



MARYLAND DEPARTMENT OF THE ENVIRONMENT  
MARYLAND DEPARTMENT OF AGRICULTURE



# WATER QUALITY TRADING PROGRAM



Chesapeake Bay Program  
Trading and Offsets Workgroup  
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Lynn Buhl, Assistant Secretary, MDE  
Susan Payne, Coordinator, Ecosystem  
Markets and Certainty Programs, MDA



# Water Quality Trading Program



## Highlights of EPA's 2003 Water Quality Trading Policy

- Policy encouraged voluntary trading programs that establish incentives for voluntary reductions to facilitate implementation of TMDLs, reduce the costs of compliance with Clean Water Act regulations, and promote watershed-based initiatives.
- Market-based, water quality trading provides greater flexibility and has the potential to achieve water quality and environmental benefits greater than would otherwise be achieved under more traditional regulatory approaches.
- Market-based programs not only achieve water quality goals at a substantial economic savings, but also create economic incentives for innovation, emerging technology, voluntary pollution reductions, and greater efficiency in improving water quality.



# Water Quality Trading Program



## Development of Trading Policy in Maryland

- March 2008 - Point Source-Point Source Policy issued by MDE
  - Trading not allowed in lieu of Enhanced Nutrient Removal (ENR) upgrades
  - Chesapeake Bay Restoration Fund
- May 2008 - Point Source-Nonpoint Source Policy issued by MDA
  - Maryland General Assembly enacts Agricultural Certification Program Legislation on June 1, 2010 and June 1, 2012
- December 29, 2010 - EPA issued Chesapeake Bay TMDL
  - Requires offsets for new growth and development



# Water Quality Trading Program



## Development of Trading Policy in Maryland

- October 23, 2015 - MDA and MDE release Maryland Trading Policy Statement
  - Restoration Economy
  - Municipal Separate Storm Sewer System (MS4) permit holders allowed to trade for a portion of impervious surface restoration requirement
- August 29, 2016 - MDA regulations for generation, verification, and certification of agricultural credits
- July 16, 2018 - MDE regulations for the Maryland Water Quality Trading Program



# Water Quality Trading Program



## Maryland Water Quality Trading Advisory Committee

### ➤ 32 Members

- Industry
- Agriculture
- Local, state, and federal government agencies
- Non-governmental organizations

### ➤ Ongoing consultative group to provide advice on trading program and trading infrastructure

- Refinement of Maryland Trading Manual
- Monitoring of Trading Program and recommendations for Program improvements, including changes to regulations





# Water Quality Trading Program



## Trading Regulations

- Maryland Department of Agriculture
  - The Agricultural Nutrient and Sediment Credit Certification Program establishes the requirements and standards for the generation, verification, and certification of nonpoint source nitrogen, phosphorus, and sediment credits on agricultural lands (Annotated Code of Maryland 15.20.12).
- Maryland Department of the Environment
  - The Maryland Water Quality Trading Program establishes the policies and procedures to support market-based trading activities to enhance water quality and to certify, verify, and register non-agricultural point and nonpoint source nitrogen, phosphorus, and sediment credits (Annotated Code of Maryland 26.08.11)



# Water Quality Trading Program



## Program Elements

- Voluntary
- Market-driven
  - State provides infrastructure but does not set prices nor conduct trades
- Establishes baseline conditions
- Uses only Bay Program-approved Best Management Practices (BMPs)
- Requires third party verification for stormwater, agriculture, and alternative practices
  - Proper BMP implementation and maintenance
  - Credit calculation
- Promotes transparency
  - Credit certification
  - Online, publicly accessible Registry and Marketplace



