WEST VIRGINIA
SECRETARY OF STATE
KEN HECHLER
ADMINISTRATIVE LAW DIVISION

Form #8

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1990 AUG 20 7:13:52

NOTICE OF AN EMERGENCY AMENDMENT TO AN EMERGENCY RULE

AGENCY: Department of Commerce, Labor & Environmental Resources State Water Resources Board TITLE NUMBER: 46

DATE EMERGENCY RULE WAS ORIGINALLY FILED: June 13, 1990

IS THIS THE FIRST EMERGENCY AMENDMENT TO THE ORIGINALLY FILED EMERGENCY RULE:

Yes

IS THIS THE SECOND EMERGENCY AMENDMENT TO THE ORIGINALLY FILED EMERGENCY RULE:

_____

DATE OF FIRST EMERGENCY AMENDMENT: _____

SERIES NUMBER OF RULE: 1 TITLE OF RULE Legislative Rules Water Resources Board Requirements Governing Water Quality Standards

THE ATTACHED IS AN EMERGENCY AMENDMENT TO AN EXISTING EMERGENCY RULE. THIS EMERGENCY AMENDMENT BECOMES EFFECTIVE UPON FILING.

Frances E Hunter
Frances E. Hunter

John M. Ranson
John M. Ranson

8.22

STATE OF WEST VIRGINIA
STATE WATER RESOURCES BOARD
1260 Greenbrier Street
Charleston, West Virginia 25311
(304) 348-4002

FILED
1990 AUG 27 PM 3:48
OFFICE OF THE SECRETARY OF STATE

August 27, 1990

The Honorable Ken Hechler
Secretary of State
State Capitol Bldg. # 1 Room 157K
Charleston, West Virginia 25305

Dear Mr. Secretary:

On August 20, 1990 we filed with your office an emergency amendment to an emergency rule Title 46 - Series 1 - Legislative Rules Water Resources Board "Requirements Governing Water Quality Standards" along with the form prescribed by your office and also on this date filed fifteen (15) copies with the Legislative Rule-Making Review Committee.

Please be advised that there was a clerical error on page 16 Section 7.2.d.20.B line 4 which has been correct to show arsenic not to exceed "200" ug/l instead of "105" ug/l and that page 13 was inadvertently omitted from the Appendix E for a total of 14 pages.

I am enclosing the pages only for insertion into the State Register and on this date have also filed these pages with the Legislative Rule-Making Review Committee for their consideration.

If you have any questions please do not hesitate to call me at 348-4002.

Respectfully submitted,

Frances E. Hunter

Frances E. Hunter
Executive Secretary

enclosures

c Legislative Rule-Making
Review Committee

STATE OF WEST VIRGINIA
STATE WATER RESOURCES BOARD
1260 Greenbrier Street
Charleston, West Virginia 25311
(304) 348-4002

August 20, 1990

The Honorable Ken Hechler
Secretary of State
State Capitol Bldg. # 1 Room 157K
Charleston, West Virginia 25305

Dear Mr. Secretary:

Enclosed find a copy of an emergency amendment to an emergency rule Title 46 - Series 1 - "Legislative Rules Water Resources Board Requirements Governing Water Quality Standards" and the form prescribed by your office for this filing. On this date eight (8) copies have also been filed with the Legislative Rule Making Review Committee.

This emergency rule is being amended as a result of comments received and public hearing on July 16, 1990: 1) to correct typographical errors that affect permitting and compliance with the Federal Clean Water Act; 2) to codify an agreement with EPA that will lead to approval of West Virginia's Water Quality Standards; 3) to reflect the Secretary of State's disapproval of one portion of the Emergency Rule filed June 13, 1990; 4) to retain original Aluminum criterion as agreed by EPA until additional studies may be completed (see attached letter); and 5) to amend the human health criterion for Nickel to reflect the most recent research from EPA. These amendments are necessary to fulfill the policy statement in WV Code 20-5A-1 and to achieve approval of the State's Water Quality Standards from U.S. EPA under 40 CFR Part 131 (November 8, 1983).

If you have any questions do not hesitate to contact this office.

Very truly yours,

Frances E. Hunter

Frances E. Hunter
Executive Secretary

I concur with the filing of the above.

John M. Ranson

John M. Ranson, Secretary
Department of Commerce, Labor &
Environmental Resources

enclosure

c Legislative Rule Making Review
Committee w/15 enclosures

STATE OF WEST VIRGINIA
STATE WATER RESOURCES BOARD
1260 Greenbrier Street
Charleston, West Virginia 25311
(304) 348-4002

CHARLES R. JENKINS, Ph.D.
SARAH LEE NEAL
DAVID E. SAMUEL, Ph.D.
EDWARD M. SNYDER, Ph.D.
DONALD C. TARTER, Ph.D.

GASTON CAPERTON
Governor

STAFF
FRANCES E. HUNTER
Executive Secretary

JAN R. TAYLOR, Ph.D.
Technical Advisor

June 29, 1990

Dr. Alvin R. Morris, Director (3WM00)
Water Management Division
U. S. EPA - Region III
841 Chestnut Building
Philadelphia, Pennsylvania 19107

CERTIFIED RETURN RECEIPT REQUESTED

Re: Aluminum Criterion

Dear Dr. Morris:

As you know, the WV Water Resources Board, by emergency rule effective 6/13/90, adopted EPA criteria for a number of metals due to your disapproval of those items in our 1989 rules. Many of these new criteria are creating a problem, not only for permittees, but for our permit issuing agency. We would appreciate EPA's position on a number of concerns and questions.

In particular, the new aluminum criterion for aquatic life uses is a problem. First, personnel at the State's Water Resources Section of the Division of Natural Resources believe that in most, if not all, of our streams, aluminum is naturally present in concentrations much higher than 87 ug/l. They believe that the anti-degradation language in our Water Quality Standards (Section 4) prohibits them from allowing any discharge of Al into a stream which already exceeds the standard. Can a permit be issued which allows a discharge containing Al in concentrations up to the naturally-occurring, instream level? If not, this will cause a great problem for many small and large water treatment facilities as well as for the mining and electric generating industries.

For example, a small water plant now discharges into the Little Kanawha River. The Little Kanawha is one of the State's best warmwater fisheries; i.e. the use is being attained. Natural Al levels are around 150 ug/l. With the Water Resources Section's current understanding, this plant's permit must contain an aluminum limit of zero. Since the plant uses alum as a flocculant in their treatment process, they will be unable to comply and will be in constant violation of their new permit, if they choose to continue operation.

We know that site-specific criteria may be adopted after proper scientific justification. In my opinion, EPA's Aluminum Criterion document is not one of the strongest to have been issued by the Agency, and I feel that a less stringent

criterion could be easily justified by the State given the necessary time, personnel and money. However, even if time and money can be found to develop the scientific data necessary, what, if any, relief is available in the interim? Reissued and new permits are being drafted and reviewed daily and this and the other metals criteria are now being applied to discharge limitations. We are concerned that applying an inadequately-justified Al criterion may cause enormous hardships to a vital piece of the State's infrastructure – the provision of a safe potable water supply.

With the number of calls I've been receiving concerning these new criteria, I would not be surprised to find the emergency rules challenged in court. If no court challenge is immediately forthcoming, I expect that a great deal of pressure will be put on the Legislative Rule-Making Review Committee to prevent these rules from proceeding, as is, through the Legislative process. The public hearing on these amended Water Quality Standards is scheduled for July 16, 1990 at 7 P.M. It would be helpful, for both the Board and EPA, if a representative of Region III could attend to orally present your comments on the rules and to help the Board respond to comments.

