



# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

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## AD HOC ADVISORY COMMITTEE MEETING SUMMARY

### Triennial Review WQS

April 18, 2007

### Welcome and Introductions

#### Advisory Committee Members and Alternates Present:

*Chesapeake Bay Foundation: Mike Gerel*

*City of Richmond: Robert Steidel*

*Dominion Power: Judson White*

*Environmental Protection Agency: Cheryl Atkinson*

*U.S. Fish and Wildlife Service: Cindy Kane*

*VA Association of Municipal Wastewater Agencies (VAMWA): Jim Pletl*

*Virginia Coal Association: Tommy Hudson*

*VA Department of Conservation and Recreation: Charles Lunsford*

*VA Department of Health (VDH): Michele Monti (Epidemiology), Khizar Wasti (Toxicology), Bob Croonenberghs (Shellfish Sanitation); Steve Pellei (Drinking Water)*

*VA Department of Game and Inland Fisheries: Amy Martin*

*VA Manufacturers Association: Tom Botkins*

*Virginia Save Our Streams: Stacey Brown*

#### DEQ Staff Present:

*Alan Pollock (Facilitator), Jean Gregory, Elleanore Daub, Alex Barron, David Whitehurst, Jutta Schneider, Harry Augustine, Don Smith, Allan Brockenbrough, Mark Alling, Jennifer Palmore, Chris French, Robert Brent*

#### Others Present:

*Lisa Ochsenhirt (City of Richmond)*

*Rick Parrish (Southern Environmental Law Center)*

*Dan Dietrich (Virginia Department of Health)*

*Ed Cronin (Greeley and Hansen – City of Richmond)*

### **Draft amendments for conventional pollutants 10.5% assessment rule:**

Review: All draft amendments related to the 10.5% assessment rules have been removed from the proposal. DEQ met with EPA and it was determined that the assessment rules are not appropriate in the water quality standards unless some exceedance of the criteria is built into the basis of the criteria and is demonstrated to be protective of the designated use. An example of

this is the allowable exceedances developed as part of the Chesapeake Bay amendments. In the development of those criteria for dissolved oxygen, water clarity and chlorophyll, the data showed that a certain number of exceedances of the criteria were seen in reference sites over a limited amount of time and space yet still maintain the aquatic life uses. These distributions were adopted as part of the water quality standards and used in the assessment.

The 10.5% rules may continue to be used in the assessment and is currently still in the draft assessment guidance if they are presented as statistical or quality assurance tools.

Discussion: The assessment rules are open to public comment. Comments are due May 4. Whether the agency can keep the assessment rules in the 2008 guidance is still somewhat unclear but it is believed it will be acceptable to EPA if it is presented as a tool to address variation in the data or sampling error. The “2-hit rule” is considered a good tool because one data point is insufficient information on which to make an impairment decision and it is not related to the protectiveness of the criteria. If the rule is used like a regulation or a standard then it is an inappropriate method and that is why the State of Florida was sued.

#### **Draft amendments for bacteria criteria to protect recreational uses**

Review: The draft amendments reflect a geometric mean criterion for E. coli in freshwater based on a 1% (10/1000) risk level of 206 colony forming units/100 ml of water (CFU) and for enterococci in saltwater based on a 1.9% risk level of 35 CFU. The geometric means are the main criteria to protect primary contact recreational uses as this is considered the environmentally relevant endpoint. Paragraphs under the geometric means give more detail about the criteria. They explain where the means apply (freshwater vs. saltwater), how to calculate the geometric means (4 weekly samples each month), a requirement that the single sample density applies when there is not enough data to calculate a geometric mean, how to calculate a site specific single sample density and that the single sample densities apply always for beach notification and closures.

The single sample densities will generally be used for DEQ monitoring and assessments since those programs will not usually have enough data to calculate a geometric mean. However, the TMDL program will always have sufficient data (through modeling) to calculate geometric means so the TMDL endpoints will be the geometric means. The single sample maximum will not be necessary for the TMDL endpoint.

