

Pinedale Anticline SEIS Record of Decision Visibility Milestone #2 Final Determination

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Visibility Milestone #2 ROD Requirements

Visibility Milestone #2 in Section 4.1.1 of the ROD states:

Within 42 months after signing of this ROD project related visibility impacts will be no greater than 10 days of visibility impairment over 1 dv at the Bridger Wilderness Area.



Visibility Milestone #2 ROD Requirements

The ROD further states on page 26:

All Operators will accelerate the use of advanced technologies to reduce NOx emissions to reduce visibility impacts to the 80 percent drilling rig engine NOx emissions reduction scenario, which is modeled to result in no more than 10 days greater than 1.0 dv of visibility impairment. The 80% minimum reduction must occur no later than 42 months following signing of this ROD.



Bridger Wilderness Area IMPROVE Data

- Visibility impairment is measured at two **IMPROVE** monitoring stations within the Bridger Wilderness area:

The Bridger station and the Boulder Lake station

- Ideally, visibility impacts attributable to the project area could be determined by analyzing actual monitoring data from these IMPROVE stations.
- The monitoring data includes measurements of nitrate and sulfate compounds, organic material, carbon, and soil particles originating from many natural and anthropogenic sources both within the region and transported into the region in addition to project related sources.
- It is not possible to segregate measurements from just the project related sources of emissions.



Bridger Wilderness Area IMPROVE Data

- Data from the Bridger Wilderness Area monitoring sites show a seasonal variability in visibility impairment with the highest impacts occurring typically in the summer months.
- The past 10 years of currently available data show a gradual decrease in visibility impairment (or a gradual improvement in visibility).
- The Boulder Lake site began collecting data in August 2009. It is difficult to draw any conclusions regarding visibility degradation or improvement from the limited data available for this site.



Methodology for Determining Compliance

- The air analysis and modeling conducted for the Pinedale Anticline SEIS determined that nitrate compounds formed from nitrogen oxide (NO_x) emissions, primarily from drill rig engines, were the primary project related contributor to visibility impairment.
- The visibility milestones in the PA SEIS ROD were based on the modeling results which showed improved visibility with decreasing NO_x emissions.



Methodology for Determining Compliance

- Visibility Milestone # 2 is based on the modeling results for the scenario which assumed an 80% reduction in NOx emissions from drill rig engines and total project related NOx emissions of 1,703.5 tons per year.
- Emissions at this rate resulted in a predicted impact of 10 days of visibility impairment greater than 1 dv within Bridger WA. Hence, 1,703.5 tons of NOx per year was used as the threshold for determining compliance with Visibility Milestone #2.



Methodology for Determining Compliance

- On December 16, 2011, the Pinedale Field Office issued a letter to operators included in the Pinedale Anticline 2008 ROD to request a 12-month NOx emissions inventory in order to determine compliance with Visibility Milestone #2.
- NOx emissions data was requested for the following sources from project related activities including:
 - ✓ **Stationary engines**
 - ✓ **Heaters**
 - ✓ **Tanks**
 - ✓ **Dehydration units**
 - ✓ **Pneumatic pumps**
 - ✓ **Drill rig engines**
 - ✓ **Completions**
 - ✓ **Construction mobile sources**



Methodology for Determining Compliance

- The Wyoming Department of Environmental Quality, Air Quality Division (WDEQ-AQD), provided 2011 actual emissions data for the following permitted major sources to be included in the compliance determination:
 - Pinedale compressor station
 - Paradise compressor station
 - Falcon compressor station
 - Any compressor station project related expansions that occurred in 2011.



Methodology for Determining Compliance

- In order to make a Final determination of compliance with the milestone, the BLM compiled the emissions inventories submitted by Operators and the WDEQ-AQD to determine the expected 2012 NO_x emissions level, and compared this to the threshold emissions level of 1,703.5 tons NO_x/year.
- The BLM issued a preliminary determination of compliance for Visibility Milestone #2 on March 12, 2012 with the intention of making a final determination of compliance after 2011 emissions data was available from WDEQ-AQD.



Operator Submittals

- The following operators submitted individual NOx emission inventories to the BLM:

Ultra Resources

Shell (SWEPI)

QEP Field Services

QEP Energy Company

Yates Petroleum

Anschutz Pinedale

Newfield Exploration



WDEQ-AQD Submittals for Major Sources

- The WDEQ-AQD provided actual, verified 2011 NO_x emissions data for the following permitted major sources:

Pinedale Complex	69.50 tons NO _x
Paradise Compressor Station	219.60 tons NO _x
Falcon Compressor Station	153.70 tons NO _x
Blacks Fork Gas Plant Expansion:	81.20 tons NO _x
Total Annual NO_x emissions:	524 tons NO_x



Operator Submittals

- The Operators provided actual 2011 emissions data and projected 2012 emissions data.
- 2011 emissions data were used in the compliance determination if the operator did not project increases or decreases in operations for 2012.
- Ultra, Shell, and QEP anticipated a substantial reduction in NOx emissions for 2012 due to the installation of SCR (Selective Catalytic Reduction) on drill rig engines.
- Operators also calculated an increase in NOx emissions for the Pinedale Complex in 2012. Therefore, the Operator projection of 100 tons/year of NOx was used in the compliance determination instead of the WDEQ actual 2011 emissions data of 69.5 tons NOx/year.



Operator Submittals

- The following emissions data submitted by the Operators was used to determine compliance with the milestone:
- Pinedale Complex (2012 calculated) 100 tons NOx
- Central Gathering Facilities (2011 actual) 28.0 tons NOx
- Ultra, Shell, & QEP Energy Co. (2012 calculated) 946.5 tons NOx
- Anshutz Pinedale Corp (2011 actual) 4.19 tons NOx
- Yates (2011 calculated) 17.20 tons NOx
- Newfield (2011 and 2012 calculated) 36.15 tons NOx

Total Annual NOx emissions: 1,132.04 tons NOx



Final Determination of Compliance

- Based on the Operator NO_x emissions plus WDEQ NO_x emissions (less the Pinedale Complex, since the higher operator estimate was used) the total annual NO_x emissions rate for 2012 is calculated to be:
 $(1,132.04 + 454.5)$ tons NO_x/year = 1,586.54 tons NO_x/yr
- The BLM has determined that Operators have met the requirements for Visibility Milestone #2 based on a 2012 NO_x emission rate of 1,586.54 tons NO_x/year which is less than the 1,703.5 tons NO_x/year emission threshold used to determine compliance.
- The BLM, Operators, WDEQ and EPA are actively engaged in the ongoing efforts to achieve Visibility Milestone #3.



Questions?

