OWQ Antidegradation Implementation Methodology

Stakeholder Meeting #2

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ENERGY & ENVIRONMENT

Division of Environmental Quality (DEQ)
Office of Water Quality (OWQ)
NPDES Permits Section

Today's Presentation

- Section-by-section overview of the draft OWQ Antidegradation Implementation Methodology
- Following the presentation, we will have an opportunity for general questions
- We will begin with an open discussion on each section, starting with Section 2

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Section 2: Introduction/ Arkansas' Antidegradation Plan

Policy

Included in Rule 2

- Tier 1: Existing Use
- Tier 2: High Quality
- Tier 3: Outstanding Resource
- Exceptions for lowering of water quality in a High Quality water

Legally Binding

Implementation Procedure

Included in the Continuing Planning Process (CPP) by reference

Standalone Document that can be updated independently of the CPP

Non-binding

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Section 3: Tier Protection Levels

- Tier 1: Existing Use Protection
  - Baseline protection for all parameters of all WOTUS: existing uses will be maintained and protected
- Tier 2: High Quality Protection
  - Applies to parameters of WOTUS where the baseline water quality is better than the water quality criteria
- Tier 3: Outstanding Resource Waters (ORWs)
  - Applies to waterbodies designed as ORWs in Rule 2

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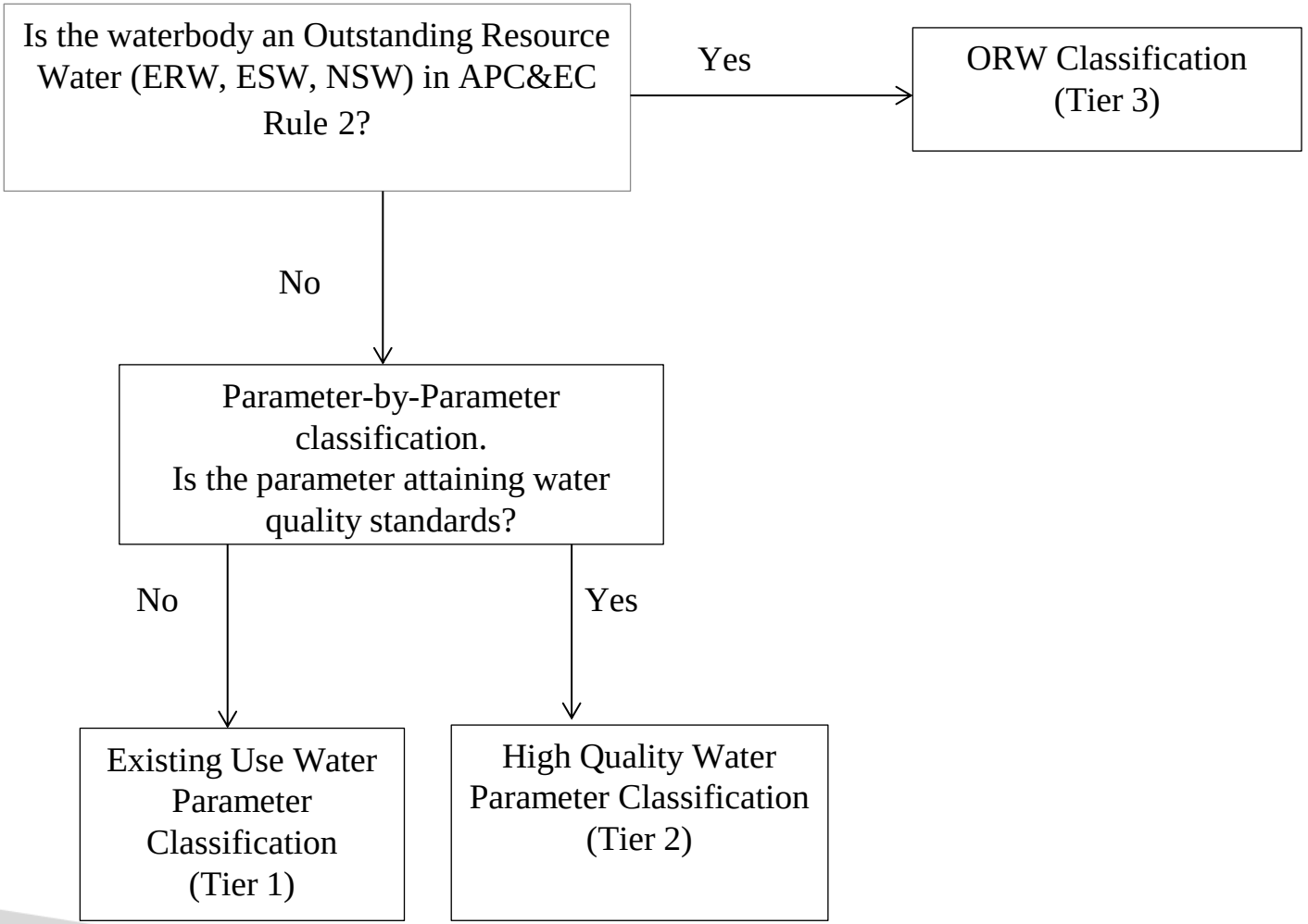
Flowchart for Determining Tier Protection Level