We would appreciate your response to our concerns as soon as possible. As soon as permits with these new limitations are issued, this Board will be receiving appeals of these permit conditions. We would like your guidance in dealing with these problems. Thank you.

Sincerely,

Jan R. Taylor

Jan R. Taylor, Ph.D.
Technical Advisor

JRT/feh

c Dave Samuel
Linda Holst, EPA
Randy Sovic, WRS-DNR
Ken Politan, DOE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107

AUG 13 1990

Jan Taylor, Ph.D.
Technical Advisor
West Virginia Water Resources Board
1260 Greenbrier Street
Charleston, West Virginia 25311

Dear Dr. Taylor:

Per your request of July 25, 1990, I have read the representative comments from industry regarding the proposed water quality standards. Responses to the comments regarding selenium, aluminum, analytical variability, and acid soluble/dissolved methods for metals are listed below.

Selenium

Comments were made that the Environmental Protection Agency's (EPA's) national criteria for selenium are inappropriate for West Virginia surface waters since the criteria were based on site-specific field data from cooling water reservoirs. EPA stands behind its criteria as being appropriately stringent on a national basis. With regard to application of these criteria to individual States, EPA's criteria may or may not be appropriate due to sensitivities of resident species, the physical and chemical characteristics of the receiving waters and their effects on the biological availability and toxicity of the chemicals. That is why EPA allows for site-specific criteria development and has such guidance in EPA's Water Quality Standards Handbook.

Aluminum

Comments were made that EPA's chronic criterion for aluminum is not appropriate since it is exceeded statewide in West Virginia and was lowered by EPA from 748 ug/L to 87 ug/L to protect striped bass. As stated by EPA at the public hearing on the emergency rulemaking, EPA supports the Board's adoption of the statewide aluminum criterion but does recognize that certain environmental factors may affect the toxicity and availability of aluminum to aquatic life. Therefore, EPA recommends that the Board adopt site-specific criteria, where appropriate, to reflect local conditions.

As discussed above, site-specific criteria procedures appear in EPA's Water Quality Standards Handbook. One of the recommended procedures allows for recalculation of the criteria by using only the laboratory toxicity data from the national database for resident species. Since striped bass do not occur in West Virginia, the statewide criterion could be readjusted by eliminating the data for this species as well data for other non-resident species.

Analytical Variability

Comments were made that said dischargers should be able to measure compliance with water quality-based effluent limitations that are below detection by reporting concentrations in effluents which are less that the practical quantification level (PQL) when the PQL is larger than the water quality-based limit.

EPA's position on measuring compliance with water quality-based effluent limits appears in two documents: the draft revised Technical Support Document for Water Quality-Based Toxics Control (April 1990) and "Strategy for the Regulation of Discharges of PHDDs and PHDFs from Pulp and Paper Mills to Waters of the United States" (May 21, 1990). In summary, these documents state that for NPDES permits, the recommended approach is to include the water quality-based limit in Part I of the permit regardless of whether the limit is below the analytical detection level. In addition, the limit should be accompanied with the specific analytical method to be used for measuring compliance, and a statement which says that any sample that is analyzed in accordance with the specified method and found to be below the detection level will be deemed to be in compliance with the permit limit (unless other monitoring information indicates a problem). As stated on page 213 of the draft revised Technical Support Document, "[f]or most NPDES permitting situations, EPA recommends that the detection level be defined in the permit as the 'minimum level' (i.e., the level at which the entire analytical system gives recognizable mass spectra and acceptable calibration points). The minimum level is developed based on interlaboratory analyses of the analyte in the matrix of concern (i.e., wastewater effluents)."

The minimum level is different from the "minimum detection limit" which is defined in 40 CFR Part 136 Appendix B as "the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte." Minimum detection limits are usually more stringent than minimum levels. For example, the minimum detection limit for 2,3,7,8-tetrachlorodibenzo-p-dioxin is 5.6 ppq, whereas the minimum levels is 10 ppq.

Analytical Methods for Metals

EPA is aware the States have had difficulty in adopting EPA's recommended criteria for metals and implementing these criteria in NPDES permits because of the stringency of these criteria and exceedances of these criteria in some receiving waters and intake waters nationwide. In many cases, these exceedances can be attributed to the total or total recoverable methodologies used for metals analysis, which measure forms of metal which are often not readily available or toxic to living organisms.

In order to more realistically measure the form of metal that is available biologically, EPA developed an acid soluble method for metals analysis. This method was to apply to both ambient and effluent samples. EPA has not finalized the method because it is not known how the method relates to the portion of metals which is biologically available, nor how the method compares with the dissolved and total recoverable methods when applied to ambient waters.

EPA Headquarters has developed a draft policy which allows States to use total, total recoverable, acid soluble, or dissolved metals measurements for evaluating the attainment of ambient water quality criteria and determining the need for water quality-based controls. However, as indicated by 40 CFR 122.45, only the total recoverable method can be used to determine compliance with NPDES permit limitations.

On July 19, 1990, EPA Region III held a Regional Water Quality Standards Forum in Baltimore, Maryland. Five of the six Region III States represented (West Virginia was absent) strongly urged EPA to approve an acid soluble method and allow this method to be used for measuring compliance with NPDES permit limits. EPA Region III is currently drafting a letter to LaJuana Wilcher, the Assistant Administrator for the Office of Water, which will request that EPA Headquarters immediately go forward with finalizing the acid soluble method and revise the permits regulation to allow this method to be used in measuring compliance with permit limitations.

EPA Region III supports EPA's draft policy on metals measurements. States can adopt water quality criteria as total, total recoverable, acid soluble, or dissolved. If the dissolved form is used, a method has to be developed to relate ambient dissolved criteria to total recoverable effluent limits. Region III has been working with Virginia to develop procedures which determine the ratio between dissolved and total recoverable metal on a discharger-specific basis. The Region would also assist West Virginia is developing similar methods if the State chose to pursue such an option.

I hope that these comments are of help to you in developing the State Water Resources Board's response to comments on the emergency rulemaking. As discussed with you today, EPA concurs with the emergency rulemaking except for the site-specific copper criteria for Little Scary Creek. Since Appalachian Power Company has agreed to accept the criteria calculated by Region III (and submitted to you on August 2, 1990), this issue will be resolved once the Board amends the emergency rules to reflect the new criteria. Approval of the amended emergency rule by EPA will remove West Virginia from the national rule for promulgation of toxics criteria for those States which have not met the requirements of Section 303(c)(2)(B) of the Clean Water Act.

If you have any questions regarding these comments, please contact me at (215) 597-0133.

Sincerely,

Linda L. Holst

Linda L. Holst
Standards Coordinator

TITLE 46
EMERGENCY
LEGISLATIVE RULES
WATER RESOURCES BOARD

REQUIREMENTS GOVERNING WATER QUALITY STANDARDS
Series 1
1990

46-1-1. 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, 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 20-5A-1.)

1.2 Authority - W. Va. Code 20-5A-3.

1.3 Filing Date - August 20, 1990.

1.4 Effective Date - August 20, 1990.

1.5 Repeal of Former Rule - This Legislative rule repeals West Virginia Administrative Regulations, State Water Resources Board, Chapter 20-5 and 5A, Series I (1985), "Requirements Governing Water Quality Standards", filed June 13, 1990.

