



United States Department of Agriculture



Environmental Markets at NRCS



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NRCS Conservation Innovations Team



Consumer-Driven Supply Chain Approaches



Overview

- **What are Environmental Markets?**
- **Why Environmental Markets at NRCS?**
- **NRCS roles**
- **Water Quality Markets**
- **Greenhouse Gas Markets**
- **Wildlife Habitat Markets**
- **Supply Chain Conservation Labeling**
- **NRCS environmental markets policy**
- **Environmental markets and NRCS programs**



What are Environmental Markets?

- **Ecosystem services are the environmental benefits that healthy ecosystems provide, such as:**
 - Clean water and air
 - Flood prevention
 - Healthy soils
 - Wildlife habitat
- **When ecosystem services can be measured and quantified they can be sold and purchased through emerging markets.**
- **These markets are called ecosystem or environmental markets.**



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NRCS and Ecosystem Services

Farmers and ranchers often generate ecosystem services for the public good when they implement conservation practices on their lands.

- Animal waste management, fencing riparian areas → water quality improvements
- Rotational grazing, cover cropping → increased soil carbon
- Pollinator borders, wetland restoration → wildlife habitat



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Payment for Ecosystem Services



Public Payments

- Government Tax Incentives (e.g. easements)
- Government Conservation Programs

Private Payments

- Private Conservation Programs
- Voluntary Markets
- Cap-and-Trade
- Certification/Labeling



Growth in Markets for Ecosystem Services

nature
sustainability

Access provided by USDA

Altmetric: 101 Citations: 1

[More detail >>](#)

Analysis | Published: 12 March 2018

The global status and trends of Payments for Ecosystem Services

James Salzman , Genevieve Bennett, Nathaniel Carroll, Allie Goldstein & Michael Jenkins

Nature Sustainability 1, 136–144 (2018) | [Download Citation](#)

“Just two decades ago, Payments for Ecosystem Services (PES) was an obscure term, **with only three PES journal references in 1995**... There are now over 550 PES programmes around the world, with combined annual payments over \$36 billion.”

“PES has been featured on the cover of *The Economist* magazine and become a central component of China’s nationwide environmental protection strategy.

In 2016, **there were over 1,900 PES journal references**, reflecting the breadth of scholarship that has emerged.”



Why Market-based solutions at NRCS?

- **Attracting additional resources to private lands conservation**
- **Potential new source(s) of revenue for landowners**
- **Paying for Performance/Outcomes/Success/Results**



NRCS Roles in Supporting Market-based Solutions

- **Community building and education**
- **Development of ecosystem services quantification tools**
- **Technical assistance for policy-making**
- **Grants to support the development of markets and protocols**



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Community Building and Outreach

About the National Network

National Network Mission

The purpose of the National Network ("Network") is to establish a national dialogue on how water quality trading can best contribute to clean water goals. That includes providing options and recommendations to improve consistency, innovation, and integrity in water quality trading.

Who Participates in the Network



Image: Original participants in the National Network (2013)

Formed in 2013, the National Network on Water Quality Trading started with 18 organizations (shown in the banner above) representing the diversity found in most emerging trading programs in the country, including agriculture, wastewater and stormwater utilities, environmental groups, regulatory agencies and practitioners

National Network Steering Committee

- with USDA as technical advisor
- [American Farmland Trust](#)
- [Association of Clean Water Administrators](#)
- [Electric Power Research Institute](#)
- [Environmental Incentives](#)
- [Kieser & Associates, LLC](#)
- [Maryland Department of Agriculture](#)
- [Mississippi River Collaborative](#)
- [National Association of Clean Water Agencies](#)
- [National Milk Producers Federation](#)
- [The Freshwater Trust](#)
- [The Ohio Farm Bureau Federation](#)
- [Troutman Sanders](#)
- [Willamette Partnership](#)
- [World Resources Institute](#)

www.nnwqt.org

www.c-agg.org



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Development of Ecosystem Services Quantification Tools



Technical assistance to States and Stakeholders



Building a Water Quality Trading Program: Options and Considerations

Version 1.0 | June 2015: Point-Nonpoint Trades
A product of the National Network on Water Quality Trading



The logos below represent groups and organizations serving as National Network participants with the USDA as a technical advisor.



