ADDENDUM to BLM-WY Fluid Mineral Lease Sale Environmental Assessment

Greater sage-grouse

Affected Environment (Chapter 3)
GSG are a Wyoming BLM sensitive species and a WGFD species of greatest conservation need because of population decline and ongoing habitat loss. BLM Instructional Memoranda (IM) WY-2012- 019, WO IM-2012-044, and -043 establish interim management practices for proposed activities on BLM- administered lands, including federal mineral estate, until RMP updates are complete.

The first mortality of Greater sage -grouse from the mosquito driven West Nile virus (WNv) was documented in 2002 in the Powder River Basin, Wyoming. Researchers monitoring radio-collared sage-grouse have provided the most insight on prevalence and mortality rates given that mortalities in collared birds are more likely to be found and in a timely manner. Weather conditions play a large role in predicting WNv outbreaks. As temperatures rise the *Culex tarsalis* mosquito, the primary vector for WNv, is able to produce in larger numbers thereby increasing the potential for disease transmission. The probability of a future catastrophic outbreak of WNv is not predictable. Two distinct episodes of WNv impact have previously occurred in NE Wyoming in 2002 and 2007.

A second factor contributing to potential for increased risk of disease transmission is associated with mosquito breeding habitat. Breeding habitats can develop from precipitation accumulating in natural or manmade wetlands, ponds and other bodies of standing water. Reservoirs constructed to hold water produced from Coal Bed Natural Gas (CBNG) production can greatly increase the amount of available mosquito breeding habitat. Walker (2008) found lower WNv infection rates outside of CBNG fields. The disease was present each year of the study and coincided with reduced annual female survival rates of up to 27% and reduced estimates of population growth 7-10% per year. Walker suggested that eliminating manmade water sources that provide suitable mosquito breeding habitat could reduce disease occurrence.

Based on Walker's research (Walker 2008), the BLM Buffalo Field Office requires oil and gas operator's to implement pest management plans to control mosquito production within CBNG produced water. This is often accomplished through the application of larvicides. The oil and gas industry also engineers new reservoirs to minimize available mosquito breeding habitat by constructing deep ponds with steep sides to reduce growth of emergent vegetation, which is a key component of suitable breeding habitat.

Northeast Wyoming oil and gas development and production activity has changed significantly since 2009. CBNG development in the Powder River Basin has continuously declined with the peak number of drilling rigs at 19 in 2010 and 11 for a short time in 2011, with as few as zero operating during some months throughout 2009-2012. This is in contrast to the peak number of 55 rigs operating in November of 2007. This decline is expected to continue as most CBNG leases are already drilled and natural gas prices remain low. Many operators have very active CBNG plugging programs which plug, abandon, remove surface facilities and reclaim CBNG locations, essentially removing the well, above ground infrastructure and associated production activities from the landscape. According to the Wyoming Oil and Gas Conservation Commission, as of August, 31, 2013, 355 CBNG wells had been drilled in the Powder River Basin (Figure 8), (Adams, personal communication). Eighty-two percent of the wells were drilled on private surface (this includes split estate), 9% on State, 8% on BLM and 1% on U.S. Forest Service. Many wells drilled early in the development of CBNG on the eastern side of the basin have

completed the production phase of development and are now being plugged and abandoned. As of August 2013 more than 7,600 wells have been plugged and abandoned or are in the process of being plugged and abandoned, 86% of which are on private surface, 12% State, 1% BLM and 1% U.S. Forest Service (Adams, personal communication). A vast majority of CBNG wells have been shut-in, but they are still capable of production. It is unknown whether development levels will return to pre-2009 levels. New plays involving horizontal drilling and completion techniques and oil production are the factors driving where drilling is most active. Best practices, many of which were developed in the Powder River Basin, have been adopted by policy (See WY IM2012-019) and would be considered at the time development is proposed.

The risk of WNv due to increased mosquito habitat from holding ponds may also affect other special status bird species. Any shallow areas of water with emergent vegetation are susceptible to mosquito breeding and possible spread of WNv could occur. As such, water developments [associated with grazing activities] should be kept out of riparian and wetland areas where feasible, to help reduce the impacts to Greater sage-grouse from habitat loss, WNv, or reductions in forage in those areas. (Cagney et al. 2010)

