

Vya Population Management Unit Population Conservation Plan

INTRODUCTION

The Vya Sage Grouse Population Management Unit encompasses 501,247 acres of sage grouse habitat in northwestern Washoe County and a small portion of northeastern Modoc County in California. The area is bounded on the west by Surprise Valley and the Warner Mountains in California, highway 8A to the south, the Oregon-Nevada Stateline to the north and Massacre Bench and the Sheldon National Wildlife Refuge boundary to the east. Elevations vary from approximately 4,000 feet on the valley floors to over 7,000 feet at Vya Peak. Yearly precipitation levels vary from 8 inches in the valley floors to over 18 inches at the higher elevations. Vegetation types range from salt desert shrub communities in the dryer valley floors to aspen and mountain mahogany in the upper elevations. Overall, sagebrush is a dominant vegetation type in this PMU with low sagebrush, Wyoming big sagebrush and mountain big sagebrush occurring in similar amounts. Large stands of Juniper also occur within this PMU.

CONSERVATION ASSESSMENT

Sage Grouse in this population management unit occur over a large geographic area with little or no occurrence of habitat fragmentation. Over 80 percent of the land in this PMU are under federal ownership and are managed by the Bureau of Land Management. No large-scale changes in land management practices are anticipated for this PMU. A qualitative population viability analysis was done by Nevada Division of Wildlife biologists using parameters outlined in Appendix 6 of the governor's sage grouse plan. This analysis of factors in the Vya PMU indicates a low probability of extirpation within the next 20 years.

Population estimates based on lek counts over the last ten years indicate relatively stable bird numbers with a spring breeding population of 1,500 to 2,000 sage grouse. The following assessment of management risks, conservation actions and monitoring will provide NDOW and others guidance in the collection of data and management of sage grouse in this population management unit.

FACTOR: Harvest

WAFWA Guideline

Where populations are hunted, harvest rates should be 10% or less than the estimated fall population to minimize negative effects on the subsequent year's breeding population.

Risk: Over Harvest of the Population. Rated Low.

Hunting is the most obvious direct mortality factor that people observe on sage grouse. Hunting is also one of the most

manageable mortality factors. Harvest trends for the Vya PMU have been collected from hunter bag checks and questionnaire data since the mid 1950's.

During the 1960's when sage grouse

were hunted separately from other species during a September season it is estimated that harvest levels exceeded 500 birds during some years with over 200 hunters pursuing grouse in the Vya area. Conservative October seasons begun in 1986 have reduced both hunter participation and the total number of birds harvested. Due to the remoteness of the Vya hunt unit declines in hunter numbers may have been more dramatic than other more accessible hunt areas. Because of this the risk of over harvest by hunters was rated low by the population subgroup. Hunter numbers have averaged 35 over the last ten years with an average harvest of 77 birds. These October seasons have produced a ninety- percent reduction in hunter numbers and birds harvested from peak years during the 1960's. Season timing and to a lesser extent changes in bag limits have been very effective tools for matching harvest rates to sage grouse population levels. Figure 1 portrays these changes in harvest rates over the last forty years for the Vya population unit.

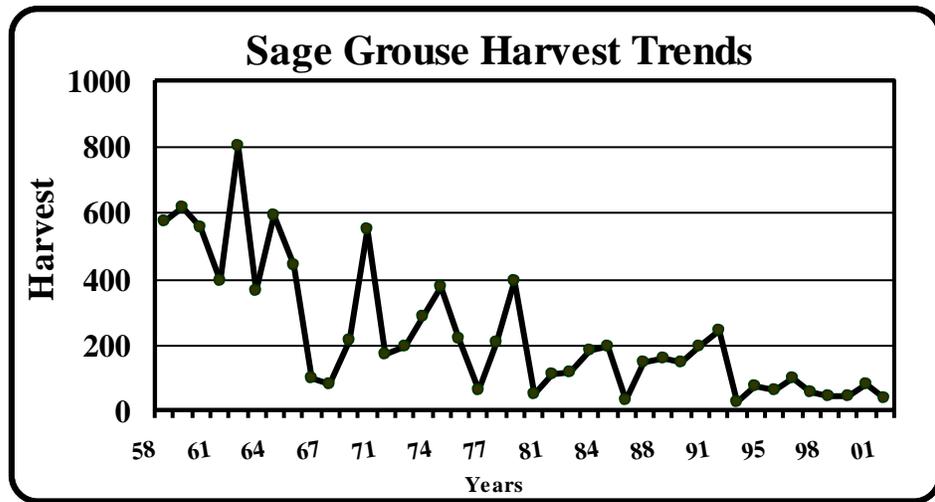


Figure 1.

Risk: Over Harvest of Females and Young. Rated Low.

Nevada studies on hunted and non-hunted areas over a four-year period were conducted in the Massacre PMU during the 1980's. Harvest rates of 25 percent were made on the hunted area, rather than the normal 7-11 percent. Based on lek counts and late summer density surveys, the number of birds increased on both the hunted and non-hunted area, but increases on the hunted area were lower than the non-hunted. These data suggest that populations are able to withstand some level of exploitation. Wing data collected during these hunts indicated that hunting birds in September produced high harvest rates on the female segment of the population. Sixty to seventy percent of the harvest during this four-year study was made up of females. Harvest ratios obtained during October seasons are generally made up of 50 percent males and 50 percent females. Delaying hunting in the fall helps to maintain low harvest rates and reduces the impact on the female segment of the population.

Risk: Over Harvest of marginal and isolated populations.

The Washoe-Lassen-Modoc population subgroup did not consider this to be a risk to sage grouse in the Vya PMU. Sage Grouse in this population management unit occur over a large geographic area with little or no occurrence of habitat fragmentation. This area is very remote and difficult to access. Because of this only a very small number of hunters pursue sage grouse in this unit during the October season. For example wing collections conducted during the 2002 season indicate that less than twenty birds were harvested out of this unit. With a population estimate of 1,500 to 2,000 birds this harvest is insignificant at less than one percent of the total grouse inhabiting this PMU.

Risk: Over Harvest of genetically unique populations.

The Washoe-Lassen-Modoc population subgroup did not consider this to be a risk to sage grouse in the Vya PMU. Sage Grouse in this population management unit occur over a large geographic area with little or no occurrence of habitat fragmentation. Genetic mixing occurs within the Vya PMU and also with adjacent PMU's.

Risk: No Harvest Data for Population Estimates. Rated Medium.

Nest success and the recruitment of juveniles into the population is usually cited as the most significant parameter influencing the population dynamics of sage grouse. Production data is used to generate fall population estimates and is vital to understanding the status and trend of a sage grouse population. Production or recruitment can be monitored by brood counts or wing composition surveys. Brood counts are labor-intensive and usually result in inadequate sample size or miss leading information. Gathering reliable production data from brood counts over a large landmass like the Vya PMU can be very difficult. Estimates of sage grouse nesting success and juvenile to adult hen ratios should be obtained through adequate samples of hunter harvested wings when there is no risk to the population. Given the remoteness of this area and the lack of harvest, gathering adequate production data will be difficult in this management unit. However, the Vya population subgroup recommends that NDOW utilize wing barrels and wing tags to delineate the location of hunter harvested wings.

Risk: Crippling Loss.

The Washoe-Lassen-Modoc population subgroup did not consider this to be a risk to sage grouse in the Vya PMU. Certainly within a hunted population crippling loss occurs. However, with the low harvest rates in this unit any crippling loss would occur at a level that would not impact the population trend.

Risk: Poaching. Rated Medium.

California Fish and Game biologists and game wardens indicate that some illegal take of sage grouse may be occurring within the Vya PMU. Most of this activity occurs during the late summer months when birds are closely associated with water sources and most vulnerable. Most of this take is considered to be opportunistic and no data exists that indicates organized poaching occurs within this PMU. Illegal take of sage grouse in this PMU is probably not at a level that is impacting population trend however, the population subgroup recommends law enforcement patrols occur during late summer and fall to document any problems with illegal take.

FACTOR: Population Status and Trend

WAFWA Guideline

Routine population monitoring should be used to assess trends and identify problems for all hunted and nonhunted populations. Check stations wing collections and questionnaires can be used to obtain harvest information. Breeding population (lek counts) and production data can be used to monitor population levels.

Risk: Unable to Determine Trend of Population. Rated High.

Having reliable information to determine how many sage grouse are in a population and whether or not bird numbers are increasing, stable or declining is vital to making proper management decisions. Sage grouse can be found throughout the 501,247 acres of the Vya PMU. This fact coupled with the remoteness of the area and difficulty in travel complicate attempts to define populations and generate population estimates. Lek counts provide the best index to breeding populations however, lek counts done to date from the ground by CDFG, BLM, volunteers and NDOW have produced an incomplete picture of the population.

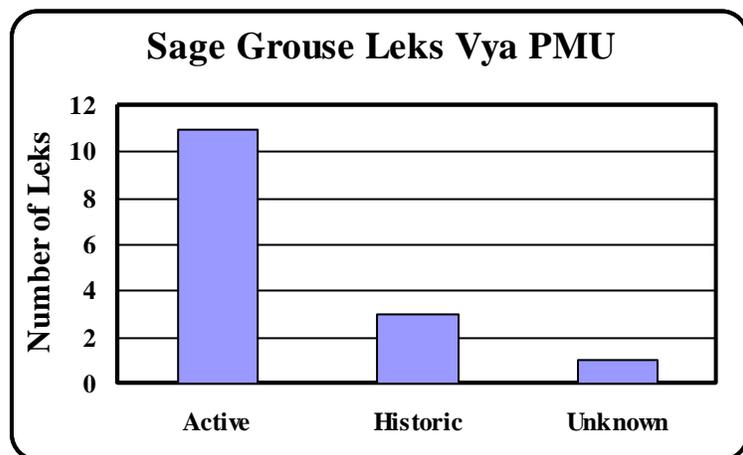


Figure 2.

Aerial lek surveys are the best method for obtaining information on population numbers and trend of sage grouse in this population management unit and others. However, NDOW does not currently conduct aerial surveys in this PMU. Budget and manpower constraints have been the reasons for not conducting these surveys in past years. Figure 2 shows what is currently known about the status of leks in the Vya PMU. In order to better understand the trends of known

leks and to identify new leks within this PMU the population subgroup has developed conservation actions and subsequent monitoring that will address the lack of knowledge about strutting grounds in this remote area. This group recommends that NDOW implement an aerial survey program which looks at all known leks in this PMU at least once a year. The group also felt that a systematic search for new leks should also be conducted on a yearly basis until all likely breeding areas within the PMU have been surveyed.

Risk: Unable to Determine Effects of Conservation Plan. Rated High.

In order to understand the effects of various conservation measures biologists must first have a good idea of how many birds are in a population what the production and recruitment rates have been and how many birds are being harvested from the population. Without this baseline information it can be difficult to determine if conservation actions are having a positive or negative effect on the population. An example of this is the predator work, which is being done in the Massacre PMU. The effects of this conservation action to increase the nesting success of sage grouse are being monitored by obtaining adequate samples of hunter harvested wings to measure whether the removal of avian predators is increasing sage grouse production rates. In the Nevada portion of the Vya PMU very little baseline population data is currently available therefore it is recommended by the population subgroup that initial conservation actions focus on obtaining this baseline population data.

FACTOR: Predation

WAFWA Guideline

For small, isolated populations and declining populations, assess the impact of predation on survival and production. Predator management should be implemented only if the available data (e.g., nest success <25%, annual survival of adult hens <45%) support the action.

Risk: Excessive nest losses by avian predators. Rated High.

The population subgroup rated this risk as high based on a study done by CDFG in Modoc County California. Studies conducted in the Massacre PMU in Nevada have indicated that the low productivity of sage grouse in this area may be the result of excessive predation during nesting. A study of the effect of predator control on sage grouse production was initiated beginning in the spring of 2000 within the Massacre PMU in the Grassy-Stevens Camp area. The division contracted with wildlife services to conduct predator control over approximately 250 square miles with emphasis on ravens. At the conclusion of this project or at any point of the project, where data supports the implementation of predator treatments to sustain or enhance sage grouse populations, the Division of Wildlife will amend this plan and propose appropriate measures to the Wildlife Commission for support and funding. Information gathered

from the study in the Grassy Stevens Camp area within the Massacre PMU may be applied to problem areas within the Vya PMU.

Risk: Excessive nest losses by terrestrial mammals. Rated Low.

The Vya population subgroup rated this as a low risk since there is no data to suggest that this is occurring in the Vya PMU.

Risk: Excessive losses on broods by avian predators. Rated Low.

The Vya population subgroup rated this as a low risk since there is no data to suggest that this is occurring in the Vya PMU.

Risk: Excessive brood losses by terrestrial mammals. Rated Low.

The Vya population subgroup rated this as a low risk since there is no data to suggest that this is occurring in the Vya PMU.

Risk: Excessive losses on adults by avian predators. Rated Low.

The Vya population subgroup rated this as a low risk since there is no data to suggest that this is occurring in the Vya PMU.

Risk: Excessive losses on adults by terrestrial mammals. Rated Low.

The Vya population subgroup rated this as a low risk since there is no data to suggest that this is occurring in the Vya PMU.

FACTOR: Bird Health

WAFWA Guideline

Manage breeding habitats to support 15-25% canopy cover of sagebrush, perennial herbaceous cover averaging >18 cm in height with >15% canopy cover for grasses and >10% for forbs and a diversity of forbs during spring.

Risk: Low production rates caused by poor nutrition. Rated Low.

Studies of red grouse (in Scotland) and ruffed grouse diets in relation to reproduction indicate that high quality diets result in greater production. The pre-laying period for females may also be critical to sage grouse populations. The nutritional and energy reserves gained in winter from a diet of sagebrush peak just prior to breeding. As spring forbs begin to appear, females shift their diet to include forbs and availability

of forbs with high nutritional value appear to influence the productivity of Sage Grouse hens. The hen must consume a diet with sufficient amounts of the essential amino acids, vitamins and minerals to produce an egg and to supply that egg with all of the nutrients needed by the egg throughout the incubation period. For optimum survival and early growth of the chicks, the hen must also provide a yolk with sufficient reserves for the newly hatched chick.

Nutritional studies specific to sage grouse populations in northwestern Nevada need to be conducted to ascertain if there is a link between nutrition and poor productivity of sage grouse. Current studies on the Sheldon National Wildlife Refuge may provide results that could be used within Vya and other adjacent PMU's.

Risk: Disease related problems.

No data exists to indicate that this is occurring in the Vya PMU. At this time the Washoe-Lassen-Modoc population subgroup did not consider this to be a risk to sage grouse in the Vya PMU.

FACTOR: Genetics

Risk: Unique population not viable.

Risk: Unique population.

Risk: Genetic mixing.

The Washoe-Lassen-Modoc population subgroup did not consider the above to be a risk to sage grouse in the Vya PMU. Sage Grouse in this population management unit occur over a large geographic area with little or no occurrence of habitat fragmentation. Grouse numbers are estimated at 1,500 to 2,000 birds in the spring with birds inhabiting most of the 501,247 acres in this PMU. Genetic mixing occurs within the Vya PMU and also with adjacent PMU's. Radio-telemetry data show movement of grouse between California and Nevada. Movements of over 40 air miles have been documented. Recent genetic work suggests sage grouse across the range are not unique, with the possible exception of southern Nevada and California.

CONSERVATION STRATEGY

Goals:

Maintain limited harvest program to allow for recreation use and data collection at levels below population thresholds.

Determine reliable population estimates and trends.

Complete Wildlife Services project to determine predator impact on sage grouse population.

Complete research on Sheldon Wildlife Refuge to determine bird health

Objectives:

Keep harvest levels below 10 percent of fall population estimate.

Collect necessary harvest data for population estimates by 2006.

Provide recreational opportunities for sport harvest.

Survey and inventory leks to determine 25 trend leks by 2006.

Determine predator criteria for application of treatments by 2006.

Determine bird health and disease with blood samples by 2006.

Conservation Actions

- The Nevada Division of Wildlife and the Nevada Wildlife Commission will utilize Season Timing and Bag Limits to control the harvest of sage grouse in the Vya PMU. California Fish and Game will maintain a closed season in the California portion of the Vya PMU.
- Seasons in Nevada will be structured to assure that harvest rates are 10% or less of the estimated fall population. Work will be done by NDOW and the Wildlife Commission on a biennial basis.
- NDOW law enforcement officers will conduct patrols in the Vya PMU to determine the extent of illegal harvest.
- The Nevada Division of Wildlife will develop spring breeding and fall population estimates for sage grouse in the Vya PMU.
- Research will be conducted to determine if avian predator control will improve production and recruitment rates of sage grouse in the Massacre PMU. Results from this research will be used to guide management decisions in other PMU's.
- Research on nutrition is being conducted on the Sheldon National Wildlife Refuge.
- Aerial lek surveys to determine spring breeding population estimate.
- Wing Composition Data to determine production, harvest composition and to generate a fall population estimate. Hunter harvested wings will help to validate questionnaire data.
- 10% Harvest Questionnaire Survey to determine harvest levels.
- Aerial surveys to locate new or unknown leks.
- Wildlife Services will conduct raven control and report on the number of birds removed
- Wildlife Services will conduct predator census and report on predator numbers.

