INTRODUCTION TO WATER QUALITY STANDARDS (WQS)

Office of Science and Technology
Office of Water
U.S. EPA

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OVERVIEW

- History of the Clean Water Act
- Laws, Regulations and Guidance Related to Water Quality Standards (WQS)
- Water Quality Standards
  - Core components of WQS:
    - Designated Uses
    - Water Quality Criteria
    - Antidegradation
  - Additional Components of WQS
- Roles of States, Territories, Authorized Tribes, the Public and the EPA
- Implementing WQS

HISTORY OF THE CLEAN WATER ACT

HISTORY OF CWA AMENDMENTS

Cleveland Mayor Carl Stokes on the banks of the Cuyahoga, 1969

Cleveland's Cuyahoga river on fire

- 1948: Federal Water Pollution Control Act (FWPCA).
- **1972: Major set of amendments, as amended to "Clean Water Act" (CWA).**
- 1981: Streamlined construction grants.
- 1987: Phased out construction grants, replaced with Clean Water State Revolving Fund.
- 2000: The "BEACH Act" amendments established a grant program to support monitoring and advisory programs at coastal marine and Great Lakes beaches. Also required research and development of recreational criteria by EPA.
- Today: The "Modern" Clean Water Act.

THE 1972 AMENDMENTS TO FWPCA: "CLEAN WATER ACT (CWA)"

- Established the basic structure for regulating pollutants discharged into the "waters of the US."
- Made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions.
- Funded the construction of sewage treatment plants under the construction grants program.
- Required each state and territory to adopt water quality standards for all intrastate waters and provided for EPA review and approval or disapproval.
- Provided opportunities for meaningful public engagement.

WHY DOES THE CLEAN WATER ACT MATTER?

Ca. 1960s present day

Cuyahoga River water quality improvements in recent years reflect the effects of requirements of the CWA 1972 amendments.

LAWS, REGULATIONS AND GUIDANCE RELATED TO WATER QUALITY STANDARDS

WORKING TOWARD CWA GOALS: IT'S A HIERARCHY

- The Clean Water Act (CWA) is a statute.
  - Statutes are passed by Congress.
  - Statutes are laws that impose requirements or "musts."
- The CWA gave EPA the authority to promulgate regulations.
  - These are substantive rules (or "musts") to implement the statute.
  - This presentation will mention several of EPA's regulations under the CWA, including WQS (40 CFR 131), NPDES (40 CFR 122), and TMDL (40 CFR 130.7).
- EPA publishes guidance to assist states and authorized tribes
  - Guidance does not have the force of law.

LAW: CLEAN WATER ACT

- Objective: "restore and maintain the chemical, physical and biological integrity of the Nation's waters." (CWA 101(a))

- Interim goal: "wherever attainable…water quality which provides for the protection and propagation of fish, shellfish and wildlife and provides for recreation in and on the water." (CWA 101(a)(2))

WATERS UNDER CWA JURISDICTION

"Waters of the United States" (WOTUS)

The U.S. EPA and the Army published the Navigable Waters Protection Rule in April 2020. Where effective, it defines WOTUS as:

- The territorial seas and traditional navigable waters,
- Perennial and intermittent tributaries to those waters,
- Certain lakes, ponds, and impoundments, and
- Wetlands adjacent to jurisdictional waters.
- The final rule also details 12 categories of exclusions, features that are not "waters of the United States," such as features that only contain water in direct response to rainfall (e.g., ephemeral features); groundwater; many ditches; prior converted cropland; and waste treatment systems.
- *States and tribes have discretion to adopt state/tribal rules to protect groundwater, and any non-WOTUS, if they choose. Such waters would not be regulated under the Clean Water Act.*

KEY CWA SECTIONS

The following are key sections that outline a portion of the major implementation programs. The first number of the section indicates the title of the Act in which that section is located.

- CWA 101 - Goals and Policy
- CWA 301 - Technology Based Effluent Limits
- CWA 302 - Water Quality Based Effluent Limits
- CWA 303 - Water Quality Standards and Implementation
- CWA 319 - Non-point Source Management
- CWA 401 - State/Tribal Certification
- CWA 402 - Point Source Permitting (NPDES)
- CWA 502 - Definitions: Navigable, Pollutant…
- CWA 510 - State/Tribal Authority
- CWA 518 - Indian Tribes

WHAT ACTIVITIES ARE REGULATED UNDER CWA?

- 'Point source' – regulated under CWA
  - Defined at CWA 502(14) "any discernable, confined and discrete conveyance including…any pipe, ditch, channel…[etc] from which pollutants are or may be discharged."
  - These discharges generally must be regulated in a manner consistent with state/tribal WQS. For example, discharges of point source pollutants regulated under the National Pollutant Discharge Elimination System (NPDES) must be permitted and permit limits must be derived from and comply with WQS.

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- 'Nonpoint source' – *not regulated under CWA*
  - Any source of water pollution that does not meet the definition at CWA 502(14).
  - Polluted runoff from rain or snowmelt carrying natural and anthropogenic pollutants to waters. Examples include runoff from agricultural lands, stream erosion, and atmospheric deposition.

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CWA'S TWO APPROACHES TO MAINTAIN AND PROTECT WATER QUALITY

Technology-based Approach

- **Goal:** Achieve a specific level of end-of-pipe performance.
- **Focuses on:** meeting limits derived from levels that EPA expects each type of industrial & municipal discharger to achieve for specific pollutants based on the performance of treatment and control technologies.
- Calculate technology-based effluent limits (TBELs) derived from federal effluent guidelines.
- CWA 301; 40 CFR 122.44(a) & (e); 40 CFR 125.3, 40 CFR 405-471

Water Quality-based Approach

- **Goal:** Meet water quality standards (WQS) in the receiving water.
- **Focuses on:** meeting limits based on what is needed to achieve water quality standards that apply to the ambient receiving water and are derived on a case by case basis.
- Calculate water quality-based effluent limits (WQBELs) derived from WQS which are applied to the water body.
- CWA 302; 40 CFR 122.44(d), 40 CFR 131-132

WATER QUALITY STANDARDS

CWA 303: BASIS FOR WATER QUALITY STANDARDS

- WQS define the water quality goals for a water body.
- WQS provide a regulatory basis for many actions, e.g.,
  - Reporting on water quality conditions and status.
  - Developing water quality-based effluent limits in National Pollutant Discharge Elimination System (NPDES) permits for point sources.
  - Setting targets for Total Maximum Daily Loads (TMDLs).
- An important function of WQS is to provide a regulatory basis for the water quality management activities authorized under the CWA.

REGULATION: WATER QUALITY STANDARDS

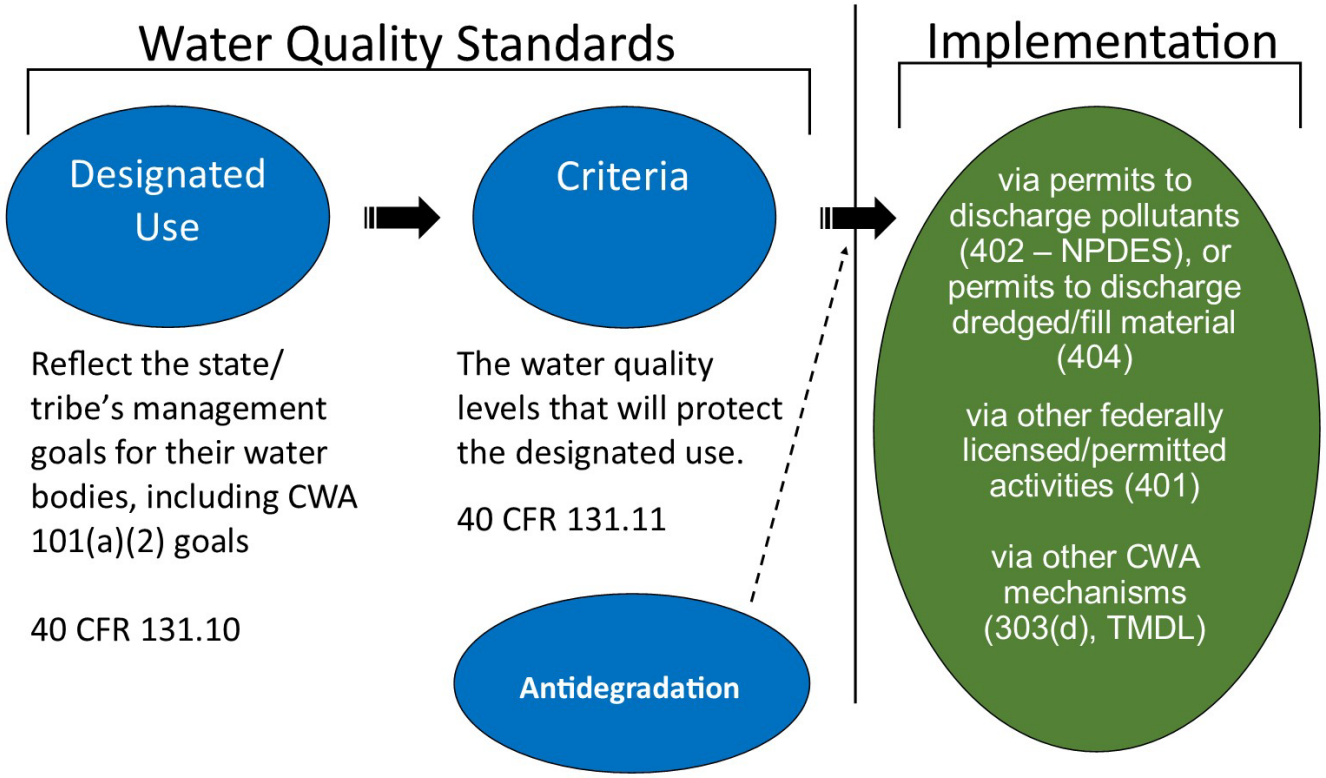
- Water quality standards (WQS) are the core of water management programs.
- States, territories and authorized tribes adopt WQS to protect public health or welfare, enhance the quality of the water, and serve the purposes of the Clean Water Act including sections 101(a) and 101(a)(2).
- State/Territorial/Tribal WQS establish water quality goals for a water body and provide a regulatory basis for controls.
- The current federal regulation is in the Code of Federal Regulations (CFR) part 131, as well as part 132 for the Great Lakes area. The federal regulation contains procedures for developing, revising, and approving state and tribal-adopted WQS and for promulgation of state and tribal WQS by EPA.
- EPA-approved state and tribal WQS can be supplemented by other state or tribal programs.

