



# Delaware's 2014 Nonpoint Source Program Management Plan



## **Administered By:**

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The Delaware Nonpoint Source Program is committed to addressing the issue of NPS pollution as it affects Delaware's numerous waterbodies. Efforts will include grant funding, education, outreach, and partnerships with other organizations working together to reduce NPS pollution in Delaware.

Reduction of NPS pollution is achieved through the incorporation or installation of specific best management practices (BMPs) addressing agriculture, silviculture, construction, septic systems, and hydromodification activities. To encourage and support the BMP installation, the NPS Program administers a competitive grant program currently made possible through Section 319 of the Clean Water Act. While this federal financial support has proven successful in complementing Delaware's NPS efforts, the NPS Program is currently seeking additional finances to expand our activities to more systematically address Delaware's NPS concerns.

Additional roles and responsibilities of the NPS Program include geospatial BMP tracking and reporting, management of the agricultural State Revolving Fund Program, support for developing Pollution Control Strategies, and watershed plan development and/or coordination.

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# Table of Contents

<b>1</b>	<b>EXECUTIVE SUMMARY .....</b>	<b>5</b>
<b>2</b>	<b>INTRODUCTION.....</b>	<b>7</b>
2.1	Purpose of the Document .....	7
2.2	Background .....	8
2.3	Authority .....	9
2.4	Overall Goals.....	10
2.5	Objectives.....	10
<b>3</b>	<b>ABOUT DELAWARE.....</b>	<b>11</b>
3.1	Introduction .....	11
3.2	Land Use and Population .....	11
3.3	Geography .....	12
3.4	Rivers and Streams.....	12
3.5	Ponds and Lakes.....	13
3.6	Wetlands.....	13
3.7	Classified Uses .....	13
<b>4</b>	<b>DELAWARE’S WATER QUALITY.....</b>	<b>14</b>
4.1	Impaired Waters .....	14
4.2	Nutrient Enrichment.....	14
4.3	TMDL Program Summary .....	15
4.4	Pollution Control Strategies .....	16
4.5	Chesapeake Bay Watershed Implementation Plan.....	17
4.6	Delaware NPS Program Watershed Plan Requirements .....	18
<b>5</b>	<b>WATER QUALITY IMPAIRMENTS .....</b>	<b>19</b>
5.1	Agriculture .....	20
5.2	Construction .....	20
5.3	Urban Runoff.....	21
5.4	Hydrologic/Habitat Modification.....	21
5.5	Septic Systems.....	23
<b>6</b>	<b>THE WATERSHED APPROACH .....</b>	<b>23</b>
6.1	Watershed Prioritization.....	24
6.2	State Level Priority Watersheds.....	24
6.3	NPS Program Priority Watersheds.....	26
6.4	Priority Pollutants.....	27

6.5	Approved Watershed Plans .....	27
<b>7</b>	<b>GOALS &amp; MILESTONES.....</b>	<b>28</b>
7.1	General NPS Program .....	28
7.2	General NPS Program Goals.....	28
7.3	General Short Term Milestones .....	32
7.4	Watershed Specific NPS Program.....	32
7.5	Watershed Specific NPS Program Goals .....	35
7.6	Watershed Specific NPS Program Milestones .....	37
7.7	NPS Program Long Term Goals .....	38
7.8	NPS Program Long Term Milestones .....	40
7.9	NPS Program Extended Term Milestones .....	41
<b>8</b>	<b>PARTNERSHIPS &amp; COLLABORATION .....</b>	<b>42</b>
8.1	Partnerships .....	42
8.2	Federal Partners.....	43
8.3	State NPS Partners .....	54
8.4	Local NPS Partners .....	69
8.5	Collaborations .....	77
<b>9</b>	<b>FUNDING.....</b>	<b>81</b>
9.1	Current Funding Sources.....	81
9.2	Funding Available .....	88
9.3	Funding Milestones .....	89
<b>10</b>	<b>MONITORING .....</b>	<b>90</b>
10.1	General Changes or Trends in Water Quality .....	90
10.2	Programs to Assess Impairments.....	91
10.3	Monitoring Programs.....	92
10.4	Changes for Surface Water Quality Monitoring Plan .....	93
10.5	Special Project Monitoring .....	94
10.6	Monitoring Coordination/Collaboration.....	95
10.7	Citizens Monitoring Programs in Delaware .....	97
10.8	Future Needs and Activities to Improve Water Quality Monitoring in Delaware .....	99
<b>11</b>	<b>ASSESSING PROGRESS.....</b>	<b>100</b>
11.1	Measuring Progress .....	101
11.2	NPS Program Administration.....	104
11.3	Plan Evaluation and Revisions .....	105

## List of Acronyms

BMP	Best Management Practices
CAFO	Concentrated Animal Feeding Operations
CBP	Chesapeake Bay Program
CWA	Clean Water Act
DDA	Department of Agriculture
DelDOT	Department of Transportation
DNREC	Department of Natural Resources and Environmental Control
EPA	Environmental Protection Agency
ERES	Exceptional Recreation or Ecological Significance
MS4	Municipal Separate Storm Sewer System
NMP	Nutrient Management Plan
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint Source
NRCS	Natural Resources Conservation Service
PCS	Pollution Control Strategy
SWM	Stormwater Management
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
USDA	United States Department of Agriculture
WIP	Watershed Implementation Plan
WQL	Water Quality Limited
WSM	Chesapeake Bay Watershed Model
WWTP	Wastewater Treatment Plant

# 1 EXECUTIVE SUMMARY

Nonpoint pollution is pollution that enters a water body from water-based or land-use activities, including atmospheric deposition; surface water runoff from agricultural lands, urban areas, forest lands, and subsurface or underground sources.

Nonpoint source water pollution is a growing threat to Delaware's environment and public health. It's the accumulation of sediment, chemicals, toxics, nutrients, debris and pathogens that rain water pick up and carry into the nearest body of water. Sometimes nonpoint pollution can be traced to several sources; sometimes it cannot be traced at all.

Delaware has been a leader in addressing NPS pollution for many years. We already have many tools to achieve cleaner water through nonpoint source management. Some are regulatory while the vast majority are voluntary programs. Watershed efforts have addressed problems in many

areas of the state. There are numerous examples of innovative approaches to management and funding.

In spite of all the work accomplished to date, environmental protection requires a more urgent effort to control NPS pollution. Development and Delaware's ever-changing landscape are significant sources of the emerging NPS problems. Non-urban land uses are shrinking but continue to produce chronic problems.

Where it is contributing to a water quality problem or potential problem, measures are taken to reduce NPS pollution. The measures taken depend on the extent and causes of the problem. Delaware's expectations for water quality are defined in the state's water quality standards. In general, the desired level of water quality depends on how the water will be used. For example, water to be used for irrigation need not be of the same quality as water for swimming or drinking. The standards also establish an expectation that waters in Delaware will not be degraded and that all waters will meet certain criteria, such as being free from debris. Waters that fail to meet any of the water quality standards are called impaired.

In order to prevent or control NPS pollution, the pollutants or conditions must be identified, their role in water quality must be understood and the sources of the pollutants or conditions must be identified. For a preventive practice to be effective, it must be able to interfere with the availability, detachment or transport of a pollutant or the creation of a condition that causes the impairment.