The secondary contact subsection has been modified to reflect the concepts and wording of the primary contact section and an antidegradation statement has been added as a ‘reminder’ that if a designated secondary contact water body has better water quality than that specified by the criteria, that quality should be maintained.

Discussion: The draft concentrations presented have not been formally accepted by the VDH.

Raising the statewide standard because it makes the TMDLs easier to attain is not appropriate. Only 20% of streams (based on probabilistic data) are listed as impaired for bacteria and most streams in Virginia are meeting the existing criterion. The existing TMDLs have not been fully implemented yet and there is no history to know if the existing criterion can be met. The

standard should only be changed when we know absolutely that it cannot be met. Adjusting the criteria in this way is translated as 25% more people will get sick.

Considering the impact on the TMDL program does not constitute the basis for the standard; rather, considering attainment of a standard or impact on the programs in the development of a standard is something states can and have done in the past. Many of the sources are not controllable (wildlife) nor regulated (overland flow) and we have to consider the feasibility of meeting that standard. Currently, attainment of the bacteria criteria is a problem for the non point source programs and the unreasonableness of the criteria makes it difficult to get participation in the communities involved.

Changing the value is considered a risk management decision but would be acceptable to EPA.

The expression of the single sample density so that it indicates it is not a ‘shall never be exceeded’ or ‘‘maximum’’ value is still a concern. It is used as a maximum value when making immediate decisions about beach advisories; however, the value is really a percentile statistically related to the mean. If used as a maximum it may be overly conservative. Perhaps it should be expressed as the 75<sup>th</sup> percentile. The beach rule states that the values published were never intended to be a ‘not to be exceeded’ value and that if it is used as a maximum value then it should be derived from the 90 – 99<sup>th</sup> percentile. The use of the 10.5% (and maybe up to 25%) exceedance rate for bacteria in the assessment program is considered appropriate because if the geometric mean criterion is met, we know with a certain amount of confidence that some exceedance of the upper values will occur and the use will be met.

There was discussion over why it is a problem calling the single sample density or maximum when that is how it will be used for assessments. Just state in the regulation that it is an assessment tool.

The state should be mindful of compliance with the beach act when making these amendments.

Paragraph A.6 should be revised to include swimming advisories or closures rather than swimming notifications and closures.

The antidegradation statement in the secondary contact section is not necessary as antidegradation applies regardless. However, antidegradation has traditionally only applied via the permit program.

DEQ will continue to work with EPA and the VDH on finalizing these amendments.

### **Numerical Criteria**

Review: DEQ does not believe a recalculation of ammonia or copper based on new data is possible or appropriate at this time and wants to wait for EPA publication and peer review.

### **Discussion:**

Eleven new publications will be published soon and one paper recalculates the ammonia criteria with the new data.

USFWS will get the ASTM method to DEQ. The ASTM method has approved acute and 28-day tests.

All of this information has been provided to EPA. Virginia has so many endangered species of mussels and we should step up our programs to protect that resource and not wait for the national criteria to change. One option would be to apply new criteria to mussel areas.

DEQ checked with North Carolina standards program about ammonia studies and levels in sensitive waters without success. Ammonia levels in the Clinch and Powell Rivers were all below detection (0.04 mg/L) so there does not appear to be a problem in these sensitive waters. However, monitoring locations may not be near discharges. Ammonia levels in the Shenandoah were checked near sources of ammonia and those levels were also low.

The ammonia criterion is of concern to the DGIF fishery biologists and comments will be provided.

The site specific copper criterion in the Clinch River is still as protective as the existing copper criteria and can remain in the regulation.

New information was distributed on cadmium which was conducted for the Association of Metropolitan Sewerage Agencies. The study presents a recalculated cadmium criterion using new published data. Also a review and reevaluation of cyanide was conducted for the Water Environment Research Federation which contains an updated cyanide criterion. This was forwarded to DEQ and results in an adjusted criterion from 1 ppb to 5.5 ppb in saltwater.

