



Minnesota
Pollution
Control
Agency

Nondegradation Rulemaking

Issue Paper 5. Nondegradation Review: alternatives analysis, economic and social justification, intergovernmental coordination and public participation.

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Nondegradation implementation procedures for protection of high-quality waters specify how a state will determine whether and to what extent water quality may be lowered. EPA's Water Quality Standards Handbook¹ states that before any lowering of water quality in high-quality waters occur, an antidegradation review must be conducted and include: 1) a determination that the lowering of water quality is necessary to accommodate important economic or social development in the area in which the waters are located and; 2) full satisfaction of all intergovernmental coordination and public participation in the review process.

In its determination of the necessity to degrade water quality, the state may require the applicant to consider all feasible and reasonable alternatives that would eliminate, reduce or mitigate degradation resulting from the proposed activity. In this way the state ensures that all feasible and reasonable alternatives to allowing the degradation have been adequately evaluated, and that the least degrading alternative, or combination of alternatives, is implemented.

The review process must also evaluate whether the economic or social benefits of the proposed activity outweigh the benefits of maintaining high water quality. If the proposed activity does not provide important social or economic benefits, degradation must not be allowed to occur. The decision of whether and to what extent water quality is lowered must also include intergovernmental coordination and public participation. How these requirements are met and their timing in the review process

are important considerations in the development of review procedures.

The information required from the applicant, including alternatives and socioeconomic benefits regarding the proposed activity (Nondegradation Demonstration) is used in the review process (Nondegradation Review) to arrive at determination (Nondegradation Decision) of whether and to what extent water quality may be lowered.

In deciding the necessity to lower water quality, how should feasible and reasonable alternatives be determined?

An integral component in the determination of whether and to what extent water quality may be lowered is a review of alternatives that will eliminate, minimize and/or mitigate degradation. In order to make this determination, the applicant must provide information regarding the technical feasibility and cost-effectiveness (economic reasonableness) of the alternatives.

States may provide guidelines or lists of the types of alternatives that could be considered. For example, Delaware's Antidegradation Implementation Procedures² lists nine general types of alternatives that the applicant must consider:

- pollution prevention;
- reduction in the scale of the project;
- water recycling or reuse;
- process changes;
- innovative treatment technology;

- advanced treatment technology;
- seasonal or controlled discharges to avoid critical water quality periods;
- improved operation and maintenance of existing treatment systems; and
- alternative discharge locations.

An alternative not mentioned above, but may merit consideration, is trading. The U.S. District Court rulings³ in 2003 on EPA's approval of West Virginia's antidegradation procedures included approval of trading provisions. The Court concluded that trading was reasonable if it resulted in an improvement to water quality in the water segment where the new or expanded discharge is located.

More specific alternatives based on the type of activity being considered may also be documented. Any list provided by the Agency should not be considered exhaustive, but rather a means of providing direction on what alternatives may be appropriate in a given situation. Also, because of the wide range of activities that may be reviewed, each applicant would not need to provide information on each alternative, but rather select those appropriate to the proposed activity.

The state's judgment of what is "reasonable" is perhaps the most difficult part of the alternatives analysis. Requiring a cost/benefit analysis of alternatives that is too prescriptive will not allow for the flexibility necessary to address a wide range of applicants and circumstances. On the other hand, some type of guidance on how to judge what is reasonable would be useful in creating consistency and efficiency. Cost/benefit analysis for each alternative should attempt to balance additional cost that may be associated with the alternatives with the enhanced water quality that would be realized through implementation of that alternative.

The Water Quality Guidance for the Great Lakes System: Supplementary Information Document⁴ suggested that, for wastewater treatment expansion, if the ratio of the costs is less than or equal to 1.1 to one (i.e., if up to a 10% increase in the cost of treatment over what will otherwise be required will eliminate the significant lowering of water quality), then the entity will be expected to utilize the additional treatment to prevent the significant lowering of water quality. In other words, up to a 10% construction cost increase for a given alternative above the original proposed alternative would be considered reasonable. If however, if no alternative is found to be at or below the 10% mark, then

social and economic alternatives for the proposed expansion would be required for approval of the expansion. Both Delaware and West Virginia use similar nonbinding guidelines, in that non-degrading or less-degrading alternatives with costs that are less than of 110% of the originally-proposed activity would be considered reasonable.

