ARKANSAS
ENERGY & ENVIRONMENT

State of Arkansas

Antidegradation Implementation Methodology

DRAFT

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1. DEFINITIONS

Activities: Proposed new or expanded NPDES permits, CWA § 404 dredge and fill permits, or any activity requiring a CWA § 401 certification.

Alternatives Analysis: A structured evaluation of less- and non-degrading range of practicable alternatives that prevent or lessen degradation.

Antidegradation Implementation Methodology: The implementation methodology that outlines how the Arkansas Department of Energy and Environment, Division of Environmental Quality (DEQ)[1], Office of Water Quality (OWQ) will determine on a case-by-case basis whether and to what extent existing water quality may be degraded in a Water of the State. The Antidegradation Policy refers to binding regulatory language or statute, while the antidegradation implementation methodology is the process by which activities are reviewed.

Arkansas 303(d) List: A list of waterbody segments that are currently not supporting one or more designated uses and/or not consistently meeting water quality criteria.

Assimilative Capacity: The ability of a waterbody to receive additional quantities of a pollutant (or pollutants) and still meet the water quality necessary to support the uses specified in CWA section 101(a)(2). Assimilative capacity is the difference in water quality between what is needed to protect the uses specified in CWA section 101(a)(2) and the actual water quality in the waterbody.

Baseline Water Quality (BWQ): The level of water quality that is used to establish the assimilative capacity within a waterbody. BWQ will be determined the first time that a new or expanding authorization is considered. For a new authorization, the BWQ shall be representative of the water quality at or immediately upstream from a proposed discharge. For an expanding authorization, the BWQ shall also include the levels of pollutants already permitted to be discharged at maximum design flow. BWQ is expressed as a concentration.

Beneficial Uses: All existing and designated uses of waters of the state as defined in APC&EC Rule 2.

Best Management Practice (BMP): A practice, or combination of practices, that is determined to be an effective and practicable (including technological, economic, and institutional considerations) means of preventing or reducing the amount of pollution entering a waterbody.

Clean Water Act (CWA): The federal Water Pollution Control Act, as amended 33 U.S.C. §§ 1251 *et. seq.*

Critical Flow Conditions: The point in time when the beneficial uses within a water of the State are most susceptible to anthropogenic and/or hydrologic effects; generally, but not necessarily,

[1] Arkansas Department of Energy and Environment, Division of Environmental Quality (DEQ) is the successor agency of the Arkansas Department of Environmental Quality (ADEQ).

when a stream is at or below its 7Q10 flow or harmonic mean (APC&EC Rule 2.106 "critical flows"). A lake's critical condition shall be determined on a case-by-case basis.

Cumulative Degradation: Within a waterbody or a waterbody segment, the collective reduction of assimilative capacity from multiple activities or increased discharges over time.

Degradation: An increase in the concentration or load of the pollutants of concern within a surface water measured on a parameter-by-parameter basis.

Division: Division of Environmental Quality.

Designated Use: Those uses specified in the water quality standards for each waterbody or stream segment whether or not they are being attained.

Effluent: Water that is not reused after flowing out of any wastewater treatment facility or other works used for the purpose of treating, stabilizing, or holding wastes.

Existing Activity: NPDES permits, state permits, any activity with a CWA § 401 certification, or any activity that threatens the highest attainable use or results in significant degradation, at the time the baseline water quality is determined.

Existing Use: Those uses listed in Section 303(c)(2) of the CWA, 33 U.S.C. § 1313(c)(2) (i.e., public water supplies, propagation of fish and wildlife, recreational uses, agricultural and industrial water supplies, and navigation), which were actually attained in the waterbody on or after November 28, 1975, whether or not they are included in the water quality standards.

Existing Use Protection (EUP): Maintenance and protection of existing instream water uses and the level of water quality necessary to protect existing uses. All parameters of all waters are designated for all uses as per Rule 2.302 unless the use has been removed following APC&EC Rule 2.306.

Expanding Wastewater Source: An existing permitted source with a proposal to increase permitted mass of pollutants, with a corresponding change in one or more of the following factors: design flow, process equipment associated with production, or significant change in operations.

High Quality Protection (HQP): Protection and maintenance of parameters that have water quality that exceeds levels necessary to support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water. Any significant lowering of water quality for these parameters requires the completion of a Tier 2 review prior to authorization. For the uses listed in CWA 101(a)(2), this includes all parameters of waters that are not defined as Tier 1 or 3 and have water quality that is better than water quality criteria.