COMPONENTS OF WQS

- WQS consist of 3 core components:
  - Designated uses (sometimes known as "beneficial uses"),
  - Criteria to protect those uses, and
  - Antidegradation requirements.

- Additional components: general policies (e.g., low flow provisions, mixing zone policies) (40 CFR 131.13), WQS variances (40 CFR 131.14), compliance schedule authorizing provisions (40 CFR 131.15).

WATER QUALITY STANDARDS SCHEMATIC



DESIGNATED USES (40 CFR 131.10)

- Designated uses are those uses specified in [states' and authorized tribes'] water quality standards [regulations] for each water body or segment, whether or not they are being attained.
- They describe the water quality goals or desired condition for a specific water body, and the functions and/or activities that are supported by a level of water quality.
- They also serve as tools to communicate water quality goals to the public.

WHAT DOES THE CWA SAY ABOUT USES?

- CWA 303 (c)(2)(a): water quality standards shall serve the purposes of the [Act] and "shall be established taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial, and other purposes, and…navigation."
- CWA 101(a)(2) sets a national goal that, "wherever attainable…water quality which provides for the protection and propagation of fish, shellfish and wildlife, and…recreation in and on the water…"
  - **"Uses specified in section 101(a)(2) of the Act" -**
    - Protection and propagation of fish, shellfish and wildlife
    - Recreation in and on the water
  - "**Non-101(a)(2) uses**": Any uses not unrelated to the protection and propagation of fish, shellfish, wildlife or recreation in and on the water (40 CFR 131.3(q).
- The WQS regulations at 40 CFR Part 131 interpret the CWA to effectively establish a "rebuttable presumption" that CWA 101 (a)(2) uses are attainable and must be designated. If a state or tribe disagrees, they may demonstrate that such uses are not attainable through a Use Attainability Analysis (UAA)
- States and tribes are not required to designate non 101(a)(2) uses but their use and value must be considered.

DESIGNATED USES-STATE/TRIBAL ROLES (40 CFR 131.10)

- States and authorized tribes must specifically identify designated uses to express their goals.
  - There are no federal "default" designated uses.
- States and authorized tribes have discretion in designating and how to articulate them as long as the system established allows protection of waters consistent with the CWA and regulations.
- States and authorized tribes can designate multiple uses for each water body.
- States and authorized tribes must take into account downstream protection when designating uses.

EXAMPLES OF DESIGNATED USE APPROACHES

State A	State B
Specifically designates multiple uses to each water.	Designates a "class" that contains multiple different uses.
For example, one water body designated for: Warm water aquatic life use, Public water supply use, Agricultural use, and Primary contact recreation use	For example, designations may be: Class A(1): - Aquatic biota, wildlife and aquatic habitat use - Aesthetics use - Swimming and other primary contact recreation use - Boating, fishing and other recreation use Class A(2) - Includes Class A(1) + Public Water Supply Class B - Includes Class A(1), Class A(2), + irrigation of crops and other agricultural uses

REVISING DESIGNATED USES

- Sometimes the designated uses and criteria need to be adjusted to reflect that the underlying WQS is not attainable.
- Except in certain circumstances, designated uses can be revised to reflect:
  - **More specific** desired condition (e.g., aquatic life use to cold water- or warm water-aquatic life use).
  - Clearer articulation of the **attainable** use (e.g. primary vs secondary contact recreation use).
- Revising designated uses can lead to more effective criteria, permits, TMDLs.
- Evaluation of the use and value for that use is generally required by a state/tribe wishing to make a revision, but Congress intended more prescriptive requirements for revising uses related to CWA 101(a)(2) uses.
  - For CWA 101(a)(2) uses, revisions must be accompanied by a UAA (a "structured scientific assessment of the physical, chemical, biological and economic factors affecting attainment of the use.")

REVISING DESIGNATED USES: USE ATTAINABILITY ANALYSIS (UAA)

- When revising uses specified in CWA 101(a)(2), revisions must be accompanied by a UAA, which is a "structured scientific assessment of the physical, chemical, biological and economic factors affecting attainment of the use.").
  - *EPA does not act on UAAs, but can and should work closely with states and authorized tribes prior to submission to provide input.*
  - A UAA must identify a factor precluding the attainment of the use. EPA specifies 6 factors that can be used to demonstrate that a use is not attainable- "131.10(g) factors."
  - After completing a required UAA a state/authorized tribe must adopt the highest attainable use (HAU) and the criteria to protect the HAU.
    - Highest attainable use (HAU) is the "modified aquatic life, wildlife, or recreation use that is both closest to the uses specified in section 101(a)(2) of the Act and attainable, based on the evaluation of the factor(s) in § 131.10(g) that preclude(s) attainment of the use and any other information or analyses that were used to evaluate attainability." (40 CFR 131.3(m))

REVISING DESIGNATED USES: THE 131.10(G) FACTORS

1. **Naturally occurring** pollutant concentrations prevent the attainment of the use.
2. **Natural, ephemeral, intermittent or low flow conditions or water levels** prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met.
3. **Human caused conditions or sources of pollution** prevent the attainment of the use and **cannot be remedied or would cause more environmental damage to correct** than to leave in place.
4. Dams, diversions, or other types of **hydrologic modifications** preclude the attainment of the use and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use.
5. **Physical conditions related to the natural features** of the water body such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, **preclude attainment of aquatic life protection uses**.
6. Controls more stringent than those required by sections 301(b) and 306 of the Act would result in **substantial and widespread economic and social impact.**

REVISING DESIGNATED USES: USE ATTAINABILITY ANALYSIS (UAA) 131.10(J) AND 131.10(K)

- A UAA is <u>required</u>:
  - before removing CWA 101(a)(2) uses, and subcategories of such uses, and
  - when designating for the first time, uses that do NOT include CWA 101(a)(2) uses or when adopting subcategories of such uses with less stringent criteria.
- A UAA is <u>not required:</u>
  - when designating a CWA 101(a)(2) use for the first time,
  - when designating a subcategory of a CWA 101(a)(2) use that requires criteria at least as stringent as previously applicable, and
  - before removing or revising non-101(a)(2) uses. However, must justify how consideration of the use and value of such uses supports the action (i.e., "Use and Value" Demonstration).

WATER QUALITY CRITERIA
40 CFR 131.11

- Criteria are the water quality levels that will protect the designated use.
- Definition (40 CFR 131.3(b)): "Elements of State water quality standards, expressed as constituent concentrations, levels or narrative statements, representing water quality that supports a particular designated use. When criteria are met, water quality will generally protect the designated use."

CWA REQUIREMENTS FOR CRITERIA

- CWA 303(c)(1): "States/Tribes shall adopt criteria to protect designated uses into their WQS."