Risks to Greater sage-grouse from oil, gas, and CBNG development include elevated mortality due to collisions with structures and vehicles, risk of WNv due to increased mosquito habitat from holding ponds, disturbance of birds that may force them into suboptimal habitats with elevated predation rates (resulting in a decline in habitat suitability), and direct habitat loss (Walker et al. 2007). The construction phase of CBNG well development (drilling and completion), which typically takes 1-2 months for a single drill bore (but can extend up to 14 months or more for a multiple drill hole well pad), is a period of high intensity human activity, noise, road and equipment use, and site disturbance. This period is considered one of particularly high impact to Greater sage-grouse, especially if it coincides with seasons when the birds might already be stressed (Walker et al. 2007). However, adverse impacts to sage-grouse may continue to occur beyond the construction phase and throughout normal operations during production (Holloran 2005; Walker et al. 2007; Doherty et al. 2008). Sage-grouse may simply avoid otherwise suitable habitat as the density of roads, power lines, or energy development increases (Lyon and Anderson 2003; Holloran 2005; Kaiser 2006; Doherty et al. 2008). Abandonment of leks may not occur during the first year of drilling and operations, but often is shown to occur within 2-10 years following well development (Walker et al. 2007, Harju et al. 2010, Hess and Beck 2012).

If produced water is stored in evaporation ponds or reservoirs, Greater sage-grouse could be vulnerable to the threat of WNv if *Culix tarsalis* mosquitos were allowed to breed in the holding ponds (Walker et al. 2007).

The issues surrounding WNv are multi-faceted. Many actions considered necessary for addressing WNv and other potential impacts to state wide populations of sage grouse are being contemplated in the Draft RMP amendments and/or revisions. The analysis contained in the Population Viability Analysis (PVA) report assumed specific future development scenarios which we are inherently unable to predict. Likewise, the report assumes specific impacts would occur to Greater sage-grouse lek attendance when applying the stochastic "catastrophic outbreak" of WNv to the assumed development scenario. The PVA report predicts that if all assumptions remain unchanged, then the result of such an outbreak, is would be a loss of population viability in the Wyoming portion of the basin. While the impacts to sage-grouse populations from WNv can be described in general terms, the potential for, and severity of, any future outbreak cannot be quantified; further NEPA cannot predict whether a stochastic event, such as a future catastrophic outbreak of WNv as in the PVA model, would occur. At the time

of leasing, without a discrete development proposal, BLM has no information about whether or how a particular lease may be developed.

Specifically, not all oil and gas developments result in large volumes of produced water that would necessitate intensive planning and oversight-with or without WNv occurrences. CBNG produced water evaporation ponds have been linked to outbreaks of WNv in the past but recent efforts to construct and maintain these impoundments have had success in reducing mosquito breeding grounds and have been coupled with coordinated reclamation and habitat restoration efforts.[1]

The authors of the PVA report concluded that "energy development alone would not result in extirpation of the sage-grouse population if all other environmental factors remained favorable. However, energy development combined with the threat of West Nile virus compromises this small population. Intensive population monitoring combined with large scale habitat reclamation/restoration and reducing the West Nile virus threat (man-made water sources) are recommended." (Quoted from: Northeast WY Sage-Grouse (Draft) Conservation Plan Addendum dated October 20, 2013).

Further, the PVA report indicates that populations in the Powder River Basin remain viable as of the time of publication. The study further maintains that efforts to bolster populations near and within the basin itself through restoration can help to maintain or improve the remaining viability of these local populations. BLM is operating with increased focus on accelerated reclamation and habitat restoration projects alike. The High Plains District has embarked on a new Healthy Lands focal area called Powder River Restoration and has further supported the development of a Candidate Conservation Agreement (CCA) covering 5 counties of northeastern Wyoming. The agreement is coupled with a Candidate Conservation Agreement with Assurances (CCAA) and a Conservation Agreement (CA). The intended outcome of all these agreements and collaborative conservation values is to further enhance the remaining viability of populations in the basin and throughout NE Wyoming.

There are several on-going studies and strategies for limiting the potential for WNv outbreaks in NE Wyoming because the severe impacts of a widespread outbreak are of great concern to the BLM and its partners. The report reinforces the concept that robust strategies are necessary for healthy Greater sage grouse populations that require large and predominantly unfragmented landscape-scale habitats. BLM-WY continues to work with industry partners, Wyoming Game and Fish Department, private landowners and the U.S. Fish and Wildlife Service to maintain and manage for the long-term conservation and restoration of Greater sage grouse habitats and populations in the PRB.

