ANTIDEGRADATION

NEI-WQS Academy

October 2019

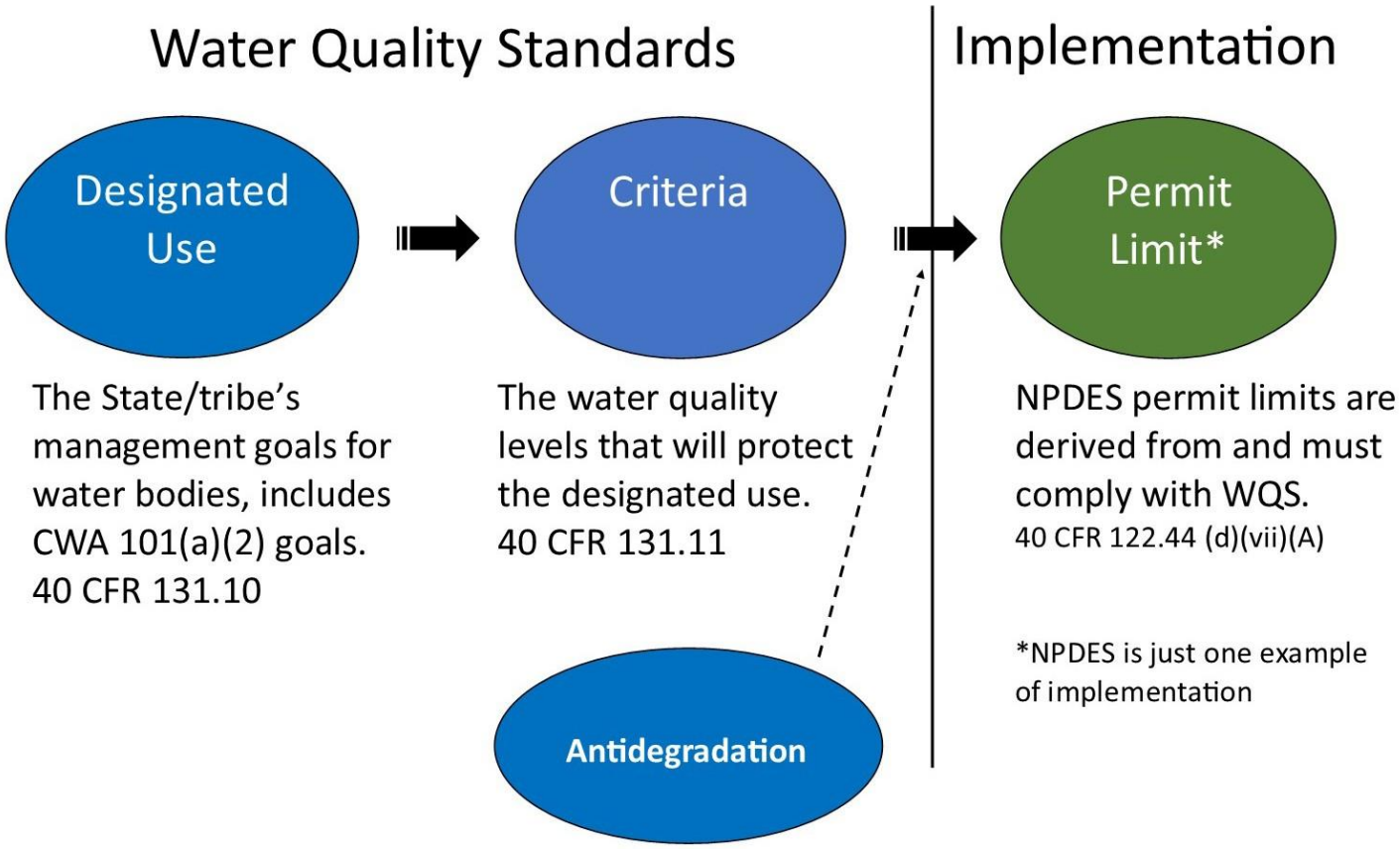
Three Components of WQS

DESIGNATED USES: management objectives for surface waters

CRITERIA: levels of water quality that will support the designated uses; expressed as numeric values and/or narrative statements

ANTIDEGRADATION POLICY AND METHODS: framework for maintaining and protecting water quality that has already been achieved

Role of Antidegradation in WQS



Components of Antidegradation

- Policy: States the goals and framework of protection
  - 40 CFR 131.12 (a): The State shall develop and adopt a statewide antidegradation policy.
- Implementation Methods ('Procedure'): Describes how the policy will be applied
  - 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.

Antidegradation Requirements 40 CFR 131.12 (a): Policy

- States and authorized tribes must develop and <u>adopt</u> a statewide antidegradation <u>policy</u> 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;
  - Compliance with CWA section 316 in regards to thermal discharges

USEPA Anti-deg Policy:

- Section 131.12(a)(l), or "Tier 1," protecting "existing uses," provides the absolute floor of water quality in all waters of the United States. This paragraph applies a minimum level of protection to all waters.