- CWA 303(c)(2)(b): "States/Tribes shall adopt criteria for "priority pollutants" (a list of "toxic pollutants" from a Congressional committee report referenced in *CWA 307(a)*).

WQS REGULATORY REQUIREMENTS FOR CRITERIA

- WQS regulation at 40 CFR 131.11: "States [&Tribes] must adopt those water quality criteria to that protect the designated use."
  - Criteria must be based on sound scientific rationale.
    - EPA produces national water quality criteria *recommendations* under CWA 304(a) (these are recommendations, not Federal rules).
    - Factors such as technological feasibility, social and economic costs, and the benefits of achieving criteria levels are not considered in criteria development.
    - Criteria may be revised as new scientific data or methodologies are developed.
  - Criteria must contain sufficient parameters or constituents to protect the designated use.
  - For waters with multiple use designations, the criteria shall support the most sensitive use.
    - EPA encourages states and tribes to reach out to the local communities to learn how they use particular water bodies. This information will help make more informed decisions on how to support the most sensitive use.

TWO FORMS OF CRITERIA

- **Numeric** – 40 CFR 131.11(b) provides that states/tribes should establish numeric values based on:
  - EPA's 304(a) national recommended water quality criteria,
    - Recommendations developed by EPA based on the latest scientific knowledge, issued periodically as guidance to states/tribes for use in developing their own criteria.
    - NOTE: EPA typically uses these as basis for promulgation if necessary.
  - 304(a) recommendations modified to reflect site-specific conditions, or
  - Other scientifically defensible methods.
- **Narrative** – states/authorized tribes should establish narrative criteria
  - Where numeric criteria cannot be established, or
  - To supplement numeric criteria.

❖ Both numeric and narrative forms of criteria provide a regulatory basis for implementation and management actions like NPDES permit limits.

NARRATIVE CRITERIA

- Example:

"Surface waters *shall be free from* substances attributable to wastewater discharges or other pollutant sources that cause injury to, or are toxic to, or produce adverse physiological responses in humans, animals, or plants."

Note: For CWA 307(a) toxics, a state/tribe must provide a method of translating a narrative criterion into something numeric from which a permit writer can derive effluent limits (40 CFR 131.11(a)(2)).

TYPES OF CRITERIA

- Aquatic life
- Biological
- Human health
- Recreational
- Nutrient
- Other (e.g., hydrologic, sediment)

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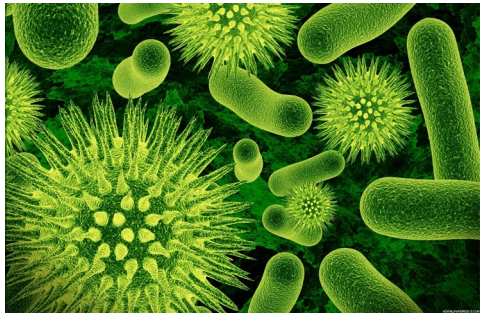

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TYPES OF CRITERIA

- Different types of water quality criteria are complementary. There is no one type of criteria that will guarantee protection of all designated uses.
- Ideally all types of water quality criteria are considered when setting standards and evaluating the condition of a waterbody.
- Different types of water quality criteria collectively provide a valuable tool for setting standards and making water quality management decisions that help protect the broad diversity of life affected by water pollutants.

AQUATIC LIFE CRITERIA

- Aquatic life criteria protect aquatic life from specific pollutants in the water column.
- In addition to typical surface waters, EPA recommendations are largely applicable to wetlands, but some may need adjustments, for example because of natural factors such as pH.
- An aquatic life criterion typically contains three components:
  - **Magnitude** (or concentration) – how much of a parameter
  - **Duration** – period of time over which the instream concentration is averaged
  - **Frequency** – how often the magnitude can be exceeded

Example: "To protect the Aquatic Life Use from acute toxicity in saltwater, dissolved Zinc *shall not* exceed 90 micrograms per liter as a one hour average more than once every three years."

AQUATIC LIFE CRITERIA

- Aquatic life criteria usually include:
  - An acute value to protect against short exposure periods,
  - A chronic value to protect against long term exposure, and
  - Separate saltwater values and freshwater values to account for different effects depending on salinity.

Example: Dissolved Zinc Aquatic Life Criteria
For all of the below, concentrations shall not exceed the specified number as a 1 hour average (for acute) or a 4 day average (chronic) more than once every 3 years.
Saltwater acute: 90 ug/L as a 1-hour average
Saltwater chronic: 81 ug/L as a 4 day average
Freshwater acute: 120 ug/L as a 1-hour average
Freshwater chronic: 120 ug/L as a 4 day average

Haven Lake

BIOLOGICAL CRITERIA (OR 'BIOCRITERIA')

- Biological criteria protect aquatic life uses by describing the desired biological condition of surface waters for a specific aquatic life designated use.
- Examples:
  - Narrative: "Waters shall be free from substances in concentrations or combinations that would adversely alter the structure and function of aquatic communities, as defined by the reference condition."
  - Numeric: Class I: Cool Water Aquatic Life,
    - Taxa Richness: 5
    - EPT Index: 3

HUMAN HEALTH CRITERIA

- Human health criteria are developed to protect humans from specific pollutants in both water and fish tissue that humans might ingest.
- Calculated to protect from effects of pollutants from ingestion of aquatic organisms in the water ("org only") and for ingestion of water and organisms ("water + org").
- Expressed as a pollutant concentration based on:
  - Toxicological Assessment
  - Exposure Scenario

RECREATIONAL CRITERIA

- Recreational criteria protect recreational designated uses (for activities including swimming, bathing, surfing, etc.).
- Designed to protect people from illnesses (including gastrointestinal, skin, eye, ear, etc. effects) due to exposure to fecal contamination in water, and kidney and liver damage due to exposure to certain cyanotoxins.
- For fecal contamination, EPA has published criteria recommendations based on epidemiological studies involving swimmers, looking at an association between water quality and illness.

RECREATIONAL CRITERIA

Examples

- Fecal contamination:
  - Criteria expressed in terms of fecal indicator bacteria, for example: "A 30 day *geometric mean* of 30 colony forming units (cfu) enterococci /100 mL water, not to be exceeded, and a *statistical threshold value* of 110 cfu/100 mL for marine waters may not be exceeded in more than 10% of samples in a 30 day interval.
- Cyanotoxins:
  - Criteria expressed in terms of specific toxins, for example: "The concentration of total microcystins shall not exceed 8 µg/L in more than three ten-day periods per recreational season, for more than one recreational season, over a 5-year period."

NUTRIENT CRITERIA

- Nutrient criteria are numeric limits of total nitrogen and total phosphorus that protect designated uses (aquatic life, recreational, and public water supply) from the effects of eutrophication.

- Nutrient criteria are developed for different water body types using field data of nutrient concentrations (the *stressors*) and different ecological effects symptomatic of eutrophication (the *responses*).

