



BIRMINGHAM
WATER WORKS

November 10, 2017

Mr. Russell A. Kelly, Chief
Permits and Services Division
ADEM
1400 Coliseum Blvd.
Montgomery, AL 36110-2400

Subject: No.5 Mine Draft Permit AL0079936 (Comments)

Dear Mr. Kelly:

The Water Works Board of the City of Birmingham (BWVB, Board) would like to provide the following comments regarding the draft permit (AL0079936) issued to Centennial Natural Resources, LLC for discharges from a surface mining operation on the Mulberry Fork of the Black Warrior River. The BWVB owns and operates an intake pumping station in the immediate vicinity of the proposed mining operation. The water from the Mulberry Fork is conveyed to the Western Filter Plant (WFP) where it is treated and distributed to consumers in the Birmingham metro area. Approximately one third of the BWVB's customers, or 200,000 people, are supplied with water from the Mulberry Fork/WFP.

The Board holds with utmost importance its task to supply the areas residents with reliably clean and affordable drinking water. This job requires that the BWVB maintain careful watch over all parts of its system, including protection of the quality of its raw water source. Fortunately, many others in the drinking water industry and other industries also recognize the importance of identifying and mitigating risks when the public health and safety is at stake. The RAMCAP (Risk Analysis and Management for Critical Asset Protection) protocol is an industry best practice for assessing and addressing risks in a most effective manner; this protocol has been adopted by the American Water Works Association (AWWA) for the water sector as standard J-100. This method is predicated on the identification of factors that increase the likelihood of a negative event and the identification of consequences from a negative event. Reducing the likelihood of an event and/or the consequences of an event are the ways in which risk is reduced; minimizing probability and maximizing early detection are essential.

For the specific situation at hand, the BWVB is faced with the risk that contaminants from a surface mine will pollute its water supply to the point that the water is not treatable to regulatory standards and the supply of drinking water to its customers would be interrupted. In addition to typical surface mining risks, this site's previous use as a plywood manufacturing facility presents unique concerns. The onus is on the permitting authorities to mitigate risk through proper due diligence in assessing the likelihood of a contravention of water quality standards, and through ensuring proper monitoring and controls to identify and correct any pollution that does occur.

Due to the proximity of the mine to the drinking water intake, the margin for error is razor thin. In fact, polluted mine runoff can travel to the BWWB's intake pumps in a matter of hours after leaving the mine site. With this narrow margin for error and the health of many Alabama residents at stake, this issue deserves exceptional consideration.

The source water protection regulations administered by the Alabama Department of Environmental Management (ADEM) concerning the protection of the supply for drinking water utilities were created with the current situation in mind. In fact, the source water protection area (SWPA) is defined as, "the critical, or special, area in the immediate vicinity of a surface water plant intake that is closely scrutinized for contaminant sources." The SWPA extends 15 miles upstream of the intake and includes the land 500 ft. inland along all waterway banks. (Appendix A). The No. 5 Mine is in the Board's Mulberry SWPA and should be closely scrutinized as directed in the regulations. The news headlines are increasingly occupied with stories of municipal drinking water supplies that are interrupted because of nearby industrial activities. Events in Charleston, West Virginia, Toledo, Ohio, and on the Dan River in North Carolina highlight how quickly an incident can transpire and how the public can be affected when risks are unmitigated at a site close to the drinking water intake. Each of the events involving the interruption of public water supplies seemed unlikely until the day of occurrence. They did occur, however, and impacted hundreds of thousands of people for many days and weeks. The BWWB respectfully requests that ADEM consider the comments below and modify its approach to permitting this site, in the best interest of its customers and so that Birmingham does not endure similar catastrophes to those seen elsewhere.

