

## **Cumberland County's Chesapeake Bay Tributary Strategy**

Cumberland County's Chesapeake Bay Tributary Strategy will guide the Conservation District in the implementation of the County Chesapeake Bay Program. This strategy will help to determine the types of Best Management Practices (BMPs) and Projects implemented by the Conservation District. However, it is important to realize implementing the Strategy is a dynamic process. As the Strategy matures, BMPs and implementation methods may change. This Strategy is meant to complement Pennsylvania's Chesapeake Bay Tributary Strategy and to coincide with the goals of partnering agencies.

The Conservation District began by collecting background information from Agricultural Census Data, Cumberland County's Open Space Preservation Plan, PA's Chesapeake Bay Nutrient Reduction Strategy, Conservation District reports and data, Penn State's Agricultural Extension Service, the USDA Natural Resources Conservation Service and Farm Service Agency, along with other miscellaneous sources.

The information was then summarized and analyzed to identify trends throughout the County and the agricultural community. Based on these trends and the corresponding needs identified, the Conservation District selected ten BMPs supported by the background information and trends. The need for these BMPs is also supported through the field observation of the Conservation District staff. The ten selected practices will serve as the foundation for the Strategy.

The remainder of this document expands upon these ten practices, sets implementation goals, identifies needs, and estimates results of implementation.

### **Core Strategy BMPs: Definitions and Justification**

1. **Conservation Planning (Farm Plans):** "a comprehensive plan that addresses natural resource management on agricultural lands and utilizes best management practices that control erosion and sediment loss and manage runoff."

**Justification for selection of BMP 1:** The Conservation District believes that a solid conservation plan is the foundation for on farm conservation. A comprehensive farm plan addresses proper nutrient management, soil conservation, and opens the door for many other conservation practices (i.e. diversion, waterways, contour farming).

As previously mentioned, there is a general trend for producers to do "more with less", especially in the County's dairy industry. In an effort to increase production, operators may have a tendency to farm through waterways, remove buffers, over apply fertilizer and manure, continuously plant row crops, etc. ***This intensive management results in a greater demand on the soil resources and a greater need for conservation planning.***

***Secondly, Cumberland County's demand for conservation planning far exceeds the manageable workload of the Natural Resources Conservation Service (NRCS) staff.*** There are still producers who do not have a conservation plan and an even greater number of producers who need to have plan updates or revisions. Traditionally, NRCS has been responsible for addressing conservation planning needs. However, the Conservation District has established a priority system to help NRCS with this workload, hopefully reducing the time a producer must wait before receiving planning services.

2. **Conservation Tillage:** “planting and growing crops with minimal disturbance of the surface soil.” Conservation Tillage is a component of conservation planning. Conservation tillage helps to improve overall soil quality while reducing soil erosion.
3. **Advanced No Till:** “...a form of conservation tillage in which the crop is seeded directly into vegetative cover or drop residue with minimal or no disturbance of the surface soil...a minimum of 50% crop residue must be maintained.” An alternative to traditional tillage methods, no till systems result in the greatest reductions in soil erosion from crop fields.
4. **Cover Crops:** “grown to provide winter cover of cropland...”

**Justification for selection of BMPs 2, 3, 4:** This strategy emphasizes a greater need for Conservation Planning. The three previous BMPs may all be components of a successful Conservation Plan. Therefore, it makes sense to include them as part of our Strategy.

Through field observation, the staff at the Conservation District has identified a need for these three BMPs:

- a. Moldboard plows and conventional tillage are still being utilized throughout the county, leaving soils bare and susceptible to erosion.
- b. Corn silage is a common crop throughout the county, leaving fields bare after harvest unless a cover crop is seeded.
- c. Some producers are fall plowing without seeding a cover crop, a seemingly arbitrary practice that exposes fields throughout the winter months.
- d. Winter spreading is a fairly common practice which increases the potential for nutrient runoff. Adequate cover, either by way of crop residue or cover crops is essential if manure application is to occur in the fall or winter months. Upcoming Nutrient Management revisions may require producers to maintain adequate levels of residue in order to spread manure in the winter.
- e. Additionally, cover crops reduce nutrient runoff through crop uptake.

***The Conservation District realizes the high soil and water quality benefits these practices offer relative to the costs of implementation.*** Due to decreased funding in the Bay Program, different and more efficient approaches will be required if PA is to meet the 2010 reduction goals.

5. **Nutrient Management:** “a comprehensive plan that describes the optimum use of nutrients to minimize nutrient loss while maintaining yield.”

**Justification for selection of BMP 5:** A well written, properly implemented nutrient plan is an invaluable tool in properly balancing nutrients with crop needs. Nutrient management plans guide producers throughout the proper storage and utilization of animal wastes and fertilizers, reducing the potential for nutrient loss to the environment. The ideal Nutrient Plan complements the producers Conservation Plan.