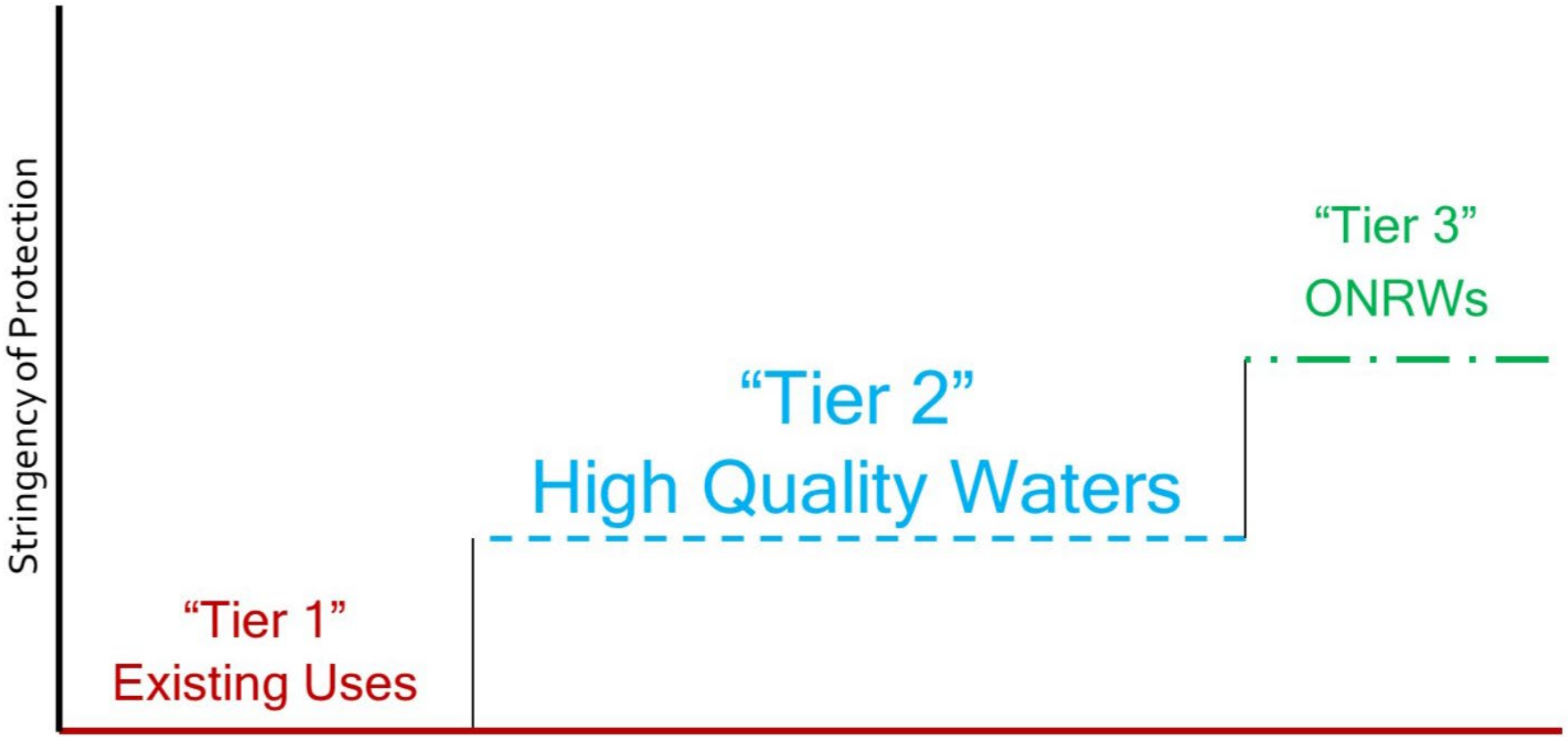
ANTIDEGRADATION
40 CFR 131.12

- **Policy:**
  - 40 CFR 131.12 (a): The State shall develop and adopt a statewide antidegradation policy.
  - Antidegradation adds additional protections for waters of the U.S. above and beyond designated uses and criteria. The antidegradation policy provides the goals and framework of protection.
- **Implementation Methods:**
  - 40 CFR 131.12(b): The State shall develop methods for implementing the antidegradation policy that are, at a minimum, consistent with the State's policy and with paragraph (a) of this section. The State shall provide an opportunity for public involvement during the development and any subsequent revisions of the implementation methods, and shall make the methods available to the public.
  - The antidegradation implementation method describes how the state/tribe will implement the policy.

ANTIDEGRADATION REQUIREMENTS 40 CFR 131.12 (A): POLICY

- States and authorized tribes must develop and adopt a statewide antidegradation policy that includes:
  - Protection for **existing uses** for all waters of the U.S.;
  - Protection for **high quality waters** (water quality that exceeds the levels necessary to support protection and propagation of fish, shellfish and wildlife and recreation in and on the waters);
    - Identification of High Quality Waters
    - Analysis of Alternatives
  - Protection for **Outstanding National Resource Waters** (ONRWs) identified by the state/tribe; and
  - Compliance with CWA 316 in regard to thermal discharges.

THE 3 "TIERS" OF PROTECTION



"TIER 1" PROTECTION: EXISTING USES

- 40 CFR 131.12 (a)(1): "Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected."

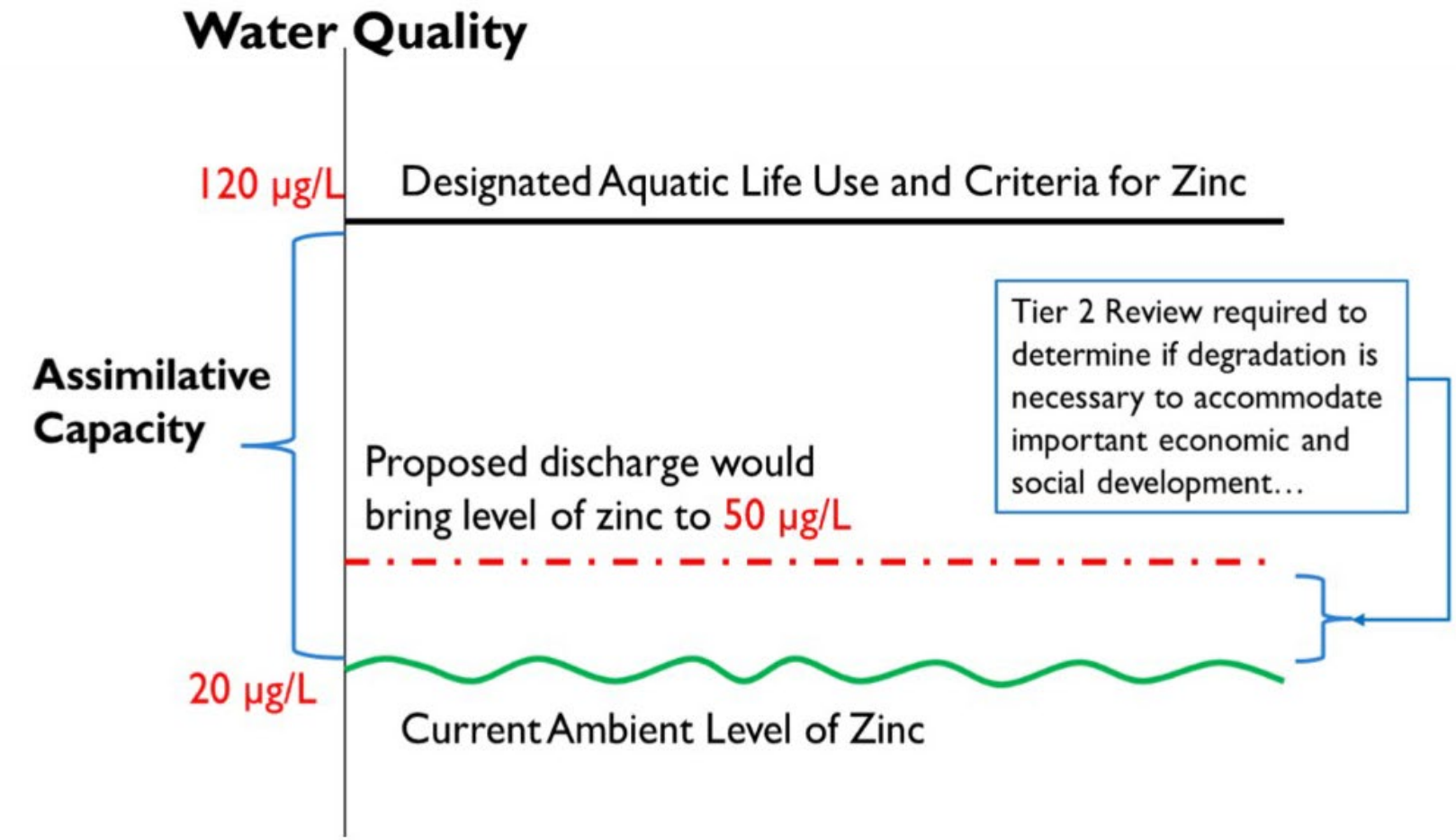
- This protection applies to all waters of the U.S.

"TIER 2" PROTECTION: HIGH QUALITY WATERS

- What is Tier 2 Protection?
  - 40 CFR 131.12(a)(2): Maintenance and protection of high quality waters: waters where water quality is better than necessary to support CWA 101(a)(2) uses (protection and propagation of fish, shellfish and wildlife and recreation in and on the water.)
  - High water quality shall be maintained and protected UNLESS:
    - Use of the assimilative capacity is necessary to accommodate important economic or social development in the area in which the waters are located.
    - If this is the case, in order to allow that lowering there must be a Tier 2 Review, including analysis of alternatives, a socio-economic analysis, and public participation, to demonstrate these circumstances are met.

"TIER 2" REVIEW

HYPOTHETICAL EXAMPLE - DEMONSTRATION PURPOSES ONLY!



"TIER 2" REVIEW PROCESS

- Identify water bodies that will be afforded Tier 2 protection.
- Is degradation "necessary"?
  - Analysis of Alternatives
- Is the activity "important"?
  - Social/economic analysis
- Assure protection for existing uses.
  - Tier 1 protection
- Assure achievement of regulatory pollution control for point and nonpoint sources.
- Intergovernmental coordination and public participation.

