
Appendix D

Required Design Features

APPENDIX D

REQUIRED DESIGN FEATURES

Required Design Features (RDFs) are required for certain activities in all GRSG habitat. RDFs establish the minimum specifications for certain activities to help mitigate adverse impacts. However, the applicability and overall effectiveness of each RDF cannot be fully assessed until the project level when the project location and design are known. Because of site-specific circumstances, some RDFs may not apply to some projects (e.g., a resource is not present on a given site) and/or may require slight variations (e.g., a larger or smaller protective area). All variations in RDFs would require that at least one of the following be demonstrated in the NEPA analysis associated with the project/activity:

- A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g. due to site limitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable;
- An alternative RDF is determined to provide equal or better protection for GRSG or its habitat;
- A specific RDF will provide no additional protection to GRSG or its habitat.

PROPOSED PLAN

General RDFs

The following RDFs would apply to development in all programs within PHMA, GHMA and OHMA consistent with applicable law.

RDF Gen 1: Locate new roads outside of GRSG habitat to the extent practical.

RDF Gen 2: Avoid constructing roads within riparian areas and ephemeral drainages. Construct low-water crossings at right angles to ephemeral drainages and stream crossings (note that such construction may require permitting under Sections 401 and 404 of the Clean Water Act).

RDF Gen 3: Limit construction of new roads where roads are already in existence and could be used or upgraded to meet the needs of the project or operation. Design roads to an appropriate standard, no higher than necessary, to accommodate intended purpose and level of use.

RDF Gen 4: Coordinate road construction and use with ROW holders to minimize disturbance to the extent possible.

RDF Gen 5: During project construction and operation, establish and post speed limits in GRSG habitat to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

RDF Gen 6: Newly constructed project roads that access valid existing rights would not be managed as public access roads. Proponents will restrict access by employing traffic control devices such as signage, gates, and fencing.

RDF Gen 7: Require dust abatement practices when authorizing use on roads.

RDF Gen 9: Upon project completion, reclaim roads developed for project access on public lands unless, based on site-specific analysis, the route provides specific benefits for public access and does not contribute to resource conflicts.

RDF Gen 10: Design or site permanent structures that create movement (e.g., pump jack/ windmill) to minimize impacts on GRSG habitat.

RDF Gen 11: Equip temporary and permanent aboveground facilities with structures or devices that discourage nesting and perching of raptors, corvids, and other predators.

RDF Gen 12: Control the spread and effects of nonnative, invasive plant species (e.g., by washing vehicles and equipment, minimize unnecessary surface disturbance; Evangelista et al. 2011). All projects would be required to have a noxious weed management plan in place prior to construction and operations.

RDF Gen 13: Implement project site-cleaning practices to preclude the accumulation of debris, solid waste, putrescible wastes, and other potential anthropogenic subsidies for predators of GRSG.

RDF Gen 14: Locate project related temporary housing sites outside of GRSG habitat.

RDF Gen 15: When interim reclamation is required, irrigate site to establish seedlings more quickly if the site requires it.

RDF Gen 16: Utilize mulching techniques to expedite reclamation and to protect soils if the site requires it.

RDF Gen 17: Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.

RDF GEN 18: When authorizing ground-disturbing activities, require the use of vegetation and soil reclamation standards suitable for the site type prior to construction.

RDF GEN 19: Instruct all construction employees to avoid harassment and disturbance of wildlife, especially during the GRSG breeding (e.g., courtship and nesting) season. In addition, pets shall not be permitted on site during construction (BLM 2005b).

RDF GEN 20: To reduce predator perching in GRSG habitat, limit the construction of vertical facilities and fences to the minimum number and amount needed and install anti-perch devices where applicable.

RDF GEN 21: Outfit all reservoirs, pits, tanks, troughs or similar features with appropriate type and number of wildlife escape ramps (BLM 1990; Taylor and Tuttle 2007).

RDF GEN 22: Load and unload all equipment on existing roads to minimize disturbance to vegetation and soil.

In addition to the General RDFs, the following resource programs will include the following program specific RDFs applicable to PHMA, GHMA and OHMA consistent with applicable law:

Lands and Realty*

RDF LR-LUA 1: Where new ROWs associated with valid existing rights are required, co-locate new ROWs within existing ROWs or where it best minimizes impacts in GRSG habitat. Use existing roads or realignments of existing roads to access valid existing rights that are not yet developed.

RDF LR-LUA 2: Do not issue ROWs to counties on newly constructed energy/mining development roads, unless for a temporary use consistent with all other terms and conditions included in this document.

RDF GEN 3: Where necessary, fit transmission towers with anti-perch devices (Lammers and Collopy 2007) in GRSG habitat.

*These RDFs also apply to other land use authorizations such as leases and permits.

Fuels and Fire Management

RDF WFM 1: Power-wash all firefighting vehicles, including engines, water tenders, personnel vehicles, and all-terrain vehicles (ATVs), prior to deploying in or near GRSG habitat to minimize the introduction and spread of undesirable and invasive plant species.

RDF WFM 2: Protect wildland areas from wildfire originating on private lands, infrastructure corridors, and recreational areas.

RDF WFM 3: Reduce the risk of vehicle or human-caused wildfires and the spread of invasive species by planting perennial vegetation (e.g., green-strips) paralleling road rights-of-way.

Fluid Minerals RDFs

RDF Lease FM 1: Co-locate power lines, flow lines, and small pipelines under or immediately adjacent to existing roads (Bui et al. 2010) in order to minimize or avoid disturbance.

RDF Lease FM 2: Cover, create barriers, or implement other effective deterrents (e.g., netting, fencing, birdballs, and sound cannons) for all ponds and tanks containing potentially toxic materials to reduce GRSG mortality.

RDF Lease FM 3: Require installation of noise shields to comply with noise restrictions (see Action SSS 7) when drilling during the breeding, nesting, brood-rearing, and/or wintering season. Require applicable GRSG seasonal timing restrictions when noise restrictions cannot be met (see Action SSS 6).

RDF Lease FM 4: Ensure habitat restoration meets GRSG habitat objectives (Table 2-3) for reclamation and restoration practices/sites (Pyke 2011).

RDF Lease FM 5: Maximize the area of interim reclamation on long-term access roads and well pads, including reshaping, topsoil management, and revegetating cut-and-fill slopes.

RDF Lease FM 6: Restore disturbed areas at final reclamation to the pre-disturbance landforms and meets the GRSG habitat objectives (table 2-3).

RDF Lease FM 7: Use only closed-loop systems for drilling operations and no reserve pits within GRSG habitat.

RDF Lease FM 8: Place liquid gathering facilities outside of GRSG habitat. Have no tanks at well locations within GRSG habitat to minimize vehicle traffic and perching and nesting sites for aerial predators of GRSG.

RDF Lease FM 9: In GRSG habitat, use remote monitoring techniques for production facilities and develop a plan to reduce vehicular traffic frequency of vehicle use (Lyon and Anderson 2003).

RDF Lease FM 10: Use dust abatement practices on well pads.

RDF Lease FM 11: Cluster disturbances associated with operations and facilities as close as possible, unless site-specific conditions indicate that disturbances to GRSG habitat would be reduced if operations and facilities locations would best fit a unique special arrangement.

RDF Lease FM 12: Apply a phased development approach with concurrent reclamation.

RDF Lease FM 13: Restrict pit and impoundment construction to reduce or eliminate augmenting threats from West Nile virus (Dougherty 2007).

RDF Lease FM 14: In GRSG habitat, remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues, use the following steps for reservoir design to limit favorable mosquito habitat (Doherty 2007):

- Overbuild size of ponds for muddy and non-vegetated shorelines
- Build steep shorelines to decrease vegetation and increase wave actions
- Avoid flooding terrestrial vegetation in flat terrain or low lying areas
- Construct dams or impoundments that restrict down slope seepage or overflow
- Line the channel where discharge water flows into the pond with crushed rock
- Construct spillway with steep sides and line it with crushed rock.
- Treat waters with larvicides to reduce mosquito production where water occurs on the surface

RDF Lease FM 15: Consider using oak (or other material) mats for drilling activities to reduce vegetation disturbance and for roads between closely spaced wells to reduce soil compaction and maintain soil structure to increase likelihood of vegetation reestablishment following drilling.

Locatable Minerals

RDF LOC 1: Install noise shields to comply with noise restrictions (see Action SSS 7) when drilling during the breeding, nesting, brood-rearing, and/or wintering season. Apply GRSG seasonal timing restrictions when noise restrictions cannot be met (see Action SSS 6).

RDF LOC 2: Cluster disturbances associated with operations and facilities as close as possible, unless site-specific conditions indicate that disturbances to GRSG habitat would be reduced if operations and facilities locations would best fit a unique special arrangement.

RDF LOC 3: Restrict pit and impoundment construction to reduce or eliminate augmenting threats from West Nile virus (Dougherty 2007).

RDF LOC 4: Remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues, use the following steps for reservoir design to limit favorable mosquito habitat (Doherty 2007):

- Overbuild size of ponds for muddy and non-vegetated shorelines
- Build steep shorelines to decrease vegetation and increase wave actions
- Avoid flooding terrestrial vegetation in flat terrain or low lying areas
- Construct dams or impoundments that restrict down slope seepage or overflow
- Line the channel where discharge water flows into the pond with crushed rock
- Construct spillway with steep sides and line it with crushed rock.
- Treat waters with larvicides to reduce mosquito production where water occurs on the surface

RDF LOC 5: Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve sage-grouse habitat needs.

