District of Columbia Surface Water Assessment and Listing Methodology

Prepared for District Department of Energy and the Environment

August 2023

DEPARTMENT OF ENERGY & ENVIRONMENT
GOVERNMENT OF THE DISTRICT OF COLUMBIA

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BACKGROUND AND PURPOSE

The Clean Water Act (CWA) requires states - including the District of Columbia (the District) - to report on the quality of the Nation's waters. CWA Section 305(b) requires states to prepare a comprehensive biennial water quality assessment report and CWA Section 303(d) requires a list of waters for which effluent limitations are not sufficient to meet water quality standards (WQS). As part of WQS, waters are assigned designated uses, which define the types of uses that the waters are expected to support (i.e., primary contact recreation, secondary contact recreation etc.). Criteria and indicators for determining if these uses are attained are established for each designated use by waterbody or waterbody segment (e.g., bacteria concentrations to determine if a water is safe for swimming; chemical pollutant concentrations to determine if water can support aquatic life, etc.). Waters undergo a regular assessment process every other year to determine if criteria are met and individual designated uses are attained. Waters that meet the criteria for a given use "support" that designated use. Waters that do not meet the criteria for a given use do not support that designated use, and they are placed on the 303(d) list of impaired waters. Results are then reported through the Integrated Report (IR).

This document summarizes the District's methods for assessing attainment of designated uses, categorizing waterbodies based on attainment of uses, listing and delisting waterbodies on the 303(d) list, and reporting results through the IR. The District implements these methods to make impairment determinations and listing/delisting decisions, to determine categorizations, and to prepare the IR.

INTRODUCTION

Beginning in 2004, EPA recommended that states prepare a single water quality monitoring and assessment report (the IR) every even-numbered year that combines the Section 305(b) report and the Section 303(d) list of impaired waters (U.S. EPA, 2002). The District began to produce Section 305(b) reports in 1992 and Integrated Reports in 2004. The assessment of waterbody segments in the District is undertaken with a combination of physical/chemical water quality data, physical habitat data, benthic macroinvertebrate assessment data, fish tissue data, and observations related to narrative criteria[1].

EPA provides comprehensive information and guidance on WQS, water quality compliance, and water quality assessment and reporting. According to EPA,

> ***Water quality assessment*** *begins with water quality standards. After setting standards, states assess their waters to determine the degree to which these standards are being met. To do so, states may take biological, chemical, and physical measures of their waters; sample fish tissue and sediments; and evaluate land use data, predictive models, and surveys (U.S. EPA, 2021a).*

[1] Note that this assessment methodology establishes an approach for assessment that includes narrative criteria. Prior to the implementation of this assessment methodology, the District did not explicitly integrate narrative criteria into assessment.

In general terms,

> **Assessment** of an individual waterbody segment means analyzing physical/chemical water quality data, physical habitat data, benthic macroinvertebrate data, fish tissue data, observations related to narrative criteria, and other information to determine designated use support.
>
> **Designated use** is the use (or uses) specified for a waterbody whether it is attained or not.
>
> **Impaired waters** are those waterbodies that do not meet WQS.
>
> **Categorization** is used to organize and report on the assessment of waterbodies in the IR according to use attainment.
>
> A **303(d) list** is a compilation of impaired waterbodies.
>
> **Listing** is the process of placing an impaired waterbody on the 303(d) list.
>
> **Delisting** is the process of removing an impaired waterbody from the 303(d) list where the assessment methods and decision rules indicate that the condition causing the impairment is no longer present or not present.

EPA recognizes that states may use different methods to determine whether a waterbody meets WQS as long as they use "all existing and readily available information" in developing their 303(d) lists (40 C.F.R. §130.7(b) (5)). Accordingly, EPA's regulations require states to submit a summary description of the methodology used to develop the list and to make a copy of the entire methodology available for review. In general, an assessment methodology constitutes the "decision rules" that will be used when assessing water quality to determine the impairment status and categorization for a particular waterbody (U.S. EPA, 2003).

Regarding content (U.S. EPA, 2005), EPA suggests that:

> *The assessment methodology should be consistent with the state's WQSs and include a description of the following as part of their section 303(d) list submissions:*
>
> - *What data and information were used to make attainment determinations (e.g., results from site-specific and probabilistic monitoring and other predictive tools).*
> - *How the data and information were used to make attainment determinations and place surface water segments in the five reporting categories.*
> - *Rationales for any decision to not use any existing and readily available data and information.*
> - *Changes in the assessment methodology since the last reporting cycle.*

On balance, EPA guidance provides the District and other states with considerable latitude in designing and implementing methods to assess, categorize, and list and delist waterbodies.

DATA

The District considers all existing and readily available data to assess attainment of designated uses.

In general, the main sources of data used for assessment purposes are:

- District ambient water quality monitoring data
- Ambient monitoring data from other agencies (EPA, USGS, Corps of Engineers, DC Water, etc.)
- Monitoring data from other sources (universities, non-governmental organizations, citizen scientists, etc.)
- District phytoplankton, zooplankton, and benthic macroinvertebrate data
- District fish tissue data
- District physical habitat data
- District special monitoring studies
- Compliance monitoring
- Observations from District staff related to narrative criteria (see footnote #1 regarding the use of narrative criteria)
- TMDL documents for DC waterbodies including the Chesapeake Bay Total Daily Maximum Load for Nitrogen, Phosphorus and Sediment, 2010.

To maintain data quality, the District ensures that the data utilized for assessment is unbiased and based on scientifically sound data collection and analytical methods. The District's Water Quality Monitoring Regulations (District of Columbia Municipal Regulations [DCMR] Title 21, Chapter 19) were developed to ensure accurate, consistent, and reproducible water quality monitoring data for decision making purposes. These regulations include Quality Assurance Project Plan (QAPP) requirements and specific quality assurance procedures. Any data – including data collected by the District or data collected by others – that do not satisfy quality requirements are not utilized for assessment purposes.

The specific data utilized for assessment might vary from one reporting cycle to the next because of the implementation of special studies, the implementation of projects that include relevant data collection, or other reasons. The data used for assessment is documented in the individual IRs.

ASSESSMENT METHODOLOGY

During the assessment process, data are used to determine if a waterbody supports each of its designated uses. In general, data are compared against numeric water quality criteria, narrative criteria, and other benthic macroinvertebrate, fish tissue, and physical habitat metrics to determine if a given use is supported. If a waterbody meets criteria for a given use, that use is supported in that waterbody. If some or all criteria are not met, the waterbody does not support that designated use and it is considered impaired for that designated use.

