



Appendix E

Sagebrush Obligate

Conservation Measures

Thunder Basin Grassland Prairie Ecosystem Association
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NOTE: The point value of conservation measures will be adjusted based on acreage involved and distance from occupied habitat. Conservation measures in close proximity to occupied habitat will receive the highest value while measures occurring farther away will receive proportionately reduced values. Points should be viewed as guidelines for typical situations. Species density, lack of species use, proximity to known habitat use areas, and/or suitability of existing habitat may be considered in assigning the final point value. All factors considered in assigning a reduced point value will be documented in the CI or CI/CP. Any increases to stated point values will require specific Association Board approval. Unless otherwise noted, all conservation measures apply to the entire enrolled acreage of the CI or CI/CP holder and apply throughout the full term of the CI or CI/CP.

Sagebrush habitats are becoming increasingly degraded and fragmented due to the impacts of multiple threats, including direct conversion, urbanization, infrastructure (roads, power lines, etc.), wildfire and the change in wildfire frequency, incursion of invasive plants, inappropriate grazing management, and nonrenewable and renewable energy development. Recently, these threats have been summarized in such documents as the National Technical Team report and the Conservation Objectives Team report. In addition, the Near-term Conservation Objectives document suggests measures that should be undertaken in the near future. Many of these threat factors could be exacerbated by effects of climate change, which may influence long-term habitat trends. For sagebrush obligates such as the greater sage-grouse, Brewer's sparrow, sage sparrow, and sage thrasher (all species covered by this CCAA), the dramatic decline in sagebrush habitat is of critical concern.

Over the past few years, the State of Wyoming has developed a conservation strategy based around habitat priority areas identified in various executive orders as sage-grouse core areas. There are currently six core areas identified in the five county coverage area: Douglas, Thunder Basin, Newcastle, North Gillette, and portions of North Glenrock and Natrona.

The Association's landscape-wide focus on maintaining and restoring sagebrush habitat to meet the needs of sage-grouse supports the core area concept and also supports inclusion of the other three sagebrush-obligate species mentioned above. Rowland et.al. (2006) found that these species shared substantial habitat with greater sage-grouse: sage thrasher (mean $\phi = 0.57$), sage sparrow (mean $\phi = 0.55$), and Brewer's sparrow (mean $\phi = 0.50$) where mean ϕ values from 0.30 to 0.85 indicated sharing of substantial habitat. With this in mind, the following conservation measures are designed to positively impact sagebrush habitat in ways that will be beneficial to the four covered sagebrush-obligate species. In addition, conservation measures that apply specifically to one or more of these four species are clearly identified.

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

Habitat Fragmentation and Destruction

Conversion of Suitable Habitat

A1 Sagebrush Obligate Threat: Modification of lands from wildfire, poorly reclaimed energy developments, and conversion of sagebrush habitat to agriculture use (including grassland monocultures) are primary sources of habitat fragmentation and degradation across the coverage area, especially in areas where suitably deep soils and adequate water are available. These and similar modifications have reduced known and potential habitat for nesting, brood-rearing, and/or wintering birds. Within the coverage area, most of the farming activity occurred during the 1920s and 1930s and a majority of these areas, along with natural wildfire scars, were poorly reclaimed, if they were reclaimed at all. This has created areas of fragmentation and degradation depending on the site.

A1 Sagebrush Obligate Conservation Measure A: Conduct baseline monitoring to determine existing conditions and compare to current guidelines (BLM Habitat Assessment Framework, etc.). Design treatments to bring native sagebrush-grassland species to desired conditions on a collective 320 acres of disturbed lands utilizing appropriate tools (e. g. seeding, grazing management, herbicide, etc.) [up to 6 points depending on proximity to lek, connectivity, and surrounding habitat conditions]

CI or CI/CP Information:

- Conduct baseline vegetation monitoring: height and cover by species
- Report information along with GPS location of established 100' vegetation transects: 1 per 80 acres, minimum of 4
- Specify details of selected treatment methods including control of invasive species if necessary
- Baseline photo points with GPS locations: 1 per 80 acres, minimum of 4

Performance Monitoring to Support Adaptive Management:

- Monitor vegetation height and cover by species annually between June 15 and August 15; report to the Association by September 30 of each year or as specified in the CI or CI/CP
- Photograph habitat treatment areas annually within ± 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 4 years¹ to verify treatment area trend

A1 Sagebrush Obligate Conservation Measure B: Commit to no additional conversion of sagebrush rangeland to cropland (including grassland monocultures such as crested wheat) on enrolled lands [1 - 6 points depending on the history of conversion and extent of cropland currently within the CI or CI/CP; 1 additional point if area is within 5 miles of an active sage-grouse lek]

CI or CI/CP Information:

- Map existing land configuration specifying existing land use
- Document likelihood of changes in land configuration or use

Performance Monitoring to Support Adaptive Management:

- Map and report any changes in land configuration or use to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify land use

A1 Sagebrush Obligate Benefits: Protection, establishment or reestablishment of native sagebrush-grassland plant communities will reduce fragmentation and/or degradation, thus increasing potential foraging, nesting, brood-rearing or other uses by sagebrush obligates. This will benefit nest establishment and success, brood rearing success, and/or winter use capacity.

¹ This frequency is adapted from WDEQ-LQD Guideline 14 which specifies that at least two interim vegetation monitoring events occur within a 10-year period following the initial sampling to evaluate reclamation success trends.

Energy Development: Mining

A2 Sagebrush Obligate Threat: Sagebrush stands that meet mine bond release criteria for shrub density may not meet the optimal sagebrush density or canopy cover for sagebrush obligate habitat. This reduces potential habitat for nesting, brood-rearing, and/or winter use and is a lost opportunity to provide habitat that is better suited to sagebrush obligates.

A2 Sagebrush Obligate Conservation Measure: Increase and sustain the extent of sagebrush and forb mosaic re-establishment on mined land reclamation above the minimum required and approved acreage in the permit-to-mine. Report success-failure to the Association and redo failed seeding until successful as compared to adjacent non-mined areas [2 points for every 100 percent increase above the minimum approved acreage, minimum 40 collective acres]

CI or CI/CP Information:

- Map increased areas of sagebrush/forb habitat to be established
- Indicate proposed seeding parameters - PLS rate, seed mix composition, etc.
- Baseline photo points with GPS locations: 1 per 40 acres

One-time Compliance Monitoring:

- Report details of seeding (map of seeded area, acres covered, seedbed preparation methods used, seeding equipment used, dates of seeding, seed invoices, seed mix tag, etc.) to the Association within 30 days of treatment

Performance Monitoring to Support Adaptive Management:

- Monitor vegetation species height and cover by species annually between June 15 and August 15; report data and seeding success / failure to the Association by September 30 of each year or as specified in the CI or CI/CP
- Provide excerpt of DEQ report detailing increased sagebrush/forb area parameters
- Photograph sagebrush/forb habitat annually within + 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify habitat practices

A2 Sagebrush Obligate Benefits: Increasing the area and extent of sagebrush stands in coal mine reclamation increases the potential total sagebrush obligate habitat and increases the likelihood for reclamation use by sagebrush obligates for nesting, brood-rearing, and/or winter use.

A3 Sagebrush Obligate Threat: Use of non-native plant species for coal mine reclamation seeding of approved pasturelands in the postmine reclamation plan results in vegetation communities that are not conducive to sagebrush obligate use, and represent lost potential sagebrush obligate habitat. Non-native reclamation reduces the available habitat for nesting, brood-rearing, and/or winter use.

A3 Sagebrush Obligate Conservation Measure: Substitute native sagebrush grassland seed mix in lieu of re-establishing the post-mine improved pasture acreage allowed by the approved reclamation plans

in the permit-to-mine. Report success-failure to the Association and redo failed seeding until successful as compared to adjacent areas [3 points for every 80 acres of improved pasture acreage seeded with a sagebrush-grassland mix]

CI or CI/CP Information:

- Map proposed areas of sagebrush grassland establishment
- Indicate proposed seeding parameters - PLS rate, seed mix composition, etc.
- Baseline photo points with GPS locations: 1 per 40 acres

One-time Compliance Monitoring:

- Report details of seeding (map of seeded area, acres covered, seedbed preparation methods used, seeding equipment used, dates of seeding, seed invoices, seed mix tag, etc.) to the Association within 30 days of treatment

Performance Monitoring to Support Adaptive Management:

- Monitor vegetation species height and cover by species annually between June 15 and August 15; report data and seeding success / failure to the Association by September 30 of each year or as specified in the CI or CI/CP
- Provide excerpt of DEQ report detailing sagebrush grassland area parameters
- Photograph sagebrush grassland habitat annually within + 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify habitat practices

A3 Sagebrush Obligate Benefits: Forgoing the approved option to establish pastureland acreage in reclamation and instead reclaiming with native species will increase the quality of the reclamation for sagebrush obligates, thus increasing the likelihood for reclamation use by sagebrush obligates for nesting, brood-rearing, and/or winter use.

A4 Sagebrush Obligate Threat: Disturbances can create sagebrush habitat fragmentation and inhibit sagebrush obligate use and sage-grouse movement between undisturbed areas. Sage-grouse, particularly non-migratory populations, require extensive areas of habitat to allow movement and seasonal selection of habitat areas for breeding, brood-rearing, overwintering, etc.. Sagebrush obligates can abandon use of fragmented habitat and nesting and brood rearing success and/or winter use capacity is reduced.

A4 Sagebrush Obligate Conservation Measure: Incorporate landscape scale sagebrush obligate lifecycle needs into mine reclamation plans. This requires establishing connections between reclamation and surrounding native sagebrush areas and integrating sagebrush, grassland, and forb plantings with each other and with reclamation topography [6 points for integrated reclamation plan covering entire mine, minimum 640 contiguous acres]

CI or CI/CP Information:

- Identify and map suitable sagebrush obligate habitat and potential areas of connection to native habitat

- Provide portion of plan describing voluntary integrated habitat reclamation
- Baseline photo points with GPS locations: 4 per 640 acres

Performance Monitoring to Support Adaptive Management:

- Photograph points annually within \pm 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Report sage-grouse use of area through pellet count surveys (include GPS track along with location and description of pellets) or other sagebrush obligate wildlife monitoring to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify reclamation efforts

A4 Sagebrush Obligate Benefits: Creating intact habitat blocks reduces habitat fragmentation and maintains or potentially increases nesting and brood rearing success and/or winter use capacity. Establishing planned habitat linkages within reclaimed areas will increase the movement of sage-grouse between use areas. It will also increase the habitat use capacity by effectively minimizing fragmentation factors and essentially increasing the habitat tract boundaries. This increases the likelihood that sagebrush obligates will use the larger undisturbed areas for nesting, brood-rearing, and/or winter use.

Energy Development: Non-renewable

A5 Sagebrush Obligate Threat: High density oil and gas facilities can contribute to habitat fragmentation. Sagebrush obligates can abandon use of fragmented habitat and nesting and brood rearing success and/or winter use capacity is reduced.

A5 Sagebrush Obligate Conservation Measure: Limit surface disturbance to 5% or less of suitable sagebrush obligate habitat per 640 acres in non-core areas by reducing drill site area and density through multi-well drilling pads, directional drilling, consolidated pipeline/road/utility corridors, closed loop drilling mud recovery systems, or other appropriate methods [9 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Map suitable sagebrush obligate habitat and existing surface disturbance areas
- Specify details of activities selected to limit surface disturbance
- Document current drill site size, drilling density, and likelihood of new oil and gas facilities

Performance Monitoring to Support Adaptive Management:

- Map and report activities to limit surface disturbance to the Association by December 31 of each year or as specified in the CI or CI/CP
- Photograph each activity to limit surface disturbance annually; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify use of activities to limit surface disturbance

A5 Sagebrush Obligate Benefits: Reducing the disturbance footprint and resulting habitat fragmentation due to high density oil and gas facilities will protect intact habitat blocks and habitat

connectivity. This will maintain and potentially increase nesting and brood rearing success and/or improve winter use capacity.

A6 Sagebrush Obligate Threat: Oil and gas well pad establishment can contribute to habitat loss and fragmentation as they often remove sagebrush habitat. Unless multi-well pads are used, habitat impact increases with well pad size as the larger the pad the greater the habitat removed. Reduced or fragmented sagebrush obligate habitat results in reduced nest establishment and success, reduced brood-rearing success, and/or reduced winter capacity.

A6 Sagebrush Obligate Conservation Measure A: Commit to multi-well pads or new well pad areas in sagebrush habitat that average less than 80 percent of average pre-CCAA pad size [4 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Document current average drill site size, drilling density, and likelihood of new oil and gas facilities

Performance Monitoring to Support Adaptive Management:

- Map and report new drill site size for each well along with drilling density to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify drill site size and drilling density

A6 Sagebrush Obligate Conservation Measure B: Commit to utilizing drill pad mats on all level sites in suitable sagebrush habitat [5 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Document likelihood of new oil and gas facilities

Performance Monitoring to Support Adaptive Management:

- Map and report mat implementation details (drill site size, mat dimensions, and deployment methodologies, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Photograph drill pad mats utilized during the year; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once a year to verify drill pad mat utilization

A6 Sagebrush Obligate Benefits: Reducing well pad size or impact, with corresponding reduced habitat loss from current practices, will result in increased sagebrush obligate use capacity. This will favorably affect nest establishment and success, brood rearing success, and/or winter capacity.

Facilities: Detrimental Siting Due to Lack of Information

A7 Sagebrush Obligate Threat: Lack of information on sagebrush obligate use areas and/or sagebrush habitat can result in inadvertent fragmentation from placement of roads, power lines, fences, or other

detrimental infrastructure within critical distances of suitable sagebrush obligate habitat. This can cause sagebrush obligates to use marginal habitats resulting in reduced success in nest establishment, brood survivorship, and/or winter survivorship.

A7 Sagebrush Obligate Conservation Measure A: Collect information necessary to maintain and update sagebrush obligate habitat maps and report to the Association at least annually. This information includes recording GPS locations of incidental sightings and conducting 1/2 mile of sage-grouse pellet counts in each pasture within 6 miles of known sage-grouse leks. Where applicable, the participating member will utilize this information for surface use purposes to avoid habitat fragmentation. The Association will report this information to appropriate agencies annually [3 points for entire CI or CI/CP area, additional points are possible if identified habitat use areas are protected from fragmentation]

CI or CI/CP Information:

- GPS location of existing sage-grouse leks and map of known sagebrush obligate use areas
- Identify pastures where pellet counts will be conducted

Reporting Requirements:

- GPS location of incidental sightings including number of birds; report to the Association after each sighting (preferred) or no later than December 31 of each year or as specified in the CI or CI/CP
- GPS track of sage-grouse pellet survey route including location and description of pellets; report to the Association after each survey (preferred) or no later than December 31 of each year or as specified in the CI or CI/CP
- Document how information was utilized for surface use purposes; report to the Association by December 31 of each year or as specified in the CI or CI/CP

A7 Sagebrush Obligate Conservation Measure B: Conduct sage-grouse collaring studies, daily lek usage studies, nesting studies, genetic testing, resource selection functions, environmental analysis, or other studies necessary to maintain and update sagebrush obligate life cycle information and habitat use maps. Where applicable, the participating member will utilize this information to avoid fragmentation of suitable sagebrush obligate habitat. The Association will report this information to appropriate agencies annually and will attempt to publish pertinent information in a timely manner [4 points per annual study, depending on study parameters; additional points are possible if identified habitat use areas are protected from fragmentation]

CI or CI/CP Information:

- GPS location of existing sage-grouse leks and map of known sagebrush obligate use areas
- Identify study parameters (location, timing, objectives, etc.)

Reporting Requirements:

- Participating member will provide a summary report of studies to the Association by December 31 of each year or as specified in the CI or CI/CP
- A complete report which includes all collected data will be provided to the Association within 90 days of project completion.

- Document how information was utilized for surface use purposes; report to the Association by December 31 of each year or as specified in the CI or CI/CP

A7 Sagebrush Obligate Benefits: Active collection of sagebrush obligate use and sagebrush habitat information will reduce fragmentation of suitable habitat by increasing the identification of suitable habitats, allowing for better planning, maintenance, and conservation of these areas. The Association will use this information to update and disseminate habitat maps to its members, thereby reducing the potential for placement of infrastructure in or near suitable sagebrush obligate habitats. This will improve the potential for nesting and brood-rearing success and/or capacity of winter habitat.

Facilities: High Profile

A8 Sage-grouse Threat: High-profile, above-ground facilities (such as power lines, substations, guy wires, compressor stations, storage tanks, and communication towers) modify surrounding habitat by serving as potential raptor perches. Sage-grouse avoid these facilities causing reduced use or abandonment of suitable seasonal sage-grouse habitats. This can reduce sage-grouse lek attendance and even cause leks to be abandoned. For example, power line avoidance by sage-grouse could force the birds away from prime brood-rearing habitat into marginal habitat resulting in reduced brood survivorship rates and reducing the overall population recruitment. Additionally, above-ground facilities can cause sage-grouse injuries or fatalities from direct collisions.

