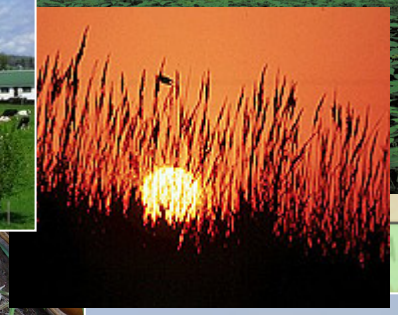
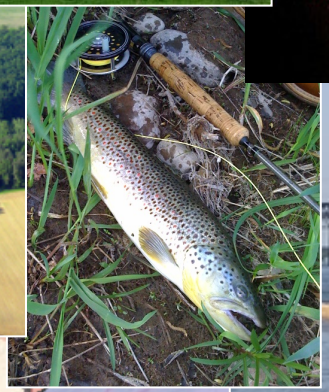
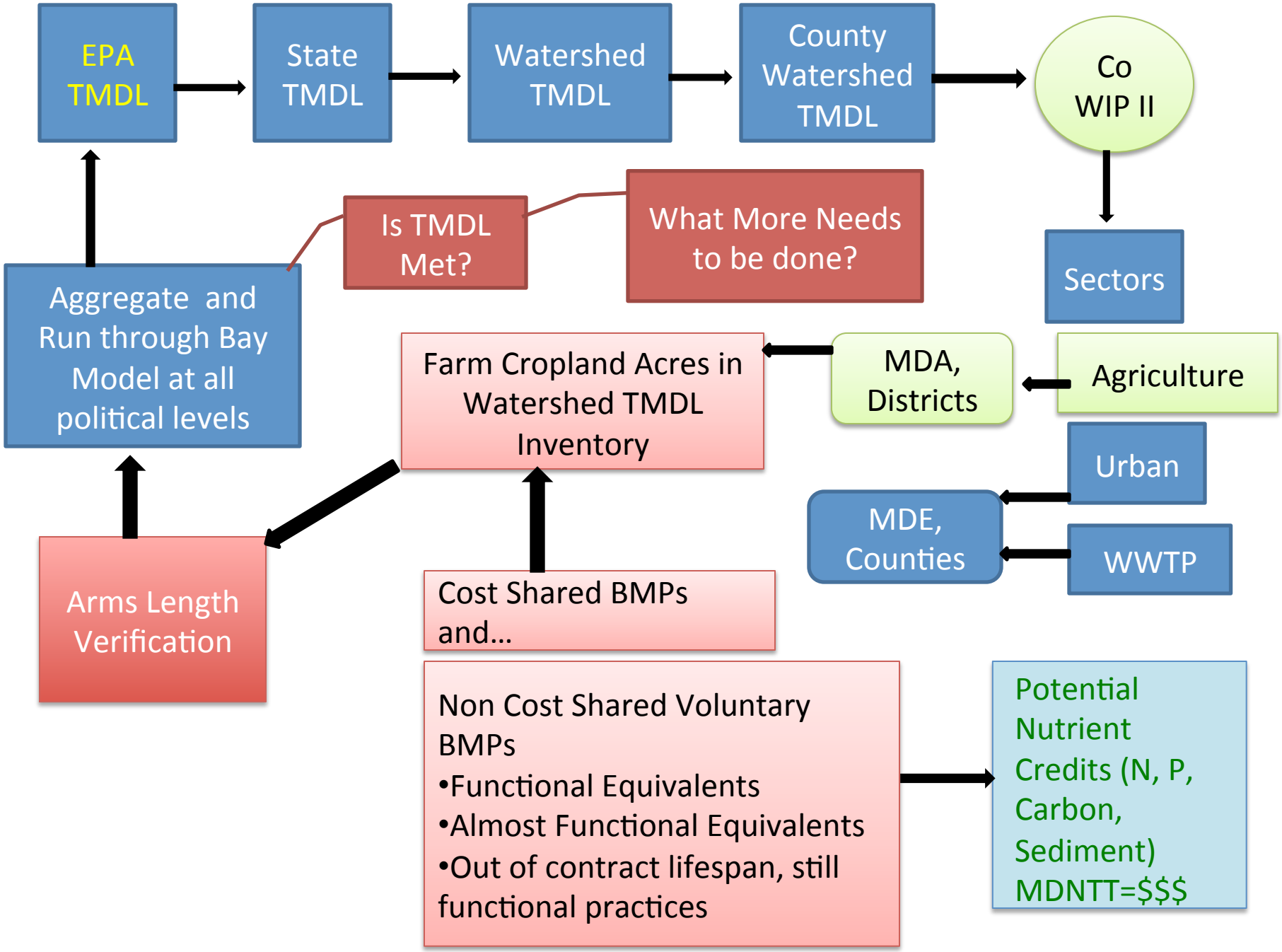
Howard County Best Management Practice Inventory Project





Bob Ensor, District Manager, HSCD and Dana York, Green Earth Connection


How do we clean up our rivers
without cleaning out our wallets?
There is a way!


