



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

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AD HOC ADVISORY COMMITTEE MEETING SUMMARY

Triennial Review WQS

March 21, 2007

Welcome and Introductions

Advisory Committee Members and Alternates Present:

Chesapeake Bay Foundation: Joe Tannery

City of Richmond: Lisa Ochsenhirt, Fredrico Maisch

Dominion Power: Judson White, Ken Roller

Department of Navy: Dave Cotnoir

James River Association: Chuck Frederickson

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), Ram Tripathi (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, Don Smith, Allan Brockenbrough, Vijay Satyal, Jennifer Palmore, Chris French

Others Present:

Rick Parrish (Southern Environmental Law Center)

Jamie Mitchell (Hampton Roads Sanitation District)

Yuan Fang (Greeley and Hanson)

John Heard (Virginia Coal Association)

Dan Dietrich (Virginia Department of Health)

Draft amendments for conventional pollutants 10.5% assessment rule:

Review: The draft amendments have not changed from the last meeting and we are still awaiting EPA input on the draft amendments which DEQ will report on at the next meeting.

The assessment rules allow one violation in data sets with < 10 data points (2-hit rule) and less than 10.5% violations in stations with > 10 data points.

In order to show the group how the 10.5% rule would look from a state wide and site specific perspective, the mock assessment shown at the last meeting was visually displayed on maps. For dissolved oxygen, the 2-hit rule resulted in 59 stations as not assessed (or more accurately 'insufficient data'), 161 as 'not impaired' under the 10.5% rule, 143 as 'impaired' and 1813 with zero violations. This data was from a 5 year window ending in 2004. Most of the dissolved oxygen impairments are on the eastern half of the state and are co-located with unimpaired, and insufficient data stations (Tuckahoe Creek in the James basin as example). This shows that in watersheds with good monitoring coverage, we are seeing the impairments. Another example showed the North and Slate Creek watershed (James basin) where one station was <10.5% violation and all other stations showed zero violations. That one station with <10.5% violation rate would put the watershed on the impaired waters list when the surrounding watershed seems to show there is no impairment. Another location in the SF Shenandoah showed a similar scenario.

Many of the impaired stations seen on the maps are actually swamp waters with natural impairments. These waters need site specific criteria to reflect the natural water quality.

For pH, the 2-hit rule resulted in 158 stations as not assessed (or more accurately 'insufficient data'), 167 as 'not impaired' under the 10.5% rule, 175 as 'impaired' and 1913 with zero violations. Many of the pH violations are in the eastern half of the state and are also associated with swamp waters which are naturally impaired for pH. An example in Tuckahoe Creek showed many stations that would indicate 'insufficient data' under the rules, but they are co-located with impaired stations. Again, this shows that in watersheds with good coverage, we are seeing the impairments even with the rules in place. On the other hand, in some of these examples the rules do not avoid a TMDL as the 'insufficient data' and unimpaired stations are co-located in the same watershed as the impaired stations.

There are still a number of watersheds (like North Creek) where the rules would avoid a TMDL where it does not seem appropriate.

Endangered and threatened species waters were shown in the Clinch/Powell, Roanoke and James basins. Except for a few examples in tributaries to endangered and threatened waters, these areas are dominated by zero violations and use of the rules should not create or overlook potential impacts to endangered and threatened species.

For temperature impairments, the maps are focused on stockable trout streams. Impairments for temperature are routinely seen in urban areas (Roanoke, Waynesboro) but these streams are not meeting temperature criteria in the summer. No stocking is occurring in the summer either. DEQ will be working with the Department of Game and Inland Fisheries to consider an alternate summer temperature criteria for stocked trout streams.

Discussion: The use of the assessment rules in water quality standards (WQS) continues to be unacceptable to some members who have heard EPA legal advisors say that the states do not need the rules in the WQS. DEQ explained we have heard other EPA Region 3 states say they

plan to keep using the assessment rules without language in the WQS. We are working actively with EPA to determine what is required of the states regarding the assessment rules.

