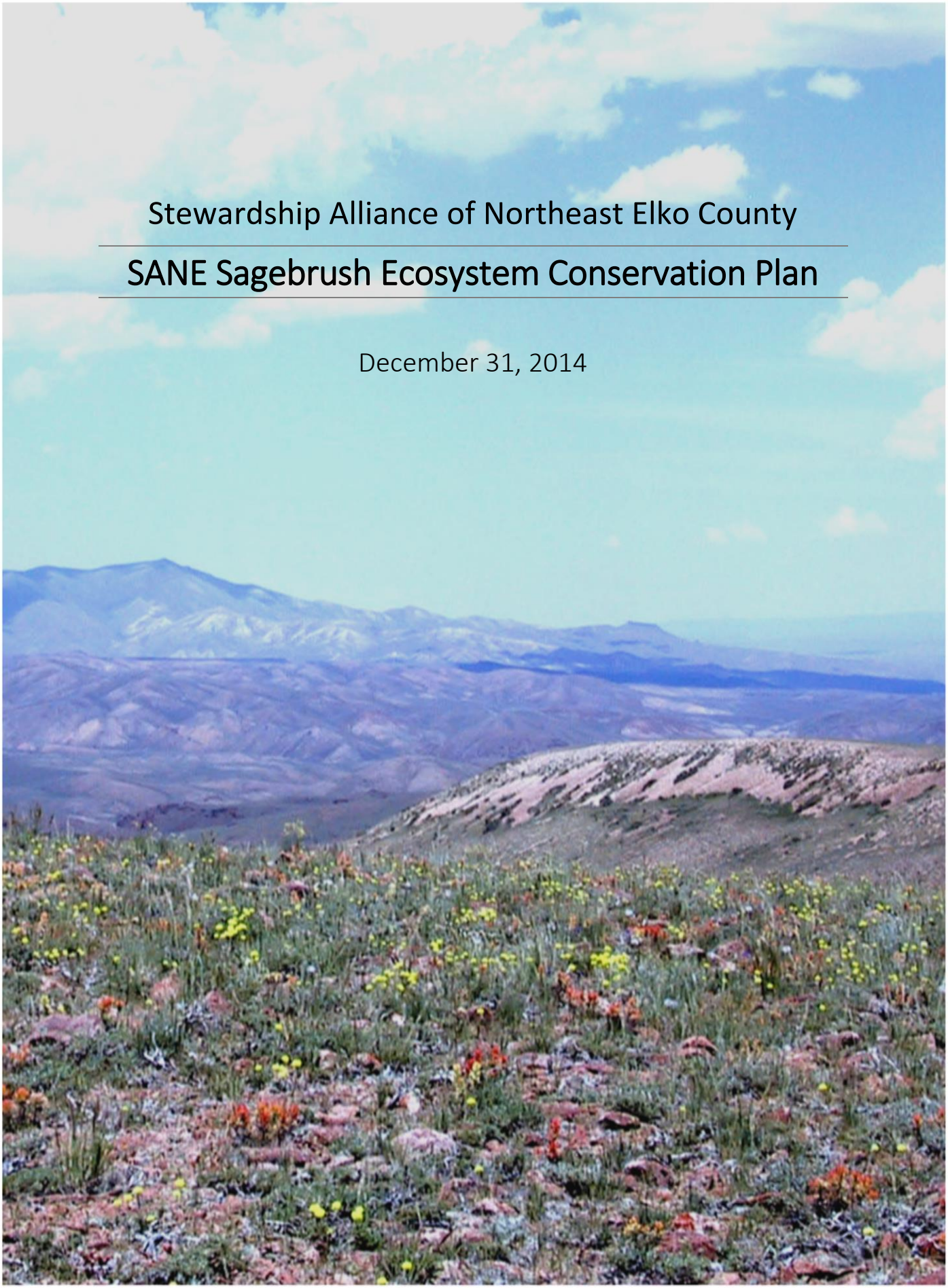
Stewardship Alliance of Northeast Elko County

SANE Sagebrush Ecosystem Conservation Plan

December 31, 2014



Stewardship Alliance of Northeast Elko County

SANE Sagebrush Ecosystem Conservation Plan

December 31, 2014

Prepared for:

NE Elko County Conservation District
c/o Robin Boies
HC 34 Box 300
Wells, NV 89835

Prepared by the:

Stewardship Alliance of Northeast Elko County

and

Sheila Anderson, Editor
Resource Concepts, Inc.
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Carson City, NV 89703
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With Grant Assistance from Public Lands Council and Nevada Department of Wildlife

Endorsements

We, the members, participating agencies, and stakeholders of the Stewardship Alliance of Northeast Elko County, have reviewed and support the Sagebrush Ecosystem Conservation Plan for Northeast Elko County.

Name	Ranch or Agency	Signature	Date
PETE ANDERSON	NDF		8-29-14
JOE I DURANT Janelle Durant	Twin Meadows	Janelle Durant	12-11-14
Tamzy Hopwood	Winecup Gamble Ranch	Tamzy Hopwood	12-11-14
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VICKI A. SMITH	Cottonwood Ranch	Vicki A Smith	12-11-14
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Name	Ranch or Agency	Signature	Date
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Jill C. Silvey	BLM	Jill C. Silvey	12/17/2014
Jim Barber	NV. Dept of Ag		12/17/14

Name	Ranch or Agency	Signature	Date
Bill Dunkelberger, Forest Supervisor	US Forest Service		12/16/14
Matt Boisseau, Deputy District Ranger	US Forest Service	Matt Boisseau	12/15/14
Wendy Fuell, District Ranger	US Forest Service	Wendy Fuell	
Kyra Reid	US Forest Service	Kyra Chris Walton Reid	12/29/14
Matthew Boisseau	US Forest Service		1/5/15
Sheila Anderson	**Resource Concepts Inc.**	Sheila Anderson	1/12/15

Elko County Board of Commissioners

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Glen G. Guttry
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September 26, 2014

Resource Concepts, Inc.
Attn: Ms. Sheila Anderson
340 North Minnesota Street
Carson City, NV 89705

Stewardship Alliance of Northeast Elko
Attn: Ms. Robin Boies
HC 34 Box 300
Wells, NV 89835

Re: SANE Draft Sagebrush Ecosystem Conservation Plan

Dear Ms. Anderson:

At a regularly scheduled meeting of the Elko County Board of Commissioners on September 17, 2014 the Draft Sagebrush Ecosystem Conservation Plan was presented by the Stewardship Alliance of Northeast Elko County (SANE). The Draft plan was reviewed and discussed by the Board. At the conclusion of the presentation the Elko County Board of Commissioners unanimously supported and indorse the Draft Plan. Additionally we emphatically support SANE and their concepts and believe that projects such as this can and should be a template for local, state and federal political bodies as they look at ways to solve public land issues in the future.

Respectfully,

Charlie Myers, Chair

Grant Gerber, Vice Chair

Demar Dahl, Commissioner

Glen Guttry, Commissioner

Jeff Williams, Commissioner

United States Department of the Interior

Pacific Southwest Region
FISH AND WILDLIFE SERVICE
Nevada Fish and Wildlife Office
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RESOURCE CONCEPTS, INC.

November 18, 2014

Sheila Anderson
Resource Concepts, Inc.
340 N Minnesota Street
Carson City, NV. 89705

Dear Ms. Anderson:

Thank you for the opportunity to provide comments on the "Sagebrush Ecosystem Conservation Plan" (herein referred to as the Draft Plan). The U.S. Fish and Wildlife Service (FWS) has reviewed the draft. We acknowledge that the overarching goal of the Draft Plan is to identify economic and ecological objectives developed through the Stewardship Alliance of Northeast Elko (SANE) team with an emphasis towards providing a conservation benefit for the Greater sage-grouse and their habitats in which they rely upon. We support your commitment in working together at the local level to achieve this with ranchers who best know their lands. Incorporating diverse agency specialists identified as the technical assistance committee (TAC), including FWS staff, is an approach that we further support to facilitate implementation and effectiveness for "on the ground" projects that will promote sagebrush ecosystem conservation in Nevada.

You propose a broad array of projects, many of which we believe can help conserve sagebrush ecosystems. We have uncertainty about the value of some proposed projects, such as sagebrush removal (e.g. brush management and fuel breaks), identified in the Draft Plan. We encourage setting specific goals within the final plan that ensures the conservation of intact sagebrush ecosystems that support sage grouse. We recommend developing a full array of strategies to address the threat of fires, as well as the threat of invasive species such as cheatgrass, which we believe to be significant in many parts of the Great Basin. We anticipate that as projects are designed through the TAC, the potential site-specific risks and benefits of each practice would be identified and appropriately managed.

We can discuss with the SANE team private and public land conservation tools available through the FWS. For example, Candidate Conservation Agreements with Assurances (CCAA's) are voluntary agreements between the Service and partner(s) where a private landowner agrees to implement specific conservation measures for candidate or at-risk species. In addition, the Partners for Fish and Wildlife Program is a resource for technical and financial assistance for habitat enhancement projects.

We encourage the SANE team to enter the Draft Plan into the Conservation Efforts Database (CED) (http://conservationefforts.org/) identified in the Greater sage-grouse data call. The Bureau of Land Management, Nevada Department of Wildlife, Natural Resources Conservation Service, and FWS Partners for Fish and Wildlife Program will be entering their respective projects in the database. We encourage you to become aware of their plans to respond to the data call to avoid duplicating efforts. In addition to the Draft Plan, please consider entering projects completed between 2009-2014 that are not included in entries of the previously mentioned agencies or other partners. The CED will be open for data entry through December 31, 2014. All data and information submitted to us, including names and addresses, will become part of the decisional record for this package and available for public inspection.

Please contact my office if you have any questions. Thank you for your effort and we look forward to continuing working together to achieve compatible goals.

Sincerely,

Edward D. Koch
Nevada State Supervisor

Nevada Department of Wildlife
60 Youth Center Road
Elko, Nevada 89801

Attention: Connie Lee, Private Lands Coordinator

To Whom it May Concern:

The Nevada Cattlemen's Association (NCA) is in full and strong support of the Stewardship Alliance of Northeast Elko County's (SANE) collaborative efforts to sustain a healthy ecosystem for sage grouse and other wildlife. Their pro-active efforts to enhance habitat are done in concert with multiple use activities such as grazing and recreation sustainability. Our hopes are that the SANE group's efforts, even though currently in its infancy, will serve as a blueprint of how cooperation and collaboration of on-the-ground projects can be beneficial to all and most importantly to the land.

The collaborative SANE team includes personnel representing the USFS, BLM, NRCS, NDOW, NDF, UNR, and USFWS. The core of the SANE team includes the eight neighboring ranches that own or manage 1.7 million acres of prime sage grouse habitat. Of that, 29 percent is private land, 69 percent is BLM grazing allotments and 2 percent is USFS grazing allotments. The area involved encompasses most of the Salmon River drainage located in the northeast corner of Nevada.

The SANE group utilizes a landscape and watershed approach to their consensus based proposed projects. A few of the on-the-ground projects proposed include green-stripping, monitoring lek status, water improvements, fence removal and flagging, spring and meadow restoration, and invasive species management.

In addition to habitat restoration, the proposed SANE project is designed to keep this large chunk of land out of the hands of lawyers and courts. It is self-evident that sustainability of the livestock industry is dependent on finding a better approach to federal lands management issues. The focuses of the group are on-the-ground habitat projects along with long-term collaborative solutions to the many land management conflicts that continue to face the industry. NCA welcomes such a breath of fresh air and applauds this group for exploring a new collaborative, cooperative, consensus and science-based approach to federal lands management.

It is for the above reasons that the NCA endorses the SANE group's proposed activities and applaud their efforts. We look forward to seeing the long-term positive results that

AFFILIATE NATIONAL CATTLEMEN'S BEEF ASSOCIATION
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are sure to be realized thorough this collaborative, cooperative, consensus and science based land management process. The SANE group's proposal assists NCA in accomplishing our mission which is to promote, preserve and protect a dynamic and profitable Nevada beef industry.

Thank you for the opportunity to comment on such a refreshing and exciting project that is designed to improve our rangelands while insuring the sustainability of ranching in Nevada.

Ron Torell

Ron Torell
President, Nevada Cattlemen's Association

EXECUTIVE SUMMARY

The Stewardship Alliance of Northeast Elko County (SANE) is a group of landowners, public land users, and public resource agency specialists who were brought together by their ties to a common use area, to meet common objectives. The Ranchers who belong to SANE operate livestock businesses on more than 1.7 million acres of public and private land, and represent a diverse cross-section of Nevada culture, particularly the ranching industry typical of Elko County. The Biologists and Resource Specialist who belong to SANE formed a Technical Advisory Committee (TAC) to bring scientific expertise and long-term local knowledge of wildlife populations, wildland fire, range management, ecological conditions, and public land management policy and regulations into the local planning process.

Many programs, reports, and initiatives have been created since 2010 when the US Fish and Wildlife Service announced their finding that greater sage-grouse was warranted for listing as a Threatened species under the Endangered Species Act (ESA). These initiatives and recommendations blanket a diverse range of geographic, ecological, climatic, social, and political boundaries.

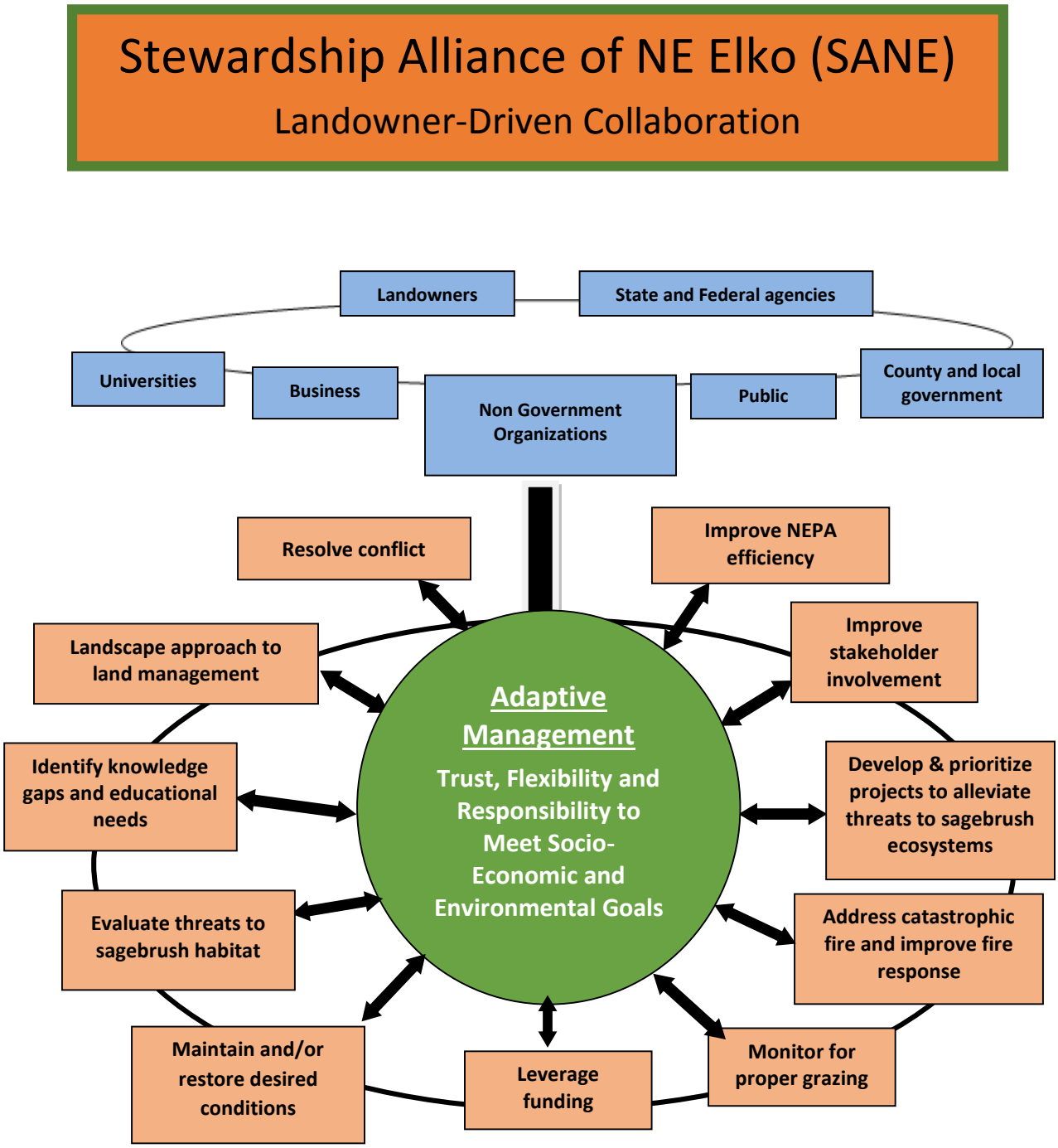
The SANE approach differs from the other programmatic plans and assessments by being a grassroots, bottom-up planning effort that strives to achieve the following hallmarks of success:

- Enhanced viability of range livestock operations in the SANE Plan Area through improved practices to minimize the impacts of operating a livestock grazing business on public lands within priority sage-grouse habitat.
- Sagebrush ecosystem conservation and mitigation of specific documented risks to greater sage-grouse using collaborative planning centered on science and local expertise to develop, implement, and monitor projects in the SANE Plan Area.
- Increased understanding and perpetuation of the public/private partnership and the responsibilities associated with implementation of management actions and monitoring for adaptive management.
- Creation of an operational framework based on long-term commitment to collaborative planning that younger generations can follow.

SANE ranchers took a proactive approach regarding their futures on public lands and made a commitment to sound management of the sagebrush ecosystems that support the livestock industry as well as many other ecosystem services. SANE members embrace a factual approach to conservation planning to address specific documented risks based on local knowledge and science from the people who manage and use the public lands on the ground.

SANE has developed a local understanding of habitat and population threats to greater sage-grouse at the ground level. Wildfire is the most significant factor affecting sage-grouse habitat throughout the Plan Area. The SANE Plan includes objectives and actions to reduce threats to sagebrush ecosystems, the wildlife, and the land users they support. Local development of the proposed actions in the SANE Plan increases the assurance that actions will be implemented and that implemented actions will be effective.

The foundation of the *Sagebrush Ecosystem Conservation Plan* (2014) is an adaptive management process based on an ongoing commitment to finding long-term solutions to the persistent challenge of grazing western public lands by incorporating conservation education, evaluation, common goals, and long term commitment of the SANE members. The SANE process is depicted in the following chart.



The SANE rancher-driven initiative includes actions to document the desired future conditions for rangeland resources at a landscape scale and on-the-ground projects to minimize habitat-related threats to sagebrush habitat, and sage-grouse in particular within the Plan Area. The SANE ranchers, with the involvement of the TAC, are becoming more conscientious and informed about rangeland health and are concerned about resource conservation and management for natural resources and uses in addition to livestock grazing.

The SANE Plan identifies two primary goals, each with multiple objectives, that are the road map for moving forward:

Socio-Economic Goal:
Elevate public awareness of the present and historic interdependence between public and private lands in the West by implementing a management approach for natural resources focused on the reliance between public and private assets as the basis for natural resource conservation, land management, and economic viability of rural ranching communities.

Ecological Goal:
Maintain sustainable sagebrush ecosystems to provide habitat (food, shelter, and water) for wildlife and domestic livestock including greater sage-grouse.

Rangeland ecosystems are in a continual state of change driven by natural climatic events, environmental stressors, and by anthropogenic uses. SANE is committed to respond to changing conditions on the landscape by addressing problem areas as they are identified. SANE will be supported by the TAC through the adaptive management process that will allow flexibility to identify practical solutions based on sound science.

The SANE members came together voluntarily as an independent, foresighted, and hardworking group of ranchers with a common goal to create, and be a part of a better decision-making process for conservation in their backyard. SANE reached out and local land management agencies responded to the call for science-based planning. SANE will continue to work on refining threat assessments and perfecting effective actions that minimize or remove risks to the sagebrush ecosystem using local monitoring results. Future success will be based on ongoing development, implementation, and monitoring the local-based actions that address specific objectives and verified threats.

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List of Acronyms

AIM	Assessment, Inventory and Monitoring
AMP	Allotment Management Plan
ATV	All-Terrain Vehicle
AUM	Animal Unit Month. The standard measure of forage or feed requirement to maintain a mature cow and calf for a period of 30 days.
BAER	Burn Area Emergency Response
BLM	Bureau of Land Management
COT	Conservation Objectives Team
CWMA	Coordinated Weed Management Area
ESA	Endangered Species Act
ES&R	Emergency Stabilization and Rehabilitation
FLPMA	Federal Land Policy and Management Act
FPD	Fire Protection District
HMT	Holistic Management Team
HRM	Holistic Resource Management
IDFG	Idaho Department of Fish and Game
IM	Instruction Memorandum
MLRA	Major Land Resource Area: geographically associated land resource units, usually encompassing several thousand acres. MLRAs are characterized by particular patterns of soils, geology, climate, water.
MOU	Memorandum of Understanding
NECD	NE Elko County Conservation District
NEPA	National Environmental Policy Act
NDF	Nevada Division of Forestry
NDOA	Nevada Department of Agriculture
NDOW	Nevada Department of Wildlife
NPCD	NDOW Partners for Conservation and Development Program
NRCS	Natural Resources Conservation Service
NRI	National Resources Inventory
PAC	Priority Areas for Conservation
PLC	Public Lands Council
PMU	population management units
PPE	personal protective equipment
RAC	Resource Advisory Councils
RSF	Resource Selection Function
RVRFPD	Rural Volunteer Rangeland Fire Protection Districts

SANE	Stewardship Alliance of NE Elko County
SGI	Sage-grouse Initiative
SRCA	Salmon River Cattlemen's Association
SRM	Society for Range Management
SWReGAP	Southwest Regional ReGap Program
TAC	Technical Advisory Committee
UNCE	University of Nevada Cooperative Extension
UP	Union Pacific
USFS	US Forest Service
USGS	US Geological Survey
USFWS	US Fish and Wildlife Service
UTV	Utility Task Vehicle
VFD	volunteer fire department
WAFWA	Western Association of Fish and Wildlife Agencies

Cover Photo by Robin Boies

PART 1. BACKGROUND

1. INTRODUCTION

SANE is a solution-based multidisciplinary conservation team working together to provide a rich heritage using the tools of education, balancing science with local knowledge, and collaboration. Our alliance/team is grounded in accountability and common values while recognizing the interrelationship between good habitat and economic viability. We work to create a sustainable community rich in traditional resource uses.

The Stewardship Alliance of Northeast Elko County (SANE) is an organized group of ranchers, biologists, and resource specialists, all of whom have knowledge and experience with management and uses of rangeland in northeast Nevada. Ranchers who belong to SANE operate livestock businesses on more than 1.7 million acres of public and private lands as shown in Appendix B Figure 2. Federal resource management agencies include the US Forest Service (USFS), the Bureau of Land Management (BLM), and Natural Resources Conservation Service (NRCS). Participating State agencies include the Nevada Department of Wildlife (NDOW), the Nevada Division of Forestry (NDF), NE Elko County Conservation District (NECD), and University of Nevada Cooperative Extension (UNCE).

SANE members recognize that private landowners have a large stake in conservation of healthy sagebrush ecosystems, and sage-grouse habitat in particular. Many have been actively involved in conducting improvements on their lands and in adjusting some management practices that benefit sage-grouse. SANE members recognize that private lands provide essential sage-grouse habitat and the greatest benefits to sage-grouse will come from addressing threats on both public and private land through a cooperative conservation approach.

The purposes of this plan are to create a living document that

1. Represents the objectives of the ranching community in NE Elko County;
2. Creates an environment of learning from all represented stakeholders; and
3. Creates a concise assemblage of pertinent information suitable for the US Fish and Wildlife Service (USFWS) administrative record regarding sage-grouse conservation in the Plan Area that better refines the threat assessment to greater sage-grouse with specific goals, objectives, and actions for conservation of greater sage-grouse and the habitat upon which they depend.

Acronyms and definitions of terms used in the SANE Plan are included in Appendix A.

2. THE SANE TEAM

One of many issues that we face is that we've allowed others outside of our industry to form deep rooted opinions about ranching that are not factually based. This is who we are.

2.1 THE RANCHES PARTICIPATING IN THE 2014 PLAN

For the past fifty or more years, the ranchers, their families and predecessors in the SANE Plan Area have managed their livestock operations in a manner that has resulted in the current vegetative conditions that support the existing healthy and productive sagebrush ecosystems and priority sage-grouse habitat. These sagebrush/grasslands have been grazed and managed by the SANE ranchers through existing management agency permits. Ranchers have made careful use of the range resources because healthy sagebrush ecosystems are also the foundation of their range livestock operations.

2.1.1 Y-3 II Ranch

Courtney and Travis Gaved have been on the Y3 II Ranch for nearly 10 years and have managed the ranch for the last four years for the Yanke family. The ranch straddles the Nevada/ Idaho border and includes approximately 11,500 acres of private land and 90,000 acres of federal and Idaho State land.

Within the Plan Area, the ranch operates on the BLM Jackpot and Bear Creek Allotments, which are divided into smaller use areas that are fenced or bound by natural barriers, steep canyons, and cliffs. BLM allotments are managed with a rest rotation management system as part of their allotment management plan (AMP). Private lands include irrigated and native meadow that are used for hay production and winter feeding. Some of the private lands are open for hunting and receive heavy hunting pressure.

Several crested wheatgrass seedings were developed between 1953 and 1969 to improve livestock grazing. Over the decades, sagebrush has reestablished in many of the seedings that today provide increased management flexibility and rest for native rangelands during the early growing season and provide early winter forage.

The livestock operation is severely impacted by raven predation during calving. Lower elevations of the Scott Fire in 2007 were converted to halogeton. The Ranch is pursuing solutions to address both of these challenges.

2.1.2 Salmon River Cattlemen's Association

Salmon River Cattlemen's Association (SRCA) has approximately 40 members who are livestock producers from northeast Nevada and southern Idaho with livestock operations ranging in size from 10 to 1,400 head. SRCA ownership is based on a total of 7,000 shares of

stock. Each share enables the owner to run one head during the April 20 to November 1 grazing season under one common brand.

The 332,900-acre Salmon River Allotment is 85 percent public land (276,398 acres) managed by the BLM, and 15 percent private land (56,502 acres) leased by SRCA from the Salmon River Canal Company (99-year lease).

SRCA is a Nevada Corporation but its stockholders are family farms. The six-member Board of Directors hires the Livestock Manager who works with the BLM Range Conservationist to determine annual pasture use dates and rotations, stocking rates, and other objectives based on annual precipitation and forage production conditions. The Manager and three to five cowboys, a fence-builder, and a cook live at the ranch headquarters during the grazing season. Riders check livestock and range conditions continually when livestock are present on the allotment. Livestock owners and additional hands are available for gathering.

The grazing system is primarily a deferred rotation system in several units which incorporates private rangeland comingled with public land and fenced private land pastures. The association has an Environmental Stewardship Committee that works with the Board, the Ranch Manager, range consultants, and BLM to advise on grazing management, monitoring, and range improvement projects.

2.1.3 Cottonwood Ranch

Photo by Agee Smith

Cottonwood Ranch has been family owned and operated in the O'Neil Basin since the 1940's. Vicki and Agee Smith and the Smith Family are the current managers. The Cottonwood Ranch includes approximately 1,200 acres of private land and three allotments; the 17,000-acre Cottonwood Allotment managed by the BLM, and the 15,000- acre Cottonwood Creek and Goat Creek Allotments managed by USFS. The private lands are predominantly irrigated and native meadows. The mid-elevation landscape is sagebrush/grassland. Upper elevations are characterized by mountain shrub, aspen, curl-leaf mountain mahogany, and conifers.

Allotment boundaries were fenced in the mid-1950s. In 1972, the BLM divided the Cottonwood Allotment into four pastures, a rest-rotation grazing system was started, and the upland rangelands started to improve. Riparian areas were still a concern.

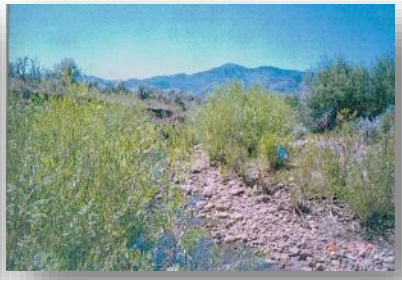
The Smiths established the Cottonwood Ranch Holistic Management Team (HMT) in 1995 to initiate a new approach to conflict resolution between livestock grazing on public lands and agency and citizen concerns with riparian conditions. The HMT approach integrates

ecological, social, and financial considerations into one plan to meet the goals and objectives of a diverse group of land users. The Cottonwood HMT includes the Cottonwood Ranch family and staff, BLM, USFS, UNCE, NDOW, NRCS, NDF, USFWS, private property groups, area ranchers, neighbors, concerned citizens of northern Nevada and southern Idaho, public land recreationists, and the Elko County Commission. The HMT meets quarterly, before, during, and after the grazing season, to discuss objectives, adjust management, and evaluate the success or problems with the previous year's grazing plan.

In 1996, the ranch began using managed timing and duration of livestock grazing to initiate shorter grazing periods and to avoid grazing the same area at the same time each year. The Cottonwood Ranch is committed to having riders with the cattle most of the time where one of the rider's duties is to move cattle off riparian areas, allowing cattle to drink, but not to linger.

According to Pat Coffin, BLM fisheries biologist/riparian specialist, a stream survey of Cottonwood Creek during 2011 showed vast improvement in riparian condition indices since timing and duration livestock grazing management was implemented through collaborative resource stewardship (via the HMT process). The riparian improvements documented below on Cottonwood Creek occurred concurrently with a greater than 2-fold increase in cattle stocking rates.

October 1979



August 1988

September 2011

2.1.4 Boies Ranch

The Boies Ranch has been family-owned for generations and is currently managed by Robin and Steve Boies, and their sons and families. Their livestock operation includes more than 12,600 acres of private land, including native and irrigated meadows that are used with approximately 112,200 acres of public lands in the Hubbard/Vineyard Allotment managed by the BLM. The BLM allotment is divided into eight main pastures with three crested wheatgrass seedings at the lower elevation.

From the 1940's to the mid 1990's the typical grazing management was early spring use and continued use until late autumn. Private lands were used in the winter. The Hubbard/Vineyard Allotment had few division fences until the 1990's. In 1996, rest and change in season of use were introduced to the Hubbard/Vineyard pastures which had never been rested during the spring growing season since cattle were introduced in the 1860's. All

allotment pastures now receive spring rest either two out of every three years, or two out of every four years.

In 2000, after participating in the Cottonwood Ranch HMT the previous five years, the Boies Ranch started a HMT that included state and federal management agencies. The combination of these two ranch teams led to the formation of the *Shoesole Resource Management Team*. The Hubbard/Vineyard has used this type of collaborative, consensus-based management model for fifteen years. This model is grounded in adaptive management that strives to balance the ecological, economic, and social/cultural bottom line.

BLM riparian specialists conducted a survey of streams within the Hubbard/Vineyard Allotment in 2013. The study documented marked gains in riparian condition index scores thirteen years after grazing management changes were implemented. According to Pat Coffin, BLM fisheries biologist/riparian specialist, "These improvements are directly due to the results of team input and subsequent grazing management implementation."

2.1.5 Home Ranch

Ruby and Domingo Uhart have owned and operated a 250-300 head cow-calf operation on the Home Ranch in the O'Neil Basin since 2011. The Ranch includes 600 acres of private land at the Home Ranch and 200 acres of private land on Wildcat Creek, north of the Gibbs Ranch that are mostly irrigated and native meadow. Private lands are operated in conjunction with the 18,805-acre Canyon Allotment managed by the BLM. The season of use in the Canyon Allotment is May 1 through November 20. An annual grazing plan is coordinated with the BLM Range Conservationist to set stocking rates and use periods for each of the three allotment pastures, Canyon, Cottonwood, and Black Mountain. A deferred rotation grazing system provides for periodic rest from grazing during the growing season in each pasture.

An 11-acre riparian pasture was created on Salmon Falls Creek following the Black Mountain Fire in 2007. Grazing in the riparian pasture is carefully managed and varies each year. For example, in 2012 it was grazed by 191 cows for twelve days.

The Canyon Pasture is watered from a well and pipeline with two troughs and a storage tank. The Cottonwood Pasture is bordered by Cottonwood Creek and the Home Ranch meadows. Two riparian exclosures along Cottonwood Creek/Salmon Falls River have historically been grazed for seven to ten days each year. Two troughs from the Canyon pipeline and a water gap in Cottonwood Creek are the water sources for the Cottonwood Pasture. A portion of the Badlands Wilderness Study Area is located in the northeast part of the Canyon Allotment. The Black Mountain Pasture borders Salmon Falls River and the Home Ranch. The existing livestock water locations in the Black Mountain Pasture are water gaps in Salmon Falls Creek.

The Home Ranch has been a Shoesole Resource Management Group member since 2013.

2.1.6 Twin Meadows Ranch

Janelle and Joe Durant own and manage the largest livestock operation in the O'Neil Basin consisting of three ranches: Twin Meadows Ranch and the Bell Brand Ranches, Gilmer and

Sun Creek. Collectively, these ranches consist of approximately 10,290 acres of private land that are managed in conjunction with 16,300 acres on the USFS White Elephant and Wilson Creek Allotments, and 102,700 acres of public land managed by the BLM on the East Buckhorn Allotment.

A rotational grazing strategy using numerous pastures is planned annually through collaboration between the USFS, the BLM, and the Durants to discuss turn-out dates, duration, and Animal Unit Months (AUMs) for each pasture. Upper elevation Forest allotments are generally used for grazing in the late summer through fall. BLM lands are divided into pastures that are used with a rotation grazing plan that incorporates long rest periods for each pasture. Private lands are predominantly irrigated and native meadow. The rangeland is well watered by springs, ephemeral streams, and excavated water catchments in many draws.

2.1.7 Gibbs Ranch

The Gibbs Ranch is a fifth generation family ranching business comprised of several homesteads that date back to the 1880's. The ranch was acquired by William Gibbs in 1916 from the Truett Land and Livestock Company. The Ranch is currently managed by Lana and Bill Gibbs and Wyatt and Jessica (Gibbs) Mesna.

Over 3,900 acres of private land are characterized as irrigated and native meadows and sagebrush/grasslands. The ranch now includes two allotments managed by the BLM, Hot Creek Allotment and Anderson Creek Allotment. The Hot Creek Allotment was the first ranch in Nevada to operate a three pasture rest-rotating grazing system. The Anderson Creek Allotment was acquired in 1996 in conjunction with a BLM/NDOW land transfer and is operated as a four pasture rotation system.

Over the decades, the ranch has made substantial improvements to maintain the productivity and sustainability of their private land and grazing allotments. The Gibbs Ranch conducted an early stream channel stabilization project circa 1950 that successfully restored Mary's River by constructing check dams that raised the groundwater elevation, stabilized deep headcuts and downcuts, restored the channel base elevation, and reconnected the hydrology between the stream and its floodplain. The Gibbs' Mary's River project and other meadow improvements are credited with saving and restoring the ranch meadows that are important for sage-grouse brood rearing. Other improvements include crested wheatgrass seedings (circa 1960), pasture fencing for proper grazing management, spring and riparian exclosures, stockwater ponds, and restoration of Hot Creek Reservoir, an important nesting habitat and stopover habitat for migrating waterfowl.

2.1.8 Winecup Gamble Ranch

James Rogers has been the Winecup Gamble Ranch Manager for the last three years. The Winecup Gamble is the largest ranch in the SANE Plan Area with approximately 257,000 acres of private land and 742,000 acres of public land managed by the BLM on four grazing allotments: HD Allotment, Gamble Individual Allotment, Dairy Valley Allotment, and Pilot Valley Allotment.

A small portion of the ranch sits on the west side of Highway 93 with the majority of the one-million acres on the east side. The bulk of the ranch is in checkerboard ownership although there are several thousand acres of contiguous private land holdings along the Thousands Springs drainage and in the upper reaches of the Snake Mountain Range. There are hundreds of springs located throughout the ranch with a large majority of them located on private property.

Winecup Ranch *Photo by James Rogers*

Approximately 15,000 acres of the ranch are irrigated with flood irrigation, sub irrigation, and mechanical methods. Crops grown on the ranch include native hay, alfalfa, oats, sorghum, turnips, and vetch. The diversity of these crops is a major attraction for waterfowl and other wildlife.

Under current management, the ranch has implemented a rotational grazing system across 23 separate pastures. With this plan, cattle rarely remain in any one location or around any water source for longer than 3 weeks. This management is only possible because of the 72 water wells located throughout the property that are used to control cattle distribution and creation of water blocks around springs and seeps that can be managed to keep cattle out when it is time for them to move on. Additional management is being implemented to enhance the benefits of pasture rest in sensitive resource areas.

The California Trail traversed this property nearly 120 years ago. The ruts of the wagon trains still remain and the Ranch is working closely with the public in both preserving this historical feature as well as enhancing the viewing enjoyment.

It is the intent of the Winecup Gamble Ranch to maintain a profitable cattle operation with public lands grazing while stewarding the history, the wildlife, and the landscape. This requires close working relationships and communication with ranch personnel, neighboring ranches, public land agencies, and the public.

2.1.9 Shoesole Resource Management Group

Currently, the Cottonwood Ranch, the Boies Ranch, and the Home Ranch form the Shoesole Holistic Management Group known as *Shoesole* with participation from the BLM, USFS, UNCE, NDOW, NRCS, NDF, USFWS, neighbors, concerned citizens of northern Nevada and southern Idaho, public land recreationists, and the Elko County Commission (McAdoo, et al. 2004). The Shoesole Holistic Management process involves a consensus-based decision-making model that encourages diverse participants to consider the economic, environmental, and social impacts of a decision before it is implemented.

2.2 SANE TECHNICAL ADVISORY COMMITTEE

SANE includes biologists, fuels management specialists, range conservationists, conservation planners, and other specialists from public land management and resource agencies with regulatory authority and management responsibility in the Plan Area. The agency specialists, identified in Table 1 are organized as the SANE Technical Advisory Committee (TAC) to provide the biological, mapping, and range science expertise for the SANE Plan.

Table 1.0 SANE Technical Advisory Committee members.

Bureau of Land Management Elko District Office (BLM)	
Cam Collins	Biologist
Clay Stott	Range Conservationist
Jeff Moore	Range Conservationist
Tom Reid	Fuels Specialist
Tyson Gripp	Fire Rehabilitation Specialist
Tom Warren	Operations
United States Forest Service (USFS)	
Kyra Walton-Reid	Biologist
Natural Resources Conservation Service (NRCS)	
Jaime Jasmine	District Conservationist
Chuck Petersen	Range Management Specialist
US Fish and Wildlife Service	
Kenneth Scheffler	Partner's Biologist Elko
Nevada Department of Wildlife (NDOW)	
Kari Huebner	Game Biologist
Connie Lee	Private Lands Coordinator
Steve Foree	Habitat Supervisor
Kevin Netcher	Fisheries Biologist
Mackenzie Jeffress	Diversity Biologist
Pheasants Forever/ Natural Resource's Conservation Service	
Rachelle Peppers	
Nevada Division of Forestry (NDF)	
Ryan Shane	Resource Management Officer
Nevada Conservation District Program	
Doni Bruland	
Nevada Cooperative Extension	
Kent McAdoo	Natural Resources Specialist

2.3 OTHER STAKEHOLDERS

SANE has received support from other outside interests who endorse the SANE approach to resource planning. They include:

N-1 Nevada State Grazing Board	Nevada Cattlemen's Association
Wells Rural Electric	Northeast Nevada Stewardship Group
NE Elko County Conservation District	Public Lands Council

3. GRAZING HISTORY

The cattle ranching business within the Plan Area dates back to the 1860's and the era of cattle barons and open rangeland grazing in Nevada. Completion of the Central Pacific Railroad made it feasible to raise and ship thousands of cattle to meet the large demands for beef in the Comstock, other mining districts, and the California markets.

Post-Civil War private land acquisitions in the Plan Area were made through federal land grant acts, land purchases from the State of Nevada, and purchases from the Central Pacific Railroad. Private lands throughout most of the Plan Area were originally acquired by Jasper Harrell and John Sparks. Harrell ranches ran approximately 30,000 head of cattle over a vast area of northeast Nevada and southern Idaho. Private land parcels were mostly restricted to areas that could be irrigated or were springs in strategic locations. John Sparks' purchase of Gollaher Mountain was one exception to purchasing only irrigable lands. This was one of the rare examples of a rancher obtaining title to his summer rangelands (Young and Sparks 2002).

Jasper Harrell sold his holdings to John Sparks and John Tinnin making them among the largest ranchers in the West. Their cattle empire on the sagebrush/grasslands ranged from Wells to Pilot Peak on the south and to the Snake River on the north. Their range was overstocked with 70,000 head of cattle grazing year round (Young and Sparks 2002).

Many observers recognized that the range was being overgrazed. In 1886 the State legislature was requested to fund research to find ways to seed and restore the range. The newness and the immensity of the ranching industry was without standards for ranchers to gauge the capacity of the sagebrush/grasslands to sustain continued intense utilization. John Clay, a recognized leader of the industry at the time, suggested tightening the credit system as the key to solving the industry's problems. The idea of range management did not even surface (Young and Sparks 2002).

> *Rarely does a single climatological event alter the plant and animal ecology or change the social and economic structure of a wide geographical area. However, such a far-reaching and dynamic event was the devastating winter of 1889-90 in the sagebrush/grasslands of western North America.*
>
> (**J. A. Young and B.A. Sparks**)

The "white winter" of 1889-1890, marked the first significant change in open grazing practices, and particularly winter grazing in the sagebrush/grasslands. Months of record low temperatures of -40°F and deep snow caused huge losses of animals dependent upon open range forage and browse. Catastrophic losses of livestock were reported as high as 95 percent. Sparks-Tinnin had branded thirty-eight thousand calves during the 1885 roundup on their Nevada and Idaho holdings. In 1890 they branded only 68 calves (Young and Sparks 2002).

In the spring of 1890, the effect of the enormous winter precipitation was excellent for plant growth. However the impacts of unlimited livestock grazing during the previous two decades had

selectively exploited perennial grasses and herbs and the advantageous growing conditions favored the remaining shrubs and woody vegetation. This transition brought about a significant change in the forage resources of the sagebrush/grasslands as the era of unrestricted-grazing left a permanent mark on the landscape, the effects of which are still evident and irreversible in some places, even with the best management practices available.

Following the disastrous winter of 1889-1890, the need to grow hay for winter feeding was obvious and irrigation became a common practice that resulted in converting terraces and some alluvial sites from shrubs to irrigated meadow and created many stringer meadows preferred by greater sage-grouse for late brood rearing. By 1894, Sparks had about ten thousand acres under irrigation.

Open grazing continued until 1934 with the passage of the Taylor Grazing Act. Over a period of the next twenty to thirty years, Grazing Districts were formalized, State Grazing Boards were established, and grazing allotments with specific forage allocations were adjudicated, usually to the current land users.

In the 1940's the historic land ownership pattern changed again in the Plan Area. Divisions and parceling of smaller individual ranches occurred that are representative of the current ownership pattern.

President Franklin D. Roosevelt closed the remaining vacant federal lands to acquisition with only approximately six percent of the available public domain (excluding railroad lands) transferred into private ownership in Nevada. With no legal way to obtain title to the acres of rangeland necessary to sustain an economic livestock operation, the best feasible option was to continue using the public lands. As rangeland survey information became available and the science of rangeland ecology and management advanced, the BLM adjusted permitted use (also called "preference") to balance livestock grazing with annual forage production, physiological needs of the plants, and wildlife needs.

Current levels of permitted public land grazing has been reduced significantly over the past several decades. Reductions from 1980 to 1999 were estimated at 44,311 AUMs in the Elko BLM District (RCI 1994). At that time the AUM reduction was estimated to result in an economic loss of $2.4 million per year.

4. DESCRIPTION OF THE PLAN AREA

The SANE Plan Area encompasses over 1.7 million acres. The Plan Area includes eight ranches that encompass approximately 495,000 acres of private ranch land, 1,200,000 acres of public land allotments managed by the BLM, and 30,000 acres of FS allotments. The geographic boundaries of the SANE Plan Area are within the NECD jurisdictional area. The Plan Area extends from the Nevada-Idaho border on the north, to the Mary's River Mountain Range on the west, the Pequop Mountains on the south, and the Nevada-Utah border on the east. The general location of the SANE Plan Area is shown in Appendix B Figure 1.

The SANE Plan Area is within the Northern Basin and Range and Central Basin and Range ecoregions, and within Major Land Resource Areas (MLRA) 24 (Humboldt Area) and 25 (Owyhee High Plateau). General soil, climate, land use, and topographic descriptions for MLRAs 24 and 25 are included in Appendix C.

4.1 TOPOGRAPHY, CLIMATE

The diverse topography of the SANE Plan Area includes basins, mountains, and plateaus, many of which are dissected by steep canyons and escarpments. Elevations range from 4,239 feet at Montello to 10,719 feet at Pilot Peak. Topographic and geographic features within the SANE Plan Area are shown in Appendix B Figure 1.

The climate is semi-arid with cold, wet winters, wet springs, and warm dry summers. Annual precipitation across the plan area ranges from eight inches to more than sixteen inches at the higher elevations. Precipitation is predominantly in the form of snow and is highly variable.

Lower elevation basins are typically hotter and drier desert shrublands. Higher elevations are typically cooler and moister and support mixed mountain shrublands transitioning into coniferous and aspen forests at the highest elevations. Mid-elevation slopes and fans are dissected by numerous perennial and ephemeral streams.

4.2 WATERSHEDS, CREEKS, SPRINGS

The SANE Plan Area includes portions of three major drainage basins: the Lahontan Basin, the Bonneville Basin, and the Snake River Basin. The Lahontan Basin is defined by tributaries to the Humboldt River that drain the western-most portions of the Plan Area including Wildcat Creek, T Creek, Currant Creek and the Mary's River. The southern portion of the Plan Area is part of the Bonneville Basin and includes Thousand Springs Creek, Loomis Creek, Crittenden Creek, and Granite Creek. The Snake River Basin includes three large watersheds in the O'Neil Basin: Sun Creek, Canyon Creek, and Cottonwood Creek. The eastern portion of the Plan Area along both sides of Highway 93 includes Salmon Falls Creek, Shoshone Creek, Trout Creek, Jakes Creek, North and South Forks Salmon Falls Creek, Knoll Creek, and Cedar Creek which are also part of the Snake River Basin. Other waters within the Plan Area include Crittenden Reservoir, Boies Reservoir, Hot Creek Reservoir, and many seeps and springs.

4.3 SOILS

Soils are key factors in determining potential vegetation types, site productivity, resilience after disturbance, and resistance to invasive species. NRCS has completed the following soil surveys in the Plan Area.

Elko County, Nevada, Central Part (1997)

Elko County, Nevada, Northeast Part 1 (1998)

Humboldt National Forest Area, Nevada, North Part, Parts of Elko and White Pine Counties (unpublished)

Soils in the Plan Area are highly variable as to mineral origin, texture, rock content, and available water capacity. Many of the soils in the Plan Area are characterized by limiting factors to plant growth such as shallow depth to bedrock or other restrictive layers, high clay content, or high pH and/or alkalinity Specific soil information for the Plan Area can be obtained from http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm.

4.4 LAND COVER CLASSIFICATION

Vegetation types and patterns on the landscape are often determinants for overall biological diversity and are used to delineate habitat types in conservation evaluations (Lowery, et al. 2007). Land cover classification mapping has been completed for the SANE Plan Area as part of the US Geological Survey (USGS) Southwest Regional ReGAP Program (SWReGAP) using digital imagery-based methods. These results produce a “coarse landscape scale” representation of the vegetation diversity in the SANE Plan Area.