A8 Sage-grouse Conservation Measure A: Avoid siting facilities within 6/10 mile of sage-grouse leks or other suitable sage-grouse habitats [2 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Identify and GPS sage-grouse lek locations and map suitable sage-grouse habitat
- Document likelihood of new facilities

Performance Monitoring to Support Adaptive Management:

- Map any new facilities within 6/10 mile of sage-grouse leks or other suitable sage-grouse habitats; report new facilities or submit a "no new facilities" statement to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify siting of facilities

A8 Sage-grouse Conservation Measure B: Commit to reducing high-profile, above-ground facilities by undertaking activities such as burying power lines whenever possible, marking overhead power lines or guy wires to reduce collision, and siting facilities to limit raptor use [2 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Document likelihood of new facilities
- Specify selected activities to reduce high-profile, above-ground facilities

Performance Monitoring to Support Adaptive Management:

- Map and report activities to reduce high-profile, above-ground facilities employed during the year to the Association by December 31 of each year or as specified in the CI or CI/CP

- Photograph each employed activity to reduce high-profile, above-ground facilities; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify use of activities to reduce high-profile, above-ground facilities

A8 Sage-grouse Benefits: Reducing potential perch sites will reduce sage-grouse lek and other suitable habitat impacts, and risk of direct sage-grouse mortality from raptor predation or collisions. This will maintain or increase use of suitable sage-grouse habitats, thus improving the potential for nesting and brood-rearing success and/or capacity of winter habitat.

Fences

A9 Sage-grouse Threat: Fences cause habitat fragmentation and potential travel corridors for predators. Also, research has shown that sage-grouse can fly into poorly located fences causing direct injury or mortality. Additionally, wooden fence posts provide potential perch sites from which raptors can hunt for sage-grouse.

A9 Sage-grouse Conservation Measure A: Selectively remove fences near sage-grouse leks and in suitable sage-grouse habitat to decrease fragmentation [1 point per 1/4 mile, maximum of 3 points]

CI or CI/CP Information:

- Identify and map sage-grouse leks and suitable sage-grouse habitat
- Map existing fences
- Indicate fences that will be removed
- Baseline photo points with GPS locations: 1 per 1/4 mile

One-time Compliance Monitoring:

- Report amount of fence removed to the Association by December 31
- Photograph area of removed fence; provide digital photograph(s) to the Association by December 31
- Association staff will visit site to verify fence status

Performance Monitoring to Support Adaptive Management:

- Association staff will visit site at least once 5 years to verify status of fence removal

A9 Sage-grouse Conservation Measure B: Remove unused fences and mark remaining fences to reduce risk of collision by sage-grouse [1 point per 1/4 mile, maximum of 6 points]

CI or CI/CP Information:

- Map existing fences
- Indicate fences that will be removed or marked
- Baseline photo points with GPS locations: 1 per 1/4 mile

One-time Compliance Monitoring:

- Report amount of fence removed and/or marked to the Association by December 31
- Photograph area of removed fence; provide digital photograph(s) to the Association by December 31

- Association staff will visit site to verify removal of fence

Performance Monitoring to Support Adaptive Management:

- Photograph area of marked fence within ± 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify status of fence marking

A9 Sage-grouse Conservation Measure C: Commit to siting new fences 6/10 mile outside of sage-grouse leks or other suitable sage-grouse habitat using proven methods to limit raptor use. Mark fences as necessary [1 point for entire CI or CI/CP area]

CI or CI/CP Information:

- Identify and map sage-grouse leks and suitable sage-grouse habitat
- Document likelihood of new fences
- Indicate selected method to limit raptor use

One-time Compliance Monitoring:

- Map any new fences and report to the Association by December 31
- Provide documentation (invoice, etc.) that non-wooden line posts were used to the Association by December 31
- Association staff will visit site to verify siting of fence and use of non-wooden line posts

Performance Monitoring to Support Adaptive Management:

- Map new fences within 6/10 mile of sage-grouse leks or other suitable sage-grouse habitat; report changes or submit a "no new fence" statement to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify status of fence marking or at least once every 5 years to verify fence status

A9 Sage-grouse Benefits: These measures will reduce habitat fragmentation and the risk of direct mortality from fence collisions, from predators using the fence lines as travel corridors, and/or from raptors using the fences as perch sites to hunt sage-grouse. These measures will provide the potential for increased survival rates of the sage-grouse population.

Fragmentation: General

A10 Sagebrush Obligate Threat: Disturbances can create sagebrush habitat fragmentation and inhibit sagebrush obligate use and sage-grouse movement between undisturbed areas. Sage-grouse, particularly non-migratory populations, require extensive areas of habitat to allow movement and seasonal selection of habitat areas for breeding, brood-rearing, overwintering, etc.. Sagebrush obligates can abandon use of fragmented habitat and nesting and brood rearing success and/or winter use capacity is reduced.

A10 Sagebrush Obligate Conservation Measure A: Obtain or donate conservation easements with a minimum 10 year term (term must match CI or CI/CP term) for intact habitat to be managed specifically for sagebrush obligates [8 points for each 320 contiguous acres]

CI or CI/CP Information:

- Identify proposed conservation easement participants and provide map

One-time Compliance Monitoring:

- Obtain or donate conservation agreement within 5 years of CI or CI/CP signing
- Immediately upon finalization, submit a signed copy of the conservation agreement to the Association

Performance Monitoring to Support Adaptive Management:

- If the conservation easement is obtained and managed by the participating member, report actions taken to ensure protection of intact habitat and specific management actions taken to benefit sagebrush obligates to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify habitat protection and management actions

A10 Sagebrush Obligate Conservation Measure B: Obtain or provide acreage for use as a grass bank with a minimum 10 year term (term must match CI or CI/CP I term). This acreage will be used to facilitate and better manage habitat restoration efforts (e.g., understory development, invasive species control, drought management, etc.) occurring throughout the Coverage Area. Participating members will be able to use the grass bank acreage in return for providing rest on their property equal to 120% of their grass bank acreage use. A deferred-rotation or rest-rotation grazing schedule will be developed for the grass bank to ensure sagebrush obligate habitat development occurs in the grass bank acreage as well [5 points for each 320 contiguous acres]

CI or CI/CP Information:

- Identify proposed grass bank acreage and provide map
- Identify deferred-rotation or rest-rotation grazing schedule/parameters
- Location of grass bank acreage must be approved by the Association Board

One-time Compliance Monitoring:

- Obtain or donate grass bank acreage within 5 years of CI or CI/CP signing
- Immediately upon finalization, submit a signed copy of the grass bank agreement to the Association

Performance Monitoring to Support Adaptive Management:

- Association staff will annually determine appropriate stocking rates utilizing the GRI and other monitoring tools, and coordinate with Association members to ensure grass bank acreage is used appropriately
- Association staff will visit the site at least once every year to verify habitat protection and management actions

A10 Sage-grouse Conservation Measure C: Protect, enhance, or restore habitat linkages between 320 acre minimum blocks of suitable sage-grouse habitat. Although no research was found to support

specific widths, to be conservative, this measure requires linkage widths to be at least 50 feet for blocks less than 1/4 mile apart and at least 100 feet for blocks 1/4 mile or more apart [2 points for entire CI or CI/CP habitat, 2 additional points for occupied habitat]

CI or CI/CP Information:

- Identify and map suitable sage-grouse habitat
- Map habitat linkages
- Baseline photo points with GPS locations: 1 per linkage corridor

Performance Monitoring to Support Adaptive Management:

- Photograph linkage corridors annually within \pm 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Report sage-grouse use of linkage corridors through pellet count surveys (include GPS track along with location and description of pellets) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify habitat linkages

A10 Sagebrush Obligate Benefits: Protecting intact habitat blocks reduces habitat fragmentation and maintains or potentially increases nesting and brood rearing success and/or winter use capacity. Establishing planned habitat linkages within disturbed or reclaimed areas will increase the movement of sage-grouse between use areas. It will also increase the habitat use capacity by effectively minimizing fragmentation factors and essentially increasing the habitat tract boundaries. This increases the likelihood that sagebrush obligates will use the larger undisturbed areas for nesting, brood-rearing, and/or winter use.

Fragmentation: Brewer's Sparrow

A11 Brewer's Sparrow Threat: The potential loss or fragmentation of suitable sagebrush habitat is considered to be the principal threat to Brewer's sparrow populations. Quality Brewer's sparrow breeding habitat includes large shrublands with sagebrush cover in the 25 to 40 percent range, a shrub canopy height less than 5 feet, numerous available shrubs less than 3 feet in height in the interior of the shrubland and low or absent Russian thistle cover. Given these parameters, any fragmentation or modification of existing conditions that meet these criteria, or actions that preclude them from becoming established are threats to Brewer's sparrow populations. Such actions reduce the number of nests and/or nest success of Brewer's sparrows.

A11 Brewer's Sparrow Conservation Measure A: Map and protect sagebrush stands that contain areas of dense shrubs with 25 to 40 percent shrub cover, general shrub heights of 5 feet or less and significant numbers of live shrubs with heights less than 3 feet [2 points for each contiguous 320 acres]

CI or CI/CP Information:

- Identify and map suitable Brewer's sparrow habitat
- Conduct baseline shrub monitoring: cover by species, species height
- Report information along with GPS location of established 100' shrub transects: 1 per 80 acres

- Indicate level of current use by Brewer's sparrow
- Identify protection measures
- Baseline photo points with GPS locations: 2 per 320 acres

Performance Monitoring to Support Adaptive Management:

- Monitor shrub species height and cover by shrub species annually between June 15 and August 15; report to the Association by September 30 of each year or as specified in the CI or CI/CP
- Photograph protected areas annually within ± 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Report Brewer's sparrow use of protected areas by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 4 years² to verify treatment area trend

A11 Brewer's Sparrow Conservation Measure B: Delineate and protect sagebrush stands or other shrub stands with known Brewer's sparrow nesting activity [3 points for each contiguous 320 acres]

CI or CI/CP Information:

- Identify and map known Brewer's sparrow nesting habitat
- Conduct baseline shrub monitoring: cover by species, species height
- Report information along with GPS location of established 100' shrub transects: 1 per 80 acres
- Indicate level of current use by Brewer's sparrow
- Identify protection measures
- Baseline photo points with GPS locations: 2 per 320 acres

Performance Monitoring to Support Adaptive Management:

- Monitor shrub species height and cover by shrub species annually between June 15 and August 15; report to the Association by September 30 of each year or as specified in the CI or CI/CP
- Photograph protected areas annually within ± 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Report Brewer's sparrow use of protected areas by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 4 years³ to verify treatment area trend

A11 Brewer's Sparrow Conservation Measure C: Identify and enhance suboptimal sagebrush stands to create stands with general shrub heights in the 1.5 to 5 feet range and numerous individual robust live plants less than 3 feet in height [2 points for each contiguous 320 acres]

² This frequency is adapted from WDEQ-LQD Guideline 14 which specifies that at least two interim vegetation monitoring events occur within a 10-year period following the initial sampling to evaluate reclamation success trends.

³ This frequency is adapted from WDEQ-LQD Guideline 14 which specifies that at least two interim vegetation monitoring events occur within a 10-year period following the initial sampling to evaluate reclamation success trends.

CI or CI/CP Information:

- Identify and map suboptimal sagebrush habitat
- Conduct baseline shrub monitoring: cover by species, species height
- Report information along with GPS location of established 100' shrub transects: 1 per 80 acres
- Indicate level of current use by Brewer's sparrow, if any
- Identify enhancement measures
- Baseline photo points with GPS locations: 2 per 320 acres

Performance Monitoring to Support Adaptive Management:

- Monitor shrub species height and cover by shrub species annually between June 15 and August 15; report to the Association by September 30 of each year or as specified in the CI or CI/CP
- Photograph protected areas annually within \pm 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Report Brewer's sparrow use of protected areas by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 4 years⁴ to verify habitat parameters

A11 Brewer's Sparrow Conservation Measure D: Delineate areas of Russian thistle dominance within or adjacent to active Brewer's sparrow habitat; treat the Russian thistle and replace with sagebrush cover in the range of 25 to 40 percent, reporting success-failure to the Association, and redoing failed seeding until successful as compared to adjacent areas [2 points for a collective 320 acres]

CI or CI/CP Information:

- Identify and map active Brewer's sparrow habitat and areas of Russian thistle
- Conduct baseline vegetation monitoring: cover by shrub species and Russian thistle, shrub species height
- Report information along with GPS location of established 100' shrub transects: 1 per 80 acres
- Indicate level of current use by Brewer's sparrow, if any
- Identify treatment methods, PLS seeding rate, etc.
- Baseline photo points with GPS locations: 2 per 320 acres

One time Compliance Monitoring:

- Report details of spraying (map of sprayed area, acres covered, spray equipment used, chemicals used, wind speed & direction, temperature, relative humidity, etc.) to the Association within 30 days of treatment
- Report details of seeding (map of seeded area, acres covered, seedbed preparation methods used, seeding equipment used, dates of seeding, seed invoices, seed mix tag, etc.) to the Association within 30 days of treatment

⁴ Ibid

Performance Monitoring to Support Adaptive Management:

- Monitor shrub species height and cover by shrub species annually between June 15 and August 15; report data and seeding success / failure to the Association by September 30 of each year or as specified in the CI or CI/CP
- Photograph treatment area annually within \pm 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Report Brewer's sparrow use of treatment areas to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 4 years⁵ to verify treatment area trend

A11 Brewer's Sparrow Benefits: Protection, establishment, or reestablishment of sagebrush stands that meet the Brewer's sparrow nesting habitat criteria will reduce fragmentation and increase available habitat, thus benefiting nest establishment, nesting success, brood rearing success, and overall population recruitment.

Fragmentation: Sage Sparrow

A12 Sage Sparrow Threat: Since sage sparrows nest in large shrub patches of 320 contiguous acres⁶, the species is particularly vulnerable to fragmentation, reduction of the extent of existing shrub patches, and to any shrub clearing actions. Additionally, the species is known to favor sagebrush patches for habitat, particularly patches that contain relatively evenly spaced sagebrush plants ranging from 2 to 6 feet in height. Range modifications that diminish those conditions, or preclude their development, consequently degrade sage sparrow habitat. Prime nesting sites are considered to be vigorous sagebrush plants 2 to 6 feet in height that contain more than 75 percent live material. Any shrub stand modifications that eliminate or reduce these conditions constitute a threat to sage sparrow nesting habitat. Actions that disturb or modify existing habitat that meets the above criteria, or preclude development of shrub stands with those criteria, reduces the number of nests or nest success of sage sparrow.

A12 Sage Sparrow Conservation Measure A: Map and protect sagebrush stands that contain vigorous sagebrush plants with the majority ranging from 2 to 6 feet in height [2 points for each contiguous 320 acres]

CI or CI/CP Information:

- Identify and map suitable sage sparrow habitat
- Conduct baseline shrub monitoring: cover by species, species height
- Report information along with GPS location of established 100' shrub transects: 1 per 80 acres

⁵ This frequency is adapted from WDEQ-LQD Guideline 14 which specifies that at least two interim vegetation monitoring events occur within a 10-year period following the initial sampling to evaluate reclamation success trends.

⁶ Paige & Ritter, 1999

- Indicate level of current use by sage sparrow
- Identify protection measures
- Baseline photo points with GPS locations: 2 per 320 acres

Performance Monitoring to Support Adaptive Management:

- Monitor shrub species height and cover by shrub species annually between June 15 and August 15; report to the Association by September 30 of each year or as specified in the CI or CI/CP
- Photograph protected areas annually within ± 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Report sage sparrow use of protected areas by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 4 years⁷ to verify treatment area trend

A12 Sage Sparrow Conservation Measure B: Delineate and protect sagebrush stands or other shrub stands with known sage sparrow breeding activity [3 points for each contiguous 320 acres]

CI or CI/CP Information:

- Identify and map known sage sparrow breeding habitat
- Conduct baseline shrub monitoring: cover by species, species height
- Report information along with GPS location of established 100' shrub transects: 1 per 80 acres
- Indicate level of current use by sage sparrow
- Identify protection measures
- Baseline photo points with GPS locations: 2 per 320 acres

Performance Monitoring to Support Adaptive Management:

- Monitor shrub species height and cover by shrub species annually between June 15 and August 15; report to the Association by September 30 of each year or as specified in the CI or CI/CP
- Photograph protected areas annually within ± 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Report sage sparrow use of protected areas by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 4 years⁸ to verify habitat protection

A12 Sage Sparrow Conservation Measure C: Identify and enhance suboptimal sagebrush stands to create vigorous stands with heights in the 2 to 6 feet range [2 points for each contiguous 320 acres]

⁷ This frequency is adapted from WDEQ-LQD Guideline 14 which specifies that at least two interim vegetation monitoring events occur within a 10-year period following the initial sampling to evaluate reclamation success trends.