Showing the 10.5% rule as an example in naturally impaired waters for dissolved oxygen or pH is not appropriate.

DEQ should show the assessment using historic data.

DEQ would like to continue to use the rules and believes the method in place is still protective and would allow us to focus our resources in areas that clearly need improvement.

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 (this is unchanged from previous geometric means for saltwater). The geometric means are the main criteria to protect primary contact recreational uses as this is considered the environmentally relevant endpoint. The single sample maximum is required for beach monitoring to make quick decisions for public health protection and the states are allowed to use the single sample maximum for other Clean Water Act purposes (like assessments) as they deem appropriate. These draft amendments present the geometric means as the applicable criteria in all surface waters. 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), requirement that the single sample maximum applies when there is not enough data to calculate a geometric mean, the single sample maxima must be exceeded more than once for data sets containing less than 10 samples or more than 10.5% for larger data sets to result in an impairment, how to calculate a site specific single sample maximum and that the single sample maximums apply always for beach advisories and closures.

DEQ staff believes the revised amendments include the site specific needs for the Richmond CSO waters so a special standard may not be needed (provided sufficient data is collected to calculate the geometric mean). No amendments to the shellfish criteria are expected.

Discussion:

Paragraph A.6 should be revised to include swimming advisories and closures rather than swimming notifications and closures. E.coli should also be included for beach notification and closures of freshwater beaches.

The single sample maximum 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.

There were staff concerns mixed data sets containing some months with geometric means and other months with single samples. It was thought that should not be a concern and that both endpoints would have an assessment. A suggestion was made that available data for each month

would be reviewed and if enough data are available to assess against the geometric mean then that would constitute a pass/fail for that month and the data would not be included in the single sample maximum review. If not enough data for the geometric mean were available, all data from that month would be combined with all other data not used for geometric mean calculations in the assessment period for an assessment against the SSM using the 10.5% rules. Staff believes guidance will be helpful in situations where one endpoint (geometric mean or single sample max) shows impairment and the other does not.

DEQ staff believes the approach taken with the primary contact amendments should be repeated in the secondary contact section, with the exception that the numerical values for the secondary contact geometric mean and the single sample maximum remain the same (based on 5X the existing criteria rather than 5X the draft proposed criteria). Some believe that the secondary contact numerical criteria should be 5X the draft proposed criteria; others believe the secondary criteria should be deleted or site specific based on the highest attainable value. There is no scientific basis for the 5X the primary criteria.

Any secondary contact designation is a use removal and requires a use attainability analysis (UAA). The secondary criteria as high as 5X the primary criteria should not automatically be assumed after a use attainability analysis shows that primary contact is not feasible in a water body. The highest attainable concentration should be the goal. The way the regulation is currently written, it is not ensured that this 'highest attainable' concentration would be considered since the existing regulation specifies that the secondary contact goal is 5X the primary contact. There is no in-between value recommended. Some flexibility should be included in the regulation if the UAA shows that a more stringent value could be met. Any step away from primary is a step backwards and all waters should be clean enough for swimming. We are already considering an upward adjustment to the primary criteria so conservancy in a secondary contact criterion should be included.

The secondary contact values were already debated and adopted under a previous rulemaking, are difficult to meet as written and should not be deleted. Antidegradation should override these situations where the quality of the water is better than the secondary criteria but the UAA results in a secondary contact use. A scientifically derived secondary contact criterion based on the appropriate risk and exposure analysis should be developed.

Staff will consider adding language to the secondary contact subsection which references antidegradation or recognition that the secondary contact criteria are the highest values acceptable to protect secondary contact recreation and that other lower values may be more appropriate.

Staff believes the 10.5% rules will probably be included in the 2008 assessment for now, since they were in the 2006 assessment. The other amendments proposed with this rulemaking are on a parallel track to the 2008 assessment so it is unsure how much of the triennial review amendments (like the new geometric means and single sample maximums) will be able to be incorporated in the 2008 assessment.

The site specific single sample maximum footnote (#5) should include the concept that 'sufficient data' must be gathered in order to do the site specific calculation.