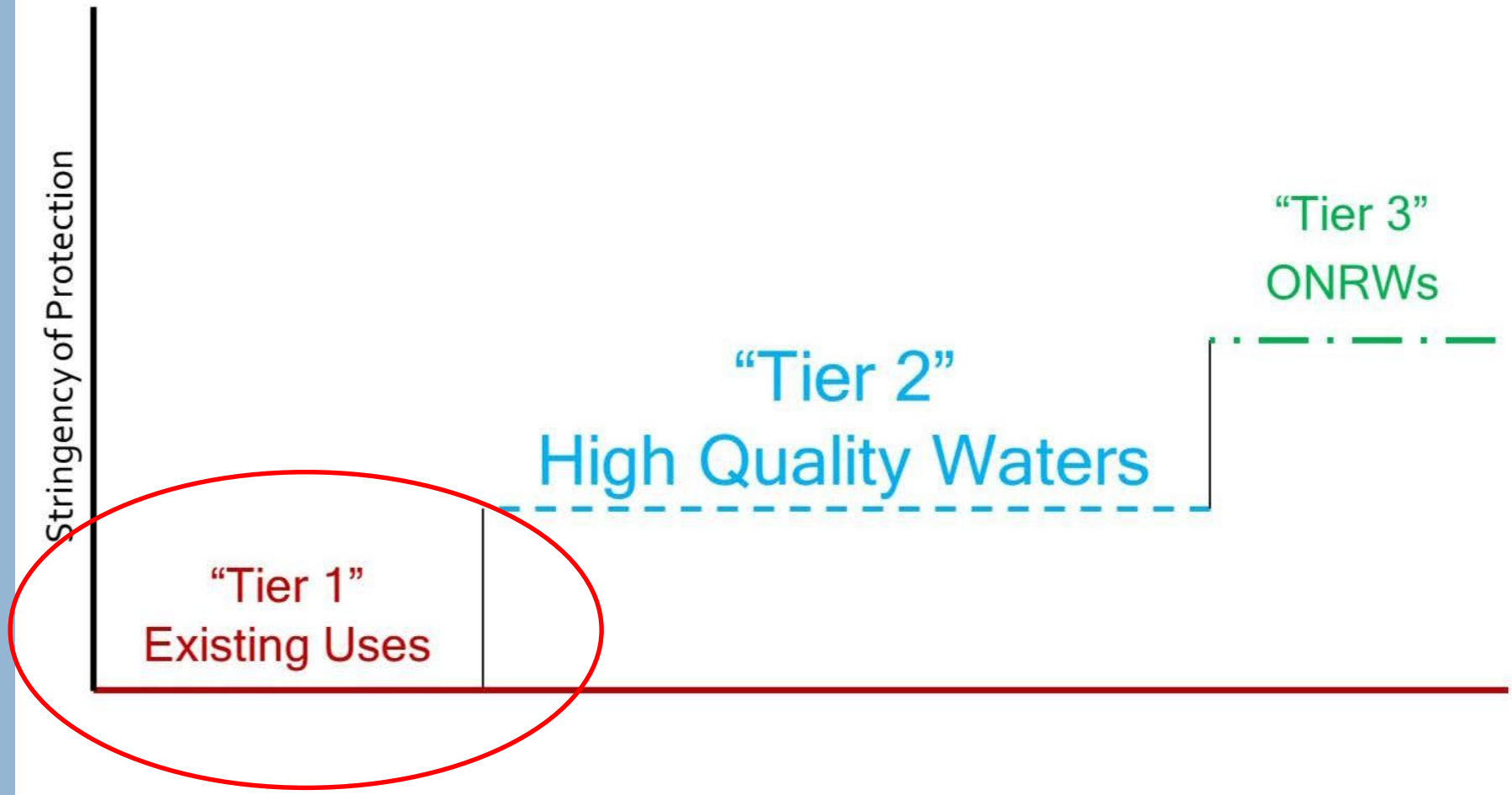
- Section131.12(a)(2),or "Tier2,"applies to waters whose quality exceeds that necessary to protect the section 101(a)(2) goals of the Act. In this case, water quality may not be lowered to less than the level necessary to fully protect the "fishable/swimmable" uses and other existing uses and may be lowered even to those levels only after following all the provisions described ins ection 131.12(a)(2).

- Section131.12(a)(3),or"Tier3,"applies to Outstanding National Resource Waters (ONRW) where the ordinary use classifications and supporting criteria may not be sufficient or appropriate. As described in the preamble to the Water Quality Standards Regulation, "States may allow some limited activities which result in temporary and short-term changes in water quality, "but such changes in water quality should not impact existing uses or alter the essential character or special use that makes the water an ONRW.

The 3 "Tiers" of Protection

Adapted from USEPA WQSA Spring 2018

The 3 "Tiers" of Protection



Adapted from USEPA WQSA Spring 2018

“Tier 1” Protection: Existing Uses

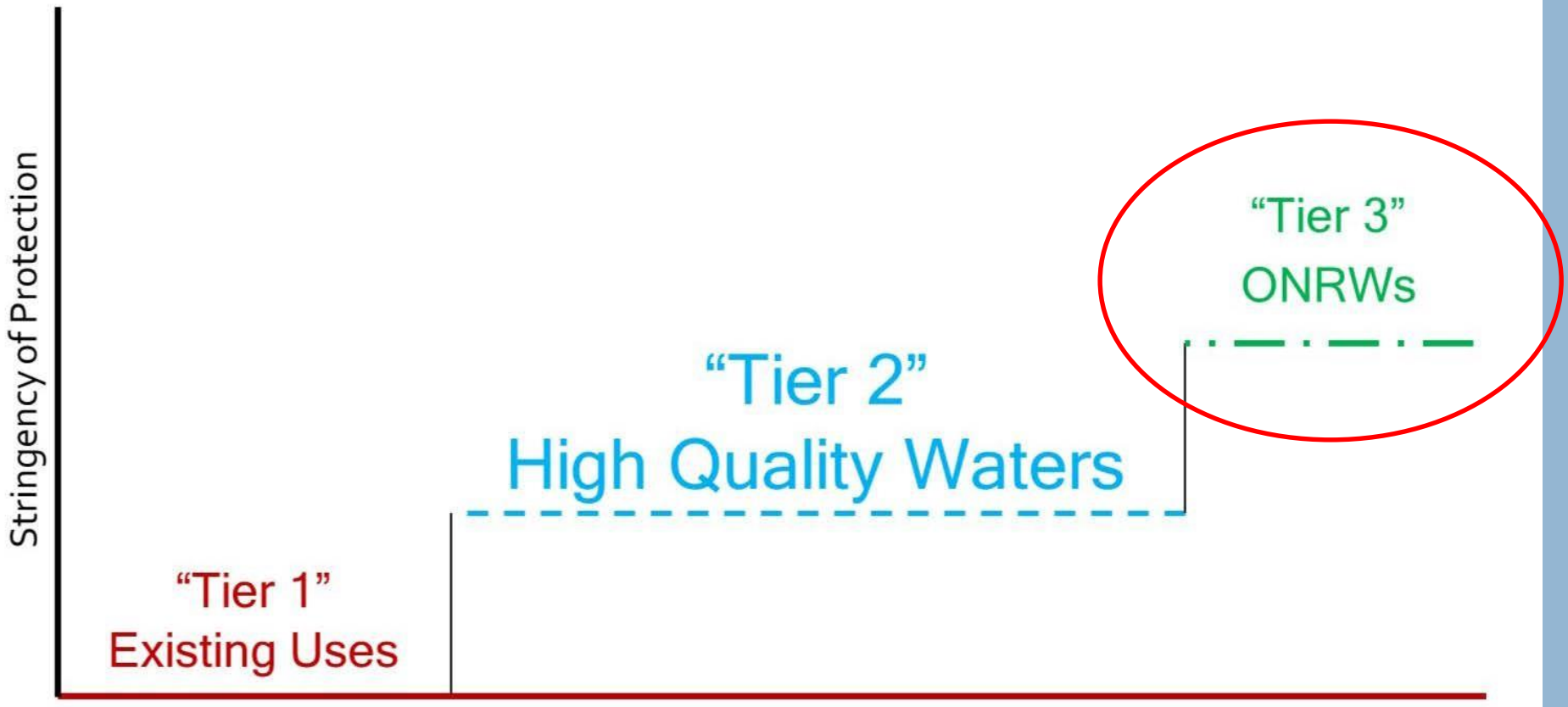
40 CFR 131.12 (a)(1)

“Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.”

