



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

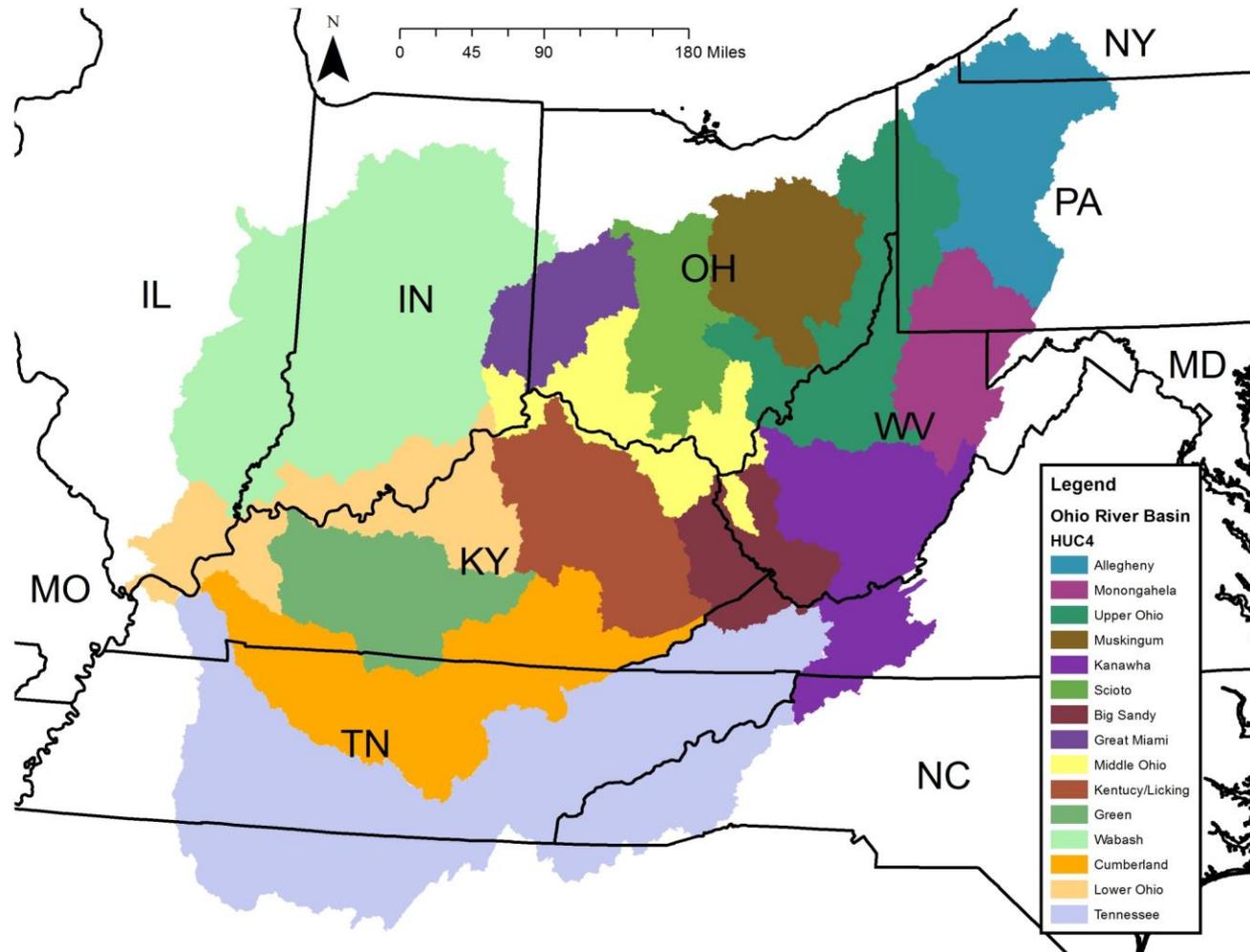
- Based on research, EPRI identified opportunities to improve the implementation of WQT.
- A pilot project provides a platform to test approaches, engage stakeholders, and advance theoretical debates.