RDF LOC 6: Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.

RDF LOC 7: Cover (e.g., fine mesh netting or use other effective techniques) all pits and tanks regardless of size to reduce sage-grouse mortality.

Comprehensive Travel and Transportation Management

RDF CTTM 1: Rehabilitate roads, primitive roads, and trails not designated in approved travel management plans.

RDF CTTM 2: Reclaim closed duplicate roads by restoring original landform and establishing desired vegetation in GRSG habitat in accordance with

GRSG habitat objectives (Table 2-3) as identified in travel management planning.

ALTERNATIVE A

No Required Design Features (RDFs) were identified under Alternative A.

ALTERNATIVE B

Alternative B contains best management practices (BMPs) from the NTT report that were brought forward as RDFs consistent with applicable law.

Fluid Minerals RDFs

Roads - PHMA

- Close and rehabilitate duplicate roads.
- Use dust abatement on roads and pads.
- Restrict vehicle traffic to only authorized users on newly constructed routes (using signage, gates, etc.).
- Do not issue ROWs or SUAs to counties on newly constructed energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.
- Establish trip restrictions (Lyon and Anderson 2003) or minimization through use of telemetry and remote well control (e.g., Supervisory Control and Data Acquisition).
- Establish speed limits on BLM and National Forest System roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.
- Construct road crossings at right angles to ephemeral drainages and stream crossings.
- Coordinate road construction and use among ROW or SUA holders.
- Locate roads to avoid important areas and habitats.
- Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.
- Cluster disturbances, operations (fracture stimulation, liquids gathering, etc.), and facilities.
- Use directional and horizontal drilling to reduce surface disturbance.
- Place infrastructure in already disturbed locations where the habitat has not been fully restored.
- Apply a phased development approach with concurrent reclamation.

- Place liquid gathering facilities outside of priority areas. Have no tanks at well locations within priority habitat areas to minimize truck traffic and perching and nesting sites for ravens and raptors.
- Pipelines must be under or immediately adjacent to the road (Bui et al. 2010).
- Use remote monitoring techniques for production facilities and develop a plan to reduce the frequency of vehicle use (Lyon and Anderson 2003).
- Restrict the construction of tall facilities and fences to the minimum number and amount needed.
- Site and/or minimize linear ROWs or SUAs to reduce disturbance to sagebrush habitats.
- Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.
- Bury distribution power lines.
- Co-locate power lines, flow lines, and small pipelines under or immediately adjacent to existing roads (Bui et al. 2010).
- Design or site permanent structures which create movement (e.g., pump jack) to minimize impacts to GRSG.
- Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce GRSG mortality.
- Equip tanks and other above-ground facilities with structures or devices that discourage nesting of raptors and corvids.
- Control the spread and effects of non-native plant species (Evangelista et al. 2011) (e.g., by washing vehicles and equipment.).
- Use only closed-loop systems for drilling operations and no reserve pits.
- Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).
- Remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues, use the following steps for reservoir design to limit favorable mosquito habitat:
 - Overbuild size of ponds for muddy and non-vegetated shorelines.
 - Build steep shorelines to decrease vegetation and increase wave actions.

- Avoid flooding terrestrial vegetation in flat terrain or low lying areas.
 - Construct dams or impoundments that restrict down slope seepage or overflow.
 - Line the channel where discharge water flows into the pond with crushed rock.
 - Construct spillway with steep sides and line it with crushed rock.
 - Treat waters with larvicides to reduce mosquito production where water occurs on the surface.
- Limit noise to less than 10 decibels above ambient measures (20-24 dBA) at sunrise at the perimeter of a lek during active lek season (Patricelli et al. 2010, Blickley et al. In preparation).
 - Require noise shields when drilling during the lek, nesting, brood-rearing, or wintering season.
 - Fit transmission towers with anti-perch devices (Lammers and Collopy 2007).
 - Require GRSG-safe fences.
 - Locate new compressor stations outside priority habitats and design them to reduce noise that may be directed towards priority habitat.
 - Clean up refuse (Bui et al. 2011).
 - Locate man camps outside of priority habitats.

Reclamation - PHMA

- Include objectives for ensuring habitat restoration to meet GRSG habitat needs in reclamation practices/sites (Pyke 2011). Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve GRSG habitat needs.
- Maximize the area of interim reclamation on long-term access roads and well pads, including reshaping, topsoiling and revegetating cut-and-fill slopes.
- Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.
- Irrigate interim reclamation if necessary for establishing seedlings more quickly.
- Utilize mulching techniques to expedite reclamation and to protect soils.

Roads - GHMA

- Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.
- Do not issue ROWs or SUAs to counties on energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.
- Establish speed limits to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.
- Coordinate road construction and use among ROW or SUA holders.
- Construct road crossings at right angles to ephemeral drainages and stream crossings.
- Use dust abatement practices on roads and pads.
- Close and reclaim duplicate roads by restoring original landform and establishing desired vegetation.

Operations – GHMA

- Cluster disturbances, operations (fracturing stimulation, liquids gathering, etc.), and facilities.
- Use directional and horizontal drilling to reduce surface disturbance.
- Clean up refuse (Bui et al. 2010).
- Restrict the construction of tall facilities and fences to the minimum number and amount needed.
- Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce GRSB mortality.
- Equip tanks and other above-ground facilities with structures or devices that discourage nesting by raptors or corvids.
- Use remote monitoring techniques for production facilities and develop a plan to reduce vehicular traffic frequency of vehicle use.
- Control the spread and effects from non-native plant species. (e.g., by washing vehicles and equipment).
- Restrict pit and impoundment construction to reduce or eliminate augmenting threats from West Nile virus (Dougherty 2007). See this table's BMP Section A: West Nile Virus.

Locatable Minerals RDFs

Roads – PHMA

- Design roads to an appropriate standard no higher than necessary to accommodate their intended purposes.
- Locate roads to avoid important areas and habitats.
- Coordinate road construction and use among ROW or SUA holders.
- Construct road crossing at right angles to ephemeral drainages and stream crossings.
- Establish speed limits on BLM and National Forest System roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.
- Do not issue ROWs or SUAs to counties on mining development roads, unless for a temporary use consistent with all other terms and conditions including this document.
- Restrict vehicle traffic to only authorized users on newly constructed routes (e. g., use signing, gates, etc.).
- Use dust abatement practices on roads and pads.
- Close and reclaim duplicate roads, by restoring original landform and establishing desired vegetation.

Operations - PHMA

- Cluster disturbances associated with operations and facilities as close as possible.
- Place infrastructure in already disturbed locations where the habitat has not been restored.
- Restrict the construction of tall facilities and fences to the minimum number and amount needed.
- Site and/or minimize linear ROWs or SUAs to reduce disturbance to sagebrush habitats.
- Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.
- Bury power lines.
- Cover (e.g., fine mesh netting or use other effective techniques) all pits and tanks regardless of size to reduce GRSG mortality.
- Equip tanks and other above ground facilities with structures or devices that discourage nesting of raptors and corvids.

- Control the spread and effects of non-native plant species (Gelbard and Belnap 2003, Bergquist et al. 2007).
- Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007). See this table's BMP Section A: West Nile Virus.
- Require GRSG-safe fences around sumps.
- Clean up refuse (Bui et al. 2010).
- Locate man camps outside of priority GRSG habitats.

Reclamation – PHMA

- Include restoration objectives to meet GRSG habitat needs in reclamation practices/sites.
- Address post reclamation management in reclamation plans such that goals and objectives are to protect and improve GRSG habitat needs.
- Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.
- Restore disturbed areas at final reclamation to pre-disturbance landform and desired plant community.
- Irrigate interim reclamation as necessary during dry periods. Utilize mulching techniques to expedite reclamation.

Fuels and Fire Management RDFs

Fuels Management

- Where applicable, design fuels treatment objective to protect existing sagebrush ecosystems, modify fire behavior, restore native plants, and create landscape patterns which most benefit GRSG habitat.
- Provide training to fuels treatment personnel on GRSG biology, habitat requirements, and identification of areas utilized locally.
- Use fire prescriptions that minimize undesirable effects on vegetation or soils (e.g., minimize mortality of desirable perennial plant species and reduce risk of hydrophobicity).
- Ensure proposed sagebrush treatments are planned with interdisciplinary input from BLM, Forest Service, and /or state wildlife agency biologist and that treatment acreage is conservative in the context of surrounding GRSG seasonal habitats and landscape.

