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STATE OF NEVADA
Sagebrush Ecosystem Program

SAGEBRUSH ECOSYSTEM COUNCIL
STAFF REPORT
MEETING DATE: July 10, 2014

DATE: July 4, 2014

TO: Sagebrush Ecosystem Council Members

FROM: Sagebrush Ecosystem Technical Team
Telephone: 775-684-8600

THROUGH: Tim Rubald, Program Manager
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SUBJECT: Discussion and possible adoption of proposed revisions to sections of the 2012 State Plan, including: Anthropogenic Disturbances, Pinyon-Juniper Encroachment, Recreation and OHV Use, and Implementation Responsibilities.

SUMMARY

The purpose of these items is to discuss and consider adoption of proposed revisions to sections of the State Plan, including: Anthropogenic Disturbances, Pinyon-Juniper Encroachment, Recreation and OHV Use, and Implementation Responsibilities. The SEC first directed the SETT to update the State Plan and EIS Alternative at the April 22, 2013 meeting. Since that time, the SETT has been primarily focused on revising items necessary for inclusion in the BLM/USFS LUPA and FEIS. With that work accomplished, the primary focus has shifted to updating the State Plan, necessary to be complete by September 2014, when the USFWS begins their 12-month findings process for the listing decision. A timeline for accomplishing this work was approved by the SEC at the April 8, 2014 meeting.

PREVIOUS ACTION

March 27, 2013. The Council directed the SETT to meet with USFWS and NDOW staffs to discuss the USFWS comments on the Nevada State Plan and report back to the Council.

April 22, 2013. The Council directed the SETT to further develop the Nevada State Plan and the EIS Alternative to incorporate the concerns expressed by the USFWS.

July 30, 2013. The Council adopted the Sagebrush Ecosystem Strategic Detailed Timeline, which included revision of the State Plan/EIS Alternative.

April 8, 2014. The Council approved a report on the timeline for revising the State Plan, which included consideration of the revised Pinyon-Juniper Encroachment,

Recreation and OHV Use, and Implementation Responsibilities sections at the July 2014 Council meeting.

June 23, 2014. The Council approved the revised goals, objectives, and management actions for the Mining and Energy Production, Distribution, and Transmission sections of the State Plan and recommended the SETT combine the sections into an Anthropogenic Disturbances section for inclusion in the 2014 State Plan.

DISCUSSION

These agenda items request the approval of revisions to the Anthropogenic Disturbances, Pinyon-Juniper Encroachment, Recreation and OHV Use, and Implementation Responsibilities sections of the State Plan. The revised sections provide more detailed background information and further develop the concepts in the 2012 State Plan.

Item #7 is for the consideration and approval of the proposed Anthropogenic Disturbances section of the State Plan. At the June 23, 2014 meeting the SEC approved the goals, objectives, and management actions for the Mining and Energy Production, Distribution, and Transmission sections of the State Plan and recommended the SETT combine the sections into an Anthropogenic Disturbances section.

Item #8 is for the consideration and approval of the proposed Pinyon-Juniper Encroachment, Recreation and OHV Use, and Implementation Responsibilities sections of the State Plan. The Mapping section of the State Plan was also originally scheduled to be presented at this meeting; however it will be discussed at the August 2014 meeting.

RECOMMENDATION

Staff recommends the SEC approve the proposed revisions to the Anthropogenic Disturbances, Pinyon-Juniper Encroachment, Recreation and OHV Use, and Implementation Responsibilities sections of the State Plan or provides direction to the SETT on how to further revise the sections.

POSSIBLE MOTION

Should the SEC agree with the staff recommendation, a possible motion would be: "Motion to approve the proposed revisions to the Anthropogenic Disturbances, Pinyon-Juniper Encroachment, Recreation and OHV Use, and Implementation Responsibilities sections of the State Plan."

or

"Motion to approve the proposed revisions to the Anthropogenic Disturbances, Pinyon-Juniper Encroachment, Recreation and OHV Use, and Implementation Responsibilities sections of the State Plan, with additional amendments."

(The SEC may choose to approve the sections individually or collectively.)

Attachments:

1. Revised State Plan Section 7.6: Anthropogenic Disturbances
2. Revised State Plan Section 7.2: Pinyon-Juniper Encroachment
3. Revised State Plan Section 7.7: Recreation and OHV Use
4. Revised State Plan Section 5.0: Implementation Responsibilities

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7.6 ANTHROPOGENIC DISTURBANCES

Anthropogenic disturbances, including mining, energy development, and infrastructure are a threat to sage-grouse and their habitat in Nevada; however these activities are a vital part of Nevada's economy. The State of Nevada seeks a balanced approach that allows for the preservation of Nevada's economy, while conserving and protecting sage-grouse populations and the sagebrush ecosystem upon which they need to survive. Nevada's strategy is to provide consultation for project planning to first avoid and minimize impacts to sage-grouse (see Section 3.0) and then to offset residual impacts through compensatory mitigation via the Conservation Credit System (see Section 8.0).