"Tier 1" Protection: Existing Uses

- All waters of the U.S.
  - Requires the maintenance and protection of existing uses
  - "Existing uses are those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards." 40 CFR 131.3(e)
- Waters assigned Tiers 2 & 3 protection
  - Receive Tier 1 protection in addition to either Tier 2 or Tier 3 protection

The 3 "Tiers" of Protection



Adapted from USEPA WQSA Spring 2018

"Tier 3" Protection: Outstanding National Resource Waters

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."

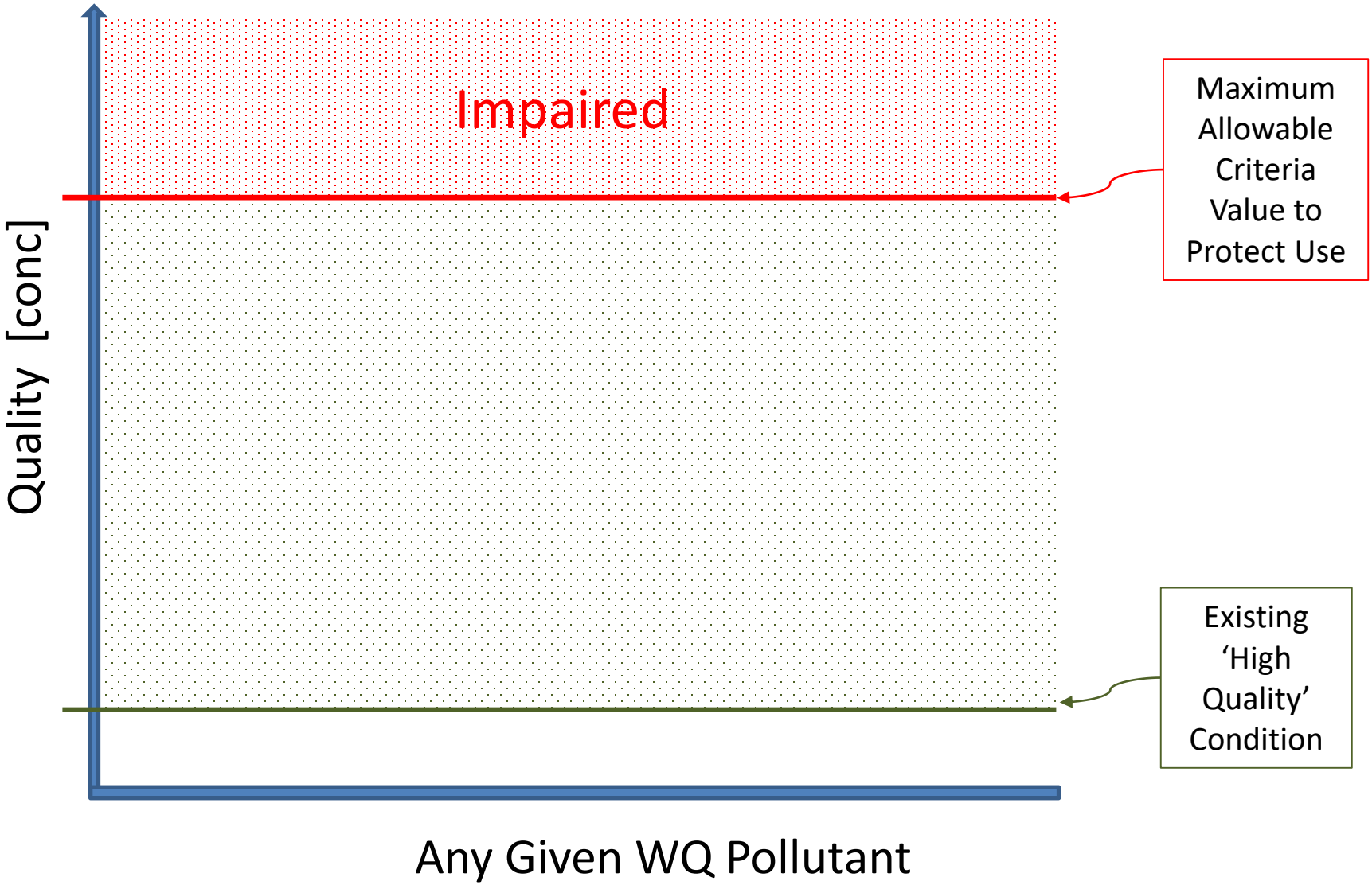
"Tier 3" Protection: Outstanding National Resource Waters

- What are ONRWs?
  - Water bodies that the state/tribe has assigned Tier 3 protection
  - A state/tribe can classify any water body as an ONRW
  - Typically includes:
    - Waters that are viewed as pristine
    - Highly valued waters: important to recreation or tourism
    - Water of exceptional ecological significance: important, unique, or sensitive ecologically
- What does Tier 3 protection mean?
  - Most stringent level of protection.
  - No degradation is allowed, except on a short term or temporary basis (weeks or months, not years)

