Enclosure 1
Rationale for EPA's Action on
West Virginia's 2018-2020-2022 Clean Water Act Section 303(d) List

I. Purpose

This document sets forth the U.S. Environmental Protection Agency, Region 3 (EPA) rationale, pursuant to Section 303(d) of the Clean Water Act (CWA) and its implementing regulations, for partially approving and partially disapproving West Virginia's 2018-2020-2022 list of water quality limited segments (WQLSs) still requiring total maximum daily loads (TMDLs) (Section 303(d) list, or list). On May 5, 2023, EPA received the West Virginia Department of Environmental Protection's (WVDEP) final 2018-2020-2022 Integrated Report (IR) and supporting documentation and information. EPA has conducted a review of WVDEP's 2018-2020-2022 IR and supporting documentation and information. Based on this review, EPA has determined that the portion of the IR constituting West Virginia's 2018-2020-2022 Section 303(d) list (i.e., Category 5 of the IR) does not fully satisfy the requirements of Section 303(d) of the CWA and EPA's implementing regulations. Therefore, EPA hereby partially approves and partially disapproves West Virginia's 2018-2020-2022 Section 303(d) list. The statutory and regulatory requirements, and EPA's review of West Virginia's compliance with each requirement, are described in detail below.

This Enclosure 1 describes the basis for: (1) EPA's decision to partially approve West Virginia's 2018-2020-2022 Section 303(d) list to the extent that it identifies 1,423 WQLSs (1,384 stream WQLSs and 39 lake WQLSs) requiring a Total Maximum Daily Load (TMDL); (2) EPA's decision to partially disapprove West Virginia's 2018-2020-2022 CWA Section 303(d) list to the extent that it omits certain WQLSs; and (3) EPA's identification of omitted waters not meeting the state's water quality standards. Enclosure 2 describes the basis for EPA's identification of waters to be added to West Virginia's Section 303(d) list. The waters identified by EPA for inclusion in West Virginia's 2018-2020-2022 Section 303(d) list are in Enclosure 3.

II. Statutory and Regulatory Background

1) Identification of WQLSs for Inclusion on Section 303(d) List

Section 303(d)(1) of the CWA and EPA's implementing regulations at 40 C.F.R. Part 130 direct states to identify those waters within their jurisdiction for which effluent limitations required by Section 301(b)(1)(A) and (B) are not stringent enough to implement any water quality standard applicable to those waters and to establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters. EPA's regulations require states to biennially submit to EPA the list identifying WQLSs still requiring a TMDL. This list of WQLSs is commonly referred to as the Section 303(d) list. The Section 303(d) listing requirement applies to waters impaired by point and/or nonpoint sources, pursuant to EPA's long-standing interpretation of Section 303(d). EPA regulations provide that states do not need to identify waters on the Section 303(d) list where the following controls are adequate to implement applicable standards: (1) technology-based effluent limitations required by the CWA; (2) more stringent effluent limitations required by state or local authority; or (3) other pollution control requirements required by state, local, or federal authority. See 40 CFR §130.7(b)(1) and (2).

EPA's recommended multi-part IR format is intended to satisfy the listing requirements of

Section 303(d) and the requirements of Sections 305(b) and 314 of the CWA.[1] This IR format is intended to provide the public and other interested stakeholders with a comprehensive summary of a state's water quality. Consistent with that format, WVDEP's IR places all surface waters in West Virginia into at least one of the five assessment categories. Category 5 of the IR represents the Section 303(d) list of WQLSs still requiring a TMDL. The assessment categories used in WVDEP's IR are as follows[2]:

- Category 1 – Waters fully supporting all designated uses.
- Category 2 – Waters fully supporting some designated uses, but insufficient or no information exists to assess the other designated uses.
- Category 3 – Waters where insufficient or no information exists to determine if any of the uses are being met
- Category 4 – Waters that are impaired or threatened but do not need a Total Maximum Daily Load (TMDL).
    - Category 4a – waters that already have an approved TMDL but are still not meeting standards.
    - Category 4b – waters that have other control mechanisms in place which are reasonably expected to return the water to meeting designated uses.
    - Category 4c - waters that have been determined to be impaired, where non-pollutant pollution is contributing to the impairment (ex. low flow alteration).
- Category 5 – Waters that have been assessed as impaired and need a TMDL.

2) Consideration of Existing and Readily Available Water Quality Related Data and Information

In developing the Section 303(d) list, states are required to assemble and evaluate all existing and readily available water quality related data and information including, at a minimum, existing and readily available data and information about the following categories of waters: (1) waters identified as partially meeting or not meeting designated uses, or as threatened, in the state's most recent Section 305(b) report; (2) waters for which dilution calculations or predictive modeling indicate non-attainment of applicable water quality standards; (3) waters for which water quality problems have been reported by governmental agencies, members of the public, or academic institutions; and (4) waters identified as impaired or threatened in any Section 319 nonpoint source assessment submitted to EPA. In addition to these minimum categories, states are required to assemble and evaluate and should actively solicit any other data and information that is existing and readily available. See 40 CFR §130.7(b)(5). While states are required to assemble and evaluate all existing and readily available water quality related data and information, states may make reasonable decisions to use or not use particular data or information in determining whether to list particular waters. See 40 CFR § 130.7(b)(6)(iii).

[1] With the exception of Category 5, EPA neither approves nor disapproves the Integrated Report. Category 5 constitutes the list of impaired waters pursuant to CWA Section 303(d) that EPA approves or disapproves pursuant to 40 C.F.R. 130.7.
[2] Integrated Report categories are described in further detail in EPA's Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act: https://www.epa.gov/sites/production/files/2015-10/documents/2006irg-report.pdf

In addition to requiring states to assemble and evaluate all existing and readily available water quality-related data and information, EPA regulations at 40 CFR 130.7(b)(6) require states to include as part of their submissions to EPA, documentation to support decisions to rely or not rely on particular data and information, and decisions to list or not list waters on the Section 303(d) list. Such documentation shall include, at a minimum, the following information: (1) a description of the methodology used to develop the list; (2) a description of the data and information used to identify waters; (3) a rationale for any decision to not use existing and readily available data discussed in 130.7(b)(5); and (4) any other reasonable information requested by the Region.

3) Priority Ranking

EPA regulations also codify and interpret the requirement in Section 303(d)(1)(A) of the CWA that states establish a priority ranking for Section 303(d) listed waters. The regulations at 40 CFR §130.7(b)(4) require states to prioritize waters on their Section 303(d) lists for TMDL development, and also to identify those WQLSs targeted for TMDL development in the next two years. In prioritizing and targeting waters, states must, at a minimum, take into account the severity of the pollution and the uses to be made of such waters. See Section 303(d)(1)(A). As long as these factors are taken into account, states retain considerable discretion and may consider other factors when prioritizing TMDLs for development. See 57 FR 33040, 33045 (July 24, 1992).

III. Analysis of West Virginia's Submission

EPA has reviewed WVDEP's 2018-2020-2022 IR and has concluded that WVDEP developed its 2018-2020-2022 Section 303(d) list in partial compliance with Section 303(d) of the CWA and 40 CFR §130.7. Because EPA has determined that WVDEP's submission does not use all existing and readily available water quality information, and does not provide a technical, science-based rationale for not using existing and readily available data, EPA is partially approving and partially disapproving WVDEP's Section 303(d) list and identifying additional waters for the 2018-2020-2022 list. As a result of its review, EPA has determined the following:

(1) WVDEP has appropriately identified 1,423WQLSs (1,384 stream WQLSs and 39 lake WQLSs) requiring TMDLs on its 2018-2020-2022 Section 303(d) list. EPA approves inclusion of these waters on West Virginia's 2018-2020-2022 Section 303(d) list.

