

Antidegradation Training



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Mock Alternatives Analysis & Exhibit 9A

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Antidegradation

“It is a riddle, wrapped in a mystery, inside an enigma...”

The Alternatives Analysis

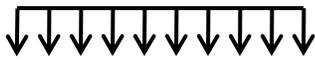


“...but perhaps there is a key. That key is...”

Conventional vs. Antidegradation Analysis

Conventional
(You must clear the hurdles!)

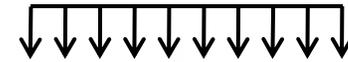
\$\$\$ Feasibility, Operational Complexity, etc., etc. etc.



VS.

Antidegradation
(How high can you jump?)

\$\$\$ Feasibility, Operational Complexity, etc., etc. etc.



What's Different?

Conventional Evaluation	Antidegradation Analysis
Predetermined numeric effluent targets	Goes beyond the predetermined targets
Cost-effectiveness	Water quality impact
The hurdle: Meet effluent limits	The bar: The least degrading reasonable alternative



What's the Same?

- Similarities to “conventional” evaluation
 - The same basic constraints
 - The selected alternative must be:
 - Practicable, Affordable
 - Capable of meeting all effluent limits



What's Completely New?

- Public notice and opportunity for public comment prior to finalizing alternatives analysis
- Justification of degradation, if any, through demonstration of Social and Economic Importance (SEI)



Step 1: Background Information

- The Facility
 - Description/diagram of existing facility
 - Existing flows and loadings
 - Proposed design flows and loadings
- The Receiving stream network
 - Designations, UAA status, impairment status
- Effluent limits
 - Existing NPDES limits, if applicable
 - WLA values for discharging alternatives



Step 2: Pollutants of Concern (POCs)

- Identify Effluent POCs and their respective Tiers
- Nutrients are POCs!



Step 3: Identify Alternatives

- Three Types:
 - BPCA (Base Pollution Control Alternative)
 - NDA (Non-Degrading Alternative)
 - LDA (Less Degrading Alternative)



Step 4: Alternative Evaluation

- Is the alternative “reasonable”?
 - Practicable
 - Is it Economically Efficient?
 - Is it Affordable?
- If the answer to all of the above is “YES”, then the alternative is “reasonable”



Step 4 (cont.): Alternative Evaluation

- Relative comparison of degradation
- Comparisons may be more qualitative than quantitative
- “...do not allow precision to overwhelm common sense. Nothing in municipal wastewater treatment is ever known with greater validity than within 10 percent of the correct answer, and variability is the norm.” - EPA Nitrogen Control Manual



Step 5: Select the Preferred Alternative

- The least degrading reasonable alternative
- Expect some difficulties in concluding what is truly the “least degrading”
 - Textbook process efficiencies vs. actual installations
 - Utilization of existing infrastructure sometimes results in “hybrid” arrangements
 - Operational capabilities



Step 6: Social/Economic Importance

- Required if the preferred alternative will result in degradation
 1. Identify the affected community
 2. Identify relevant factors that characterize the social/economic conditions of the affected community
 3. Describe the important social and economic development associated with the project



Checklist (Exhibit 9A)

- ✓ Certification by an Iowa P.E.
- ✓ Executive Summary
- ✓ Public notification & intergovernmental requirements (public comments & responsiveness summary)
- ✓ Background information
 - Existing and design flows and loadings
 - Receiving stream designations and impairment status
 - NPDES/TMDL limits identified
 - POCs identified
- ✓ Present worth values for practicable alternatives (including discount rate used)



Checklist (cont.)

- ✓ Classification (BPCA, NDA or LDA) and reasonableness of alternatives evaluated
- ✓ Alternatives adequately described/shown (schematic)
- ✓ Pollutant-by-Pollutant comparison of degradation for each reasonable alternative
- ✓ Identification of preferred alternative
- ✓ Preferred alternative is the least degrading reasonable alternative?
- ✓ Affordability analysis for alternatives found to be practicable and economically efficient but not affordable
- ✓ Demonstration of Social and Economic Importance



Useful Links

IDNR Water Quality Standards Antidegradation	http://www.iowadnr.gov/water/standards/antidegradation.html
IDNR Wastewater Construction	http://www.iowadnr.gov/water/wastewater/index.html
Iowa Surface Water Classification	http://www.iowadnr.gov/water/standards/ruleref.html
Use Assessment/Attainability Analysis	http://www.iowadnr.gov/water/uaa.html
Impaired Waters – 303(d) Listings	http://www.igsb.uiowa.edu/wqm/wqa/303d.html
TMDLs	http://www.iowadnr.gov/water/watershed/tmdl/index.html
Discount Rates	http://www.economics.nrcs.usda.gov/cost/priceindexes/rates.html
EPA Interim Economic Guidance Workbook	http://www.epa.gov/waterscience/standards/econworkbook/