Potential to Exceed Water Quality Standards

The conventional treatment process has a limited ability to remove many metals and other toxic compounds; hence, there is a maximum concentration of these contaminants that is acceptable in the water that the BWWB attempts to treat to drinking water standards. This maximum concentration is codified through an ADEM narrative Water Quality Standard (WQS) for waters designated as PWS, meaning dischargers are prohibited from causing contamination that would make the water unsuitable for drinking purposes if subjected to conventional treatment. (Ala. Admin Code 335-6-10-.09). This standard is the primary distinguishing characteristic of the PWS classification over the Fish and Wildlife classification, which is the classification assigned to most of the waters in the Black Warrior Basin. Unfortunately, it is apparent that ADEM has not considered the treatability of this water in its reasonable potential analysis (RPA). This analysis, contained in the NPDES permit rationale, compares likely discharges to the numeric water quality standards only, with no attempt to quantify the maximum tolerable concentration of the likely mining runoff contaminants. The BWWB has gone through the exercise of quantifying these tolerable limits for potential mining contaminants and they are given in Appendix B.

The BWWB will suffer significant harm if the levels of contaminants listed in Appendix B exceed the maximum tolerable concentrations given there. If the BWWB cannot remove a contaminant to the MCL, they are required to issue public notice of violation and implement a solution to regain compliance. In some cases, the BWWB would be forced to undertake additional and exceptional expense in chemicals, power, and residuals disposal if the maximum tolerable concentrations are exceeded. The BWWB prides itself in delivering high quality water at a reasonable price to its customers; any of the situations described above would severely erode this mission and the confidence of the BWWB's customers.

The Board requests that ADEM take a more critical and scrutinizing look at the RPA to ensure that the likelihood of exceeding WQSs is truly assessed. (Appendix C) In addition to the inclusion of treatability standards, the BWVB has identified other areas in the RPA that should be modified to provide a more robust, scientifically defensible analysis:

- The contribution of pollutants from the mines should be based on statistically significant and meaningful data from previous and similar mine operations. Using a single point of data collected under the current discharge monitoring protocol is wholly insufficient to characterize the true contributions of the mine to the PWS. (There will be further discussion below on the protocols needed to capture useful data.)
- Additional consideration should be given to the unique situation in this portion of the river, where the flow is regulated by dams upstream and downstream, and water can pool for extended periods. When this happens, pollutants can accumulate in the pool and be difficult to eliminate.

Beyond the assessment of ADEM, it is clear and admitted that the Alabama Surface Mining Commission (ASMC) has not tried to calculate or otherwise make an educated prediction concerning the treatability of the PWS following introduction of runoff from this mine. As a partner in permitting surface mines, and as the reviewer of the pollution abatement plan (PAP), ASMC has not fulfilled its role in preventing contraventions of water quality standards. With this dual-body regulatory approach, it is important for ADEM to consider the gaps in permit review by both parties.

Previous Industrial Activity Onsite

In addition to the water quality impacts that one would typically expect from the land disturbance associated with mining operations, this operation has the potential for unique impacts due to its history as an industrial site. In fact, the applicant has acknowledged the heightened risk associated with this activity and performed some additional sampling. Unfortunately, the additional sampling that was performed is inadequate in the number of samples taken and the locations sampled. A careful review of the environmental documents concerning this site over its lifespan yields a several concerning issues that have not been adequately addressed by the applicant, ASMC, or ADEM.

First, the underground storage tank closure report for this site includes a series of test wells and a review by licensed surveyors that indicates the flow direction of the groundwater from this site is toward the river and that the groundwater is hydraulically connected to the river. This distinction is important as any connection to the river means that groundwater contaminants will enter the PWS, not just contaminants from surface water. Given the previous industrial activity and the acidic layers of soil on this site, there is significant potential for harmful contaminants to mobilize in the groundwater during normal and average weather patterns and impact the PWS.

Second, environmental assessments performed by the applicant (and reviewed as part of the ASMC process) does not adequately characterize the site regarding use as a mine. The analysis performed was simply a surface analysis; that is, the only samples taken were in the top 12 inches of soil. This is defined by ADEM as a surface investigation; a subsurface investigation, which would be appropriate before an activity that will disturb the soil down to 50+ feet, would require the analysis to proceed to the depth of bedrock. In fact, the environmental assessment did not assess very much of this site at all, and this mine operation will be disturbing soil that has not been assessed for toxic contamination.

