MINUTES
Turbidity Water Quality Criteria Stakeholder Advisory Group meeting
July 20, 2020

Welcome and Introductions

<u>Advisory Panel Members and Alternates Present</u>:

Joe Wood	***- Chesapeake Bay Foundation***
Jameson Brunkow	***- James River Association***
Bob Burnley	***- Trout Unlimited (Virginia Council)***
Taylor Goodman, P.E.	***- VA Home Builders Association***
Chris McDonald	***- VA Association of Counties***
Mitchell Smiley	***- VA Municipal League***
Dick Sedgley	***- VAMWA/VAMSA***
Randy Bartlett	***- Fairfax Co. DPW***
Dr. Kendall Elaine Tyree, Ph.D.	***- VA Soil and Water Conservation Districts***
Martha Moore	***- VA Farm Bureau Federation***
Kyle Shreve	***- VA Agribusiness Council***
Brooks Smith	***- VA Coal & Energy Alliance***
Jeff Bragdon, P.E.	***- Virginia Transportation Construction Alliance***
Michael Elander	***- Academic/consultant representative***
Anne Chazal	***- VA Dept. of Conservation and Recreation***
Darrell Marshall	***- VA Dept. of Agriculture & Consumer Services***
Rodney Baker	***- VA Dept. of Mines Minerals & Energy***
Ernie Aschenbach	***- VA Department of Game and Inland Fisheries***
Chris Swanson, P.E.	***- VA Dept. of Transportation***

Not Present:

Phil Abraham	*- Vectre Corp.*
David Hirschman	*- Academic/consultant representative*

<u>DEQ Staff Present:</u>

Jutta Schneider	*Water Planning Div. Director*
Melanie Davenport	*Water Permitting Div. Director*
Dave Davis	*Office of Wetlands and Stream Protection Manager*
John Kennedy	*Office of Ecology Director*
David Whitehurst	*Water Quality Standards*
Erin Belt	*Stormwater Program Mgr.*
Austen Stevens	*Office of Water Compliance*

Ms. Schneider began the meeting by informing participants and attendees of the virtual nature of the stakeholder advisory group (SAG) meeting in order to be consistent with Governor Northam's Executive Orders and the applicability of Freedom Of Information Act provisions. Following those remarks, SAG participants were introduced.

Ms. Schneider then reviewed the agenda and the purpose for the meeting which was to begin the process of addressing the April 15, 2019 directive from the State Water Control Board (Board) to "…develop numeric standards for turbidity, consider development of a turbidity standard a priority, and provide updates to the Board."

She stated that the complex nature of turbidity and developing turbidity criteria prompted this initial meeting to gain stakeholder input which will assist in determining future actions in addressing the Board's directive. She explained that the meeting is not part of the formal rulemaking process and it is likely that at least one more SAG meeting will be necessary. Ms. Schneider responded to a question of how SAG participants were selected by saying that DEQ reached out to a variety of people and stakeholder groups with whom the agency has worked with in the past regarding water quality standards issues and that have expressed an interest in the topic of turbidity criteria development.

The meeting was then turned over to Mr. Kennedy. He then presented information regarding what turbidity is and its components. He then presented summarized results of a DEQ staff review on the state of the science of turbidity studies as it relates to aquatic life impacts. The studies reviewed were highly variable in their design, complicating generalization. The majority of them documented behavioral responses without paired growth, reproduction, or survival data from control groups. Other major points regarding the 50 studies reviewed are below:

- Most of the scientific literature is focused on how turbidity affects fish feeding and predator avoidance behavior, particularly of salmonids (salmon and trout).
- Very few studies have been conducted on the effects of turbidity on invertebrates.
- Studies focused on lethal levels of turbidity are rare. The ones that have been performed have found lethal effects only at very high turbidity levels (greater than 3,000 NTU)
- Non-lethal effects of turbidity have been detected at a broad range of turbidity levels, from 1.5 NTU (reduced reactive distance to prey in salmonids) to 898 NTU (increased ventilation rate in a species of sunfish).

