Comment Response Document

Regarding the Public Comment Period for MD's Assessment and Listing Methodologies for the 2024 Integrated Report of Surface Water Quality.

The Maryland Department of the Environment (MDE) conducted a public comment period of the final draft assessment and listing methodologies for the 2024 Integrated Report of Surface Water Quality. For the 2024 reporting cycle, changes were made to three assessment methodologies. The Listing Methodology for Identifying Waters Impaired by Bacteria in Maryland's Integrated Report, The Fish Tissue Assessment Methodology section which is part of the Methodology for Determining Impaired Waters by Chemical Contaminants for Maryland's Integrated Report of Surface Water Quality, and the Temperature Assessment Methodology for Use III (-P) Streams in Maryland were all updated. The public comment period was from October 11, 2023 to November 13, 2023. MDE received 2 sets of written comments.

Below is a list of the commenters, their affiliations, the date comments were submitted, and the number referenced to the comments. In the pages that follow, comments are summarized along with MDE's responses.

List of Commenters:

Author	Affiliation	Date	Comment Number
Joel Caudill	Maryland Association of Municipal Wastewater Agencies, Inc.	November 10, 2023	1-2
Robert Hirsch	Baltimore County Department of Environmental Protection and Sustainability	November 17, 2023	3-14

Maryland Association of Municipal Wastewater Agencies, Inc., Washington Suburban Sanitary Commission, 14501 Sweitzer Lane, 7th Floor, Laurel, MD 20707, Joel Caudill, MAMWA President.

MAMWA Comment 1:
As to the aquatic life water column criteria, the use is considered impaired if the CMC (acute WQS) is exceeded in more than one sample. This is in any 3-year period, and minimum sample size ≥ 10 generally. For the CCC (chronic WQS) there is a 2-stage analysis. The first is a statistical analysis process to determine if there may be a CCC exceedance. Second (if the first stage suggests an exceedance), a sampling program including ten 4-day samples over a 3-year period. If there is > one 4-day CCC exceedance, the water is placed in Category 5 (use impaired).

We commend MDE for properly and fully incorporating considerations of criteria duration and return frequency, which are of course integral parts of the water quality standards.

In regard to chronic aquatic life toxicity (CCC) the methodology (pp. 3-4) correctly refers generally to a 4-day chronic exposure duration, and data to support such determination. It should also refer to a 30-day exposure for freshwater ammonia-N, consistent with the EPA criteria and the MDE WQS. COMAR 26.08.02.03-2(I). This change is essential to remain consistent with the adopted WQS.

> **MDE Response:** Thank you for your recognition regarding the incorporation of criteria duration and frequency in the Aquatic Life Water Column Criteria. MDE agrees with your recommendation to include the 30-day exposure for freshwater ammonia-N in consistency with MDE WQS. MDE has added language to the methodology that states:
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> "However, EPA (2013, page 13) further specifies that a 30-day average may be utilized when exposure concentrations are shown to have "limited variability", as in the case of chronic exposure to ammonia. Therefore, for ammonia, both the 4-day average and a 30-day average will be assessed in conjunction for chronic exposure as cited in the Code of Maryland Regulations 26.08.02.03-2 (I):
>
> > (1) Averaging Period. The concentration of total ammonia nitrogen (in milligrams of nitrogen per liter) expressed as a 30-day average may not exceed the chronic criterion listed in Tables 1, 2 or 3….
> >
> > (4) In addition, the highest 4-day average within the 30-day period may not exceed 2.5 times the chronic criterion.

The nationally recommended criteria frequency and duration components are summarized in the following table. Maryland's assessment of water quality for the protection of aquatic life will incorporate these recommendations."

