

Water Quality Policies

WATER QUALITY STANDARDS

Introduction

Water Quality Standards & Classifications

Designated Uses & Classification

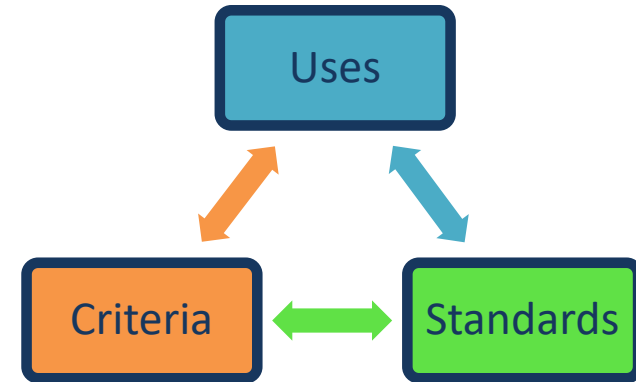
- Establishes existing and designated uses by class
- Assignment of designated uses to specific waters

Standards

- Overall Goals & Policies

Criteria

- Narrative & numeric criteria to sustain the use



General Policies

Additional Provisions included in Water Quality Standards

- Adoption of General Policies Authorized in 40 CFR 131.13
 - May be adopted at the discretion of the State
 - If adopted, then subject to EPA review and approval
 - General Policies Include:
 - Mixing Zones
 - Critical Low Flows
 - Variances
- Other Required Policies
 - Compliance Schedule Provision
- Other Policies
 - Protection of Downstream Waters

Mixing Zones

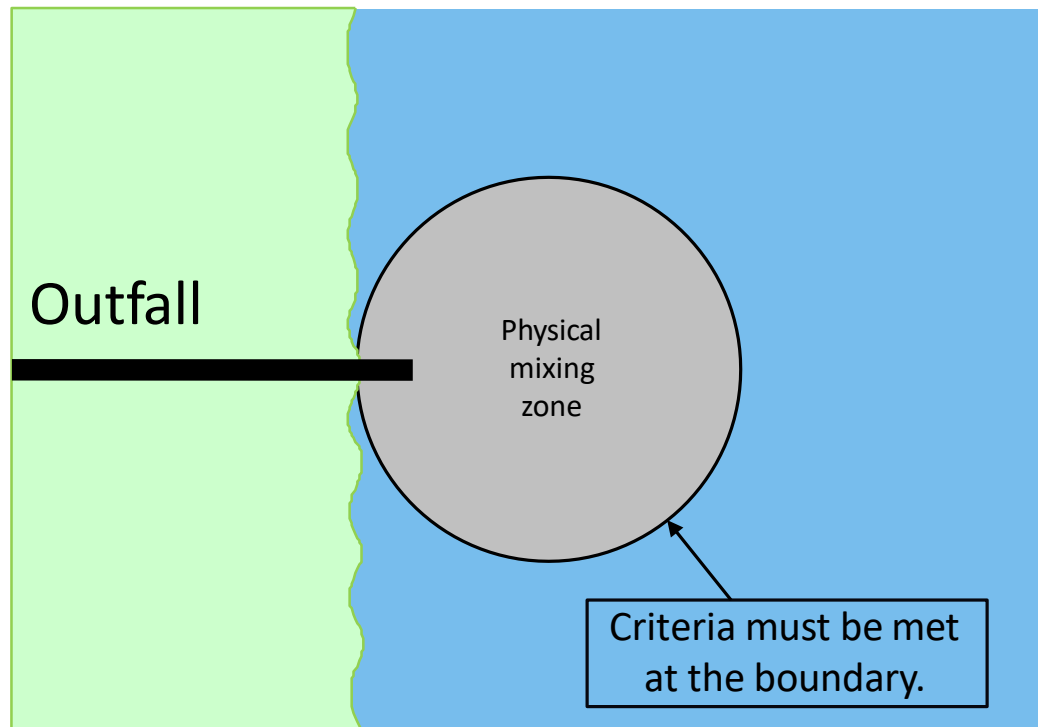
Mixing Zone

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.



2001. 5. 15

What is a Mixing Zone?



Actual or physical mixing zone:

- The portion of a waterbody where mixing occurs and certain criteria may be exceeded.
- Any time an effluent is discharged into a receiving water, there will always be some mixing.
- Described on a site specific basis using field studies and modeling.
- Criteria must be met at the boundary
- Area should be minimized to the greatest extent practical

What Should a Mixing Zone Policy Contain?

