Cooper, Laura K

From: Hakowski, Denise <Hakowski.Denise@epa.gov>
Sent: Wednesday, September 30, 2015 4:01 PM
To: Cooper, Laura K
Cc: Rivera, Nina; Fabiano, Claudia; Fleisig, Erica
Subject: Recommedations for West Virginia's 2017 Triennial Review of Water Quality Standards

Thank you for the opportunity to provide recommended new or revised provisions for West Virginia Department of Environmental Protection (WVDEP) consideration during the upcoming triennial review of West Virginia's water quality standards regulation in accordance with Clean Water Act (CWA) Section 303(c).

The Environmental Protection Agency (EPA), Region 3, has a number of recommended criteria that which either do not currently appear in West Virginia regulation, or that are different from current EPA recommendations. These criteria include:

Ammonia

West Virginia's water quality standards are currently based on EPA's 1999 Ammonia criteria document. EPA revised our recommended Ammonia freshwater criteria for the protection of aquatic life in 2013, and EPA is recommending that West Virginia review its Ammonia criteria for revision during the triennial review. In updating the 1999 ammonia criteria, EPA conducted an extensive literature review that incorporates new toxicity data from 69 studies, including new data on freshwater mussels and gill-bearing snails, which are both sensitive to ammonia toxicity. In particular, the freshwater mussels are more sensitive to ammonia than the organisms included in the 1999 criteria dataset. You can find more information on the 2013 ammonia water quality criteria on EPA's website, at http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/ammonia/.

Copper BLM

The Copper Biotic Ligand Model (BLM), a metal bioavailability model that uses receiving water body characteristics to develop site-specific water quality criteria, utilizes the best available science and serves as the basis for EPA's national recommended criteria. EPA is recommending that WV consider adopting the Copper BLM for use in the state. In its "Training Materials on Copper BLM: Implementation," EPA recommends two approaches for adopting the BLM, either incremental or statewide implementation. An incremental approach is where the hardness based criterion remains in regulation and applies to all waters except for those where site-specific criteria are derived using the BLM. If WV were to choose this approach, you could add a paragraph to the water quality standards regulation noting that site-specific criteria for copper may be developed on a case-by-case basis using the BLM, and adopted per WVDEP's process for adopting site-specific criteria into its water quality standards regulation.

The other option would be to adopt the BLM as the statewide standard to replace the current hardness-based criteria, and then either develop numeric results up front when adopting the revision, or when developing permits or conducting assessments.

You can find more information on the Copper BLM, including the "Training Materials on Copper BLM: Implemenation" on EPA's website at: http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/copper/

Other Aquatic Life Criteria

In addition to Ammonia and the Copper BLM, EPA has published a number of new criteria documents for the protection of aquatic life over the past decade. West Virginia should consider the following criteria to determine if they

should be adopted into the water quality standards to protect aquatic species in the state: Carbaryl, Acrolein, Diazinon, Nonylphenol and Tributyltin. You can refer to EPA's National Recommended Water Quality Criteria website at http://water.epa.gov/scitech/swguidance/standards/criteria/current for more information.

All of the above recommendations, including Ammonia and the Copper BLM, are aquatic life criteria. Under the Endangered Species Act, when reviewing revisions to state water quality standards, EPA must consult with the U.S. Fish and Wildlife Service to determine the impact on federally listed threatened and endangered species in West Virginia. As WVDEP reviews its aquatic life criteria as part of the triennial review process, you should consider the level of protection the national water quality criteria recommendations offer threatened and endangered species in West Virginia.

Bacteria

West Virginia's water quality standards currently include fecal coliform as an indicator of bacterial contamination in surface waters. EPA has recommended the use of e. coli or enterococci as in indicator in fresh water since 1986, and in 2012 confirmed those indicators. EPA recommends that WVDEP review the 2012 document, Recreational Water Quality Criteria (820-F-12-058, December 2012), and consider revising its bacteria criteria to be consistent with EPA recommendations. You can find more information on the 2012 recreational water quality criteria on EPA's website, at http://water.epa.gov/scitech/swguidance/standards/criteria/health/recreation/.

Human Health Criteria

EPA noted in your August 25, 2015, Water Quality Standards Quarterly Meeting presentation that you are planning to consider EPA's 2015 Updated Human Health criteria recommendations. EPA supports this plan as these updated recommendations for 94 chemical pollutants reflect the latest scientific information and EPA policies, including updated body weight, drinking water consumption rate, fish consumption rate, bioaccumulation factors, health toxicity values, and relative source contributions. Additional information on the updated human health criteria can be found at EPA's website at http://water.epa.gov/scitech/swguidance/standards/criteria/current/hhfinal.cfm.

Category A Designated Use

EPA also noted in WVDEP's August 25, 2015 presentation that WVDEP plans to review the application of its Category A (Water Supply, Public) designated use. As you review the Category A designated use in the State, EPA would remind you that as it is currently applied to all surface waters of the state, you would need to consider the provisions of federal regulations at 40 CFR 131.10. Existing uses may not be removed, downstream protection must be considered, and WVDEP would need to consider the use and value of the surface waters where the Category A designated use was being removed.

Please note that the comments and recommendations contained in this letter are strictly for the consideration of the West Virginia Department of Environmental Protection (WVDEP) and do not constitute approval or disapproval decisions under CWA Section 303(c). Neither are these comments a determination by the EPA Administrator under CWA Section 303(c)(4)(B) that revised or new standards are necessary to meet the requirements of the Act.

Thank you are again for the opportunity to provide these comments. If you have any questions regarding these comments or recommendations, please do not hesitate to contact me at (215)814-5726.

Sincerely,

Denise Hakowski
Environmental Scientist
EPA Region 3
3WP30
1650 Arch Street

Philadelphia, PA 19103

American Electric Power Comments on Recommended Changes to WV DEP Water Quality Standards Regulations: 2017 Triennial Review

American Electric Power (AEP) appreciates the opportunity to provide these comments on our recommended changes to the West Virginia Water Quality Standards Regulations (the "WQS") for the upcoming 2017 triennial review. We appreciate the agency's willingness to accept comments at this early stage.

Category A Public Water Supply Use

Currently, WV DEP applies the Category A use designation to all waterbodies in the state, except in those waterbodies that have undergone a use attainability analysis indicating that the Category A use is not appropriate. The Category A use is intended to protect the consumption of water by the public ***after conventional treatment***. AEP, like many others in the regulated community, believes that the pervasive application of this use category to all waterbodies is not appropriate. By requiring that drinking water human health criteria not be exceeded at wastewater discharges from industrial and publicy-owned treatment facilities, the agency misleads the public by suggesting that potable-quality drinking water is available in an effluent mixing zone or in downstream ambient water. NPDES permits issued by DEP are not, and never were, intended to require ***conventional treatment*** for the purpose of achieving drinking water standards. We believe that the agency needs to carefully re-evaluate the human health protection basis ***and cost implications*** of numerous facilities, some at considerable distances from drinking water intakes, being required to not exceed human health drinking water standards.

AEP recommends that the agency revise this policy and clarify that the Category A use designation apply only within a reasonable distance (e.g., 500 yards) from a known drinking water intake. The agency has already promulgated a similar application to the human health manganese criterion, whereby the criterion is not applicable at a distance five miles upstream of a public or private drinking water intake.

Design Flow Rate – Human Health Carcinogen Criteria

Currently, for calculating wasteload allocations pertaining to point source discharges, the agency uses a default stream design flow of 7Q10 for carcinogenic and non-carcinogen human health criteria. AEP recommends that this value be changed to the harmonic mean flow. The return frequency of a stream's 7Q10 flow – statistically - is once per 10 years. Thus, for every consecutive 10-year period, a stream's flow is greater than the 7Q10 value 90% of the time. During an assumed longevity of 70 years (a value consistent with US EPA risk inputs), the number of days with a flow rate corresponding to 7Q10 or less is 2,520. But, during the same 70-year period, the number of days with flow rate greater than 7Q10 is 23,030. With such a low frequency of occurrence of 7Q10 flows over a lifetime (and recognizing that

laboratory studies used to derive a reference dose value are based on ***continual*** chemical exposures), use of the 7Q10 flow is essentially a "zero exposure, zero risk" policy that is overtly over-conservative. The harmonic mean flow (a value higher than the 7Q10) will result in more reasonable frequencies of flows at or about the harmonic mean flow value, but still be environmentally protective.

Water Quality Criteria

We have the following comments on specific numeric criteria listed in Appendix E, Table 1 of 47CSR2:

Human health mercury criteria- mercury

There are three human health mercury criteria elements in the WQS: 1) a fish tissue methylmercury criterion of 0.5 mg/kg (wet weight); 2) a total mercury water criterion of 0.14 µg/L for Category A public water supply; and 3) a total mercury water criterion of 0.15 µg/L for Category C contact recreation. Currently, the WQS do not include specific procedures as to how the fish tissue criterion is to be evaluated for compliance. We recommend that the agency develop guidance on how the criterion is to be implemented from both a monitoring and assessment perspective, and (where applicable) how attainment of the criterion is to be evaluated for NPDES permitting purposes. AEP recommends that DEP follow the general procedures provided in the US EPA guidance document, "Guidance for Implementing the January 2001 Methylmercury Water Quality Criterion", EPA 823-R-10-001, 2010.

Aquatic life mercury criterion

The existing chronic aquatic life mercury criterion is expressed as a water concentration of methylmercury (0.012 µg/L). AEP requests that DEP provide a summary of what data the criterion is based on. We are aware of no acceptable chronic toxicity test that demonstrates an adverse effect to aquatic life at this low concentration. A more fundamental concern is why the agency requires water quality-based effluent limits (WQBELs) - that are expressed as total mercury – to protect for a criterion that is based on the most toxic, bioavailable form of mercury (methylmercury). Some regulated entities would likely be willing to conduct a mercury translator study if the WQS provided a mechanism to do this. We request that DEP provide a "fix" for this inconsistency by adopting a new footnote which corresponds to Section 8.18 and 8.18.2 of Appendix E, Table 1:

> *The ratio of methylmercury to total mercury may be determined on a site-specific basis, and this ratio shall be used to adjust a total mercury effluent limitation to maintain the ambient methylmercury criterion.*

At locations where the percentage of total mercury as methylmercury is very low (a common occurrence at ambient and effluent discharge locations), a permittee should not be required to attain a criterion - that is based on methylmercury - on the assumption that *all* mercury in the process wastestream is in the methylmecury form.

Human health criteria- thallium

The WQS contain drinking water and drinking water/fish consumption human health criteria for thallium (1.7 µg/L and 6.3 µg/L, respectively). AEP notes that US EPA no longer provides a scientifically defensible reference dose value for inorganic thallium salts. The most recent assessment of potential human health effects caused by exposure to thallium (US EPA. 2009. Toxicological review of thallium and compounds. EPA/635/R-08/001F) states that:

> *The available toxicity database for thallium contains studies that are generally of poor quality.* (p. 79)

In addition to US EPA's assessment, the Agency for Toxic Substance Disease Registry (ATSDR) has not issued a minimum risk level (an effects-based human health benchmark similar to the reference dose) for thallium due to insufficient toxicity data. Because of the lack of a defensible reference dose value for thallium, we recommend that the drinking water and the drinking water/fish consumption human health criteria for thallium be removed from the WQS.

Bayer CropScience

Ms. Laura Cooper, Assistant Director
Water Quality Standards Program
Department of Environmental Protection
Division of Water and Waste Management
601 57th Street, SE
Charleston, WV 25304

Re: Potential Revisions to 47 CSR 2, *Requirements Governing Water Quality Standards*, for 2016 Triennial Review

Date: 30 September 2015

Connie L. Stewart
Director QHSE
Bayer CropScience
Institute Site
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Institute, WV 25112
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Dear Ms. Cooper:

Thank you for the solicitation of comments regarding potential topics for consideration in the upcoming triennial review of the water quality criteria set forth in 47 CSR 2, *Requirements Governing Water Quality Standards.* Bayer CropScience Institute Site (BCS) has reviewed the comments offered by the West Virginia Manufacturers Association and the West Virginia Chamber of Commerce and joins in these comments.

In particular, the lack of netting for water quality-based effluent limitations (WQBELs) is a particular hardship for the Institute Site, as we face this problem with our cooling water intake, especially during summer during low flow. The WQBELs are set in such a manner that BCS can exceed its cooling water effluent limitations due to the concentration of pollutants in the intake, even though BCS has not caused or contributed to those concentrations.

Similarly, we are supportive of changes to the interpretation that Category A criteria apply to all waters of the State. The application of these criteria to all waters, regardless of whether they are used for a drinking water intake, affects the WQBELs for the Institute Site and for other industrial facilities throughout West Virginia. We support the application of Category A criteria where

Bayer CropScience

appropriate to protect drinking water intakes, but the statewide application poses an unnecessary regulatory burden to NPDES permittees.

If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

Connie Stewart

Connie Stewart
Director of QHSE
Institute Site

John M. and Petra B. Wood
P.O. Box 4103
Morgantown, WV 26504
(304) 285-6159

17 September 2015

To: West Virginia Department of Environmental Protection
Laura Cooper < Laura.K.Cooper@wv.gov >

Please accept the following public comments regarding solicitation for suggestions for criteria changes and additions as part of the upcoming triennial review for West Virginia's Water Quality Standards Rule [**47 C.S.R. § 2]**, which will be proposed by DEP in 2016 for consideration in the 2017 legislative session.

We believe that West Virginia's Water Quality Standards Rule does not appropriately implement antidegradation [**47 C.S.R. § 2-4]** to protect the narrative criteria in receiving streams—including headwater streams—below surface mines and coal refuse areas. Implementing antidegradation correctly requires setting protective thresholds for sulfates, conductivity, and TDS, which are parameters of concern for implementation of the narrative criteria and for maintaining the "Aquatic Life" designated use of the majority of West Virginia's streams. There is a solid and growing scientific consensus regarding appropriate thresholds for these parameters,[1] and even WVDEP has set thresholds in its Narrative Water Quality Permitting Guidance. For discharges into Tier 1 streams, discharge limitations should be set equal to these thresholds for sulfates, conductivity, and TDS. Based on peer-reviewed analyses of West Virginia's extensive water quality database, effluent limits should be no greater than 300-500 µS/cm for conductivity, 500 mg/l for TDS, and 50 mg/l for sulfates to provide Tier 1 protection. For discharges into Tier 2 streams, West Virginia's Water Quality Standards Rule would need to set water quality-based effluent limits for sulfates, conductivity, and TDS such that degradation is less than 10% of remaining assimilative capacity. The assimilative capacity should be determined regionally from the base loads of conductivity, TDS, and sulfates in reference streams that have had little to no surface mining impact. In addition, West Virginia's Water Quality Standards Rule should be revised to incorporate an acceptable biological threshold based on use of Genus Level Index of Most Probable Stream Status (GLIMPSS) scores. For water-quality based outlets, conductivity, TDS, and sulfates discharge limitations should be reevaluated—based on the findings of semiannual benthic surveys—and readjusted whenever GLIMPSS scores decline by more than 5% below baseline scores.

[1] Please refer to the literature review as well as the discharge monitoring report (DMR) water quality data for Scotts Run and Guston Run that we included in our 30 April 2015 public comment letter to DEP Regional Office, 47 School Street, Suite 301, Philippi, WW 26416-1150, pertaining to reissuance of WVNPDES/1017535.

Sincerely,

John M. and Petra B. Wood

John M. and Petra B. Wood
P.O. Box 4103
Morgantown, WV 26504
(304) 285-6159

30 April 2015

DEP Regional Office
47 School Street, Suite 301
Philippi, WW 26416-1150

Dear Sir or Madam,

Please accept the following public comments pertaining to the reissuance of an Article 11/West Virginia National Pollutant Discharge Elimination permit WV1017535 for PATRIOT MINING COMPANY INC, 2708 CRANBERRY SQ, MORGANTOWN, WV 26508, in order to maintain, monitor, and operate the New Hill Surface Mine in the Waynesburg and Waynesburg A seams of coal. We recommend that WVDEP take into consideration the information provided in this comment letter and impose numerical effluent limits on conductivity, total dissolved solids (TDS), and sulfates that will be sufficiently stringent to protect the aquatic life designated use of the Guston Run and Scotts Run stream segments that are or that would become adversely affected by the New Hill Surface Mine. The key points which WVDEP needs to address are summarized in the following bullets:

- The proposed mine's impacts on the general public, particularly the low-income families who live in the Cassville area and stand nothing to gain from the degradation of their use and enjoyment of their streams, should be made plain and clear. WVDEP is accountable to the general public, and in particular, these families.
- WVDEP's apparent intent to continue to ignore the preponderance of evidence in the scientific literature linking biological impairment to the elevated concentrations of sulfates, conductivity, and TDS that are released into streams by surface mining is arbitrary and capricious.
- What (if any) new methods will WVDEP use for "*evaluating the holistic health of the aquatic ecosystem*",[1] and why should new sources of ionic pollution that will be greater than the assimilative capacity of Scotts Run be approved from outfalls 026, 027 and 028 by this reissuance, particularly now, if that evaluation will not be completed on Scotts Run and Guston Run until around 2022?
- While the WVDEP Office of Special Reclamation (OSR) works to remediate the additional potential sources of biological impairment that may be due to elevated concentrations of iron in Scotts Run, why does WVDEP concurrently fail to address the elevated concentrations of sulfates, conductivity, and TDS that are being released into streams by the New Hill Complex?

[1] 2012 West Virginia Senate Bill 562
(http://www.legis.state.wv.us/Bill_Text_HTML/2012_SESSIONS/RS/bills/SB562%20SUB1%20enr.pdf)

- The permit does not appropriately implement antidegradation to protect the narrative criteria in the receiving streams. Implementing antidegradation correctly would first require setting protective thresholds for sulfates, conductivity, and TDS, which are parameters of concern for implementation of the narrative criteria. As detailed in this letter, there is a solid and growing scientific consensus regarding appropriate thresholds for these parameters, and even WVDEP has set thresholds in its Narrative Water Quality Permitting Guidance. These thresholds would then be used to classify receiving streams as Tier 1 or Tier 2. For discharges into Tier 1 streams, discharge limitations would be set equal to these thresholds for sulfates, conductivity, and TDS. For discharges into Tier 2 streams, WVDEP would need to set water quality-based effluent limits for sulfates, conductivity, and TDS such that degradation is less than 10% of remaining assimilative capacity.
- The abundant evidence—including longstanding EPA policy of independent application along with the WVSCI scores cited in this letter—demonstrate that reissuance of this permit in its present draft form will not afford Tier 2 protection to the Guston Run stream segment below outlets 014 and 021; nor will the reissuance afford Tier 2 protection to the stream segment in Scotts Run below outlet 001 (proposed outlet 028); and it will most assuredly not afford Tier 2 protection to the unimpaired stream segments in Scotts Run below outlets 006, 026 and 027 and the headwater stream segment adjacent to WV Route 43/8 if mining of the S-2009-09 WVSMCRA permit were to proceed.
- There is no conclusive evidence that the biologically impaired stream segments in Scotts Run and Guston Run will recover from the adverse effects of an, "*…operation* [that] *is past the point where measures could be taken to reducing the operation's impact on the aquatic ecosystem*". If the WV Narrative Water Quality Permitting Guidance does not apply to activities which are ″substantially complete″ where the operation is past the point where measures could be taken to reducing the operation's impact on the aquatic ecosystem, then how can WVDEP expect that any new surface mining activities in the Scotts Run Watershed are going to prevent biological impairment from happening in the unimpaired stream segments of Scotts Run?
- Last but not least, we expect WVDEP to specifically address all of the bold-faced statements and/or questions in our comment letter.

1. **Based upon the biological monitoring data that have been included in the proposed NPDES permit reissuance, the stream segments of Scotts Run that are associated with outlet 001 (proposed outlet 028) and the Guston Run stream segment that is associated with outlets 014 and 021 are biologically impaired. These data refute WVDEP's claim that Tier 1 protection is afforded for all designated uses. Based on the same biological monitoring data, the upstream segment of Scotts Run is not biologically impaired. Therefore, WVDEP's claim that a full Tier 2 anti-degradation review has been conducted is false because outlets 006 and proposed outlets 026 and 027 will release ionic pollution into the upstream segment of Scotts Run, and biological impairment will ensue.**

The public notice for this NPDES permit reissuance states that "*An anti-degradation review has been conducted. Tier 1 protection is afforded because effluent limitations ensure compliance with water quality criteria for all designated uses.*" To say that Tier 1 affords "protection" is arbitrary and capricious in this instance because there is no protection being afforded these streams in the form of effluent limitations for sulfates, conductivity, and TDS to ensure compliance with narrative water quality criteria for aquatic life. "*A water segment shall be afforded Tier 1 protection where the level of water quality is not sufficient to support recreation and wildlife and the propagation and maintenance of fish and other aquatic life, or where the water quality meets but does not exceed levels necessary to support recreation and wildlife and the propagation and maintenance of fish and other aquatic life*." [**60 C.S.R. § 5-5.4.2**] The designated use of these stream segments is B1— the "*propagation and maintenance of fish and other aquatic life in streams or stream segments that contain populations composed of all warm water aquatic life*."[2] West Virginia Stream Condition Index (WVSCI) scores show that the aquatic life in the Guston Run (Table 1) and downstream Scotts Run stream segments is impaired. WVDEP says that "*Antidegradation refers to federal regulations designed to maintain and protect high quality waters and existing water quality in other waters from unnecessary pollution. This policy will ensure that West Virginia's waters are protected from activities which have the potential to lower water quality*." [2]. This reissuance does nothing to protect the existing water quality from unnecessary pollution from sulfates, conductivity, and TDS.