46-1-2. Definitions

The following definitions in addition to those set forth in Chapter 20, Article 5A, Section 2, 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 State Health Department to assure that the Water is safe for human consumption.

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

2.3 The "Federal Act" means the Clean Water Act (also known as the Federal Water Pollution Control Act) Public Law 92-500, as amended by Public Law 100-4, 33 U.S.C. 1251, et seq.

2.4 "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. Included are those streams or stream segments which receive annual stockings of trout but which do not support year-round trout populations.

2.5 "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.

2.6 "National resource waters" are those whose unique character, ecological or recreational value or pristine nature constitutes a valuable national or State resource. (See Section 7.3.)

2.7 "Natural" or "naturally occurring" values or " natural temperature" shall mean for all of the waters of the State:

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

2.7.b Those water quality values which exist unaffected by the discharge, or direct or indirect deposit, of any solid, liquid or gaseous substance by any person.

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

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

2.10 "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.

2.11 "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.

2.12 The "State Act" or "State Law" shall mean the West Virginia Water Pollution Control Act, section one, article five(a), chapter twenty, et seq. of the West Virginia Code.

2.13 "Total recoverable" refers to the digestion procedure for certain heavy metals as referenced in 40 CFR 136, June 30, 1986, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act.

2.14 "Trout waters" are streams or stream segments which sustain year-round trout populations. Excluded are those streams or stream segments which receive annual stockings of trout but which do not support year-round trout populations.

2.15 "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.

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

2.17 "Wetlands" include such areas as swamps, marshes, bogs, and other land subject to frequent saturation or inundation, and which normally support a prevalence of vegetation typically found where wet soil conditions prevail.

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

§ 46-1-3. 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 State Water Resources Board 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 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 alters the chemical, physical or biological integrity of the waters of the State.

§ 46-1-4. Anti-degradation Policy

4.1 It is the policy of the State of West Virginia that instream water uses shall be maintained and protected as follows:

4.1.a Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected. 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. (See 4.1.d).

4.1.b At a minimum, uses are deemed attainable if they can be achieved by the imposition of effluent limits required under Sections 301(b) and 306 of the Federal Clean Water 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 body 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:

4.1.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

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

4.1.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

4.1.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

4.1.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 body to its original condition or to operate such modification in a way that would result in the attainment of the use; or

4.1.b.6 Physical conditions related to the natural features of the water body, 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.

4.1.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.

4.1.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 Board shall follow the requirements for revision of water quality standards as required by section three(a), article five A, chapter twenty of the West Virginia Code 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 Board's administrative procedural regulations for applying for less restrictive uses or criteria shall be followed.

4.1.e With the exception of the provisions of Section 7.2.c of this series, the existing trout and other high quality waters of the State must be maintained at their existing high quality unless it is determined after 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 recreation in and on the water.

4.1.f The Board and the Chief 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 for non-point source control.

4.1.g In all cases, waters which constitute an outstanding national resource as designated in Section 7.3.c shall be maintained and protected and improved where necessary.

4.1.h 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.

§ 46-1.5. Mixing Zones

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

5.2 The following criteria shall be applied to the establishment of mixing zones:

5.2.a Mixing zones shall:

5.2.a.1 Be kept as small as practical in area and length;

5.2.a.2 Not be used for, or considered as, a substitute for waste treatment;

5.2.a.3 Provide for as rapid a mixing as practical;

5.2.a.4 Not prevent the free passage of aquatic species or include spawning or nursery areas;

5.2.a.5 Not overlap a public water supply intake;

5.2.a.6 Not cause or contribute to any of the conditions prohibited in Section 3; and

5.2.a.7 Not interfere with any designated water use category.

5.3 The boundaries of the mixing zone shall reflect:

5.3.a Receiving water body characteristics such as:

5.3.a.1 Water quality,

5.3.a.2 Local meteorology,

5.3.a.3 Flow regime (including low-flow records),

5.3.a.4 Magnitude of water exchange at point of discharge,

5.3.a.5 Stratification phenomena,

5.3.a.6 Waste capacity of the receiving system including retention time,

5.3.a.7 Turbulence and speed of flow;

5.3.a.8 Morphology of the receiving system as related to plume behavior, and biological phenomena;

5.3.a.9 Designated water use categories; and

5.3.b Discharge characteristics such as:

5.3.b.1 Flow regime,

5.3.b.2 Volume,

5.3.b.3 Design,

5.3.b.4 Location,

5.3.b.5 Rate of mixing and dilution, and

5.3.b.6 Plume behavior and mass-emission rates of constituents including knowledge of their persistence, toxicity, and chemical or physical behavior with time..

5.4 Where the seven (7) day, ten (10) year return frequency is 5 cfs or less, no mixing zone may be established.

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

§ 46-1-6. Water Use Categories

6.1 These rules establish general Water Use Categories and Water Quality Standards for the waters of the State. Incidental utilization for whatever purpose may or may not constitute a justification for assignment of a Water Use Category to a particular stream segment.

6.2 Category A - Water Supply, Public - This category is used to describe waters which, after conventional treatment, are used for human consumption. This category includes:

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; and

6.2.d All other surface water intakes where the water is used for human consumption, and

6.2.e Shall apply to the stream segment extending upstream from the intake for a distance as defined in Section 7.2.a.2 of this series. (See Appendix B for partial listing).

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 a fish population composed overwhelmingly of warm water species. (These are primarily sport fisheries and may be stocked with trout seasonally.)

6.3.b Category B2 - Trout Waters - As defined in Section 2.14 (see Appendix A for a representative list).

6.3.c. Category B3 - Small Non-Fishable Streams. Streams or stream segments which because of their size or flow patterns do not offer sport fishing; they generally contain only minnows, darters, etc.

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.

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 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 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 or more industrial users. It does not include water for cooling.

§ 46-1-7. 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.i KG-19 - Meadow River and all its tributaries.

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

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

7.1.e.3.D.iv 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.i KNG - Greenbrier River and all its tributaries.

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

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

7.1.e.3.E.iv 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.A 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.A 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.

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 five (5) miles 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. Provided, however, that within a zone extending one half (1/2) mile above the intake, the chief, Division of Water Resources, Department of Natural Resources, may establish for any discharge, effluent limitations for the protection of human health that require additional removal of those pollutants. (If a watershed is not significantly larger than either of the two (2) zones above the intake, the water supply section may include the entire upstream watershed to its headwaters.)

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: Exceptions do not apply to Trout Waters.

7.2.c Exceptions: Water quality standards shall not apply: (See Section 7.2 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 designated uses of downstream waters are not adversely affected;

7.2.c.3 In any mixing zones which are established pursuant to Section 5 of these rules;

7.2.c.4 Where lesser quality is due to natural conditions. In such cases the naturally-occurring values 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 water quality standards have been adopted for the State's waters as follows:

7.2.d.1 James River - (Reserved)

7.2.d.2 Potomac River

7.2.d.2.A Except for the unnamed tributary of the South Branch of Buzzard Run above and below Prather Pond shall not have Water Use Category A; therefore may contain fluoride not to exceed 2.0 mg/l.