⁸ This frequency is adapted from on WDEQ-LQD Guideline 14 which specifies that at least two interim vegetation monitoring events occur within a 10-year period following the initial sampling to evaluate reclamation success trends.

CI or CI/CP Information:

- Identify and map suboptimal sagebrush habitat
- Conduct baseline shrub monitoring: cover by species, species height
- Report information along with GPS location of established 100' shrub transects: 1 per 80 acres
- Indicate level of current use by sage sparrow, if any
- Identify enhancement measures
- Baseline photo points with GPS locations: 2 per 320 acres

Performance Monitoring to Support Adaptive Management:

- Monitor shrub species height and cover by shrub species annually between June 15 and August 15; report to the Association by September 30 of each year or as specified in the CI or CI/CP
- Photograph protected areas annually within \pm 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Report sage sparrow use of protected areas by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 4 years⁹ to verify habitat parameters

A12 Sage Sparrow Conservation Measure D: Through plantings and/or acceptable husbandry practices, establish in-fill or peripheral areas of sagebrush to expand areas of known sage sparrow habitat that have 320 contiguous acres or more of shrub stand that contains vigorous sagebrush with the majority ranging from 2 to 6 feet in height. Report success-failure to the Association and redo failed seeding until successful as compared to adjacent areas [2 points for each contiguous 320 acres]

CI or CI/CP Information:

- Identify and map active sage sparrow habitat and potential in-fill or peripheral areas
- Conduct baseline shrub monitoring: cover by species, species height
- Report information along with GPS location of established 100' shrub transects: 1 per 80 acres
- Indicate level of current use by sage sparrow, if any
- Identify treatment methods, PLS seeding rate, etc.
- Baseline photo points with GPS locations: 2 per 320 acres

One time Compliance Monitoring:

- Report details of treatment (acres covered, method used, etc.) to the Association within 30 days of treatment
- Map seeded; report seeding efforts (invoices, seed mix tag, etc.) to the Association within 30 days of treatment

Performance Monitoring to Support Adaptive Management:

- Monitor shrub species height and cover by shrub species annually between June 15 and August 15; report to the Association by September 30 of each year or as specified in the CI or CI/CP

⁹ Ibid

- Photograph protected areas annually within \pm 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Report sage sparrow use of protected areas by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 4 years¹⁰ to verify habitat parameters

A12 Sage Sparrow Benefits: Protection, establishment, or reestablishment of sagebrush stands that meet the sage sparrow nesting habitat criteria will reduce fragmentation and increase available habitat, thus benefiting nest establishment, nesting success, brood rearing success, and overall population recruitment.

Fragmentation: Sage Thrasher

A13 Sage Thrasher Threat: Although sage thrashers have been observed utilizing marginal habitats with less than 5 percent shrub cover, quality sage thrasher habitat consists of 320 acre or larger sagebrush-grassland areas having 10 to 30 percent shrub cover with at least 15 percent of the shrubs with heights in the range of 12 to 24 inches and inclusion of dense clumps of large sagebrush plants that exceed 40 inches in height. Given these parameters, any fragmentation or modification of existing conditions that meet these criteria, or actions that preclude their development, are threats to sage thrasher populations. Such actions reduce the number of nests and/or nest success of sage thrashers.

A13 Sage Thrasher Conservation Measure A: Map and protect sagebrush stands that have shrub cover greater than 15 percent, general shrub heights in the 12 to 24 inch range and with significant clumps of larger sagebrush plants that have heights in excess of 40 inches [2 points for each contiguous 320 acres]

CI or CI/CP Information:

- Identify and map suitable sage thrasher habitat
- Conduct baseline shrub monitoring: cover by species, species height
- Report information along with GPS location of established 100' shrub transects: 1 per 80 acres
- Indicate level of current use by sage thrasher
- Identify protection measures
- Baseline photo points with GPS locations: 2 per 320 acres

Performance Monitoring to Support Adaptive Management:

- Monitor shrub species height and cover by shrub species annually between June 15 and August 15; report to the Association by September 30 of each year or as specified in the CI or CI/CP
- Photograph protected areas annually within \pm 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP

¹⁰ This frequency is adapted from WDEQ-LQD Guideline 14 which specifies that at least two interim vegetation monitoring events occur within a 10-year period following the initial sampling to evaluate reclamation success trends.

- Report sage thrasher use of protected areas by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 4 years¹¹ to verify treatment area trend

A13 Sage Thrasher Conservation Measure B: Delineate and protect sagebrush stands or other shrub stands with known sage thrasher breeding activity [3 points for each contiguous 320 acres]

CI or CI/CP Information:

- Identify and map known sage thrasher breeding habitat
- Conduct baseline shrub monitoring: cover by species, species height
- Report information along with GPS location of established 100' shrub transects: 1 per 80 acres
- Indicate level of current use by sage thrasher
- Identify protection measures
- Baseline photo points with GPS locations: 2 per 320 acres

Performance Monitoring to Support Adaptive Management:

- Monitor shrub species height and cover by shrub species annually between June 15 and August 15; report to the Association by September 30 of each year or as specified in the CI or CI/CP
- Photograph protected areas annually within \pm 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Report sage thrasher use of protected areas by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 4 years¹² to verify habitat protection

A13 Sage Thrasher Conservation Measure C: Identify and enhance suboptimal sagebrush stands to create stands with general shrub heights in the 12 to 24 inch range and significant and numerous clumps of sagebrush plants with heights greater than 40 inches [2 points for each contiguous 320 acres]

CI or CI/CP Information:

- Identify and map suboptimal sagebrush habitat
- Conduct baseline shrub monitoring: cover by species, species height
- Report information along with GPS location of established 100' shrub transects: 1 per 80 acres
- Indicate level of current use by sage thrasher, if any
- Identify enhancement measures
- Baseline photo points with GPS locations: 2 per 320 acres

Performance Monitoring to Support Adaptive Management:

- Monitor shrub species height and cover by shrub species annually between June 15 and August 15; report to the Association by September 30 of each year or as specified in the CI or CI/CP

¹¹ This frequency is adapted from WDEQ-LQD Guideline 14 which specifies that at least two interim vegetation monitoring events occur within a 10-year period following the initial sampling to evaluate reclamation success trends.

¹² Ibid

- Photograph protected areas annually within ± 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Report sage thrasher use of protected areas by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 4 years¹³ to verify habitat parameters

A13 Sage Thrasher Benefits: Protection, establishment, or reestablishment of sagebrush stands that meet the sage thrasher nesting habitat criteria will reduce fragmentation and increase available habitat, thus benefiting nest establishment, nesting success, brood rearing success, and overall population recruitment.

Inappropriate Livestock and Wildlife Grazing Management

A14 Sagebrush Obligate Threat: Inappropriate grazing management (especially during drought) can reduce beneficial forbs and cool-season bunchgrasses which are used by sagebrush obligates for both screening cover and forage. Reduction in perennial grass cover may also cause an area to be more susceptible to invasive species such as cheatgrass. Cheatgrass is especially detrimental as it not only destroys habitat but can increase the risk of extensive wildfires. Inappropriate grazing can degrade sagebrush obligate habitat resulting in reduced nesting and brood-rearing success and/or use as winter habitat.

A14 Sagebrush Obligate Conservation Measure A: Develop and follow an Association approved grazing management plan throughout the CI or CI/CP term which provides high (≥ 6 inches) structure on a minimum of 5 percent of enrolled acres during the term of the CI or CI/CP and incorporates management objectives for sagebrush obligate habitat and drought/post-drought mitigation. The grazing plan will include deferment or rotation elements, providing at least cool-season (May 1 - June 30) rest for one out of every three years, and an average of 30 percent annual utilization [7 points for initial 5 percent, 2 points each additional 1 percent of enrolled acres covered]

CI or CI/CP Information:

- Specify details of selected management plans (covered acres, deferral/rest periods, rotation objectives, drought/post-drought mitigation plan, wildlife objectives, etc.); consult with NRCS, UW Extension as necessary

Performance Monitoring to Support Adaptive Management:

- Report plan details (livestock numbers, in/out dates, supplemental forage, Grazing Response Index for each covered pasture, anticipated plan modifications, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to discuss management plan implementation, current year objectives, and anticipated plan modifications

¹³ This frequency is adapted from WDEQ-LQD Guideline 14 which specifies that at least two interim vegetation monitoring events occur within a 10-year period following the initial sampling to evaluate reclamation success trends.

A14 Sagebrush Obligate Conservation Measure B: Sponsor an Association approved grazing management plan throughout the CI or CI/CP term which provides high structure for a minimum of 5 percent of sponsor's enrolled acres during the term of the CI or CI/CP and incorporates management objectives for sagebrush obligate habitat and drought/post-drought mitigation. This can take the form of managed grass bank acres, agreements with other participating members to provided additional acreage above their minimum requirements, or other voluntary, cooperative conservation measures. The grazing plan will include deferment or rotation elements, providing at least cool-season (May 1 - June 30) rest for one out of every three years, and an average of 30 percent annual utilization [8 points for initial 5 percent, 2 points each additional 1 percent of enrolled acres covered]

CI or CI/CP Information:

- Specify details of selected management plans (covered acres, deferral/rest periods, rotation objectives, drought/post-drought mitigation plan, wildlife objectives, etc.); consult with NRCS, UW Extension as necessary

Performance Monitoring to Support Adaptive Management:

- Report plan details (livestock numbers, in/out dates, supplemental forage, Grazing Response Index for each covered pasture, anticipated plan modifications, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to discuss management plan implementation, current year objectives, and anticipated plan modifications

A14 Sagebrush Obligate Conservation Measure C: Develop and follow an Association approved, CI- or CI/CP-wide, grazing management plan throughout the CI or CI/CP term incorporating management objectives for sagebrush obligate habitat and drought/post-drought mitigation [up to 10 points, depending on habitat]

CI or CI/CP Information:

- Specify details of selected management plans (deferral/rest periods, rotation objectives, drought/post-drought mitigation plan, wildlife objectives, etc.); consult with NRCS, UW Extension as necessary

Performance Monitoring to Support Adaptive Management:

- Report plan details (livestock numbers, in/out dates, supplemental forage, Grazing Response Index for each covered pasture, anticipated plan modifications, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to discuss management plan implementation, current year objectives, and anticipated plan modifications

A14 Sagebrush Obligate Conservation Measure D: Place attractants (salt, mineral, supplements, fly rubs, etc.) and disturbances (e.g., stock tanks, branding areas, etc.) in upland locations which minimize impacts to sagebrush obligate habitat [3 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Map suitable sagebrush obligate habitat areas
- GPS existing attractant locations
- Identify sites where attractants can be located

- Baseline photo points with GPS locations: 1 per attractant site

Performance Monitoring to Support Adaptive Management:

- Photograph attractant sites annually within ± 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify attractant location

A14 Sagebrush Obligate Conservation Measure E: Manage wildlife numbers and associated habitat conditions in important sagebrush obligate habitat through the use of controlled public hunting access. Utilize focused wildlife hunting, enrollment of CI or CI/CP acreage in hunter management areas, use of walk-in area programs administered by WY Game & Fish Department, or other methods to help control wildlife numbers [3 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Map important sagebrush obligate habitat areas
- Specify details of selected wildlife management efforts (covered acres, management type and objectives, etc.); consult with WGFD, UW Extension as necessary

Performance Monitoring to Support Adaptive Management:

- Report details (estimate of wildlife numbers, anticipated modifications, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to discuss wildlife management implementation, current year objectives, and anticipated modifications

A14 Sagebrush Obligate Benefits: Appropriate grazing management of both livestock and wildlife and siting of attractants will reduce loss of forb and perennial grass (especially bunchgrass) components which are necessary for functional sagebrush obligate habitat. Additional forb production will improve brood-rearing habitat, benefiting both adult females and their broods. Increased bunchgrass vigor will improve screening cover leading to increased nest success. Improved perennial grass health will also make the area more resistant to invasion by undesirable annual species such as cheatgrass.

A15 Sage-grouse Threat: Reduction in screening cover through post-growing season grazing can increase sage-grouse nest predation leading to increases in direct mortality and declines in nest success.

A15 Sage-grouse Conservation Measure: Manage for greater than 6" residual vegetative height from April 1 to June 15 in sage-grouse nesting habitat areas [8 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Map sage-grouse nesting areas
- Specify details of selected management plan - rest and recovery periods, rotation objectives; consult with NRCS, UW Extension as necessary

Performance Monitoring to Support Adaptive Management:

- Report details (livestock numbers, in/out dates, supplemental forage, Grazing Response Index for each covered pasture, anticipated plan modifications, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP

- Conduct at least three step-pace transects between March 1 to April 15 to verify residual vegetative height; report results to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to discuss management plan implementation, current year objectives, and anticipated plan modifications

A15 Sage-grouse Benefits: Managing for appropriate screening cover will help reduce predation leading to increases in nest success and decreases in direct mortality.

Invasive Species

A16 Sagebrush Obligate Threat: Invasive species can reduce or eliminate sagebrush obligate habitat by providing perch sites (invasive trees) and displacing beneficial forbs and perennial grasses which are used for forage and screening cover. Cheatgrass is especially detrimental as it not only destroys habitat but also increases the risk of wildfires by providing a highly flammable fuel source leading to larger and hotter fires. Depending on the extent and intensity of the fire, significant areas of habitat can be fragmented or rendered unsuitable either through direct habitat destruction or by making the burned area more prone to repeat invasions by cheatgrass. This can cause sagebrush obligates to move into more marginal habitats resulting in reduced nesting and brood-rearing success and/or capacity of winter habitat.

A16 Sagebrush Obligate Conservation Measure A1: Treat annual bromes (cheatgrass, etc.) with imazapic or other herbicide approved by the Association within a contiguous block area of at least 160 acres or 10 percent of landholdings if area is less than 1,000 acres in order to maximize treatment effectiveness and reduce edge recruitment of annual bromes. Treatments will utilize localized methodology developed by the Association. Current protocol includes 2 years of post-treatment deferment during the appropriate cool-season grass boot stage and no more than moderate utilization for the remaining term of the grazing management plan. The Association is currently undertaking a study to determine the most appropriate post-treatment protocol. Once the study is complete, the results will be incorporated into this conservation measure. Report success-failure to the Association and repeat treatment as necessary [4 points for 320 acres]

CI or CI/CP Information:

- Map suitable sagebrush obligate habitat areas
- Conduct baseline vegetation monitoring: height and cover by species
- Report information along with GPS location of established 100' vegetation transects: 1 per 80 acres
- Identify treatment areas
- Indicate herbicide application parameters
- Baseline photo points with GPS locations: 2 per 160 acres

One time Compliance Monitoring:

- Report details of spraying (map of sprayed area, acres covered, spray equipment used, chemicals used, wind speed & direction, temperature, relative humidity, etc.) to the Association within 30 days of treatment

Performance Monitoring to Support Adaptive Management:

- Report vegetation cover by species, species height
- Photograph treatment areas within \pm 2 weeks of baseline photograph
- Association will visit site to verify treatment performance

A16 Sagebrush Obligate Conservation Measure A2: In addition to treating annual bromes with herbicide as described in conservation measure A1 above, prepare and reseed the area with a native sagebrush obligate focused seed mix comprised of species present in the adjacent vegetative communities; seeding must occur within 1 year of herbicide spray. Report success-failure to the Association and redo failed seeding until successful as compared to adjacent areas [7 points for 320 acres]

CI or CI/CP Information:

- Map suitable sagebrush obligate habitat areas
- Conduct baseline vegetation monitoring: height and cover by species
- Report information along with GPS location of established 100' vegetation transects: 1 per 80 acres
- Identify treatment areas noting spray / reseed areas
- Indicate herbicide application and proposed seeding parameters - herbicide name, PLS rate, seed mix composition, etc.
- Baseline photo points with GPS locations: 2 per 160 acres

One time Compliance Monitoring:

- Report details of spraying (map of sprayed area, acres covered, spray equipment used, chemicals used, wind speed & direction, temperature, relative humidity, etc.) to the Association within 30 days of treatment
- Report details of seeding (map of seeded area, acres covered, seedbed preparation methods used, seeding equipment used, dates of seeding, seed invoices, seed mix tag, etc.) to the Association within 30 days of treatment

Performance Monitoring to Support Adaptive Management:

- Monitor vegetation species height and cover by species annually between June 15 and August 15; report data and seeding success / failure to the Association by September 30 of each year or as specified in the CI or CI/CP
- Photograph treatment areas annually within \pm 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP

- Association staff will visit the site at least once every 4 years¹⁴ to verify treatment area trend

A16 Sagebrush Obligate Conservation Measure B: Treat all stands of salt cedar and/or Russian olive within drainage areas, addressing regrowth as necessary. Trees less than 1.75 miles from a sage-grouse lek will be removed and sprayed, others can be left in place. Report success-failure to the Association and repeat treatment as necessary [4 points for entire CI or CI/CP area]

CI or CI/CP Information:

- GPS location of existing sage-grouse leks
- Identify individual trees or drainage areas that will be treated
- Baseline photo points with GPS locations: panorama from center of sage-grouse lek

Performance Monitoring to Support Adaptive Management:

- Report tree removal details (acres sprayed or number of individual trees sprayed or removed, amount and type of chemical, date of spray, etc.) to the Association by December 31
- Photograph tree removal area annually within ± 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify treatment performance

A16 Sagebrush Obligate Conservation Measure C: Remove pine or juniper (cedar) trees or non-sagebrush shrubs in areas where the ecological site suggests encroachment and that are within 1/4 mile of documented sagebrush obligate habitat; this may include physical or chemical removal methods [3 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Map suitable sagebrush obligate habitat
- Identify individual trees or areas that will be treated
- Baseline photo points with GPS locations: 1 per removal site

Performance Monitoring to Support Adaptive Management:

- Report tree removal details (acres sprayed or number of individual trees sprayed or removed, amount and type of chemical, date of spray, etc.) to the Association by December 31
- Photograph tree removal area annually within ± 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify treatment performance

A16 Sagebrush Obligate Conservation Measure D: Apply mechanical, chemical, or herbivore control methods for invasive plants (see A16A1 for annual bromes) over a managed area of at least 320 acres. Report success-failure to the Association and repeat treatment as necessary [3 points per 320 acres; maximum of 9 points]

¹⁴ This frequency is adapted from WDEQ-LQD Guideline 14 which specifies that at least two interim vegetation monitoring events occur within a 10-year period following the initial sampling to evaluate reclamation success trends.