“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



ORSANCO 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

NARUC Adopts Resolution for EPRI WQT



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



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

APR 20 2012

Ms. Jessica Fox
Senior Scientist
Electric Power Research Institute
3420 Hillview Avenue
Palo Alto, California 94304

Dear Ms. Fox:

Thank you for your January 30, 2012, email regarding the Ohio River Project. We understand that you are in the process of finalizing a draft to begin implementing pilot projects in the near future, with Kentucky as the first study.

With over 460,000 miles of rivers and approximately 40 percent of the United States, the U.S. Environmental Protection Agency Region 4 has been actively involved in protecting our water resources. Region 4 has been actively involved in protecting, maintaining and restoring the health of the Ohio River which contributes over one-third of the Mississippi River's total flow. We have been following the progress of the Electric Power Research Institute's development of a nutrient trading program for the Ohio River Basin.

Excessive loading of nitrogen and phosphorus to our nation's waterways must be addressed through multiple programs. Region 4 is actively seeking to develop nutrient reduction strategies and to adopt water quality criteria that also oversee state permitting programs that limit nutrient discharges. We are providing funding for implementation of nonpoint source pollution controls and investments for wastewater infrastructure projects. In addition, Region 4 is working to address impaired by nutrients and to develop Total Maximum Daily Loads for the Ohio River. We issued a memorandum on March 16, 2011, that outlined its on-going efforts to address pollution. While the memo stressed the importance of nutrient criteria, innovation and flexibility if states are to achieve nutrient reductions and the development of these water quality standards.

Region 4 is committed to exploring the use of water quality trading as a means to encourage and support your efforts to design an interstate trading program in the Ohio River Basin. The project has already established an impressive record of collaboration with various federal and state agencies and diverse stakeholders in the basin. The project has considerable potential for identifying the challenges and benefits of an interstate trading



United States Department of Agriculture

Office of the Secretary
Washington, D.C. 20250

JUN 13 2012

Jessica Fox
Electric Power Research Institute
3420 Hillview Avenue
Palo Alto, CA 94304

Dear Jessica:

The United States Department of Agriculture highly commends you and your colleagues for the progress that the Ohio River Basin Water Quality Trading program has made over the past several years. We look forward to continuing our work with the project as you begin the pilot trading process.

Through the Office of Ecosystem Markets and the Natural Resource and Environment Mission Area's Regional Environmental Markets Initiative, USDA has established a longstanding commitment to the development of crediting and trading platforms that will result in payments to farmers and landowners and conservation investment opportunities for the private sector. These emerging markets will complement the work that the Natural Resources Conservation Service is doing to advance conservation practices on the ground and will provide another tool for permitting authorities to use to improve water quality. Although USDA has been involved with several interesting and successful ecosystem service market projects to date, the Ohio River Basin Water Quality Trading effort sets itself apart by providing a tremendous opportunity to bring water quality trading to scale and show broad benefits.

Your project is innovative and unique in its regional and interstate focus, in the leadership that has been shown by the participating states of Ohio, Indiana and Kentucky, in the involvement of major stakeholder groups in the Basin, and in its strong emphasis on a scientific framework. At the same time, the project has been careful to appropriately build on past efforts. We also applaud you and your collaborators for holding listening sessions early on with producers in the Basin to address constraints and inform the development of the trading plan.

The pilot trades will test key technical, regulatory and economic components of a regional interstate trading program—a program that even in its pilot stage will handle more transactions than most current water quality trading programs in the country. Notwithstanding our enthusiasm for the progress achieved to date, please note that EPRI's pending Conservation Innovation Grant proposal will continue to be evaluated through the independent process and criteria established for the program. We are proud of the investments we have made in this project and we look forward to building on our foundation of work together as the project enters the pilot phase.

Sincerely,


Harris Sherman
Under Secretary
Natural Resources and Environment

- 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



**The
Economist**

June 22, 2012: A [nutrient pollution article](#) in The Economist mentions EPRI's Water Quality Trading Program.