The public notice also states that "*Where applicable, a full Tier 2 anti-degradation review has been conducted.*" WVDEP says that one of the four basic elements of water quality standards is, "*An antidegradation policy to maintain and protect existing uses and high quality waters*"[1]. The fact that WVSCI scores show that the aquatic life in the upstream segment of Scotts Run is not biologically impaired and that the physical habitat (RBP) scores are "optimal" [3] indicate that Tier 2 protection should be afforded to the upstream segment of Scotts Run (i.e., adjacent to WV Routes 43 and 43/8) based upon a full Tier 2 antidegradation review. However, it appears that WVDEP does not think that a Tier 2 anti-degradation review was necessary for this permit reissuance because the draft permit and/or rationale page do not afford Tier 2 protection to any of the stream segments in Scotts Run or Guston Run. "*A water segment shall be considered a Tier 2 high quality water where the level of water quality exceeds levels necessary to support recreation and wildlife and the propagation and maintenance of fish and other aquatic life.*" [**60 C.S.R. § 5-5.5.1]** This proposed permit reissuance absolutely does NOT afford Tier 2 protection to the upstream segment of Scotts Run. Both Scotts Run and Guston Run meet the EPA's policy of independent application based solely on the WVSCI scores: "*To the extent the commenter asserts that its toxicity sampling rebuts any determination of impairment based upon biological assessment, the commenter is incorrect. Biological assessment, chemical samples, and toxicity testing each have both overlapping and unique attributes and sensitivities. Chemical sampling and toxicity testing are indirect estimators of*

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[2] http://www.dep.wv.gov/WWE/Programs/wqs/Pages/default.aspx

[3] Biological Monitoring Report: New Hill Complex - West Virginia NPDES Permit WV1017535: BAS Locations: DSR, DUTSR, UUSR, USR027, and USR. April 15, 2014. Prepared by: AllStar Ecology, LLC for Patriot Mining Company, Inc. 78pp.

biological conditions that assess the suitability of waters to support a healthy community, but they do not directly assess the community itself. Biological sampling directly evaluates the overall structure and/or functional characteristics of the aquatic community. For that reason, it has been EPA's longstanding policy (called the policy of independent application) that each method can provide valid and independently sufficient evidence of aquatic life use impairment, irrespective of the results of the other two approaches. In other words, if any one of the three assessment methods (biological sampling, chemistry sampling, or toxicity testing) identifies impairment, the water is considered impaired. See EPA, Final Policy on the Use of Biological Assessments and Criteria in the Water Quality Program (May 1991) (available at http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/biocriteria/upload/2002_10_24_npdes_pubs_owm0296.pdf)."[4] Rather than acknowledge the scientific consensus on biological impairment, WVDEP chose to misrepresent the interpretation of a single sentence from a 1991 EPA guidance document as its justification for dismissing impaired WVSCI and/or GLIMPSS scores.[5] Subsequently, the draft rationale page for this reissuance WVDEP requires the permittee only to achieve Whole Effluent Toxicity (WET) limits to "*...minimize impact to the aquatic ecosystem…*" and only "*… for any NON-CONSTRUCTED OUTLETS which are*

[4] http://www.epa.gov/reg3wapd/pdf/pdf_tmdl/WV303d/Final/Enclosure%202%20EPA%202012%20WV%20303(d)%20action%20response%20to%20comments508.pdf (see "EPA Response 6" to Arch Coal's comments on 2012 West Virginia Integrated Water Quality Monitoring and Assessment Report: the PDF also can be accessed from http://www.epa.gov/reg3wapd/tmdl/303list.html).

[5] We contend that this quote from the WVDEP Justification document (http://www.dep.wv.gov/pio/Documents/Narrative/Narrative%20Standards%20Guidance%20Justification.pdf) arbitrarily and capriciously distorts the interpretation of the 1991 EPA guidance document:

> "*The Pond-Passmore Study, upon which EPA relied in the development of its guidance on this subject, concludes that West Virginia's narrative standard is violated by surface coal mining operations based on the Study's application of two biologic assessment tools, the West Virginia Stream Condition Index ("WVSCI") and the draft Genus Level Index of Most Probable Stream Status ("GLIMPSS"), to samples of benthic macroinvertibrate life taken from these streams. This conclusion is flawed for two reasons. First, West Virginia does not use the draft GLIMPSS in its assessment of the biologic health of State streams. Second, these tools are just that – tools. They are not stand-alone determinants of compliance with the narrative standard. Any application of these assessment tools in determining compliance with the narrative standard must faithfully apply the language of the standard itself, which prohibits significant adverse impacts on the chemical, physical, hydrologic or biological components of the aquatic ecosystem. Thus, DEP's Guidance follows long-standing EPA guidance, which indicates that biosurveys cannot fully characterize an entire aquatic community and its many attributes, and accordingly suggests that "State standards should contain biological criteria that consider various components (e.g. algae, invertebrates, fish) and attributes (measures of structure and/or function) of the larger aquatic community."*"
> (Underline added)

NONPRECIPITATION INDUCED."[6] **However, by using <u>only</u> a single tool—the results of a laboratory WET test on a single species (*Ceriodaphia dubia*) for a "*holistic approach to ecosystem assessment*"[5]—isn't WVDEP contradicting its own purpose and justification for protection of the State's narrative water quality standards?** Based on the EPA's policy of independent application, the impaired WVSCI scores for Scotts Run and Guston Run are evidence enough that negative impacts to the aquatic ecosystem will ensue in the upstream segment of Scotts Run (i.e., adjacent to WV Routes 43 and 43/8) if mining activities are started there. Furthermore, the draft rationale page needs to include not just WET triggers, but also biological and chemical triggers because, "*…if any one of the three assessment methods (biological sampling, chemistry sampling, or toxicity testing) identifies impairment, the water is considered impaired.*"[4] Indeed, the WVDEP Justification document,[5] states that, "*DEP's most recent stressor identification protocols, as used in the EPA-approved TMDL process, include the guidelines shown in FIGURE 2 below for evaluating water chemistry to determine if ionic strength is a significant stressor*". In that Figure 2, WVDEP defines conductivity and sulfates concentrations greater than 1533 µS/cm and 417 mg/l, respectively, as "definite stressor". **The average conductivity and sulfates effluent concentrations at outfall 001 of WV1017535 are 2,065 µS/cm and 1,185 mg/l, respectively—see Tables 6 and 8, attached to this letter. WVDEP therefore <u>must</u> acknowledge the conductivity and sulfates effluents from outfall 001 as a "definite stressor" which, by definition, clearly exceed protective thresholds and <u>must impose</u> Tier 1 discharge limitations at least equal to these thresholds for conductivity and sulfates. And therefore, the downstream impairment in Scotts Run should trigger a Tier 2 anti-degradation review—and protection—for the upstream segments that are not impaired. To provide that Tier 2 protection, WVDEP must set water quality-based effluent limits for sulfates, conductivity, and TDS such that degradation is less than 10% of remaining assimilative capacity.** It is clear from the Wasteload Allocation & Assimilative Capacity Worksheet of the draft rationale page for this permit reissuance that WVDEP has not done this.

With respect to Senate Bill 562, which ordered WVDEP to write new rules for "*evaluating the holistic health of the aquatic ecosystem*", a genus-level (Pond et al. 2013) rather than a family-level (WVSCI) bio-monitoring approach should be used to evaluate the impairment level of the macroinvertebrates in Scotts Run and Guston Run. With regard to fish, if any species are present in Scotts Run and Guston Run, diversity generally decreases with increasing stream conductivity, particularly if conductivity exceeds 1000, with "highly tolerant" species such as creek chub and blacknose dase comprising the majority of the species present.[7] In support of this statement, Hitt and Chambers (2014) found significant degradation of fish assemblages in mining-impacted streams.

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[6] http://www.dep.wv.gov/dmr/Narrativeguidanceinformation/Documents/NPD%20and%20NPM%20NWQS%20Instructions%20Revised%2003-07-2013.pdf

[7] Personal communication: Stuart Welsh, West Virginia Cooperative Fish & Wildlife Research Unit.

2. This proposed Article 11 NPDES permit reissuance does not protect the Aquatic Life (B1) designated use criterion in Scotts Run or in Guston Run. The source(s) of CNA-Biological status have not been identified, therefore the changes proposed as part of this reissuance must be denied at least until the source(s) have been identified and provisions are added to the permit that will provide actual (Tier 2) protection.

On March 25, 2013, the U.S. Environmental Protection Agency (EPA) partially disapproved the draft 2012 Section 303(d) list prepared by WVDEP, in that "*WVDEP failed to evaluate existing and readily available information related to West Virginia's applicable narrative water quality criteria (W.Va. CSR § 47-2-3.2(e) & (i)) as applied to the aquatic life uses*." [8] Therefore, the EPA added over two hundred water quality limited segments (WQLSs), including Scotts Run and Guston Run, to the list of biologically impaired ("CNA-Biological") water bodies. Furthermore, the EPA previously concluded that, "*Based on the science, as a general matter, EPA expects that in-stream conductivity levels maintained at or below 300 µS/cm will meet water quality standards and that in-stream conductivity levels above 500 µS/cm are likely to be associated with adverse impacts that may rise to the level of exceedances of narrative state water quality standards. If water quality modeling suggests that in-stream levels will exceed 500 µS/cm, EPA believes that reasonable potential likely exists to cause or contribute to an excursion above applicable water quality standards; unless, based on site-specific data, the state has an alternative interpretation of their water quality standards that is supported by relevant science. Similarly, if water quality monitoring suggests that in-stream levels will exceed 300 µS/cm but will be below 500 µS/cm, EPA should work with the permitting authority to ensure that the permit includes conditions that protect against conductivity levels exceeding 500 µS/cm.*" [9] The EPA Science Advisory Board, which conducted a comprehensive review of two of the Agency's draft reports, The Effects of Mountaintop Mines and Valley Fills on Aquatic Ecosystems of the Central Appalachian Coalfields and A Field-based Aquatic Life Benchmark for Conductivity in Central Appalachian Streams, stated that "*The extensive data set from West Virginia used to derive the benchmark provides broad spatial coverage and includes a large number of streams with and without mountaintop mining and valley fills. The similarity of the benchmark developed using an independent data set from Kentucky was an important validation of the approach and the quality of the data.*" [10]

The West Virginia Antidegradation Implementation Procedures defines "parameter of concern" as "*…any parameter for which numeric water quality criteria have been adopted in*

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[8] < http://www.epa.gov/reg3wapd/pdf/pdf_tmdl/WV303d/2012WV303dList-Encl1-3-25-13.pdf > available at < http://www.epa.gov/reg3wapd/tmdl/303list.html >

[9] U,S. EPA MEMORANDUM. "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." < http://water.epa.gov/lawsregs/guidance/wetlands/upload/2010_04_01_wetlands_guidance_appalachian_mtntop_mining_summary.pdf >

[10] < http://yosemite.epa.gov/sab/sabproduct.nsf/0/EEDF20B88AD4C6388525785E007331F3/$File/EPA-SAB-11-006-unsigned.pdf >

47CSR2 and any other parameter for which numeric criteria are not established but where the discharge of such parameter has a reasonable potential to either cause or contribute to a violation of the narrative criteria outlined under 47CSR2, section 3." [**60 C.S.R. § 5-2.7]** With respect to the Tier 1 protection for biological impairment, which the EPA has proposed for many additional WQLS, including Guston Run and Scotts Run, it specifies that "*Where existing uses of the water body are impaired, there shall be no lowering of the water quality with respect to the parameters of concern that are causing the impairment. The agency shall consider nomination of such water body for the 303(d) list of water quality-impaired streams.*" [**60 C.S.R. § 5-4.7]** With respect to Tier 2 protection: "*Degradation for Tier 2 shall be deemed significant if the activity results in a reduction in the water segment's available assimilative capacity (the difference between the baseline water quality and the water quality criteria) of ten percent or more at the appropriate critical flow condition(s) for parameters of concern. Critical flow conditions for non-precipitation induced discharges are the 7Q10 flow of the receiving stream, plus either of the following: maximum permitted flow or maximum flow specified in the application, for industrial activities, or the average design flow, for wastewater treatment activities. Degradation will also be deemed significant if the proposed activity, together with all other activities allowed after the baseline water quality is established, results in a reduction in the water segment's available assimilative capacity of 20% or more at the appropriate critical flow conditions for the parameters of concern… Significant degradation will be determined on a parameter-by-parameter basis for each parameter of concern that might be affected by the regulated activity.*" [**60 C.S.R. §§ 5-5.6c and 5-5.6d]**

We believe that WVDEP arbitrarily and capriciously does not recognize sulfates, conductivity, and TDS as parameters of concern because it does not want to have to deal with the anti-degradation implications. Recent legal decisions indicate that the ionic pollution that is being caused by surface mining in less populated areas of southern West Virginia is not as clouded by the confounding circumstances that may be contributing to the causative sources of biological impairment in Guston Run and in Scotts Run. Nevertheless, we believe that the WVSCI data (Table 1) and the eDMR effluent data (Tables 3—8) do show that ionic pollution is at least a contributing factor to that impairment. There have been several recent southern West Virginia federal district court decisions that would appear to confirm this.[11] In a decision[12] pertaining to several Alpha Natural Resources surface mines, Judge Chambers concluded that mines operated by Alpha Natural Resources in Boone and Nicholas counties have, *"…caused or materially contributed to a significant adverse impact…* [that] *…unquestionably biologically impaired…*" the receiving streams, leaving both the diversity and abundance of aquatic life *"…profoundly reduced.*" Chambers went on to conclude that, "*Losing diversity in aquatic life, as sensitive species are extirpated and only pollution-tolerant species survive, is akin to the*

[11] *See, e.g., Ohio Valley Envtl. Coal. v. Elk Run Coal Co.,* 24 F.Supp. 3d 532, 542 (S.D.W.Va. 2014) (stating that "The Court can find no basis for substituting the WVDEP's general judgment that there is no causative effect between high conductivity and low WVSCI scores for the extensive scientific evidence in this case which reveals precisely this causative effect"); *Ohio Valley Envtl. Coal., Inc. v. Fola Coal Co., LLC*, No. CIV.A. 2:13-5006, 2015 WL 362643 (S.D.W. Va. Jan. 27, 2015).

[12] http://www.wvsd.uscourts.gov/sites/default/files/opinions/312-cv-00785_1.pdf

canary in a coal mine. These West Virginia streams… …even like those used by Defendants' expert for comparison in this trial, were once thriving aquatic ecosystems. As key ingredients to West Virginia's once abundant clean water, the upper reaches of West Virginia's complex network of flowing streams provide critical attributes — functions, in ecological science — that support the downstream water quality relied upon by West Virginians for drinking water, fishing and recreation, and important economic uses. Protecting these uses is the overriding purpose of West Virginia's water quality standards and the goal of the state's permit requirements."

The discharge monitoring report (DMR) data provided to WVDEP by MEPCO's NPDES permit (WV1007751) to WVDEP for instream Guston Run monitoring points upstream versus downstream of the site indicate that mining activities are cumulatively contributing discharges of sulfates, conductivity, and TDS that cause increases of instream concentrations well in excess of 20% between the upstream and downstream monitoring stations. These DMR data were collected by MEPCO for NPDES permit WV1007751 between February 2011 and December 2014 at two sampling sites (Table 2). The average percentage change between upstream (UGR-1) and downstream (DGR-1) monitoring stations is on the order of 34% for TDS (Table 4), and 46% for sulfates (Table 5). While the average value of 579 mg/l for TDS at UGR-1 was above the suggested EPA benchmark, the average value at DGR-1 was 34% greater at 775 mg/l. The Scotts Run data indicate an even greater difference between upstream (USR) and downstream (DSR) monitoring stations. The average percentage change between upstream (USR) and downstream (DSR) monitoring stations is on the order of 60% for conductivity (Table 6), 66% for TDS (Table 7), and 70% for sulfates (Table 8). While the average value of 562 µS/cm for conductivity at USR was above the suggested EPA benchmark, the average value at DSR was 60% greater at 900 µS/cm. Likewise for TDS, which was below 369 mg/l on average at USR, but was, on average 611 mg/l at DSR (Table 7), which is well above the 500 mg/l threshold**. Why does WVDEP think that the New Hill West mining operation authorized under the proposed permit—if it's ever started—would do anything to decrease ionic pollutants?** WVDEP should work with the EPA to ensure that the proposed permit includes conditions that will provide Tier 2 protection against conductivity and TDS levels exceeding 500 µS/cm and 500 mg/l, respectively.

The WV 2011 annual State of the Environment report[13] states that West Virginia used "Sulfates >50mg/l" as one of its specific, "targeted water quality" indicators of "sources of impairment" with which to illustrate the condition of West Virginia's rivers and streams. The report says that "*The agency uses the* [Water Management] *framework as a tool, not only to assess waters, but also to implement water quality improvement plans on each of the state's 32 watersheds.*" The average value of 336 mg/l for sulfates at UGR-1 (Table 5) is clearly already above the "targeted water quality" indicator, due to the fact that the water is effluent from Patriot Mining Company's recent surface mining activities at WVSCMRA permit S-1002-00. However, the average value at DSR was cumulatively 46% greater at 490 mg/l. While the average value of 203 mg/l for sulfates at USR was above the "targeted water quality" indicator, the average value at DSR (Table 8) was 70% greater at 346 mg/l. Therefore, WVDEP should work with the EPA to ensure that the proposed permit includes conditions that will provide Tier 2 protection against sulfate levels exceeding 50 mg/l at both its Guston Run and Scotts Run outfalls.

[13] http://www.dep.wv.gov/pio/Pages/State%20of%20the%20Environment%20report.aspx

The public notice for the WVDEP Office of Special Reclamation (OSR) WV1029169 permit application states that "*An anti-degradation review has been conducted. Tier 1 protection is afforded because effluent limitations ensure compliance with water quality criteria for all designated uses. Tier 2 protection is also afforded because the agency has made a determination that the discharge(s) will not cause significant degradation to the receiving stream(s) for any parameters of concern.*" However, the impaired WVSCI score provided with this (WV1017535) reissuance application for BAS locations "DUTSR" and "DSR" (Table 1) prove otherwise. The WV1029169 permit application lacks any credibility to state that Tier 2 protection is afforded the stream segment of Scotts Run that is downstream of the area impacted by the AS&K bond forfeiture site (WVSCMRA permit S-1011-89). The chemical data and WVSCI scores both indicate that the segment of Scotts Run downstream of the outlet only meets the first part of the either/or Tier 1 definition.

Total iron concentrations increased 16% between USR and DSR (Table 3). The two sources of acid mine drainage (AMD), the Brock Mine west of Cassville and the AMD seep at bond forfeiture site S-1011-89 (AS&K) are in need of remediation by the OSR. To date, the excavation work that has been conducted at the AS&K bond forfeiture site—prior to issuance of the permit[14]—appears to have done nothing to remediate the AMD.