Mr. Kennedy then reviewed past attempts by EPA to establish national recommendations for turbidity criteria. In 1986, EPA published a water quality criteria recommendation for solids and turbidity based on light reduction (no more than 10% reduction of the compensation point depth for photosynthetic activity). That recommendation was not widely adopted by the States. EPA also published a narrative "free from" standard that States have adopted into their WQS. He then provided an overview of the numerous challenges to developing turbidity criteria which are:

- Need for site-specificity due to climate, geology, water body size and type, and aquatic assemblages present.
- Background/natural levels should be accounted for.
- Lack of stressor-response data.
- Consistent implementation across different water quality programs.

Mr. Whitehurst then presented an overview of turbidity criteria in other States' water quality standards as summarized below.

- Almost all states have narrative criteria that stipulate the control of substances causing turbidity which interfere with designated uses.
- About 60% of jurisdictions have numeric turbidity criteria.

- The majority of numeric turbidity criteria are expressed as a value or percentage above background turbidity.
- A few states such as Arizona and Minnesota use TSS in place of turbidity.
- For numeric turbidity criteria expressed as an instantaneous maximum, values range from 10 to 150 NTUs.
- Most jurisdictions have general numeric turbidity criteria. Some have varying criteria for different designated uses, waterbody types, or river basins. Some have seasonal criteria.
- Some jurisdictions have either replaced numeric turbidity criteria with total suspended solids criteria or use TSS as a surrogate for permit limits.

He then gave an overview of other States' NPDES construction permit performance requirements and some examples of other states' permit implementation. Most States do not directly incorporate numeric turbidity criteria in permit implementation and instead rely on narrative statements regarding numeric action levels/targets, BMPs, stormwater pollution prevention plans, compliance inspections, and, when necessary, enforcement actions.

Ms. Davenport then presented information regarding Virginia's programs to control turbidity, total suspended solids (TSS), and sediment. Those programs are:

- VA Water Protection (VWP) Permit Program
- VA Erosion and Sediment (E&S) Control Program
- VA Stormwater Management Program (VSMP)

VWP regulates activities regulated in wetlands and streams include: filling, excavation, impounding surface waters, and surface water withdrawals. A VWP permit relies on appropriate erosion and sediment control measures on construction sites to maintain designated uses.

The E&S Program establishes minimum standards for the control of soil erosion and offsite sediment deposition from land-disturbing activities (e.g., clearing, grading, excavating, and construction). E&S Program applies to land-disturbing activities ≥ 10,000 square feet and to ≥ 2,500 square feet in areas subject to the Chesapeake Bay Preservation Act.

The Stormwater Management Program establishes requirements for the control of post-construction water quantity and water quality from completed land-disturbing activities (e.g., development projects). VSMP requirements apply to land-disturbing activities ≥ 1 acre and to ≥ 2,500 square feet in areas subject to the Chesapeake Bay Preservation Act.

Ms. Schneider then presented information about DEQ's Total Maximum Daily Load (TMDL) program which provides "cleanup plans" to restore waters identified as impaired. A stressor analysis is done to identify the probable cause of impairment. A number of water bodies have been identified as being impaired for the aquatic life use due to sedimentation. Even though Virginia does not have total suspended solids (TSS) or turbidity criteria, a cleanup plan is devised to control sedimentation induced through point and nonpoint sources.

Mr. Kennedy then asked if there were any questions regarding the information that was presented or any other general questions.

Brooks Smith – When EPA addressed construction and development guidelines some years ago they attempted to establish numeric turbidity limits. Was that effort included as part of the literature review? And why did Arizona switch from turbidity?

RESPONSE – The EPA effort to develop numeric turbidity may have been included. We will check with appropriate staff as well as provide the list of literature reviewed. Arizona determined that TSS is a more appropriate parameter to use as a criterion to address the problem of sedimentation.

Question submitted through the chat function: Is there guidance for protection of endangered species habitat in waterways?