Hybrid Approach: Consists of a combination of waterbody-by-waterbody and parameter-by-parameter approaches to classify waterbody tiers.

Less-Degrading Alternative: A practicable alternative to a proposed discharge that would result in fewer detrimental changes to water quality as characterized by the baseline water quality evaluation.

Non-Degrading Alternative: A practicable alternative to a proposed activity that would not result in lowering of water quality.

Non-Significant Lowering of Water Quality: A reduction of less than 10 percent of the waterbody's assimilative capacity for any pollutant as a result of all discharges/activities combined after baseline water quality has been determined. Events or activities causing non-significant lowering of water quality are not required to undergo a Tier 2 review.

Non-Point Source: Pollution that originates from diffuse sources.

Outstanding Resource Waters (ORW): Waters designated in APC&EC Rule 2 as Extraordinary Resource Waters (ERW), Ecologically Sensitive Waterbodies (ESW), and Natural and Scenic Waterways (NSW). These high quality waters constitute an outstanding state resource, with significant aesthetic, recreational, or scientific value.

Parameter-by-Parameter Basis: When an activity is proposed, the state determines which parameters represent water quality that is better than the applicable criteria developed to protect the CWA section 101(a)(2) uses. The waterbody is then considered high quality for those parameters. Using this method, a waterbody can be Tier 2 for some parameters and Tier 1 for others.

Pollutant of Concern (POC): Pollutants generated by activities that affect beneficial use(s) in waters of the state. POCs include pollutants that create conditions unfavorable to attainment of beneficial uses in the waterbody receiving pollutants generated by activities or proposed to receive pollutants generated by activities. (For example, where pH, temperature, and dissolved oxygen are in noncompliance with applicable numeric criteria or if nonpoint source activities have led to violations of turbidity criteria.)

Pollution: Contamination or other alteration of the physical, chemical, or biological properties of any waters of the state, or such discharge of any liquid, gaseous, or solid substance in any waters of the state that will, or is likely to, render the waters harmful, detrimental, or injurious to public health, safety, or welfare; to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses; or to livestock, wild animals, birds, fish, or other aquatic life (A.C.A. § 8-4-102 (2011)).

Point Source: Any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

Practicable Alternative(s): Wastewater treatment or control alternative(s) determined to be technologically feasible, able to be put in practice, and economically viable, as defined by 40 C.F.R. § 131.3(n).

7Q10: A flow volume equal to or less than the lowest mean discharge during 7 consecutive days of a year which, on the average, occurs once every 10 years.

Significant Lowering of Water Quality (also referred to as Significant Degradation): A reduction by 10 percent or more of the waterbody's assimilative capacity for any pollutant as a result of any single activity or as a result of all activities combined after baseline water quality was determined, or a prediction of such a reduction in assimilative capacity. Events or activities causing significant lowering of water quality are required to undergo a Tier 2 review.

Social and Economic Importance: The social and economic benefits to the community that will occur from new or increased discharge/activity or waste load.

Tier: Level of antidegradation protection assigned to waterbodies, as detailed in Section 3.

Temporary Lowering of Water Quality: Lowering of water quality that is non-permanent and effects can be regarded as insignificant following a review of 1) length of time during which water quality will be lowered, 2) percent change in ambient conditions during critical conditions, 3) parameters affected, 4) likelihood for long term water quality benefits to the waterbody (i.e., as may result from dredging of contaminated sediments), 5) degree to which achieving the applicable water quality standards during the proposed activity may be at risk, and 6) potential for any residual long-term influences on existing uses.

Water Quality Criteria (WQC): Criteria are elements of State water quality standards, expressed as constituent concentrations, levels, or narrative statements, representing a quality of water that supports a particular use.

Water Quality Standards (WQS): Covering water classification, beneficial uses (40 C.F.R. § 131.10), general and specific water quality criteria (40 C.F.R. § 131.11), antidegradation, and general policies (40 C.F.R. § 131.12) conditions for waters of the state.

Waterbody-by-Waterbody Approach: The review of the pollutants in a waterbody by assessing the overall quality of the waterbody as opposed to assessing the level of each pollutant of concern in a waterbody for the purpose of determining the level of protection applicable to the waterbody.