Our Farmers

THE WALL STREET JOURNAL

U.S. NEWS

Trading System Tackles Waste

New Plan Pays Farmers to Curb Agricultural Runoff That Pollutes the Gulf of Mexico

By Matt Perron

NEW MADRID, Mo.—Kevin Hollinger planted soybeans and oats last fall in his corn and soybean fields, but he isn't planning to harvest them. Instead, he is letting the crops die over the winter to improve the soil and keep fertilizer and other nutrients from running into nearby waterways.

"I could hardly go to town without someone asking, 'What's that in your field?'" said Mr. Hollinger, a fourth-generation farmer.

Helping to foot the bill for his experiment is a pilot program set to launch fully next month. Farmers in the Ohio River basin are being paid to make changes—first, what they plant to how they handle manure—in an effort to minimize runoff that can cause hypoxia, or low oxygen levels, in waterways.

Nutrient runoff plays a role, says 1,000 miles downstream from Mr. Hollinger's farm, in the heart of the so-called dead zone in the Gulf of Mexico—an area where fish and other aquatic life can't survive and which is considered one of the nation's largest water-pollution problems.

Shrinking the dead zone—which was most recently the size of Connecticut—has challenged regulators. Nutrients that flow down the Mississippi River and end up in the Gulf come from hundreds of thousands of farms across more than a dozen states.

"It takes a long time to address such a large watershed and such a significant problem," said Nancy Stoner, acting assistant administrator for water at the U.S. Environmental Protection Agency. "The agency doesn't have the power to regulate most farms, and before controlling nutrient levels in lakes, rivers and streams largely to the states. Environmental groups, who argue the states have taken little action, have used the EPA to sue it to set acceptable levels for nitrogen and phosphorus in the Mississippi basin.

Increasingly, several government and nonprofit groups, including the Electric Power Research Institute, the research arm of the U.S. utility industry, are trying an approach outside of traditional regulation. The institute is setting up a trading system,

starting with about 20 farms across Indiana, Ohio, and Kentucky. These farms create credits by keeping manure and phosphorus from reaching the Ohio River. The credits can be sold to power plants, sewage plants and other facilities that release nutrients into local waterways.

"Our program is trying to set

standards and make sure the credits are used," says Mr. Hollinger. "I don't like if we do a good job one, we can certainly lead the way for regulation." Mr. Hollinger said, though he says he will need to see better production of a decision is made to stick with it.

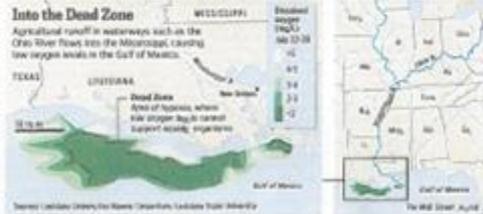
In total, the pilot projects are

monstrous markets total elsewhere in the country, according to a 2013 study by U.S. Department of Agriculture economists.

Now, "there is no regulatory backing to the voluntary plans and since being worked on, we've got the speed limit sign without a number on it," said Brad Kline, a senior attorney at the Environ-



Ohio farmer Kevin Hollinger has planted winter crops to keep fertilizer from running into nearby waterways.



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EPRI Ohio River Basin Water Quality Trading Project

Conservation Practice: 5 year hay planting

4:24 / 9:04

YouTube

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

[Wall Street Journal](http://www.wsj.com) (2/20/2014)

Example Project



Before
Runoff, erosion,
sedimentation.