RESPONSE – Endangered species are addressed as part of the aquatic life use protections afforded by WQS and criteria. Virginia Stream Condition Index (VSCI) scores included sensitive species as a metric for score calculation and toxicity studies used for criteria derivation include the most sensitive species in development of the data that are used for criteria calculation. An endangered species may, or may not be the "most sensitive species".

Joe Wood – He appreciates the level of complexity of surrounding turbidity and the development of numeric turbidity criteria but that shouldn't lessen the importance of doing so. Numeric criteria forces you to address the questions and science of interpreting narrative criteria. To what extent has DEQ considered freshwater mussels as part of the turbidity criteria development effort? Does a VSCI score necessarily provide protection for sensitive species?

RESPONSE – Mr. Wood was thanked for his input and question to be considered.

Mr. Kennedy then presented the following 2 questions as a basis for opening the meeting for discussion and/or comment from SAG members:

1. What do you see as the value-added by having turbidity water quality criteria? How would they supplement or improve DEQ's existing water quality control programs?
2. From your representative perspective, what are the pros and cons of adopting regulatory turbidity criteria and what do you think are the implications for implementation?

Randy Bartlett – Asked clarifying questions regarding the various components that compose turbidity.

Chris Austen – Asked clarifying questions regarding those States that have turbidity criteria expressed as "X percent above background" which takes into account the natural variability of turbidity above a discharge?

Martha Moore – It appears that DEQ addresses turbidity through a number of other specific regulations and she does not see the added value of another layer regulation by way of water quality criteria.

Jeff Bragdon – He had comments very similar to those of Ms. Moore and wanted to know how turbidity criteria would add any benefit to road construction activities that have best management practices and compliance inspections in place through existing programs/regulations.

Joe Wood – It seems obvious that there are complexities with implementing the narrative criteria. He appreciates that much is being done to consider sedimentation but that is different from answering the question "Are we implementing, achieving, and upholding the water quality standards?" Does DEQ think there is benefit to having empirically driven numeric standards?

RESPONSE – DEQ does not currently have a stance regarding numeric turbidity criteria. Staff are fulfilling a mandate from the Board. Virginia does not currently have turbidity criteria in the WQS and efforts to develop turbidity criteria on a national level by EPA have not been successful. VA does not currently have a proposal and the advisory group was formed to consider what options are available and workable. It was explained that there already resource constraints for existing programs mandated by WQMIRA and existing criteria.

Joe Wood – He understands that resource constraints exist but does not see how that is relevant to the question of whether or not a standard should be developed.

RESPONSE – Would like to manage expectations at this stage that just because there is a criterion doesn't mean the resources exist to manage the data obligations for assessment or enforcement purposes.

Randy Bartlett – His opinion is that one of the cons of developing turbidity criteria is that resources are lacking to define the problem and understand the issues well enough to do it and do it correctly. Given the complexity of the issues and lacking the resources to do it correctly, developing turbidity criteria now may result in doing more damage.

Taylor Goodman – Did other States examined have multiple programs that addressed turbidity or TSS similar to the multiple programs DEQ has? Under what programs do other States have their sediment control management?

RESPONSE – It is assumed that other States do have multiple programs similar to VA. Some of the information related to other States control programs was presented earlier during the meeting. There are likely some national stormwater and/or construction permit organizations that exist and the question could be posed to them.

Jamison Brunkow – He recognizes the benefits of having a "measuring stick" to implement the narrative criteria for permitting and enforcement purposes. He also sees the benefits of having conversations regarding that and recognizes the complexity of the turbidity criteria issue. Virginia has numerous waterbody types for which criteria for other parameters have been developed and implemented and he believes the same may be done for turbidity. He is a little disappointed to hear that only one other SAG meeting appears to be intended. He sees value in pooling available knowledge and specifically discussing how we can move forward with a criteria proposal. Given the combined knowledge and experience of the group he believes a strong proposal can be developed that will benefit the waters of Virginia and be used as a permitting and enforcement tool where appropriate.

