

Special Study Topic Oversight Report on Blasting in Wyoming (EY 2013)

Prior to the beginning of each evaluation year and as part of the oversight and outreach process, the Office of Surface Mining Reclamation and Enforcement (OSM) and the Wyoming Department of Environmental Quality (DEQ) Land Quality Division (LQD) solicit input from the public and interested parties regarding potential oversight topics for the upcoming Evaluation Year (EY). As part of EY 2013 oversight and as a result of suggestions and concerns from the public and interested parties, OSM and LQD agreed to evaluate a number of Wyoming coal mine permits regarding current approved blasting plans to determine compliance with the requirements of the Wyoming Coal Rules and Regulations. The topic of blasting was chosen for this evaluation year in response to suggestions and concerns raised by the public and interested parties, and a formal citizen's complaint that OSM received regarding fumes from blasting, specifically oxides of nitrogen (NOx) gas clouds. In addition to reviewing blasting plans to determine compliance with Wyoming Coal Rules and Regulations, it was also agreed that OSM would evaluate LQD's method of checking for permittee compliance with the blast plans in the field. Additionally, OSM and LQD would conduct an outreach/educational stakeholder meeting to discuss and convey current laws, regulations, the science behind blasting, and current procedures—including what to do if a citizen experiences a negative impact (damages/injury) from blasting, or NOx gas. Wyoming Coal Rules and Regulations applicable to blasting are found in Chapter 2, Section 5(a)(vii), and Chapter 6.

Permit Review

The current blasting plans contained in the following permits were evaluated to determine compliance with the requirements of the Wyoming Coal Rules and Regulations:

- Thunder Basin Coal Company's Black Thunder Mine (Permit # 233-T8)
- Peabody's Caballo Mine (Permit # 433-T6)
- Thunder Basin Coal Company's Coal Creek Mine (Permit # 483-T6)
- Cloud Peak Energy's Cordero Rojo Mine (Permit # 237-T8)
- Bridger Coal Company's Jim Bridger Mine (Permit # 338-T6)

The results of the permit review are as follows.

Thunder Basin Coal Company's Black Thunder Mine

Wyoming Coal Rules and Regulations, at Chapter 2, Section 5(a)(vii)(C), require blasting plans include, among other things, the description and location of blasting monitoring, warning and site access control equipment and procedures proposed to be used pursuant to Chapter 6, Section 4.

The Black Thunder Mine Blasting Plan, at MP-3.3.6, states that "Black Thunder does conduct periodic (quarterly) monitoring for compliance with ground-vibration standards (maximum peak particle velocity). Additionally, at MP-3.3.5, the Black Thunder Mine Blasting Plan states that "Peak particle velocities will not exceed the values given in the current LQD Coal Rules and Regulations, Chapter 6, Section 4(b)(iv) at any inhabited structure within one-half mile of the Black Thunder Mine permit

boundary. Other engineered structures will be limited to five inches per second using a modified scale distance factor of 10.02”.

Wyoming Coal Rules and Regulations, at Chapter 6, Section 4(b)(iii) (maximum peak particle velocity Vmax table) specifies maximum peak particle velocity limits for inhabited structures located 0 to 300 feet from the blasting site, 301 to 5000 feet from the blasting site, and 5001 and beyond (feet) from the blasting site. Although the Black Thunder Mine Blasting Plan states, at MP-3.3.3, that “At this time no inhabited dwellings occur within one-half mile of the permit area”, this does not relieve the mine from keeping maximum peak particle velocities with the limits listed above regarding inhabited dwellings *beyond* one-half mile of the permit area. OSM is recommending that LQD work with Thunder Basin Coal to revise the Black Thunder Mine Blasting Plan to reflect this and to also be consistent with the Black Thunder Mine Blasting Plan, at MP-3.3.5, which states, in pertinent part, that “Inhabited structures will remain at the maximum particle velocity given in the previously referenced current LQD Coal Rules and Regulations, Chapter 6, Section 4(b)(iv)”.

Additionally, Wyoming Coal Rules and Regulations, at Chapter 2, Section 5(a)(vii)(E), requires that a sample copy of the public notices required by Chapter 6, Section 3 be included in the blasting plan. Although the Black Thunder Mine Blasting Plan does include a section, at MP-3.3.4 (Public Notices of Blasting Activity), which describes the measures to be taken to notify the public regarding blasting activities, the Blasting Plan does not contain a sample copy of the public notices required by the rule stated above. OSM is recommending that LQD work with Thunder Basin Coal to revise the Black Thunder Mine Blasting Plan to include a sample copy of the public notices required by the rule stated above.

OSM found that remaining portions of the Black Thunder Mine Blasting Plan meets or exceeds the requirements of the Wyoming Coal Rules and Regulations at Chapter 2, Section 5(a)(vii) and Chapter 6.

