

Table 2-2 Description of NTT, Citizen-Proposed, Sub-Regional, & No Action Alternatives (P) = Priority Habitat, (G) = General Habitat, (C) = Connectivity Habitat, (ADH) = All Designated Habitat				
NTT No.	Program Area	NTT Alternative	Conservation Alternative	Colorado Sub-Regional Alternative
Objective: Maintain and enhance populations and distribution of sage-grouse by protecting and improving sagebrush habitats and ecosystems that sustain sage-grouse populations.				
Travel & Transportation		Objective: Manage travel and transportation to 1) reduce mortality from vehicle collisions, 2) limit change in sage-grouse behavior, 3) avoid, minimize, and mitigate habitat fragmentation, 4) limit the spread of noxious weeds, and 5) limit disruptive activity associated with human access.		
1	Travel	(P) Limit motorized travel to existing roads, primitive roads, and trails at a minimum.	Same as NTT.	Same as NTT.
2	Travel	(P) Travel management should evaluate the need for permanent or seasonal road or area closures.	Same as NTT.	(ADH) Identify seasonal closure areas for sage-grouse.
3	Travel	(P) Complete activity level travel plans within five years of the record of decision. During activity level planning, where appropriate, designate routes with current administrative/agency purpose or need to administrative access only.	Same as NTT.	Same as NTT.
4	Travel	(P) Limit route construction to realignments of existing designated routes if that realignment has a minimal impact on sage-grouse habitat, eliminates the need to construct a new road, or is necessary for motorist safety	(ADH) Limit route construction to realignments of existing designated routes if that realignment has a minimal impact on sage-grouse habitat, eliminates the need to construct a new road, or is necessary for motorist safety. Mitigate any impacts with methods that have been demonstrated to be effective to offset the loss of sage-grouse habitat.	(P) Limit route construction to routes that will not adversely affect sage-grouse populations due to habitat loss or disruptive activities.
5	Travel	(P) 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 absolute minimum standard necessary, and add the surface disturbance to the total disturbance in the priority area. If that disturbance exceeds 3 % for that area, then evaluate and implement additional, effective mitigation necessary to offset the resulting loss of sage-grouse habitat.	Same as NTT, using a 4-mile buffer from leks to determine road route.	(P) Construct new roads to the appropriate Gold Book standard and add the surface disturbance to the total disturbance in the priority area. If anthropogenic disturbance as defined in Appendix XX exceeds 5% for that Colorado Management Zone, then make additional, effective mitigation necessary to offset the resulting loss of sage-grouse habitat.  Disturbance Exception Criteria: Where data-based documentation is available to warrant a conclusion that sage-grouse populations in the applicable Colorado Sage-Grouse Management Zone are healthy and stable at objective levels or increasing, and that the development will not adversely affect sage-grouse populations

**Comment [T11]:** The disturbance cap is repeatedly mentioned below. Perhaps insert a reference at the beginning of this table to Table XX for definition of disturbance cap. Table XX should also include a catch-all Threat under Lands and Realty that would include things like land-fills, parking lots, gas plants, and other commercial developments in rural areas (they seem to be left out of Table XX).

**Comment [T12]:** Why not permanent? I’m sure there are some BLM roads/2-tracks that could be closed to benefit not only GRSG but other species in addition.

**Comment [T13]:** Mitigation for unavoidable project impacts under BLM jurisdiction should occur whether or not the cap limit (5% or 3%) has been reached to help conserve GRSG, preferably in general habitat and linkage corridors in addition to priority habitat.

				due to habitat loss or disruptive activities, the authorized officer may authorize disturbance in excess of the 5% disturbance cap without requiring additional mitigation. In many cases, this exception will require project proponents to fund studies necessary to secure the “data-based documentation” requirement.
6	Travel	(P) Allow no 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.	(ADH) Allow no upgrading of existing routes that would change route category (road, primitive road, or trail) or capacity unless it is necessary for motorist safety, or eliminates the need to construct a new road. Any impacts shall be mitigated with methods that have been demonstrated to be effective to offset the loss of sage-grouse habitat.	(P) Allow upgrades to existing routes after documenting that the upgrade will not adversely affect sage-grouse populations due to habitat loss or disruptive activities.
7	Travel	(P) Conduct restoration of roads, primitive roads and trails not designated in travel management plans. This also includes primitive route/roads that were not designated in Wilderness Study Areas and within lands with wilderness characteristics that have been selected for protection in previous RMPs.	Same as NTT.	Same as NTT.
8	Travel	(P) When reseeding roads, primitive roads and trails, use appropriate seed mixes and consider the use of transplanted sagebrush.	(ADH) When reseeding closed roads, primitive roads and trails, use appropriate native seed mixes and require the use of transplanted sagebrush.	Same as NTT.
--	Travel	No similar action.	(ADH) Prohibit new road construction within 4 miles of active sage-grouse leks, and avoid new road construction in occupied sage-grouse habitat.	No similar action.
Recreation		Objective: Manage Recreation to avoid activities that 1) disrupt sage-grouse, 2) fragment sage-grouse habitat, or 3) spread noxious weeds.		
9	Recreation	(P) Only allow BLM Special Recreation Permits (SRPs) and FS Recreation Special Use Authorizations (RSUAs) in priority habitat that have neutral or beneficial effects to priority habitat areas.	Same as NTT.	(P) Allow SRPs that will not adversely affect sage-grouse populations due to habitat loss or disruptive activities.
--	Recreation	No similar action.	(ADH) Seasonally prohibit camping and other non-motorized recreation within 4 miles of active sage-grouse leks.	No similar action.
Lands and Realty Management		Objective: Manage the Lands and Realty program to avoid, minimize, and mitigate the loss of habitat and habitat connectivity through the authorizations of Rights-of-Way (ROWs), land tenure adjustments, proposed land withdrawals, agreements with partners, and incentive programs.		
Rights-of-Way (ROW)				
10	Lands/ Realty	(P) Make priority sage-grouse habitat areas exclusion areas for new BLM ROW or FS Special Use Authorization (SUA) permits. Consider the following exceptions:	(ADH) Occupied sage-grouse habitat areas shall be exclusion areas for new ROWs permits. Consider the following exceptions:	(P) Make priority sage-grouse habitat areas avoidance areas for new ROW permits.  Exception: Large transmission lines shall be located within the identified large transmission corridor. See Figure X.

**Comment [TI4]:** The NTT Report recommends a disturbance cap of 3% within a GRSG management analysis area for anthropogenic effects on all land ownerships. If the disturbance cap is increased to a 5% cap this needs to be justified in the Draft EIS through description of stable or increasing GRSG populations, and/or stable or increasing quantity and quality of GRSG habitat in Colorado as supported by scientific literature.

**Comment [TI5]:** Not in general or linkage corridor habitat? Seems like linkage corridors areas important as priority habitat and general habitat if continually fragmented, will provide less and less use for GRSG.

**Comment [TI6]:** I’d agree that consider, rather than require, is appropriate in this case considering availability of local sagebrush. Based on a study presented in WAFWA grouse technical meeting in Steamboat in 2012, if sagebrush is transplanted more than 70 miles from origination site it may not be adapted enough to local conditions to survive over the long-term so is a waste of financial resources.

		(P) Within designated ROW or SUA corridors encumbered by existing ROW or SUA authorizations: new ROWs or SUAs may be co-located only if the entire footprint of the proposed project (including construction and staging), can be completed within the existing disturbance associated with the authorized ROWs or SUAs.	(ADH) Within designated ROW corridors encumbered by existing ROW authorizations: new ROWs may be co-located only if the entire footprint of the proposed project (including construction and staging), can be completed within the existing disturbance associated with the authorized ROWs.	(P) New ROWs may be co-located within designated ROW corridors that are encumbered by existing ROW authorizations.
		(P) Subject to valid, existing rights: where new ROWs or SUAs associated with valid existing rights are required, co-locate new ROWs or SUAs within existing ROWs or SUAs 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 absolute minimum standard necessary, and add the surface disturbance to the total disturbance in the priority area. If that disturbance exceeds 3% for that area, then evaluate and implement additional effective mitigation on a case-by-case basis to offset the resulting loss of sage-grouse habitat.	(ADH) 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 absolute minimum standard necessary, and add the surface disturbance to the total disturbance in the priority area. If that disturbance exceeds 3% for that area, then make additional mitigation that has been demonstrated to be effective to offset the resulting loss of sage-grouse habitat.	(P) Only issue ROWs after documenting that the ROWs will not adversely affect sage-grouse populations due to habitat loss or disruptive activities except where such limitation would make accessing valid existing rights impracticable. Construct new roads to the appropriate Gold Book standard and add the surface disturbance to the total disturbance in the priority area. If anthropogenic disturbance as defined in Appendix XX exceeds 5% for that Colorado Management Zone, then make additional, effective mitigation necessary to offset the resulting loss of sage-grouse habitat.  Disturbance Exception Criteria: Where data-based documentation is available to warrant a conclusion that sage-grouse populations in the applicable Colorado Sage-Grouse Management Zone are healthy and stable at objective levels or increasing, and that the development will not adversely affect sage-grouse populations due to habitat loss or disruptive activities, the authorized officer may authorize disturbance in excess of the 5% disturbance cap without requiring additional mitigation. In many cases, this exception will require project proponents to fund studies necessary to secure the “date-based documentation” requirement.
11	Lands/ Realty	(P) Evaluate and take advantage of opportunities to remove, bury, or modify existing power lines within priority sage-grouse habitat areas.	Same as NTT.	(P) Where it is not possible to evaluate new or existing overhead facilities or where existing facilities cannot be removed, buried, or modified, require perch deterrents.
12	Lands/ Realty	(P) Where existing leases, ROWs or SUAs have had some level of development (road, fence, well, etc.) and are no longer in use, reclaim the site by removing these features and restoring the habitat.  <i>Planning Direction Note:</i> Relocate existing designated ROW corridors crossing priority sage-grouse habitat void of any authorized ROWs, outside of the priority habitat area. If relocation is not possible, undesignate that entire corridor during the planning process.	Same as NTT.	(P) Reclaim and restore ROWs per regulatory requirements (43 CFR 2805.12(i)(1); 43 CFR 2885.11(b)(9)(i)).  (P) Designate new ROW corridors in priority sage-grouse habitat only where there is a compelling reason to do so and location of the corridor within priority habitat will not adversely affect sage-grouse populations due to habitat loss or disruptive activities.
13	Lands/	(G) Make general sage-grouse habitat areas “avoidance	No similar action.	(G & C) Same as NTT for general and connectivity habitat.

**Comment [T17]:** Strange wording, I recommend wording as in NTT and apply to ADH.

**Comment [T18]:** And non-lattice transmission towers where raptor perching can be effectively deterred.

	Realty	areas” for new ROWs or SUAs.		
14	Lands/ Realty	(G) Where new ROWs or SUAs are necessary in general habitat, co-locate new ROWs or SUAs within existing ROWs or SUAs where possible.	No similar action.	Same as NTT.
Land Tenure Adjustment				
15	Lands/ Realty	(P) Retain public ownership of priority sage-grouse habitat. Consider exceptions where:	Same as NTT, without exceptions for disposal to consolidate ownership that would be beneficial to sage-grouse.	Same as NTT.
		(P) There is mixed ownership, and land exchanges would allow for additional or more contiguous federal ownership patterns within the priority sage-grouse habitat area.	Same as NTT.	Same as NTT.
		(P) Under priority sage-grouse habitat areas with minority federal ownership, include an additional, effective mitigation agreement for any disposal of federal land. As a final preservation measure, consideration should be given to pursuing a permanent conservation easement.	Same as NTT.	(P) In isolated federal parcels, allow disposal of tracts that are not capable of altering grouse populations (no leks, etc.).
16	Lands/ Realty	(P) Where suitable conservation actions cannot be achieved, seek to acquire state and private lands with intact subsurface mineral estate by donation, purchase or exchange in order to best conserve, enhance, or restore sage-grouse habitat.	(ADH) BLM and FS will strive to acquire important private lands in BLM-designated ACECs and FS Sage-Grouse Special Areas. Acquisition will be prioritized over easements.	(ADH) No similar action, but consider sage-grouse habitat values in acquisitions.
Proposed Land Withdrawals				
17	Lands/ Realty	(P) Propose lands within priority sage-grouse habitat areas for mineral withdrawal.	Same as NTT.	No similar action.
18	Lands/ Realty	(P) In priority habitat, do not recommend withdrawal proposals not associated with mineral activity unless the land management is consistent with sage-grouse conservation measures. (For example; in a proposed withdrawal for a military training range buffer area, manage the buffer area with sage-grouse conservation measures.)	(ADH) Do not approve withdrawal proposals not associated with mineral activity unless the land management is consistent with sage-grouse conservation measures. (For example, in a proposed withdrawal for a military training range buffer area, manage the buffer area with sage-grouse conservation measures that have been demonstrated to be effective.)	No similar action.
18a	Lands/ Realty	No similar action.	(ADH) ROWs will be amended to require features that enhance sage-grouse habitat security.  (ADH) Existing designated corridors in BLM ACECs and FS Special Areas may be accessed for maintenance.	No similar action.
Wind Energy Development				