Note that the iron concentrations emanating from the unnamed tributary of Scotts Run at UTSR-1 (Table 2) have dropped significantly since May 2013 to below the 1.5 mg/l waste load allocation for iron (Table 3). **What type and form of treatment is being used—and by whom—to so rapidly counteract the AMD?** We assume that the mine operator installed a chemical treatment system at about that time. Whatever the treatment system is, it seems to be significantly lowering the iron concentrations—at least for the time being. **Why can't OSR employ whatever remediation method that the mine operator is using upstream of UTSR-1 to similarly reduce AMD emanating from the Brock Mine west of Cassville and at the AS&K bond forfeiture site?**

Since Guston Run and Scotts Run are now included in the Section 303(d) list of biologically impaired streams in West Virginia, we believe this requires WVDEP to determine the causes and sources of the elevated TDS and sulfates at UGR-1 and DGR-1 in Guston Run as well as the causes and sources of the cumulative increase between these two stream monitoring stations. Based on DMR data, Outfalls 014 and 021 (Tables 3—4) at Patriot Mining Company's surface coal mining New Hill West Complex NPDES permit (WV1017535) may be large contributors. According to Patriot's recent design-flow diagrams, these two outfalls drain into Guston Run

[14] The WV1029169 permit has still not been issued. The milestones indicate that it is languishing on the DMR Director's desk (see https://apps.dep.wv.gov/WebApp/_dep/search/Applications/activities.cfm?application_id=64039&dep_office_id=HPU&ap_type_code=NPD&DESCRIPTION=New%20Application%2C%20NPDES&responsible_party_name=WVDEP%20OFFICE%20OF%20SPECIAL%20RECLAMATION&APPLICATION_SEQUENCE_ID=1&APPLICATION_PERMIT_ID=WV1029169)

between MEPCO's upstream (UGR-1) and downstream (DGR-1) monitoring stations.[15] However, the UTM coordinates (Table 2) suggest that Outfall 021 drains into an unnamed tributary of Scotts Run rather than into Guston Run. So if the UTM coordinates for Outfall 021 are correct and the design-flow diagrams are incorrect, then Outfall 021 cannot be contributing to the cumulative increases in TDS and sulfates observed at DGR-1. Furthermore—according to the publicly available eDMR data—for the majority of the time Outfall 014 does not flow, so it would not persistently contribute to the increase in TDS and sulfates observed in 32 out of the 34 DMR samples (Tables 3—4) from UGR-1 to DGR-1. It is disturbing to us that the UTM coordinates suggest that Outfall 021 drains into an unnamed tributary of Scotts Run rather than into Guston Run because it adds uncertainty to our interpretation of the causes of the cumulative increases in TDS and sulfates observed at DGR-1. Moreover, according to the design-flow diagram for WV1017535 Modification #9, Patriot Mining Company's DGR-2 stream monitoring station is located downstream of Outfall 021 and upstream of Outfall 014. According to the design-flow diagram that was submitted with this permit reissuance, DGR-2 is downstream of both of these outfalls. However, the UTM coordinates suggest that DGR-2 is upstream of both outfalls. Even more disconcerting are the changes in flow rates between Patriot's DGR-2 stream monitoring station and MEPCO's DGR-1 stream monitoring station. All of the data sources indicate that MEPCO's DGR-1 is downstream of Patriot's DGR-2 and that the two stations are no more than a quarter of a mile apart. Yet both the minimum and maximum flow rates between Patriot's DGR-2 stream monitoring station and MEPCO's DGR-1 stream monitoring station decrease significantly—66% and 65%, respectively (Tables 9—10). This significant decrease in flow rates, in conjunction with the significant increases in TDS and sulfates, exacerbates the other conditions that may be contributing to biological impairment. And one thing is clearly certain: that imposing numerical effluent limits on the sources of the cumulative increases in sulfates, conductivity, and TDS—be they from MEPCO's permit, or Patriot's past or present permits, or both—would go a long way towards ameliorating the cumulative impacts that are attributable to the surface coal mining activities in this drainage regardless of what WVDEP's narrative water quality permitting guidance presently requires for "substantially complete" operations. **Please clarify where DGR-2 is actually located. Given the issues we have identified concerning conductivity, sulfates, and flow, the justification stated in the rationale page that, "*…to minimize redundancy*…" is an illegitimate reason to allow the mining operator to delete the DGR-2 stream monitoring station.**

If the final result of "substantially complete" surface mining operations is that our public waterways are going to be biologically impaired then something is very wrong with WVDEP guidelines. WVDEP still has to enforce the antidegradation laws in the Clean Water Act regardless of what the Division of Mining and Reclamation's policies or justifications are [16] regarding enforcement of the narrative water quality standards. The Narrative Water Quality Standards section of the rationale page for MEPCO's NPDES permit reissuance application (WV1007751) states that, "*Facilities with primarily precipitation induced discharges are unlikely to cause or contribute to violations of the West Virginia's narrative water quality*

[15] Please note that the left-to-right order of the columns in Tables 3-8 is based upon design-flow diagram locations.

[16] http://www.dep.wv.gov/dmr/Narrativeguidanceinformation/Pages/default.aspx

standards. Precipitation induced discharges (storm water) flow only in response to precipitation and do not have residence time with un-weathered rock and therefore would not be expected to have elevated mineralization/ions in the discharge. Primarily precipitation induced outlets only flow at times when the receiving streams have the greatest assimilative capacity (dilution). These outlets are designed not to discharge during critical low flow conditions of the receiving stream, and therefore do not have a reasonable potential to adversely impact the aquatic ecosystem." The Narrative Water Quality Standards section of the rationale page for this NPDES permit reissuance application (WV1017535) states pretty much the same thing, but also says that, "*The guidance goes on to state that it does not apply to activities which are "substantially complete" where the operation is past the point where measures could be taken to reducing the operation's impact on the aquatic ecosystem… …The entire drainage area for outlet 001 (272.30 acres) has been reclaimed, revegetated and has vegetative growth of that required for Phase 2 requirements… …The drainage area designated for Outlet 021 was final graded, mulched and seeded in September 2012. The vegetation above Outlet 021 meets those requirements of Phase 2 vegetation and displays mature vegetation. Since the drainage area contributing to these outlets are past the point where additional control measures could be implemented to reduce the impact on the aquatic ecosystem, the operations contributing to these outlets are considered substantially complete. Therefore WVDEP's "Permitting Guidance for Surface Mine Operations to Protect West Virginia's Narrative Water Quality Standards, 47CSR2 Sections 3.2.e and 3.2.i" does not apply to outlets 001, 014, 015, 016, and 021.*"

Moreover, the WVDEP's determination that outlets 001, 014, 015, 016 and 021 are "substantially complete," ignores control measures that could be taken to address water quality problems from those outfalls. Under the WVDEP's narrative guidance, an outfall is "substantially complete" when, "*the operation is past the point where measures that could be taken under either an AEPP or an AMP could be effective in reducing the operation's impact on the aquatic ecosystem.*" Here, a Toxicity Reduction Evaluation ("TRE") or Toxicity Identification Evaluation ("TIE") could still be used to identify causes of toxicity and potential corrective action.[17] Under the EPA's Technical Support Document for Toxics Control ("TSD") corrective procedures using a TRE or a TIE can include many options to reduce or eliminate the toxicity of effluent—including chemical treatment. These outfalls cannot be said to be substantially complete when no TIE or TRE has been performed.

Note the high concentrations of sulfates, conductivity, and TDS that the "substantially complete" outfall 001 is still generating fifteen years after construction (Tables 6—8). Look at the increase in the concentrations of TDS and sulfates from UGR-1 to DGR-1 (Tables 4—5), which are undoubtedly attributable to the effluents from the "substantially complete" outfalls 014 and 021. These are all water-quality based (non-precipitation-induced) outfalls. The drainage areas all received variances to convert the designated land use from forest to hayland pasture. Neither the original (2010) nor the revised (2013) narrative water quality guidance and justification documents contain any supporting, peer-

[17] < http://www.dep.wv.gov/pio/Documents/2011-05-11%20%20Narrative%20Standards%20Permitting%20Guidance%20(Rev%20%202).pdf > (see footnote on page 1, and Adaptive Management Plan (AMP) on page 6)

reviewed literature to back up the reasons why the fact that all or part of a permitted operation is "substantially complete" terminates a mine operator's liability for causing or remediating water pollution or its duty to remediate that pollution. These documents were clearly written by the pro-coal bureaucracy pervading WVDEP and the State legislature, not by WVDEP scientists.

Even though it is considered "substantially complete", Outfall 001 is still generating significantly elevated concentrations relative to the base loads of sulfates, conductivity, and TDS at the proposed biological assessment stations (BAS-USR and BAS-USR027).[18] Outfall 001 (and 028) are instream outlets: the "reconstructed stream" will continue to flow after the mining permit S-2009-09 is completed and reclaimed—if that mining is ever started—and it will continue to release significantly elevated concentrations of sulfates, conductivity, and TDS relative to the present base load. Changes in the minimum and maximum flow rates between Patriot's DGR-2 stream monitoring station and MEPCO's DGR-1 stream monitoring station decrease significantly—66% and 65%, respectively—in about a quarter of a mile of stream length. This significant decrease in flow rates, in conjunction with the significant increases in TDS and sulfates, is clearly indicative of a reasonable potential to adversely impact the aquatic ecosystem regardless of whether or not MEPCO's and Patriot's permitted outfalls between MEPCO's UGR-1 and DGR-1 stream monitoring stations are precipitation-induced discharges or water-quality based discharges. The source(s) of CNA-Biological status have not yet been identified by WVDEP, therefore the changes proposed as part of this reissuance must be denied at least until the source(s) have been identified and provisions are added to the permit that will provide actual (Tier 2) protection. Some combination of environmental and/or mining-induced causes may be cumulatively contributing to the impairment.

In a comparison of TDS with acid-base accounting parameters that are commonly used to quantify the effluent characteristics of mine spoils Odenheimer et al. (2013) found that, "*…MPA [maximum potential acidity] (sulfur content) had the strongest relationship to TDS release…*" and that "*…Samples with MPA values of… 3.0+ g* kg^{-1} *produced TDS values >500 mg* l^{-1}." We suggest that their findings might be employed as an indicator that WVDEP engineers should evaluate during the surface-mine and NPDES application process as triggering a reasonable potential to cause cumulative biological impairment of receiving streams. Section I-11 of Patriot Mining Company's application for WVSCMRA permit S-2009-09 provided MPA results at three overburden test sites—bore holes NH 10-08, NH 11-08, and NH 13-08—of 11.53, 11.93, and 10.29 "tons per thousand", respectively. Given that tons per thousand is equivalent to grams per kilogram, these reported MPA values are all significantly greater than the 3.0 value that Odenheimer et al. (2013) predicted would produce TDS values >500 mg/l. Antidegredation policy and the reopener clause on these NPDES permits provide WVDEP with mechanisms for imposing a numerical effluent limit on TDS, which would go a long way towards reducing the elevated values in Scotts Run and Guston Run.

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[18] See Table 8 of Biological Monitoring Report: New Hill Complex - West Virginia NPDES Permit WV1017535: BAS Locations: DSR, DUTSR, UUSR, USR027, and USR. April 15, 2014. Prepared by: AllStar Ecology, LLC for Patriot Mining Company, Inc. 78pp. Base loads at USR and USR027 were: 478 and 454 µS/cm for conductivity, 322 and 316 mg/l for TDS, and 60 mg/l for sulfates.

3. **There is already abundant evidence published in peer-reviewed literature demonstrating that sulfates, conductivity, and TDS are causative stressors, and there is evidence that those parameters are elevated in Scotts Run and Guston Run and therefore are responsible for the biological impairment documented in those streams. Accordingly, WVDEP must establish limits for those pollutants, even if it intends to undertake additional efforts to identify other potential causative stressors.**

According to the 2014 Integrated Water Quality Monitoring and Assessment Report[19] (i.e., the draft 303(d)) list, the status of Scotts Run and Guston Run is "CNA-Biological" and that "*The causative stressor(s) of impairment and the contributing sources of pollution will be identified during the TMDL development process.*" The septic systems of the houses along Scotts Run and Guston Run are all connected to Scotts Run Public Service District sewage lines, so residential development is an unlikely source of fecal contamination. There is iron impairment in Scotts Run due to legacy coal mining activities upstream of the USR and DSR stream monitoring stations, whereas the data for the Guston Run stream monitoring stations are all below the 1.5 mg/l iron impairment (chronic) threshold (Tables 2—3). **If WVDEP were to assume that iron is a causative stressor of biological impairment in Scotts Run, then why do the WVSCI scores in Guston Run indicate biological impairment when there are no iron concentrations greater than the chronic threshold? Could the elevated concentrations of sulfates, conductivity, and TDS by themselves be a causative stressor?** This seems likely at least in Guston Run. WVDEP has already acknowledged the "ionic stress" in Scotts Run and Guston Run as being "*Significant stressors of biologically impacted streams in the Monongahela River Watershed*".[20] **Couldn't the elevated concentrations of conductivity, TDS, sulfates, and iron—in combination—be contributing to cumulative causative stress in Scotts Run?** WVDEP initially implied in the June, 2014 draft of the Section 303(d) List [21] that the sources of biological impairment in Scotts Run and Guston Run would be determined as soon as WVDEP worked out the new, holistic biological integrity assessment methodology: "*The alternative "TBD" entries signify the DEP's intent to address the impairments as soon as practicable after accomplishing SB 562 requirements.*" WVDEP has already had three years since the passage of SB 562 to work this out. However, in the revised 2014 Section 303(d) List[17] that WVDEP sent to EPA last week, the projected TMDL year has now been delayed until "(No Later Than)" 2022. **How much longer will WVDEP continue to procrastinate? Rather than maintain the status quo (Tier 1), we believe that placing numerical permit limits on sulfates, conductivity, and TDS—in addition to the numerical permit limits already in place for iron—would improve the likelihood of affording actual (Tier 2) protection to the**

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[19] < http://www.dep.wv.gov/WWE/watershed/IR/Documents/IR_2014_Documents/DraftIRtoEPA/DraftReportSupplements2014.pdf >

[20] http://www.dep.wv.gov/WWE/watershed/TMDL/grpd/Documents/D2%20Mon%202014/EPA%20Approved%20Docs/USEPA%20Approved_D2_TMDL_Report_4_14_14.pdf (see Table 4-2)

[21] The initial draft is no longer available on the WVDEP Website.

biologically impaired segments of Scotts Run and Guston Run that are downstream of this NPDES permit.

Peer-reviewed scientific studies conducted in the Appalachian Region have documented statistically significant associations between high concentrations of conductivity, sulfates, and TDS below surface coal mines and degradation of aquatic stream life (Palmer et al. 2010, Bernhardt and Palmer 2011, U.S. EPA 2011a, Lindberg et al. 2011, Daniels et al. 2014). Freund and Petty (2007) noted that streams began exhibiting ecological impairment—based on WVSCI scores—with dissolved aluminum, iron, manganese, and nickel concentrations as low as 0.16, 0.22, 0.34, and 0.020 mg/L, respectively; and at sulfate concentrations as low as 50 mg/L and at specific conductance levels of 144 µS/cm. They also noted that "*All indications from this study and previous studies (Maret and MacCoy 2002; Clements 2004; Merovich and Petty, 2007) suggest that the combination of many dilute stressors can interact to produce biological impairment even in streams where no single chemical constituent exceeds water quality criteria. This is an important water quality management issue that must be addressed if we are to ever be successful restoring and protecting biological life uses of streams in mined watersheds*". Declines in stream macroinvertebrate biodiversity have been linked to the amount of mining activity in a watershed (Pond et al. 2008, Merriam et al. 2011, Cormier et al. 2013a) [22] and to increased levels of sulfate (Palmer et al. 2010, Bernhardt et al. 2012) and specific conductance (Pond et al. 2008, Mincy 2012) below coal mines, with habitat metrics contributing less of a significant effect than conductivity, sulfate, and TDS (Pond et al. 2014). In addition, peer-reviewed studies have been published which corroborate the adverse effects of elevated conductivity on fish and amphibian diversity and abundance (Wood and Williams 2013, Hitt and Chambers 2014, Muncy et al. 2014). To our knowledge, there still are no peer-reviewed studies in the scientific literature nor any "relevant science" that contradict these findings. Roark et al. (2013) disputed Cormier and Suter's (2013) conductivity benchmark methodology, but Roark's unweighted cumulative distribution function estimate (345 µS/cm) was nevertheless below the suggested EPA benchmark of 500 µS/cm.

Percentages of valley fill, mining, and urban development were found by Cormier et al. (2013a) to be strong predictors of rising conductivity levels in streams, but that "*the type of ions associated with urban land uses differs (i.e., CL^- dominated), from that of coal mining land use (i.e., HCO_3^- and SO_4^{2-} dominated)*". A mixture dominated by the ions Ca^+, Mg^+, HCO_3^-, and SO_4^-, as measured by conductivity, is a common cause of extirpation of aquatic macroinvertebrates in Appalachia where surface coal mining is prevalent (Cormier et al. 2013b). U.S. EPA (2011b) found that, "…*% Urban/residential is not well correlated* [r=0.13] *and in* [the WVDEP WABbase in Ecoregion 69D] *region is confounded somewhat by mining land uses*". Merriam et al (2013) found that, "*A greater proportion of sites fell below the WVSCI threshold* [<68.01] *at all levels of additional surface mining across SLWs* [segment level watersheds] *with pre-existing land use. For example, ~20% of SLWs with additional surface mining between 30 and 40% remained unimpaired when surface mining was the only stressor. In contrast, 100% of SLWs with pre-existing residential development were predicted to fall below the WVSCI*

[22] We have determined that approximately 2172 acres of 9420 acres, or 23% of the Scotts Run watershed, has already been surface mined and/or permitted for surface mining operations.

threshold with additional surface mining ≥20% (Fig. 7B)." Merriam et al. (2013) also states that, "*When residential development is the only stressor present, increased dissolved constituents (especially Na and Cl) and decreased habitat quality and biological conditions can be linked directly to increased density of built structures upstream.*" **It should be noted that this does not appear to be a finding of the Merriam *et al.* study. And even if this a general statement based upon a review of the literature, it should also be noted that Merriam does not cite any references and in particular does not cite any references pertaining to high-gradient, Appalachian streams.** Even so, the dissolved ionic constituents that they implicate are indicative of wintertime road salting, which have a short-term, seasonal effect on conductivity levels rather than the long-term, year-round effect that Ca^{+}, Mg^{+}, HCO_3^{-}, and SO_4^{-} ions that are released by surface-mine spoils have on aquatic macroinvertebrates in Appalachian streams. Pond et al. (2014) said that, "*…we found that specific conductance accounted for nearly all of the variation in Ca (r2 = 0.99), Mg (r2 = 0.99), SO4 (r2 = 0.98), and K (r2 = 0.97), and to a lesser extent HCO3 (r2 = 0.77) and Na (r2 = 0.52).*" Pond et al. (2014) also noted that, "*Overall, biological variation was strongly correlated with water chemistry and less by reach-scale habitat and landscape conditions. Since ion concentrations explained the greatest amount of biological impacts and were the most altered (compared to reference), this suggests that recovery is potentially hindered by ions, even in forested reaches long after reclamation.*" **Regardless of whether or not residential development contributes to the adverse effects that are caused by surface mining the Merriam *et al.* analysis was flawed because they did not analyze WVSCI scores or conductivity levels at any SLWs with residential development only (i.e., without surface mining).** Nevertheless, a quite important takeaway from their results that they did not discuss was that state agencies like WVDEP should deny all new surface mining permits in SLWs with residential development where surface mining has already occurred in >20% of the watershed. **And since we have determined that approximately 2,172 acres of 9,420 acres, or 23% of the Scotts Run watershed, has already been surface mined and/or permitted for surface mining operations, why is WVDEP still issuing and renewing more surface mining permits in the Scotts Run watershed?**

Likewise, Daniels et al. (2014) who, *"…summarizes column leaching studies of spoils (n > 50) and refuse and TDS effects on local water quality and biotic response.*" concluded that, "*…research to date has been consistent in documenting depressed benthic macroinvertebrate communities in mining influenced streams, and statistical associations of such effects with measured levels of SC/TDS. Hence, available research strongly suggests that elevated concentrations of major ions in mine discharge waters, measured as SC* [specific conductance] *and TDS, are causing aquatic community alterations.*" Evans et al. (2014) analyzed longitudinal trends (1 to 23 years) in conductivity (SC) concentrations from 137 Virginia valley-fill (VF) sites and concluded that, "*… the model projected time required to approach natural conditions (by declining to <500 µS/cm) was 19.6 years after VF construction, indicating long-lasting but not permanent aquatic impacts due to elevated (>500 µS/cm) SC.*" We predict that WVDEP will—or already has—latched onto these results as proof and justification of new and continuous surface coal mining that will protect the narrative water quality standards because the negative impacts will not be permanent. However, the Evans et al. conclusion is flawed for two reasons. First, their model does not take into consideration the cumulative effects of multiple surface mines in the same watershed, let alone the cumulative effects of surface mining and residential development found by Merriam et al. (2013). Second, and even more importantly, the Evans et

al. (2014) model of the projected time required to approach natural conditions was based on only 16 of the 137 VF sites in their study. The authors cherry picked only the 16 samples, "*…with significant negative quadratic relationships…*" and "*…at least five years of data after the estimated quadratic maximum…*" on which to base their conclusions, when in fact they excluded 75 of the 137 sites where conductivity either increased, did not change over time, or lacked post-mining data points, and that, *"…by the end of the time frame of this study, only 7 of the 137 VFs studied had exhibited declines to mean values <500 µS/cm.*" We highly recommend that WVDEP's decision makers read the entire manuscript before accepting the findings in Evans et al. (2014) as presented in their abstract. Likewise, Petty et al. (2013) stated that, *"Conductivity tended to decline with mine age, but this trend was not significant (Fig. 6).*" The conductivity values (n=5) referred to in their Figure 6 declined from about 3,300 µS/cm in the "constructed perennial stream channels" (i.e., drainage ditches) they studied at the youngest mine to about 2,200 µS/cm in the ditch at the 20-year-old mine, which further underscores our contention and that of the peer-reviewed literature that elevated conductivity causes biological impairment. The average WVSCI score and percentage of EPT in the five ditches that Petty et al. (2013) studied was 48 and 5% respectively—which indicates that the ditches were biologically impaired—while the average WVSCI score and percentage of EPT in the reference streams they compared the ditches to was 68 and 48%, respectively. Moreover, the authors observed "*…significant declines in stream dwelling salamander populations…*" and that, "*…there was a significant shift in community types that can be that can be linked to conversion from forested lotic habitat…"* in the reference streams "*…to grassland lentic habitat*" in the constructed perennial stream channels and that, "*…the shift in local amphibian and macroinvertebrate assemblages from lotic, sensitive taxa to lentic, generalist taxa may become problematic as the cumulative effects from mine to mine are considered at a regional scale…*". The low-gradient channels they studied were presumably engineered to prevent surface water from running off the perimeter of the surface mine, hence they tended to be perennially filled with water—and with cattails, willows, pond-dwelling insects, and mature frogs and toads.

