



Draft 2018 Listing Methodology Document
RESPONSES TO PUBLIC COMMENTS

Public Notice
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Water Protection Program
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INTRODUCTION

Pursuant to 40 CFR 130.7, States, Territories and authorized Tribes must submit biennially to the U.S. Environmental Protection Agency (EPA) a list of water-quality limited (impaired) segments, pollutants causing impairment, and the priority ranking of waters targeted for Total Maximum Daily Load (TMDL) development. Federal regulation at 40 CFR 130.7 also requires States, Territories, and authorized Tribes to submit to EPA a written methodology describing the state's approach in considering and evaluating existing and readily available data used to develop its 303(d) List of impaired waters. The listing methodology must be submitted to EPA each year the Section 303(d) List is due. While EPA does not approve or disapprove the listing methodology, the agency considers the methodology during its review of the state's 303(d) impaired waters list and the determination to list or not to list waters.

The Missouri Department of Natural Resources (department) placed the draft 2018 Listing Methodology Document (LMD) on public notice from Nov. 1, 2015 to Jan. 31, 2016. All original comments received during this public notice period are available online on the department's website at <http://dnr.mo.gov/env/wpp/waterquality/303d/303d.htm>. Comments were received from the following groups or individuals:

Association of Missouri Cleanwater Agencies
City of Springfield
Newman, Comley and Ruth, P.C. Law Firm
U.S. Environmental Protection Agency

This document summarizes and paraphrases the comments received, provides the department's responses to those comments, and notes any changes made to the final draft 2018 LMD resulting from these comments.

Association of Missouri Cleanwater Agencies Comments

Several comments were submitted by the Association of Missouri Cleanwater Agencies (Association). Those comments are summarized below in the order they were presented in the comment letter.

The Association commented that when sampling for acute pollutant parameters, the methodology should specify that two grab samples for acute pollutant parameters will be taken within one hour, 15 minutes apart to minimize errors in grab sampling as well as the impact of data outliers. The Association states that regulatory implications of making an incorrect determination readily justifies taking two samples 15 minutes apart for acute toxic pollutant parameters and that doing so would not be a major staffing issue.

Department Response

Water quality pollutant parameters that have acute water quality criteria for the protection of aquatic life designated use include ammonia, chlorine, cyanide, chloride, metals, and two organic compounds. In the absence of a known chemical spill, or presence of a fish kill or other aquatic life kill, it would be difficult for the department to determine if a toxic event is occurring at the time of a sampling event. A determination of a toxic event would not be known until laboratory chemical analyses have been completed. Due to the infrequent nature of toxic events, the general assumption that toxic events are not occurring under ambient, base flow conditions is reasonable. Should the department determine that a toxic event occurred during the sampling period, this information would be noted in the assessment worksheet and the data used or censored according to the LMD.

It is important to note that field sampling and quality assurance/quality control protocols require assessment sampling to be conducted during representative stream conditions. The majority of monitoring used for assessment purposes is designed to characterize a water body under representative ambient conditions by collecting multiple samples at multiple stream locations (spatially) and over time (temporally). Depending upon the purpose of the water quality study, samples may also be collected multiple times per day to document diurnal fluctuations. Because multiple samples are collected within a day, year or over multiple years, adding an additional sampling requirement to collect two samples within a 15 minute period per hour is not necessary and would not add significant resolution to the data. Additionally, the fiscal impact of an additional sample in terms of both staff time and analytical costs has not been estimated. While the Association asserts such costs may not be “major”, resource costs and allocations could be significant given the number and type of sampling the department conducts for assessment purposes. No changes were made to the draft LMD as a result of this comment.

The Association commented the methodology states that when there are fewer than eight samples the department will use the 25th percentile hardness to calculate the applicable instream water quality standard. When determining hardness for hardness dependent water quality criteria for acute samples, the department should use the actual hardness associated with each sample, regardless of the number of samples available.

Department Response

The Association’s comment does not accurately reflect the text where hardness is referenced in Appendix C of the draft 2018 LMD placed on public notice. The draft 2018 LMD currently states that when determining hardness-based metals criteria (acute or chronic) with eight or fewer samples, the hardness value associated with the sample will be used. This current language is consistent with how the Association states the methodology should read and no change is necessary. No changes were made to the draft LMD as a result of this comment.