Delaware's 2014 NPS Management Plan is a statewide look at protecting Delaware's natural resources from nonpoint pollution. It is a collaborative effort of a wide range of entities. This plan reflects current efforts and creative, practical new ideas from all our partners and interested citizens. The recommendations focus on how we can improve existing efforts by stronger implementation, increased funding, or doing something new.

The 2014 NPS Management Plan represents the unified effort of many agencies and individuals to outline the various goals, objectives and strategies in Delaware's priority watersheds. Many activities are currently taking place or are proposed for future implementation in order to achieve Delaware's water quality goals. In addition, watershed scale source reduction goals and implementation milestones are described in detail.

Since its inception, Delaware's NPS Program has strongly supported and promoted the collaborative efforts of state, federal, and local agencies as well as private organizations in order to achieve nonpoint source reduction goals. The Delaware NPS Program is committed to implementing an environmentally sensitive program which focuses on the attainment of water quality goals on a watershed level by using a balanced approach of education, research, technical assistance, financial incentives and regulation.

## 2 INTRODUCTION

### *Vision*

The Department of Natural Resources and Environmental Control envisions a Delaware that offers a healthy environment where people include a commitment to the protection, enhancement and enjoyment of the environment in their daily lives; where Delawareans' stewardship of natural resources ensures the sustainability of these resources for the appreciation and enjoyment of future generations; and where people recognize that a healthy environment and a strong economy support one another.

### *Mission*

It's the mission of the Delaware Department of Natural Resources and Environmental Control to protect and manage the state's vital natural resources, protect public health and safety, provide quality outdoor recreation and to serve and educate the citizens of the First State about the wise use, conservation and enhancement of Delaware's Environment.

### **2.1 Purpose of the Document**

Delaware's Nonpoint Source (NPS) 2014 Management Plan is designed to describe a holistic approach to controlling and remediation of nonpoint source pollution. This 2014 NPS Management Plan incorporates programmatic changes since the submission of the last Management Plan in 1999 and identifies current efforts and looks forward to further program improvements over the next five year horizon. It is the intention that this document will serve as a living guidance for the activities undertaken by the respective programs.

The Delaware Nonpoint Source Program is the designated lead entity in developing this plan. The plan will describe the Delaware's Nonpoint Source Programs, which loosely includes all nonpoint efforts by federal, state, tribal, and local governments as well as volunteer programs carried out by the general public. To compile this information and evaluate the needs has been a monumental endeavor, partly due to the incredible depth and diversity of work that is underway. The landscape of nonpoint initiatives has changed dramatically throughout the period of preparation, especially as the state wrestles with the needs of protecting and restoring Delaware's important watersheds. The authors hope they have captured the major efforts and have left an open door to further program adjustments and improvements as time goes on.

In a broad sense, this plan has two purposes. The first purpose of the document, and of highest priority, is to assess the particular needs of Delaware regarding nonpoint source pollution. While Federal NPS targets and strategies address pollutants, pollutant loads and pollutant reductions on a broad scale, many NPS issues are unique to the Mid-Atlantic Region and in Delaware specifically. This plan looks specifically at the additional needs of protecting Delaware's unique resources and identifies needs beyond the current capacity.

The second is continued compliance with federal Environmental Protection Agency (EPA) mandates. Delaware is required to update its NPS Management Plan so it can continue to receive grant funds under Section 319 of the Clean Water Act. Guidance from the EPA was used to evaluate current nonpoint source efforts and determine where program upgrades are needed.

The 2014 NPS Management Plan is intended to be used as a guide by local, state and federal agencies as they develop projects and implement NPS reduction programs over the next five years. This 2014 NPS Management Plan outlines the NPS issues to be addressed and actions to be implemented over the planning period of 2014 through 2019.

## **2.2 Background**

The 1972 federal Clean Water Act (CWA) established a national framework for protecting and improving water quality. The overall goal of the CWA is “to restore and maintain the chemical, physical and biological integrity of the Nation’s waters.” The result of the CWA led to water quality improvements through the treatment requirements for point source wastewater discharges.

Then, The Clean Water Act of 1987, Section 319 required each state in the nation to develop a program to control nonpoint sources of pollution to both surface and ground waters. Nonpoint source pollution has been defined as “pollution caused by diffuse sources” and as such: “is associated with agricultural, silvicultural, urban runoff, runoff from construction activities, etc. Such pollution results in the human induced alteration of the chemical, physical, biological and radiological integrity of water. In practical terms, nonpoint source pollution does not result from a discharge at a specific, single location (such as a pipe), but generally results from land runoff, precipitation, atmospheric deposition, or percolation. Pollution from nonpoint sources occurs when the rate at which pollutant materials entering water bodies or ground water exceeds natural levels (U.S. Environmental Protection Agency, 1987).

On August 4, 1988, Delaware’s original Nonpoint Source Pollution Management Program was approved by the Environmental Protection Agency (EPA) making it one of the first programs in the nation to comply with Section 319 of the Clean Water Act.

From 1989 to 1997, the NPS Program relied on the development and implementation of Best Management Practices, identification of key partners, establishing agreements for interagency cooperation and funding many successful education, protection and restoration projects. This early period of NPS management in Delaware served to foster a keen understanding of the value of collaboration, consensus and community involvement in water quality management.

From 1997 to 2013, efforts were made to fund implementation programs or activities that address the priority NPS contaminant sources such as agriculture, forestry, urban runoff, hydro modification, land disposal and various other miscellaneous sources. Examples of past activities include funding Kent and Sussex County Conservation District planner positions, stream restoration, and septic system pump-out, repair and/or replacement. These activities were prioritized based upon contaminate category and tended to establish BMP implementation on a

geographic wide scale throughout Delaware. This broad approach served to successfully educate various sectors of the positive outcomes from BMP implementation and fostered a high rate of acceptance within each of the respective implementation groups.

While these and similar projects are expected to continue, a prioritized approach will be established through the development of this document to assure NPS activities are focused within watersheds that have approved watershed plans. Delaware's NPS Program will establish this prioritized approach so as to better align itself with state strategies in an effort to better utilize funding and compliment efforts targeting water quality protection or improvement projects within priority watersheds.

## **2.3 Authority**

Section 319(h) of the Clean Water Act of 1987 authorized specific funding for the purpose of implementing approved state nonpoint source management programs. In order to be eligible for 319 funding, a state must have an approved nonpoint source assessment report and management program. Final grant awards are based on management program priorities to assure that the funds will be used effectively to achieve the objectives of the nonpoint source program. Whenever possible, 319 grant funds will be focused in sub-watersheds where NPS control activities are likely to have the greatest positive impact and/or have watershed based plans. Funded restoration activities will be implemented using the most effective measures and practices available in order to achieve water quality improvements. Eligible types of management program implementation activities include the following:

- Non-regulatory or regulatory programs for enforcement;
- Technical assistance;
- Financial assistance;
- Education;
- Training;
- Technology transfer; and
- Demonstration projects.

In addition, monitoring to assess the success of specific nonpoint source implementation projects is considered an eligible implementation activity, whereas general nonpoint source surface water assessment activities are not eligible. Each Fiscal Year, the Environmental Protection Agency (EPA) oversees the administration of 319 grant funds based on Congressional appropriations and issues regional guidance by which the grant funds are to be managed and allocated. The availability of annual 319 grant funds presents the opportunity and challenge for states and EPA to work together to implement successful NPS management programs.

