



Maryland
Department of
the Environment

Nutrient Trading for NPDES Permittees

*October 22, 2018
1 to 3 PM*

*Greg Busch
Integrated Water Planning Program
gregory.busch@maryland.gov*

MDE trading website
mde.maryland.gov/programs/Water/TMDL/TMDLImplementation/Pages/WQ-Trading-2.aspx

MDE Trading Administrator e-mail
mde.wqtrading@maryland.gov



Outline

- Trading overview
 - Roles of state agencies
 - Definitions
- Generating Credits
- Purchasing Credits
- Example Trade



What is trading?

- Water Quality Trading Program
 - Establishes a water quality marketplace for meeting and maintaining pollutant load limits
 - Between the agricultural, stormwater, wastewater, and on-site sewage disposal sectors
 - Attract public and private participation
 - Supplement the more traditional governmental approaches for improving water quality
- Goals
 - Enhance Maryland's effort to protect and restore
 - The Chesapeake Bay and its tributaries
 - Non-tidal waters
 - Achieve results faster and at a lower cost
 - Accelerating efforts to restore and improve water quality



State agency roles in the trading program

- MDA
 - Registration of agricultural credits
- MDE
 - Registration of:
 - Wastewater credits
 - Septic credits
 - Stormwater credits (and alternative practices)
 - Oyster aquaculture credits
 - Certification of trades to meet MS4 requirements



Terms

- **Credit:** A unit of load reduction equal to one pound (delivered) of nitrogen, phosphorus or sediment
- **Credit Certification:** The process where credits are quantified by the department
- **Baseline:** The practices or actions or pollution reductions that must be achieved before a credit seller can generate credit
- **Registration:** The placement of credit on the registry after verification and certification
- **Registry:** The publicly accessible ledger of credits and trades
- **Verification:** the process through which credits are authenticated, either through annual reports or inspections by qualified parties

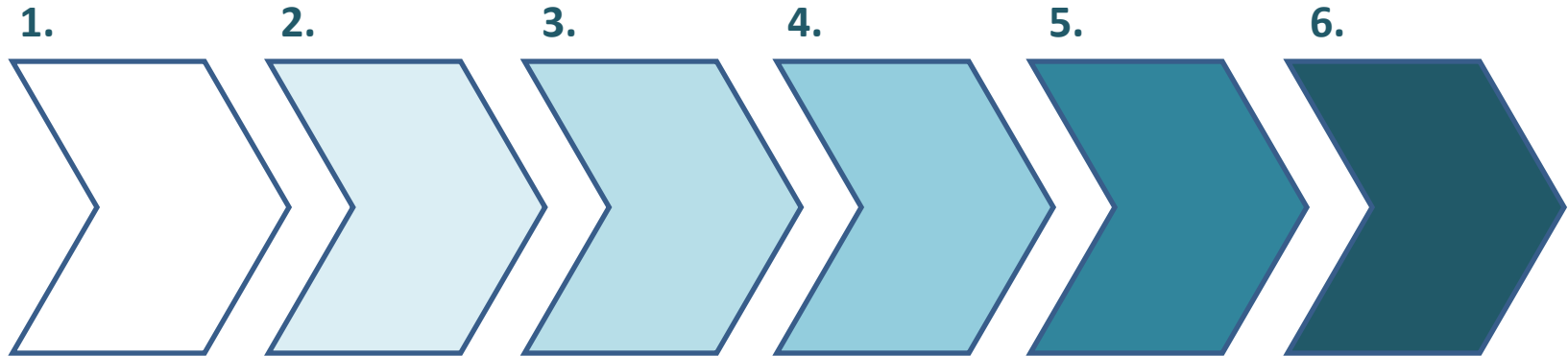


Terms

- **EOT Ratio:** A numeric adjustment to compensate for processes through which pollutants are reduced through natural processes before reaching the bay
- **Reserve Ratio:** A 5% reduction applied to registered credits to create a credit reserve
- **Uncertainty Ratio:** A numeric adjustment to account for inaccuracies in measuring pollutant reductions
 - *1:1 typically*
 - *2:1 for trades from NPS to wastewater PS*



