Water Quality Trading Program
Structures:
What Works and
What Doesn’t Work
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Outline

• Foundation
  – Principles
  – Conditions that favor trading

• *Structure*
  – Key components of a trading program
  – Examples from other programs
  – Options for Passaic Trading Project
How Trading Works

• A ‘cap’ or limit is placed on the total amount of pollutant that can be released from all sources
• Sources receive an allocation, i.e., authorization to release a given amount of pollutant
• Sources can meet their allocation by:
  – Making all necessary reductions on-site OR
  – Buying additional allocations - credits - from other sources that have reduced pollutants below their own allocation
How Trading Works, cont’d

- The exchange of credits to meet the water quality cap is ‘trading’
  - BUYERS have high pollutant control costs
  - SUPPLIERS have lower costs
- Water quality trading (WQT) takes different forms
  - Point/source trades
  - Point/nonpoint source trades
Foundation: Principles

• Water quality trading is a tool to help meet water quality goals
  – At lower cost
  – Sooner than might otherwise occur
  – Multiple benefits

• Water quality trading is **not**
  – A way to evade responsibility for water quality goals
  – A way to dismantle the CWA

• Key functions for all trading programs
  – CWA compliance, public information, connecting buyers/sellers
Foundation: Conditions that favor trading

- Water quality problem and pollutant sources are characterized
- Desired water quality target is in place, e.g., consensus cap or TMDL → Driver
- Multiple point sources face more stringent permit limits, i.e., water quality-based limits
- Significant pollutant control cost differences exist among PS
Foundation:
Conditions that favor trading (2)

- Sufficient modeling, data available to assess relative water quality impact of trades
- States, stakeholders willing to take nontraditional approach

* Rutgers/Cornell developing project
  - Research based
  - Neutral party
Trading Structures

• What is it?
• Why does it matter?
• Permit systems
• Potential trading structures for the Passaic
Trading Structures

• **What is a trading structure?**
  - The overall process for executing trades
    • How does a discharger buy or sell credits?
    • What is the role of the regulator in permitting or rejecting trades? How does the regulator evaluate compliance?

• **Poorly planned structure is common pitfall in other trading programs**

• **Structure should have flexibility, accountability, enforceability**
## Components of a Trading Structure

### Permit system

<table>
<thead>
<tr>
<th>Define compliance for PS</th>
<th>Ensure accountability and define liability for pollutant reductions</th>
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<tbody>
<tr>
<td>Maintain ability for Regulator to enforce against noncompliance</td>
<td>Ensure avoidance of hotspots</td>
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<tr>
<td>Define trading area boundaries</td>
<td>Track trades and progress towards WQ goals</td>
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<td>Define credits</td>
<td>Manage risk among parties to trades</td>
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<tr>
<td>Enable communication among credit buyers and sellers</td>
<td>Provide information to the public and other stakeholders</td>
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<td>Clear approval process for trades</td>
<td><strong>NGO support</strong></td>
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<td>Monitoring and reporting</td>
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Importance of Permit system

- Permit system $\rightarrow$ structure $\rightarrow$ likelihood of success
- Different permit systems $\rightarrow$ Different structures
  - Individual point source or
  - Watershed-based permitting system
Trading Structures That Work

- Long Island Sound (Connecticut)
  - Watershed-based permit, i.e. general permit
  - Trading process: WWTPs have individual load limits for total nitrogen (TN). Trades are made indirectly through state agency
  - Trading ratios are defined in general permit
  - Formula for price of a credit is defined in the general permit; price is updated annually
  - Trades are easily tracked
  - Program is simple to administer
  - WWTPs continue to monitor and report TN
Trading Structures That Work

• Lower Minnesota River
  – Watershed-based permit, i.e. general permit
  – Trading process: WWTFs have individual limits for total phosphorus (TP). WWTFs can CHOOSE to trade directly on individual basis or form trading associations.
  – Trading ratios are defined in general permit
  – Price of a credit is negotiated by the buyer and seller
  – Option of trading association reduces risk of noncompliance
  – Trades are easily tracked
  – Program is simple to administer
  – WWTFs continue to monitor and report TP

• Programs that use watershed-based permits have simple and clear processes to make trades
Successful trading programs have successful structures