A statement specifying whether the state or tribe intends to authorize mixing zones.

Description of the general procedures for defining and implementing mixing zones in terms of the following, at a minimum:

- **Location**
- **Size** (with consideration of low flow conditions)
- **Shape**
- **Outfall design**
- **In-zone water quality**

What Else Should a Mixing Zone Policy Contain?

Mixing zone policies should contain sufficient information to ensure the following:

- Mixing zones do not impair the designated use of the waterbody as a whole.
- Pollutant concentrations within the mixing zone are not lethal to organisms passing through the mixing zone.
- Pollutant concentrations within the mixing zone do not cause significant human health risks considering likely exposure pathways (e.g., skin contact, consuming fish).
- Mixing zones do not endanger critical areas (e.g., breeding or spawning grounds, habitat for threatened or endangered species, areas with sensitive biota, shellfish beds, fisheries, drinking water intakes and sources, or recreational areas).

When Might a Mixing Zone Not Be Appropriate?

Bioaccumulative pollutants in the discharge.

- Bioaccumulatives are more likely to affect the entire waterbody.
- May cause significant human health risk.

Bacteria in waters designated for primary contact recreation.

- May cause significant human health risk.
- May endanger critical areas (e.g., recreational areas).

When an effluent is known to attract biota (e.g., temperature, innate behavior such as migration, food source near the outfall).

- Sometimes toxic pollutants or other factors can attract aquatic life to a mixing zone, which can cause organisms to incur significant exposure.

Mixing Zone Policy vs Permit

Mixing zone policy:

- Contained in Water Quality Standards
- General Policy
- Describes the general characteristics of and requirements associated with mixing zones.
- Legally binding state or tribal policy adopted into WQS.
- Considered a WQS that EPA reviews and approves or disapproves under Section 303(c) of the Clean Water Act.

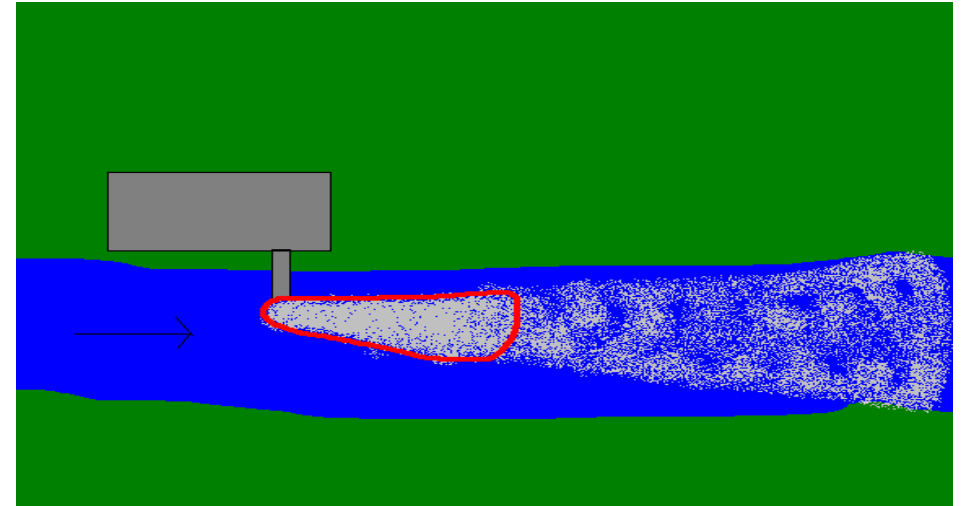
Individual, site-specific mixing zone:

- Established within an NPDES permit
- Site specific implementation
- Authorized for a particular point-source discharge in accordance with a state or tribal mixing zone policy.
- Also known as a regulatory mixing zone.
- Not considered a WQS that EPA reviews and approves or disapproves.

Mixing Zone Example: CT

Zone of Influence

- May be established on a case by case basis and shall consider:
 - Characteristics of discharge (volume, strength, persistence, potential for bioaccumulation or unacceptable risks)
 - Zone of passage
 - Effect on sensitive habitat
 - Aesthetic impacts
 - Location of other discharges
 - Environmental value and unique chemical, physical and biological characteristics of receiving water
- Size limited to the maximum extent possible



Application in NPDES Permits:

- Expressed in a permit in terms of flow rate (gph)
- Established based on
 - Best professional judgement
 - Dye studies
 - Modeling

