west virginia department of environmental protection

Division of Water & Waste Management
601 57th Street, Southeast
Charleston, WV 25304
Phone: (304) 926-0440
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Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

June 25, 2015

Shawn M. Garvin, Regional Administrator
EPA Region 3
1650 Arch Street
Mail Code: 3RA00
Philadelphia, PA 19103-2029

Re: West Virginia's Submission of Revised Water Quality Standards

Dear Mr. Garvin:

The West Virginia Department of Environmental Protection (DEP) hereby submits its revised water quality standards rule to the United States Environmental Protection Agency (EPA) in accordance with section 303(c) of the federal Clean Water Act and 40 C.F.R. §131.6 and 131.20(c). The rule entitled "47CSR2 Requirements Governing Water Quality Standards", became effective June 1, 2015. The state authority for the rule exists under W. Va. Code § 22-11-4(a)(16) and 22-11-7b. The submittal package includes Legal Certification from DEP counsel.

DEP respectfully requests EPA's timely review and approval of the revisions to the State's water quality standards in accordance with 40 C.F.R. §131.21. If you have any questions or need any additional information, please contact Laura Cooper at (304) 926-0499 extension 1110 or via email at Laura.K.Cooper@wv.gov.

Sincerely,

Scott Mandirola
Director

cc: Denise Hakowski, EPA Region 3

SENDER: *COMPLETE THIS SECTION*

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- Print your name and address on the reverse so that we can return the card to you.
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1. Article Addressed to:

Shawn Garvin, Regl Admin.
EPA Region 3
1650 Arch St
mail code 3RA00
Philadelphia, PA
19103-2029

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X U.S. EPA ☐ Agent ☐ Addressee
1650 ARCH STREET
PHILADELPHIA PA 19103

B. Received by *(Printed Name)* | C. Date of Delivery

JUL 06 2015

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PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

West Virginia Department of Environmental Protection
Division of Water and Waste Management
Water Quality Standards Program
Requirements Governing Water Quality Standards Rule

Final Rule Submittal Package Contents

The following items are included in this submittal package for EPA review and consideration:

1. **Legal Certification from DEP General Counsel**, dated June 9, 2015
2. **Rationale for Revision**s to Water Quality Standards Rule (47CSR2)
3. **Final Water Quality Standards Rule** (47CSR2), effective date June 1, 2015
4. **Materials regarding "Agency Approved" Water Quality Standards Rule, July 2014**
    a. Proposed rule with strikethrough/underline revisions
    b. Public Hearing Transcript
    c. Written & Oral comments, & DEP response to comments
5. **Appendix A Copper WER Rationale** - Final Application of Site-Specific Copper Water Effect Ratio

1. Legal Certification from DEP General Counsel

west virginia department of environmental protection

Executive Office
601 57th Street, Southeast
Charleston, West Virginia 25304
Phone: (304) 926-0440
Fax: (304) 926-0446

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

June 9, 2015

Shawn M. Garvin, Regional Administrator
EPA Region III
1650 Arch Street
Mail Code: 3RA00
Philadelphia, PA 19103-2029

Re: Legal Certification: 47 C.S.R. 2, *Requirements Governing Water Quality Standards*

Dear Mr. Garvin:

This letter constitutes the legal certification that must accompany the State's submission of revised water quality standards to EPA pursuant to 40 C.F.R. § 131.6(e). The undersigned hereby certifies that the State's revised water quality standards, a copy of which is included in this submittal packet, were duly adopted by the West Virginia Legislature in accordance with State law to become effective immediately upon final approval by EPA.

As General Counsel to the West Virginia Department of Environmental Protection (DEP), I am the agency's chief legal officer and thus am authorized to provide legal counsel and representation to the agency in all matters. DEP is permitted to utilize its own legal counsel (as opposed to being represented by the West Virginia Attorney General) by virtue of W. Va. Code § 22-1-6(d)(7).

If you have any questions or concerns, or if you wish to discuss this matter in any particular, please do not hesitate to contact me.

Very truly yours,

Kristin A. Boggs
General Counsel

cc: Denise Hakowski, EPA Region III

2. Rationale for Revisions to Water Quality Standards Rule

Division of Water and Waste Management (DWWM)
Water Quality Standards Program
Rationale Document for the Water Quality Standards Rule
(47CSR2 Requirements Governing Water Quality Standards)

Rationale Purpose

The purpose of this rationale document is to provide Environmental Protection Agency ("EPA") personnel a description and justification of changes made to the West Virginia Water Quality Standards Rule during the required EPA review and approval process. While EPA staff have previously reviewed rationale materials associated with the amendments set forth in the *Agency Proposed Water Quality Standards Rule*, this document reflects the final changes made by the West Virginia Legislature during its 2015 Regular Session and represents the final *Legislature Approved Water Quality Standards Rule* ("Final Rule").

Water Quality Standards Rule

The *Water Quality Standards Rule* (Title 47, Code of State Regulations, Series 2) establishes requirements governing surface water quality standards for the waters of the State and establishes standards of purity and quality consistent with (1) public health and the public enjoyment thereof; (2) the propagation and protection of animal, bird, fish, and other 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. *See*, W. Va. Code § 22-11-2.

Rule Making Process in WV/History 2012-2014

Unlike most states in EPA Region III, the rule promulgation process in West Virginia includes an approval process by State Legislature. DEP initiated the rule revision process in by submitting an *Agency Proposed Water Quality Standards Rule* for review by both EPA and the public in June/July 2014, and held a public hearing on July 1, 2014. After accepting and responding to all oral and written comments, and completing a final review based on the submitted comments, DEP submitted the *Agency Approved Water Quality Standards Rule* to the Legislative Rule Making Review Committee ("LRMRC") in August 2014, and in November the LRMRC recommended the *Agency Approved Water Quality Standards Rule* move forward for review during the 2015 session. The *Agency Approved Water Quality Standards Rule* was heard at numerous committee hearings in both the House and Senate, and ultimately approved by Legislature on March 12, 2015 and signed by Governor on March 31, 2015. The Final Rule passed by West Virginia Legislature during its 2015 Session is identical to the Agency Approved rule as it was submitted by DEP in August 2014.

Final Legislature-Approved Changes

Kanawha River Zone 1 Category A Exemption Removal

Section – 47 CSR 2 section 7.2.d.19.1.
Revision Summary – DEP and many other local, state and federal agencies have worked diligently to address pollution on the Kanawha River, and collective efforts over the past few decades have resulted in vastly improved water quality. Due to the ability for this use designation to be met, it was determined that an exemption from Category A drinking water standards was no longer necessary on Kanawha River. DEP decided to remove Category A drinking water use exemption from Kanawha River main stem, Zone 1 (from mile point 0, at its confluence with the Ohio River, to mile point 72 near Diamond, West Virginia).

Revision
7.2.d.19.1. For the Kanawha River main stem, Zone 1~~, Water Use Category A shall not apply; and T~~ the minimum flow shall be 1,960 cfs at the Charleston gauge.

Kanawha River Copper Water Effect Ratio for Sanitary Board of City of Charleston, WV

Section – 47 CSR 2 section 7.2.d.19.2.
Revision Summary – A copper water effect ratio was added for The Sanitary Board of the City of Charleston, pursuant to EPA Streamlined Water-Effect Ratio Procedure for Discharges of Copper (see Appendix A Rationale – Final Application of Site-Specific Copper Water Effect Ratio).

Revision
7.2.d.19.2. ~~The minimum flow shall be 1,960 cfs at the Charleston gauge.~~ Pursuant to 46 CSR 6, a Copper Water Effect Ratio (WER) of 5.62 shall be applied to The Sanitary Board of the City of Charleston, West Virginia wastewater treatment plant discharge of total recoverable cooper to Kanawha River, Zone 1.

3. Final Water Quality Standards Rule

WEST VIRGINIA SECRETARY OF STATE

NATALIE E. TENNANT

ADMINISTRATIVE LAW DIVISION

eFILED

5/4/2015 10:34:34 AM

OFFICE OF
WEST VIRGINIA SECRETARY OF STATE

FORM 6 -- NOTICE OF FINAL FILING AND ADOPTION OF A LEGISLATIVE RULE AUTHORIZED BY THE WEST VIRGINIA LEGISLATURE

AGENCY **Water Resources Division Of Water And Waste Management**
RULE TYPE **Legislative** AMENDMENT TO EXISTING RULE **Yes** TITLE-SERIES **47-02**
RULE NAME **Requirements Governing Water Quality Standards**

CITE AUTHORITY **§22-11-4(a)(16); 22-11-7b**

HOUSE OR SENATE BILL NUMBER	SECTION	PASSED ON
2283	**64-3-1(h)**	**03/12/2015**

THIS RULE IS FILED WITH THE SECRETARY OF STATE. THIS RULE BECOMES EFFECTIVE ON THE FOLLOWING DATE

Monday, June 01, 2015

BY CHOOSING 'YES', I ATTEST THAT THE PREVIOUS STATEMENTS ARE TRUE AND CORRECT.

Yes
Kristin A Boggs -- By my signature, I certify that I am the person authorized to file legislative rules, in accordance with West Virginia Code §29A-3-11 and §39A-3-2.

Title-Series: 47-02 Rule Id: 9466 Document: 26654

TITLE 47
LEGISLATIVE RULE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER RESOURCES

SERIES 2
REQUIREMENTS GOVERNING WATER QUALITY STANDARDS

§47-2-1. General.

1.1. Scope. -- These rules establish requirements governing the discharge or deposit of sewage, industrial wastes and other wastes into the waters of the state and establish water quality standards for the waters of the State standing or flowing over the surface of the State. 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 of the State consistent with (1) public health and public enjoyment thereof; (2) the propagation and protection of animal, bird, fish, and other 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. (See W. Va. Code §22-11-2.)

1.2. Authority. -- W. Va. Code §§22-11-4(a)(16); 22-11-7b.

1.3. Filing Date. -- May 4, 2015.

1.4. Effective Date. -- June 1, 2015

§47-2-2. Definitions.

The following definitions in addition to those set forth in W. Va. Code §22-11-3, shall apply to these rules unless otherwise specified herein, or unless the context in which used clearly requires a different meaning:

2.1. "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 human consumption.

2.2. Lakes

2.2a. “Cool water lakes” are lentic water bodies that have a summer hydraulic residence time greater than 14 days, and are either managed by the West Virginia Division of Natural Resources for the support of cool water fish species or support cool water fish species, such as walleye and trout. “Cool water lakes” do not include those waters that receive stockings of trout, but that do not support year-round trout populations. (See Appendix F for a representative list.)

2.2.b. “Warm water lakes” are lentic water bodies that have a summer hydraulic residence time greater than 14 days, and are either managed by the West Virginia Division of Natural Resources for the support of warm water fish species or support warm water fish species, such as bass and catfish.

2.3. "Cumulative" means a pollutant which increases in concentration in an organism by successive additions at different times or in different ways (bio-accumulation).

2.4. "Designated uses" are those uses specified in water quality standards for each water or segment whether or not they are being attained. (See sections 6.2 - 6.6, herein)

2.5. "Dissolved metal" is operationally defined as that portion of metal which passes through a 0.45 micron filter.

2.6. "Existing uses" are those uses actually attained in a water on or after November 28, 1975, whether or not they are included in the water quality standards.

2.7. The "Federal Act" means the Clean Water Act (also known as the Federal Water Pollution Control Act) 33 U.S.C. §1251 - 1387.

2.8. "High quality waters" are those waters whose quality is equal to or better than the minimum levels necessary to achieve the national water quality goal uses.

2.9. "Intermittent streams" are streams which have no flow during sustained periods of no precipitation and which do not support aquatic life whose life history requires residence in flowing waters for a continuous period of at least six (6) months.

2.10. "Outstanding national resource waters" are those waters whose unique character, ecological or recreational value or pristine nature constitutes a valuable national or State resource.

2.11. "Natural" or "naturally occurring" values or "natural temperature" shall mean for all of the waters of the state:

2.11.a. Those water quality values which exist unaffected by -- or unaffected as a consequence of -- any water use by any person; and

2.11.b. Those water quality values which exist unaffected by the discharge, or direct or indirect deposit of, any solid, liquid or gaseous substance from any point source or non-point source.

2.12. "Non-point source" shall mean any source other than a point source from which pollutants may reach the waters of the state.

2.13. "Persistent" shall mean a pollutant and its transformation products which under natural conditions degrade slowly in an aquatic environment.

2.14. "Point source" shall mean any discernible, confined and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural stormwater discharges and return flows from irrigated agriculture.

2.15. "Representative important species of aquatic life" shall mean those species of aquatic life whose protection and propagation will assure the sustained presence of a balanced aquatic community. Such species are representative in the sense that maintenance of water quality criteria will assure both the natural completion of the species' life cycles and the overall protection and sustained propagation of the balanced aquatic community.

2.16. “Secretary” shall mean the Secretary of the Department of Environmental Protection or such other person to whom the Secretary has delegated authority or duties pursuant to W. Va. Code §§22-1-6 or 22-1-8.

2.17. The "State Act" or "State Law" shall mean the West Virginia Water Pollution Control Act, W. Va. Code §22-11-1 et seq.

2.18. "Total recoverable" refers to the digestion procedure for certain heavy metals as referenced in 40 CFR 136, as amended June 15, 1990 and March 26, 2007, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act.

2.19. "Trout waters" are waters which sustain year-round trout populations. Excluded are those waters which receive annual stockings of trout but which do not support year-round trout populations.

2.20. "Water quality criteria" shall mean levels of parameters or stream conditions that are required to be maintained by these regulations. Criteria may be expressed as a constituent concentration, levels, or narrative statement, representing a quality of water that supports a designated use or uses.

2.21. "Water quality standards" means the combination of water uses to be protected and the water quality criteria to be maintained by these rules.

2.22. "Wetlands" are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.

2.23. "Wet weather streams" are streams that flow only in direct response to precipitation or whose channels are at all times above the water table.

§47-2-3. Conditions Not Allowable In State Waters.

3.1. Certain characteristics of sewage, industrial wastes and other wastes cause pollution and are objectionable in all waters of the state. Therefore, the Secretary does hereby proclaim that the following general conditions are not to be allowed in any of the waters of the state.

3.2. No sewage, industrial wastes or other wastes present in any of the waters of the state shall cause therein or materially contribute to any of the following conditions thereof:

3.2.a. Distinctly visible floating or settleable solids, suspended solids, scum, foam or oily slicks;

3.2.b. Deposits or sludge banks on the bottom;

3.2.c. Odors in the vicinity of the waters;

3.2.d. Taste or odor that would adversely affect the designated uses of the affected waters;

3.2.e. Materials in concentrations which are harmful, hazardous or toxic to man, animal or aquatic life;

3.2.f. Distinctly visible color;

3.2.g. Algae blooms or concentrations of bacteria which may impair or interfere with the designated uses of the affected waters;

3.2.h. Requiring an unreasonable degree of treatment for the production of potable water by modern water treatment processes as commonly employed; and

3.2.i. Any other condition, including radiological exposure, which adversely alters the integrity of the waters of the State including wetlands; no significant adverse impact to the chemical, physical, hydrologic, or biological components of aquatic ecosystems shall be allowed.

§47-2-4. Antidegradation Policy.

4.1. It is the policy of the State of West Virginia that the waters of the state shall be maintained and protected as follows:

4.1.a. Tier 1 Protection. Existing water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected. Existing uses are those uses actually attained in a water on or after November 28, 1975, whether or not they are included as designated uses within these water quality standards.

4.1.b. Tier 2 Protection. The existing high quality waters of the state must be maintained at their existing high quality unless it is determined after satisfaction of the intergovernmental coordination of the state's continuing planning process and opportunity for public comment and hearing that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. If limited degradation is allowed, it shall not result in injury or interference with existing stream water uses or in violation of state or federal water quality criteria that describe the base levels necessary to sustain the national water quality goal uses of protection and propagation of fish, shellfish and wildlife and recreating in and on the water.

In addition, the Secretary shall assure that all new and existing point sources shall achieve the highest established statutory and regulatory requirements applicable to them and shall assure the achievement of cost-effective and reasonable best management practices (BMPs) for non-point source control. If BMPs are demonstrated to be inadequate to reduce or minimize water quality impacts, the Secretary may require that more appropriate BMPs be developed and applied.

4.1.b.1. High quality waters are those waters meeting the definition at section 2.8 herein.

4.1.b.2. High quality waters may include but are not limited to the following:

4.1.b.2.A. Streams designated by the West Virginia Legislature under the West Virginia Natural Stream Preservation Act, pursuant to W. Va. Code §22-13-5; and

4.1.b.2.B. Streams listed in West Virginia High Quality Streams, Fifth Edition, prepared by the Wildlife Resources Division, Department of Natural Resources (1986).

4.1.b.2.C. Streams or stream segments which receive annual stockings of trout but which do not support year-round trout populations.

4.1.c. Tier 3 Protection. In all cases, waters which constitute an outstanding national resource shall be maintained and protected and improved where necessary. Outstanding national resource waters include, but are not limited to, all streams and rivers within the boundaries of Wilderness Areas designated by The Wilderness Act (16 U.S.C. §1131 et seq.) within the State, all Federally designated rivers under the "Wild and Scenic Rivers Act", 16 U.S.C. §1271 et seq.; all streams and other bodies of water in state parks which are high quality waters or naturally reproducing trout streams; waters in national parks and forests which are high quality waters or naturally reproducing trout streams; waters designated under the "National Parks and Recreation Act of 1978", as amended; and pursuant to

subsection 7.1 of 60CSR5, those waters whose unique character, ecological or recreational value, or pristine nature constitutes a valuable national or state resource.

Additional waters may be nominated for inclusion in that category by any interested party or by the Secretary on his or her own initiative. To designate a nominated water as an outstanding national resource water, the Secretary shall follow the public notice and hearing provisions as provided in 46 C.S.R. 6.

4.1.d. All applicable requirements of section 316(a) of the Federal Act shall apply to modifications of the temperature water quality criteria provided for in these rules.

§47-2-5. Mixing Zones.

5.1. In the permit review and planning process or upon the request of a permit applicant or permittee, the Secretary may establish on a case-by-case basis an appropriate mixing zone.

5.2. The following guidelines and conditions are applicable to all mixing zones:

5.2.a. The Secretary will assign, on a case-by-case basis, definable geometric limits for mixing zones for a discharge or a pollutant or pollutants within a discharge. Applicable limits shall include, but may not be limited to, the linear distances from the point of discharge, surface area involvement, volume of receiving water, and shall take into account other nearby mixing zones. Mixing zones shall take into account the mixing conditions in the receiving stream (i.e: whether complete or incomplete mixing conditions exist). Mixing zones will not be allowed until applicable limits are assigned by the Secretary in accordance with this section.

5.2.b. Concentrations of pollutants which exceed the acute criteria for protection of aquatic life set forth in Appendix E, Table 1 shall not exist at any point within an assigned mixing zone or in the discharge itself unless a zone of initial dilution is assigned. A zone of initial dilution may be assigned on a case-by-case basis at the discretion of the Secretary. The zone of initial dilution is the area within the mixing zone where initial dilution of the effluent with the receiving water occurs, and where the concentration of the effluent will be its greatest in the water column. Where a zone of initial dilution is assigned by the Secretary, the size of the zone shall be determined using one of the four alternatives outlined in section 4.3.3 of US EPA's Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001 PB91-127415, March 1991). Concentrations of pollutants shall not exceed the acute criteria at the edge of the assigned zone of initial dilution. Chronic criteria for the protection of aquatic life may be exceeded within the mixing zone but shall be met at the edge of the assigned mixing zone.

5.2.c. Concentrations of pollutants which exceed the criteria for the protection of human health set forth in Appendix E, Table 1 shall not be allowed at any point unless a mixing zone has been assigned by the Secretary after consultation with the Commissioner of the West Virginia Bureau for Public Health. Human health criteria may be exceeded within an assigned mixing zone, but shall be met at the edge of the assigned mixing zone. 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. In assessing the potential human health risks of establishing a mixing zone upstream from a drinking water intake, the Secretary shall consider the cumulative effects of multiple discharges and mixing zones on the drinking water intake. No mixing zone for human health criteria shall be established on a stream which has a seven (7) day, ten (10) year return frequency of 5 cfs or less.

5.2.d. Mixing zones, including zones of initial dilution, shall not interfere with fish spawning or nursery areas or fish migration routes; shall not overlap public water supply intakes or bathing areas;

cause lethality to or preclude the free passage of fish or other aquatic life; nor harm any threatened or endangered species, as listed in the Federal Endangered Species Act, 15 U.S.C. §1531 et seq.

5.2.e. The 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.

5.2.f. In lakes and other surface impoundments, the volume of a mixing zone shall not affect in excess of ten (10) percent of the volume of that portion of the receiving waters available for mixing.

5.2.g. A mixing zone shall be limited to an area or volume which will not adversely alter the existing or designated uses of the receiving water, nor be so large as to adversely affect the integrity of the water.

5.2.h. Mixing zones shall not:

5.2.h.1. Be used for, or considered as, a substitute for technology-based requirements of the Act and other applicable state and federal laws.

5.2.h.2. Extend downstream at any time a distance more than five times the width of the receiving watercourse at the point of discharge.

5.2.h.3. Cause or contribute to any of the conditions prohibited in section 3, herein.

5.2.h.4. Be granted where instream waste concentration of a discharge is greater than 80%.

5.2.h.5. Overlap one another.

5.2.h.6. Overlap any 1/2 mile zone described in section 7.2.a.2 herein.

5.2.i. In the case of thermal discharges, a successful demonstration conducted under section 316(a) of the Act shall constitute compliance with all provisions of this section.

5.2.j. The Secretary may waive the requirements of subsections 5.2.e and 5.2.h.2 above if a discharger provides an acceptable demonstration of:

5.2.j.1. Information defining the actual boundaries of the mixing zone in question; and

5.2.j.2. Information and data proving no violation of subsections 5.2.d and 5.2.g above by the mixing zone in question.

5.2.k. Upon implementation of a mixing zone in a permit, the permittee shall provide documentation that demonstrates to the satisfaction of the Secretary that the mixing zone is in compliance with the provisions outlined in subsections 5.2.b, 5.2.c, 5.2.e, and 5.2.h.2, herein.

5.2.l. In order to facilitate a determination or assessment of a mixing zone pursuant to this section, the Secretary may require a permit applicant or permittee to submit such information as deemed necessary.

§47-2-6. Water Use Categories.

6.1. These rules establish general Water Use Categories and Water Quality Standards for the waters of the State. Unless otherwise designated by these rules, at a minimum 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 Federal Act goals. Incidental utilization for whatever purpose may or may not constitute a justification for assignment of a water use category to a particular stream segment.

6.1.a. Waste assimilation and transport are not recognized as designated uses. The classification of the waters must take into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation.

Subcategories of a use may be adopted and appropriate criteria set to reflect varying needs of such subcategories of uses, for example to differentiate between trout water and other waters.

6.1.b. At a minimum, uses are deemed attainable if they can be achieved by the imposition of effluent limits required under section 301(b) and section 306 of the Federal Act and use of cost-effective and reasonable best management practices for non-point source control. Seasonal uses may be adopted as an alternative to reclassifying a water or segment thereof to uses requiring less stringent water quality criteria. If seasonal uses are adopted, water quality criteria will be adjusted to reflect the seasonal uses; however, such criteria shall not preclude the attainment and maintenance of a more protective use in another season. A designated use which is not an existing use may be removed, or subcategories of a use may be established if it can be demonstrated that attaining the designated use is not feasible because:

6.1.b.1. Application of effluent limitations for existing sources more stringent than those required pursuant to section 301 (b) and section 306 of the Federal Act in order to attain the existing designated use would result in substantial and widespread adverse economic and social impact; or

6.1.b.2. Naturally-occurring pollutant concentrations prevent the attainment of the use; or

6.1.b.3. Natural, ephemeral, intermittent or low flow conditions of water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges to enable uses to be met; or

6.1.b.4. Human-caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or

6.1.b.5. Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water to its original condition or to operate such modification in a way that would result in the attainment of the use; or

6.1.b.6. Physical conditions related to the natural features of the water, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses.

6.1.c. The State shall take into consideration the quality of downstream waters and shall assure that its water quality standards provide for the attainment of the water quality standards of downstream waters.

6.1.d. In establishing a less restrictive use or uses, or subcategory of use or uses, and the water quality criteria based upon such uses, the Secretary shall follow the requirements for revision of water quality standards as required by W. Va. Code §22-11-7b and section 303 of the Federal Act and the regulations thereunder. Any revision of water quality standards shall be made with the concurrence of

EPA. The Secretary's administrative procedural regulations for applying for less restrictive uses or criteria shall be followed.

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 water 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 public or private water supply used for human consumption.

6.3. Category B -- Propagation and maintenance of fish and other aquatic life. --

This category includes:

6.3.a. Category B1 -- Warm water fishery streams. -- Streams or stream segments which contain populations composed of all warm water aquatic life.

6.3.b. Category B2 -- Trout Waters. -- As defined in section 2.19, herein (See Appendix A for a representative list.)

6.3.c. Category B4 -- Wetlands. -- As defined in section 2.22, herein; certain numeric stream criteria may not be appropriate for application to wetlands (see Appendix E, Table 1).

6.4. Category C -- Water contact recreation. -- This category includes swimming, fishing, water skiing and certain types of pleasure boating such as sailing in very small craft and outboard motor boats. (See Appendix D for a representative list of category C waters.)

6.5. Category D. -- Agriculture and wildlife uses.

6.5.a. Category D1 -- Irrigation. -- This category includes all stream segments used for irrigation.

6.5.b. Category D2 -- Livestock watering. -- This category includes all stream segments used for livestock watering.

6.5.c. Category D3 -- Wildlife. -- This category includes all stream segments and wetlands used by wildlife.

6.6. Category E -- Water supply industrial, water transport, cooling and power. -- This category includes cooling water, industrial water supply, power production, commercial and pleasure vessel activity, except those small craft included in Category C.

6.6.a. Category E1 -- Water Transport. -- This category includes all stream segments modified for water transport and having permanently maintained navigation aides.

6.6.b. Category E2 -- Cooling Water. -- This category includes all stream segments having one (1) or more users for industrial cooling.

6.6.c. Category E3 -- Power production. -- This category includes all stream segments extending from a point 500 feet upstream from the intake to a point one half (1/2) mile below the wastewater discharge point. (See Appendix C for representative list.)

6.6.d. Category E4 -- Industrial. -- This category is used to describe all stream segments with one (1) or more industrial users. It does not include water for cooling.

§47-2-7. West Virginia Waters.

7.1. Major River Basins and their Alphanumeric System. All streams and their tributaries in West Virginia shall be individually identified using an alphanumeric system as identified in the "Key to West Virginia Stream Systems and Major Tributaries" (1956) as published by the Conservation Commission of West Virginia and revised by the West Virginia Department of Natural Resources, Division of Wildlife (1985).

7.1.a. J - James River Basin. All tributaries to the West Virginia - Virginia State line.

7.1.b. P - Potomac River Basin. All tributaries of the main stem of the Potomac River to the West Virginia - Maryland - Virginia State line to the confluence of the North Branch and the South Branch of the Potomac River and all tributaries arising in West Virginia excluding the major tributaries hereinafter designated:

7.1.b.1. S - Shenandoah River and all its tributaries arising in West Virginia to the West Virginia - Virginia State line.

7.1.b.2. PC - Cacapon River and all its tributaries.

7.1.b.3. PSB - South Branch and all its tributaries.

7.1.b.4. PNB - North Branch and all tributaries to the North Branch arising in West Virginia.

7.1.c. M - Monongahela River Basin. The Monongahela River Basin main stem and all its tributaries excluding the following major tributaries which are designated as follows:

7.1.c.1. MC - Cheat River and all its tributaries except those listed below:

7.1.c.1.A. MCB - Blackwater River and all its tributaries.

7.1.c.2. MW - West Fork River and all its tributaries.

7.1.c.3. MT - Tygart River and all its tributaries except those listed below:

7.1.c.3.A. MTB - Buckhannon River and all its tributaries.

7.1.c.3.B. MTM - Middle Fork River and all its tributaries.

7.1.c.4. MY - Youghigheny River and all its tributaries to the West Virginia - Maryland State line.

7.1.d. O Zone 1 - Ohio River - Main Stem. The main stem of the Ohio River from the Ohio - Pennsylvania - West Virginia state line to the Ohio - Kentucky - West Virginia State line.

7.1.e. O Zone 2 - Ohio River - Tributaries. All tributaries of the Ohio River excluding the following major tributaries:

7.1.e.1. LK - Little Kanawha River. The Little Kanawha River and all its tributaries excluding the following major tributary which is designated as follows:

7.1.e.1.A. LKH - Hughes River and all its tributaries.

7.1.e.2. K - Kanawha River Zone 1. The main stem of the Kanawha River from mile point 0, at its confluence with the Ohio River, to mile point 72 near Diamond, West Virginia.

7.1.e.3. K - Kanawha River Zone 2. The main stem of the Kanawha River from mile point 72 near Diamond, West Virginia and all its tributaries from mile point 0 to the headwaters excluding the following major tributaries which are designated as follows:

7.1.e.3.A. KP - Pocatalico River and all its tributaries.

7.1.e.3.B. KC - Coal River and all its tributaries.

7.1.e.3.C. KE - Elk River and all its tributaries.

7.1.e.3.D. KG - Gauley River. The Gauley River and all its tributaries excluding the following major tributaries which are designated as follows:

7.1.e.3.D.1. KG-19 - Meadow River and all its tributaries.

7.1.e.3.D.2. KG-34 - Cherry River and all its tributaries.

7.1.e.3.D.3. KGC - Cranberry River and all its tributaries.

7.1.e.3.D.4. KGW - Williams River and all its tributaries.

7.1.e.3.E. KN - New River. The New River from its confluence with the Gauley River to the Virginia - West Virginia State line and all tributaries excluding the following major tributaries which are designated as follows:

7.1.e.3.E.1. KNG - Greenbrier River and all its tributaries.

7.1.e.3.E.2. KNB - Bluestone River and all its tributaries.

7.1.e.3.E.3. KN-60 - East River and all its tributaries.

7.1.e.3.E.4. K(L)-81-(1) - Bluestone Lake.

7.1.e.4. OG - Guyandotte River. The Guyandotte River and all its tributaries excluding the following major tributary which is designated as follows:

7.1.e.4.1. OGM - Mud River and all its tributaries.

7.1.e.5. BS - Big Sandy River. The Big Sandy River to the Kentucky - Virginia - West Virginia State lines and all its tributaries arising in West Virginia excluding the following major tributary which is designated as follows:

7.1.e.5.1 BST - Tug Fork and all its tributaries.

7.2. Applicability of Water Quality Standards. The following shall apply at all times unless a specific exception is granted in this section:

7.2.a. Water Use Categories as described in section 6, herein.

7.2.a.1. Based on meeting those Section 6 definitions, tributaries or stream segments may be classified for one or more Water Use Categories. When more than one use exists, they shall be protected by criteria for the use category requiring the most stringent protection.

7.2.a.2. Each segment extending upstream from the intake of a water supply public (Water Use Category A), for a distance of one half (1/2) mile or to the headwater, must be protected by prohibiting the discharge of any pollutants in excess of the concentrations designated for this Water Use Category in section 8, herein. In addition, within that one half (1/2) mile zone, the Secretary may establish for any discharge, effluent limitations for the protection of human health that require additional removal of pollutants than would otherwise be provided by this rule. (If a watershed is not significantly larger than this zone above the intake, the water supply section may include the entire upstream watershed to its headwaters.) The one-half (1/2) mile zone described in this section shall not apply to the Ohio River main channel (between Brown's Island and the left descending bank) between river mile points 61.0 and 63.5 and mile points 70 and 71. All mixing zone regulations found in section 5 of this rule will apply except 47 CSR 2 §5.2.h.6. Whether a mixing zone is appropriate, and the proper size of such zone, would need to be considered on a site-specific basis in accordance with the EPA approved West Virginia mixing zone regulations in 47 CSR 2_§5.

7.2.b. In the absence of any special application or contrary provision, water quality standards shall apply at all times when flows are equal to or greater than the minimum mean seven (7) consecutive day drought flow with a ten (10) year return frequency (7Q10). NOTE: With the exception of section 7.2.c.5 listed herein exceptions do not apply to trout waters nor to the requirements of section 3, herein.

7.2.c. Exceptions: Numeric water quality standards shall not apply: (See section 7.2.d, herein, for site-specific revisions)

7.2.c.1. When the flow is less than 7Q10;

7.2.c.2. In wet weather streams (or intermittent streams, when they are dry or have no measurable flow): Provided, that the existing and designated uses of downstream waters are not adversely affected;

7.2.c.3. In any assigned zone of initial dilution of any mixing zone where a zone of initial dilution is required by section 5.2.b herein, or in any assigned mixing zone for human health criteria or aquatic life criteria for which a zone of initial dilution is not assigned; In zones of initial dilution and certain mixing zones: Provided, That all requirements described in section 5 herein shall apply to all zones of initial dilution and all mixing zones;

7.2.c.4. Where, on the basis of natural conditions, the Secretary has established a site-specific aquatic life water quality criterion that modifies a water quality criterion set out in Appendix E, Table 1 of this rule. Where a natural condition of a water is demonstrated to be of lower quality than a water quality criterion for the use classes and subclasses in section 6 of this rule, the Secretary, in his or her discretion, may establish a site-specific water quality criterion for aquatic life. This alternate criterion may only serve as the chronic criterion established for that parameter. This alternate criterion must be met at end of pipe. Where the Secretary decides to establish a site-specific water quality criterion for aquatic life, the natural condition constitutes the applicable water quality criterion. A site-specific criterion for natural conditions may only be established through the legislative rulemaking process in accordance with W. Va. Code §29A-3-1 et seq. and must satisfy the public participation requirements set forth at 40 C.F.R. 131.20 and 40 C.F.R. Part 25. Site-specific criteria for natural conditions may be established only for aquatic life criteria. A public notice, hearing and comment period is required before site-specific criteria for natural conditions are established.

Upon application or on its own initiative, the Secretary will determine whether a natural condition of a water should be approved as a site-specific water quality criterion. Before he or she approves a site-specific water quality criterion for a natural condition, the Secretary must find that the natural condition will fully protect existing and designated uses and ensure the protection of aquatic life. If a natural condition of a water varies with time, the natural condition will be determined to be the actual natural condition of the water measured prior to or concurrent with discharge or operation. The Secretary will, in his or her discretion, determine a natural condition for one or more seasonal or shorter periods to reflect variable ambient conditions; and require additional or continuing monitoring of natural conditions.

An application for a site-specific criterion to be established on the basis of natural conditions shall be filed with the Secretary and shall include the following information:

7.2.c.4.A. A U.S.G.S. 7.5 minute map showing the stream segment affected and showing all existing discharge points and proposed discharge point;

7.2.c.4.B. The alphanumeric code of the affected stream, if known;

7.2.c.4.C. Water quality data for the stream or stream segment. Where adequate data are unavailable, additional studies may be required by the Secretary;

7.2.c.4.D. General land uses (e.g. mining, agricultural, recreation, residential, commercial, industrial, etc.) as well as specific land uses adjacent to the waters for the affected segment or stream;

7.2.c.4.E. The existing and designated uses of the receiving waters into which the segment in question discharges and the location where those downstream uses begin to occur;

7.2.c.4.F. General physical characteristics of the stream segment, including, but not limited to width, depth, bottom composition and slope;

7.2.c.4.G. Conclusive information and data of the source of the natural condition that causes the stream to exceed the water quality standard for the criterion at issue.

7.2.c.4.H. The average flow rate in the segment and the amount of flow at a designated control point and a statement regarding whether the flow of the stream is ephemeral, intermittent or perennial;

7.2.c.4.I. An assessment of aquatic life in the stream or stream segment in question and in the adjacent upstream and downstream segments; and

7.2.c.4.J. Any additional information or data that the Secretary deems necessary to make a decision on the application.

7.2.c.5. For the upper Blackwater River from the mouth of Yellow Creek to a point 5.1 miles upstream, when flow is less than 7Q10. Naturally occurring values for Dissolved Oxygen as established by data collected by the dischargers within this reach and reviewed by the Secretary shall be the applicable criteria.

7.2.d. Site-specific applicability of water use categories and water quality criteria - State-wide water quality standards shall apply except where site-specific numeric criteria, variances or use removals have been approved following application and hearing, as provided in 46 C.S.R. 6. (See section 8.4 and section 8.5, herein) The following are approved site-specific criteria, variances and use reclassifications:

7.2.d.1. James River - (Reserved)

7.2.d.2. Potomac River

7.2.d.2.1. A site-specific numeric criterion for aluminum, not to exceed 500 ug/l, shall apply to the section of Opequon Creek from Turkey Run to the Potomac River.

7.2.d.3. Shenandoah River - (Reserved)

7.2.d.4. Cacapon River - (Reserved)

7.2.d.5. South Branch - (Reserved)

7.2.d.6. North Branch - (Reserved)

7.2.d.7. Monongahela River

7.2.d.7.1. Flow in the main stem of the Monongahela River, as regulated by the Tygart and Stonewall Jackson Reservoirs, operated by the U. S. Army Corps of Engineers, is based on a minimum flow of 425 cfs at Lock and Dam No. 8, river mile point 90.8. This exception does not apply to tributaries of the Monongahela River.

7.2.d.8. Cheat River

7.2.d.8.1. In the unnamed tributary of Daugherty Run, approximately one mile upstream of Daugherty Run's confluence with the Cheat River, a site-specific numeric criterion for iron of 3.5 mg/l shall apply and the following frequency and duration requirements shall apply to the chronic numeric criterion for selenium (5ug/l): the four-day average concentration shall not be exceeded more than three times every three years (36 months), on average. Further, the following site-specific numeric criteria shall apply to Fly Ash Run of Daugherty Run: acute numeric criterion for aluminum: 888.5 ug/l and manganese: 5 mg/l. For both the unnamed tributary of Daugherty Run, approximately one mile upstream of Daugherty Run's confluence with the Cheat River, and Fly Ash Run, Water Use Category A shall not apply.

7.2.d.9. Blackwater River - (Reserved)

7.2.d.10. West Fork River - (Reserved)

7.2.d.11. Tygart River - (Reserved)

7.2.d.12. Buckhannon River - (Reserved)

7.2.d.13. Middle Fork River - (Reserved)

7.2.d.14. Youghiogheny River - (Reserved)

7.2.d.15. Ohio River Main Stem - (Reserved)

7.2.d.16. Ohio River Tributaries.

7.2.d.16.1. Site-specific numeric criteria shall apply to the stretch of Conners Run (0-77-A), a tributary of Fish Creek, from its mouth to the discharge from Conner Run impoundment, which shall not have the Water Use Category A and may contain selenium not to exceed 62 ug/1; and iron not to exceed 3.5 mg/1 as a monthly average and 7 mg/1 as a daily maximum.

7.2.d.17. Little Kanawha River - (Reserved)

7.2.d.18. Hughes River - (Reserved)

7.2.d.19. Kanawha River Zone 1 - Main Stem

7.2.d.19.1. For the Kanawha River main stem, Zone 1 the minimum flow shall be 1,960 cfs at the Charleston gauge.

7.2.d.19.2. Pursuant to 46 CSR 6, a Copper Water Effect Ratio (WER) of 5.62 shall be applied to The Sanitary Board of the City of Charleston, West Virginia wastewater treatment plant discharge of total recoverable copper to Kanawha River, Zone 1.

7.2.d.20. Kanawha River Zone 2 and Tributaries.

7.2.d.20.1. For the main stem of the Kanawha River only, the minimum flow shall be 1,896 cfs at mile point 72.

7.2.d.20.2. The stretch between the mouth of Little Scary Creek (K-31) and the Little Scary impoundment shall not have Water Use Category A. The following site-specific numeric criteria shall apply to that section: selenium not to exceed 62 ug/1 and copper not to exceed 105 ug/1 as a daily maximum nor 49 ug/1 as a 4-day average.

7.2.d.21. Pocatalico River - (Reserved)

7.2.d.22. Coal River - (Reserved)

7.2.d.23. Elk River - (Reserved)

7.2.d.24. Gauley River - (Reserved)

7.2.d.25. Meadow River - (Reserved)

7.2.d.26. Cherry River - (Reserved)

7.2.d.27. Cranberry River - (Reserved)

7.2.d.28. Williams River - (Reserved)

7.2.d.29. New River

7.2.d.29.1. In Marr Branch, a tributary of the New River, a site-specific dissolved zinc criteria defined by the equation CMC=CCC=e0.8541*ln(hardness)+1.151 x CF shall apply for both chronic and acute exposures

7.2.d.30. Greenbrier River - (Reserved)

7.2.d.31. Bluestone River - (Reserved)

7.2.d.32. Bluestone Lake - (Reserved)

7.2.d.33. East River - (Reserved)

7.2.d.34. Guyandotte River

7.2.d.34.1. Pats Branch from its confluence with the Guyandotte River to a point 1000 feet upstream shall not have Water Use Category A and Category D1 designation.

7.2.d.35. Mud River - (Reserved)

7.2.d.36. Big Sandy River - (Reserved)

7.2.d.37. Tug Fork River - (Reserved)

§47-2-8. Specific Water Quality Criteria.

8.1. Charts of specific water quality criteria are included in Appendix E, Table 1.

8.1.a. Specific state (i.e. total, total recoverable, dissolved, valence, etc.) of any parameter to be analyzed shall follow 40 CFR 136, Guidelines Establishing Test Procedures for Analysis of Pollutants Under the Clean Water Act, as amended, June 15, 1990 and March 26, 2007. (See also 47 C.S.R. 10, section 7.3 - National Pollutant Discharge Elimination System (NPDES) Program.)

8.1.b. Compliance with aquatic life water quality criteria expressed as dissolved metal shall be determined based on dissolved metals concentrations.

8.1.b.1. The aquatic life criteria for all metals listed in Appendix E, Table 2 shall be converted to a dissolved concentration by multiplying each numerical value or criterion equation from Appendix E, Table 1 by the appropriate conversion factor (CF) from Appendix E, Table 2.

8.1.b.2. Permit limits based on dissolved metal water quality criteria shall be prepared in accordance with the U.S. EPA document "The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From A Dissolved Criterion, EPA 823-B-96-007 June 1996.

8.1.b.3. NPDES permit applicants may petition the Secretary to develop a site-specific translator consistent with the provisions in this section. The Secretary may, on a case-by-case basis require an applicant applying for a translator to conduct appropriate sediment monitoring through

SEM/AVS ratio, bioassay or other approved methods to evaluate effluent limits that prevent toxicity to aquatic life.

8.1.c. An "X" or numerical value in the use columns of Appendix E, Table 1 shall represent the applicable criteria.

8.1.d. Charts of water quality criteria in Appendix E, Table 1 shall be applied in accordance with major stream and use applications, sections 6 and 7, herein.

8.2. Criteria for Toxicants

8.2.a. Toxicants which are carcinogenic have human health criteria (Water Use Categories A and C) based upon an estimated risk level of one additional cancer case per one million persons (10^{-6}) and are indicated in Appendix E, Table 1 with an endnote ([b]).

8.2.b. For waters other than the Ohio River between river mile points 68.0 and 70.0, a final determination on the critical design flow for carcinogens is not made in this rule, in order to permit further review and study of that issue. Following the conclusion of such review and study, the Legislature may again take up the authorization of this rule for purposes of addressing the critical design flow for carcinogens: Provided, That until such time as the review and study of the issue is concluded or until such time as the Legislature may again take up the authorization of this rule, the regulatory requirements for determining effluent limits for carcinogens shall remain as they were on the date this rule was proposed.

8.2.b.1. For the Ohio River between river mile points 68.0 and 70.0 the critical design flow for determining effluent limits for carcinogens shall be harmonic mean flow.

8.3. Criteria for Nutrients

8.3.a. Lakes

8.3.a.1. This subsection establishes nutrient criteria designed to protect Water Use Categories B and C. The following cool water nutrient criteria shall apply to cool water lakes. (See Appendix F for a representative list.) The following warm water nutrient criteria shall apply to all other lakes with a summer residence time greater than 14 days.

8.3.a.2. Total phosphorus shall not exceed 40 µg/l for warm water lakes and 30 µg/l for cool water lakes based on an average of four or more samples collected during the period May 1 to October 31. Chlorophyll-a shall not exceed 20 µg/l for warm water lakes and 10 µg/l for cool water lakes based on an average of four or more samples collected during the period May 1–October 31. In lieu of total phosphorus and/or chlorophyll-a sampling, impairment may be evidenced at any time by noncompliance with section 3.2, as determined by the Secretary.

8.4. Variances from Specific Water Quality Criteria. A variance from numeric criteria may be granted to a discharger if it can be demonstrated that the conditions outlined in paragraphs 6.1.b.1 through 6.1.b.6, herein, limit the attainment of one or more specific water quality criteria. Variances shall apply only to the discharger to whom they are granted and shall be reviewed by the Secretary at least every three years. In granting a variance, the requirements for revision of water quality standards in 46 CSR 6 shall be followed.

8.5. Site-specific numeric criteria. The Secretary may establish numeric criteria different from those set forth in Appendix E, Table 1 for a stream or stream segment upon a demonstration that existing numeric criteria are either over-protective or under-protective of the aquatic life residing in the stream or

stream segment. A site-specific numeric criterion will be established only where the numeric criterion will be fully protective of the aquatic life and the existing and designated uses in the stream or stream segment. The site-specific numeric criterion may be established by conducting a Water Effect Ratio study pursuant to the procedures outlined in US EPA's "Interim Guidance on the Determination and Use of Water-Effect Ratios for Metals" (February 1994); other methods may be used with prior approval by the Secretary. In adopting site-specific numeric criteria, the requirements for revision of water quality standards set forth in 46 CSR 6 shall be followed.

§47-2-9. Establishment Of Safe Concentration Values.

When a specific water quality standard has not been established by these rules and there is a discharge or proposed discharge into waters of the State, the use of which has been designated a Category B1, B2, B3 or B4, such discharge may be regulated by the Secretary where necessary to protect State waters through establishment of a safe concentration value as follows:

9.1. Establishment of a safe concentration value shall be based upon data obtained from relevant aquatic field studies, standard bioassay test data which exists in substantial available scientific literature, or data obtained from specific tests utilizing one (1) or more representative important species of aquatic life designated on a case-by-case basis by the Secretary and conducted in a water environment which is equal to or closely approximates that of the natural quality of the receiving waters.

9.2. In those cases where it has been determined that there is insufficient available data to establish a safe concentration value for a pollutant, the safe concentration value shall be determined by applying the appropriate application factor as set forth below to the 96-hour LC 50 value. Except where the Secretary determines, based upon substantial available scientific data that an alternate application factor exists for a pollutant, the following appropriate application factors shall be used in the determination of safe concentration values:

9.2.a. Concentrations of pollutants or combinations of pollutants that are not persistent and not cumulative shall not exceed 0.10 (1/10) of the 96-hour LC 50.

9.2.b. Concentrations of pollutants or combinations of pollutants that are persistent or cumulative shall not exceed 0.01 (1/100) of the 96-hour LC 50.

9.3. Persons seeking issuance of a permit pursuant to these rules authorizing the discharge of a pollutant for which a safe concentration value is to be established using special bioassay tests pursuant to subsection 9.1 of this section shall perform such testing as approved by the Secretary and shall submit all of the following in writing to the Secretary:

9.3.a. A plan proposing the bioassay testing to be performed.

9.3.b. Such periodic progress reports of the testing as may be required by the Secretary.

9.3.c. A report of the completed results of such testing including, but not limited to, all data obtained during the course of testing, and all calculations made in the recording, collection, interpretation and evaluation of such data.

9.4. Bioassay testing shall be conducted in accordance with methodologies outlined in the following documents: U.S. EPA Office of Research and Development Series Publication, Methods for Measuring the Acute Toxicity (EPA/600/4-90/027F, August 1993, 4th Edition) or Short Term Methods for Estimating Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (EPA/600/4-89/001), March 1989; Standard Methods for the Examination of Water and Wastewater (18th Edition); or

ASTM Practice E 729-88 for Conducting Acute Toxicity Tests with Fishes, Macroinvertebrates and Amphibians as published in Volume 11.04 of the 1988 Annual Book of ASTM Standards. Test waters shall be reconstituted according to recommendations and methodologies specified in the previously cited references or methodologies approved in writing by the Secretary.

APPENDIX A
CATEGORY B-2 - TROUT WATERS

This list contains known trout waters and is not intended to exclude any waters which meet the definition in Section 2.19.

River Basin	County	Stream
James River		
J	Monroe	South Fork Potts Creek
Potomac River		
P	Jefferson	Town Run
P	"	Rocky Marsh Run
P	Berkeley	Opequon Creek
P	"	Tuscarora Creek (Above Martinsburg)
P	"	Middle Creek (Above Route 30 Bridge)
P	"	Mill Creek
P	"	Hartland Run
P	"	Mill Run
P	"	Tillance Creek
P	Morgan	Meadow Branch
PS	Jefferson	Flowing Springs Run (Above Halltown)
PS	"	Cattail Run
PS	"	Evitt's Run
PS	"	Big Bullskin Run
PS	"	Long Marsh Run
PC	Hampshire	Cold Stream
PC	"	Edwards Run and Impoundment
PC	"	Dillons Run
PC	Hardy	Lost River
PC	"	Camp Branch
PC	"	Lower Cove Run
PC	"	Moores Run
PC	"	North River (Above Rio)
PC	"	Waites Run

PC	"	Trout Run
PC	"	Trout Pond (Impoundment)
PC	"	Warden Lake (Impoundment)
PC	"	Rock Cliff Lake (Impoundment)
PSB	Hampshire	Mill Creek
PSB	"	Mill Run
PSB	Hardy	Dumpling Creek
PSB	Grant-Pendleton	North Fork South Branch
PSB	Grant	North Fork Lunice Creek
PSB	"	South Fork Lunice Creek
PSB	"	South Mill Creek (Above Hiser)
PSB	"	Spring Run
PSB	Pendleton	Hawes Run (Impoundment)
PSB	"	Little Fork
PSB	"	South Branch (Above North Fork)
River Basin	County	Stream
Potomac River		
PSB	Pendleton	Senena Creek
PSB	"	Laurel Fork
PSB	"	Big Run
PNB	Mineral	North Fork Patterson Creek
PNB	"	Fort Ashby (Impoundment)
PNB	"	New Creek
PNB	"	New Creek Dam 14 (Impoundment)
PNB	"	Mill Creek (Above Markwood)
Monongahela River		
M	Monongalia-Marion	Whiteday Creek (Above Smithtown)
MC	Monongalia	Morgan Run
MC	"	Coopers Rock (Impoundment)
MC	"	Blaney Hollow
MC	Preston	Laurel Run
MC	"	Elsey Run
MC	"	Saltlick Creek
MC	"	Buffalo Creek

MC	"	Wolf Creek
MC	Tucker	Clover Run
MC	"	Elklick Run
MC	"	Horseshoe Run
MC	"	Maxwell Run
MC	"	Red Creek
MC	"	Slip Hill Mill Branch
MC	"	Thomas Park (Impoundment)
MC	"	Blackwater River (Above Davis)
MC	"	Blackwater River (Below Davis)
MC	Randolph	Camp Five Run
MC	"	Dry Fork (Above Otter Creek)
MC	"	Glady Fork
MC	"	Laurel Fork
MC	"	Gandy Creek (Above Whitmer)
MC	"	East Fork Glady Fork (Above C & P Compressor Station)
MC	Randolph	Shavers Fork (Above Little Black Fork)
MC	"	Three Spring Run
MC	"	Spruce Knob Lake (Impoundment)
MW	Harrison	Dog Run (Pond)
MW	Lewis	Stonecoal
MT	Barbour	Brushy Fork (Above Valley Furnace)
MT	"	Teter Creek Lake (Impoundment)
MT	"	Mill Run
MT	Taylor-Barbour	Tygart Lake Tailwaters (Above Route 119 Bridge)
MT	Preston	Roaring Creek (Above Little Lick Branch)
MT	Randolph	Tygart River (Above Huttonsville)
MT	"	Elkwater Fork
River Basin	County	Stream

Monongahela River

MT	Randolph	Big Run
MTB	Upshur-Randolph-Lewis	Right Fork Buckhannon River
MTB	Upshur	Buckhannon River (Above Beans Mill)

MTB	Upshur	French Creek
MTB	Upshur-Randolph	Left Fork Right Fork
MTN	Upshur	Right Fork Middle Fork River
MTM	Randolph	Middle Fork River (Above Cassity)
MY	Preston	Rhine Creek
Little Kanawha River		
LK	Upshur	Left Fork-Right Fork Little Kanawha River
LK	Upshur-Lewis	Little Kanawha River (Above Wildcat)
Kanawha River		
KE	Braxton	Sutton Reservoir
KE	"	Sutton Lake Tailwaters (Above Route 38/5 Bridge)
KE	Webster	Back Fork
KE	"	Desert Fork
KE	"	Fall Run
KE	"	Laurel Fork
KE	"	Left Fork Holly River
KE	"	Sugar Creek
KE	"	Elk River (Above Webster Springs)
KC	Raleigh	Stephens Lake (Impoundment)
KC	"	Marsh Fork (Above Sundial)
KG	Nicholas	Summersville Reservoir (Impoundment)
KG	"	Summersville Tailwaters (Above Collison Creek)
KG	Nicholas	Deer Creek
KG	Randolph-Webster	Gauley River (Above Moust Coal Tipple)
KG	Fayette	Glade Creek
KG	Nicholas	Hominy Creek
KG	"	Anglins Creek
KG	Greenbrier	Big Clear Creek
KG	"	Little Clear Creek and Laurel Run

KG	"	Meadow Creek
KG	Fayette	Wolf Creek
KG	Nicholas	Cherry River
KG	Greenbrier-Nicholas	Laurel Creek
KG	" "	North Fork Cherry River
KG	Greenbrier	Summit Lake (Impoundment)
KG	Greenbrier-Nicholas	South Fork Cherry River

River Basin	County	Stream
Kanawha River		
KGC	Pocahontas-Webster-Nicholas	Cranberry River
KGC	Pocahontas	South Fork Cranberry River
KGW	Pocahontas	Tea Creek
KGW	Pocahontas-Webster	Williams River (Above Dyer)
KN	Raleigh	Glade Creek
KN	Summers	Meadow Creek
KN	Fayette	Mill Creek
KN	"	Laurel Creek (Above Cotton Hill)
KN	Raleigh	Pinch Creek
KN	Monroe	Rich Creek
KN	"	Turkey Creek
KN	Fayette	Dunloup Creek (Downstream from Harvey Sewage Treatment Plant)
KN	Mercer	East River (Above Kelleysville)
KN	"	Pigeon Creek
KN	Monroe	Laurel Creek
KNG	Monroe	Kitchen Creek (Above Gap Mills)
KNG	Greenbrier	Culverson Creek
KNG	"	Milligan Creek
KNG	Greenbrier-Monroe	Second Creek (Rt. 219 Bridge to Nickell's Mill)
KNG	Greenbrier	North Fork Anthony Creek
KNG	"	Spring Creek
KNG	"	Anthony Creek (Above Big Draft)
KNG	Pocahontas	Watoga Lake

KNG	"	Beaver Creek
KNG	"	Knapp's Creek
KNG	"	Hills Creek
KNG	"	North Fork Deer Creek (Above Route 28/5)
KNG	"	Deer Creek
KNG	"	Sitlington Creek
KNG	"	Stoney Creek
KNG	"	Swago Creek
KNG	"	Buffalo Fork (Impoundment)
KNG	"	Seneca (Impoundment)
KNG	"	Greenbrier River (Above Hosterman)
KNG	"	West Fork-Greenbrier River (Above the impoundment at the tannery)
KNG	"	Little River-East Fork
KNG	"	Little River-West Fork
KNG	"	Five Mile Run
KNG	"	Mullenax Run
KNG	"	Abes Run
KNB	Mercer	Marsh Fork
KNB	"	Camp Creek
OG	Wyoming	Pinnacle creek
BST	McDowell	Dry Fork (Above Canebrake)

APPENDIX B

This list contains known waters used as public water supplies and is not intended to exclude any waters as described in Section 6.2, herein.