- Define compliance for PS
- Maintain ability for Regulator to enforce against noncompliance
- Define trading area boundaries
- Define credits
- Enable communication among credit buyers and sellers
- Clear approval process for trades
- Monitoring and reporting

- Ensure accountability and define liability for pollutant reductions
- Ensure avoidance of hotspots
- Track trades and progress towards WQ goals
- Manage risk among parties to trades
- Provide information to the public and other stakeholders
- NGO support

- **Permit type**— selection of individual point source or watershed based permitting system
Common trading obstacles

- TMDL not in place
  - Rock River (WI)
- Uncertain trading guidelines and transaction costs
  - Fox Wolf (WI)
- Complicated approval process
  - Chatfield Reservoir (CO), Cherry Creek (CO), Lake Dillon (CO), Kalamazoo (MI)
- Flawed trading ratio could have created a hot spot
- Difficulty identifying participants
  - Kalamazoo (MI)
- Not economically favorable to trade
  - Blue Plains (VA), Red Cedar River (WI), Boulder Creek (CO)
Options for Passaic project

• 3 possible structures
  – Market-like trading
  – Direct trading for water treatment
  – Trading association

• MS4s and WWTPs can have different trading structures
Phosphorus Impaired Streams & WWTP Loads

Amount of TP Discharge (lbs/yr)
- 600 - 24,989
- 25,000 - 49,999
- 50,000 - 74,999
- 75,000 - 99,999
- 100,000 - 123,000

TP Status
- Full Attain
- Insufficient
- Non Attain
- Watershed Streams
- Lakes & Reservoirs
- Sub-Watershed
- Watershed Boundary

Data Source: NJDEP, 2004 Integrated List, DMRs, Phase I TMDL (Proposed), TRC Omni

The Map Library of New Jersey - RUTGERS
Structure 1: Market-like trading

- Original vision for WQT - market environment for trading
- Buyers and sellers find each other and negotiate trades
- Permit type
  - TP limits for each PS are set in watershed-based permit (Lower Minnesota River approach)
  - Each PS gets individual NJPDES permit for TP
Structure 2: Direct trading for water treatment

- Permit type
  - Each PS gets individual NJPDES permit for TP
    - TP limit based on TMDL WLA
  - PS that exceed TP limits compensate water purveyor for cost of added water treatment
  - Compensation – negotiated or predetermined by unit price for TP load exceedance
  - Which state authority can approve these trades?
Structure 3: Trading associations

- Permit type
  - PS form an association, receive watershed-based permit for TP
  - Permit gives collective cap for association
  - Cap = sum of WLAs from PS

- PS in group permit can trade among themselves to meet collective cap
  - If association violates cap, receive penalty proportional to cap exceedance
Structure 3: Trading associations (contd.)

- Most flexible structure
- Reduces risk of noncompliance for a WWTP
- Internal trading within the association is not subject to NJDEP approval
- NJDEP would retain right to inspect individual WWTPs and enforce as needed
- Monitoring and reporting requirements for TP specified in group permit
- PS continue to have NJPDES permits for other parameters
EPA supports watershed-based permitting (WBP)

- Advantages:
  - Better quality NPDES permits
  - Less contentious permit issuance
  - Mechanism to implement TMDLs
  - Foundation for water quality trading
  - Emphasis on environmental results due to watershed planning
  - Attainment of watershed goals
Watershed-based permit for the Passaic

- Feasibility of WBP for Passaic watershed
  - WWTP association already in place: Passaic River Basin Alliance
  - EPA guidance: 6 steps to WBP
    - Steps 1-3 already complete
- Passaic WBP requires strong support and advance effort from NJDEP
Structure 3: Added Benefits

- Protection for low income municipalities
  - As part of an association, not left alone to meet WWTP and MS4 allocations for TP

- MS4 group permit is potential catalyst for stormwater utilities in NJ
Further steps for Passaic Trading Structure

- Consider phasing in the target cap
- Develop water quality equivalence ratios (i.e. trading ratios)
- Develop strategies to avoid hot spots
- Account for growth
Recommendations from other programs

- Know your constituents
- Make environmental data available and understandable
- Make policy based on scientific data
- A fiscal impact statement is a valuable tool to demonstrate value of WQT
- Trading process has to be simple, flexible, accountable, enforceable
- What is purpose of trading – interim fix or long term solution?
For more information:

www.water.rutgers.edu/Projects/trading/WQTrading.htm