Operationalizing Antidegradation

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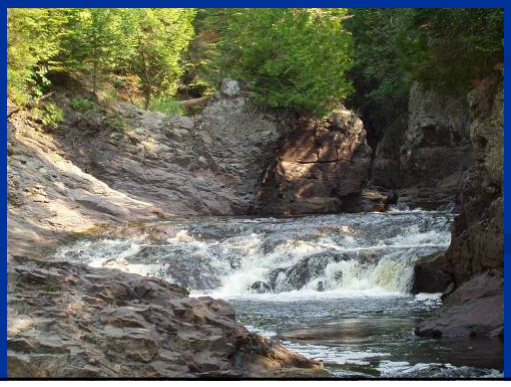
February 11, 2009

2-Tier Tier 2 Discussion

- Antidegradation and MS4 stormwater
- Could this type of approach be extended for use in addressing antidegradation more generally?



Goals

- Clear criteria for antidegradation determinations
  - Transparent, tangible, objective
  - More efficient process
- Encourage applicants to consider practices that minimize stream impacts
  - Including implementing measures that may not be directly related to the process discharge

Part 1 – Antidegradation and MS4 Stormwater Discharges

Q: When might there be a new or increased discharge of pollutants to a water body

A: When there are new areas (e.g. a new subdivision) added to the MS4 system

- Typically results in higher volumes of runoff

- More energy, more potential for erosion in the stream channel
- Greater volumes means greater pollutant loadings
- Presumably receiving waters would be affected

Premise

- **A State can assure compliance with its antidegradation requirements by preventing effects from new or increased discharges**

  How can a MS4 permittee eliminate or prevent effects from new/increased discharges?

  Implement:
  - **Green infrastructure**
  - **Low Impact Development**
  - **Other Stormwater controls**

  as development and redevelopment occurs so there is no net increase in stormwater impacts

Premise

- If post-development hydrology = predevelopment hydrology, antidegradation goals are met
  - Providing detention, but still allowing higher stormwater volumes to be discharges, would not be considered as meeting this standard

Is No Net Increase Realistic?

Numerous Approaches Already Being Implemented by States

North Carolina

The North Carolina permit to Construct, Operate and Maintain Impervious Areas and BMPs Associated with Residential Development Disturbing < 1 acre

Use rain barrels, rain gardens, permeable pavements, and/or other stormwater best management practices to control and treat the stormwater runoff from all built upon areas of the site from the first 1.5 inches of rain

New Jersey

The New Jersey Stormwater Management Rules require that a "major development" project must comply with one of the following groundwater recharge requirements:

- ***Demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures maintain 100 percent of the average annual preconstruction groundwater recharge volume for the site; or***
- ***Demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from pre-construction to post-construction for the 2-year storm is infiltrated***

Ohio

The Ohio construction general permit for the Big Darby Creek Watershed near Columbus, where significant growth is projected, includes post-construction infiltration requirements:

- ***Post-development groundwater recharge be equal to or exceed the pre-construction groundwater recharge***
- **Protection of open space (infiltration areas) is to be achieved by binding conservation easements that identify a third party management agency, such as a homeowners association, condominium association, political jurisdiction or land trust**
- **If the post-development recharge volume will be less than the pre-construction recharge mitigation is required**

West Virginia
Manage a 1-inch storm

West Virginia DEP has proposed a small MS4 permit with performance standards for new and redevelopment projects:

Performance Standards. The permittee must implement and enforce via ordinance and/or other enforceable mechanism(s) the following requirements for new and redevelopment: […] Site design standards for all new and redevelopment that require, in combination or alone, management measures that infiltrate, evapotranspirate and reuse of, at a minimum, the first one inch of rainfall from a 24-hour storm. This first one inch of rainfall must be 100% managed with no discharge to surface waters.

Analysis of rainfall data in the State indicate that, on average, 90% of the rainfall events in West Virginia are 1 inch or less.

Is Managing a 1-Inch Storm Roughly Equivalent to No Net Increase?

Just about…

- **Under most conditions in the Midwest it is estimated that under predevelopment conditions 80-90% of the annual stormwater volume is infiltrated or evapotranspirated**
- **This generally corresponds to control of a 1 inch storm (the so called water quality storm) with green infrastructure techniques (infiltration, plant uptake or storage for reuse with no discharge)**

California – Another way of getting at No Net Increase

The Los Angeles Regional Water Quality Control Board has included the following standard in the draft MS4 permit for Ventura County:

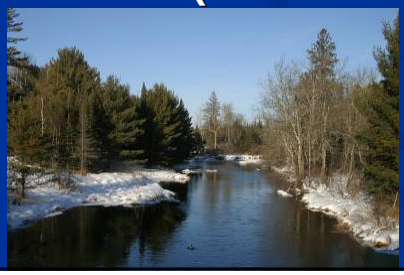
Permittees shall require that new development and redevelopment projects control pollutants, pollutant loads, and runoff volume emanating from impervious surfaces through percolation, infiltration, storage, or evapotranspiration, by reducing the percentage of Effective Impervious Area to less than 5 percent of total project area

Chesapeake Bay
Goal of No Net Increase of Sediment / Nutrients

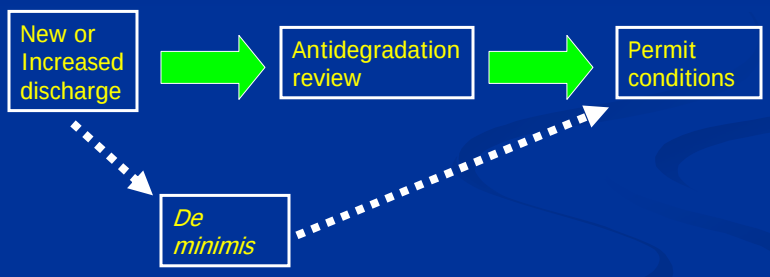
- **On-site management of stormwater**
  - **BMPs**
- **Off-site Mitigation**
- **Trading**