Pennsylvania is currently in the process of reviewing and revising the existing Nutrient Management Act. PA’s current Nutrient Management Rules and Regulations have been in effect since 1997. The upcoming revisions are meant to strengthen the Nutrient Management Regulations by identifying weaknesses in the current regulations. ***The proposed regulations will be more stringent and in turn require greater program oversight by the Conservation District staff.*** The revised regulations may

also include landowners who previously were not affected by the regulations who are now in need of Conservation District assistance (i.e. horse owners).

- 6. Animal Waste Systems:** “designed for the proper handling, storage, and utilization of wastes generated from animal confinement operations...”

**Justification for selection of BMP6:** Cumberland County began to participate in the Bay Program in 1987. Since that time period, the Conservation District has spent nearly 1.2 million dollars implementing BMPs on county farms, of which the majority was waste management systems. Because of the demonstrated success with animal waste systems, these BMPs will remain a vital part of the core strategy. However, with limited BMP funding projected in the immediate future, implementation of structural BMPs in the future will most likely decrease.

***Animal Waste Management Systems, such as waste storage structures, heavy use area protection and runoff controls are proven Best Management Practices. Proper waste containment and collection is absolutely essential if producers are expected to implement and follow a nutrient management plan.*** For example, if a daily haul system is in place, manure must be hauled at inopportune times (i.e. frozen, snow covered ground). Revising Nutrient Management regulations will continue to require operators to properly manage animal waste, and may prohibit application of wastes during frozen or snow covered periods.

***Secondly, the incentives to farmers to implement structural BMPs is high:*** animal health and productivity often improve, manure handling is improved, manure can be applied at the most critical times, pollution potential from winter spreading can be eliminated, fertilizer bills decrease and overall farm appearance and value may increase.

- 7. Horse Pasture Management:** “the use of rotational grazing practices, streambank fencing, paddocks, off stream watering and stabilization of heavy use areas...” on horse operations.

**Justification for BMP 7:** Previously, PA’s Nutrient Management Regulations ignored horse facilities, at least those operated for pleasure purposes. However, Cumberland County has identified a definite need for nutrient management and pasture management on horse operations, particularly on facilities where horses are kept for pleasure. Many times, the number of horses on these small pastures far exceeds the pasture capacity, resulting in bare mud lots with excessive sediment and nutrient runoff.

Most likely, PA’s revised Nutrient Management Regulations will include many of these facilities. Regulating these operations will result in a greater number of requests submitted to the Conservation District for technical assistance. Additionally, because these operations were previously exempt, there is potential for significant improvement in a relatively short time period.

- 8. Rotational Grazing:** “the purpose of this BMP is to increase forage and livestock implementation, increase forage nutrient removal, increase forage density and average height resulting in improved infiltration and decreased runoff.”

**Justification for BMP 8:** Rotational grazing may be a valid tool for some producers. From an environmental standpoint, grazing systems generally have lower sediment and nutrient losses than unrestricted grazing or crop fields. A grazing system may be

implemented in lieu of costly waste storage tanks and / or confinement areas while still offering significant nutrient and sediment savings.

- 9. Precision Agriculture:** “the use of multiple management systems beyond standard nutrient management practices to further minimize nutrient losses.”

**Justification for BMP 9:** Precision Agriculture is a new concept to most farmers and to the Conservation District. In a sense, this BMP is an intensive combination of the producer’s Conservation Plan and their Nutrient Management Plan.

Precision Agriculture offers significant nutrient and sediment efficiencies over “regular” Nutrient Management. There is a general trend for operators to utilize more custom services and to rely on crop consultants for advice. By utilizing private industry and the available technologies, producers may practice more precision farming than otherwise would have been possible if relying strictly on their farm’s resources.

- 10. Erosion and Sediment Controls:** “...erosion and sediment controls applied during construction activities on urban land.”

**Justification for BMP 10:** Due to the infrastructure and growth rates of Cumberland County, overseeing E&S Controls on development sites will continue to be an essential function of the Conservation District. Also, as more emphasis is placed on Conservation Planning, structural E&S controls may become more common as part of the Conservation Plan.

These ten practices all have a direct potential to improve sediment and nutrient loading into the waterways of Cumberland County and ultimately the Chesapeake Bay. The Conservation District has attempted to select BMPs where a need has been demonstrated, results have been proven, and current trends in Cumberland County support the use of these BMPs.

With the exception of Animal Waste Systems and Horse Manure Management, these practices involve management changes on the part of the operator. From the standpoint of the Conservation District, these practices provide an avenue to continue to improve water quality with less monetary investment from programs.

However, it is important to realize operators must have a vested interest in implementing these BMPs. In order for that to happen, education will play a major role. Without the tangible benefits provided by structural practices, farmers must understand the intangible payback. Conservation Practices involving management changes must be viewed by the operator as an investment in their operations; increased sustainability of soil and water resources is a long term asset to their operations.

