WATER QUALITY TRADING FRAMEWORK AND PROCESSES



Agenda

Cooperative Approaches to Water Quality Improvements

Types of Water Quality Trading

Point Source to Nonpoint Source Trading

Point Source to Point Source Trading

Questions

Ruekert • Mielke

COOPERATIVE APPROACHES TO WATER QUALITY IMPROVEMENTS



Cooperative Approaches to Water Quality Improvements

Adaptive management (AM)
 Water Quality Trading (WQT)

Adaptive Management

- Permittee improves water quality in a watershed by reducing in-stream phosphorus concentrations
- Permit compliance is demonstrated by reducing instream phosphorus concentrations and eventually acheiving the phosphorus water quality criteria

Water Quality Trading

- •Permittee purchases "credits" in the watershed to acheive permit compliance
- •Permit compliance is demonstrated by comparing permittee discharge data and "credits" available to the applicable WQBEL



Quick Terms & Acronyms





TYPES OF WATER QUALITY TRADING



Types of Water Quality Trading

- Point to Point Trades (Traditional Municipal/Industrial Discharge, MS4, CAFO)
- Point to Nonpoint Trades (Non-permitted Agricultural, Nonpermitted Urban, etc.)



POINT SOURCE TO NONPOINT SOURCE TRADING



Agricultural Coordination

BMPs

- 1. Filter strips
- 2. Buffers
- 3. Improved Tillage





Agricultural Coordination

- 4. Cover crops
- 5. Grassed waterways
- 6. Retention ponds
- 7. Wetland restoration
- 8. Barnyard improvement
- 9. Nutrient management plans





City of Columbus

- Not Permitted MS4 Community
- Rock River TMDL Requirements Less Stringent for TSS and TP than WWTF permit
- WWTF TP Future Permit
 - **0.075 mg/L**
 - Optimized to 0.15 mg/L





Compliance Options

□ Treatment plant upgrades: estimated \$3,203,000 - \$5,850,000

OR cooperative approach: estimated \$1,779,790

Watershed Trading Unit Cost							
	Watershed 20 Year Cost	Pounds Phosphorus					
Initial cost per acre (seeding, etc), \$/acre	500						
Lost production, \$/acre/yr	300						
O&M Cost \$/ac/yr	100						
20 Year Cost, \$/acre	8500						
Annual Cost, \$/acre	425						
Filter Strip P Reduction, lbs P/acre/yr		8					
20 Year P Reduction, lbs P/acre		160					
Unit Cost, \$ / lbs P		53					



WQT Program Development Process

- 1. Calculate approximate pounds of P per year needed to determine feasibility
- 2. Research watershed
 - Critical Source Areas
 - Nutrient Management Plans
 - Proximity to waterway/location in reachshed
 - Upstream/downstream of WWTF



Phosphorus Reduction Calculation





- Reduction from existing 0.9
 MGD at 0.7 mg/L
- Optimization at the WWTF to 0.15 mg/L
- Remaining reduction from 0.15 to 0.075 equates to ~270 pounds of phosphorus per year



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- Watershed research
- 230 Sites Identified





WQT Program Development Process

- 3. Reach out to DNR to discuss WQT program
- 4. Reach out to farmers in watershed and/or other organizations that own farmed land in the watershed
- Secure enough projects to meet needed pounds P, plus a 10-15% buffer



City of Columbus

ColumbusACTS meeting

- 2 interested parties
 - One private entity
 - Later restructured into two projects
 - One producer





City of Columbus





Calculation for Pounds Phosphorus from practices

- □ Acreage taken out of production, controlled acreage
- Phosphorus index based on soil sampling
- TMDL non point source load allocation
- Long-term credits vs. interim credits
- Trade Ratio

Trade Ratio = (Delivery + Downstream + Equivalency + Uncertainty - Habitat Adjustment):1



WQT Program Development Process

- 6. Draft preliminary WQT Plan and submit to DNR
- Receive comments and requests for further information from DNR
- 8. Update trading plan and resubmit to DNR



WQT Program Development Process

- 9. Develop land owner agreements and contracts
 - Address any land owner concerns
- 10. Submit final paperwork to WDNR





Typical Landowner Concerns

- Contract length
- Crop rotations with regard to cover crops
- Rental rate
- Who is the point of contact
- What happens if practice fails or is unable to be constructed
- Weather issues



WQT Trading Plan Requirements

- Notice of Intent to Conduct Water Quality Trading
 - Permit renewal application
- WQT Plan
 - Site analyses
 - Quantification of credits
 - Preliminary design and maintenance considerations
 - Snap Plus modeling
 - Soil Sample Information
 - Implementation and timeline information
 - O&M documents
- WQT Checklist
- Management Practice Registration



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WQT Trading Plan Requirements

Trading Document	Purpose	Parties Involved	Additional Guidance (click to follow)
Notice of Intent	 Permittee/credit user submits to WDNR Allows permittee to confirm trading eligibility prior to plan development Typically submitted no later than the preliminary facility plan step of a compliance schedule for TP WQBELs or at least 12 months prior to permit expiration.* 	 Permittee/credit user WDNR local wastewater engineer/local trading coordinator 	<u>Notice of Intent</u>
Trade Agreement	 Document required of permittee/credit user by s. 283.84, Wis. Stats. to formalize the trade Typically completed prior to submittal of the WQT plan or at least 9 months prior to permit expiration.* 	 Permittee/credit user Credit generator WDNR or local governmental unit (if applicable) 	<u>Trade Agreement</u>
WQT Plan &Checklist	 Permittee/credit user submits to WDNR Documents will be public noticed Outlines the content of the WQT strategy Typically submitted with the final facility plan step of the compliance schedule for TP WQBELs or with the permit application for reissuance at least 6 months prior to permit expiration.* 	 Permittee/credit user WDNR wastewater engineer/local trading coordinator Statewide trading coordinator, if necessary 	WQT Plan & Checklist
Management Practice Registration (only with NPS credit generators)	 Permittee/credit user submits to WDNR to confirm the management practice has been properly installed in accordance with the WQT plan WDNR reviews and tracks registration using docket numbering system Information can be reviewed later for trade verification and auditing 	 Permittee/credit user WDNR wastewater engineer/local trading coordinator Statewide trading coordinator 	<u>Registration</u>

http://dnr.wi.gov/topic/SurfaceWater/watergualitytrading.html



WQT Program Development Process

- 11. Implement WQT plan practices
- 12. Annual inspections
- 13. Annual O&M
- 14. Continue to look for new opportunities in the watershed



POINT SOURCE TO POINT SOURCE TRADING



Rock River Basin TMDL

Nasco

- □ Life Sciences Company, frogs
- Fort Atkinson
- Direction discharge to Rock
 River
 - Frog tanks
 - TMDL requirements







City of ColumbusTP TMDL

olumbus WWTF			
ow (MGD)	1.26		
nt Level (mg/L)	0.075		
	Allocation		
TMDL Allocation (pounds per	(pounds per	Actual Pounds at	
day)	month)	Design Flow	Excess Pounds
16.39	508.09	24.43	484
20.80	582.40	22.07	560
18.83	583.73	24.43	559
15.65	469.50	23.64	446
14.43	447.33	24.43	423
14.16	424.80	23.64	401
14.17	439.27	24.43	415
15.58	482.98	24.43	459
16.11	483.30	23.64	460
15.58	482.98	24.43	459
15.98	479.40	23.64	456
14.61	452.91	24.43	428
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Agreement Finalized

- □ 8/30/2018
- □ 10 yr.
- □ 5 yr. "Off Ramp"