Part 1 - Conclusion

It should be possible for expanding MS4 communities to comply with antidegradation and minimize the environmental impacts by implementing defined stormwater control measures (alternatives)



Part 2 - Operationalizing Antidegradation for NPDES Decision-making



Idealized schematic of antidegradation process

Protecting Water Quality

- Existing uses are protected through reasonable potential and WQBEL calculation procedures
- High quality waters are protected by an analysis of wastewater treatment alternatives and identification of social/ economic impacts associated with a new or increased discharge

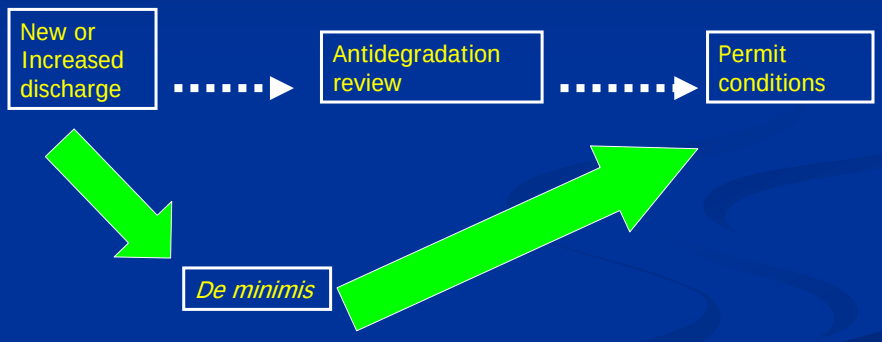
Problems with Alternatives Analyses

- Applicants do not know the scope of the alternatives analysis
- State/Tribal/Federal reviewers may lack technical knowledge to evaluate alternatives analysis
- State/Tribal/Federal reviewers lack criteria against which to evaluate information provided by applicants

As a result…

- Reviewers uncomfortable evaluating Tier 2 applications
  - May require specialized knowledge
  - No criteria other than completion
- Applicants try very hard to avoid triggering Tier 2 reviews:
  - Pressure for broad *de minimis* provisions
  - Pressure for categorical exemptions

How The Antidegradation Process Oftentimes Actually Works



De minimis concept isn't all bad

- If the *de minimis* threshold is kept small, projects that qualify must achieve more rigorous pollution control than the minimum required
- High quality waters remain high quality
- Clear review and approval criteria

Problems with *de minimis*

- "Black box" limits effective public participation
- Recent litigation significantly limits the applicability of *de minimis*
- Cumulative impacts
- Record keeping
- Verification

Here's An Idea

- No *de minimis*, no exemptions
- Evaluate sensitivity of receiving water
- Assess significance of impacts
- Stronger, more encompassing alternatives analysis with emphasis on avoiding/minimizing impacts
- List anticipated social and economic benefits and impacts

A Better Alternatives Analysis

- Holistic
- Clear environmental protection objectives
- Encourages low impact development/green infrastructure
- Rewards innovation
- Protects water quality
- Easy to implement
- Transparent to the public

Alternatives Analysis - Overview

Impact	Description of Applicant's environmental impact minimization efforts	State's Rating of Applicant's Proposal			
		0 (no info.)	1 (acceptable)	2 (good)	3 (outstanding)
Wastewater					
Stormwater					
Hydrology					
Aquatic Habitat					
Air					

No info. = no information provided by applicant

Acceptable = satisfies all state/tribal & Federal requirements (if any)

Good = better than minimum requirements (if any)

Outstanding = Substantially beyond minimum requirements (if any)

Wastewater

Impact	Description of Applicant's environmental impact minimization efforts	State's Rating of Applicant's Proposal			
		0 (no info.)	1 (acceptable)	2 (good)	3 (outstanding)
Wastewater					
Water conservation					
Pollution prevention					
Wastewater treatment					
Offsets					

Stormwater

Impact	Description of Applicant's environmental impact minimization efforts	State's Rating of Applicant's Proposal			
		0 (no info.)	1 (acceptable)	2 (good)	3 (outstanding)
Stormwater					
Evapo-transpiration					
Infiltration					
Capture & reuse					

The Review/Evaluation Process

If:

- ✓ **All designated uses are protected and all applicable requirements are complied with**
- ✓ **Receiving water is not especially sensitive**
- ✓ **Expected environmental impact of the proposed discharge is not extreme**
- ✓ **Thorough alternatives analysis and implementation *(score of 2 or better?)***
- ✓ **There are substantial socio-economic impacts**

The Review/Evaluation Process

Then:

The applicant passes the antidegradation review

Note there are numerous opportunities to adjust the list of factors to be included and to tweak the evaluation process

The main idea is to "operationalize" or "systematize" the application process and the decision-making process

Summary

If we can find define criteria for specifically what needs to be addressed in application and how application reviews will be carried out we can:

- **Reduce uncertainty about what needs to be submitted**
- **Allow for public participation**
- **Reduce uncertainty/misunderstanding about how determinations are made**
- **Streamline decision making and make determinations more objective and more consistent**

Summary

Ultimately we may be able to prompt better consideration of alternatives, better implementation of alternatives, and better protection of water resources by *operationalizing antidegradation*