The WVDEP continues to ignore the fact that conductivity, sulfates, and TDS discharged from coal mines are pollutants even though the scientific consensus is that these water quality parameters are strong indicators of biological impairment. If the WVDEP can set numerical limits on pH and total suspended solids, which are clearly indicators of pollution rather than "toxic pollutants", then the WVDEP can and should set numerical limits on conductivity, sulfates, and TDS on this permit reissuance. A water quality benchmark already exists for conductivity (Cormier and Suter 2013, Griffith 2014), which should be a trigger on this permit. "*The derivation of this aquatic life benchmark using conductivity illustrates the practical use of the field-based method for developing water-quality benchmarks for pollutants that are not amenable to laboratory methods [11]. The method is credible because it is adapted from methods that have been successfully used for nearly 30 years to develop water-quality criteria using laboratory data and because the field-based method has withstood extensive public and peer review. The derived benchmark is credible because it has been validated and has withstood tests of the models, causation, and potential confounding.*" (Cormier et al. 2013c)

4. Reissuing this permit in its present draft form will eventually ruin most of the last-remaining, unimpaired stream segment in the Scotts Run watershed by allowing the mine operator to overload it with ionic pollutants.

It is a fact—see the 2014 benthic study provided by the permittee as part of this permit reissuance—that the Scotts Run stream segment that parallels WV Routes 43 (Cassville-Mt. Morris Road) and 43/8 (Fleming Road) is not biologically impaired. There has been little in the way of surface mining along this stretch with the exception of a few, localized punch mines in the Waynesburg coal seam. This situation will change dramatically if and when surface mining of the S-2009-09 WVSCMRA permit occurs. The modifications in this NPDES reissuance—along with those in WV1017535, Modification #9 in 2009—approve three NPDES outfalls (006, 026 and 027) along the stream segment adjacent to Route 43. In addition, all of the surface and groundwater drainage from the mine would be diverted away from the existing headwater streams along Routes 43 and 43/8. All of that water would be diverted towards the outfalls, effectively choking off the existing headwater streams along Route 43/8 and Scotts Run along Route 43 from at least half of their usual water budget.

The three outfalls have a designed maximum flow rate of 196 cfs. Outfall 006 and its associated sedimentation pond was constructed during the mining of WV SCMRA permit S-2010-01, so it has effectively choked off the headwater stream between itself and Scotts Run for the past 15 years. Outfalls 026 and 027 have not yet been constructed. We can attest to the fact that there is abundant surface and groundwater sheet-flow coming from the proposed S-2009-09 permit area along WV Routes 43 and 43/8 because we live here and travel these roads almost every day, and the previously forested areas have been logged since 2010. The hydrologic balance will be significantly altered if mining commences in this area. The headwater tributaries that would be dredged and filled if the 404 permit is approved and mining commences would decapitate the hydrological connections to Scotts Run, and would cease to provide any of the functional benefits that currently contribute to biological integrity of the upstream segments of Scotts Run. Even the draft rationale page for this reissuance attests to the fact that these so-called "precipitation induced" outfalls may flow in response to the groundwater that *"…may be encountered…*" during the mining phase, and that the permit writer has to hold these outfalls to the NWQS guidelines. These outfalls will flow when the mine pits are overloaded with water, which will in turn release slugs of treated AMD waters heavily laden with ionic pollutants into the Scotts Run stream segment and result in biological impairment.

5. Other Miscellaneous Questions and/or Comments

(a.) Section 3.C., page 3 of the draft rationale page, says that, "*Due to the 5.00 acres for Amendment No. 1 of S200909, Tier 2 review will be conducted and anti-deg effluent limits recalculated for outlets 006, 026 and 027. Revised limits listed below.*" **Does this mean that revised limits were calculated as a result of a Tier 2 review on these outlets, or has this Tier 2 review not yet been conducted and the limits will be revised at a later date? If it is the latter, will the public be notified and allowed to comment?**

(b.) Why is selenium not listed under "Outlet 006, 026 and 027" at the bottom of page 3 of the rationale page?

(c.) Section 3.C., page 5 of the draft rationale page, says that, "*When an ash source is determined, an ash constituent analysis can be submitted to determine whether the parameters to be monitored can be minimized based on what is/is not present in the proposed ash source.*" **Does this mean that the parameters to be monitored may be revised at a later date? If this is true, will the public be notified and allowed to comment?**

(d.) Explain the procedures that will be used and the data that will be collected at the "special outlets" (BAS-DSR, BAS-USR, and BAS-UUSR) to *"…account for the holistic assessment of the aquatic ecosystem while limiting assessment to potential impacts of the permit area.*" **How does limiting the assessment to potential impacts of the permit area provide the Tier 2 protection that the WV1029169 permit application asserts is already afforded to Scotts Run downstream of OSR's proposed AMD plant and the new sedimentation pond in the AMD seep?**

(e.) As far as we can tell, the permittee did not include an Aquatic Ecosystem Protection Plan (AEPP)—which should include controls designed to lower the magnitude of pollutant loading associated with mining activities—with the permit reissuance application. According to the Guidance [23], "*New and expanded discharge permit applications shall include an AEPP for agency review and approval, and the permit writer shall use the control measures outlined therein as part of his or her RP analysis, as outlined more fully above. The permittee shall use the measures outlined in its AEPP as a means of maintaining the health of the aquatic ecosystem and complying with the State's narrative water quality standards. An AEPP describes control measures the applicant will implement to achieve WET limitations and minimize adverse biological impacts to the aquatic ecosystem surrounding the permitted activity. The plan should also include controls designed to lower the magnitude of pollutant loading associated with mining activities. If the agency cannot conclude that the proposed measures are reasonably expected to result in compliance, then the permit will not be issued*."

In conclusion, we believe that the reasons behind WVDEP's intransigence to accept the science linking ionic pollution from coal mines with biological impairment of our streams are deeply rooted in the political/economic culture that binds the West Virginia legislative community with the coal industry. We believe this is wrong, places economic concerns on an unequal par with environmental concerns, and ridicules the agency's moniker of "Environmental Protection". We believe that the alleged Tier 1 and 2 anti-degradation reviews of this proposed permit reissuance fail to recognize that the elevated discharges of sulfates, conductivity, and

[23] < http://www.dep.wv.gov/pio/Documents/2011-05-11%20%20Narrative%20Standards%20Permitting%20Guidance%20(Rev%20%202).pdf >

TDS are contributing to aquatic life impairment; that WVDEP should make it a high priority to identify the causative stressors that are responsible for and/or contributing to biological impairment (WVSCI scores <68.01) before reissuing this permit; that this reissuance requires numerical effluent limits for conductivity, TDS and sulfates; and that Tier 2 protection against future sources of biological impairment must be afforded to the Scotts Run stream segment and headwater streams adjacent to WV Routes 43 and 43/8.

Sincerely,

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Table 1. West Virginia Stream Condition Index (WVSI) macroinvertebrate scores for Guston Run. Data sources: WVDEP, Watershed Assessment Program database (1999-2009); and Biological Monitoring Report: New Hill Complex - West Virginia NPDES Permit WV1017535: BAS Locations: DSR, DUTSR, UUSR, USR027, and USR dated April 15, 2014. Prepared by: AllStar Ecology, LLC for Patriot Mining Company, Inc. 78pp (2013). A WVSCI score belew 68.01 is considered impaired.

SAMPLE DATE	Latitude	Longitude	Stream	Mile Point	BAS Location	WVSCI Score
9/15/1999	39° 40' 30.4"	-80° 02' 10.3"	Guston Run	0.6		49.29
5/18/2004	39° 40' 23.2"	-80° 01' 55.6"	Guston Run	0.4		53.07
7/22/2009	39° 40' 23.2"	-80° 01' 55.6"	Guston Run	0.4		45.35
9/15/1999	39° 39' 38.5"	-80° 00' 03.2"	Scotts Run	0.6		31.80
7/22/2009	39° 39' 38.5"	-80° 00' 03.2"	Scotts Run	0.6		51.36
6/10/2003	39° 40' 28.2"	-80° 04' 02.3"	Scotts Run	5.4		54.23
7/22/2009	39° 40' 29.3"	-80° 04' 05.9"	Scotts Run	5.5		74.27
9/27/2013	39° 39' 58.9"	-80° 03' 08.1"	Scotts Run		DSR	56.97
9/27/2013	39° 39' 59.5"	-80° 03' 11.8"	Scotts Run		DUTSR	51.39
9/27/2013	39° 39' 57.3"	-80° 03' 47.6"	Scotts Run		UUSR	63.86
9/27/2013	39° 40' 18.8"	-80° 03' 56.5"	Scotts Run		USR027	80.93
9/27/2013	39° 40' 30.2"	-80° 04' 08.7"	Scotts Run		USR	86.50

Table 2. Location of upstream (UGR-1) and downstream (DGR-1) Guston Run WVNPDES/1007751 (MEPCO, LLC) Discharge Monitoring Report (DMR) sampling stations, and at WVNPDES/1017535 DMR sampling stations at several New Hill Mine Complex stream monitoring points and associated outfalls.

SAMPLING SITE	DESCRIPTION	LATITUDE	LONGITUDE
UGR-1	Guston Run Upstream (WV1007751)	39° 41' 19"	-80° 02' 53"
DGR-4	Guston Run Upstream	39° 41' 14"	-80° 02' 50"
Outfall 021 **	Sediment Channel 1	39° 40' 19"	-80° 02' 37"
DGR-2 **	Guston Run downstream	39° 40' 57"	-80° 02' 35"
Outfall 014	Sediment Channel 1A	39° 40' 48"	-80° 02' 36"
DGR-1	Guston Run downstream (WV1007751)	39° 40' 45"	-80° 02' 25"
DGR-3	Guston Run at mouth	39° 40' 20"	-80° 02' 51"
USR/NH-4	Scotts Run Upstream	39° 39' 57"	-80° 03' 50"
Outfall 001	Pond #1 of S-2010-01	39° 40' 00"	-80° 03' 12"
DSR/NH-3	Scotts Run Downstream below Old Refuse Hollow - Article 3 Point for S-2010-01	39° 39' 58"	-80° 03' 12"
UTSR-1	Unnamed Tributary of Scotts Run	39° 40' 00"	-80° 02' 34"

** NOTE: The spatial coordinates when mapped do not correspond with the design-flow diagrams.

Table 3. Total Iron concentrations. Data source: Patriot Mining Company, WV1017535 eDMR data.

	Scotts Run				Guston Run				
Date	Upstream (USR)	Outfall 001	Downstream (DSR)	UTSR-1	Upstream (DGR-4)	Outfall 021	DGR-2	Outfall 014	Downstream (DGR-3)
9/13/2010	0.16		0.171	69.49	0.121		0.076		0.015
10/11/2010	0.014		1.958	45.26					
10/19/2010	0.639		0.139	49.86	0.164		0.161		0.097
10/22/2010	0.029		3.812	54.91					
11/2/2010	0.018		4.211	47.89					
11/15/2010	0.213	0.037	0.683	49	0.037		0.623		0.023
11/20/2010	0.052		1.01	44.45					
12/4/2010	0.06		1.36	3.02					
12/13/2010	3.906	0.197	1.729	14.31	0.235		0.227		0.174
12/18/2010	0.004		1.24	21.94					
1/8/2011	0.032		1.129	16.68					
1/22/2011	1.443		0.844	20.13					
2/12/2011	3.769		1.265	1.011					
3/4/2011	5.56		1.91	3.331					
3/21/2011	5.826	0.149	2.092	7.716	0.2		0.225		0.12
3/28/2011	4.535		1.584	9.919					
4/21/2011	5.11	0.434	1.68	9.259	0.296		0.298		0.223
5/9/2011	6.03		1.83	6.55					
7/21/2011	0.714		3.09	46.65	0.09	0.03	0.105		0.181
8/15/2011	0.471	0.242	3.39	29.89	0.139		0.094	0.68	0.089
9/12/2011	2.69	0.14	3.36	25.57	0.19	0.26	0.18		0.12
10/26/2011	4.47	0.34	1.39	12.04	0.24		0.23		0.12
11/14/2011	4.7	0.23	3.02	21.8	0.14		0.15		0.11
12/12/2011	4.42	0.19	2.64	6.06	0.15	0.11	0.13		0.14
1/16/2012	3.17	0.11	1.96	7.31	0.17	0.18	0.13		0.11
2/14/2012	3.39	0.12	1.98	17.09	0.17	0.11	0.19	0.37	0.11
3/15/2012	2.3	0.11	1.55	14.56	0.32	0.22	0.32	0.58	0.16
7/16/2012	0.16	0.14	5.72	49.9	0.11	0.22	0.11		0.11
8/13/2012	0.42	0.15	3.64	41.81	0.11	0.42	0.11		0.11
9/25/2012	0.09	0.2	5.23	49.46	0.11	0.03	0.23		0.07
10/15/2012	0.29	0.15	3.62	42.03	0.03	0.04	0.03		0.02
11/12/2012	0.86	0.46	2.02	24.45	0.23	0.25	0.24		0.22
12/17/2012	1.07	0.25	1.83	15.82	0.18	0.29	0.16		0.2
1/14/2013	2.87	0.3	1.39	3.83	0.57	0.6	0.55	0.33	0.31
2/15/2013	3.59	0.32	1.35	6.81	0.21	0.54	0.21	0.52	0.2

	Scotts Run				Guston Run				
Date	Upstream (USR)	Outfall 001	Downstream (DSR)	UTSR-1	Upstream (DGR-4)	Outfall 021	DGR-2	Outfall 014	Downstream (DGR-3)
4/15/2013	4.13	0.38	2.39	16.68	0.21		0.22	0.04	0.26
5/13/2013	1.93	0.16	2.11	0.05	0.14	0.02	0.02		0.02
6/17/2013	1.07	0.14	2.37	0.38	0.29	0.08	0.19		0.18
7/15/2013	1.68	0.2	1.35	0.42	0.77	0.24	0.46		0.67
8/16/2013	2.96	0.28	1.68	0.53	0.18	0.34	0.16		0.22
9/16/2013	0.73		2.77	0.12	0.06	0.04	0.06		0.03
10/14/2013	0.17		4.96	0.72	0.2	0.43	0.27		0.32
11/14/2013	0.41		4.14	0.07	0.05	0.02	0.02		0.02
12/13/2013	2.99		1.58	0.06	0.21	0.34	0.1		0.06
1/16/2014	2.87		1.48	0.06	0.89	1.22	0.62	0.18	0.22
2/14/2014	3.56		1.8	0.05	0.35	0.51	0.26	0.52	0.13
3/11/2014	5.46		2.27	0.08	0.22	0.1	0.22	0.08	0.08
4/15/2014	4.02		1.97	0.13	0.37	0.17	0.26	0.26	0.15
5/13/2014	2.88	0.06	1.82	0.1	0.65	0.89	0.55		0.22
6/13/2014	2.17	0.23	2.33	0.11	0.15	0.06	0.16		0.1
7/2/2014	0.52	0.04	4.37	0.09	0.14	0.05	0.14		0.08
8/12/2014	0.36	0.1	3.1	0.11	0.18	0.03	0.14		0.21
9/24/2014	0.29	0.09	4.67	0.35	0.21	0.13	0.24		0.1
10/14/2014	0.19	0.05	4.32	0.07	0.07	0.03	0.63		0.03
11/14/2014	0.07	0.07	3.1	0.19	0.65	0.05	0.01		0.13
12/12/2014	1.82	0.04	1.05	0.05	0.22	0.45	0.1		0.05
n	56	33	56	56	44	34	44	10	44
Sum	113.355	6.109	131.457	910.2	10.422	8.5	9.609	3.56	6.312
Average	**2.02**	**0.19**	**2.35**	**16.25**	**0.24**	**0.25**	**0.22**	**0.36**	**0.14**

Percentage Change (USR to DSR)	Percentage Change (DGR-4 to DGR-2)	Percentage Change (DGR-2 to DGR-3)
16	-8	-36

Table 4. Total Dissolved Solids (TDS, mg/l) at upstream (UGR-1) and downstream (DGR-1) Guston Run NPDES stream monitoring points and the percentage change from UGR-1 to DGR-1. Data source: MEPCO, LLC., WV1007751 eDMR data.

Date	MEPCO's UGR-1 (upstream)	MEPCO's DGR-1 (downstream)	
2/28/2011	516	496	
7/29/2011	572	732	
10/18/2011	540	652	
11/14/2011	516	588	
12/16/2011	456	496	
1/19/2012	488	584	
2/23/2012	572	696	
3/15/2012	536	648	
4/17/2012	616	832	
5/31/2012	516	876	
6/21/2012	664	988	
7/18/2012	692	992	
8/28/2012	544	988	
9/20/2012	584	932	
10/19/2012	604	940	
11/30/2012	688	912	
12/27/2012	560	764	
1/23/2013	600	824	
2/22/2013	552	896	
3/27/2012	500	704	
4/24/2013	596	812	
5/29/2013	648	972	
6/19/2013	532	692	
7/24/2013	368	412	
8/28/2013	564	788	
9/24/2013	740	1060	
10/28/2013	872	1252	
11/15/2013	780	1044	
12/23/2013	484	524	
1/30/2014	788	444	
2/27/2014	444	640	
3/24/2014	524	684	
4/28/2014	532	764	
5/23/2014	496	728	Percentage Change (UGR-1 to DGR-1)
n	34	34	
Sum	19684	26356	
Average	**579**	**775**	**34**

Table 5. Sulfates (mg/l) at upstream (UGR-1) and downstream (DGR-1) Guston Run NPDES stream monitoring points and the percentage change from UGR-1 to DGR-1. Data source: MEPCO, LLC., WV1007751 eDMR data.

Date	MEPCO's UGR-1 (upstream)	MEPCO's DGR-1 (downstream)	
2/28/2011	300	290	
7/29/2011	319.71	464.67	
10/18/2011	272.55	302.66	
11/14/2011	275	250	
12/16/2011	260	280	
1/19/2012	300	330	
2/23/2012	350	500	
3/15/2012	310	450	
4/17/2012	257.7	729.1	
5/31/2012	322.8	544.9	
6/21/2012	356.4	636.2	
7/18/2012	425	700	
8/28/2012	302	636	
9/20/2012	342	681	
10/19/2012	398	632	
11/30/2012	464	628	
12/27/2012	336	492	
1/23/2013	325	500	
2/22/2013	341	590	
3/27/2012	280	471	
4/24/2013	381	531	
5/29/2013	407	655	
6/19/2013	250	430	
7/24/2013	145	150	
8/28/2013	290	391	
9/24/2013	398	600	
10/28/2013	512	764	
11/15/2013	514	701	
12/23/2013	280	301	
1/30/2014	433	283	
2/27/2014	288	398	
3/24/2014	352	467	
4/28/2014	351.2	475.95	
5/23/2014	284.15	416.83	**Percentage Change (UGR-1 to DGR-1)**
n	34	34	
Sum	11422.51	16671.31	
Average	**336**	**490**	**46**

Table 6. Conductivity (µS/cm) at upstream (USR) and downstream (DSR) Scotts Run stream monitoring points and the percentage change from USR to DSR attributable to effluent from the New Hill Mine Complex (Outfall 001) and the unnamed tributary of Scotts Run (UTSR-1). Data source: Patriot Mining Company, WV1017535 eDMR data.