- Where appropriate, ensure that treatments are configured in a manner (e.g., strips) that promotes use by GRSG (See Connelly et al. 2000).
- Where applicable, incorporate roads and natural fuel breaks into fuel break design.
- Power-wash all vehicles and equipment involved in fuels management activities prior to entering the area to minimize the introduction of undesirable and/or invasive plant species.
- Design vegetation treatment in areas of high frequency to facilitate firefighting safety, reduce the risk of extreme fire behavior; and to reduce the risk and rate of fire spread to key and restoration habitats.
- Give priority for implementing specific GRSG habitat restoration projects in annual grasslands first to sites which are adjacent to or surrounded by GRSG key habitats. Annual grasslands are second priority for restoration when the sites not adjacent to key habitat, but within 2 miles of key habitat. The third priority for annual grasslands habitat restoration projects are sites beyond 2 miles of key habitat. The intent is to focus restoration outward from existing, intact habitat.
- As funding and logistics permit, restore annual grasslands to a species composition characterized by perennial grasses, forbs, and shrubs.
- Emphasize the use of native plant species, recognizing that non-native species may be necessary depending on the availability of native seed and prevailing site conditions.
- Remove standing and encroaching trees within at least 100 meters of occupied GRSG leks and other habitats (e.g., nesting, wintering, and brood rearing) to reduce the availability of perch sites for avian predators, as appropriate, and resources permit.
- Protect wildland areas from wildfire originating on private lands, infrastructure corridors, and recreational areas.
- Reduce the risk of vehicle or human-caused wildfires and the spread of invasive species by planting perennial vegetation (e.g., green-strips) paralleling road rights-of-way.
- Strategically place and maintain pre-treated strips/areas (e.g., mowing, herbicide application, and strictly managed grazed strips) to aid in controlling wildfire should wildfire occur near key habitats or important restoration areas (such as where investments in restoration have already been made).

Fire Management

- Develop state-specific GRSG toolboxes containing maps, a list of resource advisors, contact information, local guidance, and other relevant information.
- Provide localized maps to dispatch offices and extended attack incident commanders for use in prioritizing wildfire suppression resources and determining suppression tactics.
- Assign a GRSG resource advisor to all extended attack fires in or near key GRSG habitat areas. Prior to the fire season, provide training to GRSG resource advisors on wildfire suppression organization, objectives, tactics, and procedures to develop a cadre of qualified individuals.
- On critical fire weather days, pre-position additional fire suppression resources to optimize a quick and efficient response in GRSG habitat areas.
- During periods of multiple fires, ensure line officers are involved in setting priorities.
- To the extent possible, locate wildfire suppression facilities (i.e., base camps, spike camps, drop points, staging areas, and heli-bases) in areas where physical disturbance to GRSG habitat can be minimized. These include disturbed areas, grasslands, near roads/trails or in other areas where there is existing disturbance or minimal sagebrush cover.
- Power-wash all firefighting vehicles, to the extent possible, including engines, water tenders, personnel vehicles, and ATVs prior to deploying in or near GRSG habitat areas to minimize noxious weed spread.
- Minimize unnecessary cross-country vehicle travel during fire operations in GRSG habitat.
- Minimize burnout operations in key GRSG habitat areas by constructing direct fire line whenever safe and practical to do so.
- Utilize retardant and mechanized equipment to minimize burned acreage during initial attack.
- As safety allows, conduct mop-up where the black adjoins unburned islands, dog legs, or other habitat features to minimize sagebrush loss.

ALTERNATIVES C, D, AND F

Alternatives C, D, and F contain RDFs based on the NTT report in addition to RDFs developed by the BLM and Forest Service ID Team to be applied consistent with applicable law.

Fluid Minerals RDFs

Roads - PHMA

- Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.
- Locate roads to avoid important areas and habitats.
- Coordinate road construction and use among ROW or SUA holders.
- Construct road crossings at right angles to ephemeral drainages and stream crossings.
- Establish speed limits on BLM and National Forest System roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.
- Establish trip restrictions (Lyon and Anderson 2003) or minimization through use of telemetry and remote well control (e.g., Supervisory Control and Data Acquisition).
- Do not issue ROWs or SUAs to counties on newly constructed energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.
- Restrict vehicle traffic to only authorized users on newly constructed routes (using signage, gates, etc.)
- Use dust abatement on roads and pads.
- Close and rehabilitate duplicate roads.
- Cluster disturbances, operations (fracture stimulation, liquids gathering, etc.), and facilities.
- Use directional and horizontal drilling to reduce surface disturbance.
- Place infrastructure in already disturbed locations where the habitat has not been fully restored.
- Apply a phased development approach with concurrent reclamation.
- Place liquid gathering facilities outside of priority areas. Have no tanks at well locations within priority habitat areas to minimize truck traffic and perching and nesting sites for ravens and raptors.
- Pipelines must be under or immediately adjacent to the road (Bui et al. 2010).
- Use remote monitoring techniques for production facilities and develop a plan to reduce the frequency of vehicle use (Lyon and Anderson 2003).
- Restrict the construction of tall facilities and fences to the minimum number and amount needed.

- Site and/or minimize linear ROWs or SUAs to reduce disturbance to sagebrush habitats.
- Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.
- Bury distribution power lines.
- Collocate powerlines, flowlines, and small pipelines under or immediately adjacent to existing roads (Bui et al. 2010).
- Design or site permanent structures which create movement (e.g., pump jack) to minimize impacts to sage-grouse.
- Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce GRSG mortality.
- Equip tanks and other above-ground facilities with structures or devices that discourage nesting of raptors and corvids.
- Control the spread and effects of non-native plant species (Evangelista et al. 2011) (e.g., by washing vehicles and equipment).
- Use only closed-loop systems for drilling operations and no reserve pits.
- Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).
- Remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues, use the following steps for reservoir design to limit favorable mosquito habitat:
 - Overbuild size of ponds for muddy and non-vegetated shorelines.
 - Build steep shorelines to decrease vegetation and increase wave actions.
 - Avoid flooding terrestrial vegetation in flat terrain or low lying areas.
 - Construct dams or impoundments that restrict down slope seepage or overflow.
 - Line the channel where discharge water flows into the pond with crushed rock.
 - Construct spillway with steep sides and line it with crushed rock.
 - Treat waters with larvicides to reduce mosquito production where water occurs on the surface.

- Limit noise to less than 10 decibels above ambient measures (20-24 dBA) at sunrise at the perimeter of a lek during active lek season (Patricelli et al. 2010, Blickley et al. In preparation).
- Require noise shields when drilling during the lek, nesting, brood-rearing, or wintering season.
- Fit transmission towers with anti-perch devices (Lammers and Collopy 2007).
- Require GRSG-safe fences.
- Locate new compressor stations outside priority habitats and design them to reduce noise that may be directed towards priority habitat.
- Clean up refuse (Bui et al. 2011).
- Locate man camps outside of priority habitats.

Reclamation - PHMA

- Include objectives for ensuring habitat restoration to meet GRSG habitat needs in reclamation practices/sites (Pyke 2011). Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve GRSG habitat needs.
- Maximize the area of interim reclamation on long-term access roads and well pads, including reshaping, topsoiling and revegetating cut-and-fill slopes.
- Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.
- Irrigate interim reclamation if necessary for establishing seedlings more quickly.
- Utilize mulching techniques to expedite reclamation and to protect soils.

Roads - GHMA

- Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.
- Do not issue ROWs or SUAs to counties on energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.
- Establish speed limits to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.
- Coordinate road construction and use among ROW or SUA holders.
- Construct road crossings at right angles to ephemeral drainages and stream crossings.

- Use dust abatement practices on roads and pads.
- Close and reclaim duplicate roads by restoring original landform and establishing desired vegetation.

Operations – GHMA

- Cluster disturbances, operations (fracturing stimulation, liquids gathering, etc.), and facilities.
- Use directional and horizontal drilling to reduce surface disturbance.
- Clean up refuse (Bui et al. 2010).
- Restrict the construction of tall facilities and fences to the minimum number and amount needed.
- Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce GRSB mortality.
- Equip tanks and other above-ground facilities with structures or devices that discourage nesting by raptors or corvids.
- Use remote monitoring techniques for production facilities and develop a plan to reduce vehicular traffic frequency of vehicle use.
- Control the spread and effects from non-native plant species. (e.g., by washing vehicles and equipment.)
- Restrict pit and impoundment construction to reduce or eliminate augmenting threats from West Nile virus (Dougherty 2007).

Locatable Minerals RDFs**Roads – PHMA**

- Design roads to an appropriate standard no higher than necessary to accommodate their intended purposes.
- Locate roads to avoid important areas and habitats.
- Coordinate road construction and use among ROW or SUA holders.
- Construct road crossing at right angles to ephemeral drainages and stream crossings.
- Establish speed limits on BLM and National Forest System roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.
- Do not issue ROWs or SUAs to counties on mining development roads, unless for a temporary use consistent with all other terms and conditions including this document.

- Restrict vehicle traffic to only authorized users on newly constructed routes (e. g., use signing, gates, etc.).
- Use dust abatement practices on roads and pads.
- Close and reclaim duplicate roads, by restoring original landform and establishing desired vegetation.

Operations - PHMA

- Cluster disturbances associated with operations and facilities as close as possible.
- Place infrastructure in already disturbed locations where the habitat has not been restored.
- Restrict the construction of tall facilities and fences to the minimum number and amount needed.
- Site and/or minimize linear ROWs or SUAs to reduce disturbance to sagebrush habitats.
- Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.
- Bury power lines.
- Cover (e.g., fine mesh netting or use other effective techniques) all pits and tanks regardless of size to reduce GRSG mortality.
- Equip tanks and other above ground facilities with structures or devices that discourage nesting of raptors and corvids.
- Control the spread and effects of non-native plant species (Gelbard and Belnap 2003, Bergquist et al. 2007).
- Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).
- Require GRSG-safe fences around sumps.
- Clean up refuse (Bui et al. 2010).
- Locate man camps outside of priority GRSG habitats.

