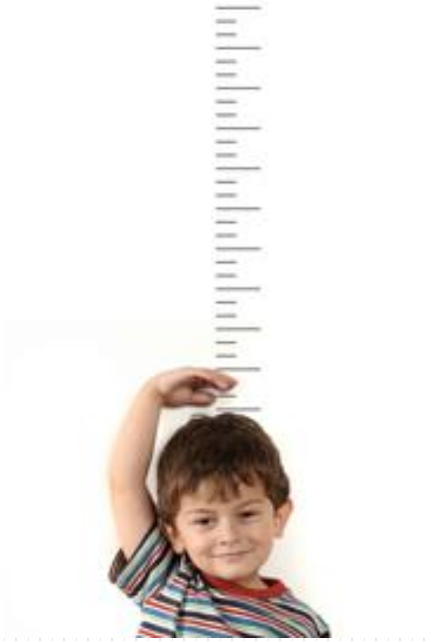
Water Quality Standards Academy:
Tools for Achieving Water Quality Standards



9/18/2012

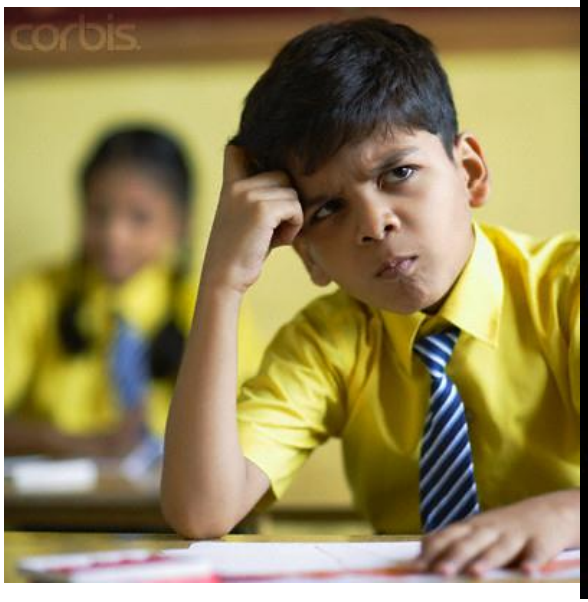
Problem Statement

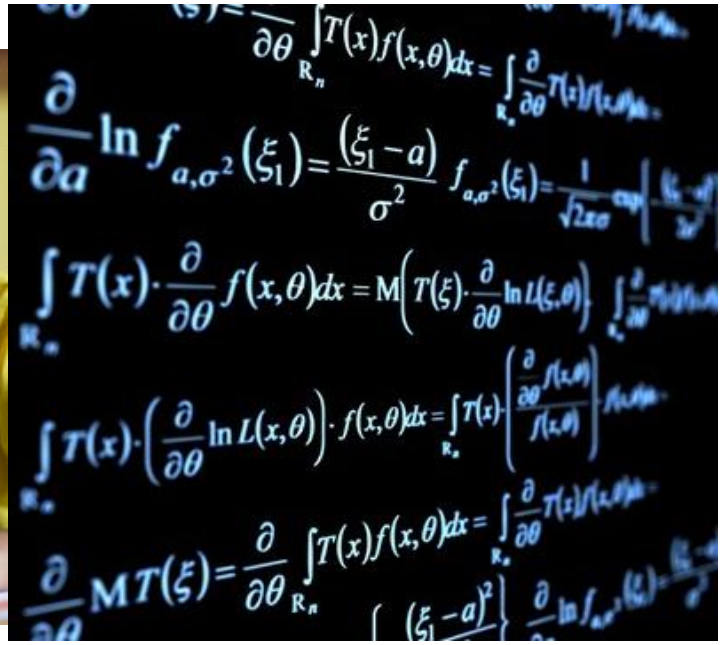
- For some waters, the current applicable standards (designated uses, criteria) reflecting CWA 101(a)(2) goals cannot be attained within a short time horizon.