Water Quality Standards

As described in the District's WQS (DCMR Title 21, Chapter 11), the categories of designated uses for the surface waters of the District of Columbia are:

- Class A – Primary contact recreation (swimmable)
- Class B – Secondary contact recreation and aesthetic enjoyment (wadeable)
- Class C – Protection and propagation of fish, shellfish, and wildlife (aquatic life)
- Class D – Protection of human health related to consumption of fish and shellfish (fish consumption)

- Class E – Navigation (ability to travel freely up and down the river using assorted watercraft and absent of man-made objects that impede free movement)

Assessment Criteria

The assessment criteria for each use class are summarized as follows:

- Class A: District WQS include narrative criteria and numeric criteria for E. coli, pH, and turbidity that apply to Class A waters for the protection of primary contact recreation.
- Class B: District WQS include narrative criteria and numeric criteria for pH and turbidity that apply to Class B waters for the protection of secondary contact recreation and aesthetic enjoyment.
- Class C: District WQS include narrative criteria, numeric criteria for dissolved oxygen, temperature, pH, turbidity, secchi depth, total dissolved gases, hydrogen sulfide, oil & grease, Chlorophyll-*a*, inorganic compounds (mostly metals but including ammonia), and organic constituents; physical habitat assessment metrics; and benthic macroinvertebrate metrics that apply to Class C waters for the protection of aquatic life.
- Class D: District WQS include narrative criteria and numeric criteria for metals and organic constituents that apply to Class D waters for the protection of human health. The District also uses EPA fish tissue screening values (U.S. EPA 2000) to identify contaminants in fish tissue that may pose risks to human health. Operationally, for the specific waterbodies or segments from which fish tissue is collected and found to be contaminated, the presence of a fish consumption advisory is considered in assessment (U.S. EPA, 2005).
- Class E: District WQS include narrative criteria that apply to Class E waters for the protection of navigation.

Assessment and Reporting Period

The District uses data from the most recent five-year period for assessment (the assessment period). Reporting (and 303(d) listing and delisting) is completed every other year in a biennial IR.

Assessment Units

Surface waters in the District are divided into waterbody segments (sometimes referred to as waterbodies or segments) that are used as assessment units (Table 1). As shown in the "Type" column, waterbody segments are distinguished as tidal or non-tidal. Each waterbody segment is assessed independently. A waterbody segment that does not support a designated use is considered impaired for that use.

Table 1. *Waterbody Segments Used as Assessment Units*

Waterbody Name	Waterbody ID	Watershed	Type
Anacostia DC Seg 01 (Lower Anacostia)	DCANA00E SEG1	Anacostia	Tidal
Anacostia DC Seg 02 (Upper Anacostia)	DCANA00E SEG2	Anacostia	Tidal
Fort Chaplin Run	DCTFC01R	Anacostia	Non-tidal
Fort Davis Tributary	DCTFD01R	Anacostia	Non-tidal

Table 1. *Waterbody Segments Used as Assessment Units*

Waterbody Name	Waterbody ID	Watershed	Type
Fort Dupont	DCTDU01R	Anacostia	Non-tidal
Fort Stanton Tributary	DCTFS01R	Anacostia	Non-tidal
Hickey Run	DCTHR01R	Anacostia	Non-tidal
Nash Run	DCTNA01R	Anacostia	Non-tidal
Pope Branch (Hawes Run)	DCTPB01R	Anacostia	Non-tidal
Texas Avenue Tributary	DCTTX27R	Anacostia	Non-tidal
Watts Branch DC Seg 01 (Lower Watts Branch)	DCTWB00R SEG1	Anacostia	Non-tidal
Watts Branch DC Seg 02 (Upper Watts Branch)	DCTWB00R SEG2	Anacostia	Non-tidal
Kingman Lake	DCAKL00L	Anacostia	Tidal
Washington Ship Channel	DCPWC04E	Anacostia	Tidal
Potomac DC Seg 01 (Lower Potomac)	DCPMS00E SEG1	Potomac	Tidal
Potomac DC Seg 02 (Middle Potomac)	DCPMS00E SEG2	Potomac	Tidal
Potomac DC Seg 03 (Upper Potomac)	DCPMS00E SEG3	Potomac	Tidal
Battery Kemble Creek	DCTBK01R	Potomac	Non-tidal
Dalecarlia Tributary	DCTDA01R	Potomac	Non-tidal
Foundry Branch	DCTFB02R	Potomac	Non-tidal
Oxon Run	DCTOR01R	Potomac	Non-tidal
Chesapeake & Ohio Canal	DCTCO01L	Potomac	Non-tidal
Tidal Basin	DCPTB01L	Potomac	Tidal
Rock Creek DC Seg 01 (Lower Rock Creek)	DCRCR00R SEG1	Rock Creek	Non-tidal
Rock Creek DC Seg 02 (Upper Rock Creek)	DCRCR00R SEG2	Rock Creek	Non-tidal
Broad Branch	DCTBR01R	Rock Creek	Non-tidal
Dumbarton Oaks	DCTDO01R	Rock Creek	Non-tidal
Fenwick Branch	DCTFE01R	Rock Creek	Non-tidal
Klingle Valley	DCTKV01R	Rock Creek	Non-tidal
Luzon Branch	DCTLU01R	Rock Creek	Non-tidal
Melvin Hazen Valley Branch	DCTMH01R	Rock Creek	Non-tidal
Normanstone Creek	DCTNS01R	Rock Creek	Non-tidal
Pinehurst Branch	DCTPI01R	Rock Creek	Non-tidal
Piney Branch	DCTPY01R	Rock Creek	Non-tidal
Portal Branch	DCTPO01R	Rock Creek	Non-tidal
Soapstone Creek	DCTSO01R	Rock Creek	Non-tidal

Water Quality Assessment

Water Quality Data

The District models its assessment methods for water quality data and its decision rules for designated use attainment on recommendations made by EPA in its Consolidated Assessment and Listing Methodology (CALM) guidance (U.S. EPA, 2002). Specific assessment methods for individual constituents and the associated numeric criteria for constituents as found in the District's WQS (Title 21, Chapter 11 – District of Columbia Municipal Regulations) are described in Table 2. Waters that do not meet water quality criteria over the assessment period do not attain WQS and are considered to be impaired.

All of the water quality data collected during the assessment period is consolidated and organized by waterbody segment (the assessment unit) for assessment purposes. This can include data from multiple stations within a waterbody segment and, in some instances, multiple data samples and/or duplicate samples (e.g., QA/QC samples) collected on the same day. For all data used in the assessment, field and laboratory notes on data and data collection and laboratory-based data qualifier flags are used to determine the usability of data.

The assessment of conventional constituents generally follows the "ten percent" rule. That is, waters are impaired for 303(d) when:

> *More than 10% of the samples exceed the criterion* (U.S.EPA 2002)

Exceptions are the assessment of secchi depth and chlorophyll-*a* where seasonal segment averages instead of the ten percent rule are used for assessment. Consideration is given to criteria that are expressed to describe weekly, monthly, and seasonal averaging periods (e.g., weekly dissolved oxygen means, monthly *E. coli* geomeans seasonal segment average chlorophyll a measurements).

The assessment of toxic constituents (ammonia, metals, and organic constituents) is based on the "no more than once every three years" rule (U.S. EPA, 1997). This rule is used for the assessment of Class C aquatic life and Class D human health/fish consumption uses. Under this rule, non-attainment occurs where there is more than one exceedance of the water quality criteria within a three-year period based on grab or composite samples. Operationally, a single sample exceedance of Class C aquatic life or Class D human health/fish consumption criteria within a three-year period is assessed as insufficient information to make a use support decision. Two or more exceedances of the same criteria within a three-year period using grab or composite samples indicates an impaired condition where the use is not supported. EPA typically recommends that the "no more than once every three years" rule be applied on some minimal sample size – such as when 10 or more samples are collected within the 3-year period. However, 10 or more samples for a given toxic pollutant are rarely collected over any given 3-year period. Therefore, DOEE uses the "no more than once every three years" rule combined with its best professional judgment to evaluate whether toxic pollutants cause non-attainment in individual waterbodies.