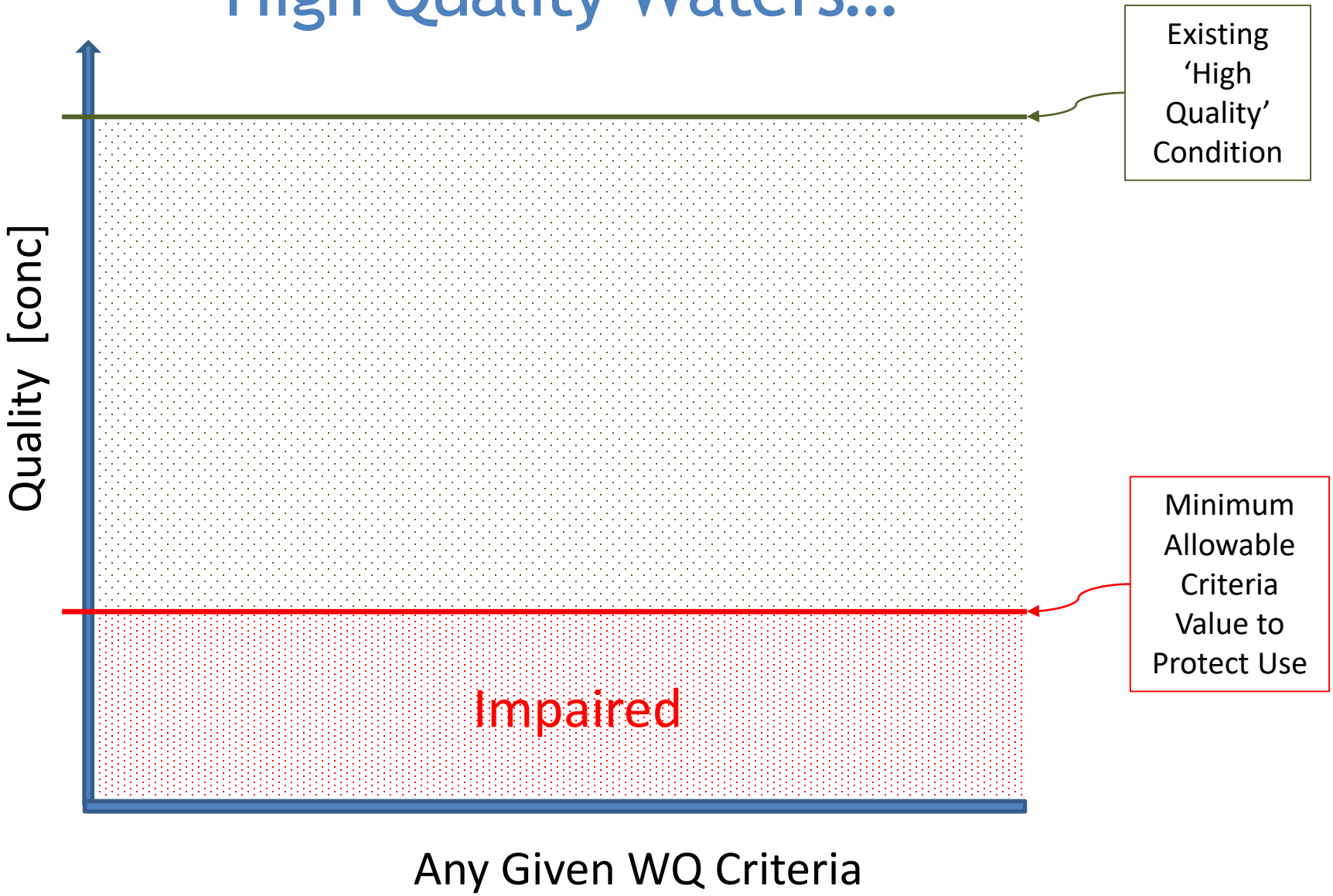
The 3 "Tiers" of Protection

Adapted from USEPA WQSA Spring 2018

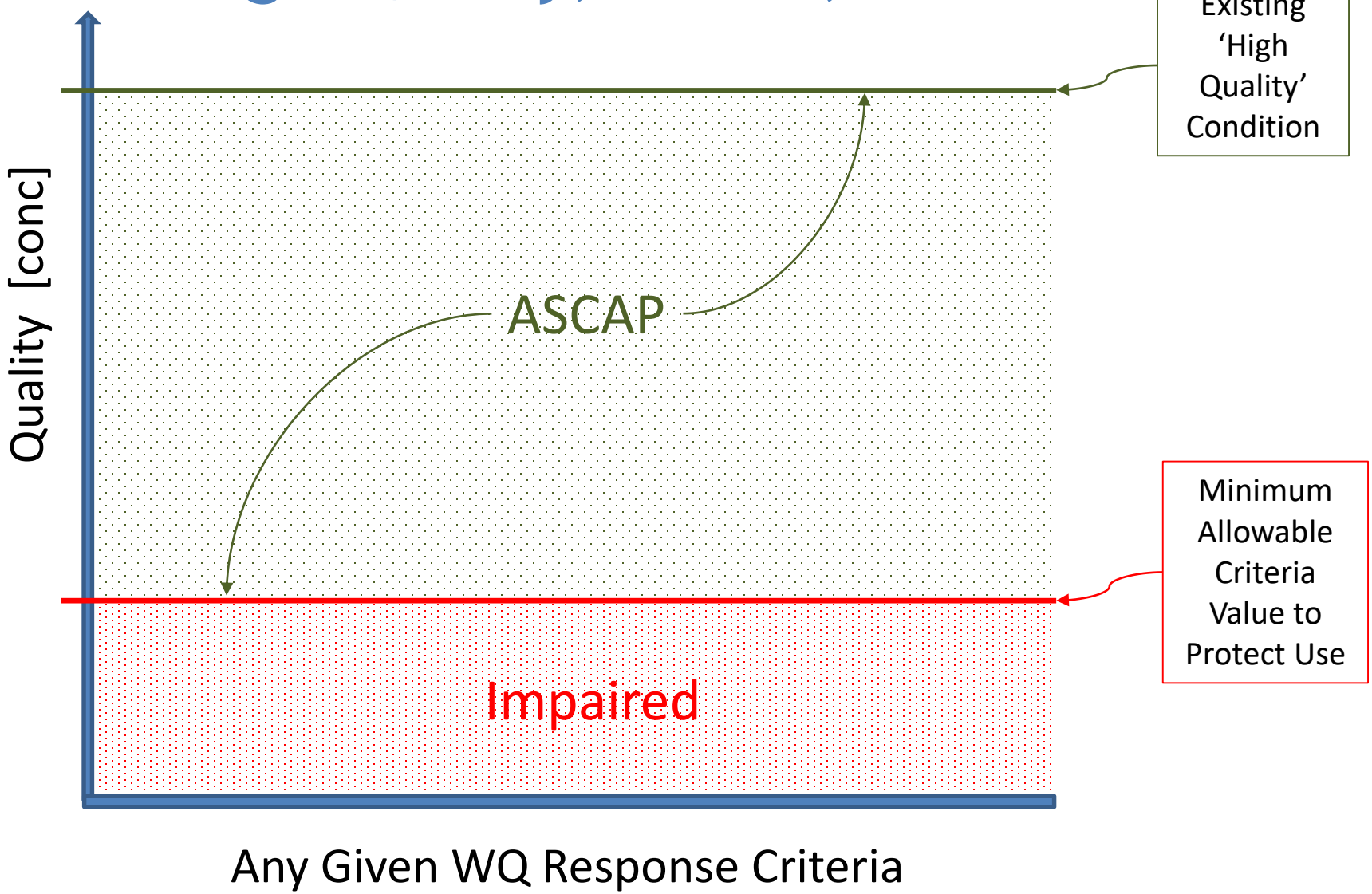
High Quality Waters…



High Quality Waters…



High Quality, ASCAP, Tier 2 …



"Tier 2" Protection: High Quality Waters

- What is Tier 2 Protection?
  - Maintenance and protection of water quality that is better than necessary to support CWA section 101(a)(2) uses
    - Protects the assimilative capacity of a water body
  - In specific circumstances assimilative capacity may be utilized
    - Use of the assimilative capacity is necessary to accommodate important economic or social development in the area in which the waters are located
    - Must undergo a Tier 2 Review, including public participation, to demonstrate these circumstances are met

"Tier 2" Protection: High Quality Waters

40 CFR 131.12 (a)(2)

"Where the quality of the waters exceeds levels necessary to support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected

unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost effective and reasonable best management practices for nonpoint source control."