## **2.4 Overall Goals**

The Delaware NPS Program will use goals and related measures of success to assess and report on Program effectiveness. The goals and measures of success cover two main categories: environmental, and administrative. Attaining measures of success in each area is key to an effective program. The NPS Program has established a series of environmental goals related to restoration of impaired waters, protection of high quality waters, protection of wetlands and control of NPS pollution. The established goals of the Delaware NPS Program include:

- Establish NPS reduction targets;
- Secure additional funding for NPS related project implementation;
- Develop Watershed Plans for all of Delaware's priority watersheds;
- Prioritize, target, and restore designated uses of impaired waters;
- Protect or restore highly valued resource waters;
- Identify and implement the most cost-effective NPS management measures to improve and protect water quality;
- Coordinate efforts of the various NPS agencies within the state;
- Identify interagency programmatic deficiencies toward control of nonpoint sources of pollution, cultivate agencies' program capabilities to address these deficiencies, and develop new programs as needed;
- Integrate the NPS program with related management studies; and
- Through designated milestones, monitor effectiveness of BMPs and management strategies in improving and protecting both surface and groundwater quality.

## **2.5 Objectives**

The objectives of Delaware's NPS Program are multi-faceted. These objectives are defined as follows:

- Support Local Conservation Activities: The 2014 NPS Management Plan is based on the premise that water quality solutions must be developed and implemented with the support of citizens who have an acknowledged interest in the watershed. The Department plays an important role in supporting local conservation activities. DNREC has structured its NPS program to assist local watershed groups. Planning and monitoring staff are assigned to help specific watershed groups within the state's priority watersheds.
- Complete Comprehensive Assessments: Using watersheds, drainages or even sub-drainages as a management area increases DNREC's ability to collect and utilize information to prepare comprehensive assessments of the state's priority watersheds. Comprehensive assessments explain the complex interactions between land use practices, pollutant loads, watershed processes and water body conditions. DNREC will create standard procedures for pooling information from numerous sources on a watershed basis.

- Improve Collaboration with Other Programs: Agencies and Organizations: A watershed approach strengthens existing intra-agency and interagency coordination and targeting of resources.
- Improve Connection between Assessment, Planning and Implementation: A watershed approach will accelerate the trend within DNREC to link assessment and planning information to implementation grants. Delaware's TMDL development process requires an explicit numeric connection between sources, impacts, control measures and reduction strategies. This can only give priority to grant applicants who show that grant submission activities are supported by an approved watershed plan.

## **3 ABOUT DELAWARE**

### ***3.1 Introduction***

Tiny Delaware, the second smallest state, is only 100 miles long and 30 miles wide. Delaware covers 2,489 square miles. 1,955 square miles of Delaware are land areas. 535 square miles of Delaware are covered by water. Delaware is bordered in the north by Pennsylvania and in the south and west by Maryland. To the northeast of Delaware, across the Delaware River and Delaware Bay lies New Jersey. On the east, Delaware is bordered by the Atlantic Ocean. Delaware is divided into the three unique counties of Sussex, Kent and New Castle. The state capital, Dover, is housed in the middle county Kent.

### ***3.2 Land Use and Population***

Delaware is ranked 45th among the other states with a population of 817,491 residents. That number seasonally swells during the summer month as the beachgoers flock to coastal Sussex County.

In spite of a growing urban population, Delaware's agriculture community continues to show a strong presence producing a diverse array of commodity products including, poultry broilers, soybeans, corn, and milk. Manufacturing operations throughout the state produce various chemical compounds, food products, paper products, rubber and plastics products, primary metals, and printed materials. The state also has a small but resilient fishing industry focused on crabs and clams markets. Mining in Delaware is limited to sand and gravel operations with a few magnesium compounds.

### **3.3 Geography**

The highest point in Delaware is only 450 feet above sea level; in a mobile home park just west of Ebright Road. Ebright Road is in Delaware's northernmost county, New Castle, located near the Pennsylvania border. The lowest point in Delaware is at sea level in the southernmost county, Sussex, at the shore where Delaware meets the Atlantic Ocean. The Mean Elevation of the state of Delaware is 60 feet above sea level.

Delaware shares the Delmarva Peninsula with parts of Maryland and Virginia. Delaware's small size doesn't leave much room for major or varied land forms and most of the state lies on a low, flat coastal plain. In general, Delaware slopes down from a piedmont plateau in the north to a near sea level coastal plain in the east and south. Delaware is situated such that it is part of two major land regions; the Atlantic Coastal Plain and the Piedmont.

**Atlantic Coastal Plain:** The Atlantic Plain runs over 2,200 miles from Cape Cod along the eastern seaboard of the United States and around the Gulf of Mexico to the Mexico border. Except for a small area in the north, most of Delaware's land area is part of the Atlantic Coastal Plain. This land is flat and not very high. It rarely reaches more than 80 feet above sea level. The southern boundary of Delaware is swampland; 30,000 acres of swamp!

**Piedmont:** The Piedmont stretches from New Jersey south to Alabama. Crossing the northern edge of Delaware, the Piedmont is about 10 miles wide at its widest point within the state. The Piedmont is marked by rolling hills. The highest point in Delaware, located near Ebright Road, is located in the Piedmont region.

### **3.4 Rivers and Streams**

Delaware has classified more than 2,509 miles of rivers and streams, and 2,954 acres of lakes and ponds that have been classified using a rating system called for in the Federal Clean Water Act. The classification system is keyed to a management program designed to protect uses of the waters (referred to as "designated uses") for such purposes as drinking water supply, recreation, and the propagation of fish, aquatic life and wildlife. These designated uses serve as Delaware's water quality goals for specific watersheds. In order to protect those uses, a comprehensive set of chemical, biological, and habitat standards have been promulgated. Designated uses and standards are embodied in the State of Delaware Surface Water Quality Standards as amended on June 11, 2011.

The Department of Natural Resources and Environmental Control has found that 99% of Delaware's rivers and streams do not fully support the swimming use and 64% do not fully support the fish and wildlife use. Most of these waters do not meet the standards because of nonpoint source pollution impacts.

### **3.5 Ponds and Lakes**

Ponds and lakes in Delaware exhibit many of the same problems as rivers and streams. However, ponds and lakes also serve as "catch basins" for a variety of pollutants that are washed from the land and the air into these water bodies. An indicator which shows the tendency for lakes and ponds to accumulate pollutants is the extent of nutrient enrichment. Nutrient enrichment can lead to excessive weed and algae growth, reduced water clarity, and decreases in population of aquatic life and wildlife. The department has found that 41% of Delaware's fresh water ponds and lakes do not fully support the swimming use and 74% do not fully support the fish and wildlife use.

### **3.6 Wetlands**

Wetlands have many important functions and values to society. They provide fish and wildlife habitat, help maintain water quality, and provide indirect socioeconomic values such as flood and storm water damage protection. With the implementation of federally mandated regulations known as Total Maximum Daily Loads (TMDLs) to reduce pollutants into water bodies, wetland preservation is considered one of the most important strategies for achieving the pollution reduction efforts necessary to meet water quality standards.