(2) WVDEP has not provided a technical, science-based rationale[3] for not using existing and readily available data and information for certain water bodies of the state when developing West Virginia's 2018-2020-2022 Section 303(d) list. Specifically based on EPA's review of data assembled by WVDEP and documentation of its biological data assessment decisions that was provided with the submission of WVDEP's final 2018-2020-2022 IR, WVDEP did not use, and did not provide a technical, science-based rationale for not using, existing and readily available information related to West Virginia's applicable narrative water quality criteria (W. Va. CSR § 47-2-3.2(e) & (i)) as applied to aquatic life.

[3] "EPA will evaluate whether a state, territory, or authorized tribe provides a technical, science-based rationale for decisions not to use data or information. See 2006 IR memo, at 37; *Sierra Club v. Leavitt*, 488 F.3d 904, 913-14 (11th Cir. 2007); *Potomac Riverkeeper, Inc. v. Wheeler*, 381 F. Supp. 3d 1, 14-18 (D.D.C. 2019), *aff'd*, 815 F. App'x 551 (D.C. Cir. 2020); *Center for Biological Diversity v. EPA*, 90 F. Supp. 3d 1177, 1211-12 (W.D. Wash. 2015); *Friends of the Wild Swan, Inc. v. US EPA*, 130 F. Supp. 2d 1184, 1193-94 (D. Mont. 1999)."

1) Description of WVDEP's Submission

EPA received WVDEP's final 2018-2020-2022 Section 303(d) list submission on May 5, 2023. WVDEP's submittal was later published in the Assessment, Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS), which is EPA's electronic system to accept and track 303(d) submissions and actions. ATTAINS transformed and modernized paper integrated reporting into an electronic system, which allows EPA, states, and the public to access, search, and track water quality assessment decisions.[4] WVDEP's Category 5 data in ATTAINS represents WVDEP's Section 303(d) list. In addition to the Section 303(d) list, WVDEP submitted water quality assessment results for its other surface waters pertaining to IR assessment categories 1 – 4 through ATTAINS, along with a narrative IR and supporting documentation and information. In addition to ATTAINS, WVDEP shares its IR and supporting documentation and information, including the Section 303(d) list, on its webpage.[5] In summary, EPA considered the following information in WVDEP's 2018-2020-2022 IR submission for its review: (1) the IR narrative, tables, and story map, including an overview of the process for development of the 2018-2020-2022 IR; (2) the Section 303(d) list, or waters listed in Category 5 within ATTAINS; (3) the remaining waters listed in Categories 1 – 4, present within ATTAINS; (4) the assessment methodologies for numerical water quality criteria and narrative water quality criteria (biological impairment, fish consumption advisories and excess filamentous algae); (5) descriptions of the data solicitation and public notice processes; (6) documentation to support decisions to list or not list waters, including decisions to remove waters from Category 5; (7) descriptions of data that the state considered; (8) comments received on the draft list; (9) the state's response to those comments; and (10) WVDEP's draft biological and assessment data provided to EPA in excel spreadsheets and an access database. To the extent that prior approved Section 303(d) lists have been incorporated into the 2018-2020-2022 Section 303(d) list, EPA's rationale for approving those lists remains operative unless otherwise noted.

WVDEP identified 1,423 WQLSs in Category 5. In addition to the information for each segment captured in ATTAINS, the information that follows each WQLS in the 303(d) list spreadsheet and supplemental tables available on WVDEP's website includes the group assigned to the Watershed for the TMDL Framework Scheduling, Watershed (HUC8), Assessment Unit ID, Waterbody Name, Waterbody Extent Description, size of assessment unit, units of size, parameter, parameter category, the cycle the segment was first listed, and the TMDL Target/Priority.

2) Description of the methodology used to develop the list (CFR §130.7(b)(6)(i))

WVDEP has developed methodologies for assessing whether waters are achieving its water quality standards, including its designated uses and associated water quality criteria. These assessment methodologies are intended to describe the state's interpretation of its water quality standards and identify scientifically defensible approaches for assessing water quality. WVDEP's assessment methodologies are not considered rules, but rather a means to provide consistency and transparency in integrated reporting. Furthermore, assessment methodologies are living documents that can be revised as new statistical approaches, technologies, or other improved methods are adopted.

WVDEP's final assessment methodologies are described in Section 5.0 (Use Assessment Procedures) and Appendix A (Aquatic Life Use Assessment and Biological Stressor Identification

[4] ATTAINS data is publicly accessible via EPA's How's My Waterway online tool and ATTAINS web and geospatial services. For more information, see: https://www.epa.gov/waterdata/get-data-access-public-attains-data

[5] Hyperlink: https://dep.wv.gov/wwe/watershed/ir/pages/303d_305b.aspx

Procedures) of the final IR. WVDEP solicited feedback on its assessment methodologies during the IR public comment period from April 14, 2022 to June 1, 2022.

The basis for 303(d) listing decisions relates to the West Virginia water quality standards. With limited exceptions, if water quality standards are not being met, a waterbody is considered impaired, placed on the 303(d) list, and scheduled for TMDL development. The West Virginia water quality standards are codified at 47 CSR 2 - *Requirements Governing Water Quality Standards*, and at 60 CSR 5 - *Antidegradation Implementation Procedures.* For stream water quality assessments for the 2018-2020-2022 IR, WVDEP generally used water quality data generated and analyzed between January 1, 2013 – December 30, 2020 from the state's 32 major watersheds.

For the 2018-2020-2022 IR reporting cycle, significant changes were made to assessment unit delineations. WVDEP has refined assessment units to include a finer scale resolution of stream layers, incorporating 1:100,000 scale National Hydrography Dataset (NHD) streams into its existing 1:24,000 scale NHD stream layer. This resulted in changing the total number of assessment units from approximately 12,000 to 47,500. For more information, please see page 2 of WVDEP's 2018-2020-2022 IR. Crosswalks between old and new assessment units are available on WVDEP's website.[5]

WVDEP also developed new *Aquatic Life Use Assessment and Biological Stressor Identification Procedures* described in Appendix A of WVDEP's 2018-2020-2022 IR.

Since submission of its most recent previous Section 303(d) list, WVDEP adopted a new selenium fish tissue water quality criterion element. The assessment methodology WVDEP used to incorporate this new fish tissue element is described in WVDEP's IR transmittal letter to EPA. EPA appreciates WVDEP's effort to address EPA's comment about evaluating the available fish tissue data. EPA acknowledges that the criteria are relatively recent and that WVDEP's experience implementing the fish tissue element is limited. EPA expects that WVDEP will refine its assessment of fish tissue data as it gains more experience and as more data and information become available. EPA also appreciates WVDEP identifying impairment if either water column or fish tissue data indicate impairment, as the values of the two criterion elements are not correlated in WVDEP's selenium criteria.

3) Description of the data and information used to identify waters (CFR §130.7(b)(6)(ii))

In preparation for the 303(d) listing process, the WVDEP's Division of Water and Waste Management is responsible for the collection and compilation of water quality-related data and information. WVDEP based the 2018-2020-2022 Section 303(d) list on a variety of data and information sources. WVDEP generated the majority of available surface water quality data through monitoring activities that the WVDEP Watershed Assessment Program (WAP) performed within the watershed management framework cycle, as described in Section 3.0 of WVDEP's 2018-2020-2022 IR (WVDEP Surface Water Monitoring). Table 2 of the IR describes the monitoring activities that occurred during 2016-2020, including ambient monitoring, probabilistic, pre-TMDL, Targeted, Lakes, Continuous, Long Term, Wetlands, Harmful Algal Bloom, Filamentous Algae, and Fish Tissue monitoring.

WVDEP also solicited relevant water quality data and information from the public. WVDEP issued a public call for data to be used for purposes of the 2018-2020-2022 Section 303(d) list in which WVDEP sought data generated through December 30, 2020. WVDEP sought water quality information from various state and federal agencies, colleges and universities, and private individuals, businesses

and organizations. News releases and public notices were published in state newspapers and letters were sent to state and federal agencies known by WVDEP to be generators of water quality data. Section 4.0 (Third Party Monitoring and Data) of WVDEP's 2018-2020-2022 IR describes how third-party data was assembled in the IR, and a complete list of data providers is shown on Table 3 of the IR.