- The public still wishes to retain the 101(a)(2) goals but…
- Permits to discharge to waters must reflect what is attainable in the short term

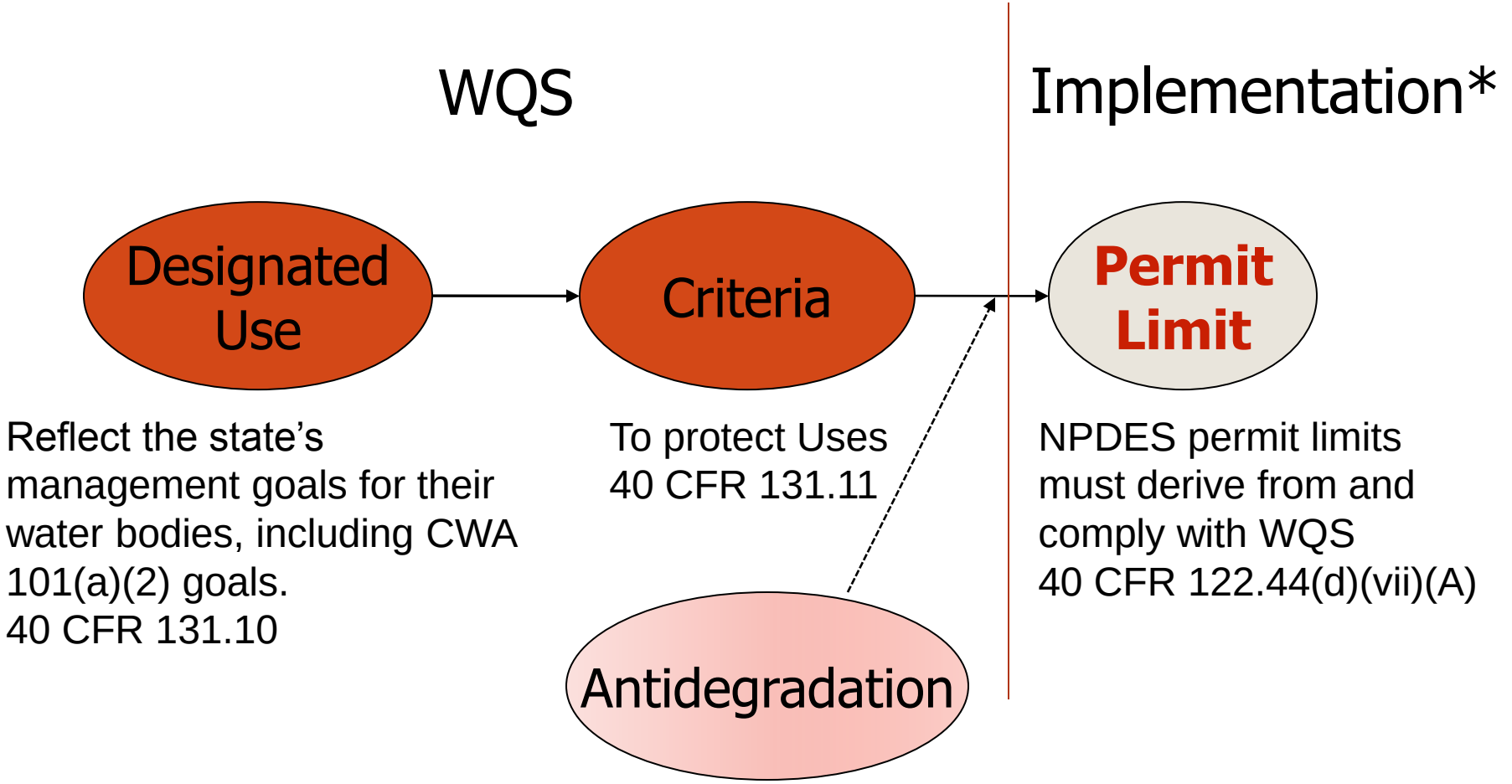
Guiding Principles

- Standards should guide the process of restoration
- Standards should not be a barrier to achieving incremental water quality improvement
- Standards do not have to be the same for every water body