Date	Upstream (USR)	Outfall 001	Downstream (DSR)	UTSR-1
9/13/2010	818		1559	
10/11/2010	685		1048	2530
10/19/2010	767		1164	
10/22/2010	820		1156	2580
11/2/2010	789		1288	2620
11/15/2010	794	1730	1106	
11/20/2010	525		778	2430
12/4/2010	380		562	944
12/13/2010	556	1739	694	
12/18/2010	479		684	2350
1/8/2011	438		623	2320
1/22/2011	860		622	2460
2/12/2011	438		558	637
3/4/2011	416		860	1321
3/21/2011	427	1910	602	
3/28/2011	440		652	2130
4/21/2011	350	1913	478	
5/9/2011	432		696	1768
7/21/2011	600		929	
8/15/2011	632	1919	981	
9/12/2011	657	2030	1097	
10/26/2011	434	1677	602	
11/14/2011	532	1940	788	
12/12/2011	415	1774	738	
1/16/2012	385	1954	621	
2/14/2012	450	2030	731	
3/15/2012	386	1857	602	
7/16/2012	707	2490	1421	
8/13/2012	674	1811	1124	
9/25/2012	754	2160	1500	
10/15/2012	776	2200	1592	
11/12/2012	665	2020	1066	
12/17/2012	694	2240	1251	
1/14/2013	399	1896	616	
2/15/2013	416	1814	606	

Date	Upstream (USR)	Outfall 001	Downstream (DSR)	UTSR-1
4/15/2013	524	1882	767	
5/13/2013	560	1975	879	
6/17/2013	601	2130	978	
7/15/2013	422	1570	495	
8/16/2013	576	1907	839	
9/16/2013	637		987	
10/14/2013	701		1276	
11/14/2013	680		1153	
12/13/2013	452		649	
1/16/2014	361		571	
2/14/2014	420		644	
3/11/2014	477		708	
4/15/2014	364		587	
5/13/2014	524	2070	725	
6/13/2014	599	2039	838	
7/2/2014	623.3	2913	1107	
8/12/2014	558.1	2301	982	
9/24/2014	648.7	2285	1236	
10/14/2014	689.9	3318	1276	
11/14/2014	608	2430	1614	
12/12/2014	443.9	2214	682.2	
n	56	33	56	12
Sum	31459.9	68138	50388.2	24090
Average	**562**	**2065**	**900**	**2008**
Percentage Change (USR to DSR)			**60**	

Table 7. Total Dissolved Solids (TDS, mg/l) at upstream (USR) and downstream (DSR) Scotts Run stream monitoring points and the percentage change from USR to DSR attributable to effluent from the New Hill Mine Complex (Outfall 001) and the unnamed tributary of Scotts Run (UTSR-1). Data source: Patriot Mining Company, WV1017535 eDMR data.

Date	Upstream (USR)	Outfall 001	Downstream (DSR)	UTSR-1
9/13/2010	544		1204	275
10/11/2010	552	2120	776	160
10/19/2010	536		832	280
10/22/2010	596	2092	820	230
11/2/2010	612	2068	900	180
11/15/2010	600		760	300
11/20/2010	420	1984	572	90
12/4/2010	356	708	452	60
12/13/2010	388		528	180
12/18/2010	444	1988	544	80
1/8/2011	356	1836	458	75
1/22/2011	600	1956	456	250
2/12/2011	190	480	448	268
3/4/2011	224	948	404	190
3/21/2011	228		444	180
3/28/2011	256	1592	464	180
4/21/2011	196		344	170
5/9/2011	220	1344	484	
7/21/2011	372		568	196
8/15/2011	384		628	275
9/12/2011	440		768	240
10/26/2011	228		340	143
11/14/2011	296		520	170
12/12/2011	220		468	140
1/16/2012	208		380	150
2/14/2012	224		484	350
3/15/2012	240		432	135
7/16/2012	472		988	586
8/13/2012	400		768	224
9/25/2012	472		1056	264
10/15/2012	460		1072	235
11/12/2012	440		688	253
12/17/2012	468		868	265
1/14/2013	248		452	139
2/15/2013	248		392	190

Date	Upstream (USR)	Outfall 001	Downstream (DSR)	UTSR-1
4/15/2013	312		508	250
5/13/2013	324		588	225
6/17/2013	396		684	200
7/15/2013	372		360	130
8/16/2013	400		632	200
9/16/2013	360		612	230
10/14/2013	448		860	270
11/14/2013	432		800	270
12/13/2013	308		432	150
1/16/2014	216		328	114
2/14/2014	228		348	140
3/11/2014	280		424	185
4/15/2014	252		384	101
5/13/2014	320		456	170
6/13/2014	420		596	220
7/2/2014	412	1772	744	
8/12/2014	408	1868	664	
9/24/2014	448	1888	864	
10/14/2014	484	2024	872	
11/14/2014	416	2056	824	
12/12/2014	308	1896	484	
n	56	18	56	49
Sum	20682	30620	34226	9958
Average	**369**	**1701**	**611**	**203**
Percentage Change (USR to DSR)			**66**	

Table 8. Sulfates (mg/l) at upstream (USR) and downstream (DSR) Scotts Run stream monitoring points and the percentage change from USR to DSR attributable to effluent from the New Hill Mine Complex (Outfall 001) and the unnamed tributary of Scotts Run (UTSR-1). Data source: Patriot Mining Company, WV1017535 eDMR data.

Date	Upstream (USR)	Outfall 001	Downstream (DSR)	UTSR-1
9/13/2010	275		650	
10/11/2010	160		400	1750
10/19/2010	280		375	
10/22/2010	230		475	1700
11/2/2010	180		550	1700
11/15/2010	300	1050	350	
11/20/2010	90		200	1350
12/4/2010	60		190	475
12/13/2010	180	850	270	
12/18/2010	80		220	1400
1/8/2011	75		200	1400
1/22/2011	250		200	1550
2/12/2011	268		210	260
3/4/2011	190		220	800
3/21/2011	180	1250	240	
3/28/2011	180		280	1450
4/21/2011	170	1200	210	
5/9/2011				
7/21/2011	196		332	
8/15/2011	275	1100	450	
9/12/2011	240	1050	375	
10/26/2011	143	885	174	
11/14/2011	170	1350	260	
12/12/2011	140	750	280	
1/16/2012	150	775	210	
2/14/2012	350	1200	350	
3/15/2012	135	1100	220	
7/16/2012	586	1538	629	
8/13/2012	224	963	416	
9/25/2012	264	1341	695	
10/15/2012	235	1365	730	
11/12/2012	253	1268	454	
12/17/2012	265	1489	573	
1/14/2013	139	1100	218	
2/15/2013	190	1100	220	
4/15/2013	250	1100	375	

Date	Upstream (USR)	Outfall 001	Downstream (DSR)	UTSR-1
5/13/2013	225	1450	400	
6/17/2013	200	1250	300	
7/15/2013	130	1000	115	
8/16/2013	200	1000	270	
9/16/2013	230		390	
10/14/2013	270		475	
11/14/2013	270		525	
12/13/2013	150		220	
1/16/2014	114		192	
2/14/2014	140		220	
3/11/2014	185		340	
4/15/2014	101		210	
5/13/2014	170	1250	225	
6/13/2014	220	1250	325	
7/2/2014	272	1229.2	424	
8/12/2014	162	1330	378	
9/24/2014	233	1230	607	
10/14/2014	213	1590	513	
11/14/2014	208	1590	493	
12/12/2014	135	1124	204	
n	55	33	55	11
Sum	11181	39117.2	19027	13835
Average	**203**	**1185**	**346**	**1258**
Percentage Change (USR to DSR)			**70**	

Table 9. Minimum flow rates (cfs) at MEPCO and Patriot Mining Company NPDES water quality monitoring stations in Guston Run. Data source: MEPCO, LLC. (WV1007751) and Patriot Mining Company (WV1017535), eDMR data.

MEPCO's Date	Patriot's Date	MEPCO's UGR-1 (upstream)	Patriot's DGR-4 (upstream)	Patriot's Outlet 021	Patriot's DGR-2	Patriot's Outlet 014	MEPCO's DGR-1 (downstream)
2/28/2011		1.34					0.56
7/29/2011	7/21/2011	0.33	1.096	0.0102	1.096	0	0.39
	8/15/2011		2.82	0	2.41	0.0092	
	9/12/2011		0.825	0	0.825	0	
10/18/2011	10/19/2011	1.337	5.32	0	5.32	0	1.56
11/14/2011	11/14/2011	1.058	3.062	0	3.062	0	1.337
12/16/2011	12/12/2011	1.337	11.07	0.0409	3.52	0	2.228
1/19/2012	1/16/2012	1.337	3.735	0.0409	3.735	0	0.836
2/23/2012	2/14/2012	1.337	7.32	0.0614	5.445	0.0007	1.56
3/15/2012	3/15/2012	1.56	8.2	0.0082	8.2	0.001	1.894
4/17/2012		0.668					0.713
5/31/2012		0.049					0.39
6/21/2012		0.111					0.189
7/18/2012	7/16/2012	0.051	0.665	0.0041	0.665	0	0.078
8/28/2012	8/13/2012	0.034	1.245	0.0041	1.245	0	0.067
9/20/2012	9/25/2012	0.036	0.145	0.0009	0.145	0	0.067
10/19/2012	10/15/2012	0.047	0.623	0.0032	0.623	0	0.078
11/30/2012	11/12/2012	0.033	4.382	0.0081	4.62	0	0.078
12/27/2012	12/17/2012	0.334	0.822	0.0027	0.901	0	0.334
1/23/2013	1/14/2013	0.334	7.564	0.0491	8.237	0.0025	0.412
2/22/2013	2/15/2013	0.501	4.98	0.004	4.98	0.004	0.557
3/27/2012		0.39					0.39
4/24/2013	4/16/2013	0.334	0.31	0	0.39	0.001	0.501
5/29/2013	5/14/2013	0.189	0.14	0.0409	0.368	0	0.279
6/19/2013	6/17/2013	0.334	0.048	0.0409	0.36	0	0.468
7/24/2013	7/15/2013	1.504	1.33	0.0409	3.22	0	2.284
8/28/2013	8/16/2013	0.279	0.55	0.0307	0.9	0	0.613
9/24/2013	9/16/2013	0.241	0.1	0.0307	0.32	0	0.39

MEPCO's Date	Patriot's Date	MEPCO's UGR-1 (upstream)	Patriot's DGR-4 (upstream)	Patriot's Outlet 021	Patriot's DGR-2	Patriot's Outlet 014	MEPCO's DGR-1 (downstream)
10/28/2013	10/14/2013	0.138	0.04	0.0307	0.21	0	0.245
11/15/2013	11/14/2013	0.058	0.04	0.0307	0.16	0	0.174
12/23/2013	12/13/2013	0.613	0.2	0.0205	0.49	0	1.727
1/30/2014	1/16/2014	0.189	0.51	0.0409	1.85	0.0077	0.49
2/27/2014	2/14/2014	0.39	0.56	0.0409	1.5	0.0041	0.613
3/24/2014	3/11/2014	0.334	0.84	0.0614	1.13	0.002	0.412
4/28/2014	4/15/2014	0.279	1	0.0614	1.88	0.0038	0.613
5/23/2014	5/13/2014	0.557	0.66	0.0409	1.19	0	0.635
6/23/2014	6/13/2014	0.279	0.24	0.0409	0.59	0	0.412
7/28/2014	7/12/2014	0.16	0.12	0.0205	0.32	0	0.245
8/27/2014	8/12/2014	0.245	0.12	0.0205	0.28	0	0.279
9/23/2014	9/16/2014	0.223	0.12	0.0205	0.28	0	0.256
10/30/2014	10/14/2014	0.167	0.12	0.0102	0.24	0	0.334
11/20/2014	11/14/2014	0.245	0.16	0.0051	0.16	0	0.39
12/18/2014	12/12/2014	0.668	0.32	0.0077	0.96	0	1.058

n	41	38	38	38	38	41
Sum	19.65	71.402	0.8747	71.827	0.036	26.136
Average	**0.479**	**1.879**	**0.023**	**1.89**	**0.001**	**0.637**

Percentage Change from MEPCO's (UGR-1) to Patriot's (DGR-4)	Patriot's Percentage Change (DGR-4 to DGR-2)	Percentage Change from Patriot's (DGR-2) to MEPCO's (DGR-1)
292	**1**	**-66**

MEPCO's Percentage Change (UGR-1 to DGR-1)
33

Table 10. Maximum flow rates (cfs) at MEPCO and Patriot Mining Company NPDES water quality monitoring stations in Guston Run. Data source: MEPCO, LLC. (WV1007751) and Patriot Mining Company (WV1017535), eDMR data.

MEPCO's Date	Patriot's Date	MEPCO's UGR-1 (upstream)	Patriot's DGR-4 (upstream)	Patriot's Outlet 021	Patriot's DGR-2	Patriot's Outlet 014	MEPCO's DGR-1 (downstream)
2/28/2011		2.01					2.12
7/29/2011	7/21/2011	0.39	5.461	0.0102	1.361	0	0.45
	8/15/2011		5.432	0	2.82	0.0092	
	9/12/2011		2.563	0	2.563	0	
10/18/2011	10/19/2011	2.061	11.32	0	11.32	0	2.172
11/14/2011	11/14/2011	2.451	6.64	0	6.64	0	2.896
12/16/2011	12/12/2011	1.337	62.637	0.0409	11.07	0	2.228
1/19/2012	1/16/2012	1.671	7.158	0.0614	7.158	0	2.061
2/23/2012	2/14/2012	2.061	8.765	0.0614	9	0.0007	2.339
3/15/2012	3/15/2012	1.671	13.502	0.0205	9.545	0.0014	1.894
4/17/2012		0.668					1.058
5/31/2012		1.337					1.671
6/21/2012		0.39					0.501
7/18/2012	7/16/2012	0.06	1.756	0.0102	1.756	0	0.111
8/28/2012	8/13/2012	0.038	2.25	0.0205	1.62	0	0.078
9/20/2012	9/25/2012	0.062	0.7968	0.0016	0.7968	0	0.111
10/19/2012	10/15/2012	0.074	0.81	0.0054	0.81	0	0.167
11/30/2012	11/12/2012	0.093	6.64	0.0081	7	0	0.167
12/27/2012	12/17/2012	1.058	1.021	0.0081	1.119	0	1.448
1/23/2013	1/14/2013	0.39	10.534	0.0614	10.89	0.0025	0.613
2/22/2013	2/15/2013	1.058	6.96	0.0614	7.238	0.0102	1.17
3/27/2012		0.78					1.415
4/24/2013	4/16/2013	0.39	1.29	0	1.15	0.001	0.512
5/29/2013	5/14/2013	0.223	0.15	0.0409	0.39	0	0.39
6/19/2013	6/17/2013	0.39	0.48	0.0409	0.52	0	0.468
7/24/2013	7/15/2013	2.388	1.72	0.0409	4.1	0	3.064
8/28/2013	8/16/2013	0.836	0.75	0.0614	1.5	0	1.504
9/24/2013	9/16/2013	0.245	0.24	0.0409	0.56	0	0.39

MEPCO's Date	Patriot's Date	MEPCO's UGR-1 (upstream)	Patriot's DGR-4 (upstream)	Patriot's Outlet 021	Patriot's DGR-2	Patriot's Outlet 014	MEPCO's DGR-1 (downstream)
10/28/2013	10/14/2013	0.16	0.1	0.0409	0.37	0	0.39
11/15/2013	11/14/2013	0.058	0.04	0.0307	0.42	0	0.256
12/23/2013	12/13/2013	1.058	0.9	0.0205	1.08	0	1.727
1/30/2014	1/16/2014	0.379	1.28	0.0409	3.77	0.0205	0.49
2/27/2014	2/14/2014	0.613	1.08	0.0614	3.19	0.0061	0.713
3/24/2014	3/11/2014	0.49	1.08	0.0614	2.52	0.0041	0.78
4/28/2014	4/15/2014	0.836	1.5	0.0614	2.71	0.0038	1.95
5/23/2014	5/13/2014	0.557	0.81	0.0614	1.24	0	1.448
6/23/2014	6/13/2014	1.337	0.32	0.0409	1.05	0	1.582
7/28/2014	7/12/2014	0.334	0.12	0.0205	0.36	0	0.836
8/27/2014	8/12/2014	0.446	0.24	0.0205	0.36	0	0.613
9/23/2014	9/16/2014	0.245	0.18	0.0205	0.3	0	0.39
10/30/2014	10/14/2014	0.39	0.16	0.0102	0.36	0	0.501
11/20/2014	11/14/2014	0.334	0.44	0.0102	0.29	0	0.557
12/18/2014	12/12/2014	1.058	0.39	0.0205	1.08	0	2.117

n	41	38	38	38	38	41
Sum	32.427	167.5158	1.118	120.0268	0.0595	45.348
Average	**0.791**	**4.408**	**0.029**	**3.159**	**0.002**	**1.106**

Percentage Change from MEPCO's (UGR-1) to Patriot's (DGR-4)	Patriot's Percentage Change (DGR-4 to DGR-2)	Percentage Change from Patriot's (DGR-2) to MEPCO's (DGR-1)
457	**-28**	**-65**

MEPCO's Percentage Change (UGR-1 to DGR-1)
40

September 30, 2015

Via U.S. Mail and email to Laura.k.cooper@wv.gov

Laura Cooper
Water Quality Standards, DWWM
WV Department of Environmental Protection
601 57th St., S.E.
Charleston, WV 25304

Re: Comments on Potential Revisions to Water Quality Standards

Dear Ms. Cooper:

Thank you for the opportunity to provide comments concerning suggested rule changes in preparation for the Water Quality Standards Triennial Review to assist DEP to determine what changes to propose to the West Virginia Legislature in 2016 for the 2017 legislative session.

These comments are filed on behalf of the West Virginia Chamber of Commerce ("the Chamber"). The Chamber is West Virginia's largest, most influential general business organization, representing all business sectors in every region of the State. Members range from small business enterprises to mid-sizes manufacturers to tourism destinations to energy companies to Fortune 500 corporations. However, small businesses are the core of our membership - making up 85% of the Chamber's membership.

The Chamber asks DEP to consider the following proposed revisions.

1. Interpretation of Category A Use Designation for All Waters of the State

The Chamber and other representatives of the regulated community have repeatedly commented in past years that DEP lacks legal authority and a scientific justification for its interpretation that all State waters are considered to qualify as Category A waters (public drinking water supplies). West Virginia's water quality standards create a presumption of only two uses that apply to all waters of the State: propagation and maintenance of aquatic life (Category B) and water contact recreation (Category C). W. Va. C.S.R. § 47-2-6.1. Except for these two presumptive uses, only "existing uses" are protected. "Existing uses" are only those uses "actually attained in a water on or after November 28, 1975." W. Va. C.S.R. § 47-2-4.1.a.

No provision of West Virginia's water quality standards designates all waters of the State as Category A waters, and DEP has not demonstrated that all waters of the State have been used as drinking water sources at some time since November 28, 1975. Moreover, the West Virginia

Legislature repeatedly rejected prior attempts by the Environmental Quality Board, who previously had authority over water quality standards, to amend the water quality standards regulations to officially designate all waters of the State as Category A waters. This reflects the desire of the West Virginia Legislature that all waters of the State should *not* be presumed to be drinking water sources. Yet, the agency still persists in implementing by policy an interpretation that is not supported by either the existing regulations or the Legislature.

DEP's position that all State waters are considered Category A results in imposition of more stringent effluent limits than necessary for the protection of human health. This is contrary to the declaration set forth in the West Virginia Water Pollution Control Act that calls for water quality standards to be consistent with public health and also the "expansion of employment opportunities, maintenance and expansion of agriculture and the provision of a permanent foundation for healthy industrial development." W. Va. Code § 22-11-2. Instead of striking an appropriate balance, DEP's interpretation discourages development and investment by imposing standards more stringent than necessary to protect public health.

The Chamber urges the DEP apply the Category A use designations in accordance with the existing statutory and regulatory framework.

2. Basis for Use Designations

Consistent with the comments above concerning Category A, DEP should support all its specific use designations with appropriate evidence. For example, if a particular stream has been designated for use as a drinking water source or other specific use, DEP should have appropriate evidence that the streams are actually used in that fashion. By applying certain use designations "by default," permittees can be subjected to more stringent effluent limits than required to attain the actual uses of certain streams.

3. Consideration of Pollutant Concentration in Intake Water

The Chamber urges the agency to adopt regulations that would take into account the concentration of a pollutant in water withdrawn from a stream in calculating water quality standards-based effluent limits for discharging the same water. In many cases, the concentration of certain pollutants in the stream already exceeds WV/NPDES permit effluent limit for the same pollutants. As a result, the permittee is required to expend resources treating the water to achieve a pollutant concentration below that present in the water withdrawn from the stream.