River Basin	County	Operating Company	Source
Shenandoah River			
S	Jefferson	Charlestown Water	Shenandoah River
Potomac River			
P	Jefferson	3-M Company	Turkey Run
P	"	Shepherdstown Water	Potomac River
P	"	Harpers Ferry Water	Elk Run
P	Berkeley	DuPont Potomac River Works	Potomac River
P	"	Berkeley County PSD	Le Feure Spring
P		Opequon PSD	Quarry Spring
P	"	Hedgesville PSD	Speck Spring
P	Morgan	Paw Paw Water	Potomac River
PSB	Hampshire	Romney Water	South Branch Potomac River
PSB	"	Peterkin Conference Center	Mill Run
PSB	Hardy	Moorefield Municipal Water	South Fork River
PSB	Pendleton	U.S. Naval Radio Sta.	South Fork River
PSB	"	Circleville Water Inc.	North Fork of South Branch, Potomac River
PSB	Grant	Mountain Top PSD	Mill Creek, Impoundment
PSB	"	Petersburg Municipal Water	South Branch, Potomac River
PNB	Grant	Island Creek Coal	Impoundment
PNB	Mineral	Piedmont Municipal Water	Savage River, Maryland
PNB	"	Keyser Water	New Creek
PNB	"	Fort Ashby PSD	Lake

River Basin	County	Operating Company	Source
Monongahela River			
M	Monongalia	Morgantown Water Comm.	Colburn Creek & Monongahela River
M	"	Morgantown Ordinance Works	Monongahela River
M	Preston	Preston County PSD	Deckers Creek
M	Monongalia	Blacksville # 1 Mine	Impoundment
M	"	Loveridge Mine	Impoundment
M	"	Consolidation Coal Co.	Impoundment
M	Preston	Mason Town Water	Block Run
MC	Preston	Fibair Inc.	Impoundment
MC	Monongalia	Cheat Neck PSD	Cheat Lake
MC	"	Lakeview County Club	Cheat Lake-Lake Lynn
Monongahela River			
MC	Monongalia	Union Districk PSD	Cheat Lake-Lake Lynn
MC	"	Cooper's Rock State Park	Impoundment
MC	Preston	Kingwood Water	Cheat River
MC	Preston	Hopemount State Hosp.	Snowy Creek
MC	"	Rowlesburg Water	Keyser Run & Cheat River
MC	"	Albright	Cheat River
MC	Tucker	Parsons Water	Shavers & Elk Lick Fork
MC	"	Thomas Municipal	Thomas Reservoir
MC	"	Hamrick PSD	Dry Fork
MC	"	Douglas Water System	Long Run
MC	"	Davis Water	Blackwater River
MC	"	Hambleton Water System	Roaring Creek
MC	"	Canaan Valley State	Blackwater River Park
MC	Pocahontas	Cheat Mt. Sewer	Shavers Lake
MC	"	Snowshoe Co. Water	Shavers Fork
MC	Randolph	Womelsdorf Water	Yokum Run
MW	Harrison	Lumberport Water	Jones Run
MW	"	Clarksburg Water Bd.	West Fork River
MW	"	Bridgeport Mun. Water	Deecons & Hinkle Creek
MW	"	Salem Water Board	Dog Run

MW	"	West Milford Water	West Fork River
MW	Lewis	W.V. Water-Weston District	West Fork River
MW	"	Jackson's Mill Camp	Impoundment
MW	"	West Fork River PSD	West Fork River
MW	"	Kennedy Compresssor Station	West Fork River
MW	"	Jane Lew Water Comm.	Hackers Creek
MW	Harrison	Bel-Meadow Country Club	Lake
MW	"	Harrison Power Station	West Fork River
MW	"	Oakdale Portal	Impoundment
MW	"	Robinson Port	Impoundment
MT	Marion	Fairmont Water Comm.	Tygart River
MT	"	Mannington Water	Impoundment
MT	"	Monongah Water Works	Tygart River
MT	"	Eastern Assoc.	Coal Corp Impoundment
MT	"	Four States Water	Impoundment
MT	Harrison	Shinnston Water Dept.	Tygart River
MT	Taylor	Grafton Water	Tygart River-Lake
MT	Barbour	Phillippi Water	Tygart River
MT	"	Bethlehem Mines Corp.	Impoundment
MT	"	Belington Water Works	Tygart River & Mill Run Lake
MT	Randolph	Elkins Municipal Water	Tygart River
MT	"	Beverly Water	Tygart River
MT	"	Valley Water	Tygart River
MT	"	Huttonsville Medium Security Prison	Tygart River
MT	"	Mill Creek Water	Mill Creek
MTB	Upshur	Buckhannon Water Board	Buckhannon River

River Basin	County	Operating Company	Source
Ohio River			
O Zone 1	Hancock	Chester Water & Sewer	Ohio River
O "	Brooke	City of Weirton	Ohio River
O Zone 1	Brooke	Weirton Steel Division	Ohio River
O "	Ohio	Wheeling Water	Ohio River
O "	Tyler	Sistersville Mun. Water	Ohio River

O	"	Pleasants	Pleasants Power Station	Ohio River
O	"	Cabel	Huntington Water Corp.	Ohio River
O	"	Marshall	Mobay Chemical Co.	Ohio River
O	"	Wood	E. I. DuPont	Ohio River
O	Zone 2	Marshall	Meron Water	Glass House Hollow
O	"	"	New Urindahana Water	Wheeling Creek System
O	"	Wetzel	Pine Grove Water	North Fork, Fishing Creek
O	"	Marshall	Consolidated Coal Co.	Impoundment
O	"	Tyler	Middlebourne Water	Middle Island Creek
O	"	Doddridge	West Union Mun. Water	Middle Island Creek
O	"	Mason	Hidden Valley Country	Lake/Impoundment
O	"	Jackson	Ripley Water	Mill Creek
O	"	Wayne	Wayne Municipal Water	Twelve Pole Creek
O	"	"	East Lynn Lake	East Lynn Lake
O	"	"	Monterey Coal Co.	Impoundment

Little Kanawha

LK	Wood	Claywood Park PSD	Little Kanawha River
LK	Calhoun	Grantsville Mun. Water	Little Kanawha River
LK	Gilmer	Glenville Utility	Little Kanawha River
LK	"	Consolidated Gas Compressor	Steer Creek
LK	Braxton	Burnsville Water Works	Little Kanawha River
LK	Roane	Spencer Water	Spring Creek Mile Tree Reservoir
LK	Wirt	Elizabeth Water	Little Kanawha River
LKH	Ritchie	Cairo Water	North Fork Hughes River
LKH	"	Harrisville Water	North Fork Hughes River
LKH	"	Pennsboro Water	North Fork Hughes River

Kanawha River

K	Putnam	Buffalo Water	Cross Creek
K	"	Winfield Water	Poplar Fork & Crooked Creek
K	"	South Putnam PSD	Poplar Fork & Crooked Creek
K	Kanawha	Cedar Grove Water	Kanawha River
K	"	Pratt Water	Kanawha River
K	Fayette	Armstrong PSD PO-K1-CO-EL	Kanawha River & Gum Hollow

K	"	Kanawha Water Co.-	Unnamed Tributary Kanawha Beards Fork
K	Kanawha	Midland Trail School	Impoundment
K	"	Cedar Coal Co.	Impoundment
K	Fayette	Elkem Metals Co.	Kanawha River
K	Fayette	Deepwater PSD	Kanawha River

River Basin	County	Operating Company	Source
Kanawha River			
K	Fayette	Kanawha Falls PSD	Kanawha River
K	"	W.V. Water-Montgomery	Kanawha River
Pocatalico River			
KP	Kanawha	Sissonville PSD	Pocatalico River
KP	Roane	Walton PSD	Silcott Fork Dam
Coal River			
KC	Kanawha	St. Albans Water	Coal River
KC	"	Washington PSD	Coal River
KC	Lincoln	Lincoln PSD	Coal River
KC	Boone	Coal River PSD	Coal River
KC	"	Whitesville PSD	Coal River
KC	Raleigh	Armco Mine 10	Marsh Fork
KC	"	Armco Steel-Montc. Stickney	Coal River
KC	Raleigh	Peabody Coal	Coal River
KC	"	Stephens Lake Park	Lake Stephens
KC	Boone	W.V. Water-Madison Dist.	Little Coal River
KC	"	Van PSD	Pond Fork
KC	Raleigh	Consol. Coal Co.	Workmans Creek
KC	Boone	Water Ways Park	Coal River
Elk River			
KE	Kanawha	Clendenin Water	Elk River

KE	"	W.V. Water-Kanawha Valley District	Elk River
KE	Kanawha	Pinch PSD	Elk River
KE	Clay	Clay Waterworks	Elk River
KE	"	Procious PSD	Elk River
KE	Braxton	Flatwoods-Canoe Run PSD	Elk River
KE	"	Sugar Creek PSD	Elk River
KE	"	W.V. Water-Gassaway Dist.	Elk River
KE	"	W.V. Water-Sutton Dist.	Elk River
KE	Webster	W.V. Water-Webster Springs	Elk River
KE		Holly River State Park	Holly River
Gauley River			
KG	Nicholas	Craigsville PSD	Gauley River
KG	"	Summersville Water	Impoundment/ Muddlety Creek
KG	"	Nettie-Leivasy PSD	Jim Branch
KG	Webster	Cowen PSD	Gauley River
KG	Nicholas	Wilderness PSD	Anglins Creek & Meadow River
KG	"	Richwood Water	North Fork Cherry River
KN	Fayette	Ames Heights Water	Mill Creek
KN	"	Mt. Hope Water	Impounded Mine (Surface)
KN	Fayette	Ansted Municipal Water	Mill Creek

River Basin	County	Operating Company	Source
New River			
KN	Fayette	Fayette Co. Park	Impoundment
KN	"	New River Gorge Campground	Impoundment
KN	"	Fayetteville Water	Wolfe Creek
KN	Raleigh	Beckley Water	Glade Creek
KN	"	Westmoreland Coal Co.	Farley Branch
Bluestone River			
KNB	Summers	Jumping Branch-Nimitz	Mt. Valley Lake
KNB	"	Bluestone Conf. Center	Bluestone Lake
KNB	"	Pipestem State Park	Impoundment
KNB	Mercer	Town of Athens	Impoundment

KNB	"	Bluewell PSD	Impoundment
KNB	"	Bramwell Water	Impoundment
KNB	"	Green Valley-Glenwood PSD	Bailey Reservoir
KNB	"	Kelly's Tank	Spring
KNB	"	W.V. Water Princeton	Impoundment/ Brusch Creek
KNB	"	Lashmeet PSD	Impoundment
KNB	"	Pinnacle Water Assoc.	Mine
KNB	"	W.V. Water Bluefield	Impoundment

Greenbrier River

KNG	Summers	W.V. Water Hinton	Greenbrier River & New River
KNG	"	Big Bend PSD	Greenbrier River
KNG	Greenbrier	Alderson Water Dept.	Greenbrier River
KNG	"	Ronceverte Water	Greenbrier River
KNG	"	Lewisburg Water	Greenbrier River
KNG	Pocahontas	Denmar State Hospital Water	Greenbrier River
KNG	"	City of Marlinton Water	Knapp Creek
KNG	"	Cass Scenic Railroad	Leatherbark Creek
KNG	"	Upper Greenbrier PSD	Greenbrier River
KNG	"	The Hermitage	Greenbrier River

Guyandotte River

OG	Cabell	Salt Rock PSD	Guyandotte River
OG	Lincoln	West Hamlin Water	Guyandotte River
OG	Logan	Logan Water Board	Guyandotte River
OG	"	Man Water Works	Guyandotte River
OG	"	Buffalo Creek PSD	Buffalo Creek/ Mine/Wells
OG	Logan	Chapmanville	Guyandotte River
OG	"	Logan PSD	Whitman Creek/ Guyandotte River
OG	Mingo	Gilbert Water	Guyandotte River
OG	Wyoming	Oceana Water	Laurel Fork
OG	"	Glen Rogers PSD	Impoundment
OG	Wyoming	Pineville Water	Pinnacle Creek
OG	Raleigh	Raleigh Co. PSD-Amigo	Tommy Creek
OMG	Cabell	Milton Water Works	Guyandotte River
OMG	"	Culloden PSD	Indian Fork Creek

River Basin	County	Operating Company	Source
Guyandotte River			
OMG	Putnam	Hurricane Municipal Water	Impoundment
OMG	Putnam	Lake Washington PSD	Lake Washington
Big Sandy River			
BS	Wayne	Kenova Municipal Water	Big Sandy River
BS	"	Fort Gay Water	Tug Fork
BST	Mingo	Kermit Water	Tug Fork
BST	"	Matewan Water	Tug Fork
BST	"	A & H Coal Co., Inc.	Impoundment
BST	"	Williamson Water	Impoundment
BST	McDowell	City of Welch	Impoundment/Wells
BST	"	City of Gary	Impoundment/Mine

APPENDIX C
CATEGORY E-3 - POWER PRODUCTION

This list contains known power production facilities and is not intended to exclude any waters as described in Section 6.6.c, herein.

River Basin	County	Station Name	Operating Company
Monongahela River			
M	Monongalia	Fort Martin Power Station	Monongahela Power
M	Marion	Rivesville Station	Monongahela Power
MC	Preston	Albright Station	Monongahela Power
Potomac	Grant	Mt. Storm Power Station	Virginia Electric & Power Company
Ohio River			
O - Zone 1	Wetzel	Hannibal (Hydro)	Ohio Power
O " "	Marshall	Kammer	Ohio Power
O " "	"	Mitchell	Ohio Power
O " "	Pleasants	Pleasants Station	Monongahela Power
O " "	"	Willow Island Station	Monongahela Power
O " "	Mason	Phillip Sporn Plant	Central Operating (AEP)
O " "	"	Racine (Hydro)	Ohio Power
O " "	"	Mountaineer	Appalachian Power Co.
K	Putnam	Winfield (Hydro)	Appalachian Power Co.
K	Kanawha	Marmet (Hydro)	Appalachian Power Co.
K	"	London (Hydro)	Appalachian Power Co.
K	"	Kanawha River	Appalachian Power Co.
K	"	John E. Amos	Appalachian Power Co.

APPENDIX D
CATEGORY C - WATER CONTACT RECREATION

This list contains waters known to be used for water contact recreation and is not intended to exclude any waters as described in section 6.4, herein.

River Basin	Stream Code	Stream	County
Shenandoah	S	Shenandoah River	Jefferson
Potomac	P	Potomac River	Jefferson
	P	" "	Hampshire
	P	" "	Berkeley
	P	" "	Morgan
	P-9	Sleepy Creek & Meadow Branch	Berkeley
	P-9-G-1	North Fork of Indian Run	Morgan
South Branch	PSB	South Branch of Potomac River	Hampshire
	PSB	" "	Hardy
	PSB	" "	Grant
	PSB-21-X	Hawes Run	Pendleton
	PSB-25-C-2	Spring Run	Grant
	PSB-28	North Fork South Branch Potomac River	Grant
North Branch	PNB	North Branch of Potomac River	Mineral
	PNB-4-EE	North Fork Patterson Creek	Grant
	PNB-7-H	Linton Creek	Grant
	PNB-17	Stoney River-Mt. Storm Lake	Grant
	PC	Cacapon River	Hampshire
Monongalia			
Cheat	MC	Cheat Lake/Cheat river	Monongalia/Preston

	MC	Alpine Lake	Preston
	MC-6	Coopers Rock Lake/ Quarry Run	Monongalia
	MC-12	Big Sandy Creek	Preston
	MSC	Shavers Fork	Randolph
	MTN	Middle Fork River	Barbour/Randolph/ Upshur
	MW	West Fork River	Harrison
	MW-18	Stonecoal Creek/ Stonecoal Lake	Lewis
River Basin	Stream Code	Stream	County
Ohio	O	Ohio River	Brooke/Cabell/ Hancock/Jackson/ Marshall/Mason/Ohio/ Pleasants/Tyler/ Wayne/Wood/Wetzel
	O-2-H	Beech Fork of Twelvepole Creek/Beech Fork Lake	Wayne
	O-2-Q	East Fork of Twelvepole Creek/East Lynn Lake	Wayne
	O-3	Fourpole Creek	Cabell
	O-21	Old Town Creek/ McClintic Ponds	Mason
	OMI	Middle Island Creek/ Crystal Lake	Doddridge
	OG	Guyandotte River	Cabell
	OG	Guyandotte River/ R. D. Bailey Lake	Wyoming
	OGM	Mud River	Cabell

Little Kanawha	LK	Little Kanawha River/ Burnsville Lake	Braxton
Kanawha	K	Kanawha River	Fayette/Kanawha/ Mason/Putnam
	K-1	Unnamed Tributary Krodel Lake	Mason
	KC	Coal River	Kanawha
	KC-45-Q	Stephens Branch/ Lake Stephens	Raleigh
	KE	Elk River	Kanawha/Clay/ Braxton/Webster/ Randolph
	KE	Sutton Lake	Braxton
	KN	New River	Fayette/Raleigh/ Summers
	KN-26-F	Little Beaver Creek	Raleigh
	KNG	Greenbrier River	Greenbrier/ Pocahontas/Summers
	KNG-23-E-1	Little Devil Creek/ Moncove Lake	Monroe
	KNG-28	Anthony Creek	Greenbrier
	KNG-28-P	Meadow Creek/ Lake Sherwood	Greenbrier
River Basin	Stream Code	Stream	County
	KNB	Bluestone River/ Bluestone Lake	Summers
	KG	Gauley River	Webster
Kanawha	KG	Gauley River/ Summersville Lake	Nicholas
	KGW	Williams River	Webster

APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.1 Dissolved Aluminum (ug/l)	750xCF[5]	750xCF[5]	750xCF[5]	87xCF[5]			
8.2. Acute and chronic aquatic life criteria for ammonia shall be determined using the National Criterion for Ammonia in Fresh Water[d] from USEPA's 1999 Update of Ambient Water Quality Criteria for Ammonia (EPA-822-R-99-014, December 1999)	X	X	X	X			
8.3 Antimony (ug/l)					4300	14	
8.4 Arsenic (ug/l)					10	10	100
8.4.1 Dissolved Trivalent Arsenic (ug/l)	340	150	340	150			
8.5 Barium (mg/l)						1.0	
8.6 Beryllium (ug/l)	130		130			4.0	
8.7 Cadmium (ug/l) Hardness (mg/l $CaCO_3$) — Soluble Cd 0 - 35 — 1.0 36 - 75 — 2.0 76 - 150 — 5.0 > 150 — 10.0						X	

APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.7.1 10 ug/l in the Ohio River (O Zone 1) main stem (see section 7.1.d, herein)						X	
8.7.2 The four-day average concentration of dissolved cadmium determined by the following equation: $Cd = e^{(0.7409[ln(hardness)]-4.719)} \times CF$[5]		X		X			
8.7.3 The one-hour average concentration of dissolved cadmium determined by the following equation: $Cd = e^{(1.0166[ln(hardness)]-3.924)} \times CF$[5]	X		X				
8.8 Chloride (mg/l)	860	230	860	230	250	250	
8.9.1 Chromium, dissolved hexavalent (ug/l):	16	11	16	7.2		50	
8.9.2 Chromium, trivalent (ug/l) The one-hour average concentration of dissolved trivalent chromium determined by the following equation: $CrIII = e^{(0.8190[ln(hardness)]+3.7256)} \times CF$[5]	X		X				
8.9.3 The four-day average concentration of dissolved trivalent chromium determined by the following concentration: $CrIII = e^{(0.8190[ln(hardness)]+0.6848)} \times CF$[5]		X		X			
8.10 Copper (ug/l)						1000	

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APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.10.1 The four-day average concentration of dissolved copper determined by the following equation[a]: $Cu = e^{(0.8545[\ln(hardness)]-1.702)} \times CF$[5]		X		X			
8.10.2 The one-hour average concentration of dissolved copper determined by the following equation[a]: $Cu = e^{(0.9422[\ln(hardness)]-1.700)} \times CF$[5]	X		X				
8.11 Cyanide (ug/l) (As free cyanide $HCN+CN^-$)	22	5.0	22	5.0	5.0	5.0	
8.12 Dissolved Oxygen[c]: not less than 5 mg/l at any time.	X				X	X	X
8.12.1 Ohio River main stem - the average concentration shall not be less than 5.0 mg/l per calendar day and shall not be less than 4.0 mg/l at any time or place outside any established mixing zone - provided that a minimum of 5.0 mg/l at any time is maintained during the April 15-June 15 spawning season.	X						
8.12.2 Not less than 7.0 mg/l in spawning areas and in no case less than 6.0 mg/l at any time.			X				

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APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.13 Fecal Coliform: Maximum allowable level of fecal coliform content for Water Contact Recreation (either MPN or MF) shall not exceed 200/100 ml as a monthly geometric mean based on not less than 5 samples per month; nor to exceed 400_/100 ml in more than ten percent of all samples taken during the month.					X	X	
8.13.1 Ohio River main stem (zone 1) - During the non-recreational season (November through April only) the maximum allowable level of fecal coliform for the Ohio River (either MPN or MF) shall not exceed 2000/100 ml as a monthly geometric mean based on not less than 5 samples per month.					X	X	
8.14 Fluoride (mg/l)						1.4	
8.14.1 Not to exceed 2.0 for category D1 uses.							X
8.15 Iron[e] (mg/l)		1.5		1.0		1.5	
8.16 Lead (ug/l)						50	
8.16.1 The four-day average concentration of dissolved lead determined by the following equation[a]: $Pb = e^{(1.273[\ln(\text{hardness})]-4.705)}{}_X\ CF^5$		X		X			

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.16.2 The one-hour average concentration of dissolved lead determined by the following equation[a]: $Pb = e^{(1.273[\ln(hardness)]-1.46)} \times CF^5$	X		X				
8.17 Manganese (mg/l) (see §6.2.d)						1.0	
8.18 Mercury The total organism body burden of any aquatic species shall not exceed 0.5 ug/g as methylmercury.					0.5	0.5	
8.18.1 Total mercury in any unfiltered water sample (ug/l):	2.4		2.4		0.15	0.14	
8.18.2 Methylmercury (water column) (ug/l):		.012		.012			
Nickel (ug/l)					4600	510	
8.19.1 The four-day average concentration of dissolved nickel determined by the following equation[a]: $Ni = e^{(0.846[\ln(hardness)]+0.0584)} \times CF^5$		X		X			
8.19.2 The one-hour average concentration of dissolved nickel determined by the following equation[a]: $Ni = e^{(0.846[\ln(hardness)]+2.255)} \times CF^5$	X		X				
8.20 Nitrate (as Nitrate-N) (mg/l)						10	

APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.21 Nitrite (as Nitrite-N) (mg/l)	1.0		.060				
8.22 Nutrients							
Chlorophyll –a (µg/l) (see §47-2-8.3)							
Total Phosphorus (µg/l) (see §47-2-8.3)							
8.23 Organics							
Chlordane[b] (ng/l)	2400	4.3	2400	4.3	0.46	0.46	0.46
DDT[b] (ng/l)	1100	1.0	1100	1.0	0.024	0.024	0.024
Aldrin[b] (ng/l)	3.0		3.0		0.071	0.071	0.071
Dieldrin[b] (ng/l)	2500	1.9	2500	1.9	0.071	0.071	0.071
Endrin (ng/l)	180	2.3	180	2.3	2.3	2.3	2.3
Toxaphene[b] (ng/l)	730	0.2	730	0.2	0.73	0.73	0.73
PCB[b] (ng/l)		14.0		14.0	0.045	0.044	0.045
Methoxychlor (ug/l)		0.03		0.03	0.03	0.03	0.03
Dioxin (2,3,7,8- TCDD)[b] (pg/l)					0.014	0.013	0.014
Acrylonitrile[b] (ug/l)					0.66	0.059	
Benzene[b] (ug/l)					51	0.66	
1,2-dichlorobenzene (mg/l)					17	2.7	
1,3-dichlorobenzene (mg/l)					2.6	0.4	

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APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
1,4-dichlorobenzene (mg/l)					2.6	0.4	
2,4-dinitrotoluene[b] (ug/l)					9.1	0.11	
Hexachlorobenzene[b] (ng/l)					0.77	0.72	
Carbon tetrachloride[b] (ug/l)					4.4	0.25	
Chloroform[b] (ug/l)					470	5.7	
Bromoform[b] (ug/l)					140	4.3	
Dichlorobromomethane[b] (ug/l)					17	0.55	
Methyl Bromide (ug/l)					1500	47	
Methylene Chloride[b] (ug/l)					590	4.6	
1,2-dichloroethane[b] (ug/l)					99	0.035	
1,1,1- trichloroethane[b] (mg/l)						12	
1,1,2,2-tetrachloroethane (ug/l)					11	0.17	
1,1-dichloroethylene[b] (ug/l)					3.2	0.03	
Trichloroethylene[b] (ug/l)					81	2.7	
Tetrachloroethylene[b] (ug/l)					8.85	0.8	
Toluene[b] (mg/l)					200	6.8	
Acenaphthene (ug/l)					990	670	
Anthracene (ug/l)					40,000	8,300	
Benzo(a) Anthracene[b] (ug/l)					0.018	0.0038	

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APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
Benzo(a) Pyrene[b] (ug/l)					0.018	0.0038	
Benzo(b) Fluoranthene[b] (ug/l)					0.018	0.0038	
Benzo(k) Fluoranthene[b] (ug/l)					0.018	0.0038	
Chrysene[b] (ug/l)					0.018	0.0038	
Dibenzo(a,h)Anthracene[b] (ug/l)					0.018	0.0038	
Fluorene (ug/l)					5300	1100	
Indeno(1,2,3-cd)Pyrene[b] (ug/l)					0.018	0.0038	
Pyrene (ug/l)					4000	830	
2-Chloronaphthalene (ug/l)					1600	1000	
Phthalate esters[6] (ug/l)		3.0		3.0			
Vinyl chloride[b] (chloroethene) (ug/l)					525	2.0	
alpa-BHC (alpha- Hexachloro-cyclohexane)[b] (ug/l)					0.013	.0039	
beta-BHC(beta- Hexachloro-cyclohexane)[b] (ug/l)					0.046	0.014	
gamma-BHC (gamma- Hexachloro-cyclohexane)[b] (ug/l)	2.0	0.08	2.0	0.08	0.063	0.019	
Chlorobenzene (mg/l)					21	0.68	
Ethylbenzene (mg/l)					29	3.1	
Heptachlor[b] (ng/l)	520	3.8	520	3.8	0.21	0.21	

APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
2-methyl-4,6-Dinitrophenol (ug/l)					765	13.4	
Fluoranthene (ug/l)					370	300	
8.23.1 When the specified criteria for organic chemicals listed in §8.23 are less than the practical laboratory quantification level, instream values will be calculated from discharge concentrations and flow rates, where applicable.							
8.24 pH[e] No values below 6.0 nor above 9.0. Higher values due to photosynthetic activity may be tolerated.	X	X	X	X	X	X	X
8.25 Phenolic Materials							
8.25.1 Phenol (ug/l)					4,600,000	21,000	
8.25.2 2-Chlorophenol (ug/l)					400	120	
8.25.3 2,4-Dichlorophenol (ug/l)					790	93	
8.25.4 2,4-Dimethylphenol (ug/l)					2300	540	
8.25.5 2,4-Dinitrophenol (ug/l)					14,000	70	
8.25.6 Pentachlorophenol[b] (ug/l)					8.2	0.28	
8.25.6.a The one-hour average concentration of pentachlorophenol determined by the following equation: exp(1.005(pH)-4.869)	X		X				

APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.25.6.b The 4-day average concentration of pentachlorophenol determined by the following equation: exp(1.005(pH)-5.134).		X		X			
8.25.7 2,4,6-Trichlorophenol[b] (ug/l)					6.5	2.1	
8.26 Radioactivity: Gross Beta activity not to exceed 1000 picocuries per liter (pCi/l), nor shall activity from dissolved strontium-90 exceed 10 pCi/l, nor shall activity from dissolved alpha emitters exceed 3 pCi/l.	X		X		X	X	X
8.26.1 Gross total alpha particle activity (including radium-226 but excluding radon and uranium shall not exceed 15 pCi/l and combined radium-226 and radium-228 shall not exceed 5pCi/l; provided that the specific determination of radium-226 and radium-228 are not required if dissolved particle activity does not exceed 5pCi/l; the concentration of tritium shall not exceed 20,000 pCi/l; the concentration of total strontium-90 shall not exceed 8 pCi/l in the Ohio River main stem.	X		X		X	X	X
8.27 Selenium (ug/l)	20	5	20	5		50	

APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.28 Silver (ug/l) Hardness Silver 0-50 1 51-100 4 101-200 12 >201 24				X		X	
8.28.1 0-50 1 51-100 4 101-200 12 201-400 24 401-500 30 501-600 43		X					
8.28.2 The one-hour average concentration of dissolved silver determined by the following equation: $Ag=e^{(1.72[ln(hardness)]-6.59)} \times CF$[5]	X		X				

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APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.29 Temperature Temperature rise shall be limited to no more than 5°F above natural temperature, not to exceed 87°F at any time during months of May through November and not to exceed 73°F at any time during the months of December through April. During any month of the year, heat should not be added to a stream in excess of the amount that will raise the temperature of the water more than 5°F above natural temperature. In lakes and reservoirs, the temperature of the epilimnion should not be raised more than 3°F by the addition of heat of artificial origin. The normal daily and seasonable temperature fluctuations that existed before the addition of heat due to other natural causes should be maintained.		X					
8.29.1 For the Kanawha River Main Stem (K-1): Temperature rise shall be limited to no more than 5°F above natural temperature, not to exceed 90°F in any case.		X					

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.29.2 No heated effluents will be discharged in the vicinity of spawning areas. The maximum temperatures for cold waters are expressed in the following table: Daily Mean °F / Hourly Max °F Oct-Apr 50 / 55 Sep-&May 58 / 62 Jun-Aug 66 / 70			X				

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.29.3 For Ohio River Main Stem (01) (see section 7.1.d, herein): Period Ave. / Inst. Max. Jan 1-31 45°F / 50°F February 45 / 50 March 1-15 51 / 56 March 16-31 54 / 59 April 1-15 58 / 64 April 16-30 64 / 69 May 1-15 68 / 73 May 16-31 75 / 80 June 1-15 80 / 85 June 16-30 83 / 87 July 1-31 84 / 89 August 1-31 84 / 89 Sept 1-15 84 / 87 Sept 16-30 82 / 86 Oct 1-15 77 / 82 Oct 16-31 72 / 77 Nov 1-30 67 / 72 Dec 1-31 52 / 57	X						
8.30 Thallium (ug/l)					6.3	1.7	
8.31 Threshold odor[e] Not to exceed a threshold odor number of 8 at 104°F as a daily average.		X		X	X	X	
8.32 Total Residual Chlorine (ug/l - measured by amperometric or equivalent method)	19	11					

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APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.32.1 No chlorinated discharge allowed			X				
8.33 Turbidity No point or non-point source to West Virginia's waters shall contribute a net load of suspended matter such that the turbidity exceeds 10 NTU's over background turbidity when the background is 50 NTU or less, or have more than a 10% increase in turbidity (plus 10 NTU minimum) when the background turbidity is more than 50 NTUs. This limitation shall apply to all earth disturbance activities and shall be determined by measuring stream quality directly above and below the area where drainage from such activity enters the affected stream. Any earth disturbing activity continuously or intermittently carried on by the same or associated persons on the same stream or tributary segment shall be allowed a single net loading increase.		X		X	X	X	

47CSR2
APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.33.1 This rule shall not apply to those activities at which Best Management Practices in accordance with the State's adopted 208 Water Quality Management Plan are being utilized, maintained and completed on a site-specific basis as determined by the appropriate 208 cooperative or an approved Federal or State Surface Mining Permit is in effect. This exemption shall not apply to Trout Waters.		X			X	X	
8.34 Zinc (ug/l) The four-day average concentration of dissolved zinc determined by the following equation[a]: $Zn = e^{(0.8473[\ln(hardness)]+0.884)} \times CF$[5]		X		X			
8.34.1 The one-hour average concentration of dissolved zinc determined by the following equation[a]: $Zn = e^{(0.8473[\ln(hardness)]+0.884)} \times CF$[5]	X		X				

[1] One hour average concentration not to be exceeded more than once every three years on the average, unless otherwise noted.
[2] Four-day average concentration not to be exceeded more than once every three years on the average, unless otherwise noted.
[3] These criteria have been calculated to protect human health from toxic effects through fish consumption, unless otherwise noted. Concentration not to be exceeded, unless otherwise noted.
[4] These criteria have been calculated to protect human health from toxic and/or organoleptic effects through drinking water and fish consumption, unless otherwise noted. Concentration not to be exceeded, unless otherwise noted.
[5] The appropriate Conversion Factor (CF) is a value used as a multiplier to derive the dissolved aquatic life criterion is found in Appendix E, Table 2.
[6] Phthalate esters are determined by the summation of the concentrations of Butylbenzyl Phthalate, Diethyl Phthalate, Dimethyl Phthalate, Di-n-Butyl Phthalate and Di-n-Octyl Phthalate.

47CSR2
APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			

[a] Hardness as calcium carbonate (mg/l). The minimum hardness allowed for use in this equation shall not be less than 25 mg/l, even if the actual ambient hardness is less than 25 mg/l. The maximum hardness value for use in this equation shall not exceed 400 mg/l even if the actual hardness is greater than 400 mg/l.
[b] Known or suspected carcinogen. Human health standards are for a risk level of 10^{-6}.
[c] May not be applicable to wetlands (B4) - site-specific criteria are desirable.
[d] The early life stage equation in the National Criterion shall be used to establish chronic criteria throughout the state unless the applicant demonstrates that no early life stages of fish occur in the affected water(s).

APPENDIX E
TABLE 2

Conversion Factors

Metal	Acute	Chronic
Aluminum	1.000	1.000
Arsenic (III)	1.000	1.000
Cadmium	1.136672-[(ln hardness)(0.041838)]	1.101672-[(ln hardness)(0.041838)]
Chromium (III)	0.316	0.860
Chromium(VI)	0.982	0.962
Copper	0.960	0.960
Lead	1.46203-[(ln hardness)(0.145712)]	1.46203-[(ln hardness)(0.145712)]
Nickel	0.998	0.997
Silver	0.85	N/A
Zinc	0.978	0.986

APPENDIX F
COOL WATER LAKES

This list contains lakes to be managed for cool water fisheries and is not intended to exclude any waters which meet the definition in Section 2.2.

River Basin	County	Lake
Potomac River		
PC	Hardy Lost River	Trout Pond (Impoundment)
PC	Hardy Lost River	Rock Cliff Lake (Impoundment)
PSB	Pendleton	Hawes Run (Impoundment)
PNB	Mineral	New Creek Dam 14(Impoundment)
Monongahela River		
MC	Monongalia	Coopers Rock (Impoundment)
MC	Monongalia	Cheat Lake
MC	Tucker	Thomas Park (Impoundment)
MC	Randolph	Spruce Knob Lake (Impoundment)
MT	Taylor	Tygart Lake
MW	Lewis	Stonecoal Lake
Kanawha River		
KC	Raleigh	Stephens Lake (Impoundment)
KG	Nicholas	Summersville Reservoir (Impoundment)
KG	Greenbrier	Summit Lake (Impoundment)
KNG	Pocahontas	Watoga Lake
KNG	Pocahontas	Buffalo Fork (Impoundment)
KNG	Pocahontas	Seneca (Impoundment)
KCG	Pocahontas	Handley Pond
Guyandotte River		
OG	Wyoming/Mingo	RD Bailey Lake

4. Materials regarding "Agency Approved" Water Quality Standards Rule, July 2014

a. **Proposed rule with strikethrough/underline revisions**

b. **Public Hearing Transcript**

c. **Written & Oral comments, & DEP response to comments**

a. Proposed Rule with strikethrough/underline revisions

TITLE 47
LEGISLATIVE RULE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER RESOURCES

SERIES 2
REQUIREMENTS GOVERNING WATER QUALITY STANDARDS

§47-2-1. General.

1.1. Scope. -- These rules establish requirements governing the discharge or deposit of sewage, industrial wastes and other wastes into the waters of the state and establish water quality standards for the waters of the State standing or flowing over the surface of the State. 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 of the State consistent with (1) public health and public enjoyment thereof; (2) the propagation and protection of animal, bird, fish, and other 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. (See W. Va. Code §22-11-2.)

1.2. Authority. -- W. Va. Code §§22-11-4(a)(16); 22-11-7b.

1.3. Filing Date. -- ~~April 16, 2014.~~

1.4. Effective Date. -- ~~June 21, 2014.~~

§47-2-2. Definitions.

The following definitions in addition to those set forth in W. Va. Code §22-11-3, shall apply to these rules unless otherwise specified herein, or unless the context in which used clearly requires a different meaning:

2.1. "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 human consumption.

2.2. Lakes

2.2a. “Cool water lakes” are lentic water bodies that have a summer hydraulic residence time greater than 14 days, and are either managed by the West Virginia Division of Natural Resources for the support of cool water fish species or support cool water fish species, such as walleye and trout. “Cool water lakes” do not include those waters that receive stockings of trout, but that do not support year-round trout populations. (See Appendix F for a representative list.)

2.2.b. “Warm water lakes” are lentic water bodies that have a summer hydraulic residence time greater than 14 days, and are either managed by the West Virginia Division of Natural Resources for the support of warm water fish species or support warm water fish species, such as bass and catfish.

2.3. "Cumulative" means a pollutant which increases in concentration in an organism by successive additions at different times or in different ways (bio-accumulation).

2.4. "Designated uses" are those uses specified in water quality standards for each water or segment whether or not they are being attained. (See sections 6.2 - 6.6, herein)

2.5. "Dissolved metal" is operationally defined as that portion of metal which passes through a 0.45 micron filter.

2.6. "Existing uses" are those uses actually attained in a water on or after November 28, 1975, whether or not they are included in the water quality standards.

2.7. The "Federal Act" means the Clean Water Act (also known as the Federal Water Pollution Control Act) 33 U.S.C. §1251 - 1387.

2.8. "High quality waters" are those waters whose quality is equal to or better than the minimum levels necessary to achieve the national water quality goal uses.

2.9. "Intermittent streams" are streams which have no flow during sustained periods of no precipitation and which do not support aquatic life whose life history requires residence in flowing waters for a continuous period of at least six (6) months.

2.10. "Outstanding national resource waters" are those waters whose unique character, ecological or recreational value or pristine nature constitutes a valuable national or State resource.

2.11. "Natural" or "naturally occurring" values or "natural temperature" shall mean for all of the waters of the state:

2.11.a. Those water quality values which exist unaffected by -- or unaffected as a consequence of -- any water use by any person; and

2.11.b. Those water quality values which exist unaffected by the discharge, or direct or indirect deposit of, any solid, liquid or gaseous substance from any point source or non-point source.

2.12. "Non-point source" shall mean any source other than a point source from which pollutants may reach the waters of the state.

2.13. "Persistent" shall mean a pollutant and its transformation products which under natural conditions degrade slowly in an aquatic environment.

2.14. "Point source" shall mean any discernible, confined and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural stormwater discharges and return flows from irrigated agriculture.

2.15. "Representative important species of aquatic life" shall mean those species of aquatic life whose protection and propagation will assure the sustained presence of a balanced aquatic community. Such species are representative in the sense that maintenance of water quality criteria will assure both the natural completion of the species' life cycles and the overall protection and sustained propagation of the balanced aquatic community.

2.16. “Secretary” shall mean the Secretary of the Department of Environmental Protection or such other person to whom the Secretary has delegated authority or duties pursuant to W. Va. Code §§22-1-6 or 22-1-8.

2.17. The "State Act" or "State Law" shall mean the West Virginia Water Pollution Control Act, W. Va. Code §22-11-1 et seq.

2.18. "Total recoverable" refers to the digestion procedure for certain heavy metals as referenced in 40 CFR 136, as amended June 15, 1990 and March 26, 2007, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act.

2.19. "Trout waters" are waters which sustain year-round trout populations. Excluded are those waters which receive annual stockings of trout but which do not support year-round trout populations.

2.20. "Water quality criteria" shall mean levels of parameters or stream conditions that are required to be maintained by these regulations. Criteria may be expressed as a constituent concentration, levels, or narrative statement, representing a quality of water that supports a designated use or uses.

2.21. "Water quality standards" means the combination of water uses to be protected and the water quality criteria to be maintained by these rules.

2.22. "Wetlands" are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.

2.23. "Wet weather streams" are streams that flow only in direct response to precipitation or whose channels are at all times above the water table.

§47-2-3. Conditions Not Allowable In State Waters.

3.1. Certain characteristics of sewage, industrial wastes and other wastes cause pollution and are objectionable in all waters of the state. Therefore, the Secretary does hereby proclaim that the following general conditions are not to be allowed in any of the waters of the state.

3.2. No sewage, industrial wastes or other wastes present in any of the waters of the state shall cause therein or materially contribute to any of the following conditions thereof:

3.2.a. Distinctly visible floating or settleable solids, suspended solids, scum, foam or oily slicks;

3.2.b. Deposits or sludge banks on the bottom;

3.2.c. Odors in the vicinity of the waters;

3.2.d. Taste or odor that would adversely affect the designated uses of the affected waters;

3.2.e. Materials in concentrations which are harmful, hazardous or toxic to man, animal or aquatic life;

3.2.f. Distinctly visible color;

3.2.g. Algae blooms or concentrations of bacteria which may impair or interfere with the designated uses of the affected waters;

3.2.h. Requiring an unreasonable degree of treatment for the production of potable water by modern water treatment processes as commonly employed; and

3.2.i. Any other condition, including radiological exposure, which adversely alters the integrity of the waters of the State including wetlands; no significant adverse impact to the chemical, physical, hydrologic, or biological components of aquatic ecosystems shall be allowed.

§47-2-4. Antidegradation Policy.

4.1. It is the policy of the State of West Virginia that the waters of the state shall be maintained and protected as follows:

4.1.a. Tier 1 Protection. Existing water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected. Existing uses are those uses actually attained in a water on or after November 28, 1975, whether or not they are included as designated uses within these water quality standards.

4.1.b. Tier 2 Protection. The existing high quality waters of the state must be maintained at their existing high quality unless it is determined after satisfaction of the intergovernmental coordination of the state's continuing planning process and opportunity for public comment and hearing that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. If limited degradation is allowed, it shall not result in injury or interference with existing stream water uses or in violation of state or federal water quality criteria that describe the base levels necessary to sustain the national water quality goal uses of protection and propagation of fish, shellfish and wildlife and recreating in and on the water.

In addition, the Secretary shall assure that all new and existing point sources shall achieve the highest established statutory and regulatory requirements applicable to them and shall assure the achievement of cost-effective and reasonable best management practices (BMPs) for non-point source control. If BMPs are demonstrated to be inadequate to reduce or minimize water quality impacts, the Secretary may require that more appropriate BMPs be developed and applied.

4.1.b.1. High quality waters are those waters meeting the definition at section 2.8 herein.

4.1.b.2. High quality waters may include but are not limited to the following:

4.1.b.2.A. Streams designated by the West Virginia Legislature under the West Virginia Natural Stream Preservation Act, pursuant to W. Va. Code §22-13-5; and

4.1.b.2.B. Streams listed in West Virginia High Quality Streams, Fifth Edition, prepared by the Wildlife Resources Division, Department of Natural Resources (1986).

4.1.b.2.C. Streams or stream segments which receive annual stockings of trout but which do not support year-round trout populations.

4.1.c. Tier 3 Protection. In all cases, waters which constitute an outstanding national resource shall be maintained and protected and improved where necessary. Outstanding national resource waters include, but are not limited to, all streams and rivers within the boundaries of Wilderness Areas designated by The Wilderness Act (16 U.S.C. §1131 et seq.) within the State, all Federally designated rivers under the "Wild and Scenic Rivers Act", 16 U.S.C. §1271 et seq.; all streams and other bodies of water in state parks which are high quality waters or naturally reproducing trout streams; waters in national parks and forests which are high quality waters or naturally reproducing trout streams; waters designated under the "National Parks and Recreation Act of 1978", as amended; and pursuant to

subsection 7.1 of 60CSR5, those waters whose unique character, ecological or recreational value, or pristine nature constitutes a valuable national or state resource.

Additional waters may be nominated for inclusion in that category by any interested party or by the Secretary on his or her own initiative. To designate a nominated water as an outstanding national resource water, the Secretary shall follow the public notice and hearing provisions as provided in 46 C.S.R. 6.

4.1.d. All applicable requirements of section 316(a) of the Federal Act shall apply to modifications of the temperature water quality criteria provided for in these rules.

§47-2-5. Mixing Zones.

5.1. In the permit review and planning process or upon the request of a permit applicant or permittee, the Secretary may establish on a case-by-case basis an appropriate mixing zone.

5.2. The following guidelines and conditions are applicable to all mixing zones:

5.2.a. The Secretary will assign, on a case-by-case basis, definable geometric limits for mixing zones for a discharge or a pollutant or pollutants within a discharge. Applicable limits shall include, but may not be limited to, the linear distances from the point of discharge, surface area involvement, volume of receiving water, and shall take into account other nearby mixing zones. Mixing zones shall take into account the mixing conditions in the receiving stream (i.e: whether complete or incomplete mixing conditions exist). Mixing zones will not be allowed until applicable limits are assigned by the Secretary in accordance with this section.

5.2.b. Concentrations of pollutants which exceed the acute criteria for protection of aquatic life set forth in Appendix E, Table 1 shall not exist at any point within an assigned mixing zone or in the discharge itself unless a zone of initial dilution is assigned. A zone of initial dilution may be assigned on a case-by-case basis at the discretion of the Secretary. The zone of initial dilution is the area within the mixing zone where initial dilution of the effluent with the receiving water occurs, and where the concentration of the effluent will be its greatest in the water column. Where a zone of initial dilution is assigned by the Secretary, the size of the zone shall be determined using one of the four alternatives outlined in section 4.3.3 of US EPA's Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001 PB91-127415, March 1991). Concentrations of pollutants shall not exceed the acute criteria at the edge of the assigned zone of initial dilution. Chronic criteria for the protection of aquatic life may be exceeded within the mixing zone but shall be met at the edge of the assigned mixing zone.

5.2.c. Concentrations of pollutants which exceed the criteria for the protection of human health set forth in Appendix E, Table 1 shall not be allowed at any point unless a mixing zone has been assigned by the Secretary after consultation with the Commissioner of the West Virginia Bureau for Public Health. Human health criteria may be exceeded within an assigned mixing zone, but shall be met at the edge of the assigned mixing zone. 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. In assessing the potential human health risks of establishing a mixing zone upstream from a drinking water intake, the Secretary shall consider the cumulative effects of multiple discharges and mixing zones on the drinking water intake. No mixing zone for human health criteria shall be established on a stream which has a seven (7) day, ten (10) year return frequency of 5 cfs or less.

5.2.d. Mixing zones, including zones of initial dilution, shall not interfere with fish spawning or nursery areas or fish migration routes; shall not overlap public water supply intakes or bathing areas;

cause lethality to or preclude the free passage of fish or other aquatic life; nor harm any threatened or endangered species, as listed in the Federal Endangered Species Act, 15 U.S.C. §1531 et seq.

5.2.e. The 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.

5.2.f. In lakes and other surface impoundments, the volume of a mixing zone shall not affect in excess of ten (10) percent of the volume of that portion of the receiving waters available for mixing.

5.2.g. A mixing zone shall be limited to an area or volume which will not adversely alter the existing or designated uses of the receiving water, nor be so large as to adversely affect the integrity of the water.

5.2.h. Mixing zones shall not:

5.2.h.1. Be used for, or considered as, a substitute for technology-based requirements of the Act and other applicable state and federal laws.

5.2.h.2. Extend downstream at any time a distance more than five times the width of the receiving watercourse at the point of discharge.

5.2.h.3. Cause or contribute to any of the conditions prohibited in section 3, herein.

5.2.h.4. Be granted where instream waste concentration of a discharge is greater than 80%.

5.2.h.5. Overlap one another.

5.2.h.6. Overlap any 1/2 mile zone described in section 7.2.a.2 herein.

5.2.i. In the case of thermal discharges, a successful demonstration conducted under section 316(a) of the Act shall constitute compliance with all provisions of this section.

5.2.j. The Secretary may waive the requirements of subsections 5.2.e and 5.2.h.2 above if a discharger provides an acceptable demonstration of:

5.2.j.1. Information defining the actual boundaries of the mixing zone in question; and

5.2.j.2. Information and data proving no violation of subsections 5.2.d and 5.2.g above by the mixing zone in question.

5.2.k. Upon implementation of a mixing zone in a permit, the permittee shall provide documentation that demonstrates to the satisfaction of the Secretary that the mixing zone is in compliance with the provisions outlined in subsections 5.2.b, 5.2.c, 5.2.e, and 5.2.h.2, herein.

5.2.l. In order to facilitate a determination or assessment of a mixing zone pursuant to this section, the Secretary may require a permit applicant or permittee to submit such information as deemed necessary.

§47-2-6. Water Use Categories.

6.1. These rules establish general Water Use Categories and Water Quality Standards for the waters of the State. Unless otherwise designated by these rules, at a minimum 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 Federal Act goals. Incidental utilization for whatever purpose may or may not constitute a justification for assignment of a water use category to a particular stream segment.

6.1.a. Waste assimilation and transport are not recognized as designated uses. The classification of the waters must take into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation.

Subcategories of a use may be adopted and appropriate criteria set to reflect varying needs of such subcategories of uses, for example to differentiate between trout water and other waters.

6.1.b. At a minimum, uses are deemed attainable if they can be achieved by the imposition of effluent limits required under section 301(b) and section 306 of the Federal Act and use of cost-effective and reasonable best management practices for non-point source control. Seasonal uses may be adopted as an alternative to reclassifying a water or segment thereof to uses requiring less stringent water quality criteria. If seasonal uses are adopted, water quality criteria will be adjusted to reflect the seasonal uses; however, such criteria shall not preclude the attainment and maintenance of a more protective use in another season. A designated use which is not an existing use may be removed, or subcategories of a use may be established if it can be demonstrated that attaining the designated use is not feasible because:

6.1.b.1. Application of effluent limitations for existing sources more stringent than those required pursuant to section 301 (b) and section 306 of the Federal Act in order to attain the existing designated use would result in substantial and widespread adverse economic and social impact; or

6.1.b.2. Naturally-occurring pollutant concentrations prevent the attainment of the use; or

6.1.b.3. Natural, ephemeral, intermittent or low flow conditions of water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges to enable uses to be met; or

6.1.b.4. Human-caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or

6.1.b.5. Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water to its original condition or to operate such modification in a way that would result in the attainment of the use; or

6.1.b.6. Physical conditions related to the natural features of the water, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses.

6.1.c. The State shall take into consideration the quality of downstream waters and shall assure that its water quality standards provide for the attainment of the water quality standards of downstream waters.

6.1.d. In establishing a less restrictive use or uses, or subcategory of use or uses, and the water quality criteria based upon such uses, the Secretary shall follow the requirements for revision of water quality standards as required by W. Va. Code §22-11-7b and section 303 of the Federal Act and the regulations thereunder. Any revision of water quality standards shall be made with the concurrence of

EPA. The Secretary's administrative procedural regulations for applying for less restrictive uses or criteria shall be followed.

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 water 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 public or private water supply used for human consumption.

6.3. Category B -- Propagation and maintenance of fish and other aquatic life. --

This category includes:

6.3.a. Category B1 -- Warm water fishery streams. -- Streams or stream segments which contain populations composed of all warm water aquatic life.

6.3.b. Category B2 -- Trout Waters. -- As defined in section 2.19, herein (See Appendix A for a representative list.)

6.3.c. Category B4 -- Wetlands. -- As defined in section 2.22, herein; certain numeric stream criteria may not be appropriate for application to wetlands (see Appendix E, Table 1).

