



Building Ecosystem Markets in Maryland

Maryland Department of
Agriculture

June 23, 2020



GGRA PLAN 4.3.11.2 NUTRIENT TRADING for GHG BENEFITS

- Carbon trading offers entities a more cost-effective means to meet regulatory requirements or participate in voluntary programs by acquiring credits or offsets generated from reductions elsewhere
- MDA expects to add carbon credits to the Maryland Water Quality Trading Program
- Carbon credits would be “stacked” onto existing nitrogen, phosphorus, and sediment credits as tradable commodities, increasing the potential value of the total credit package and taking another incremental step toward building a comprehensive environmental marketplace
- Reporting will be included in Healthy Soils Initiative going forward

TRADING PROGRAM STRUCTURE

- Voluntary
- Market-driven
 - State provides infrastructure but does not set prices nor conduct trades
- Performance-based
- Uses an online suite of tools:
 - Calculator
 - Registry
 - Marketplace
 - Administrative module
 - Interactive mapping feature
- Partnership between MDE and MDA

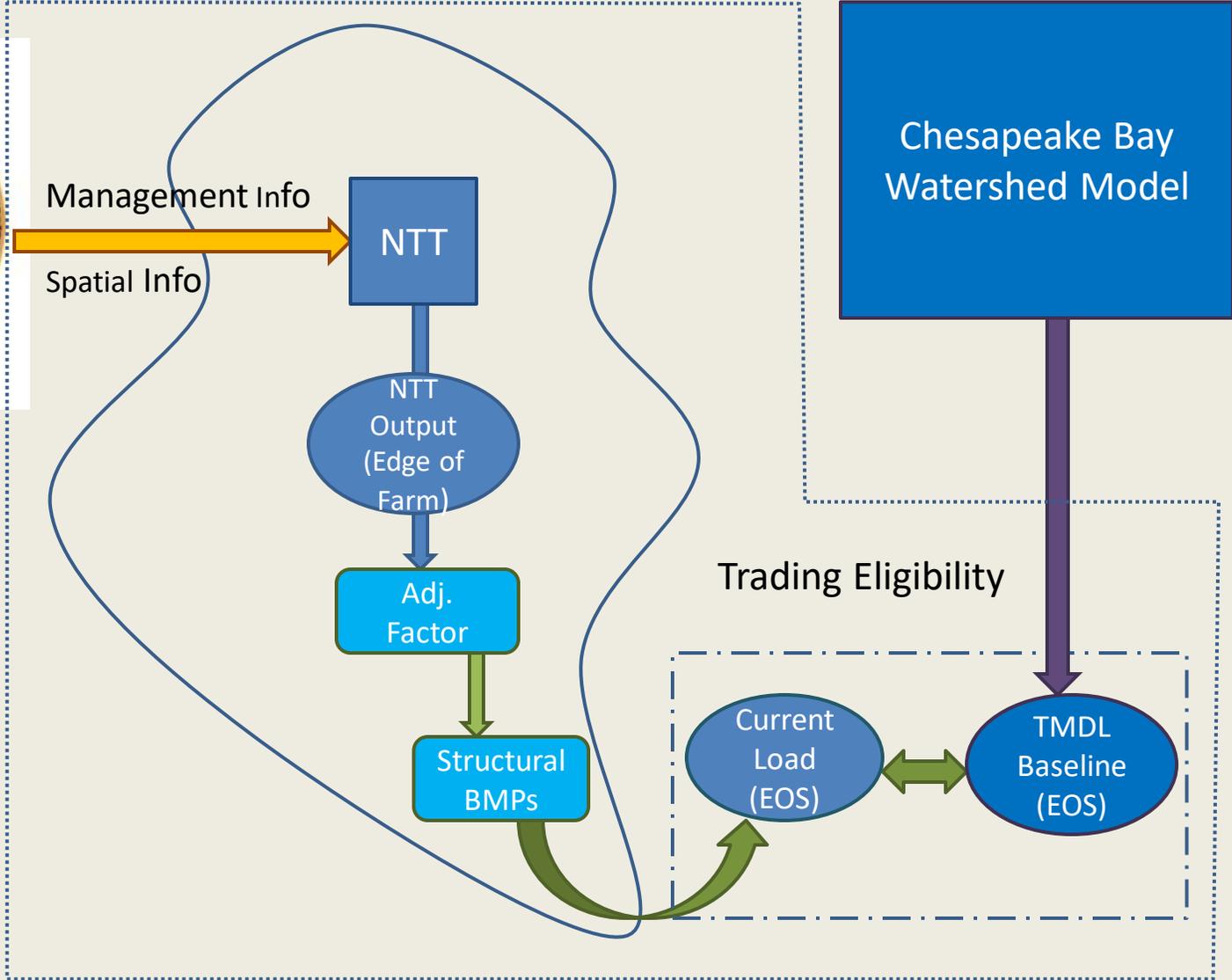
CALCULATION TOOL OVERVIEW

- Farm-scale, site-specific **Calculation** tool is used by agricultural producers to determine baseline eligibility and/or credit-generation capacity for Certainty, trading, and other MDA programs
- Tool based on the World Resources Institute NutrientNet platform as modified to reflect the Chesapeake Bay Watershed Model land use loads, calculations, and BMP efficiencies
- Maryland tool revised to incorporate the USDA/NRCS Nutrient Tracking Tool (NTT)
- Maryland template used to create a multi-state platform, the Chesapeake Bay Nutrient Tracking/Trading Tool (CBNTT), with state-specific tools for Maryland (MNTT), Virginia, and Pennsylvania
- Tracking/trading tool already has the embedded capability to calculate carbon credits
- MDA has grant funding to calibrate tool for carbon