Given that the District uses data from the most recent five-year period for biennial assessment and reporting, the three-year requirement of the no more than once every three years rule requires special treatment. This is accomplished by applying the one-in-three rule separately to data from years one through three, years two through four, and years three through five. Two or more exceedances within any of the three-year periods indicates an impaired condition where the use is not supported.

Table 2. *Assessment Methods for Numeric Water Quality Criteria*[1]				
Constituent	**DU Class**	**Water Quality Criterion (WQC)**	**Assessment Metric**	**Non-Attainment of Water Quality Criteria**
E. coli 30-day Geomean[2] (126) (Maximum 30-day geometric mean for 5 samples)	A	126 MPN/100 mL	Calendar month geomeans	Any monthly geomean exceedance of the WQC.
E. coli SSV (410)	A	410 MPN/100mL	All individual samples	>10% of the individual samples exceed the WQC.
Dissolved oxygen in non-tidal waters: Instantaneous Minimum year-round in non-tidal waters.	C	5 mg/L	All individual samples	>10% of the individual samples exceed the WQC.
Dissolved oxygen in tidal waters Feb 1 through May 31: 7-day mean[3].	C	6 mg/L	7-day means. Use successive weeks beginning Feb 1, Feb 8, etc.	>10% of assessment metric (7-day means) exceed the WQC.
Dissolved oxygen in tidal waters Feb 1 through May 31: Instantaneous minimum.	C	5 mg/L	All individual samples	>10% of the individual samples (instantaneous minimums) exceed the WQC.
Dissolved oxygen in tidal waters June 1 through Jan 31: 30-day mean[4].	C	5.5 mg/L	Calendar month means	>10% of assessment metric (calendar month means) exceed the WQC.
Dissolved oxygen in tidal waters June 1 through Jan 31: 7-day mean.	C	4 mg/L	7-day means. Use successive weeks beginning June 1, June 8, etc.	>10% of assessment metric (7-day means) exceed the WQC.
Dissolved oxygen in tidal waters June 1 through Jan 31:	C	3.2 mg/L Use 4.3 mg/l if water temperature is ≥ 29 degrees C	All individual samples. Adjust criteria where temperature is ≥ 29 degrees C	>10% of the individual samples exceed the WQC.

Table 2. *Assessment Methods for Numeric Water Quality Criteria*[1]				
Constituent	**DU Class**	**Water Quality Criterion (WQC)**	**Assessment Metric**	**Non-Attainment of Water Quality Criteria**
Instantaneous minimum.				
Temperature: maximum	C	32.2 degrees C	All individual samples	>10% of the individual samples exceed the WQC.
Temperature: Maximum change above ambient.	C	2.8 degrees C	All individual samples	>10% of the individual samples exceed the WQC.
pH	A, B, C	> 6.0 and < 8.5	Individual samples	>10% of the individual samples exceed the WQC
Oil and Grease	C	10 mg/L	Individual samples	>10% of the individual samples exceed the WQC
Turbidity Increase above ambient	A, B, C	20 NTUs	Individual samples	>10% of the individual samples exceed the WQC
Secchi depth: seasonal segment average in tidal waters April 1 through October 31	C	0.8 m	Seasonal segment averages (April 1 through October 31) over the five-year assessment period.	Mean of seasonal segment averages exceeds the WQC
Chlorophyll-*a:* Seasonal average in tidal waters from July 1 to September 30	C	25 ug/L	Seasonal segment averages (July 1 through Sept 30) over the five-year assessment period.	Mean of seasonal segment averages exceeds the WQC
Ammonia	C	Specific chronic (CCC) 4-day avg concentration depending upon pH, temperature and season	All calculated CCC Values. For CCC, the highest 4-day avg concentration within a calendar month shall not exceed 2.5 times the CCC.	Two or more exceedances of the CCC aquatic life criterion within a three-year period[5]
	C	Specific acute (CMC) 1-hour avg concentration depending upon pH and temperature	All calculated CMC values	Two or more exceedances of the CMC aquatic life criterion within a three-year period[5]

Table 2. *Assessment Methods for Numeric Water Quality Criteria*[1]

Constituent	DU Class	Water Quality Criterion (WQC)	Assessment Metric	Non-Attainment of Water Quality Criteria
Metals	C	Specific chronic (CCC) 4-day avg concentration for each metal	All calculated CCC concentrations (converted to appropriate dissolved or total fraction as needed for comparison to criteria)	Two or more exceedances of a CCC aquatic life criterion within a three-year period[5]
	C	Specific acute (CMC) 1-hour avg concentration for each metal	All calculated CMC concentrations (converted to appropriate dissolved or total fraction as needed for comparison to criteria)	Two or more exceedances of a CMC aquatic life criterion within a three-year period[5]
	D	Specific 30-day human health concentration for each metal	Calendar month 30-day average concentrations	Two or more exceedances of a human health criterion within a three-year period[5]
Organic constituents	C	Specific chronic (CCC) 4-day avg concentration for each metal	All calculated CCC concentrations (converted to appropriate dissolved or total fraction as needed for comparison to criteria)	Two or more exceedances of a CCC aquatic life criterion within a three-year period[5]
	C	Specific acute (CMC) 1-hour avg concentration for each metal	All calculated CMC concentrations (converted to appropriate dissolved or total fraction as needed for comparison to criteria)	Two or more exceedances of a CMC aquatic life criterion within a three-year period[5]
	D	Specific 30-day human health concentration for each metal	Calendar month 30-day average concentrations	Two or more exceedances of a human health criterion within a three-year period[5].

[1] Use support decisions for most constituents are based on a five-year statistical evaluation of ambient water quality data. Assessment occurs at the waterbody segment level. Consideration can be given to the recentness of data, extreme weather conditions, and other factors in assessing non-attainment.

[2] The 30-day geometric mean is a calendar month geomean.

[3] The 7-day mean refers to a calendar date mean for successive seven-day periods (e.g., January 1-7, January 8-14, etc.).

[4] The 30-day mean is a calendar month mean.

[5] Best professional judgment and potential use of the ten percent rule are considered for metals and organic constituents if the number of samples is abundant relative to the number of exceedances (e.g., two exceedances out of fifty samples in a three-year reporting period, or 4%, might be interpreted as attainment). In addition, best professional judgment is also used when the sample size is low (e.g., when the sample size is less than 10).

Treatment of Non-detect (ND) Values

ND values occur when a water quality sample is analyzed but the pollutant of interest is not found (not detected) above the detection limit. Detection limits represent the lowest concentrations of the

constituent that can be measured reliably. For the purposes of water quality assessment, ND values are treated as follows:

- Pollutants of interest are not assumed to be present when reported as ND.
- NDs are not replaced or substituted with estimates such as the Method Detection Limit [MDL] or one-half the MDL in assessment.
- In cases where a calculated value is required for comparison with a criterion that is a measure of central tendency (e.g., a mean, geomean, or average) NDs are not included in the calculation.
- In cases where the number of samples is considered in the analysis (e.g., for parameters assessed using the "the ten percent rule"- see Table 2), NDs are used as part of the sample count but they are not interpreted as exceedances.
- In the case of metals and organic constituents where the number of exceedances within a three-year time period are evaluated, NDs are not considered exceedances.

Physical Habitat Assessment

The District is studying its physical habitat assessment metrics and protocol in 2023. The objective is to develop new metrics and a protocol that reflect the urban nature of tributary streams in the District. The District expects to add the revised metrics and protocol to the Assessment Methodology when they become available.