**Comment [T19]:** I assume because not allowed under 1872 mining law?

18b	Wind	No similar action.	(ADH) Do not site wind energy development in occupied sage-grouse habitat (Jones 2012).	No similar action.
18c	Wind	No similar action.	(ADH) Site wind energy development at least five miles from active sage-grouse leks.	No similar action.
Industrial Solar				
18d	Solar	No similar action.	(ADH) Industrial solar projects will be prohibited in ACECs and occupied habitats.	No similar action.
Range Management		Objectives: Manage the Range Management program to 1) maintain residual herbaceous cover to reduce predation during nesting, 2) avoid sage-grouse habitat changes due to herbivory, 3) avoid direct effects of herbivores on sage-grouse, such as trampling of nests and eggs, 4) avoid altering sage-grouse behavior due to the presence of herbivores, 5) avoid impacts to sage-grouse and sage-grouse behavior from structures associated with grazing management, and 6) maintain and develop agreements with partners that are consistent with before-stated Range Management objectives.		
19	Range	(P) Within priority sage-grouse habitat, incorporate sage-grouse habitat objectives and management considerations into all BLM and FS grazing allotments through Allotment Management Plans (AMPs) or permit renewals and/or FS Annual Operating Instructions.	Same as NTT.	(ADH) Same as NTT except apply to ADH.
20	Range	(ADH) Work cooperatively on integrated ranch planning within sage-grouse habitat so operations with deeded/BLM and/or FS allotments can be planned as single units.	Same as NTT.	Same as NTT.
21	Range	(P) Prioritize completion of land health assessments (FS may use other analyses) and processing grazing permits within priority sage-grouse habitat areas. Focus this process on allotments that have the best opportunities for conserving, enhancing or restoring habitat for sage-grouse. Utilize BLM Ecological Site Descriptions (ESDs) (FS may use other methods) to conduct land health assessments to determine if standards of range-land health are being met.	Same as NTT.	(ADH) Same as NTT, but apply to ADH. Consider sage-grouse habitat requirements in conjunction with all resource values managed by the BLM, and give preference to grouse habitat unless site specific circumstances warrant an exemption.
22	Range	(ADH) Conduct land health assessments that include (at a minimum) indicators and measurements of structure/condition/composition of vegetation specific to achieving sage-grouse habitat objectives (Doherty et al. 2011). If local/state seasonal habitat objectives are not available, use sage-grouse habitat recommendations from Connelly et al. 2000b and Hagen et al. 2007.	Same as NTT.	Same as NTT.

**Comment [TI10]:** Recommend prohibiting wind farms and industrial solar in priority habitat. Possible exception for projects that mitigate impacts, both on- and off-site, to the point that they are grouse-neutral for that management zone, with concurrence from CPW.

**Comment [TI11]:** Good, yes.

**Comment [TI12]:** Habitat guidelines in Connelly et al. (2000) should be used as the minimum standard to measure achievement or maintenance of habitat objectives but if more localized standards exist, such as in the Colorado Greater Sage-grouse Conservation Plan (2008), they should be used.

--	Range	No similar action.	(ADH) Retire grazing allotments within all sage-grouse habitat.	No similar action.
Implementing Management Actions after Land Health and Habitat Evaluations				
23	Range	(ADH) Develop specific objectives to conserve, enhance or restore priority sage-grouse habitat based on BLM ESDs (FS may use other methods) and assessments (including within wetlands and riparian areas). If an effective grazing system that meets sage-grouse habitat requirements is not already in place, analyze at least one alternative that conserves, restores or enhances sage-grouse habitat in the NEPA document prepared for the permit renewal (Doherty et al. 2011b, Williams et al. 2011).	No similar action.	(ADH) Develop specific objectives - through NEPA analysis conducted in accordance with the permit/lease renewal process - to conserve, enhance, or restore priority sage-grouse habitat. Base benchmarks on Ecological Site/Range Site Descriptions (ES/RSDs). When existing ES/RSDs have not been developed, or are too general to serve adequately as benchmarks, identify and document local reference sites for areas of similar potential that exemplify achievement of sage-grouse habitat objectives and use these sites as the benchmark reference. Establish measurable objectives related to sage-grouse habitat from baseline monitoring data, ecological site descriptions, or land health assessments/evaluations.
24	Range	(ADH) Manage for vegetation composition and structure consistent with ecological site potential and within the reference state to achieve sage-grouse seasonal habitat objectives.	(ADH) Manage for vegetation composition and structure consistent with ecological site potential and within the reference state to achieve sage-grouse habitat objectives.	(ADH) Manage for vegetation composition and structure consistent with ecological site potential and within the reference state subject to successional stage objectives.
25	Range	(ADH) Implement management actions (grazing decisions, Annual Operating Instructions [FS only], AMP/Conservation Plan development, or other agreements) to modify grazing management to meet seasonal sage-grouse habitat requirements (Connelly et al. 2011c). Consider singly, or in combination, changes in: 1) Season or timing of use; 2) Numbers of livestock (includes temporary non-use or livestock removal); 3) Distribution of livestock use; 4) Intensity of use; and 5) Type of livestock (e.g., cattle, sheep, horses, llamas, alpacas and goats) (Briske et al. 2011).	(ADH) Implement management actions (grazing decisions, AMP/Conservation Plan development, or other plans or agreements) to modify grazing management to meet seasonal sage-grouse habitat requirements (Connelly et al. 2011c). Consider singly, or in combination, changes in: 1. Season, or timing, and/or frequency of livestock use; 2. Numbers/AUMs of livestock (includes temporary non-use or livestock removal); 3. Distribution of livestock use; 4. Intensity of livestock use; and 5. Type of livestock (e.g., cattle, sheep, horses, llamas, alpacas and goats) (Briske et al. 2011).	(ADH) Include terms and conditions on grazing permits and leases that assure plant growth requirements are met and residual forage remains available for sage-grouse hiding cover. Specify as necessary: 1) Season or timing of use; 2) Numbers of livestock (include temporary non-use or livestock removal); 3) Distributions of livestock use; 4) Intensity of use (utilization or stubble height objectives); 5) Kind of livestock (e.g., cattle, sheep, horse, llama, alpaca, and goat); 6) Class of livestock (e.g., yearlings versus cow/calf pairs).
26	Range	(P) During drought periods, prioritize evaluating effects of the drought in priority sage-grouse habitat areas relative to their needs for food and cover. Since there is a lag in vegetation recovery following drought (Thurow and Taylor 1999), ensure that post-drought management allows for vegetation recovery that meets sage-grouse needs in priority sage-grouse habitat areas.	(ADH) During drought periods, prioritize evaluating effects of drought in sage-grouse habitat areas relative to their biological needs, as well as drought effects on ungrazed reference areas. Since there is a lag in vegetation recovery following drought (Thurow and Taylor 1999), ensure that post-drought management allows for vegetation recovery that meets sage-grouse needs in sage-grouse habitat areas based on sage-grouse habitat objectives.	(ADH) Develop drought contingency plans at the appropriate landscape unit that provide for a consistent/appropriate BLM response. Plans should establish policy for addressing ongoing drought and post-drought recovery.
Riparian Areas and Wet Meadows				

**Comment [TI 13]:** For GRSG or whatever successional stage is desired by BLM manager?

**Comment [TI 14]:** Is this the same as exemplifying achievement of sage-grouse habitat objectives as stated in line 23 or meeting seasonal sage-grouse habitat requirements under the NTT alternative in this line? Residual forage should at least meet minimal habitat structure requirements

**Comment [TI 15]:** For sage-grouse, correct?



27	Range	(P) Manage riparian areas and wet meadows for proper functioning condition or other similar methodology (FS only) within priority sage-grouse habitats.	Same as NTT.	Same as NTT, but apply to ADH.
28	Range	(ADH) Manage wet meadows to maintain a component of perennial forbs with diverse species richness relative to site potential (e.g., reference state) to facilitate brood rearing. Also conserve or enhance these wet meadow complexes to maintain or increase amount of edge and cover within that edge to minimize elevated mortality during the late brood rearing period (Hagen et al. 2007, Kolada et al. 2009, Atamian et al. 2010).	(ADH) Within sage-grouse habitats, manage wet meadows to maintain a component of perennial forbs with diverse species richness and productivity relative to site potential (e.g., reference state) to facilitate brood rearing. At least 6 inches of stubble height must remain on all riparian/meadow area herbaceous species at all times. Also conserve or enhance these wet meadow complexes to maintain or increase the amount of edge and cover within that edge to minimize elevated mortality during the late brood-rearing period (Hagen et al. 2007, Kolada et al. 2009, Atamian et al. 2010).	(ADH) Within ADH, manage wet meadows to maintain diverse species richness, including a component of perennial forbs, relative to site potential (e.g., reference state).
29	Range	(ADH) Where riparian areas and wet meadows meet proper functioning condition or meet standards using other similar methodology (FS only), strive to attain reference state vegetation relative to the ecological site description.  For example: Within priority sage-grouse habitat, reduce hot season grazing on riparian and meadow complexes to promote recovery or maintenance of appropriate vegetation and water quality. Utilize fencing/herding techniques or seasonal use or livestock distribution changes to reduce pressure on riparian or wet meadow vegetation used by sage-grouse in the hot season (summer) (Aldridge and Brigham 2002, Crawford et al. 2004, Hagen et al. 2007).	Same as NTT.	(ADH) Establish permit/lease terms and conditions (Line 19) in conjunction with grazing strategies to ensure that the timing and level of utilization results in wet meadows with diverse species richness, including a component of perennial forbs, relative to site potential (e.g., reference state).
30	Range	(P) Authorize new water development for diversion from spring or seep source only when priority sage-grouse habitat would benefit from the development. This includes developing new water sources for livestock as part of an AMP/conservation plan to improve sage-grouse habitat.	(ADH) Authorize no new water developments for diversion from spring or seep sources within sage-grouse habitat.	(ADH) Authorize new water development only after determining that the project will not adversely impact sage-grouse from habitat loss. Ensure that adequate long-term grazing management is in effect before authorizing water developments that may increase levels of use or change season of use. Give specific consideration to adjacent or downstream wetland habitat when a project entails a diversion from a spring or seep.
31	Range	(P) Analyze springs, seeps and associated pipelines to determine if modifications are necessary to maintain the continuity of the predevelopment riparian area within priority sage-grouse habitats. Make modifications where necessary, considering impacts to other water uses when	(ADH) Analyze springs, seeps and associated water developments to determine if modifications are necessary to maintain the continuity of the predevelopment riparian area within sage-grouse habitats. Make modifications where necessary, including dismantling water.	(P) Analyze springs, seeps and associated pipelines to determine if modifications are necessary to maintain the continuity of the predevelopment riparian area. If necessary to maintain sage-grouse populations or reverse a downward population trend caused by habitat loss, modify or decommission the project to restore the applicable wetland habitat.

**Comment [TI16]:** good

**Comment [TI17]:** This does not consider height of forbs and other vegetation unless site potential accounts for that. I think mention of increase or maintenance of cover is warranted. Need to ensure that BLM and USFS standards for stubble height in wet meadows and uplands at least match minimal habitat structure guidelines (for wet meadow habitat use summer-fall guidance in Colorado GRSG Conservation Plan (2008)).

**Comment [TI18]:** Again, should mention height not just richness.

**Comment [TI19]:** Missing words. Add “development structures” or something similar.

		such considerations are neutral or beneficial to sage-grouse.		
--	Range	No similar action.	(ADH) Avoid grazing and trailing within lekking, nesting, brood-rearing, and winter habitats during periods of the year when these habitats are utilized by sage-grouse.	No similar action.
Treatments to Increase Forage for Livestock/Wild Ungulates				
32	Range	(P) Only allow treatments that conserve, enhance or restore sage-grouse habitat (this includes treatments that benefit livestock as part of an AMP/Conservation Plan to improve sage-grouse habitat).	(ADH) Ensure that vegetation treatments create landscape patterns which most benefit sage-grouse. Only allow treatments that are demonstrated to benefit sage-grouse and retain sagebrush height and cover consistent with sage-grouse habitat objectives (this includes treatments that benefit livestock as part of an AMP/Conservation Plan to improve sage-grouse habitat).	<p>(P – Sagebrush Ecosites) Retain in sagebrush habitat, for each management zone, a minimum of 70% of the ecological sites capable of supporting 12% canopy cover of Wyoming Sagebrush or 15% canopy cover of Mountain Sagebrush. Manage for a total disturbance cap of less than 30%, to include all loss of sagebrush from all causes including anthropogenic disturbance, wildfire, plowed field agriculture, and vegetation treatments. This cap is applied to priority habitat that supports sagebrush ecosites in the management zone. Sites capable of supporting sagebrush habitat will count against the cap until they have recovered to at least 12 percent canopy cover in Wyoming big sagebrush and 15 percent in mountain big sagebrush dominated areas (Bohne et al., 2007). Note:</p> <ul style="list-style-type: none"><li>• Only map-able stands of cheatgrass and Pinyon/ Juniper encroachment will count against the disturbance cap.</li><li>• Irrigated meadows do not count against the cap.</li><li>• On a site by site basis, independent of cap management issues, do not allow treatments with the potential to adversely affect sage-grouse populations.</li></ul>
33	Range	<p>(P) Evaluate the role of existing seedings that are currently composed of primarily introduced perennial grasses in and adjacent to priority sage-grouse habitats to determine if they should be restored to sagebrush or habitat of higher quality for sage-grouse. If these seedings are part of an AMP/ Conservation Plan or if they provide value in conserving or enhancing the rest of the priority habitats, then no restoration would be necessary. Assess the compatibility of these seedings for sage-grouse habitat or as a component of a grazing system during the land health assessments (or other analyses [FS only]) (Davies et al. 2011).</p> <p>For example: Some introduced grass seedings are an integral part of a livestock management plan and reduce</p>	(ADH) Evaluate the role of existing seedings that are currently composed of primarily introduced perennial grasses in and adjacent to sage-grouse habitat to determine if they should be restored to sagebrush or habitat of higher quality for sage-grouse. If these seedings provide value in conserving or enhancing sage-grouse habitats, then no restoration would be necessary. Assess the compatibility of these seedings for sage-grouse habitat during the land health assessments.	Same as NTT.