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Section 4: Tier Protection Levels and Antidegradation Evaluation

- Tier 1 and Tier 2 evaluations are done on a parameter-by-parameter basis
  - The receiving stream may require different evaluations for different parameters
- Tier 3 evaluations are done on a waterbody-by-waterbody basis

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Section 4: Tier Protection Levels and Antidegradation Evaluation
Tier 1

- Existing Use Protection Evaluation
  - For parameters of WOTUS not attaining water quality criteria
  - Discharge may not cause or contribute to impairment of a designated or existing use, violation of water quality criteria, or increase pollutant loading to a § 303(d) listed water
  - No social or economic analysis required

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Section 4: Tier Protection Levels and Antidegradation Evaluation
Tier 2

- High Quality Protection Evaluation
  - For all parameters of WOTUS that are attaining water quality criteria, except for in waters designated as Outstanding Resource waters
  - A significant increase (>10% of the total assimilative capacity) in cumulative pollutant loading requires social and economic analyses
  - At minimum, Tier 2 reviews require that Tier 1 protection is ensured

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Section 4: Tier Protection Levels and Antidegradation Evaluation
Tier 3

- Outstanding Resource Waters Evaluation
  - For waters designated in Rule 2 as ERW, ESW, or NSW
  - No permanent increase of parameter loading
  - Temporary lowering of water quality is eligible for review

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Sections 5-6

- Section 5: Assigning Tier Protection
  - Mostly a summary of the previous section, focused on which waters receive each tier of protection
- Section 6: Revising Tier Protection Levels
  - Tier of protection for a water or parameter can change as waters are added or removed from the list of ORWs in Rule 2, or impairments are added or removed from the Arkansas 303(d) List.

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Section 7: Activities Eligible for Antidegradation Review

- New or expanding wastewater discharges
- Special cases
  - Thermal discharges are evaluated in accordance with Rule 2.204 and Section 316 of the CWA
  - General permits will be incrementally addressed within 5 years of approval of the AIM, but coverage for new and expanding facilities may still be subject to antidegradation reviews from the effective date of the AIM
  - DEQ may develop a general antidegradation review for small domestic dischargers (generally ≤ 50,000 GPD)

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Section 8: Antidegradation Review Procedure

- Applicants should coordinate with DEQ **before** applying for an NPDES permit
  - Antidegradation must be considered during the design phase of the project
  - The applicant may submit an analysis of no degradation, temporary degradation, or non-significant degradation if they believe one of these conditions is applicable

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Section 8: Antidegradation Review Procedure Steps

1. Request preliminary limits
2. DEQ will determine degree of degradation (applicant may submit an analysis)
3. If significant degradation is determined, applicant must submit alternatives and socioeconomic analyses
4. Public notice of complete application and antidegradation review
5. Public notice of draft permit decision, antidegradation review, and Water Quality Management Plan (WQMP)
6. Public hearing (if sufficient public interest)
7. Final permitting decision
8. Opportunity to appeal

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Section 8.B.4: Degradation Determination

- Non-significant degradation
  - Use of less than or equal to 10% of the total assimilative capacity
  - Requires water quality data
  - No alternatives analysis or socioeconomic impact review is required

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Section 8.B.4: Degradation Determination

- Significant degradation
  - Use of greater than 10% of the total assimilative capacity; OR the applicant may predict significant degradation and proceed without evaluating water quality
  - Applicant must do an alternatives analysis and socioeconomic impact review