Criterion	Duration	Frequency
Acute	1-Hour Average	Not to be exceeded more than once every three years
Chronic	4-Day Average	
Chronic Ammonia	30-Day Average and 4-Day Average (2.5X)	

Source: EPA. 2013. Ambient Life Water Quality Criteria for Ammonia - Freshwater 2013. United States Environmental Protection Agency, Office of Water, Office of Science and Technology, Washington, DC. EPA 822-R-18-002. Accessed December 2023. Available at https://www.epa.gov/sites/default/files/2015-08/documents/aquatic-life-ambient-water-quality-criteria-for-ammonia-freshwater-2013.pdf

MAMWA Comment 2:
For sediment toxicity (toxicity to aquatic organism), because of the absence of criteria for most parameters, MDE states it will consider EPA guidance values, NOAA sediment criteria guidance, MDE-derived values, and other accepted criteria. Generally, MDE uses a "Triad" approach involving ambient sediment bioassays, ambient chemical data, and changes in benthic community structure. We have no specific generic concerns about the process as outlined by MDE.

However, in regard to sediment contamination and the potential for adverse effects on aquatic life, the Guidance identifies four quantitative factors, three of which involve the NOAA "ER-Ms." Guidance p. 10. The potential is considered "high" if (among other factors) "the mean ER-M quotient is greater than 0.5" (the third factor). The ER-M quotient is the sediment concentration divided by the ER-M. We presume this means the mean value of the ER-Ms for more than one sediment pollutant parameter. It is not explained why > 0.5, and not ≥ 1.0, would be considered a high potential for adverse effects.

Although it might otherwise be considered that a mean ER-M quotient > 0.5 worked in conjunction with the other three factors, the Guidance draft prefaces the list of factors with the statement that "the potential for adverse effect from contaminated sediment is said to be high if either of the following conditions are met" (emphasis added), and this wording appears to rule out a requirement for exceedances of more than one of the enumerated factors before it is

considered that there is a high potential for adverse effects. In any event, we assert that there is no apparent basis for a ≥ 0.5 threshold, including in any combination with other factors.

We therefore recommend use of the ≥ 1.0 threshold for this third factor.

> **MDE Response:** The basis for the ≥ 0.5 threshold comes from Long et al. 2000 and Anderson et al. 2001. It is referenced on page 13 of the methodology by subscript 3 under condition #4 and states "Long et al., (2000) showed that there is a much higher probability (>48%) that samples would be toxic in which six or more ERM values are exceeded or in which mean ERM quotients exceed 0.5." Condition #4 references the six or more ER-M values being exceeded and condition #3 references the mean ER-M quotient exceeding 0.5, both of which result in a much higher probability (>48%) that samples would be toxic according to the study. Therefore, based on these studies, the methodology will continue to use ≥ 0.5 as the threshold.

Baltimore County Department of Environmental Protection and Sustainability, County Office Building, 111 West Chesapeake Avenue Room 305 Towson, Maryland 21204, Robert Hirsch, Natural Resource Manager.

<u>Changes to bacteria listing methodology for water contact recreation use:</u>

BCDEPS Comment 3: The listing methodology uses "10 events" and "10 samples" interchangeably. Please clarify what is meant by "10 events" and "10 samples":

- Do "event" and "sample" mean the same thing?
- What is one event? Is it visiting a site on one date, and all the samples taken are collectively one event?
- What is one samples? Do replicate samples taken on the same day count as separate samples, or does the set of replicate samples count as one sample?

> **MDE Response:** Although the methodology uses "10 events" and "10 samples" interchangeably, they are not the same thing. Just as you suggested, an "event" refers to when one or more samples are taken under consistent conditions on the same date at a distinct station or location. A "sample" refers to a grab sample or discrete sample and is a single sample collected in an individual container. The MDE Beaches Program takes triplicate samples at their beaches, which is 3 separate containers of water from 3 separate, but nearby, stations all at the same beach on the same day, which counts as 1

sampling event for that beach. MDE intended to specify a minimum sampling size of 10 sampling events per station or location in order to meet the temporal requirements needed to assess a Geomean or Statistical Threshold Value, as expressed in the criteria, for a single sampling location. For areas other than beaches, a single sample at a single station could be considered a sampling event if that station is intended to categorize the given waterbody. Or there are likely multiple stations that get sampled on the same day to categorize a larger body of water, and we would also consider that day of samples, "an event". Ideally, at least weekly sampling will occur for all stations which is about the 10 sampling events per station in 90 days. MDE updated the language in the methodology to specify 10 sampling events.

