

Permitting Tools with Roots in WQS

Mixing Zones and Permit Compliance Schedules

VIRTUAL WQS ACADEMY

FEBRUARY 2026

Disclaimers

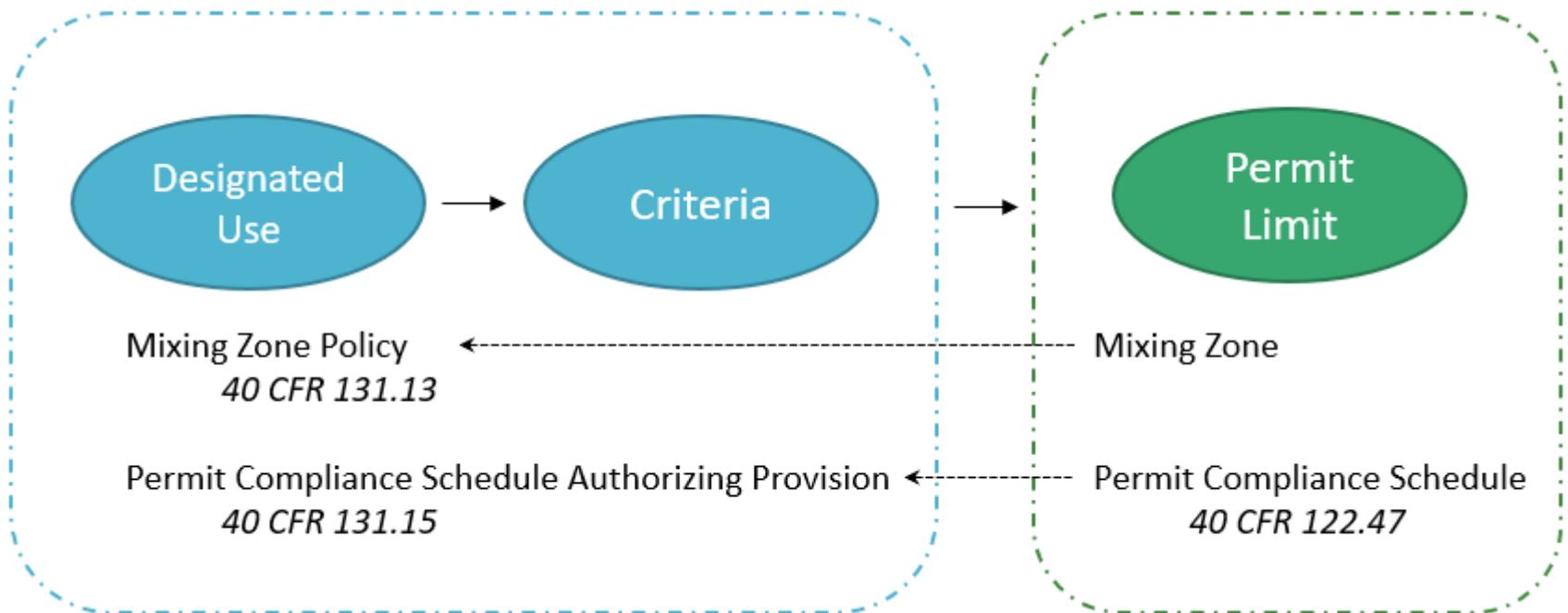
- **This presentation does not:**
 - Impose any binding requirements
 - Determine the obligations of the regulated community
 - Change or substitute for any statutory provision or regulatory requirement
 - Change or substitute for any Agency policy or guidance
 - Control in any case of conflict between this discussion and statute, regulation, policy or guidance

The views expressed in presentation are those of the author[s] and do not necessarily represent the views or policies of the U.S. Environmental Protection Agency.