Pursuant to 40 CFR 130.7(b)(5), states must assemble and evaluate all existing and readily available water quality-related data and information to develop their Section 303(d) lists, including but not limited to, such data and information for the following categories of waters. Where WVDEP chooses not to use existing and readily available data, WVDEP must provide a technical, science-based rationale. *Id.* 130.7(b)(6)(iii).

i. Section 130.7(b)(5)(i), Waters identified by WVDEP in its most recent Section 305(b) report as "partially meeting" or not meeting designated uses or as "threatened."

While WVDEP assembled all existing and readily available information for purposes of the Section 305(b) portion of the IR, WVDEP did not use certain biological data reported in the IR for the purpose of identifying WQLSs on its 2018-2020-2022 Section 303(d) list. A further discussion is found in Section III (Basis for EPA's Decision to Add Waters to West Virginia's 2018-2020-2022 303(d) list) below.

ii. Section 130.7(b)(5)(ii), Waters for which dilution calculations or predictive models indicate nonattainment of applicable water quality standards.

Where predictive modeling indicates that a waterbody is not achieving water quality criteria even if point source discharges are meeting technology-based effluent limitations in accordance with existing permit limits, the waterbody should be placed on the 303(d) list. WVDEP uses the TMDL development process to intensify monitoring effort and refine identification of the extent of impairment. If a TMDL model predicts impairment for an assessment unit, WVDEP generally develops a TMDL for that assessment unit and then identifies that assessment unit as impaired with a TMDL (Category 4A) in the subsequent IR. When TMDL modelling predicts a pollutant impairment for which a TMDL is not developed, the applicable assessment units are included on the West Virginia's next Section 303(d) list (Category 5).

iii. Section 130.7(b)(5)(iii), Waters for which water quality problems have been reported by local, state, or federal agencies; members of the public; or academic institutions.

WVDEP solicited water quality data and information from the public, including entities outside of WVDEP. WVDEP also encourages volunteer data collection as part of West Virginia Save Our Streams program. Outside data sources for the 2018-2020-2022 IR other than WVDEP are identified in Table 3 of WVDEP's 2018-2020-2022 IR. WVDEP provided an explanation of how it considers external data.

WVDEP encourages comment on its draft lists, and the submission of water quality data, each time the list is public noticed. WVDEP received additional data and information as comments to its Public Notice Draft 2018-2020-2022 Section 303(d) list. WVDEP summarized the comments and any changes that were made to the proposed list based on additional data and information. While WVDEP made some changes based upon public comment, WVDEP did not use certain biological data identified by EPA and public comment for the purpose of identifying WQLSs. A further discussion is found in

Section III.

iv. Section 130.7(b)(5)(iv), Waters identified by WVDEP as impaired or threatened in a nonpoint assessment submitted to EPA under section 319 of the CWA or in any updates of the assessment.

WVDEP properly listed waters where it identified nonpoint sources as causing or expected to cause impairment, consistent with Section 303(d). Section 303(d) lists are to include all WQLSs still needing TMDLs, regardless of whether the source of impairment is a point and/or nonpoint source. EPA's long-standing interpretation is that Section 303(d) applies to waters impacted by point and/or nonpoint sources.

V. Other data and information used to identify waters (besides items i-iv discussed above).

EPA has reviewed WVDEP's description of the data, information, and methodology used by WVDEP in the development of its 2018-2020-2022 Section 303(d) list. This includes supplemental data and information that was submitted in response to EPA's comments. Table 3 of WVDEP's 2018-2020-22 IR lists sources of data utilized during the listing process. As set forth in more detail in Section III below, WVDEP assembled all existing and readily available data. However, WVDEP did not use certain existing and readily available information related to West Virginia's applicable narrative water quality criteria set forth at W. Va. CSR § 47-2-3.2(e) & (i) as applied to aquatic life.

4) A rationale for any decision to not use any existing and readily available data and information (CFR §130.7(b)(6)(iii))

While states are required to evaluate all existing and readily available water quality-related data and information, states may make reasonable decisions whether and how particular data or information are used in determining whether to list particular waters. The decision not to use particular data, however, is distinguished from the requirement in 40 CFR 130.7(b)(5) that states assemble and evaluate all existing and readily available data. As set forth in Section III below, WVDEP did not use certain existing and readily available genus level biological data relevant to water quality for the purpose of identifying WQLSs on its 2018-2020-2022 Section 303(d) list. Further, WVDEP did not provide a technical, science-based rationale for not using that data, as described in Section III below.

WVDEP has also informed EPA that the state will discontinue, with limited exceptions, its use of instream water chemistry data self-reported by NPDES permittees through discharge monitoring reports (DMRs). While it is not clear whether the rationale provided by WVDEP is fully consistent with NPDES permit provisions, EPA is unaware based on the record before it of any waterbody-pollutant combinations that were omitted from West Virginia's Section 303(d) list due to WVDEP's decision to discontinue use of self-reported DMR data. EPA looks forward to working with WVDEP in the next IR cycle to ensure that self-reported DMR data are evaluated and used in appropriate circumstances.

Apart from the two instances mentioned above, WVDEP provided a rationale for not using particular existing and readily available water quality related data and information as a basis for identifying waters as part of the Section 303(d) list. WVDEP evaluated data from internal and external sources to ensure that collection and analytical methods, quality assurance/quality control and method detection levels were consistent with approved procedures. EPA finds WVDEP's screening protocol and criteria described in its 2018-2020-2022 IR to be a technical, science-based rationale in determining

the usage of data for the purposes of 130.7(b)(5) and (b)(6)(iii).

5) Any other reasonable information requested by the Regional Administrator (CFR §130.7(b)(6)(iv))

WVDEP provided additional information requested by EPA. WVDEP did not provide a technical, science-based rationale for not using certain genus level macroinvertebrate data as described in Section III below.

i. Rationale for delisting of waterbodies included on the previous Section 303(d) list

WVDEP has removed certain waterbody-pollutant combinations from the 2018-2020-2022 Section 303(d) list that were included in previous 303(d) lists. As provided in 40 CFR §130.7(b)(6)(iv), EPA requested that WVDEP demonstrate good cause for not including waterbody-pollutant combinations that were on the previous Section 303(d) list for the prior IR cycle. With the exception of the 117 biologically impaired waters EPA has identified in Enclosure 3, WVDEP has demonstrated, to EPA's satisfaction, good cause for not including certain waterbody-pollutant combinations on its list. Per EPA's regulations, good cause includes, but is not limited to: more recent or accurate data; more sophisticated water quality modeling; flaws in the original analysis that led to the water being listed in the categories in section 130.7(b)(5); or changes in conditions (e.g., new control equipment, elimination of discharges) resulting in attainment of water quality standards. There may also be reassessments revealing that a WQLS is still impaired, but that the causes of impairment have changed; these waters therefore remain on the list but are identified as impaired by a different pollutant(s).

In its final 2018-2020-2022 Section 303(d) list, WVDEP delisted waterbodies due to development of TMDLs, new water quality analyses demonstrating compliance with water quality standards, revisions to water quality standards associated with the previous listing, or corrections to listings previously in error.

WVDEP provided EPA with a basis for each previously listed segment removed from the 2018-2020-2022 Section 303(d) list. EPA reviewed WVDEP's rationale and agrees that all but 117 WQLSs were appropriately removed from the Section 303(d) list. EPA does not agree with WVDEP's decision to remove 117 of the WQLSs because biological data indicate impairment, as discussed in Section III.

ii. Rationale for excluding waterbodies from the Section 303(d) list pursuant to 40 CFR §130.7(b)(1) because other control mechanisms are in place that are reasonably expected to return the water to meeting WQS

WVDEP has one water in Category 4B of the IR, Stony River, which is impaired for temperature. WVDEP's decision not to include this water on its 2018-2020-2022 Section 303(d) list due to other required pollution controls is consistent with EPA regulations at 40 CFR §130.7(b)(1). Under 40 CFR §130.7(b)(1), states are not required to list WQLSs still requiring TMDLs (i.e., the Section 303(d) list or waters listed in Category 5) where effluent limitations required by the CWA, more stringent effluent limitations required by state or local authority, or other pollution control requirements required by state, local, or federal authority, are stringent enough to implement applicable water quality standards. Although the regulation does not specify the timeframe in which these various requirements must implement applicable water quality standards to support a state's decision not to list particular waters, EPA expects that required controls will result in attainment in a reasonable time, based on the

nature of the pollutant and actions that need to be taken to achieve attainment.