The following Chart, Figure XXX, shows nitrogen, phosphorous and sediment loading data. The chart also shows land use acres. The loads shown are projected to eventually occur when all the reported management practices installed between 1985 and 2002 become fully functional at reducing loads to surface water and within groundwater. The data was provided by the EPA’s Chesapeake Bay Program Office. The nutrient and sediment loads were calculated using the EPA’s Chesapeake Bay Program watershed model.

The loading data shown on this chart was used to help select the Core Strategy BMPs. Colored cells indicate specific loading values used to determine the appropriate BMPs for the Strategy. These values may also be of assistance when measuring results of implementation.

<b>Cumberland County Loading Data and Land Use</b>										
<b>2002 Cumberland County Acres by Landuse</b>										
Conventional Till	Conservation Till	Hay	Pasture	Manure	Forest	Pervious Developed	Impervious Developed	Mixed Open	Open Water	Septic Systems
39,511	34,306	32,030	22,270	203	134,844	25,785	17,043	44,554	2,240	N/A
<b>NITROGEN Projected 2002 Edge-Of-Stream Loads in pounds per year</b>										
Conventional Till	Conservation Till	Hay	Pasture	Manure	Forest	Pervious Developed	Impervious Developed	Mixed Open	Open Water	Septic Systems
751,089	599,639	257,538	325,976	210,403	344,768	300,015	151,055	308,182	25,317	275,350
<b>PHOSPHOROUS Projected 2002 Edge-Of-Stream Loads in pounds per year</b>										
Conventional Till	Conservation Till	Hay	Pasture	Manure	Forest	Pervious Developed	Impervious Developed	Mixed Open	Open Water	Septic Systems
63,058	34,338	17,187	18,678	25,603	3,155	18,369	8,787	23,123	1,269	0
<b>SEDIMENT Projected 2002 Edge-Of-Stream Loads in pounds per year</b>										
Conventional Till	Conservation Till	Hay	Pasture	Manure	Forest	Pervious Developed	Impervious Developed	Mixed Open	Open Water	Septic Systems
36,206	9,816	8,406	5,194	0	5,893	6,831	0	6,114	0	0
<b>NITROGEN - Projected loading rates based on 2002 implementation in pounds per acre</b>										
Conventional Till	Conservation Till	Hay	Pasture	Manure	Forest	Pervious Developed	Impervious Developed	Mixed Open	Open Water	Septic Systems
19.00	17.50	8.00	14.60	1,036.50	2.60	11.60	8.90	6.90	11.30	0.00
<b>PHOSPHOROUS - Projected loading rates based on 2002 implementation in pounds per acre</b>										
Conventional Till	Conservation Till	Hay	Pasture	Manure	Forest	Pervious Developed	Impervious Developed	Mixed Open	Open Water	Septic Systems
1.60	1.00	0.54	0.84	126.12	0.02	0.71	0.52	0.52	0.57	N/A
<b>SEDIMENT - Projected loading rates based on 2002 implementation in pounds per acre</b>										
Conventional Till	Conservation Till	Hay	Pasture	Manure	Forest	Pervious Developed	Impervious Developed	Mixed Open	Open Water	Septic Systems
0.916	0.286	0.262	0.233	0.000	0.044	25,785.000	17,043.000	44,554.000	2,240.000	N/A

**BMP Implementation Goals**

<b>Cumberland County Chesapeake Bay Tributary Strategy</b>										
<b>Core BMP Implementation Goals</b>										
<b>Core Strategy Practices</b>	<b>Units</b>	<b>Target Goal</b>	<b>Achieved</b>	<b>Remaining</b>	<b>Total Strategy Goal</b>	<b>Strategy Goals - Five Year Plan</b>				
						<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
<b>Conservation Planning</b>	Acres	94,752	50,132	44,620	25,000	4500	4750	5000	5250	5500
<b>Conservation Tillage</b>	Acres	48,700	34,305	14,395	15,000	1500	2500	3500	3500	4000
<b>Advanced No Till</b>	Acres	23,265	8,576	14,689	7,500	750	1250	1750	1750	2000
<b>Cover Crops</b>	Acres	42,223	15,000	27,223	20,000	3500	4500	5500	5750	5750
<b>Nutrient Management</b>	Acres	16,126	36,805	-20,679	10,500	2100	2100	2100	2100	2100
<b>Animal Waste Systems</b>	AEUs	28,400	22,297	6,103	7,500	2000	1800	1500	1100	1100
<b>Horse Manure Management</b>	Acres	13,704	66	13,638	325	40	60	75	75	75
<b>Rotational Grazing</b>	Acres	1,166	266	900	325	50	50	75	75	75
<b>**Precision Agriculture</b>	Acres	47,928	Unknown	47,928	5,550	750	1050	1250	1250	1250
<b>E &amp; S Controls</b>	Acres	1,354	1,344	10	800	175	175	150	150	150

The Core BMPs shown listed above are in no particular order. These are the ten BMPs that will serve as the foundation of Cumberland County's Tributary Strategy. These BMPs were selected by the Conservation District staff in partnership with the Cumberland County NRCS staff.