EPA TMDL
State TMDL
Watershed TMDL
County Watershed TMDL
Co WIP II
Sectors
What More Needs to be done?
Is TMDL Met?
Aggregate and Run through Bay Model at all political levels
Farm Cropland Acres in Watershed TMDL Inventory
MDA, Districts
Agriculture
Urban
MDE, Counties
WWTP
Arms Length Verification
Cost Shared BMPs and…
Non Cost Shared Voluntary BMPs
•Functional Equivalents
•Almost Functional Equivalents
•Out of contract lifespan, still functional practices
Potential Nutrient Credits (N, P, Carbon, Sediment) MDNTT=$$$

Verification Protocol Options			Practice information that might be determined					When Implemented	Issues	
Data Gathering System	Who	How	C/S Fed	C/S State	C/S Other	Non C/S Meeting NRCS Standards	Non C/S Adaptive, Performance functional equivalent	Installation date	Requirements, Remarks	Data Quality, Quantity, Ease of data gathering
1. Farm by farm inventory	Trained or Certified Personnel	Farm Visits	Yes	Yes	Yes	Yes	Yes	Yes	Need a certification procedure, access to C/S records	High quantity and quality, time intensive and costly
2. Farmer Self Certification with onsite verification	Trained or Certified Personnel	self knowledge , farm visits	Yes	Yes	Yes	Yes	Yes	Maybe, if known	Need a certification procedure, access to C/S records, training for farmers, spot check procedures	High quantity and quality, time intensive and costly
3. Farmer Self Certification	Farmer	self knowledge	Maybe	Maybe	Maybe	Maybe	Maybe	Maybe, if known	Need training for farmers, penalty for false reporting, spot check procedures	Lower quantity and quality, less costly
4. Use of existing federal, state or district records	District personnel	review of in office plans and documents	Yes	Yes	Maybe	Maybe	No	Yes		Partial information on practices on the ground, time consuming for existing office staff
5. Transect of County or Watersheds	Trained or Certified Personnel	Point evaluations	No	No	No	Maybe	Maybe	Maybe, if known	C/S status will be unknown, have to cross reference other databases to eliminate double counting in NEIEN	Good quality, statistically valid if designed properly, low public acceptance
6. Farmer reported at USDA FSA Office	Farmer	self knowledge	Maybe	Maybe	Maybe	No	No	No	Farmer knowledge is important, training may be needed, need to spot check	Lower quantity and quality, less costly
7. NASS Survey	NASS and Farmer	self knowledge	Maybe	Maybe	Maybe	No	No	Maybe, if known	Ground truthing needed	Could be lots of double counting with current methods of collecting data
8. Aerial Photography, remote sensing	Photo Interpreters	Photo interpretation	Maybe, if known	Maybe, if known	Maybe, if known	Maybe, if known	Maybe, if known	Maybe, if known	C/S status will be unknown, have to cross reference other databases to eliminate double counting in NEIEN, Management practices can not be determined.	Good quality, statistically valid if designed properly, low public acceptance
9. NRI Point or some other statistically selected sites	Trained or Certified Personnel	Field Spot Visits	Maybe, if known	Maybe, if known	Maybe, if known	Maybe, if known	Maybe, if known	Maybe, if known	C/S status will be unknown, have to cross reference other databases to eliminate double counting in NEIEN, Management practices can not be determined.	Good quality, statistically valid if designed properly, low public acceptance

There are Many Decisions to Make in the Implementation of a Successful Data Collection System

Development Decisions:

- What to collect
- Where to collect
- Protocol (how) to collect
- Existing System Update or Design a New System?
- Training on System Selected
- Pilot System
- Reliability/Validity Testing
- Adjust System/Training
- Communication Strategy
- Implementation
- Reliability/Validity Testing
- Future Year Systems?

Success Considerations:

•Cost of system selected

•Technical Assistance requirements

•People or Technology Intensive

•Sustainability of System for Future Year Collections

•Landowner Acceptance

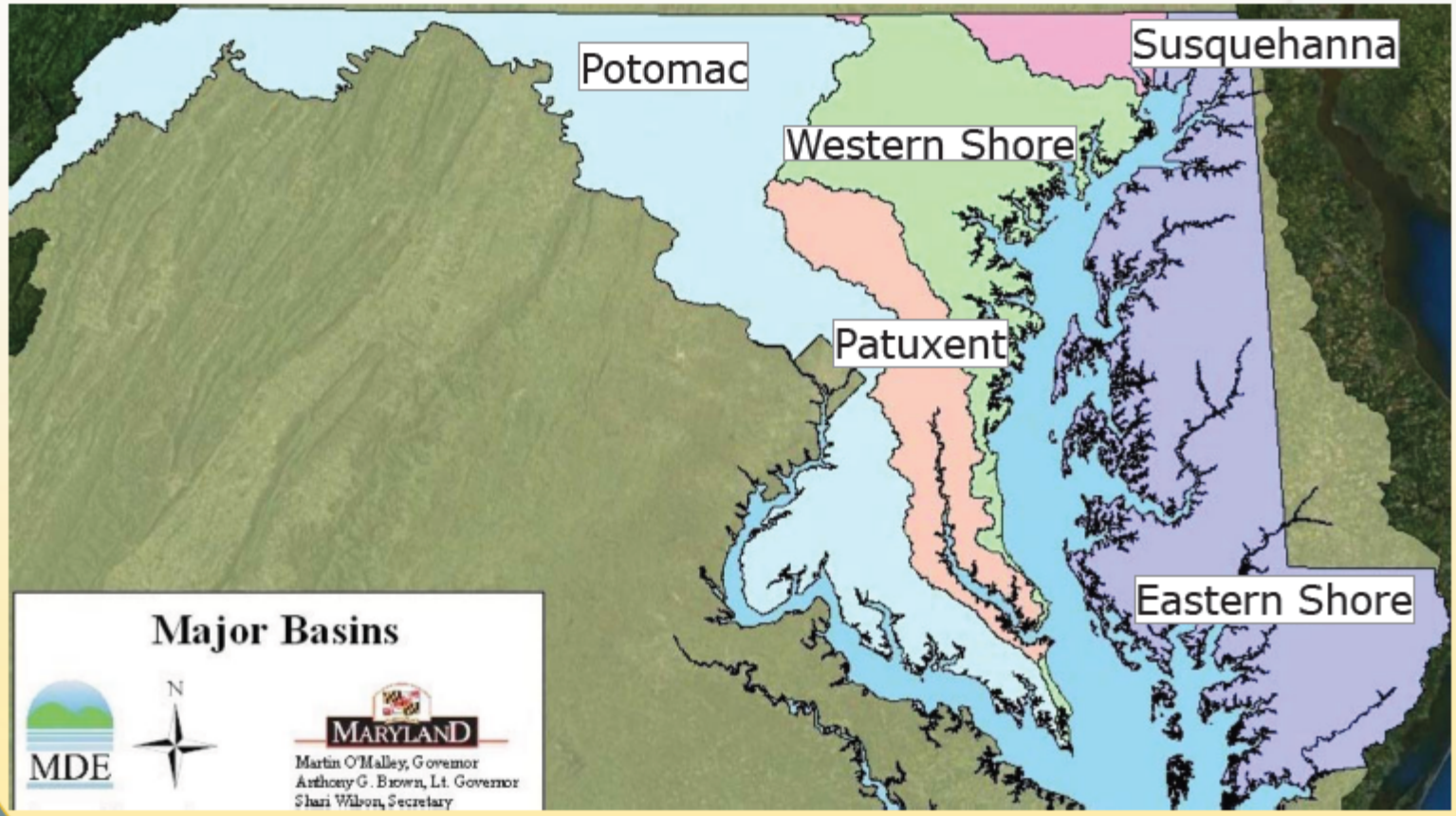
•State Agency Acceptance

•EPA Acceptance

•Public Acceptance

•Culture Change Requirements

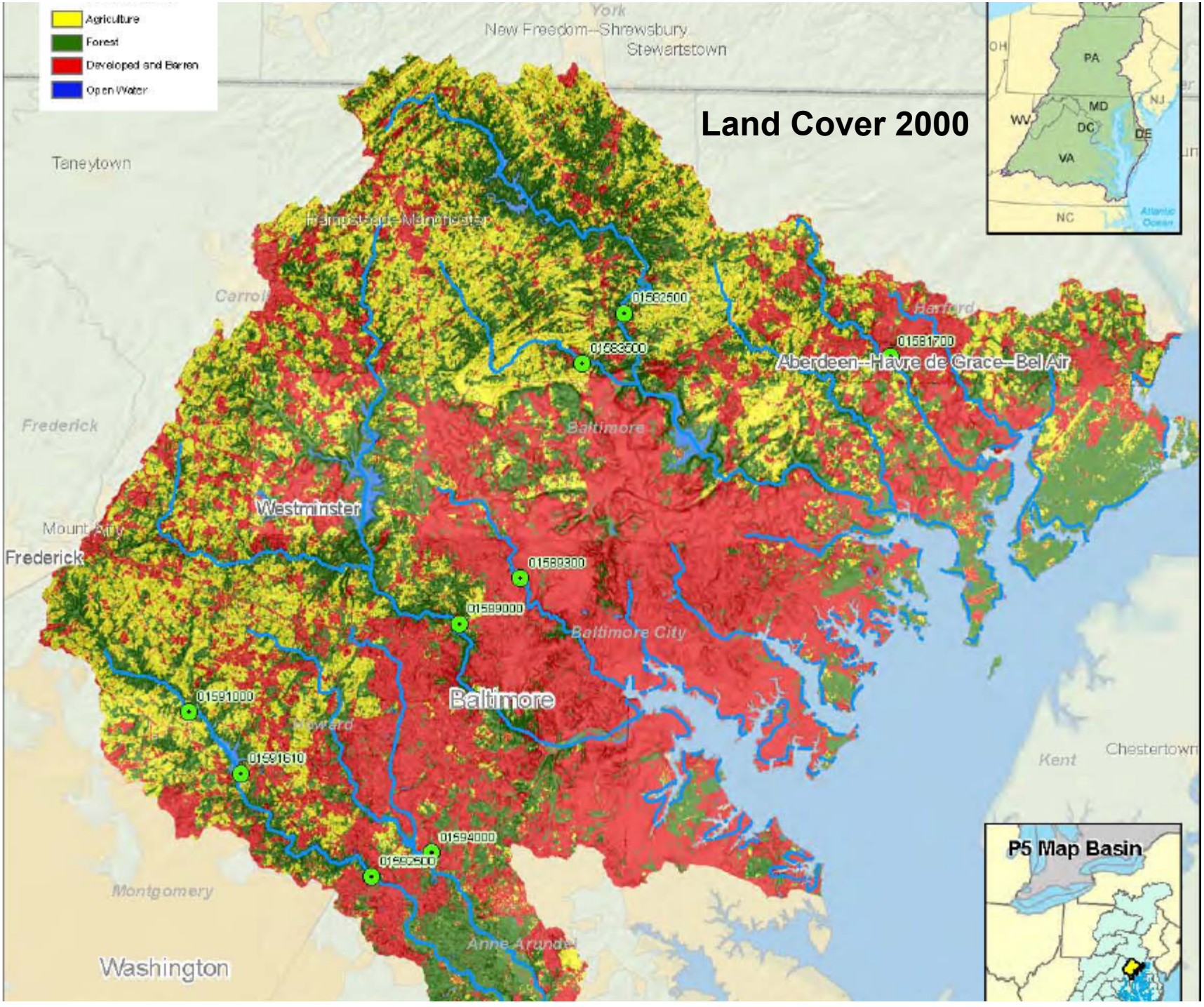
Maryland WIP Basin Approach



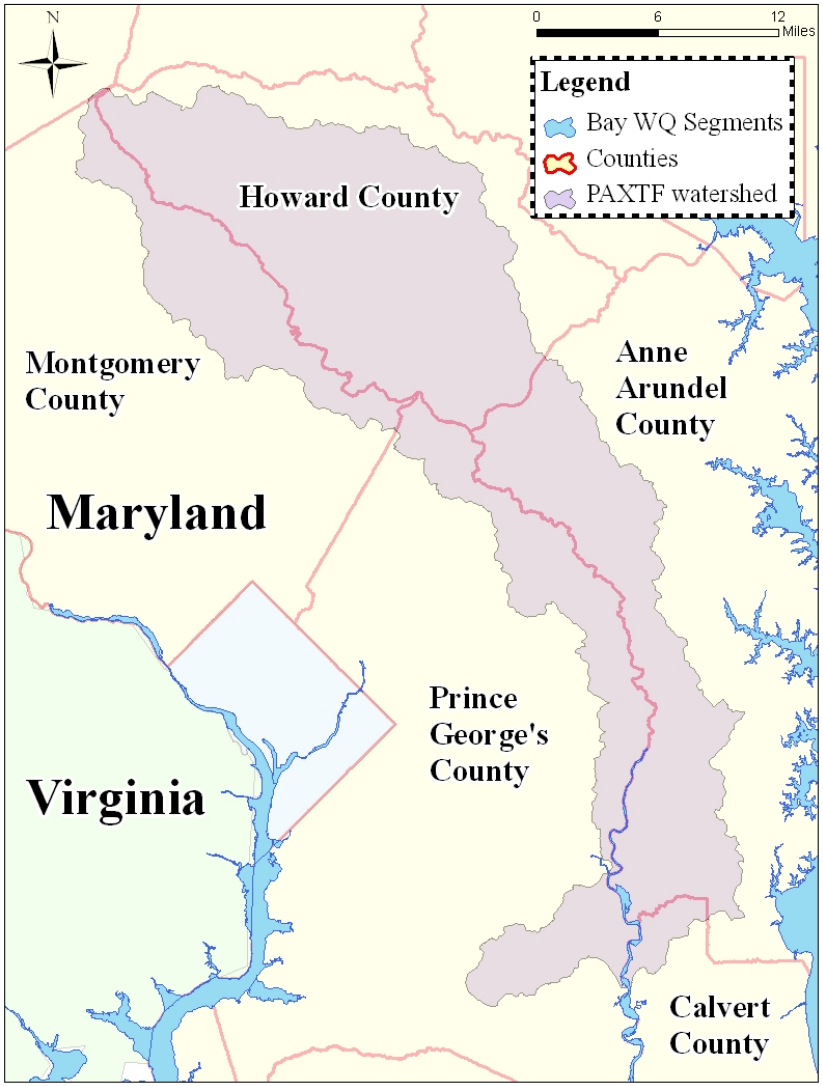
Howard Soil Conservation District - TMDL BMP Inventory

Steps For Implementing County BMP Inventory Projects

1. Project Introduction
2. Project Scope
3. Development and Testing of Inventory Tools
4. Determine Staffing Needs
5. Training
6. Field Inventory
7. Data Entry
8. Final Steps/Report


Agriculture
Forest
Developed and Barren
Open Water
Land Cover 2000
York
New Freedom--Shrewsbury
Stewartstown
Taneytown
Frederick
Westminster
Mount Airy
Frederick
Baltimore
Baltimore City
Aberdeen--Havre de Grace--Bel Air
Harford
Howard
Montgomery
Anne Arundel
Washington
Kent
Chestertown
01582500
01583500
01581700
01589300
01589000
01591000
01591610
01594000
01595500
OH
PA
WV
MD
DC
NJ
DE
VA
NC
Atlantic Ocean
P5 Map Basin

Patuxent Tidal Fresh (PAXTF) Segment Drainage Area with counties delineated



Howard County Project Background

- **Highly urbanizing eastern half of county, Columbia and Ellicott City**
- **High participation in agricultural land preservation programs in western half of county. 335 total farms, 230 in preservation program.**
- **County government realizes benefits of preserving good quality ag land including the environmental benefits, opportunities for trading between sectors.**
- **County under gun to meet TMDL goals for all sectors.**
- **Howard SCD proposed project to determine farmer funded BMP's on farms, how many ag pres farms meet TMDL using MD NTT and Bay watershed baseline numbers and determine opportunities for credits.**
- **County allocated $80,000 for the first year of project for assessments.**
- **HSCD has leadership using trained private contractors.**

Objectives of the HSCD Project

- Three (3) separate and distinct objectives.