Aquatic Life Numerical Criteria

Review: New or revised numerical criteria for cadmium (revised per EPA 2001 304(a) guidance), diazinon (new per EPA 2005 304(a) guidance), lead (revised per addition of conversion factors to VA state specific criteria), nonylphenol (revised per EPA 2005 304(a) guidance), PCB (cogeners deleted and numerical criteria listed as 'total PCBs), selenium (freshwater listed as total per EPA 2006 304(a) summary table; saltwater revised EPA 304(a)), silver (revised per EPA 304(a)), and TBT (revised per EPA 2003 304(a) guidance).

Another amendment to saltwater criteria which clarifies that each metals criterion is the numerical value X the water effect ratio (WER). The WER is already part of the freshwater metals equations. The idea here is that the water effect ratio is part of the criterion and does not need to go through a rulemaking to implement it for permitting. Only two water effect ratio studies have been conducted in Virginia in the past 13 years.

Other amendments include combining chlorine produced oxidant with chlorine (both have same CAS numbers) and a statement that total alpha and beta endosulfan should not exceed the criteria listed (from 2006 EPA 304(a) summary table).

Almost all aquatic life criteria match the EPA published 2006 table of 304(a) criteria. A few are VA specific criteria (copper saltwater, lead, nickel freshwater, kepone and mirex). Thirteen are non-priority pollutants and all metals use the EPA 2000 'California Toxics Rule' published conversion factors except for saltwater copper which was a state specific criteria developed using dissolved data.

No updates to ammonia based on new toxicity data submitted by USFWS are expected. One reason DEQ staff is not comfortable at this time with updates is because EPA sent a letter to the Environmental Law and Policy Center reaffirming their commitment to evaluate new toxicity data. The letter also states that other evaluations will be done on key recovery needs, stressors and ammonia in stream exposure analyses. DEQ is uncomfortable with moving ahead of EPA at this time.

DEQ also questions the need for more stringent criteria. In areas where ammonia was originally considered an obvious stressor for fish kills in the Shenandoah due to the agricultural inputs from poultry litter and food processing industries in that area, in stream analyses showed ammonia concentrations very low in those ambient waters. This indicates ammonia would probably not be present in any waters at high enough levels to cause concerns (and a need to lower criteria).

The USFWS submitted data from the manuscript in press (Environmental Toxicology and Chemistry to be published this fall) which used ASTM published methods to obtain acute toxicity results for ammonia to freshwater mussels. These results do not indicate the acute criterion needs adjustment. However, the chronic results do indicate the VA chronic criterion for

ammonia may not be protective of freshwater mussels. DEQ will share the manuscripts with the ad hoc members.

No updates to the copper criteria based on new toxicity data submitted by USFWS are expected. One reason DEQ is not comfortable adjusting the criteria is because EPA just published in February 2007, the Biotic Ligand Model to replace the existing 1995 304(a) copper criterion (which is what we would be adjusting based on the new toxicity data). We believe the adjustment of the 1995 copper criteria under the old guidelines might not be viewed as favorable for the many permittees that would be impacted by a very stringent copper criteria calculated under the old guidelines, given there is an entirely new method available.

The USFWS submitted copper data from the manuscript in press (Environmental Toxicology and Chemistry to be published this fall) which used ASTM published methods to obtain acute toxicity results. These results do not indicate the acute criterion needs adjustment. However, the chronic results do indicate the VA chronic criterion for copper may not be protective of freshwater mussels. DEQ will share the manuscripts with the ad hoc members.

Discussion: Regarding the low in stream ammonia concentrations seen in the Shenandoah, this may be only a basin specific occurrence and DEQ staff is urged to check with North Carolina for a longer term study that showed much higher values for in stream ammonia that were in exceedence of the ammonia criterion.

DEQ needs to reconsider the site specific criterion in the Clinch River for copper. It is based on an outdated cellulytic enzyme assay.