Critical Low Flows

Establishing Critical Low Flows

- Provisions are established in WQS to identify low flows to which standards apply
- During low flow periods, there is less water available for dilution
- Effluents can have greater impacts during low flow conditions
- Selection of appropriate low flow related to exposure assumptions for water quality criteria

Criteria	Hydrologically Based Flow	Biologically Based Flow
Acute Aquatic Life	1Q10	1B3
Chronic Aquatic Life	7Q10	4B3
Human Health - Nonthreshold	Mean Harmonic Flow	
Human Health - Threshold	Shorter duration flow (e.g.30Q2) *	

* Technical Support Document for Water Quality based Toxics Control

Other Low Flow Considerations

Revisit periodically during Triennial Review to determine if flow conditions have changed

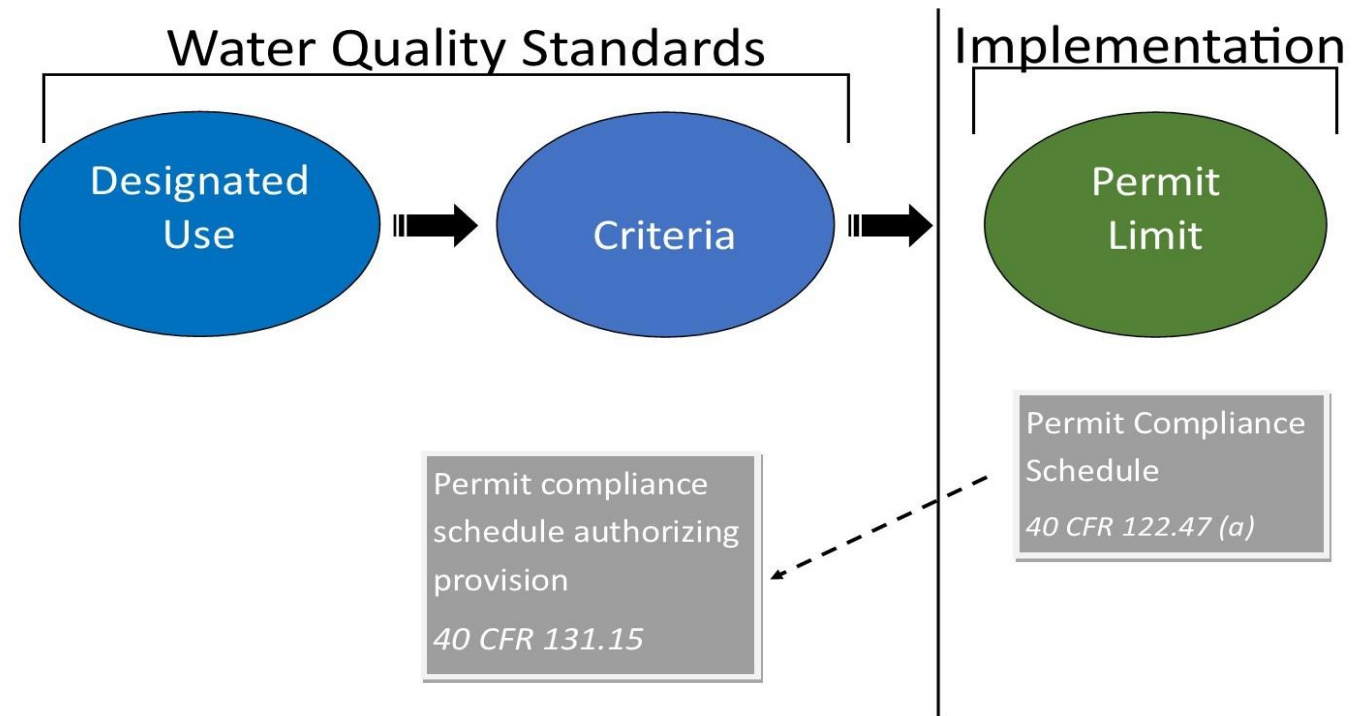
- Are there changes to long term flow patterns?
- Have Hydrologic alterations such as dams or groundwater withdrawals, etc. changed flow conditions?
- Setting low flow conditions in tidal waters?

Identifying Critical Low Flows in Water Quality Standards is not the same as establishing standards or regulations for water quantity

Provisions for Schedules

Permit Compliance Schedules

A tool that allows additional time to take specific actions to meet an NPDES Water Quality Based Effluent Limit



Conditions of Permit Compliance Schedules

- Time requirements:
 - Compliance required “as soon as possible.”
 - Must contain an enforceable sequence of actions and final limit.
 - Interim requirements if schedule is longer than 1 year.
- CS itself is included in the permit.
- CS may be used by facilities to implement a variance.