Great Lakes Commission des Grands Lacs

For Commissioners | For the Media

About | News | Our Work | Partnerships | Library | About the Lakes

Fox River Phosphorus Trading Program

Introduction

This project aims to alleviate high nutrient levels and algal blooms in Wisconsin's Lower Fox River Watershed (LFRW) by establishing a water quality trading program. A phosphorus credit trading program in the LFRW is a market-based approach to enable the most economic solution to achieving water quality goals that will increase overall environmental and economic benefits. The Lower Fox River flows into lower Green Bay, both of which suffer from excessive sediment, nutrients, bacteria and heavy metal loads. The Lower Fox River is considered an "impaired" water way and is therefore subject to a Total Maximum Daily Load (TMDL). A TMDL sets a limit on the amount a pollutant that a water body can receive without violating water quality standards.

The Great Lakes Commission is working with the U.S. Department of Agriculture Natural Resources Conservation Service (USDA-NRCS) and the Wisconsin DNR to develop this innovative program. Funding is provided by NRCS through the Great Lakes Restoration Initiative which has identified the Lower Fox River/Green Bay as a priority watershed for targeted restoration efforts.

For more information contact Victoria Pebbles, vpebbles@glc.org.

Announcements

- January 19, 2015 – Lower Fox River Watershed Water Quality Trading Economic Feasibility Assessment released
- April 23, 2014 – Experts to Examine Demand and Supply for Water Quality Trading in Lower Fox River Watershed
- August 1, 2013 – New Fox P Trade Field Coordinator

CONTACT

For questions or media inquiries, please contact Beth Wanamaker, beth@glc.org.

RECENT GLC NEWS

Great Lakes Commission releases ErieStat to support Lake Erie phosphorus reduction efforts

Great Lakes Commission approves inclusion of Great Lakes provisions in water infrastructure legislation

NOAA, Great Lakes Commission habitat restoration efforts showcased in new video at 2018 AOC Conference

Great Lakes Commission urges Congress to fully fund the Great Lakes Restoration Initiative in FY 2019

es
ration



Grants to Support Market Development



Conservation Innovation Grants



What do markets need to thrive?

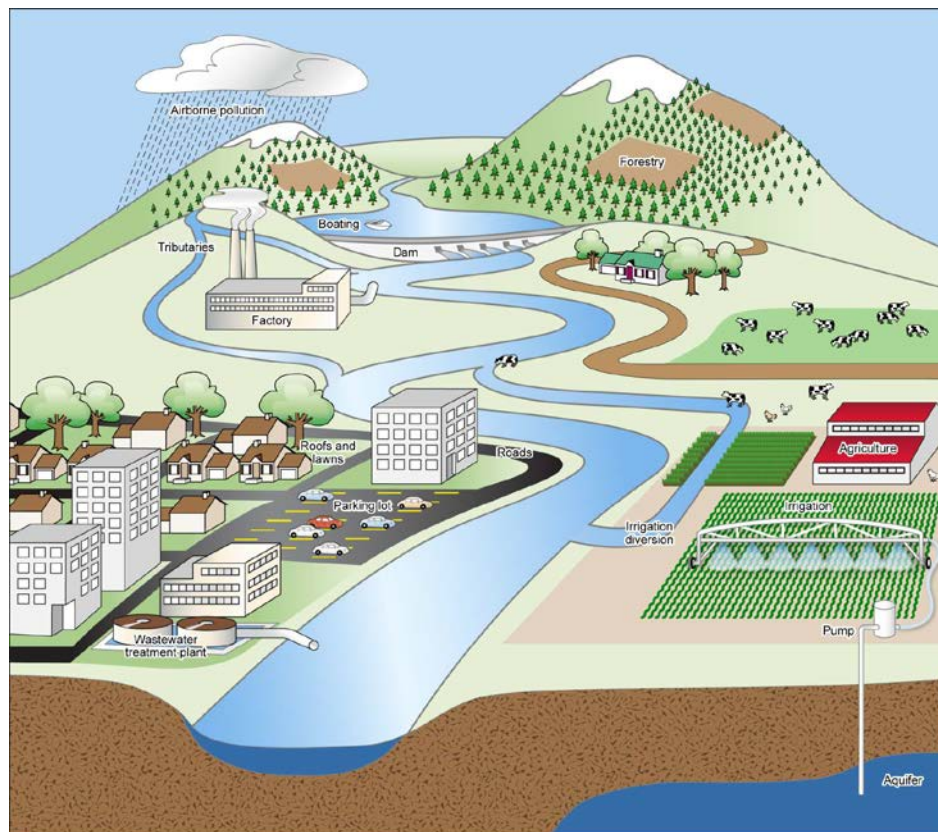
- Sufficient supply of the thing being sold
- Sufficient demand to buy that thing
- Marketplace rules
- Transparency