Reclamation – PHMA

- Include restoration objectives to meet GRSG habitat needs in reclamation practices/sites.
- Address post reclamation management in reclamation plans such that goals and objectives are to protect and improve GRSG habitat needs.
- Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.

- Restore disturbed areas at final reclamation to pre-disturbance landform and desired plant community
- Irrigate interim reclamation as necessary during dry periods. Utilize mulching techniques to expedite reclamation.

Fuels and Fire Management RDFs

Fuels Management

- Where applicable, design fuels treatment objective to protect existing sagebrush ecosystems, modify fire behavior, restore native plants, and create landscape patterns which most benefit GRSG habitat.
- Provide training to fuels treatment personnel on GRSG biology, habitat requirements, and identification of areas utilized locally.
- Use burning prescriptions that minimize undesirable effects on vegetation or soils (e.g., minimize mortality of desirable perennial plant species and reduce risk of annual grass invasion).
- Ensure proposed sagebrush treatments are planned with full interdisciplinary input pursuant to NEPA and coordination with state fish and wildlife agencies, and that treatment acreage is conservative in the context of surrounding GRSG seasonal habitats and landscape.
- Where appropriate, ensure that treatments are configured in a manner that promotes use by GRSG. Where applicable, incorporate roads and natural fuel breaks into fuel break design.
- Power-wash all vehicles and equipment involved in fuels management activities prior to entering the area to minimize the introduction of undesirable and/or invasive plant species.
- Design vegetation treatments in areas of high fire frequency which facilitate firefighter safety, reduce the potential acres burned, and reduce the fire risk to GRSG habitat. Additionally, develop maps for GRSG habitat which spatially display existing fuels treatments that can be used to assist suppression activities. Give priority for implementing specific GRSG habitat restoration projects in annual grasslands, first to sites which are adjacent to or surrounded by PHMA or that reestablish continuity between priority habitats. Annual grasslands are a second priority for restoration when the sites are not adjacent to PHMA, but within two miles of PHMA. The third priority for annual grassland habitat restoration projects are sites beyond two miles of PHMA. The intent is to focus restoration outward from existing, intact habitat.
- As funding and logistics permit, restore annual grasslands to a species composition characterized by perennial grasses, forbs, and

shrubs or one of that referenced in land use planning documentation.

- Emphasize the use of native plant species, recognizing that non-native species may be necessary depending on the availability of native seed and prevailing site conditions.
- Remove standing and encroaching trees within at least 110 yards of occupied GRSG leks and other habitats (e.g., nesting, wintering and brood rearing) to reduce the availability of perch sites for avian predators, as resources permit. Protect wildland areas from wildfire originating on private lands, infrastructure corridors, and recreational areas.
- Reduce the risk of vehicle- or human-caused wildfires and the spread of invasive species by installing fuel breaks and/or planting perennial vegetation (e.g., green-strips) paralleling road rights-of-way. Strategically place and maintain pre-treated strips/areas (e.g., mowing, herbicide application, etc.) to aid in controlling wildfire, should wildfire occur near PHMA or important restoration areas (such as where investments in restoration have already been made).

Fire Management

- Compile District/Forest level information into state-wide GRSG tool boxes. Tool boxes will contain maps, listing of resource advisors, contact information, local guidance, and other relevant information for each District/Forest, which will be aggregated into a state-wide document.
- Provide localized maps to dispatch offices and extended attack incident commanders for use in prioritizing wildfire suppression resources and designing suppression tactics.
- Assign a resource advisor with GRSG expertise, or who has access to GRSG expertise, to all extended attack fires in or near GRSG habitat. Prior to the fire season, provide training to GRSG resource advisors on wildfire suppression organization, objectives, tactics, and procedures to develop a cadre of qualified individuals. Involve state wildlife agency expertise in fire operations through:
 - instructing resource advisors during preseason trainings;
 - qualification as resource advisors;
 - coordination with resource advisors during fire incidents;
 - contributing to incident planning with information such as habitat features or other key data useful in fire decision making.

- On critical fire weather days, pre-position additional fire suppression resources to optimize a quick and efficient response in GRSG habitat areas.
- During periods of multiple fires, ensure line officers are involved in setting priorities.
- To the extent possible, locate wildfire suppression facilities (i.e., base camps, spike camps, drop points, staging areas, heli-bases, etc.) in areas where physical disturbance to GRSG habitat can be minimized. These include disturbed areas, grasslands, near roads/trails or in other areas where there is existing disturbance or minimal sagebrush cover. Power-wash all firefighting vehicles, to the extent possible, including engines, water tenders, personnel vehicles, and all-terrain vehicles (ATV) prior to deploying in or near GRSG habitat areas to minimize noxious weed spread. Minimize unnecessary cross-country vehicle travel during fire operations in GRSG habitat.
- Minimize burnout operations in key GRSG habitat areas by constructing direct fire line whenever safe and practical to do so.
- Utilize retardant, mechanized equipment, and other available resources to minimize burned acreage during initial attack. As safety allows, conduct mop-up where the black adjoins unburned islands, dog legs, or other habitat features to minimize sagebrush loss.
- Adequately document fire operation activities in GRSG habitat for potential follow-up coordination activities.

Wildlife/Greater Sage-Grouse RDFs

- During the period specified, manage discretionary surface disturbing activities and uses to prevent disturbance to GRSG during life cycle periods. Seasonal protection is identified for the following: Seasonal Protection within four (4) miles of active GRSG leks from March 1 through June 15, Seasonal protection of GRSG wintering areas from November 1 through March 31, Seasonal protection of GRSG wintering areas from November 1 through March 31, Seasonal protection of GRSG brood-rearing habitat from May 15 to August 15.
- For any surface-disturbing activities proposed in sagebrush shrublands, the Proponent will conduct clearance surveys for GRSG breeding activity during the GRSG's breeding season before initiating the activities. The surveys must encompass all sagebrush shrublands within 3.0 miles of the proposed activities. Three surveys would be conducted every season during pre-planning operations. In areas found to have probable GRSG activity, surveys should continue during project operations.

- Ensure that all authorized ground disturbing projects have vegetation reclamation standards suitable for the site type prior to construction and ensure that reclamation to appropriate GRSG standards are budgeted for.
- Remove or modify existing water developments that are negatively impacting GRSG habitats.
- Build or modify exclosures so that they large enough to provide hiding cover to GRSG and other wildlife and to reduce the possibility of wildlife collisions with fences. This includes mitigation for reduction of Culex mosquitos.
- In PHMA, remove livestock ponds built in perennial channels that are negatively impacting riparian habitat, either directly or indirectly, and do not permit new ones to be built in these areas.
- Ensure that any water developments do not remove more than 50 percent of water from any spring or other surface water source, in accordance with state water law and subject to valid existing rights. Water developments should make water available on the ground for wildlife use. All troughs should be outfitted with the appropriate type and number of wildlife escape ramps.
- On BLM and National Forest System Wilderness and Wilderness Study Areas (WSAs), mechanized equipment may be used to protect areas of high resource concerns or values; however, the use of mechanized equipment will be evaluated against potential long-term resource damage.
- During the period specified, manage discretionary surface disturbing activities and uses to prevent disturbance to GRSG during life cycle periods. Seasonal protection is identified for the following:
 - Seasonal Protection within four (4) miles of active GRSG leks from March 1 through June 15.
 - Seasonal protection of GRSG wintering areas from November 1 through March 31.
 - Seasonal protection of GRSG brood-rearing habitat from May 15 to August 15.
- All field and district offices should apply BLM IM 2013-094 or similar methodology until superseded related to drought management planning.
- Use aircraft to check livestock in areas where consistent trespass has been noted and access/manpower is difficult to obtain.
- In pastures where short term livestock utilization standards are not met, AUMs grazed the following year should be reduced accordingly. AUMs cannot be applied to another pasture.

- In PHMA, any pasture scheduled for rest as part of its grazing permit schedule should not be used if short term utilization limits have been exceeded.
- Fire and fuels operations should focus on protecting and enhancing occupied GRSG habitats. This includes taking into account the feasibility and cost of future rehabilitation efforts during WFDSS planning and general fire operations in all occupied GRSG habitats.
- To reduce the probability of Culex mosquitos or reductions in nesting habitat volumes, evaluate the need for livestock reductions or changes in seasons of use before considering construction of new livestock ponds in PHMA.
- Implement appropriate time-of-day and/or time-of year restrictions for future construction and/or maintenance activities in known GRSG habitat to avoid adverse impacts.
- In evaluating land and realty actions, consider off-site mitigation on a case-by-case basis.
- Avoid authorizing rights-of-way that would result in significant habitat loss, habitat fragmentation, or population disturbance.
- Reseed all areas requiring reclamation with a seed mixture appropriate for the soils, climate, and landform of the area to ensure recovery of the ecological processes and habitat features of the potential natural vegetation, and to prevent the invasion of noxious weeds or other exotic invasive species.
- Work with existing rights-of-way holders in an attempt to install perch guards on all poles where existing utility poles are located within 3miles of known leks, where necessary. Stipulate these requirements at grant renewal.
- Authorize new rights-of-way at least 3.3 km (2miles) or other appropriate distances (based on features such as type of project, topography, etc.) from leks.
- Use existing utility corridors and consolidate rights-of-way to reduce habitat loss, degradation, and fragmentation. Whenever possible, install new power lines within existing utility corridors. Otherwise power lines should be located at least 3 miles from breeding, nesting, brood-rearing and winter habitat.
- Where GRSG conservation opportunities exist, BLM field offices and Forests should work in cooperation with righters-of-way holders to conduct maintenance and operation activities, authorized under an approved ROW grant, to avoid and minimize effect on GRSG habitat.