Ultimately the decision of what are feasible and reasonable alternatives will be left to the Agency's best professional judgment, based on the information provided by the applicant and on case-by-case bases. The Agency may require the applicant to submit additional information if it determines that not all feasible and reasonable alternatives have been considered.

What factors should be considered in the determination of economic or social justification?

Nondegradation policy is not intended to unnecessarily restrict development. Rather, its intent, through economic or social justification analysis, is to provide for a process whereby a State can weigh the need for economic or social development against the maintenance of water quality in high quality waters.

Factors that may be considered in the decision of economic or social justification may include:

- condition of the local economy;
- changes in population;
- changes in the number and types of jobs directly or indirectly resulting from the proposed activity;
- changes in the community tax base;
- changes in social conditions or services;
- impacts to human health;
- impact to the environment;
- benefits associated with the maintenance of high water quality;
- any relevant information provided through the intergovernmental cooperation and public participant requirement; and
- any other relevant economic or social factors considered important by the Agency.

EPA's Interim Economic Guidance for Water Quality Standards⁵ suggests a number of tools for calculating economic impacts of both publicly- and privately-financed projects. Although these tools provide estimates for economic changes, there is little in the way of specifics for determining the importance or significance

of the proposed activity. Criteria defining important economic or social development vary widely with environmental, economic, and social conditions. Selection of any quantitative threshold or weights defining important development would be somewhat arbitrary and perhaps indefensible. Ultimately, the judgment is left to the State's discretion, on a case-by-case basis, in the determination of whether the proposed activity justifies degrading water quality.

How should intergovernmental cooperation and public participation requirements of federal regulations be met?

Federal regulation⁶ requires "...full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process..." to be included in the review process. The continuing planning process is specifically required under the Clean Water Act, Section 303 (e)(1)⁷. One intent of this requirement is to ensure cooperation among the various agencies involved in water resources protection. Maintaining communication and cooperation among agencies reduces unnecessary redundancy thereby creating a more efficient means of environmental protection. Because States vary widely in how their agencies are organized with respect to water resources protection, there is little or no specific federal guidance in how intergovernmental cooperation should be accomplished.

The means and timing of the public participation requirement in the review process are important considerations. States may hold a public hearing or hearings, or provide public notice and the opportunity for the public to request a hearing. In Minnesota public participation opportunities regarding permits, including nondegradation requirements, are provided in Minn. R. Chapter 7001⁸. Under these provisions the public may provide written comments on draft permits, or petition for a public informational meeting or contested case hearing.

In its antidegradation guidance⁹, EPA Region 5 recommends that any public notice related to potential lowering of water quality should address or reference documents, which include information on the following:

1. Statement of the state's antidegradation policy
2. Specific identification of substances for which effluent limit relaxation is being proposed (if appropriate)
3. Description of the current level of water quality

4. Description of the impact that the proposed action will have on water quality
5. Summary of other actions that have lowered water quality and determination of cumulative impacts
6. De minimis test justification (if appropriate)
7. Important social and economic development demonstration in support of effluent limit relaxation or new discharge (if appropriate)
8. Type of substance involved, and known and suspected environmental effects
9. Identity of other appropriate agencies which have been notified of the proposed action

Another approach would be to provide public participation opportunities earlier in the process, when the alternatives and socioeconomic justification are being considered. The processes for which this could occur would need to be explored. One possibility, at least for some levels of review, may be to consider nondegradation alternatives and socioeconomic justification in the environmental review process.

Examples from other states

Because of the flexibility States have in meeting the federal regulations and conducting antidegradation review, it may be informative to look at examples from other States. The following excerpts were taken from the Tetra Tech, Inc., Technical Memorandum #2, "Overview of State, Federal, and Judicial Guidance on Antidegradation"¹⁰, (pages 32-36).

Pennsylvania

Pennsylvania requires special pre-permit analysis for proposed discharges into high-quality, Tier 2 waters. Alternatives to new, additional, or increased point source discharges to surface waters must be employed where they are cost-effective and environmentally sound. This requirement is called the "nondischarge alternatives analysis." If a nondischarge alternative is not cost-effective and environmentally sound, the proposed discharger must use the best available combination of cost-effective treatment, land disposal, pollution prevention, and wastewater reuse technologies. This process is known as the "anti-degradation best available combination of technologies" (ABACT) and establishes a minimum level of performance for the discharger.

