Ohio River Basin
Water Quality Trading Project

Jessica Fox
Technical Executive, EPRI
March 17th, 2015
EPRI Overview

• The Electric Power Research Institute, Inc. conducts research, development and demonstration (RD&D) relating to the generation, delivery and use of electricity for the benefit of the public.

• An independent, nonprofit organization, we bring together scientists and engineers as well as experts from academia and the industry to help address challenges in electricity.
EPRI WQT Project Receives U.S. Water Prize!

The U.S. Water Prize honors individuals, institutions, and organizations that have made an outstanding achievement in the advancement of sustainable solutions to national water challenges.
How WQT Works

Farm installs best management practice to generate credit

Permitted source buys credit to meet regulatory requirement

Nutrient Reduction at Lower Cost
EPRI’s Focus in WQT

• Based on research, EPRI identified opportunities to improve the implementation of WQT.
• A pilot project provides a platform to test approaches, engage stakeholders, and advance theoretical debates.

“Can WQT be a socially, ecologically, and economically viable?”

☑ Ecologically
☑ Socially
☒ Economically?
Ohio River Basin

Pilot Trades (2013-2016)
60+ farmer contracts
150,000+ pounds TN & TP
KY, IN, OH
OVERSANCO Resolution – June 2011

OHIO RIVER VALLEY
WATER SANITATION COMMISSION

RESOLUTION 2-11

DEVELOPMENT OF AN INTERSTATE WATER QUALITY TRADING PROGRAM FOR THE OHIO RIVER BASIN

WHEREAS: the States of Illinois, Indiana, Ohio, Pennsylvania, New York, Kentucky, Virginia and West Virginia are signatory to the Ohio River Valley Water Sanitation Compact; and

WHEREAS: the Compact pledges the states to faithful cooperation in the control of future pollution, and the abatement of existing pollution, from the waters of the Ohio River Basin; and

WHEREAS: excessive nutrient loading has been identified as a water quality problem within the Ohio River Basin; and

WHEREAS: the sources and causes of nutrient loading are many and varied; and

WHEREAS: the States recognize the need for additional mechanisms to facilitate nutrient reductions, including water quality trading; and
RESOLVED, The Board of Directors of the National Association of Regulatory Utility Commissioner, convened at its 2013 Summer Committee Meetings in Denver, Colorado commends EPRI for working to develop best practices in water quality trading, and encourages state governments to consider similar programs in other states, given the importance of water quality to the nation.
Project Letters

USEPA
USDA
EPA R4
EPA R5
SWCDs
State Conservationists
Others
Project Collaborators & Advisory Groups

Organizations:
- Electric Power Research Institute
- American Farmland Trust
- Ohio Farm Bureau Federation
- ORSANCO
- Tennessee Valley Authority
- American Electric Power
- Hoosier Energy
- Duke Energy
- Troutman & Sanders
- UC Santa Barbara

States:
- Ohio
- Indiana
- Kentucky

Agencies:
- USEPA
- USDA

External Advisory Groups:
- Electric Power Industry
- Environmental Groups
- Municipal Wastewater Treatment Plants
- Agriculture
Advisory Committees

- WWTP
- Agriculture
- States
- Power Plants
- Environmental Groups
OH, IN, and KY Sign Trading Plan!

August 9th, 2012 in Cincinnati Ohio

Our Farmers

Trading System Tackles Waste
New Plan Pays Farmers to Curb Agricultural Runoff That Pollutes the Gulf of Mexico

Check out our U-Tube Video that summarize the Project!
http://wqt.epri.com

Wall Street Journal (2/20/2014)
Example Project

Before
Runoff, erosion, sedimentation.