7.2.d.2.B Except for Turkey Run, a small tributary of Opequon Creek (P-4) of the Potomac River, shall not have Water Use Category A; and therefore may contain fluoride not to exceed 8 mg/l, ammonia not to exceed 4 mg/l, chlorides not to exceed 530 mg/l, cyanide (as free cyanide HCN + CN) not to exceed 50 ug/l and hexavalent chromium (total) not to exceed 100 ug/l.

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

7.2.d.6.A Except that the Stony River downstream from the limit of the thermal mixing zone (as established by Board Order of 11/20/75) for the Mount Storm Lake wastewater treatment facility to its confluence with the North Branch of the Potomac River is exempt from the 5°F above natural temperature rise; however, the maximum temperature outside the mixing zone shall not exceed 87°F at any time during the months of May through November and not to exceed 73°F at any time during the months of December through April.

7.2.d.7 Monongahela River

7.2.d.7.A Except that flow in the main stem of the Monongahela River, as regulated by the Tygart Reservoir, operated by the U. S. Army Corps of Engineers, is based on a minimum flow of 345 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.7.B Except for an unnamed tributary to the Monongahela River mainstem at approximately 3700 feet upstream of

mile point 125, which may contain suspended solids not to exceed 60 mg/l, oil and grease not to exceed 15 mg/l, Ammonia-Nitrogen not to exceed 30 mg/l, total phenols not to exceed .10 mg/l, total cyanide not to exceed .05 mg/l, total manganese not to exceed 4 mg/l, total zinc not to exceed 1.5 mg/l, total copper not to exceed 1.0 mg/l, Benzene not to exceed .05 mg/l, Napthalene not to exceed .05 mg/l and Benzo (a) Pyrene not to exceed .05 mg/l and iron not to exceed 4 mg/l for the months June through November and 7 mg/l for the months of December through May.

7.2.d.8 Cheat River - (Reserved)

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

7.2.d.14.A Water Use Categories A and E are excluded from the tributaries of the Youghiogheny River in West Virginia which flow into Maryland.

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

7.2.d.16 Ohio River Tributaries

7.2.d.16.A Except the stretch of Conners Run (O-77-A), a tributary of Fish Creek, from its mouth to the discharge from Conner Run impoundment, shall not have the Water Use Category A and may contain arsenic not to exceed 200 ug/l; selenium not to exceed 62 ug/l; and, iron not to exceed 3.5 mg/l as a monthly average and 7 mg/l as a daily maximum.

7.2.d.16.B Except for that segment of Harmon Creek (O-97) from its confluence with the Ohio River to a point 2.2 miles upstream shall not have the Water Use Category A designation. Therefore, at any time the temperature shall not exceed 100°F, total iron shall not exceed 4.0 mg/l and total fluoride shall not exceed 2.0 mg/l, each as thirty (30) day average values to be determined from four (4) weekly samples.

7.2.d.16.C Except in the stretch of Cow Creek (O-55) from its mouth to a point approximately 2,300 feet upstream, the Water Use Category A shall not apply.

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.A For the Kanawha River main stem, Zone 1, Water Use Category A shall not apply; and

7.2.d.19.B The minimum flow shall be 1,960 cfs at the Charleston gauge.

7.2.d.20 Kanawha River Zone 2 and Tributaries

7.2.d.20.A 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.B Except the stretch between the mouth of Little Scary Creek (K-31) and the Little Scary impoundment shall not have Water Use Category A or B1 and shall have Water Use Category B3; therefore may contain arsenic not to exceed 200 ug/l and selenium not to exceed 62 ug/l; and copper not to exceed 105 ug/l as a daily maximum nor 49 ug/l as a 4-day average..

7.2.d.20-C Except for Ward Hollow (K-39-A), a small tributary of Davis Creek which may contain chlorides not to exceed 540 mg/l.

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.16.C Except in the stretch of Cow Creek (O-55) from its mouth to a point approximately 2,300 feet upstream, the Water Use Category A shall not apply.

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.A For the Kanawha River main stem, Zone 1, Water Use Category A shall not apply; and

7.2.d.19.B The minimum flow shall be 1,960 cfs at the Charleston gauge.

7.2.d.20 Kanawha River Zone 2 and Tributaries

7.2.d.20.A 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.B Except the stretch between the mouth of Little Scary Creek (K-31) and the Little Scary impoundment shall not have Water Use Category A or B1 and shall have Water Use Category B3; therefore may contain arsenic not to exceed 105 ug/l and selenium not to exceed 62 ug/l; and copper not to exceed 105 ug/l as a daily maximum nor 49 ug/l as a 4-day average.

7.2.d.20-C Except for Ward Hollow (K-39-A), a small tributary of Davis Creek which may contain chlorides not to exceed 540 mg/l.

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.A Except the stretch of Laurel Creek (KN-5), a tributary of the New River, from the confluence of Dempsey Branch and Laurel Creek to a point 1.7 miles below, where the specific criterion for iron shall be 2.0 mg/l total iron, and from that point to the confluence of Laurel Creek and the New River, the specific criterion for iron shall be 1.0 mg/l total iron.

7.2.d.30 Greenbrier River

7.2.d.30.A Water Use Category A and B2 shall not apply to that segment of the East Fork of the Greenbrier River (KNG-78) from the reservoir located at the tannery to the confluence with the West Fork; provided that all trout water (B2) standards shall not be violated in the mainstem Greenbrier River.

7.2.d.31 Bluestone River - (Reserved)

7.2.d.32 Bluestone Lake

7.2.d.32.A Category E Water Uses are deleted in Bluestone Lake and temperature rise shall be limited to no more than 3°F above natural not to exceed 81°F at any time during the months of May through November and not to exceed 73°F at any time during December through April.

7.2.d.33 East River - (Reserved)

7.2.d.34 Guyandotte River - (Reserved)

7.2.d.35 Mud River - (Reserved)

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

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

7.3 Special Waters of the State

7.3.a High Quality Waters. High quality waters shall include but are not limited to all waters as defined in Section 2.4.

7.3.b All streams designated by the West Virginia Legislature under the West Virginia Natural Streams Preservation Act, section one, article five B, chapter 20, et seq. of the West Virginia Code.

7.3.c West Virginia High Quality Streams Fourth Edition, prepared by the Wildlife Resources Division, Department of Natural Resources (1979).

7.3.d National Resource Waters. National Resource Waters shall include but are not limited to the following waters of the State:

7.3.d.1 All Federally designated rivers under the "Wild and Scenic Rivers Act", Public Law 95-542, as amended, 16 u.S.C. 1271, et seq.

7.3.d.2 All naturally reproducing trout streams.

7.3.d.3 All streams and other bodies of water in State and National Forests and Recreation Areas.

7.3.e National Rivers. "National Parks and Recreation Act of 1978." Public Law 95-625, as amended, 16 U.S.C. 1, et seq.

§ 46-1-8. Specific Water Quality Criteria

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

8.1.a. Specific state (i.e. total, total recoverable, 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, June 30, 1986 (see also Series II, Section 7.3).

8.1.b An "X" or numerical value in the use columns of Appendix E shall represent the applicable criteria.

8.1.c Charts of water quality criteria in Appendix E shall be applied in accordance with major stream and use applications, Sections 6 and 7.

8.2 Criteria for Toxicants

8.2.a Toxicants which are carcinogenic have human health criteria (Water Use Category A) based upon an estimated risk level of one additional cancer death per one million persons (10^{-6}) and are indicated in Appendix E by an asterisk (*).