### **Special Standards**

Review: The first special standard discussed was a benthic use subcategorization in the Little Calpasture River below Goshen Dam (Lake Merriweather). There is a benthic impairment directly below the dam which improves before the confluence with the downstream water (Maury River) which is 0.83 miles. The stressor report identifies the impairments due to the natural consequence of the impoundment that cannot be remedied by any design or operational changes (e.g. food supply changes and decreases in DO saturation potential due to increased temperature from solar radiation). A history of the enforcement issues since 1992 were presented. There was a period of about five years were the dam was operated correctly. During this period of time, the stream condition index does not vary much from other years. The site specific criterion is based on the 10<sup>th</sup> percentile of the data distribution from the station below the dam. The 10<sup>th</sup> percentile was the statistic used in the development of the Stream Condition Index method by Tetra Tech. The special standard was presented as *Little Calpasture River from Goshen Dam to 0.02 miles above its confluence with the Calpasture River has a stream condition index of at least 20.5 to protect the subcategory of aquatic life that exists here as a result of the hydrologic modification. From 0.02 miles above the confluence with the Calpasture River to the confluence with the Calpasture River, the general aquatic life designated use shall apply.*

Discussion: There are concerns the segment is too large and that DEQ should identify (or get the Boy Scout organization who own the dam to do the work) the benthic condition between the dam and the downstream end of the segment to better define the downstream endpoint. There is going to be some gradient of recovery between the dam and the downstream station. The downstream station is currently variable and sometimes does not meet the 'healthy' stream condition index of 60. The entire watershed will be modeled via a sediment model to meet the stream condition index of 60 at the farthest downstream station. A site specific sediment standard would not be appropriate as the conditions below the dam are not due to sediment. DEQ should state that the downstream score is 60. The TMDL is not expected to change conditions at the station closest to the dam.

If the site specific criterion is based on the 10<sup>th</sup> percentile of the data distribution from the station below the dam, then there will be a 10% exceedance rate at the downstream station and we will be unable to delist. However, the distribution used to define the 10<sup>th</sup> percentile was done using the entire record, which includes times when the dam was not operating according to the Consent Order. DEQ thinks there has been and will be some limited improvement from the bottom of that distribution.

An endangered mussel lives in this watershed and there are concerns with changing the aquatic life use here.

DEQ should ensure existing uses are met and other aspects of the use attainability analysis need to be defended.

DEQ believes this is a classic case of a use sub categorization due to dams but will reconsider the length of segment and the gradient of recovery between the dam and the downstream station.

Review: The second special standard considered will be for a site specific pH criterion for Curtis Lake in Stafford County. Curtis Lake is fertilized to maintain a high quality fishery which results in a pH range of 5.5 to 9.6. The lake meets nutrient criteria for chlorophyll and phosphorus, there are no downstream impacts and best management practices are employed. The special standards was presented as *Lake Curtis in Stafford County has a pH standard of 5.5-9.6 which is protective of the aquatic life in this reservoir and is a result of the fertilization techniques needed to manage the fishery.*

Discussion: This pH problem is seen in other lakes also but DEQ would like to use this as a test case for this lake as it is a consent decree lake with the TMDL due in 2010. The change needs to be documented in order for EPA to approve.

Review: The third special standard is a site specific criterion to protect the public water supply in the Roanoke River below Clover, VA. The Roanoke River is designated as a public water supply from Kerr Dam to Leesville dam. The manganese criterion of 50 µg/l is a secondary MCL and applies at the water supply intake in this segment (the intake is at Kerr Reservoir near Clarksville). The Roanoke River is naturally higher than the criterion but the higher background results in no addition to the waters supply. The permit limit was applied as 'total manganese' and the Health Department has told us the concern here is for 'dissolved manganese'. The only

difference between the existing criterion and the special standard is that it is specified to be 'dissolved manganese.' The special standard is presented as *John H. Kerr Reservoir at the Clarksville water supply intake has a dissolved manganese criterion of 50 µg/l to protect the acceptable taste, odor or aesthetic quality of the drinking water.*

Discussion: The reason for changing the criteria to dissolved must be documented since recently in WVA there was a change in the public water supply application for manganese which was not well documented and was difficult for EPA to approve.