6.4. Category C -- Water contact recreation. -- This category includes swimming, fishing, water skiing and certain types of pleasure boating such as sailing in very small craft and outboard motor boats. (See Appendix D for a representative list of category C waters.)

6.5. Category D. -- Agriculture and wildlife uses.

6.5.a. Category D1 -- Irrigation. -- This category includes all stream segments used for irrigation.

6.5.b. Category D2 -- Livestock watering. -- This category includes all stream segments used for livestock watering.

6.5.c. Category D3 -- Wildlife. -- This category includes all stream segments and wetlands used by wildlife.

6.6. Category E -- Water supply industrial, water transport, cooling and power. -- This category includes cooling water, industrial water supply, power production, commercial and pleasure vessel activity, except those small craft included in Category C.

6.6.a. Category E1 -- Water Transport. -- This category includes all stream segments modified for water transport and having permanently maintained navigation aides.

6.6.b. Category E2 -- Cooling Water. -- This category includes all stream segments having one (1) or more users for industrial cooling.

6.6.c. Category E3 -- Power production. -- This category includes all stream segments extending from a point 500 feet upstream from the intake to a point one half (1/2) mile below the wastewater discharge point. (See Appendix C for representative list.)

6.6.d. Category E4 -- Industrial. -- This category is used to describe all stream segments with one (1) or more industrial users. It does not include water for cooling.

§47-2-7. West Virginia Waters.

7.1. Major River Basins and their Alphanumeric System. All streams and their tributaries in West Virginia shall be individually identified using an alphanumeric system as identified in the "Key to West Virginia Stream Systems and Major Tributaries" (1956) as published by the Conservation Commission of West Virginia and revised by the West Virginia Department of Natural Resources, Division of Wildlife (1985).

7.1.a. J - James River Basin. All tributaries to the West Virginia - Virginia State line.

7.1.b. P - Potomac River Basin. All tributaries of the main stem of the Potomac River to the West Virginia - Maryland - Virginia State line to the confluence of the North Branch and the South Branch of the Potomac River and all tributaries arising in West Virginia excluding the major tributaries hereinafter designated:

7.1.b.1. S - Shenandoah River and all its tributaries arising in West Virginia to the West Virginia - Virginia State line.

7.1.b.2. PC - Cacapon River and all its tributaries.

7.1.b.3. PSB - South Branch and all its tributaries.

7.1.b.4. PNB - North Branch and all tributaries to the North Branch arising in West Virginia.

7.1.c. M - Monongahela River Basin. The Monongahela River Basin main stem and all its tributaries excluding the following major tributaries which are designated as follows:

7.1.c.1. MC - Cheat River and all its tributaries except those listed below:

7.1.c.1.A. MCB - Blackwater River and all its tributaries.

7.1.c.2. MW - West Fork River and all its tributaries.

7.1.c.3. MT - Tygart River and all its tributaries except those listed below:

7.1.c.3.A. MTB - Buckhannon River and all its tributaries.

7.1.c.3.B. MTM - Middle Fork River and all its tributaries.

7.1.c.4. MY - Youghigheny River and all its tributaries to the West Virginia - Maryland State line.

7.1.d. O Zone 1 - Ohio River - Main Stem. The main stem of the Ohio River from the Ohio - Pennsylvania - West Virginia state line to the Ohio - Kentucky - West Virginia State line.

7.1.e. O Zone 2 - Ohio River - Tributaries. All tributaries of the Ohio River excluding the following major tributaries:

7.1.e.1. LK - Little Kanawha River. The Little Kanawha River and all its tributaries excluding the following major tributary which is designated as follows:

7.1.e.1.A. LKH - Hughes River and all its tributaries.

7.1.e.2. K - Kanawha River Zone 1. The main stem of the Kanawha River from mile point 0, at its confluence with the Ohio River, to mile point 72 near Diamond, West Virginia.

7.1.e.3. K - Kanawha River Zone 2. The main stem of the Kanawha River from mile point 72 near Diamond, West Virginia and all its tributaries from mile point 0 to the headwaters excluding the following major tributaries which are designated as follows:

7.1.e.3.A. KP - Pocatalico River and all its tributaries.

7.1.e.3.B. KC - Coal River and all its tributaries.

7.1.e.3.C. KE - Elk River and all its tributaries.

7.1.e.3.D. KG - Gauley River. The Gauley River and all its tributaries excluding the following major tributaries which are designated as follows:

7.1.e.3.D.1. KG-19 - Meadow River and all its tributaries.

7.1.e.3.D.2. KG-34 - Cherry River and all its tributaries.

7.1.e.3.D.3. KGC - Cranberry River and all its tributaries.

7.1.e.3.D.4. KGW - Williams River and all its tributaries.

7.1.e.3.E. KN - New River. The New River from its confluence with the Gauley River to the Virginia - West Virginia State line and all tributaries excluding the following major tributaries which are designated as follows:

7.1.e.3.E.1. KNG - Greenbrier River and all its tributaries.

7.1.e.3.E.2. KNB - Bluestone River and all its tributaries.

7.1.e.3.E.3. KN-60 - East River and all its tributaries.

7.1.e.3.E.4. K(L)-81-(1) - Bluestone Lake.

7.1.e.4. OG - Guyandotte River. The Guyandotte River and all its tributaries excluding the following major tributary which is designated as follows:

7.1.e.4.1. OGM - Mud River and all its tributaries.

7.1.e.5. BS - Big Sandy River. The Big Sandy River to the Kentucky - Virginia - West Virginia State lines and all its tributaries arising in West Virginia excluding the following major tributary which is designated as follows:

7.1.e.5.1 BST - Tug Fork and all its tributaries.

7.2. Applicability of Water Quality Standards. The following shall apply at all times unless a specific exception is granted in this section:

7.2.a. Water Use Categories as described in section 6, herein.

7.2.a.1. Based on meeting those Section 6 definitions, tributaries or stream segments may be classified for one or more Water Use Categories. When more than one use exists, they shall be protected by criteria for the use category requiring the most stringent protection.

7.2.a.2. Each segment extending upstream from the intake of a water supply public (Water Use Category A), for a distance of one half (1/2) mile or to the headwater, must be protected by prohibiting the discharge of any pollutants in excess of the concentrations designated for this Water Use Category in section 8, herein. In addition, within that one half (1/2) mile zone, the Secretary may establish for any discharge, effluent limitations for the protection of human health that require additional removal of pollutants than would otherwise be provided by this rule. (If a watershed is not significantly larger than this zone above the intake, the water supply section may include the entire upstream watershed to its headwaters.) The one-half (1/2) mile zone described in this section shall not apply to the Ohio River main channel (between Brown's Island and the left descending bank) between river mile points 61.0 and 63.5 and mile points 70 and 71. All mixing zone regulations found in section 5 of this rule will apply except 47 CSR 2 §5.2.h.6. Whether a mixing zone is appropriate, and the proper size of such zone, would need to be considered on a site-specific basis in accordance with the EPA approved West Virginia mixing zone regulations in 47 CSR 2 §5.

7.2.b. In the absence of any special application or contrary provision, water quality standards shall apply at all times when flows are equal to or greater than the minimum mean seven (7) consecutive day drought flow with a ten (10) year return frequency (7Q10). NOTE: With the exception of section 7.2.c.5 listed herein exceptions do not apply to trout waters nor to the requirements of section 3, herein.

7.2.c. Exceptions: Numeric water quality standards shall not apply: (See section 7.2.d, herein, for site-specific revisions)

7.2.c.1. When the flow is less than 7Q10;

7.2.c.2. In wet weather streams (or intermittent streams, when they are dry or have no measurable flow): Provided, that the existing and designated uses of downstream waters are not adversely affected;

7.2.c.3. In any assigned zone of initial dilution of any mixing zone where a zone of initial dilution is required by section 5.2.b herein, or in any assigned mixing zone for human health criteria or aquatic life criteria for which a zone of initial dilution is not assigned; In zones of initial dilution and certain mixing zones: Provided, That all requirements described in section 5 herein shall apply to all zones of initial dilution and all mixing zones;

7.2.c.4. Where, on the basis of natural conditions, the Secretary has established a site-specific aquatic life water quality criterion that modifies a water quality criterion set out in Appendix E, Table 1 of this rule. Where a natural condition of a water is demonstrated to be of lower quality than a water quality criterion for the use classes and subclasses in section 6 of this rule, the Secretary, in his or her discretion, may establish a site-specific water quality criterion for aquatic life. This alternate criterion may only serve as the chronic criterion established for that parameter. This alternate criterion must be met at end of pipe. Where the Secretary decides to establish a site-specific water quality criterion for aquatic life, the natural condition constitutes the applicable water quality criterion. A site-specific criterion for natural conditions may only be established through the legislative rulemaking process in accordance with W. Va. Code §29A-3-1 et seq. and must satisfy the public participation requirements set forth at 40 C.F.R. 131.20 and 40 C.F.R. Part 25. Site-specific criteria for natural conditions may be established only for aquatic life criteria. A public notice, hearing and comment period is required before site-specific criteria for natural conditions are established.

Upon application or on its own initiative, the Secretary will determine whether a natural condition of a water should be approved as a site-specific water quality criterion. Before he or she approves a site-specific water quality criterion for a natural condition, the Secretary must find that the natural condition will fully protect existing and designated uses and ensure the protection of aquatic life. If a natural condition of a water varies with time, the natural condition will be determined to be the actual natural condition of the water measured prior to or concurrent with discharge or operation. The Secretary will, in his or her discretion, determine a natural condition for one or more seasonal or shorter periods to reflect variable ambient conditions; and require additional or continuing monitoring of natural conditions.

An application for a site-specific criterion to be established on the basis of natural conditions shall be filed with the Secretary and shall include the following information:

7.2.c.4.A. A U.S.G.S. 7.5 minute map showing the stream segment affected and showing all existing discharge points and proposed discharge point;

7.2.c.4.B. The alphanumeric code of the affected stream, if known;

7.2.c.4.C. Water quality data for the stream or stream segment. Where adequate data are unavailable, additional studies may be required by the Secretary;

7.2.c.4.D. General land uses (e.g. mining, agricultural, recreation, residential, commercial, industrial, etc.) as well as specific land uses adjacent to the waters for the affected segment or stream;

7.2.c.4.E. The existing and designated uses of the receiving waters into which the segment in question discharges and the location where those downstream uses begin to occur;

7.2.c.4.F. General physical characteristics of the stream segment, including, but not limited to width, depth, bottom composition and slope;

7.2.c.4.G. Conclusive information and data of the source of the natural condition that causes the stream to exceed the water quality standard for the criterion at issue.

7.2.c.4.H. The average flow rate in the segment and the amount of flow at a designated control point and a statement regarding whether the flow of the stream is ephemeral, intermittent or perennial;

7.2.c.4.I. An assessment of aquatic life in the stream or stream segment in question and in the adjacent upstream and downstream segments; and

7.2.c.4.J. Any additional information or data that the Secretary deems necessary to make a decision on the application.

7.2.c.5. For the upper Blackwater River from the mouth of Yellow Creek to a point 5.1 miles upstream, when flow is less than 7Q10. Naturally occurring values for Dissolved Oxygen as established by data collected by the dischargers within this reach and reviewed by the Secretary shall be the applicable criteria.

7.2.d. Site-specific applicability of water use categories and water quality criteria - State-wide water quality standards shall apply except where site-specific numeric criteria, variances or use removals have been approved following application and hearing, as provided in 46 C.S.R. 6. (See section 8.4 and section 8.5, herein) The following are approved site-specific criteria, variances and use reclassifications:

7.2.d.1. James River - (Reserved)

7.2.d.2. Potomac River

7.2.d.2.1. A site-specific numeric criterion for aluminum, not to exceed 500 ug/l, shall apply to the section of Opequon Creek from Turkey Run to the Potomac River.

7.2.d.3. Shenandoah River - (Reserved)

7.2.d.4. Cacapon River - (Reserved)

7.2.d.5. South Branch - (Reserved)

7.2.d.6. North Branch - (Reserved)

7.2.d.7. Monongahela River

7.2.d.7.1. Flow in the main stem of the Monongahela River, as regulated by the Tygart and Stonewall Jackson Reservoirs, operated by the U. S. Army Corps of Engineers, is based on a minimum flow of 425 cfs at Lock and Dam No. 8, river mile point 90.8. This exception does not apply to tributaries of the Monongahela River.

7.2.d.8. Cheat River

7.2.d.8.1. In the unnamed tributary of Daugherty Run, approximately one mile upstream of Daugherty Run's confluence with the Cheat River, a site-specific numeric criterion for iron of 3.5 mg/l shall apply and the following frequency and duration requirements shall apply to the chronic numeric criterion for selenium (5ug/l): the four-day average concentration shall not be exceeded more than three times every three years (36 months), on average. Further, the following site-specific numeric criteria shall apply to Fly Ash Run of Daugherty Run: acute numeric criterion for aluminum: 888.5 ug/l and manganese: 5 mg/l. For both the unnamed tributary of Daugherty Run, approximately one mile upstream of Daugherty Run's confluence with the Cheat River, and Fly Ash Run, Water Use Category A shall not apply.

7.2.d.9. Blackwater River - (Reserved)

7.2.d.10. West Fork River - (Reserved)

7.2.d.11. Tygart River - (Reserved)

7.2.d.12. Buckhannon River - (Reserved)

7.2.d.13. Middle Fork River - (Reserved)

7.2.d.14. Youghiogheny River - (Reserved)

7.2.d.15. Ohio River Main Stem - (Reserved)

7.2.d.16. Ohio River Tributaries.

7.2.d.16.1. Site-specific numeric criteria shall apply to the stretch of Conners Run (0-77-A), a tributary of Fish Creek, from its mouth to the discharge from Conner Run impoundment, which shall not have the Water Use Category A and may contain selenium not to exceed 62 ug/1; and iron not to exceed 3.5 mg/1 as a monthly average and 7 mg/1 as a daily maximum.

7.2.d.17. Little Kanawha River - (Reserved)

7.2.d.18. Hughes River - (Reserved)

7.2.d.19. Kanawha River Zone 1 - Main Stem

7.2.d.19.1. For the Kanawha River main stem, Zone 1~~, Water Use Category A shall not apply; and T~~ the minimum flow shall be 1,960 cfs at the Charleston gauge.

7.2.d.19.2. ~~The minimum flow shall be 1,960 cfs at the Charleston gauge.~~ Pursuant to 46 CSR 6, a Copper Water Effect Ratio (WER) of 5.62 shall be applied to The Sanitary Board of the City of Charleston, West Virginia wastewater treatment plant discharge of total recoverable cooper to Kanawha River, Zone 1.

7.2.d.20. Kanawha River Zone 2 and Tributaries.

7.2.d.20.1. For the main stem of the Kanawha River only, the minimum flow shall be 1,896 cfs at mile point 72.

7.2.d.20.2. The stretch between the mouth of Little Scary Creek (K-31) and the Little Scary impoundment shall not have Water Use Category A. The following site-specific numeric criteria shall apply to that section: selenium not to exceed 62 ug/1 and copper not to exceed 105 ug/1 as a daily maximum nor 49 ug/1 as a 4-day average.

7.2.d.21. Pocatalico River - (Reserved)

7.2.d.22. Coal River - (Reserved)

7.2.d.23. Elk River - (Reserved)

7.2.d.24. Gauley River - (Reserved)

7.2.d.25. Meadow River - (Reserved)

7.2.d.26. Cherry River - (Reserved)

7.2.d.27. Cranberry River - (Reserved)

7.2.d.28. Williams River - (Reserved)

7.2.d.29. New River

7.2.d.29.1. In Marr Branch, a tributary of the New River, a site-specific dissolved zinc criteria defined by the equation CMC=CCC=e0.8541*ln(hardness)+1.151 x CF shall apply for both chronic and acute exposures

7.2.d.30. Greenbrier River - (Reserved)

7.2.d.31. Bluestone River - (Reserved)

7.2.d.32. Bluestone Lake - (Reserved)

7.2.d.33. East River - (Reserved)

7.2.d.34. Guyandotte River

7.2.d.34.1. Pats Branch from its confluence with the Guyandotte River to a point 1000 feet upstream shall not have Water Use Category A and Category D1 designation.

7.2.d.35. Mud River - (Reserved)

7.2.d.36. Big Sandy River - (Reserved)

7.2.d.37. Tug Fork River - (Reserved)

§47-2-8. Specific Water Quality Criteria.

8.1. Charts of specific water quality criteria are included in Appendix E, Table 1.

8.1.a. Specific state (i.e. total, total recoverable, dissolved, valence, etc.) of any parameter to be analyzed shall follow 40 CFR 136, Guidelines Establishing Test Procedures for Analysis of Pollutants Under the Clean Water Act, as amended, June 15, 1990 and March 26, 2007. (See also 47 C.S.R. 10, section 7.3 - National Pollutant Discharge Elimination System (NPDES) Program.)

8.1.b. Compliance with aquatic life water quality criteria expressed as dissolved metal shall be determined based on dissolved metals concentrations.

8.1.b.1. The aquatic life criteria for all metals listed in Appendix E, Table 2 shall be converted to a dissolved concentration by multiplying each numerical value or criterion equation from Appendix E, Table 1 by the appropriate conversion factor (CF) from Appendix E, Table 2.

8.1.b.2. Permit limits based on dissolved metal water quality criteria shall be prepared in accordance with the U.S. EPA document "The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From A Dissolved Criterion, EPA 823-B-96-007 June 1996.

8.1.b.3. NPDES permit applicants may petition the Secretary to develop a site-specific translator consistent with the provisions in this section. The Secretary may, on a case-by-case basis

require an applicant applying for a translator to conduct appropriate sediment monitoring through SEM/AVS ratio, bioassay or other approved methods to evaluate effluent limits that prevent toxicity to aquatic life.

8.1.c. An "X" or numerical value in the use columns of Appendix E, Table 1 shall represent the applicable criteria.

8.1.d. Charts of water quality criteria in Appendix E, Table 1 shall be applied in accordance with major stream and use applications, sections 6 and 7, herein.

8.2. Criteria for Toxicants

8.2.a. Toxicants which are carcinogenic have human health criteria (Water Use Categories A and C) based upon an estimated risk level of one additional cancer case per one million persons (10^{-6}) and are indicated in Appendix E, Table 1 with an endnote (^{b}).

8.2.b. For waters other than the Ohio River between river mile points 68.0 and 70.0, a final determination on the critical design flow for carcinogens is not made in this rule, in order to permit further review and study of that issue. Following the conclusion of such review and study, the Legislature may again take up the authorization of this rule for purposes of addressing the critical design flow for carcinogens: Provided, That until such time as the review and study of the issue is concluded or until such time as the Legislature may again take up the authorization of this rule, the regulatory requirements for determining effluent limits for carcinogens shall remain as they were on the date this rule was proposed.

8.2.b.1. For the Ohio River between river mile points 68.0 and 70.0 the critical design flow for determining effluent limits for carcinogens shall be harmonic mean flow.

8.3. Criteria for Nutrients

8.3.a. Lakes

8.3.a.1. This subsection establishes nutrient criteria designed to protect Water Use Categories B and C. The following cool water nutrient criteria shall apply to cool water lakes. (See Appendix F for a representative list.) The following warm water nutrient criteria shall apply to all other lakes with a summer residence time greater than 14 days.

8.3.a.2. Total phosphorus shall not exceed 40 µg/l for warm water lakes and 30 µg/l for cool water lakes based on an average of four or more samples collected during the period May 1 to October 31. Chlorophyll-a shall not exceed 20 µg/l for warm water lakes and 10 µg/l for cool water lakes based on an average of four or more samples collected during the period May 1–October 31. In lieu of total phosphorus and/or chlorophyll-a sampling, impairment may be evidenced at any time by noncompliance with section 3.2, as determined by the Secretary.

8.4. Variances from Specific Water Quality Criteria. A variance from numeric criteria may be granted to a discharger if it can be demonstrated that the conditions outlined in paragraphs 6.1.b.1 through 6.1.b.6, herein, limit the attainment of one or more specific water quality criteria. Variances shall apply only to the discharger to whom they are granted and shall be reviewed by the Secretary at least every three years. In granting a variance, the requirements for revision of water quality standards in 46 CSR 6 shall be followed.

8.5. Site-specific numeric criteria. The Secretary may establish numeric criteria different from those set forth in Appendix E, Table 1 for a stream or stream segment upon a demonstration that existing

numeric criteria are either over-protective or under-protective of the aquatic life residing in the stream or stream segment. A site-specific numeric criterion will be established only where the numeric criterion will be fully protective of the aquatic life and the existing and designated uses in the stream or stream segment. The site-specific numeric criterion may be established by conducting a Water Effect Ratio study pursuant to the procedures outlined in US EPA's "Interim Guidance on the Determination and Use of Water-Effect Ratios for Metals" (February 1994); other methods may be used with prior approval by the Secretary. In adopting site-specific numeric criteria, the requirements for revision of water quality standards set forth in 46 CSR 6 shall be followed.

§47-2-9. Establishment Of Safe Concentration Values.

When a specific water quality standard has not been established by these rules and there is a discharge or proposed discharge into waters of the State, the use of which has been designated a Category B1, B2, B3 or B4, such discharge may be regulated by the Secretary where necessary to protect State waters through establishment of a safe concentration value as follows:

9.1. Establishment of a safe concentration value shall be based upon data obtained from relevant aquatic field studies, standard bioassay test data which exists in substantial available scientific literature, or data obtained from specific tests utilizing one (1) or more representative important species of aquatic life designated on a case-by-case basis by the Secretary and conducted in a water environment which is equal to or closely approximates that of the natural quality of the receiving waters.

9.2. In those cases where it has been determined that there is insufficient available data to establish a safe concentration value for a pollutant, the safe concentration value shall be determined by applying the appropriate application factor as set forth below to the 96-hour LC 50 value. Except where the Secretary determines, based upon substantial available scientific data that an alternate application factor exists for a pollutant, the following appropriate application factors shall be used in the determination of safe concentration values:

9.2.a. Concentrations of pollutants or combinations of pollutants that are not persistent and not cumulative shall not exceed 0.10 (1/10) of the 96-hour LC 50.

9.2.b. Concentrations of pollutants or combinations of pollutants that are persistent or cumulative shall not exceed 0.01 (1/100) of the 96-hour LC 50.

9.3. Persons seeking issuance of a permit pursuant to these rules authorizing the discharge of a pollutant for which a safe concentration value is to be established using special bioassay tests pursuant to subsection 9.1 of this section shall perform such testing as approved by the Secretary and shall submit all of the following in writing to the Secretary:

9.3.a. A plan proposing the bioassay testing to be performed.

9.3.b. Such periodic progress reports of the testing as may be required by the Secretary.

9.3.c. A report of the completed results of such testing including, but not limited to, all data obtained during the course of testing, and all calculations made in the recording, collection, interpretation and evaluation of such data.

9.4. Bioassay testing shall be conducted in accordance with methodologies outlined in the following documents: U.S. EPA Office of Research and Development Series Publication, Methods for Measuring the Acute Toxicity (EPA/600/4-90/027F, August 1993, 4th Edition) or Short Term Methods for Estimating Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (EPA/600/4-

89/001), March 1989; Standard Methods for the Examination of Water and Wastewater (18th Edition); or ASTM Practice E 729-88 for Conducting Acute Toxicity Tests with Fishes, Macroinvertebrates and Amphibians as published in Volume 11.04 of the 1988 Annual Book of ASTM Standards. Test waters shall be reconstituted according to recommendations and methodologies specified in the previously cited references or methodologies approved in writing by the Secretary.

APPENDIX A
CATEGORY B-2 - TROUT WATERS

This list contains known trout waters and is not intended to exclude any waters which meet the definition in Section 2.19.

River Basin	County	Stream
James River		
J	Monroe	South Fork Potts Creek
Potomac River		
P	Jefferson	Town Run
P	"	Rocky Marsh Run
P	Berkeley	Opequon Creek
P	"	Tuscarora Creek (Above Martinsburg)
P	"	Middle Creek (Above Route 30 Bridge)
P	"	Mill Creek
P	"	Hartland Run
P	"	Mill Run
P	"	Tillance Creek
P	Morgan	Meadow Branch
PS	Jefferson	Flowing Springs Run (Above Halltown)
PS	"	Cattail Run
PS	"	Evitt's Run
PS	"	Big Bullskin Run
PS	"	Long Marsh Run
PC	Hampshire	Cold Stream
PC	"	Edwards Run and Impoundment
PC	"	Dillons Run
PC	Hardy	Lost River
PC	"	Camp Branch
PC	"	Lower Cove Run
PC	"	Moores Run
PC	"	North River (Above Rio)
PC	"	Waites Run

PC	"	Trout Run
PC	"	Trout Pond (Impoundment)
PC	"	Warden Lake (Impoundment)
PC	"	Rock Cliff Lake (Impoundment)
PSB	Hampshire	Mill Creek
PSB	"	Mill Run
PSB	Hardy	Dumpling Creek
PSB	Grant-Pendleton	North Fork South Branch
PSB	Grant	North Fork Lunice Creek
PSB	"	South Fork Lunice Creek
PSB	"	South Mill Creek (Above Hiser)
PSB	"	Spring Run
PSB	Pendleton	Hawes Run (Impoundment)
PSB	"	Little Fork
PSB	"	South Branch (Above North Fork)
River Basin	County	Stream
Potomac River		
PSB	Pendleton	Senena Creek
PSB	"	Laurel Fork
PSB	"	Big Run
PNB	Mineral	North Fork Patterson Creek
PNB	"	Fort Ashby (Impoundment)
PNB	"	New Creek
PNB	"	New Creek Dam 14 (Impoundment)
PNB	"	Mill Creek (Above Markwood)
Monongahela River		
M	Monongalia-Marion	Whiteday Creek (Above Smithtown)
MC	Monongalia	Morgan Run
MC	"	Coopers Rock (Impoundment)
MC	"	Blaney Hollow
MC	Preston	Laurel Run
MC	"	Elsey Run
MC	"	Saltlick Creek
MC	"	Buffalo Creek

MC	"	Wolf Creek
MC	Tucker	Clover Run
MC	"	Elklick Run
MC	"	Horseshoe Run
MC	"	Maxwell Run
MC	"	Red Creek
MC	"	Slip Hill Mill Branch
MC	"	Thomas Park (Impoundment)
MC	"	Blackwater River (Above Davis)
MC	"	Blackwater River (Below Davis)
MC	Randolph	Camp Five Run
MC	"	Dry Fork (Above Otter Creek)
MC	"	Glady Fork
MC	"	Laurel Fork
MC	"	Gandy Creek (Above Whitmer)
MC	"	East Fork Glady Fork (Above C & P Compressor Station)
MC	Randolph	Shavers Fork (Above Little Black Fork)
MC	"	Three Spring Run
MC	"	Spruce Knob Lake (Impoundment)
MW	Harrison	Dog Run (Pond)
MW	Lewis	Stonecoal
MT	Barbour	Brushy Fork (Above Valley Furnace)
MT	"	Teter Creek Lake (Impoundment)
MT	"	Mill Run
MT	Taylor-Barbour	Tygart Lake Tailwaters (Above Route 119 Bridge)
MT	Preston	Roaring Creek (Above Little Lick Branch)
MT	Randolph	Tygart River (Above Huttonsville)
MT	"	Elkwater Fork
River Basin	County	Stream
Monongahela River		
MT	Randolph	Big Run
MTB	Upshur-Randolph-Lewis	Right Fork Buckhannon River
MTB	Upshur	Buckhannon River (Above Beans Mill)

MTB	Upshur	French Creek
MTB	Upshur-Randolph	Left Fork Right Fork
MTN	Upshur	Right Fork Middle Fork River
MTM	Randolph	Middle Fork River (Above Cassity)
MY	Preston	Rhine Creek
Little Kanawha River		
LK	Upshur	Left Fork-Right Fork Little Kanawha River
LK	Upshur-Lewis	Little Kanawha River (Above Wildcat)
Kanawha River		
KE	Braxton	Sutton Reservoir
KE	"	Sutton Lake Tailwaters (Above Route 38/5 Bridge)
KE	Webster	Back Fork
KE	"	Desert Fork
KE	"	Fall Run
KE	"	Laurel Fork
KE	"	Left Fork Holly River
KE	"	Sugar Creek
KE	"	Elk River (Above Webster Springs)
KC	Raleigh	Stephens Lake (Impoundment)
KC	"	Marsh Fork (Above Sundial)
KG	Nicholas	Summersville Reservoir (Impoundment)
KG	"	Summersville Tailwaters (Above Collison Creek)
KG	Nicholas	Deer Creek
KG	Randolph-Webster	Gauley River (Above Moust Coal Tipple)
KG	Fayette	Glade Creek
KG	Nicholas	Hominy Creek
KG	"	Anglins Creek
KG	Greenbrier	Big Clear Creek
KG	"	Little Clear Creek and Laurel Run

KG	"	Meadow Creek
KG	Fayette	Wolf Creek
KG	Nicholas	Cherry River
KG	Greenbrier-Nicholas	Laurel Creek
KG	" "	North Fork Cherry River
KG	Greenbrier	Summit Lake (Impoundment)
KG	Greenbrier-Nicholas	South Fork Cherry River

River Basin	County	Stream
Kanawha River		
KGC	Pocahontas-Webster-Nicholas	Cranberry River
KGC	Pocahontas	South Fork Cranberry River
KGW	Pocahontas	Tea Creek
KGW	Pocahontas-Webster	Williams River (Above Dyer)
KN	Raleigh	Glade Creek
KN	Summers	Meadow Creek
KN	Fayette	Mill Creek
KN	"	Laurel Creek (Above Cotton Hill)
KN	Raleigh	Pinch Creek
KN	Monroe	Rich Creek
KN	"	Turkey Creek
KN	Fayette	Dunloup Creek (Downstream from Harvey Sewage Treatment Plant)
KN	Mercer	East River (Above Kelleysville)
KN	"	Pigeon Creek
KN	Monroe	Laurel Creek
KNG	Monroe	Kitchen Creek (Above Gap Mills)
KNG	Greenbrier	Culverson Creek
KNG	"	Milligan Creek
KNG	Greenbrier-Monroe	Second Creek (Rt. 219 Bridge to Nickell's Mill)
KNG	Greenbrier	North Fork Anthony Creek
KNG	"	Spring Creek
KNG	"	Anthony Creek (Above Big Draft)
KNG	Pocahontas	Watoga Lake

KNG	"	Beaver Creek
KNG	"	Knapp's Creek
KNG	"	Hills Creek
KNG	"	North Fork Deer Creek (Above Route 28/5)
KNG	"	Deer Creek
KNG	"	Sitlington Creek
KNG	"	Stoney Creek
KNG	"	Swago Creek
KNG	"	Buffalo Fork (Impoundment)
KNG	"	Seneca (Impoundment)
KNG	"	Greenbrier River (Above Hosterman)
KNG	"	West Fork-Greenbrier River (Above the impoundment at the tannery)
KNG	"	Little River-East Fork
KNG	"	Little River-West Fork
KNG	"	Five Mile Run
KNG	"	Mullenax Run
KNG	"	Abes Run
KNB	Mercer	Marsh Fork
KNB	"	Camp Creek
OG	Wyoming	Pinnacle creek
BST	McDowell	Dry Fork (Above Canebrake)

APPENDIX B

This list contains known waters used as public water supplies and is not intended to exclude any waters as described in Section 6.2, herein.

River Basin	County	Operating Company	Source
Shenandoah River			
S	Jefferson	Charlestown Water	Shenandoah River
Potomac River			
P	Jefferson	3-M Company	Turkey Run
P	"	Shepherdstown Water	Potomac River
P	"	Harpers Ferry Water	Elk Run
P	Berkeley	DuPont Potomac River Works	Potomac River
P	"	Berkeley County PSD	Le Feure Spring
P		Opequon PSD	Quarry Spring
P	"	Hedgesville PSD	Speck Spring
P	Morgan	Paw Paw Water	Potomac River
PSB	Hampshire	Romney Water	South Branch Potomac River
PSB	"	Peterkin Conference Center	Mill Run
PSB	Hardy	Moorefield Municipal Water	South Fork River
PSB	Pendleton	U.S. Naval Radio Sta.	South Fork River
PSB	"	Circleville Water Inc.	North Fork of South Branch, Potomac River
PSB	Grant	Mountain Top PSD	Mill Creek, Impoundment
PSB	"	Petersburg Municipal Water	South Branch, Potomac River
PNB	Grant	Island Creek Coal	Impoundment
PNB	Mineral	Piedmont Municipal Water	Savage River, Maryland
PNB	"	Keyser Water	New Creek
PNB	"	Fort Ashby PSD	Lake

Monongahela River			
M	Monongalia	Morgantown Water Comm.	Colburn Creek & Monongahela River
M	"	Morgantown Ordinance Works	Monongahela River
M	Preston	Preston County PSD	Deckers Creek
M	Monongalia	Blacksville # 1 Mine	Impoundment
M	"	Loveridge Mine	Impoundment
M	"	Consolidation Coal Co.	Impoundment
M	Preston	Mason Town Water	Block Run
MC	Preston	Fibair Inc.	Impoundment
MC	Monongalia	Cheat Neck PSD	Cheat Lake
MC	"	Lakeview County Club	Cheat Lake-Lake Lynn
River Basin	County	Operating Company	Source
Monongahela River			
MC	Monongalia	Union Districk PSD	Cheat Lake-Lake Lynn
MC	"	Cooper's Rock State Park	Impoundment
MC	Preston	Kingwood Water	Cheat River
MC	Preston	Hopemount State Hosp.	Snowy Creek
MC	"	Rowlesburg Water	Keyser Run & Cheat River
MC	"	Albright	Cheat River
MC	Tucker	Parsons Water	Shavers & Elk Lick Fork
MC	"	Thomas Municipal	Thomas Reservoir
MC	"	Hamrick PSD	Dry Fork
MC	"	Douglas Water System	Long Run
MC	"	Davis Water	Blackwater River
MC	"	Hambleton Water System	Roaring Creek
MC	"	Canaan Valley State	Blackwater River Park
MC	Pocahontas	Cheat Mt. Sewer	Shavers Lake
MC	"	Snowshoe Co. Water	Shavers Fork
MC	Randolph	Womelsdorf Water	Yokum Run
MW	Harrison	Lumberport Water	Jones Run
MW	"	Clarksburg Water Bd.	West Fork River
MW	"	Bridgeport Mun. Water	Deecons & Hinkle Creek
MW	"	Salem Water Board	Dog Run

MW	"	West Milford Water	West Fork River
MW	Lewis	W.V. Water-Weston District	West Fork River
MW	"	Jackson's Mill Camp	Impoundment
MW	"	West Fork River PSD	West Fork River
MW	"	Kennedy Compresssor Station	West Fork River
MW	"	Jane Lew Water Comm.	Hackers Creek
MW	Harrison	Bel-Meadow Country Club	Lake
MW	"	Harrison Power Station	West Fork River
MW	"	Oakdale Portal	Impoundment
MW	"	Robinson Port	Impoundment
MT	Marion	Fairmont Water Comm.	Tygart River
MT	"	Mannington Water	Impoundment
MT	"	Monongah Water Works	Tygart River
MT	"	Eastern Assoc.	Coal Corp Impoundment
MT	"	Four States Water	Impoundment
MT	Harrison	Shinnston Water Dept.	Tygart River
MT	Taylor	Grafton Water	Tygart River-Lake
MT	Barbour	Phillippi Water	Tygart River
MT	"	Bethlehem Mines Corp.	Impoundment
MT	"	Belington Water Works	Tygart River & Mill Run Lake
MT	Randolph	Elkins Municipal Water	Tygart River
MT	"	Beverly Water	Tygart River
MT	"	Valley Water	Tygart River
MT	"	Huttonsville Medium Security Prison	Tygart River
MT	"	Mill Creek Water	Mill Creek
MTB	Upshur	Buckhannon Water Board	Buckhannon River

River Basin	County	Operating Company	Source
Ohio River			
O Zone 1	Hancock	Chester Water & Sewer	Ohio River
O "	Brooke	City of Weirton	Ohio River
O Zone 1	Brooke	Weirton Steel Division	Ohio River
O "	Ohio	Wheeling Water	Ohio River
O "	Tyler	Sistersville Mun. Water	Ohio River

O	"	Pleasants	Pleasants Power Station	Ohio River
O	"	Cabell	Huntington Water Corp.	Ohio River
O	"	Marshall	Mobay Chemical Co.	Ohio River
O	"	Wood	E. I. DuPont	Ohio River
O	Zone 2	Marshall	Meron Water	Glass House Hollow
O	"	"	New Urindahana Water	Wheeling Creek System
O	"	Wetzel	Pine Grove Water	North Fork, Fishing Creek
O	"	Marshall	Consolidated Coal Co.	Impoundment
O	"	Tyler	Middlebourne Water	Middle Island Creek
O	"	Doddridge	West Union Mun. Water	Middle Island Creek
O	"	Mason	Hidden Valley Country	Lake/Impoundment
O	"	Jackson	Ripley Water	Mill Creek
O	"	Wayne	Wayne Municipal Water	Twelve Pole Creek
O	"	"	East Lynn Lake	East Lynn Lake
O	"	"	Monterey Coal Co.	Impoundment

Little Kanawha

LK	Wood	Claywood Park PSD	Little Kanawha River
LK	Calhoun	Grantsville Mun. Water	Little Kanawha River
LK	Gilmer	Glenville Utility	Little Kanawha River
LK	"	Consolidated Gas Compressor	Steer Creek
LK	Braxton	Burnsville Water Works	Little Kanawha River
LK	Roane	Spencer Water	Spring Creek Mile Tree Reservoir
LK	Wirt	Elizabeth Water	Little Kanawha River
LKH	Ritchie	Cairo Water	North Fork Hughes River
LKH	"	Harrisville Water	North Fork Hughes River
LKH	"	Pennsboro Water	North Fork Hughes River

Kanawha River

K	Putnam	Buffalo Water	Cross Creek
K	"	Winfield Water	Poplar Fork & Crooked Creek
K	"	South Putnam PSD	Poplar Fork & Crooked Creek
K	Kanawha	Cedar Grove Water	Kanawha River
K	"	Pratt Water	Kanawha River
K	Fayette	Armstrong PSD PO-K1-CO-EL	Kanawha River & Gum Hollow

K	"	Kanawha Water Co.-	Unnamed Tributary Kanawha Beards Fork
K	Kanawha	Midland Trail School	Impoundment
K	"	Cedar Coal Co.	Impoundment
K	Fayette	Elkem Metals Co.	Kanawha River
K	Fayette	Deepwater PSD	Kanawha River

River Basin	County	Operating Company	Source
Kanawha River			
K	Fayette	Kanawha Falls PSD	Kanawha River
K	"	W.V. Water-Montgomery	Kanawha River
Pocatalico River			
KP	Kanawha	Sissonville PSD	Pocatalico River
KP	Roane	Walton PSD	Silcott Fork Dam
Coal River			
KC	Kanawha	St. Albans Water	Coal River
KC	"	Washington PSD	Coal River
KC	Lincoln	Lincoln PSD	Coal River
KC	Boone	Coal River PSD	Coal River
KC	"	Whitesville PSD	Coal River
KC	Raleigh	Armco Mine 10	Marsh Fork
KC	"	Armco Steel-Montc. Stickney	Coal River
KC	Raleigh	Peabody Coal	Coal River
KC	"	Stephens Lake Park	Lake Stephens
KC	Boone	W.V. Water-Madison Dist.	Little Coal River
KC	"	Van PSD	Pond Fork
KC	Raleigh	Consol. Coal Co.	Workmans Creek
KC	Boone	Water Ways Park	Coal River
Elk River			
KE	Kanawha	Clendenin Water	Elk River

KE	"	W.V. Water-Kanawha Valley District	Elk River
KE	Kanawha	Pinch PSD	Elk River
KE	Clay	Clay Waterworks	Elk River
KE	"	Procious PSD	Elk River
KE	Braxton	Flatwoods-Canoe Run PSD	Elk River
KE	"	Sugar Creek PSD	Elk River
KE	"	W.V. Water-Gassaway Dist.	Elk River
KE	"	W.V. Water-Sutton Dist.	Elk River
KE	Webster	W.V. Water-Webster Springs	Elk River
KE		Holly River State Park	Holly River
Gauley River			
KG	Nicholas	Craigsville PSD	Gauley River
KG	"	Summersville Water	Impoundment/ Muddlety Creek
KG	"	Nettie-Leivasy PSD	Jim Branch
KG	Webster	Cowen PSD	Gauley River
KG	Nicholas	Wilderness PSD	Anglins Creek & Meadow River
KG	"	Richwood Water	North Fork Cherry River
KN	Fayette	Ames Heights Water	Mill Creek
KN	"	Mt. Hope Water	Impounded Mine (Surface)
KN	Fayette	Ansted Municipal Water	Mill Creek
River Basin	County	Operating Company	Source
New River			
KN	Fayette	Fayette Co. Park	Impoundment
KN	"	New River Gorge Campground	Impoundment
KN	"	Fayetteville Water	Wolfe Creek
KN	Raleigh	Beckley Water	Glade Creek
KN	"	Westmoreland Coal Co.	Farley Branch
Bluestone River			
KNB	Summers	Jumping Branch-Nimitz	Mt. Valley Lake
KNB	"	Bluestone Conf. Center	Bluestone Lake
KNB	"	Pipestem State Park	Impoundment
KNB	Mercer	Town of Athens	Impoundment

KNB	"	Bluewell PSD	Impoundment
KNB	"	Bramwell Water	Impoundment
KNB	"	Green Valley-Glenwood PSD	Bailey Reservoir
KNB	"	Kelly's Tank	Spring
KNB	"	W.V. Water Princeton	Impoundment/ Brusch Creek
KNB	"	Lashmeet PSD	Impoundment
KNB	"	Pinnacle Water Assoc.	Mine
KNB	"	W.V. Water Bluefield	Impoundment

Greenbrier River

KNG	Summers	W.V. Water Hinton	Greenbrier River & New River
KNG	"	Big Bend PSD	Greenbrier River
KNG	Greenbrier	Alderson Water Dept.	Greenbrier River
KNG	"	Ronceverte Water	Greenbrier River
KNG	"	Lewisburg Water	Greenbrier River
KNG	Pocahontas	Denmar State Hospital Water	Greenbrier River
KNG	"	City of Marlinton Water	Knapp Creek
KNG	"	Cass Scenic Railroad	Leatherbark Creek
KNG	"	Upper Greenbrier PSD	Greenbrier River
KNG	"	The Hermitage	Greenbrier River

Guyandotte River

OG	Cabell	Salt Rock PSD	Guyandotte River
OG	Lincoln	West Hamlin Water	Guyandotte River
OG	Logan	Logan Water Board	Guyandotte River
OG	"	Man Water Works	Guyandotte River
OG	"	Buffalo Creek PSD	Buffalo Creek/ Mine/Wells
OG	Logan	Chapmanville	Guyandotte River
OG	"	Logan PSD	Whitman Creek/ Guyandotte River
OG	Mingo	Gilbert Water	Guyandotte River
OG	Wyoming	Oceana Water	Laurel Fork
OG	"	Glen Rogers PSD	Impoundment
OG	Wyoming	Pineville Water	Pinnacle Creek
OG	Raleigh	Raleigh Co. PSD-Amigo	Tommy Creek
OMG	Cabell	Milton Water Works	Guyandotte River
OMG	"	Culloden PSD	Indian Fork Creek

River Basin	County	Operating Company	Source
Guyandotte River			
OMG	Putnam	Hurricane Municipal Water	Impoundment
OMG	Putnam	Lake Washington PSD	Lake Washington
Big Sandy River			
BS	Wayne	Kenova Municipal Water	Big Sandy River
BS	"	Fort Gay Water	Tug Fork
BST	Mingo	Kermit Water	Tug Fork
BST	"	Matewan Water	Tug Fork
BST	"	A & H Coal Co., Inc.	Impoundment
BST	"	Williamson Water	Impoundment
BST	McDowell	City of Welch	Impoundment/Wells
BST	"	City of Gary	Impoundment/Mine

APPENDIX C
CATEGORY E-3 - POWER PRODUCTION

This list contains known power production facilities and is not intended to exclude any waters as described in Section 6.6.c, herein.

River Basin	County	Station Name	Operating Company
Monongahela River			
M	Monongalia	Fort Martin Power Station	Monongahela Power
M	Marion	Rivesville Station	Monongahela Power
MC	Preston	Albright Station	Monongahela Power
Potomac	Grant	Mt. Storm Power Station	Virginia Electric & Power Company
Ohio River			
O - Zone 1	Wetzel	Hannibal (Hydro)	Ohio Power
O " "	Marshall	Kammer	Ohio Power
O " "	"	Mitchell	Ohio Power
O " "	Pleasants	Pleasants Station	Monongahela Power
O " "	"	Willow Island Station	Monongahela Power
O " "	Mason	Phillip Sporn Plant	Central Operating (AEP)
O " "	"	Racine (Hydro)	Ohio Power
O " "	"	Mountaineer	Appalachian Power Co.
K	Putnam	Winfield (Hydro)	Appalachian Power Co.
K	Kanawha	Marmet (Hydro)	Appalachian Power Co.
K	"	London (Hydro)	Appalachian Power Co.
K	"	Kanawha River	Appalachian Power Co.
K	"	John E. Amos	Appalachian Power Co.

APPENDIX D
CATEGORY C - WATER CONTACT RECREATION

This list contains waters known to be used for water contact recreation and is not intended to exclude any waters as described in section 6.4, herein.

River Basin	Stream Code	Stream	County
Shenandoah	S	Shenandoah River	Jefferson
Potomac	P	Potomac River	Jefferson
	P	" "	Hampshire
	P	" "	Berkeley
	P	" "	Morgan
	P-9	Sleepy Creek & Meadow Branch	Berkeley
	P-9-G-1	North Fork of Indian Run	Morgan
South Branch	PSB	South Branch of Potomac River	Hampshire
	PSB	" "	Hardy
	PSB	" "	Grant
	PSB-21-X	Hawes Run	Pendleton
	PSB-25-C-2	Spring Run	Grant
	PSB-28	North Fork South Branch Potomac River	Grant
North Branch	PNB	North Branch of Potomac River	Mineral
	PNB-4-EE	North Fork Patterson Creek	Grant
	PNB-7-H	Linton Creek	Grant
	PNB-17	Stoney River-Mt. Storm Lake	Grant
	PC	Cacapon River	Hampshire
Monongalia			
Cheat	MC	Cheat Lake/Cheat river	Monongalia/Preston

	MC	Alpine Lake	Preston
	MC-6	Coopers Rock Lake/ Quarry Run	Monongalia
	MC-12	Big Sandy Creek	Preston
	MSC	Shavers Fork	Randolph
	MTN	Middle Fork River	Barbour/Randolph/ Upshur
	MW	West Fork River	Harrison
	MW-18	Stonecoal Creek/ Stonecoal Lake	Lewis
River Basin	Stream Code	Stream	County
Ohio	O	Ohio River	Brooke/Cabell/ Hancock/Jackson/ Marshall/Mason/Ohio/ Pleasants/Tyler/ Wayne/Wood/Wetzel
	O-2-H	Beech Fork of Twelvepole Creek/Beech Fork Lake	Wayne
	O-2-Q	East Fork of Twelvepole Creek/East Lynn Lake	Wayne
	O-3	Fourpole Creek	Cabell
	O-21	Old Town Creek/ McClintic Ponds	Mason
	OMI	Middle Island Creek/ Crystal Lake	Doddridge
	OG	Guyandotte River	Cabell
	OG	Guyandotte River/ R. D. Bailey Lake	Wyoming
	OGM	Mud River	Cabell

Little Kanawha	LK	Little Kanawha River/ Burnsville Lake	Braxton
Kanawha	K	Kanawha River	Fayette/Kanawha/ Mason/Putnam
	K-1	Unnamed Tributary Krodel Lake	Mason
	KC	Coal River	Kanawha
	KC-45-Q	Stephens Branch/ Lake Stephens	Raleigh
	KE	Elk River	Kanawha/Clay/ Braxton/Webster/ Randolph
	KE	Sutton Lake	Braxton
	KN	New River	Fayette/Raleigh/ Summers
	KN-26-F	Little Beaver Creek	Raleigh
	KNG	Greenbrier River	Greenbrier/ Pocahontas/Summers
	KNG-23-E-1	Little Devil Creek/ Moncove Lake	Monroe
	KNG-28	Anthony Creek	Greenbrier
	KNG-28-P	Meadow Creek/ Lake Sherwood	Greenbrier
River Basin	Stream Code	Stream	County
	KNB	Bluestone River/ Bluestone Lake	Summers
	KG	Gauley River	Webster
Kanawha	KG	Gauley River/ Summersville Lake	Nicholas
	KGW	Williams River	Webster

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APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.1 Dissolved Aluminum (ug/l)	750xCF[5]	750xCF[5]	750xCF[5]	87xCF[5]			
8.2. Acute and chronic aquatic life criteria for ammonia shall be determined using the National Criterion for Ammonia in Fresh Water[d] from USEPA's 1999 Update of Ambient Water Quality Criteria for Ammonia (EPA-822-R-99-014, December 1999)	X	X	X	X			
8.3 Antimony (ug/l)					4300	14	
8.4 Arsenic (ug/l)					10	10	100
8.4.1 Dissolved Trivalent Arsenic (ug/l)	340	150	340	150			
8.5 Barium (mg/l)						1.0	
8.6 Beryllium (ug/l)	130		130			4.0	
8.7 Cadmium (ug/l) Hardness (mg/l $CaCO_3$) / Soluble Cd 0 - 35 / 1.0 36 - 75 / 2.0 76 - 150 / 5.0 > 150 / 10.0						X	

47CSR2
APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.7.1 10 ug/l in the Ohio River (O Zone 1) main stem (see section 7.1.d, herein)						X	
8.7.2 The four-day average concentration of dissolved cadmium determined by the following equation: $Cd = e^{(0.7409[ln(hardness)]-4.719)} \times CF$[5]		X		X			
8.7.3 The one-hour average concentration of dissolved cadmium determined by the following equation: $Cd = e^{(1.0166[ln(hardness)]-3.924)} \times CF$[5]	X		X				
8.8 Chloride (mg/l)	860	230	860	230	250	250	
8.9.1 Chromium, dissolved hexavalent (ug/l):	16	11	16	7.2		50	
8.9.2 Chromium, trivalent (ug/l) The one-hour average concentration of dissolved trivalent chromium determined by the following equation: $CrIII = e^{(0.8190[ln(hardness)]+3.7256)} \times CF$[5]	X		X				
8.9.3 The four-day average concentration of dissolved trivalent chromium determined by the following concentration: $CrIII = e^{(0.8190[ln(hardness)]+0.6848)} \times CF$[5]		X		X			
8.10 Copper (ug/l)						1000	

47CSR2
APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.10.1 The four-day average concentration of dissolved copper determined by the following equation[a]: $Cu = e^{(0.8545[\ln(hardness)]-1.702)} \times CF^{5}$		X		X			
8.10.2 The one-hour average concentration of dissolved copper determined by the following equation[a]: $Cu = e^{(0.9422[\ln(hardness)]-1.700)} \times CF^{5}$	X		X				
8.11 Cyanide (ug/l) (As free cyanide $HCN+CN^{-}$)	22	5.0	22	5.0	5.0	5.0	
8.12 Dissolved Oxygen[c]: not less than 5 mg/l at any time.	X				X	X	X
8.12.1 Ohio River main stem - the average concentration shall not be less than 5.0 mg/l per calendar day and shall not be less than 4.0 mg/l at any time or place outside any established mixing zone - provided that a minimum of 5.0 mg/l at any time is maintained during the April 15-June 15 spawning season.	X						
8.12.2 Not less than 7.0 mg/l in spawning areas and in no case less than 6.0 mg/l at any time.			X				

47CSR2
APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.13 Fecal Coliform: Maximum allowable level of fecal coliform content for Water Contact Recreation (either MPN or MF) shall not exceed 200/100 ml as a monthly geometric mean based on not less than 5 samples per month; nor to exceed 400/100 ml in more than ten percent of all samples taken during the month.					X	X	
8.13.1 Ohio River main stem (zone 1) - During the non-recreational season (November through April only) the maximum allowable level of fecal coliform for the Ohio River (either MPN or MF) shall not exceed 2000/100 ml as a monthly geometric mean based on not less than 5 samples per month.					X	X	
8.14 Fluoride (mg/l)						1.4	
8.14.1 Not to exceed 2.0 for category D1 uses.							X
8.15 Iron[c] (mg/l)		1.5		1.0		1.5	
8.16 Lead (ug/l)						50	
8.16.1 The four-day average concentration of dissolved lead determined by the following equation[a]: $Pb = e^{(1.273[\ln(\text{hardness})]-4.705)} \times CF$[5]		X		X			

47CSR2
APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.16.2 The one-hour average concentration of dissolved lead determined by the following equation[a]: $Pb = e^{(1.273[\ln(hardness)]-1.46)} \times CF^5$	X		X				
8.17 Manganese (mg/l) (see §6.2.d)						1.0	
8.18 Mercury The total organism body burden of any aquatic species shall not exceed 0.5 ug/g as methylmercury.					0.5	0.5	
8.18.1 Total mercury in any unfiltered water sample (ug/l):	2.4		2.4		0.15	0.14	
8.18.2 Methylmercury (water column) (ug/l):		.012		.012			
Nickel (ug/l)					4600	510	
8.19.1 The four-day average concentration of dissolved nickel determined by the following equation[a]: $Ni = e^{(0.846[\ln(hardness)]+0.0584)} \times CF^5$		X		X			
8.19.2 The one-hour average concentration of dissolved nickel determined by the following equation[a]: $Ni = e^{(0.846[\ln(hardness)]+2.255)} \times CF^5$	X		X				
8.20 Nitrate (as Nitrate-N) (mg/l)						10	

