United States Department of the Interior
Bureau of Land Management

DOI-BLM-MT-0000-2019-0001-EA

Environmental Assessment
Oil and Gas Lease Parcel Sale
July 30, 2019

June 11, 2019

Location: Billings, Miles City, Havre, and North Dakota Field Offices
(all parcels in Lewistown Field Office are deferred)

see Appendix A for list of lease parcels by number and legal description

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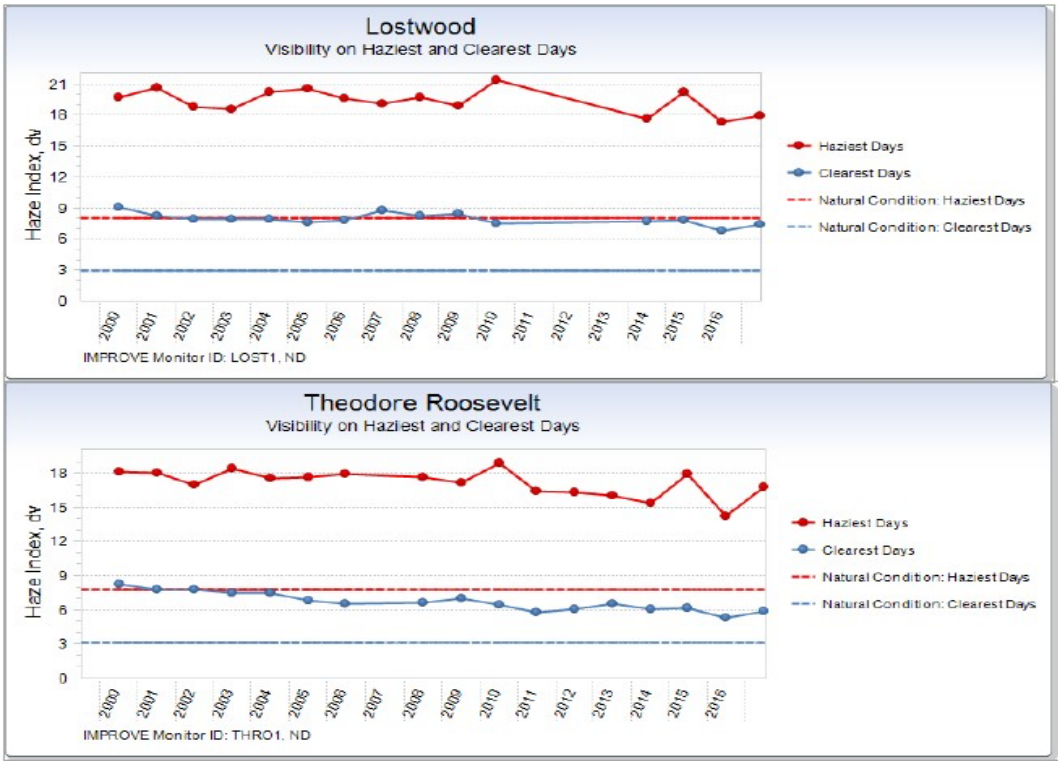
The Bureau of Land Management's mission is to sustain the health, diversity, and productivity of the public land s for the use and enjoyment of present and future generations.

Following are excerpted sections of the EA which analyze the impacts that would be caused to the air quality of the Lostwood Wilderness and Theodore Roosevelt Wilderness under the Proposed Action of leasing the federal mineral estate to oil and gas production. These excerpts are from the Affected Environment & Environmental Consequences Section.

Pollutant particles in the atmosphere cam impair scenic views, degrading the contrast, colors, and distance an observer is able to see. Visibility is a measure of how far and how well and observer can see a distant and varied scene and can be assessed in terms of distance that a person can distinguish a large dark object on the horizon and is measured as the standard visual range in miles. A deciview is a unit of measurement of quantify human perception of visibility. It is derived from the natural logarithm of atmospheric light extinction coefficient. One (1) deciview is roughly the smallest change in visibility (haze) that is barely perceptible. Because visibility at any one location is highly variable throughout the year, it is characterized by three groupings: the clearest 20% days, average 20% days, and haziest 20% days.

Visibility degradation is primarily due to anthropogenic sulfate, nitrate, and particulate emissions and due to wildfires. Air pollutants affecting visibility can be transported hundreds of miles. Some of the proposed parcels are within 50 kilometers (km) (approximately 30 miles) of a Class I area, which is the transition point from near-field to far-field analysis, and if developed emissions could potentially impact visibility and result in atmospheric deposition. Propose parcels within the Billings Field Office are within 50 km of the Northern Cheyenne Trible Class I area. Proposed parcels within the North Dakota Field Office are seven miles from the Lostwood Wilderness Area and twelve miles from Theodore Roosevelt National Park Class I areas. **Figure 2** shows current visibility trends at some of the Class I areas that could potentially be impacted from development on proposed parcels.