How credits are created and traded



1. A BMP is installed to reduce nitrogen, phosphorus or sediment

2. The BMP owner or other responsible party submits a certification form and verification documentation to MDE or MDA

3. The credit is certified and posted to the registry

4. The credit generator reaches an agreement with a credit purchaser, and a credit acquisition form is submitted to MDE

5. The trade is registered and the transfer of credit is posted in the registry

6. The credit purchaser applies the credit toward meeting a permit requirement

Credit Generation

Credit Acquisition



Generating Non-Agricultural Credits

- MDE trading website
 - Credit generation for:
 - a. Wastewater
 - b. Septic systems
 - c. Stormwater & alternative urban practices
 - d. Oyster aquaculture
 - Currently based on Phase 5 Model
 - Update with Phase 6 numbers in 2019

The screenshot shows the website for the Maryland Department of the Environment's Water Quality Trading Program. The header includes the MDE logo and the text 'DEPARTMENT OF THE ENVIRONMENT'. A search bar is located in the top right corner. The main navigation menu includes links for HOME, ABOUT MDE, AIR, LAND, WATER, MARYLANDER, PERMITS, and NEWSROOM. The page is titled 'Water Quality Trading Program Home' and features a large image of a bridge over water. Below the image are four buttons: GENERATING CREDITS, PURCHASING CREDITS, REGISTRY & MARKET, and TOOLS & RESOURCES. A paragraph of text describes the program as a market for nitrogen, phosphorus, and sediment reductions, a collaborative effort between MDE and the Maryland Department of Agriculture (MDA).

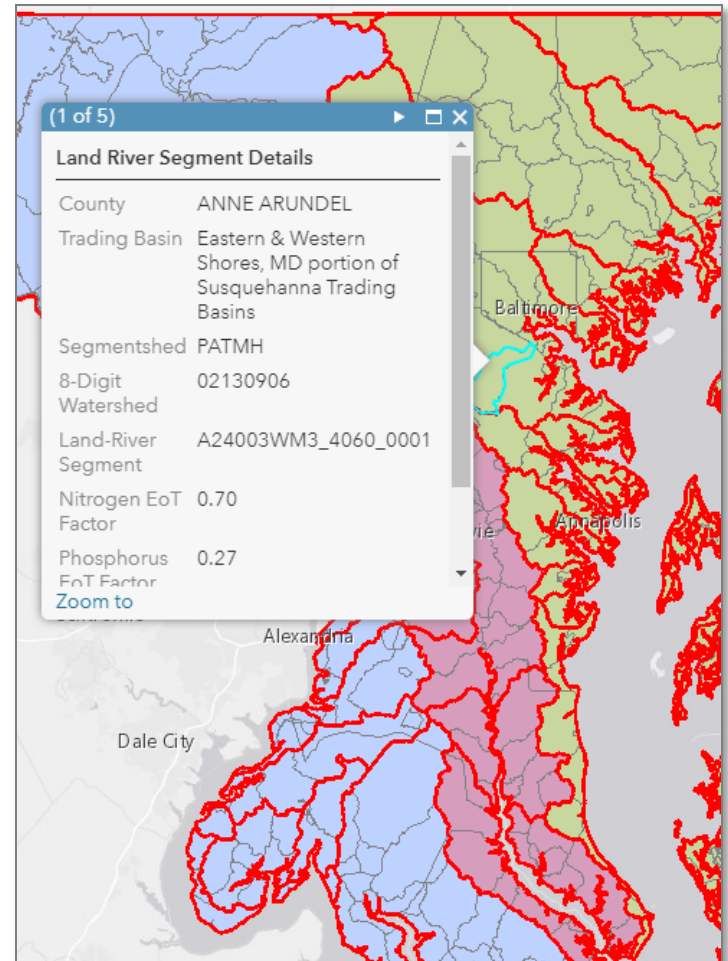
Webpage: mde.maryland.gov/programs/Water/TMDL/TMDLImplementation/Pages/WQ-Trading-2.aspx
e-mail: mde.wqtrading@maryland.gov



EOT Factor Map

- Determining credit geography
 - Use lat-long to find:
 - Watershed
 - Segmentshed
 - Land-river segment
 - 8-Digit watershed
 - EOT Factors
 - Currently based on Phase 5 Model

arcg.is/TiDym





Wastewater Performance-Based Credit Generation

1. Modify discharge permit to allow trading (if necessary)
 - Establishes a Benchmark Load under which a permittee can generate credits
 - Establishes a formula for calculating and reporting performance-based credit
2. Complete credit estimation spreadsheet
 - Credit based on performance over one calendar year
 - Form can be completed in January of subsequent year
3. Submit credit certification form
 - To MDE Trading Administrator
 - MDE certifies credit and places credit on registry