Market Sector: Water



- Program-based by jurisdiction—local impacts
- Largely compliance-based

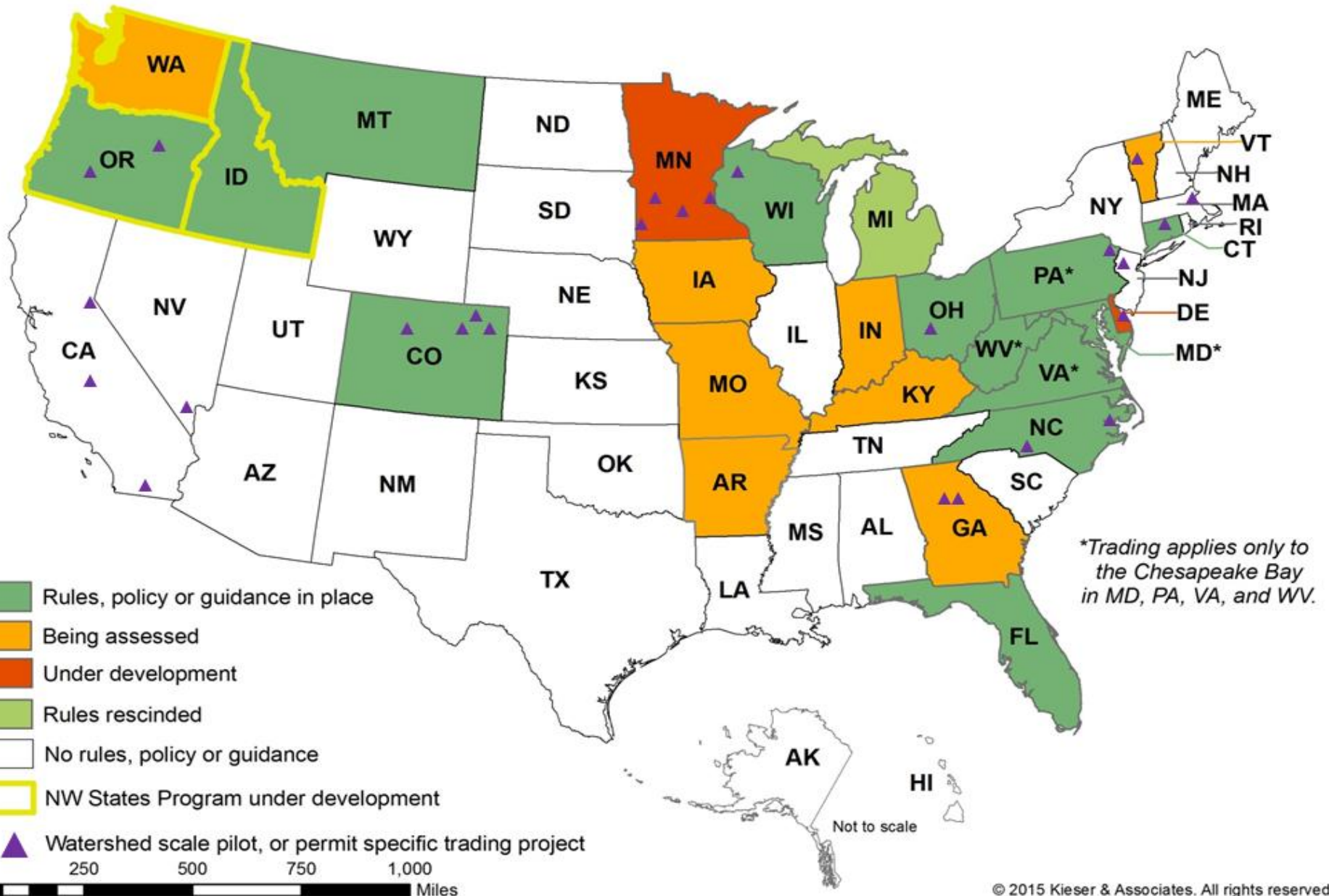


Source: GAO. | GAO-18-84

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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"



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

Source: Goolsby et al, 1999

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.

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.

Benefits

Cost-effective pollutant reductions

Andillary 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.