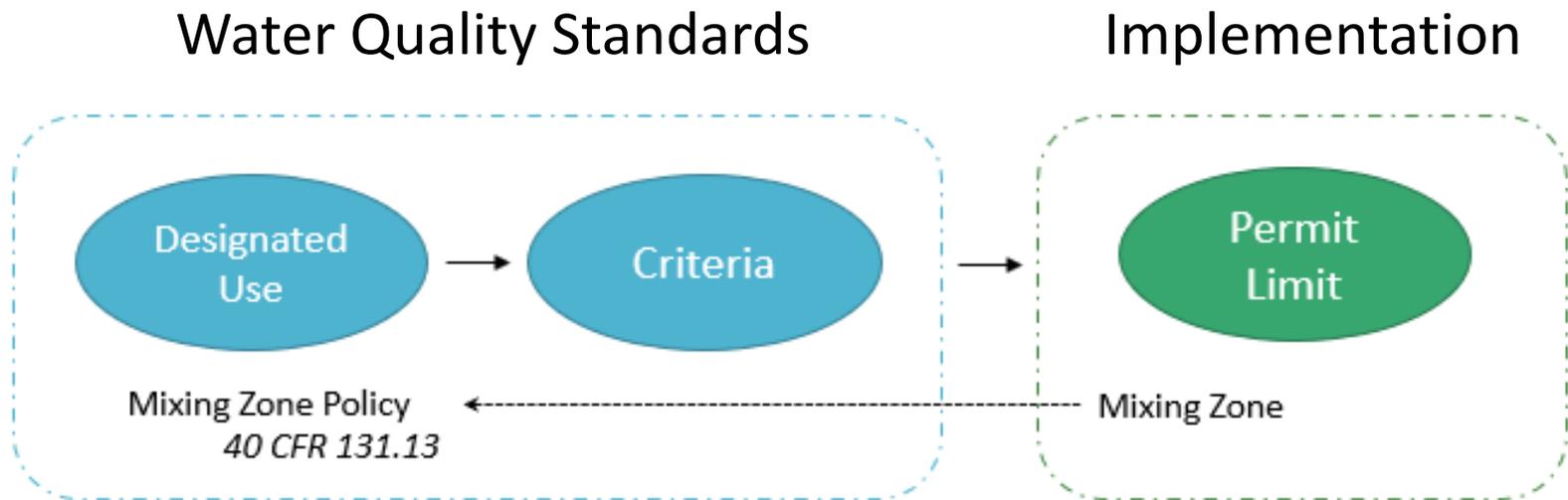
Two permitting tools with links to Water Quality Standards

Water Quality Standards

Implementation

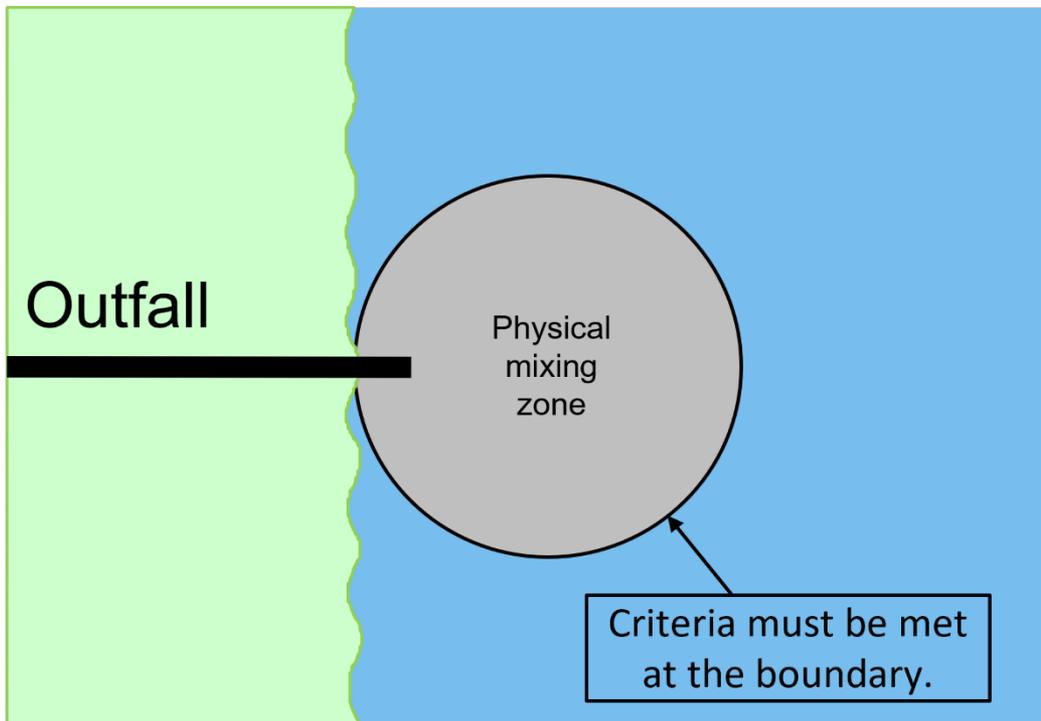


Mixing Zone: a tool that designates a zone within the waterbody where mixing can occur, to allow for dilution of the effluent.