When determining hardness-based metals criteria with more than eight samples, the department will use the 25th percentile hardness to calculate the applicable instream water quality standards as required by 10 CSR 20-7.031(1)(BB).

The Association also commented that chronic criteria are expressed as 4-day average criteria. The methodology does not explain how available data are manipulated to calculate the highest four day average value. It would be incorrect for the department to compare a single grab sample to a 4-day chronic standard. Instead, the department should either sample for four consecutive days or take all annual data to calculate the highest 4-day average.

Department Response

When examining existing and readily available data for assessment purposes, the department verifies that flow conditions at the time of water quality sampling were stable and representative of ambient conditions. If stream flow data are available to support that stable conditions were maintained over a 4-day period, it is reasonable to assume that pollutant loading also remained constant over the same 4-day period when the sampling event occurred. This method of assessment is consistent with EPA Integrated Reporting (IR) Guidance and allows for use of the highest quality data available (<http://www.epa.gov/tmdl/integrated-reporting-guidance>). No changes were made to the draft LMD as a result of this comment.

The Association stated that the U.S. Geological Survey (USGS) grades its data (excellent, good, fair, or poor). Where data are evaluated by USGS as being either poor or fair, the data should not be used to make an impairment determination. Instead follow-up monitoring should be performed until valid data (good or excellent) are collected.

Department Response

The department is aware the USGS graded their continuous monitoring (e.g. sonde) data as excellent, good, fair, or poor and appreciates the comment requesting additional information to be added to the LMD. A clarifying note will be added to specify the department will only use those data rated as excellent and good for assessment purposes.

The Association disagrees with the one-in-three year proposed approach of listing a water as being impaired for toxics. Where it may make sense for a significant toxicity event such as a fish kill, it does not make sense for isolated, non-significant excursions. It places too much significance on a single grab sample or two samples in a three year period. An example of 2 out of 50 samples for copper would cause an impaired water determination. The 10 percent approach should also be applied to toxics in lieu of the one-in-three policy with the proviso that the department will designate a water as being impaired if there are two documented significant

toxicity events (fish kill or sampling results exceeding the applicable criterion by 100 percent) in any three year period. A similar comment was provided by the City of Springfield.

Department Response

The one-in-three year assessment method is consistent with EPA IR Guidance and state implementation of water quality standards. As stated in the guidance, “For toxic (priority pollutants) and protection of freshwater aquatic life, EPA IR guidance recommends use of a one-in-three year maximum allowable excursion recurrence frequency.” The guidance also recommends making non-attainment decisions for “conventional pollutants” and has not encouraged the use of the 10 percent rule with other pollutants, including toxics. Development and implementation of acute and chronic water quality criteria are based on the concept that toxicity criteria contain components of magnitude, duration and frequency protective of aquatic life. The not to exceed more than “once every three years” frequency can be found in both criteria development guidelines (e.g., *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection Of Aquatic Organisms and Their Uses*, (p.34, PB85-227049) and *Water Quality Standards Handbook*, (Chapter 3, p.4, EPA 823-B-94-005a) as well as criteria implementation guidance (e.g., *Technical Support Document for Water Quality-based Toxics Control*, p. 36, EPA 505-2-90-001). Water quality assessments using the once every three year return interval frequency ensures consistency with toxicity criteria development and water quality standards implementation. It also ensures that aquatic communities impacted by pollutants are identified and provided opportunity for ecological recovery from toxic stressors in an expeditious manner. No changes were made to the draft LMD as a result of this comment.

The Association commented that the department applies a “stable flow” qualifier for determining whether toxics data are representative and should be used for impaired waters determinations. It is recommended that the final methodology specify the department will document its evaluation of stable conditions for all data for each water it proposes and adds to the impaired waters list.