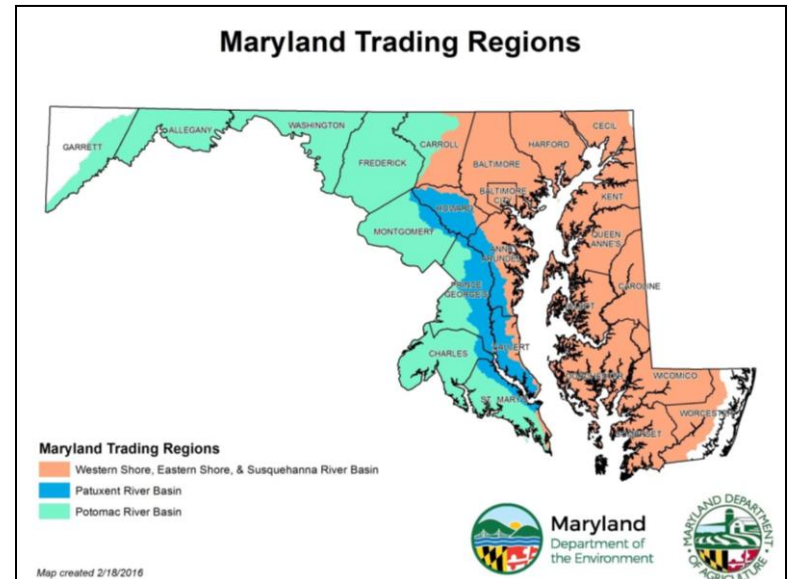


# Water Quality Trading Program



## Trading Regions

- Only credits generated in Maryland can be purchased or used in Maryland
- Trading regions are based on the geographical boundaries of the three large watersheds within Maryland:
  - Potomac River Basin
  - Patuxent River Basin
  - Eastern and Western Shore River Basins, including a portion of the Susquehanna watershed.
- Trades must occur within the same trading regions







# Water Quality Trading Program



## Local Water Quality

- Credits may be used to comply with the applicable nitrogen, phosphorus, and sediment load or wasteload allocations of local TMDLS
- The use of a credit may not cause or contribute to local water quality impairments or prevent the attainment of local water quality standards
- Credits used within any impaired waters must be generated within such impaired waters or upstream of the credit user's discharge.



# Water Quality Trading Program



## Trading Ratios

- The Trading Program utilizes three trading ratios:
  - Edge of Tide Ratio (previously delivery factor)
    - ❖ “Edge of Tide (EoT) Ratio” means a numeric adjustment applied to a trade to compensate for different EoT factors in the segmentshed where the credit is generated and the segmentshed where the credit is used.
    - ❖ TRANSLATION: This ratio accounts for the attenuation of a pollutant on its way through tributaries to the main stem of the Bay. The ratio varies depending on the distance the pollutant has to travel. In general, the greater the distance, the greater the pollutant loss and the lower the ratio.



# Water Quality Trading Program



## Trading Ratios

- Reserve Ratio
  - ❖ “Reserve ratio” means a 5 percent reduction in the total number of generated credits, the result rounded down to the next whole number, placed in the reserve pool at the time of certification.
  - ❖ TRANSLATION: This ratio represents a 5% reduction in the total number of certified credits that can be used by the buyer in a trade. Credits resulting from the application of this ratio are placed in an annual reserve pool and may be used to offset the loss, failure, or underperformance of purchased credits, address credit needs, or if not used for these purposes, be retired for overall water quality improvement



# Water Quality Trading Program



## Trading Ratios

- **Uncertainty Ratio**

- ❖ “Uncertainty Ratio” means a numeric adjustment to a trade to compensate for possible discrepancies in estimated pollutant reductions resulting from inaccuracy in credit estimation methodology or variability in project performance, or to provide a margin of safety in the achievement of water quality goals.
- ❖ **TRANSLATION:** This ratio is applied to a credit to compensate for the challenges that exist in accurately measuring nonpoint source credit generation. A higher ratio is applied to the credit due to the complexities associated with monitoring, assessing, and modeling pollutant load reductions, as well as the varying effectiveness of best management practices due to inconsistencies in operation and maintenance. The ratio provides a margin of safety to account for these uncertainties.



# Water Quality Trading Program



## Program Framework and Transparency

- MDE is responsible for the permitting process and the overall trading program
- MDA is responsible for certification, verification, and registration of agricultural nonpoint credits
- MDE is responsible for certification, verification, and registration of point and other nonpoint source credits.
- Credits must be certified, verified, and registered before they can be traded.
- A credit's lifespan is determined during the certification process and included in the credit registration
  - Credits are generated when a BMP is installed, placed into operation, and operation/maintenance guidelines are followed.
  - Credits may be certified for more than 1 year, but are applied annually.