The Department of Game and Inland Fisheries would like to see the data that shows it is not harmful to aquatic life.

Review: An update was provided on the other special standards issues.

Discussion: The Lake Drummond special standard is contingent on EPA approval of the lakes nutrient criteria. EPA is still building the record to defend their final decision on those amendments.

### **Antidegradation**

Review and Discussion:

There are no antidegradation changes being considered by DEQ at this time. It was identified at the last meeting that the concerns raised were related to implementation of the antidegradation standard so a review of the updated draft guidance for antidegradation was provided. Several new exceptions to tier decision making have been added to the guidance. The agency is moving to a tiering by use rather than the holistic approach we use now. We currently do not use the parameter by parameter approach and would place a water in Tier 1 if (for example) one metal criterion was exceeded in a watershed. That would trigger a Tier 1 permitting approach (must meet standards) for other parameters (like conventional pollutants) even if the water quality was better than standards for those other parameters.

Tiering by designated use may make sense when looking at a water quality clean up plan but does not make sense in determining permit limits.

Historically, parameters not used to place water in Tier 1 included fecal coliform, natural background or periodic exceedences. A new exclusion in the draft guidance is that DO and ammonia cannot be adjusted from Tier 2 to Tier 1 based on the adoption of a new criterion that suddenly places the water in Tier 1 because of the newly calculated effluent limit. DO, ammonia would have been placed at Tier 2 if we had data to show water quality was better than standards. Several members did not agree this should be restricted to DO and ammonia. If one parameter is exceeded and information about other parameters is unknown, the other parameters should be permitted as Tier 2.

A cumulative toxic effect could suddenly cause instream problems as more parameters are permitted at Tier 1.

The group was reminded that Virginia's approach is also conservative in that in the absence of data, we place a water body in Tier 2. We also use very conservative assumptions in permitting in assuming it is always critical conditions (low flow, maximum effluent flow, use the 97<sup>th</sup> percentile of the effluent distribution to find the expected maximum value) and we use the most restrictive variables in the calculation to determine the criteria that applies (lowest hardness for metals, highest pH and temperature for ammonia)

The terminology 'antidegradation is applied' means that no more than 25% or 10% of the cumulative assimilative capacity is allowed in a Tier 2 water as this is considered 'insignificant degradation.' It does not mean an economic demonstration has occurred. These de minimus policies are commonly used in Tier 2 waters around the country.

Additional exclusions in the draft guidance for establishing appropriate water quality tiers include exceedences of chlorine and taste and odor criteria, fish consumption advisories, 1998 EPA overlappings and nutrient enriched waters designations.

The discharge of any parameter should not be used to establish a receiving stream as a Tier 1 water for the purpose of evaluating other parameters. There was disagreement with the idea that if one aquatic life criterion is exceeded, then the aquatic life use is not met and maintaining the other parameters at the level of the criterion (Tier 1 rather than Tier 2) is acceptable. Antidegradation is a water quality degradation tool and not a designated use maintenance tool.

The antidegradation guidance should have public input and approval. The justification should be laid out and explained to the public.

DEQ will bring these concerns back to executive management to see if we want to start another public process to reevaluate our guidance and focus on this issue.