Adaptive Management

NDOW will monitor sage grouse harvest in the Vya PMU using the monitoring actions described above. If data gathered from this monitoring indicates a change is needed in the harvest program to meet WAFWA guidelines NDOW and the Wildlife Commission will use appropriate conservation actions described above to meet WAFWA guidelines.

Wildlife Services and NDOW will conduct and monitor predator control and its effects on sage grouse production in the Massacre PMU. Results from this research will be used to guide management decisions in Vya and other PMU's.

Information gathered on nutritional studies being done on the Sheldon may be applied to management of sage grouse in the Vya PMU.

Lassen, Washoe and Modoc Counties Sage Grouse Plan

Prioritization Table for Vya PMU

Risk Factors	Conservation Actions that Address Risks
High Risk	
Unable to Determine Population Trend	3 5
Unable to Determine Effects of Conservation Measures of Plan	3 5
Excessive nest losses by Avian Predators	4
Medium Risk	
No Harvest Data for Population Estimates	5
Poaching	2
Nutrition	6
Low Risk	
Over Harvest of Population	1 2 3 5
Over Harvest of Females and Young of Year	5
Excessive Nest Losses by Terrestrial Mammals	4
Excessive Losses on Broods by Avian Predators	4
Excessive Losses on Broods by Terrestrial Mammals	4
Excessive Losses on Adults by Avian Predators	4
Excessive Losses on Adults by Terrestrial Mammals	4
Low Production Rates Caused by Poor Nutrition	6

**Lassen Washoe Modoc Sage Grouse Conservation Plan
Vya PMU
Conservation Actions to Address Population Risks**

Conservation Action # 1

The Nevada Department of Wildlife and the Nevada Wildlife Commission will utilize season timing, bag limits and if needed permit systems to control the harvest of sage grouse in the Vya PMU on a biennial basis.

What is the objective of this action?

Keep harvest levels below 10 percent of the fall population estimate as recommended by WAFWA guidelines.

Why is this action being conducted?

It has been determined that harvest levels above 10 percent of fall population numbers can cause additive mortality to sage grouse populations.

How will this action be carried out? Who will oversee and conduct this investigation?

NDOW will generate population estimates and collect harvest data through hunter-harvested wings and 10 percent questionnaire data. This information will be used to determine harvest percentages and make recommendations to the Nevada Wildlife Commission on season lengths, bag limits and or the need for a permit system.

Where will these actions take place?

Information will be collected and analyzed for the Vya PMU.

When will these actions be conducted?

These investigations will be completed on both an annual and biannual basis.

How will the results be applied to future conservation actions?

Based upon the results of these investigations changes in harvest strategies will be recommended to the Nevada Wildlife Commission as needed.

**Lassen Washoe Modoc Sage Grouse Conservation Plan
Vya PMU
Conservation Actions to Address Population Risks**

Conservation Action # 2

Nevada Department of Wildlife law enforcement officers will conduct patrols in the Vya PMU to determine the extent of illegal harvest.

What is the objective of this action?

Keep harvest levels below 10 percent of the fall population estimate as recommended by WAFWA guidelines.

Why is this action being conducted?

It has been determined that harvest levels above 10 percent of fall population numbers can cause additive mortality to sage grouse populations.

How will this action be carried out? Who will oversee and conduct this investigation?

NDOW will generate population estimates and collect harvest data through hunter-harvested wings and 10 percent questionnaire data. This information along with an estimate of illegally harvested birds will be used to determine harvest percentages of sage grouse in the Vya PMU. If an analysis of this information suggests that illegal harvest is unacceptably high NDOW will increase law enforcement patrols within the Vya PMU and or recommend a change in seasons and bag limits to the Nevada Wildlife Commission.

Where will these actions take place?

Information will be collected and analyzed for the Vya PMU.

When will these actions be conducted?

These investigations will be completed on both an annual and biannual basis.

How will the results be applied to future conservation actions?

If results from these investigations show that poaching levels are high enough to impact population levels then NDOW will increase law enforcement patrols in areas where the poaching is occurring or recommend changes in harvest strategies.

Lassen Washoe Modoc Sage Grouse Conservation Plan
Vya PMU
Conservation Actions to Address Population Risks

Conservation Action # 3:

NDOW will develop population estimates for sage grouse in the Vya PMU.

What is the objective of this action?

Use aerial survey techniques to inventory leks in the Vya PMU and establish 10 trend leks by 2008 to be surveyed on an annual basis to generate a minimum spring breeding estimate.

Why is this action being conducted?

Current population estimates based on lek counts indicate a spring breeding population of 1,500 to 2,000 birds. These estimates are currently based on ground counts, which have been highly variable, from year to year. Accurate population estimates are necessary for harvest programs and as a reflection of habitat trends.

How will this action be carried out? Who will oversee and conduct this investigation?

The Nevada Department of Wildlife will conduct intensive aerial lek surveys using rotary aircraft to determine total active leks and the number of birds utilizing these breeding grounds. NDOW will utilize the same methodology that has been in place on the Sheldon since 1994. A minimum breeding population estimate will be established using formulas currently accepted by the scientific community.

Where are the actions going to take place?

The entire PMU will be surveyed for lek attendance. There are currently 17 leks identified within the Vya PMU of which 11 have been identified as active, 3 as unknown, and 3 as historic. Active leks will be given first priority when surveying, unknown, and historic status leks will be surveyed if time allows. As flights are taking place, if new leks are discovered a Universal Transverse Mercator (UTM) location will be taken, a place name will be assigned, and the number of birds observed will be recorded. In addition, any substantial notes or comments will also be recorded.

When will these actions be conducted?

These surveys will have to be conducted on an annual basis beginning in 2005 and will be as close to the same dates as possible for each consecutive year.

How will the results be applied to future conservation actions?

Minimum spring population estimates will allow the NDOW and the Wildlife Commission to maintain harvest at or below 10% of the population, which meets WAFWA guidelines. These population estimates will enable State and Federal Agencies to assess population status and trend.

**Lassen Washoe Modoc Sage Grouse Conservation Plan
Vya PMU
Conservation Actions to Address Population Risks**

Conservation Action # 4

Research will be conducted to determine if avian predator control will improve production and recruitment rates of sage grouse in the Vya PMU.

What is the objective of this action?

Determine if predator removal will increase production and recruitment rates of sage grouse in the Grassy Stevens Camp area within the Massacre PMU. Results from this study may be applied to the Vya PMU if needed.

Why is this action being conducted?

NDOW has determined that sage grouse nest success and chick survival within the Grassy Stevens areas are below levels needed for population growth or maintenance (chick/hen ratio greater than or equal to 2.25). Chicks /Hen were estimated at 1.04 in 2001.

How will this action be carried out? Who will oversee and conduct this investigation?

Wildlife Services will place baits in the field and monitor baits during the project duration. Wildlife Services will provide the NDOW with Global Positioning System (GPS) coordinates for the locations of the treated areas. Wildlife Services will provide licensed applicators. Raven densities will be monitored during the project duration using standard survey methods. Wildlife Services will conduct a post-treatment analysis of the effectiveness of the control project. Wildlife Services will provide reports of all surveys conducted to the NDOW (*Nevada Predator Management Plan Project 1*). NDOW will determine chick/hen ratio thru the collection of hunter-harvested wings annually.

Where will these actions take place?

The project treatment was conducted in the Grassy/Hart Camp area of Washoe County with control areas on the Sheldon National Wildlife Refuge and the Lone Willow area of Humboldt County. Total size of the project area is approximately 250 square miles.

When will these actions be conducted?

These studies have been conducted for the last three years from 2000 to 2003 and are scheduled to continue through 2004. To date 86,303 dollars have been expended on this project with an average cost of 28,767 dollars per year. Money for this project has come from hunter contributions to the NDOW predator control program.

How will the results be applied to future conservation actions?

This study reflects the complexity of the predator-prey-habitat relationships that exist. Based on results to date predator control may or may not play a role in population regulation in the Grassy-Stevens Camp area. Under some conditions predation is additive and control would produce a positive response in a sage grouse population. What these conditions are still need to be determined. This study may need to be taken one step further with a greater emphasis on condition and utilization of pre-laying, nesting and early brood rearing habitat by sage grouse and other species.

**Lassen Washoe Modoc Sage Grouse Conservation Plan
Vya PMU
Conservation Actions to Address Population Risks**

Conservation Action # 5

Nevada Department of Wildlife will collect wing composition data to determine production and harvest composition.

What is the objective of this action?

Determine the productivity levels and the sex and age of harvested sage grouse in the Vya PMU.

Why is this action being conducted?

Productivity levels will be used to generate fall population estimates and to determine if other actions implemented within this plan are having a positive effect on recruitment rates of sage grouse in this PMU. Sex and age data will be used to determine harvest effects on specific segments of the population. Changes in season timing and or bag limits can be implemented if these data show that current harvest actions are impacting bird numbers. This action provides the best measure of population health regarding nesting success and chick survival.

How will this action be carried out? Who will oversee and conduct this investigation?

NDOW will place wing collection barrels at locations throughout the Vya PMU. Harvested wings will be analyzed on an annual basis by NDOW biologists. Information on sex, age and production will be recorded and used to determine whether or not the conservation actions of this plan are addressing the risks outlined for the Vya PMU.

Where will these actions take place?

Information will be analyzed for the Vya PMU.

When will these actions be conducted?

These investigations will be completed on both an annual and biannual basis.

How will the results be applied to future conservation actions?

Results from wing composition data regarding female/male harvest, nest success and chicks per hen estimates will be compared to WAFWA guidelines where applicable. If those values are not meeting guidelines that would sustain a healthy sage grouse

population, then changes in harvest strategies will be recommended to the Nevada Wildlife Commission.

**Sage-grouse Habitat Management Risks, Conservation Measures,
and Monitoring Actions
Vya Population Management Unit
(California and Nevada)
Surprise Field Office BLM**

The Vya PMU is considered to be maintaining the second largest population of Greater sage-grouse in northeastern California. Making major changes to existing management (livestock, wild horses, fire, recreation, mining) is a risk because we cannot be absolutely sure why the PMU is maintaining itself, or what impact major changes could have. Changes in management in the Vya PMU should be carefully considered in terms of scale and degree of risk, and they should be initiated slowly.

There are approximately 500,413 acres in the Vya PMU. Most of the PMU is managed by federal agencies with about 391,432 acres managed by the BLM and another 10,759 acres managed by the U.S. Forest Service. Approximately 82,714 acres (16.5%) is privately owned and another 9,825 acres (2.0%) is classified as water. The last 5,049 acres (1.0%) are classified as "unknown". Elevations within the PMU range from 4,470 to 8,300 feet with the vast majority of acreage within the PMU falling between 5,200 and 6,400 feet.

Using existing data layers and staff knowledge, the Geographic Information System (GIS) *Arcview* (Version 3.2) was used to model the approximate acreage of each "R" value habitat within the Vya PMU. While final mapping and fine tuning of the map still needs to be done, this method estimated about 40% of acres were in the "R-0" habitat, 5% of acres in "R-1", 26% of acres in "R-2", 22% of acres in "R-3", and 1% of acres in "R-4". Another 6% of acres are currently in unknown condition or did not map out as suitable habitat for sage-grouse. It is important to note, however, that these breakdowns are expected to change in the future as more precise data become available. Although other working groups may have broke down "R-value" habitats into further subsets, at this time, the Surprise Field Office staff does not believe that a further breakdown of habitat types can be ascertained with any great certainty.

Conservation Goals

1. Promote habitat conditions that support wintering, breeding, nesting, and brood-rearing success.
2. Provide secure sage-grouse winter, breeding, and nesting habitat with minimal disturbance and harassment.
3. Permit no net, long-term loss of sage-grouse habitat as a result of actions authorized by federal and state agencies; minimize habitat losses resulting from natural disturbances (wildland fire, insects, disease, etc.); work with landowners to minimize habitat losses on private lands.
4. Continue existing, and initiate, new efforts to restore historical sage-grouse habitat.

Factor: Habitat

Risk #1: Temporary conversion of sagebrush communities to perennial herbaceous communities

Season/Habitat affected: All

Contributing Management Action: Wild and prescribed fires or herbicide use on areas with strong native understories.

Risk Rating: High

Within the Vya PMU, the Surprise Field Office has some records of fires as early as 1900 although more complete records of fires have been kept since the early 1980's. Since 1900, approximately 12,205 acres (about 2.4% of the PMU) are known to have burned in 36 separate incidents. Incidents numbered between 1 and 5 per year. Fire size has ranged from the 2,837 acre *Lake 2* fire which burned in September of 1999 to the smallest, the *Crooks* fire which burned less than 1 acre in July 2001. About 64% of fires (n=23) were natural starts due to lightning strikes from early July to late September. These incidents burned a total of 4,025 acres or 33% of area burned. The remaining 36% of fires (n=13) were responsible for the other 67% of area burned and were due to accidental or unknown causes starting for the most part between August and October. Fires have occurred primarily at elevations above 5,000 feet and between 4,600 and 6,800 feet with most acreage appearing to have burned in low sage sites, then: big sage, basin big, and Wyoming sites, and finally the fewest in mountain big sage sites.

At higher elevations the risk of temporarily converting large acreages of land from sagebrush to perennial herbaceous vegetation is low to moderate on the Surprise Resource Area. At lower elevations this risk is much higher. There are few natural or artificial starts, and the variety of vegetation types and topography and the amount of rock limits the size and extent of most fires. In addition, the Surprise Field Office currently follows a policy of full suppression on all wildfires, and resources are generally sufficient to begin immediate control of most fires. The risk of large fires is probably locally higher in the lower elevations as is attested by larger fires on these sites.

The risk of temporarily converting smaller areas of land from sagebrush to perennial herbaceous vegetation is moderate to high in the Vya PMU. There is no active fire plan to specify areas that should be left with islands of unburned fuel. As a result, general firefighting techniques are standard practice, including burning out islands of unburned fuel. Many areas are occupied by over mature stands of sagebrush, which need disturbance to return them to productive sagebrush communities. Small-scale prescribed fire is planned for many of these stands in the higher elevations. Prescribed fire has commonly escaped from control lines and burned additional, unplanned acres.

Prescribed fire continues to be recognized as a tool, particularly for restoring aspen, riparian, and high elevation big sagebrush communities to natural fire regimes (see Appendix #2, Cowhead/Massacre General Decisions #15 and 16 part C). The *Lake 2* wildfire rehabilitation plan and all prescriptive fire plans, emphasize resting burned areas for a minimum of two growing seasons with the objective of restoring native herbaceous vegetation for soil stabilization. Mountain big sagebrush restoration for sage-grouse habitat has not been included as an objective in any of the current Activity or Land Use Plans. The vast majority of wild and prescriptive fires in the Vya PMU have occurred at lower to mid elevations. Lower elevation fires (below about 5,500 feet) have come back to heavy cheatgrass even when immediately reseeded (lower elevations of *Lake 2* fire). At higher elevations, fires may never completely burn leaving blocks of sagebrush. These sagebrush blocks provide a natural seed source, the burned areas provide additional habitat variety for wildlife, and sagebrush recovery generally occurs naturally.

WAFWA Guidelines: (See Appendix #1). 1, 5, 6, 7, 8, 9, 11, 13, 14, 18, 19, 20, 29, 30, 31, 32, and 33.

1. ["Monitor habitat conditions and only propose treatments if warranted by range condition (i.e., the area no longer supports habitat conditions described in the following guidelines under habitat protection). Do not base land treatments on schedules, targets, or quotas."(Connelly et al. 2000).]

Surprise Field Office policy/decision: With the exception of; past non-native species seedings, land treatments (prescribed fire, brush reduction, juniper reduction, native seeding) are conducted for one of two reasons. Small areas around private lands, structures, and other important resource sites are treated to reduce the risk of wildfire. All remaining vegetation treatments are conducted to restore ecological site conditions. Decisions to implement vegetation treatments are made on a case-by-case basis, and not as part of schedules, targets or quotas.

5. ["Manage breeding habitats to support 15-25% canopy cover of sagebrush, perennial herbaceous cover averaging >18 cm in height with >15% canopy cover for grasses and >10% for forbs and a diversity of forbs (Barnett and Crawford 1994, Drut et al. 1994a, Apa 1998) during spring (Table 3). Habitats meeting these conditions should have a high priority for wildfire suppression and should not be considered for sagebrush control programs. Sagebrush and herbaceous cover should provide overhead and lateral concealment from predators. If average sagebrush height is >75 cm, herbaceous cover may need to be substantially greater than 18 cm to provide this protection. The herbaceous height requirement may not be possible in habitats dominated by grasses that are relatively short when mature. In these cases, local biologists and range ecologists should develop height requirements that are reasonable and ecologically

defensible. Cover on leks does not have to meet the above requirements (Connelly et al. 2000).]