DEQ is unsure whether the new data would be incorporated into the existing data base and applied statewide or if the existing criteria would be lowered to protect the mussel species in all freshwaters or just in endangered and threatened species waters. These are all questions that must be answered if we adjust the criteria in response to this new information.

New information is available for saltwater cyanide from the Water Environment Research Federation. The current saltwater cyanide criterion is driven by one data point and new data has been collected by EPA to replace that. This information will be forwarded to DEQ.

Human Health Numerical Criteria

Review: DEQ has incorporated in the draft amendments, EPAs 2000 methodology for calculating human health criteria for almost all the criteria. The comment boxes along the side of the draft table indicate how each criterion was calculated and how it differs from the 2004 criterion. In some cases the criteria differ from EPAs 2006 table of 304(a) criteria because DEQ updated the RfD or q1* based on the Integrated Risk Information System (IRIS). Most of the new human health values differ from 2004 because of the new fish intake values of .0175 kg fish/day. There are 14 other criteria that also include the relative source contribution factor of 20%. All of these adjustments result in more stringent criteria.

Several exceptions to the methodology include barium, arsenic, cadmium chromium, copper, lead, radionuclides (applies to public water supplies only – this is a change from existing where

is applies in all waters) and silvex. These are based on primary MCLs or a drinking water action level (lead). Other exceptions include foaming agents, manganese, nitrite, sulfate and TDS which are secondary MCLs. 2,4 Dichlorophenoxy acetic acid, iron and methoxychlor are from EPA Red or Gold book values from as early as 1976. The human health values for nickel also do not use the new fish ingestion rate under the new methodology but EPA acknowledges that it is under reassessment and does not use or recommend the new consumption value for nickel.

Another important exception is the dioxin criteria. The State Water Control Board along with the Virginia Department of Health developed the dioxin criterion along with a great amount of public input and EPA approval in 1990 and it subsequently withstood a legal challenge. Staff has recommended at this time that the dioxin criteria remain unchanged.

The fish tissue criterion for methyl mercury is included and the water column human health mercury criteria are deleted.

No human health criterion for temperature was included in the draft amendments.

There was no further discussion.

Special Standards

Review: Section 9 VAC 25-260-310 contains many new and old site specific standards. Some of these special standards go back to late 1960's and early 70's to address specific water quality problems as needed. We still use this section periodically with the most recent site specific amendments being the James River numerical chlorophyll and the Mattaponi and Pamunkey dissolved oxygen criteria.

There are eight site specific amendments under consideration, five are revisions of existing amendments and three are new. The first special standard is 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). This situation is a classic example of a use subcategorization requiring less stringent criteria due to the presence of a dam. Any incorrect operational activities that have occurred in the past (sedimentation causing fish kills and benthic impairments) are under an enforcement order. Sedimentation from upstream will be included as part of a TMDL. The adjustment of the benthic aquatic life use assumes correct dam operation will continue and the sediment TMDL will be implemented.

Discussion: This benthic impairment has not recovered from the impacts of the incorrect dam operational practices in the past and the dam must be operated properly and the TMDL implemented and the benthic community allowed to respond before benthic uses changes should be considered. This follows the same concern raised during the use attainability analysis (UAA) proposed for Straight Creek which was the problem of moving ahead with a UAA before the TMDL is implemented.

The stressor study describes the recovery of the benthic community after proper dam operation and the impact of the irreparable stressors on the benthic community. This study will be shared with the group.

DEQ should look into a workshop EPA recently did regarding water quality criteria below dams.

While most benthic stations are not placed below dams because it is understood that the benthic community below the dam is not representative of normal stream conditions, this station was placed here because of the enforcement actions against the owners of the dam and the Little Calpasture River here is part of the consent order which requires a TMDL by 2010. Either a TMDL must be written (DEQ staff believes the TMDL will not result in aquatic life use attainment because of irreparable stressors due to the presence of the dam) or the water quality standard must be changed (via a use change).

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. The fertilization results in algal growth for fish food and subsequent pH increases late in the day due to CO₂ uptake during photosynthesis. Best management practices are employed, pH ranges 5.5 to 9.6, the lake meets nutrient criteria for chlorophyll and phosphorus and there are no downstream impacts. This pH problem is seen in other lakes 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.