Anthropogenic disturbances can negatively impact sage-grouse both directly and indirectly, and through various mechanisms. Anthropogenic disturbances can directly impact sage-grouse by causing direct loss of habitat, avoidance behavior to infrastructure (Doherty et al. 2008) and to otherwise suitable habitat (Lyon and Anderson 2003, Holloran 2005, Kaiser 2006, Doherty et al 2008), direct mortality through collision with infrastructure (Beck et al 2006, Stevens et al 2012) and mosquitos carrying the West Nile virus (Walker and Naugle 2011) associated with artificial ponds created by development (Zou et al 2006), and negative impacts to survival and reproduction (Lyon and Anderson 2003, Holloran 2005, Kaiser 2006, Aldridge and Boyce 2007, Holloran et al 2007). Indirect impacts on sage-grouse demographics can be caused by noise produced from operations (Braun et al 2002, Holloran 2005, Kaiser 2006, Blickley et al 2012), vehicle traffic on associated roads (Lyon and Anderson 2003), and increased predation by raptors perching on associated power lines (Ellis 1984). Moreover, anthropogenic disturbances can lead to an increase in the presence of cheatgrass and other invasive plant species (Bradley and Mustard 2006, Manier et al 2014). In addition, habitat fragmentation resulting from cumulative effects of multiple anthropogenic disturbances across the landscape has been shown to have long term negative impacts on sage-grouse populations (Johnson et al 2011, Knick and Hanser 2011, Knick et al 2013).

Mining

Mining is a vital part of the state of Nevada's economy both currently and historically. The initial discovery of the Comstock Lode silver ore deposit in Virginia City in the 1850s was central to the settling and development of Nevada, as well as a major reason for Nevada's admission into the United States in 1864. The Nevada Department of Taxation currently estimates the net assed mineral value in the State to be approximately $5.1 billion (State of Nevada 2014) and the Nevada Bureau of Mines and Geology (NBMG) estimates the total production value at $10.76 billion (NBMG 2014)[1]. The annual tax revenue collected in fiscal year 2013 was approximately $236 million (State of Nevada 2014). It is estimated that Nevada's mining economic output contributes a 6% share of Nevada's statewide GDP (Nevada Mining Association 2011).

The primary type of mineral exploration and development in the state of Nevada is locatable minerals, including gold, silver, and copper. Locatable mineral development and exploration is governed under the General Mining Law of 1872 and is a non-discretionary activity on federal lands. Additional federal, state, and local laws also govern locatable minerals. Salable and non-energy leasable mineral exploration and development also occurs, though to a lesser extent. Salable mineral materials, which are common varieties of construction materials and aggregates, such as sand, stone, and gravel are governed under the Materials Acts of 1947. Government and non-profit organizations may obtain these

[1] The State of Nevada 2014 estimate is for FY 12-13 (June 2012 – July 2013) and the NBMG estimate is for calendar year 2012. Both estimates also include geothermal energy and petroleum production.

resources free of charge for community purposes on BLM and USFS administered lands. The Nevada Department of Transportation and local governments are the primary users of gravel and sand resources on federal lands in Nevada. Non-energy leasable minerals, such as potassium and sodium, which are governed under the Mineral Leasing Act of 1920 are also present, however there are currently no leases in sage-grouse habitat in Nevada (BLM 2013).

The extent of mining activities across the state of Nevada overlaps with the range of sage-grouse habitat. There are approximately 2 million acres of locatable mineral claims in sage-grouse habitat in Nevada (BLM 2013). The total "footprint" of mining in Nevada is estimated at 169,029 and 181,340 acres by BLM and NDEP respectively (Biaggi personal communication 2014). Mining and its associated facilities and infrastructure may result in habitat fragmentation, direct habitat loss, and indirect impacts decreasing the suitability of otherwise suitable habitat (USFWS 2013). The specific impacts of mining on sage-grouse and their habitat have not been studied (Manier 2013); however the consistency in findings from research evaluating the impacts of different types of anthropogenic disturbances, principally oil and gas development, on sage-grouse (Naugle et al 2011), may offer insights to the impacts of other anthropogenic disturbances, such as mining.

Non-Renewable Energy Production

Though there is currently little oil and gas development in Nevada. Oil production in Nevada has been on a steady decline and is currently limited to approximately 336,000 barrels of oil production annually (Nevada Division of Minerals 2014a). Within sage-grouse habitat it is limited to two major basins, including the Railroad Valley and Pine Valley, with Railroad Valley being the predominant oil-producing valley in Nevada (BLM 2013). However, with recent federal approval of oil and gas exploration near Wells, Nevada (BLM 2014), there may be potential for increased oil and gas production in the State pending results of the exploration.

In a comprehensive literature review of the impacts of energy development, principally oil and gas, on sage-grouse conducted by Naugle et al (2011), all studies reported negative effects, while no positive impacts to sage-grouse populations or habitat were reported. Negative responses of sage-grouse were consistent regardless of whether lek dynamics or demographic rates were studied (Naugle et al 2011). The specific direct and indirect impacts are described above.