Surprise Field Office policy/decision: With the exception of past non-native species seedings, all of the lands in the Surprise Field Office managed portion of the Vya PMU are being managed for mid-, late-, or potential natural communities, as defined by the NRCS ecological site potentials (see Cowhead/Massacre LUP; Subunit #1, decision #6; Subunit #2, decision #5; Subunit 3, decision #4). Where mid-, late-, or potential natural community is compatible with 15-25% canopy cover of sagebrush, >15% canopy cover of grasses, and >10% canopy cover of forbs, breeding habitat will be managed to meet these cover classes. Where mid-, late-, or potential natural community should have sagebrush canopy covers in the 15-25% range, and current sagebrush canopy cover is greater than 25%, especially if sagebrush canopy cover is suppressing the herbaceous understory, management to restore appropriate sagebrush covers may require reducing sagebrush cover to less than 15% in the short term.

Current policy is for full wildfire suppression throughout the Surprise Resource Area, including all sage-grouse breeding habitat. However, prescribed fire and other vegetation treatments continue to be considered for use in areas that meet the needs for sage-grouse breeding habitat, if treatment is needed to maintain or improve ecological site conditions. Where vegetation treatment is proposed in areas used by sage-grouse, the timing, size, and pattern of treatment are adjusted to minimize impacts on seasonal sage-grouse habitat.

The guideline to maintain 18 cm (about 7 inches) of herbaceous cover around sagebrush for nest screening can be met, without changing current utilization guidelines of moderate use (see Cowhead/Massacre general decision #3, and most AMP's), where: 1) ecological sites are meeting the mid/late/PNC seral stage objectives, and 2) where bluebunch wheatgrass is the dominant or a co-dominant species. Bluebunch wheatgrass is generally a significant portion of the community on loamy soils at higher elevations (>6000 feet), and on deep loamy soils and/or north facing slopes at lower elevations. The guideline would not be fully met where bluebunch wheatgrass is not a dominant/co-dominant species (either because the site does not have the potential to support bluebunch wheatgrass, or because the site is in an early seral stage), or where the community has moved beyond PNC and brush species are reducing the vigor/density of bluebunch wheatgrass. On sites dominated by other species of native, perennial grasses (such as Idaho fescue and Thurber's needlegrass), the 18 cm herbaceous cover guideline is being met on very productive sites, and on areas which are less accessible to livestock and wild horses (especially on steeper slopes and areas that are more than 1/2 mile from water).

6. [“For non-migratory grouse occupying habitats that are uniformly distributed (i.e., habitats have the characteristics described in guideline 5 and are generally distributed

around the leks), protect (i.e., do not manipulate) sagebrush and herbaceous understory within 3.2 km of all occupied leks. For non-migratory populations, consider leks the center of year-round activity and use them as focal points for management efforts (Braun et al. 1977).”(Connelly et al. 2000).]

7. [“For non-migratory populations where sagebrush is not uniformly distributed (i.e., habitats have the characteristics described in guideline 5 but irregularly distributed with respect to leks), protect suitable habitats for <5km from all occupied leks. Use radio-telemetry, repeated surveys for grouse use, or habitat mapping to identify nesting and early brood rearing habitats.” (Connelly et al. 2000).]

8. [“For migratory populations, identify and protect breeding habitats within 18 km of leks in a manner similar to that described for non-migratory sage-grouse. For migratory sage-grouse, leks generally are associated with nesting habitats but migratory birds may move >18 km from leks to nest sites. Thus, protection of habitat within 3.2 km of leks may not protect most of the important nesting areas (Wakkinen et al. 1992, Lyon 2000)”, (Connelly et al. 2000).]

Surprise Field Office policy/decision: Response for 6, 7, and 8. Radio telemetry studies conducted in the northern portion of the Vya PMU have not yet determined migratory or non-migratory status for sage-grouse in this PMU. Considering the cost of radio telemetry operations this most likely will not happen for most birds. Known leks are distributed throughout the Vya PMU with habitat more or less uniformly distributed around them. Known active leks are concentrated in the northwestern corner of the PMU.

Current Field Office policy is to consider leks the center of year-round activity, “Evaluate on a case-by-case basis. Areas within two miles of strutting grounds which do not meet nest habitat requirements may be treated”, (Cowhead/Massacre LUP, General Decision #16). In addition, it is Field Office policy to consider wildlife habitat needs prior to implementation of any land treatment projects. The timing, size, and pattern of treatment are adjusted to minimize short-term impacts on sage-grouse habitat, and other wildlife habitat. Treatment projects tend to be relatively small in size, and all consider site-specific impacts on sage-grouse seasonal habitat needs.

9. [“In areas of large-scale habitat loss (>40% of original breeding habitat), protect all remaining habitats from additional loss or degradation. If remaining habitats are degraded, follow guidelines for habitat restoration listed below” (Connelly et al. 2000).]

Surprise Field Office policy/decision: Using GIS to create a two mile buffer around all known leks, active and inactive, within the Vya PMU and overlaying known fires, seedings, and range improvements, there are no areas within the Vya PMU that can be characterized as having lost more than 40% of the original sage-

grouse breeding habitat. In addition, no fires or vegetation manipulations are known to have destroyed any lek in the PMU, i.e., overlap of lek and burn, although several are known to have come within 0.8 km (0.5 miles). The policy of full wildfire suppression reduces the risk of losing large portions of sage-grouse breeding habitat. Vegetation treatment is conducted on a site-specific basis, and the needs for sage-grouse nesting habitat are considered whenever projects are proposed. Therefore, should large blocks of sage-grouse breeding habitat be lost to wildfire, additional vegetation treatment in the area would not be proposed.

11. ["Suppress wildfires in all breeding habitats. In the event of multiple fires, land management agencies should have all breeding habitats identified and prioritized for suppression, giving the highest priority to breeding habitats that have become fragmented or reduced by >40% in the last 30 years."(Connelly et al. 2000).]

Surprise Field Office policy/decision: There are no areas within the Vya PMU that can be characterized as having lost more than 40% of the original sage-grouse breeding habitat. It is current Surprise Field Office policy to suppress all wildfires, regardless of where they occur. To date, current staffing levels have been sufficient to respond to all fires as they occur. Therefore, fire suppression has not needed to be prioritized. Should prioritization for wildfire suppression become necessary in the future, urban interface areas would probably receive the highest priority, followed by low elevation sites prone to cheatgrass invasion, then by high elevation areas (including most sage-grouse breeding habitats).

13. ["Before initiating vegetation treatments, quantitatively evaluate the area proposed for treatment to ensure that it does not have sagebrush and herbaceous cover suitable for breeding habitat (Table 3). Treatments should not be undertaken within sage-grouse habitats until the limiting vegetation factor(s) has been identified, the proposed treatment is known to provide the desired vegetation response, and land use activities can be managed after treatment to ensure that vegetation objectives are met "(Connelly et al. 2000).]

Surprise Field Office policy/decision: With the exception of; past non-native species seedings and fuel reduction projects, land treatments in Vya PMU are conducted with the objective of maintaining or restoring ecological site conditions. Ecological sites in mid to late seral stage generally provide the most ideal sage-grouse breeding habitat possible for the site. Few land treatments are currently conducted in the resource area. All are relatively small in size, and all consider site-specific impacts on sage-grouse seasonal habitat needs. The timing, size, and pattern of treatment are adjusted to minimize short-term impacts on sage-grouse, and other wildlife habitat. At the current scale of implementation, land treatments in the Surprise Resource Area are providing a net benefit to sage-grouse habitat.

14. [“Restore degraded rangelands to a condition that again provides suitable breeding habitat for sage-grouse by including sagebrush, native forbs (especially legumes), and native grasses in reseeding efforts (Ara 1998). If native forbs and grasses are unavailable, use species that are functional equivalents and provide habitat characteristics similar to those of native species ”(Connelly et al. 2000).]

Surprise Field Office policy/decision: Rehabilitation seed mixtures always include native species of grasses, shrubs (including big sagebrush), and forbs. Non-native species, such as crested wheatgrass and forage kochia are only used in areas where native species have little or no chance of successfully reseeding. Current BLM policy is to support native species habitat and communities whenever possible.

18. [“When restoring habitats dominated by mountain big sagebrush, regardless of the techniques used (e.g., fire, herbicides), treat <20% of the breeding habitat (including areas burned by wildfire) within a 20-year period (Bunting et al. 1987). The 20-year period represents the approximate recovery time for a stand of mountain big sagebrush. Additional treatments should be deferred until the previously treated area again provides suitable breeding habitat (Table 3). In some cases, this may take <20 years and in other cases >20 years. If 2,4-D or similar herbicides are used, they should be applied in strips in a manner that minimizes their effect on forbs.”(Connelly et al. 2000).]

Surprise Field Office policy/decision: (See Appendix 2, Cowhead/Massacre LUP, Decision #16 C, 3(a) and 4(a) – Allow for treating up to 90% of any particular treatment area.

Current Field Office policy is to consider wildlife habitat needs prior to implementation of any land treatment projects. The timing, size, and pattern of treatment are adjusted to minimize short-term impacts on sage-grouse habitat, and other wildlife habitat. Treatment projects tend to be relatively small in size, and all consider site-specific impacts on sage-grouse seasonal habitat needs. At the current scale of implementation, land treatments in the Surprise Resource Area are providing a net benefit to sage-grouse habitat.

Current funding levels allow for little land treatment annually. As a result, there is little risk that large portions of sage-grouse breeding habitat would be treated, other than through prescribed fire on the higher elevation mountain big sagebrush sites.

19. [“All wildfires and prescribed burns should be evaluated as soon as possible to determine if reseeding is necessary to achieve habitat management objectives. If needed, reseed with sagebrush, native bunchgrasses, and forbs whenever possible” (Connelly et al. 2000).]

Surprise Field Office policy/decision: All burns of a significant size (over about 100 acres), or which occur in areas susceptible to noxious weed or cheatgrass invasion, are immediately evaluated to determine if reseeding is necessary. Where it is determined that reseeding is needed, a seed mixture that is appropriate for the site is determined, and reseeding is completed as soon as possible (generally before the next growing season). It is current BLM policy to support native species habitat and communities whenever possible. Therefore, rehabilitation seed mixtures are always composed of native species of grasses, shrubs (including big sagebrush), and forbs. Non-native species, such as crested wheatgrass and forage kochia are only used in areas where native species have little or no chance of successfully reseeding.

20. [“Until research unequivocally demonstrates that use of tebuthiuron and similar acting herbicides to control sagebrush has no long-lasting negative impacts on sage-grouse habitat, use these herbicides only on an experimental basis and over a sufficiently small area that any long-term negative impacts are negligible. Because these herbicides have the potential of reducing but not eliminating sagebrush cover within grouse breeding habitats, thus stimulating herbaceous development, their use as sage-grouse habitat management tools should be closely examined ”, (Connelly et al. 2000).]

Surprise Field Office policy/decision: Due to political pressure surrounding the safety of agricultural chemical use on public lands (primarily concerns about wildlife habitat, water quality, and recreational human exposure) herbicides have not been used in the Surprise Resource Area for many years. Experiments, using herbicide spraying on sites with severely degraded understories, are currently planned on the Home Camp Allotment (Massacre PMU) to determine if such treatment can recover native herbaceous understories. However, research cannot be said to have unequivocally demonstrated that herbicides have no long-lasting negative impacts on sage-grouse habitat or any other resource value on public lands. Until it does, political pressure to not use chemicals on public lands will continue. Therefore, it is not anticipated that herbicide use will become a standard, widespread practice for restoring sites with degraded understories in the near future.

29. [“Maintain sagebrush communities on a landscape scale, allowing sage-grouse access to sagebrush stands with canopy cover of 10-30% and heights of at least 25-35 cm regardless of snow cover. These areas should be high priority for wildfire suppression and sagebrush control should be avoided.” (Connelly et al. 2000).]

Surprise Field Office policy/decision: There is virtually no risk that sagebrush will not be maintained on a landscape scale in the Surprise Resource Area. Sage-grouse have, and will continue to have, access to a wide variety of sagebrush communities with appropriate canopy covers and heights suitable for winter habitat needs throughout the Surprise Resource Area and the Vya PMU.

It is current Surprise Field Office policy to suppress all wildfires, regardless of where they occur. To date, current staffing levels have been sufficient to respond to all fires as they occur. Therefore, fire suppression has not needed to be prioritized. Should prioritization for wildfire suppression become necessary in the future, urban interface areas would probably receive the highest priority, followed by low elevation sites prone to cheatgrass invasion (including large portions of sage-grouse winter habitat), then by high elevation areas.

Few land treatments are currently conducted in the resource area. All are relatively small in size, and all consider site-specific impacts on sage-grouse seasonal habitat needs, including winter habitat. The timing, size, and pattern of treatment are adjusted to minimize short-term impacts on sage-grouse, and other wildlife habitat. At the current scale of implementation, land treatments in the Surprise Resource Area are providing a net benefit to sage-grouse habitat.

30. ["Protect patches of sagebrush within burned areas from disturbance and manipulation. These areas may provide the only winter habitat for sage-grouse and their loss could result in the extirpation of the grouse population. They are also important seed sources for sagebrush re-establishment in the burned areas. During fire suppression activities do not remove or burn any remaining patches of sagebrush within the fire perimeter", (Connelly et al. 2000).]

Surprise Field Office policy/decision: There is no active fire plan to specify areas that should be left with islands of unburned fuel. As a result, general firefighting techniques are standard practice, burning out islands of unburned fuel during wildfire suppression. At the current scale of wildfire, prescribed fire, and vegetation treatment, there is virtually no risk of losing all, or even a significant portion, of the sage-grouse winter habitat in the Surprise Resource Area. However, the practice of removing unburned islands of fuel does slow re-establishment of sagebrush within burned areas.

31. ["In areas of large-scale habitat loss (>40% of original winter habitat), protect all remaining habitats", (Connelly et al. 2000).]

Surprise Field Office policy/decision: There are no areas within the Surprise Field Office that can be characterized as having lost more than 40% of the original sage-grouse winter habitat. See WAFWA Guideline #9 for further discussion.

32. ["Reseed former winter range with the appropriate subspecies of sagebrush and herbaceous species unless the species are re-colonizing the area in a density that would allow recovery within 15 years", (Connelly et al. 2000).]

Surprise Field Office policy/decision: All burns of a significant size (over about 100 acres), or which occur in areas susceptible to noxious weed or cheatgrass invasion, are immediately evaluated to determine if reseeding is necessary. Where it is determined that reseeding is needed, a seed mixture that is appropriate for the site is determined, and reseeding is completed as soon as possible (generally before the next growing season). Depending on the availability of seed mixtures, rehabilitation seed mixtures always include native species of grasses, shrubs (including big sagebrush), and forbs.

Most high elevation areas that burn, recover adequate sagebrush cover within 15 years, regardless of the extent of the burn. Most low elevation areas that burn require reseeding to prevent cheatgrass encroachment; they frequently do not recover sagebrush and therefore good sage-grouse habitat regardless of how they are seeded. Most mid elevation areas do not burn large or blocky areas; they tend to burn in small mosaics, up drainages, and on deeper, more productive soils. Sagebrush seed sources are present adjacent to the burned areas, and these sites rarely require seeding to re-establish good sage-grouse habitat.

33. [“Discourage prescribed burns >50 ha and do not burn >20% of an area used by sage-grouse during winter within any 20–30 year interval (depending on estimated recovery time for the sagebrush habitat)”, (Connelly et al. 2000).]

Surprise Field Office policy/decision: Due to cost constraints, most prescribed burns in the Surprise Resource Area cover more than 50 ha (124 acres). However, few prescribed burns are conducted in sage-grouse winter habitat. Current funding levels allow for little land treatment annually. As a result, priority is given to areas that will respond reliably well, and which will benefit the largest number of resources. In general, these are higher elevation sites, which provide sage-grouse breeding and brood rearing habitat, rather than winter habitat. Few treatments are proposed in sage-grouse winter habitat because rehabilitation at these elevations is very slow and expensive. Fire in particular, is rarely prescribed on low elevation Wyoming big sagebrush sites because of their susceptibility to cheatgrass encroachment.

Conservation Measure(s): *Rehabilitate burned areas when needed. Use native seed mixtures which include sagebrush and forbs that are appropriate for the site. Emphasize full fire suppression on R-0 sites to prevent conversion to R-1 sites.*

Responsible Parties: *BLM*

Monitoring: *Inspect seeded areas during the first two growing seasons to ensure seed mixtures are appropriate and effective.*

Conservation Measure(s): *Keep livestock off of burned areas for a minimum of two growing seasons (rest pasture, fence burned area, or herd livestock). Develop further*

prescriptive grazing management as needed to ensure meeting both overstory and understory objectives.

