Water Quality Trading in EPA Region 10

米国環境保護庁第 10 管区における水質取引

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Conditions Necessary for Trading

- **Market Driver**
  - regulatory requirement sets limit on effluent discharges
  - defines commodity and market area
- **Cost differential**
  - the financial incentive for entering into a trade
  - must cover transaction costs
- **Ability**
  - technical feasibility and adequate supply
- **Opportunity**
  - tools for trading available

Regulatory Drivers for Water Quality Trading

- TMDL = Total Maximum Daily Load
  - Pollutant cap set on all sources to achieve reductions necessary to maintain water quality standards in impaired water bodies
- Point sources assigned individual Waste Load Allocations
  - enforced in NPDES permit through specified limit
- Nonpoint sources assigned Load Allocation by category
  - State, federal cost-share programs used to encourage use of Best Management Practices (BMPs)

Water Quality Trading Design Issues

- Lack of specific authority to trade in Clean Water Act and vague EPA guidance
  - ***Water Quality Trading Policy January 2003***
- TMDL must address watershed specific conditions and assign reductions to variety of sources
- Potential for localized water quality impacts from trading
- Lack of enforcement authority over nonpoint sources and Load Allocations

EPA Water Quality Trading Policy

- Geographic scope – within a watershed
  - Area determined by environmental equivalence
- Pollutant suitability
  - Nutrients – encourage
  - Persistent bioaccumulative toxics – discourage
  - Other pollutants – may be OK
- Trading may occur pre-TMDL, to meet TMDL, and to maintain unimpaired waters

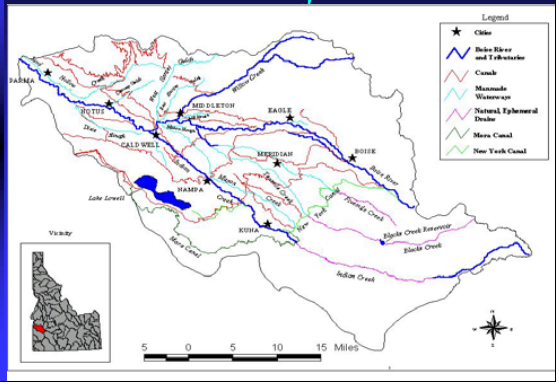
EPA Water Quality Trading Policy

- Facilities may not trade to meet technology-based NPDES limits
  - may trade to meet more stringent water quality-based limits (such as indicated by TMDL)
- Surplus credits created only when discharge reduced *below* water quality-based limits
- Trading must not result in exceedance of water quality standard (no "hot spots")
- Elements of credible trading programs

EPA Region 10's Trading Experience

- Idaho:
  - Lower Boise River Water Quality Trading Demonstration Project - *phosphorus*
  - Mid-Snake River Project - *phosphorus*
  - Idaho DEQ issuing Water Pollutant Trading Guidance for Watersheds based on project experience
- Oregon:
  - Tualatin River Water Quality Trading Demonstration Project – *temperature* trading authorized for two plants under watershed permit.
- Water Quality Trading Assessment Handbook

Lower Boise River Trading Demonstration Project



Lower Boise River Demo. Project Participants

- **Agriculture**
  - Idaho Farm Bureau
  - Idaho Water Users Association
  - Ada, Canyon County Soil Conservation Districts
  - Pioneer Irrigation District
  - Payette River Water Master
- **Agriculture Agencies**
  - Soil Conservation Commission
  - NRCS
- **Environmental Agencies**
  - US EPA
  - Idaho DEQ
- **Environmental Interests**
  - Idaho Rivers United
- **Local Government**
  - Cities of Boise, Meridian, Nampa, Middleton
  - Ada County Highway District
- **Industry**
  - Micron
  - Simplot
  - Idaho Power
- **Other**
  - SW Idaho RC&D council
  - USBR
  - American Wetlands

Lower Boise's Trading System Design

- **Dynamic, market-based trading**
  - Broad authorization to trade subject to trading rules
- **Liability remains with permit holder**
  - PS, NPS sign private trade contracts
- **Environment protected**
  - BMP List specifies acceptable practices, measurement
  - Location-based trade ratios applied to achieve environmentally equivalent reductions
- **Robust participation by agriculture**
  - Trading driven by economic decisions
- **Private association oversees trading system**