8.2.b For Water Use Category B, the criteria for organic carcinogens are for the protection against accumulation of

those carcinogens in fish flesh in excess of the amount that would produce a cancer risk level of one in one million (10^{-6}) humans.

46-1-9. 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 as Category B1 and B2, such discharge may be regulated by the chief where necessary to protect State water 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 or more representative important species of aquatic life designated on a case-by-case basis by the chief 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 chief 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 or 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 chief and shall submit all of the following in writing to the chief:

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

9.2.b Such periodic progress reports of the testing as may be required by the chief.

9.2.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 the methodologies outlined in the following documents: EPA Ecological Research Series Publication, EPA-660/3/75/009; Methods of Acute Toxicity Tests With Fish, Macroinvertebrates, and Amphibians (April 1975); Standard Methods for the Examination of Water and Wastewater (16th 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; or EPA Environmental Monitoring Series Publication, EPA-6001 4-78-013, Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms (600/4-85/013) 3rd Edition February 1985) or Short Term Methods for Estimating Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (EPA/600/4-85/014), December 1985. Test waters shall be reconstituted according to recommendations and methodologies specified in the previously cited references or methodologies approved in writing by the chief.

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 2.14.

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	Jefferson	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-	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)
PSB	"	Seneca Creek
PSB	"	Laurel Fork
PSB	"	Big Run
PNB	Mineral	North Fork Patterson Creek
PNB	"	Fork 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	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
MT	"	Big Run
MTB	Upshur-Randolph	Right Fork Buckhannon River
MTB	Upshur	Buckhannon River (Above Beans Mill)
MTB	Upshur	French Creek
MTB	Upshur-Randolph	Left Fork Right Fork
MTM	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	Pocahontas	Laurel Run

KE	Webster	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	Greenbrier	Meadow Creek
KG	Fayette	Wolf Creek
KG	Nicholas	Cherry River
KG	Greenbrier-Nicholas	Laurel Creek
KG	Greenbrier-Nicholas	North Fork Cherry River
KG	Greenbrier	Summit Lake (Impoundment)
KG	Greenbrier-Nicholas	South Fork Cherry 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	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
KNG	"	Little River-East Fork
KNG	"	Little River-West Fork
KNG	"	East Fork, Greenbrier River above the impoundment at the tannery
KNG	"	Five Mile Run
KNG	"	Mullenax Run
KNG	"	Abes Run

APPENDIX B
CATEGORY A - WATER SUPPLY PUBLIC

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

River Basin	County	Operating Company	Source
Shenandoah River			
S	Jefferson	Charlestown Water	Shenandoah River
Potomac River			
P	Jefferson	3-M Company	Turkey Run
P	"	Shepardstown Water	Potomac River
P	Jefferson	Harpers Ferry Water	Elk Run
P	Berkeley	DuPont Potomac River Works	Potomac River
P	Berkeley	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	Hampshire	Peterkin Conference Center	Mill Run
PSB	Hardy	Moorefield Municipal Water	South Fork River
PSB	Pendleton	U.S. Naval Radio Sta.	South Fork River
PSB	"	Circilville Water Inc.	North Fork of South Branch, Potomac River
PSB	Grant	Mountain Top PSD	Mill Creek, Imp.
PSB	"	Petersburg Municipal Water	South Branch, Potomac River
PNB	Grant	Island Creek Coal	Impoundment
PNB	Mineral	Piedmont Municipal Water	Savage River, Maryland
PNB	Mineral	Keyser Water	New Creek
PNB	"	Fort Ashby PSD	Lake
Monongahela River			
M	Monongalia	Morgantown Water Comm.	Colburn Creek & Monongahela R.
M	Monongalia	Morgantown Ordinance Works	Monongahela R.
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 Country Club	Cheat Lake-Lake Lynn
MC	Monongalia	Union District PSD	Cheat Lake-Lake Lynn
MC	Monongalia	Cooper's Rock State Park	Impoundment
MC	Preston	Kingwood Water	Cheat River
MC	"	Hopemount State Hospital	Snowy Creek
MC	Preston	Rowlesburg Water	Keyser Run & Cheat River
MC	Preston	Albright	Cheat River
MC	Tucker	Parsons Water	Shavers & Elk Lick Fork
MC	Tucker	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	Tucker	Canaan Valley State Park	Blackwater River
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	Harrison	Salem Water Bd.	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	"	Kenndy Comprssor Station	West Fork River
MW	Lewis	Jane Lew Water Comm.	Hackers Creek
MW	Harrison	Bel-Meadow Country Club	Lake
MW	Harrison	Harrison Power Station	West Fork River

	MW	Harrison	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	Marion	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	Barbour	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	Randolph	Mill Creek Water	Mill Creek
	MTB	Upshur	Buckhannon Water Board	Buckhannon River
Ohio River				
O	Zone 1	Hancock	Chester Water & Sewer	Ohio River
0	Zone 1	Brooke	City of Weirton	Ohio River
O	" "	Brooke	Weirton Steel Division	Ohio River
0	" "	Ohio	Wheeling Water	Ohio River
0	" "	Mason	Philip Sporn Plant	Ohio River
O	" "	Tyler	Sistersville Municipal Water	Ohio River
O	" "	Pleasants	Pleasants Power Station	Ohio River
O	" "	Cabell	Huntington Water Corp.	Ohio River
O	" "	Marshall	Mobay Chemical Co.	Ohio River
0	" "	Wood	E. I. DuPont	Ohio River
O	Zone 2	Marshall	Cameron Water	Glass House Hollow
O	" "	Marshall	New Urindahana Water System	Wheeling Creek
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 Municipal 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	Zone 2		Wayne	East Lynn Lake	East Lynn Lake
O	"	"	"	Monterey Coal Co.	Impoundment
Little Kanawha					
	LK		Wood	Claywood Park PSD	Little Kanawha River
	LK		Calhoun	Grantsville Municipal Water	Little Kanawha River
	LK		Gilmer	Glenville Utility	Little Kanawha River
	LK		Gilmer	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		Ritchie	Harrisville Water	North Fork Hughes River
	LKH		Ritchie	Pennsboro Water	North Fork Hughes Fork
Kanawha River					
	K		Putnam	Buffalo Water	Cross Creek
	K		"	Winfield Water	Poplar Fork & Crooked Creek
	K		Putnam	South Putnam PSD	Poplar Fork & Ceooked Creek
	K		Kanawha	Cedar Grove Water	Kanawha River
	K		"	Kanawha River Plant	Kanawha River
	K		"	Pratt Water	Kanawha River
	K		Fayette	Armstrong PSD PO-K1-CO-EL	Kanawha River & Gum Hollow
	K		Fayette	Kanawha Water Co.-	Unnamed

		Beards Fork	Tributary Kanawha River
K	Kanawha	Midland Trail School	Impoundment
K	"	Cedar Coal Co.	Impoundment
K	Fayette	Elkem Metals Co.	Kanawha River
K	"	Deepwater PSD	Kanawha River
K	"	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	Boone	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 Dist.	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	Braxton	Sugar Creek PSD	Elk River
KE	"	W.V.Water-Gassaway Dist.	Elk River
KE	Braxton	W.V.Water-Sutton District	Elk River
KE	Webster	W.V.Water-Webster Springs	Elk River
KE	Webster	Holly River State	Holly River