"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 2" Review Process: Identification of High Quality Waters

40 CFR 131.12 (a)(2)(i)

"The State may

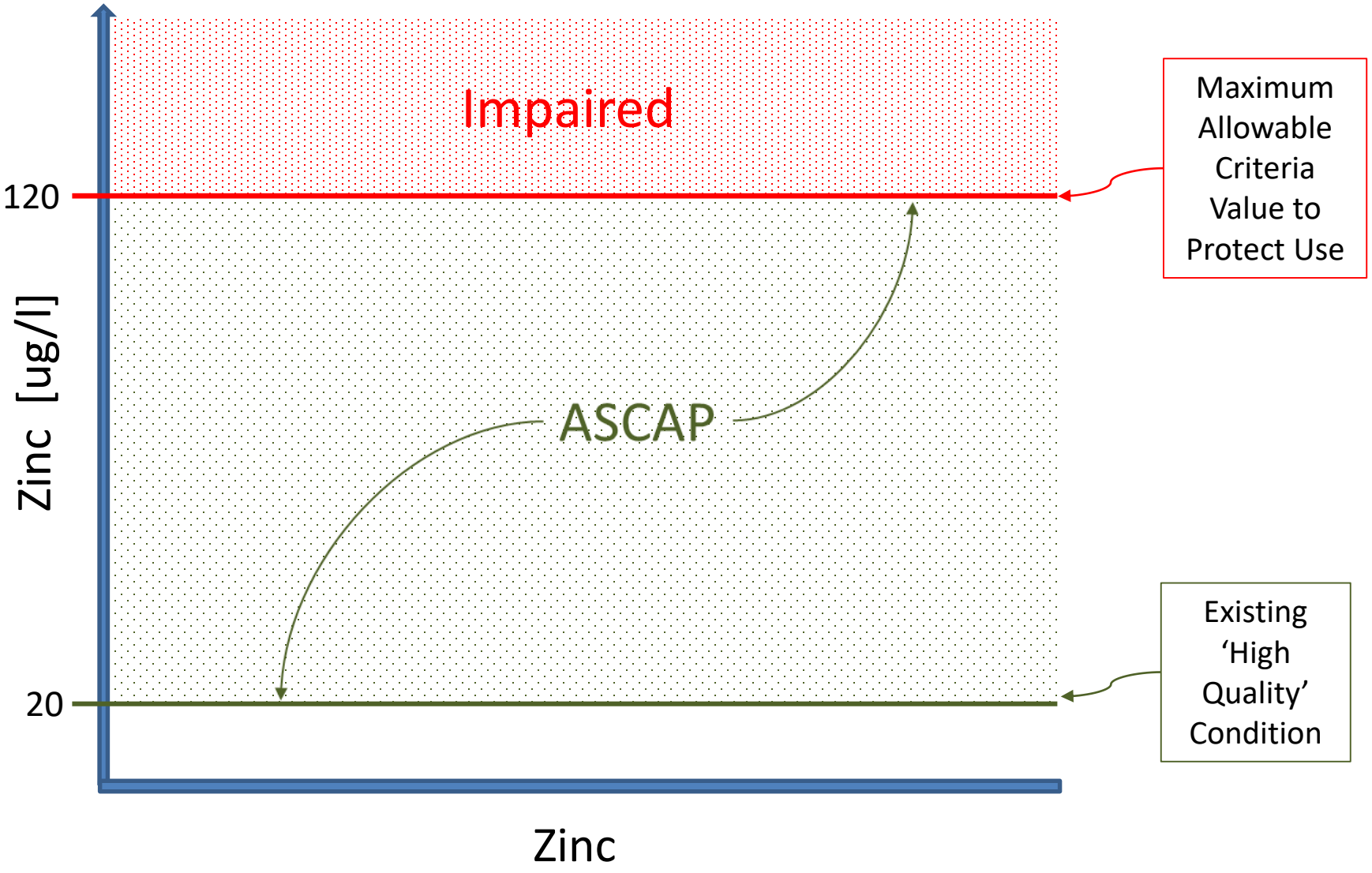
identify waters for the protections described in paragraph (a)(2) of this section on a parameter-by-parameter basis or on a water body-by-water body basis.

Where the State identifies waters for antidegradation protection on a water body-by-water body basis, the State shall provide an opportunity for public involvement in any decisions about whether the protections described in paragraph (a)(2) of this section will be afforded to a water body, and the factors considered when making those decisions. Further, the State shall not exclude a water body from the protections described in paragraph (a)(2) of this section solely because water quality does not exceed levels necessary to support all of the uses specified in section 101(a)(2) of the Act."

Identifying "Tier 2" Waters: Parameter – by - Parameter

- Water quality determined to be high quality for specific parameters by examining chemical/biological data
  - Assess each parameter individually
  - High quality if water quality of specific parameter is better than level necessary to support CWA section 101(a)(2) use
  - Example of high water quality for zinc (Zn)
    - Criterion for Zn to protect aquatic life use:120 µg/L
    - Current ambient water quality for Zn: 20 µg/L
    - Assimilative capacity: 100 µg/L
- State/tribe determines "Tier" on a case-by-case basis
- Water body may be Tier 2 for some parameters and not others

High Quality Waters…



Identifying "Tier 2" Waters: Water Body-By-Water Body

- State/tribe will assign Tier 2 protection to a specific water body, usually upfront
- Tier assignment is based on biological, physical, chemical and/or aesthetic quality information (holistic assessment)
- State/tribe must not exclude a water from Tier 2 protection "solely because the water quality does not exceed levels necessary to support all of the uses specified in section 101(a)(2) of the Act." 40 CFR 131.12(a)(2)(i)
- State/tribe must provide an opportunity for public involvement on decisions about which waters receive Tier 2 protection and why

Adapted from USEPA WQSA Spring 2018

"Tier 2" Review: Necessary and Important

40 CFR 131.12 (a)(2)

"Where the quality of the waters exceeds levels necessary to support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process,

that allowing lower water quality is *necessary* to accommodate *important* economic or social development in the area in which the waters are located.

In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost effective and reasonable best management practices for nonpoint source control.