<b>Cumberland County Chesapeake Bay Tributary Strategy Secondary BMP Implementation Goals</b>										
Secondary Strategy Practices	Units	Target Goal	Achieved	Remaining	Total Strategy Goal	Strategy Goals - Five Year Plan				
						2006	2007	2008	2009	2010
<b>Carbon Sequestration</b>	Acres	13,791	447	13,344	1,000	200	200	200	200	200
<b>Grass Buffers</b>	Acres	2,438	8	2,430	1,500	300	300	300	300	300
<b>Land Retirement</b>	Acres	11,910	4,518	7,392	2,500	500	500	500	500	500
<b>Yield Reserve</b>	Acres	16,126	Unknown	16,126	0	0	0	0	0	0
<b>Mortality Composters</b>	System	0	Unknown	0	3	0	1	1	0	1
<b>Precision Rotation Grazing</b>	Acres	1,749	Unknown	1,749	150	0	0	50	50	50
<b>Off Stream Watering without Fence</b>	Acres	4,372	Unknown	4,372	25	0	0	10	15	0
<b>Off Stream Watering with Fence</b>	Acres	7,286	Unknown	7,286	400	50	75	75	75	75
<b>Storm Water Management - Wet Ponds</b>	Acres	12,903	Unknown	12,903	50	10	10	10	10	10
<b>Storm Water Management - Filtering</b>	Acres	12,903	Unknown	12,903	50	10	10	10	10	10
<b>Storm Water Management - Infiltration</b>	Acres	12,903	Unknown	12,903	50	10	10	10	10	10
<b>Stream Restoration (developed)</b>	Feet	0	0	0	0	0	0	0	0	0
<b>Grass Buffers (developed)</b>	Acres	2,438	Unknown	2,438	150	30	30	30	30	30
<b>Riparian Forest Buffers</b>	Acres	4,169	391	3,778	250	50	50	50	50	50
<b>Wetlands</b>	Acres	169	26	143	75	10	10	15	20	20
<b>Tree Planting</b>	Acres	655	629	26	100	20	20	20	20	20
<b>Non-urban Stream Restoration</b>	Feet	6,986	1,200	5,786	0	0	0	0	0	0
<b>Dirt and Gravel Road Improvements</b>	Feet	50,746	34,948	15,798	20,000	4000	4000	4000	4000	4000

The Secondary BMPs listed above are in no particular order. Although this Strategy does not focus on these practices, the Conservation District does have the opportunity to work with these practices. Due to the dynamic nature of the Strategy and dependent upon demonstrated needs, these practices may be a portion of the Strategy implementation, particularly in future years.

### Limited Control BMPs

A comprehensive list of Best Management Practices is part of the PA Chesapeake Bay Tributary Strategy. The Conservation District has determined that no control or very limited control exists at the District level for some of these practices. These practices are implemented by other agencies, private industry, or municipalities. For this reason, the following practices are not considered in the County Tributary Strategy:

1. Precision Feeding for Dairy
2. Phytase Feed Additive for Swine, Poultry
3. Ammonia Emissions Reductions – Swine, Poultry, Dairy
4. Urban Nutrient Management
5. Reduced Urban Growth
6. Urban Street Sweeping
7. Forest Harvesting Practice
8. Septic System Denitrification/Hookups
9. Abandoned Mine Reclamation
10. Mixed Open Nutrient Management

### Strategy Implementation Approach

This section describes the Cumberland County Bay Strategy implementation approach. The implementation strategy was determined by the Conservation District Staff in partnership with the local NRCS / USDA staff.

#### Special Project Funds – Animal Waste Systems

1. **In 2005-2006, Special Project Funds will be utilized for one of the ten Core BMPs: Animal Waste Systems.** There were several reasons for making this decision:
  - (a) Animal Waste Systems are necessary for proper waste storage and utilization which leads to reduced nutrient loss to the environment.
  - (b) The Conservation District has a successful history of implementing animal waste systems through a variety of programs.
  - (c) A large backlog of landowners needing assistance with animal waste systems currently exists.
  - (d) Due to the time constraints associated with structuring and implementing a new program, the Conservation District determined Special Project funds in the first year of the Strategy would be used most efficiently if directed to a proven BMP with an existing distribution mechanism for the funds.
2. **In order to assist more landowners with limited funding, a maximum of \$5000 per landowner will be used.** Dependent upon funding, 6 landowners @ \$5000 each will be assisted.
3. **Understanding that \$5000 per landowner will only cover a small portion of an animal waste system, the Conservation District will attempt to “piggy back” with other programs, specifically the PA Nutrient Management Grant Program and the USDA EQIP Program.**
4. **Impaired Watersheds will receive priority for Special Project Funds. Among impaired watersheds, those designated as impaired due to nutrient pollution and/or siltation will receive the highest priority, with other impairments receiving secondary considerations.**

### **The Nine Other Core Practices**

Although the Conservation District will utilize 2005-2006 Special Project Funds on Animal Waste Systems, the nine other Core BMPs will also be a part of the 2005-2006 Strategy.