# Water Quality Trading Program



## Program Framework and Transparency

- Verification is required annually or at least every three years.
  - Wastewater credits are verified annually through Discharge Monitoring (DMR) Reports required by the facility's NPDES permit
  - Stormwater, agriculture and alternate practices are verified through a State or County inspector, a professional engineer registered in Maryland, or a verifier that has been approved by either MDE or MDA
- MDE and MDA will maintain an online, publicly accessible Registry containing relevant information about credits, verification and trading activities, and credit usage.



# Water Quality Trading Program



## Role of Permits

- Wastewater and stormwater permits are issued on a five-year permit cycle
- Issuance of individual permits allow MDE to manage trading activities through facility-specific conditions
  - Whether and how a permittee can generate credits
  - Degree to which permittee can use credits
- Coordination with other MDE regulatory programs will assist in the certification and verification of credit-generating BMPs
  - COMAR 26.04.03 – Water Supply and Sewerage Systems
  - COMAR 26.17.01 – Erosion and Sediment Control
  - COMAR 26.17.04 – Waterway Construction
  - COMAR 26.23 – Nontidal Wetlands
  - COMAR 26.24 – Tidal Wetlands



# Water Quality Trading Program



## Program Participation

- A person may only use credits generated and sold within the State to:
  - Comply with the applicable nitrogen, phosphorus, and sediment load or wasteload allocations of the Maryland portion of the Chesapeake Bay TMDL, local TMDLs, or NPDES permit requirements; or
  - Improve water quality.
- To participate in the Trading Program a person must:
  - Meet appropriate baseline requirements;
  - Implement a BMP approved by the Chesapeake Bay Program that is acceptable to the Department;
  - Demonstrate a load reduction below the baseline requirements; and
  - Submit a Certification and Registration form to MDE or MDA.



# Water Quality Trading Program



## Baselines

Baselines are the practices, actions, or levels of nitrogen, phosphorus, or sediment reductions that must be achieved before a credit seller becomes eligible to generate and sell credits.

- The baseline for an agricultural nonpoint source is determined by MDA in accordance with COMAR 15.20.12.
- The baseline for a wastewater point source is based on an annual loading limit wasteload allocation established in the source's NPDES permit.
- The baseline for a stormwater point source is the restoration requirement of the source's NPDES permit.



# Water Quality Trading Program



## Baselines

- The baseline for a nonregulated source is the pollutant load generated under the conditions that existed prior to installation of the BMP
- The baseline load per equivalent dwelling unit for an on-site sewage disposal system is:
  - 18.56 pounds of nitrogen per year for a system located in the Critical Area for the Chesapeake and Atlantic Coastal Bays;
  - 11.60 pounds of nitrogen per year for a system located within 1,000 feet of surface water; and
  - 6.96 pounds of nitrogen per year for all other systems.





# Water Quality Trading Program



## Use of Registry

Account Creation: Go to [mdnutrienttrading.com](http://mdnutrienttrading.com) to open an account; click on Registry Link and then “Sign up now!”

*CHESAPEAKE BAY NUTRIENT TRADING REGISTRY*

Projects Verifications Credits Trades Usage Records Market Sign in

Home / Accounts / Create Account

### CREATE ACCOUNT

**ACCOUNT INFO**

Primary State\*

Account Type\*

Account Name\*

Verifier Number

**CONTACT INFO**

Full Name\*

Address\*

City\*

State\*

Zip\*

Phone\*

**ORGANIZATION INFO**

Organization Name

Job Title

Address

City

State

Zip

Email\*

Password\*

Confirm Password\*

931

Type the text

Privacy & Terms

GO

Create account



# Water Quality Trading Program



## User Dashboard: Facilitates navigation through the Registry

CHESAPEAKE BAY NUTRIENT TRADING REGISTRY

Home Accounts Projects Verifications Credits Trades Usage Records Market

maryland user 1/11/2016 ▾

Home / Accounts / maryland user 1/11/2016

### MARYLAND USER 1/11/2016'S DASHBOARD

Projects Credits Trades (buyer) Trades (seller)

+ Add Project

The following projects belong to this account.