Renewable Energy Production

The development, transmission, and distribution of renewable and non-renewable energy is a high priority for the state of Nevada. Shifting national and state energy policies, as well as Nevada's favorable conditions for different types of renewable energy resources, renewable energy development is likely to increase in the State. The SEP supports Nevada's Renewable Portfolio Standard goal of 25% of Nevada's energy coming from renewable sources by 2025. In addition, the Nevada Public Utilities Commission this year ruled in accordance with Nevada S.B. 123 requiring the retirement of no less than 300 MW of coal-fired electrical generating capacity on or before December 31, 2014, and not less than 250 MW of coal-fired electrical generating capacity on or before December 31, 2017 (Public Utilities Commission of Nevada 2014).

Renewable energy resources in Nevada include geothermal, wind, solar, and biomass. Nevada has vast geothermal resources and is leading the way in geothermal energy development in the United States. As of the end of 2013, of the 3442 MW of installed generating capacity in the U.S. (Matek 2014), Nevada contributes 586 MW (Nevada Division of Minerals 2014b), representing approximately 17% of total installed capacity in the U.S. Nevada is outpacing the rest of the country in developing geothermal projects. Nevada accounted for approximately 41% of the total number of projects under development

in the U.S. since 2011 (Matek 2014). Nevada currently has 22 operating geothermal plants at 14 different locations (Nevada Division of Minerals 2014b). There are significant geothermal resources in northern Nevada that coincide with the sage-grouse habitat range. Recent geothermal projects that coincide with sage-grouse habitat include the Tuscarora, McGinness Hills, and Jersey Valley Geothermal Power Plants.

Wind energy is one of the fastest growing renewable energy sectors in the U.S.; however the potential viability for development of this resource in Nevada is currently limited. Analysis conducted as part of BLM's Wind Energy Development Programmatic EIS showed most of Nevada's wind power classification rated as poor to fair, with only small pockets classified as good to outstanding (BLM 2005). Some of those pockets however, overlap with sage-grouse habitat. Currently there is one wind generation facility in Nevada, the Spring Valley Wind Project; an approximately 150 MW facility located approximately 30 miles east of Ely, NV.

The BLM, as part of a Programmatic Environmental EIS for Solar Energy Development, developed Solar Energy Zones (SEZ), defined as areas well suited for utility scale production of solar energy. Five SEZs were identified for Nevada; all located in Clark and southern Nye counties, outside the range of sage-grouse (BLM 2012). There are currently no solar energy rights of ways within sage-grouse habitat in Nevada (BLM 2013).

There is currently no significant commercial conifer biomass energy economy in Nevada (BLM 2013); however considering that pinyon-juniper expansion is one of the major threats facing sage-grouse in Nevada, the SEP encourages exploring and incentivizing biomass energy development in the State.

Renewable energy development can negatively impact sage-grouse both directly and indirectly, and through various mechanisms. Impacts to sage-grouse from geothermal energy development have not been assessed in the scientific literature because the development has been too recent to identify immediate and lag effects (Knick et al 2011). There are currently no commercial solar projects operating in sage-grouse habitats at this time, so the impacts cannot be assessed. There has been one study on the effects on sage-grouse from wind energy developments recently completed in south-central Wyoming, which demonstrated that the relative probabilities of sage-grouse nest and brood success decreased with proximity to wind turbines (LeBeau 2012). Wind energy generation also requires tall structures, which can provide artificial nesting and perching substrate for sage-grouse predators (Knight and Kawashima 1993). Renewable energy development requires many of the same features for construction and operation as non-renewable energy, so it is anticipated that the potential impacts from direct habitat loss, habitat fragmentation through roads and power lines, noise, and increased human presence would most likely be similar to those for non-renewable energy production (USFWS 2010).

Infrastructure

Infrastructure whether related to energy production, mining, or any other purpose, can adversely impact sage-grouse. Infrastructure can result in habitat loss and fragmentation, sage-grouse avoidance of otherwise suitable habitat, provide a source for the spread of invasive species, and provide artificial subsidies for predators (USFWS 2013). Infrastructure most common in Nevada includes transmission lines, distribution lines and roads. Other types of infrastructure may also include, but is not limited to, pipelines, communication towers, and fences.