**Comment [TI20]:** We agree that alteration of habitat by grazing in itself should not be counted toward the disturbance cap but habitat treatments that alter or convert habitat to benefit grazing and that have a negative effect on GRSG habitat should count in the disturbance cap. Similarly, range structure projects (corrals, etc.) that effect GRSG habitat should count in the disturbance cap.

**Comment [TI21]:** We would like to further discuss this conservation measure. If the conservation measure remains in an alternative in the Draft RMP EIS we request clarification of the difference between what’s included in the 30% cap and the 3% or 5% cap.

**Comment [TI22]:** We recommend that all habitat converted to agricultural use be included in a disturbance cap limit. However, a 150-foot buffer around the edge of an irrigated field may be taken out of the disturbance cap calculation if late brood-rearing habitat is a limiting factor for sage-grouse persistence in the analysis area.



		grazing pressure in important sagebrush habitats or serve as a strategic fuels management area.		
--	Range	No similar action.	(ADH) Any vegetation treatment plan must include pretreatment data on wildlife and habitat condition, establish non-grazing exclosures, and include long-term monitoring where treated areas are monitored for at least three years before grazing returns. Continue monitoring for five years after livestock are returned to the area, and compare to treated, ungrazed exclosures, as well as untreated areas.	No similar action.
Structural Range Improvements and Livestock Management Tools				
34	Range	(P) Design any new structural range improvements and location of supplements (salt or protein blocks) to conserve, enhance, or restore sage-grouse habitat through an improved grazing management system relative to sage-grouse objectives. Structural range improvements, in this context, include but are not limited to: cattleguards, fences, exclosures, corrals or other livestock handling structures; pipelines, troughs, storage tanks (including moveable tanks used in livestock water hauling), windmills, ponds/reservoirs, solar panels and spring developments. Potential for invasive species establishment or increase following construction must be considered in the project planning process and monitored and treated post-construction.	(ADH) Avoid all new structural range developments in occupied sage-grouse habitat unless independent peer-reviewed studies show that the range improvement structure benefits sage-grouse. Salt and supplement will not be used within occupied habitat. Structural range developments, in this context, include but are not limited to cattle guards, fences, exclosures, corrals or other livestock handling structures; pipelines, troughs, storage tanks (including moveable tanks used in livestock water hauling), windmills, ponds/reservoirs, solar panels and spring developments. Potential for invasive species establishment or increase following construction must be considered in the project planning process and monitored and treated post-construction. Consider the comparative cost of changing grazing management instead of constructing additional range developments.	(ADH) Design new range improvement projects to enhance livestock distribution and to control the timing and intensity of utilization. Examples of structural range improvement projects are cattleguards, fences, corrals, pipelines, troughs, storage tanks, windmills, ponds/reservoirs, solar panels, and spring developments.  Include a plan to monitor and control invasive plant species following any related ground disturbance.  Place mineral or salt supplements away from water sources and leks in locations that enhance livestock distribution.
35	Range	(P) When developing or modifying water developments, use applicable Preferred Design Features (PDFs) or Required Design Features (RDFs) ( <i>See this table's PDFs/RDFs</i> ) to mitigate potential impacts from West Nile virus (Clark et al. 2006, Doherty 2007, Walker et al. 2007b, Walker and Naugle 2011).	Same as NTT.	(P) Where conditions create the potential for impacts from West Nile virus, use PDFs/RDFs to mitigate the potential impacts. <i>See this table's PDFs/RDFs</i> .
36	Range	(P) Evaluate existing structural range improvements and location of supplements (salt or protein blocks) to make sure they conserve, enhance or restore sage-grouse habitat.	Same as NTT.	(P) Evaluate existing structural range improvements to determine if modifications are necessary to maintain sage-grouse populations or reverse a downward population trend caused by habitat loss. Modify or decommission projects as necessary.  Place mineral and salt supplements away from water sources and leks in

**Comment [TI23]:** I think this should be adopted for some subset of treatments in different sage-brush ecosites.

				locations that enhance livestock distribution.
37	Range	(P) To reduce outright sage-grouse strikes and mortality, remove, modify or mark fences in high risk areas within priority sage-grouse habitat based on proximity to lek, lek size, and topography (Christiansen 2009, Stevens 2011).	(ADH) Remove, modify or mark fences in areas of moderate or high risk of sage-grouse strikes within sage-grouse habitat based on proximity to lek, lek size, and topography (Christiansen 2009; Stevens 2011).	(ADH) Mark fences in high risk areas (Christiansen 2009, Stevens 2011). (P) Where marking fences does not reduce fence-related grouse mortality, modify fences. Where modification does not reduce grouse mortality and the fence-related mortality is sufficient to adversely affect grouse populations, remove fences.
38	Range	(P) Monitor for, and treat invasive species associated with existing range improvements (Gelbard and Belnap 2003 and Bergquist et al. 2007).	Same as NTT.	Same as NTT, but apply to ADH.
--	Range	No similar action.	(ADH) Any vegetation treatment plan must include pretreatment data on wildlife and habitat condition, establish non-grazing exclosures, and include long-term monitoring where treated areas are monitored for at least three years before grazing returns. Continue monitoring for five years after livestock are returned to the area, and compare to treated, ungrazed exclosures, as well as untreated areas.	No similar action.
Retirement of Grazing Privileges				
39	Range	(ADH) Maintain retirement of grazing privileges as an option in priority sage-grouse areas when the current permittee is willing to retire grazing on all or part of an allotment.  Analyze the adverse impacts of no livestock use on wildfire and invasive species threats (Crawford et al. 2004) in evaluating retirement proposals.  <i>Planning direction Note:</i> Each planning effort will identify the specific allotment(s) where permanent retirement of grazing privileges is potentially beneficial.	Same as NTT.  <i>Planning direction Note:</i> In each planning process, identify grazing allotments where permanent retirement of grazing privileges would be potentially beneficial to sage-grouse.	(ADH) When a permittee or lessee voluntarily relinquishes grazing preference, consider conversion of the allotment to a reserve allotment (grass bank) that will remain available for use on a temporary, non-renewable basis. Authorize temporary, non-renewable permits in reserve allotments to meet resource objectives elsewhere such as rest or deferment due to fire.
--	Range	No similar action.	(ADH) Encourage partners to monitor effects of retiring grazing permits in sage-grouse habitat.	No similar action.
Wild Horse Management		Objective: Manage wild horses in a manner designed to 1) avoid reductions in grass, forb and shrub cover, 2) avoid increasing unpalatable forbes and invasive plants such as cheatgrass.		
40	Wild Horses	(P) Manage wild horse and burro population levels within established Appropriate Management Levels (AML).	Same as NTT.	(ADH) Same as NTT except apply to ADH.
41	Wild Horses	(ADH) Prioritize gathers in priority sage-grouse habitat, unless removals are necessary in other areas to prevent catastrophic environmental issues, including herd health impacts.	Same as NTT.	(ADH) Same as NTT, but consider sage-grouse habitat requirements in conjunction with all resource values managed by the BLM, and give preference to grouse habitat unless site specific circumstances warrant an exemption.

**Comment [T124]:** Fences only count as disturbance if there is an associated road or two-track along it where more than one vehicle per day passes by on a regular basis (i.e. once a week or less often would not be considered regular). In essence it is the road activity that is the disturbance not the fence.

**Comment [T125]:** I recommend going back to NTT intent somewhat and leaving open possibility of removing or modifying fences up front rather than marking, then modifying, then removing as sequential steps.

**Comment [T126]:** Shouldn't this be a "P" since it says in priority habitat?

**Comment [T127]:** So, the Conservation alternative in line 22 says retire all allotments but now the Conservation alternative says the same as the NTT? If you can, please explain the overlap in conservation alternative recommendations.

**Comment [T128]:** Seems reasonable but I would add in that grazing must be conducted in a manner to not go below minimum habitat requirements for sage-grouse (e.g. extremely short duration and/or low number of AUMs that the area could potentially support in a normal growing season and still meet range requirements). I recommend that grazing exclosures be set up on some grass reserves as a monitoring subset as explained in line 33 to ensure that overuse of the grass bank is not occurring (which benefits both grouse and ranchers).

42	Wild Horses	(P) Within priority habitat, develop or amend BLM Herd Management Area Plans (HMAPs) and FS Wild horse Territory Plans (WHTPs) to incorporate sage-grouse habitat objectives and management considerations for all BLM herd management areas (HMAs) and FS Wild horse Territories (WHTs).	Same as NTT.	Same as NTT. When developing HMAPs apply all appropriate conservation measures from the Range program, including, but not limited to, timing, utilization of forage, and structural range improvements.
43	Wild Horses	(P) For all BLM HMAs and FS WHTs within priority sage-grouse habitat, prioritize the evaluation of all AMLs based on indicators that address structure/condition/composition of vegetation and measurements specific to achieving sage-grouse habitat objectives.	No similar action.	Same as NTT, but consider sage-grouse habitat requirements in conjunction with all resource values managed by the BLM, and give preference to grouse habitat unless site specific circumstances warrant an exemption.
44	Wild Horses	(ADH) Coordinate with other resources (Range, Wildlife, and Riparian) to conduct land health assessments to determine existing structure/condition/composition of vegetation within all BLM HMAs and FS WHTs.	Same as NTT.	Same as NTT.
45	Wild Horses	(P) When conducting NEPA analysis for wild horse and burro management activities, water developments or other rangeland improvements for wild horses in priority 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 identified for domestic livestock identified above in priority habitats.	Same as NTT.	Same as NTT.
Fluid Minerals Management <sup>1</sup>		Objective: Manage fluid minerals to avoid, minimize, and mitigate 1) direct disturbance, displacement, or mortality of sage-grouse, 2) direst loss of habitat, or loss of effective habitat through fragmentation, and 3) cumulative landscape-level impacts.		
Unleased Fluid Minerals				
46	Fluid Minerals	(P) Close priority sage-grouse habitat areas to fluid mineral leasing. Upon expiration or termination of existing leases, do not accept nominations/expressions of interest for parcels within priority areas.  Exception: When an opportunity exists for the BLM and FS to influence conservation measures where surface and/or	(ADH) Close occupied habitat areas to fluid mineral leasing. No new leases or permits will be issued. Upon expiration or termination of existing leases, do not accept nominations/expressions of interest for parcels within occupied habitat.  Exception: When there is an opportunity for the BLM and FS to	(P) Make sage-grouse habitat areas NSO areas for fluid mineral leasing.  Exception Criteria: Where data-based documentation is available to warrant a conclusion that sage-grouse populations in the applicable Colorado Sage-Grouse Management Zone are healthy and stable at objective levels or increasing, and that the development will not adversely affect sage-grouse populations due to habitat loss or disruptive activities, the authorized officer may

<sup>1</sup> The Oil Shale and Tar Sands Programmatic EIS (Record of Decision, **date**) excludes from oil shale leasing all core/preliminary priority sage-grouse habitat (PPH in CO). Please note that in Preliminary General Habitat (PGH), the management actions for fluid minerals also pertain to oil shale resources through all alternatives.