Trading Rules: Water Quality Protection

- Ratios apply to credit calculations to ensure equivalent reductions ("Parma Pounds")
  - *River Location Ratios:* transmission losses in the Boise River
  - *Drainage Delivery Ratios:* transmission losses within a subwatershed
  - *Site Location Factors:* potential for water re-use
- Market places high value on high quality reductions

Permit Mechanisms: Authorization & Limits on Trading

- Variable permit limit authorized
- Location-based ratios applied to credits
- Point sources liable for trade performance
- Limits on trading to prevent local impacts
- Modified Discharge Monitoring Report to reflect trade results
- Permit Audits: only PS permit holder is liable
  - Review of PS trade records, discharge reports
  - NPS credits site visit: SCC must be with EPA, DEQ

Trading Rules: Nonpoint Source Mechanisms

- Nonpoint source trades limited to practices on BMP List
- Nonpoint source baseline = TMDL baseline conditions
- Water Quality Contribution required from each NPS credit
  - *credits only created by reductions exceeding TMDL Implementation Plan*
- Process for adding new BMPs

Trade Execution & Tracking

- Trade Notification Forms:
  - *Transfers credits from seller to buyer*
- Reduction Credit Certificates:
  - *Certifies nonpoint source reductions*
- Trade Tracking Database:
  - *Records all trade transactions*
- Monthly Trade Summary:
  - *Ensures watershed-wide trade reconciliation*
- Trade Tracking Audits

Trading in Oregon: Clean Water Services in Tualatin River Basin

- CWS (Clean Water Services) is the largest wastewater and stormwater utility in Oregon
  - Serves about 450,000 people in and around Portland
  - CWS has two treatment plants that discharge to the Tualatin River, treats water to high quality
- CWS needs to reduce temperature of its discharge by 1.5 degrees F
  - Refrigeration is only technology option:
    - $50 million to install, $2 million annually to operate

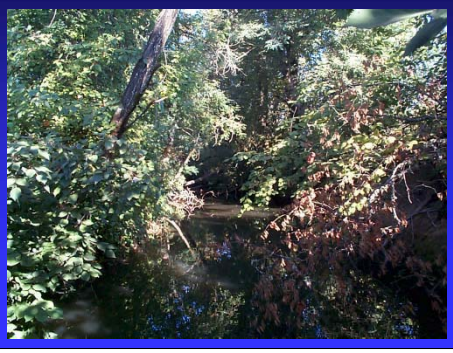
Outline of CWS "Model" Trade

1. **A temperature trade** which will involve a combination of the following:
   - Increase shade along stream by planting riparian areas
   - Flow augmentation
   - Effluent reuse
2. **"Bubble" permit limits for BOD and ammonia**
   - This will allow interplant and intraplant trading of BOD and ammonia.

Focus: Riparian Restoration

- Better environmental solution:
  - More ecosystem benefits for less money
  - Gets restoration work done that would not happen otherwise
- Trade issues to address:
  - How much to plant?
  - Where to plant?
  - What to plant?
  - How to get it planted?
  - How to keep it planted?

"Good" Riparian Area



"Bad" Riparian Area

CWS' Temperature Trade

- What to plant:
  - Native species
- Where to plant:

  Location based on
  - Ability of stream to support salmon (particularly spawning, rearing).
  - Current riparian condition/stream temperature
  - Willingness of landowners to participate

Clean Water Services' Temperature Trade

- How much to plant:
  - To be quantified by calculating the amount of solar radiation blocked by shade-producing vegetation.
  - The agreed-on planning horizon is 20 years.
  - Must account for lack of cooling provided by immature trees.
- How to get it planted:
  - CWS supplements payments to farmers by US Dept. of Agriculture's Conservation Reserve Enhancement Program

Region 10's Water Quality Trading Handbook

- Empower watershed stakeholders to decide if water quality trading is right tool for them
  - before investing significant time & resources
- Guide them through evaluation of their own and their watershed's environmental and economic conditions
  - May learn that trading won't work for their situation
- Educate them about design elements of water quality trading
  - to prepare them for a challenging design process

Chapters in Water Quality Trading Assessment Handbook:

- Pollutant Suitability
- Financial Attractiveness
- Market Infrastructure
- Recruiting Stakeholders
- Stakeholder Readiness
- Appendices on Phosphorus, Sediment, Temperature

Can download copy from EPA website:
http://www.epa.gov/owow/watershed/trading/tradelinks.html