Maryland Department of the Environment		CREDIT CERTIFICATION AND REGISTRATION FORM FOR WASTEWATER POINT SOURCE PROJECT DURATION: JANUARY 1 TO DECEMBER 31,	
A. PROJECT ELIGIBILITY			
Please respond to the questions below.			
(1)	Does the NPDES or State Discharge Permit for this facility allow nitrogen, phosphorus, or sediment trading?		Yes <input type="checkbox"/>
(2)	Have all discharge monitoring reports (DMRs) for the compliance year associated with this credit request been submitted to the Department?		<input type="checkbox"/>
(3)	Did this facility operate below the NPDES or State Discharge Permit assigned performance-based benchmark loads for nitrogen, phosphorus, and/or sediment?		<input type="checkbox"/>
If the answers to questions 1 - 3 are yes, please proceed with this application. Otherwise, contact the Maryland Department of the Environment at mde.trading@mda.state.md.us .			
B. APPLICANT INFORMATION			
Applicant Name: _____			
Mailing Address: _____			
Municipality: _____		State: _____	ZIP Code: _____
Telephone Number: _____		Email: _____	
If the Applicant is not the Contact Person, please provide the following information for the Contact Person below.			
Contact Person Name: _____			
Address: _____			
Telephone: _____		Email: _____	
C. PROJECT INFORMATION			
NPDES Discharge Permit Number: _____		State Discharge Permit Number: _____	
Facility Name: _____		Ownership: _____	
Facility Address (Not P.O. Box): _____			
Municipality: _____		State: MARYLAND	ZIP Code: _____
Wastewater Point Source: Municipal <input type="checkbox"/> Industrial <input type="checkbox"/> Other (Please explain below) <input type="checkbox"/>			
Surface Water Discharge: <input type="checkbox"/>		Groundwater Discharge: <input type="checkbox"/> Other (Please explain below) <input type="checkbox"/>	
Design Capacity: _____		Treatment Technology: _____	
Credit Verification and Registration Form for Wastewater Point Source Version 1.0 on 08-07-16 Draft 075			
			Page 1



Wastewater Credit Generation

- Performance-Based Credits
 - Calculating credits

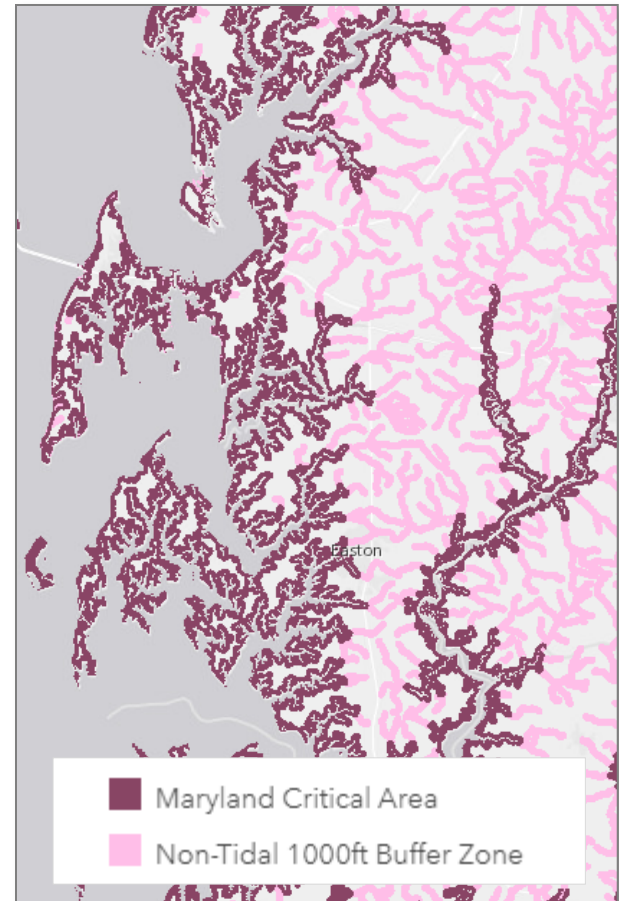
$$\text{Credit} = 8.34 \times \text{Actual flow [MGD]} \times (\text{baseline} - \text{actual}) \text{ concentration [mg/L]}$$