		mineral ownership is not entirely federally owned (i.e., checkerboard ownership). In this case, a plan amendment may be developed that opens the priority habitat area for new leasing. The plan must demonstrate long-term population increases in the priority area through mitigation (prior to issuing the lease) including lease stipulations, off-site mitigation, etc., and avoid short-term losses that put the sage-grouse population at risk from stochastic events leading to extirpation.	influence conservation measures where surface and/or mineral ownership is not entirely federally owned (i.e., checkerboard ownership). In this case, a plan amendment may be developed that opens sage-grouse habitat for new leasing. The plan must demonstrate long-term population increases in the priority area through mitigation (prior to issuing the lease) including lease stipulations and off-site mitigation and avoid short-term losses that put the sage-grouse population at risk from stochastic events leading to extirpation.	authorize disturbance in excess of the 5% disturbance cap without requiring additional mitigation. In many cases, this exception will require project proponents to fund studies necessary to secure the “data-based documentation” requirement. Grant exceptions, modifications, or waivers only with concurrence from Colorado Parks and Wildlife. See Appendix XX.
		(P) Allow geophysical exploration within priority sage-grouse habitat areas to obtain information for existing Federal fluid mineral leases or areas adjacent to state or fee lands within priority sage-grouse habitat areas. Allow geophysical operations only using helicopter-portable drilling, wheeled or tracked vehicles on existing roads, or other approved methods conducted in accordance with seasonal timing limitations and other restrictions that may apply.	(ADH) Allow geophysical exploration within occupied sage-grouse habitat areas to obtain exploratory information for areas outside of and adjacent to occupied sage-grouse habitat areas. Only allow geophysical operations by helicopter-portable drilling methods and in accordance with seasonal timing restrictions and/or other restrictions that may apply. Geophysical exploration shall be subject to seasonal restrictions that preclude activities in breeding, nesting, brood rearing and winter habitats during their season of use by sage-grouse.	Same as NTT.
--	Fluid Minerals	No similar action.	No similar action.	(ADH) Where drainage is likely, the BLM may issue new leases with an NSO stipulation with appropriate exception, waiver, and modification criteria. The BLM would consider granting an exception, modification, or waiver to this NSO only after collaboration with the state wildlife agency.
Leased Fluid Minerals				
47	Fluid Minerals	<p>(P) Apply the following conservation measures through Resource Management Plan (RMP) implementation decisions (e.g., approval of an Application for Permit to Drill, Sundry Notice, etc.) and upon completion of the environmental record of review (43 CFR 3162.5, include appropriate documentation of compliance with NEPA. In this process evaluate, among other things:</p> <ol style="list-style-type: none"><li>Whether the conservation measure is “reasonable” (43 CFR 3101.1-2) with the valid existing rights; and</li><li>Whether the action is in conformance with the approved RMP.</li></ol>	<p>(ADH) Apply the following conservation measures as Conditions of Approval at the project and well permitting stages, and through RMP implementation decisions and upon completion of the environmental record of review (43 CFR § 3162.5), including appropriate documentation of compliance with NEPA. In this process evaluate, among other things:</p> <ol style="list-style-type: none"><li>Whether the conservation measure is “reasonable” (43 CFR § 3101.1-2) with the valid existing rights; and</li><li>Whether the action is in conformance with the approved RMP.</li></ol>	<p>(P) Where Federal oil and gas leases have been issued and the applicable RMP decision, as revised or amended, does not provide adequate stipulations for the protection of sage-grouse or sage-grouse habitat, determine adequate protections through the NEPA process and the environmental record of review (43 CFR 3162.5) and include as permit Conditions of Approval (COAs).</p> <p>The Surface Use Plan of Operations (SUPO) (43CFR 3162-1(f)) for proposed operations shall address, at a minimum, the anticipated noise, density and amount of disturbance, mechanical movement (e.g., pump jacks), permanent and temporary facilities, traffic, phases of development over time, offsite mitigation, and expected periods of use associated with the proposed project. Seasonal habitats or project features related to potential sage-grouse impacts that are not addressed in the SUPO based on</p>

**Comment [TI29]:** Mitigate below and especially above the 5% cap. The 5% cap should only be allowable versus 3% if data-based documentation for Colorado shows we can go up to 5%.

**Comment [TI30]:** If exceptions for projects appear warranted, keep data-based documentation requirement (burden of proof) with project proponent, and keep requirement for concurrence from CPW.

**Comment [TI31]:** I recommend using seasonal restriction sentence from Conservation Alt (last sentence) because it is more specific and clear. NTT seasonal restrictions are undefined and therefore unclear. Probably OK for this measure to apply just to Priority Habitat, rather than ADH.

**Comment [TI32]:** We recommend including buffers that take into account indirect disturbance to GRSG in disturbance cap calculations, especially if frequent noise results from the project (see Blickley et al. 2012). An exception, for example, may be a buried pipeline with a narrow right-of-way.

Blickley, J.L., D. Blackwood, and G.L. Patricelli. 2012. Experimental Evidence for the Effects of Chronic Anthropogenic Noise on Abundance of Greater Sage-Grouse at Leks. Conservation Biology 26:461-471.

				site-specific or project-specific considerations shall be noted in the project file along with a rationale for not including them.
48	Fluid Minerals	(P) Provide the following conservation measures as terms and conditions on an approved RMP:	Same as NTT.	(P) The below-described conservation measures will be considered when analyzing all exploration and development applications and will be applied within the constraints of valid existing rights. Due to site-specific circumstances, some of the conservation measures may be inapplicable to some applications.
49	Fluid Minerals	(P) Do not allow new surface occupancy within priority habitat areas, including winter concentration areas, during any time of the year (Doherty et al. 2008, Carpenter et al. 2010). Exception:	Same as NTT.	(P) Where consistent with valid existing rights and development requirements, include as COAs the following disturbance and surface occupancy limits:
50	Fluid Minerals	(P) If the lease is entirely within priority habitats, apply a 4-mile NSO around the lek and limit permitted disturbances to 1 per section with no more than 3% surface disturbance in that section.	Same as NTT.	(P) Apply seasonal conditional surface use (CSU) that prohibits surface occupancy or disturbance within 4 miles of a lek during lekking and early brood-rearing. See Appendix XY & Table XY. Where practicable, limit permitted disturbances as defined in Appendix XX to 5% in any Colorado Management Zone. Where disturbance exceeds 5% in any Management Zone make additional, effective mitigation necessary to offset the resulting loss of sage-grouse habitat.
				Exception:
				<ol style="list-style-type: none"><li>Where multiple wells are drilled from one pad in a multi-year operation, the drilling equipment may remain in place within 4 miles of a lek during lekking and early brood-rearing. Drilling-related activities may be prohibited during this time.</li><li>Where topography and/or terrain are such that surface occupancy or disturbance within 4 miles of a lek will not adversely affect sage-grouse populations due to habitat loss or disruptive activities impacting lekking or early brood rearing, the authorized officer may authorize the surface occupancy or disturbance.</li><li>Where data-based documentation is available to warrant a conclusion that sage-grouse populations in the applicable Colorado Sage-Grouse Management Zone are healthy and stable at objective levels or increasing, and that the development will not adversely affect sage-grouse populations due to habitat loss or disruptive activities, the authorized officer may authorize disturbance in excess of the</li></ol>

**Comment [T133]:** Should this be “COA” rather than “CSU”? Technically speaking, I don’t think a CSU can be applied to an existing lease.

**Comment [T134]:** Effectiveness of mitigation should be determined in coordination with, and concurrence from, CPW.

**Comment [T135]:** Appendix XY (not included with comments) has a differently worded Exception. Which one applies? The WEMs should all be in one spot to avoid confusion. And the exception criteria should probably indicate that the closer the proposed activity is to a lek, the greater the risk to grouse breeding and nesting, and therefore the lesser the likelihood there is that an exception would be granted.

**Comment [T136]:** State somewhere that there will not be exceptions granted to a 60-day TL within 0.6 mile from active leks.

				5% disturbance cap without requiring additional mitigation. In many cases, this exception will require project proponents to fund studies necessary to secure the “date-based documentation” requirement.
51	Fluid Minerals	(P) If the entire lease is within the 4 mile lek perimeter, limit permitted disturbances to 1 per section with no more than 3% surface disturbance in that section. Require any development to be placed at the most distal part of the lease from the lek, or depending on topography and other habitat aspects, in an area that is less demonstrably harmful to sage-grouse.	Same as NTT.	(P) If entire lease is within the 4 mile lek perimeter, limit permitted disturbances as defined in Appendix XX to 5% in any Colorado Management Zone and make additional, effective mitigation necessary to offset the resulting loss of sage-grouse habitat.
52	Fluid Minerals	(P) Apply a seasonal restriction on exploratory drilling that prohibits resurface-disturbing activities during the nesting and early brood-rearing season in all priority sage-grouse habitat during this period.	(ADH) Apply a seasonal restriction on exploratory drilling that prohibits surface-disturbing activities during the nesting and brood-rearing season in all occupied sage-grouse habitat during this period. This seasonal restriction shall also to apply to related activities that are disruptive to sage-grouse, including vehicle traffic and other human presence.	Same as NTT.
53	Fluid Minerals	(P) BLM should closely examine the applicability of categorical exclusions in priority habitat. If extraordinary circumstances review is applicable, BLM should determine whether those circumstances exist.	Same as NTT.	Same as NTT.
54	Fluid Minerals	(P) Complete Master Development Plans in lieu of Application for Permit to Drill (APD)-by-APD processing for all but wildcat wells.	Same as NTT.	(P) Complete Master Development Plans in lieu of APD-by-APD processing for all but exploratory wells.
55	Fluid Minerals	(P) When permitting APD’s on existing leases that are not yet developed, the proposed surface disturbance cannot exceed 3% for that area. Consider an exception if: <ul style="list-style-type: none"><li>Additional effective mitigation is demonstrated to offset the resulting loss of sage-grouse.</li></ul>	(ADH) When permitting APDs on existing leases that are not yet developed, the proposed surface disturbance cannot exceed 3% per section for that area. Consider an exception if: <ul style="list-style-type: none"><li>Additional, effective mitigation is demonstrated to offset the resulting loss of sage-grouse.</li></ul>	(P) When permitting APD’s on existing leases that are not yet developed, the proposed surface disturbance cannot exceed 5% for that area. Consider an exception if: <ul style="list-style-type: none"><li>Additional effective mitigation is demonstrated to offset the resulting loss of sage-grouse; or</li><li>The additional disturbance will not adversely affect sage-grouse populations due to habitat loss or disruptive activities.</li></ul>
56	Fluid Minerals	(P) When necessary, conduct additional, effective mitigation in 1) priority sage-grouse habitat areas or—less preferably—2) general sage-grouse habitat (dependent upon the area-specific ability to increase	(ADH) When necessary, conduct additional, effective mitigation in occupied habitat (dependent upon the area-specific ability to increase sage-grouse populations).	Same as NTT.

**Comment [TI37]:** Should mitigate above 5% as well as below.

**Comment [TI38]:** This appears to be nearly the same as #50 above



		sage-grouse populations).		
57	Fluid Minerals	(P) Conduct additional, effective mitigation first within the same population area where the impact is realized, and if not possible then conduct mitigation within the same Management Zone as the impact, per 2006 WAFWA Strategy (pp. 2-17).	(ADH) Conduct additional, effective mitigation first within the same population area where the impact is realized, and if not possible then conduct mitigation within the same Management Zone as the impact, per 2006 WAFWA Strategy – pg 2-17.	Same as NTT.
58	Fluid Minerals	(P) Require unitization when deemed necessary for proper development and operation of an area (with strong oversight and monitoring) to minimize adverse impacts to sage-grouse according to the Federal Lease Form, 3100-11, Sections 4 and 6.	Same as NTT.	(P) Encourage unitization within Colorado Management Zones when necessary for proper development and operation of an area or to facilitate more orderly (e.g., phased and/or clustered) development as a means of minimizing adverse impacts to sage-grouse. (See Federal Lease Form, 3100-11, Sections 4 and 6; <b>Appendix XZ</b> ).  (P) Consider unitization-related issues during development of Master Leasing Plans (MLPs).
59	Fluid Minerals	(P) Identify areas where acquisitions (including subsurface mineral rights) or conservation easements would benefit sage-grouse.	Same as NTT.	No similar action.
60	Fluid Minerals	(ADH) For future actions, require a full reclamation bond specific to the site in accordance with 43 CFR 3104.2, 3104.3, and 3104.5. Ensure bonds are sufficient for costs relative to reclamation (Connelly et al. 2000, Hagen et al. 2007) that would result in full restoration of the lands to the condition it was found prior to disturbance. Base the reclamation costs on the assumption that contractors for the BLM and FS will perform the work.	Same as NTT.	Same as NTT.
--	Fluid Minerals	No similar action.	(ADH) Prohibit the construction of evaporation or infiltration reservoirs to hold coalbed methane wastewater.	No similar action.
--	Fluid Minerals	No similar action.	(ADH) Agencies will explore options to amend, cancel, or buy out leases in ACECs and occupied habitats.	No similar action.
--	Fluid Minerals	No similar action.	(ADH) Include conditions that require relinquishment of leases/authorizations if doing so will: 1) mitigate the impact of a proposed development, or 2) mitigate the unanticipated impacts of an approved development.	No similar action.
--	Fluid Minerals	No similar action.	(ADH) No waivers will be issued.	No similar action.
--	Fluid Minerals	No similar action.	(ADH) Any oil, gas, geothermal activity will be conducted to maximize avoidance of impacts, based on	No similar action.

**Comment [TI39]:** Why not? I recommend leaving in as option.

**Comment [TI40]:** Recommend something like: (ADH) [or at least (P)] All wastewater pits must be netted to exclude grouse (flying or walking), including chicks. Mosquito larvae cannot be allowed to exist in any pit. All pits must be regularly monitored for compliance and the presence of grouse that may have somehow gained entry. Monitoring reports must be submitted to BLM within 1 week of site visit.