The SWReGAP data land cover classification in the SANE Plan Area includes 29 native plant communities, agricultural lands, barren lands, low to high intensity developed area, invasive annual and biennial forbland (e.g. halogeton), invasive annual grassland (e.g. cheatgrass), introduced perennial grassland (e.g. crested wheatgrass), open water, and recently burned areas. The most extensive land coverage classes in the NE Elko Conservation District are sagebrush dominated vegetation types including Inter-Mountain Basins Big Sagebrush Shrubland, Inter-Mountain Basins Montane Sagebrush Steppe, and Great Basin Xeric Mixed Sagebrush Shrubland.

4.5 ECOLOGICAL SITES

An ecological site is a distinctive kind of land with specific soil and physical characteristics that differs from other kinds of land in its ability to respond similarly to management actions and natural disturbances. Ecological sites are classifications of native vegetation and landscapes that are separated for study, evaluation, and management (Swanson, et al. 2006). Ecological site descriptions have been written by and can be obtained from NRCS. An ecological site description includes an interpretation of the physical, climatic, soil, and vegetation conditions for the area. The predominant ecological sites within the Plan Area are summarized in Tables 2.0 and 3.0. Ecological site descriptions for the predominant ecological sites in the Plan Area are included in Appendix C.

Table 2.0 Upland ecological sites comprising approximately 75 percent of the SANE Plan Area.

ECOLOGICAL SITE NAME	MLRA	ACRES (Approx.)	DOMINANT PLANT COMMUNITY
Shallow Clay Loam 10-14 P.Z.	25	266,940	Black sagebrush/bluebunch wheatgrass
Loamy 8-10 P.Z.	25	217,570	Wyoming big sagebrush/Thurber's needlegrass/bluebunch wheatgrass
Shallow Calcareous Loam 8-10 P.Z.	24	214,030	Black sagebrush/ Thurber's needlegrass/ Indian ricegrass
Shallow Calcareous Loam 10-14 P.Z.	24	157,610	Black sagebrush/ bluebunch wheatgrass/ Indian ricegrass
Mountain Ridge	25	99,350	Low sagebrush/black sagebrush/Idaho fescue/bluegrass
Claypan 12-16 P.Z.	25	74,830	Low sagebrush/ Idaho fescue/ bluebunch wheatgrass
Loamy 10-12 P.Z.	25	53,800	Big sagebrush/ bluebunch wheatgrass/ Thurber's needlegrass
Shallow Calcareous Loam 8-10 P.Z.	28	37,490	Black sagebrush/ Indian ricegrass/ Needleandthread
Loamy 5-8 P.Z.	28	29,670	Shadscale/ Indian ricegrass/ Bottlebrush squirreltail
Shallow Loam 8-12	25	28,130	Wyoming big sagebrush/ Thurber's needlegrass/ bluebunch wheatgrass

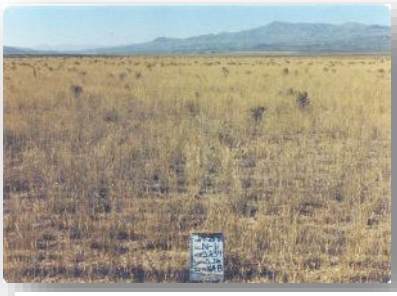
Table 3.0 Meadow Ecological Sites Comprising less than one percent of the SANE Plan Area.

ECOLOGICAL SITE NAME	MLRA	ACRES (Approx.)	DOMINANT PLANT COMMUNITY
Dry Floodplain	24	3,150	Basin big sagebrush/ Basin wildrye
Dry meadow	25	1,750	Nevada bluegrass/ alpine timothy
Wet meadow	25	1,530	Tufted hairgrass

4.5.1 Crested Wheatgrass

Crested wheatgrass seedings are another important vegetation cover type in the Plan Area. Most seedings were planted in the 1950's and 1960's and now include reestablished sagebrush and native grasses. Seedings were originally created to control spread of halogeton and to increase livestock forage. They are now a crucial management component that provide flexibility for allotment management plans such as providing areas for fall and winter grazing and allowing rest of native rangeland during the early spring brooding season for greater sage-grouse.

Sagebrush reestablishment in the crested wheatgrass seeding between 1984 and 2009 on the Salmon River Allotment at key area SR02 is shown below.



1984

1992

2009

4.6 FIRE HISTORY

Fire is an environmental factor that can both rejuvenate or replace sagebrush/grassland. All of the ranches and each of the sage-grouse population management units (PMU) in the Plan Area have been impacted by wildland fire. A summary of the wildfires that occurred between 2000 and 2013 in the SANE Plan Area is shown in Table 4.0. Fire suppression in the Plan Area during this timeframe was successful at keeping 19 percent of fires less than 100 acres in size, and 48 percent of the fires less than 500 acres in size. The worst fire season occurred in 2007 with a total of 151,708 acres burned. Other large fire years occurred in 2000, 2001, 2006, and 2012 with greater than 10,000 acres burned each year.

The risks associated with wildfire in sagebrush ecosystems vary depending upon the condition of the resources when the fire occurs. If the ecosystem is in a resilient condition and in a higher precipitation zone (12-14 inches) it has a very good probability of returning to its former condition. If the ecosystem is depleted of resilient herbaceous species of perennial grasses and forbs when it burns and there is a seed source nearby, there is an extreme risk of invasion of noxious and undesirable plants, especially cheatgrass. Cheatgrass-dominated communities are easily ignited and thus have high probabilities of repeated fires. Cheatgrass is also a 'flashy fuel' that quickly spreads fire, particularly under wind-driven conditions. Frequent and repeated fires in the same area result in continual downward trend of ecological condition toward the extreme degradation and permanent transition to annual grasslands. Currently there are no cheatgrass monocultures in the Plan Area.

Table 4.0 Fire History in the SANE Plan Area 2000 to 2013.

YEAR	FIRE NAME	ACRES	RANCH
2000	12-Mile	57	Winecup-Gamble
2000	18-Mile	336	Winecup-Gamble
2000	21-Mil	304	Winecup-Gamble
2000	Charlie	3,021	Winecup-Gamble
2000	Choke Cherry	6,167	Salmon River
2000	Cold Springs Fire	8.393	Hubbard-Vineyard
2000	County Zone	29,872	Winecup-Gamble
2000	East Wimpy	50	Winecup-Gamble
2000	Gamble	22	Winecup-Gamble
2000	Mahogany	212	Salmon River/Twin Meadows
2000	O'Neil Complex	24,514	Cottonwood/Gilmer
2000	Patty Jack	35	Winecup-Gamble
2000	West Basin	4,276	Salmon River
2000	Wimpy	2,739	Winecup-Gamble
2001	Bishop	251	Winecup-Gamble
2001	Delano	294	Winecup-Gamble
2001	Tabor Creek	1,336	Winecup-Gamble
2001	Upper Delano	4,351	Winecup-Gamble
2001	Wine Cup	9,343	Winecup-Gamble
2002	Dry Canyon	204	Winecup-Gamble
2002	Knoll Mountain	22	Salmon River
2003	Mule	329	Winecup-Gamble
2003	Ranch	219	Winecup-Gamble
2003	Savanna	1,443	Winecup-Gamble
2005	Contact	4	Salmon River
2005	Contact	1,658	Salmon River
2006	Bell Canyon	2,859	Salmon River
2006	Deer	15,598	Sun Creek/Gibbs

YEAR	FIRE NAME	ACRES	RANCH
2006	Jackson Mine	333	Winecup-Gamble
2007	Black Mountain	1,285	Home Ranch
2007	Blanchard	20	Salmon River
2007	Eccles Ranch	17,954	Winecup-Gamble
2007	Hepworth	1,201	Winecup-Gamble
2007	Murdock	421	Winecup-Gamble
2007	Pequop Spring	1,299	Winecup-Gamble
2007	Scott Creek	50,195	Y3-II
2007	West Basin	46,396	Salmon River
2007	West Fork	30	Winecup-Gamble
2007	West Fork	32,907	Winecup-Gamble
2008	East Slide Rock Ridge	2,457	Cottonwood
2010	Chicken Springs	268	Winecup-Gamble
2011	Salmon	4,846	Home Ranch/Hubbard-Vineyard
2011	Signboard Pass	1,113	Winecup-Gamble
2011	Tijuana John	747	Salmon River
2011	Willow	268	Winecup-Gamble
2012	Morning Star	531	Y3-II
2012	Twenty Mile	13,149	Winecup-Gamble
2013	Bloody Gulch	18	Salmon River
2013	Cold Springs	14	Winecup-Gamble
2013	Hot Creek	212	Gibbs Ranch
2013	Salmon	359	Winecup-Gamble
2013	Silver Star	231	Winecup-Gamble

4.7 ECOSYSTEM SERVICES

Ecosystem services have been described in similar ways by numerous groups. The Nevada Conservation Credit System Manual defines ecosystem services as:

> The benefits that people obtain from nature. These include provisioning services such as food, water, timber, and fiber; regulating services that affect climate, floods, disease, wastes, and water quality; cultural services that provide recreational, aesthetic, and spiritual benefits; and supporting services such as soil formation, photosynthesis, and nutrient cycling (NNHP and SETT 2014).

Many of these services are traditionally viewed as free benefits to society such as wildlife habitat and diversity, watershed services, carbon storage, and scenic landscapes. Because ecosystem services have not traditionally been traded and generally do not have a current "market price," landowners are not typically compensated for the critical benefits that their private rangelands naturally deliver to the public (USFS 2014).

> *Mechanisms are needed by which private landowners can seek returns on the ecosystem services provided on their land in addition to those commonly associated with commercial products.*
>
> **US Forest Service**

4.8 WILDLIFE

4.8.1 Sagebrush Habitat

Sagebrush habitat in the SANE Plan Area provides food and shelter for a wide variety of wildlife species both seasonally and year-round. The following eight wildlife species in Nevada are dependent on sagebrush habitat for most of their life history needs (i.e. sagebrush obligates):

Pygmy rabbit	*Brachylagus idahoensis*
Great Basin pocket mouse	*Perognathus parvus*
Sagebrush vole	*Lemmiscus curtatus*
Sagebrush lizard	*Sceloporus graciosus*
Greater sage-grouse	*Centrocercus urophasianus*
Brewer's sparrow	*Spizella breweri*
Sage thrasher	*Oreoscoptes montanus*
Sage sparrow	*Artemisiospiza nevadensis*

Mule deer and pronghorn are also dependent on sagebrush habitat as well as other habitat types to meet seasonal habitat requirements.

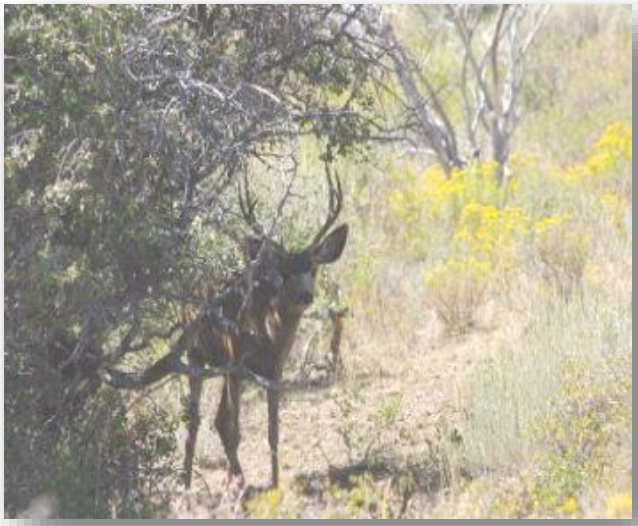


Photo by Clay Stott

The following key elements of sagebrush habitat are important to wildlife identified in the Nevada Wildlife Action Plan (NDOW 2012):

- Mature sagebrush stands provide nesting structure, protection from predators and thermal cover. Key species for conservation identified by NDOW for mature sagebrush habitat include greater sage-grouse, loggerhead shrike, sage sparrow, Brewer's sparrow, and sage thrasher.
- Young to mid-age class sagebrush stands provide foraging area, protection from predators, and thermal cover. NDOW identified mule deer as a key species for conservation in this habitat type.
- Tall big sagebrush stands provide burrowing opportunities, protection from predators, and foraging area. NDOW identified pygmy rabbit as a key species for conservation in this habitat type.
- Grasses and forbs in the understory of sagebrush habitats provide nesting cover and forage. NDOW identified greater sage-grouse and Columbia sharp-tailed grouse as the key species for conservation in this habitat type.

4.8.2 Aquatic Habitat and Fisheries

The Lahontan Basin portion of the SANE Plan Area supports the following native fish: redside shiner, speckled dace, mountain sucker, Tahoe sucker, and Paiute sculpin (Pers. Comm. Netcher 2014).

Within the Snake River Basin redband trout and mountain whitefish are the only native sportfish present. Brown trout can also be found in the main stem of the river. Nongame species include speckled dace, longnose dace, redside shiner, bridgelip sucker, chiselmouth, and Northern pikeminnow. Leatherside chub, an NDOW species of concern, is believed to be present but has not been recently documented (Pers. Comm. Netcher 2014).

Loomis Creek, a tributary to Thousands Springs Creek in the Bonneville Basin, supports a brook trout fishery. Non-game fish include mottled sculpin, Utah chub, speckled dace and redside shiner (Pers. Comm. Netcher 2014).

4.8.3 Protected Species in Sagebrush Ecosystems

Lahontan Cutthroat Trout is listed as a Threatened species under the Endangered Species Act (ESA); is only found within the Lahontan Basin portion of the Plan Area.

Columbia Spotted Frog is a candidate for federal listing under the ESA.

Migratory Birds are protected by the Migratory Bird Treaty Act.[1]

A wide diversity of breeding bird species have been recorded in the SANE Plan Area by both the Cottonwood Ranch and the Hubbard/Vineyard Ranch. A species list is included in Appendix D.

Other species are designated as sensitive by the BLM and USFS on the districts where they occur. A list of BLM and USFS sensitive species with potential for occurrence in the SANE Plan Area is included in Appendix E.

4.8.4 Priority Species for Conservation

NDOW has identified 81 species in the Nevada Wildlife Action Plan (NDOW 2012) as Species of Conservation Priority that have potential for occurrence in the Plan Area. NDOW Species of Concern are listed in Appendix E.

4.9 GREATER SAGE-GROUSE

In 2010 the USFWS determined that greater sage-grouse were warranted for protection under the ESA as a threatened or endangered species, but precluded the listing decision based on other higher priorities. USFWS is now under a court order to publish a proposed finding in September 2015 for greater sage-grouse in Nevada and the other 10 western states where it occurs.

4.9.1 Greater Sage-Grouse Population Management Units

The SANE Plan Area includes portions of four sage-grouse PMU, the O'Neil PMU, the Snake PMU, the Gollaher PMU, and the East Valley PMU as shown in Figure 3. Only a very small portion of the East Valley PMU is included in the Plan Area. Each PMU is characterized by numerous active, inactive, and historic leks summarized in Table 5.0. NDOW uses the following criteria to categorize leks.[2]

Active – a lek that had two or more birds present during at least one of three or more visitations in a given breeding season. For a strutting ground to attain this status it must also have had two or more birds present during at least two years in a five-year period (Connelly

[1] MBTA makes it unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not.

[2] Because of the sheer number of documented lek locations in the State of Nevada and the limited personnel available to visit all leks each year, the status applied to a lek based on its most recent visitation will be upheld in subsequent years until the lek is revisited to verify its status.

et al. 2003). As of 2014, there were 114 Active greater sage-grouse leks in the SANE Plan Area.

Inactive – a lek that has been surveyed three or more times during one breeding season with no birds detected during any survey period and no sign observed on the lek. If a lek is only visited once during a breeding season and was surveyed under adequate conditions and no birds were observed during the current year and during the previous year, and no sign was observed at the lek, then the lek status is determined to be inactive. As of 2014, there were 135 Inactive greater sage-grouse leks in the SANE Plan Area.

Historic – a lek that has had no bird activity for twenty years or more and has been checked according to protocol at least intermittently. Another means of classifying a lek as historic is to photograph a lek location (field biologist) and determine if the habitat is suitable for normal courtship displays. For example, if a lek location lies in a monotypic stand of sagebrush that is three to four feet tall, then conditions are no longer suitable for strutting activity. As of 2014, there were 26 Historic greater sage-grouse leks in the SANE Plan Area.

Unknown – a lek that may not have had birds present during the last visitation, but could be considered viable due to the presence of sign at the lek. This designation could be especially useful when weather conditions or observer arrival at a lek could be considered unsuitable to observe strutting behavior. The presence of a single strutting male would invoke the classification of the lek as unknown. A lek that was active in the previous year, but was inadequately sampled (as stated above) in the current year with no birds observed could also be classified as unknown. AS of 2014, there were 12 greater sage-grouse leks of unknown status in the SANE Plan Area.

Table 5.0 Greater Sage-Grouse Population Management Units (PMU) and status of leks in the SANE Plan Area (Pers. Comm. Huebner 2014).

POPULATION MANAGEMENT UNIT (PMU)	PMU SIZE (acres)	PMU ACREAGE IN THE SANE PLAN AREA (%)	NUMBER OF ACTIVE LEKS	NUMBER OF INACTIVE LEKS	NUMBER OF HISTORIC LEKS	NUMBER OF LEKS OF UNKNOWN STATUS	TOTAL NUMBER OF LEKS
O'Neil	1,014,675	384,355 (38%)	59	60	10	7	**136**
Gollaher	944,705	716,229 (76%)	30	53	15	3	**101**
Snake	538,128	454,739 (85%)	17	22		1	**40**
East Valley	1,619,014	169,250 (10%)	8		1	1	**10**
Total			**114**	**135**	**26**	**12**	**287**

4.9.2 Greater Sage-Grouse Habitat Maps.

The SANE Plan Area provides seasonal habitat required for wintering, breeding, nesting, and brood-rearing. NDOW identified 51 percent, approximately 880,000 acres, of the sage-grouse habitat within the SANE Plan Area as 'essential and irreplaceable' as shown in Figure 4 (NDOW 2011). Another five percent, approximately 81,000 acres, was identified as 'Important Habitat,' and 30 percent, approximately 513,000 acres, was identified as habitat of 'moderate importance.' The land status distribution of essential and irreplaceable, important, and moderately important habitat is shown in Table 6.0 and emphasizes the necessity of the public-private partnership for sage-grouse conservation in the SANE Plan Area.

Table 6.0 Approximate acreage of Sage-grouse Habitat on Private, BLM, and USFS land in the SANE Plan Area.

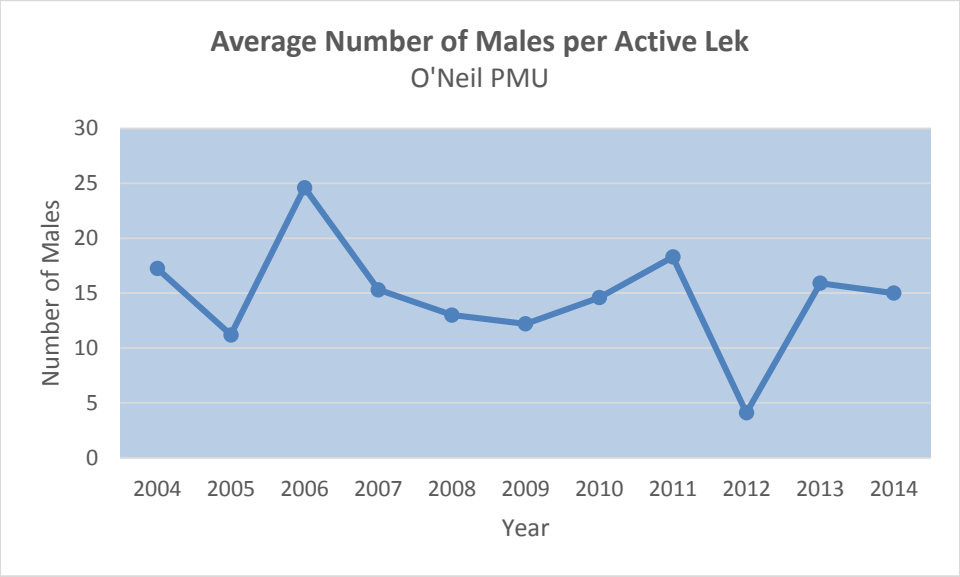
RANCH	NDOW HABITAT CATEGORIZATION	PRIVATE ACRES	BLM ACRES	USFS ACRES
Boies-Hubbard/Vineyard Ranch	**Essential/Irreplaceable**	8,075	97,680	
	Important	1,500	13,420	
	Moderate	2,920	1,020	
Smith-Cottonwood Ranch	**Essential/Irreplaceable**	590	16,975	10,590
	Important	510	75	
Durant-	**Essential/Irreplaceable**	6,995	87,145	14,280
	Important	3,295	15560	
	Moderate		40	65
Gibbs Ranch	**Essential/Irreplaceable**	2,130	36,660	5
	Important	1,815	2,215	
Salmon River	**Essential/Irreplaceable**	48,585	191,560	
	Important	16,360	56,115	
	Moderate	2,190	3,900	
Uhart - Home Ranch	**Essential/Irreplaceable**		17,540	
	Important	610	1,270	
Winecup-Gamble	**Essential/Irreplaceable**	96,710	209,410	
	Important	142,860	199,830	
	Moderate	35,950	34,925	
Y3 II	**Essential/Irreplaceable**	1,535	26,760	
	Important	9,020	41,105	

The BLM in Nevada used the NDOW habitat categorization to define 'preliminary priority habitat' as including NDOW Categories 1 and 2, and 'preliminary general habitat' as NDOW Category 3.

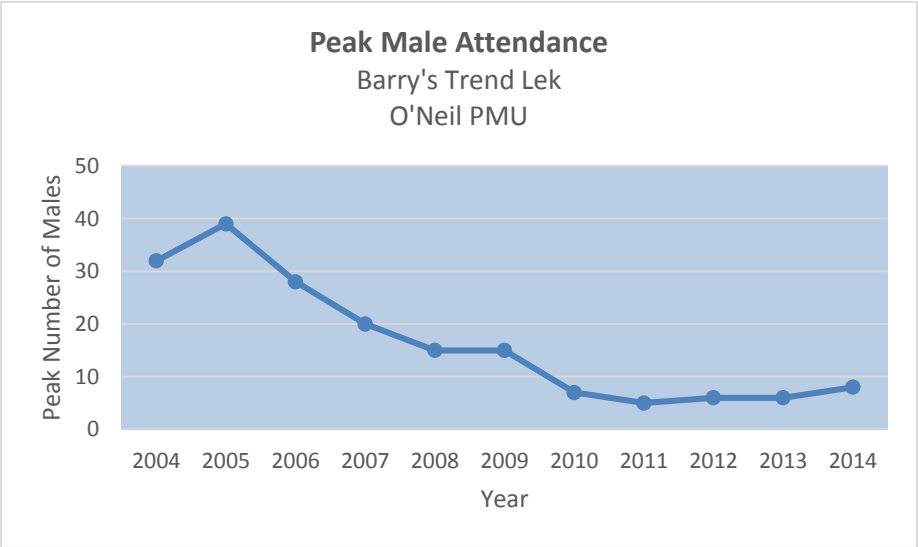
For the State of Nevada, the Sagebrush Ecosystem Council and Sagebrush Ecosystem Team are in the process of finalizing another sage-grouse habitat map based on a Resource Selection Function (RSF) modeling project conducted by the USGS. The results of the RSF mapping are currently in the process of final approval by the Sagebrush Ecosystem Council and will be supplemented to the SANE Plan when available.

4.9.3 O'Neil PMU

O'Neil PMU has one of the largest greater sage-grouse populations in Elko County (NDOW 2013). Thirty-eight percent of the O'Neil PMU is in the SANE Plan Area. There are 59 active leks and 60 inactive leks in the O'Neil PMU. The average number of males per active lek between 2004 and 2014 has ranged from a high of 25 in 2006 to a low of 4 in 2012 with a mean of 15. The average number of males per active lek observed in 2014 was 15. Between 2000 and 2007, 38 of 189 leks (20 percent) were burned by wildfire, most of them in 2006. Habitat loss due to fire, aroga moth infestations, and drought conditions were identified as factors affecting population change (Pers. Comm. Huebner 2014).

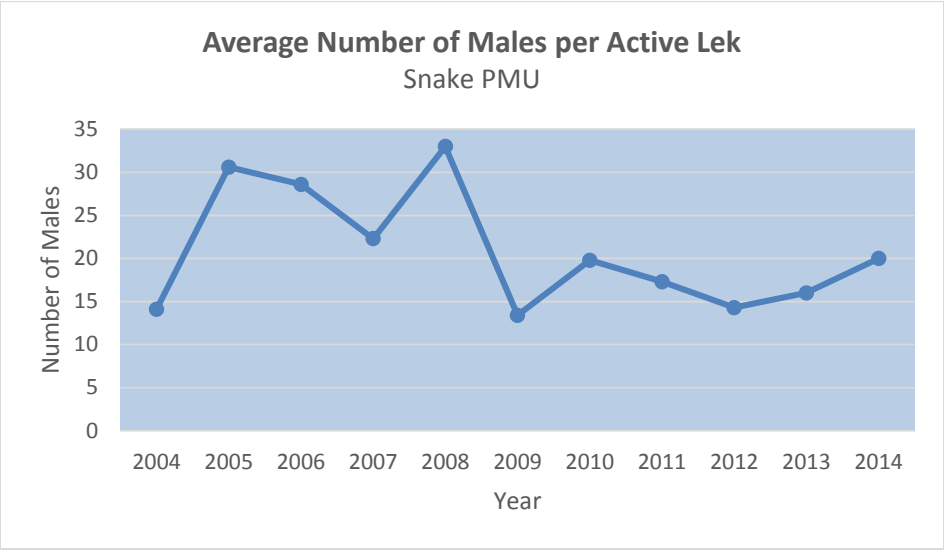


Barry's trend lek has been counted in the O'Neil PMU since 1999. The average peak male attendance over the last 10 years at Barry's lek is 16 birds. Population recruitment rates based on wing data between 2004 and 2007 ranged from 0.71 chicks per hen in 2007 to 2.28 chicks per hen in 2005 (Pers. Comm. Huebner 2014).

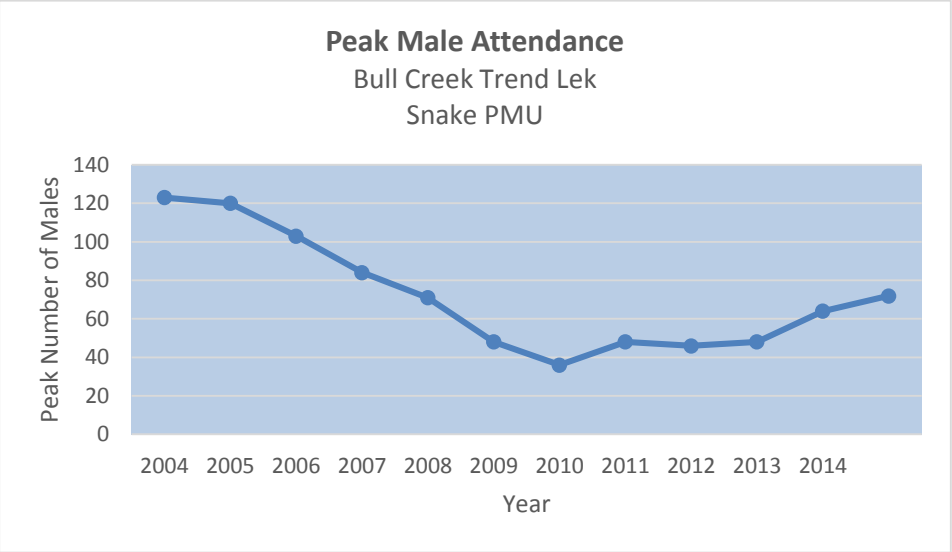


4.9.4 Snake PMU

Eighty-five percent of the Snake PMU is in the SANE Plan Area. There are 17 active and 22 inactive leks in the Snake PMU. The average number of males per active lek between 2004 and 2014 ranged from a low of 13 in 2009 to a high of 33 in 2008 with an 11-year average of 21. The average number of males per active lek observed in 2014 was 20. Population recruitment rates based on wing data between 2004 and 2007 ranged from 0.49 chicks per hen in 2007 to 1.5 chicks per hen in 2004 (Pers. Comm. Huebner 2014).

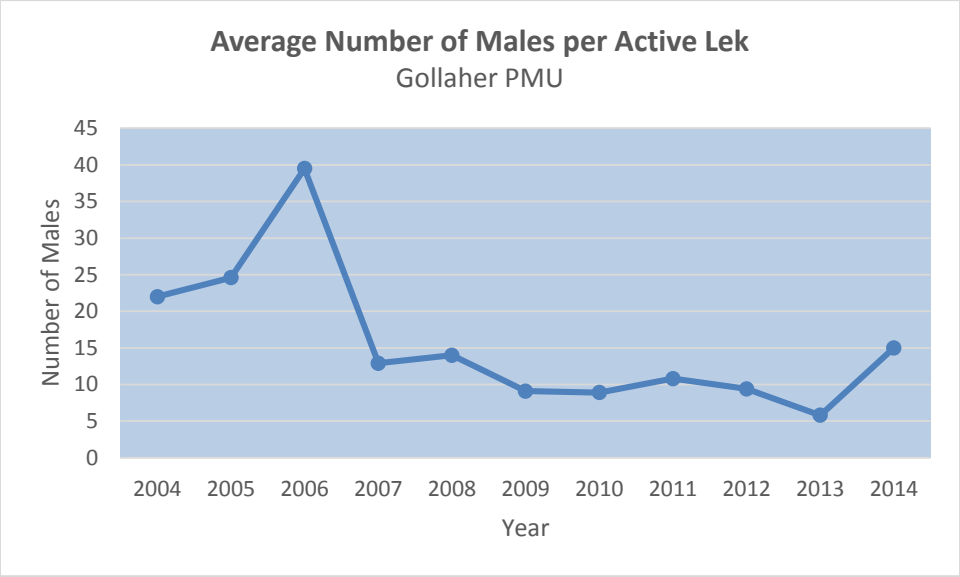


The Bull Creek Trend Lek in the Snake PMU has been counted since 2001. The average peak attendance at the Bull Creek lek between 2004 and 2014 was 72 males. In 2004 a raven control project was implemented specifically targeted to increase nest success of greater sage-grouse in this PMU. Higher attendance was recorded between 2004 and 2007 following predator control projects (Pers. Comm. Huebner 2014).

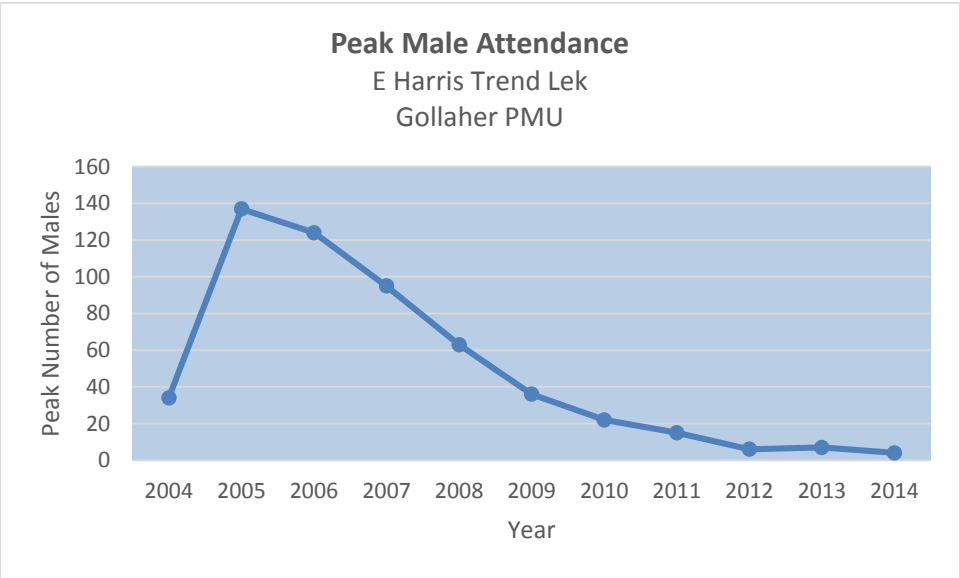


4.9.5 Gollaher PMU

Seventy-six percent of the Gollaher PMU is in the SANE Plan Area. There are 30 active and 53 inactive leks in the Gollaher PMU. The average number of males per active lek between 2004 and 2014 ranged from a low of 6 in 2013 to a high of 40 in 2006 with an 11-year average of 16. The Average number of males per active lek observed in 2014 was 15. Between 2000 and 2007, 92 out of 129 leks (71 percent) were burned by wildfire. Of the 39 leks that burned in 2000, only three were active in 2008 (Pers. Comm. Huebner 2014).



The East Harris trend lek has been counted in the Gollaher PMU since 2001. The average peak attendance between 2004 and 2014 is 49 males. Population recruitment rates based on wing data between 2004 and 2007 ranged from 0.69 chicks per hen in 2007 to 1.77 chicks per hen in 2005 (Pers. Comm. Huebner 2014).



4.9.6 Greater Sage-Grouse Research

Photo by Kari Huebner

Several research projects have been conducted in the SANE Plan Area using radio telemetry to document sage-grouse movements and nesting success. The results are summarized in Table 7.0 (Pers. Comm. Huebner 2014). Between 2002 and 2014 a total of 704 sage-grouse were captured and collared. Some of the telemetry results documented interstate movements between Nevada and Idaho.

Idaho State University research in the Snake Mountains from 2002-2005 found 50 percent nesting success, 43 percent nest predation, and 7 percent nest abandonment. A later study by West Inc. in 2010-2012 also found 50 percent nesting success and 50 percent nest predation. Nesting occurred an average of 4.6 miles from the lek of capture. West Inc. documented movements from leks on Browns Bench to Shoshone Basin in Idaho and to O'Neil Basin in Nevada. Some post-breeding migrations were more than 25 miles from the lek of capture.

The USGS study on Gollaher Mountain in 2011 documented birds moving 10-miles from Gollaher Mountain to Shoshone Basin. Another USGS study on Knoll Mountain found elevational movements between seasonal habitats.

Table 7.0. Summary of greater sage-grouse telemetry research conducted within the SANE Plan Area.

PROJECT	YEAR	SAGE-GROUSE COLLARED	LEK SURVEYS	HABITAT SURVEYS	RAVEN SURVEYS	RESULTS	MOVEMENTS
NE NV Sage-Grouse/Predator Project Idaho State University	2002-05	87		103 (nest sites and random)	124	Nest success was 50%, of the unsuccessful nests 43% were predated and 7% were abandoned.	Varied movements along the east bench of the Snake Mtns. At least one hen captured on a lek on the east side of the Snake Mtns, nested in O'Neil Basin.
Snake Mtns Satellite Collaring Fuller and Yates BSU	2003	8				Collars only lasted spring and summer due to battery life.	Most hens nested and raised broods about 9 miles from the lek of capture.
Flat Creek Collaring NDOW	2009-10	5				Four of the five birds collared died within one year of being collared. No new leks were documented.	Four of the five birds stayed near their capture locations near Flat Creek, however one male moved over to Devils Table where he died near the NW Devils Table lek.
NE NV Sage Grouse/Predator Project Idaho Fish and Game	2010-current	431	64			Nest success was 29% during 2010 - 2012, the rest of the results have not been published.	Most of the movement is NE to Shoshone Basin (ID) and SW to O'Neil Basin.
Browns Bench West Inc.	2010-12	49	56			50% nest success, 50% nest predation; females nested and average of 4.6 miles from lek location. IDFG still has a large ongoing study on the Idaho side of Browns Bench.	Birds moved from leks on Browns Bench to Shoshone Basin in ID and O'Neil Basin. Some movements were more than 25 miles from the lek of capture.
SWIP Sage Grouse Study USGS	2010-12	95	223	77 (nest sites and random)	530	Study funding ran out before the final report was written.	Birds were captured on the west side of Knoll Mtn and stayed on the west side. They moved up in elevation seasonally.
Gollaher Mtn USGS	2011	29	132			Wind proponent pulled the application and funding ran out after one field season.	Birds were captured NW of Gollaher Mtn and moved approximately 10 miles NE to Shoshone Basin on the Nevada and Idaho border.

PART 2. GREATER SAGE-GROUSE THREAT ASSESSMENT

Photo by Ed Partee

5. GREATER SAGE-GROUSE THREAT ASSESSMENT

Several different threat assessments for greater sage-grouse have occurred over the last ten years. The findings that pertain to northeast Nevada are summarized below.

5.1 2004 GREATER SAGE-GROUSE CONSERVATION PLAN FOR NEVADA AND EASTERN CALIFORNIA

In 2004, the Governor's Sage-Grouse Conservation Plan identified threats to greater sage-grouse in Nevada that included habitat quantity, habitat quality, wildfire, habitat fragmentation, livestock grazing, wild horses, predation, changing land uses, hunting/poaching, disturbance, disease, pesticides, and climate. At that time, on a statewide scale habitat quality and quantity had been most influenced by wildfire, pinyon/juniper encroachment, non-native range seeding, wet meadows becoming degraded, improper livestock grazing, habitat fragmentation, and direct loss.

5.2 2010 US FISH AND WILDLIFE SERVICE 12-MONTH FINDING

In 2010 the USFWS announced their 12-month finding for greater sage-grouse and determined that listing was warranted, but precluded by higher priorities. The USFWS analyses followed the provisions of the ESA §424.11(c) which identifies five factors for listing or reclassifying a species as threatened or endangered on the basis of the best scientific and commercial data available. The USFWS finding was based on four of the five ESA listing factors described in Appendix F: Factor 'A' Habitat Conversion; Factor 'C' Disease and Predation; Factor 'D' Regulatory Mechanisms; and Factor 'E' Other. The 12 month finding identified threats to greater sage-grouse on a regional basis that included: habitat conversion for agriculture, urbanization, infrastructure in sagebrush habitats, power lines, communication towers, fences, roads, railroads, fire, invasive plants, pinyon/juniper encroachment, grazing, energy development, mining, wind energy development, transmission corridors, and climate change. Not all of the range-wide issues identified by USFWS are a concern in Nevada at this time. (NRCS 2010).

5.3 2010 NEVADA NRCS SAGE-GROUSE INITIATIVE PLAN

NRCS and USFWS formed a joint partnership in 2010 to initiate the Sage-grouse Initiative (SGI) to aid sage-grouse while helping sustain working ranches and farms in the West. The two agencies used conferencing provisions under Section 7 of ESA to assess the potential benefits and adverse effects of specific NRCS conservation practices, many of which are common to western ranching operations that could be implemented and maintained by landowners participating in SGI. USFWS worked closely with NRCS to analyze the expected cumulative effect of implementing 40 individual conservation practices that could potentially be beneficial or could potentially adversely affect the birds and their habitat. Conservation measures were added to the

conservation practices to avoid, ameliorate, or minimize the identified adverse effects in order to remove or reduce the known threats. The Conference Report provides certainty to cooperators who voluntarily implement the NRCS SGI conservation practices to assure compliance with the ESA should the species be listed as threatened or endangered (NRCS 2010).

5.4 2013 GREATER SAGE-GROUSE CONSERVATION OBJECTIVES TEAM (COT) FINAL REPORT

In February 2013, the USFWS collaborated with state wildlife agencies to convene the Conservation Objectives Team (COT) and develop recommendations regarding threats to greater sage-grouse across the 11 western states where they occur, and to determine the degree to which threats need to be reduced to conserve greater sage-grouse so that it would no longer be in danger of extinction or likely to become extinct in the foreseeable future.

USFWS used the Western Association of Fish and Wildlife Agencies (WAFWA) *Greater Sage-Grouse Comprehensive Conservation Strategy* (Stiver, et al. 2006) to identify actions and measures that should be put in place now in order to arrest continuing population declines. The premise used in the COT report was that:

> *Conservation success will be achieved by removing or reducing threats to the species now, such that population trends will eventually be stable or increasing, even if numbers are not restored to historic levels.*
>
> **US Fish and Wildlife Service**

Priority Areas for Conservation (PACs) were identified in the COT report as key habitats essential for sage-grouse conservation. These areas were identified as highly important for long term viability of the species and were identified as the primary focal areas for conservation efforts (USFWS 2013).

Three factors were used in the COT Report to define conservation goals, objectives, and conservation measures for PACs: *population and habitat representation, redundancy, and resilience.* Retaining redundancy, representation, and resilience means having multiple and geographically distributed sage-grouse populations across the species' ecological and geographic range. By conserving well distributed sage-grouse populations, species' adaptive traits can be preserved and populations can be maintained at levels that make sage-grouse more resilient in the face of catastrophes or environmental change.

The defined conservation goal for greater sage-grouse in the COT Report was clearly identified as:

> *…Healthy sagebrush shrub and native perennial grass and forb communities … connected, well, distributed populations and habitats …maintained through threat amelioration, conservation of key habitats, and restoration activities.*
>
> **US Fish and Wildlife Service**

The SANE Plan Area lies within the southwest part of PAC Management Zone IV: Snake River Plains. The COT report identified the risk levels and threats for the Snake River Plains PAC shown in Table 8.0.

Table 8.0 Potential threats to greater sage-grouse in Management Zone IV, Snake River Plains Priority Area for Conservation (PAC) prepared by the Conservation Objectives Team (USFWS 2013).

Isolated, small size populations	Sagebrush elimination	Agricultural Conversion	Fire	Conifers	Weeds/Annual Grasses	Energy	Mining	Infrastructure	Grazing	Free-Roaming Equids	Recreation	Urbanization
Conservation Objectives Team (COT) Analyses												
N	L	L	Y	Y	Y	L	L	Y	Y	L	Y	Y
Y= Threat Is Present and Widespread; L= Threat Is Present But Localized; N= Threat Is Not Known To Be Present; U= Unknown												

5.5 2014 SANE GREATER SAGE-GROUSE THREAT ASSESSMENT

The SANE ranchers and TAC worked together to analyze and refine the threat assessment presented for Zone IV in the COT Report to specifically apply to the 1.7 million-acre SANE Plan Area, which comprises just less that 20 percent of Management Zone IV. The results of the refined threat assessment are shown in Table 9.0.

Table 9.0. Potential threats to greater sage-grouse in the SANE Plan Area (2014) prepared by SANE and the TAC.

Isolated, Small Size Populations	Sagebrush Elimination	Agricultural Conversion	Fire	Conifers	Weeds/Annual Grasses	Energy	Mining	Infrastructure	Grazing	Free-Roaming Equids	Recreation	Urbanization	Predation	Drought
SANE Team Analyses														
N	L	N	Y	L	Y	N	L	Y	L	N	Y	L	Y	Y
Y= Threat Is Present and Widespread; L= Threat Is Present But Localized; N= Threat Is Not Known To Be Present; U= Unknown														

The four greatest threats to greater sage-grouse in the SANE Plan Area were identified by consensus to be wildfire, predation, drought and invasive species.

5.5.1 Wildfire

Wildfire is the greatest threat to greater sage-grouse in the Plan Area as it usually results in complete removal and/or mortality of sagebrush shrubs. The threat of wildfire is widespread and wildfire ignitions from lightning strikes are imminent as part of the ecological processes in the sagebrush/grasslands. Fires have occurred in the past and will occur in the future. Human-caused ignitions are also a risk. Several leks in the Plan Area have been abandoned following wildfires (Pers. Comm. Huebner 2014). Some burned areas within the Plan Area have recovered and sagebrush is reestablished. Other burned areas have been rehabilitated with post-fire seeding. The adverse impacts of fire are typically greatest at lower elevations where the risk of cheatgrass invasion is highest.

The impacts of fire can also be positive and restorative when it occurs in areas of resistant and resilient condition.

5.5.2 Predation

Predation is a natural component of sage-grouse reproduction. However, the primary source of sage-grouse nest failure was found to be predation, which can be a limiting factor for population sustainability (Idaho State University 2005, West Inc. 2012). SANE identified predation as the second-highest threat in the Plan Area.

Research conducted in the SANE Plan Area by Coates and Delehanty (2010) identified common raven as the primary cause of nest predation. Sage-grouse that nest within or near areas with

unnaturally high raven numbers may be especially vulnerable to nest failure. Research found that nest success was mostly determined by the interaction of raven abundance and the day of incubation. That is to say, the daily nest survival rate decreased as raven abundance increased, and daily survival rate was lower in early stages of incubation. Video monitoring of nests resulted in a finding that the probability of raven predation increased with reduced shrub cover.

In 2005 surveys were conducted to estimate the number of ravens in a 75 square mile area on the east side of the Snake PMU as part of a raven control and nest success study. Researchers estimated the average density of ravens to be 36.7 birds per 10 square miles in 2000 compared to an average density of 4.3 ravens per 10 square miles in 2005 following raven control (K. Huebner Personal Communication).

Raven numbers have increased 300 percent in the western United States since 1980 (Sauer et al. 2012). In desert environments, raven population increases are thought to be unusually high and caused by anthropogenic resource subsidies such as food (landfills and road kill), and artificial nest substrate such as transmission towers. Active reduction of anthropogenic subsidies and conservation/restoration of healthy sagebrush habitat are the most effective means of addressing the problem of predation. Raven control is not an effective large-scale or long-term solution.

5.5.3 Drought

Sagebrush vigor and annual herbaceous productivity of herbs and grasses used by greater sage-grouse for nest concealment and for early brood rearing is directly correlated with spring precipitation and winter snow accumulation. Native plant communities are adapted to survive successive years of below normal precipitation and can respond quickly when average precipitation occurs.

Photo by Clay Stott

Annual variability and geographic distribution of precipitation in the SANE Plan Area is high and unpredictable. Scenario planning using long-term climate predictions can help identify potential ecological changes that may result from long term fluctuations in timing and amounts of precipitation.

5.5.4 Weeds/Annual Grasses

Cheatgrass is present in the Plan Area but generally has not formed large monocultures typical of other parts of the Great Basin. Halogeton (not a listed noxious weed in Nevada) is present and a dominant species on some high pH-affected soils in lower elevation rangelands that were previously burned or disturbed. In general, the concern for cheatgrass invasion and dominance in the Plan Area is restricted to areas below 6500 feet in elevation.

5.5.5 Infrastructure

Photo by Kari Huebner

Existing linear infrastructure in the Plan Area includes a 345 kV transmission line built circa 1980 that runs NE to SW through the Snake and Gollaher PMUs. There is a strong interaction between the inherent threat of transmission lines and the threat of predation. Ravens are known to nest on the transmission towers that run past many active and inactive leks in the Snake PMU.

State Route 93 is a wide paved highway between Wells and Jackpot, NV that bisects the Gollaher and Snake PMUs. Numerous dirt roads also traverse each PMU. Some roads have been widened and graded over the past decade for improved mining access.

Photo by Janelle Durant

Allotment fences, exclosure fences, and private property fences also occur throughout the Plan Area. Land owners, BLM, USFS, and others have been actively installing fence markers on the highest risk barb wire fences as recommended by WAFWA.

5.5.6 Recreation

Recreation is one of the authorized multiple uses on public land and national forests. Recreational opportunities are widespread throughout the Plan Area and include hunting, fishing, shed antler hunting, bird watching, horseback riding, camping, fishing, photography, and ATV riding.

Although there are fewer big game hunters on the landscape in the SANE Plan Area today than there were in the late 1980s when mule deer numbers peaked, the hunting season is now longer, increasing the number of months when concentrated recreation occurs. Big game seasons are now open between August and January.

Other potential indirect impacts to sage-grouse in the SANE Plan Area that are related to hunting activity include:

- Increased use of ATVs and UTVs that are louder than traditional four-wheel drive pick-ups and increase human access via newly created off-road routes. These factors

contribute to physical damage of vegetation, fragmentation, and increase human presence.