Only <u>after</u> this process can state/tribe make a determination on whether to allow the lowering of water quality.

"TIER 3" PROTECTION: OUTSTANDING NATIONAL RESOURCE WATERS (ONRWS)

- 40 CFR 131.12 (a)(3) "Where high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected."
- A state/tribe can identify any water body as an ONRW.
- ONRWs typically include: waters that are viewed as pristine, highly valued waters (important to recreation or tourism), and waters of exceptional ecological significance (important, unique or sensitive ecologically).
- This is the most stringent protection. No degradation is allowed, except on a short term or temporary basis (weeks or months, not years).
- Some states have created a "Tier 2.5" category as a slightly less restrictive protection.

ANTIDEGRADATION REQUIREMENTS 40 CFR 131.12 (B): IMPLEMENTATION METHODS

- States/authorized tribes must develop implementation methods that describe how the policy will be applied.
  - Must be consistent with and address all components of the state's/tribe's policy and EPA's regulation.
    - 3 Tiers of Protection, Components of Tier 2 review, CWA 316 Compliance
  - Must be publicly available.
  - State/tribe must provide an opportunity for public involvement during development and revisions of implementation methods.
- In addition:
  - May provide additional details that explain how the state's/tribe's policy will be implemented.
  - Can be adopted as WQS provisions (binding), incorporated by reference (binding), or written as guidance documents (non-binding).

ADDITIONAL COMPONENTS OF WQS (40 CFR 131.13-131.15)

- States and authorized tribes may adopt additional policies affecting the application and implementation of water quality standards in addition to WQS such as:
  - Mixing zone policies (40 CFR 131.13)
  - Low flow policies (40 CFR 131.13)
  - WQS variance policies (includes WQS variance policies, procedures and authorizing provisions) (40 CFR 131.14)
  - WQS variances
    - More information on WQS variances can be found at: https://www.epa.gov/wqs-tech/water-quality-standards-variances
  - Provisions authorizing use of compliance schedules for WQBELs in NPDES permits (40 CFR 131.15)
- If these additional policies are legally binding provisions, then they are considered new or revised WQS and are subject to EPA review and approval.

ROLE: STATES, TERRITORIES AND AUTHORIZED TRIBES

- States, territories and authorized tribes have the primary authority to adopt, review and revise WQS and implementation procedures (CWA 303(c)). They must:
  - submit their WQS to EPA for review and approval or disapproval after adoption into their state or tribe's regulations,
  - review their WQS triennially, and
  - conduct a public hearing to involve the public.
- They may adopt standards more stringent than recommended by EPA (CWA 510).
- Tribes may or may not assume responsibility for administering the program at their option. They may apply for "Treatment in a Similar Manner as a State" (TAS) for the purposes of administering EPA programs under CWA 518.

STATE/TRIBAL WQS SUBMITTALS TO EPA FOR REVIEW UNDER CWA 303(c)

- Must include **the new or revised WQS provisions presented for review**
  - This could be designated uses, criteria, and/or antidegradation provisions/revisions applicable to all waters of the state at once, specific changes to specific water bodies, or provisions/revisions applicable to a specific basin in the state. It is helpful for EPA's review to either identify the specific state or tribal regulatory citations being added. If the WQS are being revised, providing a redline strikeout version can help expedite EPA's review.
- Must include **supporting information** regarding those provisions
  - For example, if a state or authorized tribe is revising a use specified in CWA 101(a)(2) to require less stringent criteria, the state or authorized tribe would need to submit a UAA.
- Must include **certification that the standards were duly adopted according to state or tribal law**
  - This certification must be provided either by the State Attorney General or appropriate legal authority within the state or authorized tribe. This is often called "Attorney General Certification" or "AG Cert".
- Must include evidence of a **public hearing**
  - EPA's regulation at 40 CFR 131.20(b) requires that states and authorized tribes must, at a minimum, conduct a public hearing on all new and revised water quality standards consistent with 40 CFR 25.5, regardless of whether the revisions are connected to a triennial review or not.

ROLE: COMMUNITY / PUBLIC INVOLVEMENT

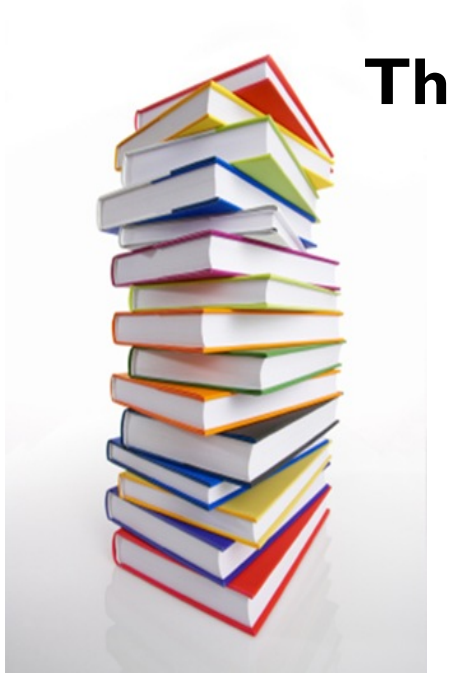
- EPA encourages states and authorized tribes to reach out to the local communities and learn how they use their water body and to keep those communities informed of. By engaging early and often, WQS decisions will best reflect the variables and needs of a local community which will benefit the public and implementing agency.
- Community members should be engaged meaningfully throughout the decision-making process through public meetings, webinars, and public hearings as necessary.
- Each community has unique considerations, and outreach should be tailored to meet those needs. Considerations when engaging the local community might include: language, age, rural/urban population, community work schedules, income and education levels, literacy rates, and community demographics.

ROLE: EPA

- Facilitate development of regulations and policies that guide EPA's review of submitted WQS.
- Coordinate with and provide technical assistance to states and authorized tribes.
- Develop and publish CWA 304(a) criteria recommendations (based on latest science).
- Approve/disapprove WQS submitted by states and authorized tribes. CWA requires EPA to approve within 60 or disapprove within 90 days. (CWA 303(c)).
  - If EPA approves as consistent with the CWA and WQS regulation, the new/revised WQS becomes effective for CWA purposes.
  - If EPA disapproves, the state or tribe has the chance to revise. Consistent with the CWA, if the state or tribe does not adopt specified changes within 90 days, the EPA Administrator must promptly propose and promulgate replacement WQS.

IMPLEMENTING WQS

A state, territory or authorized tribe has adopted WQS into their regulations and EPA has approved them under CWA 303(c). Now what?



WQS:
Theory, Plans, Process

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Implementation:
Permits to discharge or waterbody assessment program

