



Minnesota  
Pollution  
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Agency

# Comparing Selected Water Quality Trading Rules & Policies

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# Three Statewide Water Quality Trading Programs

- What is being done in other states?
  - ⇒ Michigan Rules (2002)
  - ⇒ Oregon Internal Management Directive (2005)
  - ⇒ Ohio Rules (2007)
- Selected features of three statewide trading policies

# Water Quality Trading Program Summary

- Michigan Rule
  - In effect since November 22<sup>nd</sup>, 2002
  - Administered by: Michigan Department of Environmental Quality
  - Structure: 27 chapters (29 pages)
- Oregon Directive
  - In effect since January 13<sup>th</sup>, 2005
  - Administered by: Oregon Department of Environmental Quality
  - Structure: 6 chapters, 3 appendices (29 pages)
- Ohio Rule
  - In effect since January 1<sup>st</sup>, 2007
  - Administered by: Ohio Environmental Protection Agency
  - Structure: 14 chapters (20 pages)

# Quick Review of EPA's 2003 Water Quality Trading Policy Objectives

## II. Trading Objectives

EPA supports implementation of water quality trading by states, interstate agencies and tribes where trading:

- A. Achieves early reductions and progress towards water quality standards pending development of TMDLs for impaired waters.
- B. Reduces the cost of implementing TMDLs through greater efficiency and flexible approaches.
- C. Establishes economic incentives for voluntary pollutant reductions from point and nonpoint sources within a watershed.
- D. Reduces the cost of compliance with water quality-based requirements.
- E. Offsets new or increased discharges resulting from growth in order to maintain levels of water quality that support all designated uses.
- F. Achieves greater environmental benefits than those under existing regulatory programs. EPA supports the creation of water quality trading credits in ways that achieve ancillary environmental benefits beyond the required reductions in specific pollutant loads, such as the creation and restoration of wetlands, floodplains and wildlife and/or waterfowl habitat.
- G. Secures long-term improvements in water quality through the purchase and retirement of credits by any entity.
- H. Combines ecological services to achieve multiple environmental and economic benefits, such as wetland restoration or the implementation of management practices that improve water quality and habitat.

# Michigan's Water Quality Trading Rule

- Pioneering statewide water quality trading policy
- Key concepts:
  - Credits must be Real, Surplus & Quantifiable
  - Open trading (no cap); closed trading (TMDL cap)
  - Both buyers and sellers contribute to trade ratios
  - Options for both contemporaneous trading and credit banking
- Michigan's Rule:
  - Defines how credits are generated
  - Creates a credit registry
  - Defines how credits are used
  - Creates a distinction between "open" and "closed" trading areas
  - Defines baselines
  - Establishes the application of uncertainty and water quality contribution trade ratios for both buyers and sellers
  - Establishes a program evaluation process

# Michigan's Trading Rule

## Purpose

- Purpose: To establish a voluntary statewide water quality trading program with the following goals:
  - ➔ Improving water quality and optimizing costs of achieving water quality standards
  - ➔ Creating economic incentives for:
    - ➔ voluntary point and nonpoint source load reductions beyond those required by law
    - ➔ Implementation of pollution prevention programs
    - ➔ Wetland creation and restoration
    - ➔ Development of emerging pollution control technologies
  - ➔ Facilitating the implementation of TMDLs, urban stormwater controls and agricultural management practices
  - ➔ Providing incentives for the development of new and more accurate & reliable quantification protocols & procedures
  - ➔ Providing flexibility through watershed management planning

# Michigan's Trading Rule Definitions

Some key definitions:

- Banked credits – nitrogen and phosphorus credits that are generated and registered prior to the time period during which they are traded or used
- Closed trading – the exchange of credits among or between point and nonpoint sources in a watershed or receiving water for which a pollutant specific cap has been established
- Credit – the pollutant specific discharge or load reduction, minus the water quality contribution, that is generated and entered into the water quality trading registry
- Directionality – an upstream discharge or load reduction to compensate for the downstream use of credits
- Open trading - the exchange of credits among or between point and nonpoint sources in a watershed or receiving water for which a TMDL or pollutant specific cap has not been established
- Quantifiable – the amount, rate and characteristics of changes in a discharge that can be accurately and reliably measured or modeled
- Real – a change that results in a point source discharge or a nonpoint source load reduction
- Surplus – a point source discharge or nonpoint source load reduction in excess of applicable requirements

# Michigan's Trading Rule

## Credit Generation

- ➔ Credit generation –
  - ➔ NRCS funded agricultural BMPs can only generate credits in proportion to the locally funded portion of the project
  - ➔ Clean Water Partnership (section 319) funded BMPs are not eligible to generate credits
  - ➔ Municipalities can generate credits from controls or management practices installed under publicly funded projects or programs implemented within the same jurisdiction