After
‘Heavy Use Protection Area’
No erosion, no sedimentation, easier manure management, proud farmer.
Watershed Model: WARMF
Attenuation Coefficients for Water Quality Trading

Arturo A. Keller,*† Xiaoli Chen,† Jessica Fox,‡ Matt Fulda,† Rebecca Dorsey,† Briana Seapy,† Julia Glenday,† and Erin Bray†

*Bren School of Environmental Science and Management, University of California, Santa Barbara, California 93106-5131, United States
‡Electric Power Research Institute, Palo Alto, California 94304, United States

Supporting Information

ABSTRACT: Water quality trading has been proposed as a cost-effective approach for reducing nutrient loads through credit generation from agricultural or point source reductions sold to buyers facing costly options. We present a systematic approach to determine attenuation coefficients and their uncertainty. Using a process-based model, we determine attenuation with safety margins at many watersheds for total nitrogen (TN) and total phosphorus (TP) loads as they transport from point of load reduction to the credit buyer. TN and TP in-stream attenuation generally increases with decreasing mean river flow; smaller rivers in the modeled region of the Ohio River Basin had TN attenuation factors per km, including safety margins, of 0.19–1.6%, medium rivers of
SWCD Installation Report

Before

After

Date of confirmation by SWCD Person of Coord.

Signed: [Signature]

Print Name: Heather Wirth

Date: 05/31/2013

9/4/13

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Verification Report – State Ag Agency

Credit Verification Report

The completion of this report must be done during or after...

Project Name: IN-

Verifier Information

Organization Name:

Contact Person, Team:

Project Documents

- Project
- Credit
- Sign
- SWC
- Other

Additional Requirements

- On-site
- New Credit Calculation Report, if it was re

Verification Opinion

IN-029-2013-106

Based on confirmation of Edge-of-Field nutrient load reductions calculations as specified in the Calculation Report, the Indiana State Department of the specified BMP Practice(s) will result in the site investigations conducted in accordance

ORB Program eligibility requirements;

implemented and maintained in accordance with standards or approved modifications;

quantified using appropriate metrics and RB Trading Plan;

maintained and are performing as designed; and

place to ensure the specified BMPs are contract.

Date: 10/9/2013

Agency: Indiana State Dept. of Agriculture
The Indiana Department of Environmental Management certifies that IN-029-2013-106 conforms in all respects to the requirements of the Trading Plan, as amended, and all other applicable state requirements, that the specific Credits noted above are hereby authorized for registration and sale on the ORB Program Online Registry, and that these credits can be applied towards regulatory compliance requirements or stewardship commitments, as detailed in the Trading Plan, as amended. The foregoing certification shall be conditioned on the maintenance of the project in accordance with the provisions of the Trading Plan, as amended.

Signature: [Signature]
Print Name: Paul Higgie Betham
Title: Branch Chief
State Agency: IDEM
Date: 2/13/14
Credit Reserve / Assurance

• 10% credits move to Reserve Pool
• 10% retired by EPRI

• 80% of credits can be transacted, if verified & certified.
Credit Trading Registry On-Line
Credit Purchase Receipt

Transfer Details:

Source Account ID: 100000000026540
Source Account Name: EPRI Holdings Account
Project Name: TEST ORB PROJECT 09162013
Standard Name: Ohio River Basin Water Quality Interstate Trading Program
Vintage Year: 2014
Quantity: 20.000000
Credit Type: TP lbs/year
Serial number: ORB-BAW-US-100000000033830-01102013-30092014-1680154.001-1680174-MER-0-P
Watershed (HUC4): Scioto
Sub Watershed (HUC10): Headwaters Scioto River

Additional Information:

Nutrient Type: Nitrogen
Calculation Methodology: EPA Region 5 Model
Best Management Practice: Cover Crops & Buffer Strips
Potential Ancillary Benefits*: Carbon Sequestration, Pollinator Habitat, Soil Health, Erosion Control
March 11, 2014: First Transactions
## Purchase of Stewardship Credits

### Ohio River Basin Trading Project

**9,000 credits purchased and retired**

<table>
<thead>
<tr>
<th>Account Holders</th>
<th>Projects</th>
<th>Issuances / Listings</th>
<th>Holdings</th>
<th>Retired Credits</th>
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<tr>
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Media Coverage

Media Advisory and Press Release
Coordinated with State and Federal Offices
and Agricultural Community

The Economist
THE WALL STREET JOURNAL
Bloomberg
BNA
IHS The Energy Daily
Greenwire
Environmental Finance
The Columbus Dispatch
INSIDE EPA.COM
an online news service from the publishers of Inside EPA
courier-journal.com
AG PROFESSIONAL
BROWNFIELD
AGRICULTURE TODAY

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First Public Credit Auction

- 10am to 3pm **May 20th** (New Date)
- New York City, New York Times Building
- Accepting up to 40 bidders
Why buy credits?