No projects to display.

#### ACCOUNT INFO

Account Name:	maryland user 1/11/2016
Account Status:	Account
Account Type:	Landowner
Email:	marylanduser@mail.com
Verifier Number:	
Phone:	1234567890
Address:	123 Maryland Road
State:	Maryland
Zip:	12345
Company Name:	



# Water Quality Trading Program



**Projects:** A project represents one or more accepted BMPs or other nutrient and/or sediment reduction activities that generate credits on a single site

## MANAGE PROJECTS

This is a listing of submitted projects in the registry .

+ Add Project

Search Projects  Search

[Download Search Results](#)

Project	Project ID	State/County	Trading Basin	Date Submitted	Status	Est. N	Est. P	Est. S	Actions
1-12 Test	24035-00017	Maryland Queen Anne's	Eastern Shore	2016-01-12	Approved	500	200	0	<a href="#">View</a>
1-16 ex ante test	24003-00010	Maryland Anne Arundel	Western Shore	2016-01-18	Approved	100	100	100	<a href="#">View</a>
1-18 test	51001-00009	Virginia Accomack	Potomac	2016-01-18	Approved	100	100	100	<a href="#">View</a>
1-18 test 2	51003-00005	Virginia Albemarle	James	2016-01-18	Approved	100	100	100	<a href="#">View</a>
1-8 3 pollutant check	24001-00002	Maryland Allegany	James	2016-01-08	Pending - Administrative Review	500	250		<a href="#">View</a>
12-4-15 Demo	51003-00004	Virginia Albemarle	James	2015-12-04	Approved	500	100	0	<a href="#">View</a>
1_17 test	24001-00004	Maryland Allegany	Susquehanna	2016-01-18	Approved	200	200	200	<a href="#">View</a>
25 January	24013-00011	Maryland Carroll	Potomac	2016-01-26	Approved	200	100	0	<a href="#">View</a>
4-1 test	24035-00001	Maryland Queen Anne's	Eastern Shore	2015-04-01	Pending - Technical Review	28	8	0	<a href="#">View</a>
4-16 test	24027-00001	Maryland Howard	Patuxent	2015-04-16	Approved	20	0	0	<a href="#">View</a>



# Water Quality Trading Program



**Verifications:** May be submitted at the project onset and/or at regular intervals over the project's lifespan. From this page, a verifier can also add a new verification.

## MANAGE VERIFICATIONS

[+ Add Verification](#)

This is a listing of all verifications that have been submitted. To submit a verification for an existing project, click the "Add Verification" button.

Project ▾	Project ID	Site Checked	Verifier	Notes	Status	Actions
test project	51179-00001	2015-01-15	Sara		Compliant	
test project	51179-00001	2015-04-21			Compliant	
maryland project	24003-00001	2014-09-09			Compliant	
maryland project	24003-00001	2014-12-02	Jill	approve	Pending	
maryland project	24003-00001				Compliant	
maryland project	24003-00001				Compliant	
maryland project	24003-00001				Pending	
Jill's farm	24021-00001	2014-12-02			Compliant	
Jill's farm	24021-00001	2015-11-13			Pending	
apple farm	24009-00001	2015-01-07			Compliant	



# Water Quality Trading Program



**Credits:** Listing displays project name, current and original owners, pollutant, vintage year, credit lifespan, quantity of credits issued, whether credits were issued as EOS or delivered, credit status (Pending, Active, Applied, Retired, Expired, Reserved, Suspended, Cancelled), and issue date; serial number reflects credit vintage, state-basin where credits were generated, the FIPS state/county code, and a unique identifier series

## PEAKE BAY NUTRIENT TRADING REGISTRY

Home	Accounts	Projects	Verifications	Credits	Trades	Usage Records	Market	md manager
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[Home](#) / [Credits](#) / [Index](#)

### CREDITS

Credits listed in the public registry.