### **Mixing Zones**

Review: Draft language was presented that prohibits mixing zones for bacteria, deletes the statement that mixing zone concepts only used for VPDES (would be applicable to other programs) and modifies subsection B.11 to match language in the antidegradation section 30.A.2 which refers to new and existing dischargers instead of new and increased dischargers. No specific amendments were presented for persistent bioaccumulative toxicants (PBTs). DEQ explained that all human health parameters are currently given waste load allocations assuming complete mix and using either the 30Q5 or the harmonic mean stream flow for dilution. The new PBT list from the Bay program does not include metals (except for mercury). Several other states have varying degrees of PBT prohibitions, including a mixing zone prohibition for new dischargers for specific lists of PBTs.

Discussion: The amendment which deletes the application of mixing zone concepts to VPDES was suggested by a regional office because it is overly conservative to expect water protection permits issued for dredging projects that discharge materials and elutriate taken from and returned to these large receiving waters to meet water quality criteria end of pipe. Also, mixing zones should be avoided for ambient monitoring and in assessments so making mixing zones more general in application supports these types of decisions.

DEQ should be careful of unintended consequences resulting from the deletion that mixing zone concepts only be used for VPDES. The impact or misuse of this allowance on wetlands fill projects was a concern. They can see how certain mitigation procedures may be considered invalid with a general mixing zone allowance in the regulation. Guidance on how this will be implemented should be done first to ensure water protection permits can remain protective (e.g. no dredging during migration of fish). Do not want new regulations to supersede existing guidance and policy that were written to be protective of the resources.

It was pointed out that the use of mixing zones is not a requirement and may not be allowed. There was a concern raised that subsection B.9 could allow the prohibitions to mixing zones in wetlands, swamps, marshes, lakes or ponds listed in subsection B.4 to be waived and this did not seem appropriate. This is true, however preventing movement of or lethality to passing and drifting aquatic organisms is not allowed under these waivers. Restricting this to passing and drifting organisms leaves benthic species unprotected. This is also true, however the definition of a mixing zone means that they are kept to a small area so that the designated used in the water body as a whole are protected. Also, there is reassurance in the fact that permit limits are calculated using all conservative assumptions and in some cases no dilution is allowed and standards are met end of pipe. In addition, the standards themselves are calculated using the most sensitive species and safety factors. There are no studies to show to what extent mixing zones cause impairments. There are doubts that lethality would ever be seen in those zones.

DEQ will meet with the water protection permit staff on how the draft language might inadvertently affect their program. It is not our intent to allow less protective choices to be made or supersede existing agreements by extending mixing zone concepts to these programs.

PBTs should be applied end of pipe. There was some confusion as to whether a prohibition would even have an impact on permittees since PBTs are not manufactured or allowed to be discharged. A recent survey under the Bay program only revealed a few dischargers in the Elizabeth River with PBTs and these were almost all metals (no longer on the PBT list).

DEQ should not assume there would be no impact of a prohibition. Municipalities are finding mercury from commercial products entering the facilities. A variance was provided to the Great Lakes facilities because they were unable to meet the mercury limits. Data emerging from the PCB TMDL in the Potomac is showing exceedences of PCBs using a lower detection limit. There are concerns with analytical detection limits for these low level parameters. PCBs are being found in stormwater and if they are in stormwater, they will be everywhere.

We should look into the levels of PBTs in discharges to begin to understand if there would be an impact. DEQ is not aware of any permit issued where a mixing zone was used to avoid a PBT limit. One compromise would be to apply the prohibition to new dischargers. May be best to let the first PBT TMDL for PCBs be completed to gather more information and determine a better course of action. For example, Delaware used pollution reduction plans as a more reasonable strategy. Historically, PCB and mercury point source concerns were tied to two industrial sites. All other locations have had diffuse sources and the fish tissue program is finding those impairments. If it is not a point source problem then it may not be appropriate in the regulation.



The endocrine disruptors and pharmaceuticals are a new concern that EPA is beginning to study and DEQ is starting to sample for these.