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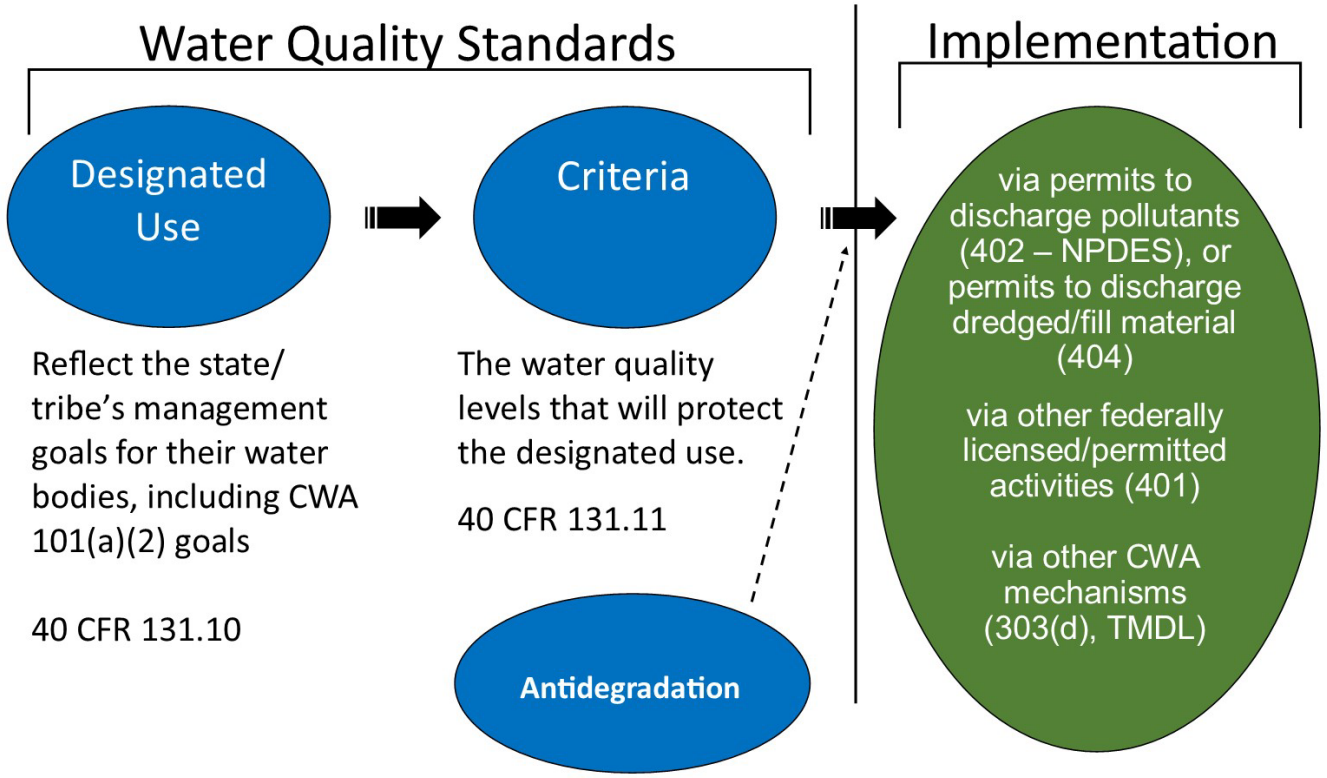
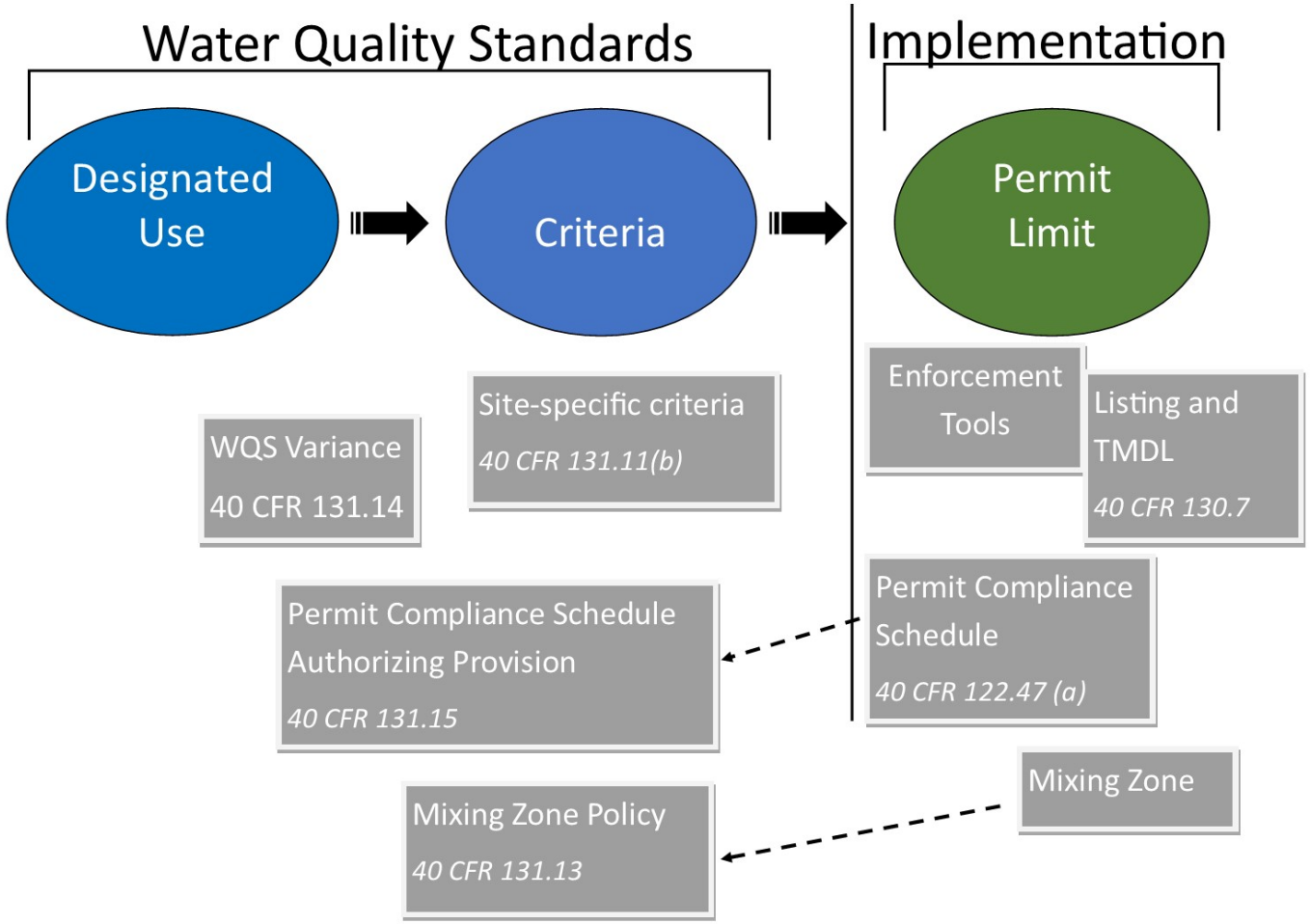
WATER QUALITY STANDARDS SCHEMATIC



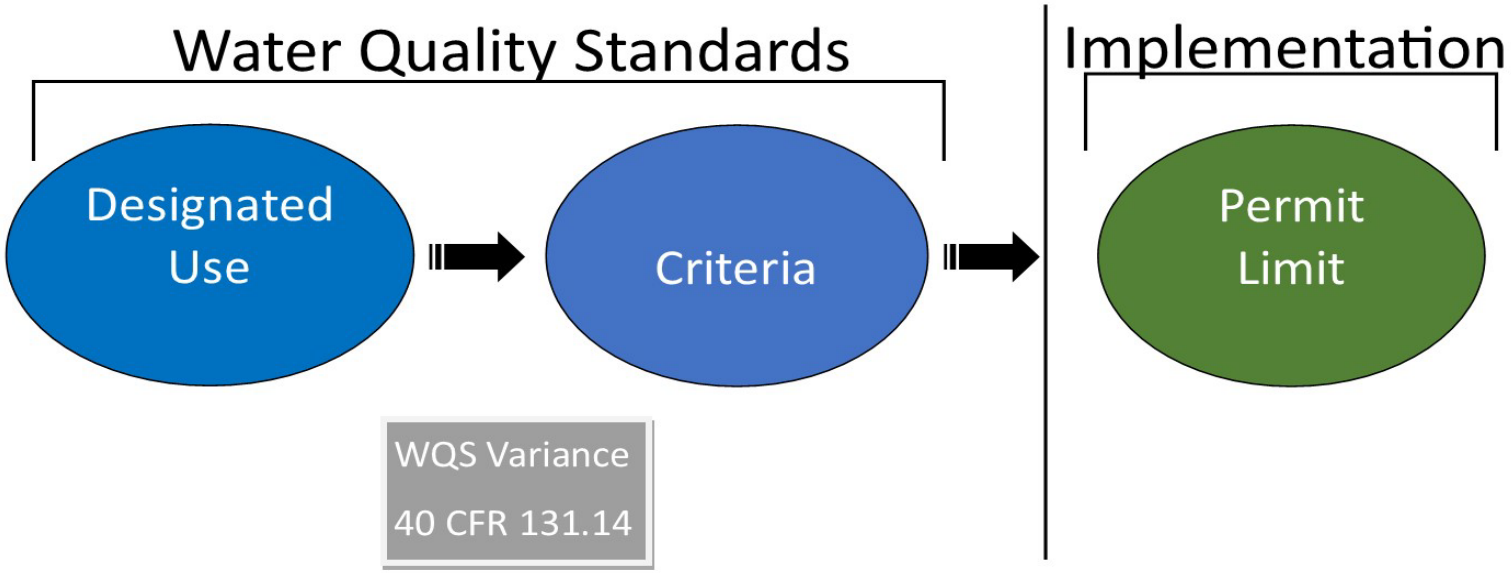
To protect existing uses, high quality waters, Outstanding National Resource Waters
40 CFR 131.12