Benthic Macroinvertebrate Assessment

The District is studying its benthic macroinvertebrate assessment metrics and protocol in 2023. The objective is to develop new metrics and a protocol that reflect the urban nature of tributary streams in the District. The District expects to add the revised metrics and protocol to the Assessment Methodology when they become available.

Fish Tissue Analysis and Assessment

The District uses the results of fish tissue analysis to assess Class D use and the safety of eating fish caught in District waters (e.g., U.S. Fish and Wildlife Service. 2018). Assessment is based on a comparison of the concentration of chemical contaminants found in fish tissue with U.S. EPA fish tissue screening values, which are concentrations above which fish tissue contaminants may pose risks to human consumers (U.S. EPA, 2000).

Operationally, fish tissue analysis and assessment includes the following steps:

- Fish tissue samples for up to 12 or more different fish species are collected at multiple sampling locations in the mainstem Anacostia and Potomac River (currently two stations in the tidal Anacostia River and two in the tidal Potomac River).
- One composite sample for individual fish species (e.g., American eel, American shad, etc.) is produced for each sampling location based on at least two individual fish from that species.
- The concentration of metals and organic constituents in the fish tissue is determined for each of these composite samples for each species (e.g., American eel) at each location (e.g., Upper Anacostia).

- The composite samples from each location for each species are combined into one sample set and summary statistics for the fish tissue concentrations within that sample set are developed (i.e., minimum, maximum, and median concentrations of total PCBs from American eel).
- For assessment purposes, an individual sample exceedance occurs when the median value of the samples for any of the fish species sampled exceeds the screening value for a metal or organic constituent.
- An overall violation of the Class D fish consumption use occurs when at least one fish species exceeds a screening value, as described in the previous bullet.

Given limited monitoring resources, fish tissue collection and analysis is focused on the mainstem tidal waters of the Anacostia and Potomac rivers. These waters are deemed to be the most likely to have chemically contaminated water and sediment quality, and the most likely to support subsistence and sport fishing activities. The assessment results based on mainstem Anacostia and Potomac river fish tissue sampling stations are applied to all tidal waterbody segments (see Table 1).

The District uses results from the fish tissue analysis to develop a fish consumption advisory. For example, the 2016 DC Fish Consumption Advisory (DOEE, 2016) recommends:

> *Do not eat eel, carp, or striped bass (rockfish, striper) caught in District waters because they are the most contaminated by chemicals like polychlorinated biphenyls (PCBs).*

While the fish consumption advisory is based on fish tissue results, its primary purpose is as a public health warning.

Narrative Criteria

In addition to numeric WQS, physical habitat, benthic macroinvertebrate, and fish tissue analysis and assessment, the District has narrative criteria that are assessed to determine attainment of designated uses. The narrative criteria are statements that describe the desired water quality goal, such as waters being “free from” pollutants like oil and scum, color and odor, and other substances that can harm people and fish. The principal narrative criteria in the District found in the District’s WQS Standards (DCMR Title 21, Chapter 11) that inform assessment are summarized in Table 3.

Table 3. Narrative Criteria

1104.1	The surface waters of the District shall be free from substances in amounts or combinations that do any one of the following: (a) Settle to form objectionable deposits; (b) Float as debris, scum, oil, or other matter to create a nuisance; (c) Produce objectionable odor, color, taste, or turbidity; (d) Cause injury to, are toxic to, or produce adverse physiological or behavioral changes in humans, plants, or animals; (e) Produce undesirable or nuisance aquatic life or result in the dominance of nuisance species; or (f) Impair the biological community that naturally occurs in the waters or depends upon the waters for its survival and propagation.
1104.3	Class A waters shall be free of discharges of untreated sewage, litter and unmarked submerged or partially submerged man-made structures that would constitute a hazard to the users of Class A waters.

Table 3. Narrative Criteria	
1104.4	The aesthetic qualities of Class B waters shall be maintained. Construction, placement or mooring of facilities not primarily and directly water oriented is prohibited in, on, or over Class B waters unless: (a) The facility is for the general public benefit and service, and (b) Land based alternatives are not available.
1104.5	Class C streams shall be maintained to support aquatic life and shall not be placed in pipes.
1104.6	Within tidally influenced Class C waters, concentrations of chlorophyll a in free floating microscopic aquatic plants (algae) shall not exceed levels that result in ecologically undesirable consequences such as reduced water clarity, low dissolved oxygen, food supply imbalances, proliferation of species deemed potentially harmful to aquatic life or humans or aesthetically objectionable conditions or otherwise render tidal waters unsuitable for designated uses.
1104.7	Class E waters shall be free of unmarked submerged or partially submerged man-made objects that pose a hazard to users of these waters.

Narrative criteria provide blanket protection for all waters. They can also protect waterbodies from pollutants for which numeric criteria are difficult to specify. The attainment of narrative criteria is typically evaluated through field observation and best professional judgment of monitoring and assessment staff. Reported conditions that might affect support of a designated use related to narrative criteria (the “free from”) are documented over the assessment and reporting period and evaluated as a component of the Assessment Methodology. Use support based on the narrative criteria is assessed with the questions provided in Table 4.

Table 4. Assessment Using Narrative Criteria			
Name of affected waterbody/segment:			
What is the reported condition?			
What uses are potentially impacted by the reported condition?			
	Yes	No	Comment
Is the reported condition substantial? (e.g., Is it significant and sizeable?)			
Is the reported condition widespread? (e.g., Does it widely impact the waterbody/segment?)			
Are any visual impacts seen? (e.g., Nuisance conditions, biological impairment, etc.)			
Is the rereported condition persistent? (e.g., Has it occurred over a long period of time or continuously?)			
Has the reported condition been remediated?			
Does the available water quality data meet the numeric criteria and support the designated use?			
Does the reported condition preclude the waterbody from supporting a designated use?			
Use support Determination: Fully Supporting _____ Not Supporting _____			

Completion of Table 4 with a use support determination based on narrative criteria is conducted by the assessment staff based on experience, knowledge of the local waterbodies, and best professional judgment.

Decision Rules for Attaining Designated Uses

The District's Assessment Methodology is governed by a set of decision rules that are intended for use support determination, categorizing waterbodies, and listing and delisting impaired waterbodies on the 303(d) list. These rules incorporate EPA's Independent Application Policy on the use of multiple types of data to assess attainment (U.S. EPA, 2005).

For Purposes of WQS Attainment/Nonattainment Determinations

Policy of independent applicability says:

- When evaluating multiple types of data (e.g., biological, chemical) and any one type of data indicates an element of a WQS is not attained, the segment should most likely be identified as impaired.

- If there is reason to doubt the nonattainment finding, re-evaluate all of the data sets to resolve discrepancies. In some cases, this may lead to modification of applicable WQS to account for site-specific information.

Policy of independent applicability does not say:

- Always assume that a single sample result showing impairment outweighs all other data showing attainment.
- Accept all differences in data findings at face value.

The decision rules for attaining designated uses in a waterbody are presented in Table 5.