- When renewing or amending ROWs, assess the impacts of ongoing use of the ROW to GRSG habitat and minimize such impacts to the extent allowed by law.
- Work with applicants to minimize habitat loss, fragmentation, and direct and indirect effects to GRSG and its habitat.
- Conduct pre-application meetings for all new ROW proposals consistent with the ROW regulations (43 CFR 2804.10) and consistent with current renewable energy ROW policy guidance (WO-IM-2011-061, issued February, 2011). Assess the impact of the proposed ROW on GRSG and its habitat, and implement the following: Ensure that reasonable alternatives for siting the ROW outside of GRSG habitat or within a BLM designated utility corridor are considered and analyzed in the NEPA document; and identify technically feasible best management practices, conditions, (e.g., siting, burying power lines) that may be implemented in order to eliminate or minimize impacts.
- For ROWs where the total project disturbance for the ROW and any connected action is less than 1 linear mile, or 2 acres of disturbance, develop mitigation measures related to construction, maintenance, operation, and reclamation activities that as determined in cooperating with the Nevada Department of Wildlife, would cumulatively maintain or enhance GRSG habitat.
- For ROW applications where the total project disturbance from the ROW and any connected action is greater than 1 linear mile or 2 acres of disturbance, the each District will determine that it is appropriate to authorize a ROW, utilizing the following process:
 - The BLM will document the reasons for its determination and require the ROW holder to implement measures to minimize impacts to sage grouse habitat.
 - In addition to considering opportunities for onsite mitigation, the BLM will, to the extent possible, cooperate with the project proponents to develop and consider implement appropriate offset mitigation that the BLM, coordinating with the Nevada Department of Wildlife determines would avoid or minimize habitat and population-level effects (Refer to WO-IM 2012-043 Greater Sage Grouse Interim Management Policies and Procedures.) When developing such mitigation, the BLM should consider compensating for the short-term and long-term direct and indirect loss of GRSG and its habitat.
- Establish speed limits on BLM and National Forest System roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.

- Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.
- Authorize ROWs by applying appropriate BMPs (BLM Wind Energy Development EIS, June 2005), land use restrictions, stipulations, and mitigation measures.
- An Environmental Assessment is required for applications for monitoring sites in known Sage-Grouse Population Management Units.

ALTERNATIVE E

Under Alternative E, Required Design features have been brought forward by the State of Nevada as part of their Nevada Greater Sage Grouse Conservation Plan and would only apply to lands in the state of Nevada within the subregion. Site Specific Consultation Based Design Features (here after Design Features) are used to minimize impacts to GRSG and its habitat due to disturbances on a project by project and site by site basis. Design Features in the state of Nevada's plan apply to all newly proposed projects and modifications to existing projects. Existing projects within SGMAs are not currently subject to Design Features; however all Design Features listed below, according to program area, are required to be considered as part of the SETT Consultation process. The state of Nevada recognizes that all Design Features may not be practical, feasible, or appropriate in all instances considering site conditions and project specifications, nor is this list completely exhaustive. Therefore, the SETT in coordination with the project proponent, will consider all of the listed Design Features on a site-specific basis. If certain Design Features are determined to not be practical, feasible, or appropriate for the specific project site, the SETT will document the reasons the Design Features were not selected. The SETT may also consider additional Design Features that may minimize impacts to GRSG and its habitat that are not specifically listed here and document the reasons for selecting the additional Design Features.

Mineral Resources

Fluid Minerals

Operations

- Cluster disturbances associated with operations and facilities as close as possible, unless site specific conditions indicate that disturbances to sagebrush habitat would be reduced if operations and facilities locations would best fit a unique special arrangement.
- Use directional and horizontal drilling to reduce surface disturbance.
- Place infrastructure in already disturbed locations.

- Apply a phased development approach with concurrent reclamation through a coordination process among relevant parties.
- Place liquid gathering facilities outside of priority areas. Have no tanks at well locations within priority habitat areas to minimize truck traffic, and perching and nesting sites for ravens and raptors.
- Pipelines should be under or immediately adjacent to the road.
- Reduce motor vehicle travel during field operations through development and implementation of remote monitoring and control systems plans.
- To reduce predator perching, limit the construction of vertical facilities and fences to the minimum number and amount needed.
- Site and/or minimize linear ROWs or SUAs to reduce disturbance to GRSG habitats.
- Co-locate new utility developments (power lines, pipelines, etc.) and transportation routes with existing utility or transportation corridors where adequate spacing separation can be achieved in order to preserve grid reliability and ongoing maintenance capability.
- Bury distribution power lines of up to 35kV where ground disturbance can be minimized. Where technology and economic factors allow, bury higher kV power lines.
- Power lines, flow lines, and small pipelines should be co-located under or immediately adjacent to existing roads.
- Permanent structures, which create movement (e.g., pump jack) should be designed or sited to minimize impacts to GRSG.
- Preclude GRSG access to pits and tanks through use of practical techniques (e.g. covers, netting, birdballs, location, etc.).
- Equip tanks and other above-ground facilities with structures or devices that discourage nesting and/ or perching of raptors, corvids, and other predators.
- Control the spread and effects of non-native, invasive plant species (Evangelista et al. 2011) (e.g., by washing vehicles and equipment, minimize unnecessary surface disturbance). All projects within SGMAs should have a noxious weed management plan in place prior to construction and operations.
- Use only closed-loop systems for drilling operations and no reserve pits.
- Reduce the potential for creating excessive or unintended mosquito habitat and associated risk of West Nile Virus impacts to GRSG. This can be implemented through minimizing pit and pond

construction and, where necessary, size of pits and ponds (Doherty 2007).

- Remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues and West Nile virus has been identified as a concern in the project area, use the following steps for reservoir design to limit favorable mosquito habitat (Doherty 2007):
 - Overbuild size of ponds for muddy and non-vegetated shorelines.
 - Build steep shorelines to decrease vegetation and increase wave actions. Ponds with steep shorelines will be equipped with NDOW approved wildlife escape ramps.
 - Avoid flooding terrestrial vegetation in flat terrain or low lying areas.
 - Construct dams or impoundments that restrict down slope seepage or overflow.
 - Line the channel where discharge water flows into the pond with crushed rock.
 - Construct spillway with steep sides and line it with crushed rock.
 - Treat waters with larvicides to reduce mosquito production where water occurs on the surface if necessary.
- Limit noise to less than 10 decibels above ambient measures at sunrise at the perimeter of a lek during active lek season (Patricelli et al. 2010, Blickley et al. 2012).
- Require noise shields when drilling during the lek, nesting, brood-rearing, or wintering season.
- Fit new transmission towers with anti-perch devices (Lammers and Collopy 2007).
- Design and construct fences consistent with NRCS fence standards and specifications Code 382 and, where appropriate, use fence markers (Sage Grouse Initiative 2013).
- Locate new compressor stations outside priority habitats. Otherwise design them to reduce noise that may be directed towards priority habitat.
- Implement site keeping practices to preclude the accumulation of debris, solid waste, putrescible wastes, and other potential anthropogenic subsidies for predators of GRSG (Bui et al 2010).
- Locate man camps outside of priority habitats.

Reclamation

- Include objectives for ensuring habitat rehabilitation to meet GRSG habitat needs in reclamation practices/sites (Pyke 2011). Address post reclamation management in reclamation plans such that goals and objectives are to protect and improve GRSG habitat needs.
- Reseed all areas requiring reclamation with a seed mixture appropriate for the soils, climate, and landform of the area to ensure recovery of the ecological processes and habitat features of the potential natural vegetation, and to prevent the invasion of noxious weeds or other exotic invasive species. Long-term monitoring is required to determine success.
- Maximize the area of interim and concurrent reclamation on long-term access roads and well pads, including reshaping, topsoiling and revegetating cut-and-fill slopes. In coordination with appropriate agencies, consider development of fuel breaks in reclamation design.
- Restore disturbed areas at final reclamation to the near pre-disturbance landforms and the desired plant community.
- Irrigate interim reclamation if necessary for establishing seedlings more quickly and if water rights are available.
- Utilize mulching techniques to expedite reclamation and to protect soils.
- Ensure that all authorized ground disturbing projects have vegetation reclamation standards suitable for the site type prior to construction and ensure that reclamation to appropriate GRSG standards are budgeted for in the reclamation bond.

Locatable Minerals

For consistency, GRSG Site Specific Consultation Based Design Features for locatable minerals shall be considered in association with state and federal permitting requirements including bonding, if applicable.

