Discussion of U.S. EPA Science Advisory Draft Reports Regarding Mountaintop Mining Panel

U.S. Environmental Protection Agency
Public Teleconference

October 20, 2010

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I am the President of Stream Restoration Incorporated, located in Mars, Pennsylvania. I have worked for Stream Restoration Incorporated since 1996. My responsibilities as President include identification and evaluation of abandoned mine drainage projects, funding acquisition, and evaluation of long-term environmental improvement post-project implementation.

I am familiar with the Commonwealth of Pennsylvania's program to restore acid mine drainage (AMD) impaired waters. The program has been very successful not only in making great strides in restoring streams, wetlands, and uplands but also in developing long-lasting partnership efforts among watershed groups, local residents and businesses, government agencies, and the mining industry, which are vital in sustaining environmental stewardship. I submit these comments based on my personal knowledge and a review of records and information compiled by my organization.

Stream Restoration Incorporated, a non-profit organization [IRC Section 501(c)(3); EIN 23-2870334; PA Tax Exempt 75-339-441], was established in 1996 and is engaged in watershed restoration, passive water treatment system development and implementation, carbon capture and sequestration, and other environmental matters. Since 1996, Stream Restoration Incorporated (SRI) has been directly involved in the implementation of over 30 passive water treatment systems, resulting in the treatment of over 1 billion gallons of mine drainage annually. At www.datashed.org, a website developed and maintained by SRI as part of a public-private partnership effort, water monitoring and other information for over 100 passive treatment systems in Pennsylvania are available for public review.

I understand that, on April 1, 2010, the U.S. Environmental Protection Agency (EPA) issued a memorandum titled: Detailed Guidance: *Improving EPA Review of Appalachian Surface Coal Mining Operations under the Clean Water Act, National Environmental Policy Act, and the Environmental Justice Executive Order*

(hereinafter Detailed Guidance). In the Detailed Guidance, EPA establishes a range of between 300-500 microSiemens (µS/cm) (a measure of conductivity) as triggering close scrutiny by EPA of the permit application and anything approaching or beyond 500 µS/cm as cause for EPA to veto a Clean Water Act (CWA) permit. Specifically, the guidance requires that "Projects projected to increase conductivity levels above 300 µS/cm should include permit conditions requiring adaptive remedial action to prevent conductivity levels from rising to levels that may contribute to water quality degradation." Application of the conductivity standard would effectively prohibit Pennsylvania's continued progress in restoration of AMD-impaired waters.

Based on first-hand knowledge, I do not believe that specific conductivity is an appropriate or accurate way to measure water quality degradation or stream impairment due to the inherent complexity of water quality issues. I have observed streams that were highly acidic and streams that contained alkalinity that were impacted by abandoned mine drainage, which were essentially "dead" for decades due to metal concentrations, which have been dramatically restored to support fish by the implementation of passive water treatment systems. It is not uncommon for both the treated water and the receiving stream to have a circumneutral pH, alkalinity, and a specific conductivity of 500µS/cm or more.

For example, on 8/6/01, Seaton Creek (avg. ~1900 gpm) in the Slippery Rock Creek Watershed (Ohio River Basin) at a site known as Erico Bridge, Dr. Fred Brenner, Biologist, Grove City College, conducted a survey of the stream and observed no fish. On the same date, at the Erico Bridge in-stream sampling point, Seaton Creek had a circumneutral pH of 6.1, an alkalinity of 14 mg/L, and a specific conductivity of 1132 µS/cm. (Previous monitoring indicated the specific conductivity ranged from 715 to 1610 µS/cm.) The total iron concentration on 08/06/01 was 3.3 mg/L, but during the previous 5 years had averaged 7.5 mg/L.

Seaton Creek was being impacted by an average of 350 gallons per minute of mine drainage with median values of 6 pH, 62 mg/L iron, and 26 mg/L alkalinity. Specific conductivity of the drainage ranged from ~1000 to ~2000 µS/cm. Two years later, in June 2003, a passive water treatment system was installed through a public-private partnership effort with the Slippery Rock Watershed Coalition. The treatment system is successfully removing ~500 lbs/day of metals, most notably iron, and has a post-treatment iron concentration averaging 1.5 mg/L. Specific conductivity remains essentially unchanged, ranging from 1400 to 1600 µS/cm.

Since the successful treatment of the discharge, not only have fish been observed in Seaton Creek but also fish spawning beds have been documented in Seaton Creek along the edges of the created wetlands. Notably, the in-stream specific conductivity is substantially unchanged from pre-treatment conditions, ranging from 593 to 1207 µS/cm while significant water quality improvements were realized. (See www.datashed.org for data.)

Another dramatic stream improvement has been documented after the implementation of a passive system to treat abandoned mine drainage prior to entering Semiconon Run in the Connequenessing Creek Watershed (Ohio River Basin). In 2002, because of the impacts of abandoned mine drainage, Semiconon Run was placed on Pennsylvania's List of Impaired Waters. In September 2002, the AMD discharge (known as AMD01M) had a circumneutral pH of 6.6, alkalinity of 77 mg/L, dissolved iron of 20.7 mg/L, and specific conductivity of 718 µS/cm, while below the discharge Semiconon Run had a pH of 7.1, alkalinity of 66 mg/L, dissolved iron of 3.4 mg/L, and specific conductivity of 707 µS/cm. No macroinvertebrates were found in this section of the stream. (Ref: PA Department of Environmental Protection, 10/2002, Qualitative Watershed Assessment in Association with the Abandoned Mine Drainage Mitigation Project at Camp Lutherlyn…, Semiconon Run Watershed, Butler County, PA.)

The passive system installed in 2004 to treat AMD01M, resulted in a final effluent averaging 6.5 pH, 59 mg/L alkalinity, 0.9 mg/L dissolved iron, and 638 µS/cm specific conductivity. In 2007, Semiconon Run had an Index of Biotic Integrity score of 68.6 (63 indicates a healthy population of aquatic organisms). Due to this dramatic recovery, 2.3 miles of Semiconon Run were removed from Pennsylvania's List of Impaired Waters [list satisfies requirements of Clean Water Act, Sections 305(b) and 303(d)]. The improvement to Semiconon Run is reported on the US EPA website as a success story at the following address: www.epa.gov/owow_keep/NPS/Success319/state/pa_semi.htm.

These are but two examples of cooperative efforts by grass-roots and non-profit organizations, government agencies, the local community, and the active mining industry to address legacy issues. What is not described in the examples is that excess bicarbonate alkalinity that can increase the specific conductivity is often desirable in the water treatment system effluent at both active mining and AML projects in order to ameliorate downstream abandoned mine discharges.

Needless to say, the waters of the Commonwealth are an incredibly important commodity for its citizens, providing domestic water supplies for communities and cities, recreational fishing and boating, and for industrial uses. Please consider that establishing limits of 300 to 500 µS/cm, at either active or abandoned mine sites, will place in jeopardy many of the environmentally-friendly activities to restore over 5000 miles of AMD-impacted streams in Pennsylvania.

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