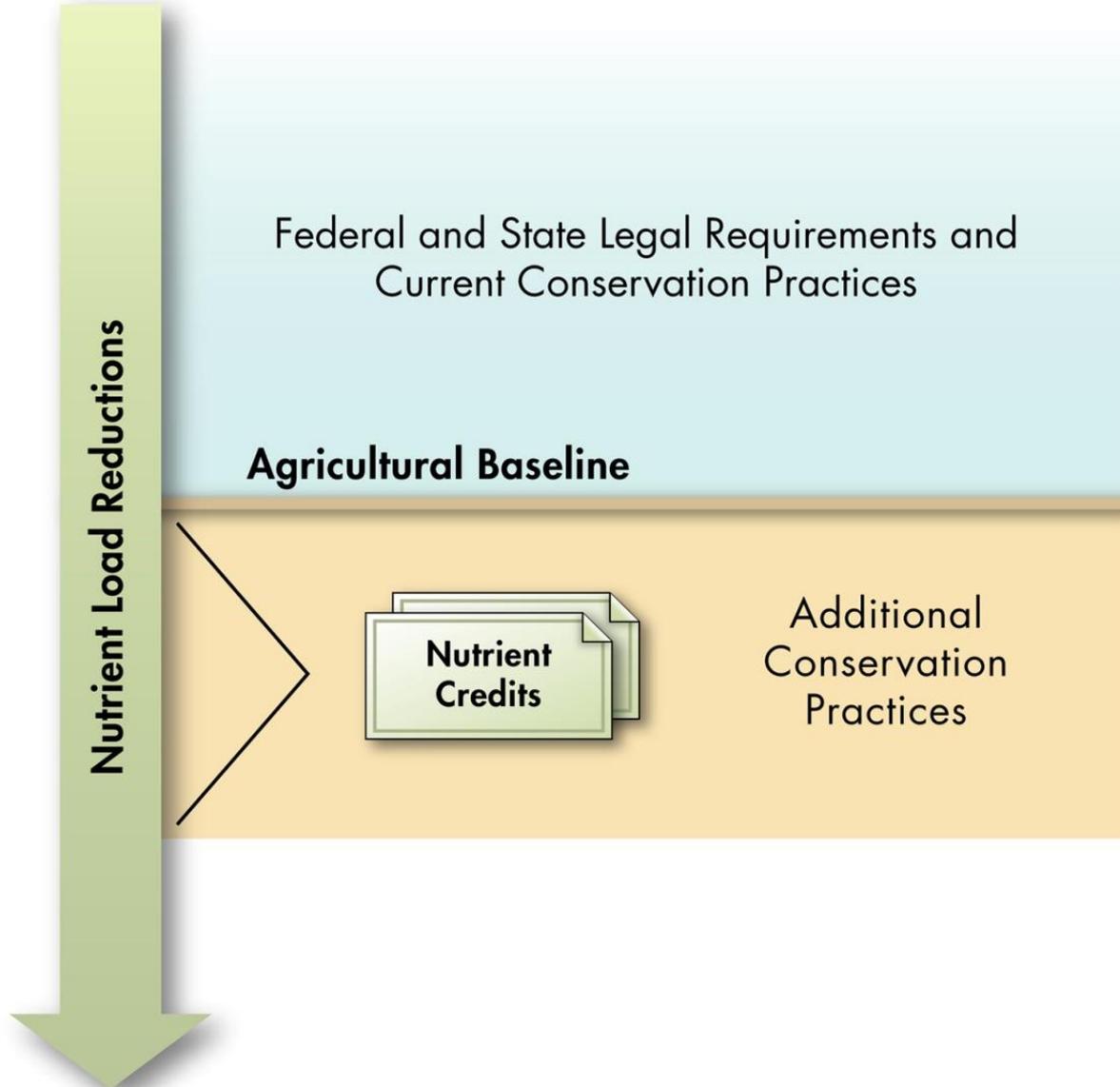


After



'Heavy Use Protection Area'
No erosion, no sedimentation,
easier manure management,
proud farmer.