CI or CI/CP Information:

- Identify invasive plant species and map proposed treatment areas
- Specify details of selected treatment methods (chemical concentration, additives, time of application, etc.); consult with Weed & Pest, UW Extension as necessary
- Baseline photo points with GPS locations: 1 per project area, minimum of 1 per 160 acres

Performance Monitoring to Support Adaptive Management:

- Report treatment details (method used, acres treated, amount and type of chemical, date of treatment, etc.) to the Association by December 31
- Photograph treatment areas annually within ± 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify treatment status

A16 Sagebrush Obligate Conservation Measure E: Control invasive or noxious weeds across rural homesite acreages through chemical or herbivore treatments to protect forage, nest sites, and migration stop-over habitat [1 point]

CI or CI/CP Information:

- Identify invasive or noxious plant species and map proposed treatment areas
- Specify details of selected treatment methods (chemical concentration, additives, time of application, etc.); consult with Weed & Pest, UW Extension as necessary
- Baseline photo points with GPS locations: 1 per project area

One-time Compliance Monitoring:

- Report details of spraying (map of sprayed area, acres covered, spray equipment used, chemicals used, wind speed & direction, temperature, relative humidity, etc.) to the Association within 30 days of treatment

Performance Monitoring to Support Adaptive Management:

- Photograph treatment areas annually within ± 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify treatment status

A16 Sagebrush Obligate Benefits: Reducing or removing the loss of available sagebrush obligate habitat, including both forb and grass components, will maintain or improve the potential for nesting and brood-rearing success and/or capacity of winter habitat. Treatments that appropriately utilize herbicides (including rates and time of application) and/or herbivores will reduce the risk of extensive wildfires and help reduce the potential spread and habitat impacts of invasive plants which frequently colonize burned areas. These measures will also help to maintain or improve the potential for nesting and brood-rearing success and/or capacity of winter habitat.

Loss of Green Vegetation and Insects

A17 Sagebrush Obligate Threat: The availability and distribution of green vegetation and associated insects is extremely limited in northeast Wyoming due to the semi-arid climate and non-conductive soil types. Green area development and availability is generally dictated by the moisture content in the alluvium of streams and ephemeral draws. The lack of these areas is a potential limiting factor for sagebrush obligate populations in northeast Wyoming as areas of green vegetation provide increased insect availability, warm season foraging, and brood-rearing habitat. Lack of green areas also concentrates sage-grouse into fewer, smaller areas which increases the possibility of spreading West Nile Virus and coccidiosis¹⁵.

A17 Sagebrush Obligate Conservation Measure A: Develop additional, suitable, quality water sources (e.g., new wells, leaving on existing sources, modifying dams to increase green area, hauling water, etc.) to facilitate soil saturation while avoiding standing water issues in ephemeral draws located in documented brood-rearing habitat from May 15 to September 15 [2 points for each 100' of draw bottom green area developed]

CI or CI/CP Information:

- Map known sagebrush obligate brood rearing habitat
- Conduct baseline green area width monitoring: 1 per 100 feet
- Report information along with GPS location of established green area width markers
- Specify location and details of selected water development and grazing management plan to avoid overutilization of developing green areas
- Baseline photo points with GPS locations: 1 per 100 feet

Performance Monitoring to Support Adaptive Management:

- Record green area width within \pm 1 week of June 15, July 15, August 15, and September 15; report to the Association by December 31 of each year or as specified in the CI or CI/CP
- Photograph water development areas annually within \pm 2 weeks of baseline photograph; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify treatment area trend

A17 Sagebrush Obligate Conservation Measure B: Install and maintain effective snow fences (utilizing metal posts) to deposit snow in or adjacent to ephemeral draws to increase soil saturation within documented brood-rearing areas [1 point per 1000' of snow fence]

CI or CI/CP Information:

- Conduct baseline green area width monitoring: 1 per 100 feet adjacent to snow fence area
- Report information along with GPS location of established green area width markers
- Specify location and details of snow fences and grazing management plan to avoid overutilization of developing green areas
- Baseline photo points with GPS locations: 1 per snow fence

¹⁵ Honess and Post (1968)

One-time Compliance Monitoring:

- Report location and feet of snow fence installed to the Association by December 31

Performance Monitoring to Support Adaptive Management:

- Record green area width within ± 1 week of June 15, July 15, August 15, and September 15; report to the Association by December 31 of each year or as specified in the CI or CI/CP
- Photograph snow fence areas annually within ± 2 weeks of baseline photograph; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify treatment area trend

A17 Sagebrush Obligate Conservation Measure C: Install and maintain water detention (spreader) structures in ephemeral draws to increase soil saturation within documented brood-rearing areas with mosquito control commitment as necessary [2 points for 100' of spreader structure]

CI or CI/CP Information:

- Conduct baseline green area width monitoring: 1 per 100 feet
- Report information along with GPS location of established green area width markers
- Specify location and details of water detention structures and grazing management plan to avoid overutilization of developing green areas
- Baseline photo points with GPS locations: 1 per spreader structure

One-time Compliance Monitoring:

- Report location and feet of spreader structures installed to the Association by December 31

Performance Monitoring to Support Adaptive Management:

- Record green area width within ± 1 week of June 15, July 15, August 15, and September 15; report to the Association by December 31 of each year or as specified in the CI or CI/CP
- Photograph water detention areas annually within ± 2 weeks of baseline photograph; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify treatment area trend

A17 Sagebrush Obligate Conservation Measure D: For alluvial wells, commit to a reduction in historic water use rate in order to increase soil saturation [1 point for each 10% reduction, maximum 3 points]

CI or CI/CP Information:

- Conduct baseline green area width monitoring: 1 per 100 feet downstream of alluvial well (total of 3)
- Report information along with GPS location of established green area width markers
- GPS locations of existing alluvial wells and water use rate during previous 5 years
- Specify grazing management plan to avoid overutilization of developing green areas
- Baseline photo points with GPS locations: 1 downstream from each alluvial well

Performance Monitoring to Support Adaptive Management:

- Record green area width within ± 1 week of June 15, July 15, August 15, and September 15; report to the Association by December 31 of each year or as specified in the CI or CI/CP

- Photograph developing green areas annually within ± 2 weeks of baseline photograph; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify treatment area trend

A17 Sagebrush Obligate Conservation Measure E: In addition to developing green areas in ephemeral draws utilizing conservation measures A through D above, interseed native forbs in ephemeral draw bottoms or documented snow collection areas within brood-rearing habitat. Report success-failure to the Association and redo failed seeding until successful as compared to adjacent areas [2 points per 100 linear feet or 1/10th of an acre in addition to green area development points]

CI or CI/CP Information:

- Identify and map sage-grouse brood-rearing habitat
- Conduct baseline vegetation monitoring: forb absence or presence by species
- Report information along with GPS location of established vegetation transects: 1 per 80 acres
- Indicate proposed seeding parameters (PLS rate, seed mix composition, etc.)
- Specify grazing management plan to avoid overutilization of developing green areas
- Baseline photo points with GPS locations: 1 per 100 feet

One-time Compliance Monitoring:

- Report details of seeding (map of seeded area, acres covered, seedbed preparation methods used, seeding equipment used, dates of seeding, seed invoices, seed mix tag, etc.) to the Association within 30 days of treatment

Performance Monitoring to Support Adaptive Management:

- Monitor forb absence or presence by species annually between May 15 and July 1; report to the Association by September 30 of each year or as specified in the CI or CI/CP
- Photograph habitat treatment areas annually within ± 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 4 years¹⁶ to verify treatment area trend

A17 Sagebrush Obligate Benefits: Increasing the soil moisture in ephemeral draws will increase the availability and distribution of green areas. The additional moisture will result in more extensive forb development and additional substrates which will produce more abundant insect populations. This will benefit brood-rearing success by providing additional habitat areas for insect and forb food sources to be developed, and will also benefit nest success by providing additional food source areas for foraging birds prior to hatch. Additional green areas will decrease sage-grouse density, decreasing the possibility of spreading West Nile Virus and coccidiosis.

¹⁶ This frequency is adapted from WDEQ-LQD Guideline 14 which specifies that at least two interim vegetation monitoring events occur within a 10-year period following the initial sampling to evaluate reclamation success trends.

A18 Sagebrush Obligate Threat: Disturbance of riparian, wetland, and greenbelt areas can negatively impact water flow patterns and volumes, as well as negatively impact green area vegetation growing on these sites. This reduces the number and quality of existing green areas, negatively impacting the availability and quality of brood-rearing habitat. These reductions in key foraging areas would reduce brood-rearing and nesting success.

A18 Sagebrush Obligate Conservation Measure A: Protect green areas associated with springs and seeps in suitable sagebrush obligate habitat by establishing appropriate herbivore barriers (fencing, etc. – all barriers must be adequately marked, not provide perch sites, and allow wildlife access) [3 points per spring or seep, maximum of 9 points]

CI or CI/CP Information:

- Identify and map suitable sagebrush obligate habitat
- Conduct baseline green area width monitoring: 1 downstream of spring or seep
- Report information along with GPS location of established green area width markers
- GPS locations of existing springs or seeps
- Specify details of herbivore barriers
- Baseline photo points with GPS locations: 1 downstream from each spring or seep

Performance Monitoring to Support Adaptive Management:

- Record green area width within ± 1 week of June 15, July 15, August 15, and September 15; report to the Association by December 31 of each year or as specified in the CI or CI/CP
- Photograph spring or seep areas annually within ± 2 weeks of baseline photograph; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify treatment area trend

A18 Sagebrush Obligate Conservation Measure B: Place attractants (salt, mineral, supplements, fly rubs, etc.) at least 1/4 mile away from riparian habitats, springs, seeps, or green areas [4 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Map riparian habitats, springs, seeps, or green areas
- GPS existing attractant locations
- Identify sites where attractants can be located
- Baseline photo points with GPS locations: 1 per attractant site

Performance Monitoring to Support Adaptive Management:

- Photograph attractant sites annually within ± 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify attractant location

A18 Sagebrush Obligate Benefits: Protecting water sources from disturbance will maintain and potentially increase the availability and quality of brood-rearing habitat. The protection and enhancement of these important foraging areas will maintain or increase nesting and brood-rearing

success by providing additional habitat areas for forb food source development and will increase substrates for additional insect populations.

Power Lines

A19 Sagebrush Obligate Threat: Installation of power lines near suitable sagebrush obligate habitat can cause reduced use or abandonment. For example, habitat fragmentation by power lines can force birds away from prime nesting habitat into marginal habitat resulting in reduced nest success rates, thus reducing the overall population. Sagebrush obligates, particularly sage-grouse, can suffer injuries or mortalities from flying into power lines. Additionally, some of the lines and associated support structures can provide perches for raptors and support structures are height features that are avoided by sage-grouse as perceived raptor perches. These factors can lead to reduced use or abandonment of suitable sagebrush obligate habitat resulting in reduced nesting and brood rearing success and/or winter use capacity.

A19 Sagebrush Obligate Conservation Measure A - Operator: Site distribution and transmission lines at least 6/10 mile away from sage-grouse leks and suitable sagebrush obligate habitat. Transmission lines and facilities are prohibited in sage-grouse core areas¹⁷ [6 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Identify suitable sagebrush obligate habitat and GPS sage-grouse lek site locations
- Document likelihood of new facilities and surface disturbance activities within 6/10 mile of known occupied sage-grouse leks and suitable sagebrush obligate habitat

Performance Monitoring to Support Adaptive Management:

- Map and any changes in facilities or surface disturbance activities that occur within 6/10 mile of known occupied sage-grouse leks and suitable sagebrush obligate habitat; report changes or submit a "no new facilities or surface disturbance activities" statement to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify siting of facilities

A19 Sagebrush Obligate Conservation Measure B - Landowner: Establish surface use agreement with the Association requiring placement of distribution and transmission lines at least 6/10 mile away from sage-grouse leks and suitable sagebrush obligate habitat. Transmission lines and facilities are prohibited in sage-grouse core areas¹⁸ [6 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Document likelihood of new power line construction
- Specify surface use agreement details or reference signed agreement

One-time Compliance Monitoring:

- Sign surface use agreement with the Association

¹⁷ Governor's Executive Order 2011-5

¹⁸ Governor's Executive Order 2011-5

A19 Sagebrush Obligate Conservation Measure C: Move or bury existing distribution and transmission lines which are within 6/10 mile of sage-grouse leks or suitable sagebrush obligate habitat [8 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Identify suitable sagebrush obligate habitat and GPS sage-grouse lek locations
- Identify existing distribution or transmission lines to be removed
- Baseline photo points with GPS locations: 1 per power line segment

One-time Compliance Monitoring:

- Report footage of distribution or transmission line removed to the Association by December 31
- Photograph area of removed power line; provide digital photograph(s) to the Association by December 31
- Association staff will visit site to verify distribution and transmission line status

A19 Sagebrush Obligate Benefits: Keeping facilities at least 6/10 mile away from leks and suitable sagebrush obligate habitat will reduce injuries and mortalities from direct collisions, reduce potential for sage-grouse lek abandonment or reduced use, reduce risk of sagebrush obligate loss from raptor predation, and maintain or increase use of suitable sagebrush obligate habitats; thus maintaining or increasing population levels.

Roads

A20 Sagebrush Obligate Threat: Roads, due to their long linear nature, are significant sources of habitat fragmentation and modification. Sagebrush obligates abandon use of highly fragmented habitat, reducing nest establishment and success, brood-rearing success, and/or winter use capacity. Traffic occurring close to occupied sage-grouse leks can reduce the distance that calling males are heard thereby reducing attendance by females. This may ultimately cause sage-grouse leks to be abandoned. Traffic can also cause nesting birds in the near vicinity of the road to abandon nests. Unpaved roads can also modify surrounding habitat by serving as predator corridors.

A20 Sagebrush Obligate Conservation Measure A: Close, prepare seedbed, and reseed roads with a native seed mix within 3¹⁹ miles of sage-grouse lek sites or 1 1/4 mile of suitable passerine habitat²⁰. Report success-failure to the Association and redo failed seeding until successful as compared to adjacent areas [1 point per 1/4 mile including any necessary road relocation costs]

CI or CI/CP Information:

- Identify and GPS sage-grouse lek site locations and suitable passerine habitat
- Indicate proposed seeding parameters - PLS rate, seed mix composition, etc.
- Map roads scheduled to be closed
- Indicate planned location for any relocated roads
- Baseline photo points with GPS locations: 1 per 1/4 mile

¹⁹ Holloran and Anderson (2005) found a majority (64%) of nests within 5 km of the lek

²⁰ Based on Bolger et.al. (1997) distance from developed edge for sage sparrows

One-time Compliance Monitoring:

- Association staff will visit site to verify road status

Performance Monitoring to Support Adaptive Management:

- Monitor vegetation species height and cover by species annually between June 15 and August 15; report data and seeding success / failure to the Association by September 30 of each year or as specified in the CI or CI/CP
- Photograph closed road segment annually within \pm 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 4 years²¹ to verify treatment area trend

A20 Sagebrush Obligate Conservation Measure B: Document existing improved and two-track roads and commit to no new roads to be developed within 6/10 mile of suitable sagebrush obligate habitat [5 points for entire CI or CI/CP area]

CI or CI/CP Information

- Identify and map suitable sagebrush obligate habitat
- Map existing roads
- Document likelihood that new roads will be built

Performance Monitoring to Support Adaptive Management:

- GPS and report placement of any new roads to the Association by December 31 of each year or as specified in the CI or CI/CP
- Report road access management actions to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify road status

A20 Sagebrush Obligate Benefits: Reducing habitat modification and fragmentation from roads can maintain and potentially increase sagebrush obligate use capacity by favorably affecting nest establishment and success, brood rearing success, and/or winter use capacity. Other benefits include reduction of noise and human disturbance along the road within a critical distance of nesting and brood rearing habitat and the sage-grouse lek.