The Chamber suggests that DEP consider the program implemented by the Ohio EPA. *See* http://www.epa.state.oh.us/portals/35/guidance/permit6.pdf.

The Chamber acknowledges that credit for pollutants in intake water is not appropriate in all circumstances, such as where the pollutant load is increasing. However, we believe it is an option that should be available to DEP and permittees in appropriate circumstances.

4. Mixing Zone Size Limitations

DEP should consider revising the size limitations for calculating mixing zones that govern human-health based water quality standards. Under DEP's current regulations, a "mixing zone shall not exceed one-third (1/3) of the width of the receiving stream, and in no case shall the mixing zone exceed one-half (1/2) of the cross-sectional area of the receiving stream." 47 CSR 5.2.e. The regulation further provides that a mixing zone cannot "[e]xtend downstream at any time a distance more than five times the width of the receiving watercourse at the point of discharge" 47 CSR 5.2.h.2 These size limitations make sense when mixing zones are developed for protection of aquatic life, as they allow fish to avoid mixing zones that are established for protection of aquatic life. Those limitations generally are not needed when human health criteria are being implemented. Except in rare situations involving water contact recreation, there is no reason to set spatial limits on human health criteria mixing zones.

DEP has authority to calculate the size of mixing zones for protection of human health. Section 5.2.c. has numerous restrictions on mixing zone size, including broad statements such as "[m]ixing zones for human health criteria shall be sized to prevent significant human health risks and shall be developed using reasonable assumptions about exposure pathways." There is no need to apply the size limitations for mixing zones designed to protect aquatic life to mixing zones governing criteria for protection of human health.

5. Use of Harmonic Mean Flow

The Chamber asks DEP to adopt harmonic mean flow for calculation of effluent limits for human-health based water quality standards for carcinogens and certain non-carcinogens. DEP presently uses the 7Q10 flow to calculate such limits EPA's *Technical Support Document for Water Quality-based Toxics Control,* EPA/505/2-90-001 (March 1991) ("the TSD") recommends the use of harmonic mean flow for development of permit limits for carcinogens:

> The long-term harmonic mean flow is recommended as the design flow for carcinogens. The recommendation of long-term harmonic mean flow has been derived from the definition of the human health criteria (HHC) for carcinogenic pollutants. The adverse impact of carcinogenic pollutants is estimated in terms of receptors (human) lifetime intakes. To be within the acceptable level of life-time body-burden of any carcinogen, such intakes should not exceed the HHC during the life-time of the receptor. A life-time for exposure to carcinogenic pollutants is defined as 70 years, or approximately 365 (days/year) multiplied by 70 years.
>
> TSD at 88.

The DEP presently also uses the 7Q10 flow to calculate permit limits for human health criteria that are noncarcinogens. EPA suggests the use of 30Q5. However, EPA's TSD also states "if the effects from certain noncarcinogens are manifested after a lifetime of exposure, then a harmonic mean flow may be appropriate (TSD 89). In addition a design flow value that is representative of the human health exposure time period should also be allowed.

Several neighboring states, including Kentucky, Ohio, and Virginia, and the Ohio River Valley Water Sanitation Commission ("ORSANCO") use harmonic mean flow to calculate certain effluent limits for both carcinogens and non-carcinogens.

Given that EPA, ORSANCO, and several neighboring states recognize harmonic mean flow to be an appropriate method for calculation of effluent limits for both carcinogens and non-carcinogens, DEP should adopt this methodology.

6. Revisions to adopt statutory changes regarding "permit shield"

During the 2015 session, the Legislature passed SB 357, which among other things modified the West Virginia Water Pollution Control Act, W. Va. Code § 22-11-6, to clarify the "permit shield" provisions of the statute. SB 357 provides that compliance with the terms of a WV/NDPES permit constitutes compliance with certain provisions of the WPCA and the federal Clean Water Act, and that water quality standards may not be enforced against a permittee excepts as provided by the terms of a WV/NPDES permit. DEP has adopted revisions to the regulations governing coal-related WV/NPDES permits (W.Va. C.S.R. § 47-30-1 *et seq.*) to implement this statutory change. The Chamber requests DEP to adopt similar revisions to the regulations governing non-coal WV/NPDES permits (W .Va. C.S.R. § 47-10-1 *et seq.*) to implement the statutory changes enacted by SB 357.

* * *

The Chamber appreciates the opportunity to offer these written comments. The Chamber reserves the right to present additional comments at future public hearings on this topic. If you have any questions, please feel free to contact me.

Sincerely,

Robert M. Stonestreet
Chair, Water Subcommittee, West Virginia Chamber of Commerce

West Virginia Coal Association

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September 30, 2015

Ms. Laura Cooper
West Virginia Department of Environmental Protection
Division of Water & Waste Management
601 57th Street
Charleston, WV 25304
Via Electronic Mail: Laura.K.Cooper@wv.gov

Re: 2017 Triennial Review of State Water Quality Standards

Dear Ms. Cooper:

Pursuant to the public notice published by the West Virginia Department of Environmental Protection (WV DEP), the West Virginia Coal Association (WVCA) offers the following comments regarding the 2017 Triennial Review of state water quality standards. WVCA appreciates the opportunity to provide comments to WV DEP regarding potential revisions to the state's water quality standards program. The West Virginia Coal Association (WVCA) is a non-profit state coal trade association representing the interests of the West Virginia coal industry on policy and regulation issues before various state and federal agencies that regulate coal extraction, processing, transportation and consumption. WVCA's general members account for 95 percent of the Mountain State's underground and surface coal production. WVCA also represents associate members that supply an array of services to the mining industry in West Virginia. WVCA's primary goal is to enhance the viability of the West Virginia coal industry by supporting efficient and environmentally responsible coal removal and

processing through reasonable, equitable and achievable state and federal policy and regulation. WVCA is the largest state coal trade association in the nation.

Overall, WV DEP is to be commended for the pronounced improvements to the water quality standards rulemaking process since assuming that duty from the Environmental Quality Board (EQB) in 2005. Recent revisions proposed by WV DEP to have updated specific water quality criteria that were maintained without adequate scientific justification. These changes will improve the relevancy of the state's water quality standard and NPDES programs and will remove unnecessary compliance complications.

However, the statewide application of the Category A / public drinking water supply use designation continues to be an unsubstantiated interpretation of West Virginia's water quality standards that has created substantial regulatory confusion and imposed significant compliance costs (with no benefit) on the coal industry.

Previous comment filings by WVCA regarding the state's water quality standards program and individual water quality criteria have detailed the history and technical particulars of the contrived interpretation of Category A by the EQB and WV DEP. These previous comments are provided as an attachment (pages 8- 17) to this filing, and we ask the agency to consider them during the current triennial review process. The past comments are particularly instructive regarding the substantial confusion surrounding the application of Category A criteria. The references to the administrative history of the state's manganese water quality criteria provide a way to address the legislative mandate regarding Category A.

On March 12, 2015 the West Virginia Legislature passed House Bill (HB) 2283. Signed by the Governor on March 31, 2015, the bill requires WV DEP in the 2017 triennial review cycle to examine its application of Category A to all waters statewide:

> The legislative rule filed in the State Register on August 1, 2014, authorized under the authority of section four, article eleven, chapter twenty-two of this code, relating to the Department of Environmental Protection (requirements governing water quality standards, 47 CSR 2), is authorized.; ***Provided; that the Secretary of the Department of Environmental Protection shall consider, for the 2017 triennial review, potential alternative applications for the Category A drinking water use designation to the waters of the state, taking into consideration stream flow, depth, and distance to a public water intake*** (emphasis added).[1]

As we have noted in our past comments, the tortured interpretation of statewide Category A application by the EQB and now WV DEP caused substantial compliance issues related to manganese and resulted in adverse environmental impacts from the application of chemical agents to maintain compliance with a misplaced standard. After many years of languishing under the EQB's rulemaking procedures and in the federal review process, a revised state standard for manganese was finally approved in 2005.

West Virginia's approved manganese Category A water quality standard, (which was only necessary because of the misplaced application of the drinking water use to all state waters), applies five miles above public and private drinking water intakes:

> "...the manganese human health criterion shall only apply within the five-mile zone immediately upstream above a known public or private supply used for human consumption."[2]

---

[1] Enrolled Committee Substitute for House Bill 2283, pg. 4, March 2015. http://www.legis.state.wv.us/Bill_Text_HTML/2015_SESSIONS/RS/pdf_bills/HB2283%20SUB%20ENR%20PRINTED.pdf

[2] 47 CSR 2.6.2.d. http://apps.sos.wv.gov/adlaw/csr/readfile.aspx?DocId=26654&Format=PDF

WV DEP supported the revision to the manganese criterion, and the federal Environmental Protection Agency (EPA) acknowledged in its approval letter that the application of drinking water criteria at the point of intake is reasonable, protective, and consistent with water quality standards programs implemented in other states:

> ...this change in the water quality standard should not have an impact on the water withdrawn for drinking, the drinking water treatment processes and the cost treating water for drinking. All water withdrawn for drinking by private and public intakes that was covered under the designated use and thus protected by the manganese criterion prior to the MN 5-mile rule continues to be subject to the applicable 1mg/L manganese criterion. Therefore, application of the MN 5-mile rule continues to protect the public water supply use...[3]
>
> The application of a criterion for the protection of public water supply at the intake point is consistent with EPA's approval in other states. EPA has approved applications of human health criteria at the intake or withdrawal points in other states as well...[4]

As WVCA has stated in previous comments, EPA's approval of the 5-mile rule and its supporting justification presents a very practical question to WV DEP with regard to application of drinking water criteria to all state waters: If application of the Category A use designation at the point of intake is protective of "all water withdrawn for drinking" and if "application of the Mn 5-mile rule continues to protect the public water supply" as EPA observed in its approval documents, then why would a similar approach not be protective and warranted for other parameters?

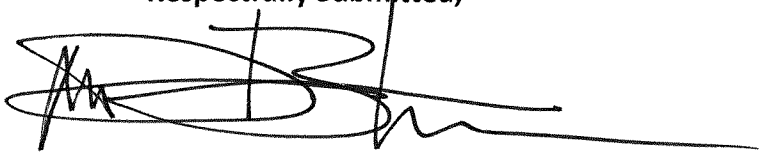
---

[3] Letter dated June 29, 2005 from EPA Region III to the EQB approving West Virginia's manganese standard.
[4] Ibid.

WV DEP has largely ignored this comment and the simple solution it offers to end the Category A controversy, choosing instead to hide behind the EQB's fabricated justification for statewide application. WVCA hopes the legislative mandate contained in HB 2283 will finally lead the agency to consideration of a similar approach for other parameters.

DEP should also address impairment determinations for the narrative criteria. As noted in the attached previous comments, WV DEP should move quickly to develop a method to assess impairment with respect to the state's narrative water quality criteria, consistent with the legislative findings and intent expressed in Senate Bill 562 and House Concurrent Resolution 111. Both of these legislative instruments instructed the agency to develop an assessment method that relies on broader measures of ecosystem health beyond simple benthic measurements.

Respectfully Submitted,



Jason D. Bostic
Vice-President

COMMENTS OF THE WEST VIRGINIA COAL ASSOCIATION:

2014 TRIENNIAL REVIEW OF WEST VIRGINIA'S WATER QUALITY STANDARDS

General Comments

While the West Virginia Department of Environmental Protection (WV DEP) has greatly improved the water quality standards rulemaking process since assuming that duty from the Environmental Quality Board (EQB) in 2005, there remains several areas where the agency needs to correct historical issues inherited from the Board. In these areas, WV DEP can build on the notable progress made to date by providing more rationality to the program.

In conducting this review and examination of West Virginia's water quality standards program, WV DEP is guided not only by science but also by the principles of public policy as established by the West Virginia Legislature. With respect to water quality standards and Clean Water Act (CWA) Section 402 permitting, this declaration of public policy is contained in the West Virginia Water Pollution Control Act (WV WPCA):

> It is declared to be the public policy of the state of West Virginia to maintain reasonable standards of purity and quality of the water the state consistent (1) public health and public enjoyment thereof; (2) the propagation and protection of animal, bird fish, aquatic and plant life; and (3) the expansion of employment opportunities, maintenance and expansion of agriculture and the provision of a permanent foundation for healthy industrial development.[1]

[1] W.Va. Code 22-11-2.

WVCA believes in several instances, detailed in subsequent comments, WV DEP maintains water quality standards far beyond "reasonable standards of purity and quality" that certainly do not promote "healthy industrial development" that is necessary or consistent with "the expansion of employment opportunities." In the case of the agency's interpretation of certain use designations, its position is the very antithesis of these stated goals and policy-- one that is not necessary to protect or enhance the public health and welfare and at the same time needlessly discourages development and investment.

Further guidance regarding rulemaking is provided by the Legislature to the agency in WV DEP's authorizing statute:

> ...legislative rules promulgated by the Director...may include provisions which are more stringent than the counterpart federal rule or program to the extent that such provisions are reasonably necessary to protect, preserve or enhance the quality of West Virginia's environment or human health or safety, taking into consideration the scientific evidence, specific environmental characteristics of West Virginia or an area thereof, or stated legislative findings, policies or purposes relied upon by the director in making such determination. In the case of specific rules which have a technical basis, the director shall also provide the specific technical basis upon which the director has relied. [2]

As our detailed comments explain, in many cases WV DEP has maintained standards and interpretations that completely fail to satisfy the Legislature's specific constraints on the agency's rulemaking authority. Consider beryllium (*see subsequent comments*) where WV DEP maintains criteria that were rejected by the federal Environmental Protection

[2] W.Va. Code 22-1-3a.

Agency (EPA) and replaced with a more scientifically defensible standard several years ago. Such a standard is not "reasonably necessary to protect, preserve or enhance the quality of West Virginia's environment" nor has WV DEP "provided the specific technical basis upon which the director has relied" to maintain this flawed standard to the Legislature.

In other cases, WV DEP has shunned the responsibility conferred on it by the Legislature by ignoring substantial evidence that current standards do not reflect "reasonable standards of purity and quality." Rather than undertaking research and rulemaking to develop a standard which "takes into consideration the scientific evidence, specific environmental characteristics of West Virginia or an area thereof", the agency submissively waits for revision of federally-recommended standards. As a federal judge recently observed "*...Section 303 of the* [federal] *CWA allocates primary authority for the development of water quality standards to the states.*"[3] When scientific information and the guiding public policy of the state demonstrate a need, WV DEP should exercise this "primary authority" and develop standards specifically for West Virginia.

WVCA urges WV DEP to consider any revisions to the state's water quality standards in the context of the public policy enunciated by the Legislature and the directives established for the agency in statute.

[3] *State of West Virginia, et.al. v. Jackson*, F.Supp.2d, 2012 WL 3090245 (D.D.C., July 31, 2012).

Aluminum Criteria

While West Virginia has made great strides in revising its water quality standards for aluminum to reflect the prevailing natural conditions within the state's waters, WVCA believes that further efforts are necessary to adopt truly protective criteria. Because aluminum is a very common, naturally occurring element, many streams in the state exceed the numeric criteria for aluminum, with no corresponding signs of impairment to the aquatic life. The result is a CWA Section 303(d) list of "impaired waters" with several streams identified as impaired for aluminum, mandating the preparation of Total Maximum Daily Load (TMDL) at state expense, to bring those waters into compliance with a flawed standard. Additionally, reliance on the current aluminum standard has burdened NPDES permit holders as they struggle to maintain compliance with a standard that, from an aquatic life use protection standpoint, is meaningless.

As with many other metals, the toxicity of aluminum is inversely related to water hardness. In other words, aluminum's toxicity to aquatic life decreases as the water hardness increases. EPA has developed hardness-dependent equations for a number of metals to reflect this relationship. For example, West Virginia has adopted EPA's hardness-dependent equations for other metals such as cadmium, trivalent chromium, copper, lead, nickel, silver, and zinc. Similar hardness-based criteria should be adopted for aluminum to reflect the actual toxicity of the constituent.

Other states have adopted similar hardness-based aluminum standards. New Mexico recently adopted a hardness-based standard that was approved by EPA in April 2012.[4] The State of Colorado received EPA approval of its hardness-based standard in August 2011.[5]

On September 21, 2011, WVCA provided a formal submission to WV DEP regarding the state's aluminum standard. The submission contained a proposed update of West Virginia's aluminum criteria to a hardness-based standard using the same methods used in calculating the revised standards for Colorado and New Mexico. WVCA has attached this submission and supporting scientific rationale to these comments in its entirety as attachment "C". WVCA urges WV DEP to adopt a hardness-based standard for aluminum to better protect aquatic life and simplify NPDES compliance with the aluminum criteria.

Beryllium Criteria

In the case of beryllium, WV DEP has maintained water quality criteria that was proposed, but then specifically rejected, by EPA. West Virginia's public drinking water supply/Category A criterion for beryllium is 0.0077 µg/l. However, the national recommended criterion for beryllium for the protection of human health is 4 µg/l, which is the maximum contaminant level (MCL) for drinking water. The West Virginia beryllium criterion is nearly three orders of magnitude below the EPA recommended standard.

[4] *See generally* attachment "A", Letter dated April 30, 2012 from EPA Region VI to the New Mexico Surface Water Quality Bureau.
[5] *See generally* attachment "B", Letter dated August 4, 2011 from EPA Region VIII to the Colorado Water Quality Control Commission.

The current West Virginia criterion appears to be based upon a proposed federally recommended criterion published in 1991.[6] ***This proposed rule was never adopted by EPA, and the proposed criterion of 0.0077 µg/l does not appear in any past version of EPA's nationally recommended water quality criteria.*** This discarded federal recommendation remains in effect for the state and as virtue of its misplaced and illegal application of Category A use designation (see subsequent comments), is being applied on all streams to all NPDES permits by WV DEP.

Following the publication of the proposed human health water quality criteria, EPA promulgated the beryllium MCL of 0.004 mg/l in July 1992. West Virginia adopted its current beryllium criterion of 0.0077 µg/l in 1993; a full year *after* EPA adopted the beryllium MCL that remains the national recommended criterion to this day. Therefore, West Virginia's beryllium criterion was not based upon the best available science in 1993, and it certainly is no more scientifically justifiable now.

WVCA urges DEP to adopt the beryllium MCL of 0.004 mg/l as the human health Category A criterion. This standard has been reaffirmed by EPA as recently as 2008, when EPA published a draft Integrated Risk Information System (IRIS) reassessment that proposed no changes to the reference dose upon which the beryllium MCL is based.[7]

[6] 56 Federal Register 58420, November 6, 1991, pg. 58442.
[7] *See generally* "Toxicological Review of Beryllium and Compounds" published by EPA in April 1998 and available at http://www.epa.gov/iris/subst/0012.htm

Selenium Criteria

An ever-growing body of scientific evidence and data confirms that continued application of the current selenium criteria to West Virginia waters is misplaced and offers no measurable improvement to environmental protection while causing widespread and extraordinarily expensive compliance issues. EPA previously determined the current standard is incorrect and has been struggling to complete a rulemaking to revise the federally recommended selenium standards. The West Virginia Legislature has previously concluded the current federally-recommended selenium limits may not be appropriate for West Virginia:

> The Legislature finds that there are concerns within West Virginia regarding the applicability of the research underlying the federal selenium criteria to a state such as West Virginia which has high precipitation rates and free-flowing streams and that the alleged environmental impacts that were documented in applicable federal research have not been observed in West Virginia... [8]

WVCA continues to believe WV DEP should contemplate revisions to the current standards for selenium. Despite near universal acknowledgement that the current selenium criteria is incorrect, and ignoring the findings of the Legislature, WV DEP has yet to take any action on its own initiative to develop a sensible, protective criteria for West Virginia. The agency has even demonstrated a hesitancy to act on site-specific criteria applications that would simply apply the selenium criteria in terms of dissolved vs. total measurements. This inaction has occurred as selenium has become a modern equivalent of the aquatic life use

[8] W.Va. Code 22-11-6.

standard for manganese, where treatment was undertaken just for the sake of satisfying a baseless standard that most states chose NOT to adopt.

WVCA recommends WV DEP, in accordance with its charge from the Legislature as the agency vested with developing water quality standards for the state, enlist the assistance of state research resources such as those available at the West Virginia Water Research Institute, West Virginia University and Marshall University and actively pursue revisions to West Virginia's water quality standard for selenium instead of simply waiting for EPA to take action on a federally-recommended criteria.