47CSR2
APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.21 Nitrite (as Nitrite-N) (mg/l)	1.0		.060				
8.22 Nutrients							
Chlorophyll –a (µg/l) (see §47-2-8.3)							
Total Phosphorus (µg/l) (see §47-2-8.3)							
8.23 Organics							
Chlordane[b] (ng/l)	2400	4.3	2400	4.3	0.46	0.46	0.46
DDT[b] (ng/l)	1100	1.0	1100	1.0	0.024	0.024	0.024
Aldrin[b] (ng/l)	3.0		3.0		0.071	0.071	0.071
Dieldrin[b] (ng/l)	2500	1.9	2500	1.9	0.071	0.071	0.071
Endrin (ng/l)	180	2.3	180	2.3	2.3	2.3	2.3
Toxaphene[b] (ng/l)	730	0.2	730	0.2	0.73	0.73	0.73
PCB[b] (ng/l)		14.0		14.0	0.045	0.044	0.045
Methoxychlor (ug/l)		0.03		0.03	0.03	0.03	0.03
Dioxin (2,3,7,8- TCDD)[b] (pg/l)					0.014	0.013	0.014
Acrylonitrile[b] (ug/l)					0.66	0.059	
Benzene[b] (ug/l)					51	0.66	
1,2-dichlorobenzene (mg/l)					17	2.7	
1,3-dichlorobenzene (mg/l)					2.6	0.4	

47CSR2
APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
1,4-dichlorobenzene (mg/l)					2.6	0.4	
2,4-dinitrotoluene[b] (ug/l)					9.1	0.11	
Hexachlorobenzene[b] (ng/l)					0.77	0.72	
Carbon tetrachloride[b] (ug/l)					4.4	0.25	
Chloroform[b] (ug/l)					470	5.7	
Bromoform[b] (ug/l)					140	4.3	
Dichlorobromomethane[b] (ug/l)					17	0.55	
Methyl Bromide (ug/l)					1500	47	
Methylene Chloride[b] (ug/l)					590	4.6	
1,2-dichloroethane[b] (ug/l)					99	0.035	
1,1,1- trichloroethane[b] (mg/l)						12	
1,1,2,2-tetrachloroethane (ug/l)					11	0.17	
1,1-dichloroethylene[b] (ug/l)					3.2	0.03	
Trichloroethylene[b] (ug/l)					81	2.7	
Tetrachloroethylene[b] (ug/l)					8.85	0.8	
Toluene[b] (mg/l)					200	6.8	
Acenaphthene (ug/l)					990	670	
Anthracene (ug/l)					40,000	8,300	
Benzo(a) Anthracene[b] (ug/l)					0.018	0.0038	

47CSR2
APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
Benzo(a) Pyrene[b] (ug/l)					0.018	0.0038	
Benzo(b) Fluoranthene[b] (ug/l)					0.018	0.0038	
Benzo(k) Fluoranthene[b] (ug/l)					0.018	0.0038	
Chrysene[b] (ug/l)					0.018	0.0038	
Dibenzo(a,h)Anthracene[b] (ug/l)					0.018	0.0038	
Fluorene (ug/l)					5300	1100	
Indeno(1,2,3-cd)Pyrene[b] (ug/l)					0.018	0.0038	
Pyrene (ug/l)					4000	830	
2-Chloronaphthalene (ug/l)					1600	1000	
Phthalate esters[6] (ug/l)		3.0		3.0			
Vinyl chloride[b] (chloroethene) (ug/l)					525	2.0	
alpa-BHC (alpha- Hexachloro-cyclohexane)[b] (ug/l)					0.013	.0039	
beta-BHC(beta- Hexachloro-cyclohexane)[b] (ug/l)					0.046	0.014	
gamma-BHC (gamma- Hexachloro-cyclohexane)[b] (ug/l)	2.0	0.08	2.0	0.08	0.063	0.019	
Chlorobenzene (mg/l)					21	0.68	
Ethylbenzene (mg/l)					29	3.1	
Heptachlor[b] (ng/l)	520	3.8	520	3.8	0.21	0.21	

47CSR2
APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
2-methyl-4,6-Dinitrophenol (ug/l)					765	13.4	
Fluoranthene (ug/l)					370	300	
8.23.1 When the specified criteria for organic chemicals listed in §8.23 are less than the practical laboratory quantification level, instream values will be calculated from discharge concentrations and flow rates, where applicable.							
8.24 pH[c] No values below 6.0 nor above 9.0. Higher values due to photosynthetic activity may be tolerated.	X	X	X	X	X	X	X
8.25 Phenolic Materials							
8.25.1 Phenol (ug/l)					4,600,000	21,000	
8.25.2 2-Chlorophenol (ug/l)					400	120	
8.25.3 2,4-Dichlorophenol (ug/l)					790	93	
8.25.4 2,4-Dimethylphenol (ug/l)					2300	540	
8.25.5 2,4-Dinitrophenol (ug/l)					14,000	70	
8.25.6 Pentachlorophenol[b] (ug/l)					8.2	0.28	
8.25.6.a The one-hour average concentration of pentachlorophenol determined by the following equation: exp(1.005(pH)-4.869)	X		X				

47CSR2
APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.25.6.b The 4-day average concentration of pentachlorophenol determined by the following equation: exp(1.005(pH)-5.134).		X		X			
8.25.7 2,4,6-Trichlorophenol[b] (ug/l)					6.5	2.1	
8.26 Radioactivity: Gross Beta activity not to exceed 1000 picocuries per liter (pCi/l), nor shall activity from dissolved strontium-90 exceed 10 pCi/l, nor shall activity from dissolved alpha emitters exceed 3 pCi/l.	X		X		X	X	X
8.26.1 Gross total alpha particle activity (including radium-226 but excluding radon and uranium shall not exceed 15 pCi/l and combined radium-226 and radium-228 shall not exceed 5pCi/l; provided that the specific determination of radium-226 and radium-228 are not required if dissolved particle activity does not exceed 5pCi/l; the concentration of tritium shall not exceed 20,000 pCi/l; the concentration of total strontium-90 shall not exceed 8 pCi/l in the Ohio River main stem.	X		X		X	X	X
8.27 Selenium (ug/l)	20	5	20	5		50	

47CSR2
APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.28 Silver (ug/l) Hardness Silver 0-50 1 51-100 4 101-200 12 >201 24				X		X	
8.28.1 0-50 1 51-100 4 101-200 12 201-400 24 401-500 30 501-600 43		X					
8.28.2 The one-hour average concentration of dissolved silver determined by the following equation: $Ag=e^{(1.72[\ln(hardness)]-6.59)} \times CF$[5]	X		X				

47CSR2
APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.29 Temperature Temperature rise shall be limited to no more than 5°F above natural temperature, not to exceed 87°F at any time during months of May through November and not to exceed 73°F at any time during the months of December through April. During any month of the year, heat should not be added to a stream in excess of the amount that will raise the temperature of the water more than 5°F above natural temperature. In lakes and reservoirs, the temperature of the epilimnion should not be raised more than 3°F by the addition of heat of artificial origin. The normal daily and seasonable temperature fluctuations that existed before the addition of heat due to other natural causes should be maintained.	X						
8.29.1 For the Kanawha River Main Stem (K-1): Temperature rise shall be limited to no more than 5°F above natural temperature, not to exceed 90°F in any case.	X						

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APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.29.2 No heated effluents will be discharged in the vicinity of spawning areas. The maximum temperatures for cold waters are expressed in the following table: Daily Mean °F / Hourly Max °F Oct-Apr 50 / 55 Sep-&May 58 / 62 Jun-Aug 66 / 70			X				

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APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.29.3 For Ohio River Main Stem (01) (see section 7.1.d, herein): Dates — Period Ave. — Inst. Max. Jan 1-31 — 45°F — 50°F February — 45 — 50 March 1-15 — 51 — 56 March 16-31 — 54 — 59 April 1-15 — 58 — 64 April 16-30 — 64 — 69 May 1-15 — 68 — 73 May 16-31 — 75 — 80 June 1-15 — 80 — 85 June 16-30 — 83 — 87 July 1-31 — 84 — 89 August 1-31 — 84 — 89 Sept 1-15 — 84 — 87 Sept 16-30 — 82 — 86 Oct 1-15 — 77 — 82 Oct 16-31 — 72 — 77 Nov 1-30 — 67 — 72 Dec 1-31 — 52 — 57		X					
8.30 Thallium (ug/l)					6.3	1.7	
8.31 Threshold odor[c] Not to exceed a threshold odor number of 8 at 104°F as a daily average.		X		X	X	X	
8.32 Total Residual Chlorine (ug/l - measured by amperometric or equivalent method)	19	11					

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APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.32.1 No chlorinated discharge allowed			X				
8.33 Turbidity No point or non-point source to West Virginia's waters shall contribute a net load of suspended matter such that the turbidity exceeds 10 NTU's over background turbidity when the background is 50 NTU or less, or have more than a 10% increase in turbidity (plus 10 NTU minimum) when the background turbidity is more than 50 NTUs. This limitation shall apply to all earth disturbance activities and shall be determined by measuring stream quality directly above and below the area where drainage from such activity enters the affected stream. Any earth disturbing activity continuously or intermittently carried on by the same or associated persons on the same stream or tributary segment shall be allowed a single net loading increase.		X		X	X	X	

47CSR2
APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.33.1 This rule shall not apply to those activities at which Best Management Practices in accordance with the State's adopted 208 Water Quality Management Plan are being utilized, maintained and completed on a site-specific basis as determined by the appropriate 208 cooperative or an approved Federal or State Surface Mining Permit is in effect. This exemption shall not apply to Trout Waters.		X			X	X	
8.34 Zinc (ug/l) The four-day average concentration of dissolved zinc determined by the following equation[a]: $Zn = e^{(0.8473[\ln(hardness)]+0.884)} \times CF$[5]		X		X			
8.34.1 The one-hour average concentration of dissolved zinc determined by the following equation[a]: $Zn = e^{(0.8473[\ln(hardness)]+0.884)} \times CF$[5]	X		X				

[1] One hour average concentration not to be exceeded more than once every three years on the average, unless otherwise noted.
[2] Four-day average concentration not to be exceeded more than once every three years on the average, unless otherwise noted.
[3] These criteria have been calculated to protect human health from toxic effects through fish consumption, unless otherwise noted. Concentration not to be exceeded, unless otherwise noted.
[4] These criteria have been calculated to protect human health from toxic and/or organoleptic effects through drinking water and fish consumption, unless otherwise noted. Concentration not to be exceeded, unless otherwise noted.
[5] The appropriate Conversion Factor (CF) is a value used as a multiplier to derive the dissolved aquatic life criterion is found in Appendix E, Table 2.
[6] Phthalate esters are determined by the summation of the concentrations of Butylbenzyl Phthalate, Diethyl Phthalate, Dimethyl Phthalate, Di-n-Butyl Phthalate and Di-n-Octyl Phthalate.

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APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			

[a] Hardness as calcium carbonate (mg/l). The minimum hardness allowed for use in this equation shall not be less than 25 mg/l, even if the actual ambient hardness is less than 25 mg/l. The maximum hardness value for use in this equation shall not exceed 400 mg/l even if the actual hardness is greater than 400 mg/l.
[b] Known or suspected carcinogen. Human health standards are for a risk level of 10^{-6}.
[c] May not be applicable to wetlands (B4) - site-specific criteria are desirable.
[d] The early life stage equation in the National Criterion shall be used to establish chronic criteria throughout the state unless the applicant demonstrates that no early life stages of fish occur in the affected water(s).

APPENDIX E
TABLE 2

Conversion Factors

Metal	Acute	Chronic
Aluminum	1.000	1.000
Arsenic (III)	1.000	1.000
Cadmium	1.136672-[(ln hardness)(0.041838)]	1.101672-[(ln hardness)(0.041838)]
Chromium (III)	0.316	0.860
Chromium(VI)	0.982	0.962
Copper	0.960	0.960
Lead	1.46203-[(ln hardness)(0.145712)]	1.46203-[(ln hardness)(0.145712)]
Nickel	0.998	0.997
Silver	0.85	N/A
Zinc	0.978	0.986

APPENDIX F
COOL WATER LAKES

This list contains lakes to be managed for cool water fisheries and is not intended to exclude any waters which meet the definition in Section 2.2.

River Basin	County	Lake
Potomac River		
PC	Hardy Lost River	Trout Pond (Impoundment)
PC	Hardy Lost River	Rock Cliff Lake (Impoundment)
PSB	Pendleton	Hawes Run (Impoundment)
PNB	Mineral	New Creek Dam 14(Impoundment)
Monongahela River		
MC	Monongalia	Coopers Rock (Impoundment)
MC	Monongalia	Cheat Lake
MC	Tucker	Thomas Park (Impoundment)
MC	Randolph	Spruce Knob Lake (Impoundment)
MT	Taylor	Tygart Lake
MW	Lewis	Stonecoal Lake
Kanawha River		
KC	Raleigh	Stephens Lake (Impoundment)
KG	Nicholas	Summersville Reservoir (Impoundment)
KG	Greenbrier	Summit Lake (Impoundment)
KNG	Pocahontas	Watoga Lake
KNG	Pocahontas	Buffalo Fork (Impoundment)
KNG	Pocahontas	Seneca (Impoundment)
KCG	Pocahontas	Handley Pond
Guyandotte River		
OG	Wyoming/Mingo	RD Bailey Lake

b. Public Hearing Transcript

BEFORE THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

ORIGINAL

HELD JULY 1, 2014

6:00 P.M.

Donna H. Miller
Certified Court Reporter

CAPITOL CITY REPORTING
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A P P E A R A N C E S

ON BEHALF OF THE DEP:

KELLY GILLENWATER

ON BEHALF OF DIVISION OF
WATER AND WASTE MANAGEMENT:

KEVIN COYNE

P R O C E E D I N G S

MS. GILLENWATER: Good evening. I am Kelly Gillenwater with the West Virginia Department of Environmental Protection's Public Information Office, and I am the facilitator for tonight's public hearing on the proposal to revise Legislative Rule 47CSR2, "Requirements Governing Water Quality Standards." DEP has proposed two revisions to the rule.

First, the removal of the Water Use Category A exemption for the Kanawha River main stem, which is classified as Zone 1.

Second, the addition of a copper water effect ratio, which you may hear referred to as "WER," for the Charleston Sanitary Board's wastewater treatment plant discharge to the Kanawha River.

Also here this evening is Kevin Coyne with the State Division of Water and Waste Management.

The purpose of tonight's hearing is to give you the opportunity to share your comments or information with the DEP about the proposed revisions.

Tonight's hearing is being recorded by a court reporter so that the comments shared can be taken into consideration and entered into the public record for this proposal. All submitted comments, both written and

verbal, will be responded to and posted on the water quality standards webpage.

To ensure that we successfully achieve the purpose of this hearing, we ask that everyone be respectful and considerate of each other by: (a) refraining from interrupting others while they are speaking, and (b) keeping your comments on topic so that our time together is used efficiently.

For those wishing to speak, when I call you up to provide your comments, please state your name and if you are with any groups or organizations.

If you have written comments that you would like to submit in addition to your spoken comments, please hand them to me or to Kevin after you speak or at the conclusion of the hearing. As a reminder, written comments can be submitted after this hearing, and the deadline to do that is July 21st of this year.

If no one has any questions about the hearing format, we will begin the hearing with our first speaker. I'll just grab our sign up sheets, and if those of you who just came in would like to sign up.

In the meantime, Nancy Ward, if you would like to come up to the podium.

MS. NANCY WARD: My name is Nancy Ward, and I'm

with the West Virginia Sustainable Business Council. I am also a business owner and resident of Charleston.

The West Virginia Sustainable Business Council supports the removal of the Category A exemption. We also have concerns about the increase in copper. I'm not exactly sure what that means, so we would like to submit a comment in writing later.

In order to attract and keep businesses and to grow our population, we need to show we are serious about cleaning up our waterways. This is a good example, if enacted, of how we can take a bad situation, the water crisis, and turn it into a catalyst for change.

MS. GILLENWATER: Okay. Julie Archer.

MS. JULIE ARCHER: Good evening. My name is Julie Archer, and I'm with West Virginia Citizen Action Group, and we also support the proposed removal of the Category A exemption for the lower part of the Kanawha River.

We recognize that the redesignation doesn't automatically make the river safe to drink, but we think it's a step in the right direction towards a cleaner Kanawha River and it opens up the possibility for West Virginia American Water to propose a secondary intake, and so for that reason we support removing that exemption, and

we appreciate the DEP taking the initiative in response to the chemical spill.

We do have some concerns about the copper WER, and we probably will submit some written comments at a later date.

Thank you.

MS. GILLENWATER: Karan Ireland.

MS. KAREN IRELAND: I'm Karan Ireland with Citizens Actively Protecting the Environment, and I'm here as a private citizen and on behalf of the citizens that we've come to represent since the January 9th chemical spill.

We support the removal of the Category A Use exemption for the Kanawha River in the hopes it will be a step towards further clean up of that waterway, and hopefully a secondary intake for the 300,000 people that were affected by the spill.

MS. GILLENWATER: Rebecca Randolph.

MS. REBECCA RANDOLPH: Rebecca Randolph with the West Virginia Manufacturers Association.

The WVMA supports the protection of actual drinking water sources in West Virginia. However, there is no evidence that the change to the use designation for the Kanawha River that has been proposed by the DEP will make

the water cleaner or safer to drink. The one thing that is certain is because of the way in which the DEP improperly applies the Category A use, there will be additional costs imposed on municipalities and on industrial and commercial businesses, without any real clear benefit to the public.

The DEP has not adequately explained what the impacts of such a change would be on the existing industrial, municipal and commercial businesses that discharge their already highly-treated effluent into the Kanawha River, because to our knowledge it hasn't investigated those impacts.

The DEP has suggested that additional testing will be required of dischargers along the river to determine whether further reductions in their treated discharges will be necessary to achieve drinking water standards.

Additional testing alone could mean thousands of dollars in increased costs to businesses along the Kanawha River, in addition to the significantly greater costs anticipated for compliance.

The DEP should not be proposing this change unless, and until, it can demonstrate how it will affect the regulated community and provide meaningful improvement for the Kanawha River.

It has been reported that the change to the standards is being proposed in order to allow the option for another intake for the West Virginia American Water plant other than on the Elk River. We submit that making a change to a provision that has been in the water quality standards for decades, before it is determined that such an option would even be feasible, either economically or technically, is clearly putting the cart before the horse in this case.

It should first be determined by West Virginia American Water or the Public Service Commission whether an intake is feasible, and that there is least some logical basis for advancing the proposed change, before making this regulatory change.

History shows that once the rule is changed and the public water supply use is imposed on the Kanawha, it will never be changed back, regardless of whether the Kanawha River segment is actually used as a water supply.

As the WVMA has also learned in the past, one of the inequities of the current water quality standards is that a discharger may be required to construct and operate treatment systems to remove pollutants that do not come from its operations, but are present in the discharge simply because they are present in the water

taken from the river.

We note that the Kanawha River is already listed as an impaired stream for fecal coliform and PCBs, each of which has drinking water criteria assigned under the current water quality standards. Thus, to the extent these pollutants are present in the intake water of an industrial plant or a municipality discharging to the Kanawha, but are not used or generated by either facility, the facility may nevertheless be required to install additional treatment on its discharge to assure drinking water standards are achieved.

It is fundamentally unfair to require downstream dischargers to clean up that portion of the river water used for their intakes, to which they did not contribute pollutants.

The same fundamental lack of fairness would exist for any other chemical that potentially could be present in the Kanawha, including chemicals present from natural background processes, that have water quality criteria that apply for human consumption.

If, as we have heard might be the case, the Category A exception is being removed in order to allow West Virginia American Water to put an alternative intake on the Kanawha River, we have an additional concern related

to Senate Bill 373, which established the Aboveground Storage Tank Act and the Public Water Supply Protection Act.

Those acts obligate the DEP to take actions to protect public water supplies by imposing certain requirements on aboveground storage tanks within a water supply's zone of critical concern, prohibiting general permits within that zone, and also requiring the DEP to impose new restrictions on previously unregulated businesses.

The number of businesses in and around the city of Charleston that could be affected by these new requirements and prohibitions are substantial, and consideration should be given to these collective costs.

As the WVMA and others have stated for years, the way the DEP has gone about regulating state waters for the protection of public health is contrary to state law and is counterproductive to the development of industry in the Mountain State. Category A was intended to apply where there is a drinking water intake, because that is where the standards are needed to protect human health.

The state has turned the rule on its head by insisting that all waters be treated as public water

supplies, imposing costs on businesses without corresponding benefit to the state's citizens or the environment.

If the DEP would follow the water quality rule as written, the removal or imposition of the Category A use on the Kanawha River, and elsewhere, would not be of such great importance. If the state took a reasonable approach to Category A, it would focus on the suitability of a stream as a public water supply. If the stream is suitable and an intake constructed, then all the protections of the water quality standards would apply to protect that intake. Instead of this common sense approach, the DEP is proposing to continue with an unlawful and destructive method of interpreting the Category A use, in which it applies the public water supply use on all streams, imposes costs and obligations on all dischargers, and then decides whether the stream is even suitable as a drinking water supply.

The DEP needs to change this approach to its water quality standards, rather than try to solve individual problems on a case-by-case basis, as it is doing here.

MS. GILLENWATER: Angie Rosser.

MS. ANGIE ROSSER: Good evening. I'm Angie

Rosser, Executive Director of the West Virginia Rivers Coalition, a statewide nonprofit focused on protecting water quality around the state.

It's important to know that less than .1 percent, just a fraction of a fraction of a percent of the world's water is available for human consumption, and it's quite something to look around the State of West Virginia and see that we have that fraction of a fraction of a percent of water available to you, and it's hard for us to think about other states who are dealing with droughts, other places in the world who are water-stressed and simply don't have what we have here.

It's been the prudent policy of the West Virginia DEP to protect most all of our water for drinking water use, with very few exceptions.

Unfortunately, this year we learned how much of an impact a single exception can have on us and what kind of options we have available for when contamination event occurs.

We also saw how vulnerable our water supplies are, and I think many of us really began to think hard about how access to clean, safe drinking water supply is fundamental to our health, and it's fundamental to our overall security.

Other countries are at war over access to clean drinking water, and I would hate to see us go down that path.

So this policy is promising something that we support to remove this exemption of the Category A use of the Kanawha River. It moves us on a path toward a cleaner Kanawha River, and a safer and more secure water supply.

It also means we will have to take a hard look at addressing the pollutants in the Kanawha River that are already known to be a threat to our health. We are talking about bacteria. We are talking about PCB's, dioxins that we already know about that are in this water.

So it will be a very good thing for us to increase our knowledge about -- through the assessment process about what's going on with the Kanawha River. What do we need to do about it? What do we need to do for our future to know that we are going to have a secure and a reliable source of drinking water for 300,000 people in this valley?

It's quite ironic at the same time we are also considering to increase a pollutant -- to increase copper by five times its current standard into the Kanawha, and the West Virginia Rivers Coalition needs more time to

take a look at this. It's quite complex and it's a site specific standard that we will be preparing written comments on. But any time we are talking about increasing a discharge by five times, a pollutant by five times, we need to take a careful look at.

But as far as the Category A exemption, removing that, restoring this, this is a good day for West Virginians. It's really putting the water drinkers first, which I think that includes all of us.

So, something we support and applaud the DEP for taking the initiative.

MS. GILLENWATER: Jeni Burns.

MS. JENI BURNS: Hi. My name is Jeni Burns, and I'm with the West Virginia Sustainable Business Council, and we are again supporting the removal of the Category A exemption on the Lower Kanawha River.

I was sitting there listening to the woman from the Manufacturers Association, and it really came as no surprise to me that they would speak against more stringent regulations on chemical industries that find our rivers to be a great place to dump their pollution in.

For me our rivers mean more than a place for industries to dump pollution. It's a place where people get in their boats and swim, and I would like to add to

that, when they swim they get water. They are already drinking the water, whether they want to or not. It's a place that Charleston hosts river competitions every summer, where people come and jet-ski and swim and have a great time. Our rivers are more than a place for an industry to dump their pollution.

Throughout our history in West Virginia, unfortunately industries, like the chemical industry and the coal industry, have had a huge voice in what happens to our river system, and I'd like to also applaud the DEP for taking the initiative to look at this, and to look at our water quality standards and have a higher standard and challenge us all to have a higher standard for ourselves as businesses to be the best that we can be.

I also would like to say as a small business owner, I own a catering company, and I was detrimentally affected by the fact that there was only one intake for our water system, and the chemical industries, coal industries, big industries that dump pollution in our river system are not the only businesses that are affected by this new regulation.

I would like to say that I applaud this new regulation as a business owner, and my business may be positively affected by this new regulation, not only

because a second intake on the water system would prevent my business from being shut down if, God forbid, there was another chemical leak that affected our water system, but also may bring more tourism into our city and I would like to see us be looked at us as a green city at some point, which would help my business when tourism comes into town.

So, for those reasons and many others, as a representative of the West Virginia Sustainable Business Council, I would like to say that we are for the removal of the exemption.

Thank you.

MS. GILLENWATER: Robin Blakeman.

MS. ROBIN BLAKEMAN: Good evening. I'm Robin Blakeman, and I am a resident of Barboursville, a mother, and I work with the Ohio Valley Environmental Coalition, and all those factors weave together to show why I am concerned about this, and why I support the removal of the Category A exemption on the Kanawha River.

About a week ago, I watched boaters, inner tubers, swimmers in the Kanawha River, and at first I was a little jealous because it was a hot day, and then I cringed. I cringed because I know that the Kanawha River is full of toxins, reproductive toxins for young women that should be a concern and other chemicals that we really need

to watch and have better enforcement of our water quality standards. So I applaud any improvement in our water quality standards.

The fact that the Kanawha River is being examined for a potential tap water intake is a good thing, and I really hope that we can get there. Right now, I would be afraid to drink water coming out of the Kanawha River, but hopefully, we will get there.

OVAC does have concerns about increasing copper limits and we probably will be submitting written comments in time with that.

We believe it will be important to set policies which require inventorying and inspecting all chemical facilities on the river, coal processing facilities and barge shipment facilities in order to achieve the goal of improved water quality on the Kanawha River.

So we hope the West Virginia DEP will involve citizens at all levels of this decision and its enforcement, and take very seriously the existing and potential threats to our tap water sources, including yet to be developed source of the Kanawha River.

I want to say that I'm also personally concerned because of the cumulative effects of whatever

pollutants are in the Kanawha River as it flows downstream and joins with the Ohio River. I and my entire immediate family get our drinking water from the Ohio River, two taps located near Huntington, and I'm aware that we get an awful lot of pollution coming from the Kanawha River and from upstream in the Ohio River.

So any improved standards on the Kanawha will also positively affect the Ohio River, which is the drinking water source for literally thousands and thousands of people.

Thank you.

MS. GILLENWATER: Maya Nye.

MS. MAYA NYE: Hello. My name is Maya Nye with People Concerned About Chemical Safety. I would also, like many of my colleagues, like to support the removal of the Category A exemption.

I'm a woman of childbearing age. You know, I'm concerned about the chemicals that are in the water that may potentially go into the drinking water system, so anything that we can do to clean that up is of utter importance to me.

Any increases in any sort of discharges into the river I think needs a serious look at. Who is it going to benefit and how will this increase our ability over time

to ensure our water security for years to come, and what are the economic benefits. You know, who is it going to be impacting.

So, again, I think the additional -- the increase of copper needs some more attention and more scrupulous eye, and I applaud the DEP for taking these efforts, and I know that I have concerns with the fact that the Kanawha River is listed consistently in a report that I've been watching over the last series of years called Wasting our Waterways.

We have now made it down to number three in the I think it's the Lower Kanawha from the Elk down to the Ohio for having more developmental toxins dumped into it than -- it's the river that has the third most developmental toxins dumped into it than any other waterway in the United States.

So anything that we can do to ensure that that is cleaned up, I think is excellent. It's great to see that we are moving up in the ranks, because previously we were listed as number one and two for the most developmental and reproductive toxins being dumped into our rivers or into the Kanawha River.

I think that it's important that we support any efforts whatsoever to ensure a cleaner Kanawha River.

So thank you very much.

MS. GILLENWATER: Have I missed any speakers or is there anyone else who didn't sign up that would like to speak?

MS. BROOKE DRAKE: My name is Brooke Drake. I am with West Virginia Citizen Action Group, and I've just been there for about a year. Before this job, I was actually a waitress.

But a few things have really caught my eye in my time at West Virginia Citizen Action Group. For example, someone just gave me this stack of paperwork one time and showed me all these maps from Patriot Coal, and the DEP and about how all this selenium is going into the river, the Kanawha River, just a few miles up from here.

If I'm expected to believe that legislation was immediately attempted to increase the selenium standards, then that's just a coincidence. I'm not really inclined to believe that their request to increase the acceptable rate of copper going into our water is just a coincidence that we decided to do one day.

If we continue to change what we believe to be a maximum standard, then these companies are just going to keep pushing it and pushing it, and going past it five times, so to speak, and they said well, we only went four

times past it, and the new law says we can go up to five times what it was last year.

If we don't have standards for ourselves and for our community and for our water, we cannot expect coal companies and other industries to take care of our children for us. This is ridiculous and we need to start standing up for ourselves.

It's copper today. It was selenium last year, and it's all adding up, and we really need to put an end to it because it's getting to the point we don't have any idea what's in our water, and just because it's not a water intake for Kanawha County doesn't mean it's not for Robin Blakeman's family in Huntington and it is water. It is our water, and we are poisoning it and we are allowing people to do it, and letting them increase the standard on what we are allowing.

Why even have standards at this point? We need to hold ourselves accountable. We need to hold our industries accountable so that we don't kill our children to keep the lights on for a few more hours when we are going to run out of coal before they can have jobs in this industry anyway.

Thank you.

MS. GILLENWATER: Any other speakers? As a

reminder, we can take written comments. You can hand them to me or to Kevin immediately after the hearing, and if you would like to submit them later, we will take them up until July the 21st of 2014.

If there's no other speakers, this concludes the public hearing on the proposed revisions to Legislative Rule 47CSR2, "Requirements Governing Water Quality Standards." The agency will review all comments and take them into consideration as it moves forward with finalizing the Agency Approved Rule, which will be submitted to the Secretary of State's office by August 1st of 2014.

Thank you for your participation in this process.

I do realize we have some members of the media here, so if you have questions, come up afterwards. Thank you and have a nice evening.

* * * *

CONCLUDED AT 6:30 P.M.

* * * *

REPORTER'S CERTIFICATE

STATE OF WEST VIRGINIA,

COUNTY OF KANAWHA, to wit:

I, Donna H. Miller, Notary Public in and for the State of West Virginia, duly commissioned and qualified, do hereby certify that the foregoing was duly taken by and before me, under the West Virginia Rules of Civil Procedure, at the time and place and for the purpose specified in the caption thereof.

I do certify that the said hearing was correctly taken by me by means of the Stenomask; that the same was transcribed by me, and that the said transcript is a true record of proceedings had.

I further certify that I am not connected by blood or marriage with any of the parties to this action, am not a relative or employee or attorney or counsel of any of the parties, nor am I a relative or employee of such attorney or counsel, or financially interested in the action, or interested, directly or indirectly, in the matter in controversy.

Given under my hand this 10th day of July, 2014.

Donna H. Miller
Notary Public

My commission expires 10-1-2023

OFFICIAL SEAL
Notary Public, State Of West Virginia
DONNA H MILLER
1439 Dog Fork Rd
Kenna, WV 25248
My Commission Expires October 1, 2023

c. Written & Oral comments, & DEP response to comments

Coyne, Kevin R

From: DEP Comments
Sent: Friday, June 27, 2014 3:38 PM
To: Coyne, Kevin R
Subject: FW: revise Legislative Rule 47CSR2, river water quality

Here is comment.

From: Bonni McKeown [mailto:barrelhbonni@yahoo.com]
Sent: Friday, June 27, 2014 3:24 PM
To: DEP Comments
Subject: revise Legislative Rule 47CSR2, river water quality

RE: WV Department of Environmental Protection's Division of Water and Waste Management comment period on revision of Legislative Rule 47CSR2, "Requirements Governing Water Quality Standards."

I understand that DEP is proposing two site specific revisions to the rule important to the Kanawha River: (1) removal of the Water Use Category A exemption for the Kanawha River main stem, Zone 1; and (2) addition of a copper water effect ratio (WER) for the Charleston Sanitary Board (CSB) wastewater treatment plant discharge to the Kanawha River.
I support stricter these revisions, to result in stronger water quality regulations for the Kanawha River; it should be held to the same standard as other rivers. Especially with the spill that happened last January.

Thank yowl
Bonni McKeown, 12 Arlington Ct., Charleston, WV 25301

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www.barrelhousebonni.com

Reconnecting generations through blues education: www.chicagoschooloftheblues.com

The Story of a Chicago Blues Musician, co-authored with Larry Hill Taylor: www.stepsonoftheblues.com

Coyne, Kevin R

From: DEP Comments
Sent: Friday, June 27, 2014 3:38 PM
To: Coyne, Kevin R
Subject: FW: Category A and the Kanawha River

Here is another comment.

-----Original Message-----
From: Humes Barbara [mailto:bhumes1@comcast.net]
Sent: Friday, June 27, 2014 12:48 PM
To: DEP Comments
Subject: Category A and the Kanawha River

I support the proposed removal of the Category A use exemption for the Kanawha River. The river should never have been exempted. I have been involved with clean water and watershed protection for almost 10 years and I know the importance of keeping our water sources clean. The chemical companies who have been using the Kanawha as a dumping ground must install improved water purification measures. I'm sure it won't hurt their profit margin all that much.

Barbara Humes
Harpers Ferry

Coyne, Kevin R

From: DEP Comments
Sent: Monday, July 07, 2014 8:47 AM
To: Coyne, Kevin R
Subject: FW: Rescind the water quality exemption for all industries and please increase air quality protection.

From: linda foster [mailto:lindafoster2011@gmail.com]
Sent: Thursday, July 03, 2014 2:41 PM
To: DEP Comments; linda foster
Subject: Rescind the water quality exemption for all industries and please increase air quality protection.

Please ammend the rules so that big industry is bound by the same water quality standards that we all must meet to keep our environment safe for people and ecosystems. Please do the same for the air quality.

Sincerely,
Barbara Daniels
16 Chestnut St.
Richwood, WV, 26261

Coyne, Kevin R

From: DEP Comments
Sent: Monday, July 07, 2014 8:48 AM
To: Coyne, Kevin R
Subject: FW: Rule 47CSR2 comment

From: Mike Harman [mailto:mph1946@gmail.com]
Sent: Wednesday, July 02, 2014 1:07 PM
To: DEP Comments
Subject: Rule 47CSR2 comment

Hello! My comment proceeds as follows:

This is a comment in support of rule 47CSR2, to remove the exemption for a section of the Kanawha River for potential use as a drinking water source.

My name is Michael Harman, and I have been a resident of St. Albans, WV since our family moved here in 1954. In fact, I am currently living in the same house my parents bought back then. I recall as a child that the Coal River was often black in color, and the Kanawha River smelled badly due to unregulated pollution because there was no federal Clean Water Act in place at that time. There was no aquatic life found in those rivers, but the quality of the rivers has improved dramatically since laws and regulations took effect. Now, I feel that my water supply from the Coal River is safe to drink, and I have been drinking it all my life, straight from the tap without any additional filtration.

Like many people, I was appalled when the Charleston and surrounding area's water supply was disrupted due to a catastrophic chemical link. But I am also concerned about ongoing air and water emissions that compromise the integrity of our environment and create problems that affect human health. Having personally witnessed improvements in the air and water quality of the Kanawha River Valley over several decades, I am highly optimistic that the Kanawha River can be made whole again, and serve as a resource for drinking water, as needs dictate.

Major manufacturers who are located along the river valley, including chemical plants, coal depots, and metal smelters, have always been subjected to limits on air and water pollution discharges. Given reasonable time to comply with more stringent rules, I am confident they can meet the standards we are entitled to, in order to preserve the quality of water and air we must consume.

I often allow myself to imagine what the Kanawha River Valley would be like, without the chemical plants and metal smelter that currently threaten our environment. There is no question that the beauty and peace of such a place would be a welcome location for industries and enterprises that don't pollute. We would more likely resemble the Hudson River of New York, or perhaps the Bow River in Alberta, where local people have stood up in support of a clean river.

The Kanawha River Valley is a naturally beautiful area, and it deserves to be protected for the quality of life and health of the residents who choose to live here. Improving the status of the Kanawha River to that of a source for drinking water will only enhance the attractiveness and versatility of that magnificent river.

Many thanks for the opportunity to comment, and for the efforts to preserve the integrity of our land, air and water.

Mike Harman

811 Dinden Drive

St. Albans, WV 25177

Coyne, Kevin R

From: DEP Comments
Sent: Monday, July 07, 2014 8:48 AM
To: Coyne, Kevin R
Subject: FW: contact-us - Harold
Attachments: Kenneth Stevens.vcf

From: Stevens, Kenneth D
Sent: Wednesday, July 02, 2014 12:13 PM
To: DEP Comments
Subject: FW: contact-us - Harold

dep **Kenneth Stevens**

Programmer Analyst B/Webmaster

DEP Business and Technology Office
IRIS/Infrastructure
1 (304) 926 0499 ext 1639
Kenneth.D.Stevens@wv.gov
601 57th St. S.E.
Charleston, WV 25304

From: Home [mailto:support@wvinteractive.com]
Sent: Wednesday, July 02, 2014 12:11 PM
To: Stevens, Kenneth D
Subject: contact-us - Harold

Home

Harold has been added

Modify my alert settings | View Harold | View contact-us

First Name:	Harold
Last Name:	Davis
E-mail Address:	hdavis00@gmail.com
Phone Number:	304-542-1294
Message:	I think the DEP should do everything in its power to facilitate a redundant intake on the Kanawha at the confluence of the Elk and Kanawha. The manufacturing associations and other commercial industries should consider the costs of cleaning up their discharges into the Kanawha a benefit to the public! Harold Eugene Davis

Last Modified 7/2/2014 12:08 PM by (unknown)

Coyne, Kevin R

From: DEP Comments
Sent: Monday, July 07, 2014 8:49 AM
To: Coyne, Kevin R
Subject: FW: WV Resident comments on 47CSR2, Requirements Governing Water Quality Standards revision

From: Steven Runfola [mailto:stevenrunfola@gmail.com]
Sent: Tuesday, July 01, 2014 8:08 AM
To: DEP Comments
Subject: WV Resident comments on 47CSR2, Requirements Governing Water Quality Standards revision

Hello:

My name is Steve Runfola and I am a WV resident. I strongly support the DEP'S proposal to revise 47CSR2 to remove the Kanawha River exemtion from the Clean Water Act Category A/Public Water Supply use.

Thank you.

Steve Runfola
45 Park Ridge Drive
Morgantown, WV. 26508
304-291-0770

Coyne, Kevin R

From: DEP Comments
Sent: Monday, July 07, 2014 8:51 AM
To: Coyne, Kevin R
Subject: FW:

From: Carli Mareneck [mailto:cmareneck@yahoo.com]
Sent: Saturday, June 28, 2014 10:41 PM
To: DEP Comments
Subject:

Please support the proposal to remove "category A" use for the Kanawha River. Let's start the process of cleaning up this river by treating it as other waterways in WV. Thank you. Sincerely, Carli Mareneck

Coyne, Kevin R

From: DEP Comments
Sent: Monday, July 07, 2014 8:51 AM
To: Coyne, Kevin R
Subject: FW: message supporting the designation of the Kanawha River as public water supply

-----Original Message-----
From: cherylw [mailto:cherylw@crosslink.net]
Sent: Saturday, June 28, 2014 10:14 PM
To: DEP Comments
Subject: message supporting the designation of the Kanawha River as public water supply

I support the proposed removal of the Category A use exemption for the Kanawha River. This change puts us on a path toward ensuring a cleaner Kanawha River and a more secure drinking water supply.

Cheryl Wagner

Coyne, Kevin R

From: DEP Comments
Sent: Friday, July 11, 2014 11:34 AM
To: Coyne, Kevin R
Subject: FW: Kanawha River exemption

From: reginall@aol.com [mailto:reginall@aol.com]
Sent: Thursday, July 10, 2014 9:33 AM
To: DEP Comments
Subject: Kanawha River exemption

I strongly support removal of the water pollution exemption for sections of the Kanawha River. Based on the drinking water disaster of the winter of 2014, this is the prudent and ethical move to take. The exemption should never have been granted in the first place.

If the state of West Virginia hopes to attract younger professional people to live here you must have a healthy environment to live in. Safe drinking water is a basic.

Next let's start working on a statewide recycling mandate. The inconsistent availability of recycling opportunities in various counties leads to trash being dumped illegally.

Regina Lindsey-Lynch

Coyne, Kevin R

From: DEP Comments
Sent: Monday, July 14, 2014 3:39 PM
To: Coyne, Kevin R
Subject: FW: Kanawha River!

From: Karianne Smith [mailto:kariannesmith80@gmail.com]
Sent: Monday, July 14, 2014 2:49 AM
To: DEP Comments
Subject: Kanawha River!

I believe that every human being absolutely deserves to have clean drinking water and absolutely does not deserve to live in fear of being slowly poisoned. Please remove the Category A use exemption for the Kanawha River.
Don't let it stop there. Fight for it, conquer it, and then do more. Ensure that we the people will never again be afraid and poisoned. I personally am leaving this state because of this issue, but please try to help the residents who for some reason cannot or do not wish to leave. I, for one, just can't take it anymore. They bend the women and children, the veterans like my husband, the elderly, and the hard working men over and stick it to them and then don't even receive a slap on the wrist. This state government is becoming more and more sloppy about how badly WV is being raped. So at least throw the less intelligent people a bone and pretend that this would stop them from being poisoned....which it won't, because every body of water in this state is toxic, now.

Coyne, Kevin R

From: DEP Comments
Sent: Monday, July 14, 2014 3:39 PM
To: Coyne, Kevin R
Subject: FW: Category A exemption for Kanawha River

From: Jonathan Lynch [mailto:jimethn@gmail.com]
Sent: Friday, July 11, 2014 7:27 PM
To: DEP Comments
Subject: Category A exemption for Kanawha River

Water quality is an important issue. Access to clean water is becoming more important and more expensive as our population grows, and some experts are saying the next world war is likely to be fought over water.

Sometimes we sacrifice the long term needs of our people in order to satisfy their short term needs. Other times we must do the opposite. Neither view is complete on its own and careful consideration must be given to all factors.

Sometimes the situation changes and what was once important is now less important. Access to water will never become less important, but access to the fruits to be gained by polluting our water may have.

Jonathan Lynch
1224 Jersey Ave
Morgantown WV 26505

Coyne, Kevin R

From: DEP Comments
Sent: Wednesday, July 16, 2014 6:59 AM
To: Coyne, Kevin R
Subject: FW: Kanawha River Exemption

From: Paul Dalzell [mailto:stillyoung77@gmail.com]
Sent: Wednesday, July 16, 2014 6:57 AM
To: DEP Comments
Subject: Kanawha River Exemption

I support the proposed removal of the Category A use exemption for the Kanawha River. This change would put us on a path toward ensuring a cleaner Kanawha River and a more secure drinking water supply.

Paul Dalzell
304-539-2383
stillyoung77@gmail.com
1425 Virginia St. E
Charleston WV 25301

Coyne, Kevin R

From: Naresh Shah <naresh.r.shah@gmail.com>
Sent: Sunday, July 20, 2014 4:56 PM
To: DEP Comments
Cc: Coyne, Kevin R
Subject: Comments on Proposal to revise site specific water quality criteria - 47 CSR2

Dear Mr. Coyne:

I, Mr. Naresh R. Shah, take this opportunity to submit my comments on the proposed revisions in 47 CSR2 rule. I am a former employee of DWWM. I worked for the agency for more than 24 years. I worked in preparing WV/NPDES permits for industrial facilities. I submit my comments as a private citizen.

I and my family reside in the Kanawha county since 1974. We receive our drinking water from WV American Water company, Recent chemical spill problem in the Elk River caused a serious need for an alternate water supply for the customers of the water company. Therefore, I wholeheartedly support the agency's first proposal to remove the water use category A exemption for the Kanawha River main stem, Zone 1. This removal is long overdue. This removal will give the agency necessary legal basis to initiate the clean-up of the main stem. With this legal basis, the agency can require more stringent terms and conditions in WV/NPDES permits for the facilities discharging into the main stem so, eventually, the water quality of the main stem can satisfy all the applicable water quality standards for Public A use. This is not going to happen overnight. It will take time but it has to be done.

Second proposal deals with the use of a copper water effect ratio for the Charleston Sanitary Board wastewater treatment discharge into the Kanawha River. I do not have any objections to this addition. However, it should be coupled with critical review of all industrial point sources going into Charleston & South Charleston Sanitary Board discharges for copper. Also, in-stream chronic aquatic toxicity tests should be conducted in the main stem. Such tests were conducted (during 1984-85 period) in the main stem by the US EPA. The tests had detected chronic adverse impacts. Such tests need to be repeated and the results should be reviewed by all the interested groups before approving the use of a copper water effect ratio. I request the agency to include these two requirements in the proposed rule.

Respectfully submitted,

Naresh R. Shah
5 Fairland Court
Nitro, WV 25143
PH: 304-776-1385 (H)
PH: 304-550-3306 (cell)
E-mai: Naresh.R.Shah@gmail.com

Coyne, Kevin R

From: DEP Comments
Sent: Monday, July 21, 2014 11:25 AM
To: Coyne, Kevin R
Subject: FW: Legislative Rule 47CSR2

From: Debbie Royalty [mailto:dar.royalty@gmail.com]
Sent: Sunday, July 20, 2014 6:31 PM
To: DEP Comments
Subject: Legislative Rule 47CSR2

Dear Sirs/Madams,

On behalf of the League of Women Voters of Jefferson County, WV (LWVJC) I would like to submit a comment regarding the proposed rule changes for 47CSR2, "Requirements Governing Water Quality Standards".

It is the position of the LWVJC to support the passing of this rule. It is important that all waters in WV remain safe for the citizens of WV.

Thank you,
Debbie Royalty, President LWVJC

Coyne, Kevin R

From: DEP Comments
Sent: Monday, July 07, 2014 8:49 AM
To: Coyne, Kevin R
Subject: FW: Kanawha River

From: Paul Handley [mailto:paulhandley1@gmail.com]
Sent: Monday, June 30, 2014 5:25 PM
To: DEP Comments
Subject: Kanawha River

How do you propose to rid the Kanawha River bed of dioxin and all of the other toxic chemicals that Charleston area chemical companies like Union Carbide, Monsanto, DuPont, etc. etc. have discharged to the Kanawha River over the past 100 years or so?

Coyne, Kevin R

From: Support WV Interactive
Sent: Tuesday, July 01, 2014 8:36 PM
To: Stevens, Kenneth D
Subject: contact-us - Dr. Dan

Home

Dr. Dan has been added

Modify my alert settings | View Dr. Dan | View contact-us

First Name:	Dr. Dan
Last Name:	Cain Sr.
E-mail Address:	cainsrdan@hotmail.com
Phone Number:	304-543-2001
Message:	Ladies and Gentlemen: I am writing to recommend that the Kanawha River not be used as a water source under any circumstances. As a lifelong resident of Kanawha Valley the river has been polluted with chemical residue from the plants and the river has been deemed by those who live here as being unable to sustain any animal life that was fit for human consumption. Please think about this carefully before finalizing any decision to use Kanawha River. Sincerely, Dr. Dan Cain, Sr.

Last Modified 7/1/2014 8:34 PM by (unknown)

ASWS
ADVOCATES FOR A SAFE WATER SYSTEM

July 11, 2014

Kevin Coyne
Water Quality Standards Office
West Virginia Department of Environmental Protection
601 57th St., S.E.
Charleston, WV 25304

Re: Support for Kanawha River being a Class A Stream

Dear Mr. Coyne:

I am writing on behalf of Advocates for a Safe Water System, an organization formed in the wake of the spill into the Elk River of MCHM and the resulting water crisis in the Kanawha Valley. Advocates for a Safe Water System, as its name implies, is concerned with ensuring that all those entrusted to serve the public interest take all appropriate steps to provide the citizens of the region with a safe and reliable water supply.

I am writing in support of the proposal by the Department of Environmental Protection to remove the Clean Water exemption which has previously been applied to portions of the Kanawha River, and to place the Kanawha River into a Category A Classification. We believe that this move would be an appropriate action to enhance the protection of the water resources in our state, and a particularly important step to take now, at a time when we have all become acutely aware of the value of all potential sources of drinking water.

Thank you for taking this action.

Sincerely,

Paul R. Sheridan
Attorney
429 McKinley Ave.
Charleston, WV 25314

WEST VIRGINIA MANUFACTURERS ASSOCIATION

2001 Quarrier Street
Charleston, WV 25311
304-345-2-2123
www.wvma.com

July 18, 2014

Mr. Kevin Coyne
Program Manager, Water
Quality Standards
West Virginia Department of
Environmental Protection
601 57th Street, S.E.
Charleston, WV 25304

Re: Comments on Proposed
Change to West Virginia Water
Quality Standards 47 CSR 2

Dear Mr. Coyne:

The Department of Environmental Protection has proposed revising the state's water quality standards, 47 CSR 2, to remove language in Section 7.2.d.19.1 stating that the Category A use (Water Supply, Public) does not apply in Kanawha River Zone 1, from the mouth of the Kanawha River up to river mile 72, near Diamond, West Virginia. This amendment would impose the Category A use on this stretch of the Kanawha River, where it has not applied for at least 40 years. The West Virginia Manufacturers Association opposes the change.

No reason is given by the DEP for the proposed change, although it has been conjectured that it is being done so that West Virginia American Water can build an alternative water intake on the Kanawha that could be used in the event of a spill on the Elk River, such as that from Freedom Industries. However, it does not appear that West Virginia American Water has concluded that such an alternative intake makes sense, or that it would be cost-effective. We suggest that to impose the Category A use, as the DEP has proposed, before there is any conclusion that the alternative intake is feasible, is putting the cart before the horse.

Nor has there been any study by the DEP of the cost of imposing the Category A use on the Kanawha River, to the WVMA's knowledge. As the DEP interprets Category A, as soon as the rule is finalized, every discharger along that 72 mile stretch of the Kanawha could have its NPDES permit reviewed, to determine whether new, more stringent limits are required to protect a public water supply. Dischargers likely will be required to retest their effluent, and impose additional treatment where they are not currently meeting Category A–derived limits. This will be required whether or not an intake is ever constructed downstream of that discharger.

Under the DEP's proposal, to avoid Category A-based limits, a permittee along the Kanawha will be required to go through the process of removing the use, or seek a determination that the use does not apply. In either event, the permittee must petition the agency for a change in water quality standards, obtain approval for the change from the West Virginia Legislature, and wait years for EPA to approve the change before it becomes final. Only then can the permit be revised.

Examples of this situation crop up periodically. The DEP was involved in a lengthy process, which required years of negotiation and amendment of the West Virginia Water Pollution Control Act, before many mine discharges could be relieved of the requirement of meeting the Category A criterion for manganese. All those involved acknowledged that treating for manganese often presented more environmental problems than the manganese itself, but the DEP's approach to water quality standards implementation delayed a resolution that was cost-effective and still environmentally protective. In recent years, the issue has arisen for Dow Chemical Company and Huntington Alloys, which discharge into Ward Hollow and Pats Branch, respectively. In each of these two situations, the Category A use clearly does not apply, as there is no public drinking water supply even possible in the streams. Nevertheless, the affected companies had to go to great expense to request changes to the water quality standards in order to clarify that the Category A use does not apply in those locations. The effect of the DEP's position is to cause businesses to spend inordinate amounts of money and time obtaining approval for changes to the water quality standards, first from the state and then from EPA, to address a situation that presented no environmental harm in the first place.

There is no support in the water quality standards rule itself for the DEP's position.[1] The State has never formally designated all water bodies as public water supplies; only Categories B and C automatically apply to all state surface waters. "Unless otherwise designated by these rules, at a minimum 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 the Federal Act goals." 47 C.S.R. 2-6.1. In fact, the Environmental Quality Board, which was previously responsible for promulgating water quality standards, originally stated that it did not consider all state waters to be public water supplies if they are not actually used as such. In the 1986 *Rationale Document for Revision of Legislative Rules*, the EQB stated that "above all, [the EQB members] agreed that the category and criteria for public water

[1] Not only is there no express support for the DEP's position in the water quality standards rule, there is implicit evidence that a universal application of Category A to all state streams was never intended. For example, the list of known public water supplies found at 47 C.S.R. 2, Appendix B, is superfluous if all streams are public water supplies.

supplies should not be applied to streams or stream segments where no one is using the waters for drinking." *See* EQB's 1986 *Rationale Document for Revision of Legislative Rules*, page 20.

Other states do not treat all streams as public water supplies. Kentucky, Virginia, Ohio and Maryland designate certain stream segments, on which there are public water intakes, as public water supplies, and apply the appropriate criteria to protect those streams and intakes. Those states do not require industry and municipalities to protect the public water supply use in areas from which the public is not drawing drinking water. Those states' water quality standards protect the public, while not imposing unreasonable costs on industry.

Were the DEP to apply the Category A use in a similar fashion – as, in fact, it is written in the water quality standards - the WVMA would not have a reason to object to the change that the DEP is proposing for the Kanawha River Zone 1, because the Category A use criteria would only be applied where the Category A use actually occurred. Where there was a public supply intake, all upstream dischargers would have to protect the use, and where there was no such use, Category A-based permit limits would not be required. Future public water supplies would also be protected – if a new intake were placed in a stream tomorrow, or in ten years, it would immediately create an existing public water supply use, without any action required by the DEP. Once an existing use is created, the Category A criteria to protect that use apply, and permit limits must be calculated accordingly. Dischargers, such as those holding NPDES permits, must protect an existing public water supply use. No person can discharge pollutants that would cause a public water supply to take in water that did not meet the Category A criteria.