1. To determine if the agricultural sector has practices already installed to meet Ag's TMDL goal (focus on farmer funded and functional equivalents).

2. To determine if an individual farm meets the TMDL baseline, or what more needs to be done to meet the baseline.

3. See if there are tradable credits for nitrogen and phosphorus over and above the baseline, or if there could be additional practices installed that will produce credits.

HSCD BMP Project

Was it mandatory for Farmers to participate?

- No, responding to the inventory is voluntary on the part of the landowner/operator. This process will help document what conservation practices Howard County farmers have implemented on a watershed basis.

Key Points in Howard County Letter to Landowners

- Purely voluntary,
- Will determine if their farm meets the TMDL and if landowner might have tradable nutrient credits,
- No obligation once a determination is made,
- Will work with landowner and/or farmer as appropriate,
- Private contractors working for the HSCD, gather data and will make no judgments on landowner's operation,
- HSCD always available for questions and discussion,
- Letter jointly signed by the District and County Ag Preservation Program.

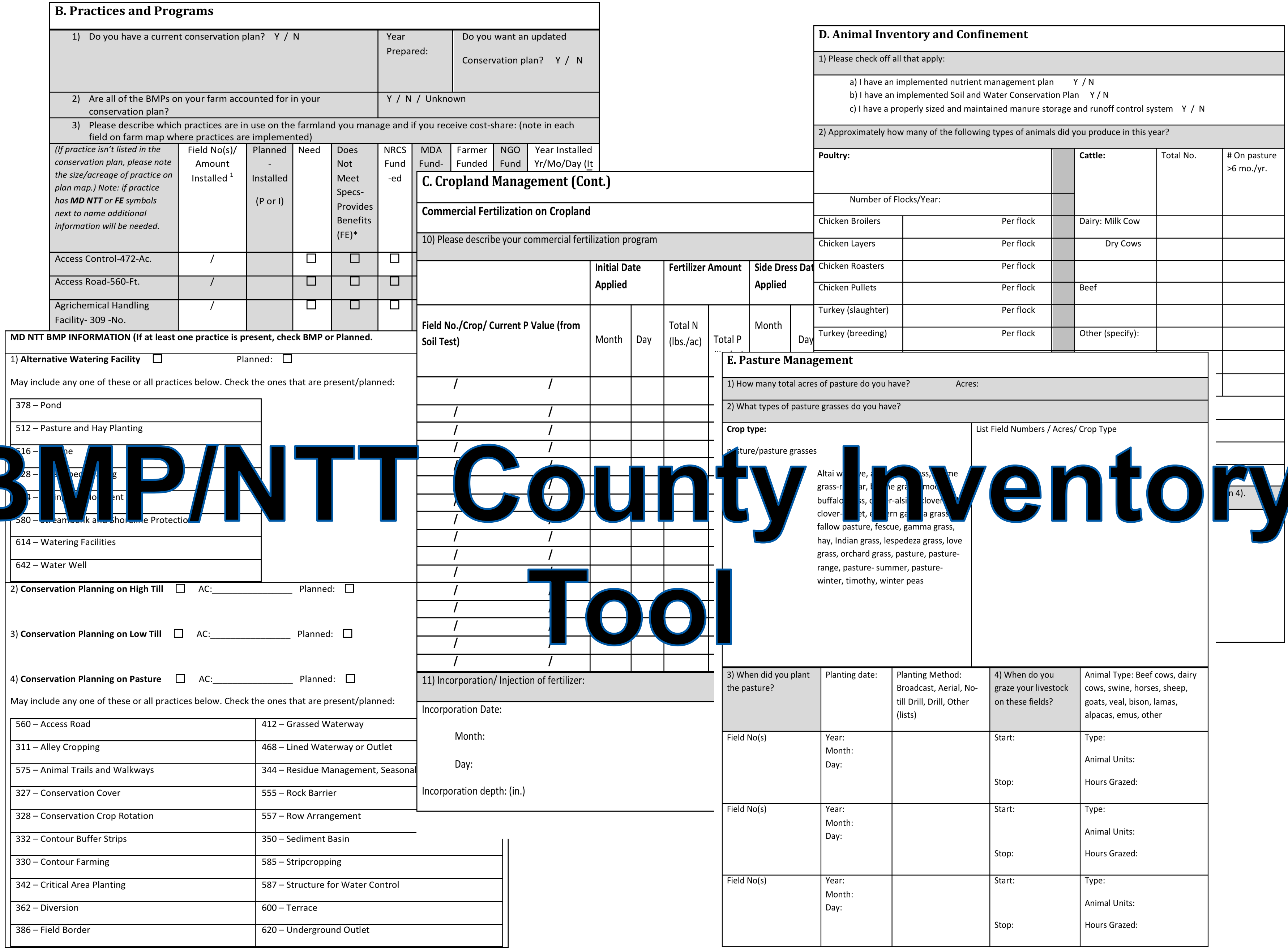
HSCD BMP Project

Who collected the Information?

- The HSCD contracted with 17 individuals to: manage the project; to conduct the inventory and enter into MDA tracking systems; and provide verification of the data that is gathered.