[Download Search Results](#)

Project	Current Owner	Original Owner	Pollutant	Vintage	Quantity	Serial Numbers	Permanent/Term	Credit Type	EOS/DEL	Credit Status	Issued On ▲
<a href="#">2-24 Confidential test</a>	<a href="#">superadmin</a>	<a href="#">superadmin</a>	N	2016	18.0	<a href="#">2016-N-MEE-24003-01121-</a> <a href="#">2016-N-MEE-24003-01138</a>	Term	ex-post	DEL	Active	2016-02-25
<a href="#">2-24 Confidential test</a>	<a href="#">Maryland</a>	<a href="#">superadmin</a>	N	2016	2.0	<a href="#">2016-N-MEE-24003-01139-</a> <a href="#">2016-N-MEE-24003-01140</a>	Term	ex-post	DEL	Retired	2016-02-25
<a href="#">va test approval</a>	<a href="#">person</a>	<a href="#">person</a>	S	2020	10.0	<a href="#">2020P-S-VJAM-51036-00001-</a> <a href="#">2020P-S-VJAM-51036-00010</a>	Permanent	ex-post		Active	2016-02-23
<a href="#">va test approval</a>	<a href="#">person</a>	<a href="#">person</a>	P	2017	20.0	<a href="#">2017P-P-VJAM-51036-00001-</a> <a href="#">2017P-P-VJAM-51036-00020</a>	Permanent	ex-post		Active	2016-02-23
<a href="#">va test approval</a>	<a href="#">person</a>	<a href="#">person</a>	N	2017	20.0	<a href="#">2017-N-VJAM-51036-00001-</a> <a href="#">2017-N-VJAM-51036-00020</a>	Term	ex-post	DEL	Active	2016-02-23





# Water Quality Trading Program



**Trades:** List of all trades that have been submitted to the Registry and accepted; new trades can also be added

[Home](#) [Accounts](#) [Projects](#) [Verifications](#) [Credits](#) [Trades](#) [Usage Records](#) [Market](#) molly virginia

[Home](#) / [Trades](#) / [Index](#)

## MANAGE TRADES

[+ Add Trade](#)

This is a listing of all trades that have been submitted. To request a new trade, click the "Add Trade" button.

[Download Search Results](#)

[All](#) [Pending](#) [Approved](#) [Rejected](#)

Date	Buyer	Seller	Status	Actions
2014-09-25	person2	superadmin	Rejected	<a href="#">🔍</a>
2014-12-03	person2	superadmin	Approved	<a href="#">🔍</a>
2014-12-03	Maryland	superadmin	Approved	<a href="#">🔍</a>
2014-12-03	Maryland	jraval	Rejected	<a href="#">🔍</a>
2015-01-07	person2	peixuan	Approved	<a href="#">🔍</a>
2015-01-09	person2	superadmin	Approved	<a href="#">🔍</a>
2015-01-09	peixuan	superadmin	Approved	<a href="#">🔍</a>
2015-01-12	peixuan	mdag	Approved	<a href="#">🔍</a>
2015-01-13	person	superadmin	Approved	<a href="#">🔍</a>
2015-01-13	person2	person	Approved	<a href="#">🔍</a>



# Water Quality Trading Program



Usage Records: Listing indicates that a credit has been used or applied; information is tracked for the entity name and location, name of the user of the credits, the year in which the credits were used, how the credits were used (to meet an NPDES permit limit, to offset new loads from a development site, etc.), and the permits to which they were applied, if applicable; usage records can be updated as well

[Home](#) / [Usage Records](#) / [Index](#)

## MANAGE USAGE RECORDS

[+ Add Usage Record](#)

This is a listing of all usage records that have been submitted. To submit a new usage record, click the "Add Usage Record" button.

