July 19, 2010

Mr Edward Hanlon, DFO
EPA Science Advisory Board Staff Office
US Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 2005

Dear Mr Hanlon,

Thank you for the opportunity to provide written comments on the two EPA draft documents on the Effects of Mountaintop Mines and Valley Fills on Aquatic Ecosystems, and on Aquatic Life Benchmark for Conductivity. These comments are submitted on behalf the KY Coal Industry Environmental Committee composed of members from the KY Coal Association, Coal Operators & Associates based in Pikeville, KY, and the Western KY Coal Association. The KY Coal Industry Environmental Committee formed a small working group of biologists that work in KY, WV, and VA to review and provide comments on these documents. The following comments represent their initial conclusions.

1. Toxicity Effects

Summaries of the toxicity effects referenced peer reviewed published scientific papers pertaining to crustaceans, fish, and benthic invertebrates. The conclusions derived from these peer reviewed papers were not consistent with the results specified in the individual papers. Conclusive arguments were made by the EPA author regarding the toxic effects of elevated conductivity when the majority of the studies reported non-conclusive, mixed results even when the conductivity levels were far greater than those found below valley fills. The EPA author appears to have been using directional writing to incorrectly support an opinion without having the true results to back up the claims. This directional writing serves to lead the reader to a predetermined viewpoint that is definitely not supported by data, but by conjecture.

2. Causal Assessment and Confounding Effects

EPA's use of Stressor Identification (SI) and Causal Analysis/Diagnosis Decision Information System (CADDIS) is a valid way to identify sources of impairment to a biological community in the event that all sources of impairment have been measured. However, the data used by EPA was not complete enough to perform a causal assessment or determine the potential for confounding effects. The physical factors or the structural integrity of the stream system were not accurately represented by the few available variables. A similar stressor identification analysis was performed for cumulative impact assessments performed on several 8-digit HUC watersheds in Kentucky. The results strongly indicated that measured physical attributes (ie. Impervious surfaces, riparian disturbance, land uses, and overall percent disturbance) consistently exceeded the influence of elevated conductivity as measured at over 400 benthic sampling sites. The correlations and their extent were analyzed using a suite of direct and indirect multivariate analyses through which confounding variables are easily recognized and

can subsequently be analyzed accordingly. The fact that the EPA causal assessment and confounding effects exercise did not find these influences only stresses the importance of using sound data in decision-making and highlights the inadequacy of the EPA's dataset. In order to determine if a particular stressor is truly affecting a population, the analysis should have included streams with low conductivity and a multitude of other stressors. If other sources of impairment, in the absence of elevated conductivity, were not found to affect mayfly populations then the EPA analysis would have more credibility. Based on our review, EPA's dataset is lacking the integrity to substantiate such a profound policy change with regards to conductivity.

3. Industry specific standard versus an all industry standard

The overwhelming emphasis placed on the mining industry with reference to a conductivity standard is unfairly based. Indirect references to the emphasis on mining are the enormity of disturbance (area), the long-term effects of the alteration, and the unnatural alteration of water chemistry. When put into context and compared to other landuse alterations, the impacts from mining are common to other anthropogenic disturbances and by comparison, are relatively short-term. The emphasis on mining therefore seems very unbalanced. For comparison, the impact of urban and residential developments are just as significant as mining to the benthic population and are more permanent in nature. The salting of roads during icy winter conditions is a temporary application but takes place multiple times per year with conductivity levels far greater than below valley fills and yet this activity takes place without hindrance or requirement of a permit.

4. Lack of confidence in restoration and recovery of mined areas

New mining best management practices and reclamation activities have been shown to greatly improve water quality. New techniques are being developed regularly that continue to improve downstream conditions. Regardless, studies do not focus on the type of mining reclamation practice upstream of the sampled streams. Also, no credence is given to the temporal nature of the mining impacts and the recovery of the streams.

A recent change to the permitting process includes the use of FPOP (fill placement and optimization process) for surface coal mines. This procedure works to determine the placement and size of hollow fills for excess material storage. As a result, avoidance and minimization is an active and definable process resulting in the downsizing of hollow fills and the reduction of impacted stream length.