**Comment [TI41]:** I recommend Conservation alternative measure in CO alternative.

			evolving scientific knowledge of impacts.	
61	Fluid Minerals	Where applicable and technically feasible, apply PDFs/RDFs (see this table’s Fluid Minerals and Multiple Program Sections) as mandatory Conditions of Approval (COAs) within priority sage-grouse habitat.	The range of alternatives is articulated in the specific PDF/RDF sections.	
Solid Minerals		Objective: Manage solid mineral programs to avoid, minimize and mitigate adverse impacts to sage-grouse habitat to the extent practical under the law and BLM jurisdiction.		
Coal				
62	Solid Minerals-Coal	(ADH) Apply minimization of surface-disturbing or disruptive activities (including operations and maintenance) where needed to reduce the impacts of human activities on important seasonal sage-grouse habitats. Apply these measures during activity level planning. Use additional effective mitigation to offset impacts as appropriate (determined by local options/needs).	Same as NTT.	(ADH) <u>Existing Coal Leases</u> : During the term of the lease, encourage the lessee to voluntarily follow PDFs to reduce and mitigate any adverse impacts to sage-grouse.
63	Solid Minerals-Coal	(P) <i>Surface mines</i> : Find unsuitable all surface mining of coal under the criteria set forth in 43 CFR 3461.5.	Same as NTT.	(ADH) <u>New Surface coal mine Leases</u> : Apply the requirements of 43 CFR Subpart 3461 to determine unsuitability. Find unsuitable all surface mining of coal under the criteria set forth in 43 CFR 3461.5 to ensure that the specific Lek instance or reference is adequately addressed. Where practicable, limit permitted disturbances as defined in Appendix XX to 5% in any Colorado Management Zone. Where disturbance exceeds 5% in any Management Zone make additional, effective mitigation necessary to offset the resulting loss of sage-grouse habitat.
64	Solid Minerals-Coal	(P) <i>Sub-surface mining</i> : Grant no new mining leases unless all surface disturbances (appurtenant facilities) are placed outside of the priority sage-grouse habitat area. In priority sage-grouse habitat areas, place any new appurtenant facilities outside of priority areas. Where new appurtenant facilities associated with the existing lease cannot be located outside the priority sage-grouse habitat area, co-locate new facilities within existing disturbed areas. If this is not possible, then build any new appurtenant facilities to the absolute minimum standard necessary.	Same as NTT.	(ADH) <u>New Underground Coal Mines Leases</u> : Grant no new mining leases unless all surface disturbances (appurtenant facilities) are placed outside of the priority sage-grouse habitat area [see 43 CFR 3461.1 (a) and (b)]. Also see Part 3460: Environment, Subpart 3461: Federal Lands Review: Unsuitability for Mining, 3461.1. Where practicable, limit permitted disturbances as defined in Appendix XX to 5% in any Colorado Management Zone. Where disturbance exceeds 5% in any Management Zone make additional, effective mitigation necessary to offset the resulting loss of sage-grouse habitat.
		No similar action.	No similar action.	(ADH) Underground mining exemption criteria for new leases:
		No similar action.	No similar action.	(a) Federal lands with coal deposits that would be mined by underground mining methods shall not be assessed as unsuitable where there would be no surface coal mining operations, as defined in 43 CFR 3400.0-5 (mm) of this title, on any lease, if issued.

**Comment [TI42]:** What do these parts of the CFR state?

**Comment [TI43]:** Again, I think we should mitigate in all PPH as suggested in NTT. I still recommend step-down approach as suggested by NTT.

		No similar action.	No similar action.	(b) Where underground mining will include surface operations and surface impacts on Federal lands to which a criterion applies, the lands shall be assessed as unsuitable unless the surface management agency find that a relevant exception or exemption applies. See 43 CFR 3461.1(b). Where practicable, limit permitted disturbances as defined in <b>Appendix XX</b> to 5% in any Colorado Management Zone. Where disturbance exceeds 5% in any Management Zone make additional, effective mitigation necessary to offset the resulting loss of sage-grouse habitat.
 --	Solid Minerals- Coal	No similar action.	No similar action.	(P) See 43 CFR 3461.4 (a) and (b) Exploration. Authorized exploration activities may be conducted only if the authorized officer reviews any application for an exploration license on such lands to ensure that any exploration does not harm any value for which the area has been assessed as unsuitable and determines that the exploration will- not adversely affect sage-grouse populations due to habitat loss or disruptive activities or that the impact can be fully mitigated. Where practicable, limit permitted disturbances as defined in <b>Appendix XX</b> to 5% in any Colorado Management Zone. Where disturbance exceeds 5% in any Management Zone make additional, effective mitigation necessary to offset the resulting loss of sage-grouse habitat.
--	Solid Minerals - Coal	No similar action.	No similar action.	(P) <u>Underground mining – Leases renewals:</u> <ul style="list-style-type: none"><li>• Require that all surface mining appurtenant facilities for underground mining be located outside of priority habitat (unless the lessee establishes that that such location is not technically feasible).</li><li>• If surface mining facilities must be located in priority habitat, require the facilities be located in areas of existing disturbance and to have the smallest footprint possible utilizing design strategies to minimize disturbance such as those identified in the PDF Section of this table.</li><li>• Apply as conditions of lease renewal all appropriate conservation measures, PDFs, and mitigation designed to avoid, minimize impacts to sage-grouse.</li></ul> (ADH) <u>Surface mining - leases renewals/readjustments:</u> Apply as conditions of lease renewal all appropriate conservation measures, PDFs, and mitigation designed to avoid, minimize impacts to sage-grouse.
--	Solid Minerals- Coal	No similar action.	No similar action.	(ADH) Recommend or require as appropriate during all relevant points of the coal leasing and authorization process, minimization of surface-disturbing or disrupting activities (including operations and maintenance) where needed to reduce the impacts of human activities on important seasonal sage-grouse habitats. Apply these measures during activity level planning (Jurisdiction is managed by the State.) The Office of Surface

				Mining or a delegated State Regulatory authority under SMCRA authorizes surface disturbance activities of active coal mining operations on federal mineral estate. The BLM coordinates with the SMCRA regulatory authority in overseeing coal leasing and permitting on Federal lands. The resource recovery and protection plan for which BLM recommends approval to the Secretary integrates the reclamation plan recommended by the SMCRA regulatory authority for active coal mines on federal mineral estate. Approval of coal mining plans on lands containing leased Federal coal is reserved to the Secretary of the Interior. 30 CFR 740.4. BLM issues coal leases and exploration licenses for right of entry to promote development of minerals on Federal lands. See the following in regards to BLM exploration: 43 CFR § 3461.4. Exploration. States with delegated authority on Federal lands from the Office of Surface Mining may have their own sage-grouse guidance in association with state wildlife agencies and such guidance may differ from state to state.
		No similar action.	No similar action.	(ADH) (a) Assessment of any area as unsuitable for all or certain stipulated methods of coal mining operations pursuant to section 522 of the Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1272) and the regulations of this subpart does not prohibit exploration of such area under 43 CFR Subpart 3410 and 43 CFR Part 3480.43 CFR 3461.4(a)
		No similar action.	No similar action.	(ADH) (b) An application for an exploration license on any lands assessed as unsuitable for all or certain stipulated methods of coal mining shall be reviewed by the Bureau of Land Management to ensure that exploration does not harm any value for which the area has been assessed as unsuitable. 43 CFR 3461.4(b)
Locatable Minerals				
65	Locatable Minerals	(P) Propose withdrawal from mineral entry based on risk to the sage-grouse and its habitat from conflicting locatable mineral potential and development.	Same as NTT.	No similar <a href="#">action</a> .
66	Locatable Minerals	(P) Make any existing claims within the withdrawal area subject to validity exams or buy out. Include claims that have been subsequently determined to be null and void in the proposed withdrawal.	Same as NTT.	(P) In accordance with 43 CFR 3809.100, require validity exams for mining claims within withdrawn areas.
67	Locatable Minerals	(P) In plans of operations required prior to any proposed surface disturbing activities, include the following: <ul style="list-style-type: none"><li>Additional effective mitigation in perpetuity for conservation (in accordance with existing policy, WO IM 2008-204). For example, purchase private land and mineral rights or severed subsurface mineral rights within the</li></ul>	Same as NTT.	(P) In plans of operations required prior to any proposed surface disturbing activities include as appropriate effective mitigation for conservation in accordance with existing policy (WO IM 2008-204).  (P) Apply seasonal restrictions if deemed necessary to prevent unnecessary or undue degradation.

Comment [T144]: Because of 1872 Mining Law?

		priority area and deed to US Government. <ul style="list-style-type: none"><li>Consider seasonal restrictions if deemed effective</li></ul>		
68	Locatable Minerals	(P) Where applicable to prevent unnecessary or undue degradation, apply PDFs/RDFs ( <i>See</i> this table’s PDF/RDFs for Locatable Minerals and Multiple Program) as mandatory conditions of approval.	The range of alternatives is articulated in the specific PDF/RDF sections.	
Non-energy Leasable Minerals				
69	Non-energy Leasable Minerals	(P) Close priority habitat to non-energy leasable mineral leasing. This includes not permitting any new leases to expand an existing mine.	Same as NTT.	(P) Consider allowing expansion of existing non-energy mineral leases. Where practicable, limit permitted disturbances, as defined in Appendix XX, to 5% in any Colorado Management Zone. Where disturbance exceeds 5% in any Management Zone make additional, effective mitigation necessary to offset the resulting loss of sage-grouse habitat.
70	Non-energy Leasable Minerals	(P) For existing non-energy leasable mineral leases, in addition to the solid minerals PDFs/RDFs, follow the same PDFs/RDFs applied to Fluid Minerals when wells are used for solution mining.	The range of alternatives is articulated in the specific PDF/RDF sections	
Salable Mineral Materials				
71	Salable Minerals	(P) Close priority habitat to mineral material sales.	Same as NTT.	(P) Consider allowing existing mineral material sale sites to continue operations. Consider allowing expansion of existing mineral material sales sites. Where practicable, limit permitted disturbances, as defined in Appendix XX, to 5% in any Colorado Management Zone. Where disturbance exceeds 5% in any Management Zone make additional, effective mitigation necessary to offset the resulting loss of sage-grouse habitat.
72	Salable Minerals	(P) Restore saleable mineral pits no longer in use to meet sage-grouse habitat conservation objectives.	Same as NTT.	(ADH) Restore saleable mineral pits no longer in use to meet sage-grouse habitat conservation objectives. Require reclamation/restoration of sage-grouse habitat as a viable long term goal to improve the sage-grouse habitat.
Mineral Split Estate		Objective: Utilize federal authority to protect sage-grouse habitat on split estate lands to the extent provided by law.		
73	Split Estate Minerals	(P) Where the federal government owns the mineral estate and the surface is in non-federal ownership, apply the conservation measures applied to public lands.	Same as NTT.	(P) Where the federal government owns the mineral estate and the surface is in non-federal ownership, apply conservation measures to the developer (lessee) of the mineral as allowable.
74	Split Estate Minerals	(P) Where the federal government owns the surface, and the mineral estate is in non-federal ownership, apply appropriate Fluid Mineral PDFs to surface development.	Same as NTT.	(P) Where the federal government owns the surface, and the mineral estate is in non-federal ownership, apply appropriate PDFs to surface development.
Wildfire Suppression, Fuels Management and Fire Rehabilitation				
Fuels Management		Objective: Manage the fuels program to avoid sage-grouse habitat loss and restore damaged habitat.		
75	Fuels Management	(P) Do not reduce sagebrush canopy cover to less than 15% (Connelly et al. 2000, Hagen et al. 2007)	(ADH) Design and implement fuels treatments with an emphasis on protecting existing sagebrush ecosystems.	(P) Do not reduce sagebrush canopy cover to less than 15% (Connelly et al. 2000, Hagen et al. 2007) unless a vegetation management objective requires

**Comment [T145]:** What about Energy Leasable Minerals like oil shale? There are priority and general GRSg habitats overlying oil shale.