Table 5. Decision Rules for Attaining Designated Uses

Use Class	Decision	Criterion	Decision Rule
A	Fully Supporting	E. coli	No exceedance of monthly geomean during assessment period. **AND**
			≤10% of samples exceed SSV **AND**
		Conventional pollutants (pH, turbidity)	≤10% of the individual samples exceed the WQC **AND**
		Narrative criteria	Water meets all relevant narrative criteria, including DC WQS §1104.3
	Not supporting	E. coli	Any exceedances of monthly geomean during assessment period **OR**
			>10% of samples exceed SSV **OR**
		Conventional pollutants (pH, turbidity)	>10% of the individual samples exceed the WQC **OR**
		Narrative criteria	Water does not meet all relevant narrative criteria, including DC WQS §1104.3
B	Fully Supporting	Conventional pollutants (pH, turbidity)	≤10% of the individual samples exceed the WQC **AND**

Table 5. Decision Rules for Attaining Designated Uses			
Use Class	Decision	Criterion	Decision Rule
		Narrative criteria	Water meets all relevant narrative criteria, including DC WQS §1104.4
	Not supporting	Conventional pollutants (pH, turbidity)	>10% of the individual samples exceed the WQC **OR**
		Narrative criteria	Water does not meet all relevant narrative criteria, including DC WQS §1104.3
C	Fully Supporting	Conventional pollutants (other than secchi depth and chlorophyll a)	≤10% of the individual samples exceed the WQC **AND**
		Secchi depth	Mean of seasonal segment averages does not exceed the WQC **AND**
		Chlorophyll a	Mean of seasonal segment averages does not exceed the WQC **AND**
		Ammonia	No more than one exceedance of the CCC WQC every three years. **AND**
			No more than one exceedance of the CMC WQC within three years **AND**
		Toxic pollutants (e.g., metals, organic constituents)	No more than one exceedance of the CCC within three years. **AND**
			No more than one exceedance of the CMC within three years. **AND**
		Bioassessment Protocols[1]	Macroinvertebrate results indicate “Fair” to “Good” water quality **AND**
		Physical habitat assessment Protocols[1]	Physical habitat assessment results indicate “Fair” to “Good” water quality

Table 5. Decision Rules for Attaining Designated Uses			
Use Class	Decision	Criterion	Decision Rule
			AND
		Narrative criteria	Water meets all relevant narrative criteria, including DC WQS §1104.6
C	Not Supporting	Conventional pollutants (e.g., pH, turbidity, DO, temperature, etc.)	>10% of the individual samples exceed the WQC **OR**
		Secchi depth	Mean of seasonal segment averages (n≤5) exceeds the WQC **OR**
		Chlorophyll a	Mean of seasonal segment averages (n≤5) exceeds the WQC **OR**
		Ammonia	More than one exceedance of the CCC WQC every three years. **OR**
			More than one exceedance of the CMC WQC every three years. **OR**
		Toxic pollutants (e.g., metals, organic constituents)	More than one exceedance of the CCC WQC within three years. **OR**
			More than one exceedance of the CMC WQC within three years[2] **OR**
		Bioassessment Protocols[1]	Macroinvertebrate results indicate "Poor" water quality **OR**
		Physical habitat assessment Protocols[1]	Physical habitat assessment results indicate "Poor" water quality **OR**
		Narrative criteria	Water does not meet all relevant narrative criteria, including DC WQS §1104.6

Table 5. Decision Rules for Attaining Designated Uses			
Use Class	Decision	Criterion	Decision Rule
D	Fully Supporting	Toxic pollutants (e.g., metals, organic constituents)	No more than one exceedance of the human health WQC within three years **AND**
		Fish tissue (e.g., metals, organic constituents)	No exceedance of EPA fish tissue screening values **AND**
		Narrative	Water meets all relevant narrative criteria
	Not Supporting	Toxic pollutants (e.g., metals, organic constituents)	More than one exceedance of the human health WQC within three years[2] **OR**
		Fish tissue (e.g., metals, organic constituents)	One or more exceedances of an EPA fish tissue screening value for a metal or organic constituent **OR**
		Narrative	Water does not meet all relevant narrative criteria
E	Fully Supporting	Narrative	Water meets all relevant narrative criteria, including DC WQS §1104.7
	Not Supporting	Narrative	Water does not meet all relevant narrative criteria, including DC WQS §1104.7

[1]Bioassessment and physical habitat assessment protocols will be used when updated metrics and protocol are approved.

[2]Best professional judgment and potential use of the ten percent rule are considered for metals and organic constituents if the number of samples is abundant relative to the number of exceedances (e.g., two exceedances out of fifty samples in a three-year reporting period, or 4%, might be interpreted as attainment). In addition, best professional judgment is also used when the sample size is low (e.g., when the sample size is less than 10).

Note that sometimes evaluations of individual criteria can fail to definitively determine use support (e.g., the evaluation may be indeterminate if there is insufficient available data/information to make a use support determination). An example is toxics analysis, where low sample sizes or high detection limits may not yield a definitive result as to whether toxics impair a use or whether that use is not supported.

In cases where other there are other data and criteria that definitively establish that a use is not supported, those other data and criteria are used and the criteria that do not provide a definitive result

are not needed for the use support determination. However, the metric or metrics that do not provide a definitive result are important in cases where other criteria indicate that the use is supported. In these cases, the decision is that there is insufficient available data/information to make a use support determination. This case is covered under Category 3 in the section below on "Categorization".

CAUSES OF IMPAIRMENT

Using the decision rules for attaining designated uses in Table 10, the District identifies and records the cause for each designated use impairment in Categories 4 and 5 of the IR (See next section on Categorization). The identification of cause is based on the type of data and metrics used to make the assessment.

The District typically addresses the cause of impairment in one of three ways, as summarized below:

1. In the most typical case, where non-attainment is a result of the violation of a numeric water quality criterion, the cause is the specific pollutant violating the criterion (e.g., *E. coli* or arsenic in the water column or PCBs in fish tissue).
2. In the second case, DOEE can use the results of the physical habitat or benthic macroinvertebrate metric to indicate non-attainment. However, the specific pollutant causing the failure of the physical habitat or benthic macroinvertebrate metric may not be known. Consistent with guidance provided for EPA's Assessment and Total Maximum Daily Load Tracking and Implementation System (ATTAINS) (U.S. EPA, 2015), the District can report physical habitat assessment or benthic macroinvertebrate assessment as a cause of non-attainment.
3. In the third case, where impacts to stream flows or habitats are observed through physical observations, DOEE may attribute impairment to a non-pollutant cause. For reporting purposes in the IR and ATTAINS, the District can use impairment parameters such as flow alteration and habitat alteration to denote non-pollutant causes where documentation that narrative criteria are not supported is available.

In these latter two types of circumstances, where impairment is not attributed to a specific pollutant, it is sufficient for the purposes of 305(b) reporting to list the non-pollutant observed impairment deficiency as the cause. In these cases, further investigation to assess whether a specific pollutant is the cause of impairment with a stressor analysis may be warranted. The District plans to develop full stressor analysis procedures to identify specific causes of aquatic life use impairments identified through macroinvertebrate or physical habitat assessment protocols and for other situations where specific causes are not identified through the assessment process.

As shown in Table 6, the methods for identifying the causes of impairment are specific to the criteria type that is exceeded or transgressed.