Department Response

Specific reference to the “stable flow” qualifier is currently provided on the department’s assessment worksheets. When assessing for chronic toxicity, the department considers the position of stream flow on the hydrographic curve in relation to when a sample was collected. Therefore, access to daily stream flow data for the water body is necessary to provide a reliable estimate of the stream flow two days prior, the day of, and the day following the sample collection date. An assessment determination for chronic toxicity cannot be determined in the absence of stream flow data. No changes were made to the draft LMD as a result of this comment.

City of Springfield comments on the 2018 LMD

The City of Springfield (City) strongly supports the department’s additions to the subcategory 5-alternative (5-alt) to the LMD. The inclusion of the 5-alt provides additional needed flexibility where Total Maximum Daily Loads (TMDLs) may not be appropriate, particularly in the case of urban stream impairments where watershed management efforts are much more effective. The City interprets the inclusion of subcategory 5-alt as a willingness by the department to strongly consider prioritizing alternative restoration approaches over development of a TMDL.

Department Response

The department appreciates the support and agrees the new category will provide additional flexibility in the assessment and restoration process. No changes were made to the draft LMD as a result of this comment.

The City provided a one-in-three year toxic event comment that was similar to the comment provided by the Association of Missouri Cleanwater Agencies.

Department Response

As stated in the response to the Association, the one-in-three year assessment method is consistent with EPA IR guidance and state implementation of water quality standards. As stated in the EPA IR guidance “For toxic (priority pollutants) and protection of freshwater aquatic life, EPA guidance recommends use of a one-in-three year maximum allowable excursion recurrence frequency.” Additional rationale and information can be found in the department’s response to the Association. No changes were made to the draft LMD as a result of this comment.

It is unclear why a percentile hardness value would be preferred over paired-hardness data, if available. While use of a reference percentile hardness value is appropriate for permit effluent limit calculations, paired hardness data should be preferred for determination of standards attainment as it best represents actual toxicity. The City requests the department to remove this requirement, and that the LMD specify the reference to compliance with any hardness based metals criteria (e.g. numeric criteria that are included in the state standards and narrative criteria based on numeric thresholds not contained in the state standards).

Department Response

The assessment method described in the draft 2018 LMD is consistent with the Water Quality Standards regulation at 10 CSR 20-7.031(1)(BB) in the determination of compliance with hardness-dependent metals criteria for the protection of aquatic life designated use. Any change to derivation of hardness, and its use within the assessment process, would first require a rule

change to the definition of hardness in the Missouri Water Quality Standards prior to a change in the LMD. No changes were made to the draft LMD as a result of this comment.

The City raised concerns about relying on the probable effect concentration (PECs) for impairment decisions without lines of evidence. The City noted that the true impact of sediment pollutant concentrations is complicated by the actual bioavailability of contaminants, which can vary based upon site conditions. To address the concerns in the 2016 LMD, the City requested the department make wording revisions to the LMD to include specific types of chemical analyses (e.g. carbon-normalization equilibrium sediment benchmarks for non-ionizable organic chemicals, porewater concentrations and simultaneously extracted metals/acid-volatile sulfide) to be conducted to better understand the potential toxicity to aquatic life and would add multiple lines of evidence before making a listing decision.

Department Response

The current assessment procedure of assessing pollutants in sediments at 150 percent of the PEC (instead of 100 percent) provides a reliable basis for assessing sediment quality conditions in freshwater ecosystems and the effects on benthic macroinvertebrate species. These assessments, and the effects and impacts of sediment toxicity that are detected, assist the department in implementing general criteria protections for aquatic life with respect to protection of benthic habitat. The department is not opposed to considering other chemical analyses, and is willing to convene stakeholder meetings of interested parties and the public to discuss future enhancements to the assessment procedure. During the public comment period, the City provided several articles for the department to review. The department is currently reviewing these documents and will convene sediment stakeholder workgroup meetings following review of the available science. In addition to enhancing sediment toxicity assessments for aquatic life protection, the department would be willing to review and investigate the potential for bioaccumulation in aquatic organisms and subsequent food chain transfers to humans or wildlife toward protection of the human health designated use. The department appreciates the City's comment and looks forward to working stakeholders to refine sediment toxicity assessment procedures. No changes were made to the draft LMD as a result of this comment, but future stakeholder meetings will be held to mature the methodology.