Danville
Chesapeake

BMP/NTT County Inventory Tool



B. Practices and Programs

1) Do you have a current conservation plan? Y / N | Year Prepared: | Do you want an updated Conservation plan? Y / N

2) Are all of the BMPs on your farm accounted for in your conservation plan? | Y / N / Unknown

3) Please describe which practices are in use on the farmland you manage and if you receive cost-share: (note in each field on farm map where practices are implemented)

*(If practice isn't listed in the conservation plan, please note the size/acreage of practice on plan map.) Note: if practice has **MD NTT** or **FE** symbols next to name additional information will be needed.*	Field No(s)/ Amount Installed [1]	Planned - Installed (P or I)	Need	Does Not Meet Specs- Provides Benefits (FE)*	NRCS Fund -ed	MDA Fund-	Farmer Funded	NGO Fund	Year Installed Yr/Mo/Day (It
Access Control-472-Ac.	/		☐	☐	☐				
Access Road-560-Ft.	/		☐	☐	☐				
Agrichemical Handling Facility- 309 -No.	/		☐	☐	☐				

MD NTT BMP INFORMATION (If at least one practice is present, check BMP or Planned.

1) **Alternative Watering Facility** ☐ Planned: ☐

May include any one of these or all practices below. Check the ones that are present/planned:

- 378 – Pond
- 512 – Pasture and Hay Planting
- 516 – ...ne
- 528 – ...
- 574 – ...
- 580 – Streambank and Shoreline Protection
- 614 – Watering Facilities
- 642 – Water Well

2) **Conservation Planning on High Till** ☐ AC:________________ Planned: ☐

3) **Conservation Planning on Low Till** ☐ AC:________________ Planned: ☐

4) **Conservation Planning on Pasture** ☐ AC:________________ Planned: ☐

May include any one of these or all practices below. Check the ones that are present/planned:

560 – Access Road	412 – Grassed Waterway
311 – Alley Cropping	468 – Lined Waterway or Outlet
575 – Animal Trails and Walkways	344 – Residue Management, Seasonal
327 – Conservation Cover	555 – Rock Barrier
328 – Conservation Crop Rotation	557 – Row Arrangement
332 – Contour Buffer Strips	350 – Sediment Basin
330 – Contour Farming	585 – Stripcropping
342 – Critical Area Planting	587 – Structure for Water Control
362 – Diversion	600 – Terrace
386 – Field Border	620 – Underground Outlet

C. Cropland Management (Cont.)

Commercial Fertilization on Cropland

10) Please describe your commercial fertilization program

Field No./Crop/ Current P Value (from Soil Test)	Initial Date Applied: Month	Day	Fertilizer Amount: Total N (lbs./ac)	Total P	Side Dress Dat... Applied: Month	Day
/ /						

11) Incorporation/ Injection of fertilizer:

Incorporation Date:

Month:

Day:

Incorporation depth: (in.)

D. Animal Inventory and Confinement

1) Please check off all that apply:

a) I have an implemented nutrient management plan Y / N

b) I have an implemented Soil and Water Conservation Plan Y / N

c) I have a properly sized and maintained manure storage and runoff control system Y / N

2) Approximately how many of the following types of animals did you produce in this year?

Poultry: Number of Flocks/Year:		Cattle:	Total No.	# On pasture >6 mo./yr.
Chicken Broilers	Per flock	Dairy: Milk Cow		
Chicken Layers	Per flock	Dry Cows		
Chicken Roasters	Per flock			
Chicken Pullets	Per flock	Beef		
Turkey (slaughter)	Per flock			
Turkey (breeding)	Per flock	Other (specify):		

E. Pasture Management

1) How many total acres of pasture do you have? Acres:

2) What types of pasture grasses do you have?

Crop type:	List Field Numbers / Acres/ Crop Type
pasture/pasture grasses: Altai w...ye, a...ss, ...me grass-r...ar, ...e gra... mo... buffal...ss, c...er-alsi... clover... clover-...et, e...ern ga...a grass... fallow pasture, fescue, gamma grass, hay, Indian grass, lespedeza grass, love grass, orchard grass, pasture, pasture-range, pasture- summer, pasture-winter, timothy, winter peas	

3) When did you plant the pasture?	Planting date:	Planting Method: Broadcast, Aerial, No-till Drill, Drill, Other (lists)	4) When do you graze your livestock on these fields?	Animal Type: Beef cows, dairy cows, swine, horses, sheep, goats, veal, bison, lamas, alpacas, emus, other
Field No(s)	Year: Month: Day:		Start: Stop:	Type: Animal Units: Hours Grazed:
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HSCD BMP Project

What happen to the data that was collected?

- The BMP data was entered into the MDA Conservation Tracker which is the tool that MDA utilizes to report BMP implementation to the EPA Chesapeake Bay Model to meet state/county Milestones.
- The HSCD is responsible for all the information and data. The HSCD holds all the information in an aggregated format and keeps individual farm information confidential with the Conservation Plan, which is protected under Maryland's Freedom of Information Act. All the data gatherers signed confidentiality agreements.

How were Practices Verified?

- The Project Manager completed a quality review when the inventory was turned into the District.
- HSCD hired professionals from adjoining counties as verifiers who were trained SCD staff.
- Verifiers were trained in the inventory process with the data inventory specialists. They visited each farm to review all data entry. The purpose of the verification visit was to provide an arms-length assurance that BMPs are planned and installed correctly and meet some established standard and specification (federal, state, local).
- After the verification visit, they would meet with the data inventory specialist to agree on practices to be reported.