Subdividing Native Habitats

A21 Sagebrush Obligate Threat: Subdividing native sagebrush habitats for development of ranchettes, housing units, or other urban uses is a significant source of fragmentation and permanent habitat conversion. Nest establishment and success, brood-rearing success, and/or winter use capacity of habitat are reduced with fragmentation and sagebrush obligates can abandon use of highly fragmented habitat. Subdivisions also create a zone of negative influence as they attract foraging predators that

²¹ This frequency is adapted from WDEQ-LQD Guideline 14 which specifies that at least two interim vegetation monitoring events occur within a 10-year period following the initial sampling to evaluate reclamation success trends.

have an ecological association with humans. These predators include coyotes, red foxes, raccoons, ravens, and domestic pets, among others.

A21 Sagebrush Obligate Conservation Measure A: Commit to maintaining the land configuration to benefit sagebrush obligates (no additional fragmentation or alteration of land use, e.g., subdivisions, etc.) [6 points for a minimum of 320 contiguous acres of important habitat areas; maximum of 10 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Identify and map suitable sagebrush habitat and/or entire ranch
- Map existing land configuration specifying existing land use
- Document likelihood of changes in land configuration or use

One-time Compliance Monitoring:

- Sign agreement with the Association committing to maintain current land configuration

Performance Monitoring to Support Adaptive Management:

- Map and report any changes in land configuration or use to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify land use

A21 Sagebrush Obligate Conservation Measure B: Allow native grasses, forbs, and shrubs to remain on at least 60 percent of rural homesite acreage to provide connectivity and forage. Acreage must be contiguous [1 point]

CI or CI/CP Information:

- Identify and map native vegetation areas and disturbed areas
- Conduct baseline vegetation monitoring: height and cover by species
- Report information along with GPS location of established 100' vegetation transects: 1 per 80 acres, minimum of 1
- Baseline photo points with GPS locations: 1 per 40 acres

Performance Monitoring to Support Adaptive Management:

- Monitor vegetation species height and cover by species annually between June 15 and August 15; report to the Association by September 30 of each year or as specified in the CI or CI/CP
- Photograph habitat protection areas annually within \pm 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 4 years²² to verify protection area trend

A21 Sagebrush Obligate Benefits: Maintaining intact habitat blocks will reduce fragmentation and retain or potentially increase sagebrush habitat connectivity and forage. This will favorably impact nest establishment and success, brood-rearing success and/or winter use capacity.

²² This frequency is adapted from WDEQ-LQD Guideline 14 which specifies that at least two interim vegetation monitoring events occur within a 10-year period following the initial sampling to evaluate reclamation success trends.

Wildfires

A22 Sagebrush Obligate Threat: Wyoming big sagebrush is easily destroyed by wildfires with recovery requiring time frames in excess of 100 years.²³ Burns in northeast Wyoming are particularly vulnerable to colonization by cheatgrass which can change the vegetation composition and restrict or prevent sagebrush obligates from utilizing even lightly burned habitat. The change in vegetation composition will likely cause sagebrush obligates to abandon the burned habitat (particularly those less than 50 years post-fire) and move into more marginal habitats resulting in reduced nesting and brood-rearing success and/or capacity of winter habitat. Even native species that regenerate on burned areas but have low value as sagebrush obligate habitat can reduce or eliminate sagebrush obligate use.

A22 Sagebrush Obligate Conservation Measure A: Commit to suppressing all wildfires in suitable sagebrush obligate habitat areas occurring within the area covered by the CI or CI/CP [1 point for a minimum of 40 acres suitable sagebrush obligate habitat]

CI or CI/CP Information:

- Identify and map suitable sagebrush obligate habitat
- Map fire suppression areas

Immediate Actions:

- Notify the Association within 5 days of any applicable wildfire suppression efforts
- GPS wildfire boundary and provide to the Association within 5 days of wildfire

Performance Monitoring to Support Adaptive Management:

- Report GPS wildfire boundary and suppression efforts to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify wildfire impacts and recovery status

A22 Sagebrush Obligate Conservation Measure B: Spray suitable occupied sagebrush obligate habitat burned by wildfires with imazapic²⁴ or other herbicide approved by the Association and, if necessary, reseed with a native grass and sagebrush mix after fires that occur on the area covered by the CCAA. Report success-failure to the Association and redo failed seeding until successful as compared to adjacent areas [3 points per 80 collective acres]

CI or CI/CP Information:

- Identify and map suitable sagebrush obligate habitat
- Indicate herbicide application and proposed seeding parameters - herbicide name, PLS rate, seed mix composition, etc.

Immediate Actions:

- GPS wildfire boundary and provide to the Association within 5 days of wildfire

²³ In a southeast Montana study, Cooper et al (2007) found that post-fire recovery rates for Wyoming big sagebrush were less than 1% per year and that annual bromes increased after burning. The highest recovery rate recorded in the study was 27% recovery after 37 years.

²⁴ Shinn and Thill (2002) have indicated that proposed techniques to reduce cheatgrass densities includes treatments with herbicides such as imazapic

- Establish baseline photo points with GPS locations within 5 days of wildfire: 1 per 40 acres
- Determine treatment (herbicide or herbicide and seed) in conjunction with the Association

Performance Monitoring to Support Adaptive Management:

- Report treatment details (acres covered, chemicals used, wind speed & direction, seeding rate, invoices, seed mix tag, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Photograph burn area annually within \pm 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify spray / re-seeding efforts

A22 Sagebrush Obligate Benefits: Protecting Wyoming big sagebrush and reducing the risk of colonization of burned areas by invasive species, especially cheatgrass, will reduce the loss of available sagebrush obligate habitat. Treatments with imazapic in the planning area have demonstrated the effectiveness of this conservation measure²⁵, especially for burns that have principally affected the understory. In this regard, the treatments will be particularly beneficial for nesting and brood-rearing habitat. The provision to reseed burned areas as necessary will provide competition by desirable and utilitarian native species against undesirable invasive species.

Windmills

A23 Sage-grouse Threat: Windmill towers are potential raptor perch sites which can cause sage-grouse to avoid habitats near windmills. This may cause grouse to abandon associated prime habitats and move into more marginal habitats resulting in reduced nesting and brood-rearing success and/or capacity of winter habitat.

A23 Sage-grouse Conservation Measure: Retrofit existing windmill pump system and remove windmill towers within 1/4 mile of known sage-grouse lek sites and occupied habitat [1 point per retrofit, maximum of 4 points]

CI or CI/CP Information:

- GPS sage-grouse lek locations and existing windmills; map occupied sage-grouse areas
- Identify windmill tower(s) to be removed
- Baseline photo points with GPS locations: 1 per windmill

One-time Compliance Monitoring:

- Report number of windmills removed to the Association by December 31
- Photograph area of removed windmill; provide digital photograph(s) to the Association by December 31
- Association staff will visit site to verify water facility status

Performance Monitoring to Support Adaptive Management:

- Association staff will visit the site at least once every 5 years to verify water facility status

²⁵ 2008 Thunder Basin Grasslands Prairie Ecosystem Association Annual Report

A8 Sage-grouse Benefits: These measures will reduce risk of sage-grouse loss from raptor predation and maintain or increase use of suitable sage-grouse habitats near water facilities.

Habitat Curtailment

Crop Lands

A24 Sagebrush Obligate Threat: Activities on areas currently used for hay production in close proximity to sagebrush stands are potential threats to nesting sage-grouse hens and broods when cutting and baling activities occur before late July²⁶. Haying during the nesting and brood rearing season can cause disturbance and direct mortality leading to a decrease in nest establishment/success and/or brood rearing success.

A24 Sagebrush Obligate Conservation Measure A: Minimize impact for those areas where haying is still occurring by delaying the initiation of cutting and baling activities until July 31 [1 point for a collective 20 acres; maximum of 5 points]

CI or CI/CP Information:

- Map current haying areas
- Document haying use during previous 5 years

Performance Monitoring to Support Adaptive Management:

- Report dates of cutting and baling activities to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years between June 15 and August 1 to verify status of haying activities

A24 Sagebrush Obligate Conservation Measure B: Minimize impact for those areas where haying use is still occurring by utilizing harvest techniques designed to reduce mortality (e.g., starting from the middle and moving out, starting at one edge and moving across, etc.) [1 point for entire CI or CI/CP area]

CI or CI/CP Information:

- Map current haying use areas
- Document haying use during previous 5 years
- Specify details of selected harvest techniques

Performance Monitoring to Support Adaptive Management:

- Report success / failure of selected harvest techniques to reduce mortality to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years between June 15 and August 1 to verify status of haying activities

²⁶ Paige and Ritter, 1999

A24 Sagebrush Obligate Benefits: Delaying agricultural activities until July 31 and utilizing appropriate harvest techniques will reduce disturbance and direct mortality thus increasing nesting and brood-rearing success.

Energy Development: Mining

A25 Sagebrush Obligate Threat: Coal mine facility establishment in the pit advance area can contribute to habitat fragmentation, particularly in cases where facilities are in high densities. Similarly, exploration activities during the nesting season in areas in advance of the pit disturbance can result in nest abandonment or reduced nest success. Sagebrush obligates abandon use of highly fragmented habitat; nest establishment/success, brood-rearing success, and/or winter use capacity of habitat is reduced with fragmentation.

A25 Sagebrush Obligate Conservation Measure A: Commit to evaluating and addressing the needs of sagebrush obligates when siting mining-related infrastructure with significant ground disturbance in areas ahead of where the mining process has been initiated (i.e., topsoil removal.) Avoid new surface occupancy or new surface disturbance activities within 6/10 mile of known occupied sage-grouse lek sites from March 1 to May 15 from 6 pm to 8 am [5 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Identify suitable sagebrush obligate habitat and GPS sage-grouse lek site locations
- Map existing facilities within 6/10 mile of known occupied sage-grouse leks
- Document future pit advance and other surface disturbance activities

Performance Monitoring to Support Adaptive Management:

- Map any pit advance or surface disturbance activities within 6/10 mile of known occupied sage-grouse leks; report changes or submit a "no pit advance or new surface disturbance activities " statement to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify siting of facilities

A25 Sagebrush Obligate Conservation Measure B: Commit to evaluating and addressing the needs of sagebrush obligates when siting mining-related infrastructure with significant ground disturbance in areas ahead of where the mining process has been initiated (i.e., topsoil removal.) Check on nesting activity in areas planned for exploration or for activities which require significant surface disturbance within the 3-mile buffer (non-core areas) around sage-grouse leks and avoid surface disturbance within 6/10 mile of located nests between March 1 and May 15 from 6 pm to 8 am. Operations that have applicable sage-grouse collaring and tracking studies may rely on this information to evaluate the impact of and potentially justify clearance for disturbance within the 3-mile buffer. Following initiation of approved disturbance activities (i.e., topsoil removal), this action will be replaced by a comparable conservation measure [5 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Identify suitable sagebrush obligate habitat and GPS sage-grouse lek site locations
- Provide GPS locations of known sage-grouse nesting sites

- Map existing facilities within 3 miles of known occupied sage-grouse leks or suitable sagebrush obligation habitat
- Document future pit advance and other surface disturbance activities
- If timing of disturbance is known, identify replacement conservation measure(s)

Performance Monitoring to Support Adaptive Management:

- Map any pit advance or surface disturbance activities within 3 miles of known occupied sage-grouse leks or suitable sagebrush obligation habitat; report changes or submit a "no pit advance or new surface disturbance activities " statement to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify siting of facilities

A25 Sagebrush Obligate Benefits: These actions, which are above and beyond regulatory requirements, will identify suitable sagebrush obligate habitat and reduce impacts from facility disturbance, resulting in the reduction of habitat fragmentation factors. This will maintain the size of intact habitat blocks, maintaining and potentially increasing sagebrush obligate use capacity, favorably affecting nest establishment and success, brood rearing success, and/or winter use capacity. Similarly, proactive assessment of nesting activity within areas planned for exploration or surface disturbance during the nesting season and avoidance of disturbance of active nests, will increase sagebrush obligate nesting success.

A26 Sagebrush Obligate Threat: Herbivore foraging on seedling sagebrush plants on coal mine reclamation can significantly stunt the shrubs and/or reduce the shrub density, extending the time required for that reclamation to provide sagebrush of sufficient height and density for sagebrush obligates. Poor quality shrub reclamation is habitat lost to sagebrush obligates during the reestablishment period.

A26 Sagebrush Obligate Conservation Measure: Protect re-established early seral sagebrush habitat from overuse by wildlife for the term of the CCAA [1 point for every collective 40 acres protected from big game; 2 points for every collective 40 acres protected from big game and rabbits]

CI or CI/CP Information:

- Map early seral sagebrush habitat to be protected
- Specify selected protection methods
- Baseline photo points with GPS locations: 1 per 40 acres

Performance Monitoring to Support Adaptive Management:

- Map and report protection methods employed to the Association by December 31 of each year or as specified in the CI or CI/CP
- Provide excerpt of DEQ report detailing protected sagebrush habitat parameters
- Photograph protected habitat annually within + 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP

- Association staff will visit the site at least once every 3 years to verify habitat protection practices

A26 Sagebrush Obligate Benefits: Reducing herbivore impacts on seedling sagebrush increases the quality of the reclamation for sagebrush obligates and decreases the time that the disturbed habitat is unavailable for sagebrush obligate use. This increases the likelihood of reclamation use by sagebrush obligates for nesting, brood-rearing, and/or winter use.

Excessive Sagebrush Canopy

A27 Sage-grouse Threat: Sagebrush canopy cover can become dense enough²⁷ that desirable forbs and perennial grasses in the understory are diminished or eliminated. In other sagebrush stands, desirable forbs and cool-season bunchgrasses in the understory are diminished or have been eliminated due to past disturbances. This can cause sage-grouse to move into more marginal habitats resulting in reduced nesting and brood-rearing success.

A27 Sage-grouse Conservation Measure A: For brood-rearing areas, utilize chemical treatments²⁸ or focused winter feeding sites²⁹ and subsequent browsing with sheep to open the canopy in a collective 40 acres of dense (greater than 35 percent³⁰ sagebrush canopy cover with adequate understory) sagebrush stands in suitable sage-grouse habitat areas. Site selection should consider season of use by sage-grouse, existing understory, and sagebrush density. Under certain conditions, cattle or goats may accomplish the same effect [1 point for a collection 40 acres]

CI or CI/CP Information:

- Identify and map suitable sage-grouse habitat and focused winter feeding sites
- Conduct baseline vegetation monitoring: height and cover by species
- Report information along with GPS location of established 100' vegetation transects: 1 per 80 acres, minimum of 1
- Baseline photo points with GPS locations: 1 per 40 acres

²⁷ Cagney et al (2010 – Grazing Influence, Objective Development, and Management in Wyoming's Greater Sage-Grouse Habitat) indicates that nesting hens tend to select an average 23% live sagebrush canopy cover, early brood-rearing cover has more open patches with the range of 10-15% live sagebrush canopy cover. Connelly, et al (2000 – Connelly, JW, MA Schroeder, AR Sands and CE Braun; Guidelines to manage sage grouse populations and their habitat. Wildlife Society Bulletin 28 (4):967-985) in their Table 3 indicate the following characteristics of sagebrush rangeland needed for productive sage grouse habitat: Breeding (15-25%), Brood-rearing (10-15%) and Winter (10-30%).

²⁸ Autenreith (1981) noted that chemical treatments to reduce sagebrush canopy may enhance brood-rearing habitats when applied in early spring to increase the coverage of herbaceous plant foods.

²⁹ Sedgwick (2004 – Habitat Restoration for Gunnison and Greater Sage-Grouse – A Literature Review) outlines that browsing animals may be used as biocontrol for reducing the densities of sagebrush and potentially increasing the herbaceous component.

³⁰ Connelly et al recommend that mechanical or chemical treatments should be used in areas with greater than 35% total shrub cover to improve late brood-rearing habitat.