- Hunters and other recreational users are also often responsible for leaving gates open that can result in unintentional livestock distribution where it was not intended to occur.
- The reintroduction of elk in the late 1990s may also have changed the distribution of hunters in the SANE Plan Area that were previously more focused on mule deer (Pers. Comm. Huebner 2014).

Photo by Clay Stott

5.5.7 Sagebrush Elimination

Localized events that occurred throughout the past century that resulted in sagebrush removal include irrigation improvements, crested wheatgrass seedings, aroga moth outbreaks, drought, herbicide application, and brush beating treatments.

5.5.8 Conifers

Utah juniper encroachment is a localized threat to sagebrush habitat that is limited to the Salmon River and Winecup Gamble Allotments in the Gollaher PMU. Juniper encroachment decreases habitat quality for sage-grouse by providing increased nesting and perching opportunities for avian predators. Sage-grouse have been shown to avoid juniper-encroached habitats once juniper canopy cover exceeds as little as four percent (Baruch-Mordo et al. 2013). Over time, encroachment can result in trees out-competing sagebrush for limited water, light, and nutrients and habitat can be converted to a condition avoided by greater sage-grouse.

5.5.9 Mining

Mining has occurred in the SANE Plan Area since the 1970's. The Dry Creek Mine road was built in the 1970's and the lower mill site was built in 1978. A barite mill facility is operated within the Snake PMU in conjunction with a barite mine outside the Plan Area. Barite mining is a localized threat to greater sage-grouse in the Snake PMU. Since 2005, mining activity between May and November has increased traffic, dust, and noise along the haul road to Highway 93. Mine road improvements have also increased traffic and hunting pressure in the SANE Plan Area.

Mineral exploration is an ongoing activity and mining claims are present throughout much of the SANE Plan Area. Mining claims are not currently active or resulting in habitat fragmentation or loss. Some gravel excavation has also occurred in localized areas.

5.5.10 Grazing

Livestock grazing is one of the authorized multiple uses on public land and national forests. Livestock grazing without concurrent considerations to address sage-grouse habitat needs can result in a reduction of sage-grouse habitat quality (NRCS 2010).

> Proper grazing is *the degree of utilization of current year's growth which, if continued will achieve management objectives and maintain or improve the long-term productivity of the site. Proper use varies with time and systems of grazing.*
>
> **Society for Range Management**

Proper livestock grazing is not a current threat to greater sage-grouse in the SANE Plan Area. Grazing is managed on federal land through a permit system. Annual operating plans that include adjustments to designated use areas, seasons of use, and numbers of livestock are developed on each allotment through a policy of cooperation, coordination, and communication between the range conservationists and the livestock producers.

Unrestricted [improper] livestock grazing can remove desired vegetation and change plant communities from desired ecological states to undesirable states where invasive and other undesirable plant species predominate. Additionally, unrestricted [improper] grazing may lead to overharvest of plant resources, decreased residual cover, decreased plant litter on the soil surface, increased bare ground, accelerated soil erosion rates, decreased water quality and reduced overall habitat quality for wildlife, including greater sage-grouse (NRCS 2010).

Alternatively, moderate grazing by livestock can increase the resiliency of sagebrush habitats, reduce the risk and severity of wildfire, and decrease the risk of exotic weed invasion (Davies et al. 2009, Davies et al. 2010).

5.5.11 Urbanization

Much of the southern part of the Gollaher PMU following the Union Pacific (UP) Railroad is in checkerboard ownership with alternating sections of land in public and private ownership. Past sales of UP property has led to increased urbanization in some locations.

5.5.12 Isolated, Small Populations

Greater sage-grouse populations throughout the majority of the SANE Plan Area are large and well connected. Only in the East Valley PMU would 'isolated, small populations' be considered a localized threat. East Valley is on the fringe of the distribution of suitable habitat for greater sage-grouse. A very small portion of the East Valley PMU lies within the southeast corner of the SANE Plan Area.

5.5.13 Agricultural Conversion

Agricultural conversion in the SANE Plan Area is for the most part a historical event. By 1894, about ten thousand acres had been brought under irrigation by Sparks-Harrell alone. The ranches operating today in the SANE Plan Area were well established before 1940 (Young and Sparks 2002).

The COT report includes crested wheatgrass seedings in this category of threat. Seedings in the SANE Plan Area may be more accurately described in the category of temporary removal of sagebrush. Most crested wheatgrass seedings that were created circa 1960 now have some reestablishment of sagebrush and limited establishment of native perennial grasses and forbs. No seedings have been implemented over the last several decades and none are currently proposed. No other conversion of sagebrush to agricultural practices (crops) is occurring in the SANE Plan Area.

The threat of 'agricultural conversion' in the SANE Plan Area is better characterized as the threat of converting existing agricultural operations (ranches) to subdivided ranchette properties (Urbanization) if ranching becomes unfeasible.

5.5.14 Energy

Energy development projects are not currently occurring or proposed in the Plan Area.

5.5.15 Free-Roaming Equids

There are no designated Herd Management Areas in the SANE Plan Area and no free-roaming horses or burros subject to protection under the Wild and Free Roaming Horse and Burros Act of 1971.

PART 3. ACTION PLAN

Photo by Kari Huebner

6. GOALS AND OBJECTIVES

Coming together is a beginning; keeping together is progress; working together is success.

Henry Ford

SANE is committed to development and implementation of long-term management and monitoring of the plan goals and objectives using an adaptive management approach. This will provide a mechanism to monitor the SANE Plan to insure actions are implemented/completed in a timely manner. Annual work plans will be developed to schedule detailed design and implementation of habitat actions and make short-term management adjustments as needed. Progress and needs for compliance with the National Environmental Policy Act (NEPA) will be updated each year. At the end of five years (2020), the Plan will be updated as needed to reflect new scientific findings, update the threat assessment to greater sage-grouse or other species of concern, and report progress toward meeting SANE goals and objectives.

SOCIO-ECONOMIC GOAL

Elevate public awareness of the present and historic interdependence between public and private lands in the West by implementing a management approach for natural resources focused on the reliance between public and private assets as the basis for natural resource conservation, land management, and economic viability of rural ranching communities.

OBJECTIVE 1. Develop management actions and implement projects in a manner that will conserve sagebrush ecosystems while maintaining public land ranching as a viable economic enterprise that is well suited to Nevada rangelands.

Action 1-1. Responsible Parties: SANE and TAC

Formalize the partnership between participating agencies and private landowners through an Interagency Memorandum of Understanding (MOU) that documents roles and responsibilities to facilitate implementation of the SANE Plan, such as an expedited NEPA process through shared responsibility.

Action 1-2. Responsible Parties: SANE and TAC
Conduct at least two SANE meetings annually to

a) Review completed and on-going projects, and evaluate progress toward meeting objectives;
b) Identify new project funding opportunities; and
c) Update future actions and objectives through adaptive management.

Action 1-3. Responsible Parties: SANE and TAC
Pursue grants and other funding opportunities to assure implementation of the plan actions, including monitoring and analyses of monitoring data and applicable research. Incorporate adaptive management decisions into annual work plans and periodic SANE Pan revisions and updates.

OBJECTIVE 2. Communicate the processes and methods of ranch management on public lands while listening to and acknowledging the viewpoints of other public land users. Remain open to new ideas and opportunities to expand stewardship practices, demonstrate rancher expertise in local resource issues, and find pathways for conflict resolution.

Action 2-1. Responsible Parties: SANE and TAC
Assure that future decisions are based on accurate knowledge. Conduct and participate in educational opportunities on current topics to exchange new and current information on land management regulations and policies, range ecology, grazing strategies, plant identification, stockmanship, and other subjects that will facilitate implementation and effectiveness of the SANE Plan.

OBJECTIVE 3. Preserve Nevada ranching culture and traditions and achieve rancher recognition as conservationists through demonstrated stewardship of natural resources.

Action 3-1: Responsible Parties: SANE and TAC
Implement sustainable grazing practices in sagebrush ecosystems that will serve as a transferable template for the process of incorporating local expertise with science and technology to find local, workable solutions for conservation.

Action 3-2. Responsible Parties: SANE
Provide leadership to public land users and private land owners, managers, and supportive organizations through completion of actions that bring together local knowledge, shared vision, and technical expertise to achieve desired outcomes.

Action 3-3: Responsible Parties: SANE
Keep private property owners within the SANE Plan Area, other stakeholders, local government, and other interested parties informed about future plan updates and progress toward implementation of the SANE Plan.

Action 3-4: Responsible Parties: SANE
Publicize the SANE Plan and collaborative planning process through news media, social media, professional organizations, and other events to

a) Effectively communicate the deep connection between ranching and the land;
b) Promote local grassroots planning; and
c) Offer support for other local area planning groups.

ECOLOGICAL GOAL
Maintain sustainable sagebrush ecosystems to provide habitat (food, shelter, and water) for wildlife and domestic livestock including greater sage-grouse.

OBJECTIVE 4. Become better informed about threats to the sagebrush ecosystem and greater sage-grouse specifically as they pertain to the SANE Plan Area.

Action 4-1: Responsible Parties: SANE and TAC
Integrate current knowledge of the SANE Plan Area with the results of ongoing scientific research conducted through the Sagebrush Ecosystem Council, USGS, and other sources to maintain a current assessment of site-specific threats in the SANE Plan Area.

OBJECTIVE 5. Reduce wildfire risk and minimize the size of wildfires.

Action 5-1: Responsible Parties: SANE, BLM, FS, Ranchers, NDF, and Elko County
Work with Elko County to improve initial attack capabilities and reduce response time to wildfire ignitions through creation of volunteer fire departments (VFDs) in the SANE Plan Area.

Action 5-2: Responsible Parties: BLM, FS, and Ranchers
Achieve successful rehabilitation of burned areas to restore forage and sage-grouse habitat functions on public and private land.

Action 5-3: Responsible Parties: SANE, BLM, and FS
Monitor fuel hazard conditions annually and implement targeted grazing, fuel reduction treatments, fuelbreaks, and greenstrips where needed to reduce the potential for hazardous wildfire conditions with careful consideration to assure that these treatments will not adversely affect greater sage-grouse or their habitat.

OBJECTIVE 6. Identify existing areas with 'desired vegetative conditions' in sagebrush ecosystems and prioritize monitoring and adaptive management of these areas to keep the sagebrush ecosystem ecologically functional.

Action 6-1: Responsible Parties: SANE and TAC
Describe the characteristics of 'desired conditions' specifically for the SANE Plan Area. Identify seasonal and limiting habitat for greater sage-grouse and for evaluating proper livestock grazing and other land uses.

Action 6-2: Responsible Parties: SANE and TAC
Define and describe the 'desired conditions' for existing land uses that are consistent with existing soil, topography, and climatic characteristics (ecological potential), and are consistent with realistic expectations based on state and transition models where available.

Action 6-3: Responsible Parties: SANE with TAC
Prioritize actions to restore 'desired conditions' where the results will be most beneficial based on the science provided through the Technical Advisory Committee, applicable research, and local knowledge of resources.

OBJECTIVE 7. Manage sagebrush and meadow habitat to remain functionally sound in terms of structure, processes, and functions and in a manner that allows recovery of habitat functions following disturbance, i.e. manage for resistance and resilience.

Action 7-1: Responsible Parties: BLM, FS, NRCS, and Ranchers
Develop, implement, and monitor sagebrush treatment projects in the SANE Plan Area consistent with ecological site potential and with consideration for WAFWA guidelines to maintain or reestablish desired conditions and ecosystem resiliency and to mitigate specific documented threats to greater sage-grouse.

Action 7-2: Responsible Parties: BLM, FS, and Ranchers
Manage livestock grazing in sagebrush rangeland to provide a diversity of grass, forb, and sagebrush plants in productive and vigorous condition with a mosaic of mixed age classes and moderate fuel conditions in accordance with ecological site potential.

Action 7-3: Responsible Parties: Ranchers, BLM, and FS
Vary the time and place of livestock use annually to allow plants to regrow, produce seed, and maintain carbohydrate reserves following grazing, i.e. maintain plant vigor.

Action 7-4: Responsible Parties: Ranchers, BLM, and FS
Establish and continue to monitor existing permanent photo points to document vegetation and soil stability changes (trend) in key areas for livestock grazing, key

areas for sage-grouse use, particularly meadows, and other resources of interest such as mule deer, elk, pronghorn, and bighorn sheep. Use additional monitoring techniques described in the *Nevada Rangeland Monitoring Handbook Second Edition* (Swanson et al. 2006) or *NDOW Partners for Conservation and Development Program* or consistent with the Nevada Conservation Credit System.

Action 7-5: SANE with TAC, BLM, NRCS, and FS
Engage in Cooperative Monitoring Agreements through the existing MOU process to expand the extent and effectiveness of monitoring grazing and other plan objectives.

OBJECTIVE 8. Identify, maintain, and enhance seasonal habitats for greater sage-grouse in portions of the Snake, Gollaher, O'Neil, and East Valley PMU within the SANE Plan Area.

Action 8-1: Responsible Parties: TAC, and Ranchers
Provide input and report sage-grouse observations to TAC biologists to better refine the mapping of key winter, breeding, and late brood rearing habitats in the SANE Plan Area and to focus resources where benefits for conservation of sage-grouse can be maximized.

Action 8-2: Responsible Parties: Ranchers, FS, BLM, and NRCS
Incorporate considerations for seasonal sage-grouse habitat needs into ranch/allotment management plans.

OBJECTIVE 9. Identify invasive species and noxious weed problem areas, actions and practices that facilitate spreading invasive species, and treatments to curtail/eradicate existing problem areas.

Action 9-1: Responsible Parties: FS, BLM, Nevada Department of Agriculture, Ranchers, and NECD
Conduct training for ranchers in noxious and invasive species identification and the appropriate and most effective practices for herbicide application or other control methods for early detection and rapid response to noxious and invasive species occurrences.

Action 9-2: Responsible Parties: SANE
Inquire with Nevada Department of Agriculture (NDOA) about forming a SANE Coordinated Weed Management Area (CWMA) or participating in an existing CWMA to coordinate annual control and mapping of noxious weeds in the SANE Plan Area.

7. PAST AND ONGOING CONSERVATION/MANAGEMENT ACTIONS THAT MINIMIZE THREATS TO SAGEBRUSH ECOSYSTEMS

Having good quality habitat available for sage-grouse can greatly reduce the effects of disease, predation, hunting, weather, and disturbance to populations.

NRCS Sage-Grouse Conference Report

7.1 CURRENT AND PAST ACTIONS THAT MAINTAIN OR IMPROVE SAGEBRUSH ECOSYSTEMS

7.1.1 Wildfire Rehabilitation

Mountain and Wyoming sagebrush shrubs are easily killed by fire. Natural reestablishment of sagebrush following fire is highly dependent upon post-fire seed dissemination from living sagebrush plants in unburned patches within the interior of the burn and around the edges adjacent to the burn. Post-fire recolonization of big sagebrush is also strongly influenced by ecological site characteristics and post-fire weather (Miller, et al. 2013).

In lower elevation Wyoming big sagebrush sites, post fire reclamation may be dependent upon incorporating adapted species with native species into seedings to increase assurance of seeding success, to control invasion of undesirable plants and noxious weeds, and for erosion control.

State and federal management agencies have cooperative agreements and cost-sharing programs in place that have been used for post-fire rehabilitation. Approximately 130,485 acres have been reseeded following fire since 2000 in the SANE Plan Area.

7.1.2 Wildfire Pre-Suppression.

The BLM, FS, and NDF have ongoing programs that include fuel breaks, greenstrips, and targeted grazing to reduce fuel hazard conditions, reduce the risk of ignition, and increase the effectiveness of suppression efforts when ignitions occur.

7.1.3 Wildfire Suppression

Cooperative agreements between Elko County, the State, and the federal land management agencies are in place that allow coordinated response and resources for wildfire suppression. Fire crews are stationed at Wells and Jackpot during the fire season as additional suppression resources.

7.1.4 Grazing Management

The BLM objective for current grazing program administration on public lands is to achieve and maintain healthy ecosystems. The agency uses *Rangeland Health Standards and Guidelines* to evaluate the effects of grazing and achieve desired conditions. Standards and guidelines were developed with input from citizen-based Resource Advisory Councils (RAC) and encompass the four fundamentals of rangeland health outlined in the grazing regulations (43 CFR 4180.1):

- Properly functioning watersheds;
- Proper water, nutrient, and energy cycling;
- Compliance with state water quality standards; and
- Protected habitat for special status species.

Standards address the health, productivity, and sustainability of public rangeland resources and represent the minimum acceptable conditions for public rangelands in terms of vegetative protection of streambanks and vegetative cover on uplands. The standards also apply to wild horses and burros and wildlife on public lands, which are evaluated separately. Standards and Guidelines for Nevada's Northeastern Great Basin Area that includes the SANE Plan Area are included in Appendix G.

Guidelines are provided to direct the development and implementation of reasonable, responsible, and cost-effective management practices and actions at the grazing allotment and watershed level that will either maintain existing desirable conditions or move rangelands toward the stated 'standards' within reasonable time frames. Typical actions for range management include periodic rest from grazing, deferment from grazing during critical growth periods, and restricted seasons of use to avoid or minimize impacts to other critical or sensitive resources.

Grazing Permits. BLM typically issues ten-year grazing permits, as authorized by the Federal Land Policy and Management Act (FLPMA) (1976). Each grazing permit must conform to all applicable laws, regulations, and land use plans and be fully supported by applicable NEPA analysis. Standards and guidelines and allotment-specific objectives and conditions are incorporated into every permit.

Conditions include the season of use, the number of livestock, utilization objectives for key species, and other constraints to address allotment-specific objectives. Permit terms and conditions can be added or modified at any time during the ten-year term through the annual authorization process, if the active use or related management practices are not meeting the land use plan or other activity plan objectives (43 CFR 4130.3-3). In certain circumstances, there may be a need to adjust periods of use, number of livestock, or use areas in response to short-term monitoring results or unpredictable events such as drought and wildfire (43 CFR 4130.3-3).

BLM Instruction Memorandum 2011. Soon after the USFWS issued the 12-month finding in 2010, the BLM issued an Instruction Memorandum (IM) with interim management policies and procedures for proposed and ongoing authorization and activities that affect greater sage-grouse and its habitat (Appendix H). The IM ensures the interim conservation measures for greater sage-grouse are implemented when field offices authorize or carry out activities on public land while

the BLM develops and decides how to best incorporate long-term conservation measures into Land Use Plan Revisions.

Range Improvements. Over the last 70 years, ranchers and range managers have constructed numerous range improvements designed to improve range condition, or facilitate more efficient and proper use of the range. Fences, seedings, and water developments are effective management tools for better livestock distribution, controlled use of riparian and spring areas, and seasonal pasture rotation and deferment.

Grazing Systems. In 1996, the Boies Ranch introduced rest and changes in season of use in pastures that had never been rested during the spring growing season. Prior to this time, cattle were turned out and left to scatter and distribute throughout the allotment with few controls.

The Winecup Gamble Ranch has just completed an allotment management plan that sets out a three-year grazing rotation such that no pasture is grazed at the same time of year for more than two consecutive years and specifically looks at the season of use within sage-grouse nesting habitat.

Salmon River began developing and implementing deferred rotation grazing systems with the allotment management plan in 1980. The system expanded to include protection of riparian areas in 2010.

Historically crested wheatgrass seedings were used to provide early spring forage and to provide early season rest for native grasses. Crested wheatgrass seedings and water developments have been constructed throughout the SANE Plan Area that provide additional flexibility and management options to implement seasonal rest and rotation of grazing use to achieve specific management objectives.

Ranchers in the SANE Plan Area began investing in conservation practices long before the petitions to list greater sage-grouse were filed. Ranchers have made significant personal investment in range improvements on public land to achieve and facilitate proper grazing management and sagebrush ecosystem conservation. A partial list of projects completed historically and recently in the SANE Plan Area is included in Table 10.0.

Table 10.0 Projects completed within the SANE Plan Area.

PROJECT NAME/LOCATION	DESCRIPTION	PRIMARY LAND MANAGER	PARTNERS	ACTION TYPE	TOTAL SIZE (AC) OR LENGTH (FT. OR MILES)	RISK ADDRESSED / CONSERVATION OBJECTIVE OR OUTCOME
Protect Spring BLM-EA-HV-17	New jack pole and rail fence constructed to protect spring head from domestic overgrazing and to increase water, forage, and habitat availability for greater-sage grouse.	BLM Wells FO		Spring/Meadow Protection	1300 ft	Grazing / improved late brood rearing habitat for greater sage-grouse.
Increased legumes in irrigated private lands	Seeded to increase quality and diversity of meadow grasses and forbs.	Private Lands	Private	Hay Meadow Improvements		Habitat Quality / improved late brood-rearing habitat.
Eighteen Mile Fence	Existing fence replacement with 3 wire, wildlife-friendly specifications.	Private Lands		Fence Modification	1.5 miles	Infrastructure: Fences/ decreased risk of direct mortality from collision.
Rocks Springs Restoration	Installed wildlife-friendly fence to protect Rock Springs and an adjacent meadow, and created RV locations for public use.	Private Lands		Spring/Meadow Protection		Recreational Use / spring protection for late brood rearing habitat.
Butler Trap Seeding	Seeded species congruent with grazing and with sage-grouse habitat to compete with weeds and undesirable species in Butler Trap private lands just south of crested wheatgrass seeding in Trout Creek.	Private Lands	Private	Range Land Seeding - Non-Native		Grazing and Invasive Species/ habitat improvement.
Fence Private Spring above Corner Reservoir	Jack pole and rail fence constructed to protect spring and late brood rearing habitat from grazing impacts.	BLM Wells FO	BLM/Private	Spring/Meadow Protection	2-3 acres	Proper Grazing Management/ improved late brood rearing habitat for sage-grouse.
Contact Fire Reseeding	Cheatgrass controlled with 'Plateau' and seeded 440 acres (2012)	Private and Federal		Fire Rehabilitation		Fire and Invasive Species / habitat rehabilitation.
20-Mile Fire Rehab	Aerial and drill seeded with desirable grasses, forbs, and sagebrush.	Private and Federal		Fire Rehabilitation		Fire and Invasive Species / sagebrush habitat rehabilitation.

PROJECT NAME/LOCATION	DESCRIPTION	PRIMARY LAND MANAGER	PARTNERS	ACTION TYPE	TOTAL SIZE (AC) OR LENGTH (FT. OR MILES)	RISK ADDRESSED / CONSERVATION OBJECTIVE OR OUTCOME
18-mile Fire Rehab	Aerial and drill seeded with desirable grasses, forbs, and sagebrush.	Private and Federal		Fire Rehabilitation		Fire and Invasive Species / sagebrush habitat rehabilitation.
Liberty Spring Exclosure	Jack pole and rail fence constructed to protect spring and late brood rearing habitat from grazing impacts.	Private Lands	USFWS	Spring/Meadow Protection	2-3 acres	Proper Grazing Management/ improved late brood rearing habitat for greater sage-grouse.
Sarah Springs Exclosure	Jack pole and rail fence constructed to protect spring and late brood rearing habitat from grazing impacts.	Private and Federal	BLM/Private	Spring/Meadow Protection	5 acres	Proper Grazing Management/ improved late brood rearing habitat for greater sage-grouse.
Box Canyon Exclosure	Jack pole and rail fence constructed to protect spring and late brood rearing habitat from grazing impacts.	Private and Federal	BLM/Private	Spring/Meadow Protection	30 acres	Proper Grazing Management/improved late brood rearing habitat for greater sage-grouse.
Boies Reservoir Pipeline	Constructed pipeline to private fields to extend meadow growing season. Includes voluntary maintenance of minimum-size pools for waterfowl and fishery, and as a sage-grouse watering site.	Private Lands	EQUIP	Pipeline		Habitat Quality/ improved grazing management flexibility and improved late brood-rearing habitat for sage-grouse and other wildlife.
Private Riparian Corridor	Created a riparian corridor on private land to improve grazing management and riparian health.	Private Lands	NRCS	Fence Construction		Proper Grazing Management/ improved riparian habitat quality.
Pastures Created in Hubbard Vineyard Allotment	Created Dry Creek, Jake's Creek, and Triangle Pastures to allow periodic rest during the growing season; also included water developments.	BLM Wells FO		Fence Construction		Proper Grazing Management/ improved rangeland health and habitat conditions.
Warm Springs Pipeline Extension	Installed an additional water trough to improve livestock distribution.	BLM Wells FO		Pipeline		Proper Grazing Management/ improved rangeland health and habitat conditions

PROJECT NAME/LOCATION	DESCRIPTION	PRIMARY LAND MANAGER	PARTNERS	ACTION TYPE	TOTAL SIZE (AC) OR LENGTH (FT. OR MILES)	RISK ADDRESSED / CONSERVATION OBJECTIVE OR OUTCOME
Choke-a-Man Well	Augmented existing Goat Creek Pipeline to improve livestock distribution.	BLM Wells FO		Pipeline		Proper Grazing Management/ improved rangeland health and habitat conditions.
Electric Fences	Created additional pastures to implement high intensity/short duration grazing system.	Private and Federal		Livestock Mgt		Proper Grazing Management/ improved rangeland health and habitat conditions.
Corridor Fencing	Fenced riparian corridor on south side of private land for improved grazing distribution on adjacent rangelands and riparian areas.	Private Lands	USFWS	Fence Construction		Proper Grazing Management/ improved rangeland health and riparian habitat conditions.
Legumes Seeding in Upper Field	Increased species diversity with added legumes and forage kochia on private land.	Private Lands		Range Land Seeding - Non-Native		Proper Grazing Management/ improved species richness and diversity.
Flat Pasture Pipeline	Constructed pipeline from private land onto public land for predictable water availability and improved livestock distribution.	BLM Wells FO		Pipeline		Proper Grazing Management/ improved water availability.
Hanks Basin Exclosures	Constructed fence to exclude livestock and protect springs and meadow.	Private and Federal	BLM/Private	Spring/Meadow Protection	20 acres	Proper Grazing Management/ improved late brood rearing habitat.
Boston Springs Exclosures	Constructed fence to exclude livestock and protect springs and meadow.	Private and Federal	BLM/Private	Spring/Meadow Protection	20 acres	Proper Grazing Management/ improved late brood rearing habitat.
Mahogany Basin Pipeline	Constructed pipeline for better livestock distribution.	Private and Federal	BLM/Private	Pipeline	7 miles	Proper Grazing Management/ improved rangeland health and habitat conditions.

PROJECT NAME/LOCATION	DESCRIPTION	PRIMARY LAND MANAGER	PARTNERS	ACTION TYPE	TOTAL SIZE (AC) OR LENGTH (FT. OR MILES)	RISK ADDRESSED / CONSERVATION OBJECTIVE OR OUTCOME
Middle Pasture Fence	Constructed fence through the Middle Pasture to provide periodic rest from grazing during the growing season.	BLM Wells FO		Fence Construction		Proper Grazing Management/ improved rangeland health and habitat conditions.
Holistic Resource Management	Initiated Holistic Resource Management (HRM) on Ranch.	Private and Federal		Livestock Mgt		Proper Grazing Management/ sustainability of energy, mineral, and water cycles.
Cottonwood Field Pipeline	Constructed pipeline to improve livestock distribution.	Private and Federal	BLM/Private	Pipeline	7 miles	Proper Grazing Management/ improved rangeland health and habitat conditions.
Hubbard Seeding Fence	Split Hubbard Seeding East and West to allow rest and proper grazing management.	BLM Wells FO		Fence Construction		Proper Grazing Management/ improved rangeland health and habitat conditions.
Bloody Gulch Pipeline	Constructed pipeline to improve livestock distribution.	Private and Federal	BLM/Private	Pipeline	15 miles	Proper Grazing Management/ improved rangeland health and habitat conditions.
Barrel Springs Pipeline	Constructed pipeline to improve livestock distribution.			Pipeline		Proper Grazing Management/improved rangeland health and habitat conditions.
Division Fence Private	Fenced Bull Pasture and riparian corridor to exclude livestock grazing.	Private Lands	NRCS	Fence Construction		Proper Grazing Management/improved riparian habitat conditions.
Forest Division Fence	Constructed division fence between North and South Forest to improve livestock management.	USFS - Jarbidge District		Fence Construction		Proper Grazing Management/ improved rangeland health and habitat conditions.

PROJECT NAME/LOCATION	DESCRIPTION	PRIMARY LAND MANAGER	PARTNERS	ACTION TYPE	TOTAL SIZE (AC) OR LENGTH (FT. OR MILES)	RISK ADDRESSED / CONSERVATION OBJECTIVE OR OUTCOME
Black Mtn Spring Development #2	Protected spring on Black Mtn.	BLM Wells FO		Spring/Meadow Protection		Proper Grazing Management/ improve late brood rearing habitat.
Devil's Creek Reservoir #6	Spring development with protection of spring source from livestock grazing.			Spring/Meadow Protection	100 ft	Proper Grazing Management/ improve late brood rearing habitat.
Devil's Creek Reservoir #8	Spring development with protection of spring source from livestock grazing.			Spring/Meadow Protection	100 ft	Proper Grazing Management/ improve late brood rearing habitat.
Devil's Creek Reservoir #12	Spring development with protection of spring source from livestock grazing.			Spring/Meadow Protection		Proper Grazing Management/ improve late brood rearing habitat.
Canyon Pasture Fence	Fenced Canyon Pasture to improve grazing management.	BLM Wells FO		Fence Construction	3.5 miles	Proper Grazing Management/ improved rangeland health and habitat conditions.
Black Mtn Pipeline	Constructed Black Mtn pipeline and 3 water troughs to improve livestock management.	BLM Wells FO		Pipeline	1.5 miles	Drought and Proper Grazing Management/improved rangeland health and habitat conditions.
Black Mtn Spring Development #3	Protected spring on Black Mtn.	BLM Wells FO		Spring/Meadow Protection		Proper Grazing Management/ improved rangeland health and habitat conditions.
Canyon Pasture and Pipeline	Constructed well and pipeline including 6 water troughs and 10,000 gallon storage tank.			Pipeline	5.5 miles	Drought/ improved water availability and predictability.
Rest/Rotation Allotment Management Plan.	Four pasture rest/rotation on BLM to improve range management.	BLM Wells FO		Livestock Mgt		Proper Grazing Management/ improved rangeland health and habitat conditions.

PROJECT NAME/LOCATION	DESCRIPTION	PRIMARY LAND MANAGER	PARTNERS	ACTION TYPE	TOTAL SIZE (AC) OR LENGTH (FT. OR MILES)	RISK ADDRESSED / CONSERVATION OBJECTIVE OR OUTCOME
Home Ranch Fence	Fence around Canyon allotment for better control of livestock grazing.	BLM Wells FO		Fence Construction	2.5 miles	Proper Grazing Management/ improved rangeland health and habitat conditions.
Warm Springs Pipeline	Pipeline Completion.			Pipeline		Drought/ improved water availability and predictability.
Goat Creek Pipeline	Pipeline Completion.			Pipeline		Drought/ improved water availability and predictability.
Canyon Seeding	Seeded Canyon Pasture to increase perennial species cover and diversity.	BLM Wells FO		Range Rehabilitation-Non-Native Seeding	60 acres	Habitat Quality/ increased species diversity and cover.
Home Ranch Seeding	Brush rehabilitation and seeding at Home Ranch to increase and restore vigor of herbaceous understory vegetation.	Private Lands		Range Rehabilitation Non-Native Seeding	34 acres	Habitat Quality/ rejuvenate productivity and herbaceous diversity.
South Fork Fence	Constructed fence to improve range management.			Fence Construction	1 mile	Proper Grazing Management/ improved rangeland health and habitat conditions.
Division Fence	Fenced the boundary between National Forest and BLM.			Livestock Mgt		Proper Grazing Management/ improved rangeland health and habitat conditions.
Boies Reservoir	Reservoir construction for irrigation to extend and ensure growing season in meadows.	Private Lands		Meadow Irrigation		Proper Grazing Management/ improved water availability and predictability for meadows.

PROJECT NAME/LOCATION	DESCRIPTION	PRIMARY LAND MANAGER	PARTNERS	ACTION TYPE	TOTAL SIZE (AC) OR LENGTH (FT. OR MILES)	RISK ADDRESSED / CONSERVATION OBJECTIVE OR OUTCOME
Gilmer Seeding	Seeded on Black Mtn.			Rangeland - Non-Native Seeding	500 acres	Proper Grazing Management/ augmentation of herbaceous component of vegetation.
Vance Fence Construction	New fence constructed to improve livestock management.	BLM Wells FO		Fence Construction	2 miles	Proper Grazing Management/ improved rangeland health and habitat conditions.
Black Mtn Spring Development	Constructed fence, pipeline, and 2 water troughs on Black Mtn for livestock management and spring protection.			Spring/Meadow Protection	5000 ft	Proper Grazing Management/ improved rangeland health and habitat conditions.
Hubbard Seeding	Seeded to control halogeton.	BLM Wells FO		Rangeland - Non-Native Seeding		Invasive Species / increase desirable perennial species diversity.
Hubbard Reservoir Construction	Reservoir Constructed on Hubbard Seeding for irrigation and to extend and ensure growing season in meadow.	BLM Wells FO	CCC	Pond/Reservoir		Drought/ improved water availability and predictability for meadows.

8. PROPOSED ACTIONS FOR SAGEBRUSH ECOSYSTEM CONSERVATION

The practices and activities described below are consistent with the NRCS/USFWS Conference Report (2010). The Conference Report evaluated the collective, landscape-level effects of implementing all aspects of NRCS practices as part of the Sage-Grouse Initiative[3] (SGI). The conservation measures associated with the SGI practices are incorporated into the proposed actions in the SANE Plan to reduce or eliminate adverse effects to greater sage-grouse habitat.

8.1 WILDFIRE THREAT REDUCTION

8.1.1 Fuelbreaks and Greenstrips (SGI)

This practice will be applied on both public and private lands to reduce the spread of wildfire and prevent habitat loss, and to interrupt the feedback cycle of wildfire to invasive plants. Existing vegetation will be removed or manipulated by mechanical means such as mowers or disks to reduce fuel loads and promote fire-resistant plants or fuel type. This practice may require reseeding with fire-resistant plants (NRCS 2010).

SANE will participate with the TAC fuels specialists and biologists to design fuel breaks and greenstrips in strategic locations to minimize large scale habitat loss due to wildfire. Implementation of fuel reduction treatments and fuel type conversion actions will be coordinated with fire agencies. Annual fuel management plans will incorporate current conservation guidelines for greater sage-grouse and will include actions for long-term maintenance to assure that these areas do not convert to stands of cheatgrass, halogeton, or other invasive or noxious weeds.

8.1.2 Fire Suppression

Legislation will be introduced into the Nevada Legislature during the 2015 session to allow formation of Rural Volunteer Rangeland Fire Protection Districts (RVRFPD) patterned after the Oregon Division of Forestry model. Ranchers within the SANE Plan Area are in the process of creating a RVRFPD) within the Elko County Fire Protection District. This process includes equipment acquisition and training. Volunteer rancher members of the RVRFPD will be trained by agency fire personnel in fire suppression, equipment operation, communication, and safety and will become red card certified responders. Positioning suppression resources throughout the SANE Plan Area will allow for faster response to ignitions, will reduce the acreage burned by wildfire, and will increase protection of sagebrush ecosystems by prioritizing areas for aggressive initial attack when multiple strikes occur. Annual response and training plans for the RVRFPD will be coordinated through the Elko County FPD and state and federal fire agencies.

Ranches in the SANE Plan Area have equipment that can be used for fire suppression on private land such as dozers, water trucks, water tenders, and hand tools. Such equipment is required to

[3] SGI is an NRCS collaborative, targeted effort to implement conservation practices which alleviate threats to sage-grouse while improving the sustainability of working ranches.

be inspected and certified by FS and/ or BLM for use on public land. The certification process will be incorporated into the RVRFPD.

Additional equipment needed to be staged within the SANE Plan Area includes Type 6 engines, drafting pumps for use in reservoirs, and water tenders. Personal protective equipment (PPE) and radios are anticipated to be provided to train volunteer wildfire responders when the VFD is created. Additional radio repeaters are needed to provide complete radio coverage throughout the Plan Area.

8.1.3 Burned Area Restoration

SANE and TAC will take actions to facilitate restoration of sage-grouse habitat burned by wildfire by initiating actions to promote reestablishment of sagebrush in reclaimed areas where it is consistent with ecological site potential. SANE ranchers will work with land management agencies to manage burned areas and promote reestablishment of resilient communities.

NDOW NPCD began monitoring burned areas in the SANE Plan Area in 2014 to evaluate the progress of natural recovery, the success of revegetation treatments, and identify areas in need of re-treatment. This baseline survey will be the basis for documenting trends and success in post-fire ecosystem restoration.

Land owners and resource agencies will strive to reseed burned sagebrush habitats in late fall or winter following fires and incorporate locally collected sagebrush seed and seed of native herbaceous plants into the seedmix whenever possible. Ideally, seeding should be timed to coincide with collection of annual crops of sagebrush seed which can be collected in late November to December. The applied seed mixtures and seeding methods will be determined by seed availability of desirable species that will restore resiliency to the burned area.

SANE and TAC will initiate planting of ‘sagebrush islands’ in older burns where sagebrush has not reestablished to provide a seed source for natural seed dispersal and sagebrush expansion.

8.3 PROPER LIVESTOCK GRAZING

8.3.1 Prescribed Grazing (SGI)

In sage-grouse habitat, this practice is critical to ensure rangelands are managed sustainably to provide habitat requirements for all life stages of sage-grouse (NRCS 2010). This practice will be applied to:

- Improve or maintain desired species composition and vigor of plant communities,
- Improve or maintain quantity and quality of forage for grazing and browsing animals' health and productivity,
- Improve or maintain surface and/or subsurface water quality and quantity,
- Improve or maintain riparian and watershed function, reduce accelerated soil erosion, and maintain or improve soil condition,
- Improve or maintain the quality and quantity of food and/or cover available for wildlife, and
- Manage fine fuel loads to maintain desired conditions.

8.3.2 Livestock Watering Facilities (SGI)

Watering facilities are commonly designed/implemented to provide adequate livestock water. Commonly used livestock watering facilities are constructed from concrete, fiberglass, metal, or rubber tires. Each tank is typically fed by a pipeline and also contains an overflow for excess water. (NRCS 2010). This practice will be applied to facilitate proper grazing management and provide access to drinking water for livestock and/or wildlife in order to meet daily water requirements and improve animal distribution to conserve or enhance important sage-grouse habitat.

8.3.3 Spring Development (SGI)

This practice will be applied primarily on private land to improve the quantity and/or quality of water for livestock, wildlife or other agricultural uses, which can also improve mesic habitat quality for sage-grouse broods. Natural springs are commonly developed as a clean source of water for livestock. Spring development will include protection of the spring source from degradation caused by unrestricted livestock use. Spring development includes installation of a spring box to filter and collect water to be delivered via pipeline to water troughs. Pipeline flow is achieved by gravity or pumping (NRCS 2010).

8.3.4 Pipelines (SGI)

Pipelines convey water from a source of supply to points of use for livestock, wildlife, or recreation. Typically this involves conveyance from a spring development or well to a livestock watering facility. Pipelines are commonly implemented underground at depths ranging from 18 inches to 6 feet depending on geographic location and winter temperatures. The primary purpose

of building and maintaining pipelines is to facilitate a livestock grazing management plan developed to improve rangeland sustainability and sage-grouse habitat (NRCS 2010).

8.3.5 Fence (SGI)

This practice may be applied to facilitate the accomplishment of conservation objectives by providing a means to control movement of animals and people, including vehicles. This practice can benefit sage-grouse habitat by facilitating the implementation of the prescribed grazing practice to improve rangeland health, increase residual cover, and ensure sustainability of rangeland resources. Additionally, the practice can be used for the relocation of existing fences located in area of known or suspected sage-grouse collisions (NRCS 2010).

8.4 HABITAT IMPROVEMENT (SGI CONFERENCE REPORT)

8.4.1 Brush Management (Juniper Tree Removal) (SGI)

This practice will be applied to create the desired plant community consistent with the ecological site, to improve forage accessibility, quality, and quantity for livestock and wildlife, or to remove post-settlement aged juniper that have encroached into shrub and grasslands in order to restore or improve sage-grouse habitats.

8.4.2 Brush Management (SGI)

This practice may be applied to create the desired plant community phase consistent with the ecological site description preferable to sage-grouse by management or removal of woody plants including sagebrush. Monotypic shrub stands may be modified by creating a mosaic of small, irregular shaped openings to increase habitat diversity and edge effects. Typical means to create the mosaic include mowing and concurrent seeding of herbaceous species.

Treatment areas proposed for sagebrush removal will be reviewed by the TAC for assurance that current guidelines relative to sage-grouse habitat are followed and treatments result in desired plant communities.

8.4.3 Prescribed Burning (SGI)

This practice may be applied to create the desired plant community phase consistent with the ecological site description that is preferable to sage-grouse. This practice has limited application in Wyoming big sagebrush sites but can provide benefits in mountain big sagebrush sites (Davies 2012).

Treatment areas proposed for prescribed burning will be review by the TAC to assure compliance with current guidelines for burning in sage-grouse habitat.

8.5 PLANNED PROJECTS

> *Focusing resources on a particular problem in the most important places on the landscape results in the highest likelihood of positively affecting sage-grouse populations in the shortest amount of time.*
>
> **Nevada NRCS Sage-grouse Initiative Plan**

SANE has developed a Project Database that provides a roadmap for prioritizing, scheduling, and tracking habitat restoration and management activities. SANE and the TAC used a quantitative process to prioritize actions in the database based on the following criteria:

- Sage-grouse threat addressed from the FWS 2010 finding
- Required level of NEPA
- Project Scale
- Habitat Conservation
- Available Funding Opportunities
- Potential For Water Quality Improvement

At the end of 2014, the database included a total of 86 projects in the Plan Area which are summarized in Table 11.0. Fifty-two of these projects occur on federal land, 17 are on private land, and 17 projects overlap both public and private land. At least $534,659.00 of funding for project implementation has already been secured for implementation of 29 projects. Actions include:

- 9 Conifer Removal projects (38,000 acres)
- 6 Fence Construction projects(13 miles)
- 1 Fence Marking project (175 miles)
- 7 Fence Modification projects(5 miles)
- 3 Fence Removal projects (12 miles)
- 3 Fire Pre-Suppression projects (1,725,687 acres)
- 8 Fire Rehabilitation projects(76,000 acres)
- 2 Hay Meadow Improvement projects
- 4 Livestock Watering Facility projects
- 2 Monitoring projects(8,700 acres – weeds)
- 14 Pipeline and Trough projects
- 2 Predator Control projects
- 1 Prescribed Fire project (11 acres)
- 2 Rangeland Seeding projects (2,300 acres)
- 22 Spring/Meadow Protection projects (64 acres)

Threats to greater sage-grouse that will be addressed by the planned actions include conifer encroachment, fences, fire, grazing, invasive species, and predation. Actions will be implemented across all PMUs with 33 occurring in the Gollaher PMU, 28 in the O'Neil PMU, and 21 in the Snake PMU. Three of the Plan actions are designed to improve breeding habitat and 27 actions are designed to improve late brood rearing habitat.