# Michigan's Trading Rule

## Unimpaired Waters and Pre-TMDL Trading

- Nutrient trading, contemporaneous upstream reduction & credit use
  - "Open" nutrient trading is authorized in an attainment area or where a TMDL has not been established if either:
    - There is a contemporaneous upstream generation of credits;  
or
    - The credit user (buyer) discharges to the same receiving water or watershed, either upstream or downstream of the credit generator (seller) and:
      - Credit generation and use are contemporaneous;  
and
      - Both sources are upstream of the site for which the credit user's water quality based effluent limitation has been developed to meet water quality standards
- The use of credits by a point source to increase its discharge of phosphorus or nitrogen is limited to a 20% increase over the currently authorized loading. The permit must be updated before credits can be used.

# Michigan's Trading Rule

## TMDL Trading

- ➔ Nutrient trading in areas for which a TMDL has been established
  - ➔ "Closed" nutrient trading is authorized in impaired receiving waters or watersheds where TMDLs have been established
  - ➔ Trading baselines are established by the nutrient cap, point source waste load allocations and nonpoint source load allocations and trading is consistent with the TMDL

# Michigan's Trading Rule

## Other Types of Trading

- Trading arrangements other than for nutrients, intra-plant trading, cross pollutant trading, and trading under a remedial action plan or lake-wide management plan (explicitly authorized) may be approved
- Proposal must demonstrate that social or economic development and benefits to the area would be forgone if the use of credits were prohibited.
- Proposal must demonstrate that trading would not degrade water quality

# Michigan's Trading Rule Baselines

- Policies, formulae and (for stormwater) pollutant specific concentrations & BMP efficiency rates established for:
  - Point Source Baselines (other than stormwater)
  - NPDES Stormwater Baselines
  - Unregulated Stormwater Baselines (other than agriculture)
  - Agricultural Nonpoint Source Baselines
  - Streambank Erosion Nonpoint Source Baselines

# Michigan's Trading Rule Trade Ratios

- Water Quality Contribution and Uncertainty
  - ➔ Point source credit generators contribute 10% of the reductions to address uncertainty and provide a net water quality benefit
  - ➔ Nonpoint source credit generators contribute 50% of the reductions to address uncertainty and provide a net water quality benefit
- Discount Factors
  - ➔ In unimpaired or pre-TMDL waters, credit users must obtain 10% additional credits if a wetland, pond, lake or impoundment is located between the upstream credit generator and the downstream credit user
  - ➔ In impaired waters, prior to the establishment of a TMDL, credit users must obtain 10% additional credits

# Michigan's Trading Rule Banked Credits

- Point and nonpoint source credits generated in advance of certain compliance requirements may be registered for future use
- Banked nutrient credits entered into the registry can be used or traded for a period of 5 years after the year of generation or 1 year after the effective compliance date, whichever comes first
- Banked credits cannot be used to meet water quality based effluent limitations established for waterbodies with retention times of less than one year (credits used for these types of limits must be generated contemporaneously)
- Credits not used within the specified credit life are retired to provide a water quality benefit

# Michigan's Trading Rule Water Quality Trading Registry

- Michigan DEQ to establish and maintain a trading registry to:
  - ➔ Register load and discharge reductions
  - ➔ Register and track generation, use and trading of credits
  - ➔ Register water quality contribution credits
  - ➔ Provide real time access to the water quality trading program
- Electronic registry to be updated on a daily basis and publicly available

# Michigan's Trading Rule Compliance and Enforcement

- Credit generators are strictly liable to ensure that reductions are real, surplus and quantifiable
- If credit generators or users notify the DEQ that credits generated, used or traded are not real, surplus, quantifiable or insufficient for the purposes for which they were registered, a 30-day reconciliation period is available to reconcile the deficiency
- If the DEQ is not notified, and discovers that there are problems with credit generation (real, insufficient, etc.), the generator is required to produce or obtain three times the number of deficient credits to be retired for a water quality benefit



# Michigan's Trading Rule Program Evaluation

- Three years after the enactment of the rule, DEQ will conduct an evaluation of the water quality trading program to establish its environmental and economic performance
- Watershed specific evaluations will be conducted every five years thereafter

# Oregon's Internal Management Directive on Water Quality Trading

- Based on EPA's Water Quality Trading Policy
- Most ecologically comprehensive of the policies examined today
- Key concepts:
  - Intended to allow achievement of water quality standards more rapidly than through conventional approaches
  - Consideration of ecological ancillary benefits such as riparian area and habitat restoration
- Oregon's Directive:
  - Defines trading objectives
  - Defines Water Quality Trading Policies
  - Defines the scope of trades
  - Establishes criteria for trade proposals
  - Describes concepts for incorporating trades in NPDES permits
  - Appendices detail sample trade protocols for:
    - temperature
    - intra-plant BOD & ammonia
    - nutrients