Responsible Parties: BLM, livestock permittees

Monitoring: *Frequently check burned areas for livestock during the first two growing seasons following fire to ensure compliance with rest requirements. Periodically check burned areas to ensure compliance with further grazing management prescriptions. Monitor burned area vegetation to ensure overstory and understory objectives are being met. Vegetation monitoring should include; 1) annual site inspections to confirm that native, perennial vegetation has stabilized soils and that cheatgrass and noxious weeds are not encroaching, and 2) line transects and photo points every 3-5 years to track recovery of sagebrush and herbaceous vegetation canopy cover.*

Risk #2: Long-term/permanent conversion of sagebrush communities to perennial herbaceous communities.

Season/Habitat affected: All

Contributing Management Action 1: Non-native species seedings

Risk Rating: Low

Contributing Management Action 2: Low elevations fire on areas with strong understories.

Risk Rating: Medium

There are eleven crested wheatgrass seedings, covering approximately 21,000 acres in the Vya PMU. This represents approximately 4% of the acres that occur in the PMU. The majority of acres treated, was in response to the Cowhead/Massacre Land Use Plan and had specified leave areas. They were completed to adhere to Nevada Department of Wildlife, "Guidelines for Vegetal Control Programs in Sage-grouse Habitats in Nevada (1969, revised 1972)." All of these early seedings were planted primarily to various varieties of crested wheatgrass, sometimes including alfalfa or clover for big game. These seedings are used to defer livestock grazing of native rangelands. At this time the BLM has no plans to re-introduce sagebrush to these areas or manage for an increase in native species. At least one of these seedings, however, the 1982 Calvary Camp seeding, has shown sagebrush reinvasion with densities of 10.8 to 23.5 % in June of 2000.

The risk of permanently converting additional acres of sagebrush communities to perennial herbaceous communities as a result of non-native species seedings is low. The majority of the acres identified for vegetation treatment (spraying or seeding) in the Cowhead/Massacre Land Use Plan have been completed (see Appendix #2, Subunit #2, decision #14 and Subunit #3, decision #8) and there are no plans to develop additional non-native seedings in drafts of the new Resource Management Plan

currently under development. Most existing seedings would be maintained as herbaceous communities. In addition, it is current BLM policy to support native species habitat and communities whenever possible. In the future, where seedings need maintenance, sage-grouse and other wildlife species habitat needs will be considered in terms of the percentage of the area which is treated annually and over time, the pattern of treatment (mosaic vs block), the type of treatment (mechanical, chemical, fire), and the species used to reseed the area following treatment.

The risk of permanently converting additional acres of sagebrush communities to perennial herbaceous communities as a result of fire on low elevation areas with strong understories is probably low to moderate. Fire is rarely prescribed on low elevation areas, regardless of the condition of the understory, because of the susceptibility of these areas for cheatgrass encroachment and because these sites seldom become significantly more valuable for either wildlife habitat or livestock forage following fire. When fire is prescribed on low elevation areas, the prescription is cool, tightly controlled, and covers small acreages. Wildfire starts on low elevation sagebrush communities with strong native perennial understories are rare in the Vya PMU. The native bunchgrass and sagebrush communities on these sites do not normally provide adequate continuous fuels to carry wildfire under anything other than unusually hot, windy, and dry weather conditions. The natural fire regime on these sites is much longer than on higher elevation sites.

WAFWA Guidelines: (See Appendix #1). 5, 6, 7, 8, 9, 11, 13, 19, 29, 31, and 32 See discussion under Risk #1; 17.

17. [“When restoring habitats dominated by Wyoming big sagebrush, regardless of the techniques used (e.g., prescribed fire, herbicides), do not treat >20% of the breeding habitat (including areas burned by wildfire) within a 30-year period (Bunting et al. 1987). The 30-year period represents the approximate recovery time for a stand of Wyoming big sagebrush. Additional treatments should be deferred until the previously treated area again provides suitable breeding habitat (Table 3). In some cases, this may take <30 years and in other cases >30 years. If 2,4-D or similar herbicides are used, they should be applied in strips in a manner that minimizes their effect on forbs. Because fire generally burns the best remaining sage-grouse habitats (i.e., those with the best understory) and leaves areas with sparse understory, use fire for habitat restoration only when it can be convincingly demonstrated to be in the best interest of sage-grouse ”(Connelly et al. 2000).]

Surprise Field Office policy/decision: Cowhead/Massacre LUP, Decision #16 C, 3(a) and 4(a) – Allow for treating up to 90% of any particular treatment area.

Current funding levels allow for little land treatment annually. As a result, priority is given to areas that will respond reliably well, and which will benefit the largest number of resources. In general, these are higher elevation sites, which provide

summer habitat for wildlife, as well as mid/late season forage for livestock and wild horses, and recreational opportunities. These higher elevations are capable of supporting taller grass species and denser herbaceous understories, which produce better sage-grouse nesting habitat. Few treatments are proposed in Wyoming big sagebrush sites because rehabilitation at these elevations is very slow and expensive, and these sites generally do not have the potential to produce ideal sage-grouse nesting habitat. Fire in particular is rarely prescribed on Wyoming big sagebrush sites because of their susceptibility to cheatgrass encroachment.

There is little risk of deliberately treating too many acres of Wyoming big sagebrush sites per year. The larger risk in Wyoming big sagebrush sites is not treating them. This allows them to continue producing less herbaceous vegetation than is ideal for successful sage-grouse nesting. Ultimately, if the sagebrush overstory becomes too dense, the understory is weakened and the sites become even more susceptible to cheatgrass invasion.

Conservation Measure(s): *Where possible, use native seed mixtures appropriate to the soil, climate and land form. Use management to increase sagebrush in seedings.*

Responsible Parties: **BLM**

Monitoring: *Vegetation monitoring should include, 1) annual site inspections to confirm that native, perennial vegetation has stabilized soils and that cheatgrass and noxious weeds are not encroaching, and 2) line transects/photo points every 3-5 years to track recovery of sagebrush and herbaceous vegetation canopy cover.*

Conservation Measure(s): *Additional seeding and/or range management.*

Responsible Parties: **BLM**

Monitoring: *Frequently check burned areas for livestock during the first two growing seasons following fire to ensure compliance with rest. Periodically check burned areas to ensure compliance with further grazing management prescriptions. Monitor burned area vegetation to ensure overstory and understory objectives are being met.*

Risk #3: Conversion of sagebrush to annual herbaceous

Season/Habitat affected: All

Contributing Management Action 1: Fire on areas with weak understories, usually at low elevations

Risk Rating: Medium

Contributing Management Action 2: Noxious weed invasion

Risk Rating: Low

The risk of conversion of sagebrush communities to annual herbaceous communities is probably moderate. Approximately 12% (58,970 acres) of the Vya PMU has the potential to be dominated by cheatgrass. Cheatgrass is a strong component of the understory on many of the lowest elevations, and it is very competitive with native herbaceous vegetation, especially when these areas burn. Historic livestock grazing practices that removed the understory vegetation contributed to the establishment of cheatgrass; rehabilitating these communities requires brush disturbance, seeding, and careful livestock management. Rehabilitation in these communities is very slow, risky, and extremely expensive. As a result, little rehabilitation has been attempted in areas with strong cheatgrass components until after a wildfire has burned through the community and cheatgrass has become the dominant (or sole) species on the site. Aggressive fire suppression is emphasized on sites with strong cheatgrass components, in an attempt to prevent them from becoming solid stands of cheatgrass; however, fires which start in these communities are frequently wind driven, fast moving, and difficult to control.

The risk of conversion of sagebrush communities to noxious weeds is low. The seed source and vectors to transport seed (roads, vehicles, livestock, wind, and water) are here. The type of noxious weeds that tend to occupy sagebrush habitat, however, generally require significant soil disturbance such as; that found along roads and heavily used livestock/wildhorse trails, around livestock/wild horse watering sites, and around mines, excavations, agricultural sites, and project developments.

Looking only at the point data collected by the Surprise Resource Area as well as from various other agencies, known weeds found in the Vya PMU include; perennial pepperweed, Scotch thistle, Bull thistle, Canada thistle, Mediterranean sage, and Dyers woad (Table 1). The 76-point data for the Vya PMU along with staff knowledge show that most weeds are located on private lands. About 22% (n=17) of these point datum were in the 0.1 to 5 acre classes with the remainder less than 0.1 acres. Canada thistle had the most occurrences (n=27) followed by Scotch thistle (n=16) and Perennial pepperweed (n=12). Although most weeds on the Surprise Resource Area occur on private lands, cooperative efforts have allowed much of the known Scotch thistle and Perennial pepperweed populations in the Vya PMU to either be mechanically removed or chemically treated. Canada thistle has not generally been treated due to its widespread location around moist habitats and along streams, as well as due to higher priority weeds reducing funding for removal. Due to this fact, Canada thistle can be seen as a threat to summer brood rearing habitat for sage-grouse. The risk is primarily due to invasion of meadow communities along riparian corridors, rather than conversion of sagebrush communities.

Table #1: Noxious Weeds in the Vya PMU

Species	Some known locations in the Vya PMU	Susceptible Sites
Perennial Pepperweed	12 populations. All locations within 1 mile of each other, about 3 miles east of Fort Bidwell, California. Most occur in Long Canyon, one adjacent to Poison Creek.	Strongly associated with water in perennial and ephemeral drainages and wetlands. Also associated with roads and disturbed areas. Aggressive suppression efforts.
Scotch Thistle	16 populations. Most known locations occur in Long Valley. Also known in Poison Creek, Mosquito Valley and Sand Creek.	Usually associated with disturbed areas. Aggressive suppression efforts.
Bull Thistle	10 populations. Widely scattered, some locations include Big Mud Lake, Fee Reservoir, and Mosquito Valley area.	Closely associated with springs and wet areas. Non-aggressive suppression
Canada Thistle	27 populations. Locations along Cowhead Slough, Fee Reservoir and Poison Creek, Mosquito Valley, and scattered north to south in Long Valley.	Disturbed areas in/near water (dams, roads, reservoirs) Moderate suppression efforts.
Dyers Woad	7 populations. Along roads to Lake Annie and Fee Reservoir.	Roads and disturbed areas Aggressive suppression efforts.
Mediterranean Sage	4 populations. A few scattered groups around Mosquito Valley and Long Valley, also east of Big Mud Lake.	Roads and disturbed areas Aggressive suppression efforts.

WAFWA Guidelines: (See Appendix #1). 5, 6, 7, 8, 9, 11, 14, 19, 29, 30, 31, 32, and 33 See discussion under Risk #1; 16 and 21

16. [“Do not use fire in sage-grouse habitats prone to invasion by cheatgrass and other invasive weed species unless adequate measures are included in restoration plans to replace the cheatgrass understory with perennial species using approved reseeding strategies. These strategies could include, but are not limited to use of pre-emergent herbicides (e.g., Oust®, Plateau®) to retard cheatgrass germination until perennial herbaceous species become established ”(Connelly et al. 2000).]

Surprise Field Office policy/decision: Rehabilitation in communities with a strong cheatgrass component is very slow, risky, and extremely expensive. As a result, little rehabilitation has been attempted in these areas until after a wildfire has burned through the community and cheatgrass has become the dominant (or sole) species on the site. Fire is rarely prescribed on low elevation areas because of their susceptibility to cheatgrass encroachment, and because these sites seldom become

more valuable for either wildlife habitat or livestock forage following fire. Where rehabilitative fire is prescribed on low elevation areas, the prescription is cool, tightly controlled, and covers small acreages.

Due to political pressure surrounding the safety of agricultural chemical use on public lands (primarily concerns about wildlife habitat, water quality, and recreational human exposure), pre-emergent herbicides have not been used in the Surprise Resource Area for many years, and it is not anticipated that herbicide use will become a standard, widespread practice for restoring sites with cheatgrass encroachment in the near future.

21. [“Avoid land use practices that reduce soil moisture effectiveness, increase erosion, cause invasion of exotic plants, and reduce abundance and diversity of forbs”, (Connelly et al. 2000).]

Surprise Field Office policy/decision: With the exception of non-native species seedings, all of the lands in the Surprise Field Office are being managed for mid-, late-, or potential natural communities, as defined by the NRCS ecological site potentials (see Cowhead/Massacre LUP; Subunit #1, decision #6; Subunit #2, decision #5; Subunit 3, decision #4. By definition, management for mid-seral or later ecological condition should maintain soil moisture retention, reduce erosion, reduce the likelihood of exotic plant invasion, and maintain the appropriate abundance and diversity of native forbs.

Many of the land uses that are allowed on BLM managed lands in the Vya PMU, including livestock and wild horse grazing, off highway vehicles, and dispersed and concentrated recreation result in localized impacts that reduce soil moisture retention, increase erosion, increase invasion by exotic plant species, and reduce the abundance and diversity of forbs. These impacts are frequently higher in sage-grouse summer habitat because livestock, wild horses, and recreational users concentrate their activities around water. These activities, and the resulting impacts, cannot be completely avoided. However, the impacts are mitigated, where possible, through livestock management systems, livestock and wild horse stocking levels, seasonal and permanent road closures, controls on dispersed camping areas, and mine site and reclamation plans. The vast majority of the planning decisions and land management policies in the Surprise Resource Area are designed to minimize these types of impacts.

See Cowhead/Massacre LUP - General Decisions #3, 4, 5, 15, and 16; Subunit #1, Decisions #6, 7, 9, and 10; Subunit #2, Decisions #1, 5, 6, and 15; Subunit #3, Decisions #1 and 4. See Allotment Management Plans, Annual Operating Plans, Multiple Use Decisions, Wildfire Rehabilitation Plans, Rangeland Health Standards and Guidelines.

Conservation Measure(s): *Initiate emergency rehabilitation measures using site specific seeding or other appropriate treatments with emphasis on low elevation and/or south facing slopes. Increase priority for fire suppression and Emergency Site Rehabilitation (ESR) on R-2 sites to prevent shift to an R-4.*

Responsible Parties: **BLM**

Monitoring: *Vegetation monitoring which should include; 1) annual site inspections to confirm that native, perennial vegetation has stabilized soils and that cheatgrass and noxious weeds are not encroaching, and 2) line transects/photo points every 3-5 years to track recovery of sagebrush and herbaceous vegetation canopy cover.*

Conservation Measure(s): *Aggressively treat noxious weed and other invasive plants where they threaten sage-grouse habitat.*

Responsible Parties: **BLM, private parties, local counties**

Monitoring: *Map noxious weed sites and monitor treatments annually until controlled/eliminated.*

Risk #4: Conversion of sagebrush to juniper

Season/Habitat affected: All

Contributing Management Action: Lack of fire/disturbance

Risk Rating: High

As a result of long-term fire suppression, western juniper, which naturally occurs on fire-safe sites along ridges, is encroaching down slopes into sagebrush communities. The encroachment is quickest on mountain big sagebrush sites, especially in deeper soils, on north-facing slopes, and along ephemeral drainages. Encroachment is also occurring more slowly in some low sagebrush, and Wyoming big sagebrush sites. As the density of juniper increases, the health of the understory communities declines. The vigor and density of brush species is reduced first and the herbaceous community is affected later. Eventually, little or no understory vegetation remains, and the site is converted to a monotypical juniper community. Once the shrub understory collapses, effective control of juniper encroachment becomes much more difficult, expensive, and dangerous for fire crews. Because there are no shrubs to provide ladder fuels, prescriptions for fire become hotter and riskier, and can cause extreme fire behavior. Recovering the understory after such hot fires is also more difficult, as the heat of the fire destroys much of the seedbank. The only alternative to prescribed fire in recovering these sites is hand-cutting juniper trees, a very expensive and time-consuming activity.

Sage-grouse will use areas with some juniper during late brood rearing and wintering, so long as a healthy sagebrush understory remains. However, juniper trees are used by raptors for perch sites while they are hunting. As a result, sage-grouse frequently abandon lek, nesting, and early brood rearing areas that are encroached upon by juniper long before the sagebrush understory is affected.

Approximately 107,000 acres (22%) of the Vya PMU is classified as encroached upon by juniper (See Appendix 3 for definition). So long as fire suppression remains high in mountain big sagebrush communities, the risk of converting additional acres of sage-grouse habitat to juniper sites will remain high. As time goes on, recovering these sites to sagebrush communities will become more difficult.

WAFWA Guidelines: (See Appendix #1). 1, 5, 13, and 18. See discussion under Risk # 1; 2.

2. ["Use appropriate vegetation treatment techniques (e.g., mechanical methods, fire) to remove junipers and other conifers that have invaded sage-grouse habitat (Commons et al. 1999). Whenever possible, employ vegetation control techniques that are least disruptive to the stand of sagebrush, if this stand meets the needs of sage-grouse.", (Connelly et al. 2000).]