BCDEPS Comment 4: The listing methodology specifies a 90-day period but does not explain how the 90-day periods are defined. Is this a rolling 90-day period (e.g. for sampling event on date "D", the period is all samples on date <= D and >= D – 90 days? Or are the 90-day periods rolling 3-month periods (e.g. May-July, June-August, July-September)?

MDE Response: For the 2024 Integrated Report, the 90-day period is static and refers to a single beach season which is a little over 90 days and goes from Memorial Day to Labor Day. The Beach Act samples are only collected during this beach season, and it was important that all data were included in the assessment decisions. MDE is still evaluating how to define the 90-day periods for year-round data and will provide further information in the next updates of the methodology. The beach season will still likely be an important component of the year-round samples since that is the time when people are most likely recreating and when the EPA studies upon which the criteria are based occurred.

BCDEPS Comment 5: The bathing beach monitoring period begins in May before most beaches open for use. Would high bacteria results in May, before beaches open for the swimming season, result in Category 5 listings?

MDE Response: Yes, if there are any geomean exceedances it will be listed. If there are only excursions of the statistical threshold value greater than 10%, MDE will evaluate the magnitude and timing of the excursions to determine impairment status. In that case, the month may be taken into consideration. However, MDE intends to list any waters with chronic bacteria impairments at any time, even if they don't occur during beach season.

BCDEPS Comment 6: MDE provides an example of how data with fewer than 10 samples may result in an impairment listing *"for incomplete data sets that consistently document high bacteria*

counts (e.g., E. coli >410 CFU/100 ml), MDE will consider whether the waterbody is impaired for the Water Contact Recreational Use." In this example, is the threshold compared to a geometric mean, STV, or a different statistic?

> **MDE Response:** If a dataset with less than 10 sampling events exceeds the geomean, then it will be automatically listed. If only the STV is exceeded, then the magnitude and timing of the excursions will be considered to determine if they indicate a chronic bacteria issue.

BCDEPS Comment 7: How does MDE use non-detects (below detection limit) in calculation of GM and STV? Does MDE use zero, or some other number?

> **MDE Response:** For Escherichia coli, if results are less than 1 and/or have the symbol "<" then 1 is used in calculations. For Enterococcus, if results are less than 10 and/or have the symbol "<" then 1 is used in calculations.

BCDEPS Comment 8: How does MDE use observations above the detection limit in calculation of GM and STV? Does MDE use the detection limit, or some other number?

> **MDE Response:** For both Escherichia coli and Enterococci, if observations are above the detection limit or have the symbol ">" then the detection limit is used in calculations.

BCDEPS Comment 9: Does MDE use these same assessment methods (including the GM and STV thresholds) to delist impaired waters? E.g. if a beach were listed for category 5 in one IR, then met the category 2 assessment criteria in a future IR, would that beach be assigned category 2 in that future IR?

> **MDE Response:** Yes, MDE uses the same methodology to delist impaired waters. However, it is important to note that, even with less than five years of data, there could be overwhelming evidence of impairment, but the same cannot be said about the absence of impairment. To move to category 2 and demonstrate that the waterbody is not impaired, all 5 years of data would need to meet the criteria.

<u>Changes to fish tissue assessment methodology</u>:

BCDEPS Comment 10: Can MDE please elaborate on the decision to set 10 samples as the minimum number to develop a representative dataset for long-term exposure?

MDE Response: A 10 sample minimum is consistent with what has been applied for aquatic life assessments. These decisions were developed based on EPA guidance, which states "The above [making use support determinations] assumes at least 10 samples over a 3-year period. If fewer than 10 samples are available, the State should use discretion and consider other factors such as the number of pollutants having a single violation and the magnitude of the exceedance(s)." (Page 3-22).

Source: EPA. 1997. Guidelines for Preparation of the Comprehensive State Water Quality Assessments (305(b) Reports) and Electronic Updates: Supplement. United States Environmental Protection Agency, Office of Water, Office of Science and Technology, Washington, DC. EPA 822-R-18-002. Accessed December 2023. Available at https://www.google.com/url?q=https://www.epa.gov/sites/default/files/2015-09/documents/guidelines_for_preparation_of_the_comprehensive_state_water_quality_assessments_305b_reports_and_electronic_updates_1997_supplement-volume2.pdf&sa=D&source=docs&ust=1702411858799772&usg=AOvVaw2osHZ1-hZsJ4ntJWjWoJwk

BCDEPS Comment 11: Can MDE explain how it will determine what constitutes a representative temporal period?