Verification Knowledge, Skills and Abilities Needed

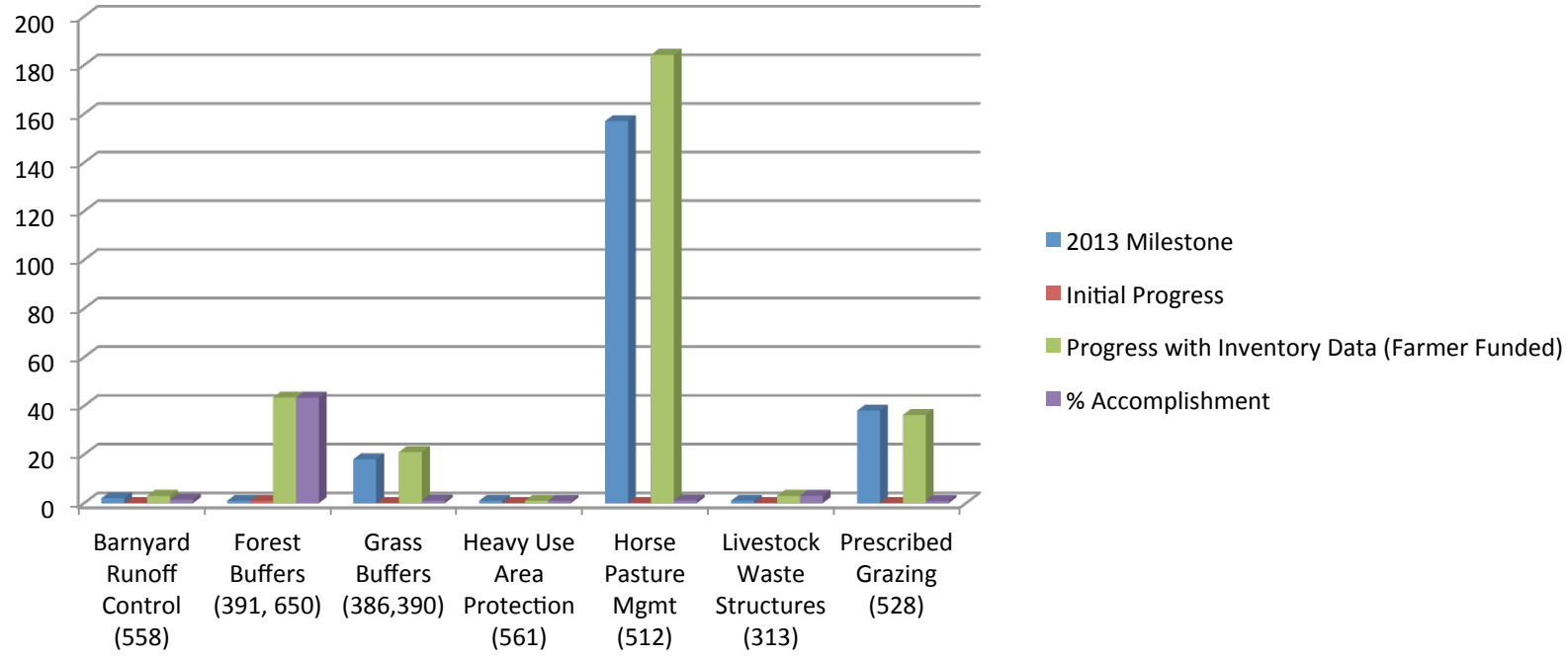
- Knowledge of BMP's, the required standards and specifications and general construction requirements and techniques. Certified with authority to review the practices.
- Skill in communication with landowners and agency authorities.
- Ability to recognize BMP's, interpret plans and designs, note deficiencies and corrective actions needed.