1. **Horse Pasture Management Implementation** – Evaluating horse operations for BMPs and providing technical and cost share assistance to these operations is a relatively new arena for the Conservation District.
  1. There may be some opportunity to implement Horse Pasture Management BMPs as a component of the Special Project BMP, Animal Waste Systems. Horse Pasture Management includes a variety of BMPs, including stabilized Heavy Use Areas and Manure Management. **The guidelines established for animal waste systems would also apply to Horse Pasture Management BMPs implemented with Special Project Funds (in 2005-2006).**
  2. As previously discussed, upcoming changes in PA's Nutrient Management Regulations will most likely include pleasure horse operations. Assuming these regulations are finalized and do include horse operations, these operations will be eligible to participate in the Nutrient Management Grant Program.
  
2. **Conservation Planning Implementation** – Traditionally, NRCS has done all of the Conservation Plans in Cumberland County. However, due to the size of the workload, two of the Conservation District staff, the Chesapeake Bay Technician and the Nutrient Management Specialist are training to assist with the conservation planning workload. Both of these technicians have attended the necessary classroom training in order to become certified Conservation Plan Writers. Writing and submitting a conservation plan for review is the final certification step. This will be done under the supervision of the local NRCS staff after the latest version of the plan writing software (Toolkit) is released.
 

The Conservation District has established a priority system for Conservation Plan Writing by the District staff. This priority system was formally approved by the Conservation District Board of Directors. A copy of the policy / procedure for District Plan writing is attached as XXXXXXXX
  
3. **Nutrient Management Implementation** – The Conservation District staff will continue to implement the County Nutrient Management Program as per the delegation agreement with the PA Department of Environmental Protection and the existing Goals and Objectives established by the Conservation District. Two staff members are currently certified to write Nutrient Management Plans. The following Goals and Objectives guide the Conservation District throughout the program implementation:

#### **GOALS:**

1. Assist agricultural producers in Cumberland County to minimize surface and groundwater nutrient loads.
2. Assist Cumberland County farmers who have a current Nutrient Management Plan to meet the requirements set forth in that plan.
3. Assist Cumberland County producers in obtaining cost share for installing BMPs on their operations and assist them in "cleaning up" their operations.
4. Assist Cumberland County producers in determining if they fall under the Nutrient Management Act regulations.

**OBJECTIVES:**

1. Work closely with the agricultural operations to promote the agricultural and environmental benefits of proper nutrient management practices.
2. Encourage Volunteer's to have a Nutrient Management Plan written for their operation.
3. Present annual educational workshops to present current Nutrient Management information.
4. Encourage soil and manure testing.
5. Complete a Farm Identification Sheet for every livestock operation in Cumberland County.
6. To assist non-production livestock owners (horse, deer, sheep, goats and etc.) to promote agricultural and environmentally sound management practices.
7. Promote and encourage innovative and cost effective alternatives to traditional manure handling systems.

**Other Implementation Considerations:**

1. The Nutrient Management Staff will work to update existing Nutrient Management Plans with the Phosphorous-Indexing component
2. After finalization of the new proposed Nutrient Management Regulations, the staff will work to implement new requirements and assist/educate landowners regarding the revised regulations.
3. The Conservation District will continue to perform Pre-sidedress Nitrogen Testing for Cumberland County corn growers.

- 4. Erosion and Sedimentation Controls Implementation** – The Conservation District E&S staff will continue to implement E&S Controls through the Chapter 102 and NPDES programs as per the delegation agreement with the PA Department of Environmental Protection and the existing Goals and Objectives established by the Conservation District. The following Goals and Objectives guide the Conservation District throughout the implementation of the E&S and NPDES programs:

**GOALS:**

1. To minimize or eliminate accelerated erosion and to prevent sediment pollution to waters of the Commonwealth as a result of earthmoving activities.
2. Conduct regular training sessions to educate plan preparers, contractors, and Township officials on program regulations and requirements, recent changes to programs and on methods to effectively reduce erosion and sedimentation pollution at all earthmoving sites.
3. Implement PA's Erosion and Sedimentation Pollution Control program as required by the Delegation agreement.
4. Initiate all enforcement proceedings pertaining to 102 violations at the District office through our Level III delegation.
5. Continue to implement the NPDES program as required by the Delegation agreement by processing NPDES permit applications for sites that disturb five acres or more within the County.
6. Encourage local governments to enact stormwater ordinances based on a watershed approach.
7. **LONG TERM:** Investigate implications of increased workload due to NPDES program modifications from EPA.
8. Monitor the State Part II Water Quality Permit program and inform the board of directors of potential Conservation District involvement.