Transmission and distribution lines (hereafter collectively referred to as power lines) are necessary for transmitting energy from power production facilities and distributing that power to homes and businesses. Power lines may directly impact sage-grouse through habitat loss and fragmentation (Knick

et al 2013), as well as direct mortality due to collisions (Beck et al 2006). Indirect habitat loss due to avoidance of vertical structures, presumably due to increases in predator populations is also a concern (Manier 2013). Power lines have been shown to decrease male lek attendance (Ellis 1985) and probability of lek persistence (Walker et al 2007), as well as causing avoidance behavior of brood-rearing habitat (LeBeau 2012). Power lines have been shown to increase predator distributions and hunting efficiency resulting in increased predation on sage-grouse (Connelly et al 2004). Preliminary results from a ten-year study on the impacts of the Falcon-Gonder transmission line on sage-grouse population dynamics in Eureka County, Nevada show a significant negative effect of the transmission line on nest success and female survival, weak negative effect on male survival, and no support for impacts on nest site selection and female nesting propensity (Gibson et al 2013). Nest success and female survival, along with chick survival, are the demographic rates that have been shown to be important for population growth (Taylor et al 2012).

Roads are widespread through the sage-grouse range and can impact sage-grouse through a variety of mechanisms. A study along I-80 in Wyoming and Utah between 1970 and 2003 found no leks within 1.25 miles of the interstate, and fewer birds on leks within 4.7 miles of the interstate, than further distances (Connelly et al 2004). Roads can negatively impact sage-grouse through direct mortality due to vehicle collision, decreased male lek attendance due to increased traffic (Holloran 2005), avoidance behavior (Lyon and Anderson 2003, LeBeau 2012), and reduced nest initiation rates (Lyon and Anderson 2003). Roads can also facilitate the spread of invasive species (Gelbard and Belnap 2003).

Goals, Objectives, and Management Actions

Goal 1: Manage anthropogenic disturbance development in a manner that provides for the long-term conservation of sage-grouse and their habitat, while balancing the need for continued development of the resources.

Objective 1.1: Achieve no net unmitigated loss of sage-grouse habitat due to new anthropogenic disturbances and any associated facilities and infrastructure within the Sage-Grouse Management Area (SGMA) in order to maintain stable or increasing sage-grouse populations.

Management Action 1.1.1: All new proposed anthropogenic disturbances within the SGMA will trigger timely SETT Consultation for application of the "avoid, minimize, mitigate" process (see Section 3.0). This will serve as a centralized impact assessment process that provides consistent evaluation, reconciliation and guidance for project development.

Management Action 1.1.2: Avoid new anthropogenic disturbance activities and its associated facilities and infrastructure within the SGMA. Locate activities, facilities, and infrastructure in non-habitat wherever possible. Avoidance of a disturbance within sage-grouse habitat is the preferred option. If avoidance is not possible, the project proponent must demonstrate why it is not possible in order for the SETT to consider minimization and mitigation alternatives. The process to demonstrate that avoidance is not possible (the "avoid process") is determined by the four management categories. (See Table 3-1 for more details on the avoid process.) If development cannot be sited in non-habitat, it should occur in the least suitable habitat.

Management Action 1.1.3: If adverse impacts to sage-grouse and their habitat cannot be avoided, project proponents will be required to minimize impacts by employing Site Specific Consultation-Based Design Features (Design Features; see Appendix A) appropriate for the

project. This may include seasonal operational restrictions, noise restrictions, clustering disturbances, and placing infrastructure in previously disturbed locations.

Management Action 1.1.4: Technically evaluate and seek to site new linear features in existing corridors (Figure XX) or, at a minimum, co-locate with existing linear features in Core, Priority, and General Management Areas.

Management Action 1.1.5: Reduce and eliminate artificial hunting perches and nesting substrate for aerial predators. This can be achieved by installing anti-nesting and anti-perching devices on new power lines (see Section 7.3) or burying power lines. Bury distribution power lines of up to 35kV where ground disturbance can be minimized, and where technically and economically feasible. Where technology and economic factors allow, bury higher kV power lines (see Appendix A). Sage-grouse habitat objectives (see Section 4.0) will be incorporated when reclaiming the site.

Management Action 1.1.6: Encourage continued research in the development of more effective perching and nesting deterrent options (see Section 7.3).

Management Action 1.1.7: Aggressively engage in reclamation/weed control efforts during pre- and post-project construction.

Management Action 1.1.8: If impacts from anthropogenic disturbances cannot be avoided and after minimization options have been exhausted, residual adverse impacts are required to be offset through compensatory mitigation. Mitigation obligations will be determined through the Conservation Credit System (see Section 8.0).

Objective 1.2: Explore options to minimize impacts from existing and abandoned anthropogenic disturbances and associated infrastructure.

Management Action 1.2.1: While SETT Consultation and the "avoid, minimize, mitigate" process does not apply retroactively to existing anthropogenic disturbances, existing operators are encouraged to incorporate the Design Features outlined in Appendix A and contact the SETT for timely input on techniques and practices to avoid and minimize existing impacts to sage-grouse and their habitat.

Management Action 1.2.2: Inventory abandoned mine sites within sage-grouse habitat and, where practical, reclaim sites to meet sage-grouse habitat objectives (see Section 4.0). Coordinate with the Abandoned Mine Lands Program on this effort.

Management Action 1.2.3: Work with the energy industry to explore opportunities to install anti-nesting and anti-perching devices on existing power lines and tall structures and to bury existing power lines where practical and economically feasible.