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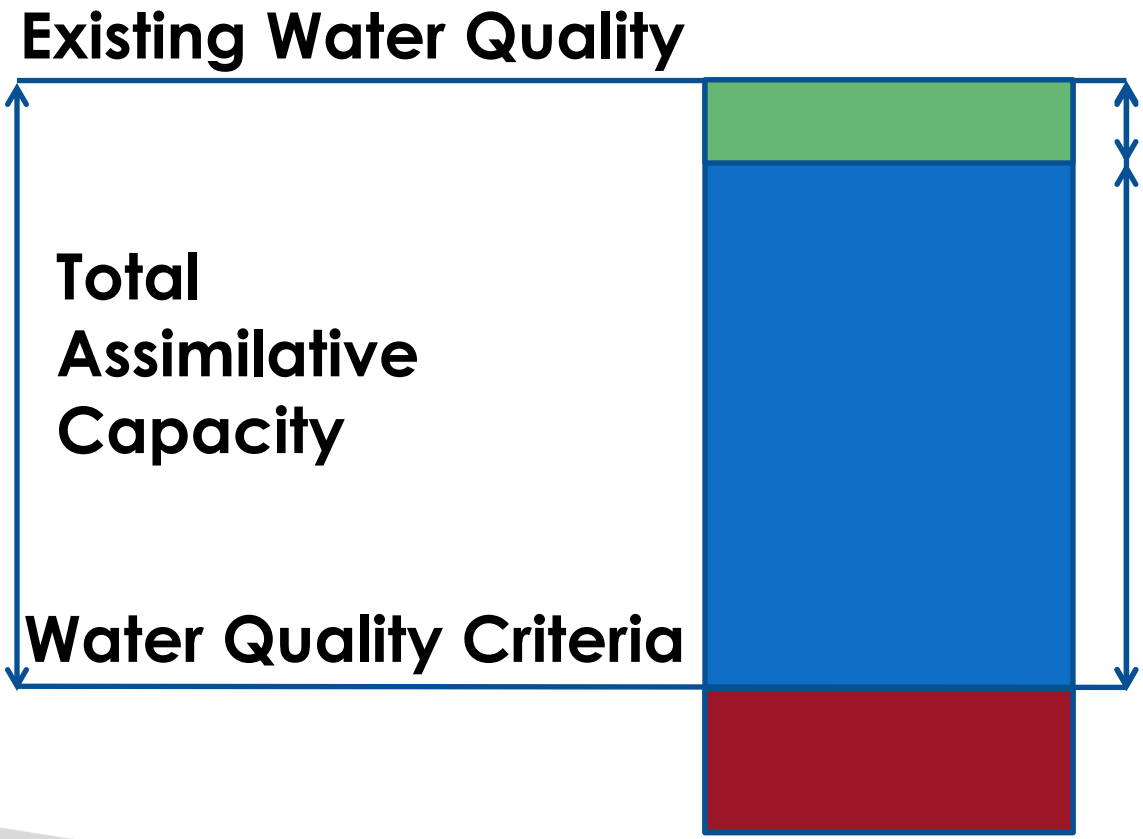
Non-significant Degradation