Surprise Field Office policy/decision: The Surprise Field Office is conducting numerous projects to reduce populations of mature juniper by hand cutting juniper in sagebrush and riparian communities. However, due to current funding levels, the number of acres being treated is insignificant when compared to the number of acres of sage-grouse habitat which have been, or which will be, converted to mature juniper sites. Preventing large portions of sagebrush communities from becoming mature juniper sites will require either a much greater number of acres of mechanical land treatment, or more invasive techniques (fire) on sites that are currently producing good sage-grouse habitat (mountain big sagebrush communities with numerous young juniper). In the short-term, these types of prescribed fires will have localized impacts on sage-grouse habitat. However, in the long term, thousands of acres of sage-grouse habitat will be retained.

Conservation Measure(s): *Mechanical treatment (preferred) or prescribed fire, consider the use of a "meadow aerator" in addition to traditional felling techniques. Treat subject during revision of AMP's and in all planned rangeland projects. This problem is dealt with in alternatives found in draft of new Resource Management Plan (RMP) for the Surprise Resource Area. As a starting point, concentrate efforts in a 1 mile (1.6 km) "buffer zone" around leks.*

Responsible Parties: **BLM**

Monitoring: *Set up photo-points, take before and after photos of site. Revisit photo points with no more than 5 years in-between photos.*

Risk #5: Loss of sagebrush habitat**Season/Habitat affected: All****Contributing Management Action 1: Mining****Risk Rating: Low****Contributing Management Action 2: Urban and agricultural expansion****Risk Rating: Medium**

There are no known mining claims in the Vya PMU. One "larger-scale" mining operation is known to have existed in the PMU, however, a mercury extraction operation in the Bald Mountain area. That mine went out of operation 60 to 70 years ago and little to no information exists for the mine. The extent of the mine appears to cover at least several scattered acres along an access road with much of the affected area currently overgrown with vegetation. About the only current "mining" activities in the PMU are gravel pits. These are associated with road maintenance activities and are fairly small and scattered. If gold prices were to go up substantially in the near future, it is conceivable that some new mining claims may show up. The overall risk of new mining operations, however, is considered low.

Approximately 83,000 acres (16.5%) of the Vya PMU is under private ownership. Private land is scattered throughout the PMU, mainly associated with water at springs and along drainages. Larger blocks of private lands associated with ranching activities are found in the north half of the area around Mosquito Valley, Cowhead Lake, and Coleman Valley. These large blocks of land are expected to remain as large tracts of land for the near future. Some seasonal cabins and yearlong residences exist, these also primarily associated with ranching activities. Agricultural expansion has probably reached its maximum extent with the largest operations around north Long Valley and Mosquito Lake, Coleman Valley and Cowhead Lake.

Land within the PMU has opportunity for development and primarily in the form of seasonal recreational cabins and expansion around existing agricultural development. Many smaller private parcels with "absentee" owners exist in the PMU. These smaller parcels have a higher risk of being sold and private cabins built on them yet the risk is considered low overall. The PMU is relatively remote and has not seen any appreciable development in the last 10 years, however, some indications are that development is increasing. In the past two years, several large blocks of private land within the boundaries of this field office have been bought with plans currently underway to subdivide and/or develop into recreational facilities. Currently, the lack of well graveled roads, nearby services, and winter weather conditions generally prohibit late winter and

early spring use of the area. The risk to sage-grouse from development in the near future is considered moderate in the Vya PMU.

WAFWA Guidelines: (See Appendix #1). P(b); 6, 7, 8, and 9. See discussion under Risk #1.

P(b). [“Although mining and energy development are common activities throughout the range of sage-grouse, quantitative data on the long-term effects of these activities on sage-grouse are limited. However, some negative impacts have been documented (Braun 1998, Lyon 2000). Thus, these activities should be discouraged in breeding habitats, but when unavoidable, restoration efforts should follow procedures outlined in these guidelines”, (Connelly et al. 2000).]

Surprise Field Office policy/decision: Cowhead/Massacre General Decisions # 9, 10, 12, 13. Little mining development has occurred in the Vya PMU and nothing substantial has occurred in recent decades. Field Office policy is to consult with state wildlife agencies when developing site plans for energy and mining activities. Bonds for restoration of sites and/or to mitigate site impacts are required to ensure that impacts to the resources are minimized. The field office negotiates with energy and mining development companies to avoid disturbing critical wildlife habitat, including sage-grouse breeding habitat, during development activities. However, mining and energy development activities cannot be prevented due to concerns over impacts to wildlife species that are not federally listed as threatened or endangered.

Conservation Measure(s): *Avoid surface occupancy within 2 miles (3.2 km) of known/occupied sage-grouse use areas, consider off site mitigation. Reclaim mining areas after disturbance with native seeding.*

Responsible Parties: **BLM**

Monitoring: *Revisit adjacent leks annually to track any changes due to presence of mine. Establish photo-points and site inspect annually at first to establish that seed mix is appropriate for site, then revisit every 3-5 years.*

Conservation Measure(s): *Retain public lands that contain leks or other important (e.g., brooding, nesting) habitat unless acquisition would result in obtaining equal or better habitat.*

Responsible Parties: **BLM, local and state governments.**

Monitoring: *None*

Risk #6: Conversion of forb dominated meadows to mat grass dominated meadows

Season/Habitat affected: Brood-rearing

Contributing Management Action1: Underutilization of meadows
Risk Rating: Low

Contributing Management Action 2: Lack of fire in meadows
Risk Rating: Low

There are approximately 45 miles of perennial streams and 665 miles of intermittent streams in the Vya PMU. In the Vya PMU, both stream types are associated with perennial springs. Perennial streams are fed by snowmelt and/or larger spring systems, an example being the Twelvemile Creek system. Intermittent streams either receive only early season snowmelt e.g., upper Rock Creek, or have small springs that don't allow above surface stream flow later in the year, portions of lower Rock Creek, Bald Mountain Canyon. Width of riparian areas varies from a few feet wide in smaller streams to several acres in size in areas associated with larger spring systems e.g, Twelvemile Creek and Horse Creek.

All of the Vya PMU is allocated to livestock and/or wild horses and is grazed during the growing season at least one year in three. Riparian areas within the PMU generally receive substantial levels of utilization during the growing season, especially later into the year as the weather becomes hotter. This fact alone is why riparian areas and meadows cannot become mat grass dominated communities within the Vya PMU. In addition, about 1,950 acres of springs and meadows are inside livestock/wild horse enclosures within the PMU. Although information on these is sporadic at best, none are known or thought to be mat grass dominated either. This is because of periodic grazing by livestock and/or wild horses due to downed fences and gates left open.

Although fire risk is low throughout the PMU and therefore lower in association with meadows, prescriptive fires have been used in the Surprise Resource Area to meet various resource goals, e.g., Massacre cabin. The risk, therefore, of converting large portions of the riparian areas and meadows in the Vya PMU to mat grass dominated communities due to lack of utilization or fire is low.

Table #2: Meadow/Spring Enclosures in the Vya PMU

Location	Acres	Condition
Biebe Spring, Massacre Lakes Allotment	1002	Unknown condition
Indian Spring, Massacre Lakes Allotment	54	Unknown condition
Post Spring, Massacre Lakes Allotment	29	1999 visit found fence corners down
Rock Creek, Nevada Cowhead Allotment	475	Built 2002. Slow, upward trend prior to fencing
Sand Creek, Sand Creek Allotment	199	Slow upward trend, intermittent grazing
Sand Creek, Sand Creek Allotment	52	Slow upward trend, intermittent grazing
Sand Creek, Sand Creek Allotment	106	Slow upward trend, intermittent grazing
Sand Creek, Sand Creek Allotment	19	Slow upward trend, intermittent grazing

Sagebrush Spring, Sand Creek Allotment	1	Unknown
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WAFWA Guideline: (See Appendix #1). See discussion under Risk #3; 21.

Conservation Measure(s): *In areas that have the potential to produce mat grass meadows and that are currently not allotted to livestock or horses, prescriptive graze or burn according to WAFWA guidelines.*

Responsible Parties: **BLM**

Monitoring: *Set up photo-points and revisit every 3-5 years for areas that are grazed.*

Conservation Measure(s): *Where appropriate, reintroduce fire onto landscape.*

Responsible Parties: **BLM**

Monitoring: *Set up photo-points and revisit every year up to five years after burn, GPS fire size to track any changes.*

Risk #7: Conversion of meadows to bare ground

Season/Habitat affected: **Brood-rearing**

Contributing Management Action: **Overutilization of meadows, usually associated with water sources**

Risk Rating: **Low to Medium**

Since 1998, thirteen Rangeland Health Assessments have been conducted on allotments in the Vya PMU. All but one allotment (Little Basin) have had write ups completed. A second allotment, Bull Creek, had no assessable waters in the PMU. Of the remaining eleven, all but one met standards or were "not met but progressing towards", standards for stream health and riparian/wetlands. The Board Corral Allotment did not meet standards for stream health or riparian wetlands and was not progressing towards those goals. Specifically, problems were found with down cutting of meadows and encroachment of upland species onto the meadows. Areas of bare ground in the meadows were also evident. Although in the short term some areas of bare ground are to be expected with grazing, those that occur year after year and lead to degradation of stream function (sediment catching and bank building) are those of concern.

Management is in place to mitigate problems in most areas including decisions on riparian stubble height requirements, construction of additional exclosures, deferred use, periodic rest, and early turnoff for regrowth e.g., Terms and Conditions of the Warner sucker Biological Opinion covering North Cowhead and Nevada Cowhead Allotments. Several areas where problems are known are waiting for funding e.g., revision of Post Spring exclosure design. Most AMPs call for maintaining greater than 90% ground cover on meadows, horse plans recognize the significance of season-long

wild horse use on meadows, and Rangeland Health Assessments are picking up the areas (and addressing the causes) where use to bare ground on meadows is still occurring e.g., portions of Bald Mountain Canyon. Therefore, the risk of converting meadows to bare ground is low to moderate.

WAFWA Guideline: (See Appendix #1). 21. See discussion under Risk #3.

Conservation Measure(s): *Where livestock grazing results in utilization determined to be detrimental to habitat quality, changes in grazing management will be made pursuant to 43 CFR 4180.1(d).*

Responsible Parties: **BLM**

Monitoring: *Establish photo-points and green-lines if not already in place and revisit every 3-5 years. Implement stubble-height and soil alteration limitations and measure several times each season for compliance.*

Risk #8: Conversion of meadows to upland vegetation

Season/Habitat affected: **Brood-rearing**

Contributing Management Action: **Reduced hydrologic functionality due to head-cutting, soil alteration (roads, heavy grazing), confinement of floodplain (roads, compaction) or other causes.**

Risk Rating: **Medium**

To this point, current Rangeland Health Assessments have only indicated that the Board Corral Allotment is showing signs of head cutting, dewatering, and invasion by upland species (See discussion under Risk 7). Measures have already been undertaken to correct these problems such as specific stubble height requirements for riparian areas, adjustments of use dates, specific salting locations defined, and turning out of cattle, which have not previously grazed the allotment. This last stipulation is in place to help with cattle distribution.

Although most meadows on the Surprise Resource Area have roads to and through them, and most drainage have roads along them, the inherent rockiness and ephemeral nature of many systems helps to offset this risk, e.g. portions of Horse Creek. Roads, especially in drainages, continue to impact systems but are politically and logistically difficult to close or re-route.

More than one half of the thirty allotments that either fully or partially occur in the Vya PMU still need to be assessed using the Rangeland Health Standards and Guidelines. Combined with the lack of knowledge concerning these aspects on private lands, and

the supposition that there are likely more problem areas to be found in future RHA's, the risk of conversion of riparian meadows to upland vegetation is rated as moderate.

An additional concern that has surfaced recently is the possibility that some recent private land acquisitions and planning have been undertaken to facilitate changes that would affect the future of local water availability. Methods could either be through direct piping off of water to urban/suburban areas, the exchange of local water rights for water rights elsewhere, or through other methods.

WAFWA Guidelines: (See Appendix #1). 21 See discussion under Risk #3; 22.

22. ["Avoid removing sagebrush within 300 m of sage-grouse foraging areas along riparian zones, meadows, lakebeds, and farmland, unless such removal is necessary to achieve habitat management objectives (e.g., meadow restoration) "(Connelly et al. 2000).]

Surprise Field Office policy/decision: Cowhead/Massacre LUP, General Decision #16, C, 1(b) - Leave 100 yard buffer zones around meadows and along drainages.

Surprise Field Office policy is to leave a 100 yard buffer zone around meadows and streams to maintain wildlife (primarily sage-grouse) hiding cover. Exceptions to this policy occur where fuels management and structure protection require sagebrush reduction less than 100 yards from riparian zones, and where riparian zones have been converted to upland sagebrush habitat that may be recovered to riparian vegetation with proper manipulation and management.

Conservation Measure(s): *Where livestock grazing results in utilization determined to be detrimental to habitat quality, changes in grazing management will be made pursuant to 43 CFR 4180.1(d). Do not build new roads in riparian areas, where problems occur, consider relocating roads and trails outside of riparian areas.*

Responsible Parties: *BLM, permittees.*

Monitoring: *Establish photo-points and green-lines if not already in place and revisit every 3-5 years. Implement stubble-height and soil alteration limitations and measure several times each season for compliance. Conduct RHA's 1 year in 15, and Proper Functioning Condition (PFC) as needed.*

Risk #9: Insufficient grass cover for successful nesting cover

Season/Habitat affected: Nesting

Contributing Management Action: Short-term over-utilization.

Risk Rating: Medium to High

All of the allotments in the Vya PMU have livestock utilization criteria of moderate use (40%-60%) or less. See Appendix #2: Cowhead/Massacre Planning Unit, General Decision #3; and Livestock Utilization Criteria table.

There are four wild horse management areas (HMA's) covering about 116,900 acres within the Vya PMU (23% of the PMU). Only a small percentage of the Nut Mountain HMA is within the PMU (See Table 3). The first two, Bitner and Nut Mountain, have Appropriate Management Levels (AML's) in place. The second two, Massacre Lakes and Carter Reservoir, should have AML's set in the near future. Although neither Massacre Lakes nor Carter Reservoir have had surveys completed to set their AML's, current estimates indicate that they will be set between 25-50 head. This would give a total of around 100 to 160 AML's. Currently, the actual number of horses within the HMA's is thought to be approximately 370. All four areas have been gathered since 1989 with Nut Mountain being gathered as recently as 2000. Carter Reservoir was gathered in 2003 with approximately 170 head removed.

As horse numbers increase, use levels in wild horse concentration areas will also increase, resulting in locally heavy use, particularly near water sources and in sage-grouse spring/summer use areas within the four herd management areas. Table 3 shows the estimated population size by the Fall of 2004.

Table #3: Wild Horse Management Areas in the Vya PMU

Wild Horse Herd Area	Acres	AML	Estimated in 2002	Estimated Population by Fall of 2004
Bitner	53,608	15-25	41	59
Nut Mountain	40,211 (97 in Vya)	30-55	87	125
Massacre Lakes	39,888	*25-30	51	73
Carter Reservoir	23,303	*30-50	190	30
Total in Vya	116,900	100-160	369	287

* These are estimates only, AML's not yet set.

Moderate use on grasses in the mid and lower elevations may not provide sufficient cover for nesting sage-grouse, however, these areas may be more suitable for spring/summer brood rearing. Dominant grasses at these lower elevations do not usually grow as tall as species on higher elevations, and 40% to 60% use may not leave the 18 cm (7 inches) of herbaceous cover recommended in WAFWA Guideline 5. Some of the mid and lower elevations in the PMU do retain 7" of herbaceous cover, at least every other year. These are areas with healthy native under-stories which are used lightly or which are rested from livestock use every other year and which do not have wild horses.

Most pastures have areas in which livestock and/or wild horses tend to congregate and use is higher. To address this problem of livestock distribution, water has been developed throughout the Surprise Resource Area to the point that there are few areas over a few miles from the nearest livestock water source. In addition, most allotments have specific criteria which prohibit the use of salt on springs, meadows, streams, and in aspen stands. See Appendix #2: Cowhead/Massacre Planning Unit, General Decision #4.

Although definitive numbers aren't available (although local radio collar work may be pointing to these conclusions), and at least at higher elevations with steeper slopes, there doesn't appear to be a lack of nesting cover. Areas that do appear to be lacking suitable cover for nesting are at lower elevations and on flatter topography (see above). These lower elevation sites while used by sage-grouse don't appear to be producing chicks. This appears to be caused by predation on hens due to poor canopy cover at the nesting site. Low elevation sites, especially if associated with water, can often be grazed longer and harder than higher elevation sites.