If a permittee cannot meet the water quality criteria at the “end of pipe,” the permit may include a dilution allowance or a specified zone for mixing to occur, where appropriate, allowing the NPDES permittee to meet new or revised WQS at the boundary of the mixing zone.

What is a Mixing Zone?



- Any time an effluent is discharged into a receiving water, mixing will occur.
- The portion of a waterbody where mixing occurs, and criteria may be exceeded.
- Described on a site-specific basis using field studies and modeling.
- Criteria must be met at the boundary.

What is a Mixing Zone?

Individual, site-specific mixing zone:

- Site specific implementation of a mixing zone in a NPDES permit.
- 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 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.

What is the Objective of a Mixing Zone Policy?

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

- Mixing zones do not impair the designated use of the waterbody.
- 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).

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**

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).

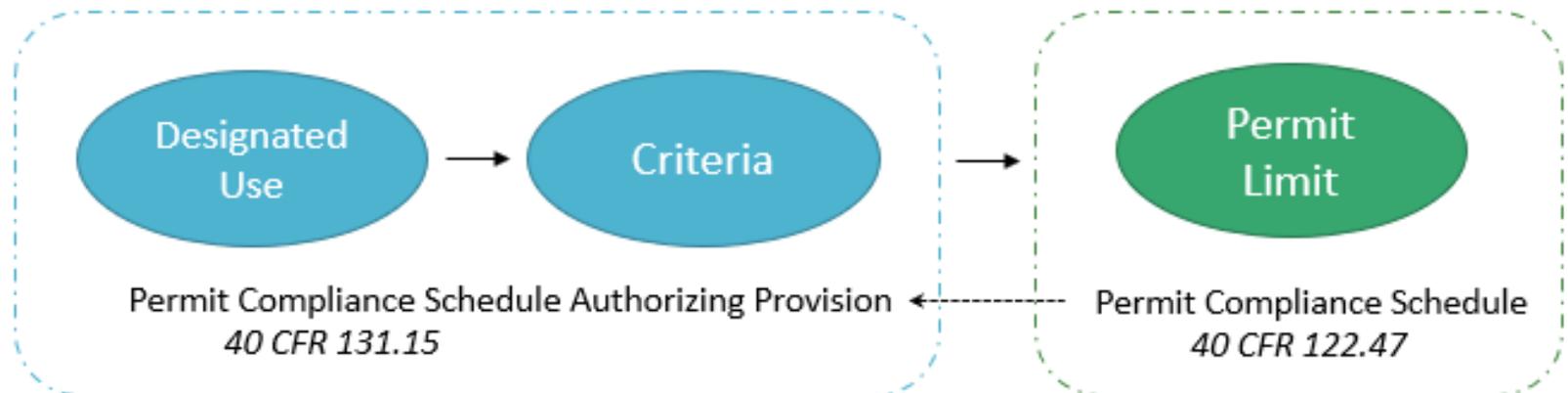
When an effluent is known to attract biota (e.g., temperature, innate behavior such as migration, food source near the outfall).

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

Permit Compliance Schedule: a tool that allows additional time to take specific actions to meet an NPDES WQBEL.

Water Quality Standards

Implementation



If a permittee cannot immediately comply with a new 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.”

What is the Purpose and CWA Definition of Permit Compliance Schedule?

- Allows for additional time to meet WQBEL when the permittee cannot meet the permit limits immediately, but it is known what specific actions can be taken to achieve the limits and how long it will take.
- Defined at CWA section 502(17) - The term "schedule of compliance" means a schedule of remedial measures including an enforceable sequence of actions or operations leading to compliance with an effluent limitation, other limitation, prohibition, or standard.
- Regulatory Requirements at 40 CFR 122.47 and 40 CFR 131.15.

What Regulatory Provisions address Permit Compliance Schedules?

§ 122.47 Schedules of compliance.

(a) General (applicable to State programs, see § 123.25). The permit may, when appropriate, specify a schedule of compliance leading to compliance with CWA and regulations.

(1) Time for compliance. Any schedules of compliance under this section shall require compliance as soon as possible, but not later than the applicable statutory deadline under the CWA.

§ 131.15 Authorizing the use of schedules of compliance for water quality-based effluent limits in NPDES permits.

If a State intends to authorize the use of schedules of compliance for water quality-based effluent limits in NPDES permits, the State must adopt a permit compliance schedule authorizing provision. Such authorizing provision is a water quality standard subject to EPA review and approval under section 303 of the Act and must be consistent with sections 502(17) and 301(b)(1)(C) of the Act.