The unknown conditions on this site are particularly concerning when you note the presence of a process wastewater lagoon onsite which was likely a repository of harmful chemical compounds. The wastewater lagoon that is present onsite was used as a process wastewater lagoon, meaning used chemicals and waste were sent to this pond, where they likely infiltrated the soil. There is no indication in the information provided by the applicant to ASMC or ADEM that the contamination in this pond has been mitigated in any way or that it has been closed in accordance with ADEM regulations. Again, this mining operation will proceed through this pond area with no knowledge of the contamination that exists.

The BWWB is rightly concerned with the lack of due diligence on this site because chemicals used in plywood manufacturing and wood treatment have the potential to cause significant harm to the drinking water supply and the people who consume the water. Phenolic compounds and aldehydes are used as a treatment to preserve wood, and some of these compounds and their derivatives are regulated by EPA. In fact, chlorinated phenols subjected to drinking water treatment processes form regulated disinfection by-products. The applicant provided a single sample at each of their groundwater monitoring wells that showed little phenols and aldehydes, but this is far from adequate to truly assess the presence of these compounds. The sampling wells are located on the upstream section of the site and away from the likely areas of highest concentration. That is, these samples were taken away from the source and in the opposite direction of migration.

Sediment Loading

The ASMC application for No. 5 Mine gives useful information on the amount of sediment that will leave the site. The applicant used a well-established industry method to identify erosion factors used to calculate soil loss, and determined that the site will lose about 58 tons of sediment per acre annually from its sediment ponds to the river. In fact, over the course of a year, nearly 10,325 tons of sediment will enter the river. The applicant also performed dynamic modeling of the operation of its sediment basins during a large storm event to determine the performance of the pond and the expected quality of discharge at points during the storm. For the ponds designed to date, the peak sediment concentration during the 10-year, 24-hour storm event is between 3,200 and 14,300 mg/L and the total sediment leaving the ponds for that event is between 18 and 95 tons per pound. (Appendix E)

These predictions represent massive amounts of material leaving the site and entering the river near the BWWB intake, and there is no protocol in place to monitor these discharges for sediment or any other contaminants that are discharged along with the sediment.

Contaminant Modeling

Given the lack of rigorous predictive analysis aimed at determining the likely impacts of the mine on the BWWB intake, the BWWB undertook an effort to make its own prediction of likely metals concentrations. The objective of the BWWB's work has been to quantify the risk of exceeding the maximum tolerable raw water concentration for conventional treatment. The Board's model uses the EPA's EFDC hydrodynamic code to perform detailed 3D hydraulics calculations using actual rainfall data and detailed surveys of the river geometry. The storm water runoff quantities are calculated using the Rational method and background river contaminant concentrations are from sampling performed by the BWWB. The last piece of information that goes into the model is the expected discharge from the mine outfalls. To date,

the BWWB has used data from the literature as an input for the mine discharge quality because useful data does not exist for mines in the Mulberry watershed. The BWWB would like to advance the understanding of mining impacts in this area by improving its model, and asks ADEM to support this effort by improving its monitoring and reporting requirements.

Monitoring and Identifying Exceedances

The BWWB contends that the current protocol for monitoring the discharges from surface mines is fundamentally flawed. These mines discharge primarily under wet weather conditions, but the protocol is designed for dry weather discharges. The discharges from coal mines are almost exclusively storm water that lands on the site, runs over the ground surface to sedimentation ponds, and is discharged to the river. When rain is not falling, there is typically no discharge from the ponds. Given this function, it is only logical that the ponds be monitored during rain events, when they are discharging pollutants of concern. However, the current protocol does not require sampling during discharge events, but exempts compliance with permit limits during these events.