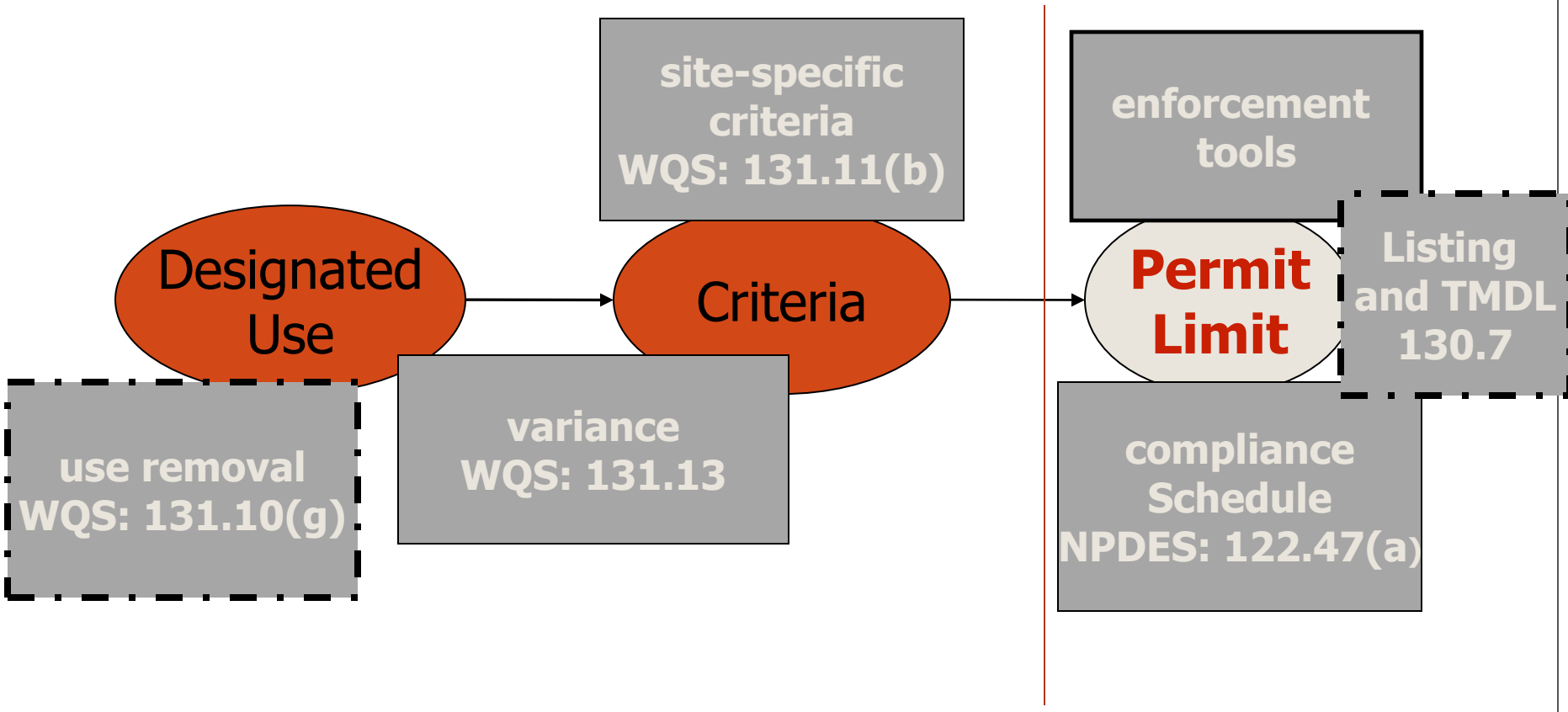


Water Quality Standards Schematic

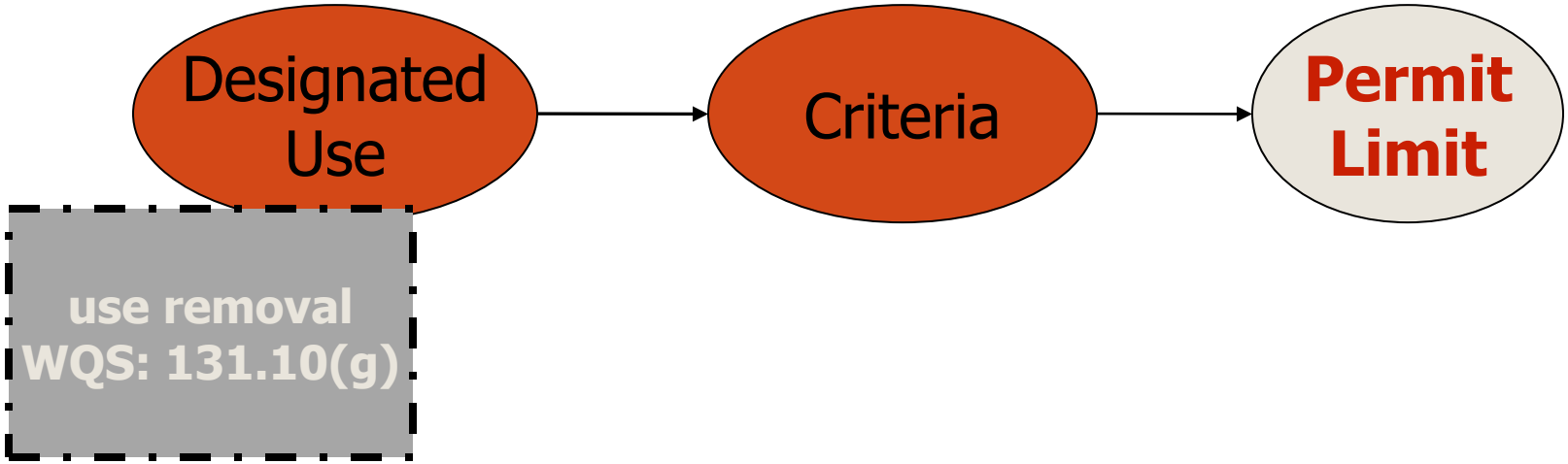


** NPDES is just one example of implementation*

A variety of tools to help meet WQS

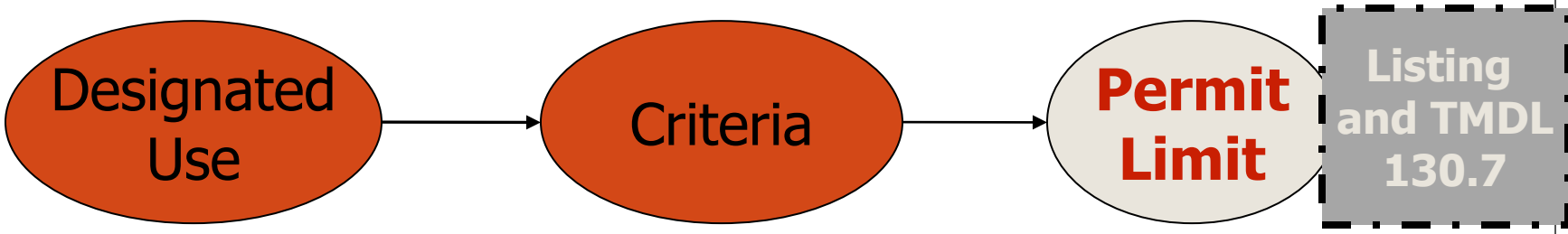


Use Removal: a tool for when it's not feasible to attain a CWA 101(a)(2) goal



A state may remove a designated use designed to protect the CWA 101(a)(2) goals and replace it with a lower goal, after going through a Use Attainability Analysis (UAA) process. *See UAAs module for more information.*

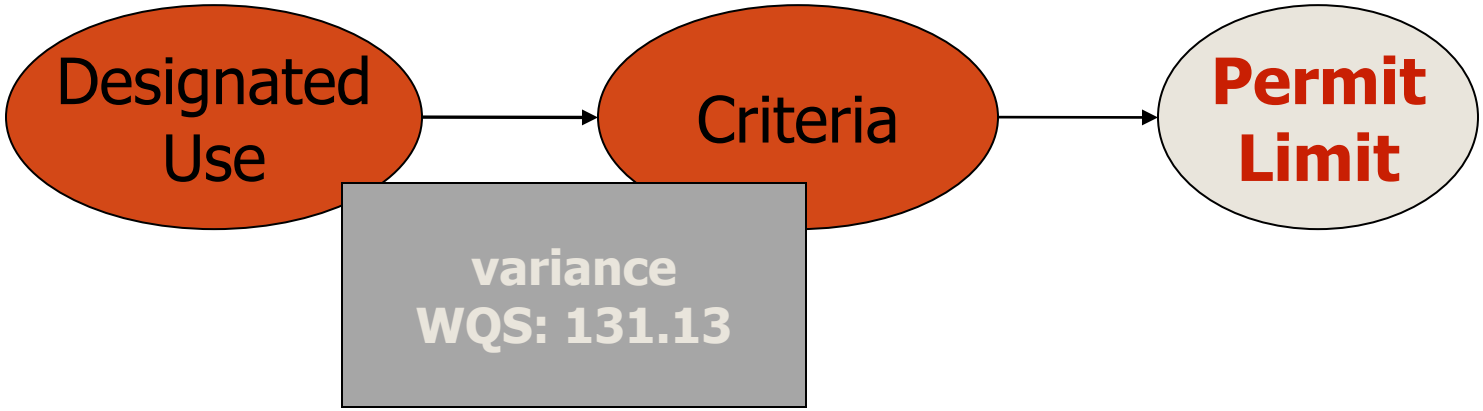
TMDL: a tool for long-term watershed restoration (point and nonpoint sources)



Every two years states submit their CWA Section 303(d) list (or integrated report) that identifies waters that are not meeting applicable water quality standards and need a Total Maximum Daily Load (TMDL).

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 (point and nonpoint).

Variance: a tool that allows additional time to determine how to meet the standards



- A variance is a temporary modification of the Use and associated Criteria, adopted and submitted to EPA for approval as a standard.
- NOTE: the word “variance” is used in other laws and regulations, but has a different meaning!

Variances: Purpose

- Allows for additional time to meet standards when a designated use is not attainable in the short-term, but might be attainable in the long-term. It may be unknown what actions need to be taken or how long it will take to meet standards.