Sites with less water or that are on steeper slopes either see little use or use later in the season. If cattle are taken off early enough in the season, these sites can retain enough residual cover for nesting the following year. Depending on the operating plan for the allotment, short-term losses in cover can be heavy. As long as cattle are removed during the growing season and/or not all residual cover is removed at the end of the season, hiding cover can still be available for next springs nesting period. This appears to be the case for sage-grouse on Bally Mountain which are known to use the steeper mountain slopes to nest. Again, these conditions can vary, and do, dependent on changes in annual operating plans, weather, and the birds themselves. This same scenario of nesting on higher elevation likely occurs throughout the Vya PMU and the Surprise Resource Area as a whole. The risk of maintaining insufficient herbaceous stubble for sage-grouse nesting cover is moderate to high as a result of short-term over-utilization.

WAFWA Guidelines: (See Appendix #1). 5. See discussion under Risk #1; 10.

10. ["During drought periods (>2 consecutive years), reduce stocking rates or change management practices for livestock, wild horses and wild ungulates if cover requirements during the nesting and brood rearing periods are not met. Grazing pressure from domestic livestock and wild ungulates should be managed in a manner that, at all times, addresses the possibility of drought. ", (Connelly et al. 2000)]

Surprise Field Office policy/decision: The field office does not currently have a resource area wide policy that addresses methods for changing management practices for livestock, wild horses, and wild ungulates in the event of drought. The resource area is in the Great Basin where "below normal" amounts of precipitation

are the rule rather than the exception. As a result, the wild ungulate population is adapted to cyclical drought events, and is currently not managed in response to drought. In addition, established livestock stocking rates and wild horse appropriate management levels are conservative, and they are usually compatible with meeting resource needs during periods of mild drought.

However, during periods of severe extended drought (generally considered to be less than 70% of median for 2 or more consecutive years), there is no systematic method for determining needed management changes. Wild ungulates, and, in extreme cases, wild horses will self-regulate numbers during periods of drought by experiencing "die-offs", especially during hard winters following dry growing seasons. Decisions to implement livestock and wild horse number reductions and livestock management changes are made on a case-by-case basis, during the summer. The decisions are generally based on lack of livestock and wild horse water, which leads to heavy localized concentrations of use and poor stock conditions, rather than on cover requirements for sage-grouse nesting and brood rearing. In areas where stock water exists only at marginal sources (reservoirs and ephemeral springs), periods of mild to moderate drought may actually result in more nesting cover the following season because larger areas are inaccessible to livestock.

Conservation Measure(s): *Temporary livestock exclusion (rest), change in livestock and horse use period or intensity of use, changes in salting or watering use areas.*

Responsible Parties: *BLM, permittees*

Monitoring: *Use of utilization and grass cover height limitations, which are measured throughout the grazing season.*

Risk #10: Low vigor herbaceous vegetation resulting in poor nesting cover and spring forage

Season/Habitat affected: Nesting and brood-rearing

Contributing Management Action 1: Lack of fire/disturbance in Mountain big sagebrush sites

Risk Rating: Medium

Contributing Management Action 2: Long-term over-utilization

Risk Rating: Medium

Contributing Management Action 3: Annual, long duration spring seasonal use (March, April, and May)

Risk Rating: Medium

Contributing Management Action 4: Noxious weed and/or cheatgrass encroachment
Risk Rating: Medium

Most of the Rangeland Health Assessments showed that soils and or biodiversity standards were being met on allotments within the Vya PMU. Vigor of plant communities was rated as good to very high for several allotments and those that did not were moving towards those goals. Only one allotment, Board Corral, not only did not meet the standards for biodiversity or soils but also was not found to be moving towards the goals for biodiversity. Changes in livestock management have been underway since the year 2000 to correct these problems and have included determination of salting locations and residual stubble heights. Noxious weed invasion is considered a low threat in the Vya PMU. Due to lack of current knowledge for all allotments, however, this risk is rated as moderate.

WAFWA Guidelines: (See Appendix #1). 1, 5, 6, 7, 8, 11, 13, 14, 18, 19, 20, 29, 32, and 33 See discussion under Risk #1; 16 and 21 See discussion under Risk #3; 10 See discussion under Risk #9; 15, 25, and 26

15. ["Where the sagebrush overstory is intact but the understory has been severely degraded and quality of nesting habitat has declined (Table 3), use appropriate techniques (e.g., brush beating in strips or patches and interseed with native grasses and forbs) that retain some sagebrush but open shrub canopy to encourage forb and grass growth. ", (Connelly et al. 2000)]

Surprise Field Office policy/decision: Cowhead/Massacre LUP, Decision #16 C, 3(c) and 4(c)6/4/20134/23/2003 allow for vegetation treatments where conditions will not improve under other types of management in a reasonable time. Experiments, using spraying and small-scale brush beating on sites with severely degraded understories, are currently planned on the Home Camp Allotment (Massacre PMU) to determine if such treatment can recover native herbaceous understories. Widespread treatment is not planned due to ongoing concerns that treatment may result in invasive species (such as rabbitbrush, cheatgrass and noxious weeds) becoming dominant on these sites.

25. ["Use brush beating or other mechanical treatments in strips 4-8 m wide in areas with relatively high shrub canopy cover (>35% total shrub cover) to improve late brood-rearing habitats. Brush beating can be used to effectively create different age classes of sagebrush in large areas with little age diversity. ", (Connelly et al. 2000)]

26. ["If brush beating is impractical, use fire or herbicides to create a mosaic of openings in mountain big sagebrush and mixed shrub communities used as late brood-rearing habitats where total shrub cover is >35%. Generally, 10-20% canopy cover of

sagebrush and <25% total shrub cover will provide adequate habitat for sage-grouse during summer. ", (Connelly et al. 2000)]

Surprise Field Office policy/decision: Response to 25 and 26. With the exception of past non-native species seedings, land treatments in the Surprise Field Office are conducted with the objective of maintaining or restoring ecological site conditions. Ideally, land treatments should be conducted before the herbaceous understory is reduced to the point that the site is susceptible to noxious weeds or re-seeding is necessary. The few land treatments currently conducted in the resource area are relatively small in size, and all consider site-specific impacts on sage-grouse seasonal habitat needs. The timing, size, and pattern of treatment are adjusted to minimize short-term impacts on sage-grouse, and other wildlife habitat.

Conservation Measure(s): *Careful use of prescribed fire, mechanical, or chemical disturbance, or change grazing prescription. Reseed where necessary with adapted species, native or non-native.*

Responsible Parties: *BLM, permittees*

Monitoring: *Establish photo-points and revisit every 3-5 years, establish long term trend transects and revisit 1 year in 10.*

Conservation Measure(s): *Where livestock or horse grazing results in utilization determined to be detrimental to habitat quality, changes in grazing management will be made pursuant to 43 CFR 4180.1(d).*

Responsible Parties: *BLM, permittees*

Monitoring: *Establish utilization standards and monitor 1 year in every 3, establish long term trend transects and revisit 1 year in 10.*

Conservation Measure(s): *Aggressively treat noxious weeds (chemically or mechanically) and other invasive plants where they threaten quality of sage-grouse habitat.*

Responsible Parties: *BLM, local counties*

Monitoring: *Monitor treatments annually until controlled, use GPS to monitor patch size.*

Risk #11: Lack of understory for sage-grouse nesting cover and spring forage

Season/Habitat affected: Nesting and brood-rearing

Contributing Management Action 1: Lack of fire/disturbance in Wyoming and Lahontan sagebrush communities

Risk Rating: Medium

Contributing Management Action 2: Historic and current over-utilization

Risk Rating: Medium

Although there is an overall lack of fire disturbance on the Surprise Resource Area, grazing has been present in moderate to high amounts for many years. Reasons for the “lack” of disturbance from fire, is due to the low number of ignitions but also due to high initial attack response. Fires in Wyoming big sage sites are often easier to reach and combined with the knowledge that these sites can easily convert to solid cheatgrass, receive high priority for suppression. For this reason, as well as the high cost of rehabilitation, fire is not often prescribed for these sites. Higher elevation sites with strong native understories are a better use of time and money. Lahontan sagebrush sites, like other low sage sites, typically do not burn as well due to lower amounts of herbaceous plant material. This of course depends on site conditions as Lahontan is often intermediate in size and function to low and Wyoming sagebrush types. Due to the low numbers of fires within the PMU, the risk of this type of disturbance not creating additional high quality cover and forage is moderate.

While past over utilization has occurred in the PMU and has lead to problems in vigor in some areas, current management has addressed most of the problems and future RHA’s will address additional areas if needed. Due to Wyoming’s location on the landscape, grazing provides moderate to high disturbance on those sites. Areas in close proximity to water see heavy use by livestock, horses, and wildlife as ambient temperatures rise in the summer. The risk that current grazing is contributing to low amounts of cover and forage is rated as moderate.

WAFWA Guidelines: (See Appendix #1). 1, 6, 7, 8, 11, 13, 14, 19, 29, 32, and 33 See discussion under Risk #1; 17 See discussion under Risk #2; 16 and 21 See discussion under Risk #3; 10. See discussion under Risk #9;15, 25, and 26. See discussion under Risk #10.

Conservation Measure(s): *Change grazing prescription.*

Responsible Parties: **BLM, permittees**

Monitoring: *Establish photo-points and long term trend transects. Revisit photo-points every 3-5 years and trend transects every 1 in 10 years.*

Conservation Measure(s): *Where livestock or wild horse grazing results in utilization determined to be detrimental to habitat quality, changes in grazing management will be made pursuant to 43 CFR 4180.1(d). Brush beating, mechanical or other disturbance and re-seeding are also options, thin sagebrush using methods shown to be effective for ecological site.*

Responsible Parties: **BLM, permittees**

Monitoring: *Establish utilization standards and monitor every 1 year in 3, establish long term trend transects and revisit 1 year in every 10.*

Risk #12: Low density or lack of appropriate insects for early brood rearing forage

Season/Habitat affected: Brood-rearing

Contributing Management Action 1: Lack of diverse habitats for favorable insects (good native grass and forb understories).

Risk Rating: Medium

Contributing Management Action 2: Insect spray operations

Risk Rating: Medium

There is little information beyond a short list of known insects found in the diet of sage-grouse to predict necessary densities for brood rearing sage-grouse. It is assumed that if the necessary sage-grouse habitats exist and are in relatively "good health" then there should be no limiting factors for the insects that sage-grouse need. At the moment, there does not appear to be a lack of appropriate habitats for brood rearing although there is always a debate as to the "health" of those habitats, e.g. riparian and other wet areas. Due to the lack of scientific literature on this topic and considering that most allotments have not had RHA's performed on them, this risk is currently rated as moderate for the Vya PMU.

It is currently not known how much spraying for insects takes place in the PMU. Spraying to reduce insects is thought to be low but no real information exists to support this. Spraying for grasshoppers is known to take place in at least one area on the north end of the Vya PMU and Mormon crickets are now known to occur along the northern boundaries of the Black Rock Desert. Due to the lack of information, a conservative rating for this risk is moderate.

WAFWA Guidelines: (See Appendix #1). 1, 6, 7, 8, 11, 13, 14, 19, 29, and 33. See discussion under Risk #1; 17. See discussion under Risk #2; 16 and 21. See discussion under Risk #3; 10. See discussion under Risk #9; 15, 25, and 26. See discussion under Risk #10.

Conservation Measure(s): *Where livestock grazing results in utilization determined to be detrimental to habitat quality, changes in grazing management will be made pursuant to 43 CFR 4180.1(d).*

Responsible Parties: **BLM, permittees**

Monitoring: *Establish utilization standards and monitor every 1 year in 3, establish long term trend transects and revisit 1 year in every 10.*

Conservation Measure(s): Consider effects on insects when permitting spraying operations and identify areas that should not be sprayed such as meadows being used by sage-grouse.

Responsible Parties: BLM, permittees, local counties

Monitoring: None

Risk #13: Lack of access to water

Season/Habitat affected: Brood-rearing

Contributing Management Action 1: Spring developments that capture all water and are inaccessible to sage-grouse

Risk Rating: Low to Medium

Contributing Management Action 2: Recreational camping at water

Risk Rating: Low

Recreation is well dispersed, and camping is generally short-term. Most spring developments on the Surprise Resource Area are constructed so as not to capture all the available water or are constructed to allow overflow back onto the riparian zone. Recently several projects have been proposed/undertaken to remedy the problem of "meadow dewatering" by water developments. Accessibility to all wildlife is a prime consideration in construction of all spring developments and placement of troughs, however, many spring developments are in some state of disrepair. The risk due to lack of access to water is therefore considered low to moderate.

WAFWA Guidelines: (See Appendix #1). 22. See discussion under Risk #8; 24, 27, and 28.

24. ["Avoid developing springs for livestock water, but if water from a spring will be used in a pipeline or trough, design the project to maintain free water and wet meadows at the spring. Capturing water from springs using pipelines and troughs may adversely affect wet meadows used by grouse for foraging". (Connelly et al. 2000)]

Surprise Field Office policy/decision: Most of the springs with the potential to be developed for livestock water already have been developed. The majority of these have water and wet meadow habitat available at the spring source, however, a large portion of spring developments in the resource area are in poor repair. Spring exclosure fences are frequently found to be down, and livestock and wild horses trample the meadows and foul spring source waters every year. Pipeline shut-off float valves are usually located in the troughs. If they are not shut off in the winter, they freeze and break. If they are not protected from livestock, they are broken. Once the shut-off valves are broken, water continues to flow to the trough

and over the top. More water is removed from the spring source meadows than is necessary to water livestock. Maintenance of projects in livestock grazing allotments, including most water developments, is the responsibility of the livestock operators. However, enforcement of maintenance responsibilities has been lax on the Surprise Resource Area.

27. ["Only construct water developments for sage-grouse in or adjacent to known summer use areas and provide escape ramps suitable for all avian species and other small animals. Water developments and "guzzlers" may improve sage-grouse summer habitats (Autenrieth et al. 1982, Hanf et al. 1994). However, sage-grouse used these developments infrequently in southeastern Idaho because most were constructed in sage-grouse winter and breeding habitat, rather than summer range (Connelly and Doughty 1989)(Connelly et al. 2000).]

Surprise Field Office policy/decision: Water has not been developed specifically for sage-grouse in the Surprise Resource Area. Water is available and fairly well distributed throughout most of the areas used by sage-grouse in the summer, in the form of springs, streams, and livestock troughs and reservoirs. Escape ramps, suitable for use by birds and small mammals, are placed in all livestock troughs. All known guzzlers in the resource area were constructed for use by chukar and bighorn sheep. All are accessible to sage-grouse, though few of the chukar guzzlers are in sage-grouse summer use areas.

28. ["Whenever possible, modify developed springs and other water sources to restore natural free-flowing water and wet meadow habitats". (Connelly et al. 2000)]

Surprise Field Office policy/decision: The majority of developed springs in the resource area have water and wet meadow habitat available at the spring source. Proper maintenance of spring developments should ensure that wet meadow habitat at the source is in good condition, and that a maximum amount of natural water flows from the source. The opportunity exists to move shut off valves from the trough to the spring headbox on some developments. This would prevent problems of valves freezing and being broken, which would retain more water at spring sources.

Conservation Measure(s): *Construct new spring developments to maintain their free-flowing characteristics, install wildlife escape ramps in new water troughs, retrofit existing troughs with wildlife escape ramps.*

Responsible Parties: **BLM**

Monitoring: *Establish project inspections and revisit projects every 5 years.*

Conservation Measure(s): *Prohibit development of new campgrounds in riparian or wet meadow areas, apply (as necessary) seasonal or area closures in key sage-grouse areas.*

Responsible Parties: *BLM, NDOW, local counties*
Monitoring: *Opportunistic law enforcement patrols.*

Factor: Disturbance

Risk #14: Human activity during breeding and nesting, or at watering sites

Season/Habitat affected: All

Contributing Management Action 1: Mining
Risk Rating: Low

Contributing Management Action 2: Roads
Risk Rating: Low

Contributing Management Action 3: Urban expansion
Risk Rating: Low to Moderate

Contributing Management Action 4: Recreation
Risk Rating: Moderate

Other than gravel pits, there is no known mining activity in the Vya PMU. Smaller in-holdings of private lands are mostly uninhabited, however, larger parcels have been recently bought and either subdivided or recreational plans made for them. Recreational activities are widely dispersed and generally low impact except for some localized problems. Sage-grouse breeding and early nesting areas are largely inaccessible during active periods due to weather and road conditions. Therefore, there is a low risk of disturbing sage-grouse during breeding and nesting, or at watering sites as a result of mining, roads, and recreation and low to moderate risks from urban expansion. See also discussions under Risks #'s 5 and 8.

WAFWA Guidelines: (See Appendix #1). N(b) and 12.