**OBJECTIVES:**

1. Conduct annual workshops to provide educational information in regards to the erosion and sedimentation program including NPDES for people with different levels of knowledge of the program
2. Work with NRCS personnel and the farming community concerning agricultural related erosion problems and complaints.
3. Investigate all erosion control complaints, gather necessary information, assess the problem, document the findings and obtain voluntary compliance if possible. If necessary, the appropriate enforcement actions will be initiated by the District.
4. Conduct routine inspections of earthmoving sites to determine if the plan is being implemented as approved. A written inspection report detailing site conditions and compliance assistance measures will be completed. Inspect sites that have a high potential for pollution on a regular basis.
5. Work with engineers and consultants in developing erosion control plans to insure state and local regulations are met.
6. Review plans in a time frame determined by the board of directors.
7. Promote innovative water quality BMPs on construction sites that will assist in aquifer recharge and prevent pollution to waters of the Commonwealth.

**Additional Considerations:** Objective 2 will play a major role in the Bay Strategy, due to the District emphasis on Conservation Planning. Objective 7, "promoting innovative water quality BMPs..." relates directly to the Stormwater BMPs designated as part of the state Chesapeake Bay Tributary Strategy.

5. **Rotational Grazing Implementation** – The Conservation District staff is working closely with NRCS to implement Rotational Grazing Practices in Cumberland County. Several programs will be utilized to promote and install rotational grazing BMPs:
  1. The Conservation District works closely with an NRCS Grazing Specialist. A Growing Greener Grant will be submitted in hopes of receiving cost share funds to implement Grazing Practices in Cumberland County. The Grazing Specialist will apply for approximately \$75,000 to install grazing practices in the County. This amount of funding would be distributed between 2-3 farms and include 70-100 acres.
  2. The District also hopes to utilize Project Grass Funding to accomplish grazing objectives. Currently, one member of the Ag staff serves on the Executive Project Grass Committee for the south central region.
  3. The USDA Environmental Quality Incentives Program (EQIP) accepts grazing applications. The Conservation District will partner with and refer potential grazing projects to the local NRCS staff. In 2005-2006, EQIP grazing applicants will be allocated 25% of the local team funding, allowing for significant opportunities for grazing projects through the EQIP program.
- 6, 7. **Conservation Tillage and Advanced No Till Implementation** – Several approaches will be utilized to apply Conservation Tillage and No Till practices in the County.
  1. The USDA EQIP program has Special Project funding available to producers for Conversion to No Till. This program educates producers and helps them get started in a no till system. Cost share funding is available to offset the initial obstacles typically associated with conversion to no till (i.e. sub-soiling, spraying, scouting). The application deadline for funding in 2005 has expired. This implementation approach will be utilized in upcoming years (assuming the program still exists).

2. Reduced tillage systems are often a component of Conservation Planning. Through Conservation Planning, the District will encourage producers to consider conservation tillage and no till as a method to reduce soil erosion and improve soil quality.
- 8. Cover Crop Implementation** – Similar to reduced tillage, cover crops will be encouraged through Conservation Planning. The District will educate producers on the benefits of cover cropping.
- 9. Precision Agriculture Implementation** – Like many of the BMPs in the PA Tributary Strategy, Precision Agriculture is a relatively new concept to the Conservation District and to many of the farming operations in the County. The Conservation District plans to implement Precision Farming in the following ways.
  1. Precision Agriculture is basically an intense, focused nutrient management system. As precision agriculture becomes more commonplace, operations may be able to receive technical assistance and cost share funding through the PA Nutrient Management Grant Program.
  2. The Conservation District hopes to develop a working relationship with local crop consulting companies and the custom farming service industry in order to promote Precision Agriculture and improved nutrient management.

### **General Implementation Methods**

- 1. Education of Producers and Promotion of BMPs** – The Conservation District will continually strive to educate producers about the benefits of on-farm conservation, new BMPs and technology, nutrient management and current issues relating to nutrient and sediment savings. This will be done in several ways:
  - A) Publications: District Newsletter and Newspaper Articles
  - B) Program promotion at local workshops, clinics, and agricultural events
  - C) Farmer Recruitment / Contacts – farm visits, phone calls, complaint investigations, through participation in other programs, etc.
  - D) Farmer Field Days
- 2. The Conservation District will pursue additional funding opportunities to help achieve the District's goals and the goals of the County Tributary Strategy** (i.e. Growing Greener Grants, Educational Grants, etc.)
- 3. The Conservation District will foster relationships with partnering agencies, organizations, and private industry that help to achieve the District's goals and the goals of the County Tributary Strategy.**

### **Needs Identified**

There were several needs identified in order to successfully implement the County's Tributary Strategy and to improve existing programs:

- 1. In order to successfully and impartially distribute Special Project Funds, a project ranking system needs to be finalized.**
- 2. The Conservation District staff needs to educate themselves regarding some of the new BMPs** (i.e. Precision Agriculture, Horse Pasture Management, etc.)