- Baseline concentration
 - POTWs at ENR: 3.0 mg/L (TN), 0.3 mg/L (TP), 30 mg/L (TSS)
 - Other facilities: assigned within permit
 - Applicable for calendar year that discharge occurred
- Permanent trades
- This process does not apply to wastewater point source to wastewater point source (point-to-point) trading



Septic Credit Generation

- Credit for BAT upgrade
 - Accounting for 5% reserve
 - Critical Area:
 - 8.8 lbs/yr EOS
 - 1,000' of non-tidal water:
 - 5.5 lbs/yr EOS
 - All other:
 - 3.3 lbs/yr EOS
- Connections to WWTP
 - Through WWTP permit
 - Through MS4 accounting



arcg.is/yuCnv



Stormwater Credit Generation

- Crediting to follow current MS4 Accounting Guidance
 - Runoff Reduction practices
 - Stormwater Treatment practices
 - Stream Restoration
 - Shoreline Management
 - Forest Planting
 - Impervious surface removal
- Baseline
 - MS4s: meet permit requirement
 - Non-MS4: current conditions
- Verification
 - State or county inspector
 - Professional Engineer
 - Department approved verifier
- Maintenance
 - A maintenance plan must be in place during lifespan of credit
 - Must be done by seller, but can be transferred to buyer
- Stormwater practices are eligible for funding through Bay Restoration Fund – Clean Water Commerce Act
 - Alternative to trading



Oyster Aquaculture Credit Generation

- Based on Chesapeake Bay Program Expert Panel Report on Oyster Tissue Reductions

Default Estimates						
Oyster Size Class Range (inches)	Size Class Midpoint (inches)	Size Class Midpoint (mm)	Content in Oyster Tissue (g/oyster)			
			Diploid*		Triploid**	
			Nitrogen†	Phosphorus‡	Nitrogen†	Phosphorus‡
2.0 - 2.49	2.25	57	0.05	0.01	0.06	0.01
2.5 - 3.49	3	76	0.09	0.01	0.13	0.01
3.5 - 4.49	4	102	0.15	0.02	0.26	0.03
4.5 - 5.49	5	127	0.22	0.02	0.44	0.05
≥ 5.5	6	152	0.31	0.03	0.67	0.07



Agricultural Credits

- Nutrient Trading Tool
 - Credit calculator for agricultural BMPs

WELCOME TO THE MARYLAND NUTRIENT TRADING PROGRAM . . .

Important Notice
Please Read before Using MNTT

On March 26, the newest version of the baseline and credit calculation tool (Maryland Nutrient Tracking Tool or MNTTv.2) will be released on this website. All existing accounts and projects will be available on the new version. **Anyone wishing to use assessments from the current version for submissions to either the Certainty or Agricultural Credit Certification Program will need to re-run them using the latest version since the results will differ.**

The current version will be archived for those with existing Certainty assessments, and access will be granted upon request to the Maryland Department of Agriculture (MDA).

For questions or additional information, contact Susan Payne, MDA's Coordinator of the Ecosystem Markets and Certainty Programs at

View Nitrogen and Phosphorous Credits

[Login to CBNTT](#)
[Login to Market \(Under Construction\)](#)

Technical References & Guidelines

- [NRCS BMP List \(PDF\)](#)

What's New

- [Maryland Nutrient Trading Policy Statement](#)

e-mail: nutrade.mda@maryland.gov
website: mdnutrienttrading.com
website: cbntt.org



Registry

- Publically-accessible ledger of credits and trades
 - Initially ...
 - Credits generated from wastewater, stormwater and septic practices will be posted on MDE's Water Quality Trading website in a basic ledger
 - Later ...
 - Registry will be migrated to the Chesapeake Bay Nutrient Trading Tool
- Each credit will receive a unique ID
 - Indicating the year in which it was created



Purchasing Credits

- Credit Purchaser reaches agreement with Credit Generator
- Form submitted to MDE Trading Administrator
- Once approved, transfer of credits will be posted to registry