Wetlands comprise a significant portion of the water resources of Delaware covering over 300,000 acres (about 470 square miles or 23%) of the state. Throughout the state a wide diversity of wetland types occur including both tidal and non-tidal wetlands. While some wetlands are directly connected or adjacent to other surface waters such as salt marshes and floodplains, others occur as isolated areas surrounded by uplands such as forested flats and Delmarva Bays. Preserving the abundance, quality, diversity and proportion of different types of wetlands in the landscape is essential to protecting the natural resources and waters of Delaware. Currently the State of Delaware is actively working in each of these areas to protect our high quality wetland resources and restore degraded systems on the watershed scale.

### **3.7 Classified Uses**

The State of Delaware Surface Water Quality Standards contains the following Designated Use categories:

- Public Water Supply
- Industrial Water Supply
- Primary Contact Recreation
- Secondary Contact Recreation
- Fish, Aquatic Life, and Wildlife
- Cold Water Fish - Put and Take
- Agricultural Water Supply
- Exceptional Recreational or Ecological Significance (ERES)

- Harvestable Shellfish Waters

Delaware's Exceptional Recreational or Ecological Significance (ERES) designation is applied to special state waters that are accorded a higher level of protection than other waters.

## **4 DELAWARE'S WATER QUALITY**

Water quality in Delaware has been monitored for more than 25 years by federal, state, academic, and citizen monitoring groups. Groundwater quality in much of the state has been highly impacted by agricultural activities in addition to residential and commercial development, including on-site wastewater (septic) discharges.

The surface waters (rivers, streams, and ponds) have been routinely monitored for many years. Intensive monitoring was conducted prior to TMDL model development, and sampling continues on at least a monthly basis at several locations. Collected data from this monitoring has revealed both nitrogen and phosphorus enrichment in the rivers, streams, and ponds of Delaware. Though nutrients are essential elements for plants and animals, their presence in excessive amounts can cause significant negative impacts to fish and other aquatic life.

### ***4.1 Impaired Waters***

Impaired waters do not meet water-quality standards for their designated uses, such as recreation, fishing, or drinking. Impaired waters could be suffering from excess nutrients, low dissolved oxygen, toxins, bacteria, heat, or any combination of these problems.

More than 90 percent of Delaware's waterways are considered impaired. The state's list of impaired waters, filed with the EPA, includes 377 bodies of water that suffer from 11 different impairments, the most common of which are pathogens and nutrients (nitrogen and phosphorus). Most impairment comes from nonpoint sources, which are harder to control.

### ***4.2 Nutrient Enrichment***

Eutrophication of surface waters is a natural process, spanning hundreds to thousands of years, resulting from natural erosion and the breakdown of organic material. Over these extended periods many lakes and ponds under natural conditions would be expected to fill in with sediments and organic materials, eventually becoming marshes and meadows. Lakes and ponds in various stages of eutrophication are considered a natural feature of Delaware's environment. Activities linked to soil erosion, domestic waste disposal (on-site septic systems), and runoff, can greatly increase the rate and amount of nutrients reaching lakes and ponds, accelerating the eutrophication process. Characteristic symptoms of nutrient enriched water bodies include murky green waters or nuisance plant growth. Delaware waters are generally considered to be impacted by nutrients (nitrogen and phosphorus).

### **4.3 TMDL Program Summary**

Section 303(d) of the 1972 Federal Clean Water Act (CWA), as amended, requires states to develop a list of waterbodies that need additional pollution reduction beyond that provided by the application of existing conventional controls. These waters are referred to as "Water Quality Limited" and must be periodically identified by the Department of Natural Resources and Environmental Control (DNREC) or the federal Environmental Protection Agency (EPA).

Water Quality Limited waters requiring the application of Total Maximum Daily Loads (TMDL) are identified in a document commonly referred to as the "303(d) list." A TMDL is the level of pollution or pollutant load below which a waterbody will meet water quality standards and thereby allow use goals such as drinking water supply, swimming and fishing, or shellfish harvesting to be achieved. A state's 303(d) list must be reviewed and approved by EPA by April 1st of every even-numbered year. Delaware is further required to develop pollution limits called "total maximum daily loads" or TMDLs, for all water quality limited waterbodies.

A full TMDL process determines the pollutants causing water quality impairments, identifies maximum permissible loading capacities for the waterbody in question, and, for each relevant pollutant, assigns load allocations (TMDLs) to each of the different sources, point and nonpoint, in the watershed.

The established process is an effective and important tool for achieving water quality standards, but is time-consuming and labor-intensive. For this reason, TMDLs are currently pursued for high priority waters with the most severe water quality problems including the Inland Bays, Nanticoke River, and the Appoquinimink River. These waters are typically impacted by both point sources (e.g., sewage treatment plants, industrial facilities) and nonpoint sources (e.g., stormwater runoff from urban and agricultural lands).

It is the policy of the Department to maintain within its jurisdiction surface waters of the State of satisfactory quality consistent with public health and public recreation purposes, the propagation and protection of fish and aquatic life, and other beneficial uses of the water. Delaware currently has several waterbodies or segments thereof which carry the ERES designation. The factors that were considered in these designations and which will be considered in possible future ERES designations include the following factors: (a) location (e.g., on federal lands such as national parks, national wilderness areas, or national wildlife refuges), (b) previous special designations (e.g., wild and scenic river), (c) existing water quality (e.g., pristine or naturally-occurring), (d) ecological value (e.g., presence of threatened or endangered species during one or more life stages), (e) recreational or aesthetic value (e.g., presence of an outstanding recreational fishery), and (f) other factors that indicate outstanding ecological or recreational resource value (e.g., rare or valuable wildlife habitat).

The State of Delaware implemented an antidegradation policy. Antidegradation refers to policies and procedures designed to prevent or minimize the reduction of water quality below existing levels. The policy can be reviewed here:

<http://www.dnrec.delaware.gov/swc/wa/Documents/antidegp.pdf>

The Delaware NPS program feels that maintaining water quality from further degradation and/or ERES status designation is a positive and achievable goal. To “hold the line” on water quality should be as important as repairing water quality limited waters. Resources should not be taken away to neglect those waters that are environmentally significant.

## **4.4 Pollution Control Strategies**

Since the early 1990’s, EPA has urged states to adopt a watershed approach to water quality management. EPA issued a new TMDL guidance document in 1991 encouraging the development of TMDLs on a watershed basis. Delaware has implemented a watershed approach that includes the integration of the TMDL monitoring and assessment program for each watershed in accordance with DNREC’s Whole Basin Management Program Schedule. Delaware has completed final TMDLs for the Appoquinimink River, Nanticoke River and Inland Bays (Indian River/Bay and Rehoboth Bay). Implementation of TMDL Regulations will be achieved through development and implementation of Pollution Control Strategies.

A Pollution Control Strategy for reducing pollution to meet these limits will be developed for each watershed. The important step following the setting of new pollution limits is developing strategies for meeting them. Delaware is obligated to write a formal Pollution Control Strategy that includes numerous ways to reduce pollution levels.

The Pollution Control Strategy (often abbreviated PCS) includes a combination of more than one pollution-reducing method. Methods could include:

- The removal of point-source discharges from waterways.
- Better management of fertilizer and manure.
- Replacement of failing septic systems with environmentally safer sewer systems.
- Protective agricultural practices such as the planting of vegetative buffer strips between cropland and waterways.

