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Water Quality Trading

St. Cloud, MN

August 5th, 2008





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What is Water Quality Trading?

- ⇒ A market-based approach to promote water quality protection and restoration
- ⇒ An alternative arrangement to achieve desired water quality goals based on the fact that different pollutant sources within a watershed face substantially different pollution control costs
- ⇒ Sources facing high pollution control costs may realize substantial cost savings by securing environmentally equivalent (or superior) results by purchasing water quality credits from sources with substantially lower pollutant reduction costs.



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Why Trading Rules?

- Decided to proceed with the development of trading rules during the 21 month period between:
 - ⇒ The Court of Appeals' August 9th, 2005 reversal of the Annandale-Maple Lake permit; and the
 - ⇒ Supreme Court's May 17th, 2007 reversal of the Court of Appeals' decision.
- Uncertainty about the legal climate for permit issuance in impaired watersheds prior to the development of TMDLs



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Minnesota Experience with Water Quality Pollutant Trading

- Rahr Malting Company (1997)
 - ⇒ Complex permitting exercise resulting in point/non-point trading
- Southern Minnesota Sugar Beet Cooperative (2000)
 - ⇒ Point/non-point trading
 - ⇒ Extremely complex verification procedures
- Minnesota River Basin Phosphorus NPDES Permit (2005)
 - ⇒ Watershed NPDES permit
 - ⇒ Point/point trading
- Pre-TMDL Phosphorus Trading (2008)
 - ⇒ Approved by MPCA Citizens Board in June
 - ⇒ Point/point trading prior to completion of a nutrient TMDL



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Review of existing trading programs in the US

- EPA Trading Program Information spreadsheet:
(<http://www.epa.gov/owow/watershed/trading/tradingprograminfo.xls#vta46>)
 - ⇒ 34 trading arrangements in 17 states
 - ⇒ 7 existing statewide trading frameworks
 - ⇒ 3 existing watershed based frameworks (?)
 - ⇒ 3 statewide trading frameworks in development

- Dartmouth College 2004 “Comprehensive Survey of Water Quality Trading and Offset Initiatives in the US”:
(<http://www.dartmouth.edu/~kfv/waterqualitytradingdatabase.pdf>)
 - ⇒ 39 trading initiatives in 17 states
 - ⇒ 1 regional trading program (Chesapeake Bay)
 - ⇒ 6 state policies and programs



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What do these trading programs tell us?

- Many elaborately designed programs have resulted in very few actual trades:
 - ⇒ Complexity
 - ⇒ Lack of demand
 - ⇒ High transaction costs associated with individually tailored trades

- Successful trading seems to occur at the watershed scale:
 - ⇒ Locally managed watershed scale programs
 - ⇒ Great Miami River Watershed (Ohio)
 - ⇒ South Nation River Watershed (Ontario)
 - ⇒ Permit mediated watershed scale programs
 - ⇒ Long Island Sound General Nitrogen Permit (Connecticut)
 - ⇒ Minnesota River Basin General Phosphorus Permit (MN)



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What do we know?

- EPA's 2003 Water Quality Trading Policy
 - ⇒ Also EPA's 2007 Water Quality Trading Toolkit for Permit Writers
- Experience gained by MPCA and other trading initiatives
- Current outlook for regulatory programs, impaired waters and TMDL development schedules



What don't we know?

- A lot!

Yogi Berra is credited with saying “It's tough to make predictions, especially about the future”:

- ⇒ Pollutants - which pollutants may be traded?
- ⇒ Watersheds – which watersheds, watershed dynamics, mix of buyers, sellers and brokers?
- ⇒ Science – watershed and pollutant delivery & quantification methods
- ⇒ Drivers - what regulatory or other instruments may motivate future trading activity?
- ⇒ Markets – will they develop and how?



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What are we trying to accomplish?

- Statewide water quality trading framework intended to:
 - ⇒ Develop a tool to help protect and restore water quality based on designated uses and water quality standards.
 - ⇒ Establish cost effective options for point sources
 - ⇒ Compliment farm bill programs to increase pollutant load reduction activities by non-point sources
 - ⇒ Encourage sellers to participate in multiple ecosystem services markets to increase value of BMPs
 - ⇒ Establish incentives for buyers or local trading programs to develop better information in exchange for lower trade ratios



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What are our objectives?

- ⇒ Simple and equitable trading framework
- ⇒ Market based incentives for activities that benefit water quality
- ⇒ Establish applicable default standards in lieu of the development of detailed local trading programs
- ⇒ Freestanding rule chapter with connections to existing and future rules and programs



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Water Quality Trading Advisory Committee

- External Membership:
 - ⇒ 80 people on email notification list
 - ⇒ Representing 58 organizations
- MPCA Membership:
 - ⇒ 19 agency staff on notification list
 - ⇒ Representing various areas of expertise

ADVISORY COMMITTEE MEETINGS

	2007						2008	
Meeting Date	Feb 27	Apr 17	Jul 17	Sep 13	Nov 6	Dec 11	Feb 26	Jul 8
Number of Participants	33	47	33	34	32	33	31	31



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Draft Water Quality Trading Rule