EPA encourages WVDEP to continue efforts, including monitoring as appropriate, to provide updates on the status of this segment. Monitoring should be scheduled for this water to verify either that water quality standards are attained or water quality standards are expected to be attained in a reasonable time. If WVDEP finds that water quality standards will not be attained through implementation of the requirements listed in 40 CFR §130.7(b)(1) in a reasonable time, it is appropriate for the water to be placed on the Section 303(d) list to ensure that implementation of the required controls, and progress towards compliance with applicable water quality standards, is tracked. If it is determined that the water is, in fact, meeting applicable water quality standards when the next Section 303(d) list is developed, it would be appropriate for the state to remove the water from the Section 303(d) list or Category 4B of the IR at that time.

iii. Identification of the pollutants causing or expected to cause a violation of the applicable water quality standards described in Section 130.7(b)(4).

EPA's regulations at Section 130.7(b)(4) require that the Section 303(d) List "shall identify the pollutants causing or expected to cause violations of the applicable water quality standards." Where the impairing pollutants are known and are the subject of West Virginia numeric water quality criteria, WVDEP identified the pollutants that were causing or expected to cause a violation of the applicable water quality standards. For many WQLSs identified on West Virginia's 2018-2020-2022 Section 303(d) list, the impairing pollutant is frequently unknown, particularly for those WQLSs identified as violating West Virginia's narrative water quality criteria as applied to aquatic life because the impairment is identified by a direct measure of the biological community. Therefore, the Section 303(d) list identifies many WQLSs based upon failure to achieve the narrative water quality criteria as applied to aquatic life without identifying the cause of impairment. The cause of biological impairments is typically determined during TMDL development through a stressor identification process, which is available at WVDEP's webpage, described in the biological assessment methodology of the IR and in TMDL reports.

6) TMDL Priority Ranking (CFR §130.7(b)(4))

EPA reviewed WVDEP's priority ranking of Section 303(d) listed waters for TMDL development and concludes that WVDEP took into account the severity of pollution and the uses to be made of such waters. Beyond these two statutory factors, states retain considerable discretion and may consider other factors when prioritizing TMDLs, including: vulnerability of particular waters; recreational, economic, and aesthetic importance of particular waters; restoration potential; degree of public interest and support; state or national policies and priorities; technical considerations, such as the complexity of the impairment; availability of adequate data and models; and implementation of watershed-based permitting programs or basin planning cycles. *See, e.g.,* 57 Fed. Reg. 33040, 33,044-45 (July 24, 1992).

WVDEP's TMDLs are generally developed according to the Watershed Management Framework cycle. The framework divides the state into 32 major watersheds and operates on a five year, five-step process. The TMDL process begins in the first year of the cycle with pre-TMDL sampling and public meetings in the affected watersheds. The data is compiled and TMDL development begins in year two of the cycle. In the third year, TMDL development continues and the TMDL is drafted. The TMDL is finalized in the fourth year. In the fifth year of the cycle, TMDL implementation

is initiated through the NPDES permitting process and efforts toward limiting nonpoint source loading. Throughout the TMDL development process, there are ample opportunities for public participation and input. For ongoing TMDL projects, the WVDEP's 2018-2020-2022 303(d) list identifies and prioritizes the waters and impairments for which future TMDLs will be developed by specifying the year in the "Projected TMDL Year" column. For other waters and impairments, where the timing of TMDL development is less certain, a high priority has been placed on TMDL development in this IR.

In addition, WVDEP has satisfied the regulatory requirement to specifically identify waters targeted for TMDL development in the next two years.

7) Public Participation

WVDEP released its draft 2018-2020-2022 IR and the Section 303(d) list of impaired waters for public review and comment on April 15, 2022 with a public comment period, open for 45 days, until June 1, 2022. In addition, announcements were sent via e-mail to WVDEP's stakeholder listserv. All materials, including the IR narrative and supporting documentation and information, were made available on WVDEP's webpage[5].

WVDEP received comments from 117 organizations/individuals, including EPA's comments submitted on June 1, 2022. WVDEP addressed the comments received in a comment response document included in the final IR submission to EPA. In addition, WVDEP made certain changes to the IR in response to public comment. EPA has determined that WVDEP adequately addressed all issues raised in the public comments received except for issues raised in comments regarding use of genus level macroinvertebrate data, which are further described in Section III, below.

III. Basis for EPA's Identification of Waters to be added to West Virginia's 2018-2020-2022 303(d) list

EPA's review of West Virginia's 2018-2020-2022 list found that WVDEP did not use all existing and readily available data to develop its Section 303(d) list. Specifically, WVDEP selectively used genus-level data in its assessment methodology by only employing these data when family-level data indicated an impairment. This selective use of available genus-level data is not scientifically sound (see Analysis of WVDEP's Use of Biological Data for Purposes of the 2018-2020-2022 303(d) List, below). In sum, WVDEP has not provided a technical, science-based rationale for excluding certain existing and readily available genus-level biological data from its assessment decisions.

Unlike EPA's approval of the state's 2016 section 303(d) list, EPA cannot conclude that the state's exclusion of certain genus-level data from the current list is an acceptable exercise of technical discretion. In EPA's approval letter for WVDEP's 2016 303(d) list, it noted an "agreement between GLIMPSS and WVSCI at identifying biological impairments at the most disturbed sites" and that the two models differed "predominately with respect to identifying impairments near the attainment threshold." However, new analysis and information since that decision shows significant discrepancies between the impairment determinations suggested by those two assessment approaches. Accordingly, EPA cannot support the State's decision to not fully utilize the genus-level dataset as technically reasonable and scientifically sound for the current list submission.

As a result, EPA is identifying 346 additional WQLSs for inclusion on West Virginia's 2018-2020-2022 Section 303(d) list, 117 of which were delisted by WVDEP in the 2018-2020-2022 IR.

EPA's identification of these WQLSs is based on data assembled by WVDEP. EPA will open a public comment period on these additions to West Virginia's 303(d) list and will, if appropriate, revise its identification of waters following consideration of any comments received. The basis for EPA's partial disapproval and for identifying additional waters and pollutants is discussed below.

1) Background

West Virginia's narrative water quality criteria (W. Va. CSR § 47-2-3.2(e) & (i)) provide:

3.2. No sewage, industrial wastes or other wastes present in any of the waters of the state shall cause therein or materially contribute to any of the following conditions thereof:

* * *

3.2.e. Materials in concentrations which are harmful, hazardous or toxic to man, animal or aquatic life;

* * *

[and] 3.2.i. Any other condition, including radiological exposure, which adversely alters the integrity of the waters of the State including wetlands; no significant adverse impact to the chemical, physical, hydrologic, or biological components of aquatic ecosystems shall be allowed.

Consistent with 40 CFR 130.7(b)(5), EPA commented on the 2010, 2012, 2014, and 2016 303(d) lists that WVDEP should assemble and evaluate existing and readily available genus-level macroinvertebrate data and provide a justification for not using any existing and readily available data. Like many states, WVDEP uses a state-specific set of metrics, called an index of biotic integrity (IBI), calculated from stream data collected within the state to assess the biological condition of its waters. WVDEP historically has used the West Virginia Stream Condition Index (WVSCI), which assesses macroinvertebrate data at the family level. WVSCI was developed in 2000 using an initial state-wide reference dataset of 67 samples, and at that time, WVSCI represented the best available means of assessing the biological condition of West Virginia's waters.