Higher Loading



Federal and State Legal Requirements and
Current Conservation Practices

Agricultural Baseline

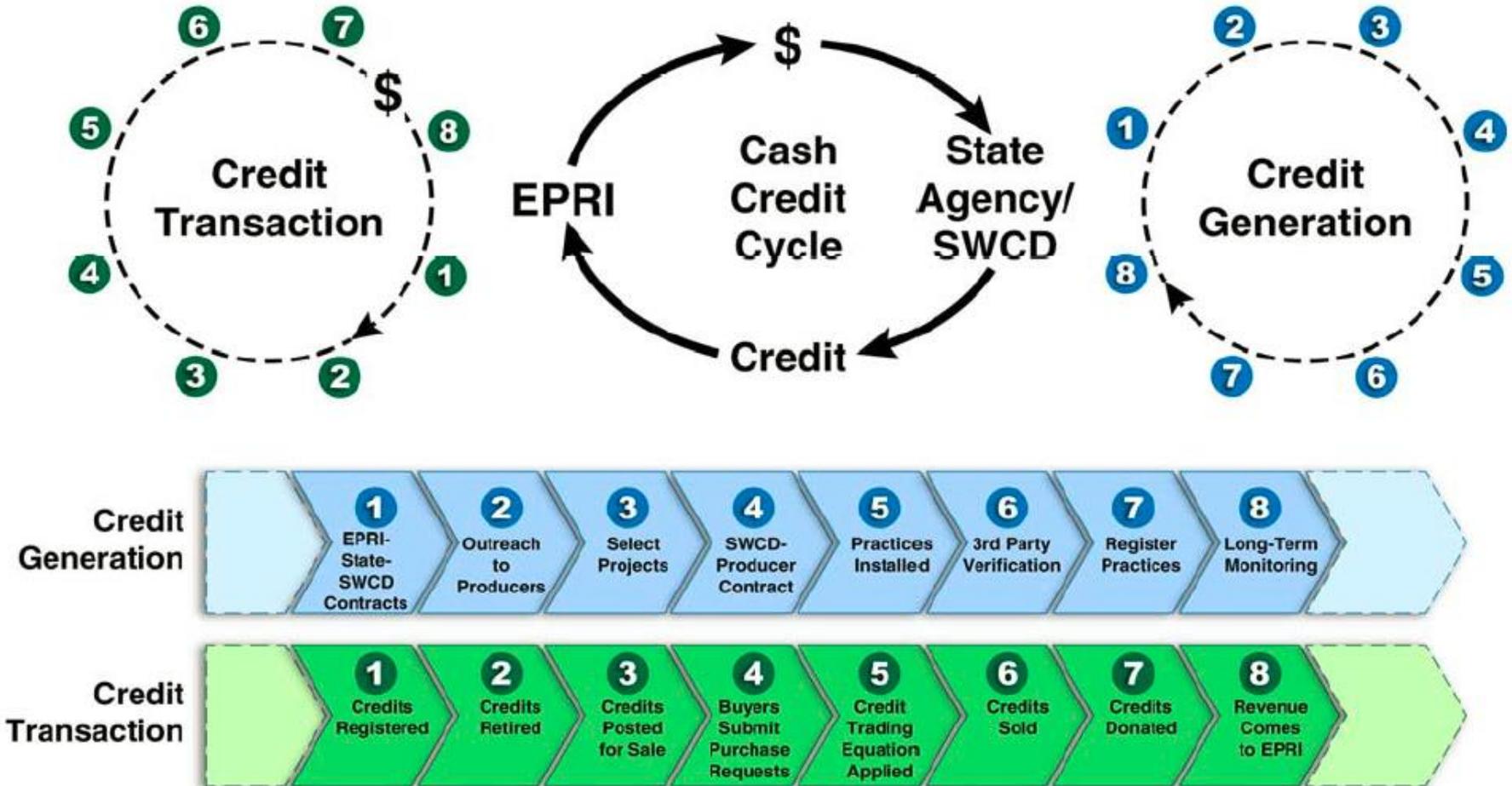
**Nutrient
Credits**

Additional
Conservation
Practices

Nutrient Load Reductions

Lower Loading

Pilot Credit Process



Watershed Model: WARMF

U.S. ENVIRONMENTAL PROTECTION AGENCY

Ecosystems Research Division

Recent Additions | Contact Us | Search: All EPA This Area

You are here: [EPA Home](#) » [athens](#) » [wwqtsc](#) » [html](#) » Watershed Analysis Risk Management Framework (WARMF)

Watershed Analysis Risk Management Framework (WARMF)

To facilitate TMDL analysis and watershed planning, WARMF was developed under sponsorship from the Electric Power Research Institute (EPRI) as a decision support system that provides a road map to calculate TMDLs for most pollutants (nutrients). It also provides a road map to guide implementation plan. The scientific basis of the model is supported by several peer reviews by independent experts. The model is organized into five (5) linked modules under one, very user friendly tool suitable for expert users.

Watershed model that calculates daily runoff, shallow groundwater flow (soil and soil layers), stream segments, and lake outflows. Land surface is characterized by land use / cover, stream network, and lake network.