Waters of the State: All streams, lakes, marshes, ponds, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, which are contained within, flow through, or border upon this state or any portion of the state (A.C.A. § 8-4-102(11)). Waters of the state include, but are not limited to, those waters meeting the federal definition of Waters of the United States (WOTUS).

2. INTRODUCTION

Arkansas's Antidegradation Policy, herein "Policy", is set forth in Chapter 2 of APC&EC Rule 2. States are required to develop and adopt an Antidegradation Policy and develop methodology for implementing such policy (40 C.F.R. § 131.12). This document shall serve as the implementation methodology for the Antidegradation Policy.

The Policy protects water quality and beneficial uses from degradation. However, the Policy also specifies exceptions for lowering water quality in a high quality water in certain situations (40 C.F.R. § 131.12(a)(2)). Lowering of water quality is allowed only after a systematic decision-making process, including an alternatives analysis. This process considers a number of factors including the classification of the waterbody, consideration of non-degrading and less degrading alternatives to the proposed activity, and comparison of economic and social benefits of the lowering of water quality proposed by the activity. In addition, the Antidegradation Policy requires the involvement of the public through permitting procedures outlined in APC&EC Rule 8 and through coordination with other government agencies.

3. TIER PROTECTION LEVELS

An Antidegradation Policy provides a means for maintaining and protecting surface water quality by requiring all activities with the potential to affect water quality to undergo review and a comment period prior to any decision to approve or deny the activity. In compliance with 40 C.F.R. § 131.12, implementation procedures for Arkansas's Policy identify levels of antidegradation protection (tiers), determination of baseline water quality (BWQ), assessing and determining extent of acceptable lowering of water quality in a high quality water, and identification of less-degrading or non-degrading alternatives. A waterbody's tier identification may be completed using a parameter-by-parameter or waterbody-by-waterbody approach. Arkansas is implementing a hybrid approach in that Tier 1 and Tier 2 protection will be identified on a parameter-by-parameter basis and Tier 3 protection will be identified on a waterbody-by-waterbody basis (Figure 1).

Tier 1: **Existing Use Protection (EUP)** the basic protection afforded to all parameters of all waterbodies regardless of current water quality, which is that existing uses will be maintained and protected.

Tier 2: **High Quality Protection (HQP)** applies to waters of the state for protection of baseline water quality which is better than the water quality criteria. An activity that proposes significant lowering of water quality would require a review as described in Section 8 of this document to demonstrate that the lowering of water quality is necessary and Tier 1 protection is ensured. Tier 2 is the default protection for all parameters of all waters, with the exception those parameters or waters that have already been determined to be Tier 1 or Tier 3.

Tier 3: **Outstanding Resource Waters (ORW)** applies to waterbodies listed as an Outstanding Resource Water (ERW, ESW, and NSW) in APC&EC Rule 2. Tier 3

review is required for those waters encompassed by APC&EC Rule 2.203 and 40 C.F.R. § 131.12(a)(3).