• Sustainability:
  – Document and register offsets for supply chain impacts
  – Achieve sustainability goals and commitments
  – Tell compelling stories about corporate sustainability efforts

• Compliance:
  – Meet Supplemental Environmental Project obligations
  – Consideration for flexible permit compliance schedules

• Social:
  – Gain experience in the only interstate WQT program
  – Network with like-minded leaders
  – Support local farmers & agriculture
Sustainability and WQ Credits

Our water quality credits fit into a sustainability strategy.

“There is potential from a broader societal basis to achieve ancillary benefits from a credit trading program that go beyond just our power plants. The fact that EPRI has created an opportunity for our company to contribute to on-the-ground improvements that have been confirmed through rigorous audit and oversight, gives us an entirely new option for meeting our broader sustainability targets.”

Mr. John McManus, Vice President, American Electric Power
The Bottom line on Sustainability

• Risk & Money!!

– Good corporate reputation lowers risk of shareholder resolutions and stakeholder complaints/protests.
– Protect the underlying natural assets that your businesses rely upon.
– People want to work with and buy products from “green” organizations.
– Socially responsible companies retain and attract the best employees.

Sustainable companies are financially outperforming their counterparts, experiencing lower corporate risk, and creating new business opportunities.
Eligibility to Participate in Auction

• Duly organized, validly existing and in good standing
• Individuals with written approval from EPRI.
• Minimum purchase commitments
  – $10,000 for publically traded companies,
  – $2,500 for individuals, non-profits, and municipalities.

As a condition of sale, EPRI will be restricting use of these credits to immediate “retirement” in order to promote broader societal benefits.
"Through solid science, transparency, and exceptional management, the EPRI project is a national model for how to advance non-traditional collaborations that benefit our common good. Now companies have the opportunity to be part of this effort, receive turn-key verified credits to meet their stewardship goals, and support local communities. Efforts like this will be critical for protecting America’s waters for years to come.”

Mr. Bob Perciasepe, President, Center For Climate and Energy Solutions. Former Deputy Administrator, EPA
The Ohio River Basin Water Quality Trading Project

Excess nutrients in the Ohio River Basin can lead to algal blooms that deplete oxygen and lead to "dead zones".

**The Problem**
- Nutrients come from many sources, such as...
  - Farm runoff from fertilizer and manure
  - Urban runoff from stormwater, septic systems, and end-of-pipe dischargers
  - Air deposition from cars and other emissions

**A Solution**
- Water Quality Trading
  - A market-based approach to achieving water quality goals by allowing permitted dischargers to generate or purchase pollution reduction credits from another source.

**How it works**
1. A facility such as a power plant or wastewater treatment plant needs to meet nutrient limits for its water quality permit. Water quality trading is one option.
2. To reduce nutrients in the watershed, Facility A pays Farmer B to do one of a number of things, such as reduce fertilizer use, plant streamside buffers with trees or keep livestock manure from getting into streams. Each conservation practice is verified.
3. Nutrient reductions are quantified as credits (for example equal to one pound of nutrient reduction). Credits are then reviewed and approved by a regulatory agency.
4. Finally, Facility A can use those credits to meet permit requirements.

**Benefits**
- Cost-effective pollutant reductions
- Ancillary benefits, such as:
  - Improved soils
  - Carbon sequestration
  - Improved wildlife habitat
  - Additional income to farmers

**Water Quality Trading Project – Ohio River Basin**
First-of-its-kind interstate program spans Ohio, Indiana, and Kentucky to evaluate the use of trading by industries, utilities, farmers, and others to meet water quality goals while minimizing costs.

Find more information at: wqt.epri.com

**The pilot trading period, from 2013-2015, is expected to reduce nutrients by...**
- **30,000 lbs** of Phosphorous
- **66,000 lbs** of Nitrogen

That's equivalent to keeping 2,950 50-lb bags of fertilizer out of the Ohio River.
Contacts & Questions

WATCH VIDEOS:
1. Project Overview
2. Registry/auction

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