A VARIETY OF TOOLS TO HELP MEET WQS

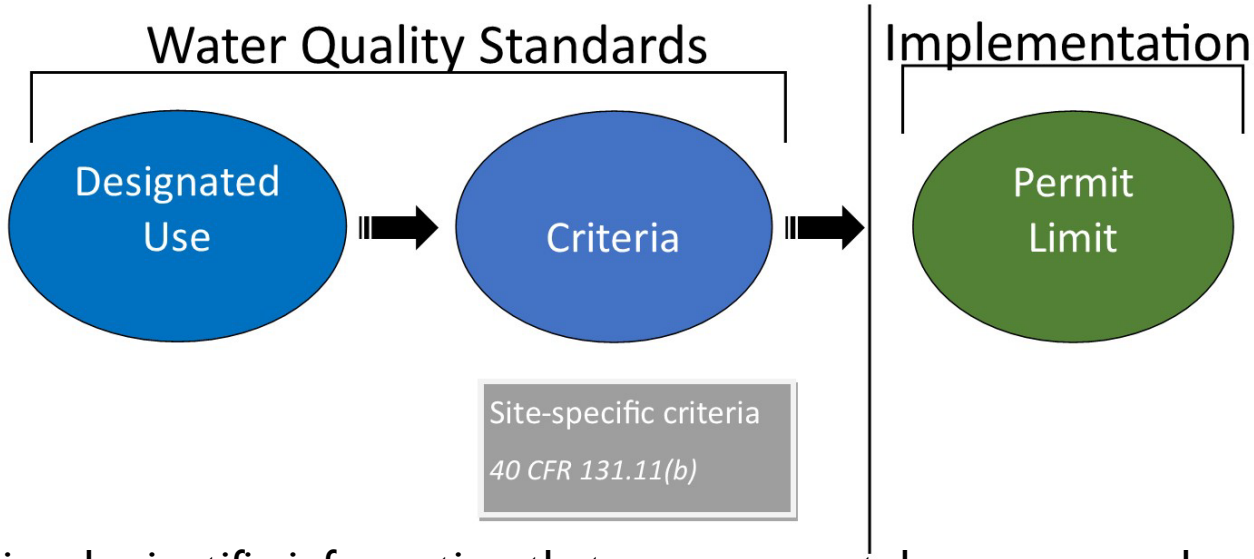


WQS VARIANCE

Time-limited designated use and criterion for a specific pollutant(s) or water quality parameter(s) that reflect the highest attainable condition during the term of the WQS variance (40 CFR131.14).



SITE SPECIFIC CRITERIA

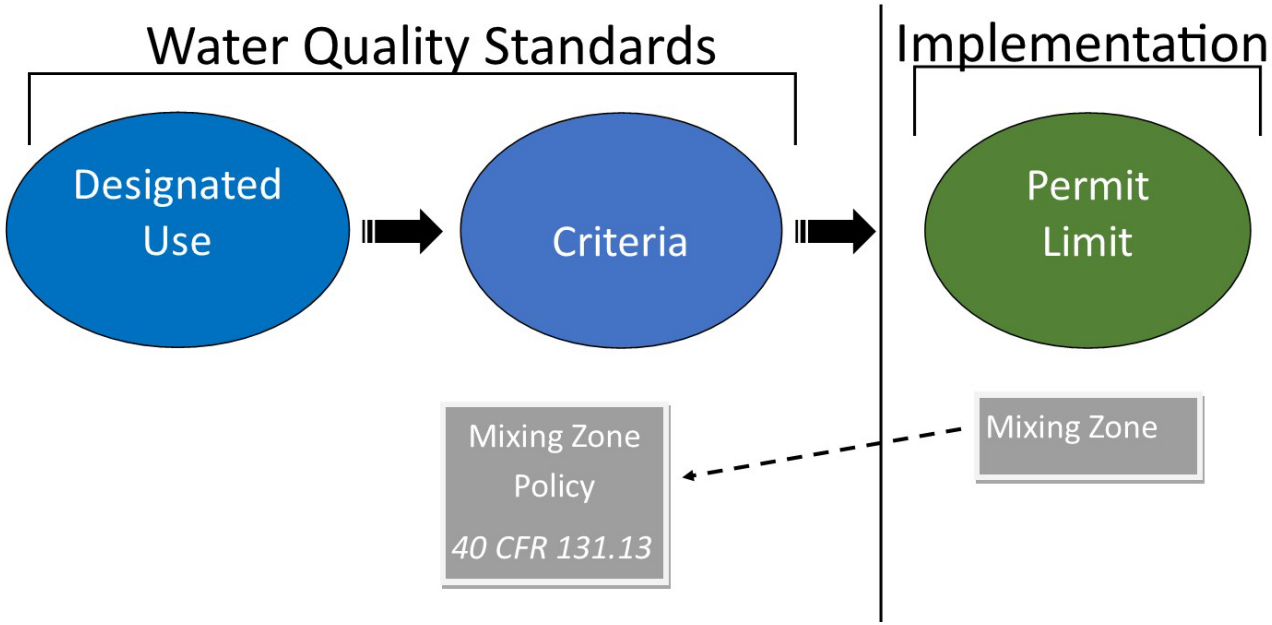


- Best used when you have additional scientific information that more accurately expresses a level/concentration for a water quality parameter to protect the designated use.
- Under Section 131.11(b)(1) of the regulations, States and Tribes may adopt numeric criteria based on:
  - Published CWA 304(a) guidance;
  - CWA 304(a) guidance modified to reflect site specific conditions; or,
  - Other scientifically defensible methods.

MIXING ZONE

A tool that allows for dilution of a discharge before criteria must be met.

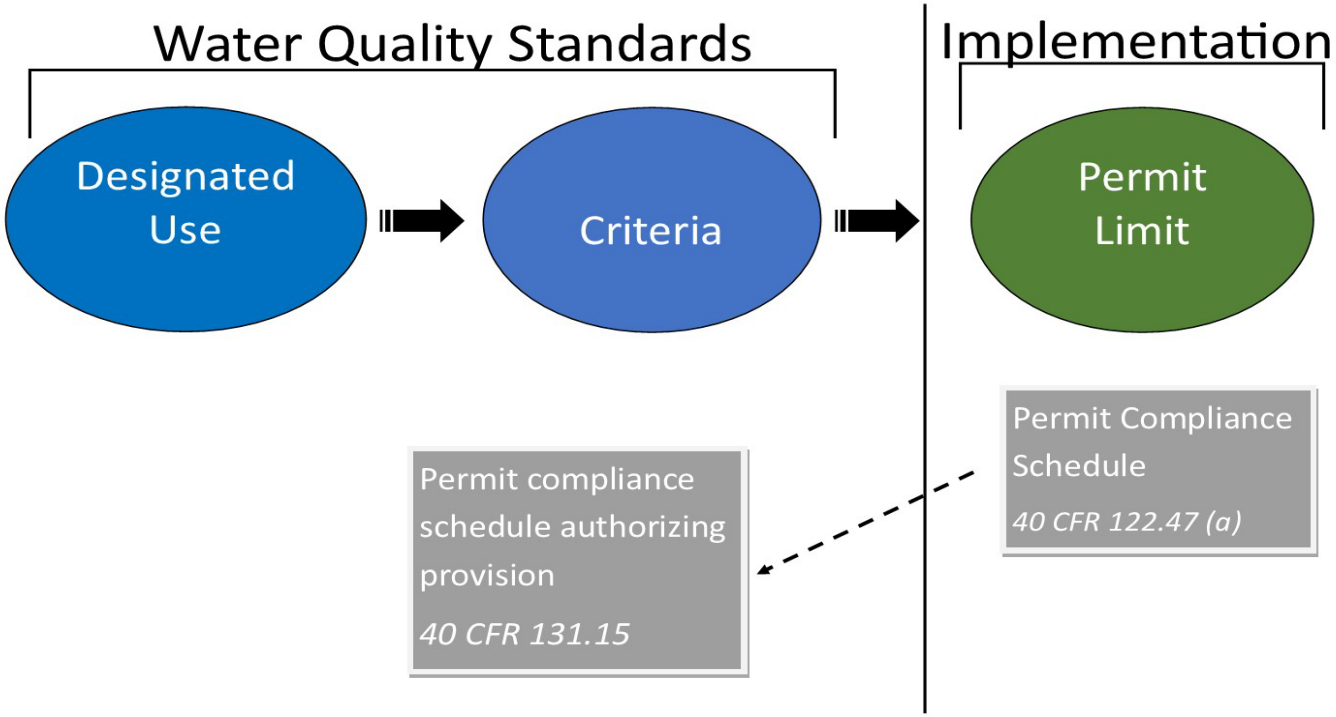
- A **mixing zone** is a limited area or volume of water where initial dilution of a discharge takes place and where certain numeric water quality criteria may be exceeded.
- **Rationale:** Sometimes organisms can be exposed to pollutant concentrations above a criterion magnitude for a short duration without interfering with the designated use of a waterbody as a whole.



PERMIT COMPLIANCE SCHEDULE

A tool that allows additional time to take specific actions to meet an NPDES WQBEL.

