

CONSERVATION INNOVATION GRANTS
Final Progress Report

Grantee Name: Maryland Department of Agriculture	
Project Title: Inventory of Voluntary BMPs	
Agreement Number: 69-3A75-10-168	
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Project Objective

The objective of the project was to conduct a complete farm inventory of all BMP's, where farmers paid 100% of the costs and practice would a) meet the NRCS practice standards or b) meet the soil and water quality protection goals of the site. Results of the inventories would be counted towards meeting the Agricultural TMDL for Maryland.

Project Activities

To meet the objectives a series of test protocols on identification of BMP's were developed and demonstrated in the field over the first 2 years. The window for field testing and farm inventories of BMP's was limited to the January to April months.

In the fall of 2010 MDA partnered with the Kent and Queen Anne's Soil Conservation Districts to begin an inventory of 40 farm operations in the NRCS showcase watershed on the Upper Chester River. Grant funds paid for two full time planners to begin the process of contracting operators to identify and inventory voluntary conservation practices. Concurrently, MDA began to develop a standardize protocol for collecting non cost-shared practices and recording them in a conservation plan. Utilizing a set of "Practice Standards" the planners were able to inventory all 23,000 acres in the Upper Chester River Watershed. This became part of the Upper Chester River Showcase Watershed Farm Assessment project.

Results of having planners on the ground and walking all the fields on the farm provided some significant results. Of the 956 conservation practices identified approximately 30% of the BMP's were farmers installed and of these practices 50% met current NRCS standards and specs.

With these results of our on farm inventory and the testing of the first standardize protocol for assessing and recording voluntary BMPs, MDA worked concurrently with the Chesapeake Bay Program and NACD to share our results and began meeting with all

parties to see how we could utilize the information and enter it into the Bay Program model.

In the summer of 2011, MDA began to modify the current Conservation Tracker database that is utilized to input records of conservation practices for input to the Bay Program Model. The database was expanded to allow planners to enter both state and federal cost-share practices and the non cost-share practices.

In the fall of 2011 the Baltimore Co. SCD signed a MOU with MDA to assist with a Best Management Practice Inventory Project. The projects goal was to record non cost- shared BMPs on farms in Baltimore County. This was to help meet the TMDL goals with the Baltimore County Watershed Implementation Plan. The project did not actually start until mid-February 2012.

BMP inventories were initially conducted on 25 farms (2,766 acres) in Baltimore County. The field inventory staff completed a complete BMP inventory on each farm using an expanded protocol that collected all the information necessary to complete a MD Nutrient Trading Tool Inventory (MDNTT). However, the MDNTT inventory information was not entered by staff for this project, but is available if the District ever wanted to complete MDNTT's analyzes on the selected farms.

After the initial testing of the new inventory protocols the Department proceeded to work with the Chesapeake Bay Program on how information collected in the field of both farmer funded practices that met NRCS standards and those practices that provide a similar water quality benefit, could be incorporated into the Bay Model.

The task of working with the Bay Program Modelers and the seven jurisdictions on a standardized voluntary BMP practice crediting protocol was directed to the Agricultural Work group of the Bay Program with a goal of creating a uniform set of criteria for recording and verifying voluntary conservation practices. This would allow field personnel to record and account for both functional equivalent and non-functional equivalent to conservation practices. Also, the Agricultural Workgroup worked on obtaining efficiency credits for non-functional equivalent practices. The Agricultural Workgroup created a Functional Equivalent Sub-Workgroup to make recommendations back to the Bay Program. The Functional Equivalent Sub-Workgroup met seven times from December 2012-March 2014 to review the Maryland manual on conducting on-farm assessments and make recommendations for the multi-state user's manual. Once finalized the manual was adopted by the Bay Program and the Bay States as a technical standard for "Resource Inventories."

As work continued within the Bay Program on a multi state standardized inventory manual, two Soil Conservation Districts, in Maryland, began to conduct on-farm inventories and collect BMPs information. In 2013 Baltimore Co. SCD completed another 13 farm inventories on 1,478 acres, Caroline SCD completed 8 inventories on 1,270 acres.

In 2013, MDA entered into a contract with Green Earth Connection, LLC to conduct training to assessment planners in the proper procedures for conducting on farm

assessments. Green Earth Connection developed and finalized material for training assessment planners in proper procedures for farm assessments.

Once the training course materials were developed, two training sites and dates were selected, advertisement sent out. We had to cut back on applications for first two courses to 16 each.

We conducted one additional training session for 12 students in how to identify and document voluntary BMPs. Students were given a field test and required to achieve 85% proficiency. The class had a 90% pass rate with two students failing to meet the minimum standards. The successful students were certified to conduct inventories and their names were placed on a list of contractors eligible to conduct on-farm inventories.