Management Action 1.2.4: Inventory power lines and utility structures that are no longer in use and look for opportunities to decommission the lines and reclaim the sites to meet sage-grouse habitat objectives (see Section 4.0).

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7.2 Pinyon-Juniper Encroachment

In Nevada, pinyon and juniper (P-J) woodlands are composed of single needle pinyon pine (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*). In northwestern Nevada pinyon and Utah juniper are replaced with western juniper (*J. occidentalis*). P-J woodlands currently cover 13% of Nevada, or approximately 9.1 million acres (Mitchell and Roberts 1999). Of the 9.1 million acres in Nevada, approximately 64% is found on BLM land, 26% on USFS land, 5% on private land, and the remaining 5% on other lands (DOD, NRC, USFWS, BIA, etc.)(DCNR-NDF 2010).

From a historical standpoint, the area occupied by pinyon and/or juniper has increased 125 to 625 percent since 1860. The increase in trees is a result of infill into shrub-steppe communities that contained low numbers of trees, and expansion of P-J into areas that previously did not support trees. (Miller et al. 2008). Potential reasons for the expansion may include: altered fire regimes, improper livestock grazing, natural range expansion, and changing climate (Romme et al. 2009).

In Nevada, P-J encroachment is ranked as the second highest threat to sage-grouse, after fire and invasive plants. This continued woodland expansion is a challenge for land and wildlife managers, with two primary concerns being the continuing steady conversion of sagebrush habitat to woodland and increased risk of large area destructive wildfires that may convert woodlands to monocultures of invasive annual grasses and other weedy species.

Pinyon – Juniper Woodland Encroachment into Sagebrush Communities – Characterization
P-J woodland encroachment is characterized by three phases (Miller et al 2005):

Phase I – Trees are present but shrubs and herbaceous vegetation are the dominant vegetation that influences ecological processes on the site;

Phase II – Trees are co-dominant with shrubs and herbaceous vegetation and all three vegetation layers influence ecological processes on the site; and

Phase III – Trees are the dominant vegetation and the primary plant layer influencing ecological processes on the site.

If a wildfire occurs before Phase III is reached, the original vegetation community has an opportunity to return to the site via successional pathway that is dependent upon the fire's surviving plant species, seed produced by the remaining shrubs, surviving herbaceous vegetation, and/or their viable seed remaining in the soil seed bank. This return to the original community is also dependent on the native plants being abundant enough to out compete any on-site invasive annual grasses like cheatgrass (*Bromus tectorum*) or medusahead grass (*Taeniatherum caput-medusae*) and perennial invasive weeds (skeleton weed, knapweeds, etc.) following the fire.

With time, and little or no fire, these invaded brush communities become Phase III woodlands, characterized by very little understory, the only evidence of the former plant community being skeletons of sagebrush and other woody brush species and a sparse population of herbaceous plants . At this point, run-off from the soil surface of spaces between trees increases, due to the loss of herbaceous ground cover. In turn, the increased rate and speed of soil erosion can trigger difficult to reverse changes to the biogeochemical cycles of the plant community. If a fire burns through the woodland at this point, the potential for the area to return to a sagebrush plant community is greatly reduced, particularly if cheatgrass, medusahead, and/or perennial invasive weeds are present in the understory.

In the Great Basin there are approximately 100,000 + acres a year moving into Phase III woodlands. (Miller et al.2008). At this rate of encroachment, management of sagebrush habitats becomes a race between a potentially permanent loss of sagebrush habitat to P-J woodland versus how much Phase I and II woodlands can reasonably be treated each year before they reach Phase III.

Land managers have to consider removal of trees from areas that historically have been sagebrush dominated as a priority activity. Numerous studies have documented the expansion of P-J woodlands into sagebrush communities (Cottam and Stewart 1940; Adams 1975; Burkhardt and Tisdale1976; Tausch et al. 1981; Tausch and West 1988, 1995;Gedney and others 1999; Miller and Rose 1995, 1999; Miller et al. 2005). In recent years, research has looked at woodland dynamics and new approaches to measure the extent that P-J woodlands have replaced or are encroaching sagebrush communities versus dynamics on sites that have supported woodlands in the past (Miller et al.2008).

Pinyon – Juniper Woodland Encroachment into Sagebrush Communities – Greater Sage-grouse Impacts
The continued expansion of woodland has become a primary threat to greater sage-grouse and other sagebrush obligate wildlife species. In the instance of sage-grouse, woodland expansion contributes to the loss of important seasonal habitats. It also increases raptor presence and predation associated with the coniferous trees (Commons et al. 1999). There are several studies that demonstrate that sage-grouse avoid areas encroached by P-J, P-J removal will increase sage-grouse habitat quality, and some evidence that sage-grouse will return to an area once P-J is removed:

- During both the breeding and summer seasons, sage-grouse preferred cover types with less than 5% juniper canopy cover compared to those same cover types with greater than 5% juniper canopy cover. (Freese 2009).