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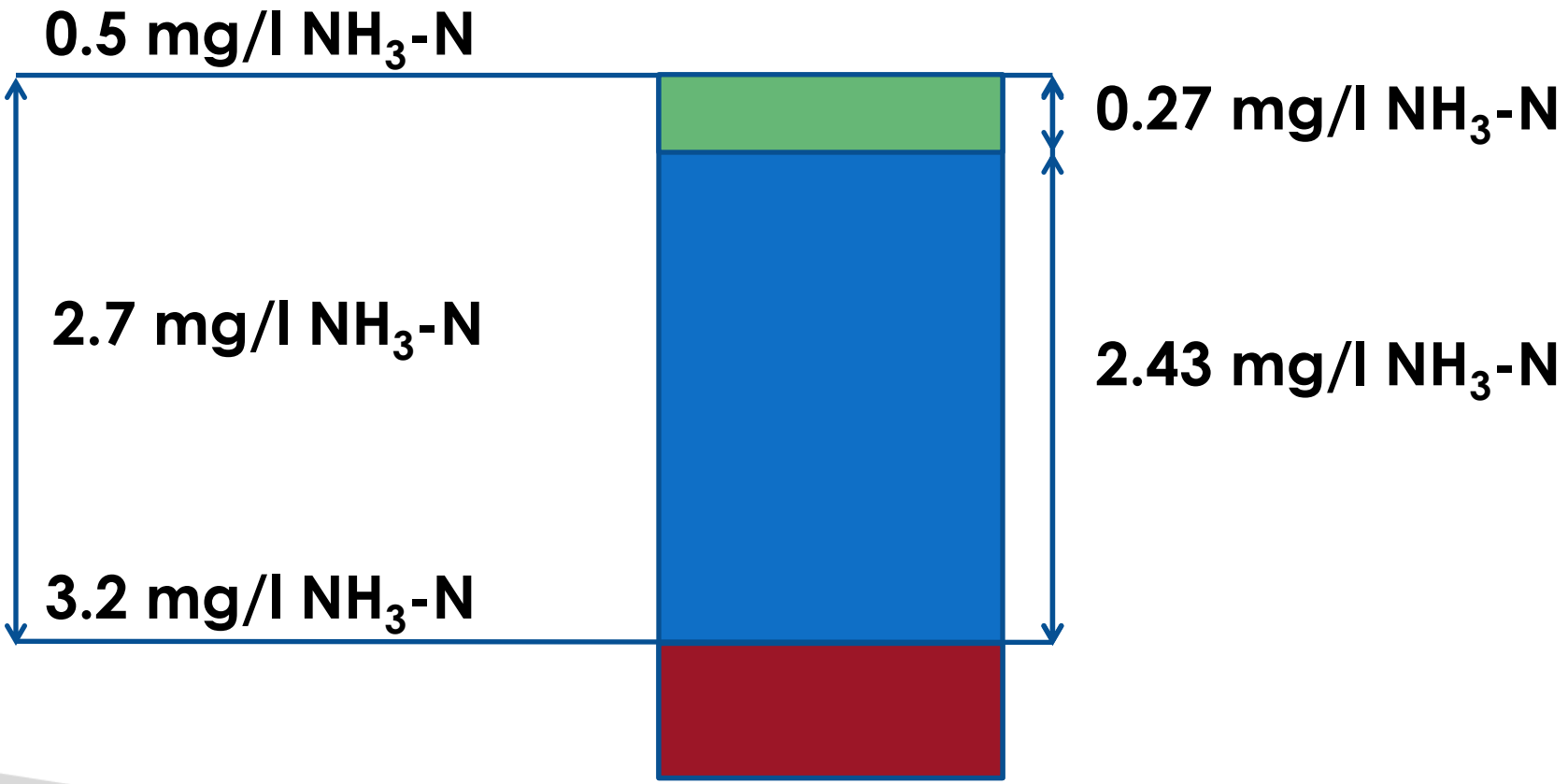
Non-significant Degradation Example



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Non-significant Degradation Example

- 0.5 MGD (0.77 cfs) facility discharging 5.0 mg/l NH_3-N
- Receiving stream 700 cfs, with background 0.5 mg/l NH_3-N
- Mixing zone = 700 × 0.25 = 175 cfs
- Water Quality Criteria = 3.2 mg/l NH_3-N
- Total Assimilative Capacity (TAC): 3.2 – 0.5 = 2.7 mg/l NH_3-N
- 10% of TAC = 0.27 mg/l NH_3-N

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Non-significant Degradation Example

- Concentration at edge of mixing zone:

$$\frac{(175\ cfs \times 0.5\frac{mg}{l}) + (0.77\ cfs \times 5.0\frac{mg}{l})}{175cfs + 0.77cfs} = 0.519 \text{ mg/l } NH_3\text{-N}$$

- Used Assimilative Capacity:
  0.519 – 0.5 = 0.019 mg/l
- 0.019 ≤ 0.27, so the degradation is non-significant

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Section 8.B.5: Alternatives, Social Development, and Economic Analyses

- Alternatives Analysis
  - Practicable alternatives, such as product/raw material substitution, improved treatment, water conservation measures, etc.
- Social Development Analysis
  - Benefits of the degradation, such as employment, improved tax base, abatement of environmental/public health problems, social benefits, housing benefits, public services, etc.

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Section 8.B.5: Alternatives, Social Development, and Economic Analyses

- Economic Analysis
  - Cost comparison of practicable alternatives
  - 20-year life cycle is suggested
  - DEQ has developed a worksheet as a guidance
    - The applicant may use this worksheet or an alternative cost analysis
  - Base cost is the minimum to achieve water quality standards (100% assimilative capacity use)
  - Alternatives costing < 120% of the base cost are presumed to be economically efficient. This is a non-binding guideline.

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Section 9: Nonpoint Sources

- Nonpoint sources do not require an antidegradation review
  - Activities (e.g. agriculture, silviculture) resulting in a new or expanded amount of pollutants entering waters solely from nonpoint sources are not subject to an antidegradation review prior to these activities commencing.

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Sections 10-14

- Section 10: Public Review
  - Provided in accordance with Rule 8
- Section 11: Intergovernmental Coordination and Review
  - Opportunity to comment will be provided
- Section 12: Final Action
  - Any comments on a proposed action will be reviewed and considered
- Section 13: Appeals (30 day period)
- Section 14: Effective Date (to be determined)

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Questions?