Operations

- Cluster disturbances associated with operations and facilities as close as possible unless site specific conditions indicate that disturbances to sagebrush habitat would be reduced if operations and facilities locations would best fit a unique special arrangement.
- Minimize site disturbance through site analysis and facility planning.
- Place infrastructure in already disturbed locations where the habitat has not been restored.
- Apply a phased development approach with concurrent reclamation through a coordination process among relevant parties.

- Reduce motor vehicle travel during field operations through development and implementation of remote monitoring and control systems plans.
- To reduce predator perching, limit the construction of vertical facilities and fences to the minimum number and amount needed.
- Site and/or minimize linear ROWs or SUAs to reduce disturbance to GRSG habitats.
- Co-locate new utility developments (power lines, pipelines, etc.) and transportation routes with existing utility or transportation corridors where adequate separation can be achieved in order to preserve grid reliability and ongoing maintenance.
- Bury distributive power lines of up to 35 kV where ground disturbance can be minimized. Where technology and economic factors allow, bury higher kV power lines.
- Preclude GRSG access to pits and tanks through use of practical techniques (e.g. covers, netting, birdballs, location, etc.).
- Equip tanks and other above ground facilities with structures or devices that discourage nesting and/or perching of raptors, corvids, and other predators.
- Control the spread and effects of Nevada Department of Agriculture listed noxious weeds (NAC 555.010, classes A through C, inclusive) and undesirable non-native plant species (Gelbard and Belnap 2003, Bergquist et al. 2007). All projects within SGMA should have a noxious weed management plan in place prior to construction and operations.
- Reduce the potential for creating excessive or unintended mosquito habitat and associated risk of West Nile Virus impacts to sage-grouse. This can be implemented through minimizing drill and process pit and pond construction and, where necessary, size of drill and process pits and ponds (Doherty 2007).
- Reduce habitat for mosquitoes that vector West Nile virus. If West Nile virus has been identified as a concern in the project area, limit favorable mosquito habitat.
- Limit noise to less than 10 decibels above ambient measures one hour before sunrise until 9:00 a.m. within 3 miles of a lek of a lek during active lek season, March 1 through May 15 (Patricelli et al. 2010, Blickley et al. 2012, and Patricelli et al. 2013).
- Require noise shields when drilling during the lek, nesting, brood-rearing, or wintering season.
- Fit new transmission towers with anti-perch devices (Lammers and Collopy 2007).

- Design and construct fences consistent with NRCS fence standards and specifications Code 382 and, where appropriate, use fence markers (Sage Grouse Initiative 2013) around sumps.
- Implement site keeping practices to preclude the accumulation of debris, solid waste, putrescible wastes, and other potential anthropogenic subsidies for predators of GRSG (Bui et al 2010).
- Locate man camps outside of priority GRSG habitats.

Reclamation

- Include objectives for ensuring habitat rehabilitation to meet GRSG habitat needs in reclamation practices/sites (Pyke 2011). Address post reclamation management in reclamation plans such that goals and objective are to protect and improve GRSG habitat needs.
- Reseed all areas requiring reclamation with a seed mixture appropriate for the soils, climate, and landform of the area to ensure recovery of the ecological processes and habitat features of the potential natural vegetation, and to prevent the invasion of noxious weeds or other exotic invasive species. Long-term monitoring is required to determine success.
- Maximize the area of interim and concurrent reclamation on infrastructure related disturbances through reshaping/regrading, topsoiling and revegetating cut and fill slopes. In coordination with appropriate agencies, consider development of fuel breaks in reclamation design.
- Ensure that all authorized ground disturbing projects have vegetation reclamation standards suitable for the site type prior to construction and ensure that reclamation to appropriate GRSG standards are budgeted for in the reclamation bond.
- Irrigate interim reclamation as necessary during dry periods when valid water rights exist.
- Utilize mulching techniques to expedite reclamation.

Salable and Non-Energy Minerals

Operations

- Cluster disturbances associated with operations and facilities as close as possible unless site specific conditions indicate that disturbances to sagebrush habitat would be reduced if operations and facilities locations would best fit a unique special arrangement.
- Minimize site disturbance through site analysis and facility planning.
- Place infrastructure in already disturbed locations where the habitat has not been restored.

- Apply a phased development approach with concurrent reclamation through a coordination process among relevant parties.
- Reduce motor vehicle travel during field operations through development and implementation of remote monitoring and control systems plans.
- To reduce predator perching, limit the construction of vertical facilities and fences to the minimum number and amount needed.
- Site or minimize linear ROWs or SUAs to reduce disturbance to sage-grouse habitats.
- Co-locate new utility developments (power lines, pipelines, etc.) and transportation routes with existing utility or transportation corridors where adequate separation can be achieved in order to preserve grid reliability and ongoing maintenance.
- Bury distributive power lines of up to 35 kV where ground disturbance can be minimized. Where technology and economic factors allow, bury higher kV power lines.
- Preclude sage-grouse access to pits and tanks through use of practical techniques (e.g. covers, netting, birdballs, location, etc.).
- Equip tanks and other above ground facilities with structures or devices that discourage nesting or perching of raptors, corvids, and other predators.
- Control the spread and effects of Nevada Department of Agriculture listed noxious weeds (NAC 555.010, classes A through C, inclusive) and undesirable non-native plant species (Gelbard and Belnap 2003, Bergquist et al. 2007).. All projects within SGMA should have a noxious weed management plan in place prior to construction and operations.
- Reduce the potential for creating excessive or unintended mosquito habitat and associated risk of West Nile Virus impacts to sage-grouse. This can be implemented through minimizing pit and pond construction and, where necessary, size of pits and ponds. Where West Nile virus has been identified as a concern, restrict pond and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).
- Remove or re-inject produced water to reduce habitat for mosquitoes that vector West Nile virus. If surface disposal of produced water continues and West Nile virus has been identified as a concern in the project area, use the steps described under “Fluid Minerals” for reservoir design to limit favorable mosquito habitat (Doherty 2007).

- Limit noise to less than 10 decibels above ambient measures one hour before sunrise until 9:00 a.m. within 3 miles of a lek during active lek season, March 1 through May 15 (Patricelli et al. 2010, Blickley et al. 2012, and Patricelli et al. 2013).
- Require noise shields when drilling during the lek, nesting, brood-rearing, or wintering season.
- Fit new transmission towers with anti-perch devices (Lammers and Collopy 2007).
- Design and construct fences consistent with NRCS fence standards and specifications Code 382 and, where appropriate, use fence markers (Sage Grouse Initiative 2013) around sumps.
- Implement site keeping practices to preclude the accumulation of debris, solid waste, putrescible wastes, and other potential anthropogenic subsidies for predators of sagegrouse (Bui et al 2010).
- Locate man camps outside of priority sage-grouse habitats.

Reclamation

- Include objectives for ensuring habitat rehabilitation to meet sage-grouse habitat needs in reclamation practices/sites (Pyke 2011). Address post reclamation management in reclamation plans such that goals and objective are to protect and improve sage-grouse habitat needs.
- Reseed all areas requiring reclamation with a seed mixture appropriate for the soils, climate, and landform of the area to ensure recovery of the ecological processes and habitat features of the potential natural vegetation, and to prevent the invasion of noxious weeds or other exotic invasive species. Long-term monitoring is required to determine success.
- Reclamation In coordination with appropriate agencies, consider development of fuel breaks in reclamation design.
- Maximize the area of interim and concurrent reclamation on infrastructure related disturbances through reshaping/regrading, topsoiling and revegetating cut and fill slopes. In coordination with appropriate agencies, consider development of fuel breaks in reclamation design.
- Ensure that all authorized ground disturbing projects have vegetation reclamation standards suitable for the site type prior to construction and ensure that reclamation to appropriate sage-grouse standards are budgeted for in the reclamation bond.
- Restore disturbed areas at final reclamation to near pre-disturbance landform and the desired plant community.

- Irrigate interim reclamation as necessary during dry periods when valid water rights exist.
- Utilize mulching techniques to expedite reclamation.

Fuels and Fire Management and Post-Fire Rehabilitation

- Fire and fuels operations should focus on protecting and enhancing occupied GRSG habitats. This includes taking into account the feasibility and cost of future rehabilitation efforts during Wildland Fire Decision Support Tree planning and general fire operations in all occupied GRSG habitats.

Fuels Management

- Design fuels treatment objective to protect existing sagebrush ecosystems, modify fire behavior, restore ecological function, and create landscape patterns which most benefit sage-grouse habitat.
- Incorporate resilience and resistance and other best available science concepts into fuels treatment planning activities
- Provide training to fuels treatment personnel on sage-grouse biology, habitat requirements, and identification of areas used locally.
- Fuels treatment project design in sagebrush and pinyon-juniper encroached sagebrush habitats must be based on the best available science. At a minimum, project proponents will consider best available science including: use of site appropriate state and transition models; ecological site characteristics; and, the evaluation of resilience to disturbance and resistance to invasive annual grasses.
- Ensure the proposed prescription burning plans meet the need of the resource via a comprehensive review by proponents, fire managers, wildlife biologists and resource managers, at a minimum.
- Use prescriptive fire use on project sites where state and transition models, ecological site descriptions and existing high site resilience/resistance are used as principle components of the prescription planning process. The desired outcome of all prescription fire use in appropriate sagebrush habitat is to minimize undesirable long-term effects on vegetation or soils (e.g., minimize mortality of desirable perennial herbaceous species and reduce risk of annual grass invasion).
- Ensure proposed sagebrush treatments are planned with full interdisciplinary input pursuant to NEPA and coordination with NDOW and SETT, and that treatment acreage is conservative in the context of surrounding sage-grouse seasonal habitats and landscape.