MDE Response: A representative temporal period depends on which criteria and designated use combination are being assessed. Criteria for the protection of human health from fish tissue consumption would have a different assessment period than the chronic freshwater criteria for the protection of aquatic life. For example, the methodology specifies that for fish tissue consumption, "All available data within a ten-year period are compiled and assessed when making impairment decisions." (Page 20). Whereas the assessments for chronic aquatic life criteria are "10 four-day periods over a 3-year timespan." (Page 8).

BCDEPS Comment 12: Is it correct that the spatial extent will be determined by the geography of the waterway being assessed?

MDE Response: This is correct. Page 23 of the assessment methodology has a section that covers the geographic scale of assessment.

Changes to temperature assessment methodology:

BCDEPS Comment 13: Most biological monitoring programs utilize random sampling locations (e.g. DNR MBSS and MS4 permittees). Current procedures in these programs generate one year of temperature data per location. If the MDE assessment method requires three consecutive years of temperature data, existing temperature data from these random sampling programs will not be usable for integrated report assessment purposes. **How does MDE plan to acquire the three consecutive years of temperature data necessary to make integrated report listing decisions?**

> **MDE Response:** Three consecutive years of data is necessary for delisting, not listing. If one year of data demonstrates temperature has failed the criteria, it will be listed. So data from the random sampling programs can be used for IR listing purposes. In order to demonstrate that a previously impaired stream is now meeting criteria, three years of data is needed to delist. However, the one year of data from the random sampling programs demonstrating that temperature is meeting criteria can be used to prioritize the follow up monitoring necessary (three years total) to confirm delisting.

BCDEPS Comment 14: MDE's current methods for use class designation accept one year of temperature data to make use class decisions (e.g. changing a stream to Use Class III). Use class is part of the water quality standards that the integrated report assesses. Different methodologies for assigning WQS to waterbodies (e.g. use class designation) and assessing waterbodies against those WQS (e.g. integrated report assessments) creates risk that WQS will be assigned to waterbodies when those waterbodies do not actually meet the WQS at the time of assignment (implying that the new use class designation was incorrect.) The proposed assessment methodology change appears to create this risk. Specifically, a stream could be designated to Use Class III based on one year of data, and concurrently listed in Category 5 or 3 based on three years of data that contain the same data used to designate Use Class III. **Shouldn't the use class designation methods align with the IR assessment methods, to avoid mis-designation of warm water streams as Use Class III cold water streams?**

> **MDE Response:** Designation of an existing use is different from assessing waterbodies against WQS. As per the Clean Water Act, an existing use is defined as"... those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards" (Code of Federal Regulations (CFR) Title 40 § 131.3(e)). Essentially, existing uses represent the highest level of use and water quality (necessary to support that use) that has been achieved since 1975.
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> In the case of MDE's cold water (Use Class III) existing use re-designations, one year of temperature data meeting criteria as well as evidence of self-sustaining cold water

obligate populations are both required for a re-designation. These data mark the highest attained conditions that were actually observed in the waterbody and establish the baseline that needs to be maintained for that body of water.

Although an existing use determination and reclassification to a Use Class III stream has more stringent temperature criteria, whether or not a waterbody is currently meeting those criteria does not affect the existing use determination. In other words, the existing use is documenting the actual achievement of meeting both the temperature and coldwater obligate requirements at some point since 1975, even if it is not currently supported. Since that temperature regime was once achieved in the waterbody, it needs to be maintained or re-established. Otherwise, if a waterbody that once supported a coldwater existing use later became impaired due to changing watershed conditions, this would allow for the continued degradation of that waterbody. This would violate the Antidegradation Policy of Maryland's water quality standards and the Clean Water Act.

For more information, please see MDE's Existing Use Determinations webpage.