A PCS will specify the necessary pollutant load reductions that need to occur such that loadings will be less than or equal to the TMDL. A PCS is likely to include the following elements:

- Identification of measurable environmental and programmatic goals;
- Identification of sources of water pollution and the relative contribution of sources;
- Implementation of pollution control and natural resource restoration measures (e.g., permit revisions, implementation of best management practices and buffer strips) to achieve clean water and other natural resource goals, especially those measures which will achieve multiple environmental and public health benefits;
- Schedules for implementation of needed restoration measures and identification of appropriate lead agencies to oversee implementation, maintenance, monitoring, and evaluation;
- Implementation of total maximum daily loads (TMDLs) for pollutants exceeding state water quality standards;
- Implementation of source water assessment and protection programs;

- Needed monitoring and evaluation to assess progress towards achieving environmental and programmatic goals;
- Funding plans to support the implementation and maintenance of needed restoration measures;
- A process for cross-agency (federal, state, interstate, and local) coordination to help implement watershed restoration action strategies; and
- A process for public involvement.

Plans are for reductions to be achieved through voluntary (for those activities that are voluntary now) and regulatory (for those activities that are regulated now) actions. However, TMDLs will provide watershed-wide pollution reduction targets which DNREC (and EPA) will be legally obligated to meet. This obligation will require new approaches for addressing point and nonpoint sources of pollution. Concepts such as “pollution trading” between different sources of pollution, geographic targeting, and pollution prevention will all be considered as part of the PCS. Meeting these targets may require regulation under existing law.

## ***4.5 Chesapeake Bay Watershed Implementation Plan***

Delaware is among six Chesapeake Bay Watershed states, along with Maryland, Virginia, West Virginia, Pennsylvania, and New York and the District of Columbia, committed to a federal-state initiative to develop a pollution "diet" that will help restore the water quality of the Bay and its tidal waters by 2025.

The Bay and many streams that drain to the Bay from each state suffer from excess pollution and must be cleaned up. The Environmental Protection Agency is leading the effort having developed a Total Maximum Daily Load (TMDL) for nutrients and sediment for the Chesapeake Bay and its tidal branches. A TMDL is the maximum amount of a pollutant that a body of water can receive and still meet water quality standards that protect humans and aquatic life. Delaware has already established state TMDLs for impaired waters in the Chesapeake, but in many cases, the EPA TMDL will call for additional reductions.

As part of the TMDL, each jurisdiction is required to develop a Watershed Implementation Plan (WIP) that details how load goals will be achieved and maintained into the future. This work is being done in three phases. Draft Phase I WIPs were due to EPA on September 1, 2010 and final plans were turned in on November 29, 2010. Phase II WIPs in draft and final forms were due to EPA by December 15, 2011 and March 30, 2012, respectively. Phase III WIPs must be received by EPA in 2018. With each successive WIP, the detail of load goals and actions to achieve those goals will become increasingly more specific. Delaware will develop milestones every 2 years to support implementation of the WIPs. The 2014 NPS Management Plan supports this effort and includes more detailed steps to achieve the TMDL goals.

Delaware's WIP work is being led by an Interagency Workgroup made up of representatives from DNREC; Delaware Department of Agriculture; Department of Transportation; Office of State Planning Coordination; County Conservation Districts; U.S. Department of Agriculture agencies; U.S. Geological Survey; and other stakeholders such as representatives from the

farming and development communities. Nine subcommittees were formed to address: agriculture; stormwater; wastewater; land use and comprehensive plans; restoration; public lands; funding; information technology; and communications.

Delaware's Phase I WIP was finalized November 2010 and was used to develop the EPA TMDL that was released December 2010. Phase II WIP work occurred in 2011 and early 2012. The Phase II WIP provides additional details about the partner organizations who will implement portions of the WIP, specifies when actions will occur, and identifies the resources necessary for success. Additionally, some of the implementation goals identified in the Phase I WIP have been pared down to a smaller scale, such as at the County level. Finally, the Phase II plan establishes implementation goals for 2017, which is when 60 percent of the necessary nitrogen, phosphorus, and sediment goals must be achieved.

#### ***4.6 Delaware NPS Program Watershed Plan Requirements***

To ensure that projects funded with CWA Section 319 dollars make progress towards restoring or protecting waters impaired by nonpoint source pollution, EPA requires watershed-based plans that are developed or implemented with Section 319 funds to address 303(d)-listed waters must include at least the elements listed below. Where the watershed-based plan is designed to implement a TMDL, these elements will help provide reasonable assurance that the nonpoint source load allocations identified in the NPS TMDL will be achieved. However, even if a NPS TMDL has not yet been completed, EPA believes that the following nine elements are critical to assure that public funds to address impaired waters are used effectively:

- a. An identification of the causes and sources or groups of similar sources that will need to be controlled to achieve the load reductions estimated in this watershed-based plan (and to achieve any other watershed goals identified in the watershed-based plan), as discussed in item (b) immediately below. Sources that need to be controlled should be identified at the significant subcategory level with estimates of the extent to which they are present in the watershed (e.g., X numbers of dairy cattle feedlots needing upgrading, including a rough estimate of the number of cattle per facility; Y acres of row crops needing improved nutrient management or sediment control; or Z linear miles of eroded streambank needing remediation).
- b. An estimate of the load reductions expected for the management measures described under paragraph (c) below (recognizing the natural variability and the difficulty in precisely predicting the performance of management measures over time). Estimates should be provided at the same level as in item (a) above (e.g., the total load reduction expected for dairy cattle feedlots; row crops; or eroded streambanks).
- c. A description of the NPS management measures that will need to be implemented to achieve the load reductions estimated under paragraph (b) above (as well as to achieve other watershed goals identified in this watershed-based plan), and an identification (using a map or a description) of the critical areas in which those measures will be needed to implement this plan.

- d. An estimate of the amounts of technical and financial assistance needed associated costs, and/or the sources and authorities that will be relied upon, to implement this plan. As sources of funding, States should consider the use of their Section 319 programs, State Revolving Funds, USDA's Environmental Quality Incentives Program and Conservation Reserve Program, and other relevant Federal, State, local and private funds that may be available to assist in implementing this plan.
- e. An information/education component that will be used to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, and implementing the NPS management measures that will be implemented.
- f. A schedule for implementing the NPS management measures identified in this plan that is reasonably expeditious.
- g. A description of interim, measurable milestones for determining whether NPS management measures or other control actions are being implemented.
- h. A set of criteria that can be used to determine whether loading reductions are being achieved over time and substantial progress is being made towards attaining water quality standards and, if not, the criteria for determining whether this watershed-based plan needs to be revised or, if a NPS TMDL has been established, whether the NPS TMDL needs to be revised.
- i. A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria established under item (h) immediately above.

As the Delaware NPS Program strategy was evolving during the development of the PCSs and the Chesapeake Bay WIP, many of these documents do not directly fulfill the obligations of the EPA nine element requirements. As such, separate Watershed Management Plans have been developed by the NPS Program using the above documents as the foundation for Plan development. In most cases, further clarity or detail was added to assure the nine elements were adequately fulfilled. In other instances, such as the Chesapeake Bay WIP, the scale was further refined so details could be broken out on a refined and smaller watershed scale.

## **5 WATER QUALITY IMPAIRMENTS**

Pollutant loads to surface waters fall into two categories: point sources and nonpoint sources. A point source is a specific source, such as an effluent pipe. Specifically for Delaware, point sources include wastewater treatment plants. Nonpoint sources of pollution are more diffuse and harder to track. In Delaware, nonpoint source pollution occurs as a result of using land for agriculture or urban development, and includes runoff from fertilizers and leaching from septic systems. In these cases, nitrogen and phosphorus enter surface waters through groundwater discharges or overland runoff. The below sections identifies the common sources of nonpoint sources of pollution in Delaware.

