Maryland’s Water Quality Trading Program

Phase II – Agricultural Nutrient Trading in Maryland

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Agricultural Nutrient Trading

A program to provide to Maryland farmers a payment for conservation practices.

A. The practices provide offsets to address new or increased loads associated with a growing population.
   - WWTP, Development, Industrial Facilities

B. Private purchase of nutrient reduction projects and practices (retirement credits)
   - Chesapeake Bay Foundation
   - Ducks Unlimited
Maryland’s Fundamental Trading Principles

A. Key Program Principles

B. How to Generate Agricultural Credits
   - Eligibility to participate
   - Baseline requirements
   - What is tradeable
   - Verification and certification requirements

C. How to Exchange Agricultural Credits
   - Finding trading partners
   - How to sell credits
   - Developing Trade Agreements
   - Accountability/Administration/
Key Principles

Establish the foundation of any trading program. They are essential for an equitable, environmentally protectable, yet viable, trading program.

Key Principle #1

- Any generator of agricultural non-point source credits must first demonstrate they have met the baseline water quality requirements for nitrogen and phosphorus levels in their watershed. These include the minimum level of nutrient reductions outlined in the Tributary Strategies or the applicable TMDL requirements. Baselines provide assurance that participants are at a minimum level of conservation stewardship and are not currently impacting local water quality.
Key Principles (cont.)

Key Principle #2

- Agricultural generators must be in compliance with all local, state, federal laws, regulations and programs. The credit purchaser and generator can not cause or contribute to water quality effects locally, downstream or, bay wide.

Key Principle #3

- BMP’s funded by federal or state cost-share cannot be used to generate credits during their contract life. However, these BMP’s can count toward baseline or after the funded lifespan has expired, you can use the BMP to generate credits.
Key Principles (cont.)

Key Principle #4
- The Agricultural Trading Program is not intended to accelerate the loss of productive farmland. Therefore, credits will not be generated under this policy for the purchase and idling of whole or substantial portions of farms to provide nutrient credits.

Key Principle #5
- Trades must result in a net decrease in loads. A portion of the agricultural credits generated in a trade will be retired 10% and used to achieve Tributary Strategies or TMDLs, the other portion becomes tradable credit.

Key Principle #6
- An Agricultural practice can only generate credits once it is installed and verified, or placed in operation.
Generation of Agricultural Credits

- Eligibility to participate
- Baseline requirements
- What is tradeable
- Verification and Certification requirements
Eligibility

Who May Sell Agricultural Credits?

- Any generator of agricultural non-point source loads:
  - Farm owners, landowners
  - Renter or lessee that can demonstrate permission by the owner to Sell credits
- Aggregators
- Maryland state entities
- Parties who remove agricultural nutrients from the environment
Eligibility of Generators to Sell

In order to sell nutrient credits as part of this program, credit generators must meet the following requirements:

- Agricultural operations generating credits must have a current nutrient management plan, an updated Soil and Water Conservation Plan including, if applicable, a Waste Management System Plan for the entire farm operation.
Eligibility of Generators to Sell (cont.)

- Any entity wanting to acquire and resell credits, such as aggregator:
  - Must be in compliance with all applicable federal, state and local requirements.
  - Must demonstrate an intent and ability to acquire and deliver sufficient offset from multiple projects or sites.
  - Must be able to demonstrate permission by the credit generator to sell credits.
  - Must be able to demonstrate that the credit owners meet all compliance and eligibility requirements.
“Baseline” Requirements for Agricultural Non-point sources

Maryland’s agricultural non-point nutrient trading program requires that operators of agricultural operations or other landowners wishing to generate credits must have achieved a level of nutrient reduction known as baseline.

Baselines are applied to all the pasture/field/animal areas within a tract that is being used to generate credits and must first achieve the stricter of:

a) the level of nutrient reduction called for in the tributary strategies; or

b) the level of nutrient reduction called for in an applicable TMDL for the watershed where the credits are generated from.

The entire tract must meet the baseline to be eligible to generate credits.

Current agronomic and structural practices can be utilized to meet baseline.

Baseline requirements may require additional implementation of BMP’s.