WWQTCS Info

- [WWQTCS Home](#)
- [Technical Support](#)
- [Tools](#)
 - [Watershed Model](#)
 - [Basins](#)
 - [LSPC](#)
 - [WAMView](#)
 - [SWMM](#)
 - [WARMF](#)
 - [Water Quality Model](#)
 - [WASP](#)
 - [QUAL2K](#)
 - [AqJatox](#)
 - [EPD-RIV1](#)
 - [Hydrodynamic Model](#)
 - [EPD](#)

First Journal paper on Credit Calculation Methods. Published June 2014

Attenuation Coefficients for Water Quality Trading

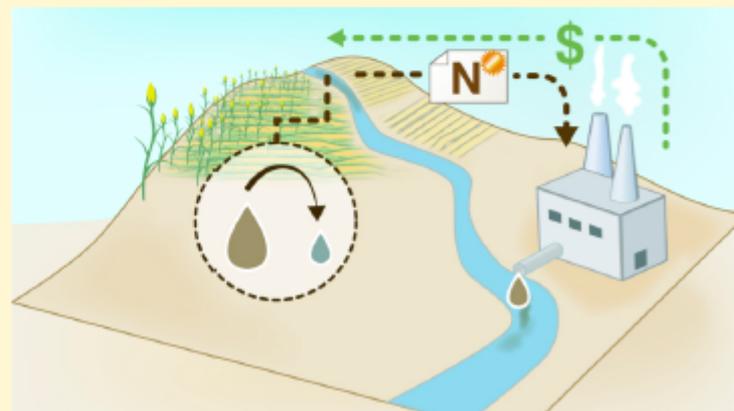
Arturo A. Keller,^{*,†} Xiaoli Chen,[†] Jessica Fox,[‡] Matt Fulda,[†] Rebecca Dorsey,[†] Briana Seapy,[†] Julia Glenday,[†] and Erin Bray[†]

[†]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

S 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

SWCD Installation Report



Before



After



Date of confirmation by S
Name of SWCD Person d
COORD.

Signed: Dennis Wirth

Date: 11/11/13

Print Name: Heather Wirth

Verification Report – State Ag Agency

Credit Verification Report

Verification Opinion IN-029-2013-106

The completion of this report must be done during or after

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

Project Name: IN-

Verifier Information

Organization Name:

Contact Person: Tom

Project Document

- Project
- Credit
- Sign
- SWC
- Other

Additional Req

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



and site investigations conducted in accordance with the ORB Program eligibility requirements; BMPs implemented and maintained in accordance with standards or approved modifications; BMPs identified using appropriate metrics and the ORB Trading Plan; BMPs maintained and are performing as designed; and BMPs in place to ensure the specified BMPs are effective and in contract.

Date: 10/9/2013

Agency: Indiana State Dept. of Agriculture

Credit Certification Report – State Permit Authority

Credit Certification Report

Completion of this report can only occur after the following conditions are met:

Project Name: IN-029-2013

HUC 10 Project Location: 05090
(10-digit HUC watershed number)

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

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Credit Calculation Report

Signed Producer Contract

Signature: 
 Print Name: Paul Higginbotham
 Title: Branch Chief
 State Agency: IDEM
 Date: 2/13/14

Year	
2013	T
2014	T

TN: _____ TP: _____

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

The screenshot displays the Market Environmental Registry (MER) web application. The top navigation bar includes icons for Store, Registry, BOAT, Dividends, Source, CDS & Bonds, RED, Loan Pricing, and Indices. The user is logged in as 'Ufe Test1' and can access Logout or Support. The main header features the 'markit environmental registry' logo and a navigation menu with options: Home, All Units (selected), Projects/Issuances, RFI, Bids/Offers, User Admin, and Activity Log.

The 'Find Units By' sidebar on the left allows filtering by Project, Account, Name, and Unit State. The main content area shows a table of units with columns for Project, Account, Vintage, Origin, Holdings, Measurement, and Status. The table lists 10 units, all from American Farmland Trust, with various measurement types (lbs/year) and statuses (Active, RFI Listed, Retired).