## **5.1 Agriculture**

Delaware's 2,400 farms encompass approximately 540,000 acres of land (42% of the state's total land area). The poultry industry, the primary agricultural segment in the state, produces almost 241 million broiler chickens annually. Sussex County is the single largest producer in the entire country, and Delaware ranks 8th overall in poultry production among the states. Animal production in Delaware also includes swine, dairy, beef cattle and horses. Other agricultural products in Delaware include field crops- corn, soybeans and small grains- and fruits and vegetables.

Agriculture has been identified as a nonpoint source (NPS) of pollution. Improvements in agricultural practices can help reduce NPS pollution; however, it is important to note that most of the NPS pollutants associated with agriculture cannot realistically be completely eliminated for many reasons. For example, agricultural operations are inherently "leaky" systems, meaning that it is impossible to ensure that all of the nutrients applied to fertilize crops will be taken up in plants or retained in soils. In fact, nitrogen efficiency, the percent of applied nitrogen that ends up in the harvested crop, can be as low as 40%. In addition, agricultural activities also impact water quality through physical disturbances caused by livestock or equipment.

It is also important to note that many of the pollutants associated with agricultural production likely have additional sources, such as neighboring urban areas. A comprehensive strategy addressing NPS inputs must consider these sources as well.

The goal of this plan is to balance the economic realities of agricultural production with minimal negative environmental impacts. This goal can be achieved through a program of education, technical assistance, financial incentives, research and demonstration, and regulation. The following section identifies the important NPS pollutants from agriculture and the associated reduction strategies to address them.

## **5.2 Construction**

The principal effect land development activities have on the erosion process consists of exposing disturbed soils to precipitation and to surface storm runoff. Shaping of land for construction or development purposes alters the soil cover and the soil in many ways, often detrimentally affecting on-site drainage patterns and eventually the off-site stream flow characteristics. Protective vegetation is reduced or removed, excavations are made, topography is altered and the disturbed soil material is stockpiled; often without vegetative cover. In effect, the physical properties of the soil are changed, making it more susceptible to the action of wind and water. Uncontrolled erosion from these areas often causes considerable environmental damage such as surface water pollution, channel and reservoir siltation and streambank erosion.

Although streams and rivers naturally carry sediment loads, erosion from construction sites can elevate these levels to well above those in undisturbed watersheds as well as other land uses. Soil erosion rates from construction activities can be 10 times that of crop land and 1000 times

that of natural forest land erosion. Sediment is the largest Nonpoint pollutant, by volume, in the United States.

The damage from sediment itself includes clogging of fish gills, smothering bottom dwelling aquatic life and reducing habitat by filling in pools. Fine soil particles such as silt and clay stay suspended in the water column for much longer periods of time and adversely affect water bodies by reducing light penetration, abrading sensitive organs of aquatic animals and reducing dissolved oxygen. In addition, the conveyance of sediment into a water body via stormwater runoff is the primary pathway for delivering other nonpoint source pollutants such as nutrients and metals.

Excessive quantities of sediment can cause costly damage to waters and to private and public lands. Obstruction of stream channels and navigable rivers by deposited sediment reduces their hydraulic capacity which, in turn, causes an increase in flood frequencies and costly property damage. The aesthetic attraction of many streams, lakes and reservoirs used for swimming, boating and fishing has been seriously impaired or destroyed. Many local and regional economies rely on dollars brought in by these recreational activities. Sediment also fills drainage channels and plugs culverts and storm drains necessitating costly dredging and maintenance. The state of Delaware dredges between 80,000 and 100,000 cubic yards of material each year at a cost of approximately 3 to 4 dollars per yd<sup>3</sup>.

### ***5.3 Urban Runoff***

Rainfall events are key in the natural hydrologic cycle. However, in highly developed areas with greater impervious cover, rainfall results in flooding, erosion, and contamination. As the water moves over these impervious surfaces, such as rooftops, driveways, roads, and parking lots, it picks up pollutants such as fertilizers containing excess amounts of nitrogen and phosphorus, sediment, oil from parking lots, trash, and other potentially harmful contaminants.

Many areas of Delaware were developed prior to the implementation of current regulations. These residential, commercial, industrial and institutional developments were constructed without stormwater management facilities and with no thought to nonpoint source pollution control. An interim period in the state's regulatory history resulted in some development with rudimentary stormwater management basins intended to address flooding issues, but their effectiveness for even that purpose is questionable. To date, very few of these sites have been identified and even fewer have received attention. Even some developments that were constructed under the current regulations have water quality and quantity problems due to the lack of maintenance. For these reasons, addressing nonpoint source pollution from existing development is just as critical as new construction.

### ***5.4 Hydrologic/Habitat Modification***

One form of hydromodification is channelization or channel modification. These terms (used interchangeably) describe river and stream channel engineering undertaken for the purpose of flood control, navigation, drainage improvement, and reduction of channel migration potential.

Activities such as straightening, widening, deepening, or relocating existing stream channels and clearing or snagging operations fall into this category. These forms of hydromodifications typically result in more uniform channel cross sections, steeper stream gradients, and reduced average pool depths. The term flow alteration describes a category of hydromodification activities that result in either an increase or a decrease in the usual supply of fresh water to a stream, river, or estuary. Flow alterations include diversions, withdrawals, and impoundments. In rivers and streams, flow alteration can also result from undersized culverts, transportation embankments, tide gates, sluice gates, and weirs.

Channel modification activities have deprived wetlands and estuarine shorelines of enriching sediments, changed the ability of natural systems to both absorb hydraulic energy and filter pollutants from surface waters, and caused interruptions in the different life stages of aquatic organisms (Sherwood et. al, 1990). Channel modification activities can also alter instream water temperature and sediment characteristics, as well as the rates and paths of sediment erosion, transport, and deposition. A frequent result of channelization and channel modification activities is a diminished suitability of instream and riparian habitat for fish and wildlife. Hardening of banks along waterways has eliminated instream and riparian habitat, decreased the quantity of organic matter entering aquatic systems, and increased the movement of NPS pollutants from the upper reaches of watersheds into coastal waters.

Channel modification projects undertaken in streams or rivers to straighten, enlarge, or relocate the channel usually require regularly scheduled maintenance activities to preserve and maintain completed projects. These maintenance activities may also result in a continual disturbance of instream and riparian habitat. In some cases, there can be substantial displacement of instream habitat due to the magnitude of the changes in surface water quality, morphology and composition of the channel, stream hydraulics, and hydrology.

Excavation projects can result in reduced flushing, lowered dissolved oxygen levels, saltwater intrusion, and loss of streamside vegetation, accelerated discharge of pollutants, and changed physical and chemical characteristics of bottom sediments in surface waters surrounding channelization or channel modification projects. Reduced flushing, in particular, can increase the deposition of finer-grained sediments and associated organic materials or other pollutants.<sup>4</sup>

The resulting changes to the distribution, amount, and timing of flows caused by flow alterations can affect a wide variety of living resources. Where tidal flow restrictors cause impoundments, there may be a loss of streamside vegetation, disruption of riparian habitat, changes in the historic plant and animal communities, and decline in sediment quality. Restricted flows can impede the movement of fish or crustaceans. Flow alteration can reduce the level of tidal flushing and the exchange rate for surface waters within coastal embayment's, with resulting impacts on the quality of surface waters and on the rates and paths of sediment transport and deposition.