An agricultural operator or landowner may use federal, state or private cost-share assistance to implement BMP’s that are used to meet the baseline nutrient reductions.
58 Sub-Allocation (TMDL) Segments

Notes:
- CEP P5.3 watershed model land-river segments drain to specific CEP water quality segments. A TMDL is required for each impaired CEP water quality segment. Thus, MDE has been refining the aggregation of CEP P5.3 land-river segments draining to a given CEP water quality segment to be TMDL Segments. There are 55 CEP water quality segments in the Maryland portion of the Bay, however, there are actually 58 TMDL Segments in Maryland, as there are 5 different aggregation of land-river segments in Maryland that drain to Virginia, Delaware, and DC water quality segments.
Determining How To Meet Baselines

Diagram:
- Amount Leaving Producer's Field
  - Before Conservation Practice
  - Total Reduction
- Baseline
- After Conservation Practice
- Amount Producer Can Trade
- Marketplace
## Baseline and Credit Calculation Example

<table>
<thead>
<tr>
<th></th>
<th>Input/Uptake</th>
<th>Total N/ac</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Residual in Soil</strong></td>
<td>+5 lbs N/ac</td>
<td>5 lbs N/ac</td>
</tr>
<tr>
<td><strong>Total Application</strong></td>
<td>+133 lbs N/ac</td>
<td>138 lbs N/ac</td>
</tr>
<tr>
<td><strong>Crop Uptake</strong></td>
<td>-114 lbs N/ac</td>
<td>24 lbs N/ac</td>
</tr>
<tr>
<td><strong>Conservation Tillage</strong></td>
<td>-4 lbs N/ac</td>
<td>20 lbs N/ac</td>
</tr>
<tr>
<td><strong>Grassed Buffers</strong></td>
<td>-11.5 lbs N/ac</td>
<td>8.5 lbs N/ac</td>
</tr>
<tr>
<td><strong>Cover Crops</strong></td>
<td>-6 lbs N/ac</td>
<td>2.5 lbs N/ac</td>
</tr>
<tr>
<td><strong>Water Control Structure</strong></td>
<td>-2 lbs N/ac</td>
<td>0.5 lbs N/ac</td>
</tr>
</tbody>
</table>

**1985 Load (22 lbs N/ac)**

**Baseline (8.9 lbs N/ac)**

**Total**

8 lbs N/ac
What is Tradeable

How to Generate Credits

Once a landowner or operator has determined the tract has achieved the baseline requirements for the watershed additional implementation of water quality improvements can be considered as a tradable credit. No partial credits for BMPs utilized to meet baseline.

 Tradable credits can be generated from any planned agronomic, land conversion, or structural practice
Agricultural Non Point Source Credit Potential

- Three categories of credit-generating practices

1. BMPs with “approved” load reductions
   - Bay Program peer review has been done
   - Stipulated BMP efficiencies built into watershed model
   - Uncertainty built into efficiency
   - No separate uncertainty ratio for the trade
Agricultural Non Point Source Credit Potential (cont.)

- BMP’s with Approved Load Reductions
  - Continuous No-Till
  - Riparian Forest Buffers
  - Riparian Grass Buffers
  - Wetland Restoration
  - Tree Planting
  - Cover Crops (Early - and Late - Planting)
  - Off - Stream Watering w/ Fencing
  - Off - Stream Watering w/o Fencing
  - Off - Stream Watering, Fencing & Rotation
- Grazing
- Animal Waste Management Systems: Livestock
- Animal Waste Management Systems: Poultry
- Barnyard Runoff Control/ Loafing Lot Management
Agricultural Non Point Source Credit Potential (cont.)

- Three categories of credit-generating practices

2. BMPs requiring technical review
   - Practices currently in use
   - Require review and establishment of efficiencies by technical workgroup
   - Credits can be traded but will be assigned an uncertainty ratio
Agricultural Non Point Source Credit Potential (cont.)

- BMP’s Requiring Technical Review
  - Dairy Precision Feeding
  - Precision Agriculture
  - Conservation – Tillage Precision Grazing
  - Water Control Structures
  - Stream Restoration
  - Cropland Conversion
  - Enhanced Nutrient Efficiency
  - Commodity Cover Crops
  - Ammonia Emission Reduction
Agricultural Non Point Source Credit Potential (cont.)