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Temperature TMDL Trading in the Pacific NW



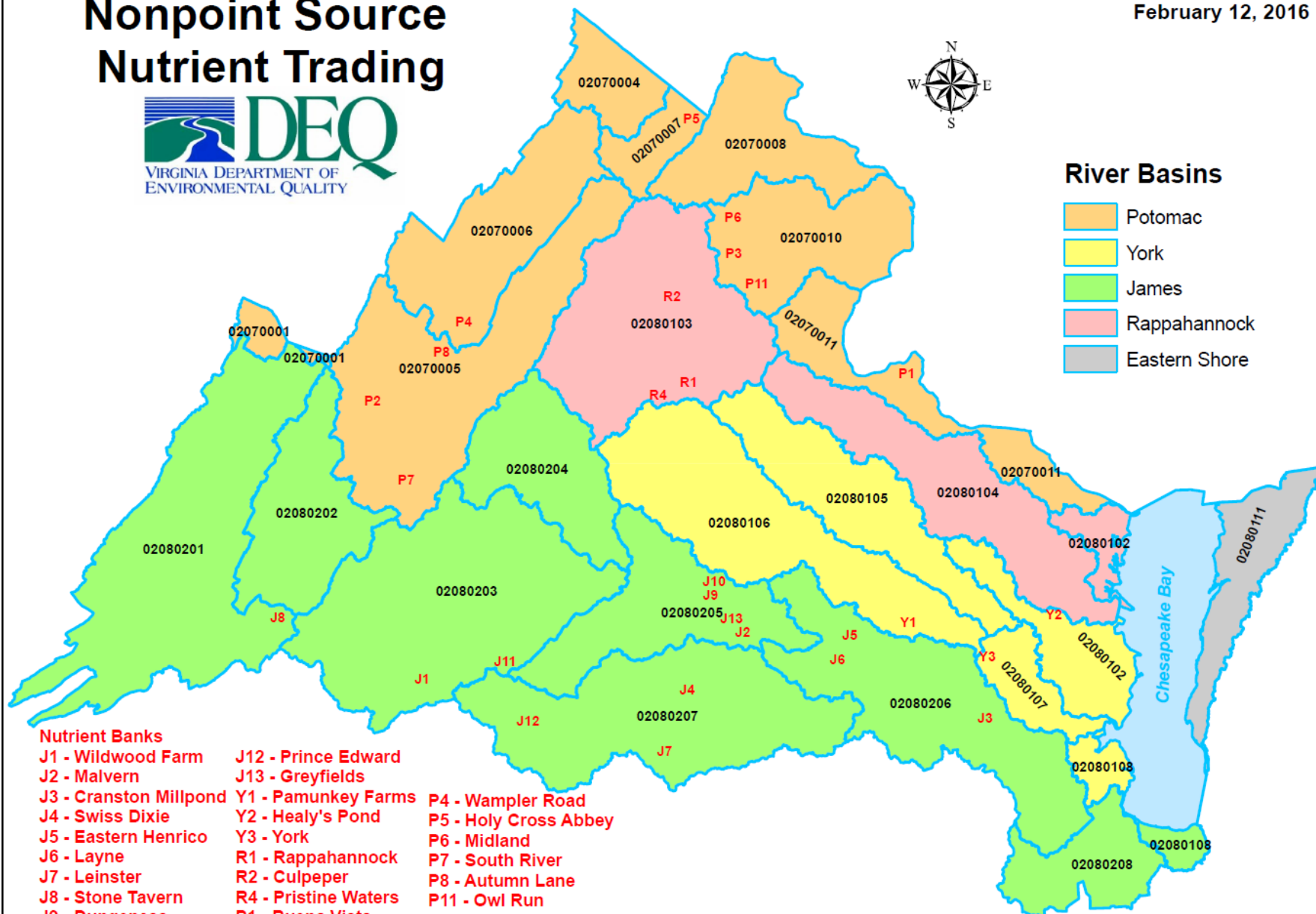
Nonpoint Source Nutrient Trading

February 12, 2016



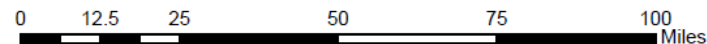
River Basins

- Potomac
- York
- James
- Rappahannock
- Eastern Shore



Nutrient Banks

- | | | |
|------------------------|----------------------|-----------------------|
| J1 - Wildwood Farm | J12 - Prince Edward | P4 - Wampler Road |
| J2 - Malvern | J13 - Greyfields | P5 - Holy Cross Abbey |
| J3 - Cranston Millpond | Y1 - Pamunkey Farms | P6 - Midland |
| J4 - Swiss Dixie | Y2 - Healy's Pond | P7 - South River |
| J5 - Eastern Henrico | Y3 - York | P8 - Autumn Lane |
| J6 - Layne | R1 - Rappahannock | P11 - Owl Run |
| J7 - Leinster | R2 - Culpeper | |
| J8 - Stone Tavern | R4 - Pristine Waters | |
| J9 - Dungeness | P1 - Buena Vista | |
| J10 - Shafer | P2 - Swinging Bridge | |
| J11 - Buckingham | P3 - Elk Run | |