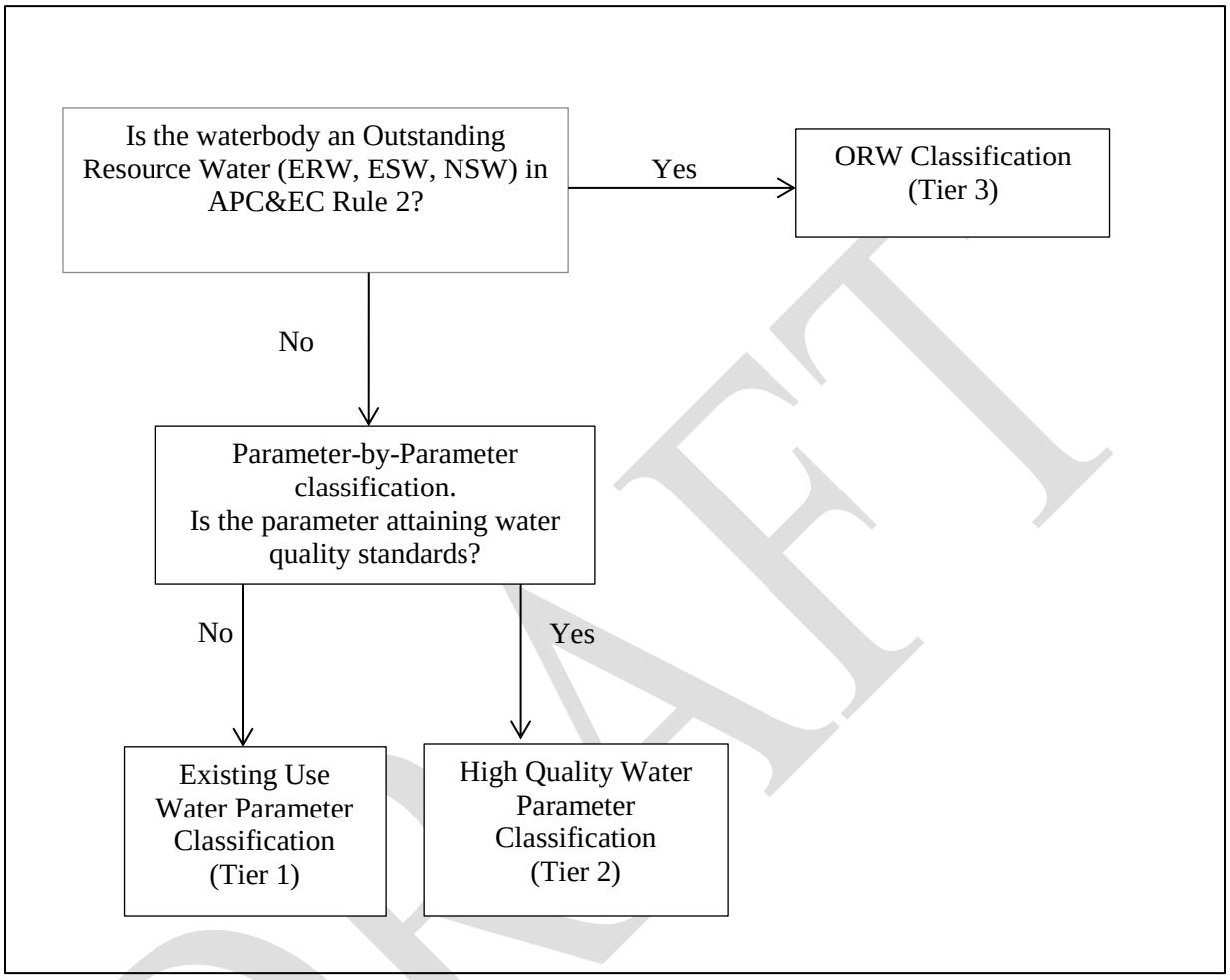

Figure 1: Antidegradation Waterbody Tier Determination Diagram

According to APC&EC Rule 2.204, in those cases where potential water quality impairment associated with a thermal discharge is involved, the Antidegradation Policy and implementing methodology shall be consistent with Section 316 of the CWA, 33 U.S.C. § 1326. Impairment of water quality from non-thermal pollutants is still subject to the antidegradation evaluation described in this document.

4. TIER PROTECTION LEVELS AND ANTIDEGRADATION EVALUATION

The level of protection identified below determines the type of antidegradation review required when new or expanded discharges are proposed and for other Clean Water Act purposes. Because the Tier 1 and Tier 2 reviews are conducted on a parameter-by-parameter basis, a waterbody may be considered Tier 1 with regards to some parameters and Tier 2 with regard to other parameters.

A) Tier 1 - Existing Use Protection (EUP) Evaluation

Tier 1 review of waters of the state (A.C.A. § 8–4–102 et seq.) will be performed for applicable parameters, including those in structures purposefully created for effluent conveyance with an existing use attained on or after November 28, 1975. For Tier 1 protection, the Antidegradation Policy is implemented through the state's NPDES permit issuance process, including applicable major modifications (See Section 5). New or expanding activities are not allowed to discharge pollutants that may cause or contribute to impairment of a designated or existing use or violation of water quality criteria in a § 303(d) listed water.

Tier 1 review allows activities to occur according to applicable water quality standards without social and economic analyses. Other statutory, regulatory, or policy (including the Continuing Planning Process or CPP) requirements for the development of appropriate effluent limits and other permit requirements are applicable.