Date Requested	NOU ID	Permit ID	Serial Numbers	Pollutant	Qty	Actions
2015-12-18	15	123	2014-N-VA1-51179-00035- 2014-N-VA1-51179-00037	N	3	<a href="#">↻</a>
2015-12-18	16	123	2015-N-VA1-51179-00041- 2015-N-VA1-51179-00042	N	2	<a href="#">↻</a>
2015-12-18	17	12345	2015P-N-EE-24045-00581- 2015P-N-EE-24045-00700	N	20	<a href="#">↻</a>
2015-12-18	18	123	2015-S-VA1-51179-00001- 2015-S-VA1-51179-00002	S	2	<a href="#">↻</a>
2015-12-18	18	123	2013P-N-VA1-51179-00001- 2013P-N-VA1-51179-00002	N	2	<a href="#">↻</a>
2015-12-18	18	123	2013P-P-VA1-51179-00001- 2013P-P-VA1-51179-00001	P	1	<a href="#">↻</a>
2015-12-18	18	123	2013P-S-VA1-51179-00001- 2013P-S-VA1-51179-00002	S	2	<a href="#">↻</a>
2015-12-18	18	123	2015-N-VA1-51179-00038- 2015-N-VA1-51179-00039	N	2	<a href="#">↻</a>
2015-12-18	18	123	2014-N-VA1-51179-00028- 2014-N-VA1-51179-00030	N	3	<a href="#">↻</a>
2015-12-18	19	123	2015-N-VA1-51179-00033- 2015-N-VA1-51179-00037	N	5	<a href="#">↻</a>



# Water Quality Trading Program



## Marketplace

**Market:** List of credits posted for sale or wanted; may also indicate interest in either purchasing or selling credits

### MARKET LISTINGS

[+ Add Listing](#)

This is the public marketplace to buy and sell credits. To submit a new listing, click "Add Listing".

All Credits For Sale Credits Wanted

#### Credits For Sale

Account	Email	Phone	Pollutant	Quantity for Sale	Notes	Actions
superadmin	<a href="mailto:kirstiea@gmail.com">kirstiea@gmail.com</a>		Nitrogen	50	50 credits for sale	<a href="#">+</a>
superadmin	<a href="mailto:kirstiea@gmail.com">kirstiea@gmail.com</a>		Nitrogen	1000		<a href="#">+</a>
superadmin	<a href="mailto:kirstiea@gmail.com">kirstiea@gmail.com</a>		Nitrogen	500		<a href="#">+</a>

#### Credits Wanted

Account	Email	Phone	Pollutant	Quantity Wanted	Notes	Actions
jraval	<a href="mailto:jraval@maryland.com">jraval@maryland.com</a>		Nitrogen	10		<a href="#">+</a>
peixuan	<a href="mailto:peixuan@wri.org">peixuan@wri.org</a>		Nitrogen	90	contact me	<a href="#">+</a>
peixuan	<a href="mailto:peixuan@wri.org">peixuan@wri.org</a>		Phosphorus	30	ASAP	<a href="#">+</a>
mdag	<a href="mailto:mdag@123.org">mdag@123.org</a>		Phosphorus	20		<a href="#">+</a>
peixuan	<a href="mailto:peixuan@wri.org">peixuan@wri.org</a>		Phosphorus	30		<a href="#">+</a>
peixuan	<a href="mailto:peixuan@wri.org">peixuan@wri.org</a>		Nitrogen	20	Feb.2 testing	<a href="#">+</a>
peixuan	<a href="mailto:peixuan@wri.org">peixuan@wri.org</a>		Phosphorus	22		<a href="#">+</a>
sara	<a href="mailto:swalker@wri.org">swalker@wri.org</a>		Phosphorus	3		<a href="#">+</a>
person	<a href="mailto:kcook@tiaer.tarleton.edu">kcook@tiaer.tarleton.edu</a>	222-222-2222	Phosphorus	100	hidden fields	<a href="#">+</a>
va developer	<a href="mailto:a@b.com">a@b.com</a>	555-555-5555	Phosphorus	10		<a href="#">+</a>

A photograph of a sunset over a body of water, with tall reeds in the foreground and trees in the background. The sun is low on the horizon, creating a bright glow and long shadows.

**QUESTIONS ?**

**lynn.buhl@maryland.gov**  
**susan.payne@maryland.gov**