- Juniper can also indirectly influence birds' avoidance of habitats through its influences on plant community compositional and structural changes, such as a reduction in the herbaceous understory (Knapp and Soule 1998, Miller et al. 2000).

- Sage-grouse avoided conifer at the 0.65 km scale (850m x 850m). Sage-grouse avoided mixed sagebrush/tree (≤40 trees/ha) at scales of 7.3 and 159.2 ha. Avoidance most supported when patch widths exceeded 200 m (Doherty 2008).

- Sage-grouse avoid areas encroached by P-J at scales of 7.9 ha to 226.8 ha (Casazza et al 2011).

- Recent modeling efforts by the Sage-grouse Initiative have shown that no leks remained active when P-J cover exceeded >4% and recommended focusing P-J removal treatments in Phase I stands (Baruch-Mordo et al 2013).

- Research focused on treatment effectiveness indicated that mechanical tree thinning increased native understory biomass by 200 percent (Brockway et al 2002).

- Removal, by cutting, of pinyon- juniper trees/shrubs in association with brush-beating to reduce height of mountain big sagebrush and deciduous brush resulted in doubling numbers of male sage grouse counted on treatment leks in years 2 and 3 post-treatment (Commons 1999).

Goals, Objectives, and Management Actions

Goal 1: Establish and maintain a resilient sagebrush ecosystem and restore sagebrush vegetation communities in order to provide for the conservation of sage-grouse and their habitat.

Objective 1.1: Reduce the expansion of P-J woodlands into otherwise suitable sage-grouse habitat.

Management Action 1.1.1: Inventory and prioritize areas for treatment of Phase I and Phase II encroachment that is contiguous with suitable sage-grouse habitat in Core, Priority, and General Management Areas in order to achieve sage-grouse habitat objectives (Table 4.1).

Management Action 1.1.2: Prioritize areas for treatment of Phase III pinyon-juniper encroachment in strategic areas only to break up continuous, hazardous fuel beds, create movement corridors, or connect habitats. Treat areas that have the greatest opportunity for recovery to suitable sage-grouse habitat based on ecological site potential. Old growth trees should be protected on woodland sites.

Management Action 1.1.3*:* Aggressively implement plans to remove Phase I and Phase II encroachment in areas contiguous with suitable sage-grouse habitat. Only treat areas in Phase III encroachment to reduce the threat of severe conflagration, create movement corridors, or connect habitats. Phase III treatments may need additional rehabilitation actions if perennial understory vegetation is absent.

Management Action 1.1.4: Allow temporary road access to P-J encroached treatment areas. Construct temporary access roads where access is needed with minimum design standards to avoid and minimize impacts. Remove and restore temporary roads upon completion of treatment.

Management Action 1.1.5: Allocate sufficient resources to fully address habitat loss and degradation in the next ten years.

Management Action 1.1.6: Share project funding between all appropriate agencies and jurisdictions by designing and completing NEPA for large-scale, watershed-based treatments over a period of years, rather than ad hoc projects.

Management Action 1.1.7**:** Incentivize and assist in the development of bio-fuels and other commercial uses of pinyon and juniper resources.

Management Action 1.1.8: Increase the incentives for private industry investment in biomass removal, land restoration, and renewable energy development by authorizing stewardship contracts for up to 20 years.

Management Action 1.1.9: Establish a target goal for number of acres to be treated annually. Monitor, adaptively manage, and report progress to the Nevada Sagebrush Ecosystem Council.

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7.8 Recreation & Off-Highway Vehicle Activities

Nevada offers some of the most robust recreational and off-highway vehicle experiences in the nation due, in large part, to its high percentage of accessible federally managed public lands. Recreation, in all of its forms, creates a significant benefit to local and statewide economies. Extensive networks of roads and trails offer recreationists excellent access to most of Nevada's expansive basin and range high desert ecosystems. This extensivity of roads and trails may also create impacts on sagebrush habitats and sage-grouse that may be difficult to measure.

While these activities are one of the many acceptable multiple-uses on our federal public lands, it also requires frequently reviewed and updated policies that allow for greater adaptive management. This may assist in ongoing efforts to protect and preserve sensitive land forms, plants, and animals from levels or types of disturbance that create unnatural or unduly negative impacts. Potential impacts on sage-grouse and their habitat associated with recreational activities include but are not limited to: increases in noise levels, distribution of invasive plants, generation of fugitive dust, and effects on predator prey relationships (Manier 2013).

In Nevada, the recent creation of the Commission on Off-Highway Vehicles provides a mechanism and a funding source to educate users on how to responsibly use off-highway vehicles while minimizing adverse effects on public land resources including important or restricted-access to sage-grouse habitats. It may also provide a funding source to allow the State to join with its federal agencies to better plan, develop, and manage a coordinated and designated system of off-road vehicle trails in Nevada. The off-highway vehicle registration system allows state law enforcement personnel to access vehicle registration information and identify vehicle titleholders in instances where state or federal laws pertaining to off-road access or use are violated.