Limitations on Compliance Schedules

- CS not allowed for permit limits based on standards adopted prior to July 1, 1977.
- CS may not allow extra time to meet TBELs.
- The time allowed by a compliance schedule may not solely be used for the development of a TMDL, a WQS including UAA, or site-specific criteria.

Permit Compliance Schedule Authorizing Provision

- Authorizing provision required in order to use compliance schedules for WQBELs
- Examples:
 1. The Department may authorize compliance schedules in accordance with individual state NPDES permits to allow the permittee time to comply with water quality-based effluent limitations determined to be necessary to implement new or revised water quality standards.
 2. NPDES permits issued by permitting authorities **within the [insert name] watershed** may include a compliance schedule in accordance with implementing regulations requiring compliance as soon as possible with **nutrient load limitations** assigned to individual dischargers.

Variances

Water Quality Standards Variance

A time-limited designated use and criterion:

- for a specific pollutant
- from a specific source or for a specific water body
- that reflects the highest attainable condition for a specific time period.

A regulatory mechanism that **allows progress toward attaining a designated use and criterion** that is **not currently attainable**.

Statutory Basis for WQS Variances

Sec. 101 of the Clean Water Act

- (a) The objective of this Act is to **restore** and maintain the
 - chemical, physical, and biological integrity of the Nation's waters.
- (1) ...
 - (2) it is the national goal that **wherever attainable**, an interim goal of water quality which provides for...

Interpretation

- The goal is to make water quality better
- This goal may not always be readily attainable

WQS Variance Requirements-HAC

Similarities between HAU and HAC

- ❑ HAU is defined as a “modified...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 factors in 131.10(g) that precludes attainment of the use and any other information or analyses used to evaluate attainability.”
- ❑ HAC is a similar requirement- a quantifiable expression of the best condition that can be achieved during the term of the variance. Cannot lower currently attained water quality.