Chesapeake Bay Nutrient Trading Tool Load Calculations



-  Nutrient Tracking Tool
-  CBNTT Operations
-  Chesapeake Bay Watershed Model



**Chesapeake Bay Nutrient
Tracking/Trading Tool (CBNTT)**
www.mdnutrienttrading.com



Welcome to the Maryland Nutrient Trading Program . . .

Important Notice Please Read before Using MNTT

On February 18, 2020, the newest version of the baseline and credit calculation tool (Maryland Nutrient Tracking Tool or MNTTv.3) will be released on this website. The most recent update includes a recalibration and other modifications to align it with the latest version of the Chesapeake Bay Program’s suite of models, Phase 6. **All existing accounts and projects will be available on the new version.**

Changes in the new version include: updated baselines and delivery factors, expansion of the options under pastures and hayfields to add a number of grass varieties, among them switchgrass and big bluestem (industrial hemp will also be added soon); revisions to Wetland best management practices (BMPs); removal of Stream Restoration and Decision Agriculture from the list of available BMPs; removal of the Prescribed Grazing BMP since rotational grazing activities are now captured in the Crop Management portion of the online tool; as well as improvements in tool functionality to make it more user friendly.

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. Removed BMPs noted above will not appear in existing worksheets in the new version; those users who selected Prescribed Grazing as a BMP will need to enter



[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](#)

[National Network on Water Quality Trading](#)

The Maryland Department of Agriculture is a member of the National Network on Water Quality Trading.

AGRICULTURAL PROJECT WORKSHEETS

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Note to Users:

The Chesapeake Bay Nutrient Trading Tool (CBNTT) has been updated and recalibrated. CBNTT v. 3 is based on the Agricultural Policy Environmental eXtender (APEX) Model version 806 and the Chesapeake Bay Watershed Model Phase 6.

Release date: February 18, 2020

WORKSHEET AND PROJECT INFORMATION

Project name:*

Applicant Name:*

The applicant is the owner of the credits.

Generator type:*

Select Generator Type

Select Generator Type
Landowner/Producer
Agribusiness/Consultant
NGO/Nonprofit
Government
Soil Conservation District
Regulated Entity
Other

Project notes:

SITE INFORMATION

[Enter](#) credit-generating site [information](#). The name field refers to the property owner or the lessee with the property owner's permission. Enter the address of the site you are implementing BMPs on, not your mailing address, if different.

Name:*

Street 1:*

Street 2:

Location description:

AGRICULTURAL PROJECT WORKSHEETS

[Home](#) » [Projects](#) » [My Farm4](#) » Edit location

Summary

Details

Edit Location

Fields

Review

Submit



Map Navigation

Use the map, address search or county and ZIP code lists below to find your area.

location search...



Zoom to a County:



Zoom to a ZIP Code:



Farm Field Tools

To add a new parcel or field, click the **New** button to enter field name and then click on the map to draw the parcel or field boundary.

To edit a parcel or field, first select it using the **Editing Options**. Then drag the vertices to edit the boundary.

Click the **Submit** button to start your nutrient credit calculation.

Editing Options:

Parcel

Fields: HQ



AGRICULTURAL PROJECT WORKSHEETS

[Home](#) » [Projects](#) » [My Farm4](#) » [Fields](#) » 2

General

Soil

Current Crop Management

Current BMPs

Current Nutrient Load

Future Crop Management

Future BMPs

Future Nutrient Load

FIELD INFORMATION

Enter field information.

Watershed: Chapel Branch-Choptank River

Land river segment: A24011EM3_4321_0000

Major basin: Eastern Shore

TMDL watershed: N/A

Field number:*

Field type:*

Field is adjacent to stream/water body*

The term adjacent refers to land that is physically part of your land parcel.

Notes:

- Select field type
- Select field type
- Crop
- Permanent pasture
- Continuous hay
- Animal confinement
- Non-managed land

COMMERCIAL FERTILIZER APPLICATIONS

Enter all commercial fertilizer applications used on this field. Please enter the total nitrogen and total phosphorus values (not ammonium or phosphate).

Add a Commercial Fertilizer Application

MANURE FERTILIZER APPLICATIONS

Enter animal manure applications for the given year. If pasture, manure generated by livestock is automatically accounted for based on the information entered in the grazing livestock section.