Conservation Goals, Objectives, and Management Actions

Goal 1: Conserve sage-grouse and their habitat while allowing for continued recreational access to public lands.

Objective 1.1: In sage-grouse habitat, avoid or minimize recreation and OHV direct and indirect impacts to sage-grouse and their habitat and monitor sites for potential impacts.

Management Action 1.1.1: Establish appropriate ambient noise levels for undisturbed sage-grouse leks. This should generally be done between the hours of 6:00 p.m. to 8:00 a.m. as these are the hours most critical for communications of sage-grouse and auditory detection of predators (Patricelli et al. 2013).

Management Action 1.1.2: Take measures to minimize or reduce activities to avoid an ambient noise level increase >10 dB at the edge of leks during the lekking season generally, March 1 through May 15 from one hour before sunrise until 9:00 AM.

Management Action 1.1.3: Assist in efforts to enhance collaborative monitoring through volunteer organizations, recreational groups, etc., to collect data that would assist in the protection, enhancement, or rehabilitation of sage-grouse habitat.

Management Action 1.1.4: Support studies that further the understanding of the relationship between recreational uses and their potential impacts on sage-grouse.

Objective 1.2: Support and implement efforts to reduce the potential for additional sage-grouse habitat fragmentation from uauthorized 'trail making'.

Management Action 1.2.1: Support and promote efforts by state, local, and federal agencies and recreational groups to promote educational campaigns that encourage responsible OHV and recreation activities that avoid or minimize negative impacts to sage-grouse and their habitat.

Management Action 1.2.2: Work with state, local, and federal agencies and recreational groups to inventory unauthorized trails in Core, Priority, and General Management Areas and where feasible restore trails to meet sage-grouse habitat objectives (see Table 4-1).

Objective 1.3: Promote the leveraging of funding from all sources when addressing sage-grouse habitat enhancement, rehabilitation, or protection projects.

Management Action 1.3.1: Develop a database to share with interested agencies and groups to maximize efforts and leverage funding.

Management *Action 1.3.2:* Encourage and support the Commission on Off-Highway Vehicles to expend OHV registration funds to ehance, rehabilitate, or protect sage-grouse habitat.

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5.0 IMPLEMENTATION RESPONSIBILITIES

The creation of the Sagebrush Ecosystem Program (SEP) was one of the main recommendations of the 2012 Governor's Sage-grouse Advisory Committee. The SEP consists of the Sagebrush Ecosystem Council (SEC) and the Sagebrush Ecosystem Technical Team (SETT). The program is established under the Department of Conservation and Natural Resources – Division of State Lands. The program is a collaborative, multi-stakeholder approach, charged to carry out programs to preserve, restore, and enhance sagebrush ecosystems in the state of Nevada. In addition, the SEP will work with Local Area Working Groups (LAWGs) and Conservation Districts to help identify and implement on-the-ground sage-grouse and sagebrush ecosystem conservation efforts.

Sagebrush Ecosystem Council (SEC)

The SEC was originally established under Executive Order 2012-19 and later solidified into state statute under NRS 232.162. The SEC consists of a nine voting member board, appointed by the Governor with representatives from the following interests: agriculture, energy, general public, conservation and environmental, mining, ranching, local government, Native American tribes, and Board of Wildlife Commissioners. In addition, the state directors of the Nevada Departments of Conservation and Natural Resources (DCNR), Wildlife (NDOW), and Agriculture (NDA), as well as the state directors for the federal agencies of BLM, USFWS, and HTNF will serve as ex-officio members. The SEC is responsible for determining policy associated with the sagebrush ecosystem and sage-grouse.

The objective of the SEC is to establish and guide a consistent, transparent process to coordinate disturbance and conservation activities and set policy in the SGMA in order to provide for a resilient and resistant sagebrush ecosystem and stable or increasing sage-grouse populations.

The specific duties of the SEC include:

- Consider the best science available in its determinations regarding the conservation of sage-grouse and sagebrush ecosystems in this State;
- Establish and carry out strategies for: 1) the conservation of the sage grouse and sagebrush ecosystems in this State; and 2) managing land which includes those sagebrush ecosystems, taking into consideration the importance of those sagebrush ecosystems and the interests of the State;
- Establish and carry out a long-term system for carrying out strategies to manage sagebrush ecosystems in this State using an adaptive management framework and providing for input from interested persons and governmental entities;
- Oversee the SETT;
- Establish and set policy for the Conservation Credit System (CCS);
- Solicit suggestions and information and, if necessary, prioritize projects concerning the enhancement of the landscape, the restoration of habitat, the reduction of nonnative grasses and plants and the mitigation of damage to, or the expansion of, scientific knowledge of sagebrush ecosystems;
- If requested, provide advice for the resolution of any conflict concerning the management of the sage-grouse or a sagebrush ecosystem in this State;