Data Entry In The MD Nutrient Trading Tool

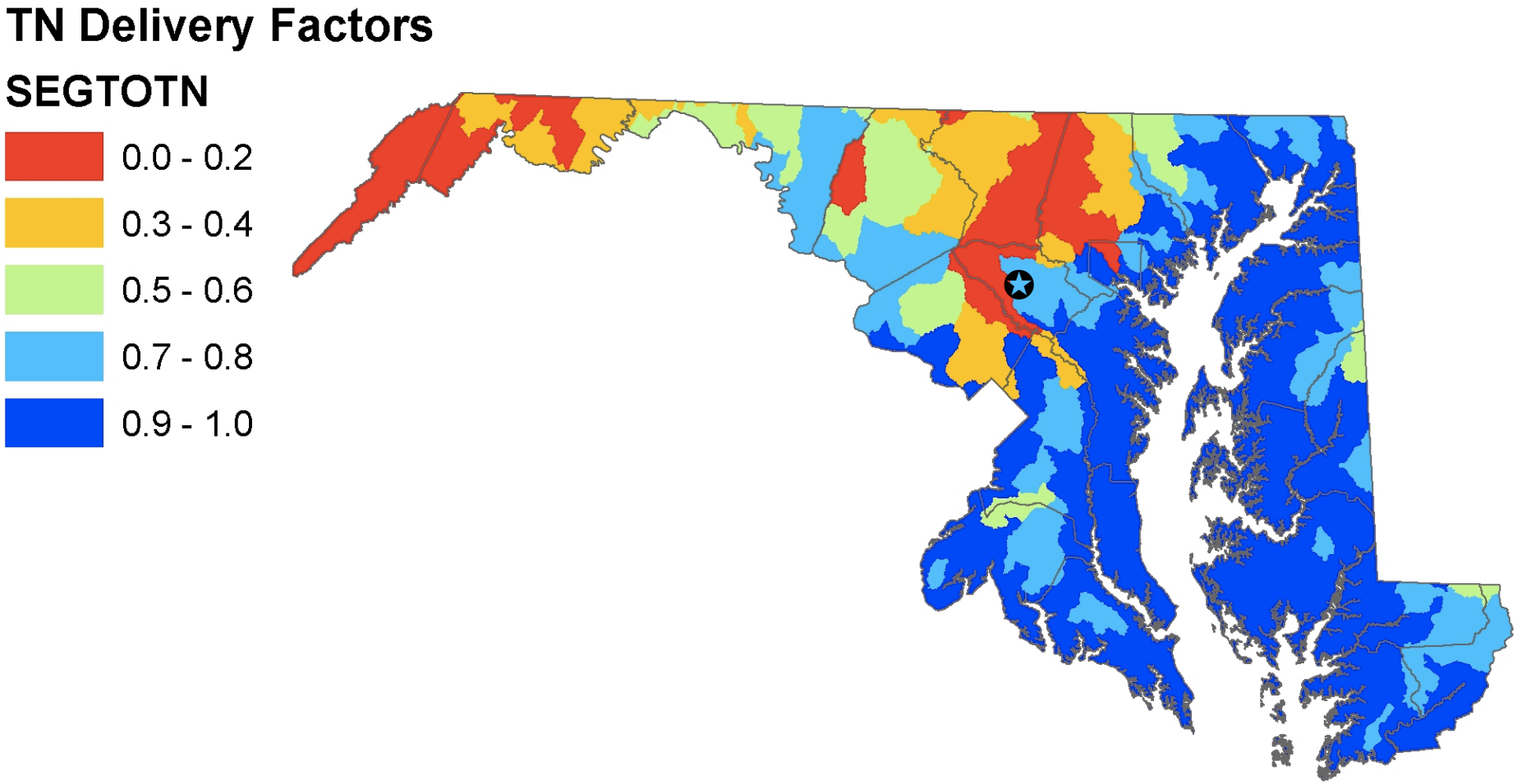
- After verification, the data was entered into MDNTT by HSCD staff.
- Inventory data was therefore reviewed by three individuals before the data collection and verification process was completed.
- At each step of the process, if issues were found, the previous steps were revisited before the process was complete.

Early BMP Results:

Practice	2013 Milestone	Initial Progress	Progress with Inventory Data (Farmer Funded)	% Accomplishment
Barnyard Runoff Control (558)	2	0	3	150%
Forest Buffers (391, 650)	1	1	43.4	4340%
Grass Buffers (386,390)	18	0	21	116%
Heavy Use Area Protection (561)	1	0	1	100%
Horse Pasture Mgmt (512)	157	0	184.2	117%
Livestock Waste Structures (313)	1	0	3	300%
Prescribed Grazing (528)	38	0	36.2	97%



Nitrogen Delivery Ratio's According to the Chesapeake Bay Partnership Model



Early Howard County MDNTT Results:

MDNTT Howard County Results*

Farm	Baseline Met?	N Red EOS	N Red to Bay	Bay N Credits Generated	P Red EOS	P Red Bay	P Credits Generated
Farmer 1	N Only	21.9	2.6	3	0	0	0
Farmer 2	Yes	42.6	35.8	36	7.5	5.4	5
Farmer 3	Yes	10.3	1.2	1	4.7	3.4	3
Farmer 4	Yes	48.1	5.8	6	10.3	7.4	7
Farmer 5	N Only	9.4	7.9	8	0	0	0
Farmer 6	Yes	443.1	367.8	368	16.4	15.6	16
Farmer 7	Yes	42.2	35.5	35	18.2	13.1	13
Farmer 8	N Only	76.3	9.2	9	0	0	0
Farmer 9	Yes	304.9	36.6	37	20.3	14.6	15
Farmer 10	Yes	217.1	26.1	26	2	1.4	1
Farmer 11	N Only	485	58.2	58	0	0	0
Farmer 12	Yes	173	20.8	21	7.5	5.4	5
SUBTOTAL		1873.9	607.5	608	86.9	66.3	65
*Version 2 MDNTT							

Observations From Howard County Project

- Project Sponsorship/Funding
- Costs (Complete project- tool development, training, inventory, data entry-$4/Ac.; Inventory with trained specialist- $2/Ac)
- Questions by Landowners/Operators
- Hiring
- Inventory Tool
- Project Management- Roles and Responsibilities
- Data Collection Team- How many do you need?
- Data Entry in Conservation Tracker and MDNTT
- From early Howard County results- most farms meet the TMDL and have credits to trade. Up to 50% of the practices on farms were “farmer installed and funded” (therefore never recorded in any database or the Chesapeake Bay Model.)
- Easily transferable to other Counties and States using methods and procedures developed by Howard County SCD.

For Information Contact:

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Howard Soil Conservation District
Local Farms, Healthy Communities

Dana York- Green Earth Connection- President- dyork818@yahoo.com, 410-708-6794

Green Earth CONNECTION