Table 11.0 Prioritized Planned Project List for the SANE Plan Area

PROJECT NAME /LOCATION/ REFERENCE NUMBER	DESCRIPTION	NEPA STATUS	PROJECT STATUS	PRIMARY LAND MANAGER	PARTNERS	RISK ADDRESSED	SAGE GROUSE LIFE CYCLE	EST. DATE COMPLETE	EST. PROJECT COST	NEPA FUNDED	PROJECT FUNDED
Rural Volunteer Rangeland Fire Protection District/ SANE Plan Area/ **WG-11**	Certify local landowners as first responders on fires and allow private equipment to be used.	NA	In Progress	Private and Federal	BLM/ Private	Fire	All			NA	No
Fuel Break around Cottonwood Ranch/ O'Neil Basin/ **CW-3**	Working with NRCS to put fuel break around private property.	NA	Proposed	Private Lands	Private	Fire	Brood Rearing		$23,325	NA	No
Early detection Goose Creek Milkvetch **AP-05**	Especially concentrated in Little Goose Creek drainage related to Goose Creek milkvetch.	Complete	Ongoing Action	BLM Wells FO	BLM/ Private	Invasive Species	All	Ongoing	$7,000	Yes	Yes
Follow up noxious weed treatments **AP-03**	Black henbane, knapweed, leafy spurge. Winecup Gamble, Little Goose Creek road systems (mapped as 20 ft buffer).	Complete	Ongoing Action	BLM Wells FO	BLM/ Private	Invasive Species	All	Ongoing	$5,000	Yes	Yes
Strategic Fuel Breaks **AP-01**	One NEPA doc analyzing strategic fuel breaks; mowing, herbicide, etc.	EA Needed	Proposed	BLM Wells FO	BLM/ Private	Fire	All	2017		Yes	No
Reduce Raven Subsidies	Reduce raven subsidies by burying dead animals, covering landfills, and reducing nesting substrates.	NA	Proposed	Private Lands	All	Predation	Breeding	Ongoing		NA	No
Augmentation of fire rehab seedings /Scott Creek Fire/ **Y3-5**	Augmentation of fire rehab seedings with sagebrush and bitterbrush seedings. Ensure grazing plan is compatible.	NEPA-check each fire	Proposed	BLM Wells FO	BLM	Fire	All	2015		NA	Yes

PROJECT NAME /LOCATION/ REFERENCE NUMBER	DESCRIPTION	NEPA STATUS	PROJECT STATUS	PRIMARY LAND MANAGER	PARTNERS	RISK ADDRESSED	SAGE GROUSE LIFE CYCLE	EST. DATE COMPLETE	EST. PROJECT COST	NEPA FUNDED	PROJECT FUNDED
Augmentation of fire rehab seedings / West Fork Fire / **AP-02A**	Augmentation of fire rehab seedings with sagebrush and bitterbrush seedings. Ensure grazing plan is compatible.	NEPA-check each fire	Proposed	BLM Wells FO	BLM	Fire	All	2015		NA	Yes
Augmentation of fire rehab seedings / Eccles Fire/ **(AP-02B**)	Augmentation of fire rehab seedings with sagebrush and bitterbrush seedings. Ensure grazing plan is compatible.	NEPA-check each fire	Proposed	BLM Wells FO	BLM	Fire	All	2015		NA	Yes
Augmentation of fire rehab seedings / Deer Fire / **AP-02C**	Augmentation of fire rehab seedings with sagebrush and bitterbrush seedings. Ensure grazing plan is compatible.	NEPA-check each fire	Proposed	BLM Wells FO	BLM	Fire	All	2015		NA	Yes
Augmentation of fire rehab seedings / 21 Mile Fire / **AP-02D**	Augmentation of fire rehab seedings with sagebrush and bitterbrush seedings. Ensure grazing plan is compatible.	NEPA-check each fire	Proposed	BLM Wells FO	BLM	Fire	All	2015		NA	Yes
Augmentation of fire rehab seedings /Salmon Fire/ **AP-02E**	Augmentation of fire rehab seedings with sagebrush and bitterbrush seedings. Ensure grazing plan is compatible.	NEPA-check each fire	Proposed	BLM Wells FO	BLM	Fire	All	2015		NA	Yes
Augmentation of fire rehab seedings /Contact Fire / **AP-02F**	Augmentation of fire rehab seedings with sagebrush and bitterbrush seedings. Ensure grazing plan is compatible.	NEPA-check each fire	Proposed	BLM Wells FO	BLM	Fire	All	2015		NA	Yes
Augmentation of fire rehab seedings / Salmon Fire / **AP-02G**	Augmentation of fire rehab seedings with sagebrush and bitterbrush seedings. Ensure grazing plan is compatible.	NEPA-check each fire	Proposed	BLM Wells FO	BLM	Fire	All	2015		NA	Yes

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Tijuana John Fence Removal / **SR-4**	Remove the North-South portion of the Tijuana John temporary fire exclosure fence.	Complete	Proposed	BLM Wells FO	BLM/ Private	Fences	Brood Rearing			Yes	Yes
Maintenance of Dirt Tanks/Pipeline **EB-1**	Improve water holding capacity.	NA	In Progress	BLM Wells FO	Private	Grazing	All	2015		NA	Yes
Maintenance of Dirt Tanks/Pipeline **ON-1**	Improve water holding capacity.	NA	In Progress	BLM Wells FO	Private	Grazing	All	2015		NA	Yes
Coon Spring Protection	Meadow to be fenced and trough and pipeline installed.	NA	In Progress	Private Lands	Noble Energy	Grazing	Brood Rearing/ Breeding	2015	$33,813	NA	Yes
Hawk Meadow and Aspen Protection	Meadow and aspen stand fenced, pipeline and stock tank installed.	NA	In Progress	Private Lands	Noble Energy	Grazing	Brood Rearing/ Breeding	2015	$36,761	NA	Yes
Schoer Meadow Fencing	Meadow to be fenced and piezometers installed.	NA	In Progress	Private Lands	Noble Energy	Grazing	Brood Rearing/ Breeding	2015	$45,275	NA	Yes
Willow Springs Fencing	Meadow fencing project with a prescribed burn and seeding. Piezometers will be installed.	NA	In Progress	Private Lands	Noble Energy	Grazing	Brood Rearing/ Breeding	2015	$64,660	NA	Yes
Willow Springs Prescribed Burn	Meadow fencing project with a prescribed burn and seeding. Piezometers will be installed.	NA	In Progress	Private Lands	Noble Energy	Grazing	Brood Rearing/ Breeding	2015	$4,900	NA	Yes
Dinner Springs exclosure juniper reduction / **AP-12**	Meadow complex spring protection and juniper reduction.	EA Needed	Proposed	BLM Wells FO	BLM	Invasive Species	Brood Rearing			No	No
Install Fence Markers / **AP-15**	Prioritize around leks.	CX done	Proposed	BLM Wells FO	BLM/ Private	Fences	All	2015		NA	Yes

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Upper Dairy Valley Exclosure Repair / **WG-9**	Numerous Springs protections, mostly on private land will be repaired.	NA	Proposed	BLM Wells FO	BLM/ Private	Grazing	Brood Rearing			NA	No
Canyon Ranch Juniper Control/ **SR-3**	2-3 Miles of juniper control around Canyon Ranch in the Trout Creek Valley.	EA Needed	Proposed	Private and Federal	BLM/ Private	Conifer Encroach-ment	All	2017	$113,152	No	No
Granite Range Juniper Control/ **SR-23**	Phase 1 and 2 juniper removal and sagebrush ecosystem restoration.	EA Needed	Proposed	Private and Federal	BLM/ Private	Conifer Encroach-ment	All	2017	$144,640	No	No
Granite Range Juniper Control/ **SR-24**	Phase 1 and 2 juniper removal and sagebrush ecosystem restoration.	EA Needed	Proposed	Private and Federal	BLM/ Private	Conifer Encroach-ment	All	2017	$794,112	No	No
Trout Creek Canyon Juniper Control / **SR-21**	Phase 1 and 2 juniper removal and sagebrush ecosystem restoration.	EA Needed	Proposed	Private and Federal	BLM/ Private	Conifer Encroach-ment	All	2017	$719,360	No	No
Trout Creek Canyon Juniper Control/ **SR-22**	Phase 1 and 2 juniper removal and sagebrush ecosystem restoration.	EA Needed	Proposed	Private and Federal	BLM/ Private	Conifer Encroach-ment	All	2017	$1,146,112	No	No
Tijuana John/Texas Canyon Juniper Control / **SR-20**	Phase 1 and 2 juniper removal and sagebrush ecosystem restoration.	EA Needed	Proposed	Private and Federal	BLM/ Private	Conifer Encroach-ment	All	2017	$1,315,840	No	No
Tijuana John Juniper Control/ **SR-19**	Phase 1 and 2 juniper removal and sagebrush ecosystem restoration.	EA Needed	Proposed	Private and Federal	BLM/ Private	Conifer Encroach-ment	All	2017	$653,568	No	No
Texas Spring Canyon area PJ treatments / **AP-04**	Phase 1 juniper removal; 4-mile diameter around Texas Spring lek. Mostly public land.	EA Needed	Proposed	BLM Wells FO	BLM/ Private	Conifer Encroach-ment	All	2017		Yes	No

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Brush Creek Spring / **WG-3**	Spring Exclosure and Irrigation headgate installation to improve control of livestock and water for meadow irrigation.	NA	Proposed	Private Lands	Private	Grazing	Brood Rearing			NA	No
White House Meadow / **WG-10**	Restore Fence that is in disrepair to protect springs and meadow.	NA	Proposed	Private Lands	Private	Grazing	Brood Rearing			NA	No
Arrowhead Spring / **WG-1**	13 acres spring exclosure with wildlife-friendly fence (approx. 3000 feet.)	NA	Proposed	Private Lands	Private	Grazing	Brood Rearing		$6,600	NA	No
Butler Trap Seeding	Complete the seeding on the second half of the Butler Trap Seeding.	NA	Proposed	Private Lands	CD	Grazing	Brood Rearing	2015	$11,363	NA	Yes
Protect Mud Spring	Springs protection exclosure.	Complete	Proposed	BLM Wells FO	BLM	Grazing	Brood Rearing	2015	$7,990	Yes	Yes
Develop/Maintain private spring / **HV-2**	Maintain spring and build exclosure.	NA	Proposed	Private Lands	BLM/ Private	Grazing	Brood Rearing	2015		NA	Yes
Bull Camp Exclosures / **HV-12**	Springs protection exclosure.	NA	Proposed	Private Lands	Private	Grazing	Brood Rearing	2015		NA	No
Protect Spring BLM-EA / **HV-39**	Springs protection exclosure.	Complete	Proposed	BLM Wells FO	BLM	Grazing	Brood Rearing	2015	$2,280	Yes	Yes
Protect Spring BLM-EA / **HV-09**	Springs protection exclosure.	Complete	In Progress	BLM Wells FO	BLM/ Private	Grazing	Brood Rearing	2015	$25,940	Yes	Yes
Protect Spring BLM-EA / **HV-08**	Springs protection exclosure.	Complete	In Progress	BLM Wells FO	BLM/ Private	Grazing	Brood Rearing	2015	$3,600	Yes	Yes
Protect Spring BLM-EA / **HV-06**	Springs protection exclosure.	Complete	In Progress	BLM Wells FO	BLM/ Private	Grazing	Brood Rearing	2015		Yes	Yes
Protect Spring BLM-EA / **HV-05**	Springs protection exclosure.	Complete	In Progress	BLM Wells FO	BLM/ Private	Grazing	Brood Rearing	2015	$3,900	Yes	Yes

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Protect Spring BLM-EA / **HV-04**	Springs protection exclosure.	Complete	In Progress	BLM Wells FO	BLM/ Private	Grazing	Brood Rearing	2015	$14,750	Yes	Yes
Lamoille Spring Fence Relocation	Relocate fence that is near lek and distribute water higher on the bench.	NA	In Progress	Private and Federal	BLM/ Private	Grazing	Brood Rearing	2015	$14,208	NA	Yes
North Black Mountain Water Access / **CA-6**	Alter new exclosure that excluded permittee from water source or install external trough.	NA	In Progress	BLM Wells FO	BLM	Grazing	All	2015		NA	Yes
Raven Control / **Y3-6**	Continue to remove ravens through permits with the USFWS near ranch and sewage ponds south of Jackpot.	Permit required	Proposed	USFWS	BLM/ Private	Predation	Breeding				No
Fence Removal/ Bear Creek / **Y3-3**	Roll up fences no longer needed.	NA	Proposed	Private Lands	Private	Fences	All			NA	No
Tijuana John Rotational Fence / **SR-5**	Install a permanent fence to split Tijuana John into a North and South pasture. This will improve grazing distribution.	EA in progress	NEPA in Progress	BLM Wells FO	BLM/ Private	Grazing	All			Yes	No
White Rock Mtn Riparian-Aspen/ **AP-10**	4 riparian-aspen areas within SANE boundary proposed for exclosure; awaiting cultural clearance.	CX in progress, pending cultural	Proposed	BLM Wells FO	BLM	Grazing	Brood Rearing			Yes	No
Chicken Springs / **WG-6**	*Liberty Fence*[1] Exclosure. 2 acres and 1311 Feet of Fence. Create water gap for controlled livestock use.	CX if *Liberty Fence*	Proposed	BLM Wells FO	BLM/ Private	Grazing	Brood Rearing			Yes	No
18 Mile Meadow / **WG-5**	Enhance meadow and diversify legumes and grasses.	NA	Proposed	Private Lands	Private	Grazing	Brood Rearing			NA	Yes

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West Basin Pipeline – North/ **SR-1**	Extend West Basin Pipeline to private land north of West Basin fence into West Basin Draw. This will add a high elevation water source in Indian Mike Pasture.	NA	In Progress	Private Lands	NRCS	Grazing	All	2015	$9,843	NA	Yes
Barrel Springs Pipeline / **CW-7**	Rebuild after fire.	NA	In Progress	USFS - Jarbidge District	NRCS	Grazing	All	2015	$16,729	NA	Yes
Create Pivots on Private / **CW-6**	Create pivots on private land and plant legumes to diversify meadow vegetation.	NA	Unknown	Private Lands	NRCS	Grazing	Brood Rearing			NA	No
Warm Springs Pipeline / **CW-4**	Maintenance of existing pipeline.	NA	In Progress	BLM Wells FO	NRCS	Grazing	All	2015	$45,904	NA	Yes
Create Chicken Springs Riparian Pasture / **CW-2**	Cattleguard needed on County Road.	Need EA if not electric fence	Proposed	BLM Wells FO	BLM/ Private	Grazing	Brood Rearing				No
Mudhole Spring Protection / **CA-5**	Protect spring head from livestock grazing using *Liberty pipe fence*.	CX Needed	Proposed	BLM Wells FO	BLM/ Private	Grazing	All				No
West Pipeline Repair / **CA-4**	Repair pipeline to restore functional condition - see permittee for details.	NA	Proposed	BLM Wells FO	NRCS	Grazing	All	2015		NA	Yes
Anderson Well/ **AC-2**	Install stockwater well on private lands. Provide water to dry corner of the Anderson Allotment to improve cattle distribution.	NA	Proposed	Private and Federal	NRCS	Grazing	All	2015		NA	Yes
Knoll Creek Fence Removal / **SR-9**	Remove old Experimental Pasture fences uses by UNR Knoll Creek Expt. Station. These fences no longer serve a management purpose.	EA in progress	NEPA in Progress	Private and Federal	BLM/ Private	Fences	All	2017		Yes	No

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Hillside Pipeline/ **SR-6**	Extend Hillside pipeline to provide more watering points in Moonshine and Emigrant pastures.	EA in progress	Proposed	BLM Wells FO	BLM/ Private	Grazing	All			Yes	No
Indian Mike Riparian Exclosure / **SR-10**	Construct new Indian Mike riparian exclosure on BLM land North of County road. Note: there are 4 - 40 acre tracts of private land south of the road.	EA Needed	Proposed	BLM Wells FO	BLM/ Private	Grazing	Brood Rearing				No
Develop Rattlesnake Spring	Develop spring.	EA Needed	Proposed	BLM Wells FO	BLM/ Private	Grazing	Brood Rearing				No
Salmon River Allotment, Unnamed Spring A exclosure / **AP-11**	Fence to protect spring. This exclosure project was originally proposed in the 2000 Salmon River Allotment FMUD.	CX/EA	Proposed	BLM Wells FO	BLM/ Private	Grazing	Brood Rearing				No
Fatal Springs West Cattle Guard / **Y3-9**	Install Cattle Guard to reduce unintended cattle movement.		Proposed	BLM Wells FO	BLM/ Private	Grazing	All				No
Bear Creek Rhone Cattle Guard / **Y3-13**	Install Cattle Guard to reduce unintended cattle movement.		Proposed	BLM Wells FO	BLM/ Private	Grazing	All				No
Brush Creek Cattle Guard / **YE-12**	Install cattle guard to reduce unintended cattle movement.		Pro-posed	Private and Federal	BLM/ Private	Grazing	All				No
Burnt Springs Cattle Guard / **Y3-11**	Install cattle guard to reduce unintended cattle movement.		Proposed	Private and Federal	BLM/ Private	Grazing	All				No
Fatal Springs East Cattle Guard / **Y3-10**	Install cattle guard to reduce unintended cattle movement.		Proposed	BLM Wells FO	BLM/ Private	Grazing	All				No

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Relocate Fence Away From Lek/ **HV-11**	Rebuild fence to reduce collision risk.	EA Needed	Proposed	BLM Wells FO	BLM/ Private	Fences	Breeding				No
Goat Creek Pipeline Extension / **CW-8**	Change cattle distribution.	EA Needed	In Progress	BLM Wells FO	NRCS	Grazing	All	2015			Yes
Mary's River Fence / **AC-1**	Divide Mary's River Pasture in the Anderson Allotment. Install fence to improve cattle distribution.	EA Needed	Proposed	BLM Wells FO	BLM/ Private	Grazing	All				No
Cottonwood Pipe to Grassy Pipe Connector **Y3-7**	Improve water reliability and distribution.	EA Needed	Proposed	BLM Wells FO	BLM	Grazing	All				No
Cottonwood Pipe to Grassy / **Y3-4**	Evaluate existing well.	EA Needed	Proposed	BLM Wells FO	BLM/ Private	Grazing	All				No
Fix/Replace Indian Spr. Pipeline and 2 Troughs / **Y3-2**	Fix and replace pipe and troughs.		Proposed	Private and Federal	BLM/ Private	Grazing	All				No
Fence Construction related to SR-9 / **SR-8**	After fence is removed in SR-9 then install new fence.	EA Needed	Proposed	BLM Wells FO	BLM/ Private	Grazing	All				No
Sagehen Spring Pipeline / **SR-7**	Extend pipeline from Sagehen Springs north and south to provide new watering locations for Granite and Knoll Creek Pastures.	EA Needed	Proposed	BLM Wells FO	BLM/ Private	Grazing	All				No
Boston Springs Pipeline / **SR-25**	Extend Boston Springs Pipeline on Middlestack Mountain.	DNA? Probably EA	Proposed	Private and Federal	BLM/ Private	Grazing	All	2015	$20,426		No

PROJECT NAME /LOCATION/ REFERENCE NUMBER	DESCRIPTION	NEPA STATUS	PROJECT STATUS	PRIMARY LAND MANAGER	PARTNERS	RISK ADDRESSED	SAGE GROUSE LIFE CYCLE	EST. DATE COMPLETE	EST. PROJECT COST	NEPA FUNDED	PROJECT FUNDED
West Basin Pipeline – South/ **SR-2**	Extension pipeline to provide water to Horse Creek Pasture. A New fence would be constructed to allow access from Horse Creek but not to the West Basin Pasture.	EA Needed	Proposed	Private and Federal	BLM Private	Grazing	All	2015	$15,326		No
Warm Springs Pipeline Extension / **CW-5**	Replace, add capacity, and add troughs to existing pipeline.	NA	In Progress	BLM Wells FO	NRCS	Grazing	All	2015		NA	Yes
Make existing temporary fire fence permanent / **CA-2**	Improve cattle distribution.	EA Needed	Proposed	BLM Wells FO	BLM/ Private	Grazing	All			No	NA
Connect West Basin to N Gollaher Pipeline /	Connect these two pipelines with 3/4 mi pipe (connected action to SR-2).	EA Needed	Proposed	BLM Wells FO	BLM/ Private	Grazing	All			No	No
Airport Rangeland Seeding - Non Native		EA Needed	Proposed	BLM Wells FO	BLM	Grazing	Brood Rearing			No	No

[1/] 'Liberty Fence' is a construction style also known as buck and pole or buck and rail fence.

9. MONITORING

9.1 EXISTING AGENCY MONITORING

9.1.1 Bureau of Land Management - Grazing

BLM conducts annual inspections to assure that livestock operators are in compliance with permit terms and conditions such as counting livestock on/off the allotment according to annual permit dates, counting livestock numbers during the grazing season, and identifying their location.

The BLM has a suite of monitoring techniques that are used to evaluate both short-term and long-term allotment objectives. Short-term monitoring is generally conducted annually to keep track of the management applied each year and the effects of that management.

Annual short term monitoring includes gathering data on actual use, distribution patterns, utilization measurements, streambank alteration, growing season conditions, and documentation of insects, fire, and other unique events. Short-term monitoring is used to plan management for the following year and to interpret the results of long-term data.

Long-term monitoring evaluates vegetative trends and whether or not progress is being made toward meeting rangeland health standards and the effectiveness of on-the-ground management actions. Long-term monitoring measures changes in resource attributes such as vegetation dynamics, soils, and stream stability over time. Long-term monitoring is usually done at permanent sampling locations in key areas and may include permanent photo points, frequency trend plots, remote sensing, and species composition. Because management objectives vary by location, the monitoring techniques used can vary from one allotment to another. The important factor in long-term monitoring is consistency over time.

Specific monitoring techniques to evaluate proper functioning conditions of streams, meadows and wetlands are conducted by a team of resource specialists focused on long-term stability and function.

BLM Monitoring Agreements. Some of the SANE members assist and participate in monitoring on public lands and national forest within the Plan Area. Cooperative monitoring agreements can and are being used in the Plan Area to expand the resources available to complete monitoring in a timely manner. Permittees with cooperative monitoring agreements collect vegetation and grazing use data using approved BLM methods and in compliance with BLM standards for use in allotment evaluations, developing allotment management plans, and adaptive management.

The Public Lands Council (PLC) and the BLM have entered into a MOU to define cooperative monitoring program that includes exchange of information, cooperative analysis and interpretation of monitoring information, and provisions for participation with public and private interests. The MOU is intended to provide a framework within which the facts and data will be collected, analyzed, shared with the public, and used by the BLM to make land management decisions.

Monitoring Agreements include clearly stated objectives and desired plant community objectives that serve as the basis for selecting the attributes to be monitored, methods to be used, and the interpretations to be made from monitoring data. All available information from prior inventories, monitoring data, climatic records, actual stocking records, utilization surveys, photographs, or other pertinent information are brought into the process of data interpretation and design of monitoring plans.

9.1.2 US Forest Service – Vegetation conditions and Wildlife Utilization

The USFS monitors livestock utilization annually and conducts some long-term trend monitoring. USFS also monitors elk utilization and other conditions in the Plan Area as needed.

9.1.3 Nevada Department of Wildlife – Wildlife Populations and Habitat

Greater sage-grouse trend leks are monitored every year to document male attendance. NDOW also conducts numerous lek counts on other leks, occasionally conducts brood surveys, participates in radio-collaring telemetry studies, and collects wings from harvested birds to estimate population demographics. In addition to sage-grouse, NDOW also conducts monitoring of fish and wildlife populations, streams surveys, and stream habitat conditions.

9.1.4 The NDOW Partners for Conservation and Development Program (NPCD)

NPCD conducts surveys to document baseline vegetation composition for monitoring long term trend. NPCD crews monitored three fires in the SANE Plan Area in 2014. The objective was to establish baseline condition measurements prior to implementing sagebrush augmentation treatments. The methods and monitoring results for the Eccles Ranch Fire, the Scott Creek Fire, and the West Fork Fire are included in Appendix I.

SANE understands the need for monitoring and has provided detailed lists of prioritized projects to NPCD. NPCD will coordinate with the TAC to continue to expand monitoring efforts in the SANE Plan Area to provide pre-project vegetation baseline conditions and post-project response.

9.1.5 Natural Resources Conservation Service – Vegetation Condition and Trend

NRCS conducts monitoring of land use and natural resource conditions and trends on non-federal lands using National Resources Inventory (NRI) methodology. NRCS establishes permanent monitoring locations to enable follow-up monitoring and trend evaluation.

9.2 ADDITIONAL MONITORING NEEDS

Increased participation and monitoring agreements would expand the BLM monitoring` database and would provide more substantial records to support management decisions.

Follow-up noxious weed monitoring would support the State policy for early detection and rapid response for new weed infestations.

10. ADAPTIVE MANAGEMENT

An adaptive management approach involves exploring alternative ways to meet management objectives, predicting the outcomes of alternatives based on the current state of knowledge, implementing one or more of these alternatives, monitoring to learn about the impacts of management actions, and then using the results to update knowledge and adjust management actions.

2014 Nevada Greater Sage-Grouse Conservation Plan

Adaptive Management will be the ongoing planning and implementation process used for the SANE Plan Area. Short-term adaptive management is necessary to respond to uncertainty in climatic circumstances, wildfire, and other unforeseeable environmental conditions using a pre-determined process. Adaptive management for short-term applications relies on management flexibility, trust, and accountability within predefined sideboards. The framework and sideboards for short-term adaptive management decisions will become an integral part of the SANE Plan. The framework will be based on local knowledge from both stakeholders and technical specialists that will bring applicable experience to implement workable solutions/adjustments in the form of short-term management alternatives that are consistent with agency regulations.

Plan implementation and monitoring will produce site-specific information for evaluation of progress toward achieving objectives, for validation of objectives, and to identify improved approaches and practices to achieve sagebrush ecosystem conservation and economic viability of ranches. Ongoing feedback and revisions to the SANE Plan will increase effectiveness, efficiency, and accountability.

11. 2015 ANNUAL WORK PLAN

Conservation Action Number	2015 Action Plan Schedule
1-2 2-1 4-1 5-1 9-1 9-2	**<u>January Meeting</u> – Noxious and Invasive Species.** Speaker: Tina Mudd Nevada Department of Agriculture. Weed identification, existing known weed occurrences, most effective treatment methods for species that exist within the plan area and species within proximity of the plan area that have potential for invasion into the plan area. Establish weed mapping protocols consistent with NDOA, funding opportunities, and leveraging funding through partnerships. Other business: SANE committees and assignments; dates for future meetings.
2-1 3-2 5-1 5-3	**<u>February Meeting</u>** Final planning and design of projects to be implemented in 2015. Continue working on the process of establishing a Rural Volunteer Rangeland Fire Protection District for wildfire suppression. Initiate preliminary design of fuel reduction treatments and fuelbreaks. TAC team meets to refine 2015 project planning.
2-1 3-2 4-1 7-1 8-1	**<u>March Meeting</u>** Speaker: Glenn Shewmaker: monitoring MOUs and cooperative agreements for monitoring. Continuing education on monitoring, regulatory assurance opportunities. Update on 2014 Nevada Greater Sage-Grouse Conservation Plan. (Agenda to be updated at February meeting.) <u>Field Training</u> – NODW Lek monitoring
	<u>May and/or June Meeting</u> Speaker: Kent McAdoo, University of Nevada Cooperative Extension (UNCE) Monitoring techniques and objectives: who, how, where, when, why, compliance with existing protocols and procedures acceptable to agencies.
2-1 6-2 7-1 7-4	**<u>June Field Trip</u> - TBD (monitoring, desired conditions, etc.)**
1-2 6-3 8-2	**<u>October Meeting</u>** – Annual plan update and report on activities and completed actions; Update SANE Plan; Develop 2016 Work Plan.
3-3 3-4 7-3	**Ongoing Activities:** Continue to pursue grants and other funding for implementing the SANE Plan Develop media outreach tools to offer support for other local area planning groups. Continue to work with agency Range Conservationists on annual grazing operating plans. Ongoing administrative actions: funding opportunities, partnerships (weeds, monitoring, rural fire protection district, admin capacity building)

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Appendix A

Terms and Definitions

Appendix A. Terms and Definitions

Adaptive Management – The continual process of adjusting management based on a changing management situation as well as o learning from our experiences as tracked through monitoring and research. It often involves management for the purpose of learning to improve future management.

Cooperative Monitoring –BLM policy enacted to encourage permittees and local BLM offices to work together to monitor and evaluate resources conditions, progress toward achieving objectives, and/or land health standards, and to share information for making grazing decisions.

Ecological Site – a kind of land with specific physical characteristics that differs from other kinds of land in its ability to produce distinctive kinds and amounts of vegetation and in its response to management. Synonymous with 'ecological type' used by US Forest Service.

Ecoregion – areas with generally similar ecosystems and type, quality, and quantity of environmental resources.

Ephemeral Streams – water courses that flow only after a precipitation event or during spring runoff.

Perennial Streams – water courses that flow year-round.

Proper Grazing – The act of continuously obtaining proper use.

Proper Use – A degree of utilization of current year's growth which, if continued, will achieve management objectives and maintain or improve the long-term productivity of the site. Proper use varies with time and systems of grazing.

Resilience – the capacity of an ecosystem to regain its fundamental structure, processes, and functioning when subjected to stressors or disturbances such as drought, livestock grazing or wildfire. In this context, resilience is a function of the underlying ecosystem attributes and processes that determine ecosystem recovery

Resistance – the capacity of an ecosystem to retain its fundamental structure, processes, and functioning (or remain largely unchanged) despite stressors or disturbances.

Appendix B

Figures and Maps

Figure 1 General Location of the SANE Plan Area
Figure 2 Ranches within the SANE Plan Area
Figure 3 Greater Sage-Grouse Population Management Units and Leks in the SANE Plan Area
Figure 4 Greater Sage-grouse Habitat Categorization in the SANE Plan Area
Figure 5 Fire History within the SANE Plan Area

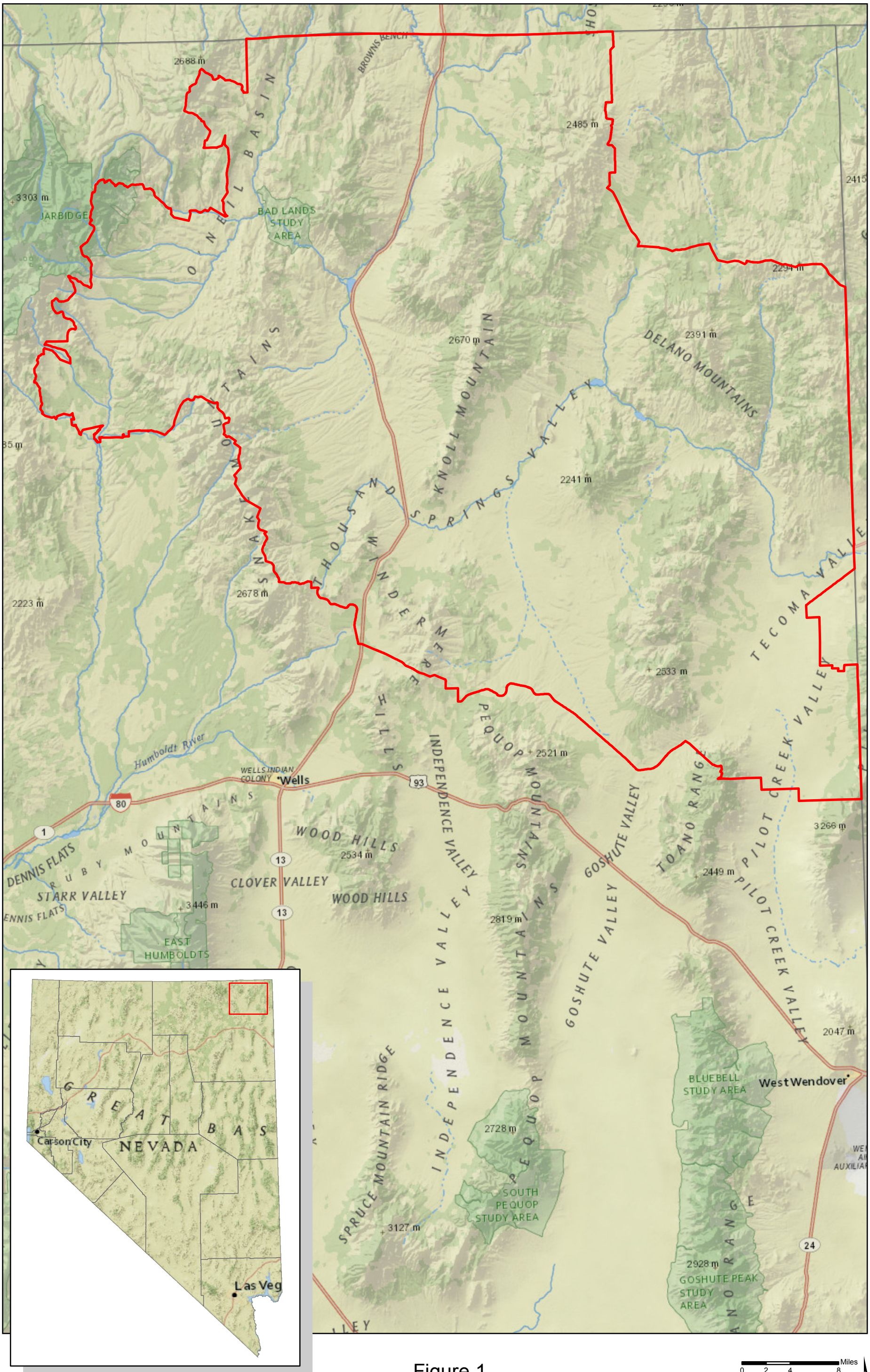

Figure 1.
General Location of the SANE Plan Area.

Prepared: 08/17/14 / Project: #13-259

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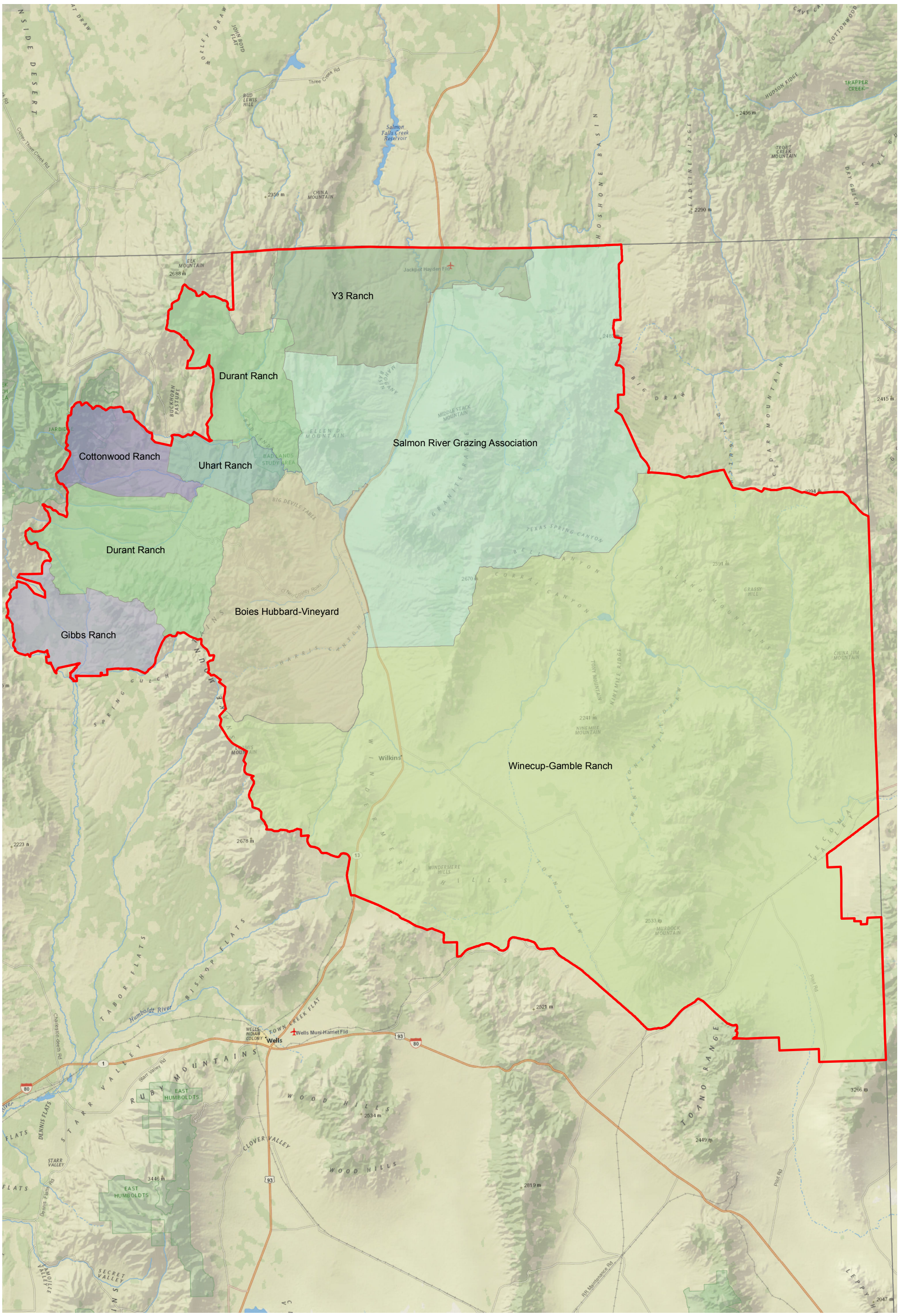

Legend

SANE Project Area

Figure 2.
Ranches within the SANE Plan Area

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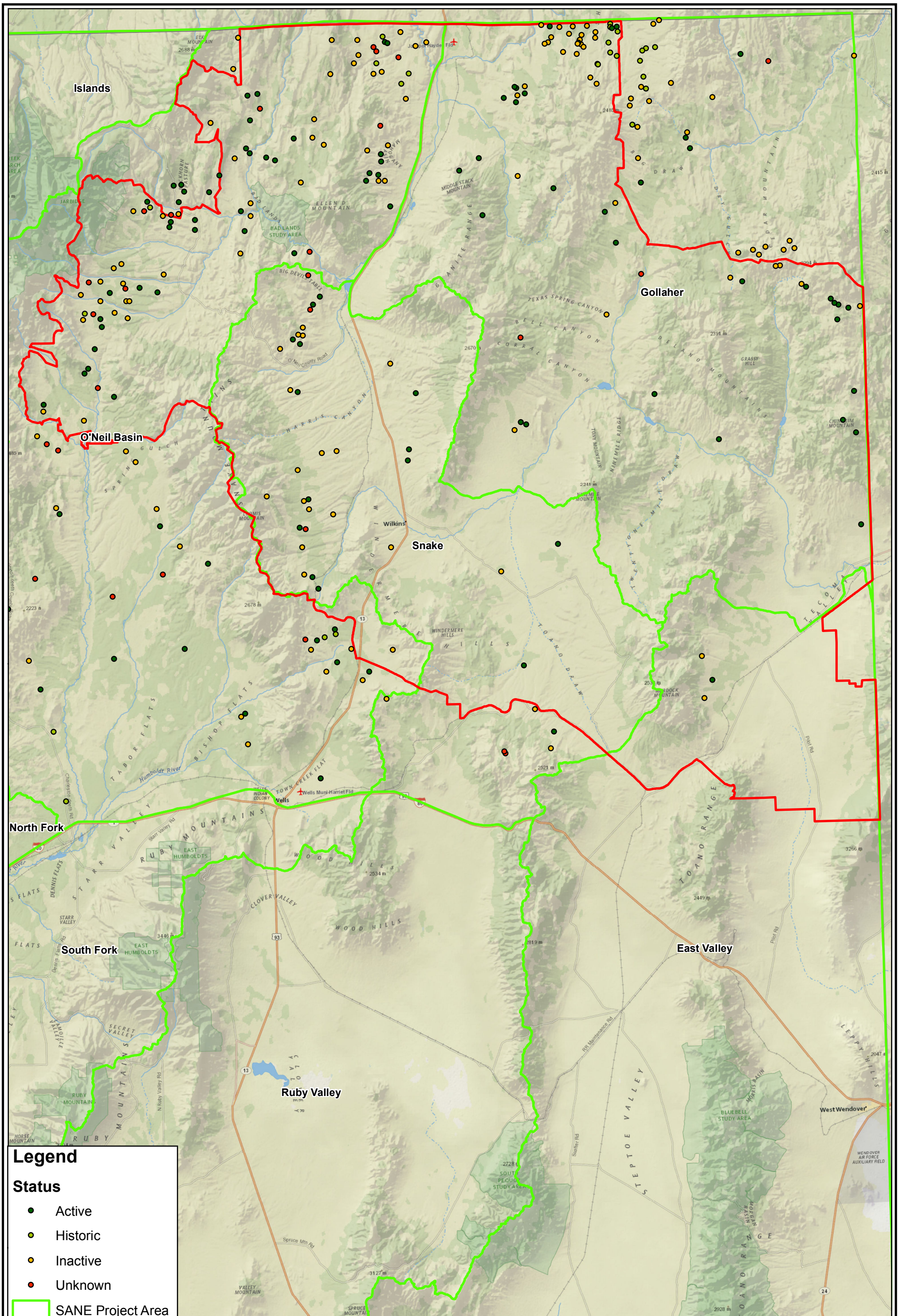

Figure 3.
Greater Sage-Grouse Population Management Units and Leks in the SANE Plan Area.

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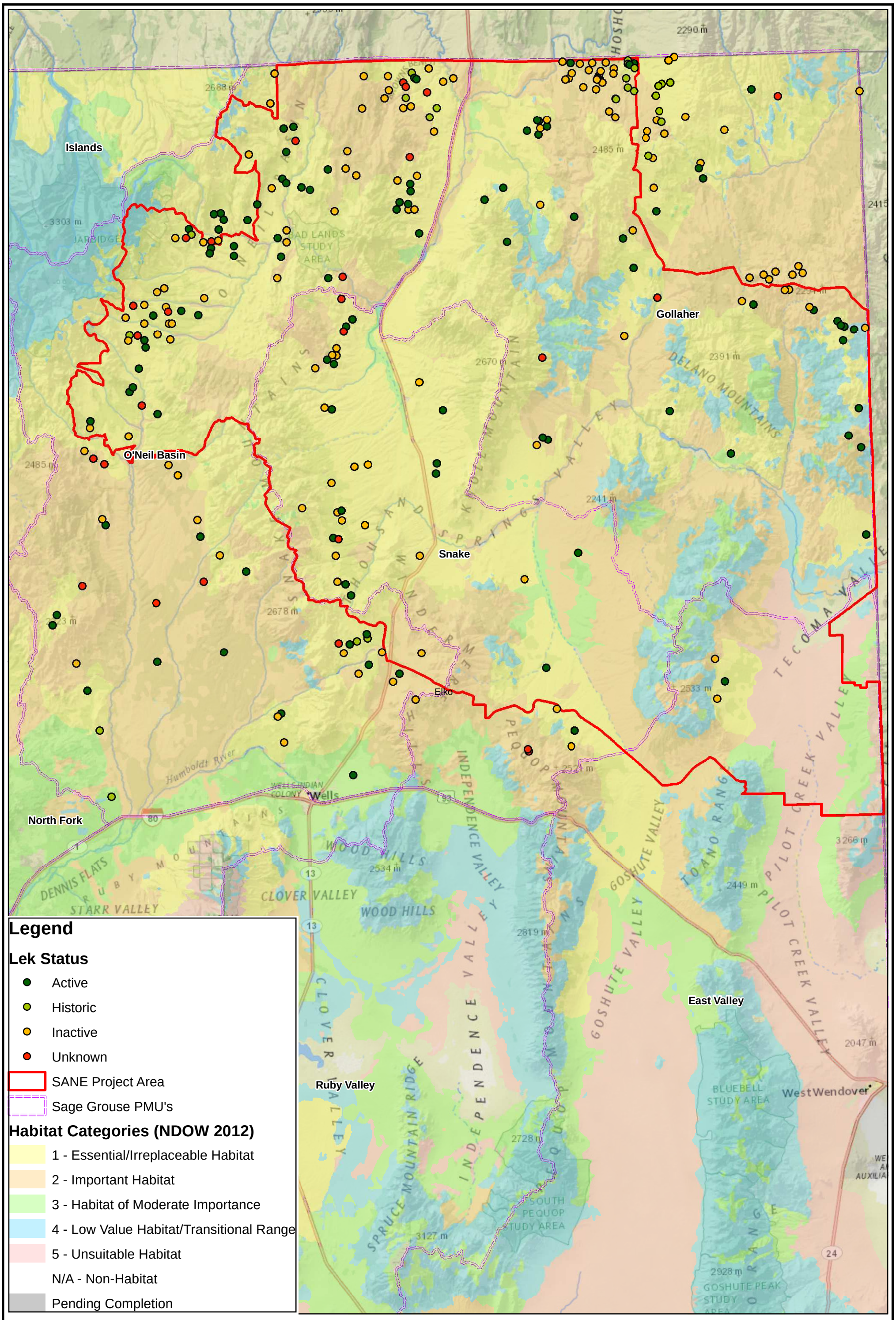

Figure 4.
Greater Sage-grouse Habitat Categorization
in the SANE Plan Area

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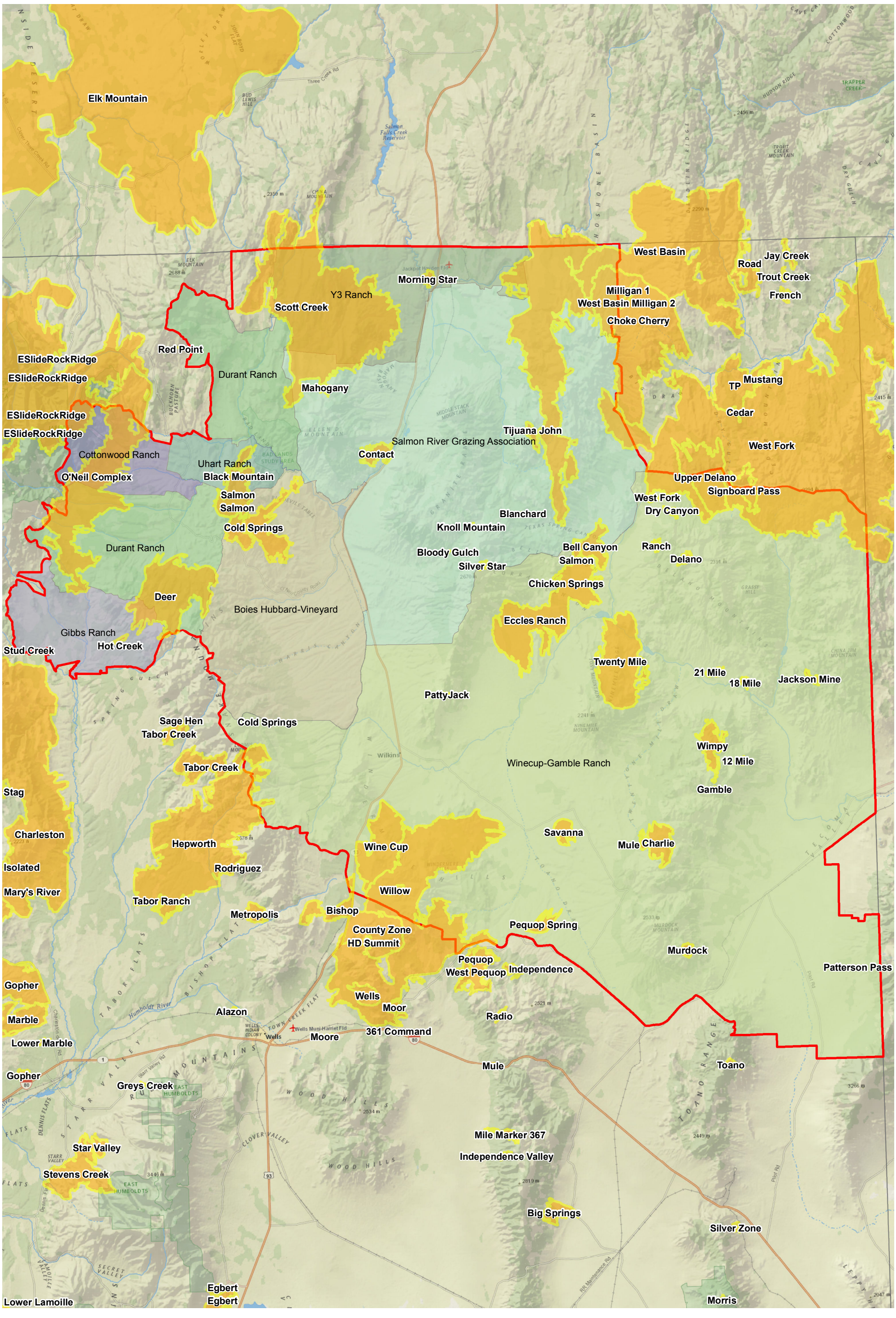

Legend

BLM Fire History 2000-2013

SANE Project Area

Figure 5.
Fire History within the SANE Plan Area

Miles
0 1.25 2.5 5

Resource Concepts Inc

Prepared: 08/17/14 / Project: #13-259

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Appendix C

Descriptions of Major Land Resource Areas

Appendix C. Descriptions of Major Land Resource Areas

Source: NRCS

MLRA 24 - Humboldt Area

Land Use: About 75 percent of this area is federally owned. Most of the remaining land area is used for farms, ranches, industrial enterprises (mining) and some urban and transportation purposes. Much of the area is used for livestock grazing, particularly during the winter, on native shrubs and grasses. Less than 3 percent of the area, generally consisting of narrow strips along the major streams and margins of valleys, is irrigated and used for growing hay, grain, tame pasture, turf, alfalfa seed and potatoes. The hay produced in the area is used principally for winter feeding of resident livestock or for sale to dairy operations in California. Concerns of management are mainly use of proper grazing practices and improvement of native rangelands and efficient use of available surface and ground water supplies.

Elevation and Topography: Elevations range from a low of about 4000 feet to 5500 feet in valleys with some mountain peaks rising to more than 9000 feet. Widely spaced, north-south trending mountain ranges are separated by broad valleys bordered by smooth, gentle alluvial slopes. Pleistocene lake sediments and recent alluvium are extensive in the major valleys.

Climate: Average annual precipitation for MLRA 24 in Nevada ranges from about 5 inches at lower elevations to about 14 inches over most mountain ranges and as much as 20 inches on higher mountain ranges. Precipitation occurs primarily as snow during the winter and as rain during the spring and fall. The relative humidity is low, evaporation is high, the percentage of sunshine is high, and the daily and seasonal range in temperature is wide. Summers are dry. Average annual temperature ranges from 39 to 50º F. Average frost-free period is generally 60 to 120-days, decreasing with elevation.

Water: The low precipitation provides only a small amount of water. Surface water is available from perennial streams that carry snowmelt from the mountains. Late season water supplies are deficient. Ryepatch Reservoir on the lower Humboldt River is the only large irrigation reservoir in the area. Limited groundwater supplies in some of the outlying valleys are being rapidly harnessed for irrigation.

Soils: Dominant soils of the valleys are Argids, Psamments, Orthids, Aquolls, Orthents and Fluvents, which have a *mesic* soil temperature regime; dominant soils in the mountains are Xerolls, Borolls, and Orthids, which have a *frigid* or *cryic* temperature regime. The soils typically have mixed mineralogy. Durargids, Durorthids, Naduargids, Camborthids, Torriorthents, and Torripsamments are on piedmont slopes and stream and lake terraces. Haplaquolls, Haploxerolls, and Torrifluvents, are on wet floodplains. Cryoborolls, Argixerolls, Haploxerolls, Haplargids and Camborthids are on mountain slopes and upland basins.