3. **Greater DEP support is needed in the areas of Agricultural complaints and enforcement.** Currently, the Conservation District staff investigates agricultural related complaints. If a legitimate complaint exists, the Conservation District typically attempts to educate the landowner and provide technical and/or cost share assistance in order to correct the problem. If the Conservation District has no success working with the landowner and the problem is not corrected, the complaint is typically forwarded to the appropriate DEP personnel. In the past, many of these landowners were never required to correct the problem.

The Department needs to require landowners who are unwilling to work with the Conservation District to correct pollution problems. **Without the assistance of DEP, the Conservation District has limited leverage to require problematic landowners to correct pollution problems.** If there is no assistance from DEP in these matters, landowners unwilling to correct pollution problems suffer no consequences and will continue to abuse the regulations and in turn the natural resources of the County.

4. **Clear, concise, and consistent guidance from the Department's Central Office is needed regarding the Chapter 102 and NPDES programs.**
5. Although 2005-2006 Special Project Funds will be spent on Animal Waste Management Systems, the Conservation District realizes the general trend in the Bay Program is away from structural practices. **The Conservation District needs to examine possible ways to utilize Special Project Funds in upcoming years on non structural practices.** For example, an incentive program could be examined to encourage cover cropping or conservation tillage.
6. **The most obvious need of the Conservation District is the continuation of and increases in program funding.** In order to continue to provide assistance to the agricultural community, the Conservation District must have the necessary funding to maintain staff positions. Additionally, in order to successfully implement the PA Chesapeake Bay Tributary Strategy and reach the 2010 goal, cost share incentives must be available to assist producers with BMP implementation.
7. In order to successfully utilize Special Project Funds and address critical pollution problems, **the Conservation District will need to partner with other programs such as the USDA EQIP and the PA Nutrient Management Grant Program.**
8. In order to successfully track the progress of the County Strategy and the PA Strategy, **an accurate and consistent BMP tracking system must be developed.**
9. **Develop a method to estimate nutrient and sediment savings from associated practices so progress can be quantified.**

### **Anticipated Results of Strategy Implementation**

1. A primary goal of the County Bay Strategy is the removal of Cumberland County streams impaired due to nutrient pollution or agricultural siltation from the 303D List of Impaired Waters.
2. Improved water quality due to less nutrient runoff and siltation.
3. Improved soil quality due to the implementation of conservation practices.

4. Improved cattle health and cleanliness due to the proper storage and containment of animal wastes.
5. Reduced nutrient and sediment losses to waters of the Commonwealth.
6. Due to the essential cooperation with partnering agencies, the working relationship and the understanding of the partnering agencies programs and mission will improve and vice versa.
7. Due to increased education efforts, the environmental awareness and knowledge of County farmers will improve.

### **Reference to Chesapeake Bay Watershed Assessment Report, 1987**

As a preliminary requirement for participation in the PA Financial Assistance Funding Program (FAFP), the Cumberland County Conservation District prepared a watershed assessment report for the Conodoguinet and Yellow Breeches Watersheds, which essentially encompass all of Cumberland County.

This study was authorized by the PA DEP Bureau of Soil and Water Conservation and funded by the FAFP (Chesapeake Bay Program) administered by the Bureau. The report was completed in June of 1987 and was prepared by the Conservation District's Bay Engineer and Bay Technician.

The Conservation District was assisted in the plan development by Geo Decisions, Inc. Various parameters were used to assess the potential for nutrient and sediment pollution throughout the County. This assessment also involved surveying 58 farms to determine pollution concerns on the operation. The results of this assessment were then used to formulate an implementation plan for the Chesapeake Bay Program in Cumberland County.

The results of this assessment determined that Best Management Practices were needed in order to reduce the amount of nutrient and sediment losses to the local waterways. The practices identified as being the most effective in reducing Non-point Source Pollution were:

- Nutrient Management
  - Construction of agricultural waste storage facilities
  - Development of a nutrient management plan
  - Soil tests and manure analysis
  - Analysis of crop yields and nutrient needs
  - Commercial fertilizer management
- Conservation Planning Components
  - Structural Erosion Controls - diversions, terraces and waterways
  - Conservation Tillage – No Till
  - Conservation Stripcropping
  - Conservation Cropping System

Major Reasons for Nutrient Loss to streams were identified as livestock holding areas, improper containment of wastes, overfertilization, winter spreading, and \*summer spreading.