- Incorporate roads and natural fuel breaks into fuel break design
- Utilize supervised livestock grazing as a tool to reduce fuels and control non-native species. Targeted grazing needs to be conducted within the framework of the sagegrouse habitat objectives (Table 4-1).
- Power-wash all vehicles and equipment involved in fuels management activities prior to entering the area to minimize the introduction of undesirable and/or invasive plant species.
- Design vegetation treatments in areas of high fire frequency, which facilitate firefighter safety, reduce the potential acres burned, and reduce the fire risk to GRSG habitat. Additionally, develop maps for GRSG habitat, which spatially display existing fuels treatments that can be used to assist suppression activities.
- For implementing specific sage-grouse habitat rehabilitation projects in annual grasslands, first give priority to sites which are adjacent to or surrounded by Core Management Areas or that reestablish continuity between priority habitats. Annual grasslands are a second priority for rehabilitation when the sites are not adjacent to Core Management Areas, but within two miles of Core Management Areas. The third priority for annual grassland habitat restoration projects are sites beyond two miles of Core Management Areas. The intent is to focus restoration outward from existing, intact habitat. Within these criteria, projects should be prioritized based on probability of success based on current condition, ecological site and state-and-transition modeling if available.
- As funding and logistics permit, rehabilitate annual grasslands to a species composition characterized by perennial grasses, forbs, and shrubs with the goal of establishing a functional ecological site based on state-and-transition modeling and ecological site descriptions.
- Emphasize the use of native plant species, recognizing that non-native species may be necessary depending on the availability of native seed and prevailing site conditions
- Based on ecological site descriptions, remove encroaching pinyon and juniper trees from areas within at least 3 kilometers (1.86 miles) of occupied GRSG leks (Connelly et al. 2000) and from other limiting habitats at least 850 meters (e.g., nesting, wintering and brood rearing) to reduce the availability of perch sites for avian predators, as resources permit (Connelly et al 2000, Casazza et al. 2011).
- Protect wildland areas from wildfire originating on private lands, infrastructure corridors, and recreational areas.

- Reduce the risk of vehicle- or human-caused wildfires and the spread of invasive species by installing and maintaining fuel breaks and/or planting perennial vegetation (e.g., green-strips) paralleling road rights-of-way. Strategically place and maintain pre-treated strips/areas (e.g., mowing, herbicide application, targeted grazing, etc.) to aid in controlling wildfire, should wildfire occur near SGMA or important restoration areas (such as where investments in restoration have already been made).
- All fuels management projects should include short and long term monitoring to ensure success and provide for adaptive management. Multiple revegetation entries may be required to ensure success.

Fire Management

- Compile state and local government/District/Forest level information into state-wide sage-grouse tool boxes. Tool boxes will contain maps, listing of state and local resource advisors, contact information, local guidance, and other relevant information for each state and local government/District/Forest, which will be aggregated into a state-wide document. Update the toolbox annually or continually.
- Provide localized maps to dispatch offices and extended attack incident commanders for use in prioritizing wildfire suppression resources and designing suppression tactics.
- Assign a state and/or local resource advisor with GRSG expertise, or who has access to GRSG expertise, to all extended attack fires in or near GRSG habitat. Prior to the fire season, provide training to GRSG resource advisors on wildfire suppression organization, objectives, tactics, and procedures to develop a cadre of qualified individuals. Involve state wildlife agency expertise in fire operations through:
 - instructing resource advisors during preseason trainings;
 - qualification as resource advisors;
 - coordination with resource advisors during fire incidents
 - contributing to incident planning with information such as habitat features or other key data useful in fire decision making.
- On critical fire weather days, pre-position additional local, state, and federal fire suppression resources to optimize a quick and efficient response in GRSG habitat areas.
- Encourage local resources (volunteer fire departments and country equipment) to respond to initial attack efforts and further encourage these agencies to obtain required ICS training to be able

to run incidents for longer periods when needed during critical fire periods.

- During periods of multiple fires, ensure line officers, in consultation with state and local resource advisors are involved in setting priorities.
- To the extent possible, locate wildfire suppression facilities (i.e., base camps, spike camps, drop points, staging areas, heli-bases, etc.) in areas where physical disturbance to GRSG habitat can be minimized. These include disturbed areas, grasslands, near roads/trails or in other areas where there is existing disturbance or minimal sagebrush cover.
- Power-wash all firefighting vehicles, to the extent possible, including engines, water tenders, personnel vehicles, and all-terrain vehicles (ATV) prior to deploying in or near GRSG habitat areas to minimize noxious weed spread. Minimize unnecessary cross-country vehicle travel during fire operations in GRSG habitat.
- Minimize burnout operations in key GRSG habitat areas by constructing direct fire line whenever safe and practical to do so.
- Utilize retardant, mechanized equipment, and other available resources to minimize burned acreage during initial attack.
- As safety allows, conduct mop-up where the black adjoins unburned islands, dog legs, or other habitat features to minimize sagebrush loss.
- Adequately document fire operation activities in GRSG habitat for potential follow-up coordination activities.
- Coordinate and utilize local fire suppression resources to the maximum extent possible.
- Eliminate “burning out” islands and fingers of unburned GRSG habitat, unless lives and property are at risk.

Post-Fire Rehabilitation

- Emphasis should be on fall revegetation to ensure greatest likelihood of success.
- All post-fire rehabilitation projects should include short- and long-term monitoring to ensure success and provide for adaptive management. Multiple revegetation entries may be required to ensure success. Emphasize the use of native plant species in post-fire rehabilitation, recognizing that non-native species may be necessary depending on the availability of native seed and prevailing site conditions. Selected species maintain site ecological function based on pre-burn conditions and anticipated threat of invasive and

noxious weed establishment. Use ecological site descriptions and state-and-transition models if available.

- Reseed all burned areas requiring rehabilitation with a seed mixture appropriate for the soils, climate, and landform of the area to ensure recovery of the ecological processes and habitat features of the potential natural vegetation, and to prevent the invasion of noxious weeds or other exotic invasive species. Long-term monitoring is required to determine success.
- Power-wash all vehicles and equipment prior to entering sage-grouse habitat rehabilitation/restoration areas to minimize noxious weed spread. Minimize unnecessary cross-country vehicle travel during rehabilitation/restoration operations in sage-grouse habitat.
- Consider Integrated Pest Management (IPM) practices to ensure greater initial control of invasive and noxious plant species.
- Sage-grouse seasonal habitat requirements must be considered when selecting revegetation materials in all burned potential and current sage-grouse habitat.
- Prioritize shrub island plantings in large burn areas which may lack sufficient shrub seed sources, in order to ensure the reestablishment of the shrub component.

Vegetation Management

- Avoid sagebrush removal in sage-grouse breeding or wintering habitats.
- Maintain all remaining large intact sagebrush patches, particularly at low elevations, through active management, in order to increase resistance and resilience to reduce the risk of being lost to wildfire.
- Limit habitat treatments in winter ranges to actions that maintain or expand current or needed levels of sagebrush available in winter.

Lands and Realty

Leases and Permits

- Permits and leases must include stipulations to minimize impacts to sage-grouse and sage-grouse habitat based upon the specific activity and ensure no net loss of sagegrouse habitat.

Right-of-Ways (ROWS)

- Work with existing rights-of-way holders to encourage installation of perch guards on all poles where existing utility poles are located within 5 km (3.2 miles) of known leks (Coates et al. 2013).

- Use existing utility corridors and consolidate rights-of-way to reduce habitat loss, degradation, and fragmentation. Install new power lines within existing utility corridors.
- Where sage-grouse conservation opportunities exist, BLM field offices and Forests should work in cooperation with rights-of-way holders to conduct maintenance and operation activities, authorized under an approved ROW grant, to avoid and minimize effect on sage-grouse habitat.
- When renewing or amending ROWs, assess the impacts of ongoing use of the ROW to sage-grouse habitat and incorporate stipulations, which minimize such impacts to the extent allowed by law.
- Conduct pre-application meetings with the BLM or Forest Service and SETT for all new ROW proposals consistent with the ROW regulations (43 CFR 2804.10) and consistent with current renewable energy ROW policy guidance (WO-IM-2011-061, issued February, 2011). Assess the impact of the proposed ROW on GRSG and its habitat, and implement the following: Ensure that reasonable alternatives for siting the ROW outside of GRSG habitat or within a BLM designated utility corridor are considered and analyzed in the NEPA document; and identify technically feasible best management practices, conditions, (e.g., siting, burying power lines) that may be implemented in order to eliminate or minimize impacts.
- Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.
- Authorize ROWs for wind energy development projects by applying appropriate Design Features as specified in the BLM Wind Energy Development EIS (BLM 2005), land use restrictions, stipulations, and mitigation measures.
- Bury distribution power lines of up to 35kV where ground disturbance can be minimized. Where technology and economic factors allow, bury higher kV power lines.
- Where existing leases or rights-of-way (ROWs) have had some level of development (road, fence, well, etc.) and are no longer in use, reclaim the site by removing these features, without interfering with valid pre-existing rights, and restoring the habitat.
- Within designated ROW corridors encumbered by existing ROW authorizations: new ROWs should be co-located to the extent practical and feasible with the entire footprint of the proposed project adjacent to or within the existing disturbance associated

with the authorized ROWs taking into account operational requirements and safety.