Figure 2: Visibility Trends at Class I Areas



Lease parcels in the North Dakota Field Office are approximately seven miles from the Lostwood Wilderness Area and twelve miles from the Theodore Roosevelt National Park Class I areas. Emissions from oil and gas development have potential to impact visibility in these Class I areas. The MCFO RMP assessed visibility impacts from the exhaust form drill rig engines on Class I areas located approximately 1 km away. Predicted impacts on color difference and contrast were less than thresholds use to identify impacts. The MCFO RMP further analyzed far-field visibility impacts on Class I areas using the CALPUFF model. The CALPUFF predicted visibility impacts are predicted to be below 0.5 change in deciviews (Δdv) and each Class I and Class II area analyzed. This threshold is included in guidance developed by the National Park Service, US Forest Service, and the FWS (FLAG 2010). At each receptor and for each year, zero days are predicted to occur when the 98th percentile change in decivews would equal or exceed 0.5. Predicted impacts were as low as 9 percent to as high as 26 percent of the threshold. Based on the results of the MCFO RMP modeling, oil and gas development is not considered to directly contribute to regional haze visibility impairment.

As emission source locations are not known during the land management planning, BLM has analyzed potential visibility impacts to nearby Class I areas if lease parcels are developed. The North Dakota Field Office reasonably foreseeable development scenario for the North Dakota parcels is that two new wells and two new well pads will be developed. To identify visibility impacts, the BLM assumes that one well will be developed for the parcel (NDM97300NB) closest to the Lostwood Class I area, and one well for the parcel (NDM102757FC) closest to Theodore Roosevelt National Park Class I area. In actuality, a well could be drilled around any of the 19 parcels. All 18 refuge parcels are no surface occupancy so would be offsite horizontally drilled, likely within 2 miles of the parcel. VISCREEN is used to evaluate changes in visibility, following the guidance in the EPA's Workbooks for Plume Visual Impacts Screening and Analysis (EPA, 1980). Changes in visibility will be assessed using the change in color difference index (ΔE) and plume contrast (C) against the background sky terrain. The highest short-term emissions from the MCFO RMP air analysis are used to evaluate changes to visibility during pad constructions, drilling, and completion phases of development. Their 2 and Tier 4 engines were analyzed for the drilling and completion phases of development. For each phase of development a VISCREEN Level-1 screening, assuming worst case atmospheric stability and wind conditions, was performed. For scenarios where level-1 screening thresholds were exceeded, a level-2 screening analysis was performed, using local meteorology data and conservative stability.

Emissions from pad construction and drilling passed the level-1 screening, with changes to visibility below color difference and plume contrast thresholds, except for drilling with Tier 2 engines near the Lostwood Wildlife Refuge. Results from the VISCREEN level-2 analysis are show in in **Table 5** below. The level-2 VISREEN analysis used a stability category of E and wind speed of 2/m/s for the parcel nearest Lostwood Wildlife Refuge, and a stability category E and wind speed of 3 m/s for the parcel nearest Theodore Roosevelt NP. Air resource specialists from the USFWS, USEPA, and NPS area currently interpreting the results of the visibility screening. Preliminary findings suggest that visibility changes remain below thresholds for Class I airsheds.

Table 5: VISCREEN Level-2 Analysis Results

Emissions Source	Nearest Class I Area	Assessment	ΔE Result	ΔE Criterion	Contrast Result	Contrast Criterion	(Pasq, wspd)[1,2]	Pass (Y/N)
NDM97300NB Drilling (Tier 2 engines)	Lostwood	Sky 1	0.5	2.0	0.0	0.5	E,2	Y
		Sky 2	0.4	2.0	0.0	0.5		Y
		Terrain 1	0.3	2.0	0.0	0.5		Y
		Terrain 2	0. 1	2 .0	0.0	0.5		Y
NDM97300NB Completion (Tier 2 engines)	Lostwood	Sky 1	1.9	2.0	0.0	0.5	E,2	Y
		Sky 2	1.5	2.0	0.0	0.5		Y
		Terrain 1	0.6	2.0	0.0	0.5		Y
		Terrain 2	0.3	2 .0	0.0	0.5		Y
NDM102757FC Completion (Tier 2 engines)	Theodore Roosevelt	Sky 1	0.9	2.0	0.0	0.5	E,3	Y
		Sky 2	0.7	2.0	0.0	0.5		Y
		Terrain 1	0.3	2.0	0.0	0.5		Y
		Terrain 2	0.2	2.0	0.0	0.5		Y
NDM97300NB Completion (Tier 4 engines)	Lostwood	Sky 1	1.1	2.0	0.0	0.5	E,2	Y
		Sky 2	0.8	2.0	0.0	0.5		Y
		Terrain 1	0.3	2.0	0.0	0.5		Y
		Terrain 2	0. 1	2 .0	0.0	0.5		Y
NDM102757FC Completion (Tier 4 engines)	Theodore Roosevelt	Sky 1	0.5	2.0	0.0	0.5	E,3	Y
		Sky 2	0.4	2.0	0.0	0.5		Y
		Terrain 1	0.2	2.0	0.0	0.5		Y
		Terrain 2	0.1	2.0	0.0	0.5		Y

[1] Assuming worst case stability and wind conditions that have cumulative frequency of occurrence above 1%
[2] Based on five years (2014-2018) of wind data from Mino t International Airport, and Theodore Roosevelt Airport.