The form is titled "CREDIT ACQUISITION REQUEST" and is from the Maryland Department of the Environment. It is divided into four main sections: A. PURCHASER ELIGIBILITY, B. PURCHASER INFORMATION, C. CREDIT GENERATOR INFORMATION, and D. CREDIT USE INFORMATION. Section A contains two questions about legal agreements and verifiers. Section B includes fields for Purchaser Name, Mailing Address, Town/City, ZIP Code, Telephone, and Email. Section C includes fields for Credit Generator's Name, Registry ID, and Project ID. Section D includes a table for Purpose of Credit Acquisition (Permit Compliance, WIP Target Load Reduction, Local Impairment, Water Quality Benefit) and a table for Total Number of EOT Tradable Credits (lbs/yr) Purchased for Nitrogen, Phosphorus, and Sediment across multiple years. It also includes fields for listing serial numbers for Nitrogen, Phosphorus, and Sediment credits.

Webpage:

mde.maryland.gov/programs/Water/TMDL/TMDLImplementation/Pages/WQ_Trading_Purchasing_Credits.aspx

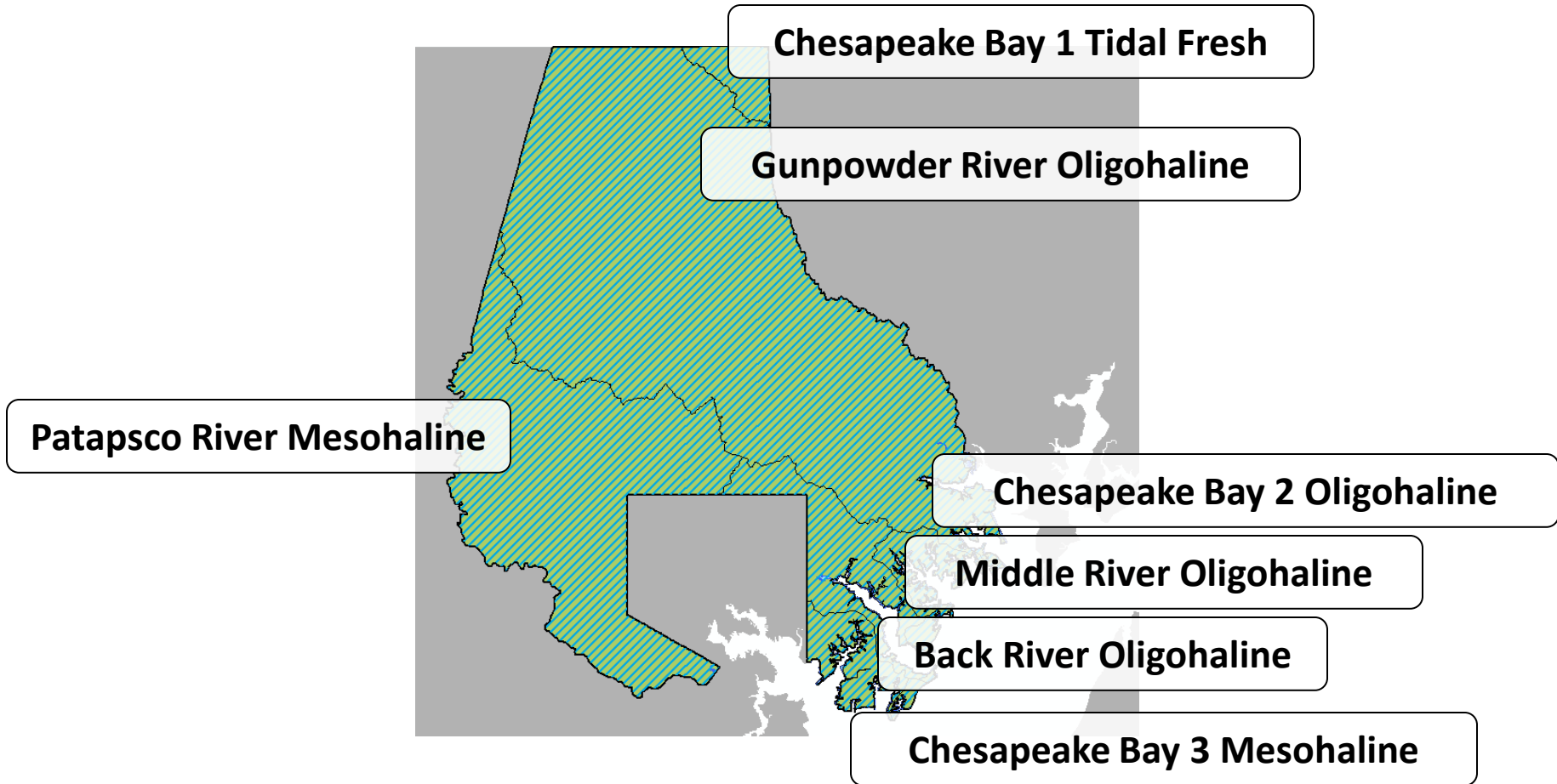


Using Traded Credit to Meet Stormwater Permit Requirements

- Phase I MS4 permits
 - Current permits must be modified to allow nutrient trading for meeting restoration requirement
 - Subsequent Phase I MS4 permits to allow traded credit for meeting restoration requirement
- Phase II MS4 permits
 - Current permits allow traded credit to be applied to restoration requirement
- General Permit for Industrial Stormwater
 - Permit is being modified to allow nutrient trading for meeting restoration requirement
- Wastewater Permits
 - Need to apply 2:1 uncertainty ratio if purchasing NPS credits
- Purchased on Maryland's Registry & Marketplace
 - MDE Trading website to provide instructions
- Credit must be conform with:
 - Trading geography
 - Trading year
 - Maintenance and verification