The state then requires an analysis to determine if nondegrading discharge alternatives exist. If the ABACT produces a nondegrading discharge, the discharge can be approved for the Tier 2 water. If it would produce a degrading discharge, a Social or Economic Justification

(SEJ) Analysis is required before it could be used. The SEJ Analysis determines the approvable level of treatment technologies and the final determination of *cost-effectiveness* is not made until the SEJ analysis is complete. If the SEJ analysis has not demonstrated economic or social importance of the activity, the only approvable discharge would be one that is nondegrading.

Oregon

The state prohibits a lowering of water quality in Tier 2 waters unless all the following apply:

- All water quality standards will be met and beneficial uses protected
- No other reasonable alternatives exist
- The lowering of the water quality is necessary for social and economic benefits that outweigh the environmental costs

If the proposed activity would likely result in any measurable change in water quality away from conditions unimpacted by anthropogenic sources, then the proposed activity is considered to likely result in the lowering of water quality. The *measurable change* is based on any of the following (a) percent change in ambient concentrations at appropriate critical periods, (b) the difference between current ambient conditions and conditions that would result if the activity is allowed, (c) percentage change in loadings, (d) percent reduction in assimilative capacity; (e) nature, persistence, and potential impacts on aquatic biota, and (f) degree of confidence in modeling used.

In the alternatives analysis, the applicant must provide a discussion of the technical and economic feasibility of the alternatives. If at least one of the alternatives to lowering the water quality is technically and economically feasible, the applicant “should pursue that alternative rather than the activity that results in a lowering of water quality. If a technically, economically alternative does not exist, the antidegradation review continues to the analysis socioeconomic benefits vs. environmental costs.

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continues to the analysis of socioeconomic benefits vs. environmental costs.

Washington

Washington requires that an applicant must consider nine alternatives to the proposed degrading discharge, and the Department of Ecology retains discretion to require that other alternatives be evaluated. This analysis is the primary focus of determining whether to allow a lowering of high-quality water parameters. The purpose is to identify site, structural, or management approaches that can be practically implemented to prevent, or minimize where prevention is not feasible, the lowering of high-quality water parameters. *Practical* and *feasible* are not defined in the guidance document. Necessity is determined on a case-by-case basis.

Then a test of importance is conducted to determine overriding public interest. This analysis considers the qualitative and quantitative benefits and costs of an action. The applicant must describe the economic and social benefits associated with lowering water quality as well as the benefits associated with maintaining high-quality water. Examples are given of factors to consider for each of these two categories. “Significant weight must be given to the value of clean water and the protection of beneficial uses to the general public and to treaty tribes at the local, regional, and statewide scales.”

Wyoming

In Wyoming, the test of economic and social importance is done on a case-by-case basis. If the applicant submits evidence that the activity is *important* development, it is presumed important unless information to the contrary is submitted in the public review process. In the public comment period, substantial weight is given to determinations by local governments and land use planning authorities. If the proposed activity is determined not to be important for social and economic development, authorization is denied. If the proposed activity is determined to be important, a determination is then made whether the degradation that would result from the activity is necessary. The degradation is considered acceptable if there are no other water quality controls available that would result in no degradation or less degradation that are economically, environmentally, and technically reasonable. The determination of whether such alternatives are available is based on a reasonable level of analysis by the project proponent and any information submitted by the public. The scope of the alternatives considered is limited to those that would accomplish the proposed activity’s purpose. In

determining the economic reasonableness of the alternatives, the state considers whether the:

- Costs of the alternative significantly exceed the costs of the proposal for publicly owned treatment works (POTWs),
- User charges resulting from the alternative would significantly exceed those of similarly situated POTWs for any discharge into the state waters, and
- Treatment alternative represents costs that significantly exceed cost for other similar discharges or standard industry practices.

West Virginia

West Virginia evaluates pollutant control alternatives from a list of non-discharge and nondegrading or less degrading alternatives listed in the guidance, the applicant must screen for and propose a list of available, cost-effective alternatives that will be evaluated in detail. The state may require that additional alternatives be analyzed. Environmental impacts that must be addressed are listed, and the cost and reasonableness criteria are defined.