RESPONSE – A good observation and, given the voluntary nature of the SAG, DEQ puts the question to the group 'what is their interest in volunteering their time to help DEQ define the approach to take if we were to use the regulatory mechanism?' There will be opportunity for much more input

should that path be taken and DEQ is soliciting feedback from the group regarding the need for and the desire to participate in additional SAG meetings.

Joe Wood – Confused about the process. The Board directive was that DEQ will develop numeric turbidity criteria. Is it still a question whether or not that will happen?

RESPONSE – The directive from the Board was clear. It's a question of what that course of action will look like. DEQ would like to better understand what the problem that needs to be solved is. Arizona switching from turbidity criteria to TSS criteria was given as an example. DEQ is going through this advisory approach to develop something that makes sense and is workable.

Martha Moore – Commented that sometimes citizen boards may not be familiar with the complexities of all regulations related to an issue. She thinks part of the process to address the Board directive is answering the question of how is the issue covered or addressed by existing regulation and not necessarily to develop additional regulations if the issue is sufficiently addressed through existing regulations.

Joe Wood – He thinks it's unfair to the Board to suggest they didn't understand what they meant when DEQ staff were given the directive. If that is the case (that the Board didn't understand the intricacies the directive entails), he suggests returning to the Board to ask them what they meant. He remarked that the fact of 60% of States have some type of turbidity criteria indicates there is a body of science to assist Virginia with criteria development. He understands that development would take considerable work and time but doesn't see the task as undoable.

RESPONSE – This process of convening a SAG is part of the process DEQ staff chose to address the Board's directive. The intention is to vet this issue and solicit input, information, and concerns from the SAG.

Question submitted through the chat function: Can you describe the relationship between turbidity, TSS, etc.? Are they directly correlated? Unrelated?

RESPONSE – From a statistical point of view, a TSS value does not necessarily translate to a turbidity value.

Jamison Brunkow – His understanding the group was being convened without the doubt that numeric criteria would be developed and promulgated. He thinks there are numerous examples from others States with turbidity criteria from which to pull data and information to assist Virginia. He asked if DEQ regularly monitors turbidity. It would be interesting to hear a summary of what turbidity data DEQ does have, if any.

RESPONSE – Not typically. TSS is regularly monitored at many freshwater monitoring stations. The exception is for many Chesapeake Bay stations where secchi depth readings are done to use as a surrogate for water clarity where submerged aquatic vegetation criteria apply. There is a body of turbidity data from USGS ConMon stations. At the next meeting it would be good to take a deeper dive into what Virginia-specific data we do have available to us. What has been seen in the available data is a high degree of variability.

Joe Wood – Asked about timeline for the next Triennial Review.

RESPONSE – Staff are putting together a list of known issues to address. A Notice Of Intended Regulatory Action (NOIRA) is intended to be published before the end of the year.

Anne Chazal – She feels that she needs more information on what has already been gathered and what gaps there are and would like to know if turbidity, in and of, itself is impacting ecosystem health apart from TSS and sedimentation. She would like to know what additional turbidity regulation would add to existing tools for controlling for TSS and sediment.

RESPONSE - There is a lack of information related to effects on invertebrate communities or fish mortality. Most all studies reviewed were related to behavioral effects. We will be providing the list of references for the studies that were reviewed.

Chris Swanson – He would be interested in hearing about how turbidity criteria, if adopted, would affect the existing erosion and sediment control program at the next SAG meeting. This includes implications for the standards in the "Green Book".

Randy Barton – Trying to understand turbidity a little better. What are its contributing factors, what are the different types, how should it be addressed?

The meeting wrapped up with Mr. Kennedy suggesting planning the next meeting within a month or so. A poll will be sent to SAG members to determine scheduling.

Action items:

- A summary of available turbidity data for Virginia available for the next meeting.
- Look into the structure of turbidity criteria for EPA Region 3 States (e.g. West Virginia).
- Provide a list of literature reviewed by DEQ staff.