Many of the statements made by the EPA relate to past and historic mining practices that no longer are used or allowed. The improvements in coal mining from blasting to reclamation have served to better restore the land surfaces or to protect natural resources. However, the long-term benefit of these positive changes have not been touted since time will be required to achieve the gains brought about by these improved practices.

5. Mixing genus versus species specific analyses

The authors repeatedly interchange genus level analyses with species specific analyses, changing the overall meaning and level of data comparison between individual organisms and larger taxa

groups. All taxa of a genus might not react or respond to stressors in a similar manner. Due to the broad variation of larval stages, cohort size, and voltinism between individual taxa, broad stroke predictions from the data can not be made. Additional studies that follow target taxa over an entire life cycle should be executed and conclusions made from that species specific information.

6. Species specific versus functional analyses

Though validated by the language of the CWA and KY regulations, there is no ecological basis in the argument that impacts to one order of taxa is significant enough to enact unrealistic water quality regulations. Stream function is not measured by the presence of one particular species or group of species but by the overall functionality of the community. Benthic organisms fill many roles in the streams (i.e. shredders, scrapers, filterers, collector-gatherers, piercers, food source, etc.). In the event of a structural or chemical alteration occurring in the stream, a functional shift would occur if the cause was significant enough to eliminate or reallocate the proportion of these roles. Importantly, studies have not shown that impacts to stream functionality would occur from the temporary extirpation of one benthic order. Functional feeding groups are typically most significantly affected by physical stream alteration. Recently performed cumulative impacts assessments have shown that analytical comparisons between developed (non-mining) areas and mined areas show almost identical functional feeding group proportions.

7. Cumulative Effects Assessment

As was stated in the EPA effects paper, "there is little evidence in the peer-reviewed literature of cumulative impacts of mining on downstream ecology." One cited paper found no evidence of additive effects from multiple mines on the fish IBI, and the Pond et al. 2008 paper reported no evidence of a significant relationship between the number of upstream valley fills and macroinvertebrate indices. In 2008, several members of the Kentucky coal mining industry performed cumulative impact assessments on six target 8-digit HUC watersheds. Although these assessments are still being reviewed by the Army Corps of Engineers, the following conclusions were drawn from one or more of these studies. Based on these conclusions, placing the basis solely on conductivity for sweeping changes in environmental law and policy are unfounded.

- First, no one variable, whether physical or chemical, exerts a sole or primary influence on the benthic diversity in the watershed. These variables work in concert to determine benthic diversity.
- Second, several chemical variables including conductivity were strongly correlated with benthic diversity. Even though conductivity appeared to be the most influencing of the chemical variables in one particular 8-digit HUC watershed, a strong correlation between the conductivity and percent Ephemeroptera was not derived. An r^2 value of 0.377 resulted indicating that conductivity is an important influencing factor but does not cause a sole effect independent of other physical or chemical variables. Of the chemical variables used in the analysis, the primary variables only accounted for 24% of community variance.
- Third, primary physical variables of elevation, logging, mine age, % mining and riparian disturbance, and total area of residents, logging, and forest were strongly correlated with

benthic diversity. One particularly strong correlation was derived from the total residential area to total riparian residential area. An r^2 value of 0.92 resulted, indicating that likely the vast majority of residential land conversion occurs within the measured 60' riparian zone. In this particular 8-digit HUC watershed total primary physical variables accounted for 37% of the community variance. Based on this specific result alone, the physical attributes of a watershed must always be considered alongside any chemical attributes.

- Fourth, in one particular 8-digit HUC watershed a comparison of Functional Feeding Groups to the measured environmental variables attributed six physical and chemical variables as influencing 46% of the community variance.
- Fifth, legacy effects from historic land use practices dating to the initial influx of settlers into the region, then again to the early 1900's, are assumed to be having a continually negative effect on benthic diversity. This statement has been substantiated in numerous peer-reviewed, published articles. No one variable (physical or chemical) appears to be having a sole effect on the benthic diversity, but work in combination to create the measured diversity. The permanent legacy of channel instability, altered hydrology, changed flow regime, sediment loading, and lost riparian zone are expected to have a negative effect for the foreseeable future.