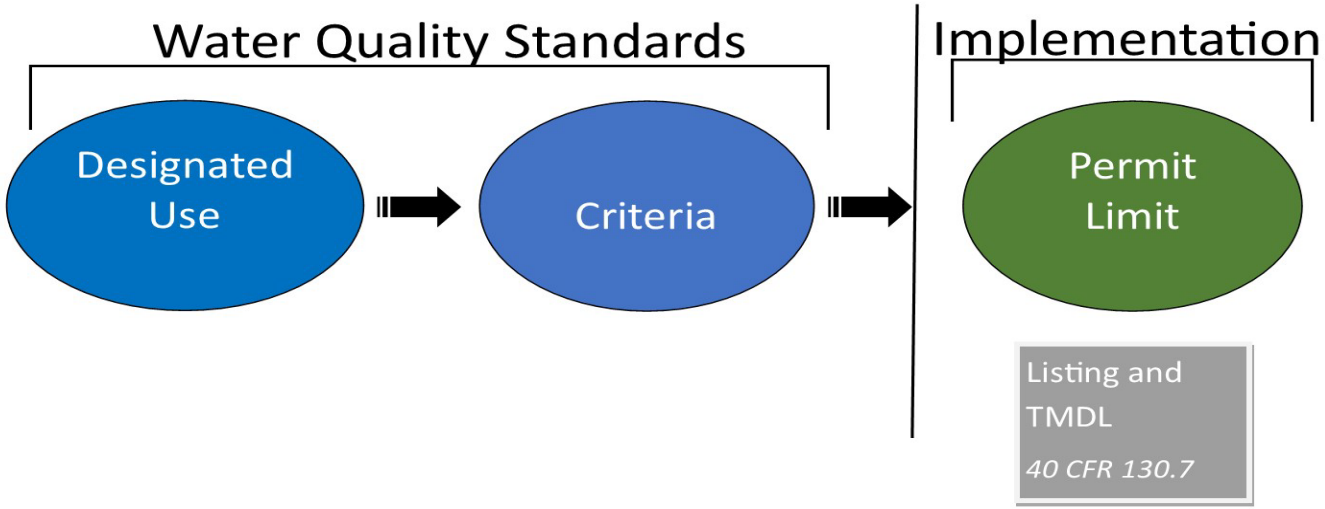
- If a permittee cannot immediately comply with the permit WQBEL upon effective date of permit, the permit may include, where appropriate, a schedule of compliance granting time to a NPDES permittee to meet new or revised WQS "as soon as possible."



TOTAL MAXIMUM DAILY LOAD (TMDL)

A tool to calculate needed source reductions (point sources and nonpoint sources) to meet WQS.

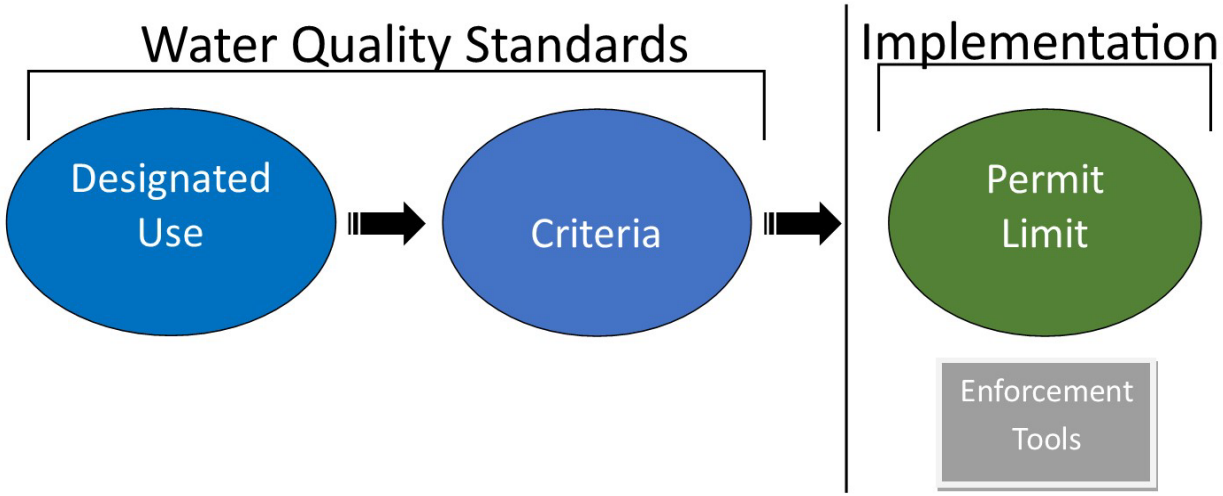
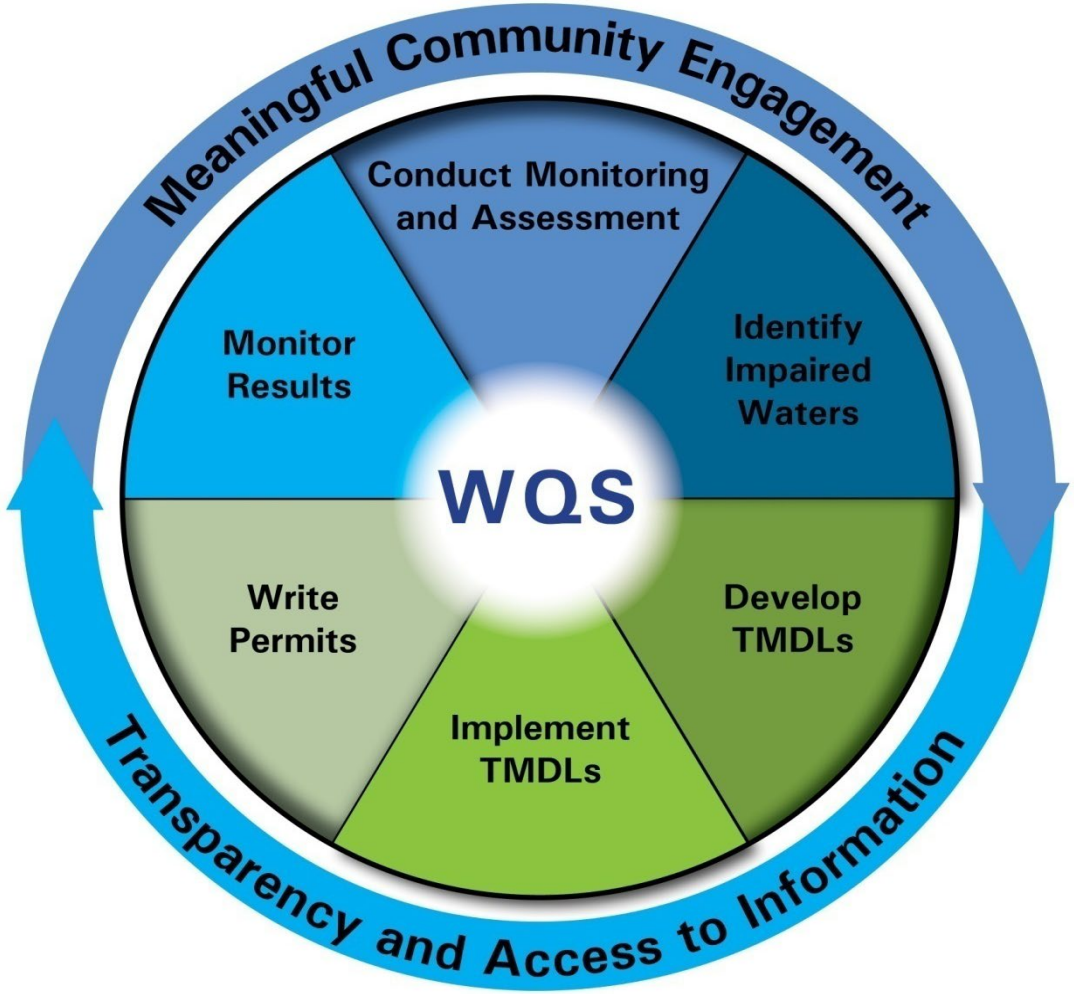
- A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources (waste load allocations for point sources and load allocations for nonpoint sources).
  - Every 2 years states/tribes develop a list of waters that are not meeting applicable WQS and need a TMDL.



ENFORCEMENT TOOLS

Requirements outside of WQS to take specific actions.

- Enforcement tools support implementation of NPDES permit limits and the underlying WQS.
  - For example, administrative orders and civil judicial consent decrees contain enforceable corrective actions and deadlines to return to compliance.



WATER QUALITY BASED APPROACH