At the public hearing on this proposed rule change there were several comments about the improvement that has been seen in the Kanawha River, and several individuals expressed a belief that the Category A use designation is required to protect individuals from incidental ingestion of water during water sports and recreation. We hope the DEP will explain to all involved that those improvements in the Kanawha are not in any way at risk whether or not Category A applies, because the Kanawha River is currently protected for Category C human health criteria. The Category C criteria protect humans for water contact recreation, including swimming, fishing, water skiing, and pleasure boating, due to the incidental ingestion of water due to these types of activities. The Category C criteria are already applied to the Kanawha River and all other waters of the State. Whereas Category C criteria protect for incidental ingestion of water, the Category A criteria are developed to protect from ingestion of two liters of water from the source each day.

The WVMA opposes the proposed rule change because it is part and parcel of an illogical and punitive approach to implementation of water quality standards in West Virginia. Were the DEP to properly apply the Category A use and set discharge limits to benefit actual public water supply intakes, the rule could be changed to impose the Category A use in the Kanawha River

without subjecting dischargers to unnecessary costs and restrictions. The entire state, not just those businesses and municipalities along the Kanawha River, would benefit from this change.

Very truly yours,

Rebecca Randolph
President
West Virginia Manufacturers Association

RR:shb

CSB

THE SANITARY BOARD

OF THE CITY OF CHARLESTON WEST VIRGINIA

July 18, 2014

Kevin Coyne
Water Quality Standards Program
Division of Water and Waste Management
West Virginia Department of Environmental Protection
601 57th Street, S.E.
Charleston, WV 25314

Re: Comments on Proposed Amendments to West Virginia Water Quality Standards Rule, 47 C.S.R. 2

Dear Mr. Coyne,

The Sanitary Board of the City of Charleston, West Virginia (the "CSB") appreciates the opportunity to provide the following comments on West Virginia Department of Environmental Protection's ("WVDEP") proposed revisions to its Water Quality Standards Rule, 47 C.S.R. 2. Specifically, WVDEP has proposed to apply a Water Effect Ratio ("WER") of 5.62 to discharges of copper from the CSB's wastewater treatment plant on the Kanawha River.[1] *See* proposed 47 C.S.R. 2-7.2.d.19.2. The CSB strongly supports this proposed change as both scientifically sound and environmentally protective.

As WVDEP is aware, a WER measures the ratio of toxicity in specific site water to the toxicity in standard laboratory water for certain metals, including copper. A WER may be used to derive site-specific limits from applicable state water quality criteria for the protection of aquatic life that were originally developed using laboratory toxicity data. A criteria adjustment factor that operates similarly to a translator, the WER is designed to "account for the effect

[1] The WER is multiplied by the state criterion to calculate the site-specific criterion.

208 26TH STREET, WEST, CHARLESTON, WV 25387-1818
TEL (304) 348-1084 ■ FAX (304)347-1808

of site-specific water characteristics on pollutant bioavailability and toxicity to aquatic life." United States Environmental Protection Agency, "Streamlined Water-Effect Ratio Procedure for Discharges of Copper," EPA-822-R-01-005 (March 2001) at 7 (the "Copper WER Guidance").[2] Thus, the WER analysis allows for a more complete and accurate understanding of copper toxicity with respect to a specific waterbody. The adoption of a site-specific criterion through the WER procedure is specifically authorized in the Procedural Rules Governing Site-Specific Revisions to Water Quality Standards, 46 C.S.R. 6-7 (referencing USEPA guidance materials).

The CSB also hopes to alleviate potential misperceptions and confusion which suggest that the adoption and implementation of the copper WER will result in a corresponding five-fold increase in the CSB's copper discharges to the Kanawha River. The CSB emphasizes that it has no plans to alter the operation of the wastewater treatment plant in a manner that would result in increased copper discharges following the application of the WER.[3] Rather, the derivation of a site-specific WER for copper has important implications for the National Pollutant Discharge Elimination System ("NPDES") permit governing discharges from the CSB's wastewater treatment plant. Specifically, the WER impacts the analysis of whether the discharges from the CSB's facility have a reasonable potential to cause or contribute to a violation of the water quality criterion for copper. Because the site-specific WER demonstrates that discharges can occur at certain concentrations greater than the water quality criterion at this location without resulting in toxicity to aquatic life, the agency's reasonable potential analysis is adjusted correspondingly. This allows for the relaxation of water quality-based NPDES permit limits for copper that the WER demonstrates are overly stringent at this location, while confirming that aquatic life remains protected.

The CSB annually (and rotating through all four quarters) conducts Whole Effluent Toxicity ("WET") tests of its wastewater treatment plant effluent. The CSB has completed both acute and chronic WET testing and the results have demonstrated that the effluent from the CSB's treatment plant is non-toxic for copper and any other pollutant. Together, the results of these past WET tests and the results of the site-specific copper WER demonstrate that there is no

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2 *Available online at* http://water.epa.gov/scitech/swguidance/standards/handbook/upload/2007_04_17_criteria_copper_copper.pdf.

3 Although no such increase is planned, the CSB notes that the WER establishes that concentrations within this range would not result in toxicity to aquatic life.

existing toxic concern and that ample site-specific buffering capacity exists to protect aquatic life.

The CSB appreciates the opportunity to provide these comments for the agency's review and consideration as the rulemaking process moves forward. Please do not hesitate to contact me at 304-348-1084, x-220 should you have any questions about anything contained in these comments.

Very truly yours,

Tim G. Haapala, P.E.
CSB Operations Manager

cc: Scott G. Mandirola, Director, WVDEP Division of Water and Waste Management.

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July 21, 2014

Mr. Scott G. Mandirola, Director
Division of Water and Waste Management
WV Department of Environmental Protection
601 57th Street, S.E.
Charleston, WV 25304

Re: 47 CSR 2, *Requirements Governing Water Quality Standards*
Proposal to remove Category A Exemption for the Lower Kanawha River

Dear Director Mandirola:

This letter is in response to the recent proposal by the West Virginia Department of Environmental Protection (DEP) to remove the language in Section 7.2.d.19.1, which states that Water Use Category A shall not apply for the Kanawha River main stem, Zone 1. Henthorn Environmental Services (HENV) performs environmental permitting and regulatory compliance work for several clients who hold NPDES Permits on this stretch of the Kanawha River, which extends from the mouth of the Kanawha River to River Mile 72, near Diamond, West Virginia. These facilities are members of the West Virginia Manufacturers Association (WVMA) and join in the WVMA comments opposing the change. Accordingly, the WVMA comments are incorporated herein by reference.

As set forth in the WVMA comments, the imposition of Category A criteria on this stretch of the Kanawha River has the potential to lower the current effluent limitations in the NPDES permits for certain parameters by an order of magnitude or more. In particular, certain organic parameters that are carcinogens have Category A criteria that are much lower than the applicable Category C criteria for protection of human health for water contact recreation.

For the reasons set forth in the WVMA letter, we urge DEP to retain the current language in Section 7.2.d.19.1 stating that Water Use Category A shall not apply for the Kanawha River main stem, Zone 1. However, if this language is removed, DEP should allow the application of harmonic mean flow for the calculation of effluent limits for carcinogens. As the Category A criteria for these parameters are based on the harmonic mean flow instead of the 7Q10 flow, this revision allows DEP to make decisions regarding the calculation of effluent limits that are consistent with the water quality criteria. We would suggest that the following language be

added to 47 CSR 2: "The critical design flow for determining effluent limits for carcinogens shall be harmonic mean flow."

Thank you for the opportunity to comment on the proposed revisions to 47 CSR 2. If you have any questions, please contact me.

Sincerely,

Jennie L. Henthorn

cc: Kevin R. Coyne, Assistant Director

WEST VIRGINIA
AMERICAN WATER

Jeffrey L. McIntyre
President
1600 Pennsylvania Avenue
Charleston, WV 25302
P 304-340-2000
F 304-340-2076
E Jeffrey.McIntyre@amwater.com

By Electronic Mail and Regular Mail

July 21, 2014

Mr. Kevin Coyne
West Virginia Department of Environmental Protection
Water Quality Standards Program
601 57th Street, SE
Charleston, West Virginia 25304

RE: Proposed Revisions to 47 CSR 2, § 7.2.d.19

Dear Mr. Coyne:

West Virginia-American Water Company ("WVAW" or the "Company") has reviewed the proposed revisions to 47 CSR 2 (the "Water Quality Rule"), § 7.2.d.19 issued for comment by the West Virginia Department of Environmental Protection ("WV DEP") and appreciates the opportunity to provide comments on the same. If adopted, the proposed revision to the Water Quality Rule will reclassify the main stem of Kanawha River Zone 1 ("Zone 1") to purportedly allow its water to be used for all purposes, including as a drinking water source under the Category A designation in the Water Quality Rule. The Company supports efforts to improve water quality and promote clean drinking water sources. As a water provider in West Virginia for nearly 130 years, WVAW understands the importance of having clean water sources available that can be effectively treated to provide people with clean drinking water that meets or exceeds water quality standards.

Our commitment to providing clean and reliable drinking water to the residents of West Virginia is why we feel compelled to caution the WV DEP to conduct all studies and evaluations of water quality standards necessary to support the designation of Zone 1 as a Category A water source. Our understanding is that WV DEP does not have data to assess every Category A parameter and that some parameters have not been evaluated at levels low enough to determine compliance with water quality standards. Obtaining and evaluating this data is critical to determine the Zone 1 eligibility as a Category A water source and should not be passed over in the interest of expediting the addition of a new water source. The reality is that without knowing more about the quality of Zone 1 water, there is no guarantee that it will be suitable as an alternative

water supply for the provision of public drinking water. Even with the exemption removed, the water quality must be evaluated to ensure it is appropriate for use as a drinking water source of supply.

We have other questions about available discharges that may or may not occur under existing NPDES permits, dredging operations in the river, materials that may be encapsulated in river sediment, and impairments of portions of the existing watershed and how each may impact water quality now and in the future. The Company is also interested to know what, based on current information, the WV DEP envisions as the timeline necessary for Zone 1 to achieve all water quality standards to allow this source to be used as a drinking water supply.

In addition to the water quality concerns noted above, the Company would be remiss not to mention the potential impact the proposed revisions could have on our community. The reclassification will certainly require a change to discharge permits for all facilities along Zone 1 and may also impact the navigability of the river in this area. These are two issues the WV DEP must consider fully and carefully, not only to ensure Category A water quality standards can be met but to evaluate how this reclassification could impact our local economy. If our local industry is required to comply with more stringent discharge requirements and/or find alternative transportation methods, the costs of doing so could be high enough to limit further economic development in the area or potentially drive industry out of the area. This would not only impact the affected industries, but also those who work for such industries, and in turn, the local economy as a whole. Additional long term concerns also include potential loss of tax revenues to the state from large industrial taxpayers and higher utility rates for all ratepayers.

The Company is not suggesting the WV DEP should not promote cleaner state waters or not reclassify the river for use as a drinking water source. The Company is encouraging the WV DEP to take the steps needed to conduct all water quality studies necessary to support such a reclassification and consider the impact such a change would have on our community as a whole.

Again, the Company appreciates the opportunity to provide its comments to the WV DEP and looks forward to working with the WV DEP and other stakeholders as they establish effective regulations that make sense.

Respectfully submitted,

Jeffrey L. McIntyre

JLM:DA:vst

cc: Scott G. Mandirola, Director

WEST VIRGINIA RIVERS COALITION

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July 21, 2014

Kevin R Coyne
Water Quality Standards Program
WV Department of Environmental Protection
601 57th St., S.E.
Charleston, WV 25304

Submitted electronically to dep.comments@wv.gov

RE: Proposed amendment to 47-02 Requirements Governing Water Quality Standards – removal of the Water Use Category A exemption for the Kanawha River main stem, Zone 1

Dear Mr. Coyne,

We support the proposed amendment to remove the Water Use Category A exemption and to treat the Kanawha River like it treats all other waters in West Virginia.

We applaud WVDEP's general policy to protect all of our water supplies for drinking water use with few exceptions. West Virginia is rich in freshwater resources, and making sure they are adequately protected for drinking water use is prudent management.

We support the investment in additional field monitoring in the Kanawha River required to determine whether Category A standards are being met. It is imperative to know the health of this major river and what steps may need to be taken to attain and maintain Category A designated use.

Thank you for taking the initiative to make this change. It moves us in the right direction toward a cleaner Kanawha River and a safer and more secure drinking water source for nearly a fifth of the state's population.

Sincerely,

Angie Rosser
West Virginia Rivers Coalition

Julie Archer
West Virginia Citizen Action Group

Dianne Bady
Ohio Valley Environmental Coalition

Don Garvin
West Virginia Environmental Council

Helen Gibbins
West Virginia League of Women Voters

Jim Van Gundy
Aquatic Ecologist

Cindy Rank
West Virginia Highlands Conservancy

Amy Vernon-Jones
Appalachian Mountain Advocates

Brent Walls
Upper Potomac Riverkeeper

WEST VIRGINIA MUNICIPAL WATER QUALITY ASSOCIATION
515 W. Main St.
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August 16, 2013

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Paul Calamita, AQUALAW

Mr. Kevin Coyne
Water Quality Standards Program
Division of Water and Waste Management
West Virginia Department of Environmental Protection
601 57th Street, S.E.
Charleston, WV 25314

Re: Comments on Proposed Amendments to WQS Rule, 47 C.S.R. 2

Dear Mr. Coyne:

I am writing on behalf of the members of the West Virginia Municipal Water Quality Association to convey our support for the proposed copper WER for the Charleston Sanitary Board.

We also wish to urge DEP to proceed with both caution and clarity regarding the potential removal of the exemption for the Kanawha River from Category A classification.

The MWQA members provide public water, sewer, and stormwater services statewide. Our members serve more than 90 percent of the sewered population in the state. We are one of the most balanced stakeholders on statewide water issues because our members not only treat public wastewater and stormwater but also are responsible for providing appropriate drinking water. We both discharge treated public wastewater/storm water to West Virginia's rivers and, at the same time, withdraw from those rivers for public drinking water purposes.

With this important perspective, we wholeheartedly support the proposed WER for copper for the Charleston Sanitary Board. While this scientific procedure apparently has been misunderstood by a number of interested parties, it is perfectly appropriate for several important reasons.

First, it is fully protective of water quality. It simply tailors the statewide (really, national) default copper criterion to the specific composition of the water in the Kanawha River. This has been done routinely in West Virginia and in every other State. That more specific standard will then be implemented in CSB's permit with several very stringent margins of safety. Those safeguards include the way the

standard itself was derived - cutting the allowable copper by 50 percent from the first observed toxic impact to the most sensitive species (likely a critter that is not even present in West Virginia waters). Moreover, any permit limit is then imposed assuming maximum POTW flows occur into drought level river flows. For POTW discharges, like Charleston's, this is an extremely conservative assumption because maximum POTW flows only occur during wet weather and not the drought conditions assumed in this analysis. It is a physical impossibility for maximum POTW flows to occur during drought conditions.

Second, US EPA itself routinely approves WERs like this nationwide because the water quality standards – especially for a common household pollutant like copper – were established anticipating this very type of tailoring. The same is true for every other State. There is no risk to water quality from the adoption of the WER. EPA has issued extensive guidance to the states on how WERs should be developed and implement for many decades.

Third, Charleston has major water quality challenges that are real, such as its ongoing combined sewer overflow program. It would be foolish and environmentally counterproductive to require Charleston to waste precious CSO dollars to address copper – which the WER establishes is a non-issue to the detriment of CSO and other necessary funding for real world issues.

Fourth, there is no way that the Department can distinguish between CSB's properly developed WER and the WERs it has already granted for other waters and discharges and the WERS which will come in the future. Thus, the stakes are high. DEP must adopt this WER, which is based upon terrifically sound science and decades of EPA/State agency precedent (all without any instream impacts). Otherwise, the regulated community will be compelled to challenge DEP's rejection of this critically important procedure to develop water quality criteria which are appropriate for West Virginia waters (while still being extremely conservative).

Fifth, WERs are important to keep West Virginia competitive for businesses without sacrificing any stream protection for the parameter which is the subject of the WER. Abandoning good science in favor of arbitrary over-regulation will impact existing West Virginia jobs that are riding on continued WERs for streams in the State and will seriously chill future job growth for any industries that may need a WER for a particular pollutant parameter. Businesses will abide by standards that are meaningful. They will have no appetite for having unnecessarily stringent requirements placed on them (especially given that WERs are so readily approved and understood in other states).

Finally, we have previously urged the Department, in accordance with express US EPA guidance, to adopt the WER factor into the metals standards themselves. That way, WERs can be applied in the permitting process. This is more efficient and important from a public input perspective because individuals commenting on NPDES permit site-specific limits are more likely to understand the science behind the WER procedure. Putting site-specific WERs out for statewide public comment really does the public a disservice by causing unnecessary concern

that they react to without any hope of understand what the WER procedure really means. In a permitting context DEP should have the luxury of spending more time with individual commenters to educate them about the critically important WER procedure and its appropriateness. For this reason, we renew our recommendation that DEP adopt the WER X WQS (with the default WER set at "1") in this or the very next triennial review.

Accordingly, the MWQA members urge DEP to adopt this scientifically valid and warranted copper WER.

We also want to share a caution about the proposed removal of the exemption for the Kanawha River from Category A status. We think DEP should defer consideration of the removal for another triennial review cycle and study the issue more fully until that time. We are particularly uncertain as to whether DEP has fully characterized the potential costs and impacts of this decision.

Further, it appears to us that the removal of the exemption will not automatically trigger Category A status for the Kanawha. Instead, the Department will have to affirmatively designate the Kanawha in a subsequent rulemaking. We hope that is the case. We urge the Department to clearly address, in its response to this comment, the legal effect of any removal of the exemption in any final rule.

Finally, we see no reason to impose unnecessary Category A requirements before any actual water supply use of the River. Accordingly, if DEP elects not to defer action on the Kanawha River Category A aspect of the triennial review proposal, we believe the final rule should specify that Category A will only become effective once a potential water withdrawer obtains a permit to construct an intake on the River.

Thank you for proposing the WER for the CSB. It reflects a necessary and appropriate application of the copper standard for the River. It is unquestionably fully protective of water quality. As a good science local government organization, we urge DEP to promptly adopt it.

Please let me know if we may provide any additional information relating to our comments.

Sincerely,

F. Paul Calamita

F. Paul Calamita
General Counsel

C: WV MWQA Members
Scott G. Mandirola

West Virginia Coal Association

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July 21, 2014

Mr. Kevin Coyne
West Virginia Department of Environmental Protection
Division of Water & Waste Management
601 57th Street
Charleston, WV 25304
Via Electronic Mail: Kevin.R.Coyne@wv.gov

Re: Proposed Revisions to State Water Quality Standards (47 CSR 2)

Dear Mr. Coyne:

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 proposed revisions to the state's Water Quality Standards Rule, 47 CSR 2.

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.

WVCA is extremely disappointed that WV DEP has ignored valid, urgent issues related to the state's water quality standards program (see subsequent comments regarding aluminum) and focused instead on proposing a revision that is essentially nothing more than a regulatory "stunt".

WV DEP has proposed a revision that would remove an exemption from a statewide use designation that simply does not exist. The designation of all state waters as public drinking water supplies has NEVER occurred. *As demonstrated by the attached, previously filed comment letters, attempts by WV DEP and the West Virginia Environmental Quality Board (WV EQB) to formally designate state waters as Category A have been consistently and unambiguously rejected by the West Virginia Legislature.*

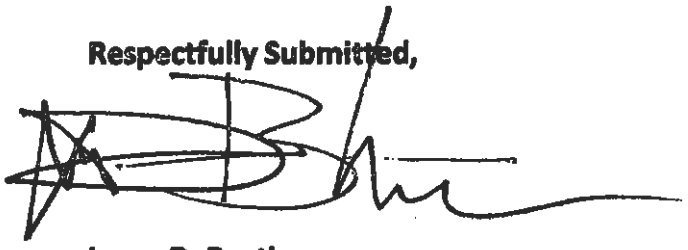
Operating under WV DEP's myth that all state waters are designated as public drinking water supplies, the agency will subject permit holders to more stringent limits immediately (WV DEP representatives have stated the agency will apply revised effluent limits to outlets located within that zone on permit renewal). The application of revised effluent limits will occur even though there is NO proposed or operating public water

intake located within the identified section of the Kanawha River. The agency takes these actions knowing full well that if a drinking water intake were proposed or actually installed within the identified zone then it would have to apply effluent limits protective of that intake to any adjacent NPDES permits regardless of the stream's (fictional) "designation" by the WV DEP. Applying revised effluent limits on the identified section of the Kanawha based simply on removing an exemption to a designation that does not exist beyond the imaginations of WV DEP and WV EQB imposes a significant regulatory burden on permit holders for absolutely no benefit. If an actual proposal to construct a public water intake occurs, WV DEP can prepare revised effluent limits within the appropriate zone of the intake for a rational purpose other than its illegal interpretation regarding statewide use designations.

WVCA has consistently raised concerns regarding the agency's position relative to the statewide designation of all waters as Category A because of WV DEP's illegal application of that use designation to all state waters. A copy of WVCA's most recent comments to the agency on this issue is attached and we request the agency consider them as part of this proposed rulemaking effort.

Additionally, WVCA asks WV DEP to address our previously-filed comments on the state's aluminum criteria. Apparently the agency has taken no further action on changes to that standard since withdrawing a proposed revision during the last legislative session or acted on several site-specific aluminum criteria applications that have been pending for several years.

Respectfully Submitted,



Jason D. Bostic
Vice-President

West Virginia Coal Association

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October 12, 2012

Mr. Kevin Coyne
West Virginia Department of Environmental Protection
Division of Water & Waste Management
601 57th Street
Charleston, WV 25304
Via Electronic Mail: Kevin.R.Coyne@wv.gov

Dear Mr. Coyne:

Pursuant to the public notice published by the West Virginia Department of Environmental Protection (WV DEP), attached to this letter please find the comments and observations of the West Virginia Coal Association (WVCA) regarding the agency's planned rulemaking efforts for the 2014 triennial review of West Virginia's water quality standards.

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 producing members account for 98 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. The professional manner in which WV DEP considers revisions to the program continually improves as does the agency's commitment to science, public involvement and adherence to the public policy goals established by the West Virginia Legislature. WVCA believes the 2014 triennial review provides yet another opportunity for WV DEP to advance the effectiveness of the program by addressing several areas of concern the agency inherited from the EQB.

WVCA's comments and suggestions will focus on several areas where action by WV DEP is overdue to address historic issues with the water quality standards program. These are long standing areas of confusion, created not by the current agency or administration, that have impacted the practical function of the water quality standards program, and more importantly, the Clean Water Act (CWA) Section 402 NPDES permitting process for decades. In most cases, these specific instances lack any rational basis and have no equal in corresponding federal regulations implemented by the federal Environmental Protection Agency (EPA) or the water quality standards programs of other states.

These areas include specific water quality standards where the state maintains outdated criteria, long ago replaced by more scientifically defensible standards, revisions to specific standards that would increase practical environmental and stream protection, application of designated use that needlessly complicates the assignment of effluent limitations and, in at least two instances, where WV DEP maintains EQB-created interpretations of state standards that are in direct contravention of the public policy of the state as expressed by the West Virginia Legislature. The interpretative issues of concern deserve distinct attention from the agency, as they represent not only instances where WV DEP ignores the will and intent of the Legislature but also cases where the agency perpetuates what is essentially illegal rulemaking by maintaining positions and "standards" that were never subject to the public comment and review process. Positions relative to use designations such as those identified in our subsequent comments are perhaps the worst examples of how West Virginia's regulatory climate discourages new investments and hastens the departure of existing operations.

WVCA's comments regarding a specific water quality standard or interpretation of existing standards should in no way be construed by WV DEP as advocating that the agency delay any current initiatives until the completion of triennial review in 2014.

WVCA appreciates the opportunity to provide these comments regarding possible revisions to the state's water quality standards rule to the WV DEP.

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.

ce report attached

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]

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[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.

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[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]

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[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.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
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DALLAS, TX 75202-2733

APR 30 2012

West Virginia Coal Association
2014 Triennial Review Comments
October 12, 2012
Attachment "A"

James P. Bearzi, Chief
Surface Water Quality Bureau
New Mexico Environment Department
Harold Runnels Building (N2050)
P.O. Box 5469
Santa Fe, NM 87502-5469

Dear Mr. Bearzi:

I am pleased to inform you that the Environmental Protection Agency (EPA or the Agency) has completed its review of the ***Standards for Interstate and Intrastate Surface Waters*** **20.6.4. NMAC.** Revisions to New Mexico's water quality standards were adopted by the New Mexico Water Quality Control Commission and filed in accordance with the State's Water Quality Act on November 1, 2010. EPA initiated its review when these revisions became effective as State law on December 1, 2010. EPA reviewed and took action on the majority of the State's revisions on April 12, 2011. The Agency decided to take some additional time before acting on other revisions in order to allow both the New Mexico Environment Department an opportunity to provide additional supporting information and to enable a more detailed review of the State's new metals criteria. In today's decision, EPA is approving the majority of the remaining new/revised amendments with one exception, described below.

After further review, we have determined that the provisions found at section **20.6.4.10 D. Site-specific criteria** represent implementation procedures and do not constitute water quality standards that require EPA's review or action under Clean Water Act (CWA) Section 303(c) and, as such, will not be taking action on them. Furthermore, we had no obligation to act on section **20.6.4.10 D. Site-specific criteria** in our April 12, 2011, action and hereby rescind the previous EPA action on the provision. Any site-specific criteria adopted under this provision, however, would constitute new water quality standards subject to EPA review and approval or disapproval under CWA Section 303(c) on a case-by-case basis.

EPA is approving the revised language in section **20.6.4.13 J. Turbidity,** with the expectation that the revised provision will be implemented consistent with the antidegradation policy and implementation methods in the State's standards and Continuing Planning Process and related documents.

EPA previously took no action on the new or revised criteria for aluminum, cadmium, and zinc contained in section **20.6.4.900 I. (1) Acute and (2) Chronic Hardness-based Metals Criteria.** Based on an extensive review of the supporting documentation, we are approving the application of the hardness-dependent equation for aluminum to those waters of the State at a pH of 6.5 to 9.0 because it will yield criteria that are protective of applicable uses in waters within that pH range. However, EPA is disapproving the application of this equation in waters where the pH is below 6.5 as it may not be protective of applicable uses below that pH range.

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Consistent with EPA's regulations, the previously approved 304(a) criteria for aluminum are thus the applicable water quality standards for purposes of the CWA in waters where the pH is at or below 6.5. In such cases, as the permitting authority in New Mexico, EPA will apply the previously approved 87 µg/L chronic total recoverable aluminum criterion. EPA is approving the hardness-dependent equations for both cadmium and zinc.

In acting on the State's revised water quality standards today, EPA is fulfilling its CWA Section 303(c) responsibilities. However, EPA's approval of water quality standards is considered a federal action which may be subject to the Section 7(a)(2) consultation requirements of the Endangered Species Act (ESA). EPA has initiated informal consultation under ESA Section 7(a)(2) with the U.S. Fish and Wildlife Service (USFWS) regarding our approval of certain new or revised water quality standards. EPA's approval of these standards is subject to the outcome of the ESA consultation process. Should the consultation process identify information regarding impacts on listed species or designated critical habitat that supports amending our approval, EPA will amend its approval decision for those new or revised water quality standards.

I appreciate the State's cooperative efforts to resolve these final few issues. If you need additional detail concerning this letter or the enclosed addendum to our original Record of Decision, please call me at (214) 665-3187, or have your staff may contact Russell Nelson at (214) 665-6646.

Sincerely,

William K. Honker, P.E.
Acting Director
Water Quality Protection Division

Enclosure

cc: James Hogan
Surface Water Quality Bureau
P.O. Box 5469
New Mexico Environment Department

Wally Murphy
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West Virginia Coal Association
2014 Triennial Review Comments
October 12, 2012
Attachment "B"

Ref: 8EPR-EP

AUG 04 2011

Peter Butler, Chair
Water Quality Control Commission
4300 Cherry Creek Drive South
Denver, CO 80222-1530

Subject: 2010 Revisions to the Basic Standards and Methodologies for Surface Waters

Dear Mr. Butler:

The purpose of this letter is to notify you of the status of the U.S. Environmental Protection Agency Region 8 (EPA) review of the revisions to the Basic Standards and Methodologies for Surface Waters (Regulation #31) adopted by the Colorado Water Quality Control Commission (Commission). The revisions were adopted on August 9, 2010 with an effective date of January 1, 2011. The submission letter included an Opinion of the Attorney General certifying that the standards were duly adopted pursuant to State law. Receipt of the revised standards on August 24, 2010 initiated EPA's review pursuant to Section 303(c) of the Clean Water Act (CWA or the Act) and the implementing federal water quality standards regulation (40 CFR Part 131).

EPA review of these water quality standards (WQS) revisions is complete, with the following exceptions:

- All provisions relating to discharger-specific variances, including those adopted with a January 1, 2013 delayed effective date
- Section 31.7(3)(a)(ii)(C) (Temporary Modifications)
- Section 31.8(2)(b)(i)(C) (Antidegradation)
- Molybdenum Table Value (Agriculture)
- Nitrate and Arsenic Table Values (Water Supply)

EPA's review of these revisions, and the supporting information and analyses, is nearing completion. With the exception of the provisions relating to discharger-specific variances, which were adopted with a delayed effective date, we estimate that our review of these revisions will be complete within 60 days.

We wish to commend the Standards Unit of the Water Quality Control Division (WQCD or the Division) for their outstanding work in support of this rulemaking action. Division staff developed proposed revisions, with input from the Standards Formulation stakeholder work

group, on a wide range of topics, including: antidegradation, arsenic, dissolved oxygen, *E. coli*, mercury, molybdenum, nitrate, temperature, temporary modifications, uranium, discharger-specific variances, and zinc. Developing these proposals required the Division to present information and solicit input during a series of stakeholder work group meetings during 2007-2009. In addition, the Division explained these issues to the Commission during the October 2008 issues scoping hearing, the November 2009 issues formulation hearing, and the June 2010 rulemaking hearing. The WQCD also developed detailed comments and recommendations on the aluminum, iron and zinc revisions proposed by the Colorado Mining Association (CMA), and the nonylphenol revision proposed by the Colorado Wastewater Utility Council (CWUC). Most revisions are well supported by the evidence submitted, and we wish to recognize the high caliber of work by the Standards Unit both prior to and during the rulemaking action.

CLEAN WATER ACT REVIEW REQUIREMENTS

CWA § 303(c)(2) requires States and authorized Indian Tribes to submit new and revised water quality standards to EPA for review. EPA is required to review and approve or disapprove the revised standards pursuant to CWA § 303(c)(3). The Region's goal has been, and will continue to be, to work closely and collaboratively with States and authorized Tribes throughout the standards revision process so that submitted revisions can be approved by EPA.

TODAY'S ACTION

The Region is approving the revisions to Regulation #31 adopted by the Commission on August 9, 2010, with the exception of the new and revised provisions EPA is not acting on today. The rationale for EPA's action is briefly outlined below and discussed in detail in Enclosure 1.

Today's letter applies only to water bodies in the State of Colorado, and does not apply to waters that are within Indian Country, as defined in 18 U.S.C. Section 1151. Today's letter is not intended as an action to approve or disapprove water quality standards applying to waters within Indian Country. EPA, or authorized Indian Tribes, as appropriate, will retain responsibilities for water quality standards for waters within Indian Country.

ENDANGERED SPECIES ACT REQUIREMENTS

It is important to note that EPA approval of water quality standards is considered a federal action which may be subject to the Section 7(a)(2) consultation requirements of the Endangered Species Act (ESA). Section 7(a)(2) of the ESA states that "each federal agency...shall...insure that any action authorized, funded or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined to be critical..."

EPA has initiated consultation under ESA Section 7(a)(2) with the U.S. Fish and Wildlife Service regarding our approval of certain new or revised water quality standards. EPA also has a Clean Water Act obligation, as a separate matter, to complete its water quality standards approval action. Therefore, in approving these water quality standards revisions today, EPA is

completing its CWA Section 303(c) responsibilities. However, because ESA consultation on EPA's approval of these standards is ongoing, EPA's approval is made subject to the outcome of the ESA consultation process. Should the consultation process with the U.S. Fish and Wildlife Service identify information regarding impacts on listed species or designated critical habitat that supports amending EPA's approval, EPA will, as appropriate, revisit and amend its approval decision for those new or revised water quality standards.

Standards Approved Without Condition

All new and revised water quality standards in this category are approved without condition because the revisions are consistent with the requirements of the Clean Water Act and EPA's implementing regulation. New and revised provisions in this category are:

- Section 31.5. Definitions.
- Section 31.7. Overview.
- Section 31.7(1)(b)(ii). Ambient Quality-Based Standards.
- Section 31.7(3). Temporary Modifications (with exception of 31.7(3)(a)(ii)(C)).
- Section 31.14(15). Compliance schedules for discharges to segments with temporary modifications.
- Table I. (Recreation, Agriculture).
- Table III. (Water Supply).

Standards Approved Subject to ESA Consultation

All new and revised water quality standards in this category are approved, subject to ESA consultation. New and revised provisions in this category are:

- Table I. Physical and Biological Parameters (Aquatic Life).
- Table III. (Aquatic Life).

Provisions EPA Is Not Acting On Today

- All provisions relating to discharger-specific variances. New and revised provisions in this category are:
  - Section 31.7. Overview (portions that relate to discharger-specific variances).
  - Section 31.7(4). Granting, Extending and Removing Variances to Numeric Standards (Effective January 1, 2013).
  - Section 31.14 (17). Permit Actions that Implement Discharger-Specific Variances.

- Section 31.7(3)(a)(ii)(C) (Temporary Modifications). This new provision was adopted to authorize temporary modifications where "there is significant uncertainty regarding the timing of implementing attainable source controls or treatment."

- Section 31.8(2)(b)(i)(C) (Antidegradation). This revised provision was adopted to authorize Use Protected designations[1] for segments that meet the 31.5 definition of "effluent-dependent stream" or "effluent-dominated stream."

- Molybdenum Table Value (Agriculture). This provision consists of the new 300 µg/L table value standard for the protection of agriculture uses.

- Nitrate and Arsenic Table Values (Water Supply). These provisions include the revised table values for nitrate (Table II) and arsenic (Table III), as modified by the respective footnotes, that authorize the Division to exclude effluent limits from discharge permits if water supply uses are designated but not "actual."

CONCLUSION

EPA Region 8 congratulates the Commission and the Division for the many improvements to the Basic Standards and Methodologies for Surface Waters. If you have any questions concerning this letter, the most knowledgeable people on my staff are David Moon (303 312-6833) and Lareina Guenzel (303-312-6610).

Sincerely,

Carol L. Campbell

Carol L. Campbell
Assistant Regional Administrator
Office of Ecosystems Protection and Remediation

Enclosure

[1] Under Colorado's antidegradation rule, antidegradation reviews are not required for segments with a Use Protected designation.

West Virginia Coal
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jbostic@wvcoal.com

September 21, 2011

Mr. Scott G. Mandirola, Director
Division of Water and Waste Management
WV Department of Environmental Protection
601 57th Street, S.E.
Charleston, WV 25304
Via electronic mail Scott.G.Mandirola@wv.gov

Re: 47 CSR 2, *Requirements Governing Water Quality Standards*
Request to Revise Statewide Category B Aquatic Life Criteria for Aluminum

Dear Director Mandirola:

As you are aware, the aluminum aquatic life water quality criteria in West Virginia have received considerable attention over the past twenty years. 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 that the criteria are intended to protect.

The current national recommended aluminum criteria are set forth in the *Ambient Aquatic Life Water Quality Criteria for Aluminum*, which was published by the United States Environmental Protection Agency ("EPA") in 1988 (the "1988 Criteria"). Considerable work has been conducted regarding aluminum toxicity since the 1988 Criteria were published. Accordingly, Henthorn Environmental Services LLC ("HENV") hired GEI Consultants, Inc., ("GEI") to prepare an update to the freshwater aquatic life aluminum criteria.

GEI reviewed the scientific literature conducted since publication of the 1988 Criteria, and used the data to recommend updated criteria for protection of aquatic life derived according to USEPA guidance (USEPA 1985). The results of GEI's work are set forth in the attached report. GEI has recommended the adoption of the following hardness-based formulas for the freshwater aluminum aquatic life criteria:

Acute Criterion		Chronic Criterion	
$CMC = e^{1.3695*\ln(hardness)+1.8308} \times CF$	=	$FCV = e^{1.3695*\ln(hardness)+0.9161} \times CF$	=

The toxicity of some metals is inversely related to water hardness. In other words, the metal's toxicity to aquatic life decreases as the water hardness increases. The United States Environmental Protection Agency ("EPA") has developed hardness-dependent equations for a number of metals to reflect this relationship. West Virginia has adopted EPA's hardness-dependent equations for cadmium, trivalent chromium, copper, lead, nickel, silver, and zinc. The hardness-based criteria developed by GEI for aluminum follow the same approach used by EPA for other metals.

Importantly, GEI has been involved in similar efforts to revise the aluminum criteria in New Mexico and Colorado. New Mexico has recently adopted the same hardness-based formulas presented by GEI in the attached report, and is awaiting EPA's approval of its revised aluminum water quality criteria. Colorado recently adopted the same acute hardness equation and a slightly modified version of the chronic hardness equation, and has received EPA approval.

Currently, West Virginia has a separate chronic aluminum criterion for Category B2 (trout) streams of 87 ug/l. This chronic criterion was based upon a single study conducted at an extremely low hardness concentration. GEI has considered and included this study in its report, and the hardness-based equations developed are protective of all Category B freshwater uses, including trout streams.

Thank you for your attention to this matter. If you have any questions, please contact me.

Sincerely,

Jason D. Bostic
Vice-President

cc: Randy C. Huffman, Cabinet Secretary
Kristin Boggs, General Counsel
Thomas L. Clarke, Director, Division of Mining & Reclamation
Kevin R. Coyne, Assistant Director



GEI Consultants

Geotechnical
Environmental
Water Resources
Ecological

Updated Freshwater Aquatic Life Criteria for Aluminum

Submitted to:
Henthorn Environmental Services, LLC
517 Sixth Avenue
St. Albans, WV 25177

Submitted by:
GEI Consultants, Inc.
Ecological Division
4601 DTC Boulevard, Suite 900
Denver, CO 80237

August 2011
Project 114210



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List of Acronyms

ACR	acute-chronic ratio
Al	aluminum
AWQC	ambient water quality criteria
CCC	criterion continuous concentration (chronic criterion)
CMC	criterion maximum concentration (acute criterion)
EC_{50}	median effect concentration –point estimate for 50% effect
FACR	final ACR
FAV	final acute value
FCV	final chronic value
GMAVs	genus mean acute values
LC_{50}	median lethal concentration –point estimate for 50% lethality
LOEC	lowest observed effect concentration
SMAVs	species mean acute values
USEPA	U.S. Environmental Protection Agency

1.0 Introduction

The current ambient water quality criteria (AWQC) for aluminum (Al) were released in 1988 (USEPA 1988). Background information on Al chemistry in freshwater systems can also be found in USEPA (1988) and in Sposito (1996). Of particular importance in deriving AWQC for Al is the pH of the water used in toxicity tests. Between a pH of 6.5 and 9.0, Al occurs largely as poorly soluble polymeric hydroxides and as complexes with humic acids, phosphate, sulfate, and other anions (USEPA 1988; Sposito 1996). Waters with a pH <6.5 are below the acceptable pH range identified by the USEPA, and such waters favor the dissolution of Al into more bioavailable monomeric and ionic forms. Consistent with the USEPA's existing criteria for Al, the updated Al criteria recommended here only consider toxicity studies conducted within the pH range of 6.5 to 9.0, and thus should only apply to surface waters with pH levels within this range.

This report reviews the scientific literature conducted since publication of the 1988 AWQC for Al, and uses these data to recommend updated criteria for protection of aquatic life derived according to USEPA guidance (USEPA 1985). Section 2 of this report summarizes the basis of the existing Al criteria and then Section 3 summarizes additional Al toxicity studies published after release of the 1988 AWQC document. Sections 4-6 then use these data to recommend updates to freshwater aquatic life criteria for Al in a format that is consistent with USEPA guidance.

2.0 Summary of Existing Criteria

The USEPA's current acute and chronic criteria for protection of aquatic life are 750 and 87 µg/L, respectively. Development of these criteria followed the *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* (USEPA 1985). Specifically, the USEPA identified acute LC_{50} values for 15 aquatic species, which resulted in the calculation of 15 species mean acute values (SMAVs)[1]. These 15 SMAVs represented 14 genera, which resulted in the calculation of 14 genus mean acute values (GMAVs)[2]. The 5th percentile of these GMAVs, or final acute value (FAV), was calculated to be 1,496 µg/L. Division of the FAV by two resulted in an acute criterion (termed the criterion maximum concentration, or CMC) of 750 µg/L. Because limited chronic Al toxicity data were available, the final chronic value (FCV) was calculated using an acute-chronic ratio (ACR). The USEPA identified ACRs of 0.9958, 10.64, and 51.47. Because the two highest ACRs were based on acutely insensitive species, these were not considered in development of the final ACR (FACR). However, because the remaining ACR of 0.9958 was less than 2, the USEPA (1985) guidelines required that the FACR be set to 2, otherwise the chronic criterion would be higher than the acute criterion. This results in a FCV of 750 µg/L (equivalent to the CMC). Finally, the USEPA (1988) considered "other data" that were considered scientifically sound, but were from studies that did not strictly meet the guidelines for calculation of the FCV. From the "other data" cited in USEPA (1988), adverse effects were reported for two "important" species at Al concentrations below the FCV of 750 µg/L: (1) a 24 percent reduction in weight of young brook trout (*Salvelinus fontinalis*) was observed at an Al concentration of 169 µg/L (Cleveland et al. Manuscript) and (2) 58 percent striped bass (*Morone saxatilis*) mortality occurred at an Al concentration of 174.4 µg/L (Buckler et al. Manuscript). Aluminum concentrations of 88 and 87.2 µg/L from these same two studies resulted in negligible toxicity. Accordingly, the USEPA set the chronic criterion, or criterion continuous concentration (CCC), at 87 µg/L.

Since the release of the current AWQC for Al in 1988, several acute and chronic Al toxicity studies have been published in the scientific literature. Many of these toxicity studies meet the USEPA (1985) guidelines for AWQC development and also result in additional data for deriving an Al ACR. As discussed below, there is also evidence that the toxicity of Al to aquatic life is hardness-dependent (i.e., Al toxicity is greater in softer waters and decreases as water hardness increases).

[1] The species mean acute value, or SMAV, is the geometric mean of acute LC_{50} values for a single species.
[2] The genus mean acute value, or GMAV, is the geometric mean of SMAVs for a single genus.

3.0 Summary of New Toxicity Studies

The USEPA (1985) guidelines for AWQC development specify minimum study requirements for consideration in the development of acute and chronic criteria for protection of aquatic life. For example, acute toxicity studies must have an exposure duration of 96 hours (although 48 hours is acceptable for more short-lived species, such as cladocerans and midges), organisms must not be fed during the study, and the endpoint must be mortality, immobilization or a combination of the two. Chronic toxicity studies must be conducted using exposure durations that encompass the full life cycle or, for fish, early life stage and partial life cycle studies are acceptable. In addition, toxicant concentrations in the exposure solutions must be analytically verified in chronic studies. Finally, under the USEPA (1985) guidelines, toxicity studies that do not meet the specific study requirements may still be retained as "other data" if the study was otherwise scientifically valid. Such "other data" are not used in the calculation of the CMC and FCV, but may be used to justify lowering the acute or chronic criteria for a toxicant if the species and endpoint tested are considered to be "biologically or recreationally important," and if the CMC or FCV were determined to be inadequately protective of these species or endpoints. For Al, "other data" were used to lower the FCV in development of the chronic criterion, as discussed in Section 2.

The following summarizes the Al toxicity data published since 1988 that are considered acceptable for updating the Al criteria. Our primary source for these new data was a study conducted on behalf of the *Arid West Water Quality Research Project* (AWWQRP 2006), in which a thorough literature review was conducted, and recommendations made for updating aquatic life criteria. While the studies used in the present report are, for the most part, the same as those used in AWWQRP (2006), we recommend different final criteria equations to maximize consistency with USEPA guidance for derivation of aquatic life criteria (USEPA 1985).

3.1 Acute Toxicity

As summarized in Section 2, the acute Al toxicity database used to derive the current acute Al criterion was based on 14 GMAVs, which in turn was based on 15 SMAVs. The updated acute Al toxicity database includes seven additional species with tests considered to be of an acceptable type and duration according to USEPA (1985):

- *Asellus aquaticus*, isopod (Martin and Holdich 1986)
- *Crangonyx pseudogracilis*, amphipod (Martin and Holdich 1986)
- *Cyclops viridis*, copepod (Storey et al. 1992)
- *Gammarus pulex*, amphipod (Storey et al. 1992)
- *Tubifex tubifex*, worm (Khangarot 1991)
- *Hybognathus amarus*, Rio Grande silvery minnow (Buhl 2002)
- *Salmo salar*, Atlantic salmon (Hamilton and Haines 1995)

This results in acute Al toxicity data for a total of 22 species representing 19 genera. In addition, new acute toxicity studies were identified for several species already included in the 1988 AWQC, including the cladoceran *Ceriodaphnia dubia* (ENSR 1992a; Soucek et al. 2001), rainbow trout (*Oncorhynchus mykiss*) (Thomsen et al. 1988; Gundersen et al. 1994), and fathead minnow (*Pimephales promelas*) (Buhl 2002; ENSR 1992b). All acceptable acute LC_{50} and EC_{50} values for Al are summarized in Table 1a.

3.2 Chronic Toxicity

The 1988 AWQC for Al included chronic toxicity data for three species: (1) the cladoceran *C. dubia*; (2) the cladoceran *Daphnia magna*; and (3) the fathead minnow *P. promelas*. As part of this update, a chronic EC16 for reproductive effects in *D. magna* (Biesinger and Christensen 1972) was added to the chronic toxicity data set. The chronic toxicity value from Biesinger and Christensen (1972) was likely excluded in USEPA (1988) because Al test concentrations were not analytically verified. However, this study is included here because the chronic value is consistent with the corresponding measured value from the Kimball manuscript, thus reducing some of the uncertainty associated with the Al concentrations not being analytically verified. This study also provides additional useful information for deriving an ACR, as discussed further below. No additional chronic toxicity studies were identified that meet the USEPA's guidelines (i.e., life cycle study or an early life stage or partial life cycle study for fish). All acceptable chronic toxicity studies are summarized in Table 2a.

A total of four ACRs were derived: 0.9958 and 0.9236 for *C. dubia*, 12.19 and 51.47 for *D. magna*, and 10.64 for fathead minnows (Table 2b). It is uncertain why the *D. magna* ACR of 51.47 is considerably higher than the other ACRs, including the other *D. magna* ACR of 12.19. However, the combination of the high hardness (220 mg/L) and pH (8.30) would likely have mitigated the toxicity of Al compared to waters with a hardness of 45.3 mg/L and pH of 6.5-7.5 used in tests to derive the *D. magna* ACR of 12.19 from Biesinger and Christensen (1972). Therefore, it is more appropriate to select an ACR from tests conducted under conditions that likely maximize Al toxicity. The *D. magna* acute values from the two studies differed by a factor of 10, but the chronic values differed by just a factor of two (Table 2b). Because the *D. magna* ACR of 51.47 is driven by an insensitive acute value under high hardness and high pH conditions, this value was excluded from the final ACR. Calculating the geometric mean of the remaining ACRs results in a final ACR of 4.9923.

In USEPA (1988), it was noted that a Final Plant Value, as defined in USEPA (1985), was not obtained because there were no plant toxicity studies conducted with an important aquatic plant species in which Al was measured and in which the endpoint measured was biologically important. No new published algal or aquatic plant studies have been obtained, so this conclusion has not changed for the present update.

Table 1a: Acute toxicity of aluminum to aquatic animals.

Species Latin Name	Species Common Name	Method	Chemical	pH	Hardness (mg/L as $CaCO_3$)	LC_{50} or EC_{20} (µg Al/L)	LC_{50} or EC_{20} Adjusted to Hardness of 50 mg/L (µg Al/L)	Species Mean Acute Value at Hardness of 50 mg/L (µg Al/L)	Reference
Acroneuria sp.	Stonefly	S,M	$AlCl_3$	7.46	47.4	>22,600	>24,315	>24,315	Call 1984
Asellus aquaticus	Isopod	S,U	$Al_2(SO_4)_3$	6.75	50	4,370	4,370	4,370	Martin and Holdich 1986
Ceriodaphnia dubia	Cladoceran	S,M	$AlCl_3$	7.42	50	1,900	1,900	>2,164	McCauley et al. 1986
Ceriodaphnia dubia	Cladoceran	S,M	$AlCl_3$	7.86	50	1,500	1,500	-	McCauley et al. 1986
Ceriodaphnia dubia	Cladoceran	S,M	$AlCl_3$	8.13	50	2,560	2,560	-	McCauley et al. 1986
Ceriodaphnia dubia	Cladoceran	S,M	$AlCl_3$	7.5	26	720	1,763	-	ENSR 1992a
Ceriodaphnia dubia	Cladoceran	S,M	$AlCl_3$	7.6	46	1,880	2,107	-	ENSR 1992a
Ceriodaphnia dubia	Cladoceran	S,M	$AlCl_3$	7.8	96	2,450	1,003	-	ENSR 1992a
Ceriodaphnia dubia	Cladoceran	S,M	$AlCl_3$	8.1	194	>99,600	>15,564	-	ENSR 1992a
Ceriodaphnia dubia	Cladoceran	S,M	-	7.6	98.5	2,880	1,138	-	Soucek et al. 2001
Ceriodaphnia sp.	Cladoceran	S,M	$AlCl_3$	7.36	47.4	2,300	2,475	3,134	Call 1984
Ceriodaphnia sp.	Cladoceran	S,M	$AlCl_3$	7.68	47.4	3,690	3,970	-	Call 1984
Crangonyx pseudogracilis	Amphipod	S,U	$Al_2(SO_4)_3$	6.75	50	9,190	9,190	9,190	Martin and Holdich 1986
Cyclops viridis	Copepod	S,U	Al_2O_3	6.9	-	>27,000	-	-	Storey et al. 1992
Daphnia magna	Cladoceran	S,M	$Al_2(SO_4)_3$	7.05	220	38,200	5,022	4,735	Kimball manuscript
Daphnia magna	Cladoceran	S,M	$AlCl_3$	7.61	45.4	>25,300	>28,875	-	Brooke et al. 1985
Daphnia magna	Cladoceran	S,U	$AlCl_3$	7	45.3	3,900	4,465	-	Biesinger and Christensen 1972
Dugesia tigrina	Flatworm	S,M	$AlCl_3$	7.48	47.4	>16,600	>17,859	>17,859	Brooke et al. 1985
Gammarus pulex	Amphipod	S,M	Al_2O_3	6.9	-	>2,700	-	-	Storey et al. 1992
Gammarus pseudolimnaeus	Amphipod	S,M	$AlCl_3$	7.53	47.4	22,000	23,669	23,669	Call 1984
Physa sp.	Snail	S,M	$AlCl_3$	7.46	47.4	55,500	59,711	32,922	Call 1984
Physa sp.	Snail	S,M	$AlCl_3$	6.59	47.4	>23,400	>25,175	-	Call 1984
Physa sp.	Snail	S,M	$AlCl_3$	7.55	47.4	30,600	32,922	-	Call 1984
Physa sp.	Snail	S,M	$AlCl_3$	8.17	47.4	>24,700	>26,574	-	Call 1984
Tanytarsus dissimilis	Midge	S,U	$Al_2(SO_4)_3$	6.85-7.71	17.43	>79,900	>338,321	>338,321	Lamb and Bailey 1981
Tubifex tubifex	Worm	R,U	$Al(NH_4SO_4)_2$	7.6	245	50,230	5,698	5,698	Khangarot 1991
Hybognathus amarus	Rio Grande silvery minnow	S,M	$AlCl_3$	8.1	140	>59,100	>14,428	>14,428	Buhl 2002

Species Latin Name	Species Common Name	Method	Chemical	pH	Hardness (mg/L as $CaCO_3$)	LC_{50} or EC_{50} (µg Al/L)	LC_{50} or EC_{50} Adjusted to Hardness of 50 mg/L (µg Al/L)	Species Mean Acute Value at Hardness of 50 mg/L (µg Al/L)	Reference
Ictalurus punctatus	Channel catfish	S,M	$AlCl_3$	7.54	47.4	>47,900	**>51,534**	>51,534	Call 1984
Lepomis cyanellus	Green sunfish	S,M	$AlCl_3$	7.55	47.4	>50,000	**>53,794**	>53,794	Call 1984
Oncorhynchus mykiss	Rainbow trout	S,M	$AlCl_3$	6.59	47.4	7,400	**7,961**	>7,547	Call 1984
Oncorhynchus mykiss	Rainbow trout	S,M	$AlCl_3$	7.31	47.4	14,600	**15,708**	-	Call 1984
Oncorhynchus mykiss	Rainbow trout	S,M	$AlCl_3$	7.46	47.4	8,600	9,253	-	Call 1984
Oncorhynchus mykiss	Rainbow trout	S,M	$AlCl_3$	8.17	47.4	>24,700	>26,574	-	Call 1984
Oncorhynchus mykiss	Rainbow trout	F,M	$AlCl_3$	8.25	23.2	6,170	**17,660**	-	Gundersen et al. 1994
Oncorhynchus mykiss	Rainbow trout	F,M	$AlCl_3$	8.25	35	6,170	**10,056**	-	Gundersen et al. 1994
Oncorhynchus mykiss	Rainbow trout	F,M	$AlCl_3$	8.29	83.6	7,670	**3,794**	-	Gundersen et al. 1994
Oncorhynchus mykiss	Rainbow trout	F,M	$AlCl_3$	8.29	115.8	6,930	**2,194**	-	Gundersen et al. 1994
Oncorhynchus tshawytscha	Chinook salmon	S,M	$NaAlO_2$	7	28	>40,000	**>88,495**	>88,495	Peterson et al. 1974
Perca flavescens	Yellow perch	S,M	$AlCl_3$	7.55	47.4	>49,800	**>53,578**	>53,578	Call 1984
Pimephales promelas	Fathead minnow	S,M	$AlCl_3$	8.1	140	>59,100	>14,428	>5,869	Buhl 2002
Pimephales promelas	Fathead minnow	S,M	$Al_2(SO_4)_3$	7.34	220	35,000	**4,601**	-	Kimball manuscript
Pimephales promelas	Fathead minnow	S,M	$AlCl_3$	7.61	47.4	>48,200	>51,857	-	Call 1984
Pimephales promelas	Fathead minnow	S,M	$AlCl_3$	8.05	47.4	>49,800	>53,578	-	Call 1984
Pimephales promelas	Fathead minnow	S,U	$Al_2(SO_4)_3$	7.6	-	>18,900	**=**	-	Boyd 1979
Pimephales promelas	Fathead minnow	S,M	$AlCl_3$	7.8	28	1,160	**2,840**	-	ENSR 1992b
Pimephales promelas	Fathead minnow	S,M	$AlCl_3$	7.6	46	8,180	**9,170**	-	ENSR 1992b
Pimephales promelas	Fathead minnow	S,M	$AlCl_3$	8.1	96	20,300	**8,308**	-	ENSR 1992b
Pimephales promelas	Fathead minnow	S,M	$AlCl_3$	8.1	194	44,800	**6,996**	-	ENSR 1992b
Salmo salar	Atlantic salmon	S,M	$AlCl_3$	6.5	6.8	599	**9,2081**	9,205	Hamilton and Haines 1995
Salvelinus fontinalis	Brook trout	F,M	$Al_2(SO_4)_3$	6.5	-	3,600	**=**	-	Decker and Menendez 1974

* Bold, underlined values were used to calculate species mean acute values.