## **5.5 Septic Systems**

Septic systems also contribute high amounts of nutrients in Delaware. From research done in one priority watershed, the Nanticoke watershed, a notable amount of nitrogen loading was found to be originating from septic systems. As the soil type and water-table depths in the Nanticoke watershed are similar to much of Delaware, similar nutrient loads can be predicted throughout the state. Raw or inadequately treated sewage is also a severe contributor to the declining health of many Delaware watersheds. This sewage contains pathogens, which are disease-causing bacteria and viruses. The potential daily pathogen output from one person's untreated sewage can equal that of treated sewage from hundreds to even thousands of people, depending on the level of treatment.

# **6 THE WATERSHED APPROACH**

Water quality restoration requires dozens of individual decisions and actions. To restore and protect water quality people not only have to change the way they do things, they often have to change the way they think about things about the land, water and the world around them. Most of the time an individual land owner's actions won't have a measurable impact on water quality (unless it is a large landowner in a small watershed). It is often frustrating for landowners to make extra investments in soil and water conservation measures while their neighbors do little or nothing. For twenty-five years nonpoint source programs had little quantifiable impact on water quality because individual efforts were dispersed across many watersheds.

The NPS Program's watershed approach will rely on partnership organizations and grassroots groups to develop voluntary approaches to restoring water quality. This approach emphasizes local watershed planning and increased collaboration between federal, state, tribal, and local governments, the public, and the private sector. Managing water resource programs on a watershed basis makes sense – for the community, the state and the environment. The watershed approach enables communities to develop water pollution solutions that incorporate local economic and environmental concerns. Local watershed planning and project implementation relies on the knowledge, wisdom and experience of farmers, foresters, recreationists and public employees who understand the watershed. When local people are involved in developing watershed plans, they have a vested interest in its success. Bringing citizens together to proactively address issues reduces conflicts. As a critical mass of the community commits to the plan, watershed protection becomes a community value. The watershed approach is well suited to Delaware's rural and urban mix where there is a strong historic tradition of developing community responses to local problems.

A coordinated watershed approach allows DNREC to leverage its resources through cooperation with other government agencies, private groups and volunteers in monitoring, data collection and water quality restoration. Broad-based collaboration and communication also prevent duplication of efforts. Because many state and federal agencies (EPA, Farm Service Agency and Natural Resources Conservation Service) fund programs on a watershed basis, this approach may increase funding for Delaware's watershed projects.

## **6.1 Watershed Prioritization**

When resources are limited, it is often appropriate to prioritize where those resources should be directed to have the best chance of obtaining desired goals. Given the NPS Program’s “watershed approach” to addressing NPS pollution problems, it makes sense to consider prioritizing watersheds for receipt of limited program resources. This is an important time to consider prioritizing watersheds for NPS Program assistance for a variety of reasons:

- The NPS Program identifies watershed prioritization as a critical tool, not only for the NPS Program, but for the watershed restoration/protection activity as a whole;
- Federal, state, and local financial resources for watershed protection and restoration efforts continue to decline; and
- Recent NPS Program emphasis on developing watershed plans for priority watersheds throughout Delaware, much more detail is now known about NPS problems and their significance in particular watersheds, as well as the methods and costs of addressing many of these problems.

The following discussions address the concepts of identifying priority watersheds in Delaware. The process facilitates the designation of priority watersheds for overall focus, but allows for deviation from the priority designations for specific projects and/or actions with appropriate reasons. For instance, the NPS Program may designate certain watersheds as priorities for overall program focus, yet have another watershed where it might be very important to have a small scale project specific project plan developed (or BMP implement efforts, or monitoring, etc.). If the reasons for doing work in that watershed were appropriate, justified, and can be accomplished under General Program funding, the work would not be precluded from being done just because it was not one of the priority watersheds. However, the priority watersheds would generally receive increased program attention over watersheds that were not priority watersheds.

## **6.2 State Level Priority Watersheds**

The NPS Program recognizes the benefits of distributing resources broadly in an effort to build local capacity and encourage partner efforts to restore and protect Delaware watersheds. In many cases, small investments can serve as seed money or catalysts for larger efforts with multiple benefits. Additionally, small investments to state sponsored projects provides excessive match opportunities that can leverage additional funding in the same watershed on projects where such match may not exist. The NPS Program also acknowledges the benefits of targeting resources to simultaneously correct multiple threats in a single watershed. Many believe this approach provides the best opportunity to obtain measurable on-site improvements in water quality.

There are a variety of issues that need to be considered when deciding which approach, or combination of approaches, provides the best potential for protecting or restoring water quality throughout Delaware, including the following:

- Limited state and federal resources.
- Varying levels of local interest and participation.
- A wide spectrum of existing water quality conditions
- Differences in the complexity and magnitude of water quality issues.
- Specific local, state, and federal goals for many watersheds.

As a result, priorities are needed to not only guide where protection and restoration resources will be directed in the future, but to help decide how those resources will be provided. Again, it is important to note that watershed prioritization will not necessarily preclude conducting work in non-priority watersheds, but it will help focus overall efforts of both the NPS Program.

Presently there is a robust number of ecological metrics, fewer stressor metrics, and even less social metrics. The team intends to further evaluate additional factors, including the following, to determine if usable metrics can be developed for them at the 8-digit, 10-digit, and/or 12-digit HUC scales:

- Ability to show water quality improvement.
- Water quality monitoring data.
- Uniqueness of a particular water body type in specific geographic areas of the state (i.e. Water body with significance of the resource).
- Recreational use of the water body.
- Importance of the water body to the state.
- Importance of the water body to the local community.
- Local community interest and their ability to coordinate and implement protection or restoration actions.
- Type and number of other state and federal agencies currently participating, or anticipated to participate, in protection or restoration actions.
- Rate of ongoing land development and urban sprawl in a watershed, as well as the status and effectiveness of local programs underway to address these issues.
- Financial resources available.
- Technical resources available.
- Geographic distribution of priority watersheds.

Section 303(d) of the 1972 federal Water Pollution Control Act (as amended) requires states to develop a list of waters that do not meet water quality standards and thus require additional pollution controls. These waters are referred to as “water quality limited” (WQL) and must be periodically identified by the state agency designated with this responsibility. In Delaware, DNREC’s Watershed Assessment Program is the designated state agency. This list includes public participation and must be approved by EPA every two years.

The 303(d) process also requires a strategy for bringing those water bodies back into compliance that is, improving water quality to the point where recognized beneficial uses of the water are fully supported, within a reasonable period of time. The primary strategy is the development of Total Maximum Daily Loads (TMDLs). The development of a TMDL addresses pollution problems by systematically identifying the water contaminants causing the water quality impairment, linking them to watershed characteristics and management practices, establishing objectives for water quality improvement, and identifying and implementing new or altered management measures designed to achieve those objectives.

Waters on the 303(d) list, which are impacted by nonpoint sources, are always of high priority for implementation of comprehensive watershed projects and restoration activities. These projects are expected to improve water quality, particularly those with action plans that include all the components necessary for approval as voluntary TMDLs.