- Coordinate and facilitate discussion among persons, federal and state agencies, and local governments concerning the maintenance of sagebrush ecosystems and the conservation of the sage-grouse;
- Provide information and advice to persons, federal and state agencies and local governments concerning any strategy, system, program or project carried out under this State Plan;
- Provide direction to state agencies concerning any strategy, system, program or project carried out pursuant to this State Plan and resolve any conflict with any direction given by another state board, commission, or department jointly with that board, commission or department, as applicable;
- Submit reports twice a year to the Governor;
- Pursuant to Attachment XX "Inter-Tribal Council of Nevada, Inc. Resolution & Letter of Support," integrate Tribal participation in the statewide conservation effort, and acknowledge traditional Tribal ecological knowledge when available to update SGMA;
- Establish policies for the identification and prioritization of landscape-scale enhancement, restoration, fuel reduction, and mitigation projects based upon ecological site potential, state and transition models, and other data that will contribute to decision making informed by science to increase resiliency; and
- Encourage and facilitate land management education and training for all user groups of sage-grouse habitat.

Sagebrush Ecosystem Technical Team (SETT)

The SETT is a multi-disciplinary, interagency team with representation from DCNR – Divisions of State Lands and Forestry, NDOW, and NDA. The SETT serves as staff to the SEC and advises them on the best available science.

The objective of the SETT is to implement a multi-disciplinary approach for the administration of this State Plan that incorporates various scientific and technical expertise and provides a well-defined process for assessing impacts and permitting activity in the SGMA.

The specific duties of the SETT include:

- Serve as staff to the SEC and advise the SEC on the best available science in order for them to set policy;
- Develop a comprehensive State Plan based on the recommendations from the Governor's Sage-grouse Advisory Council;
- Oversee the day-to-day implementation of the goals, objectives, and management actions established under this State Plan. Propose revisions to the State Plan as needed;
- Coordinate the development of the Conservation Credit System. In accordance with SEC policy, administer and operate the CCS once it is established;
- Work with the USGS and other technical experts to development sage-grouse habitat and management maps;

- Establish and manage a process in cooperation with applicable federal and state agency partners to update sage-grouse habitat and management maps using the best available science;
- Coordinate with the BLM and USFS and other federal and state agencies on the development of the Nevada and Northeastern California Greater Sage-grouse Land Use Plan Amendment (LUPA) and Environmental Impact Statement (EIS);
- Enter into an MOU with the BLM and USFS for agency coordination on sage-grouse management and administration of the CCS;
- Compile and submit state-wide data for the USFWS data call for the sage-grouse listing decision;
- Work with scientific and technical experts for advise on the best available science for implementing and updating management actions;
- Identify and prioritize landscape-scale enhancement, restoration, fuel reduction, and mitigation projects based upon ecological site potential, state and transition models, and other data that will contribute to decision making informed by science to increase resiliency following wildfire;
- Provide consultation for project proponents who want to conduct activities in the SGMA to avoid, minimize, and mitigate impacts to sage-grouse. This may include robust ground-truthing for the presence or absence of habitat. Foster and maintain collaborative processes with state and federal agencies to expedite permitting, while providing for the conservation of sage-grouse;
- Secure grants and other funding opportunities to implement habitat enhancement and restoration projects;
- Develop and oversee a monitoring and adaptive management program and provide recommendations to the SEC on how to update policies based on new information learned; and
- Establish a geographic database repository to maintain the inventory of development and mitigation projects, population data, and monitoring results.

Local Area Working Groups (LAWGs)

The LAWGs provide all stakeholders with an opportunity to work together in actively managing and restoring landscapes across boundaries. Even with collaboration there is a realization that to be successful there is a need for more investment from all sources to achieve sage-grouse conservation objectives. LAWG membership includes representation from private land owners, tribes, federal land management agencies, local governments, conservation districts, USFWS, USGS, NDOW, NGOs, USDA-ARS, UNR, USDA-NRCS, DOD, sportsmen, mining, energy, OHV users, agricultural and environmental interests.

The SEP will work with the LAWGs to:

- Develop and implement site-specific plans to accomplish enhancement and restoration projects in areas that are identified by the SEP important areas for sage-grouse conservation;
- Monitor and adaptively manage conservation actions;
- Identify potential habitat enhancement and restoration projects; and

- Provide local, site-specific expertise on a variety of issues.

Conservation Districts Program (CDP)

The CDP provides administrative support to the State Conservation Commission, which develops policy and regulations for Nevada's twenty-eight locally elected conservation districts. The CDP is comprised of a program coordinator and three staff specialists stationed in Ely, Winnemucca, and Elko. The CDP's role in the implementation of this State Plan is to assist in the development of on-the-ground conservation projects.

The SEP will work with the CDP to:

- Implement on-the-ground conservation and mitigation projects identified by the SEP and LAWGs. Provide recommendations to the SEP on possible additional projects; and
- Facilitate communication between individual CDs, SEP, LAWGs, and other stakeholders in order to more effectively achieve on-the-ground conservation.