Performance Monitoring to Support Adaptive Management:

- Monitor vegetation species height and cover by species annually between June 15 and August 15; report to the Association by September 30 of each year or as specified in the CI or CI/CP
- Report treatment details (livestock numbers, in/out dates, supplemental forage amount and days fed at each site, anticipated plan modifications, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Photograph focused winter feeding sites annually within ± 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 4 years³¹ to verify treatment area trend

A27 Sage-grouse Conservation Measure B: Seed desirable native forb and cool-season grass species in a collective 80 acres of sagebrush stands in suitable sage-grouse habitat areas using hoof action or other methods to incorporate seeds. Report success-failure to the Association and redo failed seeding until successful as compared to adjacent areas [3 points for a collective 80 acres]

CI or CI/CP Information:

- Identify and map suitable sage-grouse habitat and selected seeding sites
- Conduct baseline vegetation monitoring: height and cover by species
- Report information along with GPS location of established 100' vegetation transects: 1 per 80 acres
- Indicate proposed seeding parameters - PLS rate, seed mix composition, etc.
- Baseline photo points with GPS locations: 1 per 40 acres

One-time Compliance Monitoring:

- Report details of seeding (map of seeded area, acres covered, seedbed preparation methods used, seeding equipment used, dates of seeding, seed invoices, seed mix tag, etc.) to the Association within 30 days of treatment

Performance Monitoring to Support Adaptive Management:

- Monitor vegetation species height and cover by species annually between June 15 and August 15; report data and seeding success / failure to the Association by September 30 of each year or as specified in the CI or CI/CP
- Photograph seeding sites annually within ± 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 4 years³² to verify treatment area trend

A27 Sage-grouse Benefits: Restoring the sagebrush / understory balance can improve sage-grouse habitat. This can improve nesting and brood-rearing success, and/or winter use capacity.

³¹ This frequency is adapted from WDEQ-LQD Guideline 14 which specifies that at least two interim vegetation monitoring events occur within a 10-year period following the initial sampling to evaluate reclamation success trends.

³² Ibid

Human Disturbance

A28 Sage-grouse Threat: Human activities and noise in close proximity to occupied sage-grouse leks during the sage-grouse breeding season can reduce the distance that calling males can be heard thereby reducing lek attendance by females, can cause nesting hens in the near vicinity of the lek and facilities to abandon nests, and can cause the leks to become inactive over time. This potentially reduces the productive capacity of the affected sage-grouse population.

A28 Sage-grouse Conservation Measure A: Evaluate and address the needs of sage-grouse when siting facilities. Establish a 6/10 mile no surface occupancy zone around known occupied sage-grouse lek sites. In addition, avoid human surface disturbance activities within 6/10 mile of known occupied lek sites from March 1 to May 15 from 6 pm to 8 am [2 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Identify and GPS sage-grouse lek site locations
- Map existing facilities within 6/10 mile of known occupied sage-grouse leks
- Document likelihood of new facilities and surface disturbance activities within 6/10 mile of known occupied leks

Performance Monitoring to Support Adaptive Management:

- Map any changes in facilities or surface disturbance activities within 6/10 mile of known occupied sage-grouse leks; report any changes or submit a "no changes to facilities or surface disturbance activities" statement to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years between March 1 and May 15 to verify siting of facilities and surface disturbance activities

A28 Sage-grouse Conservation Measure B: Establish site-specific plans (e.g., grazing /calving pastures, mine-related activities, oil & gas activity, etc.) for restricting surface disturbance activities from March 1 to June 15 within a 3³³ mile nesting zone around known occupied sage-grouse leks [1 point for entire CI or CI/CP area]

CI or CI/CP Information:

- Identify and GPS sage-grouse lek site locations
- Map existing facilities within 3 miles of known occupied sage-grouse leks
- Document likelihood of new facilities and surface disturbance activities within 3 miles of known occupied sage-grouse leks

Performance Monitoring to Support Adaptive Management:

- Map any changes in facilities or surface disturbance activities that occur within 3 miles of known occupied sage-grouse leks; report any changes or submit a "no changes to facilities or surface disturbance activities" statement to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years between March 1 and June 15 to verify surface disturbance activities

³³ Holloran and Anderson (2005) found a majority (64%) of nests within 5 km of the lek

A28 Sage-grouse Conservation Measure C: Limit noise levels to less than 10 dBA³⁴ above ambient (or current research) measured with a handheld device at the perimeter of known occupied sage-grouse leks from March 1 to May 15 from 6 pm to 8 am [1 point for entire CI or CI/CP area]

CI or CI/CP Information:

- Identify and GPS occupied sage-grouse lek site locations
- Record 3 typical noise level samples with a hand-held device between March 1 and May 15 from 6 pm to 8 am at the sage-grouse lek perimeter
- Document existing facilities and likelihood of new facilities

Performance Monitoring to Support Adaptive Management:

- Map any changes in facilities that occur within 6/10 mile of known occupied sage-grouse leks; report any changes or submit a "no changes to facilities" statement to the Association by December 31 of each year or as specified in the CI or CI/CP
- Report results of 3 typical noise level samples at sage-grouse lek perimeter to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years between March 1 and May 15 to verify surface disturbance activities

A28 Sage-grouse Benefits: Removing or reducing human disturbance and noise near the sage-grouse lek during the breeding season will potentially increase the productive capacity of the lek, reduce nest abandonment risks in the nearby vicinity, and increase the overall productive capacity of the sage-grouse population affected.

Inappropriate / Poor Quality Reclamation

A29 Sagebrush Obligate Threat: Since sagebrush obligates utilize native vegetation communities, seeding with non-native plant species can produce poor quality reclamation results, especially if highly aggressive non-native plant species are used. Highly aggressive non-native species can establish habitat that is unusable by sagebrush obligates and can prevent natural reestablishment of sagebrush obligate habitat available for nesting, brood-rearing, and/or winter use.

A29 Sagebrush Obligate Conservation Measure A: Seed disturbed (e.g., burns, go-back lands, watering, salt, bedgrounds, erosional features, relocated roads, etc.) and reclaimed areas with native seed mix comprised of species present in the adjacent vegetative communities; seeding must occur within 1 year of site reclamation. Report success-failure to the Association and redo failed seeding until successful as compared to adjacent areas [2 points per 40 acres, higher points if sagebrush is included in the mix; maximum of 8 points]

CI or CI/CP Information:

- Identify and GPS disturbed and reclaimed areas
- Indicate proposed seeding parameters - PLS rate, seed mix composition, etc.
- Conduct baseline vegetation monitoring: height and cover by species

³⁴ Patricelli et.al. (2011)

- Report information along with GPS location of established 100' vegetation transects: 1 per 80 acres
- Baseline photo points with GPS locations: 1 per 40 acres

One-time Compliance Monitoring:

- Report details of seeding (map of seeded area, acres covered, seedbed preparation methods used, seeding equipment used, dates of seeding, seed invoices, seed mix tag, etc.) to the Association within 30 days of treatment

Performance Monitoring to Support Adaptive Management:

- Photograph seeded area annually within + 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 4 years³⁵ to verify treatment area trend

A29 Sagebrush Obligate Conservation Measure B: Develop and field test seed mixes comprised of native species suited to specific ecosites that provide competition against invasive species [5 points per unique test, maximum 10 points]

CI or CI/CP Information:

- Identify specific parameters of seed mixes - suitable for particular soil types, forb or shrub component, etc.
- Identify timeline for completion of seed mix and field tests
- Baseline photo points of seed test areas with GPS locations: 1 per seed test area

Reporting Requirements:

- Provide details of each field test initiated during the year (location, acres covered, seedbed preparation methods used, seed mix used, seeding equipment used, dates of seeding, invoices, seed mix tag, etc.) to the Association by December 31
- Photograph seeded area annually within + 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit site at least once every year to verify seed test status
- Provide the Association with final seed mix parameters and complete results of field tests within 30 days of test completion

A29 Sagebrush Obligate Conservation Measure C: Develop or fund a custom grown native or cultivar sagebrush and forb seed or seedling program where 50 percent of the annual production would be available to the participating member(s) and 50 percent would be available to the Association. This measure can also apply to a seed storage program. The Association's share could be retained or sold by the custom grower if no Association projects were planned for the current year [8 points]

³⁵ This frequency is adapted from WDEQ-LQD Guideline 14 which specifies that at least two interim vegetation monitoring events occur within a 10-year period following the initial sampling to evaluate reclamation success trends.

CI or CI/CP Information:

- Identify specific seeds/seedlings to be grown
- Identify timeline for seed/seedling production

One-time Compliance Monitoring:

- Submit signed agreement with custom grower to the Association within 60 days of finalization

Reporting Requirements:

- Provide details of seed/seedling production during the year to the Association by December 31
- Association staff will visit custom grow site at least once every 5 years to verify seed/seedling production status

A29 Sagebrush Obligate Benefits: Increasing the area of native plant communities will increase potential sagebrush obligate habitat. Development and field testing of seed mixes appropriate to the area and development of secure sagebrush and forb seed sources will increase our ability to restore and enhance sagebrush obligate habitat. The establishment of appropriate food sources, nesting conditions, brood-rearing, and/or wintering habitat in reclaimed areas will reduce the potential for establishment of a reclamation vegetation community that is not usable by sagebrush obligates and will ultimately increase the total sagebrush obligate habitat available.

A30 Sagebrush Obligate Threat: Poor quality seedbed conditions or materials (e.g., lack of topsoil, use of highly contaminated topsoil, use of non-native plant species for reclamation seeding, significantly delayed reclamation, etc.) can produce poor quality reclamation of disturbances and substantially increase the time before sagebrush obligate habitat is reestablished on the disturbed site. Poor quality reclamation is habitat lost to sagebrush obligates for that reestablishment period and reduces the available habitat for nesting, brood-rearing, and/or winter use.

A30 Sagebrush Obligate Conservation Measure A - Operator: Commit to separating topsoil from other soil materials when constructing pipelines or well pad locations, replacing, and seeding with appropriate native seed mix and equipment as soon as practical after construction ends, reporting success-failure to the Association, and redoing failed seeding until successful as compared to adjacent areas [4 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Document likelihood of new construction activities
- Specify details of topsoil separation measures
- Indicate proposed seeding parameters - PLS rate, seed mix composition, etc.

One-time Compliance Monitoring:

- Photograph topsoil separation activities: 1 per stripping operation
- Establish baseline photo points with GPS locations: 1 per project area
- Report details of seeding (map of seeded area, acres covered, seedbed preparation methods used, seeding equipment used, dates of seeding, seed invoices, seed mix tag, etc.) to the Association within 30 days of treatment

Performance Monitoring to Support Adaptive Management:

- Monitor vegetation species height and cover by species annually between June 15 and August 15; report data and reseeding success / failure to the Association by September 30 of each year or as specified in the CI or CI/CP
- Photograph reseeded area annually within \pm 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit site at least once every 3 years to verify topsoil handling methods and seeding results

A30 Sagebrush Obligate Conservation Measure B - Landowner: Commit to negotiating surface damage agreements that require operators to separate topsoil from other soil materials when constructing pipelines or well pad locations, replacing the topsoil, and seeding with a native seed mix as soon as possible after construction ends [4 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Document likelihood of new construction activities
- Specify details of topsoil separation measures
- Indicate proposed seeding parameters - PLS rate, seed mix composition, etc.

One-time Compliance Monitoring:

- Obtain surface damage agreement within 5 years of CI or CI/CP signing
- Immediately upon finalization, submit a signed copy of the agreement to the Association

A30 Sagebrush Obligate Benefits: High quality seedbed material and planting of native species will increase the quality of the reclamation for sagebrush obligates and decrease the time that the disturbed habitat is unavailable for sagebrush obligate use. This will increase sagebrush obligate use for nesting, brood-rearing, and/or winter use.

A31 Sagebrush Obligate Threat: Oil and gas facility designs which do not provide erosion protection and/or controls can cause erosion at facility sites, thus increasing the total area of disturbance. If left unchecked, erosion can create siltation streams that fragment additional native areas. These represent greater habitat loss or fragmentation for sagebrush obligates, potentially reducing breeding, brood-rearing, and/or winter use.

A31 Sagebrush Obligate Conservation Measure: Commit to appropriate wind and water erosion control of sites, locations, roads, and pipelines [3 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Specify details of wind and water erosion control methods
- Baseline photo points with GPS locations: 1 per control location

Performance Monitoring to Support Adaptive Management:

- Report details of erosion control activities (location, acres covered, methods used, monitoring schedule, effectiveness, information on any controls that included reseeding, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Photograph erosion control areas annually within \pm 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify erosion control activities

A31 Sagebrush Obligate Benefits: Reducing the total disturbance areas of well pads and other oil and gas facilities will reduce habitat fragmentation potential, and increase the likelihood of adjacent habitat use by sagebrush obligates for nesting, brood-rearing, and/or winter use.

A32 Sagebrush Obligate Threat: Since sagebrush obligates utilize native vegetation communities, weed infestation of native or reclaimed areas removes or reduces those areas as potential habitat for sagebrush obligates. Similarly, use of non-native plant species for reclamation of oil and gas disturbances can produce poor quality reclamation results, especially if highly aggressive non-native plant species are used. Highly aggressive non-native species can establish habitat that is unusable by sagebrush obligates and can prevent natural reestablishment of sagebrush obligate habitat available for nesting, brood-rearing, and/or winter use.

A32 Sagebrush Obligate Conservation Measure - Landowner: Commit to negotiating surface damage agreements that require oil and gas operators to conduct invasive weed control, reclaim disturbance with native seed mix, report success-failure to the Association, and commit to redo failed seeding until successful as compared to adjacent areas [4 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Document likelihood of new oil & gas activities
- Indicate proposed seeding parameters - PLS rate, seed mix composition, etc.

One-time Compliance Monitoring:

- Obtain surface damage agreement within 5 years of CI or CI/CP signing
- Immediately upon finalization, submit a signed copy of the conservation agreement to the Association

A32 Sagebrush Obligate Benefits: Controlling invasive weeds and increasing the area of native plant communities will increase potential sagebrush obligate habitat. Reducing reclamation vegetation communities that are not usable by sagebrush obligates, and establishing appropriate food sources and habitat conditions on the reclaimed area will favorably affect nest establishment and success, brood rearing success, and/or winter use capacity.

Prescribed Fires

A33 Sagebrush Obligate Threat: Wyoming big sagebrush is easily destroyed by fire with reestablishment requiring time frames in excess of 100 years.³⁶ Depending on the extent and intensity of the fire, significant areas of habitat can be fragmented or rendered unsuitable either through direct habitat destruction or secondary invasion by undesirable vegetative species. This can cause sagebrush obligates to move into more marginal habitats resulting in reduced nesting and brood-rearing success and/or capacity of winter habitat.

A33 Sagebrush Obligate Conservation Measure A: Commit to not conducting any prescribed fires within 6 miles of occupied sage-grouse leks and within 1 1/4 miles of known sagebrush obligate habitat³⁷ [3 points, 6 points if within areas identified as receiving less than 12 inches in annual precipitation]

CI or CI/CP Information:

- GPS locations of known sage-grouse leks and map of known sagebrush obligate habitat
- Document number and size of prescribed fires during previous 5 years

Performance Monitoring to Support Adaptive Management:

- Submit a "no prescribed fires" statement to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify absence of prescribed fire

A33 Sagebrush Obligate Conservation Measure B: Use site-specific designs approved by the Association for prescribed burns. This measure applies only to areas outside of core, within 6 miles of known sage-grouse leks or other areas documented as being used by sagebrush obligates, and receiving more than 12 inches in annual precipitation. Consideration must be given to other control measures such as tebuthiuron applications or focused grazing. Prescribed fire will only be used to reduce encroachment of non-sagebrush shrubs, reduce the potential for catastrophic fire and rejuvenate the sagebrush understory. Burns will be planned to occur from August 1 to March 1 depending on sagebrush obligates' use of habitat, extent of invasive species cover, and burn objective. Burns will consist of small mosaic patterns with target patch size of 50 acres or less and maximum width of 200 feet. If necessary, prescribed burn areas will be sprayed with imazapic or other herbicide approved by the Association and/or reseeded with a native grass/forb seed mix. A maximum of 32 acres of sagebrush will be disturbed per section. Report success-failure to the Association and redo failed seeding until successful as compared to adjacent areas [up to 8 points for a maximum of 640 acres]

CI or CI/CP Information:

- GPS locations of sage-grouse leks and map of suitable sagebrush obligate habitat
- Indicate herbicide application and proposed seeding parameters - herbicide name, PLS rate, seed mix composition, etc.
- Map location of prescribed fire

³⁶ In a southeast Montana study, Cooper et al (2007) found that post-fire recovery rates for Wyoming big sagebrush were less than 1% per year and that annual bromes increased after burning. The highest recovery rate recorded in the study was 27% recovery after 37 years.

³⁷ Based on Bolger et.al. (1997) distance from developed edge for sage sparrows

- Identify site-specific design including fire control measures
- Baseline photo points with GPS locations: 1 per 40 acres

Immediate Actions:

- Notify the Association 5 days before the prescribed fire so Association staff can be on site
- Photograph area within 5 days of prescribed fire
- GPS prescribed fire boundary within 5 days of burn

One-time Compliance Monitoring:

- Report details of prescribed fire (acres burned, wind direction and speed, air temperature, photographs, GPS of boundary, etc.) to the Association within 30 days of prescribed fire
- If necessary, report details of spraying (map of sprayed area, acres covered, spray equipment used, chemicals used, wind speed & direction, temperature, relative humidity, etc.) to the Association within 30 days of treatment
- If necessary, report details of seeding (map of seeded area, acres covered, seedbed preparation methods used, seeding equipment used, dates of seeding, seed invoices, seed mix tag, etc.) to the Association within 30 days of treatment

Performance Monitoring to Support Adaptive Management:

- Photograph prescribed fire annually within \pm 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify treatment response

A33 Sagebrush Obligate Benefits: Eliminating habitat impacts from prescribed burns that were planned to improve livestock grazing conditions will reduce loss of available sagebrush obligate habitat, including both canopy and understory components. Allowing planned, approved prescribed burns in higher precipitation areas will help reduce encroachment of non-sagebrush shrubs, reduce potential of catastrophic fire, and rejuvenate the sagebrush understory. Both will maintain or improve the potential for nesting and brood-rearing success by protecting or rejuvenating sagebrush stands.