The City also recommends the department adds clarity that PECs are not independently applicable numeric water quality criteria. Numeric translators of narrative criteria (e.g. PECs) may not be used as the sole source of impairment. This is partially addressed in the LMD, but additional clarity is needed. The City provided suggested wording additions.

Department Response

The department has included the assessment of pollutants in sediments for potential toxicity since the 2008 listing cycle. The sediment PEC thresholds are used as a numeric translator to

determine if the general criteria for the protection of aquatic life as stated in Missouri Water Quality Standards are being met. At the suggestion of stakeholders, the weight of evidence approach was added during updates to the listing methodology since the 2010 listing cycle. Overall, the sediment PEC thresholds are still subject to the “weight of evidence” analysis, where it could be overturned by convincing evidence of another kind, such as aquatic life survey that shows full attainment. As currently stated, when data (e.g. chemical and biological) are available the department will include this information as part of the weight of evidence analysis. No changes were made to the draft LMD as a result of this comment.

Newman, Comley and Ruth comments on the 2018 LMD

A comment was submitted on behalf of Simmons Foods, Inc. The comment was in relation to the biological assessment of small streams. Specific wording was provided for inclusion within the draft 2018 LMD to state “For streams smaller than wadeable perennial reference streams, that candidate reference streams (small control streams) of similar size, flow under natural conditions (excluding effluent) and valley segment type (VST) in the ecological drainage unit (EDU) with the same or similar land use twice during the same year the test stream is sampled.”

The following section of the draft 2018 LMD was referenced “When the Missouri Stream Condition Index (MSCI) is calculated according to the wadeable/perennial reference streams, 70% of the Class U are unclassified streams. There is a 70% failure rate for unclassified candidate reference streams.” For a fair comparison to be made, small streams being assessed should be of similar size to candidate reference streams. Candidate reference streams should have the same valley segment type, the same flow excluding artificial flow from effluent and similar land use. Small, effluent dominated streams do not have the same morphology as streams with the same natural flow, but which have much larger watersheds. Therefore, small effluent-dominated streams should not be compared to candidate reference streams with the same flow from natural sources, but which have different stream morphology and larger watersheds.

Department Response

The department agrees and recognizes that small streams should be assessed to streams of similar size and characteristics. Because of this recognition, the department had developed a 13-step process for selecting candidate reference streams. During revisions to the 2014 LMD, the stepwise process was added and incorporated into the assessment process. Candidate reference streams represent the best available stream conditions within the same EDU as the test stream. It is important to note that streams and their watersheds are unique, and no two systems will be completely identical to one another. That said, the stepwise process for selecting candidate reference streams provides a systematic means for selecting small streams that have similar characteristics. No changes were made to the draft LMD as a result of this comment.

The department would like to note that there are many effluent dominated and dependent stream systems located throughout the state. Effluent dominated or dependent systems provide

permanent and stable stream flow, and aquatic habitats throughout the year. These conditions provide an environment for aquatic life to become established and maintained. Previously, many small streams were protected under the state's general water quality criteria provided in Missouri Water Quality Standards regulation. However, under the revised stream classification system, many of these small streams are now protected under both numeric and general water quality criteria regardless if they are natural or effluent dominated systems.

An additional comment was submitted by Newman, Comley and Ruth in relation to the LMD discussing full attainment for determining non-attainment of aquatic life based upon seven or fewer macroinvertebrate samples or more than eight samples. An inquiry was made regarding the minimum number of samples required, where the department responded by stating the data must meet the data qualifications of either a data code three or four. Suggested wording was provided to revise data code three to require both spring and fall samples.

Department Response

The department agrees, and has added the suggested wording to the 2018 LMD to clarify the minimum number of samples necessary to make a biological assessment for aquatic macroinvertebrate data under data code three.

EPA Comment on 2018 LMD

Hardness is defined in the state's EPA-approved water quality standards. A state's 303(d) list is based on water quality standards and is reviewed by the EPA based on standards.

Department Response

The department assesses hardness based parameters at the 25th percentile when a minimum of eight (8) hardness samples are available. The department believes this minimum provides confidence in the accuracy of the data result. No changes were made to the draft LMD as a result of this comment.