A number of years later, scientists from WVDEP and EPA developed a genus level IBI for West Virginia's waters, the Genus-Level Index of Most Probably Stream Status (GLIMPSS), which was published in 2011 and peer-reviewed. GLIMPSS allows WVDEP to analyze genus-level data that is reported to WVDEP and assembled from NPDES permittees, 404 permittees, NRCS, and others. GLIMPSS improves upon WVSCI by representing a higher resolution and more refined method for assessing the biological condition of West Virginia's waters. GLIMPSS allows for analysis of genus level data; there can be as many as 24 genera in one family in West Virginia, with each genus having unique stress tolerances, habits, and functional feeding groups. In addition, unlike WVSCI (which applies statewide during the index period of April – October), GLIMPSS is calibrated regionally and seasonally. Accordingly, when family-level data are used (by calculating WVSCI score) rather than genus-level (by calculating a GLIMPSS score), WVDEP does not account for known information about differences in macroinvertebrate ecology within a family or for seasonal and ecoregional variations in macroinvertebrate populations. WVDEP also excludes data collected from November to March that can be evaluated using GLIMPSS but not using WVSCI.

Notwithstanding EPA's comments, WVDEP continued to use family-level data and the family-level WVSCI to assess attainment of the aquatic life use. EPA partially disapproved WV's 2014 303(d) list for failure to evaluate genus-level data and EPA added WQLSs to the list based on GLIMPSS scores. In 2016, WVDEP used only the family-level data using WVSCI and sought to provide a rationale for not using the genus-level data. EPA approved WVDEP's 2016 303(d) list, noting, among other things, an "agreement between GLIMPSS and WVSCI at identifying biological impairments at the most disturbed sites" and that the two models differed "predominately with respect to identifying impairments near the attainment threshold." WVDEP has not published a subsequent 303(d) list until this combined 2018-2020-2022 list. New analysis and information since EPA's decision on WVDEP's 2016 303(d) list shows significant discrepancies between the impairment determinations suggested by those two assessment approaches. EPA describes its analysis in Sections 2 and 3 below.

2) Analysis of WVDEP's Use of Biological Data for Purposes of the 2018-2020-2022 303(d) List

For many years, WVDEP has calculated GLIMPSS for all samples for stressor identification to support TMDL development and for statewide probabilistic condition reporting. For the combined 2018-2020-2022 303(d) list submittal, WVDEP created a new assessment methodology that made very limited use of genus-level data and GLIMPSS for a small subset of waters. Appendix 1 provides a flow chart of WVDEP's previous methodology, WV's new assessment methodology, and the method EPA used to assess WVDEP's data.

In this new methodology, WVDEP lowered the single sample impairment threshold of WVSCI from 72, representing roughly the 5th percentile of reference sites, to 50, which lies outside the WVSCI reference sample distribution (*i.e.,* it is < 0% of reference). WVDEP has not provided a rationale for changing the single sample impairment threshold, noting the thresholds of 50 (and 61) were arbitrarily derived in WVDEP's 303(d) list Transmittal Letter. This change in single sample impairment threshold is scientifically unsupported because it is not based on the statistical distribution of the reference scores, nor any statistical characteristics of WVDEP data. As such, it directly contradicts EPA guidance[6,7,8].

According to WVDEP's current methodology, a second WVSCI sample is required to make an assessment decision in two scenarios:

(1) Sites where the first sample scored between 50-61 using WVSCI and a stressor was not identified.
(2) Sites scoring between 61-71 using WVSCI.

Then, if the second sample scores between 62-71 using WVSCI, WVDEP would use GLIMPSS to make an assessment decision. However, if the second sample scored below 62 or above 71, only WVSCI would be used to make an assessment decision, not GLIMPSS. Samples with an initial single WVSCI score greater than 71 were not considered impaired and genus level data were not assessed in these samples.

[6] Barbour, M.T., J. Gerritsen, B.D. Snyder, and J.B. Stribling. 1999. Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates and Fish, Second Edition. EPA 841-B-99-002. U.S. Environmental Protection Agency; Office of Water; Washington, D.C.
[7] USEPA. 2013 Biological Assessment Program Review: Assessing Level of Technical Rigor to Support Water Quality Management. EPA 820-R-13-001
[8] USEPA. 1990. Biological Criteria: National Program Guidance for Surface Waters. EPA-440/5-90-004

Because WVDEP used genus-level data for purposes of the 2018-2020-2022 Section 303(d) list only in very limited circumstances, WVDEP did not use substantial amounts of data available where the outcome of the GLIMPSS and WVSCI analyses differ or when samples were collected during a time of year when GLIMPSS can be used but WVSCI is not applicable (November to March). WVDEP has not provided a technical, science-based rationale for not using substantial amounts of genus-level data.

EPA's review of the data results in the following changes:

- Failure to use genus level data would result in 346 assessment units identified as attaining by WVDEP's assessment methodology but as impaired using genus-level data and GLIMPSS (described in section 3, below, and Enclosure 2)
- Failure to use genus level data would result in 27 assessment units being identified as impaired by WVDEP's assessment methodology but that EPA would consider to be meeting applicable water quality standards using genus-level data and GLIMPSS (described section III and Enclosure 2)

Additionally, WVDEP has essentially continued to implement the concept of a "gray zone", which WVDEP considers a zone of uncertainty, for sites with WVSCI samples that score between 50 and 71 by requiring a second sample. While there are circumstances under which statistical analysis could support use of a "gray zone," WVDEP has provided no supporting documentation or technical, science-based rationale to demonstrate, nor has EPA been able to identify, any statistical necessity of not using data that falls within the specific gray zone (WVSCI 50-71) it has selected. WVDEP has also not demonstrated that a second sample, at either genus or family level, would improve the accuracy of assessment decisions. If WVDEP prefers to use a zone of uncertainty or "gray zone", EPA recommends calculating gray zones that are statistically valid and applied both when determining impairment (below a threshold) and determining attainment (above a threshold). When deciding if an assessment site scores below or above a chosen IBI threshold value, the Interval/Equivalence (I/E) test (Kilgour et. al. 1998) is a statistically valid technique for developing a zone of uncertainty. In 2015, EPA presented this method to WVDEP and offered assistance in statistical calculations and interpretation. EPA remains willing to provide technical support to WVDEP with I/E calculations.

3) Analysis of GLIMPSS Reference Sites

In the 2018-2020-2022 IR, WVDEP continued to express concerns, first expressed in its 2016 submission, over whether the number of GLIMPSS reference sites is sufficient to support attainment decisions. EPA finds these concerns invalid and unsubstantiated. Since the 2016 303(d) list, EPA has reviewed information relevant to the GLIMPSS reference sites. In addition, since the 2016 303(d) list, WVDEP has collected more data, including identification of additional reference sites. Based on EPA's review and the additional information collected by WVDEP, EPA is confident that the number of reference sites used to establish GLIMPSS thresholds produces accurate, reproducible results.

WVDEP expressed concerns over using GLIMPSS due to the number of reference sites used to calculate thresholds for each ecoregion-season compared to the number of references sites used to calculate the WVSCI state-wide threshold. Specifically, WVDEP expressed lack of confidence in GLIMPSS for the following ecoregions and seasons due to the number of reference sites:

- Plateau Summer (PL Su)
- Mountain Summer Streams greater than 60 square miles (MT Su>60)

- Plateau Spring (PL Sp)

WVDEP did not express concerns with the remaining ecoregion-seasons:

- Mountain Spring (MT Sp)
- Mountain Summer (MT Su)
- Mountain Winter (MT Win)
- Plateau Winter (PL Win)

Considering the number of reference sites alone without additional analysis does not provide an appropriate measure of "confidence" in a biotic index such as GLIMPSS.