The alternative or suite of alternatives is considered to be cost-effective and reasonable if it is feasible and the cost is less than 110 percent of the base costs of pollution control measures for the proposed activity. The 110 percent cost-effectiveness criterion is a general rule. If pollution control costs for alternatives that would result in substantial water quality benefits slightly exceed the 110 percent threshold, those alternatives may be required. The base cost for NPDES permitted facilities is the cost of treating raw or otherwise untreated wastewater to a level that meets water quality criteria, or the cost of meeting federally required, technology-based requirements, whichever is more stringent and legally applicable. The base cost for activities permitted under section 404 of the CWA is the cost of pollution controls that meet minimum section 404 permit and section 401 water quality certification requirements.

The state will identify the least degrading alternative—or mix of alternatives—that does not exceed the 110 percent cost threshold. This will be the state's preferred option. If the option will not result in significant degradation, permitting of the activity proceeds. If the preferred option will result in significant degradation, the applicant must conduct a social and economic importance analysis so the state can determine if the activity can be permitted. The applicant then completes a worksheet explaining how the proposed activity affects 12 social and economic factors. The applicant can use

other economic and environmental considerations to strengthen its social and economic importance analysis.

A number of example considerations are provided. The state makes a preliminary determination primarily on the basis of the demonstration made by the applicant and may weigh the applicant's demonstration against counterbalancing socioeconomic costs and projected environmental effects (those determined both in the alternatives analysis and the socioeconomic analysis). The state makes a preliminary determination on the facts on a case-by-case basis. If the information is not sufficient to make a preliminary determination, the state may request the applicant to submit specific information needed. The state then considers views and concerns expressed by the public and selected governmental agencies regarding the preliminary determination in making a final determination. The state makes a final determination on the facts on a case-by-case basis.

Discussion Points

- 1) Some general categories of alternatives are listed on pages 1 and 2. What are some specific alternatives should be considered in the alternatives analysis? (For example: tertiary treatment for wastewater; infiltration for stormwater)
- 2) Should trading be considered as an alternative? Why or why not? If so, under what circumstances?
- 3) Regarding alternatives, how should "economically-reasonable" be defined?
- 4) Should the process of how "economically-reasonable" is determined be included in rule or guidance? Why?
- 5) What factors, other than those listed on page 2, should be considered in the economic or social justification?
- 6) What agencies and agency programs (local, state and federal) should be included in the intergovernmental coordination requirement for nondegradation review?
- 7) When and by what means should public participation occur in the review process?

References and Links

¹Water Quality Standards Handbook: Second Edition, U.S. EPA, Office of Water, 1994

www.epa.gov/waterscience/standards/handbook/chapter04.html

²Delaware Department of Natural Resources and Environmental Control Policy, Antidegradation Implementation Procedures for Surface Waters of the State, 1999 www.dnrec.state.de.us/water/antidegp.pdf

³Ohio Valley Environmental Coalition, et. al. v. Marianne Lamont Horinko, Acting Administrator, United States Environmental Protection Agency; Civil Action No. 3:02-0058, 2003
www.ohvec.org/issues/mountaintop_removal/articles/antideg.pdf

⁴Water Quality Guidance for the Great Lakes System: Supplementary Information Document (SID), United States Environmental Protection Agency, Office of Water, EPA-820-B-95-001, March 1995
www.epa.gov/region5/water/wqs5/pdf/supp_inf_doc.pdf

⁵Interim Economic Guidance for Water Quality Standards, EPA-823-B-95-002, 1995
www.epa.gov/waterscience/standards/econworkbook/chaptr5.html

⁶40 CFR § 131.12, Antidegradation policy
http://edocket.access.gpo.gov/cfr_2007/julqtr/40cfr131.12.htm

⁷Clean Water Act, Section 303 (e)(1)
<http://epw.senate.gov/water.pdf>

⁸Minnesota Administrative Rules Chapter 7001, Permits and Certifications
www.revisor.leg.state.mn.us/rules/?id=7001

⁹EPA Region V Guidance for Antidegradation Policy Implementation for High Quality Waters, 1986.

¹⁰Tetra Tech, Inc., Technical Memorandum #2, “Overview of State, Federal, and Judicial Guidance on Antidegradation”, 2007
www.pca.state.mn.us/publications/snap-techmemo2.pdf

Please keep in mind that these issue papers are to generate discussion and are not to be taken as representing MPCA decisions or recommendations at this time. Your participation and input in this rule revision is much appreciated.

Contacts

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