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By e-mail

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RE: Comments on Water Quality Assessment Guidance Manual for Y2012

Dear Dr. Robertson,

The Hampton Roads Sanitation District appreciates the opportunity to comment on the above referenced document and is encouraged to see enhancements in the assessment process that have the potential to more accurately characterize the quality of Virginia's waters. HRSD would like to provide comment on the potential opportunities to further improve the program and to address a few key concerns that have potential VPDES regulatory implications.

Analytical Methodology

The VPDES permit program requires that only 40CFR Part 136 analytical procedures be used to analyze samples when such a method is available. The assessment program does not have a similar requirement. Both the ambient monitoring program and the VPDES program determine the potential for impact in state waters. Though all data used for supporting and listing purposes is collected using an EPA accepted and DEQ approved method, this does not address the concern that the use of varying methodologies between the two programs could result in conflict and undermine the credibility of the listings and subsequent TMDLs. In the previous response to comments, DEQ indicated that there has been no known incidence of conflict. Though there may have been no conflict to date, DEQ must be aware of this concern and strive to achieve unanimity between the two programs when possible.

Tissue Screening Values

HRSD requests that any alteration in Tissue Screening Values (TSV) be subject to the APA process since these values do have regulatory impact. The Virginia Department of Health (VDH) has the ability to adjust TSVs without input from DEQ or other stakeholders. A lowered screening value can result in a prohibition on fish consumption which will require the state to identify the waterbody as impaired. The regulatory community is not provided with the opportunity to comment on the TSV value or its derivation. Some VDH derived TSVs are listed in the Water Quality Monitoring Guidance but there isn't enough information available on the derivation of these screening values to provide meaningful comment.

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Commissioners: Vishnu K. Lakdawala, PhD, Chairman; B. Anne Davis, Vice-Chairman; Frederick N. Elofson, CPA; Gerald S. Johnson; Michael E. Glenn; Arthur C. Bredemeyer; Maurice P. Lynch, PhD; I. Vincent Behm, Jr.
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Continuous Monitoring (CMON)

The use of CMON has the potential to significantly improve the assessment of local waters. It also has the potential to create vast amounts of data of unknown quality in the absence of a strong quality assurance program. Based on our experience the instrumentation associated with CMON is prone to errors and requires considerable resources to identify and address invalid data. The stakes are high in CMON data collection associated with water quality assessments because the results can trigger new TMDLs or cause existing TMDLs to become more stringent.

Unfortunately, the assessment guidance lacked information (appendices or references) concerning the intended development of quality assurance for CMON. In the absence of those materials we recommend the essential QA components of CMONs should consist of the following:

- Placement of CMON sites: Care should be taken to ensure that the CMON stations are sufficiently representative of the segment and the designated uses for which they are intended to characterize. One method to accomplish that may be to compare preliminary CMON results to historically available grab samples. Acceptance criteria could be established to ensure that CMON sites are sufficiently comparable to historical data (e.g. within certain confidence limits).
- Servicing interval of CMON sites: The instruments should be removed, cleaned, and swapped out at intervals that prevent errors due to biofouling, instrument drift, and other probe failures.
- Calibration: Instruments need to be pre and post calibrated and subject to adherence to acceptable control limits.
- Comparability to grab sample results:
 - A sufficient number of QA results (i.e. comparison grab samples for laboratory analysis and independent instrument readings) should be collected to adequately cover the deployment period and include effects due to instrument swaps. We suggest that QA data be collected just prior to initial deployment, immediately prior to servicing intervals, and at a consistent weekly frequency throughout the deployment period. The number of grab samples assumed in the hypothetical scenarios is considered too small to adequately validate instrument data for regulatory listings.
 - Efforts should be made to ensure that QA results are representative of the observed dynamic range of the CMON readings. In the case of low dissolved oxygen (DO) or other diurnal effects special efforts may be needed to periodically verify the extreme values observed in the data sets.
 - QA measurements for DO should be made with Winkler titration which is the most accurate method for determining DO concentrations. QA measurements should also

- be collected with independent instruments to evaluate turbidity and hydrographic parameters such as temperature, pH, and salinity.
- Regression analyses should be performed on the relationship between QA samples and CMON measurements. CMON values may contain a systematic bias (high or low) that needs to be taken into account and corrected before the criteria assessment is made.
 - Acceptance limits should be established to determine whether CMON data is sufficiently representative of QA results. We suggest that the RPD between grab and instrument readings should not exceed 20% (after any statistical correction). The collection of a sufficient number of QA samples will also help limit the number of invalid results.
 - If DEQ plans to use CMON data to assess chlorophyll a in the James River, the data needs to be calibrated to grab sample filter results in a manner consistent with present assessment methodology. Because chlorophyll is so spatially patchy in its distribution we suggest that the existing sampling conducted by DEQ and HRSD is probably sufficient for the regulatory assessment. In fact, use of CMONs may cause the results to be skewed if algal blooms were confined to areas near the CMON.