The number and quality of reference sites influences underlying statistical measures which evaluate the accuracy and precision of an index to assess biological condition, and it is those statistical measures that should be considered in determining "confidence" in an index. These include (1) reference site standard deviation and coefficient of variation, (2) revisit data confidence intervals and coefficient of variation, and (3) overall GLIMPSS discrimination efficiency (DE) and classification efficiency (CE). It is these specific performance measures, described in more detail below, that should be analyzed. Additionally, since EPA's approval of the 2016 303(d) list, WVDEP has collected more data which improves previous GLIMPSS index performance. Based on further evaluation of this information, EPA concludes that the state's genus level biological monitoring data are readily-available data and information for which WVDEP has not provided an acceptable technical, science-based rationale for not using to make determinations for the purposes of the combined 2018-2020-2022 303(d) list.

i. Reference Site Variation

Indices of biotic integrity, such as GLIMPSS, are developed based on the premise that samples from streams with minimal anthropogenic disturbance (i.e., reference or least-disturbed sites) define biologic expectation, and the degree of deviation from those collective reference sites determines if a stream segment is impaired. Therefore, accurately characterizing expected (reference) biological condition is critically important to defining impairment. To characterize reference condition, samples from a subset of reference sites are used to define the entire population of all reference sites. As is true for any inference that depends on samples to represent a population, the more variation (range of data) you have in your population, the more samples you need to capture that variation and have confidence in the characterization of the population based on a limited subset of samples. So, while the overall number of samples is important, this alone does not provide sufficient information about the ability of reference biological samples to accurately characterize reference population condition; the underlying data variation must be evaluated as well.

Data variation in biological indices is mostly commonly evaluated using standard deviation (SD) and coefficient of variation (CV) of reference site sample scores. SD measures how far the average value lies from the mean. CV measures the ratio of standard deviation to the mean. With low sample variation, as evaluated by those performance measures, there is a high degree of confidence that reference condition is accurately characterized based on the available samples and underlying population variability.

Table 2: Reference site performance measures for ecoregion-seasons in GLIMPSS. WVDEP expressed low confidence in the rows shaded in grey in the 2016 303(d) list.

Ecoregion-Season	# of Reference Sites	Mean	Standard Deviation	Coefficient of Variation (CV%)
Mountain Spring	128	71.2	10.9	15.3
Mountain Summer	181	75.8	11.4	15.1
Mountain Winter	35	77.2	8.0	10.3
Large Mountain Summer	53	72.2	10.6	14.6
Plateau Spring	38	76.2	12.8	16.9
Plateau Summer	44	80.0	11.4	14.2
Plateau Winter	26	81.1	8.1	9.9

As Table 1 demonstrates, despite having over three times the number and percent of reference sites, the Mountain Spring and Mountain Summer have almost the same SD and CV as the ecoregions in grey that WVDEP said during the 2016 303(d) list submittal had "reference numbers too low to provide confidence in the use of these IBIs". In sum, EPA finds the variability of reference site scores is comparable and low enough across all GLIMPSS ecoregion-seasons to have high confidence in GLIMPSS reference site population characterization.

ii. Reproducibility (revisit data confidence intervals and coefficient of variation)

Precision is the ability to repeat an environmental measurement or IBI score. Documenting and achieving high precision is necessary to have high confidence in environmental data, including GLIMPSS. The goal of an assessment methodology is to measure response to anthropogenic disturbance rather than natural or sampling variability. In biological sampling, "measurement error is introduced from both natural (e.g., patchiness of habitat and associated macroinvertebrates) and methodological (both field and lab methods) sources of variability. This measurement error is most commonly estimated using repeat or duplicate samples which are collected on the same day, or within one index period" (Pond et al., 2011). Poor index precision could result from inadequate characterization of reference community (and therefore inadequate characterization of natural differences in population expectations). To evaluate this, GLIMPSS scores were compared from the same reference sites sampled in different years (called revisit sites).

To assess revisit precision, an ANOVA test of statistical differences was conducted to determine the within-site sample mean square error (MSE or variance). The square root of the MSE provided sample standard deviation. Then, the distribution of standard deviations from all the sites within an ecoregion-season was used to calculate the 90 percent confidence interval. This 90 percent confidence interval represents the range of true standard deviation from the mean that may be in the reference population based on the duplicate or revisit samples collected. These values indicate no systematic difference between season-ecoregions (the lower value for Plateau Summer is due to the overall lower mean of these duplicates). The coefficient of variation was also calculated for revisit samples (Table 3), where lower values indicate better precision.

Table 3: GLIMPSS precision estimates and statistics from reference site re-visits (Pond et al., 2011). The rows shaded in grey are ecoregions WVDEP expressed low confidence in on the 2016 303(d) list. Some ecoregions did not have available re-visit data to evaluate.

Ecoregion-Season	# of Revisits	# Total Reference Sites	MSE	SD	Population Mean	One-tailed 90% CI	CV (%)
All combined	30	NA	42.6	6.5	80.5	8.4	8.1
Mountain Spring	8	128	27.8	5.3	76.6	6.8	6.9
Mountain Summer	12	181	43.9	6.6	82.9	8.5	8.0
Plateau Spring	3	38	22.0	4.7	78.8	6.0	6.0
Plateau Summer	7	44	70.1	8.4	81.6	10.7	10.3
WVSCI	39	NA	33.2	5.75	86.8	7.4	6.6

The results of the confidence interval and coefficient of variation for revisit data indicate that despite having fewer number of reference sites, the precision is comparable between the ecoregion-seasons evaluated (and to WVSCI) and is sufficient for 303(d) assessment.

iii. GLIMPSS Discrimination (DE) and Classification Efficiencies (CE)

DE evaluates if GLIMPSS accurately differentiates between stressed site and reference conditions. If the discrimination efficiency score is high, that indicates that GLIMPSS accurately determines stream condition. One reason that DE may score low is if reference condition is inadequately characterized (for example, due to high variability in reference population and/or low number of samples sites). However, all GLIMPSS ecoregion-seasons had high discrimination efficiencies, indicating that all ecoregion-season models, including Pl Sp, Pl Su, and MT Su>60, are similarly robust and reliable for 303(d) assessment. Discrimination Efficiencies (DE) are shown in Figures 1 and 2.

CE evaluates how accurately GLIMPSS determines attainment and impairment, where a high CE indicates high confidence in characterizing streams. Similar to DE, one reason CE might score low is if reference condition was inadequately characterized. CE for GLIMPSS was calculated with a separate validation dataset (a random set of reference and stressed sites) that were not used to develop GLIMPSS. CE is the sum of the number of validation reference sites (e.g. sites that score above the 5th percentile of reference distribution) and the number of validation stressed sites (e.g. sites that score below the 5th percentile of reference distribution) divided by the total number of validation sites. The CE for the GLIMPSS indicates it performs with a very high level of confidence (CE 85-95 percent) and reference population was adequately characterized in all ecoregion-seasons.