Project	Account	Vintage	Origin	Holdings	Measurement	Status
Angel Mounds	American Farmland Trust Ohio River Basin Interstate Trading Program - Nitrogen reduction/removal ORB-BAW-US-100000000001275-01102012-30092013-2051-2060-MER-0-P	2012 - 2013	United States	10	lbs/year	RFI Listed
Angel Mounds	American Farmland Trust Ohio River Basin Interstate Trading Program - Nitrogen reduction/removal ORB-BAW-US-100000000001275-01102012-30092013-2061-2310-MER-0-P	2012 - 2013	United States	250	lbs/year	RFI Listed
Angel Mounds	American Farmland Trust Ohio River Basin Interstate Trading Program - Nitrogen reduction/removal ORB-BAW-US-100000000001275-01012012-31122012-4101-4134-MER-0-P	2012	United States	34	lbs/year	Active
Angel Mounds	American Farmland Trust Sub-Account Ohio River Basin Interstate Trading Program - Nitrogen reduction/removal ORB-BAW-US-100000000001275-01102012-30092013-2556-2650-MER-0-P	2012 - 2013	United States	95	lbs/year	Active
Lexington Plain	American Farmland Trust Ohio River Basin Interstate Trading Program - Nitrogen reduction/removal ORB-BAW-US-100000000001276-01102012-30092013-3301-4100-MER-0-P	2012 - 2013	United States	800	lbs/year	Active
Lexington Plain	American Farmland Trust Ohio River Basin Interstate Trading Program - Phosphorus reduction/removal ORB-BAW-US-100000000001276-01102012-30092013-3052-3250-MER-0-P	2012 - 2013	United States	199	lbs/year	Active
Lexington Plain	American Farmland Trust Ohio River Basin Interstate Trading Program - Phosphorus reduction/removal ORB-BAW-US-100000000001276-01102012-30092013-2951-2951-MER-0-P	2012 - 2013	United States	1	lbs/year	RFI Listed
Lexington Plain	American Farmland Trust Ohio River Basin Interstate Trading Program - Phosphorus reduction/removal ORB-BAW-US-100000000001276-01102012-30092013-2952-3051-MER-0-P	2012 - 2013	United States	100	lbs/year	Retired
Lexington Plain	American Farmland Trust Ohio River Basin Interstate Trading Program - Nitrogen reduction/removal ORB-BAW-US-100000000001276-01102012-30092013-3251-3300-MER-0-P	2012 - 2013	United States	50	lbs/year	Active

The interface includes a search bar for serial numbers and a footer with page navigation (Page 1 of 1) and a 'Less Details' link. The bottom of the page contains copyright information and logos for Markit and EPRRI (Electric Power Research Institute).

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: 20.00000
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 - Water Quality Trading Project

Clear Search:

9,000 credits purchased and retired



Account Holders		Projects		Issuances / Listings	Holdings	Retired Credits	Measurement	Type	Details
Retirement Date	Vintage	Project	Account	Project Type	Retirement Quantity				
06 Mar 2014	2013	IN-177-2013-111	AEP	Phosphorus Reduction	403		TP lbs/year	UNIT	View
<i>Serial No.: ORB-BAW-US-103000000005902-01122012-30112013-183599.001-184002-MER-0-P</i>									
06 Mar 2014	2013	IN-177-2013-111	AEP	Nitrogen Reduction	809		TN lbs/year	UNIT	View
<i>Serial No.: ORB-BAW-US-103000000005902-01122012-30112013-184103.001-184912-MER-0-P</i>									
06 Mar 2014	2013	OH-029-2013-104	AEP	Nitrogen Reduction	338		TN lbs/year	UNIT	View
<i>Serial No.: ORB-BAW-US-103000000006082-01122012-30112013-191270.001-191608-MER-0-P</i>									
06 Mar 2014	2013	IN-115-2013-108	AEP	Nitrogen Reduction	91		TN lbs/year	UNIT	View
<i>Serial No.: ORB-BAW-US-103000000005550-01122012-30112013-177677.001-177768-MER-0-P</i>									
06 Mar 2014	2013	IN-137-2013-105	AEP	Phosphorus Reduction	59		TP lbs/year	UNIT	View
<i>Serial No.: ORB-BAW-US-103000000005898-01122012-30112013-180588.001-180647-MER-0-P</i>									
06 Mar 2014	2013	IN-137-2013-102	Duke Energy	Phosphorus Reduction	22		TP lbs/year	UNIT	View
<i>Serial No.: ORB-BAW-US-103000000005895-01122012-30112013-182758.001-182780-MER-0-P</i>									
06 Mar 2014	2013	IN-115-2013-108	Duke Energy	Nitrogen Reduction	46		TN lbs/year	UNIT	View
<i>Serial No.: ORB-BAW-US-103000000005550-01122012-30112013-177768.001-177814-MER-0-P</i>									
06 Mar 2014	2013	IN-137-2013-103	Duke Energy	Nitrogen Reduction	19		TN lbs/year	UNIT	View
<i>Serial No.: ORB-BAW-US-103000000005896-01122012-30112013-183237.001-183256-MER-0-P</i>									
06 Mar 2014	2013	IN-029-2013-106	Duke Energy	Nitrogen Reduction	374		TN lbs/year	UNIT	View
<i>Serial No.: ORB-BAW-US-103000000005996-01122012-30112013-174927.001-175301-MER-0-P</i>									

Media Coverage

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



THE WALL STREET JOURNAL

Bloomberg
BNA

IHS The Energy Daily

Greenwire

Environmental
Finance

DAYTON
BUSINESS JOURNAL

The Columbus Dispatch



courier-journal.com

AG PROFESSIONAL

INSIDE INDIANA™
BUSINESS
WITH GERRY DICK

BROWNFIELD
AGRICULTURE TODAY

EPRI | ELECTRIC POWER
RESEARCH INSTITUTE

First Public Credit Auction

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



Invitation to Water Stewardship Credit Auction



Must pre-qualify. Email ohiorivertrading@epri.com by February 1st to express interest. MORE >>



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.

Thoughts of a Leader

“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

is 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.

Benefits

Cost-effective pollutant reductions

Ancillary benefits, such as:

- Improved soils
- Carbon sequestration
- Improved wildlife habitat
- Additional income to farmers

4 Finally, Facility A can use those credits to meet permit requirements.

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 stream side 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.

30% of the nitrogen loading in the larger Mississippi watershed comes from the Ohio River.

Source: Goolsby et al, 1999

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

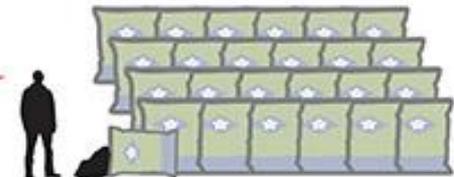


The pilot trading period, from 2013-2015, is expected to reduce nutrients by ...

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.

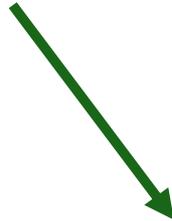


Contacts & Questions

WATCH VIDEOS:

[1. Project Overview](#)

[2. Registry/auction](#)



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Ohio River Basin Trading Project

Home About the Project EPRI Research Reference Shelf

Conservation Practice: 5 year hay planting

Stewardship credits invest in nutrient reduction on the landscape. Find out more about Stewardship Credits. MORE >>

Water quality trading is an innovative market-based approach to achieving water quality goals for nutrients such as phosphorus and nitrogen through programs that allow permitted emitters to purchase nutrient reductions from another source.

Key Resources

- EPRI Hosting First Public Credit Auction. (1.2 MB)
- Email: ohiorivertrading@epri.com by February 1st to express interest in participating

Water Quality Trading in the News

- Trading Programs Seen as Most Effective When Limited to Specific Watersheds
- Optimizing the Scale of Markets for Water Quality Trading
- Fox: Trading water quality can curb pollution
- Report: Draft Regional Recommendations for the Pacific Northwest on Water

Recent Activities

- Jan. 15th Public Webcast about Auction
- EPRI speaks about Project at ACES 2014 conference
- "Attenuation Coefficients for Water Quality Trading"