

NutrientNet/NTT

Quantifying Nutrient Reductions for Maryland's WQT Program

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ERS
April 17-18, 2012





NutrientNet/NTT

NutrientNet:

- Registry
- Marketplace
- Calculation Tools (NTT + GIS + policy)

NTT:

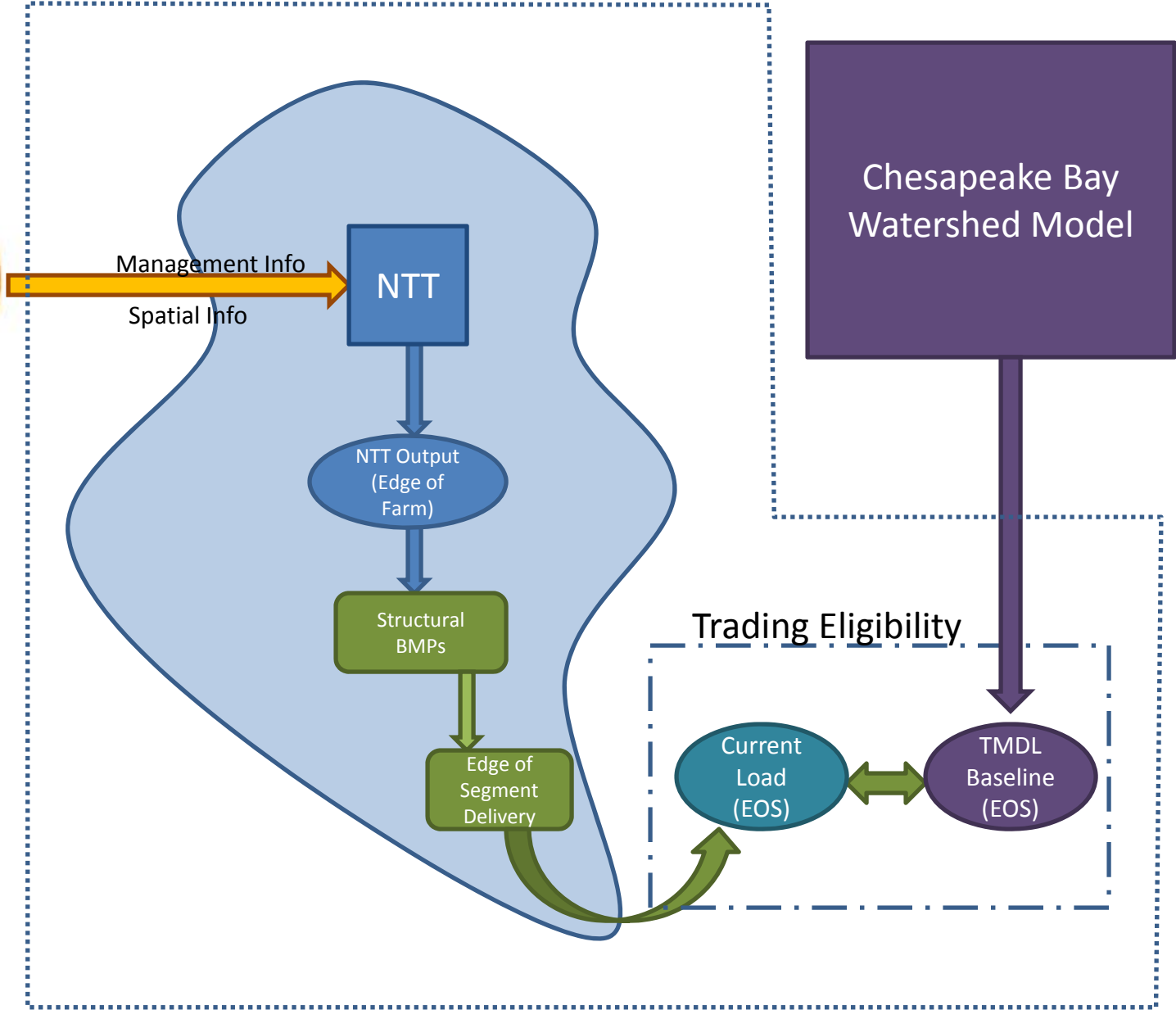
- APEX
- Uses SURGO soils, daily weather, RUSLE2 management
- Nutrients, Sediments, Carbon, and Pesticides




Applications

- Maryland
- Multistate (MD, VA, PA, WV, DE)—under development
- Current PA and WV versions do not include NTT calculator



NutrientNet Calculations



-  = NTT
-  = NutrientNet Operations
-  = CBWM



Inputs

- Spatial Inputs
 - Soil
 - Climate
 - Area
 - Watershed segment

Inputs (cont.)