- Subject to valid, existing rights, where new ROWs associated with valid existing rights are required, co-locate new ROWs within existing ROWs or where it best minimizes sage-grouse impacts. Use existing roads, or realignments as described above, to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then build any new road constructed to the minimum standard necessary.
- Upon project completion, roads used for commercial access on public lands would be reclaimed, unless, based on site-specific analysis, the route provides specific benefits for public access and does not contribute to resource conflicts.
- Construct new power lines outside of sage-grouse habitat wherever possible. If power lines cannot be sited outside of sage-grouse habitat, site power lines in the least suitable habitat possible or bury power lines, where technology and economic factors allow.
- Remove power lines that traverse important sage-grouse habitats when facilities being serviced are no longer in use or when projects are completed.
- Install anti-perching and anti-nesting measures on new tall structures, such as power lines, commensurate with the design of the structures.

Travel and Transportation

- Work with local government to enforce speed limits and design roads to be driven at speeds appropriate to minimize vehicle/wildlife collisions.
- Conduct rehabilitation of roads, primitive roads, and trails not designated in travel management plans where such plans exist and have been approved for implementation. This also includes primitive route/roads that were not designated in wilderness study areas and within lands managed for wilderness characteristics that have been selected for protection, with due consideration given to any historical significance of existing trails.
- When reseeding roads, primitive roads, and trails, use appropriate seed mixes and consider the use of transplanted sagebrush in order to meet sage-grouse habitat restoration objectives (Table 4-1). Where invasive annual grasses are present, herbicides may be used to enhance the effectiveness of any seeding and to also establish islands of desirable species for dispersion.
- Use existing roads, or realignments to access valid existing rights that are not yet developed. If valid existing rights cannot be

accessed via existing roads, then any new roads would be constructed to the minimum standard necessary to support the intended use.

- Work with local governments to minimize upgrading of existing routes that would change route category (road, primitive road, or trail) or capacity unless the upgrading would have minimal impact on sage-grouse habitat, is necessary for motorist safety, or eliminates the need to construct a new road, while providing for the intended use.
- Manage on-road travel and OHV use in key grouse areas to avoid disturbance during critical times such as winter and nesting periods.
- Consider road removal, realignment, or seasonal closures where appropriate to avoid degradation of habitat and /or to avoid disturbance during critical periods of the sage-grouse life cycle.

Recreation

- Special recreation permits must have stipulations to minimize impacts to sage-grouse and sage-grouse habitat based upon the specific activity and ensures no net unmitigated loss of sage-grouse habitat.
- Issue special recreation permits with appropriate distance and timing restrictions to minimize impacts to seasonal sage-grouse habitat.
- Develop trail mapping, and educational campaigns to reduce recreational impacts on sage-grouse, including effects of cross country travel.
- Where feasible, locate recreation trails strategically to create or augment fuel breaks in the margins of sage-grouse habitats and landscapes and not create roads or trails where they cause net negative direct and indirect impacts.
- Take measures to minimize or reduce activities and to avoid an ambient noise level increase >10 dB at the edge of leks during the lekking season generally, March 1 through May 15 from one hour before sunrise until 9:00 a.m. (Patricelli et al. 2010, Blickley et al. 2012, Patricelli et al. 2013).

Energy Development and Infrastructure

- Adopt standards outlined in Nevada Energy and Infrastructure Development Standards to Conserve Greater Sage-grouse Populations and Their Habitats, April 2010, pgs. 25-29 (Appendix G).

Wild Horses and Burros

- When conducting NEPA analysis for wild horse and burro management activities, water developments or other rangeland improvements for wild horses in sage-grouse habitat, address the direct and indirect effects to sage-grouse populations and habitat. Implement any water developments or rangeland improvements using the criteria for wild horses and burros year around use and consistent with necessary rights and right of ways in sage-grouse habitats. Incorporate the NRCS water development standards and additional criteria listed below, including Codes 614, 574, 533, 642, and 516.

Livestock Grazing and Range Management

- Where applicable and as part of a ranch management plan, use the Natural Resource Conservation Service (NRCS) Conservation Practice Standards and Specification listed below.¹ In addition, use the recommendations additions to the standards developed by NRCS and NDOW as part of NRCS' Sage-grouse Initiative and further expanded by the state of Nevada in this document:
 - Code 645: Upland Wildlife Habitat Management
 - Code 528: Prescribed Grazing
 - Emphasize rest periods and/ or seasonal deferment when appropriate as part of the grazing management plan and restoration.
 - Code 614: Water Facilities
 - Avoid placement where existing sagebrush cover will be reduced near a lek, in nesting habitat, or winter habitat whenever possible. NDOW recommends structures be at least 1 mile from a lek.
 - Code 574: Spring Development
 - Springs may be developed as long as valid water claims or rights exist and development shows a net benefit to overall habitat within a SGMA.
 - Code 533: Pumping Plant
 - NDOW recommends the structure should not be placed within 3 miles of a lek to avoid disturbance to nesting sage-grouse.

¹ These USDA; NRCS Conservation Practice Codes as well as others can be found at:
http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/technical/references/?cid=nrcs143_026849

- Code 642: Water Well
 - Well placement should encourage dispersion of livestock and provide for a neutral or no net negative impact to habitat within a SGMA. Further water developments will decrease concentrated livestock and wildlife use and further protect sagebrush habitats.
- Code 516: Livestock Pipeline
 - Pipelines shall be replaced as needed to provide for better dispersion of livestock.
 - Pipelines shall be replaced along existing pipelines, roadways, or fences.
 - Replacement and maintenance of pipelines shall use the least invasive techniques and extensive work requiring heavy equipment shall be done in a manner consistent with season of use by the GRSG (i.e. replacing improvements in GRSG winter habitat during the summer and replacing improvements in breeding and nesting habitat during the fall)
 - Replacement of improvements shall be allowed in order to not jeopardize existing and valid claims and rights.
- Code 410: Grade Stabilization Structure
 - If possible, avoid the installation of these structures during the late summer brood rearing period. NDOW recommends structure placement in mid-September through late November.
- Code 382: Fence
 - If possible, fencing should not be constructed near a lek and should be avoided in winter habitats near ridges. To make a fence more visible, use white tipped metal fence posts, securing flagging or reflectors to the top fence wires, or slide sections of PVC pipe over the top wire (Stevenson and Reece 2012).
- Relocate or modify existing water developments (including locating troughs to further disperse livestock) that are having a net negative impact on GRSG habitats. Any changes to existing water developments must be conducted in accordance with State Water Law and in close consultation with the water right owner in order to avoid a “taking” of private property water rights.
- All troughs should be outfitted with the appropriate type and number of wildlife escape ramps.

- All field and district offices should apply BLM IM 2013-094 or similar methodology until superseded related to drought management planning.

Surface Disturbing Activities - General

- During the period specified, manage discretionary surface disturbing activities and uses to prevent disturbance to GRSG during life cycle periods. Seasonal protection is identified for the following:
 - Seasonal protection within three (3) miles of active GRSG leks from March 1 through June 15 during lekking hours of 1-hour before sunrise until 9:00 am.
 - Seasonal protection of GRSG suitable wintering areas from November 1 through March 31;
 - Seasonal protection of GRSG suitable brood-rearing habitat from May 15 to August 15.
- Implement appropriate time-of-day and/or time-of year restrictions for future construction and/or maintenance activities in known GRSG habitat
- Reseed all areas requiring reclamation with a seed mixture appropriate for the soils, climate, and landform of the area to ensure recovery of the ecological processes and habitat features of the potential natural vegetation, and to prevent the invasion of noxious weeds or other exotic invasive species. Long-term monitoring is required to determine success.
- Minimize the footprint of disturbances to avoid or minimize the potential for invasive plant infestations. When possible, do not remove native vegetation. Monitor, report, and treat all disturbance sites that become occupied by invasive plants, primarily cheatgrass, and all state listed noxious weeds. Pre- and post-disturbance activities must include prevention strategies prior to entering sites. Treatments, restoration, and monitoring are required for a minimum of three years or until the site is deemed noxious and invasive weed free following the disturbance. Reporting should be sent to the Nevada Department of Agriculture via the EDDMapS link on their website.
- Maximize the area of interim reclamation on long-term surface disturbing activities to including reshaping, topsoiling and revegetating areas no longer being disturbed within the overall project foot print.

Miscellaneous

- In Wilderness and Wilderness Study Areas (WSA), the state of Nevada will work with the federal land management agencies to

investigate the use of mechanized equipment in those areas in conformance with the Wilderness Act, Federal Land Policy and Management Act, and National Forest Management Act. The State will also support congressional efforts to investigate and responsibly use additional techniques (including mechanized) to protect or restore areas that exhibit unique or emergency circumstances (fire, P/J expansion, invasive weeds infestations, excessive fuels, etc.) in order to protect the area from long term resource damage.

- Work with federal, state, and local governments and project proponents to minimize anthropogenic subsidies for predators, including ravens.

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