S = static, R = renewal, F = flow-through, U = unmeasured, M = measured

Table 1b: Results of covariance analysis of freshwater acute toxicity versus hardness.

Species	N	Slope	R^2 Value	95% Confidence Limits	Degrees of Freedom
Ceriodaphnia dubia	8	2.0674	0.751	0.8770, 3.2578	6
Daphnia magna	2	1.4439	-	-	0
Fathead minnow	5	1.5298	0.903	0.6082, 2.4514	3
All of the above	15	1.7125	0.805	1.2071, 2.2179	12

Table 1c: List of studies used to estimate acute aluminum hardness slope.

Species	Hardness (mg/L)	LC_{50} or EC_{50} (µg Al/L)	Reference
Ceriodaphnia dubia	26	720	ENSR 1992a
	46	1,880	ENSR 1992a
	50	1,500	McCauley et al. 1986
	50	1,900	McCauley et al. 1986
	50	2,560	McCauley et al. 1986
	96	2,450	ENSR 1992a
	98.5	2,880	Soucek et al. 2001
	194	>99,600	ENSR 1992a
Daphnia magna	45.3	3,900	Biesinger and Christensen 1972
	220	38,200	Kimball Manuscript
Fathead minnow	26	1,160	ENSR 1992b
	46	8,180	ENSR 1992b
	96	20,300	ENSR 1992b
	194	44,800	ENSR 1992b
	220	35,000	Kimball Manuscript

Table 2a: Chronic toxicity of aluminum to aquatic animals.

Species Latin Name	Species Common Name	Test	Chemical	pH	Hardness (mg/L as $CaCO_3$)	Limits (µg Al/L)	Chronic Value (µg Al/L)	Reference
Ceriodaphnia dubia	Cladoceran	LC	$AlCl_3$	7.15	50	1,400-2,600	1,908	McCauley et al. 1986
Ceriodaphnia dubia	Cladoceran	LC	$AlCl_3$	7.75	50	1,100-2,400	1,624	McCauley et al. 1986
Ceriodaphnia dubia	Cladoceran	LC	$AlCl_3$	7.55	47.4	4,900-12,100	7,700	Call 1984
Daphnia magna	Cladoceran	LC	$Al_2(SO_4)_3$	8.30	220	540-1,020	742.2	Kimball manuscript
Daphnia magna	Cladoceran	LC	$AlCl_3$	6.5-7.5	45.3	-	320[a]	Biesinger and Christensen 1972
Pimephales promelas	Fathead minnow	ELS	$Al_2(SO_4)_3$	7.24-8.15	220	2,300-4,700	3,288	Kimball manuscript

[a] This value is an EC_{16} for reproductive effects. It was included in Table 6 ("Other Data") of USEPA (1988), presumably because Al concentrations were not measured. However, it was included in Table 2 of this updated criteria evaluation because it provides information on the chronic sensitivity of *D. magna* in water of a moderate hardness (45.3 mg/L) and the result seems reasonable in comparison to the chronic value of 742.2 µg/L at a hardness of 220 mg/L (Kimball manuscript).

Table 2b: Aluminum acute-chronic ratios.

Species Latin Name	Species Common Name	pH	Hardness (mg/L as CaCO3)	Acute Value (µg Al/L)	Chronic Value (µg Al/L)	Acute-Chronic Ratio	Species Mean Acute-Chronic Ratio
Ceriodaphnia dubia	Cladoceran	7.15	50	1,900	1,908	0.9958	0.9590
Ceriodaphnia dubia	Cladoceran	7.75	50	1,500	1,624	0.9236	-
Daphnia magna	Cladoceran	8.30	220	38,200	742.2	51.47	-
Daphnia magna	Cladoceran	6.5-7.5	45.3	3,900	320	12.19	12.19[a]
Pimephales promelas	Fathead minnow	7.24-8.15	220	35,000	3,288	10.64	10.64
						Final ACR:	**4.9923**

[a] The acute-chronic ratio of 51.47 for *D. magna* was excluded from the species mean acute-chronic ratio because it was approximately 50 times higher than that observed for *C. dubia* and the acute-chronic ratio of 12.19 is more consistent with that observed for *P. promelas*.

3.3 Other Data

Within the pH range 6.5 – 9.0, only two other studies have been published after the 1988 Al AWQC were released, but that were not already considered to be acceptable for use in deriving the updated FAV or FCV: (1) a rainbow trout study by Thomsen et al. (1988) and (2) an Atlantic salmon study by Hamilton and Haines (1995). These are discussed below.

Thomsen et al. (1988) exposed rainbow trout (*O. mykiss*) eggs to aqueous Al concentrations in water with calcium concentrations of either 1 or 150 mg/L and a pH level of 7. The Al exposure continued through 25 days post-hatch. The LC_{50} values (measured at day 25 post-hatch) were 3,800 and 71,000 µg Al/L in waters containing calcium concentrations of 1 and 150 mg/L, respectively. The increased mortality observed in the low calcium treatment may be explained more by the low calcium treatment than by increased toxicity of Al due to higher bioavailability. As Thomsen et al. (1988) noted, the greatest reduction in survival was observed in relation to the calcium ion concentrations in the test water (survival was reduced by 24 percent in the low calcium water compared to the high calcium water without the addition of Al). Hatching time was also increased from 1.2 days in high calcium water to 4.5 days in low calcium water. Overall, this study does not meet the requirements to be included as an acceptable acute test because the exposure duration ranged from approximately 26-30 days, or as an acceptable chronic test because the study was not sufficient long to meet the early life stage requirements for rainbow trout tests (60 days post-hatch). Further, much of the mortality observed in the low calcium treatment appears to be a result of the low calcium concentration itself.

Hamilton and Haines (1995) exposed Atlantic salmon (*S. salar*) alevins to aqueous Al concentrations of 0 or 200 µg/L for 30 days. The test water pH was 6.5 and the hardness was 6.8 mg/L. This study does not meet the USEPA's (1985) specific requirements for a chronic study because it does not meet the definitions of an early life stage or partial life cycle study, but it does provide useful data that the USEPA would typically categorize as "other data." The mean weight of alevins exposed to 200 µg Al/L was significantly reduced ($p<0.05$) relative to the control, which results in a lowest observed effect concentration (LOEC) of <200 µg/L.

3.4 Unused Data

In AWQC documents, studies are identified that were not used or considered for AWQC development because the study was scientifically flawed or limited, or otherwise inappropriate for derivation of AWQC. For example, studies are not used if control organisms did not respond adequately (e.g., unacceptably high mortality) or if the test water contained elevated levels of other contaminants. In addition, studies are not used if the test species is not resident to North America. All of the unused studies published since the current Al criteria were derived are not summarized here, except for a brook trout

(*S. fontinalis*) study that is briefly summarized below given the importance of brook trout to the derivation of the 1988 chronic Al criterion.

Cleveland et al. (1991) exposed brook trout to an aqueous Al concentration of 303.9 µg/L for 56 days at a pH of 7.2 (fish were also exposed to Al at pH levels of 5.0 and 6.0, but these tests are not discussed here because the pH levels were <6.5). This study did not include a control, although only 1 percent mortality was observed following 56 days. It is unknown whether growth was affected, which is important since Cleveland et al. (1989) observed that growth is a more sensitive endpoint than survival for brook trout exposed to Al. Given the lack of a growth endpoint and due to the absence of a control treatment, this study was not sufficiently robust to identify either an acceptable chronic value for Al (for inclusion in Table 2a) or as information to be evaluated as "other data."

4.0 Hardness-Toxicity Relationship

Under the USEPA (1985) guidelines for AWQC development, methods are provided for adjusting criteria if it can be demonstrated that toxicity varies as a function of a given water quality parameter. The most common example is the relationship between water hardness and toxicity for several divalent metals. For example, the current acute and chronic criteria for cadmium, lead, nickel, and zinc are all hardness-dependent (i.e., the criteria concentrations increase with increasing water hardness; USEPA 2006). For Al, the existing data also suggest that toxicity increases with increasing water hardness, or with other water quality parameters that covary with hardness. Therefore, expressing updated Al criteria on the basis of a hardness equation—rather than as a single fixed value—is now warranted.

The general approach for deriving hardness-dependent criteria entails use of an analysis of covariance to derive a log-linear slope that relates standard toxicity values (e.g., LC_{50}s) to water hardness (USEPA 1985). To evaluate whether there is a significant statistical relationship between hardness and toxicity, there must be definitive acute values (i.e., undefined "less than" or "greater than" toxicity values are not used) from Al toxicity studies that expose organisms over a range of water hardness values such that the highest hardness is at least three times higher than the lowest, and the highest hardness is also at least 100 mg/L higher than the lowest. There were three species that met this minimum requirement: (1) *C. dubia*; (2) *D. magna*; and (3) fathead minnow.

For *C. dubia*, acute LC_{50}s were available at hardness levels of 26, 46, 50, 96, 98.5, and 194 mg/L (as $CaCO_3$). The LC_{50} at a hardness of 194 mg/L was >99,600 µg/L, which should not be used to derive the hardness-toxicity relationship because it is not a definitive value. However, if this test is not included in the hardness-toxicity evaluation, the range in hardness for the remaining *C. dubia* toxicity studies is 26 to 98.5 mg/L, which does not meet the requirement that the range between the lowest and highest hardness must be >100 mg/L. Nevertheless, because the *C. dubia* data clearly demonstrate a relationship between hardness and toxicity over an acceptable range of hardness values, the *C. dubia* data were included in the pooled slope, but the LC_{50} of >99,600 µg/L was excluded because it was not a definitive value.

The slope relating aluminum toxicity to water hardness was significantly different from zero ($p<0.05$) for all three species. In addition, the slopes were similar for all three with overlapping 95 percent confidence intervals. Accordingly, a final pooled slope of 1.3695 was derived based on the data for these three species. The individual slopes for each species and the pooled slope for combined species, as well as the data used to derive the pooled slopes, are provided in Tables 1b and 1c. The raw data used to define the relationship between hardness and toxicity, as well as the pooled slope, are plotted in Figure 1.

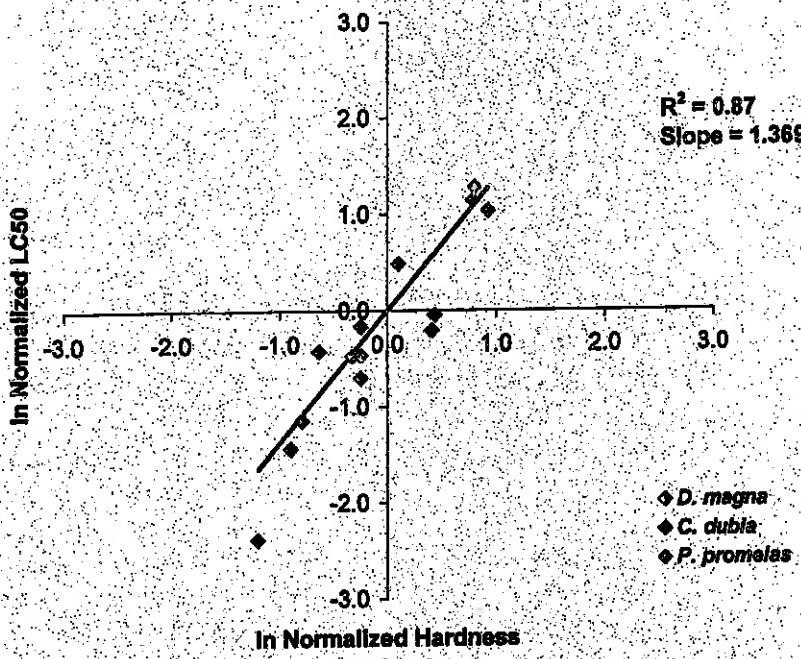


Figure 1: Relationship between hardness and acute aluminum toxicity.

5.0 Revised Aluminum Criteria

5.1 Acute Criterion

The pooled slope of 1.3695 was used to adjust the acute values in Table 1a to a hardness of 50 mg/L, except for cases where this was not possible because water hardness was not reported. Species mean acute values were calculated as the geometric mean of acceptable hardness-adjusted acute values for each species. To delineate cases in which not all toxicity values were appropriate for inclusion into a particular SMAV, the bold, underlined LC_{50} and EC_{50} values in Table 1a were ultimately used to derive the SMAVs. The SMAVs, adjusted to a hardness of 50 mg/L, ranged from >2,164 µg/L for the cladoceran *Ceriodaphnia dubia* to >338,321 µg/L for the midge *Tanytarsus dissimilis*. Genus mean acute values were calculated as the geometric mean of SMAVs and ranked from high to low (Table 3). The total number of GMAVs was 17 and the four lowest GMAVs were used to calculate the FAV following the USEPA (1985) guidelines. The FAV, at a hardness of 50 mg/L, was calculated to be 2,648 µg/L (Table 3). The FAV was then divided by two, resulting in a CMC, or acute criterion, of 1,324 µg/L at a hardness of 50 mg/L. The resulting equation for deriving the CMC over a range of hardness levels is:

$$CMC = e^{(1.3695[\ln(\text{hardness})]+1.8308)} \qquad \text{Eq. 1}$$

The hardness relationship was derived based on empirical data within a hardness range of 26 to 220 mg/L, so application of this equation to hardness levels outside of this range should be treated with caution.

5.2 Chronic Criterion

Chronic Al toxicity values did not meet the minimum data requirements for calculating the FCV as the 5th percentile of empirically derived chronic values. Accordingly, it was necessary to apply an ACR to the FAV (consistent with the calculation of the FCV for Al in USEPA [1988]). At a hardness of 50 mg/L, division of the FAV of 2,648 µg/L (see Section 5.1) by the final ACR of 4.9923 (see Section 3.2) results in a FCV of 530 µg/L (Table 3). The resulting equation for deriving the FCV over a range of hardness levels is:

$$FCV = e^{(1.3695[\ln(\text{hardness})]+0.9161)} \qquad \text{Eq. 2}$$

Similar to the acute hardness equation, because the hardness relationship was derived based on empirical data within a hardness range of 26 to 220 mg/L, application of this equation to hardness levels outside of this range should be treated with caution.

Table 3: Ranked genus mean acute values with species mean acute-chronic ratios

Rank	Genus Mean Acute Value (µg Al/L)	Species	Species Mean Acute Value (µg Al/L)	Species Mean Acute-Chronic Ratio
17	>338,321	*Tanytarsus dissimilis* (midge)	>338,321	-
16	>53,794	*Lepomis cyanellus* (green sunfish)	>53,794	-
15	>53,578	*Perca flavescens* (yellow perch)	>53,578	-
14	>51,534	*Ictalurus punctatus* (channel catfish)	>51,534	-
13	32,922	*Physa* sp. (snail)	32,922	-
12	>24,315	*Acroneuria* sp. (stonefly)	>24,315	-
11	23,669	*Gammarus pseudolimnaeus* (amphipod)	23,669	-
10	>18,189	*Dugesia tigrina* (flatworm)	>18,189	-
9	>14,428	*Hybognathus amarus* (Rio Grande silvery minnow)	>14,428	-
8	9,205	*Salmo salar* (Atlantic salmon)	9,205	-
7	9,190	*Crangonyx pseudogracilis* (amphipod)	9,190	-
6	>7,547	*Oncorhynchus mykiss* (rainbow trout)	>7,547	-
		Oncorhynchus tshawytscha (chinook salmon)	>88,495*	-
5	>5,869	*Pimephales promelas* (fathead minnow)	>5,869	10.64
4	5,698	*Tubifex tubifex* (worm)	5,698	-
3	4,735	*Daphnia magna* (cladoceran)	4,735	12.19
2	4,370	*Asellus aquaticus* (isopod)	4,370	-
1	>2,604	*Ceriodaphnia dubia* (cladoceran)	>2,164	0.9590
		Ceriodaphnia sp. (cladoceran)	3,134	-

* SMAV for chinook salmon excluded from the GMAV for *Oncorhynchus*. See text for details.

Acute Criterion:

Final Acute Value = 2,648 µg/L (calculated at a hardness of 50 mg/L from Genus Mean Acute Values)

Criterion Maximum Concentration = (2,648 µg/L) / 2 = 1,324 µg/L (at a hardness of 50 mg/L)

Pooled Slope = 1.3695 (see Table 4)

ln (Criterion Maximum Intercept) = ln (CMC) – [slope x ln(50)] = ln (1,324) – [1.3695 x ln(50)] = 1.8308

Criterion Maximum Concentration = e(1.3695[ln(hardness)] + 1.8308)

Final Acute-Chronic Ratio = 4.9923

Chronic Criterion:

Final Chronic Value = (2,648 µg/L) / 4.9923 = 530 µg/L (at a hardness of 50 mg/L)

Pooled Slope = 1.3695 (see Table 4)

ln (Final Chronic Intercept) = ln (FCV) – [slope x ln(50)] = ln (530) – [1.3695 x ln(50)] = 0.9161

Final Chronic Value = e(1.3695[ln(hardness)] + 0.9161)

5.3 Protectiveness of the Chronic Criterion to Brook Trout and Striped Bass

As discussed in Section 2, USEPA (1988) derived a FCV of 750 µg/L based on a FAV of 1,496 µg/L and an ACR of 2 (i.e., 1,496 µg/L / 2 = 750 µg/L). However, two chronic studies that did not meet strict acceptability criteria (USEPA 1985) for calculation of the FCV were ultimately considered to be important enough to warrant lowering of the FCV to ensure protection of the two species tested. Based on the Cleveland et al. and Buckler et al. manuscripts cited in the 1988 AWQC, the USEPA lowered the chronic criterion to 87 µg/L in order to ensure protection of brook trout (*Salvelinus fontinalis*) and striped bass (*Morone saxatilis*). The following briefly summarizes these studies, and evaluates the level of protection that the updated criteria equations 1 and 2 would provide for these species.

5.3.1 Brook Trout

USEPA (1988), citing an unpublished Cleveland et al. manuscript (and now published as Cleveland et al. 1989), reported that Al concentrations of 169 and 350 µg/L resulted in 3 percent and 48 percent larval brook trout mortality, respectively, after a 60 day exposure, and Al concentrations of 88 and 169 µg/L resulted in a 4 percent and 24 percent reduction in weight, respectively. Following the USEPA (1985) guidelines, the chronic value from this study would typically be defined as the geometric mean of the NOEC and LOEC for the most sensitive endpoint (growth), which is 88 and 169 µg/L, respectively. The chronic value for this test would, therefore, be 122 µg/L. It should be noted that this test was conducted in very soft water with a hardness of 12.3 mg/L. Based on the hardness-toxicity slope of 1.3695, this converts to an estimated chronic value of 833 µg/L at a hardness of 50 mg/L. Given that the FCV at a hardness of 50 mg/L is 530 µg/L, this suggests that brook trout would be adequately protected by the revised criterion[3].

In addition, the GMAV of 3,600 µg Al/L for brook trout reported in Table 1a is well above the FAV of 2,648 µg Al/L (Table 3), even though water hardness was not reported in this study (Decker and Menendez 1974) and so could not be included in the FAV derivation. Finally, an additional chronic brook trout study cited in Table 6 of the 1988 AWQC (Hunn et al. 1987) reports a chronic growth reduction at 283 µg Al/L, but in extremely soft waters (0.57 mg/L hardness). It would likely not be meaningful to apply a hardness slope to such a low water hardness, but given that the chronic value from Cleveland et al. (1989) conducted in harder water was lower than that of Hunn et al. (1987), a revised chronic criterion using Equation 2 would still be considered protective. Therefore, the available toxicity data suggest that the revised chronic criteria reported here would also be protective of both chronic and acute Al toxicity to brook trout, and so the calculated FCV does not need to be lowered to protect this species.

[3] Given that the very low hardness of 12.3 mg/L is below the range of hardness levels used to develop the pooled hardness slope, there is some uncertainty associated with this evaluation.

5.3.2 Striped Bass

USEPA (1988), citing the unpublished Buckler et al. manuscript (and now published as Buckler et al. 1987), reports that Al concentrations of 87.2 and 174.4 µg/L, at a pH of 6.5, resulted in 0 percent and 58 percent mortality of 160 day-old striped bass, respectively, after a 7 day exposure. USEPA (1988) also reported that Al concentration of 174.4 and 348.8 µg/L resulted in 2 percent and 100 percent mortality in 160 day-old striped bass at a pH of 7.2 (i.e., Al was more toxic at pH 6.5 than at pH 7.2). In addition, citing the Buckler et al. manuscript, USEPA (1988) reported that an Al concentration of 390 µg/L resulted in 0 percent mortality of 159 and 195 day-old striped bass at both a pH of 6.5 and 7.2 following a 7 day exposure. These values were identical to those in the published version of the study in Buckler et al. (1987). Additional 7 day toxicity tests of younger life stages were reported in Buckler et al. (1987). However, control survival in these other studies was marginal: (1) 72-78 percent and 79 percent for 11 day old fish at a pH of 7.2 and 6.5, respectively; and (2) 80 percent and 48 percent for 13 day old fish at a pH of 7.2 and 6.5, respectively. Conversely, control mortality was 0 percent in studies with 160 day old fish at pH levels of 6.5 and 7.2. However, if it is assumed that control mortality in the range of 20-28 percent is acceptable for younger life stages, a measured Al concentration of approximately 131 µg/L was associated with 75 percent mortality in 13 day old fish at a pH of 7.2, which was significantly greater ($p<0.05$) than in the respective control that had 20 percent mortality. In another study with 11 day old fish at a pH of 7.2, survival was not significantly reduced relative to the control up to a higher Al concentration of 179 µg/L, but was significantly reduced ($p<0.05$) at an Al concentration of 358 µg/L. At a pH of 6.5, control mortality was 21 percent (compared to 26 percent in the pH 7.2 control), but survival in Al treatments ≥22 µg/L was significantly reduced ($p<0.05$) compared to the pH 7.2 control (and presumably compared to the pH 6.5 control, but this was not reported).

Overall, Al toxicity to striped bass is highly variable depending on the age of the test organism and the pH of the water (6.5 vs. 7.2). Lowest observed effect concentrations range from 22 to <393 and NOECs range from 87 to >390 (in other words, the ranges of NOECs and LOECs from the various tests substantially overlap). Even within a similar age the NOECs and LOECs are highly variable, with NOECs for 159 day old fish being >390 µg/L and LOECs for 160 day old fish being 174 to 348 µg/L. Given this variability, we suggest that the striped bass toxicity data be excluded from consideration in updating the chronic Al criterion. Nevertheless, the chronic value reported in USEPA (1988) for striped bass in soft water[4] is 123 µg/L, which, assuming a water hardness of 14 mg/L, results in a chronic value of 703 µg/L at a hardness of 50 mg/L. Therefore, the available toxicity data suggest that the revised chronic criteria reported here (530 µg/L) would also be protective of chronic Al toxicity to striped bass, and so the calculated FCV does not need to be lowered to protect this species.

[4] Buckler et al. (1987) did not report the hardness of the test water, although the authors did note that hardness was monitored. They characterized the test water as soft. The test solution was created using well water passed through a water softener, which was then treated by reverse osmosis and passed through anionic, cationic, and mixed-bed exchange resins. The alkalinity and hardness of the well water were 237 and 272 mg/L, respectively. The alkalinity of the resulting test water was 12 mg/L. If we assume that the ratio of well water-to-test water alkalinity applies to hardness, we can estimate that the hardness of the test water was approximately 14 mg/L.

6.0 Criteria Statement

The available toxicity data, when evaluated using the procedures described in the *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* (USEPA 1985) indicate that, except possibly where a locally important species is unusually sensitive, freshwater aquatic life should be protected if the four-day average concentration (in µg/L) of Al does not exceed the numerical value given by $e^{(1.3695[\ln(\text{hardness})]+0.9161)}$ more than once every three years on the average, and if the 24-hour average concentration (in µg/L) does not exceed the numerical value given by $e^{(1.3695[\ln(\text{hardness})]+1.8308)}$ more than once every three years on the average. For example, at hardness levels of 50, 100, and 200 mg/L as $CaCO_3$, the four-day average Al concentrations are 530, 1,370, and 3,541 µg/L, respectively, and the 24-hour average Al concentrations are 1,324, 3,421, and 8,838 µg/L.

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THE STATE WATER RESOURCES BOARD

OF

WEST VIRGINIA

RATIONALE DOCUMENT

for

Revision of Legislative Rules

Series I, II, III, and IX

January 6, 1986

With this scheme, the reader is immediately keyed to the stringency of the criterion by the descending nature of the category designation (i.e. - A = most stringent, E = least stringent). The Board made further findings that (a) classification of a water body according to a particular designated use or uses does not preclude use of the water for other purposes; (b) known specific water quality criteria corresponding to each surface water category are listed in Section 8; (c) appendices to this series contain known streams or stream segments having uses, but are to be recognized as purely representative or informational; and (d) questions concerning use categorization should be resolved based upon meeting the definition in this section.

Section 6.2

Category A - Water Supply, Public:

1. Existing Rule.

The Board's existing rule on public water supplies simply states that it is "all waters used by the public for drinking purposes and applies to water before it is treated". Also, "it does not include water for cooling". This was previously designated Category B1.

2. Proposed Change.

In observation of public health guidelines and descriptions, the Board chose to use the currently accepted Department of Health definition which outlines the types of

systems that are regulated by that agency. The State Health Department currently permits public water supplies which have "at least 15 service connections or regularly serve at least 25 individuals for a period of 60 days or more". This language was proposed by the Board. Also, in consideration of the drainage area just above a public supply intake, the Board proposed language concerning a "zone of protection". That language is as follows: "Each segment extending upstream from the intake either one-half (1/2) mile or to the headwater, whichever is the less distance shall be protected by prohibiting the discharge of any pollutants in excess of the concentrations designated for this water use category in Section 8. Those dischargers to stream segments between one half (1/2) and five (5) miles upstream of an intake must consider the fate and transport of pollutants and demonstrate upon permit application that the concentration of those pollutants will not adversely affect the potability of the water supply. This use shall apply at existing or established points of public water supply withdrawal".

3. Comments and Responses.

This proposal received in excess of ten written comments and was probably the most intensely debated issue of the current revision. Numerous comments cited that by following the definition of 15 connections and/or 25 individuals, many small-group or single, domestic users

would be unprotected. One comment noted that the Health Department recognizes and routinely tests water supplies which fall outside the proposed definition although they do not "permit" this type of facility. Several suggested inclusion of all waters used for human consumption.

Other comments were directed at application of the public health criteria and particularly the zones of protection. Comments purported that it made no regulatory sense to meet drinking water supply criteria where no intake and therefore no "use" exists. Further, suggestions wereto extend the zone of protection to 20 miles, to consider the fate and transport of heavy metals and to clarify the Board's position on the level of discharge allowed in the protection zone.

Several comments were directed at the "List of Water Supplies" contained in Appendix B of the Board's regulations. These questioned the completeness of the list and whether others could/would be added.

The Board responded to the first group of comments by agreeing that all waters actually used for human consumption should be included in the definition and therefore protected. They further agreed that defining <u>where</u> 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.

The Board agreed that some clarification of the language on discharge to the protection zone, and how this mechanism would work, might be useful.

The Board disagreed, however with comments suggesting the protection zone be increased. They had two reasons for this position: (1) the State of Virginia (our neighboring State) has long had a 5 mile zone of protection with no deleterious effects and (2) there is no scientific evidence that 20 miles is any more protective than 5 miles.

4. Board Action.

Based on the comments and detailed review, the Board approved the proposed Water Supply Public definition to read as follows: "This Category is used to describe waters which, after conventional treatment are used for human consumption. This Category includes: (1) all community domestic water systems, (2) all non community domestic water systems (i.e. hospitals, schools), (3) all private domestic water systems, and (4) all other surface water intakes where the water is used for human consumption, and shall apply to the stream segment extending upstream from the intake for a distance as defined in Section 7.1.b.2 of this Series". Since the words "conventional treatment" might be questioned, the Board added the following definition in Section 2 of this Series: "Conventional Treatment" is the

treatment of water as approved by the State Health Department to assure that the water is safe for human consumption."

Section 6.3 - Category B - Propagation and Maintenance of Fish and Other Aquatic Life:

1. Existing Rule.

(Formerly C1 and C2, proposed as D1, D2, D3 and D4)

The current Board regulation (C1) states that this category is recognized for the "propagation and maintenance of fish and other aquatic life" and "includes all waters not designated as trout waters". The C2 language refers to the Trout Water definition in Section 2 and the representative list in Section 7.71 with no descriptive terms given in this section.

2. Proposed Change.

The Board proposed to recognize the natural variability in habitats used by aquatic organisms by redefining the two existing categories into four based on habitat type and primary species composition. Categories were proposed as follows:

6.3.a - D1 - Warm Water Fishing Streams. Streams or stream segments which contain a fishable population composed overwhelmingly of warm water species. (These may be stocked with trout seasonally.)

6.3.b - D2 - Trout Waters - See Section 2.

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WEST VIRGINIA LEGISLATURE

FIRST REGULAR SESSION, 1999

SECOND ENROLLMENT

Com. Sub. for House Bill No. 2533

(By Delegates Hunt, Compton, Jenkins, Linch, Faircloth and Riggs)

Passed March 21, 1999

In Effect from Passage

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SECOND ENROLLMENT

COMMITTEE SUBSTITUTE

FOR

H. B. 2533

(BY DELEGATES HUNT, COMPTON, JENKINS, LINCH, FAIRCLOTH AND RIGGS)

[Passed March 21, 1999; in effect from passage.]

AN ACT to amend and reenact sections one and two, article three, chapter sixty-four of the code of West Virginia, one thousand nine hundred thirty-one, as amended; all relating generally to the promulgation of administrative rules by the various executive or administrative agencies and the procedures relating thereto; legislative mandate or authorization for the promulgation of certain legislative rules by various executive or administrative agencies; authorizing various executive or administrative agencies to promulgate certain legislative rules in the form that the rules were filed in the state register; authorizing the various executive or administrative agencies to promulgate legislative rules as amended by the Legislature; authorizing various executive or administrative agencies to promulgate legislative rules with various modifications presented to and recommended by the legislative rule-making review committee; authorizing the division of environmental protection to promulgate a legislative

rule relating to carbon monoxide & ozone; authorizing the division of environmental protection to promulgate a legislative rule relating to standards of performance for new stationary sources; authorizing the division of environmental protection to promulgate a legislative rule relating to the prevention and control of emissions from hospital, medical, and infectious waste incinerators; authorizing the division of environmental protection to promulgate a legislative rule relating to the prevention and control of air pollution from hazardous waste treatment, storage or disposal facilities; authorizing the division of environmental protection to promulgate a legislative rule relating to acid rain provisions and permits; authorizing the division of environmental protection to promulgate a legislative rule relating to ambient air quality standards for sulfur oxides an particulate matter; authorizing the division of environmental protection to promulgate a legislative rule relating to emission standards for hazardous air pollutants pursuant to 40 CFR Part 63; authorizing the division of environmental protection to promulgate a legislative rule relating to the awarding of West Virginia stream partners program grants; authorizing the division of environmental protection to promulgate a legislative rule relating to West Virginia surface mining and reclamation; authorizing the division of environmental protection to promulgate a legislative rule relating to solid waste management; authorizing the division of environmental protection to promulgate a legislative rule relating to sewage sludge management; authorizing the division of environmental protection to promulgate a legislative rule relating to hazardous waste management; authorizing the division of environmental protection to promulgate a legislative rule relating to the state construction grants program; authorizing the division of environmental protection to promulgate a legislative rule relating to the pollution prevention and compliance assistance rule; authorizing the division of environmental protection to promulgate a legislative rule relating to the state water pollution control revolving fund program; and authorizing the environmental quality board to promulgate a legislative rule relating to the requirements governing water quality standards.

Be it enacted by the Legislature of West Virginia:

That sections one and two, article three, chapter sixty-four of the code of West Virginia, one thousand nine hundred thirty-one, as amended, be amended and reenacted, all to read as follows:

ARTICLE 3. AUTHORIZATION FOR BUREAU OF ENVIRONMENT TO PROMULGATE LEGISLATIVE RULES.

§64-3-1. Division of environmental protection.

(a) The legislative rule filed in the state register on the thirty-first day of July, one thousand nine hundred ninety-eight, authorized under the authority of section four, article five, chapter twenty-two of this code, modified by the division of environmental protection to meet the objections of the legislative rule-making review committee and refiled in the state register on the fifth day of January, one thousand nine hundred ninety-nine, relating to the division of environmental protection (ambient air quality standards for carbon monoxide and ozone, 45 CSR 9), is authorized.

(b) The legislative rule filed in the state register on the thirty-first day of July, one thousand nine hundred ninety-eight, authorized under the authority of section four, article five, chapter twenty-two of this code, modified by the division of environmental protection to meet the objections of the legislative rule-making review committee and refiled in the state register on the fifth day of January, one thousand nine hundred ninety-nine, relating to the division of environmental protection (standards of performance for new stationary sources, 45 CSR 16), is authorized.

(c) The legislative ruled filed in the state register on the third day of August, one thousand nine hundred ninety-eight, authorized under the authority of section four, article five, chapter twenty-two of this code, modified by the division of environmental protection to meet the objections of the legislative rule-making review committee and refiled in the state register on the fifth day of January, one thousand nine hundred ninety-nine, relating to the division of environmental protection (to prevent and control emissions from hospital, medical, and infectious waste incinerators, 45 CSR 24), is authorized.

(d) The legislative rule filed in the state register on the third day of August, one thousand nine hundred ninety-eight, authorized under the authority of section four, article five, chapter twenty-two of this code, modified by the division of environmental protection to meet the objections of the legislative rule-making review committee and refiled in the state register on the fifth day of January, one thousand nine hundred ninety-nine, relating to the division of environmental protection (to prevent and control air pollution from hazardous waste treatment, storage or disposal facilities, 45 CSR 25), is authorized.

(e) The legislative rule filed in the state register on the thirty-first day of July, one thousand nine hundred ninety-eight, authorized under the authority of section four, article five, chapter twenty-two of this code, relating to the division of environmental protection (acid rain provisions and permits, 45 CSR 33), is authorized.

(f) The legislative rule filed in the state register on the thirty-first day of July, one thousand nine hundred ninety-eight, authorized under the authority of section four, article five, chapter twenty-two of this code, modified by the division of environmental protection to meet the objections of the legislative rule-making review committee and refiled in the state register on the twenty-second day of January, one thousand nine hundred ninety-nine, relating to the division of environmental protection (ambient air quality standards for sulfur oxides and particulate matter, 45 CSR 8), is authorized.

(g) The legislative rule filed in the state register on the thirty-first day of July, one thousand nine hundred ninety-eight, authorized under the authority of section four, article five, chapter twenty-two of this code, modified by the division of environmental protection to meet the objections of the legislative rule-making review committee and refiled in the state register on the fifth day of January, one thousand nine hundred ninety-nine, relating to the division of environmental protection (emission standards for hazardous air pollutants pursuant to 40 CFR Part 63, 45 CSR 34), is authorized.

(h) The legislative rule filed in the state register on the thirty-first day of July, one thousand nine hundred ninety-eight, authorized under the authority of section fourteen, article thirteen, chapter twenty of this code, modified by the division of environmental protection to meet the objections of the legislative rule-making review committee and refiled in the state register on the second day of November, one thousand nine hundred ninety-eight, relating to the division of environmental protection (awarding of West Virginia stream partners program grants, 60 CSR 4) is authorized.

(i) The legislative rule filed in the state register on the thirtieth day of July, one thousand nine hundred ninety-eight, authorized under the authority of section three, article one, chapter twenty-two of this code, modified by the division of environmental protection to meet the objections of the legislative rule-making review committee and refiled in the state register on the twenty-second day of January, one thousand nine hundred ninety-nine, relating to the division of environmental protection (surface mining and reclamation regulations, 38 CSR 2), is authorized.

(j) The legislative rule filed in the state register on the thirty-first day of July, one thousand nine hundred ninety-eight, authorized under the authority of section five, article fifteen, chapter twenty-two of this code modified by the division of environmental protection to meet the objections of the legislative rule-making review committee and refiled in the state register on the seventh day of October, one thousand nine hundred ninety-eight, relating to the division of environmental protection (solid waste management, 33 CSR 1), is authorized.

(k) The legislative rule filed in the state register on the thirty-first day of July, one thousand nine hundred ninety-eight, authorized under the authority of section twenty, article fifteen, chapter twenty-two of this code, modified by the division of environmental protection to meet the objections of the legislative rule-making review committee and refiled in the state register on the twentieth day of November, one thousand nine hundred ninety-eight, relating to the division of environmental protection (sewage sludge management, 33 CSR 2), is authorized.

(l) The legislative rule filed in the state register on the third day of August, one thousand nine hundred ninety-eight, authorized under the authority of section six, article eighteen, chapter twenty-two of this code, modified by the division of environmental protection to meet the objections of the legislative rule-making review committee and refiled in the state register on the second day of October, one thousand nine hundred ninety-eight, relating to the division of environmental protection (hazardous waste management, 33 CSR 20), is authorized.

(m) The legislative rule filed in the state register on the thirtieth day of July, one thousand nine hundred ninety-eight, authorized under the authority of section six, article two, chapter twenty-two-c of this code, relating to the division of environmental protection (state construction grants program, 47 CSR 33), is authorized.

(n) The legislative rule filed in the state register on the thirty-first day of July, one thousand nine hundred ninety-eight, authorized under the authority of section six, article one, chapter twenty-two of this code, modified by the division of environmental protection to meet the objections of the legislative rule-making review committee and refiled in the state register on the twenty-second day of January, one thousand nine hundred ninety-nine, relating to the division of environmental protection (pollution prevention and compliance assistance rule, 47 CSR 3), is authorized.

(o) The legislative rule filed in the state register on the thirty-first day of July, one thousand nine hundred ninety-eight, authorized under the authority of section three, article two, chapter twenty-two-c of this code, modified by the division of environmental protection to meet the objections of the legislative rule-making review committee and refiled in the state register on the second day of November, one thousand nine hundred ninety-eight, relating to the division of environmental protection (state water pollution control revolving fund program, 47 CSR 31), is authorized.

(p) The legislative rules filed in the state register on the seventh day of October, one thousand nine hundred ninety-

eight, relating to the division of environmental protection (underground storage tank insurance trust fund, 33 CSR 32) are authorized.

§64-3-2. Environmental quality board.

The legislative rule filed in the state register on the third day of August, one thousand nine hundred ninety-eight, authorized under the authority of section four, article three, chapter twenty-two-b, of this code, relating to the environmental quality board (requirements governing water quality standards, 46 CSR 1), is authorized until the thirtieth day of October, 1999: *Provided,* 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 the interpretive differences regarding the designation of category A waters and analyze the need for distance prohibitors for the policies of public drinking water intake, with the amendments set forth below:

On page fourteen, subsection 7.2.b., by following the words "contrary provision," by striking the word "numeric";

And, on page twenty, by striking-out all of subsection 8.5..

On page 14, at the end of paragraph 7.2.a.2 after the word "headwaters.)" by inserting the following:

"Until June 30, 2003, the one-half mile zone described in this section shall not apply to the Ohio River main channel (between Brown's Island and the left descending bank) between river mile points 61.0 and 63.5."

That Joint Committee on Enrolled Bills hereby certifies that the foregoing bill is correctly enrolled.

Chairman Senate Committee

Chairman House Committee

Originating in the House.

Takes effect from passage.

Clerk of the Senate

Clerk of the House of Delegates

President of the Senate

Speaker of the House of Delegates

The within approved this the 2nd day of April, 1999.

Governor

PRESENTED TO THE
GOVERNOR
Date 3/20/99
Time 3:30

WEST VIRGINIA
SECRETARY OF STATE
KEN HECHLER
ADMINISTRATIVE LAW DIVISION

West Virginia Coal Association
2014 Triennial Review Comments
October 12, 2012
Attachment "F"

OFFICE OF THE SECRETARY OF STATE

Form #7

Effective Date

RECEIVED OCT 14 2002

Oct. 29, 1999

NOTICE OF AN EMERGENCY RULE

AGENCY: Environmental Quality Board TITLE NUMBER: 46 CSR 1

CITE AUTHORITY: 22B-3-4

EMERGENCY AMENDMENT TO AN EXISTING RULE: YES ☑ NO ☐

IF YES, SERIES NUMBER OF RULE BEING AMENDED: Series 1 (One)

TITLE OF RULE BEING AMENDED: Requirements Governing Water Quality Standards

IF NO, SERIES NUMBER OF RULE BEING FILED AS AN EMERGENCY:

TITLE OF RULE BEING FILED AS AN EMERGENCY:

THE ABOVE RULE IS BEING FILED AS AN EMERGENCY RULE TO BECOME EFFECTIVE AFTER APPROVAL BY SECRETARY OF STATE OR 42ND DAY AFTER FILING, WHICHEVER OCCURS FIRST.

THE FACTS AND CIRCUMSTANCES CONSTITUTING THE EMERGENCY ARE AS FOLLOWS:

Use additional sheets if necessary

SCANNED

Elizabeth M Chaffee

Signature

Date: Oct. 18, 1999

TO: LEGISLATIVE RULE-MAKING REVIEW COMMITTEE

FROM: Environmental Quality Board, Libby Chatfield, 558-4002

EMERGENCY RULE TITLE: Requirements Governing Water Quality Standards

1. Date of Filing: Oct. 18, 1999

2. Statutory authority for promulgating emergency rule:

22B-3-4

3. Date of filing of proposed legislative rule: _____

4. Does the emergency rule adopt new language or does it amend or appeal a current legislative rule?

Adopts new language to amend a current legislative rule.

5. Has the same or similar emergency rule previously been filed and expired?

NO.

6. State, with particularity, those facts and circumstances which make the emergency rule necessary for the immediate preservation of public peace, health, safety or welfare:

The proposed amendment clarifies that all waters of the State are protected by the public drinking water supply designated use category. The Board was directed to review and revise the rule to clarify the application of category A by October 30, 1999. (See #7) Passage of the emergency rule is necessary to extend the authority of the Water Quality Standards rule beyond the October 30, 1999, deadline.

7. If the emergency rule was promulgated in order to comply with a time limit established by the Code or federal statute or regulation, cite the Code provision, federal statute or regulation and time limit established therein.

WV Code §64-3-2 authorizes 46 CSR 1 until October 30, 1999, provided that the Board 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 the interpretive differences regarding the designation of category A water and analyze the need for distance prohibitors for the sources of public drinking water intake(s).

8. State, with particularity, those facts and circumstances which make the emergency rule necessary to prevent substantial harm to the public interest.

The proposed language clarifies that the category A use applies to all waters of the State. Although the use category has been implemented in that way for many years, questions have arisen recently from the regulated community regarding whether this interpretation/implementation is correct and appropriate. The Board has determined that this interpretation is appropriate at this time. Additionally, the Board had determined that using the watershed approach is a valuable way of implementing the public drinking water category. The Board will review the zones of critical control in the Source Water Assessment and Protection Program prepared by the Bureau of Public Health which applies the watershed approach to the waters of the State. The Board will then implement the reassessment of this category based on those zones of critical concern.

46 CSR 1
Requirements Governing Water Quality Standards
Emergency Rulemaking
October 18, 1999

Summary of Proposed Changes

The changes proposed address the implementation of the drinking water supply use category (category A) in section 6.2 of the rule. The rule will be amended to clarify that the public drinking water supply use category applies to all waters of the state. This is not a new interpretation of this section. The Office of Water Resources of the Division of Environmental Protection has implemented the use category in this way for some time. However, the existing language in the rule does not clearly define this interpretation. The Board is therefore proposing the amendment to make this clarification.

The specific changes proposed are to remove the existing language in section 6.2 and replace it with language providing that Category A applies to all waters unless it has been specifically removed as provided in Section 7 of the rule. Additional language is proposed which provides an exemption from the manganese human health criterion above five miles of a known drinking water source. This change has been included to address concerns raised by the coal industry regarding the difficulty of meeting the manganese limit.

The Board intends that the application of category A will be revisited upon completion of the delineation of Zones of Critical Concern (ZCCs) in the Source Water Assessment and Protection Plan being implemented by the WV Bureau for Public Health. According to that plan the Bureau will delineate zones of protection in all waters to ensure that appropriate water quality is maintained in the vicinity of public drinking water intakes. Those delineations are scheduled for completion in July 2000. Upon completion, the Board will review the delineations and reconsider the application of category A waters using the ZCCs.

46 CSR 1
Requirements Governing Water Quality Standards
Emergency Rulemaking
October 18, 1999

Statement of Circumstances Requiring Proposed Amendments

In 1997, the West Virginia Legislature passed HB2533, which, among other things, approved amendments to the Water Quality Standards rule. Section 65-3-2 authorized the rule until October 31, 1999 with a proviso that the Board review, revise and propose emergency and legislative rule to address the current designation of category A waters.

The proposed language clarifies that the use category applies to all waters of the state, except where that use has been removed through legislative rulemaking and is listed in section 7.2.d of the rule. This clarified language is consistent with the current application category A by the Office of Water Resources of the Division of Environmental Protection in the National Pollutant Discharge Elimination System (NPDES) permitting program. Additional language is proposed which provides an exemption from the manganese human health criterion above five miles of a known drinking water source. This change has been included to address concerns raised by the coal industry regarding the difficulty of meeting the manganese limit.

In considering the clarification of how Category A is to apply to the state's waters, the Board looked at a number of alternatives to the current implementation protocol. After reviewing a number of options, the Board believes that applying the watershed approach is a valuable way of implementing the public drinking water category. The Board will review the Zones of Critical Concern to be delineated around drinking water intakes as outlined in the Source Water Assessment and Protection Plan prepared by the West Virginia Bureau for Public Health which applies the watershed approach to the waters of the State. The Board will then implement the reassessment of the Public A use category based on those Zones of Critical Concern. The projected completion of the delineations of the ZCC's is July of 1999. Until that time, the Board has determined that the current application of the use category to all streams of the state is appropriate in that it ensures full protection of those waters until a review of the protection zones in the SWAPP can be completed.

APPENDIX B

FISCAL NOTE FOR PROPOSED RULES

Rule Title: 46 CSR 1 Requirements Governing Water Quality Standards

Type of Rule: ✓ Legislative ___ Interpretive ___ Procedural

Agency: WV Environmental Quality Board

Address: 1615 Washington Street, E., Suite 301
Charleston, WV 25311

---

1. Effect of Proposed Rule N/A

	ANNUAL		FISCAL YEAR		
	INCREASE	DECREASE	CURRENT	NEXT	THEREAFTER
ESTIMATED TOTAL COST	$	$	$	$	$
PERSONAL SERVICES					
CURRENT EXPENSE					
REPAIRS & ALTERNATIONS					
EQUIPMENT					
OTHER					

2. Explanation of above Estimates:

N/A

3. Objectives of these rules:

Proposed changes clarify the application of category A, the public drinking water supply use designation in the Water Quality Standards Rule.

Rule Title: Requirements Governing Water Quality Standards.

4. Explanation of Overall Economic Impact of Proposed Rule.

A. Economic Impact on State Government.

None. The amendments clarify the existing implementation protocol employed by the Division of Environmental Protection.

B. Economic Impact on Political Subdivisions; Specific Industries; Specific groups of Citizens.

No changes in the permitting process will occur as a result of the proposed changes. NPDES permits will continue to include discharge limits based on use category A requirements where applicable.

C. Economic Impact on Citizens/Public at Large.

Retaining Statewide application of category A will ensure protection of States waters with a watershed approach as outlined in the West Virginia Bureau for Public Health's Source Water Assessment and Protection Program can be implemented.

Date: 8/19/1999

Signature of Agency Head or Authorized Representative

Elizabeth M Chaffee

Executive Office
#10 McJunkin Road
Nitro, WV 25143-2506
Telephone No: (304)759-0575
Fax No: (304)759-0526

West Virginia Bureau of Environment

Cecil H. Underwood
Governor

Michael C. Castle
Commissioner

October 18, 1999

Ms. Judy Cooper
Director, Administrative Law
Division
Secretary of State's Office
Capitol Complex
Charleston, WV 25305

RE: 46CSR1 - "Requirements Governing Water Quality Standards"

Dear Ms. Cooper:

WV Code §29A-3-11(a) requires the Secretary of the executive department which administers an agency under WV Code §5F-2-1, et seq., to take the necessary steps to submit rules finalized by the agencies which it administers to the legislative rulemaking process. Because I am charged with providing administrative support to the Environmental Quality Board pursuant to WV Code §5F-2-1(a)(3)(C), I hereby submit, as notice of an emergency rule, the enclosed ruelmaking package prepared by the Environmental Quality Board entitled "Requirements Governing Water Quality Standards." In my capacities both as Commission of the Bureau of Environment and Director of Environmental Protection, though, I take no position on the appropriateness or need for the rule, and note that it is more stringent than the parallel federal rules concerning the designation of stream uses.

Should you have any questions, please feel free to contact me at 759-0515, or Libby Chatfield, Technical Advisor, Environmental Quality Board at 558-4002.

Sincerely,

Michael C. Castle

Michael C. Castle
Commissioner

MCC:cc

cc: Libby Chatfield
Carrie Chambers

UNITED STATES ENVIRONMENTAL PROTECTION AGE
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

West Virginia Coal Association
2014 Triennial Review Comments
October 12, 2012
Attachment "G"

FEB 1 8 2000

Senator William R. Wooton, Chair
Senate Judiciary Committee
1900 Kanawha Boulevard East
Building 1, Room 210W
Charleston, WV 25305

Dear Mr. Wooton:

The Environmental Protection Agency (EPA) understands that the Environmental Quality Board (EQB) has proposed to designate all waters of West Virginia as public drinking water supply ("Category A"). In addition, while we have not been provided with a specific proposal for the future removal of the public water supply designated use on certain streams, we understand that this is being given consideration in West Virginia. EPA Region III has been asked how we would view future determinations to remove the public drinking water supply designation on a statewide or case-by-case basis in the event that such a revision may be justified.

EPA has not developed national guidance for assessing the public water supply use designation, and EPA cannot state in advance what its position would be regarding a future attempt to remove this use designation with respect to any particular water or waters. In order to assist your deliberations, this letter describes generally the process which may be required for a State to remove this designation.

Section 303(c)(2)(A) of the Clean Water Act (CWA) requires States to consider a water body's "use and value for public water supplies..." when establishing water quality standards, and thus allows for the designation of offstream uses such as public water supplies that are not included in the Section 101(a)(2) goals (i.e., "fishable/swimmable"). Generally, to change a designated use to a less stringent use, the State must provide a structured scientific assessment of the factors affecting the attainment of the use which may include physical, chemical, biological, and economic factors described in 40 C.F.R. § 131.10(g).

EPA is charged with assuring that any change in a State's water quality standards is consistent with the requirements of the Clean Water Act. As the Act requires States to consider the "use and value for public water supplies," EPA Region III would, at a minimum, require that the State provide an assessment demonstrating why removal of a public drinking supply use is warranted. Region III believes that such an assessment would include at least the following:

- A qualitative assessment of the interactions between the various instream and offstream designated uses of a waterbody;
- An identification of those waters where the drinking water supply use designation will apply;
- An identification of those waters where the drinking water supply use does not exist, and the designated use will be removed;
- Sound rationale to justify the removal of the drinking water supply use designation for waters identified above. Such a rationale would include analysis of the factors set forth at 40 C.F.R. § 131.10(g), and documentation that the waters are not used as a source of drinking water, there are no drinking water intakes, and there are no drinking water wells in the vicinity that are hydrologically connected to the surface waters in question;
- Assurance that the 101(a)(2) uses of the Clean Water Act will not be adversely impacted in the waterbodies; and
- Assurance that the downstream uses will be fully protected;
- Adequate public participation.

Region III has been asked whether the Environmental Quality Board's proposed review the West Virginia Bureau for Public Health's delineation of Zones of Critical Concern (ZCC) and determination of the applicability of these delineations for Category A redesignation would be an acceptable assessment. Region III cannot predetermine whether or not the ZCC's are an appropriate evaluation on which to base the drinking water supply use. It would seem likely that the ZCC would provide the type of information that could be useful in making this determination.

The foregoing applies only where the drinking water use is not an "existing" use as that term is defined in the applicable laws and regulations. As you may know, a designated use may not be removed if it is an existing use. Therefore, in segments where the stream has been used as a drinking water source on or at any time since November 28, 1975, the use would need to be retained. Region III is particularly concerned in cases where an individual uses water directly from the stream. The human health of those individuals, especially in rural areas, would not be protected if the drinking water supply use were removed. Upon the reassessment of Category A, we hope that the EQB will determine how to appropriately address this issue. In the meantime, we support the EQB's on-going research and offer our assistance in this matter.