			Park
Gauley River			
KG	Nicholas	Craigsville PSD	Gauley River
KG	"	Summersville Water	Impoundment/ Muddlety Creek
KG	Nicholas	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
New River			
KN	Fayette	Ames Heights Water	Mill Creek
KN	"	Mt. Hope Water	Impounded Mine (Surface)
KN	Fayette	Ansted Municipal Water	Mill Creek
KN	"	Fayette Co. Park	Impoundments
KN	"	New River Gorge Campground	Impoundment
KN	Fayette	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	Mercer	Kelly's Tank	Spring
KNB	"	W.V.Water Princeton	Impoundment-Brush Creek
KNB	Mercer	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	Pocahontas	City of Marlinton Water	Knapp Creek
KNG	Pocahontas	Cass Scenic Railroad	Leatherbark Creek
KNG	Pocahontas	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	Logan PSD	Whitman Creek/ Guyandotte River
OG	Mingo	Gilbert Water	Guyandotte River
OG	Wyoming	Oceana Water	Laurel Fork
OG	"	Glen Rogers PSD	Impoundment
OG	"	Pineville Water	Pinnacle Creek/ Guyandotte River
OG	Wyoming	Mullens Water Works	Slab Fork Creek
OG	Raleigh	Raleigh Co. PSD-Amigo	Tommy Creek
OGM	Cabell	Milton Water Works	Guyandotte River
OGM	"	Culloden PSD	Indian Fork Creek
OGM	Putnam	Hurricane Municipal Water	Impoundment
OGM	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	McDowell	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.

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

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.

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	Noeth 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
Monongahela			
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-38	Stonecoal Creek/ Stonecoal Lake	Lewis

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 Twon 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-46-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
	KNB	Bluestone River/ Bluestone Lake	Summers
	KNB	North Fork Brush	Mercer

	Creek	
KG	Gauley River	Webster
KG	Gauley River/ Summersville Lake	Nicholas
KGW	Williams River	Webster

APPENDIX E

SPECIFIC WATER QUALITY CRITERIA

	PARAMETER	UNITS	USE DESIGNATIONS: Warmwater B 1,3	Troutwater B 2	Recreation C	Public A	All Other Uses
8.1	ALUMINUM: Not to exceed 0.5 mg/l.	mg/l		X	—	—	—
8.2	AMMONIA: The concentration of un-ionized ammonia (NH_3) shall not exceed 50 ug/l. Un-ionized ammonia shall be determined from values of total ammonia-N, pH and temperature according to the following equation: Un-ionized ammonia = $\frac{1.2(\text{total ammonia-N})}{1 + 10^{(pk_a - pH)}}$ where $pk_a = 0.0902 + 2730/(273.2 + T)$ and T = temperature in degrees C.	ug/l	50	—	—	50	—
8.2.1	The concentration of un-ionized ammonia shall not exceed 20 ug/l.	ug/l	—	20	—	—	—
8.3	ANTIMONY: Not to exceed 146 ug/l.	ug/l	—	—	—	146	—
8.4	*ARSENIC: Not to exceed 2.2 ng/l.	ng/l	—	—	—	2.2	—
8.4.1	Not to exceed 100 ug/l (Category D Uses).	ug/l	—	—	—	—	100
8.4.2	Not to exceed 190 ug/l trivalent arsenic.	ug/l	X	X	X	—	—
8.5	BARIUM: Not to exceed 1.0 mg/l.	mg/l				1	
8.6	*BERYLLIUM:	ng/l	117	117	—	6.8	

APPENDIX E

SPECIFIC WATER QUALITY CRITERIA

PARAMETER	UNITS	USE DESIGNATIONS: Warmwater B 1,3	Troutwater B 2	Recreation C	Public A	All Other Uses
8.7 CADMIUM: Hardness mg/l as $CaCO_3$ — Soluble cadmium (ug/l) 0-35 — 1 36-75 — 2 76-150 — 5 greater than 150 — 10	ug/l	___	___	___	X	___
8.7.1 Not to exceed 10 ug/l in the Ohio River (O Zone 1) main stem (See Section 7.1.d)	ug/l		___		10	
8.7.2 Not to exceed 0.4 ug/l where hardness is less than 75 mg/l as $CaCO_3$ and 1.2 ug/l in water where hardness is greater than 75 mg/l as $CaCO_3$.	ug/l	___	X	___	___	___
8.7.3 The concentration of cadmium shall not exceed the criterion determined by the equation: Cd (ug/l) = $e^{(0.7852[\ln(\text{hardness})]-3.490)}$ For example: Hardness mg/l as $CaCO_3$ — Total Recoverable Cadmium (ug/l) 50 — 0.7 100 — 1.1 200 — 2.0 300 — 2.7 400 — 3.4	ug/l	X	___	X	___	
8.8 CHLORIDE: Not to exceed 250 mg/l.	mg/l	250	250	250	250	___
8.9 COPPER: Not to exceed 1000 ug/l.	ug/l	___	___	___	1000	___

APPENDIX E

SPECIFIC WATER QUALITY CRITERIA

PARAMETER	UNITS	USE DESIGNATIONS: Warmwater B 1,3	Troutwater B2	Recreation C	Public A	All Other Uses
8.9.1 COPPER (Cont'd) Hardness mg/l as $CaCO_3$ — Total Recoverable Copper ug/l 50 — 6 100 — 11 200 — 20 300 — 29 400 — 38 500 — 46 600 — 55 700 — 63	ug/l	X	X	—	—	
8.10 CYANIDE: (As Free cyanide HCN + CN^-): Not to exceed 5 ug/l.	ug/l	5	5	5	5	
8.11 DISSOLVED OXYGEN: Not less than 5.0 mg/l at any time.	mg/l	X	—	X	X	
8.11.1 Not less than 4.0 mg/l at any time in the Kanawha River main stem, Zone 1.	mg/l	X	—	—	—	—
8.11.2 Concentration shall average 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. Ohio River main stem.	mg/l	X	—	—	—	—
8.11.3 Not less than 7.0 mg/l in spawning areas and in no case less than 6.0 mg/l at any time.	mg/l	—	X	—	—	—

APPENDIX E

SPECIFIC WATER QUALITY CRITERIA

PARAMETER	UNITS	USE DESIGNATIONS: Warmwater B 1,3	Troutwater B 2	Recreation C	Public A	All Other Uses
8.12 FECAL COLIFORM: Maximum allowable level of fecal coliform content for Primary 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 exceed 400/100 ml in more than ten percent of all samples taken during the month.	counts	—	—	X	X	—
8.12.1 For the Ohio River main stem (zone 1). For 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.	counts	—	—	X	—	—
8.13 FLUORIDE: Not to exceed 1.4 mg/l.	mg/l	—	—	—	1.4	
8.13.1 Not to exceed 2.0 mg/l for D Uses.	mg/l	—	—	—	—	2.0
8.14 HEXAVALENT CHROMIUM: Not to exceed 50 ug/l.	ug/l	—	—	—	50	—
8.14.1 Not to exceed 10 ug/l.	ug/l	10 :	—	—	—	—
8.14.2 Not to exceed 7.2 ug/l.	ug/l	—	7.2	—	—	—