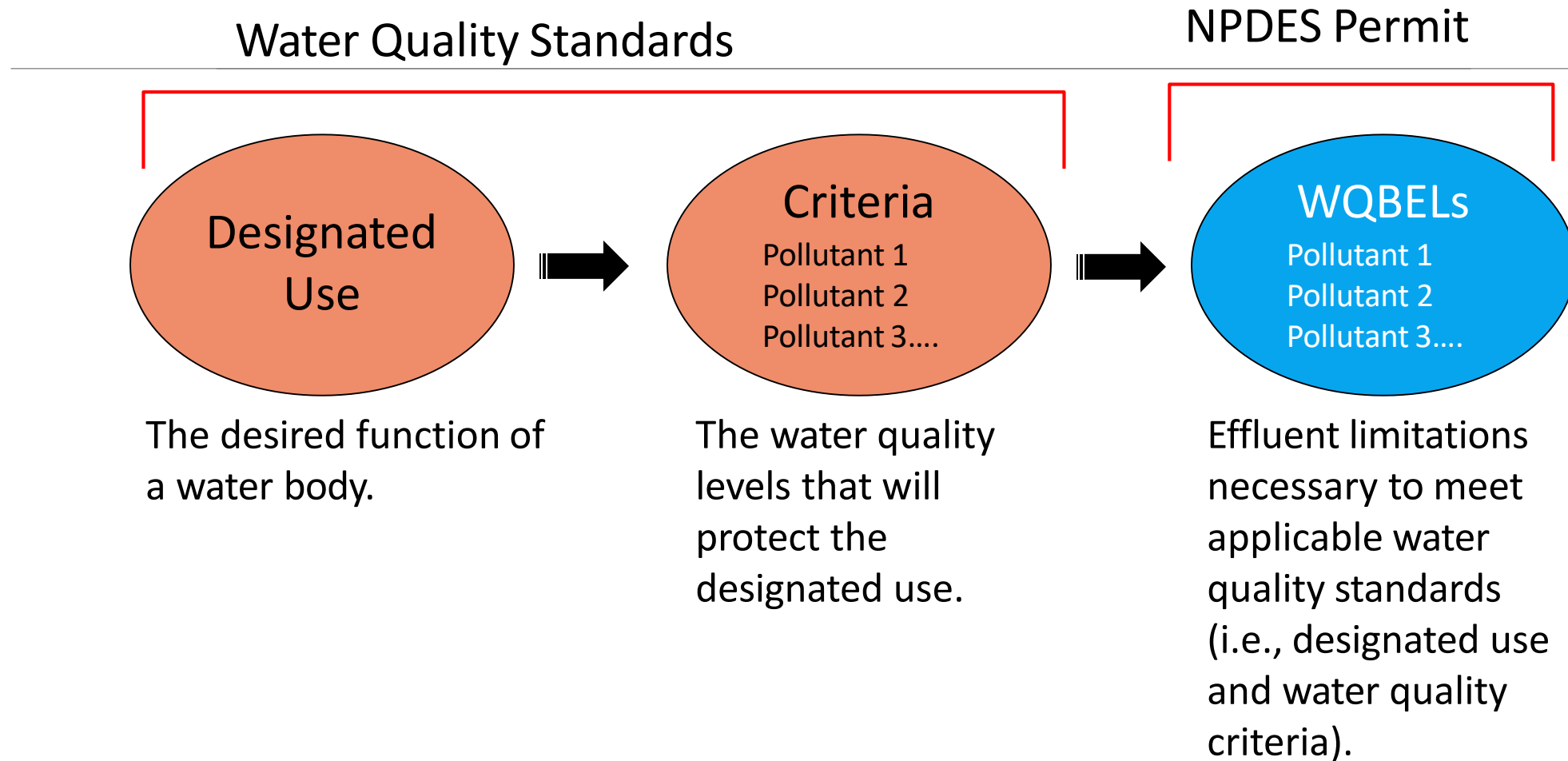
Differences Between HAU and HAC

Highest Attainable Use (HAU)	Highest Attainable Condition (HAC)
<ul style="list-style-type: none">-Only expressed as a use-Applies only to CWA 101(a)(2) uses and subcategories of such uses	<ul style="list-style-type: none">-does not have to be expressed as a use-Applies to WQS variance for either 101(a)(2) or non-101(a)(2) uses