HRSD is available to assist DEQ in developing a QA program for the CMON program. HRSD may also be able to devote additional resources to assist the agency in field sample collections, sample analysis, or other efforts should that be beneficial.

HRSD would be pleased to meet with the DEQ to discuss these comments and determine ways in which we can work together to further improve upcoming assessments.

Respectfully,



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VA DEQ Response

Analytical Methodology

While analytical procedures may be somewhat different, the Water Quality Assessment and VPDES programs work in tandem to offer a greater degree of overall water quality protection in the Commonwealth. These two programs are designed to assess water impacts on different scales. The VPDES monitoring program assesses local impacts due to an individual discharge of known pollutants while the Assessment Program evaluates water quality data on a broader scale from multiple potential pollutant sources, both point source and nonpoint source.

Although not via a formal rule making, DEQ has a formal public process to review and comment on assessment methodologies. Follow-up TMDL monitoring has validated the accuracy and reliability of DEQ's water quality assessment results. In addition, our protocols allow for re-evaluation of waters when appropriate. However, it is also true that additional monitoring sometimes results in identifying grounds for changes to Water Quality Standards and/or subsequent reclassification of waters as either EPA or DEQ's understanding of conditions improve. DEQ will continue to provide opportunities to the public to comment on changes to both Water Quality Standards and assessment procedures, so that stakeholders such as HRSD can both express their concerns and offer information for the agency to consider.

Fish Tissue Screening Values

Fish tissue screening values are calculated from Water Quality Standards human health criteria based on EPA recommendations and approved methods. The human health Water Quality Criteria are designed to protect human consumers from exposure to toxic contaminants through the consumption of contaminated fish (and in drinking water in designated public water supplies) by limiting the allowable contaminant concentration in fish tissue to less than or equal to the level of the fish tissue values. The water quality criteria are based on calculating the allowable fish tissue value, then converting this fish tissue concentration into a water concentration. The fish tissue values used in assessment are the basis for the water quality criteria, and are a direct measurement of the level of fish contamination that the water quality criteria are intended to prevent. The variables involved in the calculation of the fish tissue values and water quality criteria are identical and include; average body weight, average fish consumption rate, and a toxicological value specific to the toxic contaminant, as well as a contaminant specific bioconcentration factor (used to convert the fish tissue concentration to a water concentration). All of these variables as well as the final fish tissue values and the resulting water quality criteria concentration are subject to public review and comment during every Triennial Review of Virginia's Water Quality Standards. Opportunities for comment include Technical Advisory Committee meetings, public comment periods and public meetings.

Normally, fish tissue screening values would only change when the Water Quality Standards human health criteria change and that is accomplished through Triennial Review as well. Interested parties, such as HRSD, can recommend the inclusion of numeric methodologies used to determine compliance with the General Standard to the Technical Advisory Committee during the next Triennial Review, which is scheduled to begin in 2012.

Continuous Monitoring (CMON)

For the 2012 assessment, continuous monitoring datasets will be primarily acquired from the Virginia Institute of Marine Science and the United States Geological Survey, institutions which both have long, reputable histories of maintaining in-situ instruments and managing their data streams. Fewer than five waters will be assessed in the 2012 report using DEQ-deployed instruments. DEQ agrees with HRSD that caution should be taken with interpreting continuous monitoring data. Consistent with this concern, the guidance document specifies stringent requirements the datasets must meet for assessment. For instance, to maintain temporal representativeness of the assessment dataset, the continuous monitoring data stream must be of a minimum duration of 30 days and be used in conjunction with grab samples collected throughout the rest of the year. The use of a daily minimum of QA/QC-approved data points to screen out undetected erroneous observations provides additional protectiveness of data integrity. Furthermore, the use of nested allowable violation rates for parameter excursions mitigates any uncertainty associated with this state-of-the-art technology.

HRSD should also be assured that continuous monitoring data will not be used in the assessment of chlorophyll *a* in the James River. DEQ believes this parameter is much better characterized by Dataflow and other spatially intensive approaches.

Sincerely,

Tish Robertson, PhD

Virginia Department of Environmental Quality

Office of Water Quality Monitoring and Assessment