**Comment [T146]:** Provide definitions of the different categories of minerals.

**Comment [T147]:** OK.

		unless a fuels management objective requires additional reduction in sagebrush cover to meet strategic protection of priority sage-grouse habitat and conserve habitat quality for the species. Closely evaluate the benefits of the fuel breaks against the additional loss of sagebrush cover in the future NEPA process.	Do not reduce sagebrush canopy cover to less than 15% (Connelly et al. 2000, Hagen et al. 2007) unless a fuels management objective requires additional reduction in sagebrush cover to meet strategic protection of occupied sage-grouse habitat and conserve habitat quality for the species. Closely evaluate the benefits of the fuel break against the additional loss of sagebrush cover in the EA process.	additional reduction in sagebrush cover to meet strategic protection of priority sage-grouse habitat and conserve habitat quality for the species.
76	Fuels Management	(P) Apply appropriate seasonal restrictions for implementing fuels management treatments according to the type of seasonal habitats present in a priority area.	(ADH) Apply appropriate seasonal restrictions for implementing fuels management treatments according to the type of seasonal habitats present.	(P) Apply appropriate seasonal restrictions for implementing vegetation management treatments according to the type of seasonal habitats present in a management zone. See Appendix XY & Table XY.
77	Fuels Management	(P) Allow no treatments in known winter range unless the treatments are designed to strategically reduce wildfire risk around or in the winter range and will maintain winter range habitat quality.	(ADH) Allow no fuels treatments in known winter range unless the treatments are designed to strategically reduce wildfire risk around or in the winter range and will maintain winter range habitat quality.	(ADH) (ADH) Retain in sagebrush habitat, for each management zone, a minimum of 70% of the ecological sites capable of supporting 12% canopy cover of Wyoming Sagebrush or 15% canopy cover of Mountain Sagebrush. Manage for a total disturbance cap of less than 30%, to include all loss of sagebrush from all causes including anthropogenic disturbance, wildfire, plowed field agriculture, and vegetation treatments. This cap is applied to all designated habitat in the entire management zone. Sites capable of supporting sagebrush habitat will count against the cap until they have recovered to at least 12 percent canopy cover in Wyoming big sagebrush and 15 percent in mountain big sagebrush dominated areas (Bohne et al., 2007). Note: <ul style="list-style-type: none"><li>• Only map-able stands of cheatgrass and Pinyon/ Juniper encroachment will count against the disturbance cap.</li><li>• Irrigated meadows do not count against the cap.</li><li>• On a site by site basis, independent of cap management issues, do not allow treatments with the potential to adversely affect sage-grouse populations.</li></ul>
78	Fuels Management	(P) Do not use fire to treat sagebrush in less than 12-inch precipitation zones (e.g., Wyoming big sagebrush or other xeric sagebrush species; Connelly et al. 2000, Hagen et al. 2007, Beck et al. 2009). However, if as a last resort and after all other treatment opportunities have been explored, and site specific variables allow, the use of prescribed fire for fuels breaks that would disrupt fuel continuity or enhance land health could be considered where cheatgrass is a very minor component in the understory (Brown 1982).	(ADH) Do not use fire to treat sagebrush in less than 12-inch precipitation zones (e.g., Wyoming big sagebrush or other xeric sagebrush species; Connelly et al. 2000, Hagen et al. 2007, Beck et al. 2009). However, if as a last resort and after all other treatment opportunities have been explored and site specific variables allow, the use of prescribed fire for fuel breaks that would disrupt the fuel continuity across the landscape could be considered, in stands where cheatgrass is a very minor component in the understory	(ADH) Do not use fire to treat sagebrush in less than 12-inch precipitation zones (e.g., Wyoming big sagebrush or other xeric sagebrush species; Connelly et al. 2000, Hagen et al. 2007, Beck et al. 2009). However, if as a last resort and after all other treatment opportunities have been explored, and site specific variables allow, the use of prescribed fire or natural ignition fire for fuels breaks that would disrupt fuel continuity or enhance land health could be considered where cheatgrass is a very minor component in the understory (Brown 1982).

Comment [T148]: I recommend ADH too.



			(Brown 1982).	
79	Fuels Management	(P) Monitor and control invasive vegetation post-treatment.	No similar action.	(ADH) Same as NTT except apply to ADH.
80	Fuels Management	(P) Rest treated areas from grazing for two full growing seasons unless vegetation recovery dictates otherwise (WGFD 2011).	No similar action.	(ADH) Same as NTT except apply to ADH.
81	Fuels Management	(P) Require use of native plant seeds for fuels management treatment based on availability, adaptation (site potential), probability for success (Richards et al. 1998). Where probability of success or native seed availability is low, non-native seeds may be used as long as they meet sage-grouse habitat objectives (Pyke 2011).	No similar action.	(ADH) Require use of native plant seeds for vegetation treatments based on availability, adaptation (site potential), probability for success (Richards et al. 1998), and the vegetation management objectives for the area covered by the treatment. Where probability of success or native seed availability is low, use species that meet soil stability and hydrologic function objectives as well as vegetation and sage-grouse habitat objectives (Pyke 2011).
82	Fuels Management	(P) Design post fuels management to ensure long term persistence of seeded or pre-burn native plants. This may require temporary or long-term changes in livestock grazing, wild horse and burro, and travel management, etc., to achieve and maintain the desired condition of ES&R projects to benefit sage-grouse (Eiswerth and Shonkwiler 2006).	(ADH) Design post fuels management projects to ensure long term persistence of seeded or pre-treatment native plants, including sagebrush. This may require temporary or long-term changes in livestock grazing management, wild horse and burro management, travel management, or other activities to achieve and maintain the desired condition of the fuels management project (Eiswerth and Shonkwiler 2006).  Lands will be managed to be in the good or better ecological condition to help minimize adverse impacts of fire. Any fuels treatments will focus on interfaces with human habitation or significant existing disturbances.	Same as NTT except apply to ADH. .
83	Fuels Management	(P) Design fuels management projects in priority habitat to strategically and effectively reduce wildfire threats in the greatest area. This may require fuels treatments implemented in a more linear versus block design (Launchbaugh et al. 2007).	No similar action.	(ADH) Design vegetation treatments in sage-grouse habitats to strategically facilitate firefighter safety, reduce wildfire threats, and extreme fire behavior. This may involve spatially arranging new vegetation treatments with past treatments, vegetation with fire-resistant serial stages, natural barriers, and roads in order to constrain fire spread and growth. This may require vegetation treatments to be implemented in a more linear versus block design (Launchbaugh et al. 2007).
84	Fuels Management	(P) During fuels management project design, consider the utility of using livestock to strategically reduce fine fuels (Diamond et al. 2009), and implement grazing management that will accomplish this objective (Davies et al. 2011 and Launchbaugh et al 2007). Consult with ecologists to minimize impacts to	No similar action.	Same as NTT except apply to ADH. .

		native perennial grasses- consistent with the objectives and conservation measures of the grazing section.		
	Fuels Management	No similar action.	(ADH) Lands will be managed to be in the good or better ecological condition to help minimize adverse impacts of fire.	No similar action.
	Fuels Management	No similar action.	(ADH) Any fuels treatments will focus on interfaces with human habitation or significant existing disturbances.	No similar action.
Fire Operations		Objective: Manage fire to maintain and enhance large blocks of contiguous sagebrush.		
85	Fire Operations	(P) In priority sage-grouse habitat areas, prioritize suppression, immediately after life and property, to conserve the habitat.	Same as NTT.	(P) Prioritize suppression immediately after firefighter and public safety. Consider sage-grouse habitat requirements in conjunction with all resource values managed by the BLM, and give preference to grouse habitat unless site specific circumstances warrant an exemption.
86	Fire Operations	(G) In general habitat, prioritize suppression where wildfires threaten priority sage-grouse habitat.	No Similar action.	(G) Prioritize suppression immediately after firefighter and public safety. Consider sage-grouse habitat requirements in conjunction with all resource values managed by the BLM, and give preference to grouse habitat unless site specific circumstances warrant an exemption.
Emergency Stabilization and Rehabilitation (ES&R)		Objective: Use ES&R to address post-wildfire threats to sage-grouse habitat.		
87	ES&R	(ADH) Prioritize native seed allocation for use in sage-grouse habitat in years when preferred native seed is in short supply. This may require reallocation of native seed from Emergency Stabilization and Rehabilitation (ES&R) (BLM) and/or Burn Area Emergency Rehabilitation (BAER) (FS) projects outside of priority sage-grouse habitat to those inside it. Use of native plant seeds for ES&R or BAER seedings is required based on availability, adaptation (site potential), and probability of success Richards et al. 1998). Where probability of success or native seed availability is low, non-native seeds may be used as long as they meet sage-grouse habitat conservation objectives (Pyke 2011). Re-establishment of appropriate sagebrush species/subspecies and important understory plants, relative to site potential, shall be the highest priority for rehabilitation efforts.	Same as NTT.	(ADH) Require use of native plant seeds for vegetation treatments based on availability, adaptation (site potential), probability for success (Richards et al. 1998), and the vegetation management objectives for the area covered by the treatment. Where attempts to use native seeds have failed, or native seed availability is low, use species that meet soil stability and hydrologic function objectives as well as vegetation and sage-grouse habitat objectives (Pyke 2011).
88	ES&R	(ADH) Design post ES&R and BAER management to ensure long term persistence of seeded or pre-burn native plants. This may require temporary or long-term changes in livestock grazing, wild horse and	Same as NTT.	Same as NTT.

		burro, and travel management, etc., to achieve and maintain the desired condition of ES&R and BAER projects to benefit sage-grouse (Eiswerth and Shonkwiler 2006).		
89	ES&R	(ADH) Consider potential changes in climate (Miller et al. 2011) when proposing restoration seedings when using native plants. Consider collection from the warmer component of the species' current range when selecting native species (Kramer and Havens 2009).	Same as NTT.	No similar action.
--	ES&R	No similar action.	(ADH) Establish and strengthen networks with seed growers to assure availability of native seed for ES&R projects.	No similar action.
--	ES&R	No similar action.	(ADH) Post fire recovery must include establishing adequately sized exclosures (free of livestock grazing) that can be used to assess recovery.	No similar action.
--	ES&R	No similar action.	(ADH) Livestock grazing should be excluded from burned areas until woody and herbaceous plants achieve sage-grouse habitat objectives.	No similar action.
--	ES&R	No similar action.	(ADH) Where burned sage-grouse habitat cannot be fenced from other unburned habitat, the entire area (e.g., allotment/pasture) should be closed to grazing until recovered.	No similar action.
--	ES&R	No similar action.	(ADH) Mowing of grass will be used in any fuelbreak fuels reduction project (roadsides or other areas).	No similar action.
Habitat Restoration		Objective: (1) Use habitat restoration as a tool to create and/or maintain landscapes that benefit sage-grouse; and (2) Use Integrated Vegetation Management to control, suppress, and eradicate, where possible, noxious and invasive species per BLM Handbook H-1740-2.		
90	Habitat Restoration	(ADH) Prioritize implementation of restoration projects based on environmental variables that improve chances for project success in areas most likely to benefit sage-grouse (Meinke et al. 2009).  Prioritize restoration treatments and monitoring in seasonal habitats that are thought to be limiting sage-grouse distribution and/or abundance.	(ADH) Prioritize implementation of restoration projects based on environmental variables that improve chances for project success in areas most likely to benefit sage-grouse (Meinke et al. 2009).  Prioritize restoration in seasonal habitats that are thought to be limiting sage-grouse distribution and/or abundance and where factors causing degradation have already been addressed (e.g., changes in livestock management).	(ADH) When planning restoration treatments in sage-grouse habitat, identify seasonal habitat availability and prioritize treatments in areas that are thought to be limiting sage-grouse distribution and/or abundance, in accordance with the Prioritization Section of the narrative for the Sub-regional alternative.
91	Habitat Restoration	(P) Include sage-grouse habitat parameters as defined by Connelly et al. (2000), Hagen et al. (2007) or if available, State Sage-Grouse Conservation plans and appropriate local information in habitat restoration objectives. Make meeting these objectives within priority sage-grouse habitat areas a high restoration	(ADH) Include sage-grouse habitat objectives in habitat restoration projects. Make meeting these objectives within occupied sage-grouse habitat the highest restoration priority.	Same as NTT.

**Comment [T149]:** I recommend inclusion of NTT measure.

		priority.		
92	Habitat Restoration	(P) Require the use of native seeds for restoration based on availability, adaption (ecological site potential, and probability of success (Richards et al. 1998). Where probability of success or adapted seed availability is low, non-native seeds may be used as long as they support sage-grouse habitat objectives.	Same as NTT.	(ADH) Require use of native plant seeds for vegetation treatments based on availability, adaptation (site potential), probability for success (Richards et al. 1998), and the vegetation management objectives for the area covered by the treatment. Where probability of success or native seed availability is low, use species that meet soil stability and hydrologic function objectives as well as vegetation and sage-grouse habitat objectives (Pyke 2011).
93	Habitat Restoration	(P) Design post restoration management to ensure long term persistence of seeded or pre-burn native plants. This may require temporary or long term changes in livestock grazing, wild horse and burro, and travel management, etc., to achieve and maintain the desired condition of ES&R projects to benefit sage-grouse (Eiswerth and Shonkwiler 2006).	Same as NTT.	Same as NTT.
94	Habitat Restoration	(P) Consider potential changes in climate (Miller et al. 2011) when proposing restoration seedings when using native plants. Consider collection from the warmer component of the species' current range when selecting native species (Kramer and Havens 2009).	Same as NTT.	No similar action.
95	Habitat Restoration	(ADH) Restore native (or desirable) plants and create landscape patterns which most benefit sage-grouse.	(ADH) Exotic seedings will be rehabbed, interseeded, restored to recover sagebrush in areas to expand occupied habitats.	(ADH) Retain in sagebrush habitat, for each management zone, a minimum of 70% of the ecological sites capable of supporting 12% canopy cover of Wyoming Sagebrush or 15% canopy cover of Mountain Sagebrush. Manage for a total disturbance cap of less than 30%, to include all loss of sagebrush from all causes including anthropogenic disturbance, wildfire, plowed field agriculture, and vegetation treatments. This cap is applied to all designated habitat in the entire management zone. Sites capable of supporting sagebrush habitat will count against the cap until they have recovered to at least 12 percent canopy cover in Wyoming big sagebrush and 15 percent in mountain big sagebrush dominated areas (Bohne et al., 2007). Note: <ul style="list-style-type: none"><li>• Only map-able stands of cheatgrass and Pinyon/ Juniper encroachment will count against the disturbance cap.</li><li>• Irrigated meadows do not count against the cap.</li><li>• On a site by site basis, independent of cap management issues, do not allow treatments with the potential to adversely affect sage-grouse populations.</li></ul>
96	Habitat Restoration	(ADH) Make reestablishment of sagebrush and desirable understory plant cover (relative to ecological site potential) the highest priority for restoration efforts.	No similar action.	Same as NTT, but consider sage-grouse habitat requirements in conjunction with all resource values managed by the BLM, and give preference to grouse habitat unless site specific circumstances warrant an exemption..