Peabody’s Caballo Mine

OSM found that the Caballo Mine Blasting Plan meets or exceeds the requirements of the Wyoming Coal Rules and Regulations at Chapter 2, Section 5(a)(vii) and Chapter 6.

Thunder Basin Coal Company’s Coal Creek Mine

Wyoming Coal Rules and Regulations, at Chapter 2, Section 5(a)(vii)(C), require blasting plans include, among other things, the description and location of blasting monitoring, warning and site access control equipment and procedures proposed to be used pursuant to Chapter 6, Section 4.

The Coal Creek Mine Blasting Plan, at MP-3.3.5, states that “Seismograph surveys of each blast are not required at the Coal Creek Mine since there is limited exposure to inhabited structures and other engineered structures. However, seismograph surveys may be conducted when approaching structures

so that scale distance factors can be modified as necessary to meet the previously identified requirements which vary depending upon the type of the structure. Peak particle velocities will not exceed the values given in the current Land Quality Division Rules and Regulations, Chapter 6, Section 4.(b)(iv) at any inhabited structure within one-half mile of the Coal Creek Mine permit boundary using a scale distance factor of 65. Other engineered structures, such as pipelines, wells, highways, railroads, and buried cables will be limited to five inches per second..... Inhabited structures will remain at the maximum particle velocity given in the previously referenced current LQD Coal Rules and Regulations, Chapter 6, Section 4 (b)(iv)".

Wyoming Coal Rules and Regulations, at Chapter 6, Section 4(b)(iii) (maximum peak particle velocity Vmax table) specifies maximum peak particle velocity limits for inhabited structures located 0 to 300 feet from the blasting site, 301 to 5000 feet from the blasting site, and 5001 and beyond (feet) from the blasting site. Although the Coal Creek Mine Blasting Plan states, at MP-3.3.5, that "Seismograph surveys of each blast are not required at the Coal Creek Mine since there is limited exposure to inhabited structures and other engineered structures", this does not relieve the mine from keeping maximum peak particle velocities with the limits listed above regarding inhabited dwellings *beyond* one-half mile of the permit area. OSM is recommending that the LQD work with Thunder Basin Coal to revise the Coal Creek Mine Blasting Plan to reflect this and to also be consistent with the Coal Creek Mine Blasting Plan at MP-3.3.5 which states, in pertinent part, that "Inhabited structures will remain at the maximum particle velocity given in the previously referenced current LQD Coal Rules and Regulations, Chapter 6, Section 4 (b)(iv)".

Wyoming Coal Rules and Regulations, at Chapter 6, Section 5 (a), require that a record of each blast, including seismograph reports, shall be retained for at least three years and shall be available for inspection by the Administrator and the public on request. The record shall contain the following data....."(See the Wyoming Coal Rules and Regulations, at Chapter 6, Section 5 (a)(i-xvi) for specific blast record information required). The Coal Creek Mine Blasting Plan, at MP-3.3.6, states that "Records of each blast will be retained for a period of at least three years and will be available for inspection." Specific examples of record forms are missing from the Coal Creek Mine Blasting Plan, and so absent an onsite inspection of Coal Creek Mine's blasting records forms, it is impossible for OSM to determine from their blasting plan if the Coal Creek Mine's blasting record forms do in fact contain the information required by the Wyoming Coal Rules and Regulations at Chapter 6, Section 5 (i-xvi).

OSM found that remaining portions of the Coal Creek Mine Blasting Plan meets or exceeds the requirements of the Wyoming Coal Rules and Regulations at Chapter 2, Section 5(a)(vii) and Chapter 6.

Cloud Peak Energy's Cordero Rojo Mine

Wyoming Coal Rules and Regulations, at Chapter 2, Section 5(a)(vii)(E), require that a sample copy of the public notices required by Chapter 6, Section 3 be included in the blasting plan. Although the Cordero Rojo Mine Blasting Plan does include a section at MP-9.2 (Public Notice of Blasting Schedule) which

describes the measures to be taken to notify the public regarding blasting activities, the Blasting Plan does not contain a sample copy of the public notices required by the rule stated above. OSM is recommending that LQD work with Cloud Peak Energy's Cordero Rojo Mine Blasting Plan to include a sample copy of the public notices required by the rule stated above.

OSM found that remaining portions of the Cordero Rojo Mine Blasting Plan meets or exceeds the requirements of the Wyoming Coal Rules and Regulations at Chapter 2, Section 5(a)(vii) and Chapter 6.

Bridger Coal Company's Jim Bridger Mine

OSM found that the Jim Bridger Mine Blasting Plan meets or exceeds the requirements of the Wyoming Coal Rules and Regulations at Chapter 2, Section 5(a)(vii) and Chapter 6.