# Oregon's Water Quality Trading Directive Purpose

- Purpose:
  - ⇒ To provide a consistent framework within which trading opportunities can be pursued and implemented
  - ⇒ To identify key features of acceptable trades in order to promote trading, as well as to encourage the development of new kinds of trades
- Incorporates trading objectives that are almost identical to those in EPA's trading policy

# Oregon's Water Quality Trading Directive Policies

- Legal Authority based on the DEQ's is broad authority under state law to incorporate provisions for trading through various mechanisms
- Compliance with Current Regulations
  - ⇒ In the event a permitted facility wishes to participate in a trade or trading program, the proposed trade will be incorporated into that facility's permit
- Public Participation
  - ⇒ Complex trades such as those involving multiple sources or trades that are precedent-setting should be developed with an advisory process
- Antidegradation
  - ⇒ In general, DEQ believes that trades and trading programs, by intent of this policy, will result in higher water quality, and that an in-depth antidegradation review would not be required when the trades or trading programs achieve a no net increase of the pollutant traded and do not result in any impairment of designated uses

# Oregon's Water Quality Trading Directive Policies

## ■ Baselines

- ⇒ For trades that occur where water quality fully supports designated uses, or in impaired waters prior to a TMDL being established, the baseline for point sources should be established by the applicable water quality based effluent limitation, a quantified performance requirement or a management practice derived from water quality standards. In these scenarios the baseline for nonpoint sources should be the level of pollutant load associated with existing land uses and management practices that comply with applicable state or local regulations

## ■ Creation and Duration of Credits

- ⇒ In general, credits should be generated before or during the same period they are used to comply with a daily, weekly, monthly, seasonal or annual limitation or requirement specified in a permit. Credits may be generated as long as the pollution controls or management practices are functioning as expected
- ⇒ An exception to this general expectation is for temperature. DEQ has chosen to modify its policy to take into account the unique characteristics and benefits of a temperature trade involving the creation of shade. Shade creation via tree planting can take several years or longer, depending on soil and plant type, among other factors. Consequently, DEQ has elected to give credit once the trees are planted in accordance with an approved long-term maintenance plan, in recognition of the greater ecological value accrued by tree planting over a technology-based solution at an outfall

## ■ Dissolution of Credits

- ⇒ Unless otherwise approved, upon closure of any facility, any and all unused credits dissolve

# Oregon's Water Quality Trading Directive Scope of Trades

- Pollutants and Parameters That May Be Traded
  - ⇒ Consideration of trading opportunities will not be limited to particular pollutants
  - ⇒ Where the interdependency of pollutants is not quantifiable, cross-pollutant trading would only be allowable in situations where ecological benefits are clear and compelling
  - ⇒ Regarding toxics with bioaccumulative capabilities, DEQ acknowledges the unique ecological risks and analytic challenges associated with such pollutants. However DEQ also recognizes that trading programs may provide incentives for reducing the presence of these constituents in the environment beyond what can be achieved through current regulations. Where this is the case, DEQ will consider such trades, on a case-by-case basis with EPA review and approval

# Oregon's Water Quality Trading Directive Criteria for Trades

- Trading partners are located in the same watershed
- The impact of proposed trades can be quantified
- Trading partners provide reasonable assurance that the proposed actions will be implemented
- Trade programs designed to lead to water quality improvements
- Tradable credits can only be generated for actions that are not subject to statutory requirements and subject to applicable baselines

# Ohio Water Quality Trading Rules

- Much less complex than Michigan's rules
- Key Concepts:
  - ⇒ Requires preparation of a water quality management plan for trading
  - ⇒ Establishes the use of a fairly simple load reduction calculation methodology for nonpoint sources
  - ⇒ Establish ambient water quality monitoring requirements
  - ⇒ Establishes point source baselines from current discharge level
- Ohio's Rules:
  - ⇒ Define general requirements
  - ⇒ Require the preparation of a water quality trading plan
  - ⇒ Define standards for water quality credits
  - ⇒ Establish standards for pollutant loading calculations
  - ⇒ Define water quality baselines
  - ⇒ Define trading ratios
  - ⇒ Establish processes for incorporating trades into NPDES permits
  - ⇒ Define standards for record keeping, reporting, compliance, enforcement and oversight
  - ⇒ Define public participation criteria
  - ⇒ Establish ambient water quality monitoring requirements