\*Summer spreading was identified is the most significant loss of nitrogen. This was due to volatilization of ammonia and/or Denitrification. This report states significant nitrogen losses are inevitable due to the many different paths nitrogen can follow (escape to the environment). The report includes Fall spreading in this category and states that losses are highest during this time period due to the long time period until the next season of plant growth. Currently, fall spreading is generally separated from summer spreading. Losses during these time periods can

be minimized by avoiding application during the non-growing season, manure incorporation, and maintaining adequate levels of residue or cover crops.

Implementation of these practices was planned for a five year period. The 5 year overall cost of this program was estimated at \$1,584,000. The plan was expected to produce a 32% reduction of nitrogen loss, a 27% reduction in phosphorous loss, and a 9% reduction in soil loss.

### **Chesapeake Bay Technician 2005-2006 Strategy Goals and Objectives**

#### **GOALS:**

1. The Pennsylvania Chesapeake Bay Program Financial Assistance Funding Program goal is to assist landowners within Pennsylvania's portion of the Chesapeake Bay drainage basin with the cost of installing agriculture best management practices (BMPs) to achieve nutrient management and associated erosion and water control.
2. The Cumberland County goal is to reduce nutrients and sediment into streams and waters within the county resulting in improved countywide water quality and ultimately the Chesapeake Bay.
3. **Fully implement the new County Chesapeake Bay Tributary Strategy, resulting in removal of Cumberland County waters from the 303D List of Impaired Waters.**
4. **Assist PA DEP with implementation of the State Tributary Strategy with the ultimate goal of removing the Chesapeake Bay from the 303D List of Impaired Waters by 2010.**

#### **OBJECTIVES:**

1. Contact Cumberland County agriculture operators to demonstrate the benefits of participation in this volunteer program and to promote the County Chesapeake Bay Tributary Strategy.
2. Conduct educational and informative meetings to encourage agriculture operators to install Best Management Practices that will reduce soil erosion and nutrient runoff.
3. Assist the agriculture operator with the preparation of a Nutrient Management Plan that will improve the operation and also meet the requirements of the Pennsylvania Nutrient Management Law.
4. Assist USDA NRCS with Conservation Plan writing according to the guidelines established by the County Conservation District Board of Directors.
5. Assist operators with the selection of BMP options that will best meet their needs and prepare a schedule of operations that will outline the sequence of installation
6. Assist USDA NRCS with the planning, design and installation of selected BMPs in accordance with the Pennsylvania Technical Guide standards and specifications.
7. Assist co-operating agencies with the task of acquiring applicants for other cost share programs.
8. Assist Pa. Department of Environmental Protection with the allocation of cost share funds and record keeping of CBP agreements.
9. Maintain accurate county financial records to validate installed and cost shared Best Management Practices and administrative expenditures.
10. Prepare all reports required by DEP and EPA related to the documentation of Bay program activities, requests for the release of available revenue, and related forms.
11. Attend all Chesapeake Bay Program regional and statewide meetings to represent the interest of Cumberland County to continue participation in this program.

**Bay Technician Specific Goals 2005-2006**First Priority

- |  |             |   |
|--|-------------|---|
| 1. Individual Farmer Contacts:<br>Promote New Bay Strategy – Education   | 25          |   |
| 2. Bay Cost Share Dollars planned for 2005-2006:<br>Construction Planning, Survey, Inspection<br>Administrative – Bidding, Reporting, etc. | \$67,500.00 |   |
| 3. Number of completed Bay BMP systems reported:   | 3           |   |
| 4. Conservation Plans Written:<br>Estimated Conservation Plan Acres:   | 625         | 5 |
| 5. Revisit Strategy - new approaches / changes for 2006-2007   |             |   |

Second Priority

- |  |             |  |
|--|-------------|--|
| 1. Number of practices installed and dollars spent in<br>Non-Bay funded programs reported on CBP23s. |             |  |
| Nutrient Management Program  |             |  |
| 1. Number of Practices Installed   | 5           |  |
| 2. Dollars Spent   | \$30,000.00 |  |
| EQIP   |             |  |
| 1. Number of Practices Installed   | 4           |  |
| 2. Dollars Spent   | \$50,000.00 |  |
| Growing Greener  |             |  |
| 1. Number of Practices Installed   | 2           |  |
| 2. Dollars Spent   | \$10,000.00 |  |
| 2. Nutrient Management Plans Written:  | 3           |  |
| Nutrient Management Plans Updated:   | 3           |  |
| Estimated Total Nutrient Acres:  | 750         |  |

Other Measurable Activities

- |                       |    |
|-----------------------|----|
| Bay Contracts Signed  | 4  |
| Soil Tests Taken      | 10 |
| Manure Tests Taken    | 6  |
| Construction Checks   | 30 |
| News Articles Written | 4  |
| Field Days / Tours    | 2  |
| Training Days         | 6  |
| Surveys Completed     | 5  |