8. Laboratory versus in-situ comparisons

Inherent problems exist in elucidating the effects of one stressor on a population (conductivity) through either in-situ or laboratory experiments. In-situ stream manipulations or observational analyses share the problem of not knowing the extent of influences on a population. One specific parameter does not vary independently of other stream dynamics and there is no valid way to control this lack of independence. Oftentimes, accurate measurement of all potential influences is not possible because these influences might not be well recognized or might not be logistically available. The paucity of available environmental variables (especially physical attributes) in the EPA dataset appears particularly prone to this overriding issue. Paradoxically, laboratory tests to determine toxicity to a species also pose problems due to the exclusion of all outside environmental conditions. The synergistic effects of the physical and chemical environment are complex and can provide buffers to certain pollutants. In addition, captive breeding of laboratory test organisms could very possibly produce individuals that are more sensitive than the same naturally reproducing species. These lab produced organisms could have potentially lost the natural physiological adaptability that would occur in native species.

9. Lack of consideration for changes in reclamation procedures through time

Historic mining practices relating to the time prior to the passage of the SMCRA, had a profound impact on the cultural, biological and ecological landscape. Much of the long-term effects caused by chemical or physical changes in the stream system can be related to that period in mining when there was no sediment control, acidic mine discharges were created, and highwalls were left exposed. However, the advent of the SMCRA brought about a different set of issues including stream displacement due to hollow fill construction, compaction of backfill areas preventing tree growth, introduction of non-native species for reclamation, and a lack of natural diversity in the post-mine land use. But these and other weaknesses in the law have been

considered and changed to reflect policies that promote fill minimization, reforestation, improved sediment control, and enhanced AOC design. Many of the observations or statements made by the authors indicate that none of the improvements or changes to mining practice have been considered. Many of the improvements have promoted positive changes that have been embraced by the mining industry. The mining of yesteryear does not adequately reflect the dynamic mining practices of today.

10. The use of directional writing not following scientific process

Many instances occur whereby the author(s) leads the reader to a conclusion based upon conjecture or supposition. Data, whether contained in a peer-reviewed article or in an EPA database, must always be allowed to represent a defined outcome or practice. In other words, opinions should be based upon the data not upon the perception of the author or the attempt to enlighten a particular viewpoint. In this instance the viewpoint would be to use conductivity as a limiting factor in future mining. Many published and unpublished studies have been performed that provide definitive observations on mining's effects on benthic diversity. However, science is based upon a desire to understand phenomena. Objectivity is necessary to prevent unbiased interpretations. The directional writing style that is demonstrated by the authors makes the reader feel that the whole story is not being presented and that information exchange has become prejudiced.

The KY Coal industry employs over 17,000 miners and generates over 50,000 jobs in other areas to support the KY Coal Industry. KY exports 73% of its coal, bringing in over $3.5 Billion dollars into KY. Around 85 cents on each dollar stays here - wages, benefits, operating expenses, royalties, and taxes. The KY Coal Industry paid over $270.0 Million in severance taxes in 2008 in addition to the normal business taxes paid by all KY companies. The total revenue generated by the KY Coal Industry in 2007 was $4.9 Billion dollars.

Almost 95 percent of the electric power in Kentucky is coal-fire generated. Kentucky's electric power costs, in the industrial sector, ranked the lowest in the nation for the fourth consecutive year. Kentucky's industrial power costs are over 15% lower than any other state east of the Mississippi River and over a third lower than the U.S. average. As a result of these low cost electric rates.....KY is the 4th largest automaker, 3rd largest Aluminum producer, and the 3rd largest Stainless Steel Producer in the US. Coal drives KY's Economic Engine.

On behalf the KY Coal Association, Coal Operators & Associates, and the Western KY Coal Association, Thank you for the opportunity to provide these comments.

Sincerely,

Raymond R. Ashcraft, Jr
Chairman, KCA Environmental Committee