- Three categories of credit-generating practices

3. Other BMPs, practices, or innovative approaches
   - Innovative practices not currently in widespread use
   - Will be reviewed on case-by-case basis
   - Will establish specifications for
     - Installation
     - Operation
     - Maintenance
     - Monitoring
   - Will establish uncertainty ratio
   - Proposal will be reviewed by a technical workgroup
Other BMP’s, practices, or innovative approaches
- Algal Turf Scrubber
- Oyster Aquaculture
- Alternative Crops / Switchgrass
- Manure Incorporation (Dairy)
- Manure Incorporation (Poultry)
- Phosphorus-sorbing Materials (PSMs)
Agricultural Non Point Source Verification, Certification, and Approval

- Submit credit registration and certification form to MDA
- The program or representative may conduct field visit to verify baseline condition and credit generation proposal is appropriate
Agricultural Non Point Source Verification, Certification, and Approval (cont.)

- Application review:
  - Base line requirement
  - Compliance met
  - Credit generation proposal is reasonable
  - Landowner/operator consent
  - Tract information correct

- Approved credits are given a unique registration number and entered in the online Trading Registry.
Exchange of Agricultural Credits

- Finding a trading partner
- How to sell credits
- Developing trade agreements
- Accountability/Verification/Administration
Finding a Trading Partner

1. Seller farm found independently
   - trading partners
   - Buyer facility

2. Seller farm found using a broker
   - Broker
   - Buyer facility

3. Trading conducted through an aggregator
   - Aggregators
   - Buyer facility
   - Aggregators

4. Trading conducted through a central exchange
   - Central Exchange
Exchange of Non Point Credits

- **Marketplace**
  - Program functions as a free market, buyers and sellers are free to negotiate the terms of a trade
  - Trades are formalized through private agreements, a contractual arrangement
  - Participants are free to utilize the web base marketplace as a mechanism to assist with credit purchase
Exchanging Non Point Source Credits

• Credits may be sold directly to a regulated point source or to a conservation buyer (offset or retirement)
• Purchasing contracts between buyers and sellers
• May be brokers or aggregators
• Requirements for contract elements
• Contracts for sales to regulated buyers, approved by MDE
• Contracts for sales to non regulated buyers, approved by MDA
• A 10% retirement ration applies to all exchanges
• Upon approval trade is recorded in the Trade Registry
Trade Agreements

- Required elements of a Nutrient Trading Contract
  - Identification and contact information of parties including signature
  - Location of credits
  - Duration of contract in years
  - Quantity of credits to be exchanged each year of the contract
  - Method of credit generation, certification and registry number
Trade Agreements (cont.)

- **Required elements of a Nutrient Trading Contract**
  - **Obligation of the seller, including agreement to:**
    - Property maintain BMP or other specified facilities
    - Allow regular inspections by independent third party and MDA
    - Maintain compliance with all applicable federal, state, and local requirements
  - **Obligation of the buyer:**
    - Provide independent third party inspection, minimal once yearly
    - Prompt payment for all services and specified yearly dates
    - Regulated buyer to provide provision for violation of contract terms
Accountability/Verification/Administration

• A practice can only generate credits once it is installed and functioning
• An inspection to certify standards and spec were met and the BMP is functional is required
• The full annual credit produced by the practice will not be certified until the year following the year of installation
• Credits are used in the year they are generated
• Credits can not be banked for sale and used in future years
• The Maryland Department of Agriculture (or its designee) will perform annual spot checks on a minimum of 10% of all traded Agricultural credits
Summary of Non Point Source Program Structure

• Utilizing a web based nutrient trading application with tools to calculate eligibility and credit potential
• Provides for nitrogen and phosphorus credit calculation from agricultural sources
• Provides a separate market place for buyers and sellers of approved credits to post and exchange information on credit quantity and price
• Provides a registry to track and register trades
• User’s guide provides procedures to calculate credits and submit credit proposals with “non approved” load reduction BMPs