Potential Natural Vegetation: This area supports desert-shrub and bunchgrass-shrub vegetation. In areas receiving less than 8 inches of annual precipitation, shadscale and bud sagebrush are common. Associated plants include Indian ricegrass, winterfat, spiny hopsage, bottlebrush

squirreltail and Sandberg's bluegrass. Basin wildrye, alkali sacaton, black greasewood, and Torry's saltbush are locally important on saline-alkali affected soils of low-lying areas in valley floors. Winterfat and sickle saltbush communities are prevalent in some areas. Where the average annual precipitation ranges between 8 and 12 inches, Wyoming big sagebrush is the characteristic shrub. Local areas of black sagebrush and low sagebrush are also found within this precipitation zone. Thurber's needlegrass, Indian ricegrass, needleandthread, bluebunch wheatgrass (scarce on "droughty" sites), bottlebrush squirreltail, Sandberg's bluegrass, spiny hopsage and Douglas' rabbitbrush are common associated plants with these sagebrush species. At higher elevations where the average annual precipitation is 12 inches or more, mountain big sagebrush, bluebunch wheatgrass, Idaho fescue, snowberry and Utah serviceberry are characteristic plants. Utah juniper is found on rocky, hill and mountain slopes.

MLRA 25 - Owyhee High Plateau

Land Use: About three-fourths of this area is federally owned. Most of the remainder is in farms and ranches. Livestock production on rangelands is the main agricultural activity. Private land tracts in valleys, making up 2 or 3 percent of the total area, are irrigated and used for producing grain and forage for livestock. Open forests on high mountain slopes are grazed by livestock and wildlife.

Elevation and Topography: Elevations range from 4,590 to 7,540 feet (1,400 to 2,300m) on rolling plateaus and in gently sloping basins; but on some steep mountains, it is more than 9,835 feet (3,000m). Steep north-south-trending mountain ranges are separated by broad basins filled with alluvium.

Climate: Average annual precipitation ranges from about 8 to 15 inches (20 to 40cm) over most of the area; but as much as 30 inches (75cm) on mountain slopes. Precipitation in evenly distributed throughout the year, but it is low from midsummer to early in autumn. Average annual temperatures range from 42º to 47º F (60 to 80ºC). Average frost-free period is 90 to 120 days, decreasing with rising elevation.

Water: The supply of water from precipitation and stream flow is small and unreliable, except along the Owyhee, Bruneau and Humboldt Rivers. Stream flow depends largely on accumulated snow on the higher mountains. Except in alluvial deposits along large streams, groundwater supplies are small and little used.

Soils: Most of the soils are Xerolls. The soils are deep to shallow and medium textured to fine textured. They have a mesic, frigid, or cryic temperature regime, depending mostly on elevation. Argixerolls and Haploxerolls are on the plateaus. Durixerolls are in valleys at an elevation above *5,575* feet (1,700m). Haplargids, Camborthids and Durargids are on alluvial fans and terraces in valleys at an elevation below *5,575* feet (1,700m). Poorly drained Haplaquolls are on floodplains of the few major streams. Argixerolls and Cryoborolls are on mountains.

Potential Natural Vegetation: This area supports shrub-grass vegetation characterized by big sagebrush or low sagebrush and bluebunch wheatgrass, Thurber's needlegrass, and Idaho fescue. Other important plants are Sandberg's bluegrass, Indian ricegrass, bottlebrush squirreltail, thickspike and western wheatgrasses, penstemon, phlox, milkvetch, lupine, aster, antelope

bitterbrush, and rabbitbrush. On high plateaus are juniper and curlleaf mountain mahogany with an understory predominantly of mountain big sagebrush, serviceberry, and snowberry. Conifers, quaking aspen and curlleaf mountain mahogany are in the Ruby Range and Jarbidge Mountains and higher mountain landscapes. Conifers include whitebark pine, limber pine, Engelmann's spruce, subalpine fir and bristlecone pine.

Ecological Sites Descriptions for Sagebrush Sites in the SANE Plan Area

The following index shows the ecological sites in the SANE Plan area. Each ecological site is labeled with a NRCS site reference number. Ecological site descriptions include:

1. A physical site description including physiographic features, climatic features, and soil factors.
2. Potential native vegetation including grasses, forbs, and shrubs and an estimate by weight of the species composition.
3. Estimated total basal and crown cover.
4. Estimated total annual air dry production (pounds per acre).
5. A brief description of the changes in the plant community that could result from mismanagement or other site disturbances.

Complete ecological site descriptions for the primary sagebrush sites that are important for sagebrush ecosystem conservation are included following the index. Ecological site descriptions for other non-sagebrush sites can be obtained from the Natural Resources Conservation Service.

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
NEVADA

Rangeland Ecological Site Description

A. PHYSICAL CHARACTERISTICS

1. PHYSIOGRAPHIC FEATURES

This site occurs on summits and upper backslopes of hills and lower mountains on all aspects. Slopes range from 4 to 70 percent, but slope gradients of 4 to 15 percent are most typical. Elevations are 5500 to 7000 feet.

2. CLIMATIC FACTORS

Average annual precipitation is 10 to 14 (16) inches. Mean annual air temperature is 45 to 48 degrees F. The average growing season is about 80 to 100 days.

3. SOIL FACTORS

The soils in this site are moderately deep, well drained and moderately slowly permeable. Textures are sandy clay loams and coarse sandy loams, modified by 15 to 30 percent rock fragments.

For a listing of soils correlated to this range site and representative pedon, see Appendix II

4. VEGETATION FACTORS

a. Potential Native Vegetation

The plant community is dominated by Thurber's needlegrass, bluebunch wheatgrass and black sagebrush.

Potential vegetative composition is about 55% grasses, 10% forbs and 35% shrubs.

4. VEGETATION FACTORS (continued)

b. Major plant species, range in species composition, and species air-dry weight for a normal growing season:

PLANT SYMBOL	COMMON NAME	PERCENT BY WEIGHT (AIR-DRY)	SPECIES BY WEIGHT (LBS/AC)
Grasses			
PSSPS	bluebunch wheatgrass	30-40	150-200
ACTH7	Thurber's needlegrass	10-20	50-100
ACHY	Indian ricegrass	2-8	10-40
PPGG	other perennial grasses	2-10**	10-100
POA	bluegrass		
ELEL5	bottlebrush squirreltail		
HECO26	needleandthread		
ACWE3	Webber's needlegrass		
Forbs			
PPFF	other perennial forbs	5-15**	25-75
BALSA	balsamroot		
CRAC2	tapertip hawksbeard		
ERIOG	eriogonum		
PHLOX	phlox		
ASTER	aster		
PYRRO	goldenweed		
Shrubs and Trees			
ARNO4	black sagebrush	20-30	100-150
SSSS	other shrubs and trees	5-15**	25-75
CHVIP4	downy rabbitbrush		
GRSP	spiny hopsage		
KRLA2	winterfat		
PUTR2	antelope bitterbrush		
ARTRW	Wyoming sagebrush		
OPUNT	pricklypear		
JOUS	Utah juniper		

**Allow no more than 3% of each species of this group and no more than 10% in aggregate.

**Allow no more than 3% of each species of this group and no more than 15% in aggregate.

**Allow no more than 5% of each species of this group and no more than 15% in aggregate.

4. VEGETATION FACTORS (continued)

c. Approximate ground cover (basal and crown) is 15 to 30 percent.

d. Total annual air-dry production.

	LBs/AC
Favorable years	700
Normal years	500
Unfavorable years	300

e. Plant community dynamics

As ecological condition declines, black sagebrush and downy rabbitbrush dominate with increases of bluegrass and bottlebrush squirreltail. Cheatgrass and annual forbs are species likely to invade this site.

5. ASSOCIATED AND COMPETING SITES

a. Principal sites that commonly occur in association with the potential plant community include:

(025XY009NV) South Slope 12-14" PZ
(025XY014NV) Loamy 10-12" PZ
(025XY058NV) Bouldery Loam

b. Competing sites (and their differentiae) that are similar to this potential plant community:

(025XY024NV) Mountain Ridge [Higher elevations; FEID dominant grass]
(025XY025NV) Chalky Knoll [ARTRW codominant shrub; ACHY-ELEL5 codominant grasses; less productive site]
(025XY026NV) Channery Hill [ACHY dominant grass; less productive site]
(025XY055NV) Shallow Clay Slope 12-14" PZ [PSSPS dominant grass; less productive site; steeper slopes]

APPENDIX I

Reference Data

1. Site Documentation (number and kind of site inventory records).

____ NRCS-ECS-5 ____ NV-ECS-1
____ NRCS-RANGE-417 ____ NV-4400-13 (BLM)
____ Other _____

2. Distribution and extent.

Elko County, Nevada.

3. Location of typical example of this site.

NW¼SE¼ Section 34, T45N. R63E. MDBM. About 4 miles southwest of Contact, Elko County, Nevada.

Approved by: _____
STATE RANGE CONSERVATIONIST
NRCS NEVADA

Date Approved: May 2003

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
NEVADA

Rangeland Ecological Site Description

A. PHYSICAL CHARACTERISTICS

1. PHYSIOGRAPHIC FEATURES

This site occurs on hills, erosional fan remnants and partial ballenas on all exposures. Slopes range from 2 to 50 percent but slope gradients of 4 to 30 percent are most typical. Elevations are 4500 to 6000 feet.

2. CLIMATIC FACTORS

Average annual precipitation is 8 to 10 inches. Mean annual air temperature is 43 to 50 degrees F. The average growing season is about 70 to 120 days.

3. SOIL FACTORS

The soils in this site are typically moderately deep and well drained. The available water capacity varies with soil texture and soil depth, ranging from low to moderate. Many soils are modified with a high volume of gravels, cobbles or stones through their profile. Soil reaction increases with soil depth and slight or moderate salts and sodium generally concentrate in the lower subsoil or in the substratum. A high percentage of rock fragments on the soil surface provides a stabilizing affect on surface erosion conditions and helps to reduce evaporation and conserve soil moisture. Runoff is moderate to very rapid. The potential for sheet and rill erosion is moderate to high depending on slope.

4. VEGETATION FACTORS

a. Potential Native Vegetation

The plant community is dominated by Thurber's needlegrass, bluebunch wheatgrass, and Wyoming big sagebrush.

Potential vegetative composition is about 65% grasses, 5% forbs and 30% shrubs.

4. VEGETATION FACTORS (continued)

b. Major plant species, range in species composition, and species air-dry weight for a normal growing season:

PLANT SYMBOL	COMMON NAME	PERCENT BY WEIGHT (AIR-DRY)	SPECIES BY WEIGHT (LBS/AC)
Grasses			
PSSPS	bluebunch wheatgrass	25-40	150-240
ACTH7	Thurber's needlegrass	15-25	90-150
POSE	Sandberg's bluegrass	2-5	12-30
PPGG	other perennial grasses	2-10**	12-60
ELEL5	bottlebrush squirreltail		
HECO26	needleandthread		
LECI4	basin wildrye		
ACWE3	Webber's needlegrass		
ELMA7	thickspike wheatgrass		
ACHY	Indian ricegrass		
Forbs			
PPFF	other perennial forbs	5-15**	30-90
SPHAE	globemallow		
Shrubs			
ARTRW	Wyoming big sagebrush	15-25	90-150
SSSS	other shrubs	2-10**	12-60
CHVI8	Douglas' rabbitbrush		
GRSP	spiny hopsage		
TETRA3	horsebrush		
PUTR2	antelope bitterbrush		
KRLA2	winterfat		

**Allow no more than 3% of each species of this group and no more than 10% in aggregate.

**Allow no more than 3% of each species of this group and no more than 15% in aggregate.

**Allow no more than 3% of each species of this group and no more than 10% in aggregate.

4. VEGETATION FACTORS (continued)

c. Approximate ground cover (basal and crown) is 20 to 30 percent.

d. Total annual air-dry production.

	LBs/AC
Favorable years	800
Normal years	600
Unfavorable years	400

e. Plant community dynamics

As ecological condition declines, big sagebrush and rabbitbrush become dominant with an increase of Sandberg's bluegrass, bottlebrush squirreltail, phlox and other and mat-forming forbs in the understory. Cheatgrass, halogeton, Russian thistle and annual mustards are species likely to invade this site. Utah juniper will invade this site where it occurs adjacent to these woodland areas.

5. ASSOCIATED AND COMPETING SITES

a. Principal sites that commonly occur in association with the potential plant community include:

(024XY006NV) Dry Floodplain
(025XY014NV) Loamy 10-12" PZ
(025XY015NV) South Slope 8-12" PZ
(025XY018NV) Claypan 10-12" PZ
(025XY025NV) Chalky Knoll
(025XY059NV) JUOS WSG:0R0402

b. Competing sites (and their differentiae) that are similar to this potential plant community:

(O25XY014NV) Loamy 10-12" PZ
[More productive site]
(025XY015NV) South Slope 8-12" PZ
[PSSPS dominant plant; typically occurs on slopes greater than 30 percent]
(025XY021NV) hallow Loam 8-12" PZ
[Less productive site]
(025XY045NV) Sandy 10-12" PZ
[HECO26-ACHY codominant grasses]
(025XY066NV) Ashy Loam 10-12" PZ
[More productive site; PONE3 and HECO26 important grasses]

APPENDIX I

Reference Data

1. Site Documentation (number and kind of site inventory records).

___	NRCS-ECS-5	3	NV-ECS-1
7	NRCS-RANGE-417	51	NV-4400-13 (BLM)
___	Other _____		

2. Distribution and extent.

Elko, Eureka, Lander, and eastern Humboldt Counties, Nevada.

3. Location of typical example of this site.

S½ Section 16, T42N. R60E. MDBM. About ½ mile west of O'Neil Basin Road, along south side of entrance road to Mary's River Ranch, Elko County, Nevada.

NE¼SE¼ Section 25, T26N. R67E. MDBM. About 23 miles west of Wendover and 3 miles north of Highway 80, Silver Zone area, Toano Mountains, Elko County, Nevada.

Approved by: _____
STATE RANGE CONSERVATIONIST
NRCS NEVADA

Date Approved: May 2003

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
NEVADA

Rangeland Ecological Site Description

A. PHYSICAL CHARACTERISTICS

1. PHYSIOGRAPHIC FEATURES

This site occurs on summits and sideslopes of erosional fan piedmonts, hills and lower mountains on all aspects. Slopes range from 2 to over 50 percent, but slope gradients of 4 to 30 percent are typical. Elevations are 5000 to about 6500 feet.

2. CLIMATIC FACTORS

Average annual precipitation is 8 to 10 inches. Mean annual air temperature is 45 to 53 degrees F. The average growing season is about 90 to 120 days.

3. SOIL FACTORS

The soils of this site are less than 40 inches deep and are moderately to strongly calcareous. Soil reaction increases with soil depth. These soils will accumulate variable concentrations of salts and sodium in their lower subsoil or substratum. The soils typically have high volumes of coarse fragments through the soil profile. Rock fragments in the profile occupy plant growing space and reduce the potential soil moisture holding capacity. The available water capacity is low to very low and varies with soil texture, percent rock fragments and depth. Runoff is slow to rapid and the potential for sheet and rill erosion is moderate to high depending on the slope.

For a listing of soils correlated to this range site and representative pedon, see Appendix II

4. VEGETATION FACTORS

a. Potential Native Vegetation

The plant community is dominated by black sagebrush, Thurber's needlegrass, and Indian ricegrass.

Potential vegetative composition is about 50% grasses, 5% forbs and 45% shrubs.

4. VEGETATION FACTORS (continued)

b. Major plant species, range in species composition, and species air-dry weight for a normal growing season:

PLANT SYMBOL	COMMON NAME	PERCENT BY WEIGHT (AIR-DRY)	SPECIES BY WEIGHT (LBS/AC)
Grasses			
ACTH7	Thurber's needlegrass	20-30	70-105
ACHY	Indian ricegrass	5-15	18-53
PPGG	other perennial grasses	2-15**	7-53
PSSPS	bluebunch wheatgrass		
POSE	Sandberg's bluegrass		
HECO26	needleandthread		
ACWE3	Webber's needlegrass		
ELEL5	bottlebrush squirrreltail		
Forbs			
PPFF	other perennial forbs	5-15**	18-53
SPHAE	globemallow		
ASTRA	milkvetch		
PHLOX	phlox		
ERIOG	eriogonum		
Shrubs			
ARNO4	black sagebrush	30-40	105-140
SSSS	other shrubs	2-8**	5-20
KRLA2	winterfat		
GRSP	spiny hopsage		
ATCO	shadscale		
ARSP5	bud sagebrush		
EPNE	Nevada ephedra		
TEGL	littleleaf horsebrush		
CHVIP4	downy rabbitbrush		

**Allow no more than 3% of each species of this group and no more than 15% in aggregate.

**Allow no more than 5% of each species of this group and no more than 15% in aggregate.

**Allow no more than 3% of each species of this group and no more than 8% in aggregate.

4. VEGETATION FACTORS (continued)

c. Approximate ground cover (basal and crown) is 15 to 30 percent.

d. Total annual air-dry production.

	LBs/AC
Favorable years	500
Normal years	350
Unfavorable years	250

e. Plant community dynamics

Where management results in abusive grazing use by cattle or feral horses, Indian ricegrass and bottlebrush squirreltail increase in the understory as black sagebrush and rabbitbrush increase and become the dominant overstory vegetation. Abusive grazing by sheep will reduce black sagebrush, Thurber's needlegrass and Sandberg's bluegrass in the plant community. Cheatgrass, Russian thistle, and halogeton are species most likely to invade this site. Following wildfire, shadscale and spiny hopsage (with rabbitbush, horsebrush, and snakeweed) often replace black sagebrush.

5. ASSOCIATED AND COMPETING SITES

a. Principal sites that commonly occur in association with the potential plant community include:

(024XY005NV) Loamy 8-10" PZ
(024XY031NV) Shallow Calcareous Loam 10-14" PZ
(024XY045NV) Eroded Slope 6-10" PZ
(024XY057NV) Channery Hill 8-10" PZ

b. Competing sites (and their differentiae) that are similar to this potential plant community:

(024XY016NV) Mountain Ridge [FEID dominant grass; less productive site]
(024XY031NV) Shallow Calcareous Loam 10-14" PZ [PSSPS-ACTH7 codominant grasses; more productive site]
(024XY042NV) Steep Gravelly Loam 14+" PZ [FEID dominant grass; more productive site]

APPENDIX I

Reference Data

1. Site Documentation (number and kind of site inventory records).

____ NRCS-ECS-5 ____ NV-ECS-1
____ NRCS-RANGE-417 ____ NV-4400-13 (BLM)
____ Other _____

2. Distribution and extent.

Eureka, Humboldt, Lander, and Pershing Counties, Nevada.

3. Location of typical example of this site.

NE¼ Section 36, T32N. R43E. MDBM. About 6 miles southwest of Battle Mountain, Little Cottonwood Canyon area, Battle Mountain, Lander County, Nevada.

Approved by: _____
STATE RANGE CONSERVATIONIST
NRCS NEVADA

Date Approved: March 2003

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
NEVADA

Rangeland Ecological Site Description

A. PHYSICAL CHARACTERISTICS

1. PHYSIOGRAPHIC FEATURES

This site occurs on summits and sideslopes of hills and lower mountains on all aspects. Slopes range from 2 to over 50 percent, but slope gradients of 4 to 30 percent are typical. Elevations range from 6000 to 7500 feet.

2. CLIMATIC FACTORS

Average annual precipitation is 10 to 14 Inches. Mean annual air temperature is 41 to 45 degrees F. The average growing season is about 80 to 100 days.

3. SOIL FACTORS

The soils of this site are shallow to moderately deep to a hardpan or bedrock. These soils normally have from 30 to over 50 percent gravel and cobbles by volume distributed throughout their profile. Some soils have a moderately fine to fine textured subsoil within 10 inches of the surface. The reaction of many soils Is moderately or strongly alkaline. The available water capacity is low to moderate. These soils usually have high amounts of gravels, cobbles or stones on the surface that occupy plant growing space, yet help to reduce evaporation and conserve soil moisture. Rock fragments on the surface provide a stabilizing affect on surface erosion conditions.

For a listing of soils correlated to this range site and representative pedon, see Appendix II

4. VEGETATION FACTORS

a. Potential Native Vegetation

The plant community is dominated by black sagebrush, bluebunch wheatgrass and Thurber's needlegrass. Idaho fescue is found on those sites having a more favorable water balance.

Potential vegetative composition is about 50% grasses, 10% forbs and 40% shrubs.

b. Major plant species, range in species composition, and species air-dry weight for a normal growing season:

PLANT SYMBOL	COMMON NAME	PERCENT BY WEIGHT (AIR-DRY)	SPECIES BY WEIGHT (LBS/AC)
Grasses			
PSSPS	bluebunch wheatgrass	20-35	100-175
ACTH7	Thurber's needlegrass	10-25	50-125
ACHY	Indian ricegrass	2-8	10-40
PPGG	other perennial grasses	2-15**	10-75
FEID	Idaho fescue		
POA	bluegrass		
HECO26	needleandthread		
ACWE3	Webber's needlegrass		
LECI4	basin wildrye		
ELEL5	bottlebrush squirrreltail		
Forbs			
PPFF	other perennial forbs	5-15**	25-75
CRAC2	tapertip hawksbeard		
LUPIN	lupine		
ASTRA	milkvetch		
ASTER	aster		
PHLOX	phlox		
ERIOG	eriogonum		
Shrubs			
ARNO4	black sagebrush	25-35	125-175
SSSS	other shrubs	2-10**	10-50
KRLA2	winterfat		
GRSP	spiny hopsage		
AMUT	Utah serviceberry		
SYMPH	snowberry		
CHVI8	Douglas' rabbitbrush		

**Allow no more than 3% of each species of this group and no more than 15% in aggregate.

**Allow no more than 5% of each species of this group and no more than 15% in aggregate.

**Allow no more than 3% of each species of this group and no more than 10% in aggregate.

4. VEGETATION FACTORS (continued)

c. Approximate ground cover (basal and crown) is 30 to 40 percent.

d. Total annual air-dry production.

	LBs/AC
Favorable years	700
Normal years	500
Unfavorable years	300

e. Plant community dynamics

Where management results in abusive grazing use by cattle or feral horses, bluebunch wheatgrass and Thurber's needlegrass decrease as Sandberg's bluegrass and bottlebrush squirreltail increase in the understory while black sagebrush and rabbitbrush increase and become the dominant overstory vegetation. Abusive grazing by sheep will reduce black sagebrush and greatly decrease Thurber's needlegrass and bluegrass composition in the plant community. Cheatgrass, Russian thistle, and halogeton are species most likely to invade this site.

5. ASSOCIATED AND COMPETING SITES

a. Principal sites that commonly occur in association with the potential plant community include:

(024XY021NV) Loamy Slope 12-14" PZ
(024XY031NV) Shallow Calcareous Loam 8-10" PZ

b. Competing sites (and their differentiae) that are similar to this potential plant community:

(024XY016NV) Mountain Ridge [FEID dominant grass; less productive site]
(024XY030NV) Shallow Calcareous Loam 8-10" PZ [ACTH7-ACHY codominant grasses; less productive site]
(024XY042NV) Steep Gravelly Loam 14+" PZ [FEID dominant grass; more productive site]

APPENDIX I

Reference Data

1. Site Documentation (number and kind of site inventory records).

____ NRCS-ECS-5 ____ NV-ECS-1
____ NRCS-RANGE-417 ____ NV-4400-13 (BLM)
____ Other _____

2. Distribution and extent.

Eureka, Humboldt, Lander, and Pershing Counties, Nevada.

3. Location of typical example of this site.

Approved by: _____
STATE RANGE CONSERVATIONIST
NRCS NEVADA

Date Approved: March 2003

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
NEVADA

Rangeland Ecological Site Description

A. PHYSICAL CHARACTERISTICS

1. PHYSIOGRAPHIC FEATURES

This site occurs on summits, crests and shoulders of mountains. Slopes range from 4 to 75 percent, but slope gradients of 4 to 15 percent are most typical. Elevations are 7000 to over 9500 feet.

2. CLIMATIC FACTORS

Average annual precipitation ranges from 14 to over 20 inches. Mean annual air temperature is 41 to 44 degrees F. The average growing season is about 50 to 85 days.

3. SOIL FACTORS

The soils in this site have mostly shallow to very shallow effective rooting depths. Intense winds over this site inhibit snow accumulation and thus lower the effective precipitation. These soils have high amounts of gravels, cobbles, rock or stones on the surface which occupy plant growing space yet protect the soil from excessive erosion. The available water capacity is low, but the surface cover of rock fragments helps to reduce evaporation and conserve soil moisture. Runoff is medium to rapid and potential for sheet and rill erosion is moderate to high depending on the slope.

4. VEGETATION FACTORS

a. Potential Native Vegetation

The plant community is dominated by Idaho fescue, low sagebrush and/or black sagebrush. Black sagebrush usually dominates the ridge tops while low sagebrush is normally more prominent on slopes off the ridges. In some instances, the dwarf sagebrushes are intermingled with severely stunted big sagebrush.

Potential vegetative composition is about 50% grasses, 15% forbs and 35% shrubs.

4. VEGETATION FACTORS (continued)

b. Major plant species, range in species composition, and species air-dry weight for a normal growing season:

PLANT SYMBOL	COMMON NAME	PERCENT BY WEIGHT (AIR-DRY)	SPECIES BY WEIGHT (LBS/AC)
Grasses			
FEID	Idaho fescue	5-30	14-83
POA	bluegrass	5-15	14-41
PPGG	other perennial grasses	5-15**	14-41
LEKI2	spike-fescue		
PSSA2	foxtail wheatgrass		
PSSPS	bluebunch wheatgrass		
HECO26	needleandthread		
ACPI2	pine needlegrass		
ACWE3	Webber's needlegrass		
ACHY	Indian ricegrass		

**Allow no more than 5% of each species of this group and no more than 15% in aggregate.

Forbs			
PYRRO	goldenweed	2-5	6-14
PPFF	other perennial forbs	5-15**	14-41
BAHO	Hooker balsamroot		
STENO7	mock goldenweed		
PHLOX	phlox		
CRAC2	tapertip hawksbeard		
ERIGE2	daisy		
ERIOG	eriogonum		
ASTRA	milkvetch		
ASTER	aster		
LUPIN	lupine		
PENST	penstemon		
SENEC	groundsel		
ANRCO	rose pussytoes		

**Allow no more than 3% of each species of this group and no more than 15% in aggregate.

Shrubs			
ARTEM	sagebrush	30-35	83-96
ARAR8	low sagebrush		
ARARN	black sagebrush		
SSSS	other shrubs	2-5**	6-14
KRLA2	winterfat		
CHVI8	Douglas rabbitbrush		
SYMPH	snowberry		
ARFR4	fringed sagebrush		

**Allow no more than 3% of each species of this group and no more than 5% in aggregate.

4. VEGETATION FACTORS (continued)

c. Approximate ground cover (basal and crown) is 15 to 25 percent.

d. Total annual air-dry production.

	LBs/AC
Favorable years	400
Normal years	275
Unfavorable years	150

e. Plant community dynamics

As ecological condition delines, the dwarf sagebrushes and small rabbitbrush become dominant with increases of Sandberg's bluegrass, phlox and other mat forming forbs in the understory. Cheatgrass is the species most likely to invade this site.

5. ASSOCIATED AND COMPETING SITES

a. Principal sites that commonly occur in association with the potential plant community include:

(025XY004NV) Loamy Slope 16+" PZ
(025XY010NV) Steep North Slope
(025XY016NV) South Slope 14-18" PZ
(025XY017NV) Claypan 12-16" PZ

b. Competing sites (and their differentiae) that are similar to this potential plant community:

(025XY017NV) Claypan 12-16" PZ [More productive site; ARAR8 dominant shrub; ARNO4 absent]

(025XY022NV) Cobbly Claypan 8-12" PZ [PSSPS-ACTH7 codominant grasses; ARNO4 absent; ARAR8 dominant shrub]

(025XY032NV) Claypan 16+" PZ [More productive site; FEID dominant grass; ARNO4 absent; ARAR8 dominant shrub]

(025XY051NV) Eroded Claypan 12-16" PZ [PSSPS-FEID codominant; ARAR8 dominant shrub]

(025XY055NV) Shallow Clay Slope 10-14" PZ [PSSPS dominant grass; more productive site]

(025XY057NV) Shallow Clay Loam 10-14" PZ [PSSPS-ACTH7 codominant grasses; ARNO4 dominant shrub; ARAR8 rarely occurs]

APPENDIX I

Reference Data

1. Site Documentation (number and kind of site inventory records).

____ NRCS-ECS-5 ____ NV-ECS-1
____ NRCS-RANGE-417 ____ NV-4400-13 (BLM)
____ Other _____

2. Distribution and extent.

Elko, Humboldt, Eureka and Lander Counties, Nevada.

3. Location of typical example of this site.

Section 21, T40N. R63E. MDBM.
Approximately 18 miles north of Wells, Summer Camp Ridge area, Snake Mountains, Elko County, Nevada.

Approved by: _____
STATE RANGE CONSERVATIONIST
NRCS NEVADA

Date Approved: May 2003

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
NEVADA

Rangeland Ecological Site Description

A. PHYSICAL CHARACTERISTICS

1. PHYSIOGRAPHIC FEATURES

This site occurs on summits and sideslopes of mountains, hills, erosional fan remnants and rock-pediments on all aspects. Slopes range from 4 to 50 percent, but slope gradients are typically less than 30 percent. Elevations are 6000 to 8000 feet.

2. CLIMATIC FACTORS

Average annual precipitation is 12 to 16 inches. Mean annual air temperature is 43 to 45 degrees F. The average growing season is about 70 to 100 days.

3. SOIL FACTORS

The soils in this site are shallow to moderately deep and well drained. Depth to a fine textured subsoil ranges from 5 to 10 inches. The subsoils swell on wetting and shrink and crack upon drying. The swelling of the subsoil upon wetting results In poor soil aeration during early spring, forming a perched water table near the surface. Because of high elevations, these soils are cool and plant growth is not initiated until mid- to late spring. These soils normally have a high percentage of gravels, cobbles, rock or stones on the surface. Infiltration of water is restricted once these soils are wetted and the site is subject to water loss by runoff. Pedestaling of some grass plants is common during the winter due to frost heaving. Loss of the surface layer results in decreased productivity of the site.

4. VEGETATION FACTORS

a. Potential Native Vegetation

The plant community is dominated by Idaho fescue, bluebunch wheatgrass and low sagebrush.

4. VEGETATION FACTORS (continued)

a. Potential Native Vegetation (continued)

Potential vegetative composition is about 60% grasses, 15% forbs and 25% shrubs.

b. Major plant species, range in species composition, and species air-dry weight for a normal growing season:

PLANT SYMBOL	COMMON NAME	PERCENT BY WEIGHT (AIR-DRY)	SPECIES BY WEIGHT (LBS/AC)
Grasses			
FEID	Idaho fescue	30-50	210-350
PSSPS	bluebunch wheatgrass	15-30	105-210
POA	bluegrass	2-10	14-70
PPGG	other perennial grasses	5-15**	35-105
ELEL5	bottlebrush squirreltail		
LECI4	basin wildrye		
ACTH7	Thurber's needlegrass		
Forbs			
PPFF	other perennial forbs	10-20**	70-140
BALSA	balsamroot		
PHLOX	phlox		
CRAC2	tapertip hawksbeard		
ASSC3	crag aster		
LUPIN	lupine		
ERIOG	eriogonum		
PYRRO	goldenweed		
ASTRA	milkvetch		
ANTEN	pussytoes		
LOMAT	bisquitroot		
Shrubs			
ARAR8	low sagebrush	20-30	120-180
PUTR2	antelope bitterbrush	2-5	14-35
SSSS	other shrubs	2-8**	14-56
ARLO9	early sagebrush		
CHVI8	Douglas' rabbitbrush		
ERMI4	slenderbush eriogonum		
AMUT	Utah serviceberry		

**Allow no more than 5% of each species of this group and no more than 15% in aggregate.

**Allow no more than 3% of each species of this group and no more than 20% in aggregate.

**Allow no more than 3% of each species of this group and no more than 8% in aggregate.

4. VEGETATION FACTORS (continued)

c. Approximate ground cover (basal and crown) is 20 to 35 percent.

d. Total annual air-dry production.

	LBs/AC
Favorable years	900
Normal years	700
Unfavorable years	400

e. Plant community dynamics

As ecological condition declines, dwarf sagebrush species and Douglas' rabbitbrush become dominant with increases of bottlebrush squirreltail, Sandberg bluegrass, and mat forming forbs in the understory. Cheatgrass Is the species most likely to invade this site.

5. ASSOCIATED AND COMPETING SITES

a. Principal sites that commonly occur in association with the potential plant community include:

(025XY009NV) South Slope 12-14" PZ
(025XY012NV) Loamy Slope 12-16" PZ.
(025XY024NV) Mountain Ridge
(025XY027NV) Loamy 12-14" PZ
(025XY047NV) Clay Seep

b. Competing sites (and their differentiae) that are similar to this potential plant community:

(025XY018NV) Claypan 10-12" PZ [PSSPS-ACTH7 codominant grasses]
(025XY022NV) Cobbly Claypan 8-12" PZ [PSSPS-ACTH7 codominant grasses; less productive site]
(025XY023NV) Gravelly Claypan 12-16" PZ [PUTR2 dominant or codominant shrub]
(025XY024NV) Mountain Ridge [Much less productive site]
(025XY032NV) Claypan 16+" PZ [FEID dominant grass]
(025XY051NV) Eroded Claypan 12-16" PZ [Less productive site]
(025XY054NV) Clayey 12-14" PZ [ARLO9 dominant shrub]

APPENDIX I

Reference Data

1. Site Documentation (number and kind of site inventory records).

___	NRCS-ECS-5	6	NV-ECS-1
11	NRCS-RANGE-417	9	NV-4400-13 (BLM)
___	Other _____		

2. Distribution and extent.

Elko and Humboldt Counties, Nevada.

3. Location of typical example of this site.

NW¼ NW¼ Section 26, T35N. R54E. MDBM. Approximately 12 miles north of Elko off east side of Mountain City Highway (NvHwy 11), north slope of Adobe Summit, Elko County, Nevada.

4. Other

Idaho and Nevada have correlated this site across state lines as 025XY906IN.
Idaho site: *(025XY010ID)* Shallow Claypan 12-16" ppt.

Approved by: _____
STATE RANGE CONSERVATIONIST
NRCS NEVADA

Date Approved: May 2003

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
NEVADA

Rangeland Ecological Site Description

A. PHYSICAL CHARACTERISTICS

1. PHYSIOGRAPHIC FEATURES

This site occurs on sideslopes and summits of fan piedmonts and hills on all exposures. Slopes range from 4 to 30 percent, but slope gradients of 4 to 15 percent are most typical. Elevations are 5500 to 6500 feet.

2. CLIMATIC FACTORS

Average annual precipitation is 10 to 12 inches. Mean annual air temperature is 43 to 50 degrees F. The average growing season is about 70 to 120 days.

3. SOIL FACTORS

The soils in this site are moderately deep to deep and well drained. Surface soils are moderately fine to medium textured and normally more than 10 inches thick to the subsoil or underlying material. The available water capacity is low to moderate and some soils are modified with high volumes of rock fragments through the soil profile. Runoff is slow to moderate and the potential for sheet and rill erosion varies with slope gradient.

For a listing of soils correlated to this range site and representative pedon, see Appendix II.

4. VEGETATION FACTORS

a. Potential Native Vegetation

The plant community is dominated by bluebunch wheatgrass, Thurber's needlegrass and big sagebrush.

Potential vegetative composition is about 65% grasses, 10% forbs and 25% shrubs.

4. VEGETATION FACTORS (continued)

b. Major plant species, range in species composition, and species air-dry weight for a normal growing season:

PLANT SYMBOL	COMMON NAME	PERCENT BY WEIGHT (AIR-DRY)	SPECIES BY WEIGHT (LBS/AC)
Grasses			
PSSPS	bluebunch wheatgrass	20-35	160-280
ACTH7	Thurber's needlegrass	10-20	80-160
POA	bluegrass	2-10	16-80
PONE3	Nevada bluegrass		
POCU3	Cusick's bluegrass		
LECI4	basin wildrye	2-8	16-64
PPGG	other perennial grasses	5-10**	40-80
ELEL5	bottlebrush squirreltail		
ELMA7	thickspike wheatgrass		
POSE	Sandberg's bluegrass		
FEID	Idaho fescue		
ACHY	Indian ricegrass		

**Allow no more than 3% of each species of this group and no more than 10% in aggregate.

Forbs			
PPFF	other perennial forbs	5-15**	40-120
CRAC2	tapertip hawksbeard		
BASA3	arrowleaf balsamroot		
LUPIN	lupine		
LIRU4	white stoneseed		
ERIOG	eriogonum		

**Allow no more than 3% of each species of this group and no more than 15% in aggregate.

Shrubs			
ARTR2	big sagebrush	10-20	80-160
ARTRT	basin big sagebrush		
ARTRV	mountain big sagebrush		
ARTRW	Wyoming big sagebrush		
PUTR2	antelope bitterbrush	2-8	16-64
SSSS	other shrubs	5-10**	40-80
CHVI8	Douglas' rabbitbrush		

**Allow no more than 3% of each species of this group and no more than 10% in aggregate.

4. VEGETATION FACTORS (continued)

c. Approximate ground cover (basal and crown) is 30 to 40 percent.

d. Total annual air-dry production.

	LBs/AC
Favorable years	1000
Normal years	800
Unfavorable years	600

e. Plant community dynamics

Where management results in abusive livestock use, big sagebrush and Douglas rabbitbrush become dominant with increases of bottlebrush squirreltail and Sandberg bluegrass in the understory. Cheatgrass and annual mustards are plants likely to invade this site.

5. ASSOCIATED AND COMPETING SITES

a. Principal sites that commonly occur in association with the potential plant community include:

(025XY012NV) Loamy Slope 12-16" PZ
(025XY015NV) South Slope 8-12" PZ
(025XY018NV) Claypan 10-12" PZ

b. Competing sites (and their differentiae) that are similar to this potential plant community:

(025XY012NV) Loamy Slope 12-16" PZ [FEID-PSSPS codominant grasses]
(025XY013NV) Churning Clay 10-12" PZ [LECI4 dominant grass]
(025XY015NV) South Slope 8-12" PZ [PSSPS dominant plant on site; occurs on steeper slopes]
(025XY019NV) Loamy 8-10" PZ [Less productive site]
(025XY021NV) Shallow Loam 8-10" PZ [Much less productive site]
(025XY066NV) Ashy Loam 10-12" PZ [ACHY-ELMA7-HECO26 important species]

APPENDIX I

Reference Data

1. Site Documentation (number and kind of site inventory records).

____	NRCS-ECS-5	5	NV-ECS-1
4	NRCS-RANGE-417	4	NV-4400-13 (BLM)
____	Other _____		

2. Distribution and extent.

Elko and Humboldt Counties, Nevada.

3. Location of typical example of this site.

Section 35, T29N. R56E. MDBM.
Approximately ¾ mile northwest of Zaga Ranch House, Jiggs, Elko County, Nevada.

Approved by: _____
STATE RANGE CONSERVATIONIST
NRCS NEVADA

Date Approved: May 2003

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
NEVADA

Rangeland Ecological Site Description

A. PHYSICAL CHARACTERISTICS

1. PHYSIOGRAPHIC FEATURES

This site occurs on summits and sideslopes of piedmont slopes, hills and lower mountains on all aspects. Slopes range from 2 to 50 percent, but slope gradients of 2 to 15 percent are typical. Elevations are 4800 to 6500 feet.

2. CLIMATIC FACTORS

Average annual precipitation is 8 to 10 inches. Mean annual air temperature is 47 to 52 degrees F. The average growing season is about 100 to 120 days.

3. SOIL FACTORS

The soils of this site are shallow to moderately deep to a restrictive layer that impedes plant rooting depth. The available water holding capacity is low to moderate. Soils are well drained, runoff is slow to medium and the potential for sheet and rill erosion is slight to moderate.

For a listing of soils correlated to this range site and representative pedon, see Appendix II

4. VEGETATION FACTORS

a. Potential Native Vegetation

The plant community is dominated by black sagebrush, Indian ricegrass, and needleandthread.

Potential vegetative composition is about 45% grasses, 10% forbs and 45% shrubs.

4. VEGETATION FACTORS (continued)

b. Major plant species, range in species composition, and species air-dry weight for a normal growing season:

PLANT SYMBOL	COMMON NAME	PERCENT BY WEIGHT (AIR-DRY)	SPECIES BY WEIGHT (LBS/AC)
Grasses			
ACHY	Indian ricegrass	20-30	100-150
HECO26	needleandthread	15-25	75-125
PLJA	galleta	2-5	10-25
SPCR	sand dropseed	2-5	10-25
PPGG	other perennial grasses	2-8**	10-40
ELEL5	bottlebrush squirrreltail		
POA	bluegrass		
BLKI	King's desertgrass		
BOGR2	blue grama		
ARIST	threeawn		
**Allow no more than 3% of each species of this group and no more than 8% in aggregate.			
Forbs			
SPHAE	globemallow	2-5	10-25
PPFF	other perennial forbs	2-8**	10-40
ASTRA	milkvetch		
ASTER	aster		
PHLOX	phlox		
ERIOG	eriogonum		
**Allow no more than 3% of each species of this group and no more than 8% in aggregate.			
Shrubs			
ARNO4	black sagebrush	20-35	100-175
ATCA2	fourwing saltbush	2-8	10-40
KRLA2	winterfat	T-5	T-25
SSSS	other shrubs	2-15**	10-75
GRSP	spiny hopsage		
ATCO	shadscale		
ARSP5	bud sagebrush		
EPNE	Nevada ephedra		
GUSA2	broom snakeweed		
TETRA3	horsebrush		
CHVI8	Douglas' rabbitbrush		
JUOS	Utah juniper		
**Allow no more than 3% of each species of this group and no more than 15% in aggregate.			

4. VEGETATION FACTORS (continued)

c. Approximate ground cover (basal and crown) is 15 to 25 percent.

d. Total annual air-dry production.

	LBs/AC
Favorable years	700
Normal years	500
Unfavorable years	300

e. Plant community dynamics

Where management results in abusive grazing use by cattle or feral horses, shadscale, galleta, and especially rabbitbrush and/or broom snakeweed increase. Where this site occurs within fluve areas of beach plains, horsebrush composition in the potential plant community is often greater than is typical for this site on other landscape positions. Utah juniper readily invade this site where it occurs adjacent to these woodlands. When juniper trees occupy this site they compete with other species for available light, moisture and nutrients. Cheatgrass and mustards are likely to invade on this site.

5. ASSOCIATED AND COMPETING SITES

a. Principal sites that commonly occur in association with the potential plant community include:

(028AY004NV) Shallow Calcareous Slope 8-10" PZ
(028AY012NV) Loamy 5-8" PZ
(024XY015NV) Loamy 8-10" PZ
(024XY018NV) Coarse Gravelly Loam 5-8" PZ

b. Competing sites (and their differentiae) that are similar to this potential plant community:

(028AY004NV) Shallow Calcareous Slope 8-10" PZ [Less productive site]
(028AY027NV) Shallow Calcareous Hill 8-10" PZ [JUOS dominates visual aspect; less productive site]
(028AY034NV) Shallow Calcareous Slope 10-14" PZ [PSSPS dominant grass]
(028AY035NV) Shallow Clay Loam 10-12" PZ [ACHY-ACTH7 codominant; more productive site]

5. ASSOCIATED AND COMPETING SITES (continued)

b. Competing sites that are similar to this potential plant community (continued):

(028AY036NV) Shallow Clay Loam 12-14" PZ [PSSPS-ACTH7 codominant grasses]
(028AY043NV) Shallow Calcareous Loam 10-14" PZ [PSSPS dominant grass]
(028AY044NV) Shallow Calcareous Hill 6-8" PZ [TESP & EPNE codominant shrubs; *may be seral stage to (028AY027NV) Shallow Calcareous Hill 8-10" PZ]*
(028AY047NV) Droughty Calcareous Loam 8-10" PZ [GRSP-ARNO4 codominant shrubs; *may be seral stage to (028AY013NV) Shallow Calcareous Loam 8-10" PZ]*
(028BY011NV) Shallow Calcareous Loam 8-12" PZ [PLJA absent to rare and is not an *increaser* species]

APPENDIX I

Reference Data

1. Site Documentation (number and kind of site inventory records).

____	NRCS-ECS-5	1	NV-ECS-1
2	NRCS-RANGE-417	____	NV-4400-13 (BLM)
____	Other _____		

2. Distribution and extent.

Elko and White Pine Counties, Nevada.

3. Location of typical example of this site.

NW¼NW¼, Section 6, T35N. R70E. MDBM. About 18 miles north of Wendover, Pilot Creek Valley area, Elko County, Nevada.

Approved by: _____
STATE RANGE CONSERVATIONIST
NRCS NEVADA

Date Approved: April 2003

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
NEVADA

Rangeland Ecological Site Description

A. PHYSICAL CHARACTERISTICS

1. PHYSIOGRAPHIC FEATURES

This site occurs on fan piedmonts and alluvial flats on all exposures. Slopes range from 0 to 15 percent, but slope gradients of 2 to 8 percent are typical. Elevations are 4500 to 6000 feet.

2. CLIMATIC FACTORS

Average annual precipitation is 5 to 8 inches. Mean annual air temperature is 45 to 50 degrees F. The average growing season is about 100 to 120 days.

3. SOIL FACTORS

The soils of this site are strongly to very strongly alkaline and calcareous throughout. Permeability is moderate and runoff is slow. The available water holding capacity of the soil is low to very low. Average annual soil temperature is 47 to 52 degrees F. The potential for sheet and rill erosion is slight.

For a listing of soils correlated to this range site and representative pedon, see Appendix II

4. VEGETATION FACTORS

a. Potential Native Vegetation

The plant community is dominated by shadscale, bud sagebrush, Indian ricegrass and galleta.

Potential vegetative composition is about 30% grasses, 5% forbs and 65% shrubs.

4. VEGETATION FACTORS (continued)

b. Major plant species, range in species composition, and species air-dry weight for a normal growing season:

PLANT SYMBOL	COMMON NAME	PERCENT BY WEIGHT (AIR-DRY)	SPECIES BY WEIGHT (LBS/AC)
Grasses			
ACHY	Indian ricegrass	15-25	45-75
PLJA	galleta	2-8	6-24
BLKI	King's desertgrass	2-5	6-15
PPGG	other perennial grasses	2-8**	6-24
HECO26	needleandthread		
ELEL5	bottlebrush squirreltail		
SPCR	sand dropseed		
ARIST	threeawn		

**Allow no more than 3% of each species of this group and no more than 8% in aggregate.

Forbs			
SPHAE	globemallow	2-5	6-15
PPFF	other perennial forbs	2-8**	6-24
PENST	penstemon		
TOWNS	townsendia		

**Allow no more than 3% of each species of this group and no more than 8% in aggregate.

Shrubs			
ATCO	shadscale	40-50	120-150
ARSP5	bud sagebrush	5-10	15-30
KRLA2	winterfat	2-8	6-24
KOAM	greenmolly kochia	2-5	6-15
SSSS	other shrubs	5-15**	15-45
GRSP	spiny hopsage		
CHVI8	Douglas' rabbitbrush		
GUSA2	broom snakeweed		
TEGL	littleleaf horsebrush		

**Allow no more than 3% of each species of this group and no more than 15% in aggregate.

4. VEGETATION FACTORS (continued)

c. Approximate ground cover (basal and crown) is 15 to 25 percent.

d. Total annual air-dry production.

	LBs/AC
Favorable years	500
Normal years	300
Unfavorable years	200

e. Plant community dynamics

As ecological condition declines, shadscale, galleta and small rabbitbrush increase, while Indian ricegrass, bud sagebrush and winterfat decrease in density. Halogeton, cheatgrass and mustards are likely to invade this site. Following wildfire, galleta greatly increases. With repeated burning, snakeweed, horsebrush, and other fire-tolerant shrubs are likely to dominate this site.