Table 6. Methods for Identifying Cause of Impairment		
Designated use class	Criterion Type	Method for Identifying Cause of Impairment
Class A Primary contact recreation	Numeric criteria for individual pollutants (e.g., E. coli, pH, turbidity)	Cause is the specific pollutant or pollutants that exceed numeric criteria.
	Narrative criteria	Cause is identified by best professional judgment of assessment staff.
Class B Secondary contact recreation and aesthetic uses	Numeric criteria for individual pollutants (e.g., pH, turbidity)	Cause is the specific pollutant or pollutants that exceed numeric criteria
	Narrative criteria	Cause is identified by best professional judgment of assessment staff.
Class C Aquatic Life	Numeric criteria (e.g., pH, turbidity, DO, trace metals, organic constituents, etc.)	Cause is the specific pollutant or pollutants that exceed numeric criteria.
	Benthic macroinvertebrate and physical habitat assessment protocols[1]	Cause is identified through assessment protocols or a stressor analysis. The cause may be a pollutant or a non-pollutant.
	Narrative criteria	Cause is identified by best professional judgment of assessment staff (e.g., flow alteration).
Class D Fish Consumption	Numeric criteria for individual pollutants (e.g., trace metals and organic constituents)	Cause is the specific pollutant or pollutants that exceed numeric criteria.
	Fish tissue screening values	Cause is the specific pollutant or pollutants that exceed fish tissue screening values.
	Narrative criteria	Cause is identified by best professional judgment of assessment staff.
Class E Navigation	Narrative criteria	Cause of impairment is due to unmarked submerged or partially submerged man-made objects that pose a hazard to users of these waters as determined by best professional judgment of assessment staff

[1]Bioassessment and physical habitat assessment protocols will be used when updated metrics and protocol are approved.

CATEGORIZATION

The District follows the five-category approach for classifying WQS attainment using the guidelines for category placement established by EPA (U.S. EPA, 2005). Following assessment, the District places every waterbody into one or more of the five IR categories based on the attainment of each designated use for that waterbody as shown in Table 7. The decision logic that the District applies to document use attainment and categorization is presented in Figure 1. The emphasis within this logic is on concurrent evaluation of all available and applicable metrics/criteria for a given use. As the results from all available/applicable metrics are considered together, the results of the most "conservative" decision (i.e., impairment is the most conservative decision; attainment is the least conservative decision) drive the attainment status of any given use in any given waterbody.

Table 7. Categorization of Waterbodies

Category	Definition
1	All designated uses are supported, and no use is threatened.
2	Available data and/or information indicate that some but not all of the designated uses are supported.
3	There is insufficient available data and/or information to make a use support determination.
4	Available data and/or information indicate that at least one designated use is not being supported or is threatened, but a TMDL is not needed for specified, acceptable reasons. Category 4 and its subcategories may include TMDLs that may or may not need to be revised for one reason or another, including court orders, consent decrees, and availability of new information. The subcategories are:
4a	A State developed TMDL has been approved by EPA or a TMDL has been established by EPA for any segment-pollutant combination.
4b	Other required control measures are expected to result in the attainment of an applicable WQS in a reasonable period of time.
4c	The non-attainment of any applicable WQS for the segment is the result of pollution and is not caused by a pollutant[1].
5	Available data and/or information indicate that at least one designated use is not being supported or is threatened, and a TMDL is needed.

[1]Section 502(19) of the Clean Water Act defines pollution as "the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water." Section 1199 of the District's WQS defines "pollution" the same way and defines "pollutant" as any "substance that may alter or interfere with the restoration or maintenance of the chemical, physical, radiological, or biological integrity of the waters of the District."

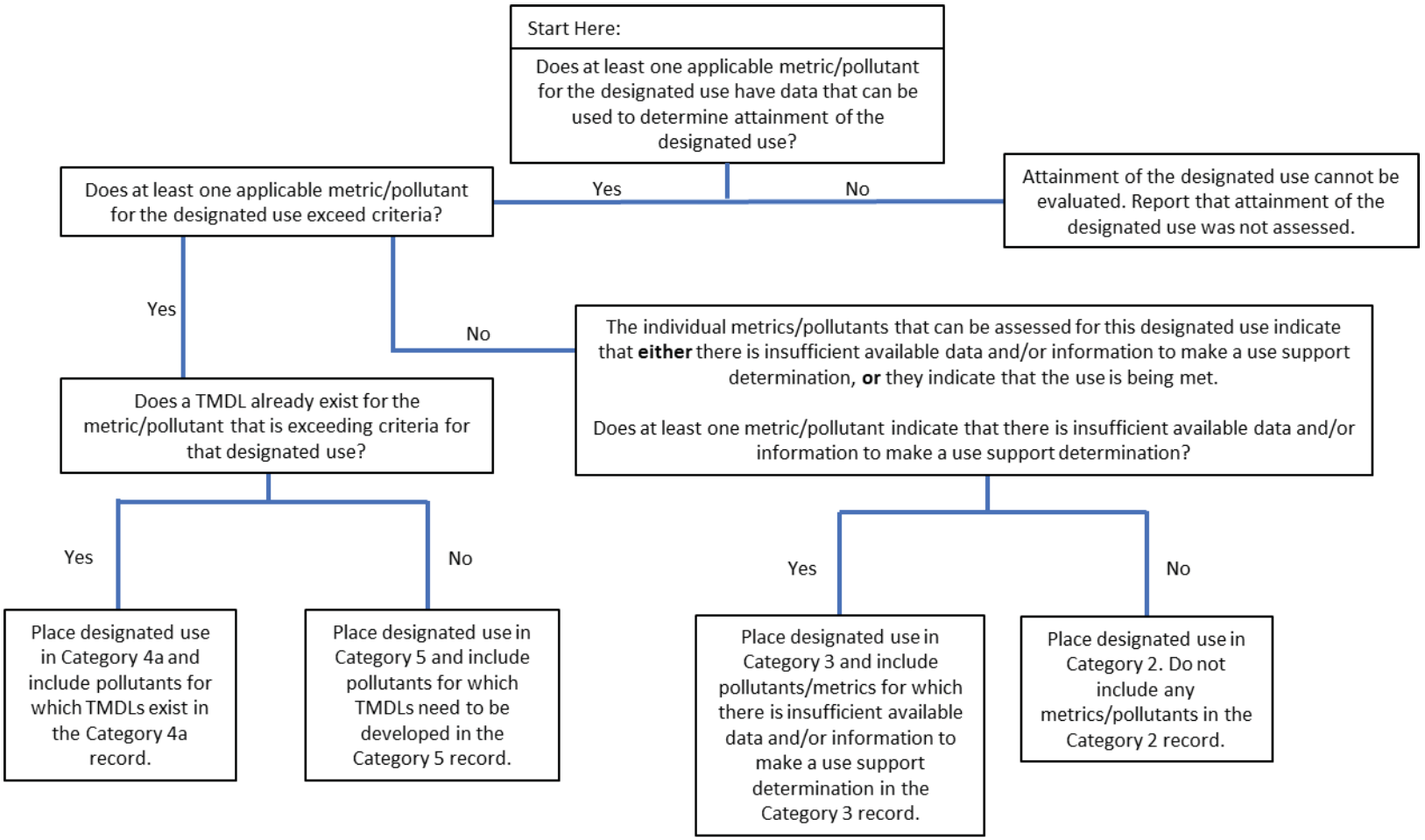

Figure 1. Decision Logic for Use Attainment and Categorization

Categorization allows the District to track progress as waterbodies incrementally or entirely attain WQS; demonstrate advancement in the development and implementation of TMDLs and other required control measures; and target monitoring for those waterbodies where additional data and information is needed to assess WQS attainment. In general,