N(b). [“Viewing sage-grouse on leks (and censusing leks) should be conducted in a manner that minimizes (or preferably eliminates) disturbance to birds (Call and Maser 1986). Agencies should generally not provide all lek locations to individuals simply interested in viewing birds. Instead, 1 to 3 lek locations should be identified as public viewing leks and, if demand is great enough, agencies should consider erecting 2–3 seasonal blinds at these leks for public use. Camping in the center of or on active leks should be vigorously discouraged”(Connelly et al. 2000).]

Surprise Field Office policy/decision: There has been little interest expressed by the general public in viewing sage-grouse leks on the Surprise Resource Area. Most lek locations are difficult to access during active periods due to wet roads and snowdrifts. On the ground census work is carefully conducted to minimize disturbance to birds, and helicopter census work is infrequent. There is little to no camping occurring while sage-grouse are using leks (too cold and wet), and most lek locations are not in areas that are highly desirable for camping later in the year (mostly low sagebrush flats with no shade or water).

12. [“Adjust timing of energy exploration, development, and construction activity to minimize disturbance of sage-grouse breeding activities. Energy-related facilities should be located >3.2 km from active leks whenever possible. Human activities within view of or <0.5 km from leks should be minimized during the early morning and late evening when birds are near or on leks”. (Connelly et al. 2000)]

Surprise Field Office policy/decision: Little energy development has occurred in the Surprise Resource Area and has generally been associated with powerline right-of-ways. Field Office policy is to consult with state wildlife agencies when developing site plans for energy and mining activities. Bonds for restoration of sites and/or to mitigate site impacts are required to ensure that impacts to the resources are minimized. The field office negotiates with energy and mining development companies to avoid disturbing critical wildlife habitat, including sage-grouse breeding habitat, during development activities. However, mining and energy development activities cannot be prevented due to concerns over impacts to wildlife species that are not federally listed as threatened or endangered.

Conservation Measure(s): *During breeding season, surface occupancy within 1 km (0.6 miles) of active breeding sites (leks) should be avoided. Avoid energy or mineral associated facilities within 3.2 km (2 miles) of leks. Off site mitigation may be considered in evaluating minerals activities on a case-by-case basis.*

Responsible Parties: **BLM**

Monitoring: *Monitor leks a minimum of 2 years in 5.*

Conservation Measure(s): *Except in emergency situations, limit activities in known/occupied sage-grouse habitat to avoid adverse impacts related to rights-of-way. Do not authorize new rights-of-way within 3.2 km (2 miles) of leks. Rehabilitate or move roads located in meadows (brood rearing habitat).*

Responsible Parties: *BLM, State transportation agencies*

Monitoring: *Monitor leks a minimum of 2 years in 5.*

Conservation Measure(s): *Retain public lands that contain leks, nesting, brood-rearing or other important habitats for sage-grouse unless disposal would result in acquisition of equal or better habitat or lead to better habitat connectivity.*

Responsible Parties: **BLM, local and state governments**

Monitoring: Monitor leks a minimum of 2 years in 5.

Conservation Measure(s): Prohibit development of new campgrounds in riparian or wet meadow areas and apply as necessary seasonal or area closures in key sage-grouse areas.

Responsible Parties: BLM, local counties

Monitoring: Monitor leks a minimum of 2 years in 5. Opportunistic law enforcement patrols.

Risk #15: Additional predator perch sites

Season/Habitat affected: All

Contributing Management Action 1: Pasture and allotment fences, spring enclosures, well structures, and troughs

Risk Rating: Low

Contributing Management Action 2: Transmission lines and communication sites

Risk Rating: High

Structures, including spring developments, water pipelines, troughs, wells, enclosures, guzzlers, holding fields, pasture and allotment fences, and private land fences, exist throughout the Vya PMU. Structures are concentrated around reliable water sources, which frequently are private and/or have been developed for watering livestock on public lands. As a result, the risk of structures being used by raptors to hunt sage-grouse is greatest later in the year, and on dry years when marginal water sources are unavailable.

One powerline runs through the Surprise Resource Area portion of the Vya PMU. There is only one known historic lek in the Vya PMU that is less than 3 km (1.8 miles) from the powerline. Only three known visits have occurred to this site, in 1974, 1976 and once again in 2002. Results are unknown for 1974 or 1976 with no birds seen in 2002. Considering the lack of survey information, these results are only inconclusive.

There is one radio facility located just inside the Vya PMU, about 13.2 km (8.25 miles) northeast of Cedarville, California. There are no known or suspected leks within 3km of the site. No applications for additional powerlines or communication sites have been filed in the Surprise Field Office for many years.

WAFWA Guidelines: (See Appendix #1). 3; 4

3. ["Increase the visibility of fences and other structures occurring within 1 km of seasonal ranges by flagging or similar means if these structures appear hazardous to flying grouse (e.g., birds have been observed hitting or narrowly missing these structures or grouse remains have been found next to these structures) "(Connelly et al. 2000).]

Surprise Field Office policy/decision: Surprise Field Office policy is to flag all fences during construction to increase their visibility to all species of wildlife (particularly pronghorn antelope, mule deer, and sage-grouse) and wild horses. Flagging generally lasts for a year or two, by which time wildlife populations are accustomed to the fence location and generally avoid injury. In the Surprise Resource Area, sage-grouse have never been observed hitting structures and no remains have ever been found next to structures.

4. ["Avoid building powerlines and other tall structures providing perch sites for raptors within 3 km of seasonal habitats. If these structures must be built, or presently exist, the lines should be buried or poles modified to prevent their use as raptor perch sites "(Connelly et al. 2000).]

Surprise Field Office policy/decision: Surprise Field Office policy is to stay within the existing corridors and use existing sites to full capacity before authorizing additional sites and rights of ways for powerlines and communication sites. The Surprise Field Office currently does not plan to require the existing powerline be buried or made less accessible to raptors.

The Land Use Plan recognizes the potential for additional communications site development within the Vya PMU (see Cowhead/Massacre LUP, Subunit #3, decision #13). The Land Use Plan also states that the 49 Mountain radio communications site (located just outside of the PMU) should first be fully developed before any new sites should be considered.

The location of leks is considered when any structure capable of providing raptor perch sites is proposed, including livestock control fences. Where possible, structures are kept as far away from leks as possible. When structures need to be closer than 3 km (1.8 miles) from known leks, other steps are taken to minimize their use by raptors, including keeping the structure out of sight of the lek with topography, minimizing wood posts, braces, and rock jacks, and adding spikes to steel fence posts to discourage raptor perching.

Conservation Measure(s): *Construct new livestock facilities (troughs, fences, corrals) at least 0.6 miles (1km) from leks, restrict new water developments, use "perch guards" on fence posts and rock cribs, and construct future livestock exclosures large enough to minimize raptor predation.*

Responsible Parties: **BLM**

Monitoring: Monitor leks a minimum of 2 years in 5, inspect projects 1 year in 5.

Conservation Measure(s): Do not authorize new rights-of-ways within 2 miles (3.2 km) of leks or brood rearing areas (try to place near existing corridors). During breeding season (1 March to 15 May), do not visit sites within 2 miles distance to a lek from dawn to 10 am or at dusk. On a case-by-case basis off site mitigation may be implemented.

Responsible Parties: BLM, California and Nevada Public Utilities

Commissions (CPUC and NPUC).

Monitoring: Monitor leks a minimum of 2 years in 5.

Risk #16: Artificially high predator population

Season/Habitat affected: All

Contributing Management Action 1: High speed roads, which increase the amount of road-killed animals and attract ravens

Risk Rating: Low

Contributing Management Action 2: Urban expansion and ranchettes, which increase the amount of garbage and attract ravens

Risk Rating: Low

Contributing Management Action 3: Agricultural expansion, which increases the amount of food for ravens

Risk Rating: Low

Contributing Management Action 4: Agricultural crop conversion, e.g. alfalfa to mint

Risk Rating: Low

Private lands are mostly uninhabited with increased chance of additional urban expansion but little chance currently for agricultural expansion (See discussions under Risk #'s 5 and 8). As long as livestock continue to be an important part of the local economy, there is little chance in the near future for large-scale crop conversions. With the exception of portions of the Barrel Springs Byway, Nevada highways 34 and 8A (45 mph, gravel), roads in the Vya PMU are mostly low speed. Therefore, there is a low risk of producing an artificially high predator population as a result of road kill, urban expansion, or agricultural expansion.

Conservation Measure(s): Do not authorize new rights-of-ways within 3.2 km (2 miles) of leks.

Responsible Parties: BLM, NDOT, Cal Trans

Monitoring: Monitor leks a minimum of 2 years in 5.

Conservation Measure(s): Retain lands that contain leks, nesting, brood-rearing or other important habitats for sage-grouse unless disposal would result in acquisition of equal or better habitat or lead to better habitat connectivity.

Responsible Parties: BLM, local counties, private

Monitoring: Monitor leks a minimum of 2 years in 5.

Risk #17: Human-caused (non-prescription) fire

Season/Habitat affected: All

Contributing Management Action: Dispersed recreation and roads.

Risk Rating: Low

Although accidental fires have accounted for most of the acreage burned in the PMU, only about 1.5 % of acreage in the Vya PMU is thought to have burned due to non-prescription (accidental) fires. In addition, only one of these fires, an unnamed 43 acre fire in 1978, was thought to be caused by vehicle exhaust igniting vegetation. The number of these fires is not expected to increase substantially in the near future due in part to low recreational use and the associated lack of road access. Therefore, there is a low risk of disturbance to sage-grouse as a result of accidental human caused fire associated with recreation and roads.

WAFWA Guidelines: (See Appendix #1). 19. See discussion under Risk #1.

Conservation Measure(s): Limit development of new roads into known/occupied sage-grouse habitat. Do not authorize new rights-of-ways within 2 miles (3.2 km) of leks. Aggressive initial attack response to all fires.

Responsible Parties: BLM, NDOT, Cal Trans, local county

Monitoring: Annually, during fire season, use all available resources e.g., lookouts, ground spotters, lightning maps, to detect fires. Monitor lek sites at minimum 2 in 5 years.

**VYA POPULATION MANAGEMENT UNIT
PRIVATE LANDS RISK ASSESSMENT**

Risk #5: Loss of sagebrush habitat to mining and agricultural or urban expansion

Season/Habitat affected: All

**Contributing Management Action 1: Mining
Risk Rating: Low**

**Contributing Management Action 2: Urban and agricultural expansion
Risk Rating: Low**

There are no known mining claims in the Vya PMU. One "larger-scale" mining operation is known to have existed in the PMU, however, a mercury extraction operation in the Bald Mountain area. That mine went out of operation 60 to 70 years ago and little to no information exists for the mine. The extent of the mine appears to cover at least several scattered acres along an access road with much of the affected area currently overgrown with vegetation. About the only current "mining" activities in the PMU are gravel pits. These are associated with road maintenance activities and are fairly small and scattered. If gold prices were to go up substantially in the near future, it is conceivable that some new mining claims may show up. The overall risk of new mining operations, however, is considered low.

Approximately 83,000 acres (16.5%) of the Vya PMU is under private ownership. Private land is scattered throughout the PMU, mainly associated with water at springs and along drainages. Larger blocks of private lands associated with ranching activities are found in the north half of the area around Mosquito Valley, Cowhead Lake, and Coleman Valley. These large blocks of land are expected to remain as large tracts of land for the near future. Some seasonal cabins and yearlong residences exist, these also primarily associated with ranching activities. Agricultural expansion has probably reached its maximum extent with the largest operations around north Long Valley and Mosquito Lake, Coleman Valley and Cowhead Lake.

Land within the PMU has some opportunity for development, albeit probably small, and primarily in the form of seasonal recreational cabins and expansion around existing agricultural development. Many smaller private parcels with "absentee" owners exist in the PMU. These smaller parcels have a higher risk of being sold and private cabins built on them yet the risk is considered low overall. The PMU is relatively remote and has not seen any appreciable development in the last 10 years, however, some indications are that development is increasing. Few well graveled roads, the lack of nearby services, and winter weather conditions generally prohibit late winter and early spring

use of the area. The risk to sage grouse from development in the near future is therefore considered low in the Vya PMU.

Risk #8: Conversion of meadows to upland vegetation

Season/Habitat affected: Brood-rearing

Contributing Management Action: Reduced hydrologic functionality due to head-cutting, soil alteration (roads, heavy grazing), confinement of floodplain (roads, compaction) or other causes.

Risk Rating: Medium

To this point, current Rangeland Health Assessments have only indicated that the Board Corral Allotment is showing signs of head cutting, dewatering, and invasion by upland species (See discussion under Risk 7). Measures have already been undertaken to correct these problems such as specific stubble height requirements for riparian areas, adjustments of use dates, specific salting locations defined, and turning out of cattle, which have not previously grazed the allotment. This last stipulation is in place to help with cattle distribution.

Although most meadows on the Surprise Resource Area have roads to and through them, and most drainage have roads along them, the inherent rockiness and ephemeral nature of many systems helps to offset this risk, e.g. portions of Horse Creek. Roads, especially in drainages, continue to impact systems but are politically and logistically difficult to close or re-route.

More than one half of the thirty allotments that either fully or partially occur in the Vya PMU still need to be assessed using the Rangeland Health Standards and Guidelines. Combined with the lack of knowledge concerning these aspects on private lands, and the supposition that there are likely more problem areas to be found in future RHA's, the risk of conversion of riparian meadows to upland vegetation is rated as moderate.

Risk #16: Artificially high predator population

Season/Habitat affected: All

Contributing Management Action 1: High speed roads, which increase the amount of road-killed animals and attract ravens.

Risk Rating: Low

Contributing Management Action 2: Urban expansion and ranchettes, which increase the amount of garbage and attract ravens.

Risk Rating: Low

Contributing Management Action 3: Agricultural expansion, which increases the amount of food for ravens.

Risk Rating: Low

Private lands are mostly uninhabited with little chance of additional urban or agricultural expansion (See discussion under Risk #5). With the exception of portions of the Barrel Springs Byway, Nevada highways 34 and 8A (45 mph, gravel), roads in the Vya PMU are mostly low speed. Therefore, there is a low risk of producing an artificially high predator population as a result of road kill, urban expansion, or agricultural expansion.

Vya PMU Habitat Risk Assessment Matrix
November 24 2002

DRAFT 1

RISK FACTOR: Habitat Degradation	Contributing Management Actions	Risk (Y/N)	H/M/L	Conservation Measures	Responsible parties	Monitoring (BLM)	Timeline (BLM)
1) Temporary conversion of sagebrush to perennial herbaceous (R-1) <i>Area of PMU not terribly prone to fires.</i>	Wildland and prescribed fires/herbicide on areas with strong native understory	Y	L	Emergency rehabilitation measures after fire, use of native seed mix when possible to enhance sage grouse habitat, keeping cows off for two growing seasons. Full suppression on R-0 sites (can shift to R-1 easily).	BLM	-Photo-points -Site inspection to ensure seed mix appropriate and effective	-Every 3-5 years -Annually
2) Long-term/permanent conversion of sagebrush to perennial herbaceous (R-4) <i>The Surprise Field Office (SFO) is no longer planting "seedings". IS THIS REFERRING TO CATTLE SEEDINGS OR FIRE, CAN'T REMEMBER?</i>	Non-native species seedings	Y	L	Where possible use native seed mixtures appropriate to the soil, climate and land form.	BLM	-Photo-points -Site inspection to ensure seed mix appropriate and effective	-Every 3-5 years -Annually
3) Conversion of sagebrush to annual herbaceous (R-4) <i>Again, the area of this PMU is not terribly prone to fires. Also, "cheatgrass model" shows about 10% or less susceptible to conversion to cheatgrass stands. As far as other invasives go, only point data and two line shapes (weeds along roads/lake shores) show up on our maps. Rating also considers yearly efforts to map and treat these sites by the SFO.</i>	Fire on areas with weak understory, usu. low elevations	Y	L/M	Emergency rehabilitation measures, site specific seeding or other treatment particularly on low elevation sites and/or south facing slopes. Increase priority for fire suppression on R-2 sites to prevent shift to an R-4.	BLM	-Photo-points -Site inspection to ensure seed mix appropriate and effective	-Every 3-5 years -Annually
	Noxious weed invasion	Y	L	Aggressively treat noxious weed and other invasive plants where they threaten quality sage-grouse habitat	BLM, local counties	GPS and track polygon size	Monitor treatments annually until controlled/eliminated
4) Conversion of sagebrush to juniper (R-3) <i>Although we are constantly working to reduce juniper through various projects, the Vya PMU has large amounts of it.</i>	Lack of fire/disturbance	Y	H	Mechanical treatment or prescribed fire. Current planning efforts within the BLM, AMP revisions, current and projected rangeland projects	BLM	Photo-points	Re-shoot photo points up to twice a year. 5 year maximum?