5. ASSOCIATED AND COMPETING SITES

a. Principal sites that commonly occur in association with the potential plant community include:

(028AY006NV) Droughty Loam 5-8" PZ
(028AY018NV) Coarse Gravelly Loam 5-8" PZ

b. Competing sites (and their differentiae) that are similar to this potential plant community:

(028AY003NV) Loamy Slope 5-8" PZ [Less productive site]
(028AY006NV) Droughty Loam 5-8" PZ [GRSP-ATCA2 codominant shrubs, ATCO minor shrub]
(028AY014NV) Gravelly Sandy Loam 5-8" PZ [More productive site; greater shrub diversity]
(028AY016NV) Gravelly Loam 5-8" PZ [ACHY-PLJA codominant grasses; *may be a "seral stage" of (028AY012NV) Loamy 5-8" PZ following wildfire*]
(028AY018NV) Coarse Gravelly Loam 5-8" PZ [More productive site; soils coarse textured]
(028BY017NV) Loamy 5-8" PZ [PLJA absent to rare; PLJA not an *increaser*]

APPENDIX I

Reference Data

1. Site Documentation (number and kind of site inventory records).

____	NRCS-ECS-5	2	NV-ECS-1
3	NRCS-RANGE-417	____	NV-4400-13 (BLM)
____	Other _____		

2. Distribution and extent.

Elko and White Pine Counties, Nevada.

3. Location of typical example of this site.

SE¼SW¼, Section 35, T31N. R69E. MDBM. About 17½ miles south of Wendover along Blue Lake Road, Elko County, Nevada.

NE¼SW¼, Section 18, T35N. R70E. MDBM. About 13 miles north of Wendover, Pilot Creek Valley area, Elko County, Nevada.

Approved by: _____
STATE RANGE CONSERVATIONIST
NRCS NEVADA

Date Approved: April 2003

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
NEVADA

Rangeland Ecological Site Description

A. PHYSICAL CHARACTERISTICS

1. PHYSIOGRAPHIC FEATURES

This site occurs on hills, erosional fan remnants, rock-pediment remnants and partial ballenas on all aspects. Slopes range from 4 to 50 percent, but slope gradients are generally less than 30 percent. Elevations are 4500 to 6500 feet.

2. CLIMATIC FACTORS

Average annual precipitation is 8 to 12 inches. Mean annual air temperature is 43 to 50 degrees F. The average growing season is about 70 to 120 days.

3. SOIL FACTORS

The soils in this site have a shallow effective rooting depth and are well drained. The soils are modified with 35 to 75 percent gravels and other coarse fragments throughout the profile. They have a high amount of gravels, cobbles and stones on the surface which occupy plant growing space yet provide a stabilizing affect on surface erosion conditions. Available water capacity of these soils is low to very low but a surface cover of coarse fragments helps to reduce evaporation and conserve soil moisture. Runoff is medium and potential for sheet and rill erosion is slight to moderate depending on slope.

4. VEGETATION FACTORS

a. Potential Native Vegetation

The plant community is dominated by bluebunch wheatgrass, Thurber's needlegrass and big sagebrush.

Potential vegetative composition is about 60% grasses, 5% forbs and 35% shrubs.

4. VEGETATION FACTORS (continued)

b. Major plant species, range in species composition, and species air-dry weight for a normal growing season:

PLANT SYMBOL	COMMON NAME	PERCENT BY WEIGHT (AIR-DRY)	SPECIES BY WEIGHT (LBS/AC)
Grasses			
PSSPS	bluebunch wheatgrass	20-35	80-140
ACTH7	Thurber's needlegrass	15-25	60-100
PPGG	other perennial grasses	5-15**	20-60
LECI4	basin wildrye		
POSE	Sandberg's bluegrass		
PONE3	Nevada bluegrass		
ELEL5	bottlebrush squirreltail		
ELMA7	thickspike wheatgrass		
ACHY	Indian ricegrass		

**Allow no more than 5% of each species of this group and no more than 15% in aggregate.

Forbs			
PPFF	other perennial forbs	2-8**	8-32
CRAC2	tapertip hawksbeard		
BASA3	arrowleaf balsamroot		

**Allow no more than 2% of each species of this group and no more than 8% in aggregate.

Shrubs			
ARTRW	Wyoming big sagebrush	20-30	80-120
PUTR2	antelope bitterbrush	2-5	8-20
SSSS	other shrubs	2-8**	8-32
CHVI8	Douglas' rabbitbrush		
TEGL	littleleaf horsebrush		
ERIOG	eriogonum		

**Allow no more than 3% of each species of this group and no more than 8% in aggregate.

4. VEGETATION FACTORS (continued)

c. Approximate ground cover (basal and crown) is 15 to 25 percent.

d. Total annual air-dry production.

	LBs/AC
Favorable years	600
Normal years	400
Unfavorable years	250

e. Plant community dynamics

Where management results in abusive livestock use, big sagebrush and rabbitbrush become dominant with increases of Sandberg bluegrass, bottlebrush squirreltail, phlox and arrowleaf balsamroot in the understory. Cheatgrass, and annual mustards are species likely to invade this site.

5. ASSOCIATED AND COMPETING SITES

a. Principal sites that commonly occur in association with the potential plant community include:

(025XY014NV) Loamy 10-12" PZ
(025XY015NV) South Slope 8-12" PZ
(025XY018NV) Claypan 10-12" PZ
(025XY019NV) Loamy 8-10" PZ

b. Competing sites (and their differentiae) that are similar to this potential plant community:

(025XY014NV) Loamy 10-12" PZ
[More productive site]
(025XY015NV) South Slope 8-12" PZ
[PSSPS dominant grass; more productive site]
(025XY019NV) Loamy 8-10" PZ
[More productive site]
(025XY066NV) Ashy Loam 10-12" PZ
[More productive site]

APPENDIX I

Reference Data

1. Site Documentation (number and kind of site inventory records).

____	NRCS-ECS-5	2	NV-ECS-1
1	NRCS-RANGE-417	9	NV-4400-13 (BLM)
____	Other _____		

2. Distribution and extent.

Elko, Eureka and Lander Counties, Nevada.

3. Location of typical example of this site.

Section 8, T44N. R62E. MDBM.
Hills west of Black Mountain, about 10 miles southwest of Contact, Cold Springs Mountains, Elko County, Nevada.

SE¼SE¼ Section 15, T43N. R64E. MDBM.
Bloody Gulch area about 3 miles west of Silkworm Mine, Knoll Mountains, Elko County, Nevada.

Approved by: _____
STATE RANGE CONSERVATIONIST
NRCS NEVADA

Date Approved: May 2003

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
NEVADA

Rangeland Ecological Site Description

A. PHYSICAL CHARACTERISTICS

1. PHYSIOGRAPHIC FEATURES

This site occurs on the outer margins of axial-stream floodplains, fan skirts and along intermittent drainageways. Slopes range from 0 to 4 percent, but are mostly less than 2 percent. Elevations are 4000 to 6000 feet.

2. CLIMATIC FACTORS

Average annual precipitation is 6 to 10 inches. Mean annual air temperature is 45 to 53 degrees F. The average growing season is about 90 to 130 days.

3. SOIL FACTORS

The soils of this site are deep to very deep and have a high available water capacity. They are somewhat poorly to well drained and runoff is mostly slow to very slow. These soils are subject to occasional overflow by stream flooding or as run-in from higher landscapes which will supply additional moisture for plant growth. During the summer and fall months, the water table is at depths below 6 feet. Most soils are slightly to moderately salt and sodium affected throughout the solum. Soil reaction increases with soil depth and most soils are moderately to very strongly saline-sodic affected below 30 inches. These soils are susceptible to gullying which can intercept normal overflow patterns causing site degradation.

For a listing of soils correlated to this range site and representative pedon, see Appendix II

4. VEGETATION FACTORS

a. Potential Native Vegetation

The plant community is dominated by basin wildrye. Basin big sagebrush and black greasewood are other important species associated with this site.

Potential vegetative composition is about 70% grasses, 5% forbs and 25% shrubs.

b. Major plant species, range in species composition, and species air-dry weight for a normal growing season:

PLANT SYMBOL	COMMON NAME	PERCENT BY WEIGHT (AIR-DRY)	SPECIES BY WEIGHT (LBS/AC)
Grasses			
LECI4	basin wildrye	55-65	605-715
PASM	western wheatgrass	5-15	55-165
LETR5	creeping wildrye	5-15	55-165
PPGG	other perennial grasses	5-15**	55-165
SPAI	alkali sacaton		
DISP	inland saltgrass		
ACHY	Indian ricegrass		
MURI	mat muhly		
ELEL5	bottlebrush squirreltail		
JUBA	Baltic rush		

**Allow no more than 5% of each species of this group and no more than 15% in aggregate.

Forbs			
PPFF	other perennial forbs	2-8**	22-88
IVAX	povertyweed		
ASTRA	milkvetch		
THELY	thelypody		

**Allow no more than 2% of each species of this group and no more than 8% in aggregate.

Shrubs			
ARTRT	basin big sagebrush[1/]	10-15	110-165
SAVE4	black greasewood	2-8	22-88
SSSS	other shrubs	2-8**	22-88
ATCO	shadscale		
GRSP	spiny hopsage		
ERNAN5	rubber rabbitbrush		

**Allow no more than 3% of each species of this group and no more than 8% in aggregate.

[1/] *Wyoming big sagebrush may also be present and is accounted for within allowance for basin big sagebrush.*

4. VEGETATION FACTORS (continued)

c. Approximate ground cover (basal and crown) is 30 to 40 percent.

d. Total annual air-dry production.

	LBs/AC
Favorable years	1500
Normal years	1100
Unfavorable years	600

e. Plant community dynamics

Where management results in abusive grazing use by livestock or feral horses, basin wildrye is replaced by woody plants. Rubber rabbitbrush, black greasewood and basin big sagebrush increase as ecological condition declines. Russian thistle and cheatgrass are species likely to invade this site.

5. ASSOCIATED AND COMPETING SITES

a. Principal sites that commonly occur in association with the potential plant community include:

(024XY003NV) Sodic Terrace 6-8" PZ
(024XY005NV) Loamy 8-10" PZ
(024XY007NV) Saline Bottom
(024XY022NV) Sodic Terrace 8-10" PZ
(025XY001NV) Moist Floodplain

b. Competing sites (and their differentiae) that are similar to this potential plant community:

(024XY007NV) Saline Bottom
[SAVE4 dominant shrub; ARTR2 rare to mostly absent]

(024XY022NV) Sodic Terrace 8-10" PZ
[SAVE4-ARTR2 codominant; less productive site]

(025XY001NV) Moist Floodplain
[More productive site; LETR5 dominant to codominant grass]

(025XY003NV) Loamy Bottom 8-14" PZ
[More productive site; SAVE4 & DISP absent; soils not saline-alkali affected]

APPENDIX I

Reference Data

1. Site Documentation (number and kind of site inventory records).

____	NRCS-ECS-5	6	NV-ECS-1
____	NRCS-RANGE-417	____	NV-4400-13 (BLM)
____	Other _____		

2. Distribution and extent.

Elko, Eureka, Humboldt, Lander, and Pershing Counties, Nevada.

3. Location of typical example of this site.

N½ Section 1, T35N. R56E. MDBM.
Along Coal Mine Creek floodplain, north of I-80 at Rydon, Elko County, Nevada.

Approved by: _____
STATE RANGE CONSERVATIONIST
NRCS NEVADA

Date Approved: March 2003

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
NEVADA

Rangeland Ecological Site Description

A. PHYSICAL CHARACTERISTICS

1. PHYSIOGRAPHIC FEATURES

This site occurs on axial-stream floodplains, stream terraces and inset fans. Slopes range from 0 to 15 percent, but slope gradients of 2 to 8 percent are most typical. Elevations are 5500 to 7500 feet.

2. CLIMATIC FACTORS

Average annual precipitation is 10 to 16 inches. Mean annual air temperature is 43 to 50 degrees F. Average growing season is about 70 to 120 days.

3. SOIL FACTORS

The soils in this site are fertile, moderately deep to deep and have a high available water capacity. They are poorly drained early in the spring with a water table within 20 inches of the surface. During the summer, the soils in this site are somewhat poorly drained with the water table usually stabilizing below 40 inches. These soils are subject to flooding for brief periods in the early spring. Flooding commonly occurs in areas along intermittent stream channels. In basin areas, overland flow occurs as run-in from higher landscapes. Runoff is slow and the potential for sheet and rill erosion is slight. These soils are susceptible to gullying which intercepts normal overflow patterns and results in site degradation.

4. VEGETATION FACTORS

a. Potential Native Vegetation

The plant community is dominated by Nevada bluegrass, alpine timothy and meadow sedges.

Potential vegetative composition is about 80% grasses and grass-like plants, 15% forbs and 5% shrubs.

4. VEGETATION FACTORS (continued)

b. Major plant species, range in species composition, and species air-dry weight for a normal growing season:

PLANT SYMBOL	COMMON NAME	PERCENT BY WEIGHT (AIR-DRY)	SPECIES BY WEIGHT (LBS/AC)
Grasses			
PONE3	Nevada bluegrass	40-60	520-780
PHAL2	alpine timothy	20-40	260-520
CAREX	sedge	2-8	26-104
MURI	mat muhly	2-8	26-104
LECI4	basin wildrye	2-8	26-104
HOBR2	meadow barley	2-5	26-65
PPGG	other perennial grasses	2-8**	26-104
ELLA3	streambank wheatgrass		
ELTR7	slender wheatgrass		
JUNCU	rush		
LETR5	creeping wildrye		
POSE	Sandberg's bluegrass		
POPR	Kentucky bluegrass		

**Allow no more than 2% of each species of this group and no more than 8% in aggregate.

Forbs			
PPFF	other perennial forbs	10-20**	130-260
TRIFO	clover		
POTEN	cinquefoil		
ARLU	Louisiana sagewort		
ASTER	aster		
IRMI	wildiris		
ACHIL	yarrow		
WYETH	wyethia		

**Allow no more than 3% of each species of this group and no more than 20% in aggregate.

Shrubs			
SSSS	other shrubs	2-8**	26-104
SALIX	willow		
ROSA	rose		
ARCAV	mountian silver sagebrush		

**Allow no more than 2% of each species of this group and no more than 8% in aggregate.

4. VEGETATION FACTORS (continued)

c. Approximate ground cover (basal and crown) is 60 to 80 percent.

d. Total annual air-dry production.

	LBs/AC
Favorable years	2000
Normal years	1300
Unfavorable years	800

e. Plant community dynamics

Where management results in abusive livestock use, Kentucky bluegrass, rushes and forbs such as wildiris, cinquefoil, foxtail barley, yarrow, sagewort or wyethia increase on the site, along with brush species in the overstory. Thistles and big sagebrush are species likely to invade this site.

5. ASSOCIATED AND COMPETING SITES

a. Principal sites that commonly occur in association with the potential plant community include:

(025XY003NV) Loamy Bottom 8-14" PZ
(025XY005NV) Wet Meadow
(025XY012NV) Loamy Slope 12-16" PZ
(025XY017NV) Claypan 12-16" PZ
(025XY003NV) Loamy Bottom 14+" PZ

b. Competing sites (and their differentiae) that are similar to this potential plant community:

(025XY003NV) Loamy Bottom 8-14" PZ [LECI4 dominant grass]
(025XY005NV) Wet Meadow [DECE dominant grass]
(025XY081NV) Loamy Bottom 14+" PZ [LECI4 dominant grass]

APPENDIX I

Reference Data

1. Site Documentation (number and kind of site inventory records).

____ NRCS-ECS-5 ____ NV-ECS-1
____ NRCS-RANGE-417 ____ NV-4400-13 (BLM)
____ Other _____

2. Distribution and extent.

Elko, Eureka, Lander and Humboldt Counties, Nevada.

3. Location of typical example of this site.

Section 23, T40N. R63E. MDBM.
Approximately 18 miles north of Wells, west of Highway 93, Elko County, Nevada.

Approved by: _____
STATE RANGE CONSERVATIONIST
NRCS NEVADA

Date Approved: May 2003

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
NEVADA

Rangeland Ecological Site Description

A. PHYSICAL CHARACTERISTICS

1. PHYSIOGRAPHIC FEATURES

This site occurs along inset fans adjacent to perennial streams and around localized seeps and springs. Slopes range from 0 to 15 percent, but slope gradients of 0 to 4 percent are most typical. Elevations are 5000 to 6000 feet.

2. CLIMATIC FACTORS

Average annual precipitation is 12 to 16 inches. However, ground water is the primary source of moisture for this plant community. Mean annual air temperature is 43 to 52 degrees F. Average growing season is about 70 to 110 days.

3. SOIL FACTORS

The soils in this site are fertile, very deep and have a high available water capacity. They are poorly to very poorly drained and have a water table at or near the surface early in the spring that usually stabilizes within 20 inches through the growing season. The soils are occasionally flooded for brief periods in the spring by stream overflow or unconfined runoff from surrounding areas. Some soils are kept moist through the growing season by springs and seeps. Runoff is slow to very slow and ponding occurs in some areas. These soils are susceptible to gullying which intercepts normal overflow patterns and results in site degradation.

4. VEGETATION FACTORS

a. Potential Native Vegetation

The plant community is dominated by tufted hairgrass. Nevada bluegrass, alpine timothy, Sierra clover and meadow sedges are important plants associated with this site.

4. VEGETATION FACTORS (continued)

b. Major plant species, range in species composition, and species air-dry weight for a normal growing season:

PLANT SYMBOL	COMMON NAME	PERCENT BY WEIGHT (AIR-DRY)	SPECIES BY WEIGHT (LBS/AC)
Grasses			
DECE	tufted hairgrass	30-60	510-1020
PONE3	Nevada bluegrass	5-10	85-170
PHAL2	alpine timothy	5-10	85-170
CAREX	sedge	5-10	85-170
PPGG	other perennial grasses	5-15**	85-255
GLYCE	mannagrass		
HOBR2	meadow barley		
JUNCU	rush		
TRIGL	arrowgrass		
Forbs			
TRWO	Sierra clover	2-5	34-85
POTEN	cinquefoil	2-5	34-85
PPFF	other perennial forbs	10-20**	170-340
ASTER	aster		
IRMI	wildiris		
SENEC	groundsel		
ACHIL	yarrow		
SISYR	blue-eyegrass		
THERM	goldenpea		
CIDO	Douglas' waterhemlock		
CAMAS	camas		
Shrubs			
SSSS	other shrubs	T-5**	T-85
SALIX	willow		
ROWO	Wood's rose		
ARCAV	mountain silver sagebrush		

**Allow no more than 3% of each species of this group and no more than 15% in aggregate.

**Allow no more than 3% of each species of this group and no more than 20% in aggregate.

**Allow no more than 2% of each species of this group and no more than 5% in aggregate.

4. VEGETATION FACTORS (continued)

c. Approximate ground cover (basal and crown) is 75 to 85 percent.

d. Total annual air-dry production.

	LBs/AC
Favorable years	3000
Normal years	1700
Unfavorable years	1000

e. Plant community dynamics

Where management results in abusive livestock use, tufted hairgrass composition is reduced with foxtail barley, rushes, sedges and forbs such as wildiris, cinquefoil and yarrow increasing on the site. Willows and roses often increase in the overstory. Redtop, Kentucky bluegrass, thistles and quackgrass are species likely to invade this site. Where stream channels become entrenched, the water table is lowered and a more drought tolerant plant community occurs on these solls as characterized by *(025XY003NV) Loamy Bottom 8-14" PZ.* High water tables and seasonal flooding may cause small marsh-like habitats to develop in depressions and basins within the site. Vegetation characteristic of these wetland areas includes cattail, bulrush, spike rush, reedgrass and water-loving sedge. Where these shallow marshes are of limited extent, they are recognized as inclusions withln this site.

5. ASSOCIATED AND COMPETING SITES

a. Principal sites that commonly occur in association with the potential plant community include:

(025XY003NV) Loamy Bottom 8-14" PZ
(025XY006NV) Dry Meadow
(025XY003NV) Loamy Bottom 14+" PZ

b. Competing sites (and their differentiae) that are similar to this potential plant community:

(025XY006NV) Dry Meadow
[PONE3 dominant grass]

APPENDIX I

Reference Data

1. Site Documentation (number and kind of site inventory records).

____ NRCS-ECS-5 ____ NV-ECS-1
____ NRCS-RANGE-417 ____ NV-4400-13 (BLM)
____ Other _____

2. Distribution and extent.

Elko, Eureka, Lander and Humboldt Counties, Nevada.

3. Location of typical example of this site.

Section 16, T30N. R52E. MDBM.
Rand Ranch, approximately 2 miles north of headquarters, Pine Valley, Eureka County, Nevada.

Section 14, T42N. R59E. MDBM.
Approximately 30 miles northwest of Wells, Elko County, Nevada.

Approved by: _____
STATE RANGE CONSERVATIONIST
NRCS NEVADA

Date Approved: May 2003

Appendix D

Breeding Birds List

Appendix D Breeding Birds List

Boies' Bird Count Annual Summaries

	Nevada Species of Conservation Priority	2005	2006	2007	2009	2010	2011	2012	Number of Years Seen
Waterfowl									
Canada Goose		1	1	1	1	1			5
Gadwall		1	1	1	1	1	1	1	7
American Wigeon						1		1	2
Mallard		1	1	1	1	1	1	1	7
Blue-winged Teal					1		1	1	3
Cinnamon Teal	X	1	1	1	1	1	1	1	7
Green-winged Teal			1	1				1	3
Northern Shoveler		1	1	1	1	1	1	1	7
Northern Pintail	X	1	1	1	1		1		5
Ring-necked Duck		1	1						2
Common Merganser		1	1	1					3
Ruddy Duck		1	1		1		1	1	5
Redhead						1			1
Canvasback	X		1			1	1		3
Lesser Scaup			1			1	1		3
Upland Game Birds									
Greater Sage-Grouse	X	1				1			2
Loons and Grebes									
Common Loon		1							1
Pied-Billed Grebe				1				1	2
Eared Grebe	X	1	1		1		1	1	5
Clark's Grebe	X	1		1		1			3
Pelicans									
American White Pelican	X		1		1				2
Herons and Ibis									
Great-blue Heron		1		1			1		3
Black-crowned Night Heron				1					1
White-Faced Ibis	X		1		1			1	3
Raptors									
Turkey Vulture		1	1	1	1	1	1		6
Osprey			1						1
Northern Harrier		1	1	1			1		4

	Nevada Species of Conservation Priority	2005	2006	2007	2009	2010	2011	2012	Number of Years Seen
Northern Goshawk	X			1				1	2
Swainson's Hawk							1	1	2
Red-tailed Hawk		1	1	1	1	1	1	1	7
Ferruginous Hawk	X				1	1	1		3
Golden Eagle		1	1	1			1		4
American Kestrel		1	1	1	1	1	1	1	7
Prairie Falcon			1		1				2
Cranes, Coots and Cranes									
Sora		1							1
American Coot		1	1	1	1	1	1	1	7
Sandhill Crane	X	1	1	1				1	4
Shorebirds									
Sempalmated Plover			1						1
Killdeer		1	1	1	1	1	1	1	7
Willet		1							1
Spotted Sandpiper		1	1			1		1	4
Common Snipe		1	1	1	1	1	1	1	7
Wilson's Phalarope		1	1	1	1	1	1	1	7
Black-necked Stilt	X				1	1			2
American Avocet	X		1	1	1				3
Lesser Yellowlegs						1			1
Gulls and Terns									
Unidentified gull			1						1
Ring-Billed Gull			1						1
Black Tern	X			1					1
Pigeons and Doves									
Rock Pigeon		1	1	1					3
Mourning Dove		1	1	1	1	1	1	1	7
Eurasian Collared-dove					1	1	1	1	4
Owls									
Burrowing Owl	X		1	1	1		1		4
Great-horned Owl				1	1				2
Goatsuckers									
Common Nighthawk				1	1	1	1	1	5
Kingfishers									
Belted Kingfisher				1				1	2

	Nevada Species of Conservation Priority	2005	2006	2007	2009	2010	2011	2012	Number of Years Seen
Hummingbirds									
Broad-Tailed Hummingbird		1	1		1	1			4
Black-Chinned Hummingbird			1						1
Woodpeckers									
Lewis's Woodpecker	X				1	1	1	1	4
Hairy Woodpecker							1		1
Northern Flicker		1	1	1	1	1	1	1	7
Red-naped Sapsucker				1	1			1	3
Flycatchers									
Western Wood-Pewee		1	1	1	1	1	1	1	7
Empidonax Flycatcher group		1				1			2
Willow Flycatcher	X		1	1			1		3
Dusky Flycatcher				1			1	1	3
Say's Phoebe				1	1	1			3
Western Kingbird		1	1	1			1	1	5
Eastern Kingbird					1				1
Shrikes									
Loggerhead Shrike	X	1	1	1	1	1	1		6
Vireos									
Warbling Vireo		1	1	1	1	1	1	1	7
Jays and Crows									
Black-billed Magpie		1	1	1	1	1	1	1	7
American Crow			1	1	1	1	1	1	6
Common Raven		1	1	1	1	1	1	1	7
Larks									
Horned Lark		1	1	1	1	1	1	1	7
Swallows									
Bank Swallow			1		1				2
Cliff Swallow		1	1	1	1	1	1	1	7
Barn Swallow		1	1			1	1	1	5
Tree Swallow			1	1		1	1		4
Violet-Green Swallow			1	1	1	1	1	1	6
Northern Rough-winged Swallow				1	1	1		1	4

	Nevada Species of Conservation Priority	2005	2006	2007	2009	2010	2011	2012	Number of Years Seen
Chickadees									
Black-capped Chickadee				1					1
Mountain Chickadee				1					1
Bushtits									
Bushtit		1							1
Nuthatches									
Red-breasted Nuthatch		1							1
White-breasted Nuthatch		1							1
Wrens									
Rock Wren		1	1	1	1	1		1	6
House Wren		1	1	1	1	1	1	1	7
Marsh Wren			1			1			2
Gnatcatchers									
Blue-Gray Gnatcatcher			1						1
Thrushes									
Mountain Bluebird				1					1
Swainson's Thrush			1	1			1	1	4
American Robin		1	1	1	1	1	1	1	7
Thrashers									
Sage Thrasher		1	1	1	1	1	1	1	7
Starlings									
European Starling				1	1	1	1	1	5
Silky Flycatchers									
Cedar Waxwing								1	1
Wood Warblers									
Yellow Warbler		1	1	1	1	1	1	1	7
Orange-crowned Warbler						1			1
Yellow-rumped Warbler		1	1						2
MacGillivray's Warbler		1							1
Common Yellowthroat		1	1	1	1	1	1	1	7
Wilson's Warbler		1	1	1					3
Yellow-breasted Chat		1	1	1	1	1		1	6

	Nevada Species of Conservation Priority	2005	2006	2007	2009	2010	2011	2012	Number of Years Seen
Tanagers									
Western Tanager		1	1			1			3
Sparrows									
Green-tailed Towhee		1		1	1	1			4
Spotted Towhee		1	1	1					3
Brewer's Sparrow	X	1	1	1	1	1	1	1	7
Vesper Sparrow		1	1		1	1		1	5
Lark Sparrow		1	1	1			1	1	5
Sage Sparrow	X				1	1			2
Savannah Sparrow		1	1	1	1	1	1	1	7
Grasshopper Sparrow		1							1
Song Sparrow		1	1	1	1	1	1	1	7
Fox Sparrow								1	1
White-crowned Sparrow				1			1		2
Dark-eyed Junco				1					1
Cardinals and Allies									
Black-headed Grosbeak		1	1		1		1	1	5
Lazuli Bunting		1	1	1	1		1	1	6
Blackbirds									
Bobolink	X	1	1	1			1	1	5
Red-winged Blackbird		1	1	1	1	1	1	1	7
Western Meadowlark		1	1	1	1	1	1	1	7
Yellow-headed Blackbird		1	1	1	1	1	1	1	7
Great-tailed Grackle						1	1	1	3
Brewer's Blackbird		1	1	1	1	1	1	1	7
Brown-headed Cowbird		1	1	1	1	1	1	1	7
Bullock's Oriole		1	1	1	1	1		1	6
Finches									
Cassin's Finch	X	1		1			1		3
House Finch		1	1	1	1			1	5
Pine Siskin		1							1
American Goldfinch		1	1			1			3
Lesser Goldfinch			1						1
Evening Grosbeak		1			1				2
Old World Sparrows									
House Sparrow		1	1	1	1		1		5
TOTAL BIRD SPECIES		78	84	80	69	67	66	67	

		Nevada Species of Conservation Priority	**2005**	**2006**	**2007**	**2009**	**2010**	**2011**	**2012**	**Number of Years Seen**
Other Animals										
	Lizard		X				X			
	Mule Deer		X	X	X	X	X			X
	Muskrat			X	X					
	Cottontail			X	X	X	X			
	Black-tailed Jackrabbit			X	X					
	Unidentified ground squirrel			X	X					
	Pronghorn				X					
	Badger				X					
	Chipmunk						X			X
	Coyote									X

Appendix E

Threatened, Endangered, and Sensitive Wildlife and Plant Species with Potential to Occur in Sagebrush Ecosystems in NE Elko County.

BLM and US Forest Service Sensitive animal species with potential for occurrence in the SANE Plan Area.

Scientific Name	Common Name	FEDERAL USFWS Status	NV State Status	NEVADA State Status	NV Range	BLM Listing Criteria *	USFS Humboldt NF
AMPHIBIANS							
Rana pipiens	Northern leopard frog		SP	S2S3	YR	1,2	
Rana luteiventris	Columbia spotted frog (including Toiyabe spotted frog subpopulation)	candidate		S2S3	YR	1,2	X
BIRDS							
Accipiter gentilis	Northern goshawk		*SS*	*S2*	*Breeding*	1	X
Aquila chrysaetos	Golden eagle					2	
Athene cunicularia hypugaea	Western burrowing owl			S3B	YR	1	
Oreortyx pictus	Mountain quail						X
Otus flammeolus	Flammulated owl						X
Buteo regalis	Ferruginous hawk			S2	YR	1,2	
Buteo swainsoni	Swainson's hawk					1	
Centrocercus urophasianus	Greater Sage-grouse	*CS*	*game bird*	*S3S4*	*YR*	*1*	X
Falco peregrinus	Peregrine falcon	*delisted 1999*	*SE*	*S2*	*YR*	*1,2*	X
Haliaeetus leucocephalus	Bald eagle	delisted 2009	SE	S1B, S3N	YR	1	X
Lanius ludovicianus	Loggerhead shrike					1	
Leucosticte atrata	Black Rosy-finch			S3	YR	2	
Melanerpes lewis	Lewis woodpecker			S3	YR	1	
Oreoscoptes montanus	Sage thrasher		SS	S5B	S	1	
Picoides tridactylus	Three-toed woodpecker						X
Spizella breweri	Brewer's sparrow		*SS*	*S4B*	*YR*		
FISH							

Scientific Name	Common Name	FEDERAL USFWS Status	NV State Status	NEVADA State Status	NV Range	BLM Listing Criteria *	USFS Humboldt NF
Lepidomeda copei	Northern leatherside chub			S1	YR	1	
Oncorhynchus clarki henshawi	Lahontan cutthroat trout	T	SE	S3	YR	1,2	X
Oncorhynchus clarki utah	Bonneville cuttrhoat trout						X
Oncorhynchus mykiss gairdneri	Inland Columbia Basin redband trout			S2	YR	2	
Salvelinus confluentus	Bull trout	T	SE	S1	YR	1,2	X
MAMMALS							
Antrozous pallidus	Pallid bat			S3B	YR	2	
Corynorhinus townsendii	Townsend's big-eared bat		SS	S2	YR	1,2	X
Eptesicus fuscus	Big brown bat			S4	YR	2	
Euderma maculatum	Spotted bat		ST	S4	YR	1,2	X
Lasionycteris noctivagans	Silver-haired bat			S3	YR	2	
Lasiurus cinereus	Hoary bat			S3	S	2	
Myotis californicus	California myotis			S4	YR	2	
Myotis ciliolabrum	Western small-footed myotis			S3	YR	2	
Myotis lucifugus	Little brown myotis			S?	YR	2	
Myotis thysanodes	Fringed myotis		PM	S2	YR	2	
Myotis volans	Long-legged myotis			S4	YR	2	
Myotis yumanensis	Yuma myotis			S3S4	YR	2	
Tadarida brasiliensis	Brazilian free-tailed bat		PM	S3S4	YR	2	
Pipistrellus hesperus	Western pipistrelle			S4	YR	2	
Brachylagus idahoensis	Pygmy rabbit	petitioned	game	S3	YR	1	X
Sorex preblei	Preble's shrew			S1S2	YR	2	

Scientific Name	Common Name	FEDERAL USFWS Status	NV State Status	NEVADA State Status	NV Range	BLM Listing Criteria *	USFS Humboldt NF
Microdipodops megacephalus	Dark kangaroo mouse		SP	S2	YR	1,2	
Ochotona princeps	Pika		SP	S2	YR	1,2	
Ovis canadensis	Bighorn sheep		game	S3/S4	YR	1,2	X
REPTILES							
None							
INSECTS							
Euphilotes pallescens mattonii	Mattoni's blue			S1	YR	2	
Molluscs							
Anodonta californiensis	California floater			S1	YR	2	
Pygulopsis humboldtensis	Humboldt pyrg			S1	YR	2	
Pyrgulopsis vinyardi	Vinyards pyrg			S1	YR	1,2	
Tryonia clathrata	Grated tryonia	petitioned 2009		S2	YR	1,2	

*Guidance for management related to BLM sensitive species is found in Manual Section 6840. Criteria used for BLM Nevada Sensitive Species include:
1. Information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range, or

2. The species depends on ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk.

BLM and US Forest Service sensitive plant species with potential for occurrence in the SANE Plan Area.

Scientific Name	Common Name	FEDERAL USFWS Status	NV State Status	NEVADA State Status	NV Range	BLM Listing Criteria *	USFS Humboldt NF
PLANTS							
Antennaria arcuata	Meadow pussytoes	Species of Concern		S1	Y	1,2	X
Asclepias eastwoodiana	Eastwood milkweed						X
Astragalus anserinus	Goose Creek milkvetch	C		S2	Y	1,2	
Astragalus lentiginosus var. *latus*	Broad-pod freckled milkvetch						X
Astragalus incialis	Currant milkvetch						X
Boechera falcatoria	Grouse Creek rockcress						X
Boechera falcifructa	Elko rockcress	Species of Concern		S1S2	Y	1,2	
Collomia renacta	Barren Valley collomia	Species of Concern		S1	Y	1,2	
Draba pennellii	Pennell draba						X
Erigeron cavernensis	Snake Mountain erigeron						X
Erigeron latus	Broad fleabane	Species of Concern		S1	Y	1,2	
Eriogonum beatleyae	Beatley buckwheat			S2	Y	1	
Eriogonum douglasii var. *elkoense*	Sunflower Flat buckwheat						X
Eriogonum lewisii	Lewis buckwheat	Species of Concern		S2S3	Y	1	X
Eriogonum nutans var. glabratum	Deeth buckwheat			S2S3	Y	1	
Ivesia rhypara var. *rhypara*	Grimy mousetails	Former candidate		S2	Y	1	
Jamesia tetrapetala							X
Lathyrus grimesii	Grimes vetchling	Species of Concern		S2	Y	1,2	X
Lepidium davisii	Davis peppercress	Species of Concern		S1	Y	1,2	
Leptodactylon glabrum	Owyhee prickly phlox	Species of Concern		S1	Y	2	
Lewisia maguirei	Maguire lewisia						X
Mentzelia tiehmii	Tiehm blazingstar			S1S2	Y	1	
Penstemon idahoensis	Idaho beardtongue			S1	Y	2	
Penstemon pudicus	Bashful penstemon						X
Penstemon rhizomatosus	Rhizome beardtongue						X

Scientific Name	Common Name	FEDERAL USFWS Status	NV State Status	NEVADA State Status	NV Range	BLM Listing Criteria *	USFS Humboldt NF
Phacelia minutissima	Least phacelia	Species of Concern		S2	Y	2	X
Poa abbreviata ssp. marshii	Marsh's bluegrass						X
Potentilla cottamii	Cottam cinquefoil	Species of Concern		S1	Y	1	
Potentilla johnstonii	Sagebrush cinquefoil						X
Primula cusickiana var. *nevadensis*	Nevada primrose						X
Ranunculus triternatus	Obscure buttercup			S1?	Y	1	
Silene nachlingerae	Nachlinger catchfly	Species of Concern		S2	Y	1	X
Trifolium andimum var. *podocephalum*	Currant Summit clover						X
Trifolium leibergii	Leiberg's colver						X
Viola lithion	Lithion violet						X

Species of Conservation Priority With Potential for Occurrence Within the SANE Project Area
NDOW Wildlife Action Plan (2013)

Year round/Residents	
Aquatic gastropods	genera from Eremopyrgus, Fluminicola, Juga, Pyrgulopsis, Tryonia
California floater	(*Anodonta californiensis*)
Bull trout - Jarbidge River basin pop. pop. 4*	(*Salvelinus confluentus*)
Lahontan cutthroat trout	(*Oncorhynchus clarkia henshawi*)*
Relict dace	(*Relictus solitaries*)*
Yellowstone cutthroat trout	(*Oncorhynchus clarkia bouvieri*)
Columbia spotted frog – Great Basin pop. pop. 3*	(*Rana luteiventris*)
Great Basin spadefoot	(*Spea intermontana*)
Northern leopard frog	(*Lithobates pipiens*)
Western toad	(*Anaxyrus boreas*)
Desert horned lizard	(*Phrynosoma platyrhinos*)
Greater short-horned lizard	(*Phrynosoma hernandesi*)
Long-nosed leopard lizard	(*Gambelia wislizenii*)
Northern rubber boa	(*Charina bottae*)
Canvasback	(*Aythya valisineria*)
Cassin's finch	(*Carpodacus cassinii*)
Columbian sharp-tailed grouse	(*Tympanuchus phasianellus columbianus*)
Dusky grouse	(*Dendragapus obscurus*)
Ferruginous hawk	(*Buteo regalis*) …….also summer/breading range
Golden eagle	(*Aquila chrysaetos*)
Greater sage grouse	(*Centrocercus urophasianus*)
Loggerhead shrike	(*Lanius ludovicianus*)
Northern Goshawk	(*Accipiter gentilis*)
Northern Pintail	(*Anas acuta*)
Pinyon Jay	(*Gymnorhinus cyanocephalus*)
Prairie falcon	(*Falco mexicanus*)
Short-eared owl	(*Asio flammeus*)
American water shrew	(*Sorex palustris*)
Bighorn sheep	(*Ovis canadensis*)
Dark kangaroo mouse	(*Microdipodops megacephalus*)
Fringed myotis	(*Myotis thysanodes*)
Little brown bat	(*Myotis lucifugus*)
Long-eared myotis	(*Myotis evotis*)
Merriam's shrew	(*Sorex merriami*)
Montane shrew	(*Sorex monticolus*)
Mule deer	(*Odocoileus hemionus*)
Northern river otter	(*Lontra canadensis*)
Preble's shrew	(*Sorex preblei*)*
Pygmy rabbit	(*Brachylagus idahoensis*)
Sagebrush vole	(*Lemmiscus curtatus*)
Silver-haired bat	(*Lasionycteris noctivagans*)
Spotted bat	(*Euderma maculatum*)
Townsend's big-eared bat	(*Corynorhinus townsendii*)

Western jumping mouse	(*Zapus princeps*)*
Western small-footed myotis	(*Myotis ciliolabrum*)
Wyoming ground squirrel	(*Spermophilus elegans nevadensis*)
Summer/Breeding	
American avocet	(*Recurvirostra americana*)
American bittern	(*Botaurus lentiginosus*)
American white pelican	(*Pelecanus erythrorhynchos*)
Bank swallow	(*Riparia riparia*)
Black rosy-finch	(*Leucosticte atrata*) ……. also winter range
Black tern	(*Chlidonias niger*)
Bobolink	(*Dolichonyx oryzivorus*)
Brewer's sparrow	(*Spizella breweri*)
Common nighthawk	(*Chordeiles minor)*
Flammulated owl	(*Otus flammeolus*)
Great Basin willow flycatcher	(*Empidonax traillii adastus*) …….also migration range
Lewis's woodpecker	(*Melanerpes lewis*)
Long-billed curlew	(*Nemenius americanus*)
Olive-sided flycatcher	(*Contopus cooperi*)
Redhead	(*Aythya americana*)
Sage sparrow	(*Amphispiza belli*)
Sage thrasher	(*Oreoscoptes montanus*)
Sandhill crane	(*Grus canadensis*)
Scott's oriole	(*Icterus parisorum*)*
Virginia's warbler	*Oreothlypis virginiae)*
Western burrowing owl	(*Athene cunicularia hypugaea)*
White-faced ibis	(*Plegadis chihi*)
Whilson's phalarope	(*Phalaropus tricolor*)
Hoary bat	(*Lasiurus cinereus*)
Mexican free-tailed bat	(*Tadarida brasiliensis*)
Winter	
Bald eagle – contiguous US pop.	(*Haliaeetus leucocephalus*)
Gray-crowned rosy-finch	(*Leucosticte tephrocotis*)
Migratory	
Common loon	(*Gavia immer*)
Long-billed dowitcher	(*Limnodromus scolopaceus*)
Peregrine falcon	(*Falco peregrinus*)
Red-necked phalarope	(*Phalaropus lobatus*)
Rufous hummingbird	(*Selasphorus rufus*)
Western least bittern	(*Lxobrychus exilis hesperis*)
Western sandpiper	(*Calidris mauri*)
Western snowy plover	(*Charadrius nivosus nivosus*)

Appendix F

Factors Considered In Determining Listing Under The Endangered Species Act (49 FR 38908 §424.11c) in the 12-Month Finding

Appendix F. Factors Considered In Determining Listing Under The Endangered Species Act (49 FR 38908 §424.11c) in the 12-Month Finding

The factors that U.S. Fish and Wildlife Service considered in determining the 12-Month Finding 'Warranted but Precluded' under The Endangered Species Act (49 FR 38908 §424.11c) are summarized below.

FACTOR A: Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range

The 2010 USFWS found that urbanization, infrastructure (fences, powerlines, and roads), mining, energy development, grazing, invasive and exotic species, pinyon-juniper encroachment, recreation, wildfire, and the likely effects of climate change were the major threats to current and future destruction, modification, or curtailment of habitat FWS acknowledged that individually, any one of these threats appears unlikely to severely affect persistence across the entire area. Cumulatively, however, these threats interact in such a way as to fragment and isolate populations.

Factor B: Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

FWS did not find Factor B to be a significant threat to greater sage-grouse.

Factor C: Disease and Predation

Disease (West Nile virus) and predation facilitated by fences, powerlines, and roads, are threats. However, the impact is thought to be relatively low and localized at this time compared to other threats.

Factor D: Inadequacy of Existing Regulatory Mechanisms

The 2010 finding states that existing regulatory mechanisms appear to be implemented in a manner that is inconsistent with life history requirements, reaction to disturbances, and currently understood conservation needs. Existing regulatory mechanisms are ineffective at ameliorating habitat-based threats and may not be able to address certain threats such as disease, drought, and fire.

Factor E: Other Natural or Manmade Factors Affecting the Species' Continued Existence

Hunting, Religious Use, and Scientific Use are not currently threatening sage-grouse populations.

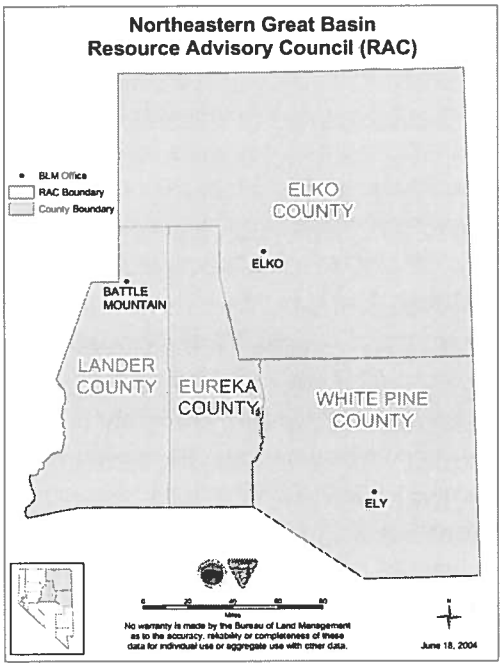
Appendix G

BLM Grazing Standards and Guidelines

Standards and Guidelines for Nevada's Northeastern Great Basin Area

PREAMBLE

The Nevada Northeastern Great Basin Resource Advisory Council (RAC), as chartered by the Department of the Interior to promote healthy rangelands, has developed Standards and Guidelines for grazing administration on about 16.2 million acres of public lands and Standards and Guidelines for maintaining healthy wild horse and burro herds on Herd Management Areas (HMAs) administered by the Bureau of Land Management within the designated geographic area of the Northeastern Great Basin. The RAC in developing these Standards and Guidelines, understands and agrees that grazing and wild horses and burros are two of the multiple uses recognized under the Federal Land Policy and Management Act (FLPMA) of 1976 (43 U.S.C. 1739, 1740). The RAC recognizes the limited management options currently available for wild horses and burros. Unlike domestic stock that can be husbanded and controlled regularly, or wildlife that can be controlled through sport harvest, free-roaming wild horses and burros must be managed by capture and adoption or placement in sanctuaries to achieve a sustainable relationship with land and resources year-round. The RAC in recommending these Standards and Guidelines urges the Bureau to aggressively implement the management strategies to expeditiously establish, achieve and maintain Appropriate Management Levels (AMLs) of wild horses and burros within HMAs and remove them from outside HMAs. These recommended Standards and Guidelines reflect the stated goals of improving rangeland



health while providing for the viability of the livestock industry, all wildlife species and wild horses and burros in the Northeastern Great Basin Area.

Background

Standards and Guidelines for rangeland health were approved and published in 1997 for all three Nevada RACs. In December 2000, the Northeastern Great Basin RAC approved Wild Horse and Burro Standards and Guidelines and they were incorporated into the existing rangeland health document. Vegetation Guidelines were approved in March 2004 and added as Appendix A. Off Highway Vehicle (OHV) Administration Guidelines were approved by all three Nevada RACs in September 2003 and are included here as well.

NORTHEASTERN GREAT BASIN RAC'S INTENDED USE OF STANDARDS AND GUIDELINES

Standards and Guidelines will be implemented through terms and conditions of grazing permits, leases, and other authorizations, grazing-related portions of activity plans (including Allotment Management Plans), and through range improvement-related activities.

Standards and Guidelines for wild horses and burros will be implemented through control of population levels within established HMAs, related portions of activity plans (including Allotment Management Plans), and through range restoration related activities. Wild horse and burro herd management practices should consider both economic and physical environment and will address all multiple uses including, but not limited to recreation, minerals, cultural resources, wildlife, domestic livestock, community economics, Areas of Critical Environmental Concern, designated wilderness and wilderness study areas (WSAs).

The RAC anticipates that in most cases the Standards and Guidelines themselves will not be terms and conditions of various authorizations but that the terms and conditions will reflect the Standards and Guidelines.

The RAC intends that the Standards and Guidelines will result in a balance of sustainable development and multiple use along with progress towards attaining healthy, properly functioning rangelands and healthy wild horse and burro herds. For that reason, wording has been adopted in this final rule that will require the authorized officer to take appropriate action upon determining the existing management practices are failing to ensure significant progress toward the fulfillment of the Standards and towards conformance with the guidelines.

The RAC intends that assessments and corrective actions will be undertaken in priority order as determined by BLM.

The BLM will use a variety of data including monitoring records, assessments, and knowledge of the locale to assist in making the "significant progress" determination. It is anticipated that in many cases it will take numerous seasons to determine direction and magnitude of trend. However, actions will be taken to establish significant progress toward conformance as soon as sufficient data are available to make informed changes relative to numbers of wild horses and burros, herd management decisions and grazing practices.

STANDARDS AND GUIDELINES

STANDARD 1. UPLAND SITES:

Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form.