Roads

A34 Sagebrush Obligate Threat: Roads, due to their long linear nature, are significant sources of habitat fragmentation and modification. Sagebrush obligates abandon use of highly fragmented habitat, reducing nest establishment and success, brood-rearing success, and/or winter use capacity. Traffic occurring close to occupied sage-grouse leks can reduce the distance that calling males are heard thereby reducing attendance by females. This may ultimately cause sage-grouse leks to be abandoned. Traffic can also cause nesting birds in the near vicinity of the road to abandon nests. Unpaved roads can modify surrounding habitat by serving as predator corridors and can be a significant source of dust which reduces the viability and vigor of vegetation in sagebrush obligate habitat. Over time, dust can impact nesting habitat, adversely affect the viability of forbs in brood-rearing habitat, and reduce the amount of effective moisture available to plants. Dust from roads and other infrastructure disturbance

areas can adversely affect several life cycle phases of insects (e.g., ants, beetles, grasshoppers, bees, wasps, etc.) that are important food sources for both passerines³⁸ and sage-grouse chicks.

A34 Sagebrush Obligate Conservation Measure A: Implement annual chemical dust control measures for high-use unpaved roadways within suitable sagebrush obligate habitat [1 point per 1/4 mile, maximum of 3 points]

CI or CI/CP Information:

- Identify and map suitable sagebrush obligate habitat and existing roads
- Identify dust control areas and map location indicating daily usage
- Specify details of selected dust control measures
- Baseline photo points with GPS locations: 1 per 1/4 mile

Performance Monitoring to Support Adaptive Management:

- Report details of selected dust control measures (when applied, how much, invoices or other documentation of dust control, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Photograph dust control area(s) annually within ± 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify effectiveness of dust control measures

A34 Sage-grouse Conservation Measure B: Establish formal commitments (including signage or active management methods) to close improved and two-track roads in suitable sage-grouse habitat to all internal and external use (excluding monitoring and unforeseen circumstances) from March 1 - June 15 [5 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Map existing roads and suitable sage-grouse habitat
- Signed surface use agreement with the Association specifying road closure details

Performance Monitoring to Support Adaptive Management:

- Report details of road closure efforts (effectiveness, response to restrictions, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify effectiveness of road closure efforts

A34 Sagebrush Passerine Conservation Measure C: Establish formal commitments (including signage or active management methods) to close improved and two-track roads in suitable sagebrush passerine habitat to all internal and external use (excluding monitoring and unforeseen circumstances) from March 15 to July 31 [4 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Map existing roads and suitable passerine habitat

³⁸ Rotenberry (1980)

- Signed surface use agreement with the Association specifying road closure details

Performance Monitoring to Support Adaptive Management:

- Report details of road closure efforts (effectiveness, response to restrictions, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify effectiveness of road closure efforts

A34 Sagebrush Obligate Benefits: Reducing habitat modification and fragmentation from roads can maintain and potentially increase sagebrush obligate use capacity by favorably affecting nest establishment and success, brood rearing success, and/or winter use capacity. Other benefits include reduction of noise and human disturbance along the road within a critical distance of nesting and brood rearing habitat and the sage-grouse lek. These measures will also reduce dust in the vicinity of nesting habitat and the sage-grouse lek, potentially increasing canopy cover, insect availability, and habitat quality.

FACTOR B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

There is no recent evidence that sagebrush obligates are overutilized for any of these purposes.

FACTOR C: Disease and Predation.

Parasites and Diseases

C1 Sagebrush Obligate Threat: While a variety of parasites and diseases can affect sagebrush obligates, research has identified that one of the key lethal diseases is West Nile Virus - particularly for sage-grouse. This virus is primarily transmitted by mosquitoes. Regional studies have shown that almost all birds affected by West Nile Virus die within the season. Mortality due to West Nile Virus represents losses in breeding and production capacity for regional sagebrush obligate populations.

C1 Sagebrush Obligate Conservation Measure A: Control mosquito larvae using *Bacillus thuringiensis* or appropriate chemicals in at least 75 percent of surface water impoundments (dikes, septic lagoons, etc.) under ownership-control within 5 mile radius of sage-grouse leks or a 1.5 mile³⁹ radius of identified sagebrush obligate nesting, brood-rearing, or fall habitat. Watershed issues must be considered if biological controls are used (e.g., fish must be species native to watershed/sub-basin unless system is closed as defined by WGFD, etc.) [4 points for entire CI or CI/CP area]

³⁹ Ciota et.al. (2012)

CI or CI/CP Information:

- Identify and GPS sage-grouse lek locations and map sagebrush obligate summer and fall habitat
- GPS locations of existing surface water impoundments
- Baseline mosquito larvae abundance at each impoundment
- Specify details of mosquito larvae control including protection of fish and birds
- Photograph of each surface water impoundment

Performance Monitoring to Support Adaptive Management:

- Report mosquito larvae abundance (test methods, date sampled, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Report details of mosquito larvae control efforts (methods used, dates controlled, post treatment larvae abundance, invoices, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify treatment status

C1 Sagebrush Obligate Conservation Measure B: Breach, drain from May 15 to September 15, or change structure of existing impoundments where mosquitoes are present (within a 1.5 mile radius of identified sagebrush obligate nesting, brood-rearing, or fall habitat) to reduce or eliminate mosquito larvae. Consideration must be given to use of impoundment by other wildlife species [2 points per impoundment depending on modification chosen]

CI or CI/CP Information:

- GPS sage-grouse lek locations and existing impoundments; map occupied sagebrush obligate areas
- Identify impoundment(s) to be removed or modified
- Baseline photo points with GPS locations: 1 per impoundment

One-time Compliance Monitoring:

- Report number of impoundments removed or modified to the Association by December 31
- Photograph area of removed or modified impoundment; provide digital photograph(s) to the Association by December 31
- Association staff will visit site to verify water facility status

Performance Monitoring to Support Adaptive Management:

- Association staff will visit the site at least once every 5 years to verify water facility status

C1 Sagebrush Obligate Conservation Measure C: Replace existing impoundment where mosquitoes are present (within a 1.5 mile radius of identified sagebrush obligate nesting, brood-rearing, or fall habitat) with a non-windmill equipped water source and breach impoundment. Consideration must be given to use of impoundment by other wildlife species [3 points per impoundment, maximum of 6 points]

CI or CI/CP Information:

- GPS sage-grouse lek locations and existing impoundments; map occupied sagebrush obligate areas
- Identify impoundment(s) to be removed
- Baseline photo points with GPS locations: 1 per impoundment

One-time Compliance Monitoring:

- Report number of impoundments removed to the Association by December 31
- Photograph area of removed impoundment and replacement water source; provide digital photograph(s) to the Association by December 31
- Association staff will visit site to verify water facility status

Performance Monitoring to Support Adaptive Management:

- Association staff will visit the site at least once every 5 years to verify water facility status

C1 Sagebrush Obligate Conservation Measure D: Control mosquito larvae in stock water tanks with larvicide or completely drain tanks that aren't in use from May to September to discourage mosquito breeding [3 points for entire CI or CI/CP area]

CI or CI/CP Information:

- GPS locations of existing stock tanks to be drained or treated
- Specify details of mosquito larvae control including protection of fish and birds
- Baseline mosquito larvae abundance at each tank to be treated
- Photograph of each stock tank

Performance Monitoring to Support Adaptive Management:

- Report mosquito larvae abundance (test methods, date sampled, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Report details of mosquito larvae control efforts (methods used, dates controlled or date tank drained, post treatment larvae abundance, invoices, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify treatment status

C1 Sagebrush Obligate Conservation Measure E: Chemically control mosquito larvae in new and used tire storage areas or in junk yards. For any tire recyclers utilized, arrange for application of mosquito larvae controls in stockpiled tires awaiting recycling [2 points for entire CI or CI/CP area]

CI or CI/CP Information:

- GPS locations of tire storage areas or junk yards
- Baseline mosquito larvae abundance at each tire storage area or junk yard
- Specify details of mosquito larvae control including protection of fish and birds
- Photograph of each tire storage area or junk yard

Performance Monitoring to Support Adaptive Management:

- Report mosquito larvae abundance (test methods, date sampled, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Report details of mosquito larvae control efforts (methods used, dates controlled or date tank drained, post treatment larvae abundance, invoices, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify treatment status

C1 Sagebrush Obligate Benefits: The potential for mosquitoes to breed in standing water in surface impoundments, tires, and waste containers is relatively high. Larvicide treatments and draining of

standing water will restrict these potential mosquito breeding areas. These controls will result in the reduction of overall mosquito numbers, corresponding to a reduced probability of West Nile Virus infection of sage-grouse and passerines. This reduction in a mortality factor will maintain or increase sagebrush obligate production capacity for the region.

C2 Sagebrush Obligate Threat: While a variety of parasites and diseases can affect sagebrush obligates, research has identified that one of the key lethal diseases is West Nile Virus - particularly for sage-grouse. This virus is primarily transmitted by mosquitoes. Regional studies have shown that almost all birds affected by West Nile Virus die during the season. Mortality due to West Nile Virus represents losses in breeding and production capacity for regional sagebrush obligate populations.

C2 Sagebrush Obligate Conservation Measure A: Control adult mosquitoes through installation of bat houses in appropriate areas (e.g., around impoundments, riparian, greenbelts/tree windbreaks, etc.) utilizing designs that avoid establishment of a raptor perch site [2 points for 5 houses, maximum of 4 points]

CI or CI/CP Information:

- Identify and GPS sage-grouse lek locations and suitable sagebrush obligate habitat
- GPS locations of planned bat houses showing likely mosquito sites
- Specify details of bat house design and placement

One-time Compliance Monitoring:

- Photograph of each bat house

Performance Monitoring to Support Adaptive Management:

- Report details of bat recruitment efforts including presence/absence or number of bats utilizing houses to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify bat house installation

C2 Sagebrush Obligate Conservation Measure B: Discourage mosquito overwintering and breeding by managing containers and woodpiles (cover, chemically treat, etc.) [3 points for entire CI or CI/CP area]

CI or CI/CP Information:

- GPS locations of container storage sites and woodpiles
- Specify details of mosquito breeding and overwintering controls

Performance Monitoring to Support Adaptive Management:

- Report details of mosquito breeding and overwintering control efforts to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify control efforts

C2 Sagebrush Obligate Benefits: These mosquito controls will result in reduced probability of West Nile Virus infection of sagebrush obligates. This reduction in a mortality factor will maintain or increase the production capacity for the region. Bats are extremely effective at capturing and consuming mosquitoes, and are a highly mobile and adaptive mosquito control tool. Snags, caves, overhangs, and

other bat roosting habitats across the landscape are relatively limited. This measure will substantially increase the number and distribution of favorable bat roosting sites and will focus the additional sites on areas likely to have mosquitoes and likely to be utilized by sage-grouse. The additional bat habitat is expected to result in dispersed and increased bat populations with corresponding reductions in mosquitoes. In addition, chemical treatments and management actions that restrict overwintering and breeding use of containers and woodpiles (restrictive covers, water removal prior to breeding season, etc.) will further restrict potential mosquito breeding success.

Predation

C3 Sagebrush Obligate Threat: Predation causes the most direct mortality of sagebrush obligates throughout all phases of their life cycle. This is especially true where habitat quality is marginal. Common predators of adult sage-grouse include golden eagles, red foxes, and bobcats. Juvenile sage-grouse are killed by a variety of predators including various diurnal raptors, ravens, badgers, red foxes, coyotes, and weasels. Nest predators for all sagebrush obligates include ravens, crows, magpies, badgers, weasels, skunks, and raccoons. Other potential predators for adult passerines include American kestrels, prairie falcons, and northern harriers. Additionally, domestic and feral dogs and cats are significant predators to sagebrush obligates in all stages of their life cycle and in all seasons, particularly in the vicinity of residential areas.

C3 Sagebrush Obligate Conservation Measure A: Remove or routinely burn as permitted (outside of seasonal activity restriction periods) existing dumps, landfills, or garbage piles within 4.3 miles⁴⁰ of occupied sage-grouse leks or suitable sagebrush obligate habitat [2 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Identify occupied sage-grouse lek locations and suitable passerine habitat; GPS dumps, landfills, or trash sites within 4.3 miles
- Identify individual trash sites which will be removed or routinely burned
- Photograph of each trash site

One-time Compliance Monitoring:

- Report number of trash sites removed to the Association by December 31
- Photograph removed trash site and provide digital photograph(s) to the Association by December 31
- Association will visit site to verify trash site status

⁴⁰ For those predator species with an ecological association with humans (including coyotes, red foxes, and raccoons for the region covered by this CCAA), Knick et al (in press) have identified a 4.3 mile distance of influence around residential areas for potential sage-grouse impacts due to the foraging distances of the general group of human-associated mammalian and avian predators of sage-grouse. For this CCAA it is assumed that this distance of influence should also apply to potential impacts from domestic and feral dogs and cats around residential areas.

Performance Monitoring to Support Adaptive Management:

- Report trash management details (dates of routine burn, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify trash disposal methods

C3 Sagebrush Obligate Conservation Measure B: Utilize waste disposal options which do not serve as attractants for predators (commercial trash pickup services, caged trash bins, etc.), particularly for those areas within 4.3 miles of occupied sage-grouse leks or suitable sagebrush obligate habitat [3 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Document existing waste disposal methods
- Specify details of selected waste disposal option

Performance Monitoring to Support Adaptive Management:

- Report the waste disposal methods being utilized including any changes in waste disposal methods to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify waste disposal method

C3 Sagebrush Obligate Conservation Measure C: Remove existing brush piles and downed trees within 3 miles of occupied sage-grouse leks and suitable passerine habitat [3 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Identify occupied sage-grouse lek locations and suitable passerine habitat; GPS existing brush piles and downed trees within 3 miles
- Identify individual brush piles or trees that will be removed
- Photograph of each brush or tree removal site

One-time Compliance Monitoring:

- Report number of brush piles or trees removed to the Association by December 31
- Photograph brush or tree removal site and provide digital photograph(s) to the Association by December 31

C3 Sage-grouse Conservation Measure D: Remove standing dead trees within 1/4 mile of occupied sage-grouse leks [1 point for entire CI or CI/CP area]

CI or CI/CP Information:

- Identify occupied sage-grouse lek locations and GPS standing dead trees within 1/4 mile
- Identify individual trees that will be removed
- Photograph of each tree removal site

One-time Compliance Monitoring:

- Report tree removal details (number of standing dead trees removed, date(s) of treatment, etc.) to the Association by December 31
- Photograph tree removal site after treatment and provide digital photograph(s) to the Association by December 31
- Association staff will visit the site to verify tree removal status

C3 Sage-grouse Conservation Measure E: Provide surface or aerial access to APHIS Wildlife Services for control of red fox, skunks, and badgers within 3 miles of occupied sage-grouse leks [1 point for entire CI or CI/CP area]

CI or CI/CP Information:

- Identify proposed access areas and provide map

One-time Compliance Monitoring:

- Submit signed surface or aerial access agreement with APHIS to the Association within 60 days of finalization

C3 Sage-grouse Supporting Conservation Measure F: Develop and disseminate public education material on appropriate sage-grouse predator control benefits and methods [1 point, maximum 3 points among this measure and all E5 measures]

CI or CI/CP Information:

- Provide details of public education material: media type, target audience, distribution methods, etc.

One-time Compliance Monitoring:

- Submit a copy of the public education material to the Association within 60 days of finalization

Reporting Requirements

- Report details of public education material dissemination (pieces distributed, distribution locations, target audience response, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP

C3 Sagebrush Obligate Benefits: Reduction of predation will increase the sagebrush obligate production capacity for the region. This can be accomplished through direct control of predators or through minimizing their preferred habitat. Educating people about sage-grouse predator control issues will encourage people to utilize appropriate methods and help them understand which predators are problems.

FACTOR D: Inadequacy of Existing Regulatory Mechanisms.

Local Land Use Laws, Processes, and Ordinances

On- and Off-Road Use of Suitable Habitat

D1 Sagebrush Obligate Threat: Both on- and off-road vehicle use of sagebrush obligate habitat can cause physical disruption of sagebrush obligates, and noise from recreational and other vehicles can cause behavioral disruptions as well. This can cause sagebrush obligates to discontinue use of breeding areas, move into more marginal habitats resulting in reduced nesting and brood-rearing success and/or capacity of winter habitat, abandon nests, or be forced to utilize habitats more prone to predation of nests, broods or adult birds.