### **Swamp Waters (Class VII)**

Review: DEQ has many naturally impaired blackwater swamps in eastern and southeastern Virginia that are listed as impaired for D.O. and pH. To address this concern, last triennial review a new class of waters for blackwater swamps was added and several waters were placed under that category. A revised pH criterion was also adopted for those waters (4.3-9.0) to address the pH impairments. A procedure was developed to demonstrate the impairments are natural and there are 27 more swamps identified via this procedure DEQ would like to add to Class VII. The existing regulation acknowledges that Class VII Swamp Waters may naturally fall outside the ranges for D.O. and pH set forth by the water quality standards and that on a case by case basis, criteria for specific Class VII waters can be developed which reflect the natural water quality. To do this DEQ studied pH and D.O. at many sites in these areas. It was determined that pH was frequently below the existing swamp standard of 4.3 and as low as 3.3. The site specific D.O. minimum D.O. criteria ranged from zero to 3.99 and can be highly variable within a swamp segment (several examples shown). Also, the low values can be seen March – December, so a summer seasonal criterion would not accurately reflect the natural condition. Other states recognize swamp waters through narrative and numerical criteria. South Carolina has a narrative criterion and permit conditions. Examples of swamps and their associated minimum draft criteria were presented.

Discussion: Almost all the data presented were surface water samples. Most swamps are shallow but some can get quite deep.

It appears that other regions of EPA are approving standards that opt not to apply these standards in naturally low D.O. waters or provide a narrative to avoid inappropriate listings. Now Virginia has been put in a position that in order to de-list we need to compare to a site specific criterion. The standards state that a site specific criterion must be adopted. This was the EPA guidance at the time and still the preferred approach in these situations. However, no one expected the D.O. values to be so low or so variable.

Several members were concerned about allowing these low values to serve as criteria; although everyone acknowledges these waters are naturally low in D.O. and pH. Perhaps a standard that recognizes the D.O. fluctuation would be better. Some of the most pristine swamps have the widest D.O. fluctuation.

These natural waters should never have been listed in the first place. Most agreed to that. Unfortunately, many were included under the consent decree and must be addressed via TMDL or regulatory change before 2010. The state must adopt a criterion that will ensure the waters can be de-listed. The standard indicates a site specific criterion must be adopted, but this could be changed or revised so that a narrative criterion can serve as the site specific criterion. DGIF, USFWS and EPA will work with DEQ to develop an appropriate criterion.

### **Chesapeake Bay**

A new addendum to the 2003 Bay criteria for dissolved oxygen, water clarity and chlorophyll will be published soon and this triennial review staff will incorporate the changes that are needed to reflect updates in the addendum. Staff also reviewed the most recent assessment and how it will change in the future.

### **Other Issues**

Review and Discussion: Several other issues that may be addressed in the final draft included updated WER procedures, an enhanced biological narrative, trout water and public water supply updates, specifying the number of significant digits for numerical criteria and removing the list of scenic rivers. DEQ should consider pursuing the biotic ligand model instead of water effect ratios.

DGIF will accept adjusting the temperature requirements in warmwater streams that are stocked. DEQ will work with DGIF on the names and locations of these streams.

If Scenic Rivers have no regulatory requirements for DEQ, they should be removed.

### **Handouts distributed at the April meeting:**

Agenda, April 18, 2007

Summary of March 21, 2007 Meeting

Draft Bacteria Amendments, April 16, 2007

Draft Mixing Zone Amendments, April 16, 2007

Draft Antidegradation Guidance (Establishing Water Quality Tiers for the Application of Anti-degradation in the VPDES Permitting Program)

Copies of Slides from Presentations

10% Rule

Special Standards

Mixing Zones

Swamp Waters

Chesapeake Bay WQS Amendments

Other Issues

Addendum to U.S. EPA Cadmium Water Quality Criteria Document, December 2004  
(submitted by VAMWA)

Scientific Review of Cyanide Cover Page, Abstract and Table of Contents - entire document  
sent to DEQ, January 2007 (submitted by VAMWA)