B) Tier 2 - High Quality Protection (HQP) Evaluation

Tier 2 review of waters of the state will be performed for all parameters that are attaining water quality criteria. By definition, in high quality waters, the baseline water quality (BWQ) is better than the minimum water quality criteria for one or more water quality parameters. In an evaluation of Tier 2 waters, where there is a significant increase (> 10% of assimilative capacity) in cumulative pollutant loading, a demonstration is required. The demonstration shall include the following items:

1) Lowering water quality is justifiable to accommodate important economic or social development in the area where the water is located;
2) The highest statutory and regulatory requirements for all new and existing point sources are achieved;
3) All cost-effective and reasonable best management practices (BMPs) for nonpoint source control are considered. See Section 9 for additional discussion; and
4) Tier 1 protection is ensured.

Decisions regarding significant lowering of water quality of Tier 2 protection levels will only be made after steps 1-4 are completed and after the intergovernmental coordination and public participation (40 C.F.R. Part 25) provisions have been satisfied.

C) Tier 3 - Outstanding Resource Waters (ORW) Evaluation

ORWs are in APC&EC Rule 2 for their outstanding natural or cultural resource value. ORWs are designated as ERW, ESW, and/or NSW (APC&EC 2015, Appendix A, D). An ORW is Tier 3, regardless of baseline water quality for each parameter. A Tier 3 waterbody's assimilative capacity is to be maintained in order to protect existing uses. Proposed new or expanding activities may proceed, but with no long-term net increase of parameter load.

5. ASSIGNING TIER PROTECTION

A) Tier 1 Protection

Prior to allowing any new or expanded discharge of a parameter, the Division and/or applicant will conduct a Tier 1 review and demonstrate that the discharge would not cause or contribute to a violation of the water quality criterion for that parameter or the existing uses of that waterbody.

B) Tier 2 Protection

Tier 2 protection is assigned on a parameter-by-parameter basis. A Tier 2 review applies to all proposed discharges to waters of the state, unless one of the following conditions applies:

- The water is an ORW to which Tier 3 protection applies,
- The discharge is considered insignificant in accordance with the criteria explained in Section 8.B.4 of this document, or
- The receiving water is listed as impaired for a POC on the Arkansas 303(d) List, which requires a Tier 1 review for that POC.

C) Tier 3 Protection

Tier 3 protection is assigned on a waterbody-by-waterbody basis to all waters designated as ORWs in APC&EC Rule 2. Any degradation of water quality is prohibited in these waters unless the discharge only results in temporary degradation.

6. REVISING TIER PROTECTION LEVELS

The tier of protection for a waterbody may change if it is added to or removed from the list of ORWs in APC&EC Rule 2. The tier of protection for a pollutant may change between Tier 1 and Tier 2 if an impairment for that pollutant is added to or removed from the Arkansas 303(d) List. An ORW may not change from Tier 3 based on the 303(d) List.

7. ACTIVITIES ELIGIBLE FOR ANTIDEGRADATION REVIEW

New or expanding wastewater discharges: Compliance with the Antidegradation Policy shall be required for all new or expanding wastewater discharges into Arkansas surface waters that require a permit. Expanding wastewater discharge is defined as increased mass of pollutants with a corresponding change in one or more of the following factors: design flow, process equipment associated with production, or significant change in operations.

Renewals: NPDES permit renewals will not be subject to review procedures, provided there are no proposed changes to the facility's effluent which would result in significant increases of pollutant loadings. However, if impairments in the waterbody are detected from routine monitoring, then changes in permit limits may be required to address subsequent downstream impairments.

Thermal Discharge: Rule 2.204 of the Arkansas Antidegradation Policy is relevant when water quality impairment is associated with a thermal discharge. The Antidegradation Policy and

implementation methodology shall be consistent with Section 316 of the CWA. Rule 2.502 states: "Heat shall not be added to any waterbody in excess of the amount that will elevate the natural temperature, outside the mixing zone, by more than 5°F (2.8°C) based upon the monthly average of the maximum daily temperatures measured at mid-depth or three feet (whichever is less) in streams, lakes or reservoirs."

General Permits: In an effort to expedite permit timeliness, antidegradation requirements will be incrementally addressed for all general permits during the renewal process within 5 years of approval of this antidegradation implementation procedure. However, activities covered by general permits may still be subject to an antidegradation review if during the application (Notice of Intent) period the activity is determined to likely cause significant degradation.

Significant Lowering of Water Quality: Discharges that may result in significant lowering of water quality in a high quality water will be subject to a Tier 2 antidegradation review.

General Antidegradation Reviews: the Division may develop a general antidegradation review for small domestic dischargers (generally less than or equal to 50,000 gallons per day) into Tier 2 waters. In all cases, applicable water quality standards shall be met (Rule 6.401(A)).