In 2014, we had all four soil conservation districts in the field conducting inventories of BMP's with trained staff; Baltimore Co. SCD inventoried an additional 23 farms for 1,932 acres. Garrett SCD conducted inventories on the three farms for 1,110; Washington Co. SCD conducted inventories on 12 farms for 2,688 and Caroline SCD conducted inventories on 19 farms for 2,289 acres.

Additionally Carroll SCD signed a MOU to conduct inventories in 2015. Two additional SCDs, Montgomery and Dorchester were sent draft MOU's for assistance in inventory and recording BMP's for the 2015 project. With the termination of the grant on September 22, 2014 all MOU's to conduct farm assessments were cancelled.

Results

While a lot of work was put into the project's development and design the real project application was never realized. Major milestones were met for field demonstration, testing, protocol development, and training. Work with NRCS and EPA on a multi state protocol, approval of BMP efficiencies, crediting a verification of "Resource Inventories" was accomplished. 2015 was to be the first year of a multi county inventory. With four of 24 SCD's participating and three additional SCD's to conduct inventories in the spring of 2015 a significant amount of data and results would have been collected and finalized.

The results that are reportable are from our earlier efforts in the Showcase Watershed project in the Chester River watershed, and for two of the three years of the Baltimore County project.

Showcase Watershed – Chester River

Utilizing a set of "Practice Standards" the planners were able to inventory all 23,000 acres in the Upper Chester River Watershed. This became part of the Upper Chester River Showcase Watershed Farm Assessment project.

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approximately 30% of the BMP's were farmers installed and of these practices 50% met current NRCS standards and specs.

Baltimore Co. SCD BMP Inventory

In total, 60 tracts were inventoried on total of 6,097 acres. Inventories could only be completed and verified in the winter months when no crops were on the ground and cover crops could be observed (normally October through March). In the winter of 2013-2014, there were numerous instances when snow coverage prevented inventory or verification staff from going to the field.

In 2012, 25 farms were inventoried on 2,766.58 acres and the average farm size was 110 acres. In 2013, 13 farms were inventoried on 1,478.52 acres and the average farm size was 114 acres. In 2014, 23 farms were inventoried and the average farm size was 84 acres.

Results of the project show there are many farmer-funded practices that could be counted toward the Baltimore Co. SCD TMDL WIP. Below are examples of 5 practices that are goals in the Baltimore Co. SCD WIP:

Best Management Practice	Unit	October 2013 Total	October 2014 Total	2017 WIP Goal	% Goal
313 – Waste Storage Facility	NO	0	2	6	33.3
340 – Winter Cover Crop	AC	899.7	2,131.6	12,277	17.4
Decision Agriculture	AC		4,547.2	14,923	30.5
391 – Riparian Forest Buffer	AC	55	55	60	91.6
590 – Nutrient Management	AC	1,211.7	4,547.2	21,666	20.9

From these results, you can see that many of the Farmer Funded Practices, if identified and verified, could help the county meet their TMDL goals without applying any new practices.

Potential for Transferability

One of the major milestone accomplishments of the project was the development and approval of a multi state on-farm BMP protocol as a standard by the Chesapeake Bay Program for reporting and Bay State usage. Through a two year collaborative effort of the seven jurisdictions in the Bay, NRCS, EPA and the Bay Program, Maryland on-farm BMP protocol was adopted. Two other states, Pennsylvania and Virginia, have developed their own protocol and inventorying manuals based upon the Maryland example.

Conclusions

While a more definitive set of conclusions could have been formulated, based upon a wider sampling size, some assessment can be performed.

- A) Both the Showcase Watershed inventory and the Baltimore Co. SCD indicate a serious under reporting of existing conservation practices that are farmer installed. Additionally, many of these practices meet the current NRCS practice code.
- B) If similar projects such as this are conducted, there is a certain amount of time that is needed to train staff. Normally training of outside contractors could take from 1-3 weeks depending on staff's knowledge of BMP's before they would be able to conduct and complete inventories.
- C) The project used all contracted staff for inventory and verification of BMPs. Therefore, they were completely neutral and unknowledgeable of District activities except for what was provided in District Conservation Plans. The verifier was from another county therefore providing an "arms-length" review of all work and reporting of BMP's.
- D) There are farm operators that farm several tracts. What has been found is that these "multiple tract farmers" normally use the same conservation practices on all their farms since they have the farm implements that make this possible (i.e. GPS, conservation tillage equipment, etc.) and therefore this results in more conservation being used than may be recorded since they may be above the financial limitation for cost-sharing or they chose not to participate in cost-sharing. This could cause an undercounting of BMPs that are farmer funded if District staff does not complete whole farm inventories of each of the farms they work with.