What is the 2007 “Hanlon Memo”?

- On May 10, 2007, EPA issued a memo to provide a framework for the review of permits consistent with the CWA and its implementing regulations. (Compliance Schedules for Water Quality-Based Effluent Limitations in NPDES Permits)
- https://www.epa.gov/sites/default/files/2015-09/documents/memo_complianceschedules_may07.pdf
- Memo provided this framework around two questions:
 1. When may a permitting authority include a compliance schedule in a permit for the purpose of achieving a water quality-based effluent limitation?
 2. What principles are applicable to assessing whether a compliance schedule for achieving a water quality-based effluent limitation is consistent with the CWA and its implementing regulations?

What are the General Requirements for Permit Compliance Schedules?

- Compliance Schedules must:
 - be included in the NPDES permit;
 - be “appropriate” and require compliance “as soon as possible;”
 - provide an enforceable sequence of actions leading to compliance with the WQBEL;
 - include an enforceable final effluent limit and the date for its achievement, even where the compliance schedule extends past the permit expiration date; and
 - include interim requirements if the compliance schedule is longer than 1 year.

What are the General Limitations of Permit Compliance Schedules?

- Compliance schedules are not allowed for permit limits based on standards adopted prior to July 1, 1977.
- Compliance schedules may not allow extra time to meet TBELs.
- Compliance schedules may not be granted solely to provide time for the development of a TMDL, a WQS including UAA, or site-specific criteria.
 - However, compliance schedules may be used to provide time to attain the highest attainable condition specified in a WQS variance.

How does a Permitting Authority Evaluate “appropriate” and “as soon as possible”?

Factors relevant for whether a compliance schedule is “appropriate” include:

- How much time discharger had under prior permits.
- Discharger’s good faith effort to comply with WQBELs.
- Need for modifications to treatment facilities or O&M.
- Time needed to implement modifications.
- If same treatment needed as before to meet WQBEL.

Factors relevant for whether compliance is “as soon as possible” include:

- Steps needed to modify treatment facilities and O&M.
- Time for those steps.
- Where state or authorized Tribe has specified a time limit in its authorizing provision, permitting authority should not presume compliance schedules can automatically be granted with that maximum allowable time.

What is a Permit Compliance Schedule Authorizing Provision?

- 40 CFR 131.15 requires EPA approved authorizing provision to use compliance schedules for WQBELs in NPDES permits.
- Examples:
 1. The Department may authorize compliance schedules, in accordance with implementing regulations, in 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 regulation(s), requiring compliance as soon as possible with **nutrient load limitations** assigned to individual dischargers **but no longer than 5 years**.

Permit Compliance Schedules and WQS Variances

Permit Compliance Schedule	WQS Variance
Provides time for a permittee to complete actions needed to achieve a WQBEL.	Provides time to make feasible water quality progress and attain the highest attainable condition (HAC) while evaluating whether or not the designated use and criteria are attainable in the future.
A permit compliance schedule requires an enforceable sequence of actions leading to compliance with a final WQBEL (based on WQS) “as soon as possible.” See 40 CFR 122.47.	A WQS variance is a time-limited designated use and criterion that reflects the HAC and provides the basis for a WQBEL. The WQS variance term reflects the time needed to achieve the HAC.
A condition included in a permit by the permitting authority; a compliance schedule can be changed if the requirements of 40 CFR 122.47 are met.	A new WQS adopted by the state or authorized Tribe; a subsequent WQS variance can be obtained if it meets the requirements of 40 CFR 131.14.

Review Question #1

True or False. States and Tribes are required to establish mixing zone policies.

Review Question #1

True or False. States and Tribes are required to establish mixing zone policies.

Answer:

- **False.** *According to 40 CFR 131.13, states and Tribes may, at their discretion, adopt mixing zone policies into their WQS. If they choose to do so, those policies are subject to EPA review and approval or disapproval action under Section 303(c) of the Clean Water Act.*

Review Question #2

True or False. EPA reviews permit compliance schedules as part of a state or Tribe's WQS submission.

Review Question #2

True or False. EPA reviews permit compliance schedules as part of a state or Tribe's WQS submission.

Answer:

- **False.** *Permit compliance schedules are included in NPDES permits, not in WQS, and are governed by permit regulations at 40 CFR Part 122. However, before permit compliance schedules can be granted, their use must be authorized in a provision approved by EPA as an applicable WQS.*

Review Question #3

True or False. A state or authorized Tribe can only use one WQS tool at a time. If it picks a WQS variance, then it cannot also use a permit compliance schedule because otherwise they are just compounding the delay.