Comment [T150]: Ditto comment on line 89.

97	Habitat Restoration	(ADH) In fire prone areas where sagebrush seed is required for sage-grouse habitat restoration, consider establishing seed harvest areas that are managed for seed production (Armstrong 2007) and are a priority for protection from outside disturbances.	Same as NTT.	Same as NTT. Work with local plant material centers and/or groups to establish seed harvest areas and local seed stocks.
--	Habitat Restoration	No similar action.	(ADH) Composition, function, and structure of native vegetation communities will be consistent with the reference state of the appropriate ESD and will provide for healthy, resilient, and recovering sage-grouse habitat components.	No similar action.
--	Habitat Restoration	No similar action.	(ADH) Avoid sagebrush reduction/treatments to increase livestock or big game forage in occupied habitat and include plans to restore high-quality habitat in areas with invasive species.	No similar action.
--	Habitat Restoration	No similar action.	(ADH) Ensure that soil cover and native herbaceous plants are at their ESD potential to help protect against invasive plants.	No similar action.
Areas of Critical Environmental Concern (ACECs)				
--	ACECs	No similar Action	(P) Designate all Priority Habitat as the Sage-grouse Habitat ACEC.	No similar action.

REQUIRED DESIGN FEATURES, PREFERRED DESIGN FEATURES and SUGGESTED DESIGN FEATURES		
<p>The following provides a list of preferred design features (PDFs) and required design features (RDFs) that are applicable to all alternatives in the resource management plan.</p> <ul style="list-style-type: none"><li>• RDFs are design features required for a specified proposal or project and are often necessary to prevent unnecessary or undue degradation of public land resources. All subsequent line items in the NTT alternative are RDFs. Citizens proposal RDF’s are the same as the NTT alternative in all line items.</li><li>• PDFs are established guidelines followed by the BLM to be incorporated into management activities where necessary, appropriate, and/or technically feasible. “Necessary” refers to the need for the PDF given the specifics of a proposal (e.g., It is not “necessary” to apply dust abatement on roads when the soil is sandy and wet.). “Appropriate” refers to the wisdom of apply the PDF (e.g., It may not be “appropriate” to locate man camps outside priority habitat because the additional vehicle miles required by a more distant location could be more detrimental to sage-grouse.). A PDF is “technically feasible” when it entails proven, or in some cases, emerging technology.</li><li>• SDFs are Suggested Design Features that apply to locatable minerals.</li></ul> <p>While the list of PDFs/RDFs/SDFs is thorough, the list is not intended to be exhaustive; additional PDFs/RDFs/SDFs could be developed and implemented to help achieve resource objectives. PDFs/RDFs/SDFs include state-of-the-art measures applied on a site-specific basis to avoid, minimize, reduce, rectify, or compensate for adverse environmental or social impacts. They are applied to management actions to help achieve desired outcomes for safe, environmentally responsible resource development by preventing, minimizing, or mitigating adverse impacts and reducing conflicts. PDFs/RDFs/SDFs also can be proposed by project applicants for activities on public lands (e.g., for gas drilling). PDFs/RDFs/SDFs not incorporated into the permit application by the applicant may be considered and evaluated through the environmental review process and incorporated into the use authorization as conditions of approval (COAs) or rights-of-way stipulations. Standard conditions of approval and rights-of-way stipulations are provided in <a href="#">Appendix XV</a>. Additional PDFs/RDFs/SDFs, COAs, and rights-of-way stipulations could be developed to meet resource objectives based on local conditions and resource specific concerns.</p>		
NTT Alternative & Conservation Alternative		Colorado Sub-Regional Alternative
WEST NILE VIRUS All Designated Habitat		
The following seven site modifications will minimize exploitation of coal bed natural gas ponds by Culex tarsalis:		
98	(ADH) 1. Increase the size of ponds to accommodate a greater volume of water than is discharged. This will result in un-vegetated and muddy shorelines that breeding <i>Cx. tarsalis</i> avoid (De Szalay and Resh 2000). This modification may reduce <i>Cx. tarsalis</i> habitat but could create larval habitat for <i>Culicoides sonorensis</i> , a vector of blue tongue disease, and should be used sparingly (Schmidtman et al. 2000). Steep shorelines should be used in combination with this technique whenever possible (Knight et al. 2003).	Same as NTT for energy-related water disposal.  (ADH) When authorizing new ponds for watering livestock, evaluate the proposed design for features that reduce the potential for creating mosquito breeding habitat in conjunction with features that make the pond fit for the purpose for which it is intended.
99	(ADH) 2. Build steep shorelines to reduce shallow water (>60 cm) and aquatic vegetation around the perimeter of impoundments (Knight et al. 2003). Construction of steep shorelines also will create more permanent ponds that are a deterrent to colonizing mosquito species like <i>Cx. tarsalis</i> which prefer newly flooded sites with high primary productivity (Knight et al. 2003).	Same as line 98.



100	(ADH) 3. Maintain the water level below that of rooted vegetation for a muddy shoreline that is unfavorable habitat for mosquito larvae. Rooted vegetation includes both aquatic and upland vegetative types. Avoid flooding terrestrial vegetation in flat terrain or low lying areas. Aquatic habitats with a vegetated inflow and outflow separated by open water produce 5-10 fold fewer Culex mosquitoes than completely vegetated wetlands (Walton and Workman 1998). Wetlands with open water also had significantly fewer stage III and IV instars which may be attributed to increased predator abundances in open water habitats (Walton and Workman 1998).	Same as line 98.
101	(ADH) 4. Construct dams or impoundments that restrict down slope seepage or overflow by digging ponds in flat areas rather than damming natural draws for effluent water storage, or lining constructed ponds in areas where seepage is anticipated (Knight et al. 2003).	Same as line 98.
102	(ADH) 5. Line the channel where discharge water flows into the pond with crushed rock, or use a horizontal pipe to discharge inflow directly into existing open water, thus precluding shallow surface inflow and accumulation of sediment that promotes aquatic vegetation.	Same as line 98.
103	(ADH) 6. Line the overflow spillway with crushed rock, and construct the spillway with steep sides to preclude the accumulation of shallow water and vegetation.	Same as line 98.
104	(ADH) 7. Fence pond site to restrict access by livestock and other wild ungulates that trample and disturb shorelines, enrich sediments with manure and create hoof print pockets of water that are attractive to breeding mosquitoes.	Same as line 98.
FLUID MINERAL DEVELOPMENT		
Fluid Mineral Roads Priority Habitat		
105	(ADH) Design roads to an appropriate standard no higher than necessary to accommodate the intended purpose.	Same as NTT.
106	(P) Locate roads to avoid important areas and habitats.	(P) PDF
107	(P) Coordinate road construction and use among ROW holders.	Same as NTT.
108	(P) Construct road crossing at right angles to ephemeral drainages and stream crossings.	(P) PDF
109	(P) Establish speed limits on BLM system roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.	(P) PDF
110	(P) Establish trip restrictions (Lyon and Anderson 2003) or minimization through use of telemetry and remote well control (e.g., Supervisory Control and Data Acquisition).	(P) PDF

**Comment [TI51]:** For new wells or existing or both? Since the technology is out there can't we make this a RDF? What reasons are there for designating as PDF rather than RDF?

111	(P) Do not issue ROWs to counties on newly constructed energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.	(P) PDF/Coordinate with counties on transportation management related to sage-grouse habitat issues.
112	(P) Restrict vehicle traffic to only authorized users on newly constructed routes (use signing, gates, etc.).	(P) PDF
113	(P) Use dust abatement practices on roads and pads.	(P) PDF
114	(P) Close and rehabilitate duplicate roads.	(P) PDF
<b>Fluid Mineral Operations Priority Habitat</b>		
115	(P) Cluster disturbances, operations (fracture stimulation, liquids gathering, etc.), and facilities.	(P) PDF
116	(P) Use directional and horizontal drilling to reduce surface disturbance.	(P) PDF
117	(P) Place infrastructure in already disturbed locations where the habitat has not been restored.	(P) PDF
118	(P) 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.	(P) PDF
119	(P) Apply a phased development approach with concurrent reclamation.	(P) PDF
120	(P) Place liquid gathering facilities outside of priority areas. Have no tanks at well locations within priority areas (minimizes perching and nesting opportunities for ravens and raptors and truck traffic). Pipelines must be under or immediately adjacent to the road (Bui et al. 2010).	(P) PDF
121	(P) Restrict the construction of tall facilities and fences to the minimum number and amount needed.	(P) PDF—Restrict the construction of facilities and fences to the minimum number and size necessary.
122	(P) Site and/or minimize linear ROWs to reduce disturbance to sagebrush habitats.	(P) PDF
123	(P) Place new utility developments (power lines, pipelines, etc.) and	(P) PDF

	transportation routes in existing utility or transportation corridors.	
124	(P) Bury distribution power lines.	(P) PDF
125	(P) Corridor power, flow, and small pipelines under or immediately adjacent to roads.	(P) PDF
126	(P) Design or site permanent structures which create movement (e.g. a pump jack) to minimize impacts to sage-grouse.	(P) PDF
127	(P) Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce sage-grouse mortality.	(P) PDF – Cover all drilling and production pits and tanks regardless of size with netting or some other BLM-approved cover <a href="#">method</a> .
128	(P) Equip tanks and other above ground facilities with structures or devices that discourage nesting of raptors and corvids.	(P) PDF
129	(P) Control the spread and effects of non-native plant species (Evangelista et al. 2011). (E.g. by washing vehicles and equipment).	(P) PDF – Clean vehicles in a manner that prevents transport of weeds.
130	(P) Use only closed-loop systems for drilling operations and no reserve pits.	(P) PDF
131	(P) Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).	(P) PDF
132	(P) 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: <input type="checkbox"/> Overbuild size of ponds for muddy and non-vegetated shorelines. <input type="checkbox"/> Build steep shorelines to decrease vegetation and increase wave actions. <input type="checkbox"/> Avoid flooding terrestrial vegetation in flat terrain or low lying areas. <input type="checkbox"/> Construct dams or impoundments that restrict down slope seepage or overflow. <input type="checkbox"/> Line the channel where discharge water flows into the pond with crushed rock. <input type="checkbox"/> Construct spillway with steep sides and line it with crushed rock. <input type="checkbox"/> Treat waters with larvicides to reduce mosquito production where water occurs on the surface.	(P) PDF
133	(P) 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. <i>In preparation</i> ).	(P) PDF

**Comment [T152]:** Recommend making this be a RDF in priority habitat, unless water is tested to be relatively clean (e.g., CBM water can achieve this, whereas deep gas produced water generally cannot).

134	(P) Require noise shields when drilling during the lek, nesting, broodrearing, or wintering season.	(P) PDF
135	(P) Fit transmission towers with anti-perch devices (Lammers and Collopy 2007).	Same as NTT.
136	(P) Require sage-grouse-safe fences.	(P) PDF
137	(P) Locate new compressor stations outside priority habitats and design them to reduce noise that may be directed towards priority habitat.	(P) PDF—Locate new compressor stations outside priority habitat.  (P) RDF-- Design compressor stations and other production equipment so that noise emitted or measured in priority habitat is no more than <b>XX</b> .
138	(P) Clean up refuse (Bui et al. 2011).	(P) RDF
139	(P) Locate man camps outside of priority habitats.	(P) PDF
Fluid Minerals Reclamation Priority Habitat		
140	(P) Include objectives for ensuring habitat restoration to meet sage-grouse 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 sage-grouse habitat needs.	(P) RDF—See <b>Appendix ZZ</b> , Reclamation Plan Requirements.
141	(P) Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.	(P) PDF
142	(P) Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.	(P) PDF—All disturbed areas will be contoured to the original contours or at least to blend with the natural topography. Blending is defined as reducing form, line, shape, and color contrast with the disturbing activity. In visually sensitive areas, all disturbed areas shall be contoured to match the original topography. Matching is defined as reproducing the original topography and eliminating form, line, shape, and color caused by the disturbance as much as possible.
143	(P) Irrigate interim reclamation if necessary for establishing seedlings more quickly.	(P) PDF
144	(P) Utilize mulching techniques to expedite reclamation and to protect soils.	(P) PDF
Fluid Minerals Roads General Habitat		

**Comment [TI53]:** I would say same as line 133; no more than 10 decibels above ambient. Explain, why this would not be possible at all locations and times if it's possible near leks seasonally and at sunrise.

