February 12th, 2018

Department of Environmental Protection, Policy Office
400 Market Street
P.O. Box 2063
Harrisburg, PA 17105-2063

RE: Advance Notice of Proposed Rulemaking for Water Quality Standard for Manganese

To the Pennsylvania Department of Environmental Protection Environmental Quality Board;

In response to the ANPR, Corsa Coal is submitting comments focused on the cost savings of water treatment associated with coal mining by changing the location of compliance to the potable water supply withdrawal point. As a company involved in the mining of coal, Corsa is familiar with the water treatment discharge requirements placed on the coal mining industry by the Department through NPDES permits issued in association with mining permits. Mine sites that require chemical treatment of water to meet the limits of the NPDES permits commonly use pH adjustment to oxidize metals that may be dissolved in the untreated or "raw" water. While iron has historically been very notable in acid mine drainage incidents due to the characteristic "orange" staining, other metals, such as manganese, may also be present and are much more difficult to remove from the water.

While metals, such as iron, can normally be oxidized in raw water by raising the pH to a 7.5 pH, manganese requires the pH to be raised over an 8.0 pH before any oxidation will occur and over a 9.0 pH before the manganese concertation will drop below a 2.0 mg/l. Many of the mine sites with manganese need to raise the pH to a 10.0 to consistently treat manganese to a 1.0 mg/l concentration, so in many sites the difference between discharging a manganese concentration of 2.0 mg/l and 1.0 mg/l is to raise the pH from a 9.0 to a 10.0. This high pH level causes multiple "side effects" in the treatment process.

The 10.0 pH level has multiple side effects when treating acid mine drainage water besides the chemical cost of increasing the alkalinity ten times higher than a 9.0 pH. One side effect of treating water to a 10.0 pH is that it will need to be lowered to below a 9.0 pH prior to discharge in order to meet normal water criteria. To lower the pH, the mine operator may add an acid to the water or try to aerate if the flow is low enough (~below 10 gpm). A second side effect is the increased precipitation of previously dissolved elements from raising the water's pH to a 10.0 pH. Besides the target metals like manganese, high pH levels precipitate other chemical elements such as magnesium, sodium, and calcium; the precipitation of these elements creates and additional maintenance cost to clean treatment facilities to maintain efficient operations.

While keeping in mind that every operation will have unique factors it is realistic to say that the incremental costs of treating from a manganese concentration 2.0 mg/l to a 1.0 mg/l is 10 times more costly in chemical usage alone then treating from a 3.0 mg/l to a 2.0 mg/l. Likewise treating from a 2.0 mg/l to a 1.0 mg/l concentration generates at least 3 times as much solids precipitation that requires regular maintenance as the 3.0 mg/l to 2.0 mg/l concentration levels. Chemical costs at Corsa controlled perpetual AMD treatment sites are over $750,000 per year and precipitated solids maintenance is over $100,000 per year. A theoretical reduction in chemical costs based on the alkalinity required to change the pH from 9.0 to 10.0 could reduce costs by up to $200,000 per year.

WILSON CREEK ENERGY, LLC.
1576 Stoystown Road
P.O. Box 260
Friedens, PA 15541
Tel: 814-443-4668
Website: www.corsacoal.com

It is important to note that cost reductions in water treatment at coal mine sites won't translate to increased cost at public water supply intakes or harm to the environment. Specifically in regards to public water supply intakes, DEP already requires analysis of potential negative impacts to a pws intake before issuing an NPDES permit. Any concern can be addressed through the current process and safeguards which have proved sufficient to this point. In regards to the environment and aquatic life, as noted previously in the discussion on raising pH levels to treat for manganese, high pH levels in the water can be a detriment to aquatic life. The potential to increase manganese in discharge concentrations to 2.0 mg/l has also been proven and accepted by DEP and the Pennsylvania Fish and Boat Commission as part of PBS Coals, Inc.'s Clear Run Trust Agreement from 7/29/1998. In the trust agreement, studies from 1995 by Free-Col Laboratories, Inc. performed toxicity tests on three species, including brook trout, and showed that a 2.0 mg/l manganese concentration had no impact on aquatic life.

In summation, Corsa believes that the significant cost savings, lack of impact to aquatic life, and continued compliance with federal regulations should allow the Environmental Hearing Board to change the manganese concentration at permitted discharge locations from a 1.0 mg/l to 2.0 mg/l standard.

Sincerely,

David B. Gardner, P.E.
Mining Engineer

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