- The time allowed may be utilized to:
  - Conduct additional studies
  - Implement controls to make feasible progress
  - Recognize that limiting conditions may change (e.g., technology can improve and become more affordable)

Variances: What are EPA's expectations?

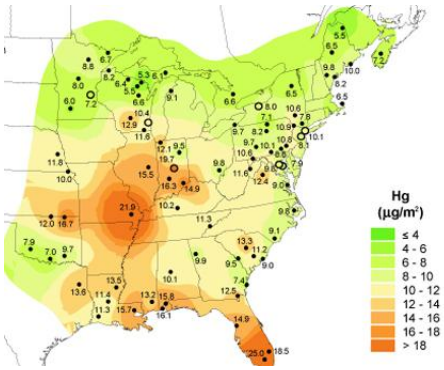
- Variance is included and identifiable in the WQS.
- Variance is subject to public notice and opportunity for comment.
- The state demonstrates that the standard is unattainable based on one of the 131.10(g) factors (e.g., "substantial and widespread economic impact) – similar to a UAA demonstration.
- Variance is protective of water quality in that it:
  - protects existing uses
  - secures the highest attainable level of water quality, short of achieving the standard
  - demonstrates that advanced treatment and alternative effluent control technologies have been considered
  - does not exempt technology based requirements

Variances: Conditions

- Have specific time limitations:
  - Only allowed for a specified time
  - Ensure reasonable progress is made toward meeting the standard
  - Ensure that upon expiration, original criteria have full effect
- Have specific scope limitations:
  - specify the sources and pollutants addressed (traditionally limited to single discharger, single pollutant)
  - specify geography (single location or whole water body)
  - Ensure existing criterion is binding on discharges not covered by the variance
  - Ensure all other applicable water quality standards not specifically modified by the variance remain applicable

Variance Case Study: Ohio Mercury

- Variance provision approved as part of Ohio's WQS
- Potentially applicable to all Ohio Hg dischargers
- Based on finding that there are no readily available means of complying with applicable WQBEL without resorting to end of pipe treatment, which would cause "substantial and widespread economic and social impact"



Hg atmospheric deposition

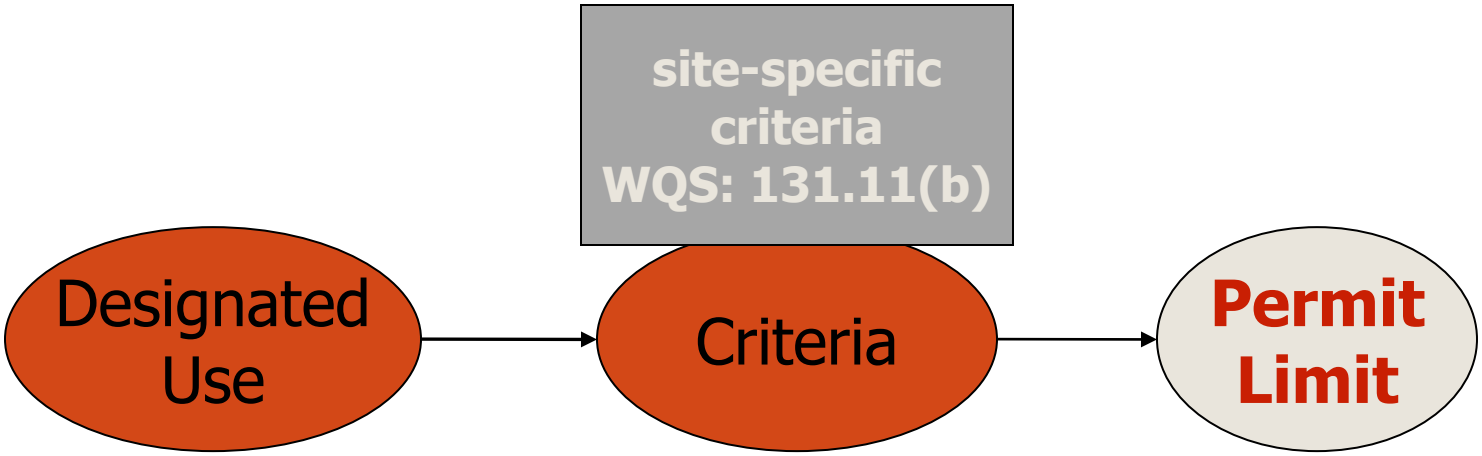
- Discharger application for coverage must include:
  - Hg control measures employed to date
  - study plan to identify and control sources of Hg
  - demonstration that end-of pipe treatment is the only viable option
- Permit Conditions include requirements to:
  - meet criteria as a yearly average
  - implement a pollution prevention plan