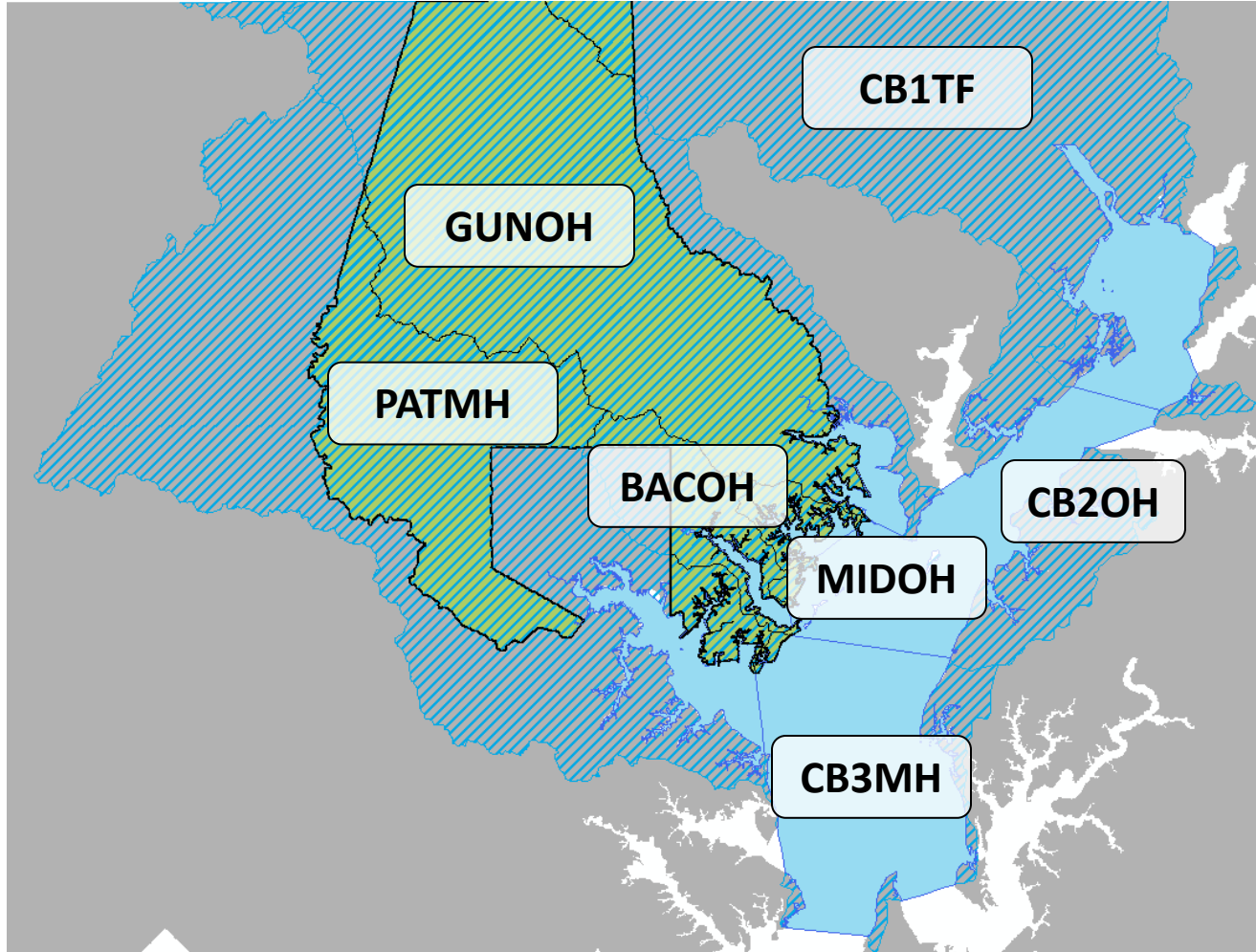


Trading Geographies for MS4s





Trading Geographies for MS4s





Example Trade A (slide 1)

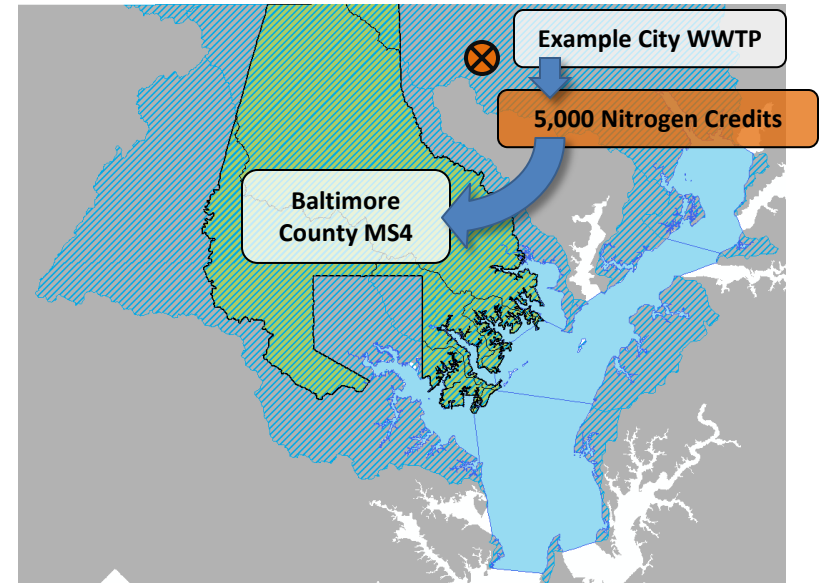
1. Baltimore County needs 5,000 nitrogen credits to meet its 2018 MS4 permit requirements
2. They contact Example City WWTP, an ENR plant in Harford County in the CB1TF watershed.
3. Example City WWTP has been discharging nitrogen at 2.6 mg/L—below its 3.0 mg/L benchmark load.
4. Example City WWTP is on track to discharge 10,000 pounds below its benchmark load.
 - With an EOT Ratio of 0.57 and a retirement ratio of 5%, it is on track to generate 5,415 pounds of credit for 2018
5. Baltimore County MS4 contacts its permit writer to ensure that this credit will be valid for meeting its restoration requirement
6. Example City WWTP requests and is granted a permit modification to allow credit generation
7. Baltimore County MS4 requests and is granted a permit modification to allow trading to meet its restoration requirement.