As indicated by:

- Indicators are canopy and ground cover, including litter, live vegetation and rock, appropriate to the potential of the site.

GUIDELINES:

1.1 Livestock grazing management and wild horse and burro population levels are appropriate when in combination with other multiple uses they maintain or promote upland vegetation and other organisms and provide for infiltration and permeability rates, soil moisture storage, and soil stability appropriate to the ecological site within management units.

1.2 When livestock grazing management and wild horse and burro herd management alone are not likely to restore areas of low infiltration or permeability, land management treatments should be designed and implemented where appropriate.

1.3 Livestock grazing management and wild horse and burro herd management are adequate when significant progress is being made toward this standard.

See Appendix A for additional guidelines for vegetation management.

STANDARD 2. RIPARIAN AND WETLAND SITES:

Riparian and wetland areas exhibit a properly functioning condition and achieve state water quality criteria.

As indicated by:

- Stream side riparian areas are functioning properly when adequate vegetation, large woody debris, or rock is present to dissipate stream energy associated with high water flows. Elements indicating proper functioning condition such as avoiding accelerating erosion, capturing sediment, and providing for groundwater recharge and release are determined by the following measurements as appropriate to the site characteristics:

  Width/Depth ratio; Channel roughness; Sinuosity of stream channel; Bank stability; Vegetative cover (amount, spacing, life form); and other cover (large woody debris, rock).
- Natural springs, seeps, and marsh areas are functioning properly when adequate vegetation is present to facilitate water retention, filtering, and release as indicated by plant species and cover appropriate to the site characteristics.
- Chemical, physical and biological water constituents are not exceeding the state water quality standards.

GUIDELINES:

2.1 Livestock grazing management and wild horse and burro population levels will maintain or promote sufficient vegetation cover, large woody debris, or rock to achieve proper functioning condition in riparian and wetland areas. Supporting the processes of energy dissipation, sediment capture, groundwater recharge, and stream bank stability will thus promote stream channel morphology (e.g., width/depth ratio, channel roughness, and sinuosity) appropriate to climate, landform, gradient, and erosional history.

2.2 Where livestock grazing management and wild horse and burro herd management are not likely to restore riparian and wetland sites, land management treatments should be designed and implemented where appropriate to the site.

2.3 Livestock grazing management and wild horse and burro herd management will maintain, restore or enhance water quality and ensure the attainment of water quality that meets or exceeds state standards.

2.4 Livestock grazing management and wild horse and burro herd management are adequate when significant progress is being made toward this standard.

See Appendix A for additional guidelines for vegetation management.

STANDARD 3. HABITAT:

Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat conditions meet the life cycle requirements of threatened and endangered species.

As indicated by:

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

GUIDELINES:

3.1 Livestock grazing management and wild horse and burro population levels will promote the conservation, restoration and maintenance of habitat for threatened and endangered species, and other special status species as may be appropriate.

3.2 Livestock grazing intensity, frequency, season of use and distribution and wild horse and burro population levels should provide for growth and reproduction of those plant species needed to reach long-term land use plan objectives. Measurements of ecological condition and trend/ utilization will be in accordance with techniques identified in the *Nevada Rangeland Monitoring Handbook.*

3.3 Livestock grazing management and wild horse and burro management should be planned and implemented to allow for integrated use by domestic livestock, wildlife, and wild horses and burros consistent with land use plan objectives.

3.4 Where livestock grazing management and wild horse and burro herd management alone are not likely to achieve habitat objectives, land treatments may be designed and implemented as appropriate.

3.5 When native plant species adapted to the site are available in sufficient quantities, and it is economically and biologically feasible to establish or increase them to meet management objectives, they will be emphasized over non-native species.

3.6 Livestock grazing management and wild horse and burro herd management are adequate when significant progress is being made toward this Standard.

See Appendix A for additional guidelines for vegetation management.

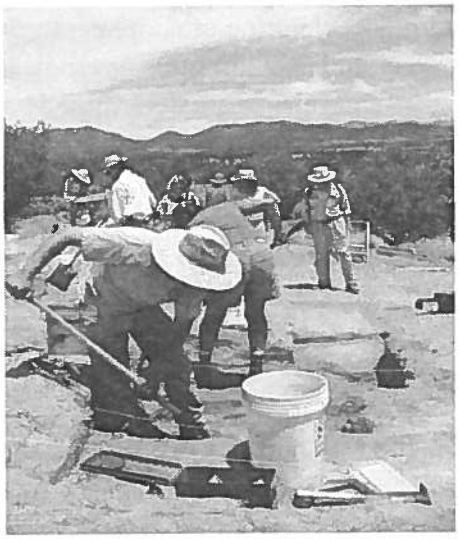
STANDARD 4. CULTURAL RESOURCES:

Land use plans will recognize cultural resources within the context of multiple use.

GUIDELINES:

4.1 Rangeland management plans will consider listings of known sites that are National Historic Register eligible or considered to be of cultural significance and new eligible sites as they become known.

4.2 Wild horse and burro herd management will be designed to avoid or mitigate damage to significant cultural resources.



Today, BLM works to protect and interpret the cultural resources that remain from those early days, as well as the first years of modern settlement.

STANDARD 5. HEALTHY WILD HORSE AND BURRO POPULATIONS:

Wild horses and burros exhibit characteristics of a healthy, productive, and diverse population. Age structure and sex ratios are appropriate to maintain the long term viability of the population as a distinct group. Herd management areas are able to provide suitable feed, water, cover and living space for wild horses and burros and maintain historic patterns of habitat use.

As indicated by:

- Healthy rangelands that provide sufficient quantities and quality of forage and water to sustain the appropriate management level on a year long basis within a herd management area.
- Wild horses and/or burros managed on a year-long basis for a condition class greater than or equal to five to allow them normal chances for survival in the winter (see glossary for equine body conditioning definitions).
- Highly adoptable wild horses and burros that are readily available from herd management areas.
- Wild horse and burro herds that exhibit appropriate age structure and sex ratio for short and long term genetic and reproductive health.

GUIDELINES:

5.1 Implement the objectives outlined in the Wild Free-Roaming Horses and Burros Tactical Plan for Nevada (May 1999).

5.2 Manage for wild horses and/or burros in herd management areas based on the capability of the HMA to provide suitable feed, water, cover and living space for all multiple uses.

5.3 Set Appropriate Management Levels based on the most limiting habitat factor (e.g. available water, suitable forage, living space and cover) in the context of multiple use.

5.4 Manage herd management area populations to preserve and enhance physical and biological characteristics that are of historical significance to the herd.

5.5 Manage wild horse and burro herds for short- and long-term increases and to enhance adoptability by ensuring that wild horses and burros displaying desirable traits are preserved in the herd thus providing a reproductive base to increase highly adoptable horses and burros for future demands.

5.6 Identify and preserve historic traits and characteristics within the herd which have proven to be highly desirable by the adoption public to increase the long-term availability of animals bearing these features.

5.7 Wild horse and burro selective removal criteria are modified on a per herd basis to correct deficiencies in population age and sex ratios which threaten short- and

Nevada's wild horse population is about 18,000 or one-half of the nation's population.

GLOSSARY

long-term genetic diversity and reproductive health.

Most definitions are taken from "A Glossary of Terms Used in Range Management" developed through the Society for Range Management. If a definition has been slightly modified it is marked with an *. Other definitions are from Grazing Administration Regulations Code of Federal Regulations, Chapter 43, Sec. 4100.0-5 or Bureau of Land Management Technical Reference. Definitions also include meanings that were developed by the Northeastern Great Basin Resource Advisory Council to understand their intent in the Standards and Guidelines.

Biotic - Refers to living components of an ecosystem, e.g., plants and animals.

Canopy - (1) The vertical projection downward of the aerial portion of vegetation, usually expressed as a percent of the ground so occupied. (2) The aerial portion of the overstory vegetation.

Canopy Cover - The percentage of ground covered by a vertical projection of the outermost perimeter of the natural spread of foliage of plants. Small openings within the canopy are included.

Climate - The average or prevailing weather conditions of a place over a period of years.

Conservation - The use and management of natural resources according to principles that assure their sustained economic and/or social benefits without impairment of environmental quality.

Distribution (Grazing) - Dispersion of grazing animals within a management unit or area.

Ecological Site - The kind of land with a specific potential natural community and specific physical site characteristics, differing from other kinds of land in its ability to produce vegetation and to respond to management.

Edaphic - Refers to the soil.

Equine body conditioning -

1. *Poor*. Extremely emaciated; spinal processes, ribs, tailhead, tuber coxae and ischii projecting prominently, no fatty tissue can be seen.
2. *Very Thin*. Emaciated; slight fatty covering over base of spinal processes; transverse processes of lumbar vertebrae feel rounded; spinal processes, ribs, tailhead, tuber coxae and ischii prominent; withers, shoulders, and neck structure faintly discernible.
3. *Thin*. Fat buildup about halfway on spinal processes; transverse processes cannot be felt; slight fat covering over ribs; spinal processes and ribs easily discernible; tailhead prominent, but individual vertebrae cannot be identified visually; tuber coxae appear rounded but easily discernible, tuber ischii not distinguishable; withers, shoulders, and neck accentuated.
4. *Moderately Thin*. Slight ridge along back; faint outline of ribs discernible; tailhead prominence depends on conformation – fat can be felt around it; tuber coxae not discernible; withers, shoulders and neck not obviously thin.
5. *Moderate*. Back is flat (no crease or ridge); ribs not visually distinguishable but easily felt around tailhead and area beginning to feel spongy; withers appear rounded over spinal processes; shoulders and neck blend smoothly into body.
6. *Moderately Fleshy*. May have slight crease down back; fat over ribs spongy; fat around tailhead soft; fat beginning to be deposited along the side of withers, behind shoulders, and along sides of neck.
7. *Fleshy*. May have crease down back; individual ribs can be felt, but noticeable filling between ribs with fat; fat around tailhead soft; fat deposited along withers, behind shoulders and along neck.
8. *Fat*. Crease down back; difficult to feel ribs; fat around tailhead very soft; area along withers

filled with fat; area behind shoulder filled with fat; noticeable thickening of neck; fat deposited along inner thighs.
9. *Extremely Fat*. Obvious crease down back; patchy fat appearing over ribs; bulging fat around tailhead, along withers, behind shoulders, and along neck; fat along inner thighs may rub together, flank filled with fat.
Erosion - (v.) Detachment and movement of soil or rock fragments by water, wind, ice or gravity. (n) The land surface worn away by running water, wind, ice, or other geologic agents, including such processes as gravitational creep.
Exotic - An organism or species which is not native to the region in which it is found. **Synonym *non-native.***

Grazing - For the purposes of this document grazing refers to the removal of vegetation by domestic livestock.
Ground Cover - The percentage of material, other than bare ground, covering the land surface. It may include live and standing dead vegetation, litter, cobble, gravel, stones and bedrock. Ground cover plus bare ground would total 100 percent.
Ground Water - Subsurface water that is in the zone of saturation. The top surface of the ground water is the "water table". Source of water for wells, seepage, springs.
Guidelines -Guidelines are livestock management practices (e.g. tools, methods, strategies and techniques) designed to achieve healthy public lands as defined by Standards and portrayed by Indicators. Guidelines are designed to provide direction, yet offer flexibility for local implementation through activity plans and grazing permits. Activity plans may add specificity to the Guidelines based on local goals and objectives as provided for in adopted manuals, handbooks and policy. Not all Guidelines fit all circumstances. Monitoring or site specific evaluation will determine if significant progress is being made towards achieving the standards, and if the appropriate guidelines are being applied.

Habitat - The natural abode of a plant or animal, including all biotic, climatic, and edaphic factors affecting life.
Herd Area - means the geographic area identified as having been used by a herd as its habitat in 1971.
Herd Management Area - Herd Area or portion of a Herd Area that has been designated through the planning process where horses and/or burros can be managed as a component of the public lands.

Indicators - Indicators are observations or measurements of physical, chemical or biological factors used to evaluate site conditions or trends, appropriate to the potential of the site. Indicators will be used to determine whether or not Standards are being met.
Infiltration - The flow of a fluid into a substance through pores or small openings.
Infiltration Rate - Maximum rate at which soil under specified conditions can absorb rain or shallow impounded water, expressed in quantity of water absorbed by the soil per unit of time, e.g., inches/hour.
Intensity (Grazing) - A reference to grazing density per unit of time.

Land Use Plan - Land use plan means a resource management plan, developed under the provisions of 43 CFR part 1600, or management framework plan. These plans are developed through public participation in accordance with the provisions of the Federal Land Policy and Management Act of 1976 and establish management direction for resource uses of public lands. (43 CFR 4100.5)
Litter - The uppermost layer of organic debris on the soil surface; essentially the freshly fallen or slightly decomposed vegetal material.

Management Objective - The objectives for which rangeland and rangeland resources are managed which includes specified uses accompanied by a description of the desired

vegetation and the expected products and/or values.

Management Plan - A program of action designed to reach a given set of objectives.

Marsh - Flat, wet, treeless areas usually covered by standing water and supporting a native growth of grasses and grasslike plants.

Monitoring - The orderly collection, analysis, and interpretation of resource data to evaluate progress toward meeting management objectives.

Morphology - The form and structure of an organism, with special emphasis on external features.

Native Species - A species which is a part of the indigenous fauna or flora of the area in question.

Overstory - The upper canopy or canopies of plants. Usually refers to trees, tall shrubs and vines.

Percolation - The flow of a liquid through a porous substance.

Plant Cover - (1) The plants or plant parts, living or dead, on the surface of the ground. Vegetative cover or herbage cover is composed of living plants and litter cover of dead parts of plants. (2) The area of ground cover by plants of one or more species.

Proper Functioning Condition - Riparian-Wetland areas are functioning properly when adequate vegetation, land-form, or large woody debris is present to dissipate stream energy associated with high waterflows, thereby reducing erosion and improving water quality; filter sediment, capture bedload, and aid floodplain development; improve flood-water retention and ground-water recharge; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity. [BLM Technical Reference 1737-9]

Range Improvement - Range improvement means an authorized physical modification or treatment which is designed to improve production of forage; change vegetation composition; control patterns of use; provide water; stabilize soil and water conditions; restore, protect and improve the condition of rangeland ecosystems to benefit livestock, wild horses and burros, and fish and wildlife. The term includes but is not limited to, structures, treatment projects, and use of mechanical devices or modifications achieved through mechanical means.

Riparian - Referring to or relating to areas adjacent to water or influenced by free water associated with streams or rivers on geologic surfaces occupying the lowest position of a watershed.

Seep - Wet areas, normally not flowing, arising from an underground water source.

Soil - (1) The unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of land plants. (2) The unconsolidated mineral matter on the surface of the earth that has been subjected to and influenced by genetic and environmental factors of parent material, climate (including moisture and temperature effects), macro- and micro-organisms, and topography, all acting over a period of time and producing a product - soil - that differs from the material it was derived in many physical, chemical, biological, and morphological properties and characteristics.

Species - A taxon or rank species; in the hierarchy or biological classification, the category below genus.

Species Composition - The proportions of various plant species in relation to the total on a given area. It may be expressed in terms of cover, density, weight, etc. Synonym *Vegetative composition.*

Spring - Flowing water originating from an underground source.

Trend - The direction of change in ecological status or resource value rating observed over time. Trend in ecological status should be described as *toward*, or *away from* the potential natural community, or as *not apparent*. Trend in a resource value rating for a specific use should be described as *up, down* or *not apparent*. Trends in resource value ratings for several uses on the same site at a given time may be in different directions, and there is no necessary correlation between trends in resource value ratings and trend in ecological status. Some agencies use *trend* only in the context of *ecological status*. Syn. *range condition trend.*

Utilization - The proportion of current year's forage production that is consumed or destroyed by grazing animals. May refer either to a single species or to the vegetation as a whole.

Watershed - (1) A total area of land above a given point on a waterway that contributes runoff water to the flow at that point. (2) A major subdivision of a drainage basin.

OFF HIGHWAY VEHICLE ADMINISTRATION GUIDELINES FOR NEVADA PUBLIC LANDS

INTRODUCTION

The Nevada Northeastern Great Basin Resource Advisory Council (RAC), the Sierra Front-Northwestern Great Basin RAC, and the Mojave-Southern Great Basin RAC, as chartered by the Department of the Interior, have developed Guidelines for the administration of Off-Highway Vehicle (OHV) use on public lands within the State of Nevada. These guidelines are intended to promote cooperation among user groups, to share resources, and to minimize conflicts in accordance with the Nevada Standards for Rangeland Health. While recognizing the legitimacy and necessity of OHV use on public lands, it has become necessary to define guidelines for management of OHVs to ensure the protection of land health and the availability of the public lands for all multiple users. These guidelines are to assist land managers in administrative and planning decisions. Administrators may use the guidelines for managing for land health and making decisions with regard to restricting, or not restricting OHV activity. Additionally, administrators may use the educational guidelines as tools to provide training for land managers and to inform the public on OHV use issues and ethics. Planners should use these guidelines in developing timely plans for resources and recreation use, while addressing the increasing demand for OHV use.

Nevada has hundreds of bike and ATV trails enjoyed by recreation enthusiasts.

ON-THE-GROUND MANAGEMENT GUIDELINES

- Encourage OHV use on existing or designated roads and trails, except in closed areas, prior to land use plans being

updated and road and trail inventories completed.

- Locate and manage OHV use to conserve soil functionality, vegetative cover, and watershed health. Manage OHV use to minimize the impact on the land, while maintaining OHV access.
- Manage OHV use by type, season, intensity, distribution, and/or duration to minimize the impact on plant and animal habitats. If seasonal closures become appropriate to minimize adverse OHV impact(s) on public lands resources, managers will strive to preserve public access by designating alternative routes.
- Manage OHV activities to conserve watershed and water quality.
- Monitor the impact(s) of OHV activities on all public land, water, air and other resources and uses.
- Maintain an inventory of existing road and trail systems.
- Manage OHV use to preserve cultural, historical, archaeological, and paleontological resources.
- Engineer, locate, and relocate roads and trails to accommodate OHV activities while minimizing resource impacts.
- Encourage cooperation in law enforcement among all agencies.
- OHV use pursuant to a permitted activity shall be governed by the terms of the permit.

PLANNING GUIDELINES

- In land use plans or plan amendments, designate areas as open, limited, or closed to OHV use.
- Address OHV management including land use and/or route designations, monitoring and adaptive management strategies, such as applying the Limits of Acceptable Change process, when developing new land use plans or amending existing land use plans. Work closely with local, state, tribal, and other affected parties and other resource users in OHV planning.
- Establish and maintain an inventory of existing routes and trails as part of the land use planning process.
- Provide for other resources and uses in OHV planning. This includes livestock grazing, other recreational uses, archaeological sites, wildlife, horses and burros, and mineral extractions and coordinate with other users of public lands.
- Conduct an assessment of current and future OHV demand, and plan for and balance the demand for this use with other multiple uses/users when developing all land use plans.
- Include in land use plans, social/ economic effects of OHV use, including special recreation events.
- Integrate concepts of habitat connectivity into OHV planning to minimize habitat fragmentation.
- For addressing/resolving local site-specific OHV issues/concerns, use collaborative planning groups consisting of local representative(s), affected/ interested group(s) and agency(s).
- Clearly identify route and area designations.
- Where land health permits, develop sustainable OHV use areas to meet current and future demands, especially for urban interface.

EDUCATION GUIDELINES

- Cooperatively develop/improve public outreach programs to promote trail etiquette, environmental ethics, and responsible-use stewardship ethic.
- Promote/expand/disseminate materials from programs such as, but not limited to, "Tread Lightly!" and "Leave No Trace."
- Provide OHV management education and training for managers, staff, partners and volunteers. Training should focus on of

the art practices and be tailored to meet local needs. Encourage communication between agencies, managers, staff, partners and volunteers to share expertise and effective techniques.

- Encourage the private sector, as well as the public sector, to conduct responsible marketing of activities on public lands while avoiding the promotion of products, behaviors and services that are inconsistent with existing regulations and land use plans.
- Develop communication and environmental education plan(s). Assess all situations where OHV use may require public information and education. Develop materials and programs appropriate to each situation.
- Utilize high use areas and special events to maximize the dissemination of responsible use education materials and concepts to the public.

APPENDIX A - VEGETATION GUIDELINES

The Nevada Northeastern Great Basin Resource Advisory Council (RAC), as chartered by the Department of the Interior, has developed Guidelines for Vegetation Management on about 16.2 million acres of public lands administered by the Bureau of Land Management within the designated geographic area of the Northeastern Great Basin within the State of Nevada.

These Vegetation Management Guidelines are intended to serve as a supplement to the Standards and Guidelines for Rangeland Health which were adopted in 1997 and later expanded to include Wild Horse and Burro Standards and Guidelines in 2000. These recommended Standards and Guidelines reflect the stated goal of improving rangeland health in the Northeastern Great Basin.

Marys River in northeastern Nevada is a prime spawning ground for Lahontan cutthroat trout.

NON-INDIGENOUS ANNUAL GRASSLANDS

DEFINITIONS:

Cheatgrass/Annual Grass Monoculture: Areas dominated by cheatgrass or other non-indigenous annual grass species that have crossed a threshold and lost the ability to recover naturally due to lack of perennial species.

Cheatgrass/Annual Grass Dominant: Recently burned areas having native perennial species present with potential for natural recovery with appropriate management of non-indigenous annual grasses.

Cheatgrass/Annual Grass Infested: Shrub dominated communities with a limited understory of native perennial species, but a significant amount of annual grasses, exhibiting a high potential to be converted to non-indigenous annual grass dominated ranges.

Desired Conditions: Communities will exhibit or be progressing toward a healthy, productive, diverse population of native and or desirable plant species, and functioning disturbance processes appropriate to the site characteristics.

Guidelines Common to All:

1. Encourage research and field trials in all non-indigenous annual grass ranges to determine

effectiveness of control on recovery and rehabilitation efforts in perennial plant communities.
2. Non-indigenous annual grass monoculture and dominated ranges must follow a successional process from annual/perennial grass mix to a shrub/grass community. Large scale seeding of shrubs should be discouraged, and small scale (islands), of intensively managed shrub seedings/ transplants encouraged.

Guidelines for Cheatgrass/ Annual Monoculture:
1. Break up the monoculture through the use of chemical, biological, and/or mechanical means to stop the spread of the effected area especially in areas that border critical habitat. Use native and non-native desirable species known to be fire tolerant and resistant during the late summer fire season.
2. Use the best available information to determine the most effective processes to break up the monoculture, reduce the cheatgrass seed bank, and restore native plant communities.

Guidelines for Cheatgrass Dominant and Cheatgrass Infested Ranges:
1. Encourage innovative approaches to control cheatgrass, such as, strategically controlled grazing and the use of prescribed fire to favor production of perennial species.
2. Seed areas with perennial grass species to reduce the dominance of cheatgrass.

Strategies:
1. Management practices to maintain healthy ecological sites should include: prescribed fire, prescribed natural fire, mechanical manipulations, specialized prescription herbivory, chemical treatments, re-seeding, or combinations of treatments.
2. Special emphasis must be placed on management activities where public safety at wildland-urban interfaces is jeopardized.

SALT DESERT SHRUBLANDS

DEFINITION: Plant communities dominated by members of the Chenopodiaceae family including: shadscale, four-wing saltbush, black and Bailey greasewoods, spiny hopsage, and white sage; with an understory including ricegrass, squirreltail, saltgrass, and other saline tolerant species.

Desired Conditions: Communities will exhibit or be progressing toward a healthy, productive, diverse population of native and/or desirable plant species, and functioning disturbance processes appropriate to the site characteristics.

Guidelines:
1. Grazing should generally be limited to very early season or dormant season rather than year round. If very early season grazing is permitted or prescribed to control cheatgrass early in the spring, grazing should be terminated early enough to allow perennial plant species to set seed.
2. After disturbance such as fire, insect infestation, and periods of less than desirable grazing management, consider resting communities for an appropriate amount of time relative to moisture conditions.
3. All management and revegetation strategies must consider current site conditions and associated thresholds (i.e., current status in state-and-transition model appropriate for the site). In addition, factors such as ecological site, presence of undesirable species (e.g., invasive or noxious species), adjacent plant communities, current use or management status, and position in the watershed must be considered prior treatment application.
4. Encourage research and field trials in salt desert shrub communities to determine the best effective methods of restoration.

Strategies:
1. Management practices to maintain healthy ecological sites should include: prescribed fire, prescribed natural fire, mechanical manipu-

lations, specialized prescription herbivory, chemical treatments, re-seeding, or combinations of treatments.
2. Special emphasis must be placed on management activities where public safety at wildland-urban interfaces is jeopardized.

SAGEBRUSH/ BUNCHGRASS RANGELANDS

DEFINITIONS: Plant communities dominated by one or more members of the Artemisia genus including Wyoming big sagebrush, low sagebrush, basin sagebrush, black sagebrush, Lahontan sagebrush, and mountain sagebrush. Herbaceous understory is dominated by perennial grasses but includes a component of annual and perennial forbs. Other shrubs may also be present.

Desired Conditions: Communities will exhibit or be progressing toward a healthy, productive, diverse population of native and/or desirable plant species, and functioning disturbance processes appropriate to the site characteristics.

Guidelines:
1. Create and maintain a diversity of sagebrush age and cover classes on the landscape through the use of prescribed fire, prescribed natural fire, mechanical, biological, and/or chemical means to provide a variety of habitats and productivity conditions.
2. Vegetation treatments should be of appropriate size to meet land management objectives. Where possible, inclusions of intact sagebrush should be left scattered within the treated area or in relatively close proximity to provide a seed source for recruitment. Distribution of residual plants will determine in part, the time period required for the successional process to proceed toward sagebrush recolonization.
3. All treatments must consider current site conditions and associated thresholds (i.e., current status in state-and-transition model appropriate for the site). In addition, factors such as ecological site, presence of undesirable species (e.g., invasive or noxious species), adjacent plant communities, current use or management status, and position in the watershed must be considered prior to treatment application.
4. Where initial condition has a depleted herbaceous understory, vegetation treatment should include seeding with desirable species suited or adapted to site conditions. Seeding methods and dates should be appropriate to the plant materials and site conditions.
5. Where a mosaic of age and cover classes already exists, maintain landscape diversity through fuels management and periodic disturbance. Recognize the system is dynamic, and suitability of the plant community for any given specie or group of species will change over time. Maintenance of diverse habitat conditions will provide a continuous suite of seasonal habitats over time.
6. Where pinyon pine and/or juniper trees have encroached into sagebrush communities, use best management practices to remove trees and re-establish understory species.

Strategies:
1. Management practices to maintain healthy ecological sites should include: prescribed fire, prescribed natural fire, mechanical manipulations, specialized prescription herbivory, chemical treatments, re-seeding, or combinations of treatments.
2. Special emphasis must be placed on management activities where public safety at wildland-urban interfaces is jeopardized.

NOXIOUS WEEDS

DEFINITIONS:
Noxious weed monoculture: Areas that have lost the ability to recover naturally due to lack of native perennial species.
Noxious weed dominant: Areas having native perennial species present with potential for natural recovery if noxious weeds are controlled.
Noxious weed infested: Plant communities with a limited understory of perennial species

and a high potential to be converted to noxious weed dominant.

Desired Conditions: Communities will exhibit or be progressing toward a healthy, productive, diverse population of native and/or desirable plant species, and functioning disturbance processes appropriate to the site characteristics.

Guidelines Common to All:

1. Encourage research and field trials in all noxious weed rangelands to determine effectiveness of noxious weed control in the recovery process of restoring perennial plant communities.
2. Noxious weed monoculture and noxious weed dominant ranges must follow a successional process from grass/grass mix to a shrub community. Use best management practices to return site to best approximation of site potential.

Guidelines for Noxious Weed Monoculture:

1. Break up monoculture using an Integrated Weed Management approach that combines chemical, biological, and/or mechanical means to reduce spread of affected area, especially in areas that border critical habitat or other sensitive sites. Treatment regime should be based on ecology and phenology of the noxious species.
2. Use best available information to determine the most effective process to break up continuity and rehabilitate native plant communities, recognizing that beneficial, introduced species may provide excellent interim benefits.

Guidelines for Noxious Weed Dominant and Infested Rangelands:

1. Encourage practices to eliminate new noxious species entry and limit current infestations to existing levels.
2. Utilize an Integrated Weed Management approach, that consists of chemical, biological, and/or mechanical means to control noxious species.
3. Encourage innovative approaches to control noxious species, such as strategically controlled grazing and use of prescribed and prescribed natural fire to favor production of native perennial species.
4. Seed areas with perennial species to reduce dominance of noxious species.

PINYON-JUNIPER WOODLANDS

DEFINITION: Plant communities dominated by one or both species of Utah juniper and/or single leaf pinyon pine. Pinyon pine generally dominates at higher and juniper at lower elevations. Herbaceous understory is dominated by perennial grasses but includes a component of annual and perennial forbs. Shrubs may also be present. In the past, woodlands were generally restricted to sites with very low fire frequency such as rocky ridges and steep slopes with little soil development.

Desired Conditions: Woodland communities will exhibit or be progressing toward a healthy, productive, diverse population of native and/or desirable plant species, and functioning disturbance processes appropriate to the site characteristics. Healthy, sustainable pinyon and juniper woodlands will be maintained on appropriate soil types as identified by Natural Resource Conservation Service soil surveys within appropriate Major Land Resource Areas (MLRAs).

Guidelines:

1. Woodlands will exhibit a combination of successional stages based on differing pinyon and juniper species composition, age structure, and understory composition appropriate to site characteristics on a watershed, or portion of a watershed.
2. Woodlands will be separated from other ecological sites by an ecotone interface zone, rather than a well-defined edge. Woodlands should not encroach outside of soil sites correlated with woodland communities.

3. Woodland stand structure should not, under normal conditions support catastrophic, stand replacing fires. Community species composition and proportionalities should follow Natural Resource Conservation guidelines appropriate to the site.
4. All management and revegetation strategies must consider current site conditions and associated thresholds (i.e., current status in state-and-transition model appropriate for the site). In addition, factors such as ecological site, presence of undesirable species (e.g., invasive or noxious species), adjacent plant communities, current use or management status, and position in the watershed must be considered prior treatment application.

Strategies:
1. Management practices to maintain healthy woodlands should include: prescribed fire, prescribed natural fire, mechanical manipulations, specialized prescription herbivory, chemical treatments, or combinations of treatments.
2. Special emphasis must be placed on management activities where public safety at wildland-urban interfaces is jeopardized.

REHABILITATION AND REVEGETATION STRATEGIES

Revegetation includes natural recovery as well as direct management actions.

General Guidelines for Rehabilitation and Revegetation:
1. On burned areas, allow natural regeneration when it is determined that populations of native perennial grasses, forbs, and shrubs are sufficient to revegetate the site.
2. Where appropriate, rest rehabilitated and naturally regenerating areas to allow recovery and establishment of perennial plant species based upon objectives and ecological site potential.
3. Determine to what extent revegetation success may be site specific and may depend on soil moisture, rainfall, elevation, soil type, slope, aspect, previous vegetative community (i.e. native vegetation or cheatgrass prior to a fire), type of seeding, aerial vs. drill seeding etc., seed mixtures, and post seeding management.
4. Use native plant species for rehabilitation except where native species are not available in sufficient quantities; native plant species cannot maintain or achieve the standard; or non-native plant species provide for enhanced protection of native habitats or soil resources.
5. To the extent possible, obtain seeds that are: source identified; or commercial varieties; and meet agency standards.

Note: In emergency situations and with agency approval, seeds may be obtained with lower standards to meet rehabilitation requirements.
6. Establish protocols for pre- and post rehabilitation/restoration monitoring to assist in future evaluation methods. Assemble a team to evaluate multi-district historical data on restoration/rehabilitation projects.

Strategies:
1. On burned areas greater than 1,000 acres, limit sagebrush seeding to no more than 10-20 percent of the burned area, distributed over no less than 5 locations within the burned area.
2. Enhance sagebrush and other shrub species germination and establishment by utilizing available and appropriate water conservation strategies (e.g., snow fence, surface imprinting, and mulching.)
3. On older, large burned areas where previous sagebrush establishment efforts were unsuccessful, interseed sagebrush on areas where perennial grasses have established. Limit seeding to no more than 20 percent of the area, distributed over no less than 5 locations within the area.
4. Rehabilitation of perennial, introduced grass seedings (e.g., crested wheatgrass) should include grazing treatments at appropriate levels to reduce abundance and competition potential. Reductions can be followed by interseeding with sagebrush as well as native grasses and forbs. Encourage early season grazing and

removal to promote seed production and increase native species.
5. Rehabilitation of decadent sagebrush communities should be promoted by using appropriate tools to reduce sagebrush, followed by direct seeding operations. Scale should be appropriate to management objectives.
6. Rehabilitation of pinyon-juniper encroached sagebrush communities should be promoted using appropriate tools to reduce trees, followed by direct seeding operations. Scale should be appropriate to management objectives.

MINED-LAND REVEGETATION GUIDELINES FOR THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION, BLM AND FOREST SERVICE

Reclaimed Desired Plant Communities for Mining Operation Disturbances

Reclamation goals for mining disturbances are (1) stabilize the site, and (2) establish a productive community based on the applicable land use plan and designated post-mining land uses. To meet these goals, a Reclaimed Desired Plant Community (RDPC) should be selected for use on the disturbed mine sites. A RDPC is defined as: A perennial plant community established on a disturbed site which contributes to stability through management and land treatment, and which produces that type and amount of vegetation necessary to meet or exceed both the land use and activity plan objective established for the site.

Several RDPCs may be selected based on site-specific revegetation goals and variable site characteristics for the mining disturbances. When selecting RDPCs, major alterations in reconstructed soils and the subsequent effect of this on the site's capability to establish and sustain the desired vegetation must be considered. A RDPC must have a reasonable chance for success when making the selection.

The plant community for the RDPC should be diverse, and when appropriate for the site should include grasses, forbs, shrubs and/or trees. The RDPC shall be comprised of species native to the area, or introduced species where the need is documented for inclusion to achieve the approved post-mining land use. The RDPC must meet the requirements of applicable State and Federal seed, poisonous and noxious plants, and introduced species laws or regulations. All RDPCs must be approved by the agencies. Plants for RDPCs may be selected using one or more of the following methods:
1. Select existing vegetation types around the mine site to represent the varied RDPCs.
2. Use test plots, demonstration areas, or areas concurrently reclaimed within the mine site or within similar representative areas from adjacent mines to serve as the RDPCs as long as they meet the reclamation goal.
3. For areas where existing vegetative types adjacent to the mine area are severely disturbed or where test plots or demonstration areas are not reasonable alternatives, RDPCs may be selected using appropriate ecological or range site descriptions or other technical sources.

Guidelines for Successful Revegetation

The revegetation release criteria for reclaimed mine sites will be to achieve as close to 100 percent of the perennial plant cover of selected comparison areas as possible. The comparison or reference areas will be selected from representative plant communities adjacent to the mine site, test plots or demonstration areas or, as appropriate, representative ecological or range site descriptions. As approved by the agencies, the selected plant communities or reference areas must have a reasonable chance for success on the mine site. Each plan-of-operations shall identify the site-specific release criteria in the reclamation plan or permit. The agencies may also require specific release standards for individual plant species or vegetative types (grasses, forbs, shrubs, trees). Cover would be estimated using a method as described in Sampling Vegetation Attributes, Interagency Technical Reference, 1996, BLM/RS/ST-96/002+1730 or other acceptable technical methods.

STANDARD AND GUIDELINES IMPLEMENTATION PROCESS

Upon approval of the Standards and Guidelines by the Secretary of the Interior, permits and leases shall contain terms and conditions that ensure conformance with the approved Standards and Guidelines.

The implementation process for Standards and Guidelines will occur under two separate processes as described below:

1. During the supervision and/or monitoring of an allotment, if it is determined that the existing terms and conditions of a grazing permit are not in conformance with the approved Standards and Guidelines and that livestock grazing was determined to be a significant factor in the non-attainment of a standard, then as soon as possible, or no later than the start of the next grazing year, the terms and conditions of the permit/lease will be modified to ensure that the grazing management practices or the levels of the grazing use will be in conformance with the Standards and/or Guidelines.
   The modification of the terms and conditions of the permit/lease will be implemented by agreement and/or by decision.
2. The allotment evaluation process will continue to be the process used to determine if existing multiple uses for allotments are meeting or making progress towards meeting land use plan objectives, allotment specific objectives, Rangeland Program Summary objectives and land use plan decisions, in addition to the Standards and Guidelines for grazing administration.
   Additionally, allotment specific objec tives may have to be developed or amended, objectives in the land use plans further quantified at the allotment spe cific level, and terms and conditions of permits changed or revised to reflect the Standards and Guidelines. Allotment evaluations will continue to be com pleted based on district priorities.
   a. The allotment evaluation consists of or involves:
      1) The evaluation of current grazing use by all users (livestock, wild horses, wildlife) based on monitoring data analysis and interpretation;
      2) Recommendations to change or adjust grazing systems;
      3) Recommendations to change or adjust stocking levels; and
      4) Establishment of stocking levels for wild horses.
   b. The allotment evaluation also serves as the basis for either issuing multiple use decisions, agreements, or a no-change determination. Multiple use decisions are prepared subsequent to completion of land use plans and are based on the attainment or non-attainment of objectives established in the land use plans and allotment evaluations.

During the evaluation process, the existing terms and conditions of a permit will be evaluated to determine if they are in conformance with the approved Standards and Guidelines. If it is determined that the existing terms and conditions are not in conformance and that livestock grazing was a significant factor in the non-attainment, then as soon as possible or no later than the start of the next grazing year, the terms and conditions of the permit/lease will be modified to ensure that the grazing management practices or the levels of grazing use will be in conformance.

At the conclusion of the evaluation process, the multiple use decision process will continue to be used to establish:

1) The terms and conditions of the grazing permits;

2) The appropriate management level for wild horses and burros that occur within the allotment; and

3) Any recommendations for wildlife populations or habitat management actions required if it is determined that these actions are necessary.

The preamble to the final regulations contains additional information regarding what action BLM would take upon becoming aware that a standard is not being met. The following preamble language is found on page 9956 of the Federal Register notice:

"... The Department intends that failing to comply with a standard in an isolated area would not necessarily result in corrective action.

"The Department recognizes that it will sometimes be a long-term process to restore rangelands to proper functioning condition. The Department intends that Standards and Guidelines will result in a balance of sustainable development and multiple use along with progress towards attaining healthy, properly functioning rangelands. For that reason, wording has been adopted in the final rule that will require the authorized officer to take appropriate action upon determining that existing grazing management practices are failing to ensure appropriate progress toward the fulfillment of standards..."

"In some areas, it may take many years to achieve healthy rangelands, as evidenced by the fundamentals, established standards, and guidelines. The Department recognizes, that in some cases, trends may be hard to even document in the first year. The Department will use a variety of data, including monitoring records, assessments, and knowledge of the locale to assist in making the "significant progress" determination."

The acceptance of progress toward reaching the desired end state is also addressed in the regulatory text in 43 CFR 4180.1 Fundamentals of Rangeland Health which includes the "making significant progress toward" language in each of the four fundamentals.

The concept of "making progress toward" is a specific consideration when determining a course of action during implementation. Determining whether a standard is being met is a distinctly different concept from determining whether progress is being made toward or away from the standard. Determining a course of action is then dependent on a variety of factors, one of which is whether progress is being made toward the standard.

With regard to actions, it is the BLM's policy and intent to work in a collaborative manner to achieve or maintain the Standards necessary for healthy, productive rangelands. It is not the policy or intent of the BLM to arbitrarily and immediately remove all livestock from an entire allotment based solely on finding a range site that is not meeting a standard. As a practical matter, the BLM has neither policy, intent, desire nor capability to arbitrarily remove all livestock where acceptable progress is being made toward meeting the Standards.

In Nevada, there are about 800 grazing allotments on 47 million acres of public land.

GEOGRAPHICAL AREA COVERED BY THE STANDARDS AND GUIDELINES

The three Resource Advisory Council (RAC) areas in Nevada are based on combinations of major land resource areas as developed by the Natural Resource Conservation Service for Nevada. This land classification system is recognized by the Bureau of Land Management, the Forest Service and other agencies as a basis for ecosystem data collection and analysis. The soil, vegetal and geophysical characteristics of each of the three areas are different and the text offered by the three RACs incorporates their understanding of the differing physical and biological needs of the rangeland ecosystems.

Recognition of these differences is critical to the successful protection of rangelands in Nevada. As a result of basing the RAC boundaries according to an ecosystem approach as opposed to strictly an administrative or jurisdictional approach, the RAC's advice and recommendations are more relevant to the on-the-ground management of natural resources. The area covered by the Standards and Guidelines is as follows. Adjustments will be made for grazing allotments that overlap the boundaries between the RAC areas.

The Northeastern Great Basin Resource Advisory Council recommends actions to the BLM Nevada State Director for all or portions of Elko, White Pine, Eureka, and Lander Counties. This includes all of the Elko District and portions of the Ely and Battle Mountain Districts. The Standards and Guidelines would apply to lands within the Owyhee High Plateau and Central Nevada Basin and Range major land resource areas as defined by the Natural Resource Conservation Service.

Resource Advisory Council members recently toured Maggie Creek Restoration project in northeastern Nevada.

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Appendix H

BLM Washington Office Instruction Memorandum 2011

U.S. DEPARTMENT OF THE INTERIOR **BUREAU OF LAND MANAGEMENT**
National

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240
http://www.blm.gov/
December 22, 2011

In Reply Refer To:
1110 (170/200/300/400) P

EMS TRANSMISSION 12/27/2011
Instruction Memorandum No. 2012-043
Expires: 09/31/2013

To: All Field Office Officials

From: Director

Subject: Greater Sage-Grouse Interim Management Policies and Procedures

Program Areas: All Programs.

Purpose: This Instruction Memorandum (IM) provides interim conservation policies and procedures to the Bureau of Land Management (BLM) field officials to be applied to ongoing and proposed authorizations and activities that affect the Greater Sage-Grouse *(Centrocercus urophasianus)* and its habitat. This direction ensures that interim conservation policies and procedures are implemented when field offices authorize or carry out activities on public land while the BLM develops and decides how to best incorporate long-term conservation measures for Greater Sage-Grouse into applicable Land Use Plans (LUP). This direction promotes sustainable Greater Sage-Grouse populations and conservation of its habitat while not closing any future options before the planning process can be completed.

This IM supplements the direction for Greater Sage-Grouse contained in Washington Office (WO) IM 2010-071 (*Gunnison and Greater Sage-Grouse Management Considerations for Energy Development*) and is consistent with WO-IM-2011-138 (*Sage-Grouse Conservation Related to Wildland Fire and Fuels Management*). The Gunnison Sage-Grouse, bi-state distinct population segment in California and Nevada, and the Washington State distinct population segment are not covered by this IM and will be addressed through other policies and planning efforts. WO-IM-2010-071 remains applicable to the Gunnison Sage-Grouse.

The 2010 U.S. Fish and Wildlife Service (FWS) findings on petitions to list the Greater Sage-Grouse (petition decision) (75 FR 13910 – 14014; 03/23/2010) identified habitat conversion and fragmentation from wildfire, invasive plants, energy and infrastructure development, urbanization, and agricultural conversion as the primary threats to the species throughout its range. Through this IM, the BLM is providing interim conservation policies and procedures across multiple programs, in order of threat magnitude, while the BLM considers amendments or revisions to LUPs. Maintaining and restoring high quality habitat for the Greater Sage-Grouse is consistent with the BLM multiple-use and sustained-yield management direction of the Federal Land Policy and Management Act.

Policy/Action: As summarized in the BLM's National Strategy, emphasis for protecting and managing Greater Sage-Grouse habitat incorporates the following principles:

1) Protection of unfragmented habitats;
2) Minimization of habitat loss and fragmentation; and
3) Management of habitats to maintain, enhance, or restore conditions that meet Greater Sage-Grouse life history needs.

To provide guidance to field offices about how to promote these principles, this IM transmits policies and procedures that apply to ongoing and proposed BLM actions, including use authorizations, within

Preliminary Priority Habitat (PPH) and Preliminary General Habitat (PGH). PPH comprises areas that have been identified as having the highest conservation value to maintaining sustainable Greater Sage-Grouse populations. These areas would include breeding, late brood-rearing, and winter concentration areas. These areas have been identified by the BLM in coordination with respective state wildlife agencies. PGH comprises areas of occupied seasonal or year-round habitat outside of priority habitat. These areas have been identified by the BLM in coordination with respective state wildlife agencies.

The policies and procedures identified in this IM are designed to minimize habitat loss in PPH and PGH and will advance the BLM's objectives to maintain or restore habitat to desired conditions by ensuring that field offices analyze and document impacts to PPH and PGH and coordinate with states and the Fish and Wildlife Service when issuing the decisions described below. These policies and procedures are in addition to and do not replace more protective measures in existing LUPs. The direction in this IM is time-limited: for each planning area where Greater Sage-Grouse occur, the conservation policies and procedures described in this IM will be applied until the BLM makes decisions through the land use planning process. All such LUP decisions are expected to be completed by the end of 2014. The BLM field offices do not need to apply the conservation policies and procedures described in this IM in areas in which (1) a state and/or local regulatory mechanism has been developed for the conservation of the Greater Sage-Grouse in coordination and concurrence with the FWS (including the Wyoming Governor's Executive Order 2011-5, Greater Sage-Grouse Core Area Protection); and (2) the state sage-grouse plan has subsequently been adopted by the BLM through the issuance of a state-level BLM IM. If BLM programs are not addressed in the adopted state Greater Sage-Grouse plan then program direction will default to the policies and procedures set forth in this WO IM.

PPH and PGH data and maps have been developed through a collaborative effort between the BLM and the respective state wildlife agencies and are stored at the National Operations Center (NOC). These science-based maps were developed using the best available data and may change as new information becomes available. Such changes would be science-based and coordinated with the state wildlife agencies so that the resulting delineation of PPH and PGH provides for sustainable populations. In those instances where the BLM state offices have not completed this delineation, the Breeding Bird Density maps developed by Doherty 2010[1] will be used. The NOC will establish the process for updating files to include the latest PPH and PGH delineations for each state. This information will assist in applying the interim conservation policies and procedures identified in Sections I and II below. As LUPs are amended or revised, the BLM state offices will be responsible for coordinating with the NOC to use the newest delineation of PPH and PGH. BLM staff may access the PPH and PGH data, using the following link: \\blm\dfs\loc\EGIS\OC\Wildlife\Transfers\GREATER_SAGE_GROUSE_GIS_DATA. Non-BLM personnel, may access these maps through the respective state wildlife agency.

The BLM will continue to work with its partners including the Western Association of Fish and Wildlife Agencies (WAFWA), FWS, U.S. Geological Survey (USGS), Natural Resource Conservation Service (NRCS), U.S. Forest Service (USFS), and the Farm Services Agency (FSA) within the framework of the Sagebrush Memorandum of Understanding (2008) and the WAFWA *Greater Sage-Grouse Comprehensive Conservation Strategy* (2006).

I. Interim Conservation Policies and Procedures for "Preliminary Priority Habitat"

Through these policies and procedures, you should seek to maintain, enhance, or restore conditions for Greater Sage-Grouse and its habitat. These policies and procedures apply to PPH only. Separate policies and procedures for PGH are provided in Section II of this IM.