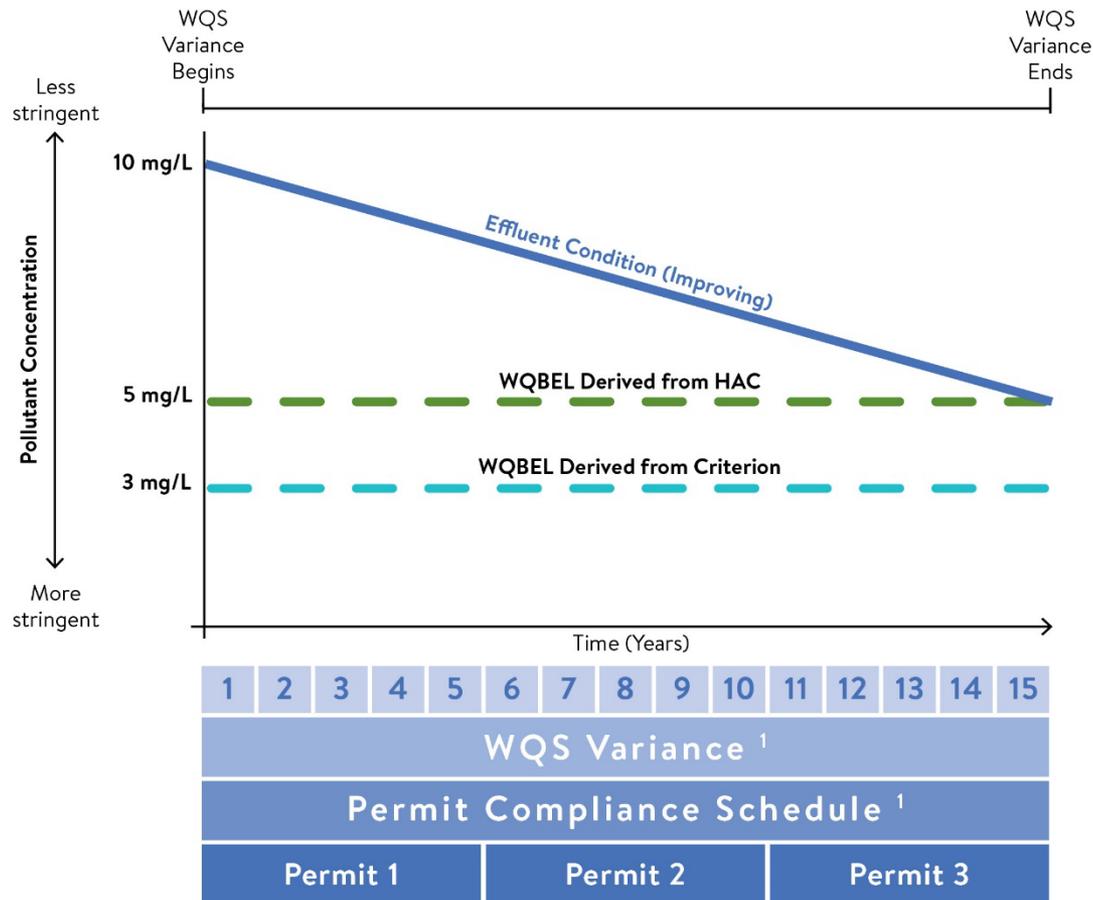
Review Question #3

True/False:

A state or authorized Tribe can only use one WQS tool at a time. If it picks a WQS variance, then it cannot also use a permit compliance schedule because otherwise they are just compounding the delay.

False – Compliance schedules provide time to install pollution controls that are necessary to meet a permit limit. WQS variances can be a useful tool when there is uncertainty around what can ultimately be attained, but incremental water quality improvements can be made. Where justified, WQS variances provide a reasoned timeframe to implement pollutant control technologies and activities to make as much water quality progress possible within that same timeframe. A discharger may be eligible for a permit compliance schedule if they need time to install pollution controls necessary to meet a permit limit based on the HAC of a WQS variance.

Example: Using a Permit Compliance Schedule with a WQS Variance



¹ Meets all statutory and regulatory requirements

Thank you. Questions?

Manjali Gupta Vlcan

Vlcan.Manjali@epa.gov

202-566-0373

John Healey

Healey.John@Epa.gov

202-566-0176