- Field information
 - Edit field area (if needed)
 - Tile Drainage
 - Irrigation
 - Soil P
 - Edit soil type (if needed)

Field area 42.50 ac (from map) ac

Tile drainage depth ft
optional

Irrigation
optional

Soil P test method

Soil P test value FIV

Override soil

Soil name 2440611: Chillum silt loam, 10 to 2 pe

Clay, Sand, Silt % 14.00%, 20.00%, 66.00% %, %, N/A

Bulk density 1.50 g/cm³ g/cm³



Inputs (cont.)

- Management Info
 - Crop rotation
 - Plant, harvest, kill dates
 - Commercial applications
 - Manure applications
 - Grazing operations
 - Tillage operations

Commercial Fertilizer Application #1

Date Year 1

Total N applied lb/ac

Total P applied lb/ac

Incorporated/Injected

Incorporation date Year 1

Incorporation depth in

Commercial Fertilizer Application #2

Date Year 1

Total N applied lb/ac

Total P applied lb/ac

Incorporated/Injected

Incorporation date Year 1

Incorporation depth in



A satellite-style map showing a large river delta system, likely the Chesapeake Bay area, with green land and dark blue water. The map is positioned on the left side of the slide.

BMPs Handled by NTT

- Nutrient management
- Cover Crops
- Contour strip cropping
- Rotational grazing
- Alternate rotations
- Low-till/No-till
- Enhanced nutrient management
- Phytase/dairy precision feeding/alum

Forest buffer in place

Area of buffer ac

Linear feet of buffer ft

Planned

Grass buffer in place

Area of buffer ac

Linear feet of buffer ft

Planned

~~Planning to convert grass buffer to trees~~ There is no grass buffer to

Wetland BMP

For more information if you have an existing wetland BMP.

[Show Wetland BMP Descriptions](#)

Structural BMPs (applied post-NTT)

- Buffers
- Wetlands
- Fencing/offstream watering
- Conservation plans
- Stream restoration
- Water control structures



NTT Outputs

	Baseline
Total N (before BMPs applied)	12.70 lb/ac
Sediment (Organic N)	5.30 lb/ac
Soluble N (NO ₃)	7.40 lb/ac
Tile Drained N	0.00 lb/ac
Total P (before BMPs applied)	2.18 lb/ac
Sediment P (Organic P)	0.68 lb/ac
Soluble P (PO ₄)	1.50 lb/ac
Tile Drained P	0.00 lb/ac
Flow	10.85 in
Sediment	N/A
Carbon	N/A
Crop Yield	
Corn	169.00 bu/ac



NutrientNet Outputs

This farm meets baseline for both nitrogen and phosphorus. You may now proceed to the Future Crop Management/Future BMPs tabs to determine credits on any or all fields.

Nitrogen

Baseline Load (EOS): 500.4 lb	11.1 lb/ac
Current Load (EOS): 221.3 lb	4.9 lb/ac

Phosphorus

Baseline Load (EOS): 50.4 lb	1.1 lb/ac
Current Load (EOS): 22.9 lb	0.5 lb/ac





Estimating Credits

- If farm meets baseline, user can enter an alternate scenario
- Follow same data input steps as for current crops
- Shortcuts available to cut entry time
- Planned management might include add'l BMPs, alternate management, or alternate crops
- Credits are calculated as difference between current and planned

Nitrogen Summary

Baseline Load (EOS):	500.4 lb	11.1 lb/ac
Current Load (EOS):	221.3 lb	4.9 lb/ac
Planned Load (EOS):	212.4 lb	4.7 lb/ac
Reductions Eligible to Generate Credits (EOS):	8.8 lb	0.2 lb/ac
Delivery Ratio:	1.00	
Reductions to Chesapeake Bay:	8.8 lb	0.2 lb/ac
Credits Generated:	9 credits/yr	Note: credits generated by crop and pasture fields are determined in aggregate and not at the per-field level.

Phosphorus Summary

Baseline Load (EOS):	50.4 lb	1.1 lb/ac
Current Load (EOS):	22.9 lb	0.5 lb/ac
Planned Load (EOS):	22.9 lb	0.5 lb/ac
Reductions Eligible to Generate Credits (EOS):	0.0 lb	0.0 lb/ac
Delivery Ratio:	1.00	
Reductions to Chesapeake Bay:	0.0 lb	0.0 lb/ac
Credits Generated:	0 credits/yr	Note: credits generated by crop and pasture fields are determined in aggregate and not at the per-field level.





Users

- Producers
- SWCD's
- Aggregators/Agri-business
- Policymakers
- Academics





Future Work

- User-friendliness
- Additional BMPs, management operations
- Calibrations
- Model updates
- Alignment with national NTT



Thank You

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Calculation Considerations

- Input data for full rotation
- NTT runs for 42 years, over full weather profile
- Structural BMP efficiencies applied to NTT results
- Calibration factor applied for baseline comparison
- CB Delivery factor applied for credit calculation.
- Calculations performed for current and planned conditions.