Variance Case Study: Charles River Combined Sewer Overflows (CSOs)

- Variance provision for the Charles River basin
- Based on finding that meeting recreational use at all times in all areas would cause "substantial and widespread economic and social impact"

- Applies only to CSO discharges
- Dischargers must:
  - Implement all CSO control actions in approved Plan
  - Obtain information necessary to determine appropriate WQS, based on relative costs and benefits of additional controls
- Time allowed by the variance was used to determine for which of the CSO-impacted waters the full101(a)(2) uses would ultimately be unattainable, and would need UAAs and eventual designation as CSO-impacted uses (called Class B – CSO)

Site specific criteria: a tool to tailor standards to local conditions



States and Tribes may adopt numeric criteria based on: CWA Section 304(a) guidance, CWA Section 304(a) guidance modified to reflect site-specific objectives; or other scientifically defensible methods (40 CFR 131.11(b)(1))

Site Specific Criteria: Purpose

- Adjusts the criteria level to something that is still protective of CWA 101(a)(2) goals but specific to the site
- Does not allow for additional time to meet standards. Is applicable immediately.

Site Specific Criteria: Conditions

- Are water quality standards, so must to be submitted to EPA for approval, must go through public comment. They must include supporting data and analysis methods.
- Do not change the designated use. While they are different from the nationally recommended criteria they still protect the designated use. (So, no UAA needed.)
- Can be less or more stringent than national recommended values.

Site Specific Criteria: Why and How

- When the physical/chemical characteristics of the site alter the bioavailability / toxicity of the pollutant (e.g., DOC binding metals), different from the laboratory dilution water
  - You can use the **Water-Effect Ratio (WER)**
- When the sensitivities of the site species differ from those used to develop the national criteria (e.g., trout don't exist at the site)
  - You can use the **Recalculation Procedure**
- When both chemical and biological differences are involved
  - You can use the **Resident Species Procedure**

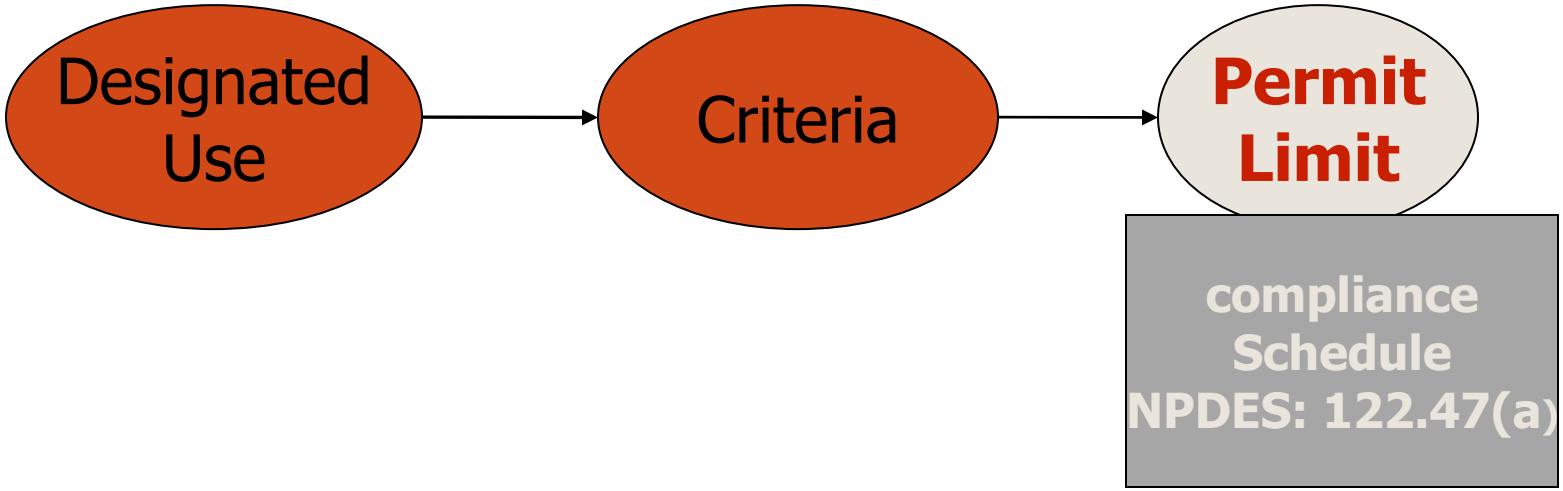
- When there are naturally high background levels of a pollutant
  - You can use a **reference water body approach**

Site Specific Criteria: Example

- Several water bodies have levels of copper not meeting state WQS (based on 304a criteria). The sources are anthropogenic and natural.
- The state suspects the natural background level is higher than the current criteria.
- State identifies a reference site with the same geology but no anthropogenic sources, and identifies the natural background level of copper. State determines that this level adequately supports the CWA 101(a)(2) goals for aquatic life.
- State develops new criteria for the water bodies with high copper that reflect the natural background: less stringent, still protective.