Category A Use Designation

WV DEP continues to operate its NDPES permitting program under the regulatory illusion that all state waters are classified as Category A and serve in their entirety as public drinking water supplies. This myth was originally formed by the Environmental Quality Board (EQB) when it possessed water quality standards rulemaking authority and WV DEP was a willing accomplice in maintaining this illegal presumption by assigning NPDES effluent limits as though all waters were legally classified as such. When the West Virginia Legislature transferred rulemaking authority from the EQB to WV DEP in 2005, the agency simply adopted the EQB's misplaced interpretation. As we detail in subsequent paragraphs, this tortured interpretation is contrary to the official actions of the West Virginia Legislature and represents a decades old illegal rulemaking action that is ripe for action.

West Virginia's water quality standards, like those of virtually all other states, establish allowable in-stream concentrations of various criteria depending on the "use" served by a given water body. These standards also recognize and define allowable "uses" to which the criteria apply. West Virginia's federally-approved water quality standards, codified as 47 CSR 1, provide that all waters of the state are considered to serve as Category B/aquatic life use and Category C/water contact recreation use. More simply, West Virginia's water quality standards default all streams to Category B/aquatic life use or Category C/water contact recreation use. Despite the actions of WV DEP with respect to assigning Category A/public drinking water supply effluent limits to all state streams, the approved regulation is clear and unambiguous:

> These rules establish general Water Use Categories and Water Quality Standards for the waters of the State. Unless otherwise designated by these rules...all waters of the State are designated for the Propagation and Maintenance of Fish and Other Aquatic Life (Category B) and for Water Contact Recreation (Category C) consistent with Clean Water Act goals...[9]
>
> Category A-- Water Supply, Public. -This category is used to describe waters which, after conventional treatment, are used for human consumption...[10]

If there was any doubt as to the meaning of the above-cited provisions, the intent of the EQB was clearly articulated in the Board's rationale document: "above all, [the EQB

[9] 47 CSR 2-6.1
[10] 47 CSR 2-6.2

members] agreed that the category and criteria for public water supplies should not be applied to stream or stream segments where no one is using the waters for drinking."[11]

Notwithstanding the clarity of the rule and the supporting rationale offered by the EQB, WV DEP mistakenly applied the Category A use designation to all waters of the state. This regulatory practice began with the entire length of substantial streams where drinking water intakes were actually located and, as the NPDES regulatory program matured, was extended to every stream within the state.

Predictably, this application of Category A designation presented practical NPDES compliance issues as public water/human health standards are typically dramatically lower and include a more comprehensive list of parameters than required for maintaining West Virginia's legal default designation of all a streams as Category B/aquatic life use and Category C/water contact recreation use.

In 1995, the EQB upheld WV DEP's misapplication of effluent limits based on the statewide Category A fallacy.[12] However, an administrative appeal decision CANNOT alter state water quality standards nor can the EQB sanction an effort by WV DEP to modify a water quality standard or any other legislative rule through application of permit specific effluent limits. If that were the case, there would be no need for the state's public comment and review procedure, or the legislative rulemaking process.

[11] State Water Resources Board, Rationale Document for Revision of Legislative Rules. January 6, 1986. Relevant pages provided as attachment "D".

[12] *See generally* E. I. du Pont de Nemours and Company, Inc. v. Chief, Office of Water Resources, Division of Environmental Protection, Appeal Nos. 599 & 602 (December 13, 1995).

Apparently realizing that such an interpretation, where the EQB sanctioned WV DEP's modification of a rule without public comment and/or Legislative review was untenable, both agencies sought to officially alter the rule to fit their confused interpretation. *Each and every time these efforts have been unequivocally rejected by the Legislature.*

In response to the regulatory confusion created by WV DEP's flawed belief that all waters of the state are Category A/public drinking water supplies, on March 21, 1999 the West Virginia Legislature passed House Bill 2533. Signed into law by the Governor on April 2, 1999, the bill authorized the state's water quality standards to remain in place until October 1999, with the condition that:

> ...the Environmental Quality Board shall review, revise and propose, within this statutory deadline, and in accordance with the provisions of chapter twenty-nine-a of this code, emergency and legislative rules to address interpretive differences regarding the designation of category A waters and analyze the need for distance prohibitors for the policies of public drinking water intake...[13]

In response to the instructions of the Legislature contained in House Bill 2533, the EQB promulgated an emergency rule in October 1999 in which it proposed classifying all waters of the State as Category A/public drinking water supplies: "The proposed amendment clarifies that all waters of the State are protected by the drinking water supply designated use category..."[14] The emergency rule was filed

[13] *See generally* Enrolled Committee Substitute for House Bill 2533, Copy provided as attachment "E"
[14] *See generally* Notice from the EQB dated October 18, 1999 regarding the filing of an emergency rule, copy provided as attachment "F".

with the Secretary of State and, in accordance with W.Va. Code 29A-3-15, was effective pending approval or disapproval by the West Virginia Legislature.

As the Legislature began its consideration of the emergency rule in the 2000 Regular Session, the Senate Judiciary Committee sought to validate the positions offered by the EQB and WV DEP that all state waters were already designated as Category A and the emergency rule did nothing more than formally codify that designation.

In response to an inquiry from the Committee, EPA responded that the October 1999 emergency rule constituted a change to West Virginia's approved water quality standards regulations and as such would require the approval of the federal agency:

> The Environmental Protection Agency understands that the Environmental Quality Board has ***proposed*** to designate all waters of West Virginia as public drinking water supply... We hope that this letter provides West Virginia with a better understanding of what EPA Region III would expect should West Virginia decide to ***pursue*** a statewide re-designation of Category A (*emphasis added*).[15]

The letter from EPA to the Committee made it clear that, contrary to the assertions of the EQB and the NPDES permitting practices of WV DEP, West Virginia's streams were presumed to serve NOT as public drinking water supplies but instead as Category B/aquatic life use and Category C/water contact recreation use. Based on EPA's response that the EQB's emergency rule amounted to a statewide re-designation of all streams, the Legislature expressly rejected the October 1999 proposal from the EQB:

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[15] Letter dated February 12,2000 from EPA Region III Associate Director- Office of Watersheds to West Virginia Senate Judiciary Chairman William Wooten. Copy provided as attachment "G".

> The emergency rule relating to the environmental quality board...filed in the state register on the eighteenth day of October, one thousand nine hundred ninety-nine..is repealed and not authorized.[16]

Despite the clear rebuke of the October 1999 rule by the Legislature and EPA's view that under the approved water quality standards program of the state that all streams defaulted to Categories B and C, WV DEP perpetuated the EQB's deceptions regarding stream designation in NPDES permitting by assigning Category A effluent limitations to all discharges.

Arrogantly ignoring the conclusions of the Legislature (and apparently assuming that the EQB and not the Legislature served as the final rulemaking body for West Virginia), WV DEP went so far as to publicly proclaim the agency will "continue its position [regarding Category A application in NPDES permits] unless directed to do otherwise by the [Environmental Quality] Board."[17] This conceited and illegal interpretation on behalf of WV DEP endures to this day; needlessly confusing the assignment of NPDES effluent limitations for several parameters such as beryllium (*see previous comments*).

Subsequent to the 2000 rejection of the emergency rule, the EQB sought to bypass the Legislature and bootstrap the Category A use classification to the entire state by promulgating a procedural rule which would have created a process to remove the (nonexistent) Category A designation. With the

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[16] Enrolled Committee Substitute for House Bill 4223. Relevant page provided as attachment "H".
[17] See attachment "I", copy of July 7, 2001 article appearing in the Charleston Gazette.

procedural rule filing, the EQB relied on WV DEP's illegal interpretation under the NPDES program to justify the need for the use removal process, evidently assuming that WV DEP possessed a higher rulemaking authority than the Legislature:

> The current implementation of Category A by the Division of Water Resources of the [DEP] in the [NPDES] permitting program is that the designated use [of Category A Public Water Supply] applies to all waters of the state, unless it has been removed specifically by the Board. The Board supports this interpretation and application of the Public Water Supply use.[18]

Based on concerns raised by NPDES permit holders that the EQB was once again trying to extend the Category A designation statewide, the Legislature decided to review the procedural rule. The Legislative Rulemaking Review Committee properly concluded the EQB was seeking to bypass the Legislature entirely and codify the illegal Category A assumption by way of the procedural rule:

> We have reviewed 46 C.S.R.7, "Procedural Rule Governing Reclassification of Water Designated for Public Water Supply, which was filed on January 8, 2003. This procedural rule allows the Environmental Quality Board to remove the Category A (public water supply use) that is described in the water quality standards (46 C.S.R. 1). ***In effect, the Board would use a procedural rule 46 C.S.R. 7 to amend a legislative rule, 46 C.S.R. 1, without legislative review. As co-chairpersons of the Legislative Rule-Making Review Committee, we must reject any procedural rule such as 46 C.S.R. 7 that functions as a legislative rule, in derogation of West Virginia Code §§29A-3-1 et seq*** (*emphasis added*).[19]

[18] *See generally* "Statement of Circumstances Requiring Proposed Rules." Filed by the EQB on September 17, 2002. Copy provided as attachment "J".

[19] *See generally* March 5, 2004 2003 letter from Senator Mike Ross and Delegate Virginia Mahan, Co-Chairs, Legislative Rulemaking Review Committee to Edward Snyder, Chair, EQB. Copy provided as attachment "K".

Defiantly, the EQB continued to believe its own regulatory illusion regarding the drinking water designation and WV DEP blindly followed, applying effluent limits to all NPDES permits based on the Category A use. The frustration created by this "alternative reality" forced the coal industry to pursue a revision to the water quality standards culminating with the adoption by the Legislature in 2004 of a revised water quality standard for manganese.

Under the revised manganese standard, the drinking water standard (which is based on EPA's secondary, non-enforceable, organoleptic recommended criteria) applies five miles above public and private drinking water intakes. When this revised manganese criteria was approved by EPA in 2005, the federal agency noted that application of Category A standards at the point of intake was reasonable and entirely consistent with the approach approved by EPA in other states:

> The application of a criterion for the protection of public water supply at the intake point is consistent with EPA's approvals in other states. EPA has approved applications of human health criteria at the intake or withdrawal points in other states as well. See 35 Ill. Adm. Code § 303.202; Ind. Adm. Code §2-1-3; 401 Ky. Adm. Regs. § 5:031; Ohio Adm. Code §3745-1-07; Sec. 5.[20]

With its approval of the revised manganese standard, EPA also reaffirmed its February 2000 interpretation of West Virginia's legal, default use designations. More importantly, with respect to any future deliberations by WV

[20] Letter dated June 29, 2005 from EPA Region III to the EQB approving the Manganese Five Mile Rule. Copy provided as attachment "L".

DEP with respect to statewide use designations, EPA found the approach taken in the new manganese criteria- protection at the point of intake- entirely protective of the human health standard:

> Therefore, this change in the water quality standard should not have an impact on the water withdrawn for drinking, the drinking water treatment processes and he cost of treating water for drinking. ***All water withdrawn for drinking by private and public intakes that was covered under the designated use and thus protected by the manganese criterion prior to the Mn [manganese] 5-mile rule continues to be subject to the applicable 1 mg/L manganese criterion.*** Therefore, application of the Mn 5-mile rule continues to protect the public water supply use, as defined (*emphasis added*).[21]

It was convenient for WV DEP to hide behind the EQB's irrational conclusions with respect to the Category A use designation while the Board held responsibility for water quality standards rulemaking authority. However, WV DEP did not disagree with or oppose the legislation to transfer that rulemaking power from EQB to the agency in 2005. *Since that legislative action, WV DEP is now responsible for perpetuating both manifestations of the Category A deception:* the myth, believed by no official body outside of the agency and the EQB, that state water quality standards actually assign the drinking water supply designation statewide, and the assignment of Category A-based effluent limitations to NPDES permits.

[21] Letter dated June 29, 2005 from EPA Region III to the EQB approving the Manganese Five Mile Rule. Copy provided as attachment "L".

As it is now responsible for every aspect of the Category A regulatory delusion, the agency must consider a practical question created by EPA's approval of the revised manganese criterion in 2005: If application of the Category A use designation at the point of intake is protective of "all water withdrawn for drinking by public and private intakes" and if "application of the Mn 5-mile rule continues to protect the public water supply" use as EPA observed with respect to the manganese criteria, then what coherent basis does WV DEP have for maintaining the EQB's fantasy that all waters of the state have been properly designated as drinking water supplies?

An approach similar to that taken with the manganese standard, that is application of the criterion at the point of intake, has already been found by EPA to be protective and an analogous approach with respect to all Category A parameters would be similarly protective and resolve the confusion created by the agency's current illogical and illegal position.

Narrative Criteria Implementation / Biological Stream Measurements

In its 2012 Regular Session, the West Virginia Legislature passed Senate Bill 562, directing WV DEP to develop rules to measure compliance with the state's narrative water quality standard.[22] Signed by the Governor on March 16, 2012 the bill requires WV DEP to develop a measurement tool that considers the

[22] *See generally* Enrolled Committee Substitute for Senate Bill 562, copy provided as attachment "M".

"holistic health of the aquatic ecosystem." WVCA believes adherence to the provisions of this legislation will improve the effectiveness of the state's water quality program by assuring public and legislative involvement in the development of an assessment tool to measure attainment of the state's narrative water quality standard. WV DEP historically relied on an assessment tool referred to as the West Virginia Stream Condition Index (WV SCI).

Like the provisions of House Concurrent Resolution (HCR) 111, which was adopted by the Legislature in 2010[23], Senate Bill 562 expresses legislative intent with respect to the narrative water quality standard and makes it clear that singular reliance by the agency on the WV SCI is indefensible. The passage of Senate Bill 562 also reinforces previous statements and objections regarding WV DEP's sole reliance on the WV SCI which myopically focuses on certain benthic species at the exclusion of other components of the stream ecosystem. *Further, the WV SCI is not a water quality standard and has never been subject to the formal rulemaking process which would involve not only public participation but review and approval by the Legislature.*

The agency's misplaced reliance on the WV SCI created a treacherous situation beginning in 2009 when EPA, initially through CWA Section 404 permits processed by the U.S. Army Corps of Engineers, seized upon the WV SCI and other non-official biological measurements to allege violations of West Virginia's narrative criteria. The resulting

[23] *See generally* House Concurrent Resolution No. 111, copy provided as attachment "N".

regulatory confusion quickly migrated to the CWA Section 402 permitting program administered by WV DEP and virtually paralyzed mine permitting activities within West Virginia.

The opportunity for stability and predictability was only recently restored to the permitting program through federal court decisions. Contained within these rulings is a clear conclusion that EPA usurped the powers reserved by Congress to individual states: *"...Section 303 of the* [federal] *CWA allocates primary authority for the development of water quality standards to the states."*[24]

With the recent federal decisions making it clear that rulemaking belongs to individual states and the Legislature providing insight as to the appropriate factors that should be considered in developing narrative standards assessment methods to satisfy the public policy goals of West Virginia, WV DEP should move quickly to finalize a new narrative standards measurement.

Trout Stream Designations

WVDEP's current process, again inherited from the EQB, for designating streams as trout waters and applying trout criteria is convoluted and nearly incomprehensible. WV DEP, despite its clear responsibility for these determinations, blindly relies on data and recommendations provided by the West Virginia Department of Natural Resources (WV DNR), an agency that has no environmental regulatory responsibility. Lack of clarity on this

[24] *State of West Virginia, et.al. v. Jackson,* et. al. F.Supp.2d, 2012 WL 3090245 (D.D.C., July 31, 2012).

issue lead the West Virginia Legislature to completely reject two recent attempts by WV DEP to expand the "codified" list of trout streams contained in the water quality standards rule. WVCA believes the 2014 triennial review provides an opportunity for the agency to establish more practical criteria for trout stream use designation.

"Trout waters" are defined in Subsection 2.19 of 47CSR2 as "waters which sustain year-round trout populations." Appendix A to 47CSR2 contains a list of "known trout waters." Streams have been added or removed from this list during past rulemaking exercises without providing the public with any data or information regarding whether the streams sustain year-round trout populations. Once a stream is placed on the list, the trout stream designation cannot be disputed later in a challenge to a specific NPDES permit limit and can only be changed through the Legislature or by a wholesale rule challenge.

If a stream is not on the codified list of known trout waters contained in Appendix A, WVDEP must demonstrate that the stream sustains a year-round trout population before applying trout stream criteria to it. *The process by which WVDEP makes this determination is not entirely clear.* In addition to the list in Appendix A, WVDEP also *reportedly* maintains one or more internal lists of trout waters, which are not readily accessible to the public. In addition, WVDEP relies heavily on consultation with WV DNR. These internal lists are apparently updated between the two agencies with no public notice and comment period. Should WV DEP assign permit limits as though a receiving stream is trout water based on these internal lists that are developed with WV DNR, the permit applicant is left with

nowhere to turn. WV DEP passively points to WV DNR as the basis for the determination, positioning the applicant to dispute effluent limits with an agency that has no environmental permitting role. *This practice results in a regulatory* ***"twilight zone"*** *where one agency with permitting responsibility relies on another that has no regulatory obligation in determining appropriate effluent limits.* Additionally, it creates a process whereby the WV DEP simply ignores other important requirements related to true cold water trout streams, such as temperature regimes, and ignores the reality that many of the "listed" streams are not cold water streams in need of more restrictive water quality criteria. WV DEP should end this practice of relying on consultation with WV DNR without providing some form of public notice regarding the factual bases upon which WV DNR has relied when it concludes that a stream is a trout water.

Members of the regulated community often are not aware that WVDEP considers a particular stream to be a trout water until WVDEP imposes trout-based effluent limitations in an NPDES permit. This sometimes occurs after a stream or stream segment has been listed on the CWA Section 303(d) list as being impaired for one or more trout criteria. While the public can comment on draft 303(d) lists, regulated entities often do not become aware that such listings have occurred until they are directly affected when a permit writer uses the 303(d) listing as the basis for imposing more stringent effluent limits based on trout criteria. At a minimum, the water quality standards rule should state that regardless of any past designation or listing of a stream or stream segment as a trout water, including on a

303(d) list, whenever WVDEP imposes new, more stringent effluent limitations in an NPDES permit based on trout criteria, the permittee can challenge the trout stream designation in an appeal to the EQB. The water quality standards rule should make it clear that a stream or stream segment's inclusion on a 303(d) list for impairment of a trout water criterion does not prohibit a permittee from challenging trout-based effluent limits in a permit appeal to the EQB.

WVCA suggests that WV DEP use the opportunity provided by the 2014 triennial review water quality standards rule to include a fair mechanism for challenging trout water designations by appealing them to the EQB, where a thorough examination of the factual basis for the trout stream designation can be undertaken.

WV DEP should also strongly consider revising the trout stream designation to distinguish naturally reproducing native trout waters and other waters, such as reproducing non-native trout waters, waters stocked with native species of trout, and waters stocked with non-native species of trout. Such a "refined" trout stream designation would allow for the assignment of effluent limits as appropriate to protect the various classes of trout waters, acknowledging that certain trout populations may need more protective standards than others. Similar "tiered" designations exist in other states and should be reviewed by WV DEP as possible models for a revised trout stream use designation.

WEST VIRGINIA MANUFACTURERS ASSOCIATION

September 29, 2015

Laura K. Cooper, Program Manager
Water Quality Standards Program
Division of Water & Waste Management
WV Dept. of Environmental Protection
601 57th Street
Charleston, WV 25304

Re: Proposals for changes to West Virginia's water quality standards during the 2017 triennial review

Dear Ms. Cooper:

The West Virginia Manufacturers Association offers the following proposals for changes to West Virginia's water quality standards during the 2017 triennial review of those standards.

A. Category A Public Water Use Study

During the 2015 Legislative Session the approval of revisions to water quality standards (47 CSR 2) in HB 2283 was conditioned on a study by the Department of Environmental Protection of the possible alternative application of the Category A public water supply use ("the Category A use"):

> (h) The legislative rule filed in the State Register on August 1, 2014, authorized under the authority of section four, article eleven, chapter twenty-two of this code, relating to the Department of Environmental Protection (requirements governing water quality standards, 47 CSR 2), is authorized.; *Provided; that the Secretary of the Department of Environmental Protection shall consider, for the 2017 triennial review, potential alternative applications for the Category A drinking water use designation to the waters of the state, taking into consideration stream flow, depth, and distance to a public water intake.*

The DEP presently applies the Category A use to all surface water bodies in the state, except where the use has been removed. The WVMA and other entities have repeatedly challenged that interpretation of the state water quality standards, as it is not supported by the terms of the water quality standards rule, is not a practice followed by most of our neighboring states, and is an unnecessarily restrictive and expensive practice. The study mandated by the

Legislature presents an opportunity for the DEP to reconsider its application of the Category A use, by exploring the function of the Category A use and how alternatives to the DEP's present approach might provide relief to industry without affecting the use.