Given the primary pathway for contaminants, sediment and metals, to enter the river is through precipitation-driven runoff, it would follow that, if one wanted to monitor the performance of pollution prevention operations, one would monitor the performance of the treatment systems during precipitation events. The BWWB performed a study of the sampling reports for the previous mines relied on by the applicant, ASMC, and ADEM to determine if the data contained in their reports should be expected to contain an accurate account of performance of the mines' treatment systems. What the Board found was that very few precipitation events are sampled at all, and virtually no samples are taken in any time proximate to significant precipitation events. In fact, only about 15% of "samples" reported include information on the concentration of contaminants leaving the site; 85% of the time the mines perform a "sampling event" when the ponds are not releasing any water.

Naturally, the more significant the precipitation event, the more significant the potential pollution and the more likely that harmful contaminants will be released, so the BWWB looked further at these events. Significant precipitation events were designated as those which meet the classification standard for an annualized return frequency (i.e. 1 year/ 24-hour storm, 2 year/ 24-hour storm, etc.). During the period from 2005 – 2013 when the Red Star Mine, Quinton Mine, and Horse Creek Mine operated, there were a total of eleven classified storms. There were four 1-year storms, five 2-year storms, one 5-year storm, and one 100-year storm. During these storms, there were various basins in operation, and for each storm there were a certain number of basins active and available for sampling. For all the storms combined, there were 231 opportunities to collect a sample from a basin discharging because of a classified storm; a total of four samples were collected. (Appendices F & G) And those four samples were collected the day after the storm when the pond had nearly ceased discharging, far away from the peak or prime discharge period. This means that the discharge reports considered by the applicant, ASMC, and ADEM as the basis for expected mine discharge quality should not be expected to provide virtually any information on the performance of the ponds during rain events. No assurances or conclusions should be made based on these reports, as they miss the very information they should be designed to capture. Unfortunately, that is exactly what has happened in virtually all the analyses by Centennial et al., ASMC, and ADEM.

Permit Modification

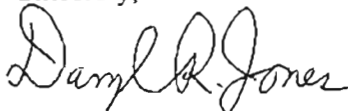
If this mine is allowed to operate, the BWWB must request that this permit be modified. To properly mitigate the risk presented by the No. 5 Mine located this close to the Mulberry drinking water intake, additional analysis and controls are required. The changes below are necessary to fully assess the likelihood that water quality standards will be violated and to put in place proper protocols to monitor and correct polluting discharges from the site. Specifically, the BWWB requests the following from ADEM:

- Perform full characterization of the site relative to its historical use as a plywood manufacturing facility, including subsurface investigation, and fully characterize site groundwater and soil contaminants.
- Update the RPA using actual background data and scrutinized mine discharge data to identify contaminants that are likely to exceed numerical WQSs and the narrative treatability WQS.
- Modify the implementation of permit limits to remove exemptions for rain events.
- Modify sampling and reporting protocols to ensure that sampling events capture discharges, including significant rain events. Monitoring of contaminant concentration and total flow (rate and duration) is vital to determining load into the river.
- Include monitoring requirements and limits in the permit for common mining pollutants and critical drinking water contaminants.
- Require the mine operator to provide access to the outfall locations for the BWWB, and contractors, to perform sampling and monitoring.
- Require a Spill Prevention, Control, and Countermeasure (SPCC) plan that meets the requirements of 40 CFR 112. The current plan is incomplete and does not contain sufficient specific information or detail to adequately protect against spill contamination.
- Require sedimentation basin designs to meet best technology available (incl. ADEM guidelines).
- Require notification of BWWB immediately upon on-site fuel spills or any other spills of potentially hazardous materials

The No. 5 Mine has the potential to bring significant harm to the function of the Mulberry Fork as a public water supply and represents a risk to the supply of drinking water for 200,000 Birmingham area residents. The current protocols for the assessment of potential WQS violations and for monitoring mine discharges is wholly inadequate as they have not considered the full impact of wet weather discharges. This permit should be updated and modified to correct the assessments where needed and impose proper monitoring and reporting requirements. The BWWB appreciates the work the ADEM does in protecting the citizens of Alabama and we appreciate to opportunity to participate in protecting this vital water resource.

Please e-mail me at Darryl.Jones@bwwb.org or call at 205-244-4404 if you have any questions or comments.

Sincerely,



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