Market Sector: Greenhouse Gases

- Protocol-based—national/global impact
- Voluntary and Regulatory (CA) markets



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Protocol: Avoided Conversion of Grasslands



Storing Carbon and Preserving Working Ranch Lands



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Protocol: Reduced Use of Nitrogen Fertilizer



NITROGEN CREDIT PROGRAM

First ever purchase of carbon credits from nitrogen stewardship practices implemented on corn fields



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Protocol: Methane reductions from rice production



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<http://nrcs.maps.arcgis.com/apps/Cascade/index.html?appid=c00a7710dbe04790823c4133777e49c0>



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Market Sector: Wildlife Habitat

- **Habitat Mitigation Credits and Trading Programs**
- **Mitigation Banking**



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Photo Credit: Jeannie Stafford/USFWS

**THE UPPER GREEN RIVER CONSERVANCY™ IS THE NATION'S FIRST
CO-OP CONSERVATION BANK™ CREATED TO RESTORE AND
MANAGE HEALTHY SAGEBRUSH LANDSCAPES WHILE PROVIDING
FOR ENERGY DEVELOPMENT AND CONTINUED RANCHING.**

The Upper Green River Conservancy Co-Op Conservation Bank™ (UGRC) is an innovative partnership of energy companies, ranchers, conservation stakeholders, and impact investors working together to ensure the protection of core sage grouse habitat in the ecologically and energy rich Upper Green River watershed in southwestern Wyoming.

For energy companies and developers, UGRC establishes a market based solution to offset the environmental impacts of development. The groundbreaking new model rewards ranchers for conservation practices and establishes critical unfragmented, landscape level protection of valuable habitats and ecosystems. UGRC provides energy companies and other organizations pursuing development the ability to achieve net conservation gains required by State and Federal regulators, and positions Wyoming to sustainably develop its substantial energy resources.

To learn more about the history and ecological importance of the Green River basin please see: [The Green River Basin: A Natural History.](#)



STATE OF NEVADA CONSERVATION CREDIT SYSTEM

Generate net benefit for Greater Sage-Grouse and create regulatory certainty.

VIEW MORE ►

State of Nevada Conservation Credit System

The Conservation Credit System (Credit System) is an innovative approach to greater sage-grouse habitat protection that ensures habitat impacts from anthropogenic disturbances are fully compensated by long-term enhancement and protection of habitat that results in a net benefit for the species, while allowing appropriate anthropogenic disturbances that are vital to the Nevada economy.

News & Announcements

MAY 2 The 2017-2018 Improvements to Nevada's Conservation Credit System Is Now Finalized and Available. [More](#)



Market Sector: Supply Chain Conservation Labeling

- Consumers choosing commercial goods for their conservation benefits
- Increasing interest in use of NRCS tools and science in pursuit of supply chain activities



Supply Chain Conservation Labeling



XERCES BEE BETTER SEAL

Xerces is a leading conservation organization and our ally in saving the Honey Bees. Soon, our almond flavors will feature the Xerces Bee Better seal, letting everyone know that the almonds they love in our ice cream were grown and harvested in a “bee friendly” manner.

Häagen-Dazs is proud to be the first company to ever receive this seal.

[LEARN MORE ABOUT THE XERCES SOCIETY](#)



Supply Chain Conservation Labeling

Conservation-Minded Purchasing: How Clothing Purchases Help Get Conservation on the Ground

Posted by Chad Douglas, Acting Internal/External Communications Team, NRCS in [Conservation](#)
Feb 26, 2018



Bare Ranch owner Lani Estill, pictured with her daughter Anna, raises cattle and sheep on more than 40,000 acres in northern California. Photo/Paige Green.



What if, before you purchased a hat or sweater, you knew the wool used to make it came from sheep raised on a ranch managed to improve soil health and increase soil carbon?