Corrective Action Taken by LQD

Since notifying LQD of the Black Thunder, Coal Creek, and Cordero Rojo blasting plan deficiencies, the LQD has taken corrective action. On June 13th, 2013, the LQD Blasting Program Principle provided written notification to the Black Thunder, Coal Creek, and Cordero Rojo mines detailing the deficiencies in their respective blasting plans. The LQD also requested prompt submittal of non-significant permit revisions to correct the deficiencies. As of July 9th, 2013, the Black Thunder and Cordero Rojo mines were preparing non-significant permit revisions to be submitted to LQD; the Coal Creek mine submitted a non-significant revision revising the blasting plan language in the permit.

Wyoming Coal Rules and Regulations

In comparing the Wyoming Coal Rules and Regulations regarding blasting to current blasting plans of approved permits, OSM also found that Wyoming's Coal Rules and Regulations regarding blasting at Chapter 6, Section 4, (b)(i)(A), are less effective than the counterpart Federal regulations at 30 CFR 816.67(b)(2)(i), which require periodic monitoring to ensure compliance with airblast standards. The LQD agrees with OSM's finding and will initiate a program amendment to address the rule deficiency. The program amendment process will be initiated no later than March 30, 2014.

Permittee Compliance

As part of the EY 2013 Performance Agreement between LQD and OSM, OSM was to also evaluate LQD's method of checking for permittee compliance with Wyoming Coal Rules and Regulations regarding blasting.

To ensure permittee compliance with the Wyoming Coal Rules and Regulations regarding blasting, the LQD inspects shot reports at each mine during quarterly inspections and also inspects shot reports at the mine or mines in question whenever LQD investigates a blasting complaint. The LQD uses seismographs to monitor shots at complainant's houses and periodically monitors shots on the mine permit to gather vibration and air blast data. The LQD has two semi-permanent seismograph stations

set-up, one on the east side of the Wyodak permit, and the other on the southwest side of the Rawhide permit. These two units are set-up with a marine battery, solar panel charger, and are connected to a modem so the LQD can contact them at any time. LQD staff writes monthly reports that are provided to the LQD Administrator, Wyodak Mine, Rawhide Mine, and the Eagle Butte Mine. These written reports have given LQD a large database of vibration and airblast records near the public that live east of Wyodak's Clovis Pit and in Rawhide Village between Rawhide and Eagle Butte mines. The LQD also conducts periodic blasting oversight inspections at mines in addition to the regular monthly mine inspections.

Based on the information above, OSM feels that the LQD is adequately administering the Wyoming Rules and Regulations regarding blasting. The LQD is engaged in a proactive effort of blast monitoring, shot report inspections, seismograph installation and maintenance, and blast data collection and dissemination in an effort to ensure permittee compliance with Wyoming Coal Rules and Regulations regarding blasting.

Public Outreach/Educational Stakeholder Meeting

As part of the EY 2013 Performance Agreement between LQD and OSM, the LQD and OSM also held an outreach/educational stakeholder meeting on November 19, 2012, to discuss and convey current laws, regulations, the science behind blasting, and current procedures—including what to do if a citizen experiences a negative impact (damages/injury) from blasting, or oxides of nitrogen (NOx) gas.

The outreach/educational stakeholder meeting was held in conjunction with an LQD Advisory Board meeting and started at 1:00PM. The meeting was well attended by mining industry representatives. One member of the public and one member of a stakeholder group were also in attendance. Opening remarks were made by LQD and OSM. OSM and LQD staff then gave a presentation on the current Federal and State laws, rules, and regulations that pertain to blasting. The joint presentation from OSM and LQD also focused on the science behind blasting, how the LQD handles citizen complaints, and what to do if a citizen experiences a negative impact from blasting including what to do if a citizen sees a cloud of NOx gas.

The next presentation was given the Wyoming Mining Association (WMA). WMA's presentation focused on current blasting safety practices, administrative controls, current testing, blasting research, and blast monitoring. The WMA also discussed the overall goals of minimizing the effects of blasting, utilizing the best safety practices, continued research and keeping an open dialogue between regulators, mines, and other stakeholders and the public.

The final presentation was given by the Campbell County Emergency Management Agency. The presentation focused on the Campbell County's notification, advisory and warning systems currently in place. Specific systems discussed included CityWatch, IPAWS/CMAS, EAS, Public Warning Sirens, NOAA weather radio and social media. The Campbell County Emergency Management Agency also agreed to assist in further education of the public regarding the various notification, advisory and warning systems currently in place.

The meeting was then opened up for input and questions. One concerned member of the public spoke of the need to better inform the public of the dangers of NOx gas and the clouds that result from blasting. Another concerned stakeholder, representing the Powder River Basin Resource Council (PRBRC), spoke about: 1) the growing public concern regarding NOx gas and clouds, 2) asked what the mines were doing to prevent NOx clouds, 3) stated that PRBRC members felt that the citizen's complaints regarding blasting weren't being addressed in a timely manner due to current LQD processes, 4) that PRBRC members were pleased with Campbell County and their efforts with notifications, and, 5) the fact that many PRBRC members live in rural areas and are outside of the range of city warning systems.

The meeting was adjourned at approximately 3:30PM.