It is important to note that for waters where the Category A use designation is removed, the protection of human health from toxic effects through fish consumption will be achieved through criteria that apply to the water contact recreation use (Category C).

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 redesignation of Category A. If you have any questions, please feel free to call Ray George at 304-234-0234, or Mary Kuo of my staff at (215)814-2390.

Sincerely,

Richard V. Pepino

Richard V. Pepino
Associate Director, Office of Watersheds

cc: Joe Altizer
Rita Pauley

tal protection (to prevent and control air pollution from coal refuse disposal areas, 45 CSR 1), is repealed.

§64-3-2. Environmental quality board.

The emergency rule relating to the environmental quality board (requirements governing water quality standards, 46 CSR 1) filed in the state register on the eighteenth day of October, one thousand nine hundred ninety-nine, and subsequently refiled in the state register on the fourteenth day of January, two thousand is repealed and not authorized. The legislative rule filed in the state register on the sixth day of August, one thousand nine hundred ninety-nine, authorized under the authority of section four, article three, chapter twenty-two-b, of this code, modified by the environmental quality board to meet the objections of the legislative rule-making review committee and refiled in the state register on the twenty-first day of January, two thousand, relating to the environmental quality board (requirements governing water quality standards, 46 CSR 1), is authorized, with the following amendment:

"On page ten, at the end of subdivision 6.2.d by adding a new sentence to read as follows:

'The manganese human health criteria shall not apply where the discharge point of the manganese is located more than five miles upstream from a known drinking water source'."

After the vote, David Yaussy, a lawyer for the state Manufacturers A thanked board members. So did Scott Goldman, a lawyer for the Cl Commerce.

Randy Sovic, technical analyst with the state Department of Environmental Protection, criticized the board's decision.

"It is very disappointing that we still don't have some clarification on this issue in the rule," Sovic said. "But the agency is going to continue its position unless directed to do otherwise by the board."

Also on Friday, Samuel was chosen to replace Snyder as the board's chairman. Snyder will continue to serve on the board.

To contact staff writer Ken Ward Jr., use e-mail or call 348-1702.

Search for: sovic (Search Help)
Publication Charleston Gazette
Article Dated 2001

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46 CSR 7
Procedural Rules Governing Reclassification of Waters Designated for Public Water Supply
September 17, 2002

Statement of Circumstances Requiring Proposed Rule

This proposed rule addresses the implementation of the Public Water Supply designated use category ("Category A") established in section 6.2 of the state Water Quality Standards (46 CSR 1 – Requirements Governing Water Quality Standards). The current implementation of Category A by the Division of Water Resources of the Department of Environmental Protection in the National Pollutant Discharge Elimination System (NPDES) permitting program is that the designated use applies to all waters of the state, unless it has been removed specifically by the Board. The Board supports this interpretation of the application of the Public Water Supply Use.

The Board acknowledges that circumstances may arise where the application of the Category A use may be determined to be inappropriate, and may result in instream permit limits that are unduly burdensome to an NPDES permit holder. In that case, the Category A use can be, and in fact has historically been, removed by amending the Water Quality Standards rule through the legislative process. The Board has heard a number of regulated industries express concern about the length of time required to remove the Category A designated use through the legislative rulemaking process. Because of the late July/early August filing requirement for revisions to legislative rules, it can take anywhere from a year to 18 months, or even longer to accomplish a use designation change.

The Board is proposing this procedural rule in order to address this concern. This rule establishes a process for removing the Category A use which, while retaining the substance and safeguards offered by the current procedures, results in a shorter time period from the date the application is filed to the final decision by the Board.

LETTER SENT MARCH 5, 2003 TO CHAIRMAN EDWARD SNYDER

Edward M. Snyder
Chairman, Environmental Quality Board
1615 Washington Street, East, Suite 301
Charleston, West Virginia 25311

Dear Chairman Snyder:

We have reviewed 46 C.S.R. 7, "Procedural Rule Governing Reclassification of Waters 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. We strongly urge the Board to reconsider its decision to adopt this procedural rule.

Please contact us at our legislative offices to discuss this problem. You may contact Senator Ross at 357-7973 and Delegate Mahan at 340-3106.

Senator Mike Ross,
Co-Chairperson, LRRC

Delegate Virginia Mahan
Co-Chairperson, LRRC

UNITED STATES ENVIRONMENTAL PROTECTION AGEN
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

June 29, 2005

Dr. Edward M. Snyder, Ph.D., Chair
West Virginia Environmental Quality Board
601 57th Street, SE
Charleston, WV 25304

Dear Dr. Snyder:

West Virginia completed its 2004 triennial review of water quality standards and revisions to 46 CSR 1, *Requirements Governing Water Quality Standards* were submitted to the U.S. Environmental Protection Agency (EPA) on June 7, 2004, pursuant to Section 303(c) (2)(A) of the Clean Water Act (CWA) and 40 C.F.R 131.20 (a). These revisions were approved by the West Virginia Legislature in the 2004 session and became effective on July 1, 2004. The West Virginia Office of the Attorney General also certified that these revisions were duly adopted and authorized pursuant to the laws of the State of West Virginia during the 2004 Legislative session. EPA Region III received this triennial review package on June 14, 2004. In a letter dated December 17, 2004, EPA approved that submission, in large part, and deferred action on the addition of the last sentence in Section 6.2.d while we evaluated and collected additional information sufficient to finalize a decision. The new sentence provides that: "The manganese human health criterion shall only apply within the five-mile zone immediately upstream above a known public or private water supply used for human consumption" (the "Manganese Five-Mile Rule"). After the triennial package was submitted to EPA, EPA received other information on the Manganese Five Mile Rule, consisting primarily of information and comments from interested parties. EPA Region III received this information on June 22 and July 21, 2004, and April 14, 2005.

The purpose of this letter is to approve the "Manganese Five-Mile Rule" submission as consistent with the requirements of the CWA and the applicable Federal regulations at 40 C.F.R. Part 131. Enclosure 1 identifies and sets forth a rationale for EPA's approval in accordance with Section 303 (c)(3) of the CWA and 40 C.F.R. Part 131. West Virginia's new or revised Water Quality Standards approved today are now effective for CWA purposes.

If you have any questions concerning this letter, please contact me at (215) 814-5422 or Ms. Cheryl Atkinson at (215) 814-3392.

Sincerely,

Jon M. Capacasa, Director
Water Protection Division

Enclosure

Enclosure 1

ENVIRONMENTAL PROTECTION AGENCY, REGION III
TITLE 46 LEGISLATIVE RULES SERIES 1
REQUIREMENTS GOVERNING WATER QUALITY
2004 TRIENNIAL REVIEW

APPROVAL OF NEW AND REVISED ITEMS

Addition of the "Manganese Five-Mile Rule" sentence in Section 6.2.d. Regulatory language was added to have the manganese human health criterion apply only within the five-mile zone immediately upstream above a known public or private water supply used for human consumption (Mn 5-mile Rule).[1] In consideration of the following factors, EPA finds that this new Rule is protective of the designated use and consistent with the Clean Water Act.

On June 24, 2003, EPA approved West Virginia's adoption of 1 mg/L of manganese, that West Virginia adopted for its public water supply use, as protective of that public water supply use.[2] Manganese has a very low toxicity via oral ingestion, and drinking water accounts for a relatively small proportion of the total manganese intake by humans. Indeed, EPA has decided not to regulate manganese as a contaminant under the Safe Drinking Water Act (SDWA). The National Recommended Water Quality Criteria for manganese for human health is based not on toxic effects, but rather on the non-enforceable SDWA secondary drinking water standard, established for organoleptic reasons.

The addition of the Mn 5-mile Rule does not change the numeric manganese criterion for

---

[1] The phase "known public or private water supply used for human consumption" includes those uses as defined in the approved State regulation at Section 6.2, for Category A, Public Water Supply. "Public Water Supply includes waters which, after conventional treatment, are used for human consumption. This category includes streams where the following are located:

a. All community domestic water supply systems;

b. All non-community domestic water supply systems;

c. All private domestic water systems;

d. All other surface water intakes where the water is used for human consumption."

Section 46-1-6.2 (numeration altered).

[2] June 24, 2003, letter from Jon Capacasa, Water Protection Division, EPA Region III to Dr. Edward Snyder, West Virginia Environmental Quality Board; see also January 14, 2004, Memorandum, U.S. Dist. Ct. Eastern Dist. PA (finding EPA's 2003 decision to approve West Virginia's manganese human health criterion reasonable).

protection of the public water supply in West Virginia. That criterion has not been modified and continues to apply in West Virginia. Rather, the Mn 5-mile Rule specifies the proper application of the approved criterion. In this case the rule creates a zone upstream from public and private drinking water intakes to protect the public water supply use from increased levels of manganese.

On June 26, 2003, EPA disapproved a prior version of this regulation.[3] The 2000 version of the Mn 5-mile Rule Mn (Section 6.2.d as adopted in May 2000) read as follows:

> "The manganese human health criteria shall not apply where the discharge point of the manganese is located more than five miles upstream from a known drinking water source."

EPA disapproved that provision because it relied on the location of the discharge to determine whether the criteria would apply. Under the 2000 Mn 5-mile rule, a discharger might be exempted from effluent limitations to meet the manganese criterion based on its distance from the intake point, regardless of the impact on the quality of the water to be used as public water supply. EPA indicated in its disapproval letter that, in the absence of a sound scientific rationale, West Virginia could not so limit the application of the criterion.

In contrast to the 2000 rule, the current Mn 5-mile rule ensures the manganese criterion applies to all waters and five miles above public and private water intakes. The manganese criterion continues to apply at all these intakes, as well as within a five-mile zone upstream of the intakes. The West Virginia Department of Environmental Protection (DEP), which is the State agency which issues National Pollutant Discharge Elimination System (NPDES) permits, will ensure that the instream concentration of manganese does not exceed the water quality standard five miles above a drinking water intake point through the incorporation of effluent limitations into permits.[4] The DEP will impose such water quality-based effluent limitations as necessary, regardless of the location of the facility itself.

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 the 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

---

[3] June 26, 2003, letter from Jon Capacasa, Water Protection Division, EPA Region III to Dr. Edward Snyder, West Virginia Environmental Quality Board.

[4] March 24, 2005, letter from Lisa McClung, Division of Water and Waste Management, West Virginia Department of Environmental Protection to Dr. Edward Snyder, West Virginia Environmental Quality Board, with enclosure.

Mn 5- mile rule, continues to be subject to the applicable 1 mg/L manganese criterion. Therefore, the application of the manganese criterion as provided by the Mn 5-mile rule continues to protect the public water supply use, as defined.

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; 327 Ind. Adm. Code § 2-1-3; 401 Ky. Adm. Regs. § 5:031; Ohio Adm. Code §3745-1-07; Sec. 5.

Commenters on the rule raised the concern of whether West Virginia is aware of and could identify all private and public intakes covered by the designated use. In a March 24, 2004, letter commenting on the Mn 5-mile Rule, the DEP explained that it maintains a database of known water intakes, which DEP has committed to update when a new intake is established or identified.[5] In addition, DEP intends to require NPDES permit applicants to search for intakes, and certify their presence or absence. WV NPDES mining permits already require applicants to list private and public water supplies downstream from the facility. Whenever a new water supply intake is constructed, DEP will evaluate existing permits and modify them if necessary. DEP is confident that through these procedures it can identify the covered intakes and properly protect the water quality through appropriate water quality-based effluent limitations. We find that the steps that DEP will take to insure the proper application of the manganese standard are reasonable, and will result in the protection of the designated use. The DEP, which beginning in July 2005 will be the agency with the authority to promulgate water quality standards and which has been involved in the public processes on all the versions of this rule, supports the Mn 5-mile rule.

Finding that this provision is protective of the designated use, EPA also considered whether the public had adequate opportunity to participate in the adoption of this provision. Some commenters raised concerns regarding the adequacy of public participation because this rule was directly enacted by the West Virginia Legislature. After full review of the record and history of this provision, EPA has decided that public participation was adequate, for the following reasons.

While this provision was adopted by the West Virginia Legislature, rather than first adopted by the West Virginia Environmental Quality Board (EQB), that does not mean that the public did not have an adequate opportunity throughout the process to provide comments and express their views regarding this provision. The public had, and exercised many opportunities to provide comment on this provision over the past five years as this provision was debated and adopted. In October 1999, EQB proposed the first version of a rule imposing a five-mile zone for the manganese criterion. EQB conducted a public hearing, solicited comments from the public on the proposal, and responded to those comments. Throughout the hearings and public

[5] *Id.*

comment processes discussing the different versions of this rule, the public has had opportunities to present their thoughts and concerns on these matters. Beginning in 2003, the West Virginia Legislature began discussions of the Mn 5-mile rule. Public debates on the rule were conducted by Legislative Committees. In June 2004, after the Legislature adopted the rule, the EQB provided the public another opportunity to comment on the Mn 5-mile rule. In addition, the EQB held a public hearing and another public comment period on February 2005. The EQB responded to the comments, and provided the comments and responses, together with a transcript of the hearing to EPA. EPA reviewed the comments and responses as part of the decision to approve the State's Rule. It is clear from a review of the public's comments that they were fully informed as to the issues that were raised by the Rule, and the State's position on the Rule. EPA has concluded that the public had adequate opportunity to provide comment on the Mn 5-mile Rule.

WEST VIRGINIA HOUSE OF DELEGATES

2012 FIRST REGULAR SESSION

SB 562

Establishing DEP procedure for biologic component compliance of narrative water quality standard

RCS# 453
3/10/2012
10:41 PM

562

PASSAGE

YEAS: 94 NAYS: 6 NOT VOTING: 0 PASSED

YEAS: 94

Anderson	Evans	Marshall	Rodighiero
Andes	Ferns	Martin	Romine
Armstead	Ferro	Michael	Rowan
Ashley	Fragale	Miley	Shaver
Azinger	Frazier	Miller, C.	Sigler
Barill	Givens	Miller, J.	Skaff
Barker	Guthrie	Moore	Smith
Boggs	Hall	Morgan	Snuffer
Border	Hamilton	Moye	Sobonya
Brown	Hartman	Nelson	Staggers
Butcher	Hatfield	O'Neal	Stephens
Campbell, D.	Householder	Overington	Storch
Campbell, T.	Howell	Pasdon	Stowers
Cann	Hunt	Paxton	Sumner
Canterbury	Iaquinta	Perdue	Swartzmiller
Caputo	Ireland	Perry	Talbott
Carmichael	Jones	Pethtel	Varner
Craig	Kump	Phillips, L.	Walker
Crosier	Lane	Phillips, R.	Wells
Diserio	Lawrence	Pino	White
Doyle	Longstreth	Poling, D.	Williams
Duke	Mahan	Poling, M.	Speaker Thompson
Ellem	Manchin	Poore	
Ellington	Marcum	Reynolds	

NAYS: 6

Cowles	Gearheart	Savilla
Fleischauer	Manypenny	Walters

NOT VOTING: 0

ENROLLED
COMMITTEE SUBSTITUTE
FOR
Senate Bill No. 562

(SENATORS KESSLER (MR. PRESIDENT), BEACH, D. FACEMIRE, FANNING, HALL, HELMICK, PREZIOSO, PLYMALE AND KLEMPA, *original sponsors*)

[Passed March 10, 2012; in effect from passage.]

AN ACT to amend and reenact §22-11-7b of the Code of West Virginia, 1931, as amended, relating to establishing a public policy for narrative water quality standards; establishing a procedure to determine compliance with the biologic component of the narrative water quality standard; and clarifying that narrative water quality rules cannot be less protective than current requirements.

Be it enacted by the Legislature of West Virginia:

That §22-11-7b of the Code of West Virginia, 1931, as amended, be amended and reenacted to read as follows:

ARTICLE 11. WATER POLLUTION CONTROL ACT.

§22-11-7b. Water quality standards; implementation of antidegradation procedures; procedure to determine compliance with the biologic component of the narrative water quality standard.

(a) All authority to promulgate rules and implement water quality standards is vested in the Secretary of the Department of Environmental Protection.

(b) All meetings with the secretary or any employee of the department and any interested party which are convened for the purpose of making a decision or deliberating toward a decision as to the form and substance of the rule governing water quality standards or variances thereto shall be held in accordance with the provisions of article nine-a, chapter six of this code. When the secretary is considering the form and substance of the rules governing water quality standards, the following are not meetings pursuant to article nine-a, chapter six of this code: (i) Consultations between the department's employees or its consultants, contractors or agents; (ii) consultations with other state or federal agencies and the department's employees or its consultants, contractors or agents; or (iii) consultations between the secretary, the department's employees or its consultants, contractors or agents with any interested party for the purpose of collecting facts and explaining state and federal requirements relating to a site specific change or variance.

(c) In order to carry out the purposes of this chapter, the secretary shall promulgate legislative rules in accordance with the provisions of article three, chapter twenty-nine-a of this code setting standards of water quality applicable to both the surface waters and groundwaters of this state. Standards of quality with respect to surface waters shall protect the public health and welfare, wildlife, fish and aquatic life and the present and prospective future uses of the water for domestic, agricultural, industrial, recreational, scenic and other legitimate beneficial uses thereof. The water quality standards of the secretary may not specify the design of equipment, type of construction or particular method which a person shall use to reduce the discharge of a pollutant.

(d) The secretary shall establish the antidegradation implementation procedures as required by 40 C. F. R. 131.12(a) which apply to regulated activities that have the potential to affect water quality. The secretary shall propose for legislative approval, pursuant to article three, chapter twenty-nine-a of the code, legislative rules to establish implementation procedures which include specifics of the review depending upon the existing uses of the water body segment that would be affected, the level of protection or "tier" assigned to the applicable water body segment, the nature of the activity and the extent to which existing water quality would be degraded. Any final classification determination of a water as a Tier 2.5 water (Water of Special Concern) does not become effective until that determination is approved by the

Legislature through the legislative rule-making process as provided in article three, chapter twenty-nine-a of the code.

(e) All remining variances shall be applied for and considered by the secretary and any variance granted shall be consistent with 33 U. S. C. Section 1311(p) of the Federal Water Control Act. At a minimum, when considering an application for a remining variance the secretary shall consider the data and information submitted by the applicant for the variance; and comments received at a public comment period and public hearing. The secretary may not grant a variance without requiring the applicant to improve the instream water quality as much as is reasonably possible by applying best available technology economically achievable using best professional judgment. Any such requirement will be included as a permit condition. The secretary may not grant a variance without a demonstration by the applicant that the coal remining operation will result in the potential for improved instream water quality as a result of the remining operation. The secretary may not grant a variance where he or she determines that degradation of the instream water quality will result from the remining operation.

(f) The secretary shall propose rules measuring compliance with the biologic component of West Virginia's narrative water quality standard requires evaluation of the holistic health of the aquatic ecosystem and a determination that the stream: (i) Supports a balanced aquatic community that is diverse in species composition; (ii) contains appropriate trophic levels of fish, in streams that have flows sufficient to support fish populations; and

(iii) the aquatic community is composed of benthic invertebrate assemblages sufficient to perform the biological functions necessary to support fish communities within the assessed reach, or, if the assessed reach has insufficient flows to support a fish community, in those downstream reaches where fish are present. The secretary shall propose rules for legislative approval in accordance with the provisions of article three, chapter twenty-nine-a of this code that implement the provisions of this subsection. Rules promulgated pursuant to this subsection may not establish measurements for biologic components of West Virginia's narrative water quality standards that would establish standards less protective than requirements that exist at the time of enactment of the amendments to this subsection by the Legislature during the 2012 regular session.

HOUSE CONCURRENT RESOLUTION NO. 111

RESOLUTION HISTORY:

Date	Action	Journal Page
03/13/10	House received Senate message	2639
03/13/10	Completed legislative action	
03/13/10	Communicated to House	259
03/13/10	Adopted by Senate (Voice vote)	259
03/13/10	Immediate consideration	258
03/13/10	Reported be adopted	258
03/13/10	To Energy, Industry and Mining	109
03/13/10	To Energy, Industry and Mining	109
03/13/10	Introduced in Senate	109
03/12/10	Communicated to Senate	1813
03/12/10	Adopted by House, Special Calendar (Voice vote)	1813
03/12/10	Reported by the Clerk	1813
03/12/10	From House Calendar, Unfinished Business, to Special Calendar	
03/11/10	Be adopted	1399
03/10/10	To House Rules	1214
03/10/10	Introduced in House	1214
03/10/10	To Rules	
03/10/10	Filed for introduction	

Urging the United States Environmental Protection Agency to interpret the West Virginia Water Pollution Act in the manner that will faithfully balance the protection of the environment with the need to maintain and expand opportunities for employment, agriculture and industry as set forth in the Legislature's statement of public policy as contained in the West Virginia Water Pollution Control Act.

Whereas, In enacting the Federal Water Pollution Control Act Congress declared that "it is the policy of Congress to recognize, preserve and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution, to plan the development and use of land and water resources?." ; and

Whereas , As an exercise of its sovereign and primary right to plan the development and use of its lands and water resources the West Virginia Legislature previously enacted Chapter 22 Article 11 of the 1931 Code of West Virginia as amended, the West Virginia Water Pollution Control Act, and in that enactment declared it to be "the public policy of the State of West Virginia to maintain reasonable standards of purity and quality of the water of the state consistent with (1) public health and 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."; and

Whereas , The State of West Virginia has developed and implemented environmental protection performance and permitting standards to adequately protect the waters of the State consistent with this statement of public policy; and

Whereas , Such standards have been promulgated by the West Virginia Department of Environmental Protection and the Legislature and submitted to and approved by the United States Environmental Protection Agency pursuant to the federal Clean Water Act; and

Whereas , These environmental protections and permitting measures include narrative water quality standards codified at 47 CSR 2-3; and

Whereas, West Virginia's narrative standards must be implemented and interpreted in a manner that is protective of aquatic communities consistent with the Legislature's statement of public policy and applicable laws; and

Whereas, The State of West Virginia has not adopted subcategories of special use to protect a certain species of mayfly but protects the aquatic community consistent with the Legislature's statement of public policy; and

Whereas, West Virginia's economic stability relies on the accurate implementation of applicable laws as enacted by the Legislature; and

Whereas, The current method in which the United States Environmental Protection Agency is interpreting the West Virginia Water Pollution Control Act is hindering economic development within the state which directly affects the employment opportunities available to all West Virginians; and

Whereas, The West Virginia Legislature would not enact legislation that would have a detrimental effect on the industrial progression of the state and cause or contribute to environmental degredation; therefore, be it

Resolved by the Legislature of West Virginia:

That any interpretation and implementation of West Virginia's narrative water quality standards is the responsibility of the West Virginia Department of Environmental Protection; and, be it

***Further Resolved*, That the requirements of the narrative criteria are met, when a stream (a) supports a balanced aquatic community that is diverse in species composition; and (b) contains appropriate trophic levels of fish (in streams with sufficient flows to support fish populations); and (c)the aquatic community is not composed only of pollution tolerant species, or the aquatic community is composed of benthic invertebrate assemblages sufficient to perform the biological functions necessary to support fish communities within the assessed reach (or, if the assessed reach has insufficient flows to support a fish community, in those downstream reaches where fish are present); and, be it**

***Further Resolved*, That interpretation of West Virginia's narrative water quality standards must faithfully balance the protection of the environment with the need to maintain and expand opportunities for employment, agriculture and industry as set forth in the Legislature's statement of public policy as contained in the West Virginia Water Pollution Control Act; and, be it**

Further Resolved, That the West Virginia Legislature encourages the United States Environment Protection Agency to change their current interpretation of the West Virginia Water Pollution Control Act to include the intent of the 72nd and subsequent Legislatures; and be it

Further Resolved, That the Clerk of the House of Delegates forward a certified copy of this resolution to the West Virginia Department of Environmental Protection, the United States Environmental Protection Agency, the Huntington District of the United States Army Corps of Engineers, and other appropriate state and federal agencies.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

JUL 2 1 2014

Mr. Kevin Coyne
Water Quality Standards Program
West Virginia Department of Environmental Protection
601 57th Street SE
Charleston, WV 25304

Dear Mr. Coyne:

The U.S. Environmental Protection Agency (EPA), Region III has reviewed the revisions to 47CSR2-Requirements Governing Water Quality Standards as proposed in the West Virginia Register on June 6, 2014. The purpose of the letter is to provide EPA's comments on the proposed revisions. 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 Clean Water Act 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.

The U.S. EPA is supportive of both the addition of the Category A use (Water Supply, Public) to the Kanawha River main stem (47CSR2 7.2.d.19.1) and the copper water effect ratio (WER) for the Sanitary Board of the City of Charleston (47CSR2 7.2.d.19.2). EPA has reviewed the information on how the WER was derived and find that it is consistent with EPA's current guidance in the March 2001 Streamlined Water-Effect Ratio Procedure for Discharges of Copper (EPA-822-R-01-005). Our only comment would be that the regulation needs to specify whether it is a dissolved or total recoverable WER.

Thank you for this opportunity to provide comments on these revisions to West Virginia's water quality standards regulation. If you have any questions concerning this letter, please contact me at (215)814-5717, or contact Denise Hakowski at (215)814-5726.

Sincerely,

Evelyn S. MacKnight

Evelyn S. MacKnight, Associate Director
Office of Standards, Assessment & TMDLs
Water Protection Division

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47 CSR 2. REQUIREMENTS GOVERNING WATER QUALITY STANDARDS
RESPONSE TO COMMENTS
2015 Rule Making

On June 6, 2014, the Division of Water & Waste Management (DWWM) commenced a forty-five day public comment period and subsequently held a public hearing on July 1, 2014 to accept oral comments on proposed revisions associated with the review of State Water Quality Standards. West Virginia's Water Quality Standards can be found in the Legislative Rule *Requirements Governing Water Quality Standards* at 47CSR2 ("Rule"), and DWWM proposed the following revisions:

1. 7.2.d.19.1 - Removal of Water Use Category A exemption - Kanawha River main stem, Zone 1.

7.2.d.19.1. For the Kanawha River main stem, Zone 1, ~~Water Use Category A shall not apply; and~~ T the minimum flow shall be 1,960 cfs at the Charleston gauge.

2. 7.2.d.19.2 - Addition of Copper Water Effect Ratio (WER) - Site specific copper WER for the Charleston Sanitary Board's wastewater treatment plant discharge to the Kanawha River.

7.2.d.19.2. The minimum flow shall be 1,960 cfs at the Charleston gauge. Pursuant to 46 CSR 6, a Copper Water Effect Ratio (WER) of 5.62 shall be applied to The Sanitary Board of the City of Charleston, West Virginia wastewater treatment plant discharge to Kanawha River, Zone 1.

DWWM accepted oral comments at the hearing and written comments through July 21, 2014. Twenty-five commenters submitted written comments regarding the proposed revisions, and nine commenters provided verbal comments. No comments were received after the submission deadline. DWWM addresses both the written and oral comments below.

Written and Oral Comments

The following individuals submitted both written and oral comments, which were similar in content, and are thus addressed in one response.

1. COMMENTER: The *West Virginia Manufacturers Association* by Rebecca Randolph, its President.

COMMENT A: *DEP rationale for proposal to remove Category A exemption*
The Commenter suggests that DEP has not given a reason for the proposed removal of the Category A exemption, but states "it has been conjectured" that this action is to allow West Virginia American Water to build an alternative intake. The Commenter further states this action is premature, or as stated by the Commenter "putting the cart before the horse", since West Virginia American Water has not concluded that an alternative intake on the Kanawha River is feasible.

RESPONSE A: As stated during the May 8, 2014 public meeting and in numerous media reports, the decision to remove the Category A exemption is a state policy decision. DEP and many other local, state and federal agencies have worked diligently to address pollution on the Kanawha River, and we do know that our collective efforts over the past few decades have resulted in vastly improved water quality. Also, this change would give the Kanawha Valley greater opportunities for alternative water supplies and economic development. Clean water, and the predictable, consistent protection of that water, ensures the availability of one of the economy's greatest assets—usable water. The decision to construct a potential secondary or "alternative" intake on the Kanawha River is a decision that West Virginia American Water would make, but DEP wants to initiate efforts assessing and potentially addressing any issues surrounding the attainment of the Category A use for Zone 1 of the Kanawha River, so that if any entity chooses to explore or potentially construct an intake the process will have been started.

COMMENT B: *NPDES permitting actions and more stringent limits*
The Commenter states that dischargers to Zone 1 of the Kanawha River will be reassessed for Category A limits and potentially receive more stringent limits as soon as the Rule is finalized. The Commenter also discusses the administrative process for use removals, citing previous examples of use removals that the commenter views as having been laborious and time-consuming.

RESPONSE B: The Commenter is correct that DEP would reassess the permits located in Zone 1 of the Kanawha River if proposed revisions approved by both the West Virginia Legislature and EPA. This assessment would take place during the permit reissuance cycle and/or during a permit modification request that would warrant such assessment and will not necessarily occur "a*s soon as the rule is finalized.*" DEP's reassessment would include an analysis for Category A that *may* lead to more stringent permit limits, but more stringent permit limits are not a foregone conclusion. DEP would also investigate regulatory options, such as the application of mixing zones, which would assist the permittee in achieving compliance with potentially more stringent permit limits. Per the comment on the use removal process and the example of the Dow Chemical and Huntington Alloy efforts, the Commenter is correct that the process was a significant time-consuming effort. Since the referenced efforts were completed, DEP has reassessed the requirements for a Category A use removal, and as evidenced by the Category A use removal on the Unnamed Tributary of Daugherty Run and Fly Ash Run during the 2014 Triennial Review, the process is now being completed more timely. That being said the removal of any use should be looked at very seriously and only done when it is fully warranted and supported by facts, not speculation.

COMMENT C: *Misapplication of Category A in State of West Virginia waters*
The Commenter states that DEP is incorrectly applying Category A use to all waters and that there is no evidence to support this.

RESPONSE C: DEP is well aware of this industry stance on the application of the Category A use in West Virginia waters. The comment on DEP improperly applying Category A use is based on the discussion section of a 1986 rationale document from the Environmental Quality Board (EQB) that discusses the definition and application of the water use designation.

The Commenter is correct that the EQB agreed that drinking water standards should not apply in *"streams or stream segments where no one is using the waters for drinking."* The Commenter fails to acknowledge the ambiguity in the rationale document, including the fact that the sentence prior to the one quoted by the Commenter states, *"They [the EQB] further agreed that defining where the criteria are to apply as part of the definition might be improper."* It should be noted that, in 1986, the EQB failed to acknowledge W.Va. Code § 22-11-7b(c), which states:

> *"In order to carry out the purposes of this chapter, the secretary shall promulgate legislative rules in accordance with the provisions of article three [§§ 29A-3-1 et seq.], chapter twenty-nine-a of this code setting standards of water quality applicable to both the surface waters and groundwaters of this state. Standards of quality with respect to surface waters shall protect the public health and welfare, wildlife, fish and aquatic life and the present and prospective future uses of the water for domestic, agricultural, industrial, recreational, scenic and other legitimate beneficial uses thereof."* (emphasis added)

The above-referenced statement of law clearly mandates that DEP must protect both current and future uses. It should be noted that the revised, and subsequently adopted, EQB Category A definition includes a reference to 47 CSR 2 §7.2.a, which states that all water quality standards shall apply at all times unless a specific exception is granted. It should also be noted that after the EQB revised the definition, it granted various Category A exemptions, but it did not remove any exemptions that would have been unnecessary if the suggested EQB policy had been implemented only to apply Category A in areas where drinking water intakes were located.

COMMENT D: *Better understanding of Category A and Category C (Human Health Criteria)*
The Commenter noted that several speakers during the July 1, 2014 public hearing were confused about the various use categories and that the Category C use already applied to Zone 1 of the Kanawha River. The commenter suggested the DEP further educate individuals on this matter.

RESPONSE D: DEP notes this comment and agrees that the Water Quality Standards Program needs to further educate individuals on the definition of the use categories and how (and where) they apply.

2. COMMENTER: The *West Virginia Rivers Coalition* by Angie Rosser, its Executive Director

COMMENT A: *Support for the removal of Category A exemption*
The commenter supported the removal of the Category A exemption on Zone 1 of the Kanawha River.

RESPONSE A: Thank you for the comment and support.

COMMENT B: *Concern for the proposed water effect ratio (WER)*

The commenter voiced concern for the proposed water effect ratio (WER) and discussed the potential submittal of comments concerning the matter.

RESPONSE B: While no further comments were submitted, DWWM does understand the concern about the copper water effect ratio (WER) that would only be applied to the Charleston Sanitary Board (CSB) discharge of copper as it applies to Category B (aquatic life use). This WER was developed with significant guidance and input from United States Environmental Protection Agency (EPA) experts, who worked with DEP and CSB staff to ensure proper procedures were followed. EPA has reviewed the results of this effort and supports DEP in moving forward with the WER. It should be noted that this WER will only apply to the CSB discharge and not to any other discharge or location on the river. DEP also notes that the new limit will be less than 100 µg/L as it applies to Category B (aquatic life use); the copper limit as it applies to Category A is 1000 µg/L.

Written Comments (submitted via email or mail)

The following individuals submitted only written comments.

3. **COMMENTERS: Bonni McKeown, Barbara Humes, Barbara Daniels, Harold Eugene Davis, Mike Harman, Steve Runfola, Carli Mareneck, Cheryl Wagner, Regina Lindsey-Lynch, Karianne Smith, Jonathan Lynch, *Advocates for a Safe Water System* by Paul Sheridan, *The League of Women Voters of Jefferson County* by Debbie Royalty, Paul Dalzell and Naresh R Shah,**

COMMENT A: *Support of the removal of Category A exemption*
The above listed commenters submitted similar comments, all of which supported the removal of the Category A exemption on Zone 1 of the Kanawha River.

RESPONSE A: Thank you for the comment and support.

4. **COMMENTERS: Dr. Dan Cain Sr. and Paul Handley**

COMMENT A: *Opposes the removal of Category A exemption*
The above listed Commenters submitted similar comments, all of which did not support the removal of the Category A exemption on Zone 1 of the Kanawha River. The rationale for this lack of support included a perception that the river is too polluted to support the Category A drinking water use.

RESPONSE A: DEP has initiated the process to review the current conditions in the river and has found most constituents for which the DEP has data are at or near Category A water quality standards. DEP will be continuing to conduct water quality sampling on the Kanawha River. Table 1 and 2 summarizes this analysis:

Table 1. Lower Kanawha River – Category A Evaluation

Parameter	Cat A Criteria	Notes	Evaluation
8.4 Arsenic (ug/l)	10	Same as C	Non-detect since 8/16/2004. Only most recent results have MDL below criteria. (previous MDL was 20 ug/L)
8.5 Barium (mg/l)	1		140 results – highest is 0.2 mg/L, most < 0.05 mg/L
8.6 Beryllium (ug/l)	4		11 recent results. Highest is 0.5 ug/L, others 0.06 ug/L or less
8.7 Cadmium (ug/l) (hardness based)	0.87 (based on hardness of 80)		135 results: 10 ug/L max; ND since 0.81 value on 5/27/2008
8.9.1 Chromium, dissolved hexavalent (ug/L)	50	Higher than other uses	No data since 2004. Only 4 are for dissolved. 290 for total. One result of 51 ug/L in 1982, all others <18ug/L
8.10 Copper (ug/l)	1000		Mostly non-detect, max result 18 ug/L
8.11 Cyanide (ug/l)	5	Same as B Chronic	173 of 176 results are old (1984 or older). 3 more recent (Dec 2003 thru April 2004 (2 non-detect; 1 at 6 ug/L)
8.14 Fluoride (mg/l)	1.4		268 samples - All old data, and highest value is 0.33 mg/L
8.17 Manganese (mg/l)	1		495 results, all below criteria
8.18.1 Total mercury in any unfiltered water sample (ug/l):	0.14	C is 0.15	Newest data (5 samples in 2007/08 using low level detection) all below 0.004 ug/L
Nickel (ug/L)	510		Most 'total' results are old – and < criteria. Newer data all dissolved form. 122 of 123 Dis results are ND (MDLs all < 40ug/L, many 5 ug/L)
8.20 Nitrate (as Nitrate-N) (mg/l)	10		Very little Nitrate data. Lots of nitrate plus nitrite (n=488) – all less than 1.8 mg/L; avg = 0.62 mg/L
8.23 Organics			See Table 2. Results of 2005/2006 sweep of VOC and SVOC at all Ambient sites were below detectable levels for all parameters at Lower Kanawha site (Winfield).
8.25 Phenolic Materials			See Table 2
8.28 Silver (ug/L)	Hardness based (4 at hardness of 51-100	Same as B chronic	164 recent (1999 to present) results. 162 are non-detect; others < 0.9 ug/L

Table 2. Lower Kanawha River – Category A Evaluation (organics)

PARAMETER	Cat A Criteria	Assessment	# Samples	Min MDL	Notes
1,1,1-Trichloroethane	12 mg/L	ND	4	1 ug/L	Below Criteria
1,1,2,2-Tetrachloroethane	0.17 ug/L	ND	4	0.38 ug/L	MDL not sufficient to assess
1,2-Dichlorobenzene (Semi-Volatile)	2.7 ug/L	ND	4	0.77 ug/L	Below Criteria
1,2-Dichloroethane	0.035	ND	4	0.4 ug/L	MDL not sufficient to assess
1,3-Dichlorobenzene (Semi-Volatile)	0.4 ug/L	ND	4	0.82 ug/L	MDL not sufficient to assess
1,4-Dichlorobenzene (Semi-Volatile)	0.4 ug/L	ND	4	0.85 ug/L	MDL not sufficient to assess
2,4,6-Trichlorophenol	2.1 ug/L	ND	4	1.87 ug/L	Below Criteria
2,4-Dichlorophenol	93	ND	4	1.26 ug/L	Below Criteria
2,4-Dimethylphenol	540 ug/L	ND	4	1.46 ug/L	Below Criteria
2,4-Dinitrophenol	70 ug/L	ND	4	1.94 ug/L	Below Criteria
2,4-Dinitrotoluene	0.11 ug/L	ND	4	1.87 ug/L	MDL not sufficient to assess
2-Chlorophenol	120	ND	4	1.19 ug/L	Below Criteria
Acenaphthene	670 ug/L	ND	4	0.68 ug/L	Below Criteria
Acrylonitrile	0.059 ug/L	ND	4	4.2 ug/L	MDL not sufficient to assess
Anthracene	8300 ug/L	ND	4	1.26 ug/L	Below Criteria
Benzene	0.66 ug/L	ND	4	0.1 ug/L	Below Criteria
Benzo(a)anthracene	0.0038 ug/L	ND	4	0.93 ug/L	MDL not sufficient to assess
Benzo(a)pyrene	0.0038 ug/L	ND	4	1.21 ug/L	MDL not sufficient to assess
Benzo(b)fluoranthene	0.0038 ug/L	ND	4	1.48 ug/L	MDL not sufficient to assess
Benzo(k)fluoranthene	0.0038 ug/L	ND	4	1.29 ug/L	MDL not sufficient to assess
Bromodichloromethane	0.55 ug/L	ND	4	0.4 ug/L	Below Criteria
Bromoform	4.3	ND	4	0.4 ug/L	Below Criteria
Butyl benzyl phthalate	NA	ND	4	3.2 ug/L	

Carbon tetrachloride	0.25 ug/L	ND	4	0.2	MDL very close to criteria
Chloroform	5.7 ug/L	ND	4	0.25 ug/L	Below Criteria
Dibenzo(a,h)anthracene	0.0038 ug/L	ND	4	1.35 ug/L	MDL not sufficient to assess
Ethylbenzene	3.1 ug/L	ND	4	0.18 ug/L	Below Criteria
Fluoranthene	300 ug/L	ND	4	1.59 ug/L	Below Criteria
Fluorene	1100 ug/L	ND	4	0.78 ug/L	Below Criteria
Hexachlorobenzene	0.72 ng/L	ND	4	0.92 ug/L	MDL not sufficient to assess
Indeno(1,2,3-cd)pyrene	0.0038 ug/L	ND	4	1.99 ug/L	MDL not sufficient to assess
Methylene chloride	4.6 ug/L	ND	4	0.5 ug/L	Below Criteria
Pentachlorophenol	0.28 ug/L	ND	4	1.99 ug/L	MDL not sufficient to assess
Toluene	6.8 mg/L	ND	4	0.17 ug/L	Below Criteria
Vinyl chloride	2.0 ug/L	ND	4	0.2 ug/L	Below Criteria

5. COMMENTER: *West Virginia American Water* by Jeff L. McIntyre, its President

COMMENT A: *DEP analysis of current conditions in the Kanawha River*
The Commenter faults DEP for not conducting an analysis of current conditions in the Kanawha River as they pertain to the Category A use attainment. The Commenter also questions the "timeline necessary for Zone 1 to achieve all water quality standards. . . ."

RESPONSE A: Please see response to 1.A. Per the comment on the potential timeline to achieve all water quality standards, DEP is committed to conducting the proper analysis of conditions and developing necessary actions to address potential issues, regardless of the length of time necessary to achieve the goal of Category A use attainment.

COMMENT B: *Impact of proposed revisions to community, industry, and local economy*
The Commenter suggests that DEP take into consideration the potential negative impacts that the proposed Category A exemption removal could have on the local community, industrial facilities that discharge to the Kanawha River, and the local economy.

RESPONSE B: DEP understands these concerns and believes that the decision to restore and ultimately protect the Category A drinking water use designation for Zone 1 of the Kanawha River will not negatively impact local industries or the economy, but in fact that the opposite is true. DEP believes that the proposed exemption removal could ultimately provide a reliable source of drinking water, thus encouraging more businesses to locate in the Kanawha Valley.

6. COMMENTER: The *West Virginia Municipal Water Quality Association* by F. Paul Calamita, its General Counsel

COMMENT A: *Support for copper WER*

The Commenter supports adoption of the copper WER for the Charleston Sanitary Board, stating that it tailors the default criterion to the composition of the water in the Kanawha River and that the EPA approved procedure is based on sound science. The Commenter further states that DEP should adopt the WER factor into the metals water quality standards themselves, so WERs could be applied in the permitting process and to help improve the general public's understanding of WERs.

RESPONSE A: Thank you for the support. At this time, DEP will continue to review site-specific criteria, such as the WER, per the guidelines in 46CSR6.

COMMENT B: *Defer revision to remove the Category A exemption until the next triennial review*

The Commenter urges DEP to defer consideration of the removal of the exemption for Zone 1 of the Kanawha River from Category A status for another triennial review cycle to allow more time for review of the matter. The Commenter further states that it is uncertain as to whether DEP has "fully characterized the potential costs and impacts of this decision."

RESPONSE B: DEP will move forward at this time with the revision to remove the Category A exemption. DEP believes that the impact and potential costs will be minimal compared to the benefits of restoring the Category A use to Zone 1 of the Kanawha River.

COMMENT C: *Clarification of rule making process*

The Commenter states that it is his understanding that removal of the Category A exemption will not constitute an immediate reclassification of the Kanawha River, and that such a classification would need to be designated in subsequent rulemaking. He further states "we urge the Department to clearly address, in its response to this comment, the legal effect of any removal of the exemption in any final rule."

RESPONSE C: DEP is following the standard rule making process as governed by West Virginia's *Administrative Procedures Act*, W. Va. Code § 29A-3-1, et seq., and EPA's procedures for revisions of states' water quality standards. The final step in this process will include approval by EPA of the Rule as finally passed by the West Virginia Legislature. Once EPA approval is granted, the Rule as passed by the Legislature will be deemed "in effect." No subsequent rulemaking efforts will be required by DEP once this proposed rule is passed by the Legislature and approved by EPA, at that point Category A would apply to Zone 1 of the Kanawha River.

COMMENT D: *Category A designation before actual use*

The Commenter states that he sees no reason to "impose unnecessary Category A requirements before any actual water supply use of the River."

RESPONSE D: DEP's goal is to restore the Category A use on Zone 1 of the Kanawha River at this time and not to delay the process. If fact, a drinking water intake would not be approved by the West Virginia Bureau for Public Health until the exemption is removed.

7. COMMENTER: The *Charleston Sanitary Board* by Tim Haapala, its Operations Manager

COMMENT A: *Support for copper WER*
The Commenter supports adoption of the copper WER for the Charleston Sanitary Board, noting the scientific basis for the WER and stating, "CSB emphasizes that is has no plans to alter the operation of the wastewater treatment plant in a manner that would result in increased copper discharges following the application of the WER."

RESPONSE A: Thank you for the support and additional information.

8. COMMENTER: United States Environmental Protection Agency Region III by Evelyn S. MacKnight, Associate Director, Water Protection Division

COMMENT A: *Support for Category A use and copper water effect ratio (WER)*
The commenter supports DEP's proposed revision to restore the Category A use on Zone 1 of the Kanawha River and the adoption of the copper WER for the Charleston Sanitary Board

RESPONSE A: Thank you for the support.

COMMENT B: *Specify dissolved or total recoverable WER*
The commenter requests DEP clarify if the WER is for dissolved or total recoverable copper.

RESPONSE B: DEP will clarify in the agency approved rule that the WER will apply to total recoverable copper.

9. COMMENTER: *Henthorn Environmental Services* by Jennie L. Henthorn, its Owner

COMMENT A: *Opposes proposed removal of Category A exemption*
The Commenter expresses support for the West Virginia Manufacturers Association's comments, which did not support the proposed removal of the Category A exemption. The Commenter notes that certain parameters, including organics, would have much lower criteria.

RESPONSE A: Please see Response 1A, 1B, and 1C above.

COMMENT B: *Harmonic mean*
The Commenter requests that DEP add the following language to the Rule, "The critical design flow for determining effluent limits for carcinogens shall be harmonic mean flow."

RESPONSE B: While DEP has considered and adopted this specific type of language into a variance request for a section of the Ohio River, as with other state waters, we will maintain the current design flow for the Kanawha River until a need can be demonstrated.

10. COMMENTER: The *West Virginia Coal Association* by Jason D. Bostic, its Vice President

COMMENT A: *Opposes proposed removal of Category A exemption*
The Commenter claims the proposed removal of the Category A exemption on Zone 1 of the Kanawha River is a "stunt" and is not in support of the revision, citing numerous points made during previous rule making efforts. The commenter claims that the West Virginia Legislature has continually rejected efforts by DEP and the EQB to formally designate State waters as Category A, and goes further to claim that DEP's application of the Category A use is "illegal".

RESPONSE A: DEP does not consider the proposed revision a stunt, nor do we believe we are taking an illegal action. Since the Commenter cited no specific statute, rule, regulation or common law authority DEP is allegedly violating, we are not in a position to further address this comment. However, as stated above, DEP believes this policy decision to restore the Category A use to Zone 1 of the Kanawha River will benefit West Virginians from Point Pleasant to Belle.

COMMENT B: *Request that DEP address previous comments concerning past rule making efforts*
The commenter requests that DEP address comments made during previous rule making efforts, specifically pointing out the proposed aluminum criteria change during the 2014 triennial review.

RESPONSE B: While this comment is outside the scope of the proposed amendments to the Rule and, thus, requires no response, it should be noted during the 2014 West Virginia Legislative Session, the Senate Judiciary Committee voted to remove the proposed statewide aluminum criteria amendment, DEP did not withdraw it. The *"several site-specific aluminum criteria applications"* the commenter refers to are based upon the same approach and rationale as the Statewide proposed criteria change that the Legislature removed during the 2014 session.

Verbal Comments (submitted during the July 1, 2014 public hearing

The following individuals submitted only verbal comments at the public hearing:

11. COMMENTERS: *West Virginia Sustainable Business Council* by Nancy Ward and Jeni Burns, its Co-Founders; *West Virginia Citizen's Action Group* by Julie Archer, its Project Manager; *Citizens Actively Protecting the Environment* by Karen Ireland, its Founder; *People Concerned About Chemical Safety* by Maya Nye, its President; and the *Ohio Valley Environmental Coalition* by Robin Blakeman, its Organizer.

COMMENT A: *Removal of Category A exemption on Zone 1 of the Kanawha River*
The above listed Commenters submitted similar comments, all of which supported the removal of the Category A exemption for Zone 1 of the Kanawha River. Some of the individuals did voice concern for the copper WER.

RESPONSE A: Thank you for the comments and support. To the extent any questions or concerns about the copper WER are not addressed in this Response to Comments or the documents accompanying DEP's rule filings to date, please contact DWWM for further information.

12. COMMENTER: Brooke Drake

COMMENT A: *Concern for copper WER*
The Commenter voiced concern over the proposed copper WER and other actions concerning the water quality standards in West Virginia.

RESPONSE A: Please see Response 11A above. Further, many of the Commenter's questions were outside the scope of the proposed amendments to this Rule and, thus, do not require a response. However, the Commenter should contact DWWM, and anyone in the Water Quality Standards Program will help address any questions and/or concerns.

DEPARTMENT OF ENVIRONMENTAL PROTECTION
SUMMARY OF AMENDMENTS
AGENCY APPROVED RULE
"Requirements Governing Water Quality Standards", 47CSR2

The following amendments have been included in the Agency Approved Rule - Requirements Governing Water Quality Standards, 47CSR2:

1. *7.2.d.19.2. The minimum flow shall be 1,960 cfs at the Charleston gauge. Pursuant to 46 CSR 6, a Copper Water Effect Ratio (WER) of 5.62 shall be applied to The Sanitary Board of the City of Charleston, West Virginia wastewater treatment plant discharge of total recoverable copper to Kanawha River, Zone 1.*

   Based on a comment from EPA, DEP clarified the revision to 7.2.d.19.2. to include the term "total recoverable copper".

5. Appendix A Copper WER Rationale – Final Application of Site-Specific Copper Water Effect Ratio

Summary
Charleston Sanitary Board Request for Cooper WER
WVDEP - Water Quality Standards Program, June 2014

WV WQS
West Virginia state law requires that all changes to state water quality standards, as outlined in 47CSR2 *Requirements Governing Water Quality Standards,* must be approved by state legislature prior to being submitted for final approval by EPA. This requirement for review and approval includes any site-specific changes including Water Effect Ratio (WER) requests.

What is a Copper Water Effect Ratio (WER)?
A WER measures the ratio of toxicity in specific "site water" in comparison to the toxicity in standard laboratory water for certain metals. WER calculations develop site-specific limits for certain metals from EPA and/or state adopted aquatic life criteria that were originally developed using laboratory toxicity data. The water effect ratio incorporates site-specific factors that can influence the bioavailability and toxicity of metals. A WER is typically applied to a specific discharger but, if adequate sampling is completed, can be applied to specific reaches or portions of a waterbody. EPA originally developed and published WER protocols in 1994 and later revised the protocols in 2001, and published the "Streamlined Water-Effect Ratio Procedure for Discharges of Copper" document (EPA-822-R-01-005).

CSB Request – Summary of Events
The Charleston Sanitary Board (CSB) met with WVDEP in September, 2013 to initiate the discussion of a potential copper WER effort. WVDEP discussed options, including the potential use of the EPA approved BLM method and CSB decided to move forward with the WER approach. CSB provided a WER sampling plan that was reviewed by both WVDEP and EPA (and revised the final plan based on the review comments and recommendations). A copy of the final WER sampling plan has been attached to this summary which includes a map of the plant discharge location and the location of the upstream sampling point. The WER testing was conducted on samples collected during sampling events on October 15, 2013 and November 18, 2013. Results for both events were forwarded on to WVDEP for review, and WVDEP shared both results with EPA staff for review. Both WVDEP and EPA provided comments and questions to CSB (and the contract lab).

WER Sampling/Laboratory Results
The EPA guidance document states that stream flow should be stable during sampling events and that water quality conditions should be compatible with those occurring during periods when nonpoint source inputs of organic matter and suspended solids are relatively low. There were no significant precipitation events immediately prior to the collection of the first sample and the flow rate in the Kanawha River remained stable and near baseflow conditions. The effluent flow rate recorded by CSB on the day of the first sampling event (October 15, 2013) was 7.72 MGD. The average effluent flow for the month of October was 7.95 MGD.

The effluent flow rate recorded by CSB on the day of the second sampling event (November 18, 2013) was 10.3 MGD. A precipitation event occurred the day before the second sampling event in which the plant recorded 0.18 inches of rainfall which CSB did not consider to be significant. CSB submitted photographic documentation to WVDEP showing sample and river water clarity at the time of the second sampling event, and the flow rate in the Kanawha River remained stable and near baseflow conditions. The photographs show typical appearance of surface water during low runoff conditions. The average effluent flow rate for the month of November was 9.18 MGD.

WVDEP requested sampling data to evaluate plant performance during both sampling events and a spread sheet containing these data has been attached. The information presented by CSB and reviewed by WVDEP was consistent with the requirements of the Streamlined Water-Effect Ratio Procedure for Discharges of Copper EPA guidance document.

R.E.I Consultants conducted the WER toxicity testing for copper for CSB in accordance with the Streamlined Procedure guidance document. Both WVDEP and EPA reviewed the laboratory results and, as outlined above, provided comments and questions to the contract lab. The contract lab addressed all comments and questions and revised reports as necessary. Based on the two sampling events, the calculated site WER based on SMAV EC50s is 5.62.

CSB Water Effects Ratio (WER)

Summary Documents/Attachments:

- WER Study plan & photos of WWTP location and sampling points
- River and rainfall reports - WER sampling events #1 and #2
- Photos - River conditions and clarity WER #2
- CSB WWTP plant performance data
- Summary lab reports - WER #1 and WER #2
- CSB/DEP correspondence (DEP/EPA WER review)

CSB Water Effects Ratio (WER)

- WER Study plan & photos of WWTP location and sampling points

CSB

THE SANITARY BOARD

OF THE CITY OF CHARLESTON WEST VIRGINIA

October 11, 2013 (REV1)

PROPOSED WATER-EFFECT RATIO (WER) FOR COPPER

1. Objective

The Sanitary Board of the City of Charleston, WV (hereinafter called "CSB") is conducting the WER to develop a site-specific numeric criterion for copper for the Charleston Wastewater Treatment Plant Outlet WV0023205-001 (hereinafter called "001"). The WER will be based on the guidance provided in the USEPA's (EPA) "Streamlined Water-Effect Ratio Procedure for Discharges of Copper" (EPA 822-R-01-005, March 2001) [hereinafter called "EPA Guidance"].