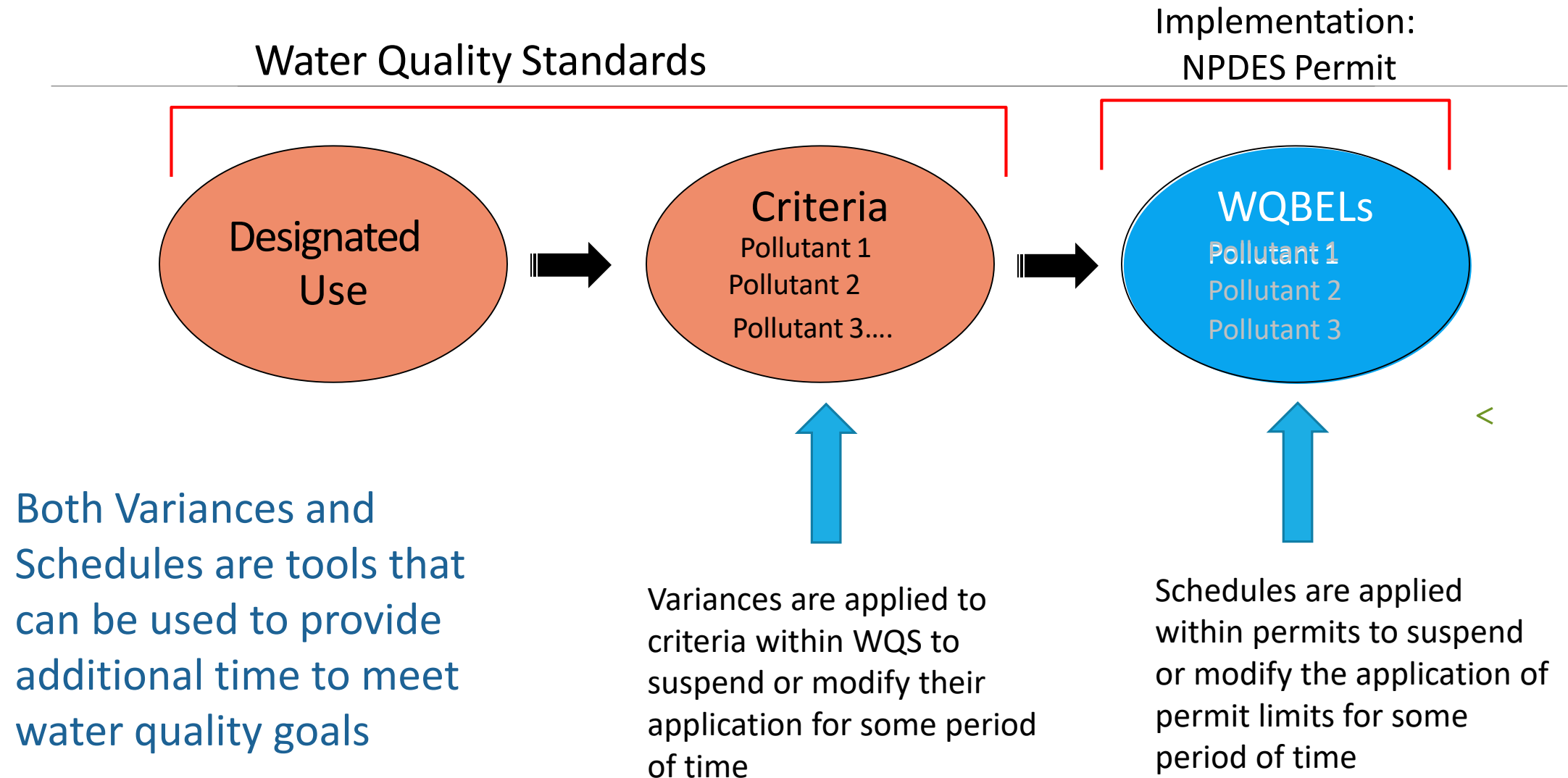
Variances and Site Specific Criteria

Site Specific Criteria	WQS Variance
Where the same designated use will be protected but with different (e.g. more or less stringent) water quality criteria.	Where the designated use cannot be attained for a period of time and the state adopts a less stringent designated use and criteria to be put in place for a specified period of time.

Link Between WQS Variances and NPDES Permits



WQS Variances, NPDES Permits & Permit Schedules



When WQS Variances Can Be Useful

Incremental water quality improvements can be made even though:

- The designated use and criterion is not attainable now, but the state or authorized tribe believes it can be in the future, or
- The feasibility of attaining the designated use and criterion in the future is uncertain, but feasible progress towards attaining the designated use can still be made by implementing known controls and tracking environmental improvements

EPA's WQS Variance Building Tool *Demonstration*

The WQS Variance Building Tool is an implementation support tool designed to help states, territories, and authorized tribes:

- 1) determine if a WQS variance is the appropriate tool for their situation, and
- 2) adopt WQS variances that are consistent with the regulatory requirements at 40 CFR Part 131.14

Requirements for Variances

- 1) Scope –Identification of the pollutant(s) or water quality parameter(s) and water body or waterbody segment
- 2) Requirements that apply throughout term of the variance (i.e. HAC)
- 3) Statement that variance requirements are the more stringent of either HAC at time of adoption, or HAC identified at reevaluation
- 4) Variance Term
- 5) Reevaluation for variances with term >5 years
- 6) Reevaluation provision

Subsequent Variances

The regulations do not prohibit adoption of a subsequent variance once initial variance expires.

A subsequent variance may be obtained if the requirements of 131.14 are fully met again.

In addition, a subsequent waterbody or waterbody segment variance would require additional documentation on implementation of Best Management Practices (BMPs) and progress for nonpoint sources.

Protection of Downstream Water Quality

Considering Impacts on Downstream Waters

In designating uses of a water body and the appropriate criteria for those uses, the State shall take into consideration the water quality standards of downstream waters and shall ensure that its water quality standards provide for the attainment and maintenance of the water quality standards of downstream uses

EPA Recommends that State adopt language into their Water Quality Standards to recognize the need to protect water quality in downstream waters affected by actions and conditions in upstream waters

- Helpful in using a watershed approach
- Provides additional clarity and specificity

Incorporating Downstream Protection

Narrative Approach

- Broad general statements
- EPA has an online decision support tool and templates

Numeric Approach

- Identify sensitive downstream waters and their criteria. Apply criteria upstream.
- Develop water quality models to relate attainment of criteria in downstream waters with water quality conditions upstream.

Example Language:

All waters shall maintain a level of water quality at the pour points to downstream waters that provides for the attainment and maintenance of the water quality standards of those downstream waters

Groundwater

Groundwater Water Quality Standards

- Not addressed in Clean Water Act
- Some states adopt WQS for Groundwater
- Not reviewable by EPA
- In CT, Groundwater Water Quality Standards have same elements as surface water Water Quality Standards
 - Designated Uses & Classifications
 - Antidegradation Provisions
 - General Policies
 - Narrative Standards
 - Numeric criteria, however, are in remediation regulations