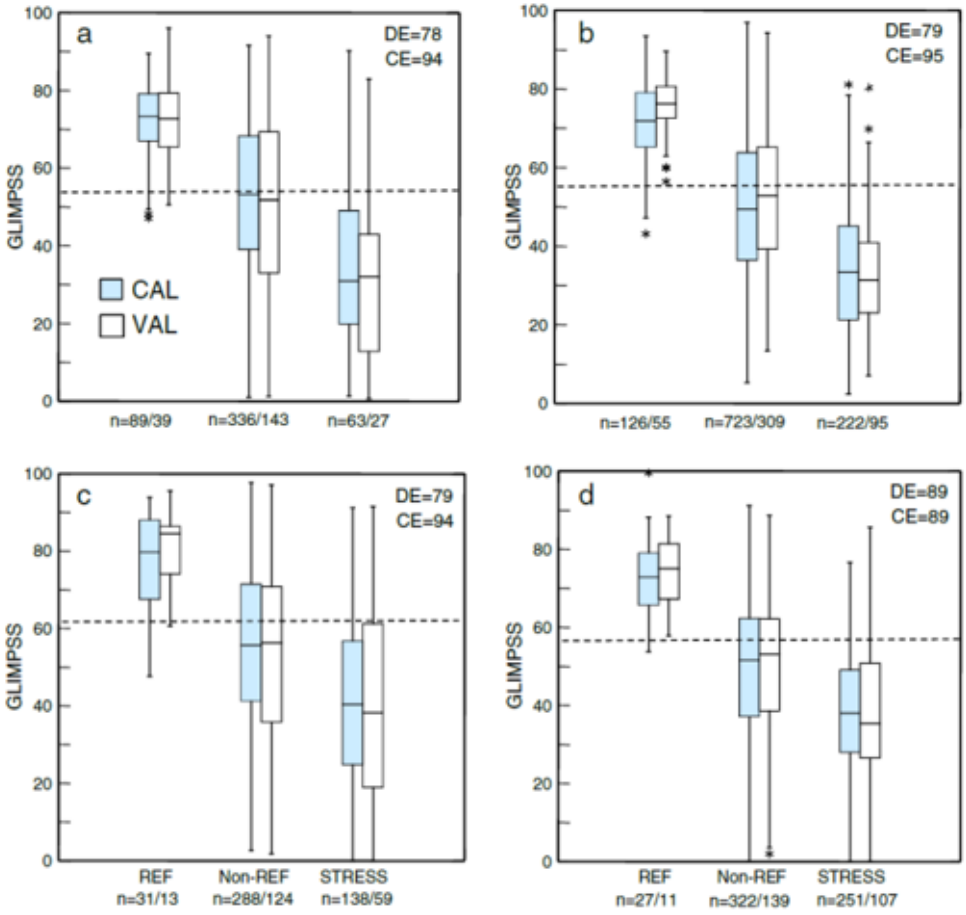


Figure 1. Boxplots of calibration (CAL) and validation (VAL) GLIMPSS (Chironomids identified to Genus (CG, 2011)) scores between REF, non-REF, and STRESS categories in MT Sp (a) MT Su (b), PL Sp (c) and PL Su (d).

Number of sites in each stratum shown as n=CAL/VAL. Percent discrimination efficient (DE) for CAL and precent classification efficiency (CE) for VAL also provided. Dashed line represents approximate 5th percentile of REF, indicating the impairment thresholds

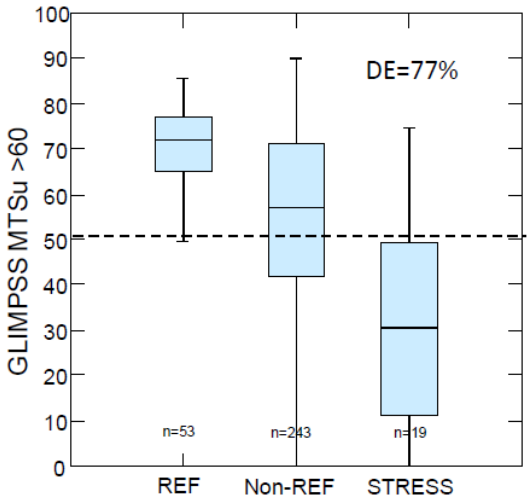


Figure 2. Boxplots of calibration (CAL) GLIMPSS (CG, 2011) scores between REF, non-REF, and STRESS categories in MT Su >60.

iv. WVDEP additional data

While GLIMPSS has sufficient accuracy and confidence for all ecoregion-seasons without additional data, it is a scientific best practice to continually incorporate new information into existing

indices (USEPA, 2013). Since publication of the last 303(d) list in 2016, WVDEP has incorporated additional reference site samples and updated taxonomic information into GLIMPSS. Discrimination efficiencies (see Appendix 2) improved slightly with more reference data but highlight that increasing the number of reference sites does not drastically affect index performance when the original index has robust performance.

Table 4: Number of Reference Sites used for each ecoregion

Ecoregion-season	# Reference Sites 2016	# Reference Sites 2020
MT Spring	128	246
MT Summer	181	305
MT Summer >60	53	65
MT Winter	29	51
PL Spring	44	63
PL Summer	38	44
PL Winter	18	25

4) EPA's Process for Identifying Additional Impaired Waters

As required by 40 CFR 130.7(d)(2), EPA has identified additional impaired waters using data provided by WVDEP but not used by WVDEP. EPA's identification process is described in Enclosure 2 to EPA's partial disapproval correspondence. The waters that EPA has identified for inclusion on West Virginia's Section 303(d) list are specified in Enclosure 3 to EPA's partial disapproval correspondence.

Within 30 days of this partial disapproval, EPA will issue a notice in the Federal Register that explains EPA's action and the additional WQLSs the EPA has identified as impaired. There will be a 30-day public comment period. Upon completion of the public comment period, EPA will, if appropriate, revise the identification of waters to be added to West Virginia's list following consideration of any comments received.

EPA began the identification process by retrieving data from (1) WVDEP's Microsoft Access database of biological data, including metric scoring and final index results for WVSCI and GLIMPSS by monitoring location, (2) a WVDEP excel spreadsheet that compiled the biological sample data and recorded the WVDEP attainment decision rationale for each assessment unit, and (3) WVDEP's final ATTAINS submission. This information, already generated by WVDEP, was provided upon EPA request and with the submission of WVDEP's final 2018-2020-2022 IR. Because the basis of EPA's partial disapproval of the 2018-2020-2022 Section 303(d) list is WVDEP's failure to provide a technical, science-based rationale for not using existing and readily available information, EPA limited its evaluation to data that was readily available to and assembled by WVDEP.

When determining whether to identify additional waters currently not on West Virginia's Section 303(d) list, EPA used West Virginia's narrative water quality criteria (W. Va. CSR § 47-2-3.2(e) & (i)) as applied to aquatic life and applied the GLIMPSS bioassessment listing methodology. A more detailed explanation of how EPA identified waters to be added to West Virginia's Section 303(d) list is provided in Enclosure 2 to EPA's partial disapproval correspondence. In Enclosure 4 to EPA's partial disproval correspondence, waters are identified that WVDEP assessed as impaired using the methodology described in Section 5.4 of the IR, but that EPA would consider to be meeting applicable water quality standards based on the assessment methodology that EPA used, further described in Enclosure 2.

5) EPA Is Identifying Additional Waters

As discussed above, when EPA partially disapproves a state's list, EPA must identify waters in the state for which effluent limitations established pursuant to Sections 301(b)(1)(A) and 301(b)(1)(B) are not sufficiently stringent to meet water quality standards. Based on the analyses discussed above, EPA is identifying WQLSs that it believes should be included on West Virginia's Section 303(d) list. Using the process outlined in Enclosure 2, EPA is identifying 346 WQLSs to be added to West Virginia's Section 303(d) list, 117 of which were delisted by the State. As stated above, the list of WQLSs EPA is adding to West Virginia's 2018-2020-2022 Section 303(d) list in included in Enclosure 3 of EPA's partial disapproval correspondence.

As previously noted, EPA reviews whether a state has included with its Section 303(d) list a priority ranking that takes into account the severity of the pollution and the uses to be made of listed waters, but EPA neither approves nor disapproves the substance of the state's priority ranking submittal. EPA is under no obligation per 40 CFR §130.7(b)(4) or the CWA to include a priority ranking for TMDL development to waters identified for addition to a state's Section 303(d) List in connection with a partial disapproval decision. EPA expects WVDEP to incorporate the WQLSs, if any, added by EPA into its next priority ranking.

Citations

Barbour, M.T., J. Gerritsen, B.D. Snyder, and J.B. Stribling. 1999. Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates and Fish, Second Edition. EPA 841-B-99-002. U.S. Environmental Protection Agency; Office of Water; Washington, D.C.

Gerritsen, J. J. Burton and M. T. Barbour. 2000. A stream condition index for West Virginia wadeable streams. Prepared for USEPA Office of Water and USEPA Region 3. EPA-822-B00-001. U.S. EPA, Office of Water, Washington, D.C.