145	(G) Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.	(ADH) Same as NTT.
146	(G) Do not issue ROWs to counties on energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.	(ADH) Coordinate with counties on transportation management related to sage-grouse habitat issues.
147	(G) Establish speed limits to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.	(ADH) PDF
148	(G) Coordinate road construction and use among ROW holders.	Same as NTT.
149	(G) Construct road crossing at right angles to ephemeral drainages and stream crossings.	(ADH) PDF
150	(G) Use dust abatement practices on roads and pads.	(ADH) PDF
151	(G) Close and reclaim duplicate roads, by restoring original landform and establishing desired vegetation.	(ADH) PDF
<b>Fluid Minerals Operations General Habitat</b>		
152	(G) Cluster disturbances, operations (fracture stimulation, liquids gathering, etc.), and facilities.	(ADH) PDF
153	(G) Use directional and horizontal drilling to reduce surface disturbance.	(ADH) PDF
154	(G) Clean up refuse (Bui et al. 2010).	(ADH) RFD
155	(G) Restrict the construction of tall facilities and fences to the minimum number and amount needed.	(ADH) PDF—Restrict the construction of facilities and fences to the minimum number and size necessary.
156	(G) Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce sage-grouse mortality.	(ADH) PDF – Cover all drilling and production pits and tanks regardless of size with netting or some other BLM-approved cover method.
157	(G) Equip tanks and other above ground facilities with structures or devices that discourage nesting of raptors and corvids.	(ADH) PDF

158	(G) Use remote monitoring techniques for production facilities and develop a plan to reduce the frequency of vehicle use.	(ADH) PDF
159	(G) Control the spread and effects from non-native plant species. (e.g., by washing vehicles and equipment).	(ADH) PDF– Clean vehicles in a manner that prevents transport of weeds.
160	(G) Restrict pit and impoundment construction to reduce or eliminate augmenting threats from West Nile virus (Dougherty 2007).	(ADH) PDF
<b>Fluid Minerals Reclamation General Habitat</b>		
161	(G) Include restoration objectives to meet sage-grouse habitat needs in reclamation practices/sites (Pyke 2011). Address post reclamation management in reclamation plan such that goals and objectives are to enhance or restore sage-grouse habitat.	(ADH) RDF—See <b>Appendix ZZ</b> , Reclamation Plan Requirements.
<b>LOCATABLE MINERALS</b>		
<b>Locatable Minerals Roads All Designated Habitat</b>		
162	(ADH) SDF— Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.	(ADH) SDF - Request operators design roads to an appropriate standard no higher than necessary to accommodate their intended purpose; require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
163	(ADH) SDF— Locate roads to avoid important areas and habitats.	(ADH) SDF - Request operators locate roads to avoid important areas and habitats; require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
164	(ADH) SDF— Coordinate road construction and use among ROW holders.	(ADH) SDF - Request ROW holders coordinate road construction and use with other ROW holders; require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
165	(ADH) SDF—Construct road crossing at right angles to ephemeral drainages and stream crossings.	(ADH) SDF - Request operators construct road crossing at right angles to ephemeral drainages and stream crossings; require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
166	(ADH) SDF— Establish speed limits on BLM system roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.	(ADH) SDF - Request operators establish speed limits on BLM system roads to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds; require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809; .
167	(ADH) SDF—Do not issue ROWs to counties on mining development roads, unless for a temporary use consistent with all other terms and conditions included in this document.	(ADH) SDF - Coordinate with counties on transportation management related to sage-grouse habitat issues.
168	(ADH) SDF— Restrict vehicle traffic to only authorized users on newly constructed routes (e. g., use signing, gates, etc.).	(ADH) SDF - Request operators restrict vehicle traffic to only authorized users on newly constructed routes (e.g., use signing, gates, etc.); require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
169	(ADH) SDF—Use dust abatement practices on roads and pads.	(ADH) SDF - Request operators use dust abatement practices on roads and pads; require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.



170	(ADH) SDF—Close and reclaim duplicate roads, by restoring original landform and establishing desired vegetation.	(ADH) SDF - Request operators close and reclaim duplicate roads, by restoring original landform and establishing desired vegetation; require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
<b>Locatable Minerals Operations All Designated Habitat</b>		
171	(ADH) SDF—Cluster disturbances associated with operations and facilities as close as possible.	(ADH) SDF - Cluster disturbances associated with operations and facilities as close as possible; require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
172	(ADH) SDF— Place infrastructure in already disturbed locations where the habitat has not been restored.	(ADH) SDF - Place infrastructure in already disturbed locations where the habitat has not been restored; require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
173	(ADH) SDF—Restrict the construction of tall facilities and fences to the minimum number and amount needed.	(ADH) SDF - Restrict the construction of tall facilities and fences to the minimum number and amount needed; require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
174	(ADH) SDF—Site and/or minimize linear ROWs to reduce disturbance to sagebrush habitats.	(ADH) SDF - Site and/or minimize linear ROWs to reduce disturbance to sagebrush habitats; require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
175	(ADH) SDF— Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.	(ADH) SDF - Request that operators place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors; require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
176	(ADH) SDF— Bury power lines.	(ADH) SDF - Request that operators bury power lines; require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
177	(ADH) SDF—Cover (e.g., fine mesh netting or use other effective techniques) all pits and tanks regardless of size to reduce sage-grouse mortality.	(ADH) SDF - Request that operators cover all pits and tanks regardless of size using fine mesh netting or other effective techniques to reduce sage-grouse mortality; require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
178	(ADH) SDF—Equip tanks and other above ground facilities with structures or devices that discourage nesting of raptors and corvids.	(ADH) SDF - Request operators equip tanks and other above ground facilities with structures or devices that discourage nesting of raptors and corvids; require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
179	(ADH) SDF— Control the spread and effects of non-native plant species (Gelbard and Belnap 2003, Bergquist et al. 2007).	(ADH) SDF - Request operators control the spread and effects of non-native plant species (Gelbard and Belnap 2003, Bergquist et al. 2007); require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
180	(ADH) SDF— Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).	(ADH) SDF - Request operators restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007); require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
181	(ADH) SDF—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: <input type="checkbox"/> Overbuild size of ponds for muddy and non-vegetated shorelines. <input type="checkbox"/> Build steep shorelines to decrease vegetation and increase wave actions. <input type="checkbox"/> Avoid flooding terrestrial vegetation in flat terrain or low lying areas.	(ADH) SDF - Request that operators adhere to the PDF/RDF provisions in this table’s Section on West Nile Virus; require adherence as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.

	<input type="checkbox"/> Construct dams or impoundments that restrict down slope seepage or overflow. <input type="checkbox"/> Line the channel where discharge water flows into the pond with crushed rock. <input type="checkbox"/> Construct spillway with steep sides and line it with crushed rock. <input type="checkbox"/> Treat waters with larvicides to reduce mosquito production where water occurs on the surface.	
182	(ADH) SDF—Require sage-grouse-safe fences around sumps.	(ADH) SDF - Request operators install sage-grouse-safe fences around sumps; require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
183	(ADH) SDF— Clean up refuse (Bui et al. 2010).	(ADH) SDF - Require operators to clean up refuse (Bui et al. 2010) so as to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
184	(ADH) SDF— Locate man camps outside of priority sage-grouse habits.	(ADH) SDF - Request that operators locate man camps outside priority habitat; require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
<b>Locatable Minerals Reclamation All Designated Habitat</b>		
185	(ADH) SDF—Include restoration objectives to meet sage-grouse habitat needs in reclamation practices/sites. Address post reclamation management in reclamation plan such that goals and objectives are to protect and improve sage-grouse habitat needs.	(ADH) SDF—See <b>Appendix ZZ</b> , Reclamation Plan Requirements.
186	(ADH) SDF—Maximize the area of interim reclamation on long-term access roads and well pads including reshaping, topsoiling and revegetating cut and fill slopes.	(ADF) No similar Action. (Interim Reclamation is a fluid mineral term that does not apply to locatable minerals)
187	(ADH) SDF— Restore disturbed areas at final reclamation to pre-disturbance landform and desired plant community.	(ADH) SDF—Request operators’ reclamation plans to target pre-disturbance landform and desired plant community vegetation; require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
188	(ADH) SDF—Irrigate interim reclamation as necessary during dry periods.	(ADH) No similar Action. (Interim Reclamation is a fluid mineral term that does not apply to locatable minerals).
189	(ADH) SDF— Utilize mulching techniques to expedite reclamation.	(ADH) SDF—Request operators use mulching techniques to expedite reclamation; require as necessary to prevent unnecessary or undue degradation under 43 CFR subpart 3809.
190	(ADH) SDF— Do not issue ROWs to counties on mining development roads, unless for a temporary use consistent with all other terms and conditions included in this document.	(ADH) SDF—Coordinate with counties on transportation management related to sage-grouse habitat issues.
<b>FIRE MANAGEMENT</b>		
<b>Fire Management—Fuels Management All Designated Habitat</b>		
191	(ADH) 1. Where applicable, design fuels treatment objective to protect existing sagebrush ecosystems, modify fire behavior, restore native plants, and create landscape patters which most benefit sage-grouse habitat.	(ADH) PDF—Where applicable, design fuels treatment objective to protect existing sagebrush ecosystems, modify fire behavior, restore native plants, and create landscape patterns to address other values-at-risk.

192	(ADH) 2. Provide training to fuels treatment personnel on sage-grouse biology, habitat requirements, and identification of areas utilized locally.	(ADH) PDF
193	(ADH) 3. 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).	(ADH) PDF
194	(ADH) 4. Ensure proposed sagebrush treatments are planned with interdisciplinary input from BLM and /or state wildlife agency biologist and that treatment acreage is conservative in the context of surrounding sage-grouse seasonal habitats and landscape.	(ADH) RFD
195	(ADH) 5. Where appropriate, ensure that treatments are configured in a manner (e.g., strips) that promotes use by sage-grouse (See Connelly et al., 2000*).	(ADH) RDF
196	(ADH) 6. Where applicable, incorporate roads and natural fuel breaks into fuel break design.	(ADH) RDF
197	(ADH) 7. 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.	(ADH) PDF
198	(ADH) 8. 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.	(ADH) RDF
199	(ADH) 9. Give priority for implementing specific sage-grouse habitat restoration projects in annual grasslands first to sites which are adjacent to or surrounded by sage-grouse 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.	(ADH) PDF
200	(ADH) 10. As funding and logistics permit, restore annual grasslands to a species composition characterized by perennial grasses, forbs, and shrubs.	(ADH) PDF—Restore annual grasslands to a species composition characterized by perennial grasses, forbs, and shrubs.
201	(ADH) 11. 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.	(ADH) PDF
202	(ADH) 12. Remove standing and encroaching trees within at least 100 meters of occupied sage-grouse 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.	(ADH) PDF
203	(ADH) 13. Protect wildland areas from wildfire originating on private lands, infrastructure corridors, and recreational areas.	(ADH) RDF—Prioritize suppression immediately after firefighter and public safety commensurate with the values-at-risk.
204	(ADH) 14. 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	(ADH) PDF

	rights-of-way.	
205	(ADH) 15. 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).	(ADH) PDF
<b>Fire Management All Designated Habitat</b>		
206	(ADH) 1. Develop state-specific sage-grouse reference information and resource materials containing maps, a list of resource advisors, contact information, local guidance, and other relevant information.	(ADH) RDF Develop state-specific sage-grouse reference and resource materials containing maps, a list of resource advisors, contact information, local guidance, and other relevant information. These state-specific sage-grouse reference and resource materials are for internal use only.
207	(ADH) 2. Provide localized maps to dispatch offices and extended attack incident commanders for use in prioritizing wildfire suppression resources and designing suppression tactics.	(ADH) RDF
208	(ADH) 3. Assign a sage-grouse resource advisor to all extended attack fires in or near key sage-grouse habitat areas. Prior to the fire season, provide training to sage-grouse resource advisors on wildfire suppression organization, objectives, tactics, and procedures to develop a cadre of qualified individuals.	(ADH) PDF—Prior to the fire season, provide training to sage-grouse resource advisors on wildfire suppression organization, objectives, tactics, and procedures to develop a cadre of qualified individuals.
209	(ADH) 4. On critical fire weather days, pre-position additional fire suppression resources to optimize a quick and efficient response in sage-grouse habitat areas.	(ADH) PDF--Pre-position fire suppression resources based on all resource values-at-risk.
210	(ADH) 5. During periods of multiple fires, ensure line officers are involved in setting priorities.	(ADH) RDF
211	(ADH) 6. Locate wildfire suppression facilities (i.e., base camps, spike camps, drop points, staging areas, and heli-bases) in areas where physical disturbance to sage-grouse 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.	(ADH) PDF
212	(ADH) 7. Power-wash all firefighting vehicles, to the extent possible, including engines, water tenders, personnel vehicles, and ATVs prior to deploying in or near sage-grouse habitat areas to minimize noxious weed spread.	(ADH) PDF
213	(ADH) 8. Minimize unnecessary cross-country vehicle travel during fire operations in sage-grouse habitat.	(ADH) RDF—Eliminate unnecessary cross-country vehicle travel during fire operations in sage-grouse habitat.
214	(ADH) 9. Minimize burnout operations in key sage-grouse habitat areas by constructing direct fireline whenever safe and practical to do so.	(ADH) PDF
215	(ADH) 10. Utilize retardant and mechanized equipment to minimize burned acreage during initial attack.	(ADH) PDF
216	(ADH) 11 As safety allows, conduct mop-up where the black adjoins unburned islands, dog legs, or other habitat features to minimize sagebrush loss.	(ADH) PDF

--	--	--

- <sup>1</sup> - NTT stands for “National Technical Team” as it relates to the “Report on National Greater Sage-Grouse Conservation Measures” released on December 21, 2011. The NTT report is included in Appendix XX of this EIS.
- <sup>2</sup> - All references to sage-grouse in this document refer to Greater Sage-Grouse
- <sup>3</sup> - All Designated Habitat (ADH) includes, Priority (P), General (G), and Connectivity (C) habitat.

**Comment [T154]:** There is no “C” designation anywhere.