- Waterbodies are placed in Category 1 when the assessment process indicates that all WQS are attained, and all designated uses are supported.
- Waterbodies/use classes within waterbodies are placed in Category 2 when the assessment process indicates that one or more designated use is supported but the data and information available is insufficient to determine that other designated uses are supported.
- Waterbodies/use classes within waterbodies are placed in Category 3 where insufficient data and information are available to make a use support determination. This insufficiency can be due to not having enough data or to not having the right quality of data to rigorously evaluate a waterbody's attainment status. Pollutants are not identified for this category because the impairment is uncertain.
- Waterbodies/use classes within waterbodies are placed in Category 4 when the impairment is recognized and either a TMDL or another control program aimed at attainment of WQS is in place, or where non-attainment is not causally linked to a pollutant.
- Waterbodies/use classes within waterbodies are placed in Category 5 when the impairment is recognized and a TMDL is needed. The waterbody/pollutant combinations in Category 5 constitute the 303(d) list. Category 5 is governed by 40 CFR 130.7(b)(1) where it is stated that:

> *Segments must be placed in Category 5 when, based on existing and readily available data and/or information, technology-based effluent limitations required by the Act, more stringent effluent limitations, and other pollution control requirements are not sufficient to implement an applicable water quality standard and a TMDL is needed.*

Category 5 listings also contain a priority ranking for TMDLs (low, medium, high) and a targeted date for TMDL development.

It should be noted that waterbodies can be placed in more than one category based on the evaluation of individual designated uses. For example, a waterbody might be in Category 4a because it has a TMDL for E. coli and also in Category 5 because of impairment due to pH that requires a TMDL.

It should also be noted that there may be multiple pollutants and/or non-pollutants included in Categories 4a or 5 for an individual waterbody. This can occur if multiple pollutants/non-pollutants are identified as causing impairment in a waterbody (Category 5) or if TMDLs for multiple pollutants have been done for that waterbody (Category 4a). The inclusion of multiple pollutants/non-pollutants in Categories 4a and 5 is important for tracking the specific causes of the impairment (see "Causes of Impairment" section above).

303(d) LISTING

The 303(d) list is developed following assessment for water quality criteria, physical habitat and benthic macroinvertebrate metrics, fish tissue analysis, and narrative criteria. The term "303(d) list" is short for the list of impaired and threatened waters (e.g., stream/river waterbody segments) that are identified and reported to EPA (U.S. EPA, 2021b) under Category 5. "Listing" is the process of placing an impaired

waterbody on the 303(d) list. Waters on the 303(d) list require development of a TMDL. This distinguishes them from Category 4a impaired waters where TMDLs have already been developed. Listing is undertaken every other year using data from the most recent five-year assessment period so that information on the status of District waterbodies and use support is current.

The listing process addresses key questions on waterbody status, including:

- Are the existing listings from the previous reporting cycle still valid?
- Are there any new impairments based on assessment of available data in the current reporting cycle and/or changes in WQS that affect current listings since the last reporting cycle?
- Are the pollutant and non-pollutant causes of impairment known and clearly documented?
- Are the waterbodies categorized correctly based on known and/or documented impairments and causes?

When the District adds waters to the 303(d) list, it also begins developing a plan and a schedule for developing the required TMDL. This information is included in the IR.

303(d) DELISTING

Delisting is the process of removing a waterbody/pollutant combination from the 303(d) list. This process is used when evidence, in the form of available data and information, indicates that the waterbody is not impaired or no longer impaired for a given designated use. Note that this process is specifically used to remove a pollutant or a waterbody/pollutant combination from Category 5 before a TMDL is completed. If data indicates that a waterbody in another category is no longer impaired but a TMDL has already been completed for that pollutant (i.e., a pollutant in Category 4a where a TMDL already exists), a process of recategorization is used. This process is discussed in sections on the "Removal of Specific Pollutant Causes" and "TMDL Withdrawal" below.

Authority for Delisting

States (including the District) are legally allowed to delist waterbodies or pollutants from their 303(d) list if the original listings are no longer supported. Specifically, 40 CFR §130.7 (b)(6)(iv)) states that:

> *Upon request by the Regional Administrator, each State must demonstrate good cause for not including a water or waters on the list. 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 § 130.7(b)(5); or changes in conditions, e.g., new control equipment, or elimination of discharges.*

EPA's *Assessment Guidance on the 2002 Integrated Report* (U.S. EPA 2001) further clarifies this and states that:

> *The existing regulation requires states, territories, and authorized tribes, at the request of the Regional Administrator, to demonstrate good cause for not including waterbodies on the 303(d) list that were included on previous 303(d) lists (pursuant to 40 CFR 130.7(b)(6)(iv))…Where a waterbody was previously listed based on certain data or information, and the state removes the waterbody without developing or obtaining any new information, EPA will carefully evaluate the state's or territory's re-evaluation of the available information, and will not approve such*

> *approvals unless the state's or territory's submission describes why it is appropriate under the current regulations to remove each affected waterbody.*

This statement emphasizes the fact that waterbodies and specific pollutants can be removed from the 303(d) list through analysis of "more recent and accurate data" or if there are "flaws in the original analysis that led to the waterbody being listed."

The District recognizes that it has authority to delist waterbody/pollutant combinations where justified and documented.

Reasons for Delisting and WQS Attainment

Guidance on the ATTAINS system for accessing information about the conditions in the Nation's surface waters (U.S. EPA, 2013) explains acceptable reasons for delisting in the context of waterbody changes from the prior reporting cycle.

> ***Reasons for delisting*** *waters include: TMDL approved or established by EPA (Category 4a), other pollution control requirements (Category 4b), and not caused by a pollutant (Category 4c).*
>
> ***Reasons for WQS attainment*** *include:*
>
> - *Applicable WQS attained, original basis for listing was incorrect*
> - *Applicable WQS attained due to restoration activities*
> - *Applicable WQS attained due to change in WQS*
> - *Applicable WQS attained according to new assessment method*
> - *Applicable WQS attained threatened water no longer threatened*
> - *Applicable WQS attained, reason for recovery unspecified*

Good Cause Justification for Delisting

When waterbodies of waterbody/pollutant combinations are delisted from the 303(d) list, the District will provide a good cause justification for the delisting in the IR. See the "Good Cause Justification" section below.

REMOVAL OF SPECIFIC POLLUTANT CAUSES

The District has a process to remove a specific pollutant identified as a cause of impairment for a waterbody when new evidence indicates that the pollutant is not causing impairment. In cases where this occurs, individual pollutants (but not necessarily all pollutants) previously reported as a cause of impairment in various tables in the IR (including in the Appendix 3.3 2022 Use Support and Cause by Pollutant table and in the Appendix 3.6 District of Columbia 303(d) List table in the "Pollutant(s) or Pollutant Categories Causing Impairment" column) can be removed when good cause justification for removal is demonstrated. This process allows the District to update and better characterize the causes of impairment in waterbodies as new and/or better information is obtained.

In terms of implementing the removal of specific pollutant causes from Category 4a waters, this is documented in the IR by no longer including those pollutants in tables summarizing causes of impairment in a given waterbody (e.g., Appendix 3.3 "2022 Use Support and Cause by Pollutant") or in

the 303(d) list. These removals are supported by a Good Cause Justification write-up, which is also included in the IR (see "Good Cause Justification" section below).