Pond, G.J., J.E. Bailey, B. Lowman, and M. J. Whitman. 2011. The West Virginia GLIMPSS (genus-level index of most probable stream status): a benthic macroinvertebrate index of biotic integrity for West Virginia's wadeable streams. West Virginia Department of Environmental Protection, Division of Water and Waste Management, Watershed Assessment Branch, Charleston, WV. DOI: 10.13140/RG.2.1.4536.3682

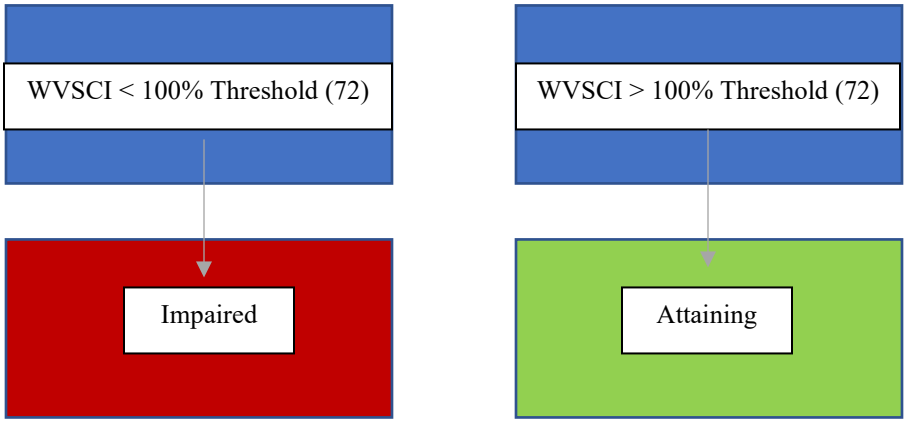
Pond GJ, Bailey JE, Lowman BM, Whitman MJ. Calibration and validation of a regionally and seasonally stratified macroinvertebrate index for West Virginia wadeable streams. Environ Monit Assess. 2013 Feb;185(2):1515-40. doi: 10.1007/s10661-012-2648-3. Epub 2012 May 13. PMID: 22580746.

USEPA. 1990. Biological Criteria: National Program Guidance for Surface Waters. EPA-440/5-90-004

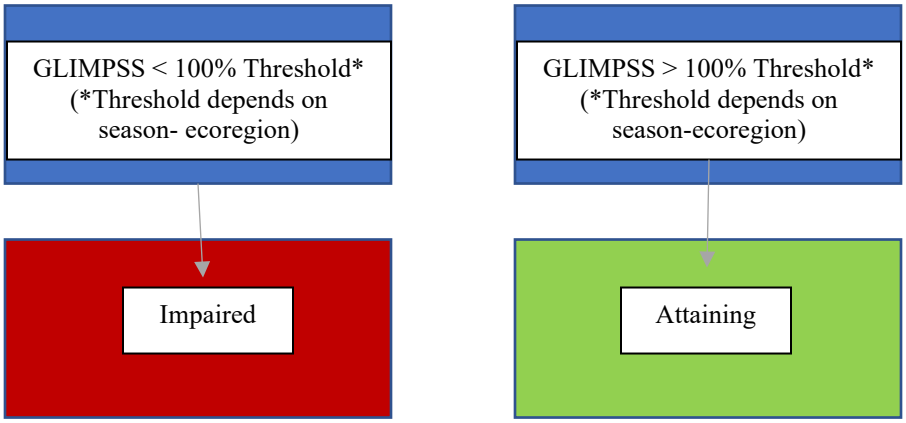
USEPA. 2013 Biological Assessment Program Review: Assessing Level of Technical Rigor to Support Water Quality Management. EPA 820-R-13-001

Appendix 1: Bioassessment Methodology Flow Charts

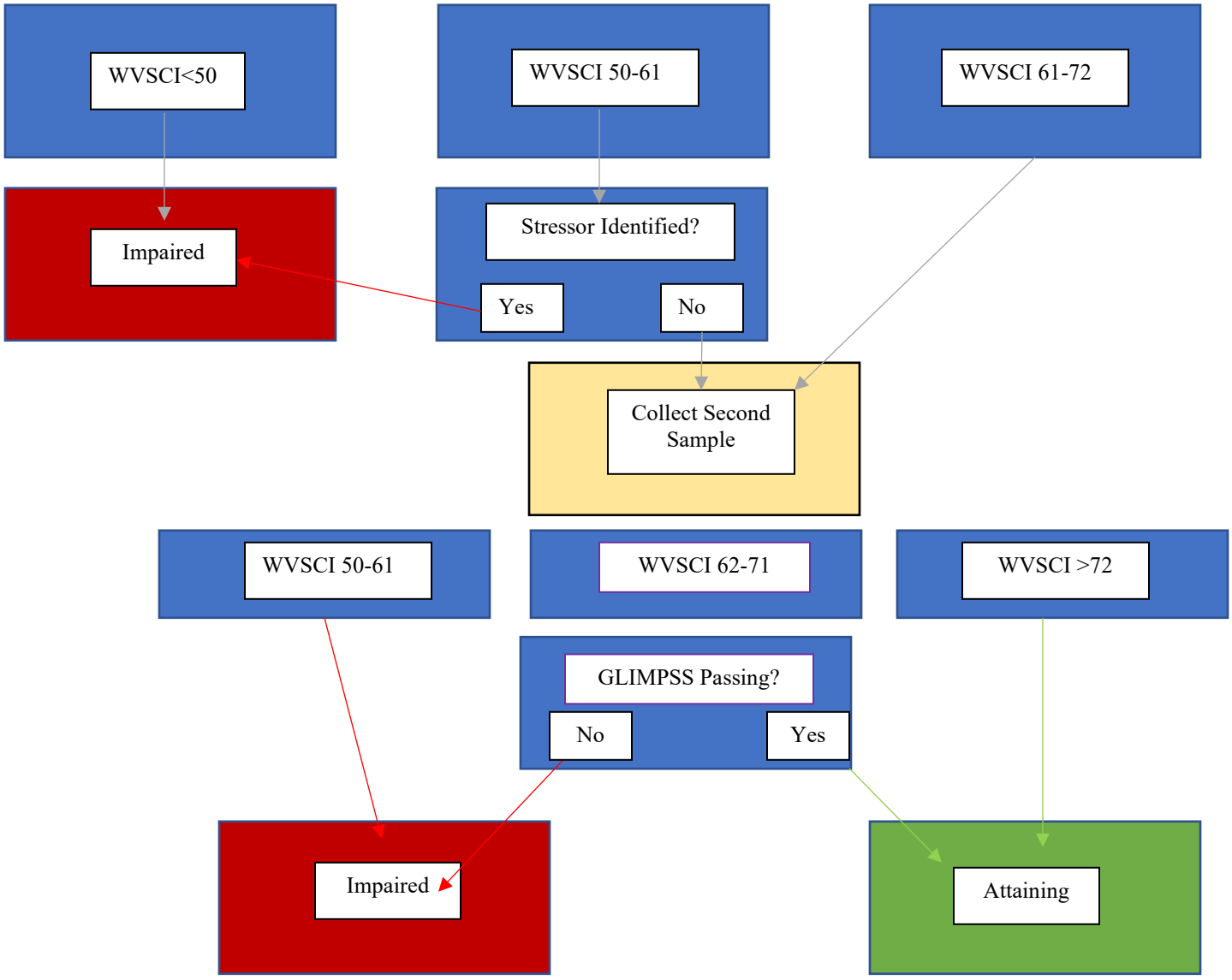
1. 2016 WVDEP Bioassessment



2. EPA Recommended Bioassessment



3. 2018-2020-2022 WVDEP Bioassessment



Appendix 2: Comparison of GLIMPSS (CF) Discrimination Efficiencies

Ecoregion-season	2011 DE[1]	2020 DE[1]
MT Spring	91.27	93.45
MT Summer	97.83	97.99
MT Summer >60	91.18	97.06
MT Winter	100	100
PL Spring	84.80	94.44
PL Summer	88.31	98.03
PL Winter	92.59	88.89
1. DE's for GLIMPSS (CF-chironomids are identified to family level)		