Example Trade A (slide 2)

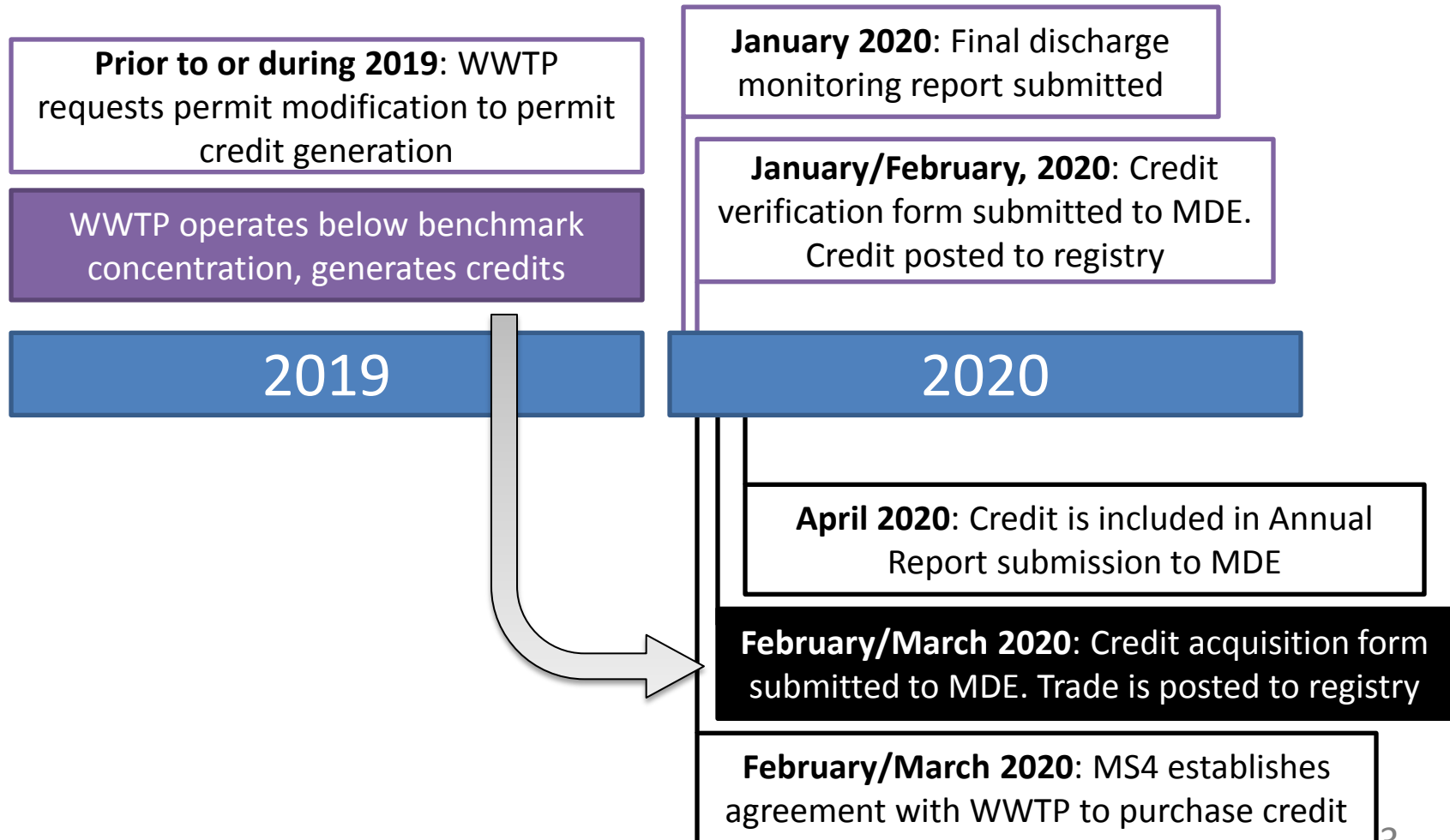
8. In January 2019, Example City WWTP collects its discharge data for 2019 and determines that it can generate 6,000 credits
9. Example City WWTP submits formwork to MDE Trading Administrator to certify 6,000 nitrogen credits
10. MDE Trading Administrator certifies the credits.
11. Baltimore county MS4 reaches an agreement with Example City WWTP to trade 5,000 credits
12. Baltimore County MS4 and Example City WWTP formally complete the trade by submitting a purchase form to MDE Trading Administrator
13. Baltimore County MS4 includes the 5,000 credits in its 2019 MS4 Annual Report



13. Baltimore County will continue purchasing 5,000 nitrogen credits in subsequent years until it has replaced them with structural practices



Generic timeline for POTW to MS4 trades





Contact Information

- MDE Trading Webpage:

mde.maryland.gov/programs/Water/TMDL/TMDLImplementation/Pages/WQ-Trading-2.aspx

- MDE Trading Administrator:

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