8. ANTIDEGRADATION REVIEW PROCEDURE

Applicant coordination with DEQ should happen before the NPDES application process to ensure that the environmental consequences of any activity that might affect water quality are fully assessed. Issuance of a state construction permit for a new or expanding facility may be contingent on the final permitting decision regarding antidegradation.

A) The review will generally take the following steps as outlined in the permit application instructions:

Step 1.

a) The applicant may request a determination of preliminary effluent limits for those water quality pollutants believed to be present in the proposed activity;
b) The applicant may submit an application without determination of preliminary effluent limits;
c) The applicant may submit an analysis of no degradation to water quality (including non-discharging options and regionalization, at a minimum);
d) The applicant may submit an analysis showing only temporary lowering of water quality; or
e) The applicant may submit an analysis showing non-significant lowering of water quality.

Step 2. The preliminary determination of effluent limits will include, if applicable, a finding that the proposed activity or increase in discharge will cause significant lowering of water quality. The preliminary limits determination, if provided by DEQ, is considered the baseline for alternatives analysis of less degrading options.

Step 3. Upon significant degradation determination, the applicant shall provide antidegradation documents, including an alternatives analysis and socioeconomic demonstration, as part of the permit application.

Step 4. Upon receipt of an administratively complete permit application, the Division will promptly cause to be published a Public Notice acknowledging the receipt of the administratively complete permit application. The Division will begin technical review.

Step 5. Upon completion of the technical review, DEQ will cause to be published, for a thirty-day comment period, the draft permit decision, which includes antidegradation review, and Water Quality Management Plan (WQMP) updates if applicable.

Step 6. The Director will evaluate the public interest and may call a public hearing on the draft permit, the antidegradation documents, and WQMP updates if applicable.

Step 7. Following the public hearing, if applicable, and receipt of public comments, the Director will make a final permitting decision. The decision will include the response to any comments, final permit, final supporting documents (including antidegradation documents), and final WQMP updates if applicable.

Step 8. Any person with standing may appeal the Director's decision in accordance with Rule 8.

B) Basis of Antidegradation Review Procedure

This portion of the chapter outlines the procedure for determining whether or not degradation is justified in waters of the state from regulated discharges/activities. The antidegradation review procedure is based on the following items. See Section 15 for the Antidegradation Decision Diagram.

1) **Level of Protection**

Determination of Tier 1, 2, or 3 status can be found in Section 3.

2) **Baseline Water Quality (BWQ) of the Receiving Water**

BWQ is defined in Section 1. The BWQ shall be representative of the water quality at or immediately upstream from a new activity or representative of the receiving steam at or below an existing activity, as applicable. Once established, BWQ is expressed as a concentration. For waters receiving pollutants from a point source (where full design capacity has not been reached), the BWQ shall include the levels of pollutants already permitted to be discharged at maximum design flow. If there is insufficient

data to determine the BWQ at the applicable location of the proposed activity, the applicant can either collect the additional data required to determine BWQ or assume significant degradation without determining BWQ.

3) **Assimilative Capacity**

Assimilative capacity is defined in Section 1. The assimilative capacity of a waterbody describes the amount of a pollutant that can be added to that waterbody without causing a violation of water quality criteria or impairing a beneficial use. For parameters within a waterbody that have been assigned Tier 1 protection, no assimilative capacity is available and existing uses and water quality standards will be maintained and protected. Tier 3 protection requires existing uses and water quality criteria to be protected and maintained. For Tier 2 protection, the assimilative capacity is protected by evaluating and setting permit limits at critical stream conditions, at discharge design flow conditions, in consideration of background water quality conditions, and in accordance with procedures established in Rule 2 and the CPP. Occasionally, multiple activities exist in close proximity, and the potential pollutant loads for all activities shall be evaluated together.

In order to determine the remaining assimilative capacity of a waterbody for a significant degradation analysis, the assimilative capacity must be determined for each water quality parameter each time a new or expanded facility/activity is considered. The assimilative capacity for dissolved oxygen is indirectly evaluated through water quality modeling of oxygen-demanding pollutants. Each waterbody has a unique available capacity for each water quality parameter that is derived from Baseline Water Quality (BWQ). The available assimilative capacity is the difference between the water quality criteria and the baseline water quality.