D1 Sagebrush Obligate Conservation Measure A: Establish surface use agreement with the Association (including signage or other active management methods) to prevent recreational vehicle use of lands from March 1 to June 15 for important sage-grouse breeding and nesting habitat, from June 15 to July 31 for important sagebrush obligate brood-rearing habitat, and from December 1 to February 15 for important sage-grouse winter habitat [4 points for entire CI or CI/CP area]

CI or CI/CP Information:

- GPS sage-grouse lek locations and map suitable sagebrush obligate habitat
- Specify details of recreational vehicle use prevention efforts or reference signed agreement

One-time Compliance Monitoring:

- Sign surface use agreement with the Association

Performance Monitoring to Support Adaptive Management:

- Report details of prevention efforts (effectiveness, response to restrictions, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify effectiveness of recreational vehicle use prevention efforts

D1 Sage-grouse Conservation Measure B: Move livestock on horseback or on foot and restrict the use of recreational vehicles and dogs for trailing and herding in suitable sage-grouse habitat from March 1 - July 31 [1 point for entire CI or CI/CP area]

CI or CI/CP Information:

- Identify GPS lek site locations and map suitable sage-grouse habitat
- Specify details of livestock moving practices

Performance Monitoring to Support Adaptive Management:

- Report details of livestock moving efforts (method used, effectiveness, sage-grouse flushed, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify livestock movement methods

D1 Sagebrush Obligate Benefits: Reduction of access and vehicular traffic will reduce related impacts to sagebrush obligate behavior and life cycle, and reduce the potential for the birds to be forced out of optimum habitat into marginal habitats. Ultimately, this will maintain or improve the potential for nesting and brood-rearing success and/or capacity of winter habitat.

Human Disturbance in Adjacent Near-lek Areas

D2 Sage-grouse Threat: Any human disturbance in the vicinity of the lek or associated nesting buffer during the breeding season can cause physical disruption of sage-grouse behavior, even if the lek is not on the participating member's property. This can cause sage-grouse to discontinue use of a lek or move into more marginal nesting habitats, resulting in reduced lek breeding success, nesting success, nest abandonment, and birds forced to utilize habitats more prone to predation of nests.

D2 Sage-grouse Conservation Measure: Minimize human disturbance in a 3⁴¹ mile nesting buffer zone around occupied sage-grouse lek sites by contacting the Association each January for current information about existing buffer zones, restrictions on activities within buffer zones, and viable alternatives to activities from March 1 - June 15 in nesting buffer zones outside the members CI or CI/CP area [maximum 2 points]

CI or CI/CP Information:

- Property map with GPS locations of known lek sites including those within 3 miles of the CI or CI/CP area

Performance Monitoring to Support Adaptive Management:

- Report details of efforts to minimize human disturbance (date of contact with the Association, effectiveness of alternatives, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP

D2 Sage-grouse Benefits: Disruption of lekking behavior by human disturbance can impact the breeding and nesting success probability, directly impacting sage-grouse populations. This measure addresses those risks by using information on leks and related nesting buffer zones to establish a non-disturbance zone relative to leks outside the participating members property during the critical lekking and nesting seasons. This will reduce related impacts to sage-grouse breeding behavior and will ultimately maintain or improve the potential for breeding and nesting success.

Recreational Lek Observations

D3 Sage-grouse Threat: Recreational lek observations can cause disruptions to sage-grouse breeding behavior. These can include disruptions due to the presence of the observers or noise from movements to and from the lek observation posts. Any or all of these disturbance factors can cause sage-grouse to discontinue use of a lek either temporarily or permanently, resulting in reduced breeding and subsequent productivity success.

D3 Sage-grouse Conservation Measure: Manage sage-grouse lek viewing impacts through establishment of lek viewing protocols for lands within the CI or CI/CP area [1 point for entire CI or CI/CP area]

CI or CI/CP Information:

- Identify and GPS sage-grouse lek site locations
- Determine leks that will be open for public viewing
- Specify details of lek viewing protocols using Wyoming Game & Fish Department's lek viewing guide as a basis, or reference filed protocol

One-time Compliance Monitoring:

- Provide lek viewing protocol to the Association within 60 days of finalization and prior to opening leks for public viewing

⁴¹ Holloran and Anderson (2005) found a majority (64%) of nests within 5 km of the lek

Performance Monitoring to Support Adaptive Management:

- Report details of lek viewing efforts (effectiveness, response to restrictions, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP

D3 Sage-grouse Benefits: Establishing specific protocols and controls on the numbers and activities of sage-grouse lek observers will help reduce negative impacts to sage-grouse breeding and production.

Split Estate

D4 Sagebrush Obligate Threat: Several agencies have defined effective regulatory mechanisms to address some or all of these sagebrush obligates as species of concern, including the Bureau of Land Management, US Forest Service, Office of Surface Mining, and Wyoming Department of Environmental Quality, among others. However, under split estate situations the effectiveness of mechanisms regulating sub-surface mineral activities can be reduced or negated, due to surface ownership and activities that are not subject to regulation. These situations can result in surface disturbance activities that can potentially decrease the availability of quality habitat resulting in reduced nesting and brood rearing success and/or winter use capacity..

D4 Sagebrush Obligate Conservation Measure: Establish a cooperative management plan between surface owner and mineral rights owner that addresses site specific fragmentation issues and maintains or enhances sagebrush obligate habitats; submit that plan to the Association for review and approval [up to 7 points depending on number of species and area covered; applicable to each party]

CI or CI/CP Information:

- Identify proposed cooperative management plan participants and provide map

One-time Compliance Monitoring:

- Develop and sign a cooperative management plan between surface and mineral rights owners 5 years of CI or CI/CP signing
- Immediately upon finalization, submit a signed copy of the cooperative management plan to the Association

Performance Monitoring to Support Adaptive Management:

- Report actions taken to ensure coordination between surface and mineral right owners and specific management actions taken to benefit sagebrush obligates to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify coordination and management actions

D4 Sagebrush Obligate Benefits: Establishing a cooperative management plan to coordinate surface owner and mineral right owner responsibilities will reduce surface disturbance activities that can potentially decrease the availability of quality habitat. This will increase nesting and brood rearing success and/or improve winter use capacity.

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

Drought

Damage to Existing Green Areas

E1 Sagebrush Obligate Threat: Disturbance of riparian, wetland, and greenbelt areas can negatively impact water flow patterns and volumes, as well as negatively impact green area vegetation growing on these sites. This reduces the number and quality of existing green areas, negatively impacting the availability and quality of brood-rearing habitat. These reductions in key foraging areas would reduce brood-rearing and nesting success.

E1 Sagebrush Obligate Conservation Measure: Reduce sedimentation by stabilizing head cuts on ephemeral draws in suitable sagebrush obligate habitat [1 point for each head cut, maximum of 4 points]

CI or CI/CP Information:

- Identify and map suitable sagebrush obligate habitat
- Conduct baseline monitoring: green area width downstream of head cut, sedimentation width
- Report information along with GPS location of established green area and sedimentation width markers
- GPS locations of existing head cuts which will be stabilized and method of stabilization
- Baseline photo points with GPS locations: 1 downstream from each head cut

Performance Monitoring to Support Adaptive Management:

- Record green area width and sedimentation width within \pm 1 week of June 15, July 15, August 15, and September 15; report to the Association by December 31 of each year or as specified in the CI or CI/CP
- Photograph head cut areas annually within \pm 2 weeks of baseline photograph; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify treatment area trend

E1 Sagebrush Obligate Benefits: Reducing head cut sedimentation will maintain and potentially increase the availability and quality of brood-rearing habitat. The protection and enhancement of these important foraging areas will maintain or increase nesting and brood-rearing success by providing additional habitat areas for forb food source development and will increase substrates for additional insect populations.

Lack of Suitable Water Availability

E2 Sagebrush Obligate Threat: The availability and distribution of water sources in the coverage area are limited and often are unsuitable for use by sagebrush obligates. For example, stock watering tanks are used extensively throughout northeast Wyoming but without appropriate escape ramps, sagebrush

obligates and other wildlife can become trapped within these tanks and drown. Poorly designed livestock barriers can also create hazards for sage-grouse and other wildlife. In addition to direct mortality, these water limitations could impact the condition of adult females and broods, consequently having a negative impact on nesting and brood-rearing success.

E2 Sagebrush Obligate Conservation Measure A: Establish guzzlers or other ground level watering points in suitable sagebrush obligate habitat and protect from trampling using wildlife friendly fencing or other measures [1 point for each, maximum of 4 points]

CI or CI/CP Information:

- GPS location of existing sage-grouse leks and map suitable sagebrush obligate habitat
- Identify location of guzzler(s) or other ground level watering points to be developed
- Baseline photo points with GPS locations: 1 per watering point

One-time Compliance Monitoring:

- Report number of guzzler(s) or other ground level watering points installed to the Association by December 31 of each year or as specified in the CI or CI/CP

Performance Monitoring to Support Adaptive Management:

- Photograph guzzler(s) or other ground level watering points annually within ± 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify watering point status

E2 Sagebrush Obligate Conservation Measure B: Install and maintain Association approved escape ramps and livestock barriers in all stock tanks [3 points for entire CI or CI/CP area]

CI or CI/CP Information:

- GPS location of existing stock tanks
- Identify location of stock tanks where new escape ramps or livestock barriers are needed
- Baseline photo points with GPS locations: 1 per stock tank

One-time Compliance Monitoring:

- Report number of escape ramps or livestock barriers installed to the Association by December 31 of each year or as specified in the CI or CI/CP

Performance Monitoring to Support Adaptive Management:

- Photograph escape ramps or livestock barriers annually within ± 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify escape ramp and livestock barrier status

E2 Sagebrush Obligate Conservation Measure C: Remove previously approved but poorly designed escape ramps and livestock barriers in all stock tanks (those found to be ineffective in providing escape for trapped animals or with designs that create other hazards). Install and maintain Association approved escape ramps and livestock barriers in all stock tanks [3 points for entire CI or CI/CP area]

CI or CI/CP Information:

- GPS location of existing stock tanks
- Identify stock tanks where replacement escape ramps or livestock barriers are needed
- Baseline photo points with GPS locations: 1 per stock tank

One-time Compliance Monitoring:

- Report number of escape ramps or livestock barriers replaced to the Association by December 31 of each year or as specified in the CI or CI/CP

Performance Monitoring to Support Adaptive Management:

- Photograph escape ramps or livestock barriers annually within ± 2 weeks of baseline photograph anniversary date; provide digital photograph(s) to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify escape ramp and livestock barrier status

E2 Sagebrush Obligate Benefits: Establishing and protecting small-scale guzzler water sources will provide focused flowing water for use by sagebrush obligates. Providing improved structures will restore the means for sagebrush obligates and other wildlife to escape from stock tanks, minimizing or eliminating the threat of drowning. This will result in reduced threats of sagebrush obligate mortality in the area. In addition, these improved water sources will maintain or improve the condition of nesting birds and broods, increasing nesting and brood-rearing success.

Use of Insecticides

E3 Sagebrush Obligate Threat: Insecticides, particularly carbofuran insecticides, can result in reduced food sources, direct mortality, and reduced population productivity. Grasshoppers and other insects are utilized by all sagebrush obligates so grasshopper control programs can exacerbate these threats.

E3 Sagebrush Obligate Conservation Measure A: Commit to not using carbofuran insecticides on the enrolled acres [4 points for entire CI or CI/CP area]

CI or CI/CP Information:

- Map current sagebrush obligate use areas
- Document likelihood of new carbofuran insecticide use
- Document use of carbofuran insecticides on enrolled acres during previous 5 years

Performance Monitoring to Support Adaptive Management:

- Provide details of any carbofuran insecticide use; report use or submit a "no use of carbofuran insecticide" statement to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify status of carbofuran insecticide programs

E3 Sagebrush Obligate Conservation Measure B: Commit to utilizing the Reduced Area & Application Treatments (RAATs) approach for all insecticide spraying on enrolled acres [6 points on entire CI or CI/CP area]

CI or CI/CP Information:

- Document likelihood of new grasshopper control and other insecticide spraying
- Document grasshopper control and insecticide spraying on enrolled acres during previous 5 years

Performance Monitoring to Support Adaptive Management:

- Provide details of grasshopper control and insecticide spraying; report use or submit a "no grasshopper control and insecticide spraying" statement to the Association by December 31 of each year or as specified in the CI or CI/CP
- Association staff will visit the site at least once every 3 years to verify status of grasshopper control and insecticide spraying programs

E3 Sagebrush Obligate Benefits: Reducing the chance of secondary poisoning from insect control programs will improve life cycle performance and increase overall production success.

Lack of Education

E4 Sagebrush Obligate Threat: Since sagebrush obligate life cycles, including variations across regions, are relatively complex and not completely understood, well-meaning members of the public can frequently have negative impacts on these species without knowing those impacts are occurring. In addition, details on life cycle habitat needs of sagebrush obligates, and the specific locations of suitable sagebrush obligate habitat in the region, are not general knowledge. Potential negative impacts can include habitat fragmentation, human disturbance, and practices that increase the probability or distribution of West Nile Virus vectors, among others. These impacts can cause sagebrush obligates to move into more marginal habitats resulting in reduced nesting, brood-rearing success, and/or capacity of winter habitat; and abandon nests or be forced to utilize habitats more prone to predation of nests, broods, or adult birds.

E4 Sagebrush Obligate Conservation Measure A: Work cooperatively with community naturalists, conservation districts, and others to develop and fund two media spots describing items of interest including the Association's CCAA commitments and conservation program, outlining sagebrush obligate benefits and steps for ranchette management, habitat fragmentation avoidance, road closures, weed control, etc. [1 point, maximum 3 points among C3F and all E5 measures]

CI or CI/CP Information:

- Provide details of public education material (media type, target audience, subject matter, distribution methods, etc.)

One-time Compliance Monitoring:

- Submit a copy of the educational material to the Association within 60 days of finalization

Reporting Requirements

- Report details of education material dissemination (distribution locations, media impressions, target audience response, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP

E4 Sagebrush Obligate Conservation Measure B: Work cooperatively with conservation districts to sponsor Small Acreage Workshops or "welcome packets" focusing on sagebrush obligate habit including avoiding/addressing habitat fragmentation, need for weed control, and other positive steps for ranchette owners [1 point, maximum 3 points among C3F and all E5 measures]]

CI or CI/CP Information:

- Provide details of public education material (media type, target audience, subject matter, distribution methods, etc.)

One-time Compliance Monitoring:

- Submit a copy of the educational material to the Association within 60 days of finalization

Reporting Requirements

- Report details of education material dissemination (distribution locations, media impressions, target audience response, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP

E4 Sagebrush Obligate Conservation Measure C: Commit to develop and present sagebrush obligate related information in classrooms, meetings, etc. [1 point, maximum 3 points among C3F and all E5 measures]

CI or CI/CP Information:

- Provide details of education material (media type, target audience, subject matter, distribution methods, etc.)

One-time Compliance Monitoring:

- Submit a copy of the educational material to the Association within 60 days of finalization

Reporting Requirements

- Report details of education material dissemination (distribution locations, media impressions, target audience response, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP

E5 Sagebrush Obligate Conservation Measure D: Develop/sponsor programs on sagebrush obligate habitat including impacts of fragmentation and benefits of weed control; provide to area school agriculture and education programs with sufficient quality to be adopted by three teachers in the same or different school [1 point, maximum 3 points among C3F and all E5 measures]

CI or CI/CP Information:

- Provide details of education material (media type, target audience, subject matter, distribution methods, etc.)

One-time Compliance Monitoring:

- Submit a copy of the educational material to the Association within 60 days of finalization

Reporting Requirements

- Report details of education material dissemination (distribution locations, media impressions, target audience response, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP

E4 Sagebrush Obligate Conservation Measure E: Sponsor/host outreach activities (e.g., informational meetings, workshops, school tours, etc.) dealing with sagebrush obligate habitat for educators and their classes and the interested public [1 point, maximum 3 points among C3F and all E5 measures]

CI or CI/CP Information:

- Provide details of outreach activities (outreach type, target audience, subject matter, distribution methods, etc.)

One-time Compliance Monitoring:

- Submit a copy of any outreach materials to the Association within 60 days of finalization

Reporting Requirements

- Report details of outreach activities (locations, media impressions, target audience response, etc.) to the Association by December 31 of each year or as specified in the CI or CI/CP

E4 Sagebrush Obligate Benefits: Actively participating in development of sagebrush obligate informational messages in a form crafted for the respective audiences and partnering with entities that have a broad audience will increase the general public knowledge about sagebrush obligates. The messages will incorporate vital information on sagebrush obligate life cycle and habitat needs and will allow listeners to make educated decisions about their actions in sagebrush habitat. This will help reduce negative impacts to breeding, production, and/or wintering success.