Analysis of Alternatives: Is degradation "necessary"?

- Identify a range of practicable alternatives for parameter(s) that have assimilative capacity
  - Practicable: "technologically possible, able to be put into practice, and economically viable." 40 CFR 131.3(n)
  - Non-degrading to less degrading
- If practicable alternatives identified, must select one to allow lowering of high water quality
  - Does not need to be least degrading alternative
- Conducted by state/tribe, permit applicant or other entity
- State/Tribe responsible for making final decision that lowering of high quality is necessary

Socio-Economic Analysis: Is the social and economic development "important"?

- Evaluate advantages and disadvantages of lowering the quality of a high quality water for the community
  - Factors evaluated can include (but are not limited to):
    - Employment, community tax base, housing, impacts on recreational value, etc.
  - EPA's *Interim Economic Guidance for Water Quality Standards: Workbook* can be used as a tool to help in this analysis
  - Flexibility in how analysis is conducted
- Conducted by state/tribe, permit applicant or other entity
- State/Tribe responsible for making final decision that lowering of high water quality is important

"Tier 2" Review Process: Existing Use Protection

40 CFR 131.12 (a)(2)

"Where the quality of the waters exceeds levels necessary to support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located.

In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully.

Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost effective and reasonable best management practices for nonpoint source control."

“Tier 2” Review Process: Pollution Control

40 CFR 131.12 (a)(2)

“Where the quality of the waters exceeds levels necessary to support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully.

Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost effective and reasonable best management practices for nonpoint source control.”

Pollution Control

- Point Sources
  - Highest statutory and regulatory requirements for all new and existing point sources achieved
    - All dischargers must be in compliance with current regulations
    - All current regulations must be properly implemented
- Nonpoint sources
  - All cost effective and reasonable best management practices (BMPs) required by the state or tribe are implemented
  - No requirement to implement any new BMPs that are not currently required by the state/tribe

"Tier 2" Review Process: Stakeholder Input

40 CFR 131.12 (a)(2)

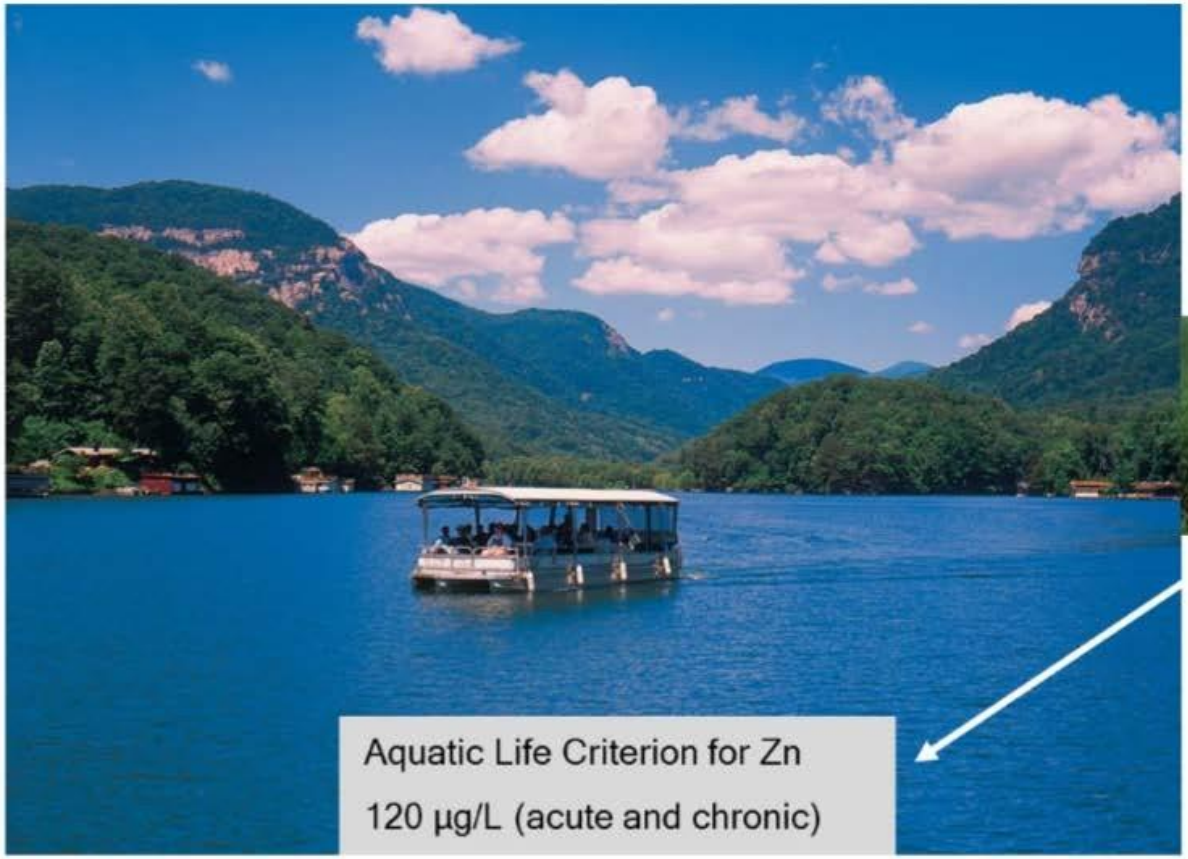
"Where the quality of the waters exceeds levels necessary to support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds,

after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process,

that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost effective and reasonable best management practices for nonpoint source control."