APPENDIX E

SPECIFIC WATER QUALITY CRITERIA

PARAMETER	UNITS	USE DESIGNATIONS: Warmwater B 1,3	Troutwater B 2	Recreation C	Public A	All Other Uses
8.15 IRON:						
Not to exceed 1.5 mg/l.	mg/l	1.5	___	___	1.5	
Effluent limitations which may result in a concentration of up to 3.5 mg/l total irton in the stream are allowable upon a demonstration to the Chief by the applicant that such concentration will not have an adverse impact upon designated stream uses. This demonstration is subject to EPA approval and must show either; (1) that the stream is supporting designated uses while containing total iron concentrations higher than the applicalbe criteria or (2) the stream does not have an aquatic life use to protect. Notwithstanding Series 1, Section 4 of the board's rules, this demonstration shall be the only demonstration required before the Chief and the Board with respect to water quality related effluent limitations. This exception does not apply to Trout Waters.	mg/l	X	___	___	___	___
8.15.1 Not to exceed 0.5 mg/l.	mg/l	___	0.5	___	___	___
8.16 LEAD:						
Not to exceed 50 ug/l.	ug/l	___	___	___	50	___
8.16.1 The concentration of lead shall not exceed the criterion determined by the equation:						
$Pb\ (ug/l) = e^{(1.273[\ln(\text{hardness})]-4.705)}$						
For example:						
Hardness mg/l as $CaCO_3$ / Lead ug/l: 50 / 1.3; 100 / 3.2; 200 / 7.7; 300 / 12.9; 400 / 18.6; 500 / 24.7; 600 / 31.1; 700 / 37.9	ug/l	X	X	___	___	___

APPENDIX E

SPECIFIC WATER QUALITY CRITERIA

PARAMETER	UNITS	USE DESIGNATIONS: Warmwater B 1,3	Troutwater B 2	Recreation C	Public A	All Other Uses
8.17 MANGANESE: Not to exceed 1.0 mg/l.	mg/l	1.0	1.0		1.0	—
8.17.1 Effluent limitations which may result in a concentration up to 2.0 mg/l manganese in the stream are allowable upon a demonstration to the Chief by the applicant that such concentration will not have an adverse impact upon designated stream uses. This demonstration is subject to EPA approval and must show either; (1) the stream is supporting designated uses while containing manganese concentrations higher than the applicable criteria, or (2) the stream does not have an aquatic life use to protect. Notwithstanding Series 1, Section 4 of the Board's rules, this demonstration shall be the only demonstration required before the Chief and the Board with respect to water quality related effluent limitations. This exception does not apply to Trout Waters.	mg/l	X	—	—	—	—
8.18 MERCURY: (total) The total organism body burden of any aquatic species shall not exceed 0.5 ug/g as total mercury.	ug/g	0.5	0.5	—	—	—
8.18.1 Total mercury concentration in any unfiltered water sample shall not exceed 0.14 ug/l.	ug/l	—	—	X	X	
8.18.2 Not to exceed 0.012 ug/l.	ug/l	X	X			
8.19 NICKEL: Not to exceed 510 ug/l.	ug/l				X	
8.19.1 Not to exceed 50 ug/l.	ug/l	—	X	—	—	—

APPENDIX E

SPECIFIC WATER QUALITY CRITERIA

PARAMETER	UNITS	USE DESIGNATIONS: Warmwater B 1,3	Troutwater B 2	Recreation C	Public A	All Other Uses
8.19.2 Not to exceed the concentration determined by the following equation: $Ni\ (ug/l) = e^{(0.846\ [\ln(hardness)]+1.1645)}$ For example:						
Hardness mg/l as $CaCO_3$ / Nickel ug/l						
50 / 88	---					
100 / 160						
200 / 280						
300 / 399						
400 / 509						
500 / 615						
600 / 718	ug/l	X				
8.20 NITRATE: (as Nitrate -N) Not to exceed 10 mg/l.	mg/l	___	___	___	10	___
8.21 NITRITE: (as Nitrite -N) Not to exceed 1.0 mg/l.	mg/l	1.0	___	___	___	
8.21.1 Not to exceed 60 ug/l.	ug/l	___	60	___	___	___
8.22 ORGANICS: Criteria / Body Burden ug/l:						
*Chlordane 0.46 / 1.0	ng/l	X	X	X	X	X
*DDT 0.024 / 0.1	ng/l	X	X	X	X	X
*Aldrin-Dieldrin 0.071 / 0.3	ng/l	X	X	X	X	X
Endrin .0023 / 0.3	ug/l	X	X	X	X	X
*Toxaphene 0.71 / 1.0	ng/l	X	X	X	X	X
*PCB 0.079 / 2.0	ng/l	X	X	X	X	X
Methoxychlor .03	ug/l	X	X	X	X	X

APPENDIX E

SPECIFIC WATER QUALITY CRITERIA

PARAMETER	UNITS	USE DESIGNATIONS: Warmwater B 1,3	Troutwater B 2	Recreation C	Public A	All Other Uses
*Benzene	ug/l	40	40	–	0.66	–
*Hexachlorobenzene	ng/l	0.74	0.74	–	0.72	–
*Carbon Tetrachloride	ug/l	4.4	4.4	–	0.25	–
*Chloroform	ug/l	15.7	15.7	–	0.19	–
*Other Halomethanes	ug/l	15.7	15.7	–	0.19	–
*1,2-dichloroethane	ug/l	98.6	98.6	–	0.035	–
1,1,1-trichloroethane	mg/l	67.3	67.3	–	1.2	–
*1,1,2,2-tetrachloroethane	ug/l	10.7	10.7	–	0.17	–
*1,1-dichloroethylene	ug/l	1.9	1.9	–	0.03	–
*Trichloroethylene	ug/l	92.4	92.4	–	3.1	–
*Tetrachloroethylene	ug/l	8.9	8.9	–	0.8	–
Toluene	mg/l	424	424	–	14.3	–
*Polynuclear Aromatic Hydrocarbons	ng/l	31.1	31.1	–	2.8	–
Phthalate Esters	ug/l	3.0	3.0	–	–	–
The organic chemicals listed above shall not exceed the specified water quality criteria. When the specified criteria is less than the practical laboratory quantification level, instream values will be calculated from discharge concentrations and flow rates, and from fish body burden, where applicable.						
8.23 pH: No values below 6.0 nor above 9.0. Higher values due to photosynthetic activity may be tolerated.	unit	X	X	X	X	X
8.24 PHENOLIC MATERIALS: Not to exceed 5 ug/l.	ug/l	5	5	—	5	—
8.25 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.	pCi/l	X	X	X	X	X

APPENDIX E

SPECIFIC WATER QUALITY CRITERIA

PARAMETER	UNITS	USE DESIGNATIONS: Warmwater B 1,3	Troutwater B 2	Recreation C	Public A	All Other Uses
8.25.1 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 5 pCi/l; provided that the specific determination of radium-226 and radium-228 are not required if dissolved particle activity does not exceed 5 pCi/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.	pCi/l	X	X	X	X	X
8.26 SELENIUM: Not to exceed 10 ug/l.	ug/l	—	—	—	10	—
8.26.1 Not to exceed 5 ug/l.	ug/l	X	X	—	—	—
8.27 SILVER: Hardness / Silver ug/l: 0-50 / 1; 51-100 / 4; 101-200 / 12; greater than 201 / 24	ug/l	—	X	—	X	—
8.27.1 0-50 / 1; 51-100 / 4; 101-200 / 12; 201-400 / 24; 401-500 / 30; 501-600 / 43	ug/l	X	—	—	—	—