Discussion: West Virginia has adjusted permit limits based on lake management practices (e.g. liming to maintain fisheries in acid mine lakes).

Review: The third issue is a site specific criterion to protect the public water supply in the Roanoke River below Clover, VA. This Roanoke River was assigned one of the largest public water supply designations in Virginia which extends from Kerr Dam to Leesville dam. Most of the water supply designations are only 5 miles above the intake. 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 water supply and a stringent end of pipe limit for manganese of 50 µg/l for the Clover Power Station. Dominion has asked that DEQ consider a site specific adjustment to the manganese criterion.

The secondary MCL was based on consumer complaints resulting from staining of laundry and objectionable tastes in beverages when manganese exceeds a concentration of 150 µg/L in water supplies (Griffin, 1960). There is also a non-regulatory, non-enforceable drinking water health advisory published in 2004 of 300 µg/L. Aquatic life are impacted at much higher levels (1 -2 mg/l).

The permittee and DEQ did a site investigation of background surface water manganese, the permittee and the water treatment plant also investigated intake and finished manganese levels at Clarksville to determine the appropriate criterion for the Roanoke River. The Kerr Reservoir had the lowest levels of manganese, followed by the Roanoke and then the Dan. Dissolved manganese never exceeded 50 µg/l at the Clarksville plant. Loadings from the plant are very

small compared to loadings from the rivers. Several options that would be protective of the water supply use came out of the investigation including delete the current 50 ug/L criterion, delete current criterion and apply 300 ug/L health advisory at the water treatment plant intake, define the form of existing criterion as dissolved manganese or apply 50 ug/l dissolved criterion at water treatment plant intake and 300 ug/L criterion at mouth of Roanoke River.

Discussion: It is true the purpose of this standard is to allow the permittee to have higher effluent limit; however DEQ is also concerned about waters unable to meet existing water quality criteria due to natural conditions. The main concern is dissolved manganese in the source water.

Swamp Waters (Class VII)

Review: DEQ has many naturally impaired blackwater swamps in eastern and southeastern Virginia that are listed as impaired for dissolved oxygen 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 20 more swamps identified via this procedure DEQ would like to add to Class VII. Since the last triennial review, we have also learned more about pH values in these waters and believe an even lower pH criterion is needed. Furthermore, this triennium DEQ would like to address the natural dissolved oxygen impairments with revised dissolved oxygen criteria. Research has shown that dissolved oxygen is highly variable in these streams and may need a segment by segment approach.

Discussion: The dissolved oxygen is known for each swamp and could be delineated in the river basin section tables.

DEQ should be cognizant of these endangered species present (e.g. Blackbanded sunfish) and the very unique natural conditions present in these waters.

There are still concerns that the water quality standards are being caught up in the TMDL process and there should be other ways besides changing the standards to avoid a TMDL in these types of waters where is it clearly naturally impaired. It is true that DEQ can list these as naturally impaired but the only way to delist is to adjust the criteria. This is how the states are pursuing these types of issues.

Mixing Zones

Discussion: DEQ is considering adding language that addresses how mixing zones and human health, pH, DO, bacteria, temperature and nutrient criteria interact. Currently the mixing zone section only addresses toxics aquatic life criteria which is the most accepted application of mixing zone concepts. Mixing zones include the allocated impact zone (AIZ) which is directly below the discharge and exceeds all criteria but lethality is prevented to drifting or passing aquatic organisms, outside the AIZ the acute criteria are met but the chronic criteria are exceeded and at the very edge of the mixing zone all criteria are met.

DEQ would also like to delete the application of mixing zones to only the VPDES program. This would allow mixing zone concepts to be used in other water programs like VWPP. Mixing zones should also be avoided for ambient monitoring and in assessments so making mixing zones more general in application supports these types of decisions.

DEQ is not at this time suggesting that allocated impact zones should be eliminated to prevent lethality to resident aquatic life or that new or expanded mixing zones for persistent bioaccumulative toxics (PBTs) be prohibited.