Click [here](#) to see typical manure values.

Add a Manure Fertilizer Application

OTHER TILLAGE OPERATIONS

Enter tillage operations here. Tillage operations for incorporated fertilizer entered in the previous two sections are already accounted for, so do not enter fertilizer incorporation tillage operations here.

Add a Tillage Operation

HARVEST / END OF SEASON OPERATIONS

Enter the end-of-season harvest and/or termination date(s) for this crop. For annual crops such as corn, you should select 'Harvest and Terminate Crop.' Generally, a termination date should occur before the plant date of any subsequent crop in this rotation, though in some instances aerial seeding might be used to plant a subsequent crop before the final harvest and kill dates of an existing crop in which case the harvest and kill dates of the existing crop would come after the plant date of the subsequent crop.

End Of Season 1



End of season operation type:*

Date:*

Harvest as silage:

- Select end of season operation type
- Select end of season operation type
- Terminate Crop (No Harvest)
- Harvest Only
- Harvest and Terminate Crop

Add End Of Season

CURRENT BMPS

All additional BMPs not captured under the Current Crop Management tab should be listed here.

BMP descriptions and efficiencies can be found at cast.chesapeakebay.net

RIPARIAN/CONSERVATION BUFFER BMPS

Enter information if you have a riparian/conservation buffer BMP in place. Note: If the nitrogen load reduction calculated for alternative watering facility is greater than that for buffers, it will be used instead.

Forest buffer:

Grass buffer:

FERTILIZER APPLICATION SETBACK

Setback in place:

WETLAND

Wetland in place:

OTHER LAND USE CONVERSION

Please indicate any non-riparian land conversion in place or planned on this field.

Acres converted: ac

Converted to:

Planned:

OTHER BEST MANAGEMENT PRACTICES

BMP 1

BMP type:*

Planned:

Add BMP



County: Caroline
Watershed: Chapel Branch-
Choptank River
Major basin: Eastern Shore
TMDL: none

N LOAD INFORMATION

Farm meets N baseline:	Yes	Future N load for animal HQ (EOS):	0.00 lbs/yr
Baseline N load fields (EOS):	2,310.00 lbs/yr	Delivery Ratio:	1.0
Current N load fields (EOS):	1,043.81 lbs/yr	Total Reductions (EOS):	271.52 lbs/yr
Future N load fields (EOS):	772.30 lbs/yr	Eligible reductions:	271.52 lbs/yr
Current N load for Animal HQ (EOS):	0.00 lbs/yr	Credits:	272

P LOAD INFORMATION (EOS)

Farm meets P baseline:	Yes	Future P load for animal HQ:	0.00 lbs/yr
Baseline P load fields (EOS):	189.00 lbs/yr	Delivery Ratio:	1.0
Current P load fields (EOS):	45.62 lbs/yr	Total Reductions (EOS):	1.96 lbs/yr
Future P load fields (EOS):	43.66 lbs/yr	Eligible reductions:	1.96 lbs/yr
Current P load for Animal HQ (EOS):	0.00 lbs/yr	Credits:	2

SEDIMENT LOAD INFORMATION

Farm meets sediment baseline:	Yes	Future sediment load for animal HQ (EOS):	0.00 t/yr
Baseline sediment load fields (EOS):	16.32 t/yr	Delivery Ratio:	1.0
Current sediment load fields (EOS):	2.72 t/yr	Total Reductions (EOS):	1.41 t/yr
Future sediment load fields (EOS):	1.91 t/yr	Eligible reductions:	1.41 t/yr

NTT RESULTS SUMMARY

Below are the results from the NTT model run. NTT models the N, P and Sediment loads for your field based on field management, soils data and historic weather. The results represent the average nutrient losses at the edge of the field and prior to any structural BMPs (i.e any BMPs indicated in the "current BMPs" or "future BMPs" tab) being applied.

	Current	Future
Total N (before BMPs applied)	8.47 lbs/ac	7.92 lbs/ac
Sediment (Organic N)	2.52 lbs/ac	2.37 lbs/ac
Soluble N (NO3)	5.94 lbs/ac	5.54 lbs/ac
Tile Drained N	0.00 lbs/ac	0.00 lbs/ac
Total P (before BMPs applied)	0.35 lbs/ac	0.32 lbs/ac
Sediment (Organic P)	0.17 lbs/ac	0.16 lbs/ac
Soluble P	0.18 lbs/ac	0.16 lbs/ac
Tile Drained P	0.00 lbs/ac	0.00 lbs/ac
Flow	13.53 in	11.74 in
Sediment	526.71 lbs/ac	433.81 lbs/ac
Carbon	48.40 lbs/ac	43.62 lbs/ac
Crop Yield	Corn: 143 bu/ac Soybeans: 50 bu/ac	Corn: 145 bu/ac Wheat, Speltz: 0 bu/ac Soybeans: 48 bu/ac



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MDA is a member of the National Network on Water Quality Trading

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