WY IM 2012-019 recognized the need for overarching policy direction for those activities[2] that can contribute to occurrences and/or outbreaks of West Nile virus. This policy would be

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[1] http://wgfd.wyo.gov/web2011/Departments/Wildlife/pdfs/SG_NORTHEAST_DRAFT0004678.pdf
http://www.fws.gov/home/feature/2006/WHB06_08sagegrouse.pdf

[2] This Instruction Memorandum (IM) provides guidance to Bureau of Land Management Wyoming (BLM WY) Field Offices (FOs) regarding management consideration of Greater Sage-Grouse habitats for proposed activities until resource management planning updates are completed. This guidance is in place of direction provided in Washington Office (WO) IM No. 2012-043 concerning interim management policies and procedures for Greater Sage-Grouse. Specifically, this IM addresses all BLM WY programs and provides all necessary interim program direction consistent with WO IM No. 2012-043.

considered at the time development was proposed, should the subject parcels be offered and sold.

> ***WY IM 2012-019 Policy Statement 7: West Nile Virus***
> *Artificial water impoundments will be managed to the extent of BLM's authority for the prevention and/or spread of West Nile virus (WNv) where the virus poses a threat to sage-grouse. This may include but is not limited to: (a) the use of larvicides and adulticides to treat waterbodies; (b) overbuilding ponds to create non-vegetated, muddy shorelines; (c) building steep shorelines to reduce shallow water and emergent aquatic vegetation; (d) maintaining the water level below rooted vegetation; (e) avoiding flooding terrestrial vegetation in flat terrain or low lying areas; (f) constructing dams or impoundments that restrict seepage or overflow; (g) lining 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; (h) lining the overflow spillway with crushed rock and construct the spillway with steep sides to preclude the accumulation of shallow water and vegetation; and (i) restricting access of ponds to livestock and wildlife (Doherty 2007).*
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> *Field Offices should consider alternate means to manage produced waters that could present additional vectors for WNv. Such remedies may include re-injection under an approved Underground Injection Control (UIC) permit, transfer to single/centralized facility, etc.*
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> *Policy Statement 7 regarding WNv does not apply to naturally occurring waters. Impoundments for wildlife and/or livestock use should be designed to reduce the potential to produce vectors for WNv where the virus may pose a threat to sage-grouse.*

No Action alternative: Not offering any parcels for sale under this competitive lease sale, will not cause beneficial or adverse impacts to sage grouse from disease vectors such as WNv. Development will continue associated with Federal valid existing lease rights, including the construction and operation of produced water storage facilities, and from continued operations on state and/or private lands. The threat of WNv to impact Greater sage-grouse is unchanged.

Proposed Action Alternative: Impacts are the same as the No Action. Should parcels be sold and development proposed, the potential for creating and managing potential mosquito breeding habitat will be addressed at the APD/NEPA stage in accordance with WY IM 2012-019, policy statement #7: West Nile virus.

Lease All Parcels Alternative: Impacts are expected to be similar to the Proposed Action. Produced water volumes would likely be greater under Alternative B, assuming that all parcels are sold and subsequently developed. However, the amount of produced water is not directly related to occurrences of WNv. If the policy outlined in WY IM 2012-019 is followed, impacts would be similar to the proposed action.

Cumulative Impacts: A vast majority of CBNG wells in the Powder River Basin have been shut-in and are still capable of production. It is unknown whether development levels will return to pre-2009 levels. Best practices that were developed in the Powder River Basin, have been adopted by policy (See WY IM2012-019) and are being incorporated into the ongoing Greater Sage Grouse Land Use Plan and RMP amendments in Rock Springs, Pinedale, Casper, Newcastle, Kemmerer, and Rawlins as well as the RMP revisions ongoing in Buffalo, Lander, and the Bighorn Basin. Potential impacts to sage grouse from outbreaks of WNv are expected to continue at current levels. The offering of lease parcels is not expected to change the overall

threat to Greater sage-grouse from WNv, as it has no influence on the potential for an outbreak of WNv, or the severity of the effect to sage-grouse populations should an outbreak occur. Please refer to Section 4.4 of the HPD EA (pages 52-53) and Section 4.7 of the WRBBD EA (pages 4-44 thru 4-46), for additional discussion of potential cumulative impacts.

References:

http://cogcc.state.co.us/rulemaking/StaffPreHearState/Exhibits/FINAL%20DOW%20TESTIMONY/B.Walker%20Testimony-041808%20FINAL.pdf

http://www.cfsph.iastate.edu/Factsheets/pdfs/west_nile_fever.pdf

http://diseasemaps.usgs.gov/wnv_wy_human.html

Draft Northeast WY Sage-Grouse Conservation Plan Addendum, October 20, 2013