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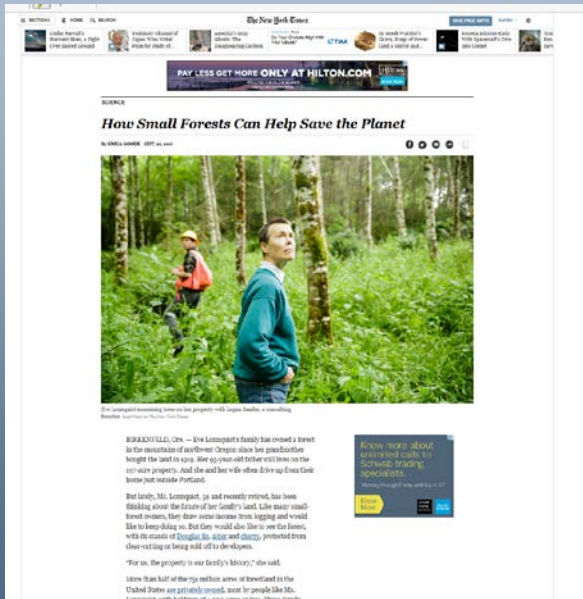
NRCS Policy on Environmental Credits

- **NRCS recognizes that producers and landowners can generate ecosystem services/credits when implementing conservation practices with NRCS financial assistance.**
- **NRCS asserts no direct or indirect interest in credits generated by EQIP, CSP or ACEP activities.**
- **However, NRCS retains the authority to ensure that NRCS program purposes are met.**
- **Can credits be developed by landowners when NRCS funds are involved?**



Markets and NRCS Programs

RCPP



RCPP



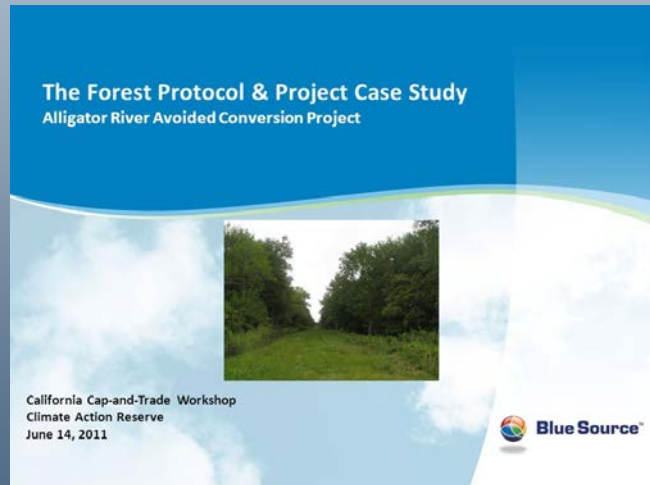
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Markets and NRCS Programs

WRP/WRE



ALE



Technical Resources

- Conservation Planning
- Ecological Sciences
- Natural Resources Assessment
Data, Maps & Analysis
- Tools & Applications
Field Office Technical Guide (FOTG)
- Engineering
- Economics
Environmental Markets & Conservation Finance

News about NRCS and Partner Projects

- Reflections on Efficiency (Quantified Ventures)
- Paying for Environmental Outcomes: A How-To Guide (Partner: Environmental Incentives)
- Managed Grazing Cultivates New Believers Among Watershed Farmers (Partner: Chesapeake Bay Foundation)
- Issuing Bonds to Invest in People (Partner: Blue Forest Conservation)

Environmental Markets & Conservation Finance



The Conservation Innovations Team was established in 2016 in response to growing interest in environmental markets and conservation finance. NRCS's work in these emerging areas complements, and in some ways is already integrated with, our traditional conservation planning and program implementation approach to private lands conservation. **Our vision: Developing new revenue streams and sources of private capital for agricultural producers and rural economies by attracting non-Federal funding to private lands conservation.**



Summary

- **Landowners and land managers often generate ecosystem services when implementing conservation practices on their lands.**
- **Market-based solutions may exist to monetize those ecosystem services and generate new income streams for landowners.**
- **Interest in market-based solutions is at an all-time high as Federal, state and non-governmental entities look for new funding sources for conservation.**
- **In general, NRCS supports the development of market-based solutions to grow the amount of non-Federal funding available for private-lands conservation.**
- **Most environmental markets are still in early stages of development and operation and require a transparent policy framework to thrive.**



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Email Lindsay White (lindsay.white@wdc.usda.gov) to sign up for updates on environmental markets and more!

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