"Tier 2" Review

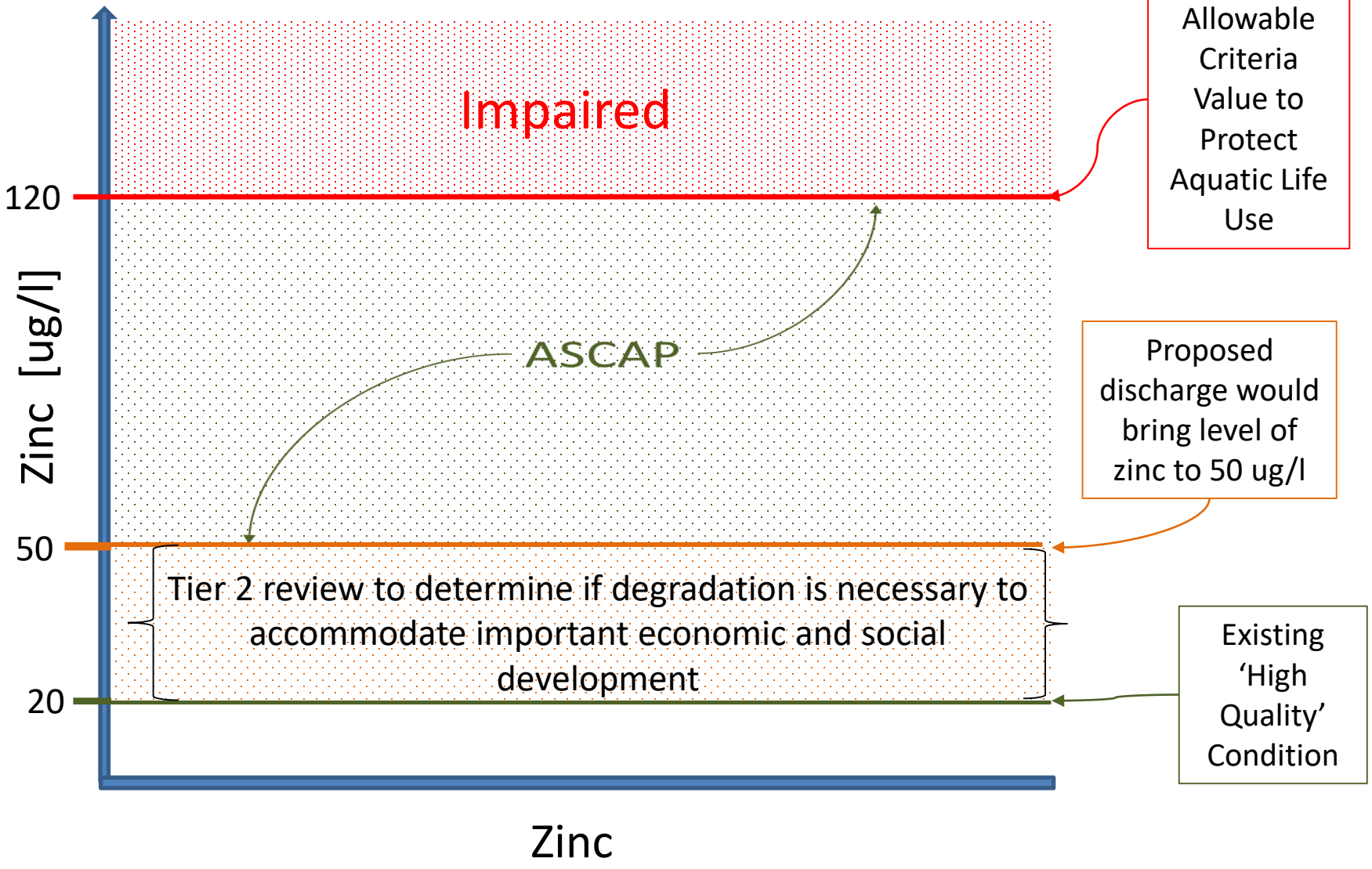
*HYPOTHETICAL EXAMPLE - DEMONSTRATION PURPOSES ONLY



Karen's Beautiful Lake currently has an ambient zinc concentration of 20 µg/L

Luis's Widget Factory proposed discharge is predicted to bring Zn levels to 50 µg/L

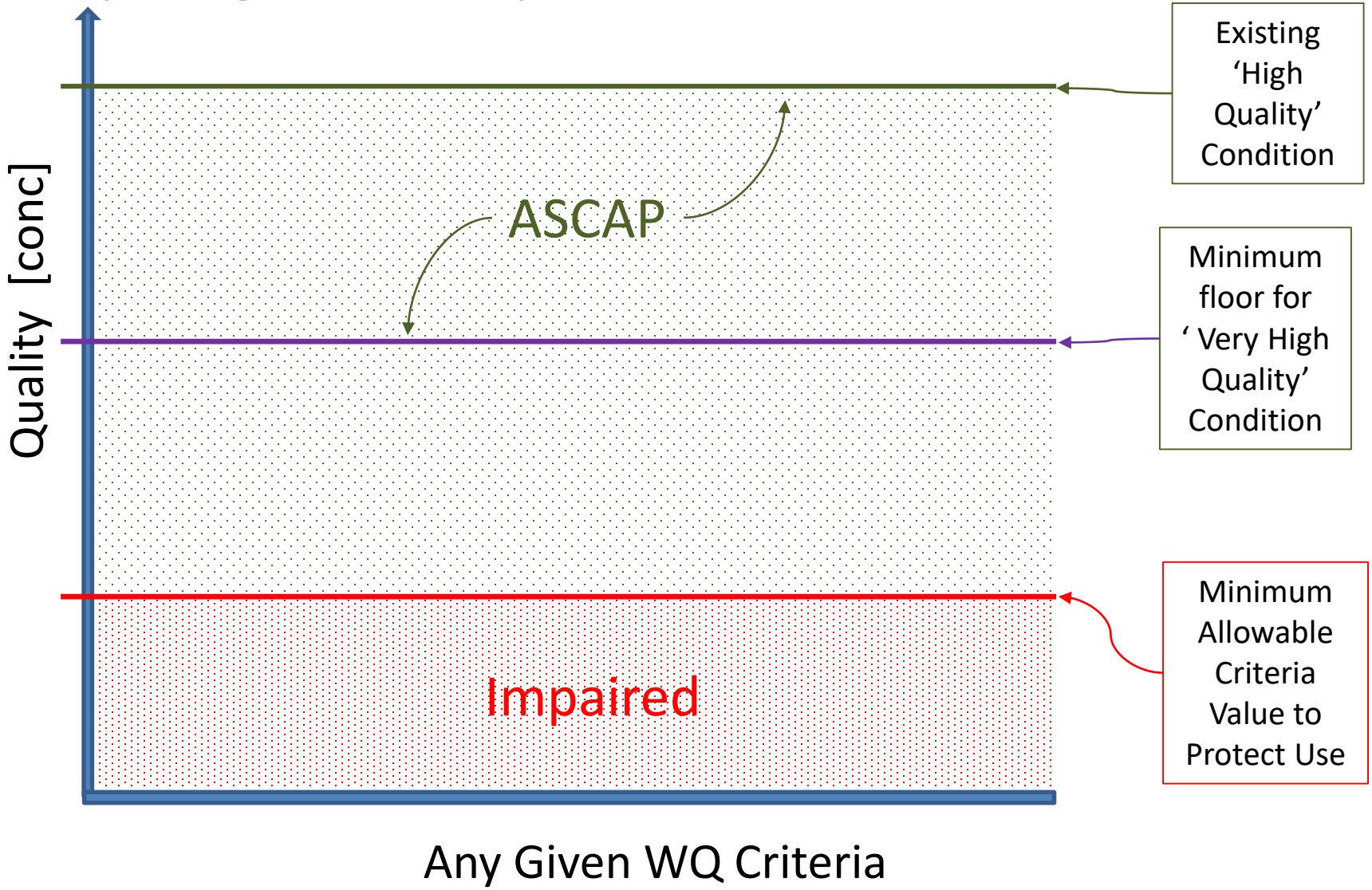
Tier 2 level review required…



“Tier 2.5”protection

Example: “Exceptional Tennessee Rivers” for Tier 2.5

Very High Quality, ASCAP, Tier 2.5 …



Antidegradation Requirements 40 CFR 131.12 (b): Implementation Methods

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

Policy vs. Implementation

- A state's policy might state:
  - "Where the quality of the waters exceeds levels necessary to support protection and propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected, unless the state makes a finding to allow degradation."
- A state's implementation methods could include:
  - *How* they identify "high quality waters" for protection.
  - Permit application forms that *document details* on alternatives to the discharge that were considered.
  - Description of *how* the public will be involved in decisions about *how* high water quality will be protected.