Example of inappropriate tools:

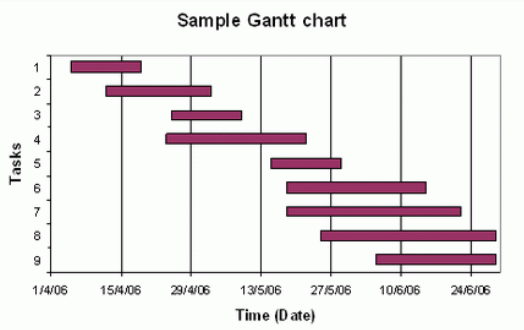
Compliance Schedule: a tool that allows additional time to take specific actions to meet a permit limit



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

Compliance Schedules: Purpose

- 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 to attain the final limits.
- The time allowed by a compliance schedule is utilized to:
  - Take a series of interim actions to make progress towards the final limit
  - …but is not allowed solely for the development of a TMDL, a WQS including UAA, or site-specific criteria



Conditions of Compliance Schedules

- In order to use compliance schedules, state or tribal WQS or implementing regulations must authorize them.
- Compliance schedules allow time to meet the WQBEL (not allowed to meet TBELs)
- Compliance schedule itself is included in the permit
- Granted only if permitting authority determines a compliance schedule is "appropriate"
  - BUT for permit limits based on standards adopted prior to July 1, 1977, no compliance schedules allowed.
- 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

Conditions of Compliance Schedules

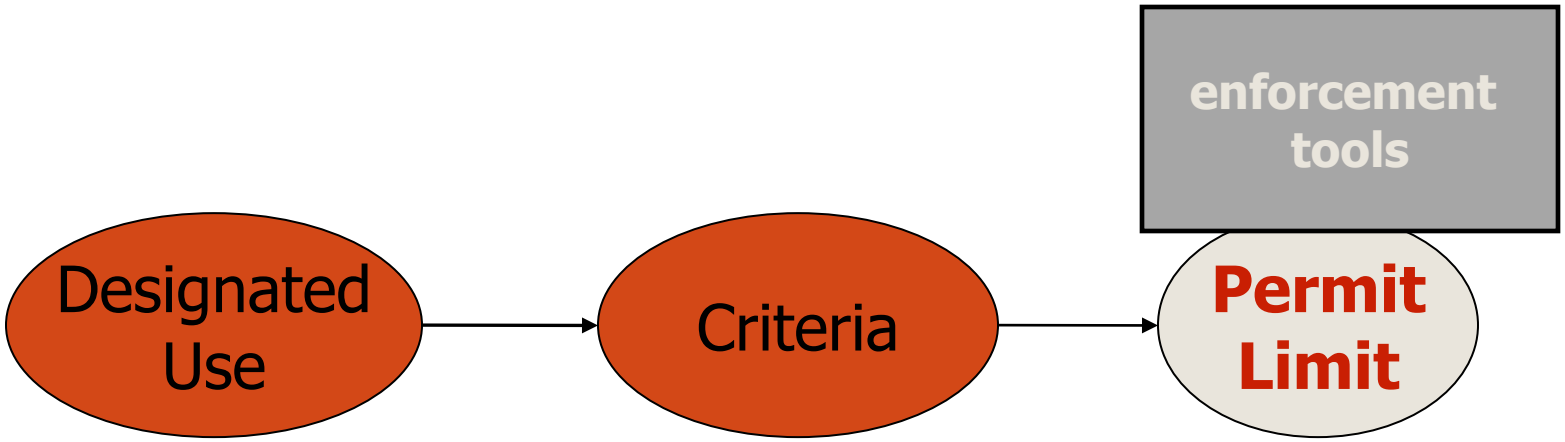
- Permitting authority must determine CS is "appropriate" and compliance achieved "as soon as possible"
- Factors for 'appropriate' include:
  - how much time discharger had under prior permits
  - discharger's good faith effort
  - need for modifications to treatment facilities or O&M
  - time needed to implement modifications
  - if same treatment needed as before to meet WQBEL
- Factors for 'as soon as possible' include:
  - steps needed to modify treatment facilities and O&M
  - time for those steps
  - permitting authority should not presume CS be based on maximum allowable time in state's authorizing provision

Compliance Schedule: Example

- Chesapeake Bay Program adopted new nutrient reduction goals to protect and restore water quality by a 2011 deadline.
- Virginia developed a general NPDES permit for nutrients for discharge to the Bay. Each tributary had a plan, and each covered facility had its own numbers.