APPENDIX E

SPECIFIC WATER QUALITY CRITERIA

PARAMETER	UNITS	USE DESIGNATIONS: Warmwater B 1,3	Troutwater B2	Recreation C	Public A	All Other Uses
8.28 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 elipimnion should not be raised more than 3°F by the addition of heat of artificial origin. The normal dialy and seasonable temperature fluctuations that existed before the addition of heat due to other than natural causes should be maintained.	°F	X				
8.28.1 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				
8.28.2 For the Bluestone R. (KNB), Bluestone Lake, (KN-60), East River (KNE), New River (KN), Gauley R. (KG) and Greenbrier River (KNG): Temperature rise shall be limited to no more than 5°F above natural temperature, not to exceed 81°F at any time during the months of May through November and not to exceed 73°F at any time during December through April.		X				

APPENDIX E

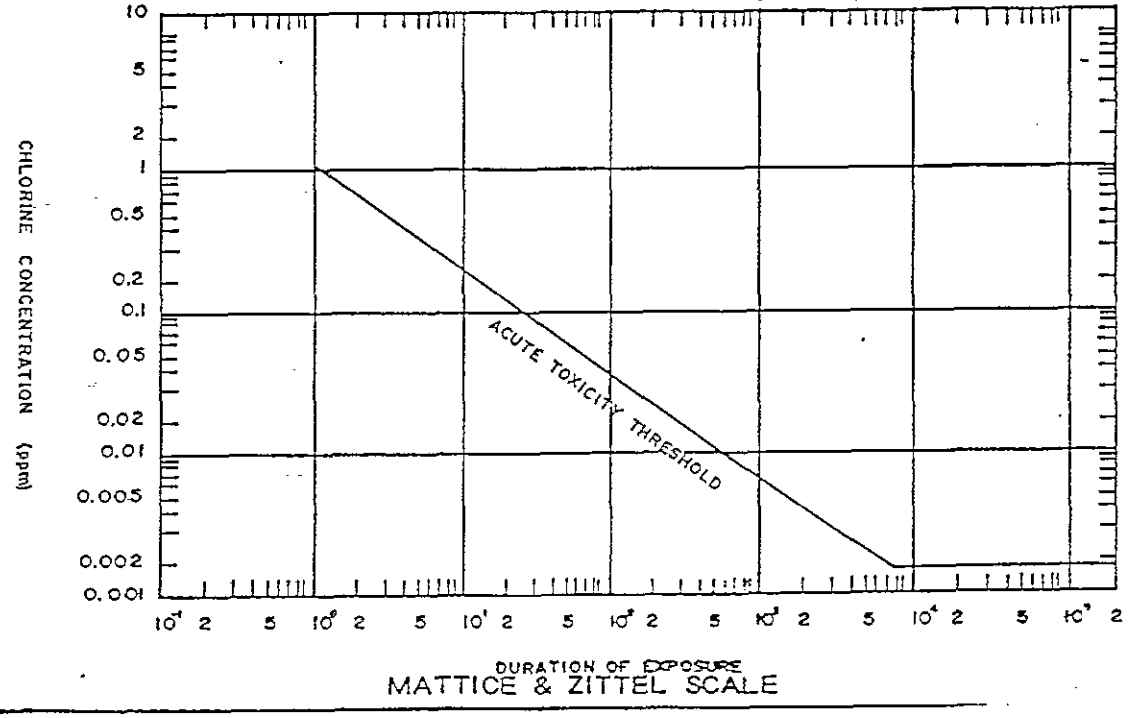
SPECIFIC WATER QUALITY CRITERIA

PARAMETER	UNITS	USE DESIGNATIONS: Warmwater B 1,3	Troutwater B 2	Recreation C	Public A	All Other Uses
8.28.3 No heated effluents will be discharged in the vicinity of spawing areas. The maximum temperatures for cold waters are expressed in the following table:						
Oct. - April: Daily Mean 50 °F; Hourly Maximum 55 °F						
Sept. - May: Daily Mean 58 °F; Hourly Maximum 62 °F						
Transition Period						
June - August: Daily Mean 66 °F; Hourly Maximum 70 °F			X			
8.28.4 For Ohio River Main Stem (01)(Section 7.1.d)						
January 1-31: Period Average 45°F; Inst. Max. 50°F	°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						
September 1-15: 84; 87						
September 16-30: 82; 86						
October 1-15: 77; 82						
October 16-31: 72; 77						
November 1-30: 67; 72	°F	X	—	—	—	
December: 52; 57						
8.29 THALLIUM: Not to exceed 13 ug/l.	ug/l	—	—	—	13	—

APPENDIX E

SPECIFIC WATER QUALITY CRITERIA

PARAMETER	UNITS	USE DESIGNATIONS: Warmwater B 1,3	Troutwater B 2	Recreation C	Public A	All Other Uses
8.30 THRESHOLD ODOR: Not to exceed a threshold odor number of 8 at 104°F as a daily average.	t.o.n.	X	X	X	X	
8.31 TOTAL RESIDUAL CHLORINE: Not to exceed 10 ug/ as measured by the amperometric or equivalent method.	ug/l	10	—	10	10	
8.31.1 No chlorinated discharge allowed.			X			
8.31.2 The following chart may be used to derive the criteria instead of the above fixed (10 ug/l) figure:						



APPENDIX E

SPECIFIC WATER QUALITY CRITERIA

PARAMETER	UNITS	USE DESIGNATIONS: Warmwater B 1,3	Troutwater B 2	Recreation C	Public A	All Other Uses
8.33 ZINC: Hardness mg/l as $CaCO_3$ — Zinc ug/l 0-150 — 50 151-300 — 100 301-400 — 300 greater than 401 — 600	ug/l	—	—	—	X	—
8.33.1 0-50 — 40 51-80 — 75 81-120 — 90 121-160 — 110 161-200 — 130 201-240 — 150 241-280 — 175 281-300 — 220 301-320 — 270 321-340 — 320 341-400 — 370 greater than 401 — 600	ug/l	X	—	—	—	—
8.33.2 Not to exceed 47 ug/l.	ug/l	—	X	—	—	—

APPENDIX E

SPECIFIC WATER QUALITY CRITERIA

PARAMETER	UNITS	USE DESIGNATIONS: Warmwater B 1,3	Troutwater B 2	Recreation C	Public A	All Other Uses
8.32 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's or less, or have more than a 10 percent increase in turbidity (plus 10 NTU minimum) when the background turbidity is more than 50 NTU's. 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 disturbance 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.	NTU's	X	X	X	X	
8.32.1 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.	NTU's	X	—	X	X	

APPENDIX E

SPECIFIC WATER QUALITY CRITERIA

PARAMETER	UNITS	USE DESIGNATIONS: Warmwater B 1,3	Troutwater B2	Recreation C	Public A	All Other Uses
8.33 ZINC:						
Hardness mg/l as $CaCO_3$ — Zinc ug/l						
0-150 — 50						
151-300 — 100						
301-400 — 300						
greater than 401 — 600	ug/l	—	—	—	X	—
8.33.1						
0-50 — 40						
51-80 — 75						
81-120 — 90						
121-160 — 110						
161-200 — 130						
201-240 — 150						
241-280 — 175						
281-300 — 220						
301-320 — 270						
321-340 — 320						
341-400 — 370						
greater than 401 — 600	ug/l	X	—	—	—	—
8.33.2 Not to exceed 47 ug/l.	ug/l	—	X	—	—	—