Integrated Vegetation Management

Proposed Authorizations/Activities

- Evaluate land treatments (including Greater Sage-Grouse habitat treatments) in a landscape-scale context to address habitat fragmentation, effective patch size, invasive species presence, and protection of intact sagebrush communities. Coordinate land treatments with adjacent land owners to avoid any unintended negative landscape effects to Greater Sage-Grouse.
- When designing vegetation treatments, reference Ecological Site Descriptions (ESD), where available; the BLM *Integrated Vegetation Management Handbook* (H-1740-2); and a white paper developed by the Western Association of Fish and Wildlife Agencies entitled, *Prescribed Fire as a Management Tool in Xeric Sagebrush Ecosystems: Is it Worth the Risk to Sage-Grouse?.*
- Coordinate, plan, design, and implement vegetation treatments (e.g., pinyon/juniper removal,

fuels treatments, green stripping) and associated effectiveness monitoring between Resources, Fuels Management, Emergency Stabilization, and Burned Area Rehabilitation programs to:

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

- When conducting National Environment Policy Act (NEPA) analysis for vegetation treatments, document your analysis of (1) short- and long-term objectives and (2) direct, indirect, and cumulative effects of treatment types on Greater Sage-Grouse and its habitat.
- Pursue short-term objectives that include maintaining soil stability and hydrologic function of the disturbed site so a resilient plant community can be established.
- Pursue a long-term objective to maintain resilient native plant communities. Choose native plant species outlined in ESDs, where available, to revegetate sites. If the commercial supply of appropriate native seed/plants is limited, work with the BLM Native Plant Materials Development Program (NPMDP) through your respective State Office Plant Conservation Program Lead. It is a primary objective of the NPMDP to ensure native plants used by Greater Sage-Grouse are being collected and developed into commercially viable crops. If currently available supplies are limited, use the materials that provide the greatest benefit for Greater Sage-Grouse. When necessary, analyze the use of non-native species that do not impede long-term reestablishment goals of native plant communities and Greater Sage-Grouse habitat.
- Meet vegetation management objectives that have been set for seeding projects prior to returning the area to authorized uses, specifically livestock grazing. This generally takes a minimum of two growing seasons (see Handbook H-1742, *Emergency Fire Rehabilitation Handbook*). When treating invasive species, use the standard operating procedures and best management practices outlined in the *2007 Vegetation Treatments Using Herbicides on BLM Lands in 17 States Environmental Impact Statement* and applicable practices found in its accompanying *Biological Assessment*.
- Where pinyon and juniper trees are encroaching on sagebrush plant communities, design treatments to increase cover of sagebrush and/or understory to (1) improve habitat for Greater Sage-Grouse; and (2) minimize avian predator perches and predation opportunities on Greater Sage-Grouse.
- Implement management actions, where appropriate, to improve degraded Greater Sage-Grouse habitats that have become encroached upon by shrubland or woodland species.
- Identify opportunities for prescribed fire; including where prescribed fire has been identified as the most appropriate tool to meet fuels management objectives and Greater Sage-Grouse conservation objectives, and the potential expansion or dominance of invasive species has been determined to be minimal through an invasive species risk determination for the treatment project (see BLM Manual Section 9015). Before using prescribed fire, field offices must analyze the potential expansion or dominance of invasive species as a result of this treatment.

Wildfire Emergency Stabilization and Burned Area Rehabilitation

Both Ongoing and Proposed Authorizations/Activities

- In Emergency Stabilization and Burned Area Rehabilitation plans, prioritize re-vegetation projects to (1) maintain and enhance unburned intact sagebrush habitat when at risk from adjacent threats; (2) stabilize soils; (3) reestablish hydrologic function; (4) maintain and enhance biological integrity; (5) promote plant resiliency; (6) limit expansion or dominance or invasive species; and (7) reestablish native species.
- Increase post-fire activities through the use of integrated funding opportunities with other resource programs and partners.
- In areas burned within the past 5 years, ensure that effectiveness monitoring outlined in post-fire stabilization and rehabilitation plans continues and report the results as outlined in WO-IM-2010-195. Post-fire stabilization and rehabilitation monitoring should continue until post-fire objectives are met.

Wildfire Suppression and Fuels Management

Ongoing Authorizations/Activities

- Threatened, endangered, and sensitive species (including sage-grouse) and associated habitats will continue to be a high natural resource priority for National and Geographic Multi-Agency Coordination Groups, whose purpose is to manage and prioritize wildland fire operations on a national and geographic area scope when fire management resource shortages are probable.
- Greater Sage-Grouse protection and habitat enhancement is a high priority for the fire management program. A full range of fire management activities and options will be utilized to sustain healthy ecosystems (including Greater Sage-Grouse habitats) within acceptable risk levels. Local agency administrators and resource advisors will convey protection priorities to incident commanders.
- Comply with the policies established in WO-IM-2011-138 (Sage-Grouse Conservation Related to Wildland Fire and Fuels Management) or successor guidance, regarding suppression operations and fuels management activities.
- Identify opportunities for prescribed fire; including where prescribed fire has been identified as the most appropriate tool to meet fuels management objectives and Greater Sage-Grouse conservation objectives, and the potential expansion or dominance of invasive species has been determined to be minimal through an invasive species risk determination for the treatment project (see BLM Manual Section 9015). Before using prescribed fire, field offices must analyze the potential expansion or dominance of invasive species as a result of this treatment.

Rights-of-Way (ROW) (e.g., Renewable Energy Projects, Roads, Powerlines, Pipelines)

Existing Authorized ROW (i.e., permit has been issued and the project may have been constructed)

- Where Greater Sage-Grouse conservation opportunities exist, BLM field offices should work in cooperation with rights-of-way (ROW) holders to conduct maintenance and operation activities, authorized under an approved ROW grant, to avoid and minimize effects on Greater Sage-Grouse and its habitat.
- When renewing or amending ROWs, assess the impacts of ongoing use of the ROW to Greater Sage-Grouse habitat and minimize such impacts to the extent allowed by law.

Pending and Future ROW Applications (i.e., permit application has not been received or has been received and is being processed)

- If the BLM has issued or, within 90 days of the issuance of this Instruction Memorandum, the BLM issues a Draft EIS (DEIS) or a Finding of No Significant Impact (FONSI)) (i.e., permit application has been received and is currently being analyzed through an EIS or EA)

    o Work with applicants to minimize habitat loss, fragmentation, and direct and indirect effects to Greater Sage-Grouse and its habitat.
    o Determine, in coordination with the respective state wildlife agency, whether the proposed ROW would likely have more than minor adverse effects to Greater Sage-Grouse and its habitat. If the proposed ROW would likely have more than minor adverse effects, then implement the policies and procedures set forth in the section immediately below ("All Other Pending and Future Applications").

- All Other Pending and Future Proposed Applications

    o Conduct pre-application meetings for all new ROW proposals consistent with the ROW regulations (43 CFR 2804.10) and consistent with current renewable energy ROW policy guidance (WO-IM-2011-061, issued February 7, 2011).
    o For pending applications, assess the impact of the proposed ROW on Greater Sage-Grouse and its habitat, and implement the following:

        - Ensure that reasonable alternatives for siting the ROW outside of the PPH or within a BLMâ€'designated utility corridor are considered and analyzed in the NEPA document.
        - Identify technically feasible best management practices, conditions, etc. (e.g., siting, burying powerlines) that may be implemented in order to eliminate or minimize impacts.

    o For ROWs where the total project disturbance from the ROW and any connected action

is less than 1 linear mile, or 2 acres of disturbance, develop mitigation measures related to construction, maintenance, operation, and reclamation activities that, as determined in cooperation with the respective state wildlife agency, would cumulatively maintain or enhance Greater Sage-Grouse habitat.

o For ROW applications where the total project disturbance from the ROW and any connected action is greater than 1 linear mile or 2 acres of disturbance, it is BLM policy that where a field office determines that it is appropriate to authorize a ROW, the following process must be followed:

- The BLM will document the reasons for its determination and require the ROW holder to implement measures to minimize impacts to sage-grouse habitat.
- In addition to considering opportunities for onsite mitigation, the BLM will, to the extent possible, cooperate with project proponents to develop and consider implementing appropriate offsite mitigation that the BLM, coordinating with the respective state wildlife agency, determines would avoid or minimize habitat and population-level effects (Refer to WO-IM-2008-204, Off-Site Mitigation). When developing such mitigation, the BLM should consider compensating for the short-term and long-term direct and indirect loss of Greater Sage-Grouse and its habitat.
- Unless the BLM determines, in coordination with the respective state wildlife agency, that the proposed ROW and mitigation measures would cumulatively maintain or enhance Greater Sage-Grouse habitat, the proposed ROW decision must be forwarded to the appropriate BLM State Director, State Wildlife Agency Director, and FWS representative for their review. If this group is unable to agree on the appropriate mitigation for the proposed ROW, then the proposed decision must be forwarded to the Greater Sage-Grouse National Policy Team with the addition of the State Wildlife Agency Director, when appropriate, for its review. If the National Policy Team and the State Wildlife Agency Director are unable to agree on the appropriate mitigation for the proposed ROW, the National Policy Team will coordinate with and brief the BLM Director for a final decision in absence of consensus.

o Field offices retain the discretion to reject or deny a ROW application, where appropriate, or defer making a final decision on an application until the completion of the LUP process described in the *National Greater Sage-Grouse Planning Strategy* for the affected area.

Leasable Minerals (Energy and Non-energy)

Proposed Leasing (i.e., a lease has not been issued and, therefore, no valid existing rights have been established)

- Solid Mineral Leasing (Coal, Oil Shale, and Non-energy)

  Assess the impact to Greater Sage-Grouse and its habitat, and implement the following:

  o If the BLM has issued or, within 90 days of the issuance of this Instruction Memorandum, the BLM issues a DEIS or a FONSI:

  - Work in cooperation with applicants to minimize habitat loss, fragmentation, and direct and indirect effects to Greater Sage-Grouse and its habitat.
    Determine, in coordination with the respective state wildlife agency, whether the proposed leasing decision would likely have more than minor adverse effects to Greater Sage-Grouse and its habitat. If the proposed leasing decision would likely have more than minor adverse effects, then implement the policies and procedures set forth in the section immediately below ("All Other Proposed Solid Mineral Leasing").

  o All Other Proposed Solid Mineral Leasing

  It is BLM policy that where a field office determines that it is appropriate to authorize a proposed leasing decision, the following process must be followed:

  - The BLM will document the reasons for its determination and implement measures to minimize impacts to sage-grouse habitat.
  - In addition to considering opportunities for onsite mitigation, the BLM will

consider whether it is appropriate to condition the lease with a requirement for offsite mitigation that the BLM, coordinating with the respective state wildlife agency, determines would avoid or minimize habitat and population-level effects (refer to WO-IM-2008-204, Off-Site Mitigation).
    - Unless the BLM determines, in coordination with their respective state wildlife agency, that the proposed lease and mitigation measures would cumulatively maintain or enhance Greater Sage-Grouse habitat, the proposed lease must be forwarded to the appropriate BLM State Director, State Wildlife Agency Director, and FWS representative for their review. If this group is unable to agree on the appropriate mitigation for the proposed lease, then the proposed decision must be forwarded to Greater Sage-Grouse National Policy Team with the addition of the State Wildlife Agency Director, when appropriate, for its review. If the National Policy and the State Wildlife Agency Director are unable to agree on the appropriate mitigation for the proposed lease, the National Policy Team will coordinate with and brief the BLM Director for a final decision in absence of consensus.
    - Exception: New leases may be issued for mine expansion provided the mines will undergo concurrent surface mine reclamation and will result in minimal additional surface disturbance adjacent to an existing operation.

  - Field offices retain the discretion to not move forward with a nomination, or defer making a final decision on a leasing nomination until the completion of the LUP process described in the National Greater Sage-Grouse Planning Strategy for the affected area.

- Fluid Mineral Leasing (i.e., oil, gas, and geothermal)

  - It is BLM policy that where a field office determines that it is appropriate to authorize a proposed leasing decision, the following process must be followed:

    - The BLM will document the reasons for its determination and require the lessee to implement measures to minimize impacts to sage-grouse habitat.
    - In addition to considering opportunities for onsite mitigation, the BLM will consider whether it is appropriate to condition the lease with a requirement for offsite mitigation that the BLM, coordinating with the respective state wildlife agency, determines would avoid or minimize habitat and population-level effects (refer to WO-IM-2008-204, Off-Site Mitigation).
    - Unless the BLM determines, in coordination with the respective state wildlife agency, that the proposed lease and mitigation measures would cumulatively maintain or enhance Greater Sage-Grouse habitat, the proposed lease decision must be forwarded to the appropriate BLM State Director, State Wildlife Agency Director, and FWS representative for their review. If this group is unable to agree on the appropriate mitigation for the proposed lease, then the proposed decision must be forwarded to the Greater Sage-Grouse National Policy Team with the addition of the State Wildlife Agency Director, when appropriate, for its review. If the National Policy Team and the State Wildlife Agency Director are unable to agree on the appropriate mitigation for the proposed lease, the National Policy Team will coordinate with and brief the BLM Director for a final decision in absence of consensus.
    - Exception: Where drainage is likely or the lands are designated as No Surface Occupancy (NSO) in the existing LUP, the BLM may issue new leases with an NSO stipulation. The NSO stipulation will also have appropriate exception, waiver, and modification criteria. **Note:** A Controlled Surface Use stipulation is not an appropriate substitution for an NSO stipulation.
  - Field offices retain the discretion to not move forward with a nomination or defer making a final decision on a leasing decision until the completion of the LUP process described in the *National Greater Sage-Grouse Planning Strategy* for the affected area.

Authorizations on Existing Leases (i.e., the lease has been issued and valid existing rights have been established)

- Existing Authorizations (i.e., a permit has been issued)

  - Where Greater Sage-Grouse conservation opportunities exist, work in cooperation with operators to minimize habitat loss, fragmentation, and direct and indirect effects to Greater Sage-Grouse and its habitat.

- Fluid Minerals: Issue Written Orders of the Authorized Officer (43 CFR 3161.2) requiring reasonable protective measures consistent with the lease terms where necessary to avoid or minimize effects to Greater Sage-Grouse populations and its habitat.

- Proposed Pending Authorizations (i.e., permit application has not been received or has been received and is being processed)
  - If the BLM has issued or, within 90 days of the issuance of this Instruction Memorandum, the BLM issues a DEIS or a FONSI:
    - Work in cooperation with applicants to minimize habitat loss, fragmentation, and direct and indirect effects to Greater Sage-Grouse and its habitat.
      - Determine, in coordination with the respective state wildlife agency, whether the proposed authorization would likely have more than minor adverse effects to Greater Sage-Grouse and its habitat. If the proposed authorization would likely have more than minor adverse effects, then implement the policies and procedures set forth in the section immediately below ("All Other Proposed Authorizations").

- All Other Proposed Authorizations

It is BLM policy that where a field office determines that it is appropriate to issue a proposed authorization, the following process must be followed:

- Where the BLM has not issued a permit for development, design future conditions or restrictions to minimize adverse effects to Greater Sage-grouse and its habitat (e.g., Best Management Practices (BMP), noise limitations, seasonal restrictions, minimization of habitat fragmentation, improved reclamation standards, proper siting/designing infrastructure, restoring habitat) prior to permit approval. These measures may be in addition to and more protective or restrictive than the stipulations and restrictions identified in approved LUPs, when reasonable (43 CFR 3101.1-2), supported by science, and analyzed through the NEPA process.
  Fluid Minerals: Consider suspending non-producing leases in instances where mitigation would not adequately protect the integrity of Greater Sage-Grouse habitat until the BLM amends or revises the LUPs. Consistently apply protective measures to split estate lands.
- In areas where Greater Sage-Grouse populations have been substantially diminished, and where few birds remain, include actions in the authorization (e.g., siting/designing infrastructure, hastened habitat restoration) that will minimize habitat loss and promote restoration of habitat when development activities cease.
- In addition to considering opportunities for onsite mitigation, the BLM will, to the extent possible, cooperate with project proponents to develop and consider implementing appropriate offsite mitigation that the BLM, coordinating with the respective state wildlife agency, determines would avoid or minimize habitat and population-level effects (refer to WO-IM-2008-204, Off-Site Mitigation). When developing such mitigation, the BLM should consider compensating for the short-term and long-term direct and indirect loss of Greater Sage-Grouse and its habitat.
- For geophysical exploration activities, include seasonal timing limitations and BMPs as permit conditions of approval to eliminate or minimize surface-disturbing and disruptive activities within nesting and brood-rearing habitat and winter concentration areas.
- Fluid Minerals: Ensure authorizations under Onshore Oil and Gas Order No. 7 (Disposal of Produced Water) consider the potential impacts to Greater Sage-Grouse from West Nile virus and develop appropriate mitigation measures.

Grazing Permit/Leases Issuance/Grazing Management

Grazing can have localized adverse effects on Greater Sage-Grouse habitat depending on the condition of the habitat and the grazing practices used. Depending on design and application, grazing practices can also be used as a tool to protect intact sagebrush habitat and increase habitat extent and continuity which is beneficial to Greater Sage-Grouse and its habitat. Given the potential financial constraints in addressing the primary threats identified by the FWS, enhanced management of livestock grazing may be the most cost-effective opportunity in many instances to improve Greater Sage-Grouse habitat on public lands.

To promote grazing practices that will protect PPH and minimize adverse effects on Greater Sage-Grouse and its habitat, the BLM will implement the following:

Ongoing Authorization Activities

- If periods of drought occur, where appropriate evaluate the season of use and stocking rate and adjust through coordination and annual billings processes.
- Continue to coordinate with other Federal agencies, state agencies, and non-Federal partners. Leverage funding to implement habitat projects and implement the recent Memorandum of Understanding between the BLM, NRCS, FWS, and USFS for enhancing PPH through grazing practices.
- Continue to prioritize use supervision and effectiveness monitoring of grazing activities to ensure compliance with permit conditions and that progress is being made on achieving land health standards.
- Continue to evaluate existing range improvements (e.g., fences, watering facilities) associated with grazing management operations for impacts on Greater Sage-Grouse and its habitat.

Proposed Authorizations/Activities – Permit/Lease Renewal/Issuance

- When several small or isolated allotments occur within a watershed or delineated geographic area, strive to evaluate all of the allotments together. Prioritize this larger geographic area against other PPH areas for processing permits/leases for renewal.
- Coordinate BMPs and vegetative objectives with NRCS for consistent application across jurisdictions where the BLM and NRCS have the greatest opportunities to benefit Greater Sage-Grouse, particularly as it applies to the NRCS's National Sage-Grouse Initiative (http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/programs/farmbill/initiatives/?&cid=steidevb1027671).
- Pursue opportunities to incorporate multiple allotments under a single management plan/strategy where incorporation would result in enhancing Greater Sage-Grouse populations or its habitat as determined in coordination with respective state wildlife agency.
- Where current livestock grazing management has been identified as a causal factor in not meeting Land Health Standards (43 CFR 4180), use the process in WO-IM-2009-007, Process for Evaluating Status of Land Health and Making Determinations of Causal Factors When Land Health Standards Are Not Achieved, to identify appropriate actions.
- Evaluate progress towards meeting standards that may affect Greater Sage-Grouse or its habitat prior to authorizing grazing on an allotment that was not achieving land health standards in the last renewal cycle, and livestock was a significant causal factor. Where available, use current monitoring data to identify any trends (e.g., progress) toward meeting the standards. Where monitoring data are not available or inadequate to determine whether progress is being made toward achieving Land Health Standards, an interdisciplinary team should be deployed as practicable to conduct a new land health assessment. The NEPA analysis for the permit/lease renewal must address a range of reasonable alternatives including alternatives that improve Greater Sage-Grouse habitat.
- If livestock grazing was the cause of not achieving land health standards that have potential to impact Greater Sage-Grouse or its habitat in the last permit renewal cycle, an interdisciplinary team should be deployed as practicable to conduct a new land health evaluation to determine if the allotment is making progress and if livestock grazing remains a casual factor.
- Plan and authorize livestock grazing and associated range improvement projects on BLM lands in a way that maintains and/or improves Greater Sage-Grouse and its habitat. Analyze through a reasonable range of alternatives any direct, indirect, and cumulative effects of grazing on Greater Sage-Grouse and its habitats through the NEPA process:
    - Incorporate available site information collected using the *Sage-Grouse Habitat Assessment Framework*[2] when evaluating existing resource condition and developing resource solutions,
    - Incorporate management practices that will provide for adequate residual plant cover (e.g., residual grass height) and diversity in the understories of sagebrush plant communities as part of viable alternatives. When addressing residual cover and species diversity, refer to the ESD and "*State and Transition Model*," where they are available, to guide the analysis.
    - Evaluate and implement grazing practices that promote the growth and persistence of native shrubs, grasses, and forbs. Grazing practices include kind and numbers of livestock, distribution, seasons of use, and livestock management practices needed to meet both livestock management and Greater Sage-Grouse habitat objectives.
    - Evaluate the potential risk to Greater Sage-Grouse and its habitats from existing structural range improvements. Address those structural range improvements identified as posing a risk during the renewal process.
    - Balance grazing between riparian habitats and upland habitats to promote the production and availability of beneficial forbs to Greater Sage-Grouse in meadows, mesic habitats, and riparian pastures for Greater Sage-Grouse use during nesting and brood-rearing while maintaining upland conditions and functions. Consider changes to season-of-use in

riparian/wetland areas before or after the summer growing season.

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

Fences (Applicable to all programs)

- Evaluate the need for proposed fences, especially those within 1.25 miles[3] of leks that have been active within the past 5 years and in movement corridors between leks and roost locations. Consider deferring fence construction unless the objective is to benefit Greater Sage-Grouse habitat, improve land health, promote successful reclamation, protect human health and safety, or provide resource protection. If the BLM authorizes a new fence, then, where appropriate, apply mitigation (e.g., proper siting, marking, post and pole construction) to minimize or eliminate potential impacts to Greater Sage-Grouse as determined in cooperation with the respective state wildlife agency.
- To improve visibility, mark existing fences that have been identified as a collision risk. Prioritizing fences within 1.25 miles[3] of a lek, fences posing higher risks to Greater Sage-Grouse include those:
  - On flat topography;
  - Where spans exceed 12 feet between T-posts;
  - Without wooden posts; or
  - Where fence densities exceed 1.6 miles of fence per section (640 acres).[3]

Water Developments (applicable to all programs)

Proposed Authorizations/Activities

- NEPA analysis for all new water developments must assess impacts to Greater Sage-Grouse and its habitat.
- Install escape ramps and a mechanism such as a float or shut-off vaive to control the flow of water in tanks and troughs.
- Design structures in a manner that minimizes potential for production of mosquitoes which may carry West Nile virus.

Special Recreation Permits

Ongoing Authorization/Activities

- Work with permittees to avoid or minimize effects to Greater Sage-Grouse and its habitat.
- Evaluate existing Special Recreation Permits (SRP) for adverse effects to Greater Sage-Grouse and modify or cancel the permit, as appropriate, to avoid or minimize effects of habitat alterations or other physical disturbances to Greater Sage-Grouse (e.g., breeding, brood-rearing, migration patterns, or winter survival).
- Implement any necessary habitat restoration activities after SRP events. Restoration activities must be consistent with Greater Sage-Grouse habitat objectives as determined by the BLM field office in collaboration with the respective state wildlife agency.

Proposed Authorizations/Activities

- Work with permit applicants to avoid impacts to Greater Sage-Grouse and its habitat.
- It is BLM policy that where a field office determines that it is appropriate to authorize a proposed special recreation permit, the following process must be followed:

o The BLM will document the reasons for its determination and require the permitee to implement measures to minimize impacts to sage-grouse habitat.
o In addition to considering opportunities for onsite mitigation, the BLM will consider whether it is appropriate to condition the permit with a requirement for offsite mitigation that the BLM, coordinating with the respective state wildlife agency, determines would avoid or minimize habitat and population-level effects (refer to WO-IM-2008-204, Off-Site Mitigation).
o Unless the BLM determines, in coordination with the respective state wildlife agency, that the proposed permit and mitigation measures would cumulatively maintain or enhance Greater Sage-Grouse habitat, the proposed special recreation permit decision must be forwarded to the appropriate BLM State Director, State Wildlife Agency Director, and FWS representative for their review. If this group is unable to agree on the appropriate mitigation for the proposed special recreation permit, then the proposed decision must be forwarded to the Greater Sage-Grouse National Policy Team with the addition of the State Wildlife Agency Director, when appropriate, for its review. If the National Policy Team and the State Wildlife Agency Director are unable to agree on the appropriate mitigation for the proposed special recreation permit, the National Policy Team will coordinate with and brief the BLM Director for a final decision in absence of consensus.

- Field offices retain the discretion to not move forward with a special recreation permit application or defer making a final decision on a special recreation permit decision until the completion of the LUP process described in the *National Greater Sage-Grouse Planning Strategy* for the affected area.

Recreation Sites

- Use conservation measures to avoid impacts to Greater Sage-Grouse at existing recreation sites.
- Consider closing recreational sites either seasonally or permanently and restricting traffic to avoid or minimize effects of habitat alterations or other physical disturbances to Greater Sage-Grouse (e.g., breeding, brood-rearing, migration patterns, or winter survival).

Travel Management

Ongoing Authorizations/Activities

- Evaluate authorizations and use and implement seasonal road/primitive road/trail restrictions if continued use would result in habitat alterations or other physical disturbances that impair life history functions of the Greater Sage-Grouse, such as breeding, brood-rearing, migration patterns, or winter survival, as appropriate.
- Place a high priority on closing and reclaiming unauthorized motor vehicle routes.
- Limit and enforce motorized vehicle use to existing or designated roads, primitive roads, and trails and seasons of use to prevent habitat loss or other physical disturbance that impair life history functions of the Greater Sage-Grouse, such as breeding, migration patterns, or winter survival.

Proposed Authorizations/Activities

- Route construction should be limited to realignments of existing or designated routes to enhance other resources only if that realignment conserves or enhances sage-grouse habitat. Use existing roads, or realignments as described above, to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then any new road constructed will be built to the absolute minimum standard necessary. No improvement to existing routes will occur that would change route category (i.e., road, primitive road, or trail) or enhance capacity.

Locatable Minerals

Ongoing Authorizations/Activities (i.e., existing operations conducted under a Notice or a Plan of Operations)

- Request that holders of Notices and Plans of Operation modify their operations to avoid or minimize adverse effects on Greater Sage-Grouse and its habitat. Operators must be informed in the request that compliance is not mandatory.

Proposed Authorizations/Activities (i.e., new Notices or Plans of Operation)

- Require that new notices and plans of operation include measures to avoid or minimize adverse effects to Greater Sage-Grouse populations and its habitat. Ensure that new notices and plans of operation comply with the requirements in 43 CFR 3809 to prevent unnecessary or undue degradation. Such compliance may assist in avoiding or minimizing adverse effects to Greater Sage-Grouse populations and habitat.

Salable Minerals

Ongoing Authorizations/Activities (i.e., an authorization has been issued)

- Where valid existing rights exist, work with the holders of authorizations to develop actions such as siting/design of infrastructure, timing of operations, or reclamation standards that will avoid or minimize effects to Greater Sage-Grouse populations and its habitat.

Proposed Authorizations/Activities

- If the BLM has issued or, within 90 days of the issuance of this Instruction Memorandum, the BLM issues a DEIS or a FONSI:

  o Work with applicants to minimize habitat loss, fragmentation, and direct and indirect effects to Greater Sage-Grouse and its habitat.
  o Determine, in coordination with the respective state wildlife agency, whether the proposed authorization would likely have more than minor adverse effects to Greater Sage-Grouse and its habitat. If the proposed authorization would likely have more than minor adverse effects, then implement the policies and procedures set forth in the section immediately below ("All Other Proposed Authorizations/Activities").

- All Other Proposed Authorizations/Activities

  It is BLM policy that where a field office determines that it is appropriate to issue an authorization, the following process must be followed:

  o The BLM will document the reasons for its determination and implement measures to minimize impacts to sage-grouse habitat.
  o In addition to considering opportunities for onsite mitigation, the BLM will, to the extent possible, cooperate with project proponents to develop and consider implementing appropriate offsite mitigation that the BLM, coordinating with the respective state wildlife agency, determines would avoid or minimize habitat and population-level effects (refer to WO-IM-2008-204, Off-Site Mitigation). When developing such mitigation, the BLM should consider compensating for the short-term and long-term direct and indirect loss of Greater Sage-Grouse and its habitat.
  o Unless the BLM determines, in coordination with the respective state wildlife agency, that the proposed pit and mitigation measures would cumulatively maintain or enhance Greater Sage-Grouse habitat, the proposed pit authorization decision must be forwarded to the appropriate BLM State Director, State Wildlife Agency Director, and FWS representative for their review. If this group is unable to agree on the appropriate mitigation for the proposed authorization, then the proposed decision must be forwarded to the Greater Sage-Grouse National Policy Team with the addition of the State Wildlife Agency Director, when appropriate, for its review. If the National Policy Team and the State Wildlife Agency Director are unable to agree on the appropriate mitigation for the proposed authorization, the National Policy Team will coordinate with and brief the BLM Director for a final decision in absence of consensus.
  o Exception- Pit Expansion Only: New permits may be issued for pit expansion, provided there are no adverse effects on Greater Sage-Grouse and its habitat.

- Field offices retain the discretion to not move forward with an authorization, where appropriate, or defer making a final decision on regarding an authorization until the completion of the LUP process described in the *National Greater Sage-Grouse Planning Strategy* for the affected area.

Grasshopper and Mormon Cricket Control and Management

Proposed Authorizations/Activities

- If grasshopper control is proposed, the NEPA analysis must address impacts on Greater Sage-Grouse and its habitat.
- Continue to implement WO-IM-2010-084, Grasshopper and Mormon Cricket Treatments within Sage-grouse Habitat, and reference WY-IM-2010-12, Greater Sage-Grouse Habitat Management Policy on Wyoming Bureau of Land Management (BLM) Administered Public Lands including the Federal Mineral Estate, for grasshopper or Mormon cricket control.
- Coordinate with local Animal and Plant Health Inspection Service (APHIS) personnel and state wildlife agencies concerning treatments in Greater Sage-Grouse habitat.
- Management actions and operating procedures may include, but are not limited, to the following:

    o Evaluate and restrict or modify treatment methods and timing of use or other mitigation.
    o Avoid spraying treatment areas in May and June (or as appropriate to local circumstances) to provide insect availability for early development of Greater Sage-Grouse chicks.
    o Application timing should be implemented to reduce disturbance and impacts to Greater Sage-Grouse.
    o Use approved chemicals with the lowest toxicity to Greater Sage-Grouse that still provide effective control of grasshopper and Mormon cricket. Coordinate with APHIS to determine the approved chemical with the lowest toxicity.
    o Evaluate the appropriate percentages of Environmental Protection Agency (EPA) allowable chemical rates and the pros and cons of available chemical use, in coordination with state wildlife agencies, FWS, and APHIS.
    o Use *Carbaryl* only when necessary to treat large grasshopper and Mormon cricket populations late in the season. APHIS will coordinate the use with the respective BLM state office prior to any application.
    o Implement effectiveness monitoring, if warranted.

Wild Horse and Burro Management

Ongoing Authorizations/Activities

- Manage wild horse and burro population levels within established Appropriate Management Levels (AML).
- Wild Horse Herd Management Areas will receive priority for removal of excess horses.
- Wild horses and burros remaining in Herd Management Areas where the AML has been established as zero will receive priority for removal.
- When developing overall workload priorities for the upcoming year, prioritize horse gathers except where removals are necessary in non-PPH to prevent catastrophic herd health and ecological impacts.

Realty Actions (e.g., Land Exchanges, Transfers, and Sales)

It is BLM policy that where a field office determines that it is appropriate to implement a public land disposal action, the following process must be followed:

- The BLM will document the reasons for its determination and implement measures to minimize impacts to sage-grouse habitat. Unless the BLM determines, in coordination with the respective state wildlife agency, that the proposed land disposal action would cumulatively maintain or enhance Greater Sage-Grouse habitat, the proposed land disposal action must be forwarded to the appropriate BLM State Director, State Wildlife Agency Director, and FWS representative for their review. If this group is unable to agree on the appropriate mitigation for the proposed land disposal action, then the proposed decision must be forwarded to the Greater Sage-Grouse National Policy Team with the addition of the State Wildlife Agency Director, when appropriate, for its review. If the National Policy Team and the State Wildlife Agency Director are unable to agree on the appropriate mitigation for the proposed land disposal action, the National Policy Team will coordinate with and brief the BLM Director for a final decision in absence of consensus.

- Exception: Those land disposal actions (e.g., the BLM's acceptance of an Application for Land for Recreation and Public Purposes, Publication of a Federal Register Notice of Realty Action, Execution of an Agreement to Initiate an Exchange, the BLM's acceptance of a State Application for Selection) initiated prior to or if the BLM is within 90 days of the issuance of a DEIS or FONSI for a land disposal action following the date of this IM.

Vegetation and Resource Monitoring

Ongoing Authorizations/Activities

- Continue to coordinate with NRCS and its contractors to implement the BLM *Landscape Monitoring Framework Project* developed under the *Assessment, Inventory and Monitoring Strategy* to assess the condition of public lands including PPH at a landscape level.
- Continue to work with livestock grazing permittees/lessees to collect specific kinds of monitoring information on their allotments to supplement monitoring information collected by the BLM (refer to WO-IB-2010-015, Grazing Permittee - Joint Cooperative Monitoring, for additional information).
- Until further direction is provided, and within the range of the Greater Sage-Grouse, the Wildlife Program (1110) will collect, consolidate, and report the following annually to the Division of Fish and Wildlife Conservation (WO-230):

  o Miles, acres, and/or number of structures (e.g., fences, water developments, well pads, gravel pits, roads) removed, installed, relocated, decommissioned, modified, or mitigated to benefit Greater Sage-Grouse and its habitat;
  o Number of BLM use authorizations issued or deferred and the associated acres where changes in management were implemented to benefit Greater Sage-Grouse and its habitat;
  o Acres where the BLM implemented changes in use in order to improve habitat for the Greater Sage-Grouse in cooperation with other Federal or state agencies;
  o Acres of habitat altered by wildland fire, acres treated after fire, and acres not treated after fire that were in need of treatment;
  o Acres of habitat altered by fuels treatment projects and how those treatments affected habitat;
  o Acres of vegetation treated to benefit Greater Sage-Grouse habitat; and
  o Number of allotments assessed for land health standards and the associated acres, according to Table 7A of the *Rangeland Inventory, Evaluation and Monitoring Report*.

Proposed Authorizations/Activities

- New activity plans and/or project plans must include clear objectives to benefit Greater Sage-Grouse habitat and vegetative resource conditions. Base these vegetative objectives on (1) the native shrub reference state as shown in the *State and Transition Model* outlined in the applicable ESD, where available; (2) published scientific habitat guidelines for specific areas; and (3) local sage-grouse working group recommendations.
- Monitor activities and projects using the BLM core indicators and protocols (see the BLM *Assessment, Inventory and Monitoring Strategy*) to ensure that the objectives are being met. Supplement data collection, as necessary, with other programmatic information for the site to demonstrate that objectives are being met.
- Complete habitat inventories/assessments using the *Sage-Grouse Habitat Assessment Frameworkin* a timely manner so that data are available for consideration in livestock grazing permit renewals and other management decisions.
-

II. Interim Conservation Policies and Procedures for "Preliminary General Habitat"

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

- When approving uses and authorizations, consider and analyze management measures that would reduce direct, indirect, and cumulative adverse effects on Greater Sage-Grouse and its habitat. For example, consider alternatives that would increase buffer distances around active

leks and timing restrictions within existing LUPs as needed to further reduce adverse effects on Greater Sage-Grouse and its habitat.

- Consider deferring authorizations in PGH where appropriate, depending on local characteristics, new science and/or data (e.g., migratory corridors or habitat between PPH), and relative habitat importance if authorizations could result in Greater Sage-Grouse population loss in PPH.
- Consider offsite mitigation measures in collaboration with state wildlife agencies and project proponents when authorizing activities.
- Evaluate and address anticipated fence collision risks within 1.25 miles[3] of leks and other seasonal habitats. Where NEPA analysis suggests that a deviation from this distance is warranted, modifications of this distance are acceptable.

Timeframe: This IM is effective immediately and will remain in effect until the BLM completes the LUP process described in the *National Greater Sage-Grouse Planning Strategy*.

Budget Impact: This IM will result in additional costs for coordination, NEPA review, planning, implementation, and monitoring.

Background: In March 2010, the FWS published its petition decision for the Greater Sage-Grouse as "Warranted but Precluded." Inadequacy of regulatory mechanisms was identified as one of the major factors in the FWS's finding on Greater Sage-Grouse. The FWS has identified the principal regulatory mechanism for the BLM as protective measures embedded in LUPs. The BLM is identifying sage-grouse conservation measures for consideration through the planning process, with a target decision date of September 2014. The goal is to conserve habitat necessary to sustain Greater Sage-Grouse populations and reduce the likelihood of listing under the Endangered Species Act.

In July 2011, the BLM announced the *National Greater Sage-Grouse Planning Strategy* which provides a framework for establishing adequate regulatory mechanisms (conservation measures) in applicable BLM LUPs throughout the range of the Greater Sage-Grouse.

Manual/Handbook Sections Affected: None.

Coordination: This IM was coordinated with the Office of National Landscape Conservation System and Community Partnership (WO-400), Assistant Director, Renewable Resources and Planning (WO-200), Minerals and Realty Management (WO-300), Fire and Aviation (FA-100), BLM state offices, FWS, and state wildlife agencies.

Contact: State Directors may direct any questions or concerns to Edwin Roberson, Assistant Director, Renewable Resources and Planning (WO-200), at 202- 208-4896 or eroberso@blm.gov, and Michael D. Nedd, Assistant Director, Minerals and Realty Management (WO-300), at 202-208-4201 or mnedd@blm.gov.

Signed by:
Mike Pool
Acting, Director

Authenticated by:
Ambyr Fowler
Division of IRM Governance, WO- 560

1 Attachment
1-Definitions (2 pp)

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[1] Doherty, K. E., J.D. Tack, J.S. Evans and D. E. Naugle. 2010. Mapping breeding densities of Greater Sage-Grouse: A tool for range-wide conservation planning. BLM Completion Report: Interagency Agreement # L10PG00911.

[2]Stiver, S.J., E.T Rinkes, AND D.E. Naugle. 2010. Sage-grouse Habitat Assessment Framework. U.S. Bureau of Land Management. Unpublished Report. U.S. Bureau of Land Management, Idaho State Office, Boise, Idaho.

[3] Stevens, B.S. 2011. Impacts of Fences on Greater Sage-Grouse in Idaho: Collision, Mitigation, and Spatial Ecology (Master's Thesis). University of Idaho, Moscow, Idaho.

Appendix I

Nevada Partners in Conservation and Development 2014 Monitoring Methods and Results for the SANE Plan Area

Appendix I. Nevada Partners in Conservation and Development 2014 Monitoring Methods and Results for the SANE Plan Area

The NPCD monitoring methods are consistent with the BLM Assessment, Inventory and Monitoring (AIM) protocol (Taylor et al. 2014), the USGS Chronosequence (Knustson et al. 2009), BLM Emergency Stabilization and Rehabilitation (ES&R), and the USFS Burn Area Emergency Response (BAER) protocol (Robichaud, Beyers and Neary 2000). The methods are simple, easily repeatable and broadly accepted by land managers, vegetation scientists and restoration practitioners. The suite of methods include line point intercept (LPI), perennial canopy gap, density of woody vegetation, photographs, soil texture and stability and plant species.

Sampling is conducted prior to treatments to establish baseline conditions for as many years possible in an effort to account for inter-annual climate variation then the same sites are visited following treatments. The various comparisons between pre and post treatment sites as well as comparisons of treated to control sites allows for project effects to be determined Turner et al. 2010).

Sampling sites consist of three 50 meter transects oriented at 0, 120 and 240 degree compass bearings. Once at the sampling location, all plants found within the perimeter of the site are identified to species (species richness). Photographs are taken along each 50 meter transect (Bonham 1989), foliar cover by species is measured via line point intercept along 50 meter transects (Canfield 1941) and the height of shrubs and perennial grasses/forbs is measured along each transect. Ground cover is measured during the LPI as well. Gaps in the perennial vegetation canopy are measured and a 2-meter by 50-meter belt transect is established to estimate the density of shrubs and trees of various size categories (Elzinga, Salzer and Willoughby 2000). The measures employed provide a complete picture of the vegetation including species at each site, all noxious or other nonnative plants, percent cover of all species, structure (height) of the shrubs and perennial understory and density by woody species (Daubenmire 1959; Elzinga, Salzer and Willoughby 2000; Bestelmeyer et al. 2005; Forbis et al. 2007).

The following tables summarize the vegetation data collected by the NPCD in 2014.

Citations

Bestelmeyer, B., Trujillo, D., Tugel, A., Havstad, K. 2002. A multi-scale classification lf vegetation dynamics in arid land: What is the right scale for models, monitoring and restoration. *Journal of Arid Environments* 65:296-318.

Elzinga, C., Salzer, D. and Willoughby, J. 2000. Measuring and Monitoring Plant Populations. BLM Technical Reference 1730-1. BLM/RS/ST-98/005+1730.

Forbis, T., Provencher, L., Turner, L., Medlyn, G., Thompson, J. and Jones, G. 2007. A Method for Landscape-Scale Vegetation Assessment: Application to Great Basin Rangeland Ecosystems. *Rangeland Ecology and Management* 60:209-217.

Knutson, K., Pyke, D., Wirth, T., Pilliod, D., Brooks, M., and Chambers, J.2009. A chronosequence feasibility assessment of emergency fire rehabilitation records within the Intermountain Western United States—Final Report to the Joint Fire Science Program—Project 08-S-08: U.S. Geological Survey Open-File Report 2009-1099, 20 p.

Robichaud, P., Beyers, J. and Neary, D. 2000. Evaluating the effectiveness of postfire rehabilitation treatments. Gen. Tech. Rep. RMRS-GTR-63. Fort Collins: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 85 p.

Taylor, J., Kachergis, E., Toevs, Karl, G., Bobo, M., Karl, M., Miller, S., and Spurrier, C. 2014. AIM-Monitoring: A Component of the BLM Assessment, Inventory, and Monitoring Strategy. Technical Note 445. U.S. Department of the Interior, Bureau of Land Management, National Operations Center, Denver, CO.

Turner, L., Pellant, M., Pyke, D., Swanson, S., Chambers, J., Forbis, T. and Herrick, J. 2010. Nevada Partners for Conservation and Development Pre and Post Habitat Treatment Vegetation Sampling Protocol.

2014 MONITORING SUMMARY

ECCLES RANCH FIRE

UTM (Universal Transverse Mercator) GPS coordinates for all vegetation plots established in 2014. All GPS and spatial data are collected using NAD83 UTM Meters Zone 11.

Site Name	point	Easting	Northing
Eccles Ranch	ECCLES-1	703283	4600796
Eccles Ranch	ECCLES-2	702606	4601089
Eccles Ranch	ECCLES-3	701820	4600101
Eccles Ranch	ECCLES-4	703141	4602457
Eccles Ranch	ECCLES-5	700998	4603182
Eccles Ranch	ECCLES-6	703889	4602040
Eccles Ranch	ECCLES-7	703867	4600040
Eccles Ranch	ECCLES-8	707723	4602848
Eccles Ranch	ECCLES-9	708261	4603797
Eccles Ranch	ECCLES-10	702104	4604114
Eccles Ranch	ECCLES-11	703681	4604786
Eccles Ranch	ECCLES-12	698606	4603510
Eccles Ranch	ECCLES-13	708475	4604405
Eccles Ranch	ECCLES-14	706993	4604024
Eccles Ranch	ECCLES-15	706422	4605310
Eccles Ranch	ECCLES-16	706173	4606146

Data Files for Eccles Ranch Fire:

Species Richness

Line Point Intercept

Canopy Gap of Perennial Vegetation

Vegetation Height measured during Line Point Intercept

SCOTT CREEK FIRE

UTM (Universal Transverse Mercator) GPS coordinates for all vegetation plots established in 2014. All GPS and spatial data are collected using NAD83 UTM Meters Zone 11.

Site Name	point	Easting	Northing
Scott Creek	SCTCK-1	681834	4648092
Scott Creek	SCTCK-2	681550	4648406
Scott Creek	SCTCK-3	681180	4647732
Scott Creek	SCTCK-4	681980	4648764
Scott Creek	SCTCK-5	681090	4649056
Scott Creek	SCTCK-6	679511	4647137
Scott Creek	SCTCK-7	679262	4647767
Scott Creek	SCTCK-8	678460	4648773
Scott Creek	SCTCK-9	684804	4645941
Scott Creek	SCTCK-10	683752	4645695
Scott Creek	SCTCK-11	684127	4645497
Scott Creek	SCTCK-12	683328	4645338
Scott Creek	SCTCK-13	685441	4645060
Scott Creek	SCTCK-14	685103	4645822
Scott Creek	SCTCK-15	686606	4644898
Scott Creek	SCTCK-16	687322	4644401
Scott Creek	SCTCK-17	686852	4643805
Scott Creek	SCTCK-18	686250	4643865
Scott Creek	SCTCK-19	685444	4643491
Scott Creek	SCTCK-20	681706	4650008
Scott Creek	SCTCK-21	683764	4649096
Scott Creek	SCTCK-22	683885	4643396
Scott Creek	SCTCK-23	687822	4642701
Scott Creek	SCTCK-24	686664	4642662
Scott Creek	SCTCK-25	686064	4641182
Scott Creek	SCTCK-26	684452	4640528
Scott Creek	SCTCK-27	683222	4640084
Scott Creek	SCTCK-28	683450	4641254
Scott Creek	SCTCK-29	681498	4641126

Site Name	point	Easting	Northing
Scott Creek	SCTCK-30	681179	4640373
Scott Creek	SCTCK-31	680973	4638768
Scott Creek	SCTCK-32	681304	4642397
Scott Creek	SCTCK-33	681841	4642658
Scott Creek	SCTCK-34	687011	4642336
Scott Creek	SCTCK-35	685049	4642626
Scott Creek	SCTCK-36	681979	4641274
Scott Creek	SCTCK-37	681754	4641996
Scott Creek	SCTCK-38	683774	4641637
Scott Creek	SCTCK-39	680570	4640396
Scott Creek	SCTCK-40	684632	4639050
Scott Creek	SCTCK-41	685336	4639332

Data Files for Scott Creek Fire:

Species Richness

Line Point Intercept

Canopy Gap of Perennial Vegetation

Vegetation Height measured during Line Point Intercept

WEST FORK FIRE

UTM (Universal Transverse Mercator) GPS coordinates for all vegetation plots established in 2014. All GPS and spatial data are collected using NAD83 UTM Meters Zone 11.

Site Name	point	Easting	Northing
West Fork	WSTFRK1	722512	4622018
West Fork	WSTFRK2	722922	4622749
West Fork	WSTFRK3	722212	4624315
West Fork	WSTFRK4	721857	4624044
West Fork	WSTFRK5	721586	4625547
West Fork	WSTFRK6	720590	4625698
West Fork	WSTFRK7	719405	4623900
West Fork	WSTFRK8	719405	4622571
West Fork	WSTFRK9	720224	4626711
West Fork	WSTFRK10	722410	4627374
West Fork	WSTFRK11	721564	4627831
West Fork	WSTFRK12	726658	4618540

Site Name	point	Easting	Northing
West Fork	WSTFRK13	725325	4619315
West Fork	WSTFRK14	724818	4619923
West Fork	WSTFRK15	727246	4619698
West Fork	WSTFRK16	726727	4621038
West Fork	WSTFRK17	726222	4622153
West Fork	WSTFRK18	730955	4619134
West Fork	WSTFRK19	729414	4619604
West Fork	WSTFRK20	729048	4620718
West Fork	WSTFRK21	729240	4620677
West Fork	WSTFRK22	729607	4620832
West Fork	WSTFRK23	728951	4621663
West Fork	WSTFRK24	729863	4621676

Data Files for West Fork Fire:

Species Richness

Line Point Intercept

Canopy Gap of Perennial Vegetation

Vegetation Height measured during Line Point Intercept