TMDL WITHDRAWAL

The District has a process to recommend withdrawal of existing TMDLs in circumstances where the TMDL for a specific waterbody/pollutant combination is not needed, and its existence might be confusing for permit writers or stakeholders. EPA identifies three scenarios where TMDL withdrawal might be warranted (U.S. EPA, 2017):

1. State-established TMDL replaces an earlier EPA-established TMDL: EPA approves the state-established TMDL and indicates that the previous TMDL is "withdrawn" or superseded by state TMDL.

2. Incorrect 303(d) listing (EPA notification recommended).

3. Revised WQS; water no longer impaired (EPA notification recommended).

TMDL withdrawal recommendations are made when good cause justification for the withdrawal is demonstrated. Once decided, TMDL withdrawal recommendations are included in IR. EPA has the responsibility to approve TMDL withdrawal recommendations.

GOOD CAUSE JUSTIFICATION

As noted earlier under 303(d) delisting, EPA requires states to provide good cause justification for delisting. The recommendation to delist a waterbody/pollutant combination is based on one or more of the good cause justifications outlined in 40 CFR §130.7 (b)(6)(iv)) to support the regulatory requirements of the delisting recommendation. Under this requirement, 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/pollutant being identified as a cause of impairment in the categories in § 130.7(b)(5)
- Changes in conditions (e.g., new control equipment, or elimination of discharges)

Internally, the District also uses good cause to justify other actions, including removal of a specific pollutant as a cause of impairment in a waterbody segment, recategorization of waterbodies, and development of recommendations for TMDL withdrawal. As an example, the Good Cause Justification can include identification of cases where the TMDL for a given pollutant is no longer needed because the pollutant is no longer identified as cause of impairment. In this type of case, DOEE interprets "more recent or accurate data" to be equivalent to "incorrect 303(d) listing" as described "TMDL Withdrawal" section above for justification for removing a TMDL.

The District uses a "weight of evidence" approach to support good cause justification. A weight of evidence approach does not rely on just one piece of evidence. Instead, it relies on evaluating multiple pieces of evidence simultaneously to make decisions and recommendations. The weight of evidence approach provides the assessment staff with the flexibility to evaluate the evidence and assign more or

less weight to individual pieces of evidence, as appropriate, to come to conclusions about the causes of impairment, delisting, recategorization, and TMDL withdrawal.

The weight of evidence approach is conducted according to the following steps:

- Identify all available relevant evidence.
- Review/analyze evidence against WQS or other decision-making criteria.
- Consider the age of the available data – is it recent or older? Recent data may merit more weight than older data, particularly if more recent data points to different conclusions than older data.
- Make recommendations based on the evidence.
- Develop a written good cause justification rationale that includes a summary of the evidence and the recommendation.

The types of evidence considered during the weight of evidence approach are summarized in Table 8.

Table 8. Types of Data used in the Weight of Evidence Approach

Data Type	Discussion
Water Quality Data	Water quality analysis is used to determine whether recent data continue to support the earlier decisions about impairment and categorization. This type of analysis aligns with a 40 CFR §130.7 (b)(6)(iv)) statement that evaluation of "more recent or accurate data" is one way to delist a waterbody from the 303(d) list. A similar understanding is used to remove individual pollutants as causes of impairment, for recategorization, and for recommended TMDL withdrawal.
Non-Water Quality Data	Non-water quality data is used to determine whether recent findings support previous listings and categorization. For example, recent macroinvertebrate or physical habitat assessments or fish tissue analysis and assessment can be used to determine if existing listings and categorization remain applicable and/or if TMDL withdrawal is recommended.
Historical Data	Examination of the original water quality data or non-water quality data that identified impairment and led specific pollutants to be listed as causing designated use impairment is used to identify data gaps, unsubstantiated assumptions, inconsistencies, or other errors in the original listings. This type of analysis provides evidence to support findings of "flaws in the original analysis that led to the water being listed," one of the "good cause justifications" endorsed in 40 CFR to support delisting a 303(d) listing or removal of individual pollutants as causes of impairment and TMDL withdrawal.
IRs	Examination of IRs is used to review what was understood about designated use support and pollutant causes across the decades. The IRs summarize data, describe water quality assessment, and document use support decisions.
TMDL Data	Examination of the water quality and non-water quality data referenced in TMDL documents is used to review the causes of impairment, the

Table 8. Types of Data used in the Weight of Evidence Approach	
Data Type	**Discussion**
	historical data used to assess impairment, and the historical data used to develop TMDL models and model inputs. In addition, review of the applicable WQS at the time of TMDL development can link impairment to specific violations of those WQS. In some cases, TMDL write-ups provide more information on the impairment than what is provided in the IR.

A weight of evidence analysis is developed for each recommendation for delisting, removal of a pollutant as a cause of impairment, recategorization, and TMDL withdrawal. This analysis supports good cause justification as it uses the evidence available in the data categories described above in the aggregate to draw conclusions. The overall accumulation of evidence backed up by best professional judgment provides good cause justification and sufficient reason to act and make recommendations.

REPORTING

The assessment results and any good cause justification for each recommendation for delisting, removal of a pollutant as a cause of impairment, recategorization, or TMDL withdrawal for all waterbodies are reported in the IR. Tabular summaries are utilized to document waterbodies placed in Categories 1, 2 and 3 with basic information on waterbody name, waterbody ID, the designated uses supported, and, in the case of Category 3, the designated use where the data and information available is insufficient to determine use support. Tabular summaries are also utilized for Category 4 and 5 listings that include the 303(d) listing year, waterbody name, waterbody ID, and pollutants or non-pollutants causing impairment. Other information - such as the TMDL establishment date, priority rankings, and targeted TMDL development date - are included where applicable on a category-by-category basis. A good cause justification rationale is provided for each delisting, removal of a pollutant as a cause of impairment, recategorization, or recommendation to withdraw a TMDL.

The District follows EPA guidance on reporting outlined in *Information Concerning 2022 Clean Water Act Section 303(d), 305(b), and 314 Integrated Reporting and Listing Decisions* (EPA, 2021c). The information reported on the District's assessment methodology and assessment results are prepared in a format that allows uploading to ATTAINS. The specific information uploaded to ATTAINS is:

Assessment Methodology (ATTAINS)

- Description of data and information used to make attainment determinations (40 CFR 130.7(b)(6)(ii))
- Description of how data and information was used to make attainment determinations (40 CFR 130.7(b)(6)(i))
- A rationale for any decision to not use any existing and readily available data and information (40 CFR 130.7(b)(6)(iii))
- Description of changes in assessment methodology since the last reporting cycle

Assessment Results (ATTAINS)

- Five-part categorization of waters

- Description of water quality of all waters of the US and the extent to which the quality of waters provides for protection and propagation of a balanced population of shellfish, fish, and wildlife and allows recreational activities in and on the water (e.g., results of probability-based/statistical surveys) (40 CFR 130.8 (b)(1))
- Changes from previous CWA 303(d) list (e.g., the waterbodies/pollutants that have been added and the waterbodies/pollutants that have been delisted and the reason for their delisting)
- A list of water quality-limited waters (impaired and threatened) still requiring a TMDL, pollutants causing the impairment, priority ranking for TMDL development (including waters targeted for TMDL development within the next two years) (40 CFR 130.7(b))
- Status of TMDL development
- Summaries of designated use support
- Any other reasonable information requested by the EPA Regional Administrator (40 CFR 130.7(b)(6)(iv))

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