Example of a conservative constituent:

water quality criteria - baseline water quality = assimilative capacity

10 mg/L - 3 mg/L = 7 mg/L

10 mg/L = water quality criteria;
3 mg/L = baseline water quality;
7 mg/L = assimilative capacity.

4) **Degradation Determination**

Some increase in pollutant loading is allowed for parameters categorized as Tier 2. DEQ or the applicant shall first determine whether or not the proposed new or expanded discharge/activity will result in significant lowering of water quality.

Documentation

Documentation to support a significant or non-significant lowering of water quality determination may include, but not be limited to, the percent change of the pollutant concentration, loading calculations, or percent reduction of assimilative capacity. For bioaccumulative parameters and other parameters that may impact aquatic biota, a

Tier 2 review may still be required even if the discharge is determined to be non-significant. If significant degradation is predicted or assumed, then this shall be a documented selection of the applicant.

Consumption of *less than* or equal to 10% of the assimilative capacity

The applicant may demonstrate the discharge consumes less than 10% of the assimilative capacity through the use of existing water quality data. In these cases, no alternatives analysis or socioeconomic impact review is required. This demonstration must consider documented changes to water quality that have occurred in this waterbody since the determination of the BWQ.

Consumption of *greater than* 10% of the assimilative capacity

A permit applicant may proceed without calculation of total assimilative capacity if it is predicted or assumed that significant degradation will occur. The applicant may proceed with submitting an alternatives analysis and social-economic impact analysis (Section 8.B.5). Once 10% of the assimilative capacity determined at the time that the BWQ was established has been consumed, all subsequent activities that result in a new or increased discharge must undergo a Tier 2 review.

Consumption of Dissolved Oxygen Sag

Consumption of the total assimilative capacity for oxygen-demanding pollutants is calculated based on the dissolved oxygen sag in an EPA-approved steady state water quality model developed in accordance with the MOA titled "Memorandum of Agreement Between U.S. Environmental Protection Agency and Arkansas Department of Environmental Quality" (see footnote 1) (MOA), concerning dissolved oxygen modeling procedures. A copy of this MOA can be found in the CPP.

5) **Alternatives Analysis and Economic and Social Development Analysis**

Antidegradation review under Tier 2 for significant lowering of water quality requires documentation that the proposed activity, treatment alternatives, and social-economic impacts have been evaluated and considered. The applicant may utilize documents such as "*Guidelines for Preparing Economic Analyses"* EPA, Revised March 2016, or others, for guidance in completing the report.

Following the evaluation of alternatives, the applicant must provide a basis for the selected alternative. This selection must be based on the practicability, economic efficiency, and social benefits of the alternative.

a) Alternatives Analysis

An applicant proposing any new or expanded discharge or activity that would significantly lower water quality is required to prepare an evaluation of alternatives. The purpose of this evaluation is to determine practicable alternative(s) that would prevent or limit the degradation associated with the proposed activity. Alternatives are compared by practicability, available

technology, and affordability to the controls required for protecting designated uses and achieving highest statutory and regulatory requirements. Alternatives to be considered should include but are not limited to:

i) Product or raw material substitution;
ii) Improved operation and maintenance of existing treatment;
iii) Installation of biological/physical/chemical treatment process(es) that provide higher level of treatment;
iv) Water conservation measures; and
v) Other alternatives.

If experimental or unproven methods are proposed, DEQ may request information on previous applications of the method, effectiveness, transferability (if applicable), costs, and other information as appropriate. Applications containing proposals for new or experimental methods will be required to append information regarding likely performance results. Such applications may be approved at the Director's discretion with the condition that if the proposed technology does not meet project pollutant control targets, the applicant must adopt conventional or other pollution control measures that meet state antidegradation requirements. DEQ may require that the applicant analyze additional alternatives if an appropriate range of alternatives were not evaluated. DEQ staff and the applicant should meet to discuss these and other issues early in the process. The applicant should also document any alternatives that were determined to be impracticable and provide a basis for the conclusion. If practicable alternatives are identified, the lowering of water quality in a high-quality water will only be authorized if one of those alternatives is selected for implementation.

