

Assessing Outcomes of Water Quality Trading Programs

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Water Quality Trading Programs Overview

- Many Programs, Many Differences
 - Nearly 20 Years Experience
 - Renewed Interest
 - Still Learning
 - Specific Conditions
 - Heterogeneity of Environment
 - Heterogeneity of Issues
 - Heterogeneity of Institutions



Water Quality Trading Programs Overview

- Varying Degrees of "Success"
 - Number of Trades?
 - Stakeholder Support
- Varying Degrees of "Success"
 - Water Quality Improvements
 - Cost Savings
 - Behavior Change



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Water Quality Trading Programs Evaluation

- Newness of Water Quality Trading Implies We Should:
 - Incorporate Evaluation Into Program Structure
 - Provide Flexibility in Programs to Adjust to Learning

Water Quality Trading Programs Evaluation

- Goals
- Outcomes
- Actions
- Constraints

Water Quality Trading Programs Primary Goals

- Water Quality Improvements
 - Location/Proximity
 - Timeliness
- Cost Effectiveness
- Future Urban Growth

Water Quality Trading Programs

Secondary Goals

- Reduce Future Uncertainty
- Complimentary Benefits
- Decision Making Flexibility
 - Management Innovations
 - Technological Innovations

Water Quality Trading Programs Actions

- Elements of Program Can Advance Goals
- Elements of Program Can Impede Goals

Water Quality Trading Programs

Choices in Policy Design

- Point Source / Nonpoint Source Trades
- Baselines and Thresholds
- Ratios
 - Equivalence
 - Delivery
 - Uncertainty
- Pre-Existing BMPs
 - With or Without Maintenance
 - With or Without Cost Share
- New BMPs
 - With or Without Cost Share
 - With or Without Targeting



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Water Quality Trading Programs Choices of Institutional Elements

- State Nonpoint Source Banks
- Broker / Clearinghouse
- Verification
- Enforcement

Elements of Program	Primary Goals			
	Water Quality Improvements		Cost Effectiveness	Future Urban Growth
	Location/Proximity	Timeliness		
PS/NPS Trades	+/-	+/-	+	+
Delivery Ratio	+	+	+	0
Uncertainty Ratio	+/0	+/0	-	-
Pre-Existing BMPs	-	-	-	+
State NPS Bank	+/-	+/-	-	+/0
Broker/Clearing House	+	+	+	+
New BMPs with Cost Share, with Targeting	+	+	+	+
New BMPs with Cost Share, without Targeting	-	-	-	+



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Elements of Program	Secondary Goals		
	Reduce Future Uncertainty	Decision Making Flexibility	Complimentary Benefits
PS/NPS Trades	+	+	+
Delivery Ratio	0	0	+/-
Uncertainty Ratio	0	-	+/-
Pre-Existing BMPs	0	0	-
State NPS Bank	+	+/-	+/-
Broker/Clearing House	+	+/-	+/-
New BMPs with Cost Share, with Targeting	+	+	+
New BMPs with Cost Share, without Targeting	0	0	0



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Evaluating Water Quality Trading

Program Goal: Water Quality Improvements

Measurable Outcomes: N, P, Sediment

Methodologies:

- Monitoring
- Modeling with BMP Adoption
 - 3rd Party Verification
 - Satellite Imagery

Data Collection:

- Water Sampling: Date, Location...
- Traded BMPs: BMP, Date of Implementation, Date of Trade, Extent (Acres...), Trading Ratios, Soils, Location...

Evaluating Water Quality Trading

Program Goal: Cost Effectiveness

Measurable Outcomes: - Expenditures
- Pollutant Reductions (See Previous Slide)

Data Collection:

- Traded BMP Effectiveness (See Previous Slide)
- Cost of BMP Implementation
- Cost of Next Best Alternative within Trading Program (PS-PS)
- Cost of Next Best Alternative without Trading Program

Water Quality Trading Programs Conclusions



Constraints



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