Discussion: Other states are pursuing the elimination of mixing zones for PBTs and more discussion is requested on this topic before it is dismissed from triennial review. DEQ staff will find a list of PBTs and try to get a list of permittees with PBT limits or identify dischargers that might be impacted by mixing restrictions on PBTs.

DEQ will circulate the recently drafted Memorandum of Understanding between DEQ, DCR, DGIF and the USFWS which describes coordination during the permit issuance process. This coordination should help to avoid mixing zone concerns in sensitive waters.

Antidegradation

Review and Discussion:

The antidegradation changes being considered by DEQ were very minor clarifications. One clarification as to whether or not Tier 3 waters can include impaired waters and the group thought that was not a regulatory issue and could be covered in guidance.

Other issues related to antidegradation and considered more important to some members of the group were discussed. Currently the agency takes a more 'holistic' or grouping approach to determine whether a water is tier 1 (must meet water quality standards) or tier 2 (must meet water quality that is better than standards) for permitting purposes. For example, waters can be placed in tier 1 if one parameter exceeds a water quality criterion. After this tier 1 determination, this means that all parameters are treated as a group and are permitted at a tier 1 level (at water quality standards). This is considered by the environmental groups as the least protective approach as the other parameters might be better than the concentrations of the standards and they want DEQ to pursue a parameter by parameter approach when tiering permits. DEQ thinks that while this 'holistic' approach for placing waters in a tier 1 category may seem less stringent than other states, we are also more conservative than other states in that we assume a water body is tier 2 if no data is available (other states assume tier 1). We also automatically place waters in tier 2 if it is a public waters supply or a trout stream and do not place waters into tier 1 due to bacteria violations in stream. To add to more conservatism to this approach, new guidance has been written by DEQ so that exceedences of chlorine and taste and odor criteria, fish consumption advisories, 1998 EPA overlistings and nutrient enriched waters designations shall not be used for placing waters into a Tier 1 category. Furthermore, if ammonia and dissolved oxygen are determined to be Tier 2, then those parameters shall remain at a Tier 2 level even if exceedences of other parameters cause a Tier 1 determination.

There is another concern that some degradation has occurred in tier 2 waters without the required analysis of social or economic necessity required by 9 VAC 25-260-30.A.2. This concern arises

from the fact that DEQ considers a non-significant lowering of water quality in Tier 2 waters as no more than 25% of the unused assimilative capacity for toxics aquatic life criteria, no more than 10% for the human health criteria and dissolved oxygen not lowered more than 0.2 mg/L. This policy has allowed permittees to continue to discharge to Tier 2 waters without the socio-economic demonstration. DEQ thinks that may be a conservative approach since the 'economic demonstrations' might allow more degradation than our 25% / 10% policy. However, the concern with this approach is that the concept of antidegradation is to eventually remove dischargers from these waters and not to continue to allow them without going through some sort of demonstration.

Handouts distributed at the March meeting:

Agenda, March 21, 2007

Summary of February 21, 2007 Meeting

Draft 10.5% Rule Amendments

Draft Bacteria (recreation) Amendments

Draft Numerical Criteria (Table of Parameters) Amendments

Copies of Slides from Presentations

10.5% Rule Maps

Numerical Criteria Aquatic Life and Human Health

Special Standards (9 VAC 25-260-3310)

Swamp Waters

Mixing Zones

Antidegradation

Letter from Benjamin Grumbles (Assistant Administrator EPA) to the Albert Ettinger (Senior Staff Attorney Environmental Law and Policy Center) date Feb 22, 2007 on ammonia criteria and endangered mussels

Letter from the National Council for Air and Stream Improvement, Inc dated Sept. 7, 2004 to EPA comments on the Notice of Intent to Re-Evaluate the Aquatic Life Ambient Water Quality Criteria for Ammonia

Proceedings Summary Report Mussel Toxicity Testing Procedures Workshop, August 23 - 24, 2005, USEPA.