2. Approach

2.1. CSB's Environmental Compliance Staff will collect samples at the following (2) two locations: (a.) A 24-hour composite at 001 and (b.) Composited core sample approximately 203-feet upstream of 001, in the Kanawha River.

2.2. Creating the simulated downstream sample ("site-sample"): The 001 sample will be mixed with the upstream sample at the dilution corresponding to the design low-flow condition that the permitting authority (DEP) uses in its permit limit calculations. DEP confirmed to use 33.5% effluent to 66.5% upstream sample to create the site-sample. The site-sample will then be spiked with various concentrations of copper sulfate 5-hydrate ($CuSO_4 \cdot 5H_2O$). A side-by-side sample of laboratory-water will be spiked with the copper sulfate 5-hydrate at the same various concentrations. Acute toxicity testing using Ceriodaphnia Dubia will be performed in the copper spiked site-sample and laboratory-water sample to obtain the 48-hour EC50.

2.3. A site specific WER will be the geometric mean of the two sample WERs derived from site-sample EC50 divided by the laboratory-water EC50.

3. Parameters

3.1. The parameters to be analyzed for this study (at 001 and upstream samples) are:

Table 3.1 – Parameters, Methods, MDL, PQL, Containers, Preservation and Hold Times

Parameter	Method	MDL (mg/L)	PQL (mg/L)	Container Type	Container Size	Preservative	Max. Hold Time
Copper, Total Recoverable	E200.8	0.001	0.005	Polyethylene	500-mL	Cool to 4°C; HNO3 to pH<2	6-months
Copper, Dissolved	E200.8	0.001	0.005	Polyethylene	500-mL	Field Filtered, then Cool to 4°C; HNO3 to pH<2	6-months
Hardness	SM2340 B	NA	1	Polyethylene	500-mL	Cool to 4°C; HNO3 to pH<2	6-months
Upstream pH	CSB Field Meter	NA	NA	Polyethylene	250-mL	None	Instant
**001 and Lab pH	SM4500H-B	NA	NA	Polyethylene	250-mL	None	Instant
Alkalinity	SM2320 B	1	10	Polyethylene	250-mL	Cool to 4° C	14-days
Dissolved Organic Carbon	SM5310 C Modified	0.2	1	Amber Glass	250-mL	Field Filtered, then Cool to 4°C; H2SO4 to pH<2	28-days
Total Suspended Solids	SM2540 D	2	10	Polyethylene	1000-mL	Cool to 4° C	7-days

3.2 Research Environmental and Industrial Consultants, Inc. (REIC) [DEP Lab Certification No. 060] was selected as a contract laboratory for the purpose of this study. REIC will analyze the following parameters: Copper, Total Recoverable; Copper, Dissolved; Hardness; pH (at various times as part of the acute toxicity testing); Alkalinity; Dissolved Organic Carbon and Total Suspended Solids. Because the pH needs to be read within 15-mins, CSB personnel will use its portable pH meter for the upstream sample pH. **CSB lab will run pH (method SM4500H-B) in the lab on a grab sample the morning the 001 composite comes off and REIC labs will be using this same pH method during the acute toxicity testing part of the WER.

3.3 REIC will be performing a 48-hour acute toxicity test using Ceriodaphnia dubia for EC50 (as discussed in part 2.2 above), following the EPA's Acute Toxicity Testing Manual EPA-821-R-02-012.

4. Sampling Stations

4.1. Sampling Locations[1]

4.1.1. **At 001:** A Sigma 900 portable sampler will be used to collect a 24 hour composite sample at the WWTP Outlet (Lat 38° 22' 19" N Long 81° 40' 42" W).

4.1.2. **At Upstream of 001:** Approximately 203-feet upstream of 001 (Lat 38° 22.227'N Long 81° 40.682'W), which is outside the influence of the discharge at 001, and away from non-point source discharges. A core sampler (aka, Sludge Judge) will be used to retrieve a composite core from the water surface to approximately three-quarters of the depth to the river bottom.

5. Sampling Schedule

5.1.1. Samples will be collected during stable flow conditions in the Kanawha, during time periods when nonpoint source inputs are relatively low (during dry weather).

5.1.2. Two sampling events shall occur, the first in October and the second in November, weather permitting.

6. QA requirements

6.1.1. Sample collection and equipment shall be in accordance with Method 1669 Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, July 1996, using "Clean Hands Dirty Hands" techniques.

6.1.2. A Field Blank using distilled water supplied by Tyler Mountain Water will be conducted at each sample site (001 and upstream river sample). The sample will be preserved with Nitric Acid and analyzed for Total Recoverable Copper.

6.1.3. A core sampler will be used to collect the Kanawha River sample. Each core sample will be deposited into a 2.5-gallon, food grade baggy then poured off into a 5-gallon sample cube. Alternatively, depending upon the sample cube REIC provides CSB, the core samples may be poured off directly into the 5-gallon sample cube. After thoroughly mixing the sample cube, pH will be read and aliquots for total recoverable copper, dissolved copper, TSS, alkalinity, Hardness and dissolved organic carbon will be poured off into labeled containers (with the required preservative, as called out in Table 3.1). A sigma 900 Sampler will be utilized to draw sample from the 5-gallon sample cube, through an in-line Enviro-Tech Disposable Capsule Filter (0.45-µm), into sample bottles for the dissolved copper and dissolved organic carbon samples.

Prior to field sampling, an Equipment Blank will be collected in the lab by filling the core sampler with distilled water and using a Sigma 900 Sampler to pump the water through an in-line Enviro-Tech Disposable Capsule Filter (0.45-µm). The sample will be preserved with Nitric Acid and analyzed for the Total Recoverable and Dissolved forms of Copper and Dissolved Organic Carbon.

[1] Attachment No. 1 shows the WER Sample Locations

6.1.4. Enough sample volume will be properly preserved and only analyzed when a data set appear to be questionable.

6.1.5. Samples will be properly labeled, immediately iced and have chain-of-custody forms.

6.1.6. CSB has a pontoon boat that it will utilize to collect its river samples. Barge traffic will be noted to ensure sampling does not occur after a barge passes the sample area.

6.1.7. The 001 composite sample will be poured off into individual sample bottles (with the required preservative, as indicated in Table 3.1) for the parameters listed in Table 3.1. A one gallon cube will also be filled with the composited 001 sample for use by REIC in setting up the test solutions.

7. Testing, calculating and reporting the WER

7.1 Testing, calculating and reporting the WER will be in accordance with Appendix A of the EPA Guidance.

7.2 The method for preparing the test solutions for the test chambers shall be as follows: Prepare a large volume of simulated downstream water by mixing effluent and upstream water in the desired ratio; place the same known volume of the simulated downstream water in each test chamber; add the necessary amount of copper, which will be different for each treatment; and mix thoroughly and let stand for 1 to 4 hours.

7.3 The laboratory-water EC50 and site-water EC50 will be normalized to the same hardness using the formula:

EC50 at Std Hdns = EC50 at Sample Hdns * {Std Hdns/Sample Hdns)^0.9422.

7.4 Each sample shall be calculated by WER = site-sample EC50 divided by the laboratory-water EC50. The site specific WER will be the geometric mean of the two sample WERs.


Charleston Sanitary Board, WWTP
Blaine Island
harleston
Magic Island
Charleston, WV, USA
Charleston
1996
Imagery Date: 3/26/2017



Legend

- Sample Point
- Outlet Location

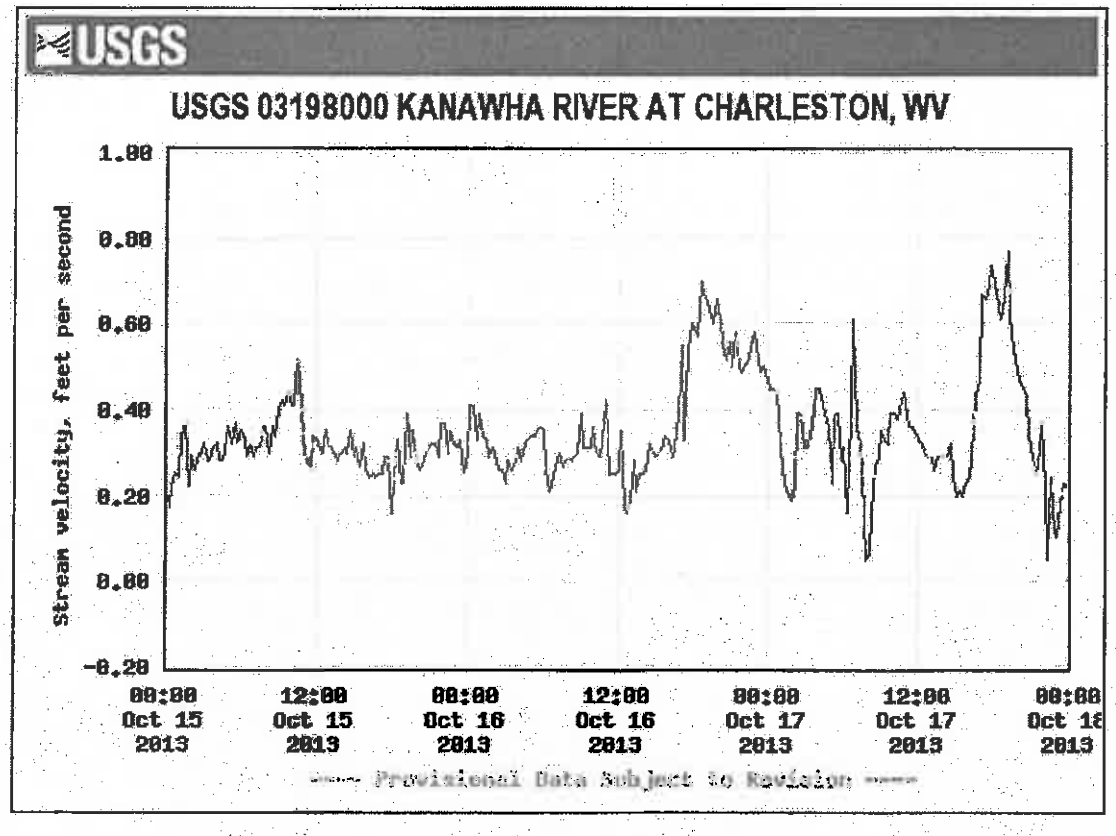
Water-Effect Ratio (WER)
Sample Locations

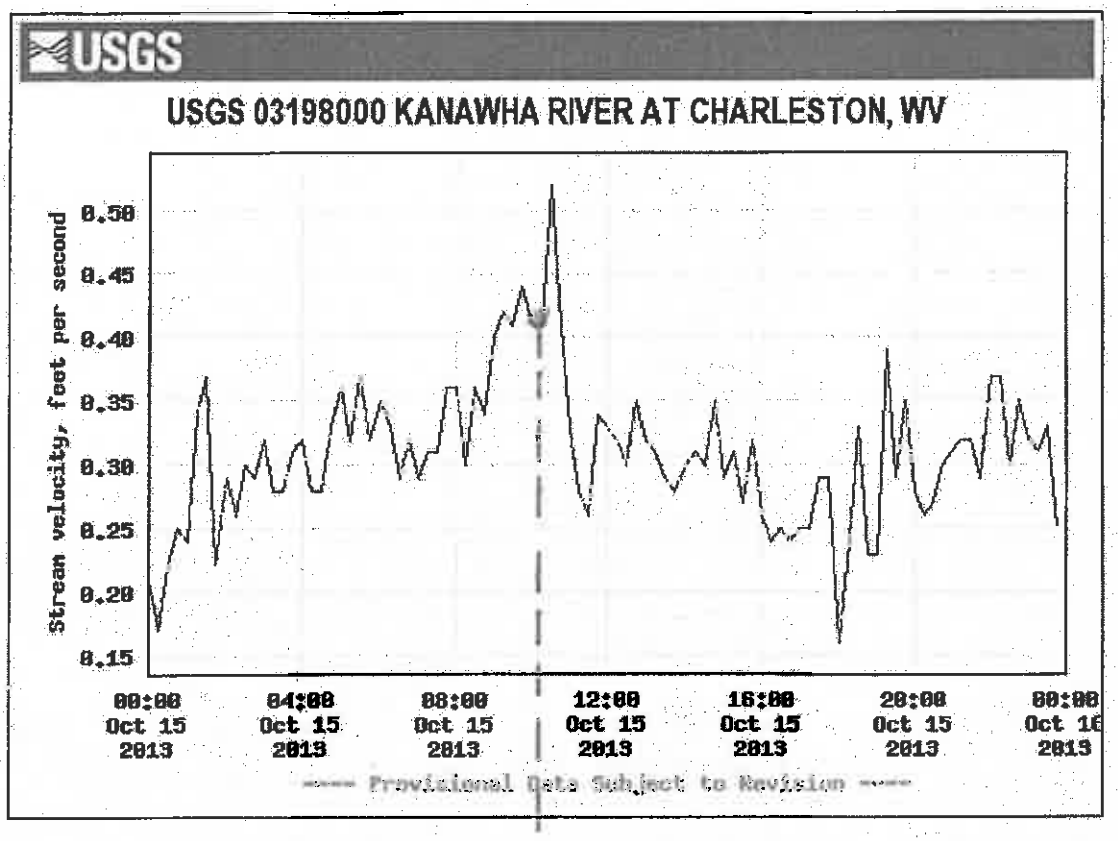
Attachment No. 1

2013/10/07

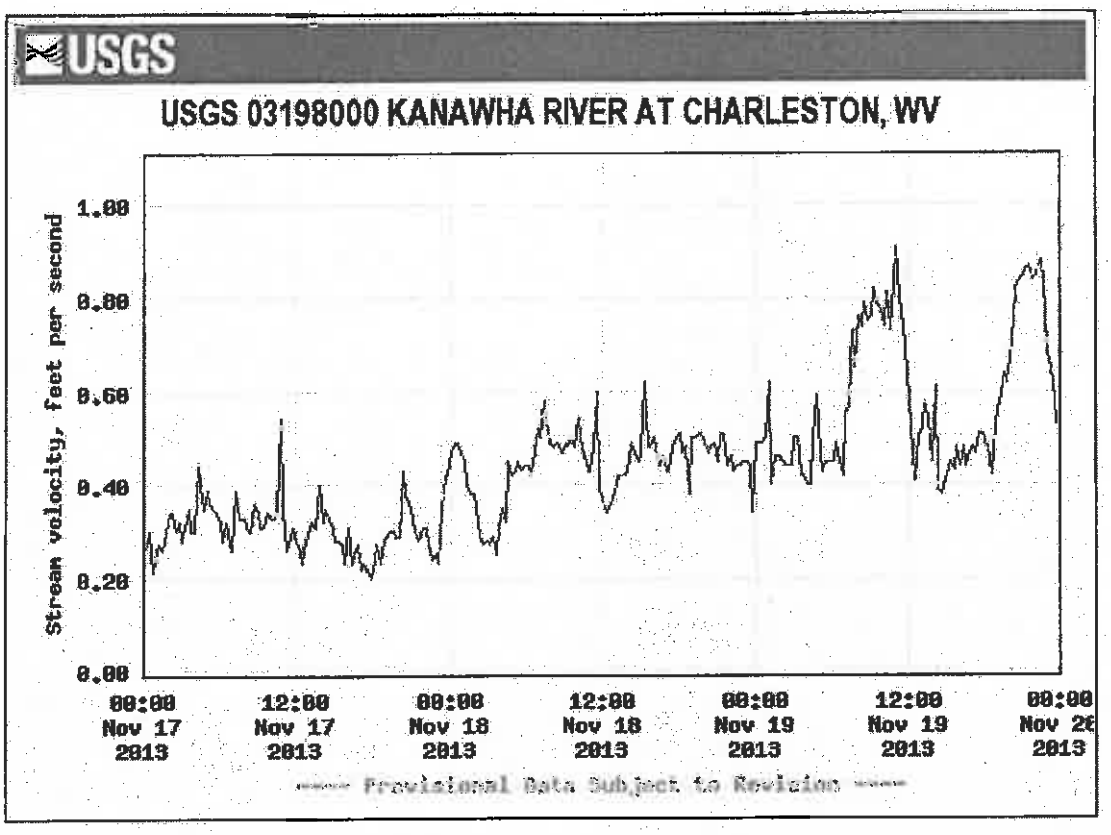
CSB Water Effects Ratio (WER)

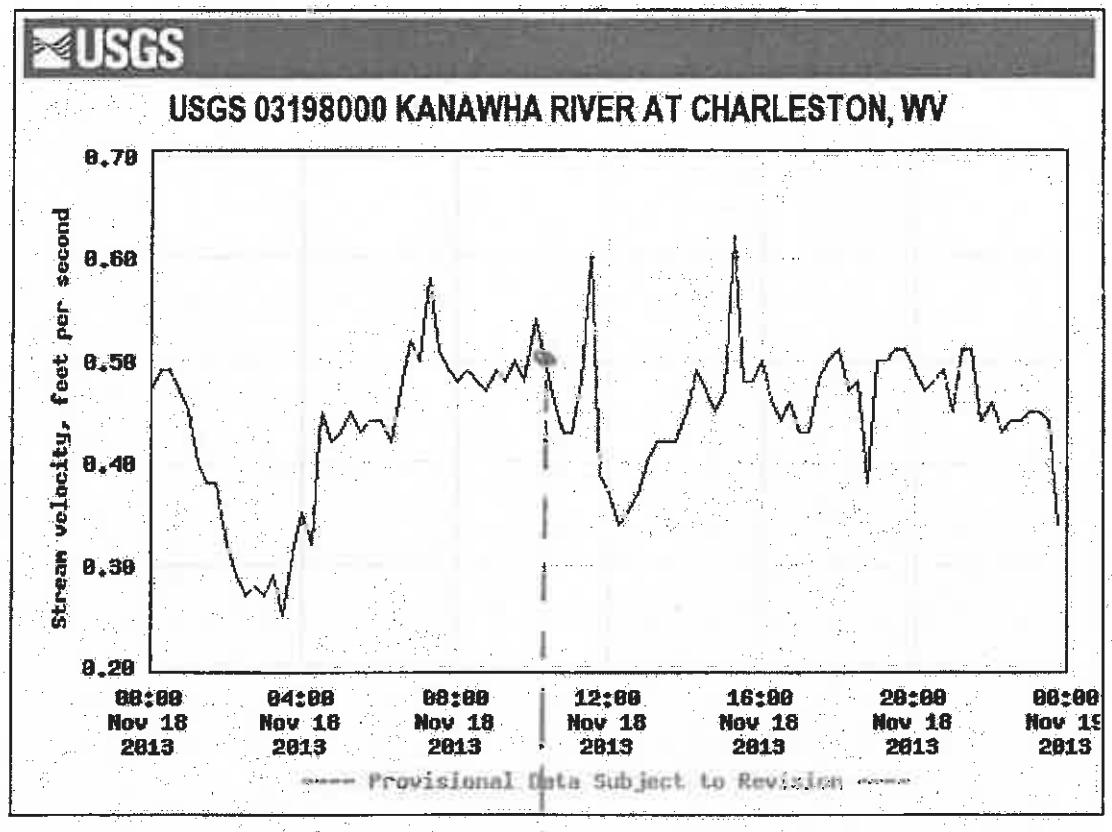
- River and rainfall reports - WER sampling events #1 and #2


USGS
USGS 03198000 KANAWHA RIVER AT CHARLESTON, WV
Stream velocity, feet per second
1.00
0.80
0.60
0.40
0.20
0.00
-0.20
00:00 Oct 15 2013
12:00 Oct 15 2013
00:00 Oct 16 2013
12:00 Oct 16 2013
00:00 Oct 17 2013
12:00 Oct 17 2013
00:00 Oct 18 2013
----- Provisional Data Subject to Revision -----



WER #1
CSO RIVER SAMPLES
TAKEN 10-15-13 FROM
10:06 - 10:20 AM


USGS
USGS 03198000 KANAWHA RIVER AT CHARLESTON, WV
Stream velocity, feet per second
1.00
0.80
0.60
0.40
0.20
0.00
00:00 Nov 17 2013
12:00 Nov 17 2013
00:00 Nov 18 2013
12:00 Nov 18 2013
00:00 Nov 19 2013
12:00 Nov 19 2013
00:00 Nov 2
2013
Provisional Data Subject to Revision



WER # 2
CSB RIVER SAMPLES
TAKEN 11-18-13 FROM
10:13 - 10:25 AM

CSB's TREATMENT PLANT RAIN GAGE SUMMARY

Date	Time	Peak (in/hr)	Total (in)	Duration (hrs)
10/07/13	2:10	0.07	0.28	6:20:00
10/16/13	15:10	0.04	0.18	25:00:00
10/22/13	7:00	0.07	0.30	33:00:00
10/30/13	4:30	0.10	0.26	4:20:00
10/31/13	14:50	0.09	0.14	14:50:00
11/07/13	2:10	0.12	0.48	6:50:00
11/12/13	3:00	0.05	0.21	9:10:00
11/15/13	19:50	0.04	0.09	4:40:00
11/17/13	14:30	0.08	0.18	8:40:00
11/22/13	6:50	0.07	0.12	8:00:00

CSB Water Effects Ratio (WER)

- Photos - River conditions and clarity WER #2



Receiving stream, upstream of Outlet No. 001. Note, stable flow conditions, no nonpoint source interference and good water clarity.



Core sample underway in receiving stream, upstream of Outlet No. 001. Note the good clarity in the receiving stream.



Note...good clarity of river water in sample cube.



Note...good clarity of river water in core sampler.

CSB Water Effects Ratio (WER)

- CSB WWTP plant performance data

NPDES MONTHLY WORKSHEET

MONTH OF October, 2013

DATE	EFF.FLOW	pH		BOD_5				SUSPENDED SOLIDS				AMMONIA NITROGEN				EFF. FECAL COLIFORM		
				INF.		EFF.		INF.		EFF.		INF.		EFF.				
		INF.	EFF.	mg/l	lbs.	mg/l	lbs.	mg/l	lbs.	mg/l	lbs.	mg/l	lbs.	mg/l	lbs.	log10	COLONIES/100 ml	ln
1	8.07	7	7	170	11000	8.9	600	160	11000	8.8	590	17	1100	14	940	0.69897	* 5	1.6094379
2	8.2	7	7	180	12000	11	750	200	14000	12	820					1.25527	* 18	2.8903718
3	7.79	7	7	190	12000	12	780	170	11000	8.5	550	18	1200	15	970	1.17609	* 15	2.7080502
4	7.47	7	7	210	13000	12	750	180	11000	8.5	530	18	1100	18	1100			
5	7.97																	
6	7.64			7-day averages		11	720			9.4	620							
7	7.52	7	6									15	940	9.8	610	1.60206	40	3.6888795
8	10.4	7	7	180	16000	10	870	280	24000	9.6	830	12	1000	11	950	1.23045	* 17	2.8332133
9	9.08	7	7	160	12000	9	680	260	20000	9.5	720					1.63347	43	3.7612001
10	7.54	7	7	200	12000	10	630	140	8800	11	690	19	1200	15	940	1.77815	60	4.0943446
11	7.8	7	7	220	14000	11	720	210	14000	14	910	19	1200	20	1300			
12	7.66																	
13	7.26			7-day averages		10	720			11	790							
14	7.21	7	7	7-day avg Permit Limits:		30	6254			45	7981	18	1100	12	720	1.88124	48	3.871201
15	7.72	7	7	200	13000	10	640	200	13000	9	580	18	1200	17	1100	1.74819	56	4.0253517
16	7.92	7	7	200	13000	11	730	210	14000	16	1000		1200			2.39794	250	5.5214609
Avg	7.95	7				10	720			11	720			15	960		33	
	Permit Limits:	6 to 9				28	5903			30	6254			16	2063		400max. day/200 mon. geo mean	

Percent Removals: Act. 95% Limit 85% Act. 95% Limit 85%

NPDES MONTHLY WORKSHEET

MONTH OF: November, 2013

DATE	EFF.FLOW	pH		BOD_5				SUSPENDED SOLIDS				AMMONIA NITROGEN				EFF. FECAL COLIFORM			
				INF.		EFF.		INF.		EFF.		INF.		EFF.					
		INF.	EFF.	mg/l	lbs.	mg/l	lbs.	mg/l	lbs.	mg/l	lbs.	mg/l	lbs.	mg/l	lbs.	log10		COLONIES/100 ml	ln
1	9.9	7	7	200	16000	9	740	210	17000	5.2	430	16	1300	16	1300				
2	10.5											15	1300						
3	7.87											16	1000						
4	7.5	7	6									17	1100	12	750	1.38021	*	24	3.1780538
5	7.92	7	6	170	11000	6.8	580	190	12000	6	400	18	1200	19	1200	1.30103	*	20	2.9957323
6	7.9	7	6	190	12000	7.9	520	170	11000	9.5	620	19	1200			1.44716	*	28	3.3322045
7	9.08	7	7	260	20000	11	830	290	22000	6.8	670	15	1100	16	1200	1.00000	*	10	2.3025851
				7-day averages:		9.2	670			7.4	530								
				7-day avg Permit Limits:		30	9254			45	7881								
8	12.1	7	7	130	13000	9.8	990	180	18000	10	1000	9.3	940	12	1200				
9	8.82																		
10	8.19																		
11	7.4	7	6									16	990	12	740	1.07918	*	12	2.4849066
12	9.01	7	7	180	14000	5.7	430	200	15000	12	900	16	1200	17	1300	0.72428	*	5.3	1.6677068
13	11.2	7	6	210	20000	7.5	700	190	18000	6	560	12	1100			1.43136		27	3.2958369
14	8.77	7	7	180	13000	5.1	370	130	9500	4	290	17	1200	16	1200	1.04139	*	11	2.3978953
				7-day averages:		7	620			8	690								
15	8.64	7	6	200	14000	6.3	450	170	12000	< 2.9	210	18	1300	19	1400				
16	8.88											16	1200						
17	8.23											18	1100						
18	12.2	7	6									10	1000	11	1100	1.07918	*	12	2.4849066
19	10.3	7	7	140	12000	5.6	480	110	9500	5.5	470	15	1300	12	1000	0.82607	*	6.7	1.9021075
Avg	9.18					7.7	610			7	560			15	1100			14	
	Permit Limits:	6 to 9				30	9254			45	7881			18	2852			400/mos avg/200 week day maxi	

Percent Removals: Act 96% Limit 85% Act 98% Limit 85%

CSB Water Effects Ratio (WER)

- Summary lab reports - WER #1 and WER #2
- CSB/DEP correspondence (DEP/EPA WER review)

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Improving the environment, one client at a time...

COPPER STREAMLINED WATER EFFECT RATIO TOXICITY TEST ON SAMPLES COLLECTED 10-16-13

Conducted For:

Charleston Sanitary Board
208 26th Street
Charleston WV 25387
Attn: Mr. Tim Haapala

By:

R. E. I. Consultants, Inc.
225 Industrial Park Road
Beaver West Virginia 25813

Ed J. Kirk, Director - Biological Division
Mike Lester, Bioassay Lab Manager
Mike Hofe, Environmental Monitoring Manager

October 31, 2013

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Copper Streamlined Water Effect Ratio Toxicity Test

Executive Summary

The Streamlined Water Effects Ratio ("WER") Dilute Mineral Water toxicity test is incorporated into the full WER suite of tests as an indicator of the baseline toxicity of the target component (copper in the case of South Charleston Sanitary Board). The toxicity of the copper within the dilute mineral water test is then compared to the toxicity of copper within the site water test as a measure of the amount of buffering capacity the site water has on the target component.

The WER Dilute Mineral Water toxicity test consisted of nine (9) spiked test concentrations (13.0, 16.7, 21.6, 27.9, 36.0, 46.5, 60.0, 77.5, and 100.0 µg/L copper) and a Control, which contained no added copper. The test was prepared by measuring out 1 liter of dilute mineral water into each of the ten 1-liter test beakers. The nine test concentrations were then each spiked with a 0.100 g/L copper sulfate ($CuSO_4 \cdot 5\ H_20$) stock solution (TABLE 1). Each of the nine test concentrations was then mixed after the addition of the copper sulfate aliquots, and was allowed to set for two (2) hours prior to loading of the test organisms.

The organism-loaded test beakers were checked at 24-hours and all test organisms had died in all spiked test concentrations. All test organisms survived in the Control. Therefore, a second test was initiated utilizing lower test concentrations of copper sulfate. This second set of concentrations consisted of 1.0, 3.0, 6.0, 9.0, and 12.0 µg/L and a second (new) Control. This second test was prepared in the same manner as the first trial, but with the above listed lower concentrations of copper sulfate.

This test was performed for 48 hours, and was checked for mortality and or effects at 24 hours as well as at the end of the 48-Hr test, and a trimmed Spearman-Karber statistical test was incorporated on the final survival data to calculate the EC50 for the Dilute Mineral Water test.

There were no mortalities (0%) in the Control Dilute Mineral Water test concentration; no mortalities (0%) in the 1.0 and 3.0 µg/L test concentrations; 40% mortality in the 6.0 µg/L test concentration; and 100% mortality in the 9.0 and 12.0 µg/L copper sulfate test concentrations.

Because the actual copper concentrations within the test dilutions will differ slightly from the targeted hypothetical copper test concentrations, aliquots of the spiked dilutions were analyzed post-test to determine the actual concentrations of total copper. For instance, the targeted 6.0 µg/L copper test concentration was measured to actually contain copper concentrations of 6.5, 6.6 and 6.4 µg/L copper, and thus a mean of 6.5 µg/L was utilized within the statistical methods to calculate the EC50. Aliquots of the Control and dilutions were analyzed at 0, 24, and 48-Hours in order to determine if copper concentrations decreased during the test. Means of these values were then utilized within the statistical analyses to calculate the EC50 using the "true" concentrations of copper rather than the targeted hypothetical concentrations.

Using these actual, analytically-derived, copper concentrations, the resulting EC50 for the Dilute Mineral Water toxicity test was calculated to be 6.24 µg/L total copper.

The Streamlined Water Effects Ratio ("WER") Site Water toxicity test is incorporated into the full WER suite of tests as an indicator of the buffering capacity of the receiving stream for the target component (copper in the case of Charleston Sanitary Board). The toxicity of the copper within the dilute mineral water test is then compared to the toxicity of copper within the site water test as a measure of the amount of buffering capacity the site water has on the target component.

The WER Site Water toxicity test was initiated by warming both the collected full-strength effluent and the collected upstream river water sample to 25°C. The river water sample was then filtered through a 60-micron screen to remove debris, potential organisms, and algae. The Site Water test consisted of nine (9) spiked test concentrations (13.0, 16.7, 21.6, 27.9, 36.0, 46.5, 60.0, 77.5, and 100.0 µg/L copper) and a River Water Control, which contained no added copper. As directed by the WV-DEP, the test was prepared by combining 335 milliliters of 100% effluent with 665 milliliters of Upstream River Water into a glass flask and mixing the solution well. Each of the nine test concentrations were then spiked with a 0.100 g/L copper sulfate ($CuSO_4 \cdot 5\ H_20$) stock solution (TABLE 1). Each of the nine test concentrations was then mixed after the addition of the copper sulfate aliquots, and was allowed to set for two (2) hours prior to loading of the test organisms.

The organism-loaded test beakers were checked at 24-hours and no test organisms had died in any of the spiked test concentrations. Therefore, a second test was initiated utilizing higher (stronger) test concentrations of copper sulfate. This second set of concentrations consisted of 200.0, 300.0, 400.0, 500.0, and 600.0 µg/L and a second (new) River Water Control. This second test was prepared in the same manner as the first trial, but with the above listed higher concentrations of copper sulfate.

This test was performed for 24 hours, since all test organisms were dead except for the River Water Control. There were no mortalities (0%) in the River Water Control test concentration, and 100% mortality in the 200.0, 300.0, 400.0, 500.0, and 600.0 µg/L copper sulfate test concentrations. The "graphical" method was incorporated on the final survival data to calculate the EC50 for the Site Water test.

Because the actual copper concentrations within the test dilutions will differ slightly from the targeted hypothetical copper test concentrations, aliquots of the spiked dilutions were analyzed post-test to determine the actual concentrations of total copper. For instance, the targeted 100.0 µg/L copper test concentration of the Site Water test was measured to actually contain copper concentrations of 89.6, 102.0. and 99.4 µg/L copper, and thus a mean of 97.0 µg/L was utilized within the statistical methods to calculate the EC50. Aliquots of the Upstream River Water Control and Site Water dilutions were analyzed at 0, 24, and 48-Hours in order to determine if copper concentrations decreased during the test. Means of these values were then utilized within the statistical analyses to calculate the EC50 using the "true" concentrations of copper rather than the targeted hypothetical concentrations.

Using these actual, analytically-derived, copper concentrations, the resulting EC50 for the Upstream Site Water toxicity test was calculated to be 130.3 µg/L total copper.

Because the EC50 for the Dilute Mineral Water toxicity test was calculated to be 6.24 µg/L total copper compared to the EC50 for the Upstream Site Water toxicity test of 130.3 µg/L total copper, the receiving stream, the Kanawha River, has a tremendous buffering capacity for copper.

The measured hardness of the Dilute Mineral Water was 82.9 mg/L. The measured average hardness of the Site Water was 89.2 mg/L. Utilizing the formula provided in the Streamlined Water-Effect Ration Procedure Guidance, the Dilute Mineral Water EC50 of 6.24 µg/L and Site Water EC50 of 130.3 µg/L were normalized to a hardness of 100 mg/L. The normalized Dilute Mineral Water EC50 was calculated to be 7.45 µg/L total copper. The normalized Site Water EC50 was calculated to be 145.2 µg/L total copper.

The WER based on the normalized Dilute Mineral Water EC50 calculates as 19.5 (145.2/7.45). If the *Ceriodaphnia dubia* Species Mean Acute Value (SMAV) EC50 of 24 µg/L is used the WER calculates as 6.05 (145.2/24).

Sincerely,

Ed J. Kirk
Director - Biological Division
R.E.I. Consultants, Inc.
304-255-2500 Beckley, WV Office
540-570-3149 Cell
ekirk@reiclabs.com

STREAMLINED WATER EFFECT RATIO "WER" TOXICITY TEST FOR COPPER CONDUCTED FOR CHARLESTON SANITARY BOARD

SUBMITTED TO:

CHARLESTON SANITARY BOARD
208 26TH STREET
CHARLESTON WV 25387
ATTN: MR. TIM HAAPALA

By:

R. E. I. CONSULTANTS, INCORPORATED
225 INDUSTRIAL PARK ROAD
BEAVER WV 25813

ED J. KIRK, DIRECTOR - BIOLOGICAL DIVISION
MIKE LESTER, MANAGER - BIOASSAY LABORATORY
MIKE HOFE, PROJECT ENGINEER

December 11, 2013

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Copper Streamlined Water Effect Ratio Toxicity Test

Executive Summary

The Streamlined Water Effects Ratio ("WER") Dilute Mineral Water toxicity test is incorporated into the full WER suite of tests as an indicator of the baseline toxicity of the target component (copper in the case of Charleston Sanitary Board). The toxicity of the copper within the dilute mineral water test is then compared to the toxicity of copper within the site water test as a measure of the amount of buffering capacity the site water has on the target component.

The 2nd of two WER Dilute Mineral Water toxicity test consisted of nine (9) spiked test concentrations (4.30, 4.78, 5.31, 5.90, 6.56, 7.30, 8.10, 9.00 and 10.00 µg/L copper) and a Control, which contained no added copper. A dilution factor of 0.9, and the results of the previous (first) WER test, was utilized to compress the targeted test concentrations, and pinpoint the EC50. The test was prepared by measuring out 1 liter of dilute mineral water into each of the ten 1-liter test beakers. Then, the nine test concentrations were each spiked with a 0.100 g/L copper sulfate ($CuSO_4 \cdot 5\ H_20$) stock solution (TABLE 1). Each of the nine test concentrations was then mixed after the addition of the copper sulfate aliquots, and was allowed to set for two (2) hours prior to loading of the test organisms.

This test was performed for 48 hours, and was checked for mortality and or effects at 24 hours as well as at the end of the 48-Hr test, and the maximum likelihood Probit statistical test was incorporated on the final survival data to calculate the EC50 for the Dilute Mineral Water test.

There were 2 mortalities (10%) in the Dilute Mineral Water Control; 0 (0%) mortalities in the 4.30 µg/L test concentration; 1 mortality (5%) in the 4.78 µg/L; 4 mortalities (20%) in the 5.31 µg/L; 7 mortalities (35%) in the 5.90 µg/L ; 8 mortalities (40%) in the 6.56 µg/L ; 16 mortalities (80%) in the 7.30 µg/L; 17 mortalities (85%) in the 8.10 µg/L test concentrations; and 20 mortalities (100%) in the 9.0 µg/L and 10.0 µg/L test concentrations.

Because the actual copper concentrations within the test dilutions will differ slightly from the targeted hypothetical copper test concentrations, aliquots of the spiked dilutions were analyzed post-test to determine the actual concentrations of total copper. For instance, the targeted 6.56 µg/L copper test concentration was measured to actually contain copper concentrations of 8.1, 8.4 and 7.8 µg/L copper, and thus a mean of 8.1 µg/L was utilized within the statistical methods to calculate the EC50. Aliquots of the Control and dilutions were analyzed at 0, 24, and 48-Hours in order to determine if copper concentrations decreased during the test. Means of these values were then utilized within the statistical analyses to calculate the EC50 using the "true" concentrations of copper rather than the targeted hypothetical concentrations.

Using these actual, analytically-derived, copper concentrations, the resulting EC50 for the Dilute Mineral Water toxicity test was calculated to be 8.31 µg/L total copper.

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The Streamlined Water Effects Ratio ("WER") Site Water toxicity test is incorporated into the full WER suite of tests as an indicator of the buffering capacity of the receiving stream for the target component (copper in the case of Charleston Sanitary Board). The toxicity of the copper within the dilute mineral water test is then compared to the toxicity of copper within the site water test as a measure of the amount of buffering capacity the site water has on the target component.

The WER Site Water toxicity test was initiated by warming both the collected full-strength effluent and the collected upstream river water sample to 25°C. The river water sample was then filtered through a 60-micron screen to remove debris, potential organisms, and algae. The Site Water test consisted of nine (9) spiked test concentrations (86.1, 95.7, 106.3, 111.8, 131.2, 145.8, 162.0, 180.0 and 200.0 µg/L copper) and a River Water Control, which contained no added copper. As directed by the WV-DEP, the test was prepared by combining 335 milliliters of 100% effluent with 665 milliliters of Upstream River Water into a glass flask and mixing the solution well. Each of the nine test concentrations were then spiked with a 0.100 g/L copper sulfate ($CuSO_4 \cdot 5\ H_20$) stock solution (TABLE 1). Each of the nine test concentrations was then mixed after the addition of the copper sulfate aliquots, and was allowed to set for two (2) hours prior to loading of the test organisms.

There were 0 mortalities (0%) in the River Water Control; 2 mortalities (10%) in the 86.1 µg/L; 7 mortalities (35%) in the 95.7 µg/L; 11 mortalities (55%) in the 106.0 µg/L; 12 mortalities (60%) in the 111.8 µg/L; 19 mortalities (95%) in the 131.2 µg/L test concentrations. All test organisms (100%) died in the 145.8 µg/L, 162.0 µg/L, 180.0 µg/L, and 200.0 µg/L test concentrations.

Because the actual copper concentrations within the test dilutions will differ slightly from the targeted hypothetical copper test concentrations, aliquots of the spiked dilutions were analyzed post-test to determine the actual concentrations of total copper. For instance, the targeted 95.7 µg/L copper test concentration of the Site Water test was measured to actually contain copper concentrations of 96.2, 87.9 and 98.5 µg/L copper, and thus a mean of 94.2 µg/L was utilized within the statistical methods to calculate the EC50. Aliquots of the Upstream River Water Control and Site Water dilutions were analyzed at 0, 24, and 48-Hours in order to determine if copper concentrations decreased during the test. Means of these values were then utilized within the statistical analyses to calculate the EC50 using the "true" concentrations of copper rather than the targeted hypothetical concentrations.

Using these actual, analytically-derived, copper concentrations, the resulting EC50 for the Upstream Site Water toxicity test was calculated to be 103.9 µg/L total copper.

Because the EC50 for the Dilute Mineral Water toxicity test was calculated to be 8.31 µg/L total copper compared to the EC50 for the Upstream Site Water toxicity test of 103.9 µg/L total copper, the receiving stream, the Kanawha River, has a tremendous buffering capacity for copper.

The measured hardness of the Dilute Mineral Water was 73.2 mg/L. The measured average hardness of the Site Water was 82.05 mg/L. Utilizing the formula provided in the Streamlined Water-Effect Ration Procedure Guidance, the Dilute Mineral Water EC50 of 8.31 µg/L and Site Water EC50 of 103.9 µg/L were normalized to a hardness of 100 mg/L. The normalized Dilute Mineral Water EC50 was calculated to be 11.15 µg/L total copper. The normalized Site Water EC50 was calculated to be 125.2 µg/L total copper.

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The WER based on the normalized Dilute Mineral Water EC50 calculates as 11.2 (125.2 divided by 11.15). If the *Ceriodaphnia dubia* Species Mean Acute Value (SMAV) EC50 of 24 µg/L is used the WER calculates as 5.22 (125.2 divided by 24).

The site WER, calculated as the geometric mean of the two sampling event WERs based on Dilute Mineral Water EC50s, is 14.8. The site WER, calculated as the geometric mean of the two sampling event WERs based on SMAV EC50s, is 5.62.

Thank you for utilizing us to conduct these tests for you. Please do not hesitate to contact us should you have questions, or if we can be of further assistance.

Sincerely,

Ed J. Kirk

Ed J. Kirk
Director - Biological Division
R.E.I. Consultants, Inc.
304-255-2500 Beckley, WV Office
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CSB
THE SANITARY BOARD
OF THE CITY OF CHARLESTON WEST VIRGINIA

February 10, 2014 *via: e-mail to Kevin.R.Coyne@wv.gov*

Kevin,

CSB's responses (in red italicized text) to your 2-7-14 e-mail are as follows:

And as I said during the conversation – it would be good to start on a summary report of the WER effort that would include a summary of the sampling events (mainly the environmental conditions as the pertain to WER guidance requirements), brief summary of the WER #1 and #2 results (and just reference the lab reports in the summary for the details), and a final summary of the WER requested by CSB (essentially the final calculated number). Again, we are more than willing to work with you on this.

CSB's brief summary of WER sampling events and results:

CSB's WER for copper was based upon the guidance in the USEPA's "Streamlined Water-Effect Ratio Procedure for Discharges of Copper" (EPA 822-R-01-005, March 2001). CSB captured two sampling events at least one month apart. Regarding the "Upstream Outlet No. 001" samples, the river flow during each sampling event was stable and water quality was unaffected by recent rainfall run-off. Regarding the "Outlet No. 001" samples, CSB WWTP was performing well and BOD and TSS parameters were within NPDES Permit limitations.

The Executive Summary in the REIC reports (copies provided to DEP) for each WER sampling event provides a concise overview of the results. The details of the analytical results are provided in the successive sections of each of the REIC reports.

For WER#1: The WER is 19.5 based on the normalized dilute mineral water EC50. If the SMAV for ceriodaphnia dubia EC50 is used, the WER is 6.05.

For WER#2: The WER is 11.2 based on the normalized dilute mineral water EC50. If the SMAV for ceriodaphnia dubia EC50 is used, the WER is 5.22.

Geo. Mean: Taking the geometric mean of the results from both WERs, the WER is 14.5 based on the normalized dilute mineral water EC50. If the SMAV for ceriodaphnia dubia EC50 is used, the WER is 5.62.

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TEL (304) 348-1084 ■ FAX (304)347-1808

WER 1

1. The CSB Chains of Custody (COCs) for outlet 001 and upstream outlet 001 composite samples collected 10-15 through10-16-2013 does not provide the pH of the samples. The EPA Streamlined Water-Effect Ratio Procedure for Discharges of Copper requires analysis of pH. Since pH is a field parameter, the analysis should have been performed at the time of sampling and this data should have been included on the COC. Please provide this parameter and/or indicate in the report where this is located.

pHs were taken, but not written down on the CSB's COCs. The pH results were: 6.76 @ Outlet No. 001 and 7.25 @ Upstream Outlet No. 001. Attached are corrective copies of the COC for each sample.

2. The CSB COC for Upstream Outlet 001 lists a compositing duration of 10:06 10-15-13 through 10:20 10-16-13 however the COC shows that the samples were relinquished at 9:00 on 10-16-13 (which is before the end of the compositing period). Please provide clarification if this is an error on the report, COC, or an issue with the monitoring device.

The CSB's COC for Upstream Outlet No. 001 is correct as reported. The Upstream Outlet No. 001 sample was a composited grab using a core sampler (taken between 10:06 to 10:20 am on 10-15-13). The samples were cooled after collection and picked up by REIC Lab the following day, 10-16-13. See Part 6. QA Requirements, sub section 6.1.3 of the CSB's Proposed WER for Copper (10-11-13) for sampling procedure.

WER 2

3. The sample information provided in the REIC data report states that the composite sample at upstream outlet 001 was collected from 7:00 11-18-13 to 7:00 11-19-13 *(this is the "Outlet No. 001" 24-hr composite dates and times, not the "Upstream Outlet No. 001")* however the COC for this sample states that the sample was collected from 10:13 11-18-13 to 10:25 (presumably on 11-19-13). The COC also states that the sample was relinquished on 11-19-13 at 8:05 which is not consistent with the collection time on the COC. Please provide clarification if this is an error on the report, COC, or an issue with the monitoring device.

The sample times and dates for "Upstream" Outlet No. 001 and Outlet No. 001 are interchanged in this comment.

The CSB's COC for Upstream Outlet No. 001 is correct as reported. The Upstream Outlet No. 001 sample was a composited grab using a core sampler (taken between 10:13 to 10:25 am on 11-18-13). The samples were cooled after collection and picked up by REIC Lab the following day, 11-19-13. See Part 6. QA Requirements, sub section 6.1.3 of the CSB's Proposed WER for Copper (10-11-13) for sampling procedure.

4. The CSB COC for upstream outlet 001 does not provide the temperature at which the samples were received by the laboratory. Please provide this parameter and/or indicate in the report where this is located.

The temperature reading is encircled (2°C) in the lower right corner of the CSB's COC. Upon receipt in its lab, REIC measures the temperature of the samples and records it on the CSB's COC. The temperatures that REIC measured were included on each CSB

COC, but may not have been legible in the copies sent to the DEP. Here's a summary of the sample temperatures for both WERs:

Sample Site:	*Outlet No. 001*	*Upstream Outlet No. 1*	*Equipment Blanks*
WER #1	*1.6°C*	*1.6°C*	*1.6°C*
WER#2	*2.0°C*	*2.0°C*	*6.0°C*

5. Method Detection Limits (MDLs) are not provided in the analytical data for equipment blanks. Please provide and/or indicate in the report where this is located – or an explanation of why this was not reported.

REIC didn't have the cell with the MDL turned on to display it in its program. Attached is a corrective copy of REIC's analytical data showing the MDL.

6. The analysis date shown for dissolved organic carbon in the laboratory data is 1-22-13. This date is not consistent with the collection date of the samples and is most likely a reporting error but please clarify to ensure this is a reporting error.

REIC confirmed that the date was incorrectly entered into its program. The correct date is 11-22-13. Attached is a corrective copy or REIC's analytical data showing the correct date.

THE SANITARY BOARD OF THE CITY OF CHARLESTON, WEST VIRGINIA

Tim G. Haapala, P.E.
CSB Operations Manager

208 26TH STREET, WEST, CHARLESTON, WV 25387-1818
TEL (304) 348-1084 ■ FAX (304)347-1808

THE SANITARY BOARD

SANITARY BOARD OF THE CITY OF CHARLESTON
CHAIN OF CUSTODY

USER SAMPLED: CSB	SAMPLED BY: ER/GJ	TURN AROUND TIME
ADDRESS:	PO NUMBER:	STANDARD 1-DAY 2-DAYS
SAMPLE TYPE: KANAWHA TRANSLATOR STUDY 1	POINT OF COLLECTION: OUTLET 001	OTHER:

USER ID	SAMPLE ID	TIME START STOP	SAMPLE DATE	SAMP TYPE	# OF CONT	PRES	PH	EPA METHOD	DESIRED MDL	PARAMETER TO BE SAMPLED
WEREFF	201310TR	0700-0700	10/15-10/16/13	C	1	HNO3	<2	200.8	.001	· CU TOTAL RECOVERABLE HARDNESS
WEREFF	2013DIS	0700-0700	10/15-10/16/13	C	1	HNO3		200.8	.001	· CU DISSOLVED FILED FILTERED
WEREFF	201310TSS	0700-0700	10/15-10/16/13	C	1	ICE		SM2540D	2	· TSS
WEREFF	201310A	0700-0700	10/15-10/16/13	C	1	ICE		SM2320B	1	· ALKALINITY
WEREFF	201310DOC	0700-0700	10/15-10/16/13	C	1	H2SO4	<2	SM5310C	.2	· DISSOLVED ORGANIC CARBON FIELD FILTERED
WEREFF	201310	0700-0700	10/15-10/16/13	C	3	ICE		*		WER EFFLUENT SAMPLE
WEREFF	FIELD BLANK	0810	10/16/13	G	1	HNO3	<2	200.8	.001	CU TOTAL RECOVERABLE

RELINQUISHED BY: Erik A. Roberts	DATE: 10-16-13	TIME: 0900	RECEIVED BY: M A Halley 10:10 10/16/13
RELINQUISHED BY: M A Halley	DATE: 10/16/13 1650	TIME:	RECEIVED BY: Dillon Lester 1650 10-16-13

COMMENTS: T-6
Act the toxicity testing manual EPA -821-R-02-012
RECEIVING STREAM - KANAWHA RIVER NPDES PERMIT # WV0023205

By TGH on 2-7-14 : CSB Lab measured pH on 10/16/13 @ Outlet No.001 was 6.76

THE SANITARY BOARD

SANITARY BOARD OF THE CITY OF CHARLESTON
CHAIN OF CUSTODY

USER SAMPLED: CSB	SAMPLED BY: ER / LH	TURN AROUND TIME
ADDRESS:	PO NUMBER:	STANDARD 1-DAY 2-DAYS
SAMPLE TYPE: KANAWHA WER STUDY	POINT OF COLLECTION: UPSTREAM OUTLET 001	OTHER:

USER ID	SAMPLE ID	TIME START STOP	SAMPLE DATE	SAMP TYPE	# OF CONT	PRES	PH	EPA METHOD	DESIRED MDL	PARAMETER TO BE SAMPLED
WERUS	201310TR	1006 - 1020	10-15-13	C	1	HNO3	<2	200.8	.001	CU TOTAL RECOVERABLE/ HARDNESS
WERUS	201310DIS	1006 - 1020	10-15-13	C	1	HNO3	<2	200.8	.001	CU DISSOLVED FIELD FILTERED ·
WERUS	201310TSS	1006 - 1020	10-15-13	C	1	ICE		SM2540D	2	TSS ·
WERUS	201310A	1006 - 1020	10-15-13	C	1	ICE		SM2320B	1	ALKALINITY ·
WERUS	201310DOC	1006 - 1020	10-15-13	C	1	H2SO4	<2	SM5310C	.2	DISSOLVED ORGANIC CARBON FIELD FILTERED ·
WERUS	201310	1006 - 1020	10-15-13	C	1	ICE		*		WER RIVER SAMPLE
WERUS	BLANK	1003	10-15-13	G	1	HNO3	<2	200.8	.001	CU TOTAL RECOVERABLE ·

RELINQUISHED BY: Erik G. Roberts	DATE: 10-14-13	TIME: 0900	RECEIVED BY: MA Hoolley 10/14/13 10:10
RELINQUISHED BY: MA Hoolley	DATE: 10/16/13 1650	TIME:	RECEIVED BY: 1650 10-16-13

COMMENTS: 7.6

* Acute toxicity testing manual EPA -821.-R-02-012
RECEIVING STREAM - KANAWHA RIVER NPDES PERMIT # WV0023205

By TGH on 2-7-14: CSB Envr. Compliance staff used a field meter to measure pH of the upstream outlet No. 001 sample on 10-15-13, which was 7.25

REI Consultants, Inc. - Analytical Report

WO#: 1311J31

Date Reported: 12/11/2013

Client:	CHARLESTON SANITARY BOARD	**Collection Date:**	11/18/2013 8:18:00 AM
Project:	KANAWHA WER STUDY 2 NOV 2013	**Date Received:**	11/19/2013
Lab ID:	1311J31-01A	**Matrix:**	Liquid
Client Sample ID:	2013 EQUIPMENT BLANKS	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP-MS			**Method: EPA 200.8**				**Analyst: JD**	
Copper	0.0016	0.0010	0.0050	NA	J	mg/L	11/21/2013 5:04 PM	PA/VA

By TGH on 2-7-14:
Report corrected by REIC on 2-7-14 to show MDL

REI Consultants, Inc. - Analytical Report

WO#: 1311J31

Date Reported: 12/11/2013

Client:	CHARLESTON SANITARY BOARD	**Collection Date:**	11/18/2013 8:18:00 AM
Project:	KANAWHA WER STUDY 2 NOV 2013	**Date Received:**	11/19/2013
Lab ID:	1311J31-02A	**Matrix:**	Liquid
Client Sample ID:	2013/FIELD FILTERED	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP-MS			**Method: EPA 200.8**				**Analyst: JD**	
Copper	0.0011	0.0010	0.0050	NA	J	mg/L	11/21/2013 5:10 PM	PA/VA
ORGANIC CARBON, TOTAL			**Method: SM5310 C-2000**				**Analyst: DSD**	
Total Organic Carbon	0.57	0.20	1.00	NA	J	mg/L	11/22/2013 3:34 PM	PA/VA

By TGH on 2-7-14:
Report corrected by REIC on 2-7-14 to correct analysis date of TOC