1. Analyze the Category A use

We believe the Category A study should begin with a thorough review of the manner in which the state's public water supply designated use protects human health. It is intended to protect those who drink surface water after it has undergone initial conventional treatment. The Category A use definition is:

6.2 Category A – Water Supply, Public. This category is used to describe waters which, after conventional treatment, are used for human consumption. This category includes streams on which the following are located:

6.2.a. All community domestic water supply systems;

6.2.b. All non-community domestic water supply systems, (i.e., hospitals, Schools, etc.;

6.2.c. All private domestic systems;

6.2.d. All other surface water intakes where the water is used for human consumption. (See Appendix B for partial listing of Category A waters; see section 7.2.a.2, herein for additional requirements for Category A waters.) The manganese human health criterion shall only apply within the five-mile zone immediately upstream above a known or private water supply used for human consumption.

47 C.S.R. 2-6.2. The use is limited to waters that are used for human consumption, after conventional treatment; i.e., waters that are drawn into surface water intakes and rendered potable.

The Category A use was never intended to apply in all places state-wide. When the Water Resources Board, the entity that formerly developed water quality standards, adopted the Category A definition, it said in its response to comments about this section that:

> The Board responded to the first group of comments [relating to the types of water intakes that would be protected] by agreeing that all waters actually used for human consumption should be included in the definition and therefore protected. They further agreed that defining where the criteria are to apply as part of the definition might be improper. **Above all, they agreed that the category and criteria for public water supplies should not be applied to streams or stream segments where no one is using the waters for drinking.**

State Water Resources Board of West Virginia Rationale Document for Revision of Legislative Rules Series I, II, III and IX (January 6, 1986) at 19-20 (bold emphasis added). The Board clearly never meant for the Category A use to apply where there was no public drinking water intake. A review of the rule, and the observations of the Board that adopted the rule, clearly establish that the goal is to protect public drinking water that is drawn through surface water intakes and subjected to conventional treatment (e.g., settling, clarification, chlorination).[1] The water that is drawn into those intakes must meet human health criteria. As long as the water meets that criteria, the water quality standards are being properly applied.

The triennial review study represents an opportunity for the DEP to educate the public about how uses are determined, and how criteria are applied. The DEP should explain that the Category A criteria are to protect those who drink the water regularly. The criteria are set at low, extremely safe, levels because they assume high levels of exposure through water consumption, two to three liters per day for long periods of time, up to 70 years. Some persons may entertain the erroneous belief that enforcing the Category A limits away from the drinking water intake somehow provides protection to the public; it does not. In those areas where Category A criteria do not apply, Category C exists to protect human health during water contact recreation like wading, swimming, fishing or waterskiing.

2. Consider alternatives

There are several options that the DEP can and should evaluate in order to comply with the Legislature's direction to consider alternatives. One approach that should be evaluated is applying the use as it was originally intended, protection of public water supplies. That can be done by applying the Category A use at water intakes that provide conventional treatment. As long as water that is pulled into the intake meets the criteria set by the state, the use is protected.

The Category A criteria are fully protective of human health when they are met at the public water supply intake, and then subjected to conventional treatment. To make certain that the water drawn into those intakes meets the criteria on a regular basis, it is reasonable to have a short buffer zone that applies above an intake. Determining the size of that buffer zone requires consideration of a multitude of factors, including stream depth and flow. These factors not only affect the calculation of the buffer zone where the Category A use applies, they may also determine whether the use is even needed. For example, on many small streams, the amount of flow will not be sufficient to support a public water supply, and in those situations the Category A use should not apply at all.

We would note that the Legislature did not ask the DEP to take into account discharges from residential, commercial, industrial or municipal sources when evaluating alternatives. We believe that is because discharges are irrelevant to the determination of what is necessary to protect public water supplies. Once the water supply intake and any buffer zone are identified,

[1] "'Conventional treatment' is the treatment of water as approved by the West Virginia Bureau for Public Health to assure that the water is safe for consumption." 47 CSR 2-2.1.

no person can discharge in a manner that interferes with the use in that stream segment, and permit limits would be established to prevent dischargers from violating the Category A criteria there.

WVMA proposal: The Category A study that is required of the DEP should:

- be outlined by the end of November, 2015 so that interested parties can comment on the scope and direction of the study.
- be completed before May, 2016 so that the DEP can share the alternatives it has developed preparatory to rulemaking for the 2017 triennial review.
- accurately assess the use that is intended to be protected by the Category A description
- assess the cumulative effect of safety factors that are used in the development of the water quality criteria (i.e. relative source contribution) and water quality based limitations (i.e. design flow, mixing zone size, exposure duration)
- identify areas in which flexibility of site specific information can be incorporated into the water quality criteria and implementation of the criteria.
- evaluate alternatives to applying the Category A use in all locations in state streams, including options for applying the use at water intakes.
- determine whether there is any significant risk of harm to human health from applying the Category A use at the drinking water intakes described in 47 CSR 2-5.2, with a margin of safety, rather than in all locations.

B. Human Health Design Flow Basis

The DEP presently uses the 7Q10 flow to calculate permit limits for human health criteria that are carcinogens. The proper flow to use is the harmonic mean flow. We urge the DEP to propose a revision to the water quality standards to authorize use of the harmonic mean flow for calculating permit limits for carcinogens. The *Technical Support Document for Water Quality-based Toxics Control,* EPA/505/2-90-001 (March 1991) ("the TSD") recommends the use of harmonic mean flow for development of permit limits for carcinogens:

> The long-term harmonic mean flow is recommended as the design flow for carcinogens. The recommendation of long-term harmonic mean flow has been derived from the definition of the human health criteria (HHC) for carcinogenic pollutants. The adverse impact of carcinogenic pollutants is estimated in terms of receptors (human) lifetime intakes. To be within the acceptable level of life-time body-burden of any carcinogen, such intakes should not exceed the HHC during the life-time of the receptor. A life-time for exposure to carcinogenic pollutants is defined as 70 years, or approximately 365 (days/year) multiplied by 70 years.

TSD at 88. The acceptable exposure is calculated over the course of a lifetime, not as a result of any acute exposure, and therefore it makes sense to use a stream flow that approximates the flow of a stream over the same 70 years when calculating exposure limits.

The DEP presently also uses the 7Q10 flow to calculate permit limits for human health criteria that are noncarcinogens. EPA suggests the use of 30Q5. However, EPA's TSD also states "if the effects from certain noncarcinogens are manifested after a lifetime of exposure, then a harmonic mean flow may be appropriate (TSD 89). In addition a design flow value that is representative of the human health exposure time period should also be allowed.

The following chart shows the design flows that are used by our neighboring states and by the Ohio River Valley Water Sanitation Commission ("ORSANCO") for protection of human health.

	Flow Basis	
State	HH – Noncancer	HH - Cancer
EPA (1)	30Q5	Harmonic Mean Flow (HMQ)
Maryland	MAF	Mean Annual Flow (MAF)
Kentucky	7Q10	HMQ
Ohio Discharge to Ohio River (2)	100% 7Q10	10% HMQ
Ohio (2&3)	HMQ	HMQ
ORSANCO	7Q10	HMQ
Virginia	30Q5	HMQ
West Virginia	7Q10	7Q10

(1) If the effects from certain non-carcinogens are manifested after a lifetime exposure, then a harmonic mean flow may be appropriate.
(2) Alternative flows may be used at the director's discretion. A mixing zone demonstration may be conducted to justify alternative percentages.
(3) Calculated as a percentage of river flow.

WVMA proposal: Evaluate the appropriate design flow for human health criteria, and allow use of the harmonic mean flow for carcinogens and the harmonic mean flow, 30Q5 or design flow value that is representative of the human health exposure time period for non-carcinogens, as appropriate.

C. Mixing Zone Size Limitations

Presently there are limits on the spatial area allowed for mixing zones. For example, "[t]he "mixing zone shall not exceed one-third(1/3) of the width of the receiving stream, and in no case shall the mixing zone exceed one-half (1/2) of the cross-sectional area of the receiving stream" (47 CSR 5.2.e.) or "extend downstream at any time a distance more than five times the width of the receiving watercourse at the point of discharge" (47 CSR 5.2.h.2). These limitations

make sense when mixing zones are developed for protection of aquatic life, as they allow fish to avoid mixing zones that are established for protection of aquatic life. Those limitations generally are not needed when human health criteria are being implemented.

The DEP has sufficient authority to calculate mixing zones for protection of human health. Section 5.2.c. has numerous restrictions on mixing zone size, including broad statements such as "Mixing zones for human health criteria shall be sized to prevent significant human health risks and shall be developed using reasonable assumptions about exposure pathways." If there is a situation where greater restrictions on zone size are needed, this language would give the DEP the authority it needs to act. In the meantime, there is no need to limit zone size in situations where the size has no adverse environmental or human health effects.

WVMA proposal: Eliminate the spatial restrictions that are established for the protection of aquatic life when calculating mixing zones for the protection of human health.

D. Net limits

Under the state's NPDES permit regulations, 47 CSR 10, a procedure for setting net limits is only described for certain technology-based limits. Changes should be made to both the NPDES regulations (47 CSR 10) and the water quality standards that would allow for netting under certain circumstances, such as where a permittee causes a reduction in the pollutants in a waterbody. For example, where a permittee could establish that high levels of iron are present in the intake water, and lower levels of iron are present when that water is discharged into the same water body, the discharge should be allowed even if it would exceed the iron water quality criteria. In that situation, the permittee is cleaning up the river, and should not be punished by a permit limit that requires further iron removal, or a wasteload allocation in a total maximum daily load calculation that does not allow credit for the iron removal.

Another place where netting might be appropriate is a discharge for once-through cooling water. In that regard, we urge the DEP to consider the approach Ohio EPA takes in allowing intake credits: http://www.epa.state.oh.us/portals/35/guidance/permit6.pdf.

We recognize that netting may not be appropriate where the pollutant loading is increasing, and that netting might require additional monitoring of intakes. However, we believe it is an option that should be available to permittees.

WVMA proposal: Adopt a change in the water quality standards that would allow appropriate net limits in NPDES permits.

E. Bacteria Standard

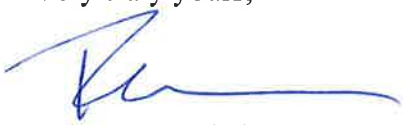
At present the water quality standards include criteria for fecal coliform, which serves as an indicator for bacteriological pathogens. We believe that E. coli has a greater correlation with swimmer illness and the DEP should evaluate substituting E. coli criteria for the fecal coliform criteria. Regardless of whether the parameter changes, we urge the DEP to consider adjusting

how the criteria are applied. Rather than a single daily maximum, such as the 400 colonies per 100 ml for fecal coliform, a monthly geometric mean should be allowed, or some percentage of exceedances allowed over the course of a 5 year permit term. In addition, some allowance should be made for wet weather exceedances where a permittee can demonstrate that bacteria exceed the criteria because of runoff, not industrial or municipal operations. For example, migrating geese can play a large role in contributing to the fecal coliform concentrations in wastewater systems, especially where ponds are included as part of the treatment process.

EPA will approve some latitude in bacteria criteria, as demonstrated by some neighboring states like Virginia, which has monthly average limits for bacteria. ORSANCO has a standard of 2,000/ml as a monthly geometric mean based on at least 5 samples per month for fecal coliform, and E. coli cannot exceed 130/100 ml as a 90 day geometric mean, based on at least 5 samples per month, or 240/100 ml in more than 25% of samples.

WVMA proposal: Adopt E. coli as the state's bacteria parameter, set the criteria as a geometric mean, and allow an exception for wet weather exceedances.

Very truly yours,



Rebecca McPhail

RM:ksw

Cooper, Laura K

From: Lewis Baker <lewabaker@gmail.com>
Sent: Saturday, September 26, 2015 2:55 PM
To: Cooper, Laura K; Peterson, James A; Smith, Chris B
Subject: Water Quality Standards, Triennial Review

Here are some recommendations for DEP, as you prepare for the next (2017) Triennial Review of Water Quality Standards:

The DEP has been told by the legislature to look into distance above intakes, depth of water, and flow volumes. Here's some thoughts on these:

Distance above intakes: I think there have already been some distance-above-intakes rules, such as 1/2 mile mixing zone, and a 5 mile zone for manganese concentrations. Perhaps DEP will expand on this for other contaminants. If so, they would likely get push-back from environmentalists on any efforts to weaken standards outside zones around intakes, and push-back from industry for efforts to have extra stringent standards for inside such PWS zones.

Intakes can pull in water from the downstream direction, under certain low flow conditions. Any protective distances should be more than just the upstream side. Perhaps the Source Water Protection ZCCs, which extend both up and down stream, should be used. But then, if we measure distances above (or below) intakes, how do we do this when the intake locations are secret, as DHSEM wants? How do we publish WQS protective zones, if DHSEM can say they are state secrets too?

Waters being used as public water sources are listed as Appendix B of the WQS (47CSR2). This list is very much out of date, with many long gone water supplies included, and many newer ones and their source water missing from the list. Appendix B should be updated, and it could include a web address where WVBPH EED maintains up-to-date listing of PWS, their source waters, their locations (again the secrecy issue), contact info, mapping of ZCCs, etc.

Depth of water: Water quality parameters tend to vary with depth. Water intakes are at different depths. Often the water coming into a plant is not the same as what's near the surface, where samples are usually collected by WVDEP, et al, for comparison to standards.

Flow of water: This can be very relevant in regards to water quality, as concentrations tend to change with flow. Some things tend to be more concentrated in high flow, and less so in low flow, while other constituents tend to have the opposite relation with flow. When spills happen, flow velocity matters a great deal to downstream intakes. Again, the standards should include webpages for statistics on flow vs concentrations, as well as webpages for realtime and historic flow conditions around the state.

Spills could be considered violations of water quality standards, especially if not reported quickly enough for downstream intakes to respond. I would recommend the WQS be a good place to require significant spills to be reported to downstream intakes within a reasonably short time (Pa and some other state 2 hours), or else the spiller is subject to an appropriate fine, and these fines go into a Source Water Protection Fund.

Other items needing attention:

Algae: We need standards that are protective of recreational uses as well as drinking water uses, which WV may adopt from Ohio, or elsewhere.

Bromide: This is a naturally occurring salt ion, which can cause disinfection byproducts to be worse in public drinking water supplies. It can be elevated above a background of 50 - 100 ppb if oilfield brines are spilled, or if discharged from coal prep plants or coal-fired plants, where it is used to scub mercury, or if bromide salts used by these industries is spilled.

There are a few places in USA where a standard of 50 parts per billion has been adopted as a water quality criteria, for protection of PWSs. This would be a good year-round value here, but as this ion is less reactive in cold weather, it could be OK to have 50 ppb criteria for summer and fall, and 100 ppb for winter and spring.

Copper: Copper limits are too stringent, and very difficult fro some dischargers to meet (city of Elkins, for example). The current criteria does not take into account copper's affinity for organic matter, which renders it much less harmful. As wastewater plants discharge plenty of organic matter, the low copper concentrations in their discharges generally do no harm. Here is a link to an article about this: http://www.hall-associates.com/publications/copper/assets/copper%20article.pdf

Lewis Baker
Huntington, WV

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September 30, 2015

Laura Cooper
Water Quality Standards, DWWM
WV Department of Environmental Protection
601 57th St., S.E.
Charleston, WV 25304
Submitted via email to Laura.K.Cooper@wv.gov

Re: 2017 Triennial Review Recommendations

Dear Ms. Cooper,

West Virginia Rivers Coalition submits these comments for the 2017 Water Quality Standards Triennial Review on behalf of its members and in collaboration with the organizations listed on the signatory page of this document. Each signatory has a vested interest in the quality of West Virginia's waters, and believes that strengthening standards are critical to the future health of our water resources and economic development opportunities in the state. We request the WVDEP act on behalf of the citizens of West Virginia by moving to further protect their water quality.

EPA-Recommended Human Health Criteria
In 2015, EPA updated its national recommended water quality criteria for human health for 94 chemical pollutants to reflect the latest scientific information and EPA policies. EPA updated its fish consumption rate, water consumption rate, and default body weight for humans. As a result, many recommended criteria have been strengthened—some significantly. Some recommended criteria have been weakened. In general, we recommend that WVDEP update West Virginia's human health criteria to reflect EPA's updates.

We have concerns, however, that if WVDEP uses local fish consumption rates to update state criteria, it must recognize that local fish consumption is likely impacted by fish consumption advisories. If people have been told that it is unsafe to eat local fish, their consumption rates will likely be less than if local waters were clean. Rather than allowing a periodic decrease in state standards as West Virginians consume less fish, the state should be aspiring to restore waterways so that fish consumption advisories are a thing of the past. Criteria should reflect this aspiration and reflect past local fish consumption amounts.

Category A Use Designation
We strongly urge WVDEP to maintain its statewide application of Category A use designation for all rivers and streams. While some rivers and streams are currently used for public drinking water intakes,

others are used for private intakes. And all rivers and streams may be used as drinking water sources in the future. Category A criteria protect us from exposure to pollutants that are most harmful to human health. Applying Category A to all streams recognizes the potential future use of all rivers and streams as drinking water sources, thus keeping options available for finding water suitable for drinking in the future. This policy keeps West Virginia attractive for businesses and citizens that are currently in West Virginia, or that might locate here in the future.

Total Dissolved Solids, Electrical Conductivity, and Sulfate Criteria

A growing body of scientific evidence points to the harmful effects of three related parameters on aquatic life: total dissolved solids (TDS), conductivity, and sulfate. Without numeric criteria for these parameters, Clean Water Act enforcement must rely on impacts to narrative criteria. In general, WVDEP has chosen not to impose limitations on these parameters nor to enforce the narrative criteria, which has led to a series of lawsuits that have resulted in great uncertainty for permittees. A lack of numeric criteria for these parameters also makes it more difficult to determine 303(d) listings and to write TMDLs. A more transparent and efficient approach would apply today's best science to promulgate numeric criteria for these three parameters.

WVDEP acknowledges that these parameters cause toxicity to aquatic life. In its TMDLs, when biological impairments are found, candidate causes and pathways are investigated. One candidate is: "High sulfates and increased ionic strength cause toxicity" (Lower Kanawha TMDL, http://www.dep.wv.gov/WWE/watershed/TMDL/grpb/Documents/Lower%20Kanawha/Lit%20Kan/LK_Final_TMDL_Report_09_26_06.pdf and many other TMDLs). Increased ionic strength can be measured by TDS and conductivity.

For conductivity, a recent series of peer-reviewed scientific analyses link high conductivity with harms to aquatic life. USEPA published a draft report that derived a conductivity benchmark of 300 uS/cm in 2010, and after review by its Science Advisory Board, this draft report was finalized in 2011 (EPA Office of Research & Development Final Report: A Field-based Aquatic Life Benchmark for Conductivity in Central Appalachian Streams, May 27, 2011). In 2013, the methods and results from this analysis were published as a series of articles in the peer-reviewed journal, Environmental Toxicology and Chemistry, including: "A method for assessing causation of field exposure–response relationships," "A method for deriving water-quality benchmarks using field data," "A method for assessing the potential for confounding applied to ionic strength in Central Appalachian streams," "Derivation of a benchmark for freshwater ionic strength," "Assessing causation of the extirpation of stream macroinvertebrates by a mixture of ions," and "Relationship of land use and elevated ionic strength in Appalachian watersheds." Further evidence has been presented in a series of federal court cases, in which the Court has sided with plaintiffs.

For TDS and sulfate, criteria should be based on the best scientific data available that links these parameters with impacts to aquatic life.

Bromide

We request DEP consider a bromide standard. A bromide/bromine effluent concentration should be set such that these pollutants are not detectable at the point of discharge or mixing into the rivers and

streams. This will reduce the carcinogenic compounds formed upon chlorination of intake water where the polluted water contains these effluent chemicals from fracking sites upstream. Bromide facilitates formation of brominated trihalomethanes, also known as THMs, when it is exposed to disinfectant processes in water treatment plants. THMs are volatile organic liquid compounds. The federal safe drinking water standard for THMs is 80 micrograms per cubic liter, and removing them from finished drinking water is difficult. Keeping bromide levels in raw water sources low is a much easier way to address the problem.

We appreciate the opportunity to submit these recommendations for the 2017 Triennial Review. Thank you for your time and consideration.

Sincerely,

Angie Rosser and Autumn Bryson
West Virginia Rivers Coalition

Gary Zuckett
West Virginia Citizens Action Group

Nancy Novak and Helen Gibbins
League of Women Voters of West Virginia

Julie Archer
West Virginia Surface Owners Rights Organization

Brent Walls
Upper Potomac Riverkeeper

Dianne Bady
Ohio Valley Environmental Coalition

Conni Gratop Lewis
West Virginia Environmental Council