State example: Arizona

- Policy includes: Three-tiered system parallel to 131.12
  - Tier 1 - Existing uses protection
  - Tier 2 - High quality water identified parameter-by-parameter
  - Tier 3 - ONRWs
- Implementation Methods include:
  - List of information permit/license applicant must submit to the state for the antidegradation analysis.
  - Worksheet for state staff on the steps of antidegradation analysis for each of the three tiers.
  - Instructions to the public on how to nominate waters as ONRWs.

State example: Ohio

- Policy includes: Many-tiered system different from131.12
  - Limited Quality Waters (Tier 1) – existing uses protection
  - High Quality Waters (Tier 2) identified water body-by-water body
    - General High Quality Waters (default)
    - Superior High Quality Waters
    - Lake Erie
    - Outstanding State Waters
  - ONRWs (Tier 3)
- Implementation Methods include:
  - Detailed public involvement process – notice, factsheet, hearing
  - Detailed worksheets on alternatives analysis for applicant to demonstrate the non-degradation, minimal degradation and mitigative technique alternatives considered

EPA Review

- Policy
  - Is it consistent with §131.12(a)(1)-(4)?
  - Are existing uses, high quality waters and ONRWs protected?
  - Are thermal discharges addressed?

- Implementation Methods
  - Are they clearly identified?
  - Are they consistent with §131.12(a)(1)-(4) and §131.12(b)?
  - Are they consistent with state's own policy?
  - Was the public able to provide input?
  - Are they publically available?

Antidegradation Summary

- Does not necessarily align with its 'common meaning'..

- Difficult to reduce to an objective equation…

$$mg/l \stackrel{?}{=} (\text{Social Impact} + \$)$$

✓ Antidegradation provides a decision-making process for determining how and how much to protect high quality waters, and a framework for protecting existing uses and ONRWs..

Questions?

Anti-Deg in the NE States…

Adapted from USEPA WQSA Spring 2018

Vermont Anti-Deg Policy:

(c) Protection and Maintenance of High-Quality Waters

(1)Waters the existing quality of which exceeds any applicable water quality criteria provide important environmental, economic, social, and other benefits to the people of the State.

Except as provided in subdivision (2) of this subsection, such waters shall be managed to maintain and protect the higher water quality and minimize risk to existing and designated uses. In all cases, the level of water quality necessary to maintain and protect all existing uses as well as applicable water quality criteria shall be maintained.

Vermont Anti-Deg Policy…

(2) A limited reduction in the existing higher quality of such waters may be allowed only when it is shown that:

(A) through the applicable permitting or approval process, the Secretary has provided public notice of the draft decision and an opportunity for public comment on the decision;

(B) after an analysis of alternatives, allowing lower water quality is necessary to prevent substantial adverse economic or social impacts on the people of the State;

(C) there shall be achieved the highest statutory and regulatory requirements for all new or existing point sources, and all cost effective and reasonable best management practices for nonpoint source control, consistent with state law.

(3) The analysis of alternatives required under subdivision (c)(2)(B) of this subsection shall evaluate a range of alternatives that would prevent or lessen the degradation associated with the proposed activity. When the analysis identifies one or more practicable alternatives, the Secretary shall only find that a lowering is necessary if one such practicable alternative is selected for implementation. For purposes of this section, "practicable" means technologically possible, able to be put into practice, and economically viable."

Vermont Anti-Deg Policy…

Protection of Outstanding Resource Waters. The Secretary may under 10 V.S.A. §1424a designate certain waters as Outstanding Resource Waters. Outstanding Resource Waters are listed in Appendix H of these rules. Where the Secretary so designates such waters for specific exceptional natural, recreational, cultural, or scenic values, their existing quality, associated with the values for which they have been designated, shall, at a minimum, be protected and maintained.

Anti-Deg in the NE States…

Adapted from USEPA WQSA Spring 2018

Review Question #1

True or False. Antidegradation policies and implementation methods address both point and nonpoint sources of pollution.

Review Question #1

- True or False. Antidegradation policies and implementation methods address both point and nonpoint sources of pollution.

- Answer:

  True. Antidegradation policies and implementation methods apply to the water body, not specific sources. Since antidegradation applies to the entire water body, it is relevant for both point and nonpoint sources of pollution. However, people often think of antidegradation of applying to a point source since a Tier 2 review is typically conducted through the NPDES program.

Review Question #2

True or False. The federal antidegradation policy allows existing uses to be impaired by lowering water quality standards.

Review Question #2

- True or False. The federal antidegradation policy allows existing uses to be impaired by lowering water quality standards.

- Answer:

  False. 40 CFR 131.12(a)(1) requires that existing uses are properly maintained.

Review Question #3

True or False. Outstanding National Resource Waters can include swamps or hot springs.

Review Question #3

- True or False. Outstanding National Resource Waters can include swamps or hot springs.

- Answer:

  True. ONRWs are assigned as such by the states and authorized tribes. EPA encourages inclusion of all waters of exceptional recreational or ecological significance as outlined in 40 CFR 131.12(a)(3).

Review Question #4

True or False. The regulation pertaining to antidegradation policies say that economic development cannot be the basis for the lowering of water quality.

Review Question #4

- True or False. The regulation pertaining to antidegradation policies say that economic development cannot be the basis for the lowering of water quality.
- Answer:
  - False. 40 CFR 131.12(a)(2) allows for the lowering of water quality that exceeds levels needed to support propagation of fish, shellfish, and wildlife and recreation in and on the water, when necessary to accommodate important economic or social development in the area of the waters if:
    - Existing uses are not impaired,
    - Required intergovernmental coordination and public participation procedures are followed, and,
    - The state or authorized tribe has ensured the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.