# Ohio Water Quality Trading Rules Purpose

- To establish a voluntary statewide water quality trading program that:
  - ⇒ Facilitates watershed-based approaches to improving water quality
  - ⇒ Improves water quality and minimizes the costs of achieving and maintaining water quality standards
  - ⇒ Provides economic incentives for voluntary pollutant reductions from point sources and nonpoint sources
  - ⇒ Achieves additional environmental benefits beyond pollutant reductions

# Ohio Water Quality Trading Rules General Requirements

- No person shall participate in water quality trading activities without an approved water quality trading management plan
- Water quality trading activities can occur:
  - ⇒ In a watershed (broadly defined)
  - ⇒ In a TMDL area
  - ⇒ In any other area where the director determines that water quality trading activities will achieve the purpose of this chapter
- Best management practices may generate water quality credits as long as they are fully maintained and continue to function as designed and shall be inspected at least annually by a qualified soil and water conservation professional

# Ohio Water Quality Trading Rules

## Water Quality Management Plan Application

- A water quality management plan application shall be developed in accordance with this chapter
- A water quality management plan renewal application shall
  - ⇒ Include an economic evaluation of the water quality trading activities, including the number and types of water quality trades, prices paid for any water quality credits, all administrative costs, and a determination of any net cost savings resulting from the water quality trading activities
  - ⇒ Assess both the overall environmental and the economic effectiveness of all water quality trading activity
  - ⇒ Include a list of pollutants being proposed for water quality trading
  - ⇒ Include a schedule for conducting ambient water quality monitoring to determine if there have been negative impacts to water quality and to document the presence or absence of improvements in water quality
  - ⇒ Include corrective measures, should any negotiated water quality credit not be produced
  - ⇒ Include a list that illustrates the range of BMPs anticipated to be used in the trading activity, including the frequency for:
    - ⇒ Assessing the pollutant removal rates and the load reductions for each BMP
    - ⇒ Collecting water quality monitoring data for evaluating BMP effectiveness.
    - ⇒ Conducting field inspections of any BMP

# Ohio Water Quality Trading Rules Water Quality Credits

- Credits may be held by a trading program as part of the corrective measures for addressing situations when a permittee discovers that water quality credits are insufficient to achieve compliance with an NPDES permit
- Where methods and procedures are not specified by other applicable rules and laws or an NPDES permit, a water quality credit shall:
  - ⇒ Unless alternate methods are deemed acceptable by the director, be calculated using the load reduction spreadsheet used to estimate load reductions that are achieved by implementing BMPs
  - ⇒ For pollutants or BMPs not included in the load reduction spreadsheet, be calculated using generally accepted engineering methods deemed acceptable by the director.

# Ohio Water Quality Trading Rules Baselines

- For permittees in an area where there is an approved TMDL, the water quality baseline shall be the lower of:
  - ⇒ The wasteload allocation established by the approved TMDL; or
  - ⇒ The current discharge level
- For permittees in an area where there is not an approved TMDL or where water quality fully supports designated uses, the water quality baseline shall be the lower of:
  - ⇒ The existing water quality based effluent limit;
  - ⇒ A technology-based performance standard; or
  - ⇒ The current discharge level
- For nonpoint sources, the water quality baseline shall be the pollutant load associated with existing land uses and management practices. Existing management practices must comply with any applicable federal, state or local requirements
- For storm water sources regulated under an NPDES permit, the water quality baseline shall be:
  - ⇒ The numeric effluent limit, if one is established in the NPDES permit; or
  - ⇒ The pollutant-specific loading achieved after implementation of management practices specified in or approved under the NPDES permit.

# Ohio Water Quality Trading Rules Trading Ratios

- For water quality trading activities between two permittees, a water quality credit shall be calculated using the trading ratio, where one pound of pollutant reduction equals one pound of water quality credit for that pollutant (1:1)
- For water quality trading activities between a permittee and a nonpoint source, the water quality credit shall:
  - ⇒ When there is not an approved TMDL, be calculated using a trading ratio where two pounds of pollutant reduction equals one pound of water quality credit for that pollutant (2:1); or
  - ⇒ When there is an approved TMDL, be calculated using a trading ratio where three pounds of pollutant reduction equals one pound of water quality credit for that pollutant (3:1)

# Ohio Water Quality Trading Rules

## Ambient Water Quality Monitoring

- **Ambient water quality monitoring requirements**
- The ambient water quality monitoring plan shall include sufficient information for the director to:
  - ⇒ Determine if there have been negative impacts to water quality; and
  - ⇒ Document the presence or absence of any improvements to water quality
- The ambient water quality monitoring plan shall:
  - ⇒ Include a list of pollutants being monitored;
  - ⇒ Provide the monitoring frequency for each pollutant being monitored;
  - ⇒ Provide the location of each pollutant monitoring site; and
  - ⇒ Identify the methods and procedures used to monitor for each pollutant