b) Social Development Analysis

Social-economic, environmental, or public health issues are considered when significantly lowering water quality. This analysis is not necessary if a non-degrading or non-significant degrading alternative is chosen. This analysis should be performed by the applicant and submitted for DEQ review. Factors to be considered by the applicant in making a determination include but may not be limited to:

i) Employment (e.g. increasing production and jobs, maintaining, or avoiding reduction in employment, permanent or short-term);
ii) Improved community tax base;
iii) Abatement of an environmental or public health problem;
iv) Providing a social benefit to the community;
v) Increasing or improving housing; and
vi) Providing necessary public services (e.g., fire department, school, infrastructure).

c) Economic Analysis

Alternatives that are deemed practicable must undergo a present worth cost comparison. An analysis of pollution control costs, or economic efficiency, is appropriate when the applicant desires to optimize the balance between water quality benefits and project costs. This analysis should be performed by the applicant and submitted for DEQ review. General cost categories that should be considered include capital cost, annual operating and maintenance cost, customer costs, and debt service.

In order to develop a standardized framework for projecting, evaluating, and comparing costs associated with various pollution control alternatives, applicants should use a 20-year life cycle present worth framework for reporting cost information. However, applicants may propose alternate economic demonstrations if appropriate. Alternative direct cost comparisons may be presented if the present worth calculation is complicated by the amount of difference in the effective design longevity of the alternatives examined.

EPA has developed spreadsheet tools for guidance in calculating costs. The spreadsheet, or an alternative method for cost analysis, should be completed and submitted with the antidegradation review. The latest EPA-developed financial guidance can be found on EPA's website.

Base cost is considered the minimum cost to achieve water quality standards. As a non-binding guideline, alternatives costing less than 120 percent of the base cost are presumed to be considered economically efficient. This economic efficiency guideline presumes that the reduction of pollutant loads below the minimum level of pollution control has an environmental benefit which warrants the increased expenditure. Each practicable alternative should consider the difference in cost from base cost as part of the evaluation.

9. IMPLEMENTATION OF CONTROLS FOR NONPOINT POLLUTION SOURCES

EPA's regulatory interpretation of 40 C.F.R. § 131.12(a)(2) is that federal Antidegradation Policy does not require DEQ to establish BMPs for nonpoint source pollution control where regulatory programs requiring BMPs do not exist. The CWA leaves it to the states to determine what, if any, controls on nonpoint sources are needed to provide for attainment of state WQS. States may adopt regulatory or voluntary programs to address nonpoint sources of pollution. Where a state has adopted a regulatory program for nonpoint source pollution control, the state must assure that such controls are properly implemented before authorization is granted to justify lowering of water quality.

DEQ and the Arkansas Department of Agriculture provide cooperative oversight of nonpoint pollution sources and waters that are impaired by nonpoint sources. Nutrient Management Plans

for permits/activities are one of the avenues used for addressing nonpoint pollution from liquid animal waste in nutrient surplus areas. The Arkansas Department of Agriculture requires waste management plans for non-liquid systems. The controlling agencies assure compliance through regulatory programs applicable to such activities. 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.

10. PUBLIC REVIEW

Prior to approval and issuance of a permit or certification for a proposed activity that will cause significant degradation of water quality, public notice is provided in accordance with APC&EC Rule 8.

11. INTERGOVERNMENTAL COORDINATION AND REVIEW

Intergovernmental coordination is required prior to approving any activity that would cause lowering of water quality to surface waters protected at the Tier 2 level. This requirement seeks to ensure that relevant public entities at the local, state, and federal levels are aware of any proposal to lower water quality and are provided with an opportunity to comment on the proposal.

The intergovernmental coordination and review process may occur in tandem and at minimum in accordance with public notice procedures outlined in the previous section. The time period afforded to commenting agencies will be consistent with the requirements for submission of public comments under the procedure outlined by APC&EC Rule 8.

12. FINAL ACTION

At the completion of the public review and input process, any comments received will be reviewed and considered to determine if changes should be made to the proposed activity. Significant changes may require an update to the antidegradation review document for the project and may be subject to an additional public notice. Final permit or certification decisions include the antidegradation review decision and WQMP update.

13. APPEALS

Antidegradation review decisions of the Division may be appealed within 30 days of the issuance of the decision and in accordance with the procedures outlined by APC&EC Rule 8. After any modification of the decision is made that is based on the Director's discretion, public review, or intergovernmental review, a second public notice may be required.

14. EFFECTIVE DATE

The effective date of this guidance is {STARTING DATE}.

15. ANTIDEGRADATION DECISION DIAGRAM