5) Loss of sagebrush acres <i>The Vya PMU has several old, and relatively small mines. Except for gravel pits, I don't know of any mining within the PMU.</i>	Mining	Y	L	Avoid surface occupancy within 2 miles of known/occupied sage-grouse use areas, consider off site mitigation. Reclaim mining areas after disturbance with native seeding.	BLM	-Photo-points -Site inspection to ensure seed mix appropriate and effective	-Every 3-5 years -Annually
5) continued <i>Area has probably reached the extent of agricultural expansion, however, small tracts of private land could be sold and converted to ranchettes. Low in short-term. Medium rating in long-term.</i>	Urban and agricultural expansion	Y	L/M	Retain public lands that contain leks or other important habitat unless acquisition would result in obtaining equal or better habitat.	Local and state governments	???	???
6) Conversion of forb meadows to mat grass meadows <i>While there may be some small areas of underutilization, especially in meadows with many pastures, either cattle grazing, natural fire or Rx fire* is expected to preclude this.</i> <i>*Massacre ranch Rx fire</i>	Underutilization	Y	L	In areas that have the potential to produce mat grass meadows and that are currently unallotted to livestock or horses, prescriptive graze or burn, e.g. Bicondoa (Bighorn sheep), Highrock Canyon (Horses).	BLM	Photo-points	Every 5 years for grazing. Annually every 3-5 years after a prescriptive burn
	Lack of fire	Y	L	Where appropriate, reintroduce fire onto landscape, * Guideline 11 for fire, e.g. Massacre Ranch R _x graze and burn.	BLM	Photo-points, GPS fire size	Re-shoot photo points up to twice a year
7) Conversion of meadows to bare ground While some meadows have had areas temporarily converted to bare ground, few allotments within the Vya PMU have huge problems with this. Those that do are being brought towards "Standards and Guidelines", e.g. Board Corral.	Overutilization, usually associated with water sources <i>Also, both the Nevada Cowhead and North Cowhead Allotments are being managed via a Biological Opinion for the Threatened Warner sucker as well as a signed Conservation Agreement in North Cowhead for the Cowhead Lake tui chub.</i>	Y	L/M	Where livestock grazing results in utilization determined to be detrimental to habitat quality, changes in grazing management will be made pursuant to 43 CFR 4180.1(d). * Standard 2 for Streams and 4 for Riparian and Wetland sites, Guideline 16 for utilization levels.	BLM	Photo-points, greenlines, stubble height and soil alteration limitations	3-5 years for photo-points and greenlines ,up to several times a season for stubble height and soil alteration.
8) Conversion of meadows to upland vegetation <i>Some areas of meadows drying out due to headcutting, Board Corral, areas to the west of Cowhead Lake up to headwaters of Twelvemile Creek and Dismal Swamp (Modoc National Forest).</i>	Reduced functionality associated with headcutting, soil alteration (roads, heavy grazing), or confinement of floodplain (roads)	Y	M	Where livestock grazing results in utilization determined to be detrimental to habitat quality, changes in grazing management will be made pursuant to 43 CFR 4180.1(d). No new roads in riparian areas, where a problem consider relocating. * Guideline 16 for utilization levels.	BLM, permittees	Photo-points, greenlines, stubble height limitations, Rangeland Health Assessments (RHA's)	3-5 years for photo-points and greenlines, up to several times a season for stubble height, RHA's 1 in 15 years.

<p>9) Insufficient stubble for successful nesting cover</p> <p>Considering the areas we found nesting sage grouse via radio collar work, amount of R-2, personal observations.</p>	Short term overutilization	Y	M	<p>Temporary livestock exclusion (rest), change in livestock and horse use period or intensity of use, changes in salting or watering use areas.</p> <p>* Standard 5 for biodiversity, Guidelines 5, 8,9,11,16.</p>	BLM, permittees	Utilization or stubble height limitations	Up to several times a season
<p>10) Low vigor herbaceous vegetation (poor nesting cover & spring forage, (R-2)).</p> <p>I would like the group to give me lots of feedback here. Ratings the same as Massacre PMU.</p> <p><i>I really don't think we have a huge problem here considering our model (slope and elevation factors) only predicts about 10-15% of area is really susceptible to cheatgrass.</i></p>	Lack of fire/disturbance in Mountain big sagebrush sites	Y	M	<p>Use of prescribed fire, mechanical or chemical disturbance, change in grazing prescription.</p> <p>* Standard 1 for upland soils and standard 5 for biodiversity, Guidelines 5, 8,9,11,16.</p>	BLM, permittees	Photo-points and long- term trend	Every 3-5 years for photo-points and 1 in 10 years for trend
	Long term overutilization	Y	M	<p>Where livestock grazing results in utilization determined to be detrimental to habitat quality, changes in grazing management will be made pursuant to 43 CFR 4180.1(d).</p> <p>* Standard 4 for Riparian and Wetland sites, and Standard 5 for Biodiversity, Guidelines 4, 8, 9,16.</p>	BLM, permittees	Utilization compliance and long term trend	1 in 3 years for utilization and 1 in 10 years for trend
	Annual, long duration spring season use (March April, May)	Y	M	<p>Where livestock grazing results in utilization determined to be detrimental to habitat quality, changes in grazing management will be made pursuant to 43 CFR 4180.1(d).* Guidelines 4, 8, 9, and 16.</p>	BLM, permittees	Utilization compliance and long term trend	1 in 3 years for utilization and 1 in 10 years for trend
	Noxious weed/cheatgrass encroachment	Y	L	<p>Aggressively treat noxious weeds and other invasive plants where they threaten quality of sage grouse habitat.</p> <p>* Guideline 10 for control of noxious weeds which may include grazing or fire management.</p>	BLM, local counties	GPS and track polygon size	Monitor treatments annually until controlled
11) Lack of understory for sage grouse nesting cover and spring forage (R-2)	Lack of fire/disturbance in Wyoming and Lahontan sagebrush sites	Y	L/M	<p>Change in grazing prescription.</p> <p>* Standard 5 for biodiversity, Guideline 11.</p>	BLM	Photo-points and long- term trend	Every 3-5 years for photo-points and 1 in 10 years for trend

	Historic overutilization <i>I don't think we ever came to consensus on Massacre for this one, however, we are well on our way to correcting past problems.</i>	Y	M	Where livestock grazing results in utilization determined to be detrimental to habitat quality, changes in grazing management will be made pursuant to 43 CFR 4180.1(d). Brush beating, mechanical or other disturbance or re-seeding also options.	BLM, permittees	Utilization compliance and long term trend	1 in 3 years for utilization and 1 in 10 years for trend
12) Low density or lack of appropriate insects for early brood rearing forage I'm calling this Moderate only because no one really knows enough about this subject (as far as which forbs and insects are best). Also see ratings for risk #'s 7 and 8 which I would think have to correlate somewhat here.	Lack of diverse habitats for favorable insects, e.g. forb areas.	Y	M	Where livestock grazing results in utilization determined to be detrimental to habitat quality, changes in grazing management will be made pursuant to 43 CFR 4180.1(d).	BLM, permittees	Utilization compliance and long term trend	1 in 3 years for utilization and 1 in 10 years for trend
13) Lack of access to water <i>In Massacre this was also rated as low. Most of our water troughs have wildlife ramps, although we may still need to work on making sure our developments do not inadvertently dewater small springs.</i> <i>Recreation is low, scattered, and heaviest impact is concentrated for a short time in the fall during hunting season.</i>	Spring developments that capture all water and are inaccessible to sage-grouse	Y	L	Construct new spring developments to maintain their free-flowing nature and wet meadow characteristics, install wildlife escape ramps in new water troughs, retrofit existing troughs with wildlife escape ramps. *Guideline 13.	BLM	Project inspections	1 in 5 years
	Recreational camping at water	Y	L	Prohibit development of new campgrounds in riparian or wet meadow areas, apply (as necessary) seasonal or area closures in key sage-grouse areas.	BLM, NDOW, local counties	Law enforcement patrols	Opportunistically

RISK FACTOR: Disturbance	Contributing Management Actions	Risk (Y/N)	H/M/L	Conservation Measures	Responsible parties	Monitoring (BLM)	Timeline (BLM)
14) Human activity during breeding and nesting, or at watering sites	Mining <i>The Vya PMU has several old, and relatively small mines. Except for gravel pits, I don't know of any mining within the PMU.</i>	Y	L	Avoid surface occupancy within 0.6 miles of known breeding sites/leks. Avoid energy or mineral associated facilities within 0.25 miles of leks. Off site mitigation may be considered in evaluating minerals activities on a case-by-case basis.	BLM	Lek surveys	Monitor lek site at minimum 2 in 5 years
	Roads <i>Low accessibility during breeding season for most of PMU.</i>	Y	L	Except in emergency situations, limit activities in known/occupied sage grouse habitat to avoid adverse impacts ...related to rights of way. Do not authorize new rights of way within 1/4 mile of leks.	BLM, State	Lek surveys	Monitor lek site at minimum 2 in 5 years
	Urban expansion <i>See risk #5, with caveat that likely no new ranchettes in critical areas.</i>	Y	L	Retain public lands that contain leks, nesting, brood-rearing or other important habitats for sage-grouse unless disposal would result in acquisition of equal or better habitat or lead to better habitat connectivity.	BLM Local and State governments	Lek surveys	Monitor lek site at minimum 2 in 5 years
	Recreation <i>See risk # 13.</i>	Y	L	Prohibit development of new campgrounds in riparian or wet meadow areas, apply as necessary seasonal or area closures in key sage-grouse areas.	BLM, local county	Lek surveys, law enforcement patrols	Monitor lek site at minimum 2 in 5 years, law enforcement patrols opportunistically

15) Additional predator perch sites	Juniper encroachment, lack of fire <i>Heavy juniper encroachment in Vya PMU although work underway to reduce this threat, see risk #4.</i>	Y	H	Use mechanical treatment or prescribed fire to reduce juniper. * Guideline 11.	BLM, private land owners	Photo-points	Re-shoot photo points up to twice a year. 5 year maximum?
	Pasture/Allotment fences, spring enclosures, wells, troughs <i>We certainly have a lot of these, same rating as Massacre PMU.</i>	Y	M	Construct new livestock facilities (troughs, fences, corrals) at least 0.6 miles from leks, restrict new water developments, use "perch guards" on fence posts and rock cribs, and construct future livestock enclosures large enough to minimize raptor predation. *Guideline 4.	BLM	Lek surveys, project inspections	Monitor lek site at minimum 2 in 5 years, inspect projects 1 in 5 years
	Transmission lines, communication sites <i>One large transmission line right through the middle, no new Right of Ways known in this PMU.</i>	Y	M	Avoid placing new structures within 2 miles of leks (try to place near existing corridors), avoid visiting sites near leks at dawn or dusk during breeding season, on a case-by-case basis off site mitigation may be considered.	BLM, California and Nevada Public Utilities Commissions (CPUC and NPUC)	Lek surveys	Monitor lek site at minimum 2 in 5 years
16) Artificially high predator population <i>Left these ratings the same as in Massacre PMU.</i>	High speed roads/road kill e.g. attracting ravens <i>Not a huge amount of traffic especially in late winter, early spring.</i>	Y	L	Do not authorize new rights-of- ways within 2 miles of leks.	BLM, NDOT?	Lek surveys	Monitor lek site at minimum 2 in 5 years
	Urban expansion, e.g. "ranchettes"	Y	L	Retain public lands that contain leks, nesting, brood-rearing or other important habitats for sage-grouse unless disposal would result in acquisition of equal or better habitat or lead to better habitat connectivity.	BLM	Lek surveys	Monitor lek site at minimum 2 in 5 years
	Agricultural expansion	Y	L	Retain public lands that contain leks, nesting, brood-rearing or other important habitats for sage-grouse unless disposal would result in acquisition of equal or better habitat or lead to better habitat connectivity.	BLM	Lek surveys	Monitor lek site at minimum 2 in 5 years

17) Human-caused fire	<i>Dispersed recreation and roads</i> <i>Low recreation and low fire risks, see risk # 13.</i>	Y	L	Limit development of new roads into known/occupied sage-grouse habitat. Do not authorize new rights-of-ways within 2 miles of leks. Aggressive initial attack response to all fires.	BLM, NDOT	Use lookouts, ground spotters, lightning maps, lek surveys	Annually during fire season, monitor lek site at minimum 2 in 5 years
Explanations/comments				* Rangeland Health Standards and Guidelines for California and Northwestern Nevada, ** Directly out of WAFWA guidelines.			
				CFR 43 4180.1 Fundamentals of Rangeland Health BLM Manual 6840 Cowhead/Massacre MFP Tuledad/Homecamp MFP Various HMP's, AMP's			
RISK FACTOR: Disturbance	Contributing Management Actions	Risk (Y/N)	H/M/L	Conservation Measures	Responsible parties	Monitoring (BLM)	Timeline (BLM)
14) Human activity during breeding and nesting, or at watering sites	Mining <i>The Vya PMU has several old, and relatively small mines. Except for gravel pits, I don't know of any mining within the PMU.</i>	Y	L	Avoid surface occupancy within 0.6 miles of known breeding sites/leks. Avoid energy or mineral associated facilities within 0.25 miles of leks. Off site mitigation may be considered in evaluating minerals activities on a case-by-case basis.	BLM	Lek surveys	Monitor lek site at minimum 2 in 5 years

	Roads <i>Low accessibility during breeding season for most of PMU.</i>	Y	L	Except in emergency situations, limit activities in known/occupied sage grouse habitat to avoid adverse impacts ...related to rights of way. Do not authorize new rights of way within 1/4 mile of leks.	BLM, State	Lek surveys	Monitor lek site at minimum 2 in 5 years
	Urban expansion <i>See risk #5, with caveat that likely no new ranchettes in critical areas.</i>	Y	L	Retain public lands that contain leks, nesting, brood-rearing or other important habitats for sage-grouse unless disposal would result in acquisition of equal or better habitat or lead to better habitat connectivity.	BLM Local and State governments	Lek surveys	Monitor lek site at minimum 2 in 5 years
	Recreation <i>See risk # 13.</i>	Y	L	Prohibit development of new campgrounds in riparian or wet meadow areas, apply as necessary seasonal or area closures in key sage-grouse areas.	BLM, local county	Lek surveys, law enforcement patrols	Monitor lek site at minimum 2 in 5 years, law enforcement patrols opportunistically
15) Additional predator perch sites	Juniper encroachment, lack of fire <i>Heavy juniper encroachment in Vya PMU although work underway to reduce this threat, see risk #4.</i>	Y	H	Use mechanical treatment or prescribed fire to reduce juniper. * Guideline 11.	BLM, private land owners	Photo-points	Re-shoot photo points up to twice a year. 5 year maximum?
	Pasture/Allotment fences, spring enclosures, wells, troughs <i>We certainly have a lot of these, same rating as Massacre PMU.</i>	Y	M	Construct new livestock facilities (troughs, fences, corrals) at least 0.6 miles from leks, restrict new water developments, use "perch guards" on fence posts and rock cribs, and construct future livestock enclosures large enough to minimize raptor predation. *Guideline 4.	BLM	Lek surveys, project inspections	Monitor lek site at minimum 2 in 5 years, inspect projects 1 in 5 years

	Transmission lines, communication sites <i>One large transmission line right through the middle, no new Right of Ways known in this PMU.</i>	Y	M	Avoid placing new structures within 2 miles of leks (try to place near existing corridors), avoid visiting sites near leks at dawn or dusk during breeding season, on a case-by-case basis off site mitigation may be considered.	BLM, California and Nevada Public Utilities Commissions (CPUC and NPUC)	Lek surveys	Monitor lek site at minimum 2 in 5 years
16) Artificially high predator population <i>Left these ratings the same as in Massacre PMU.</i>	High speed roads/road kill e.g. attracting ravens <i>Not a huge amount of traffic especially in late winter, early spring.</i>	Y	L	Do not authorize new rights-of- ways within 2 miles of leks.	BLM, NDOT?	Lek surveys	Monitor lek site at minimum 2 in 5 years
	Urban expansion, e.g. "ranchettes"	Y	L	Retain public lands that contain leks, nesting, brood-rearing or other important habitats for sage-grouse unless disposal would result in acquisition of equal or better habitat or lead to better habitat connectivity.	BLM	Lek surveys	Monitor lek site at minimum 2 in 5 years
	Agricultural expansion	Y	L	Retain public lands that contain leks, nesting, brood-rearing or other important habitats for sage-grouse unless disposal would result in acquisition of equal or better habitat or lead to better habitat connectivity.	BLM	Lek surveys	Monitor lek site at minimum 2 in 5 years
17) Human-caused fire	<i>Dispersed recreation and roads</i> <i>Low recreation and low fire risks, see risk # 13.</i>	Y	L	Limit development of new roads into known/occupied sage-grouse habitat. Do not authorize new rights-of-ways within 2 miles of leks. Aggressive initial attack response to all fires.	BLM, NDOT	Use lookouts, ground spotters, lightning maps, lek surveys	Annually during fire season, monitor lek site at minimum 2 in 5 years

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