Ch. 1	Purpose, Objectives & Applicability	Water quality, cost effective alternatives, ecological benefits
Ch. 2	Prohibitions & Restrictions	Establish legal and geographic boundaries
Ch. 3	Water Quality Trading	Drivers, markets and participants
Ch. 4	Baselines	Trade thresholds for buyers and sellers
Ch. 5	Pollutant Loading & Delivery Calculations	Required, approved or accepted scientific methodologies
Ch. 6	Trade Ratios	Offset, water quality and uncertainty ratios
Ch. 7	Credits	Definition, generation, usage and longevity
Ch. 8	Water Quality Trading Management Plans	Standards for approval of local water quality trading management plans



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Water Quality Trading Rule

Chapter 3. Prohibitions

Water quality trading may not:

- ⇒ Cause impairment of designated uses
- ⇒ Cause violations of water quality standards
- ⇒ Degrade water quality beyond nondegradation baselines
- ⇒ Cause an exceedance of an authorized pollutant loading cap in an impaired water's watershed prior to EPA approval of a TMDL for the impairment;
- ⇒ Exceed a loading capacity established by a TMDL;
- ⇒ Be used to comply with a secondary treatment limitation, technology based effluent limitation or advanced wastewater treatment requirement in accordance with Minn. R. Ch. 7053
- ⇒ Water quality trades developed for any bioaccumulative chemicals of Concern are subject to additional safeguards including increased monitoring requirements and enhanced trade ratios to address risk and uncertainty.



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Water Quality Trading Rule

Chapter 3. Restrictions:

- Geographic Restrictions:
 - ⇒ Impaired Waters Trading Restrictions
 - ⇒ Nondegradation Trading Restrictions
- Other Watershed Protection and/or Restoration Plan Trading:
 - ⇒ The generation and use of water quality trading credits shall conform with the assumptions and requirements of the applicable watershed plan.
- CAFO Trading Restrictions:
 - ⇒ CAFO production area practices may not generate credits
 - ⇒ BMPs may generate credits if they are not required under an NPDES permit
- Habitat restoration projects may generate credits provided that pollutant load reductions can be calculated
- Federally funded BMPs are eligible to generate credits in proportion to the local percentage of funding for the practice



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Water Quality Trading Rule

Chapter 4. Water Quality Trading:

- Who may participate and under what conditions
- When trading may occur:
 - ⇒ Largely based on EPA Trading Policy; plus
 - ⇒ Trading to achieve watershed based goals established by the agency, counties, local units of government, watershed districts and other watershed management organizations.
- Standards for NPDES permits & trading:
 - ⇒ Must contain a flow or load based limit for the pollutant traded
 - ⇒ Must contain language authorizing trading
 - ⇒ Authorizing the issuance of watershed based permits regulating trades
- Authorization for locally managed water quality trading programs, credit brokers & aggregators
- Definition of the geographic scope of trading



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Chapter 5. Baselines:

- Seller's Baselines:
 - ⇒ Specify minimum requirements for credit generation
 - ⇒ Dependent on whether a TMDL has been completed for an impairment Standards for NPDES permits & trading

- Buyer's baselines:
 - ⇒ Specify minimum requirements for credit usage
 - ⇒ Not dependent on TMDL status



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Chapter 7. Trade Ratios:

SELLER	Offset Ratio	Water Quality Ratio	Uncertainty Ratios		
			Monitoring Uncertainty	Climactic Uncertainty	Location Uncertainty
NPDES/SDS Permitted Source with Effluent Monitoring	100%	10%	NA	NA	Variable 0% to 50%
NPDES/SDS Permitted Source without Effluent Monitoring	100%	10%	Variable 0% to 100%	Variable 0% or 100%	Variable 0% to 50%
Source not regulated by NPDES/SDS permit program	100%	10%	Variable 0% to 100%	Variable 0% or 100%	Variable 0% to 50%



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Chapter 7. Trade Ratios:

- Offset Ratio:
 - ⇒ Replaces 100% of the traded load
- Water Quality Ratio:
 - ⇒ 10% of the traded load is retired to benefit water quality
- Uncertainty Ratios:
 - ⇒ Monitoring Uncertainty
 - ⇒ 0%, 50% or 100% depending on monitoring data available to characterize pollutant load reduction
 - ⇒ Climactic Uncertainty
 - ⇒ 0% or 100% depending on whether buyer's and seller's pollutant loads are generated by different runoff generating events
 - ⇒ Location Uncertainty
 - ⇒ 0% or 50% depending on watershed location of buyer, seller and waterbody of concern and availability of monitoring data and/or modeling estimates to adequately characterize the watershed



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Water Quality Trading Rule

Chapter 8. Credits:

- Specifies that water quality trading credits are units of :
 - ⇒ Flow expressed in cubic feet per second; or
 - ⇒ Pollutant load expressed as mass per unit of time.

- Specifies standards for credit generation
- Specifies standards for credit usage
- Specifies credit longevity
- Specifies that unregulated buyers are not subject to the baseline and trade ratio specifications of the rule



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Chapter 9. Water Quality Trading Management Plans:

- Specifies the contents of a Water Quality Trading Management Plan application to the MPCA
- MPCA approval provides authorization for the local trading program, credit broker or aggregator to certify credits for NPDES permit trading
- Authorized plans may differ from the default standards specified by the rule including:
 - ⇒ Baselines
 - ⇒ Trade Ratios
 - ⇒ Credits