- VA's regulation requires the permit to contain a compliance schedule requiring compliance as soon as possible, taking into account opportunities to minimize costs to the public or facility owners by phasing in the implementation of multiple projects; the availability of funding, water quality conditions, etc.
- Each facility required to complete a compliance plan, including any planned capital projects and nutrient credit trading if applicable. Facilities required to submit annual updates for compliance plans.

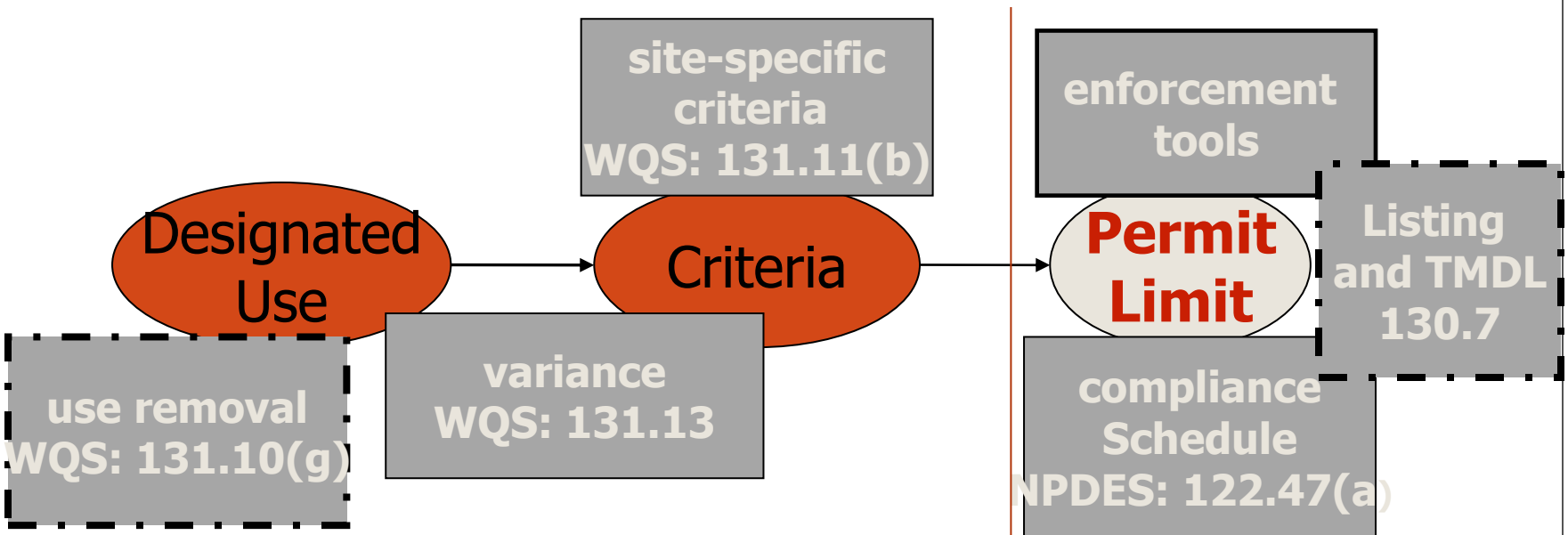
Enforcement Tools: requirements outside of WQS to take specific actions



Part of the enforcement realm, not WQS or NPDES programs

For example, a legal action resulting in a settlement agreement can contain requirements for specific actions through an administrative order which a court oversees.

Ways to Distinguish Tools



- Is the tool a WQS (i.e., must be approved as a WQS)
- Does the tool allow for additional time to meet WQS, or does it change the bar so it can be met immediately?
- Does the tool require a UAA type of analysis?
- Does the tool apply to a discharger or to a water body?
- Is the tool appropriate if you have more certainty or less certainty about time/actions needed to meet WQS?

Summary

- Use Removal: a tool for when it's not feasible to attain a CWA 101(a)(2) goal (see UAA module)
- Total Maximum Daily Load (TMDL): a tool for long-term watershed restoration (see TMDL module)
- Variance: a tool that allows additional time to determine how to meet the standards
- Site Specific Criteria: a tool to tailor standards to local conditions
- Compliance Schedule: a tool that allows additional time to take specific actions to meet a permit limit
- Enforcement Tools: requirements outside of WQS to take specific actions to meet WQS