### **6.3 NPS Program Priority Watersheds**

NPS Program priority watersheds include any watershed that has an EPA approved watershed plan. Each watershed plan prioritizes water bodies as well. Because each watershed plan is specific and unique the priorities may be unique as well. The prioritized waters within each watershed plan will take precedence. Watershed plans can be found at <http://www.epa.gov/reg3wapd/nps/index.htm>

Due to Delaware's involvement in the Chesapeake Watershed Implementation Plan (WIP), has led the NPS program to mimic their Watershed Plans after the WIP in order to achieve consistency of water quality improvement goals state wide. On May 12, 2009, President Obama signed Executive Order 13508, placing increased focus and heightened emphasis on Bay restoration. In addition, draft legislation to reauthorize the Chesapeake Bay Program, calls for increased measures from federal, state, and local governments. If the state does not meet two year milestones or short term objectives then there are potential federal actions EPA can impose. Two-year milestones are short-term objectives under the Chesapeake Bay TMDL accountability framework used to assess progress toward restoration goals while allowing jurisdictions to flexibly adapt their WIPs to meet those goals. As such, the sub-watersheds of the Chesapeake Bay will have the highest priority for NPS Program activity.

The next state-level priority watershed is the Inland Bays Watershed. This watershed is an ERES of the state. Because of its high recreational use and its economic impacts this watershed has on tourism for the state, make it an important watershed.

All other watersheds with approved watershed plans will be considered for implementation of NPS activities as warranted.

## **6.4 Priority Pollutants**

In addition to prioritizing specific watersheds of Delaware, issues or pollutant categories are brought to prominence as well. Nutrients and sediments are the major pollutants of concern throughout the state. Nutrients ultimately cause reductions in fauna abundance and diversity. Boating, fishing, and swimming are inhibited as a result of excessive plant growth. Sediments also affect fauna and flora populations as a result of turbidity and sedimentation filling in habitat on waterbody floors. Cost is incurred when navigable waters must be dredged to remove sediment.

## **6.5 Approved Watershed Plans**

The watershed approach is most effective when activities are conducted in a collaborative, partnership driven effort. This coordination is often best provided through a comprehensive Watershed Plan that is developed and implemented jointly by interested and/or affected stakeholders. Consequently, the NPS Program addresses NPS issues primarily through watershed-specific Watershed Plans. The intent of NPS Program approved Watershed Plans is to define all water quality issues and threats within the priority watershed and to recommend specific BMP implementation actions to address those problems. Details of the plan must address priorities, responsible parties, costs, and schedules in order to restore degraded waters or protect priority watersheds. The NPS Program approves watershed plans using EPA's defined 9 Elements of Watershed Planning as guidance. Watershed Plans must include all 9 elements as defined the federal CWA Section 319 program. These elements are described in the Handbook for Developing Watershed Plans to Restore and Protect Our Waters.

Using the above stated criteria, the NPS Program approval process allows activities identified in a Watershed Plan to be eligible for funding consideration under the federal Section 319 program in the following watersheds:

- a. Currently Approved 9 element watershed plans include:
  - Inland Bays
  - Little Assowoman Bay
  - St. Jones River
  - Appoquinimink River
  - Christina River
- b. Additional 9 element watershed plans scheduled for approval in 2014:
  - Upper Chesapeake Bay
  - Chester River/Choptank River
  - Nanticoke
  - Lower Chesapeake

- c. Additional 9 element watershed plans scheduled for approval in 2015:
  - Broadkill River
  - Cool Run

## **7 GOALS & MILESTONES**

The Delaware NPS Program has established a series of environmental goals related for restoration of impaired waters, protection of high quality waters, protection of wetlands and control of NPS pollution.

The NPS Program will use goals and measures of success to assess and report on NPS Program effectiveness. The goals and measures of success cover two main categories:

- General NPS Program activities (statewide)
- Watershed Component activities (priority watersheds)

### **7.1 General NPS Program**

The General NPS Program component consists of statewide activity used to address nonpoint source pollution issues on a statewide scale. Key elements of this component include:

- I. *Information, Education and Technical Assistance Programs:* Water quality information and education programs are funded across the state through a variety outreach efforts. These programs are essential in providing education that highlights the importance of restoring and protecting our water resources for current and future generations. In addition local agencies such as conservation districts, NRCS field offices, county extension offices and other DNREC offices provide technical assistance for implementing a wide variety of water quality BMPs.
- II. *Integration with Existing Programs:* A variety of local, state and federal programs have established planning activities that address NPS and or water quality improvement objectives. Integration of water quality protection considerations early in ongoing land use planning, management and development processes can help ensure that impacts to the state's bays, ponds, streams, and rivers are avoided or minimized.

### **7.2 General NPS Program Goals**

Delaware establishes the below general goals for the 2014 NPS Management Plan. The goals contained in this section are statewide in nature and account for waterbodies that do not have EPA approved watershed plans. These waters remain valuable and should not be discounted from NPS targeted activities.

- A. *Short Term Goal:* Support local and state programmatic capacity to address NPS issues and priorities.
- Maintain adequate Program funding and provide technical and financial assistance for the implementation of BMPs in coordination with local, state and federal partners (FY 2014-2016).
  - Provide adult and youth educational opportunities for multiple audiences including local citizens, community leaders, landowners, contractors and youth to develop an informed citizenry regarding water quality issues (FY 2014-2016).
- B. *Short Term Goal:* Enhance collaboration among local, state and federal agencies and private sector organizations addressing NPS pollution.
- Improve program communication and coordination at a minimum through the hosting NPS Program biennial meetings (FY 2014-2016).
  - Expand funding opportunities for NPS projects through cooperation with other programs and agencies (FY 2014-2016).
- C. *Short Term Goal:* Implement statewide pollutant-specific strategies to reduce nutrient and sediment pollutants originating from nonpoint sources of pollution.
- Achieve reductions in total nitrogen, total phosphorus and sediment loads in state defined priority watersheds that have a draft or approved Pollution Control Strategy (PCS) (FY 2014-2016).
- D. *Long Term Goal:* Comply with the following annual grant commitment responsibilities, as amended (FY 2014-2019):
- Implementation of the 2014 NPS Management Plan,
  - Administration of the CWA Section 319 grant program,
  - Projects funded wholly or in part with CWA Section 319 funding will be spatially located and tracked. All other locatable projects will be entered at the 12 digit HUC scale,
  - Complete GRTS data entry for EPA annual Winter data pull,
  - Complete semi-annual performance report,
  - Hosting the biennial NPS Program meetings,
  - Development of the NPS Annual Report,
  - Maintain EPA's watershed plan tracker, and
  - Assist in the development of Watershed Plans and/or Pollution Control Strategies.

### 7.2.1 Delaware NPS Program Short Term Strategies – General

The following General Short Term Strategies will be utilized to implement short term 2014 NPS Management Plan goals:

- a. Coordinate with Delaware agencies through the State Land Use Planning Process to assure NPS priorities are included (FY 2014-2016).
- b. Participate on the NRCS State Technical Committee and work with NRCS and FSA to ensure federal funding is being directed to address NPS priority issues to the extent possible through applicable federal programs such as EQIP, WRP, CRP and CREP (FY 2014-2019).
- c. Support the development of source water protection plans, Pollution Control Strategies and the implementation of water quality BMPs for activities and projects not addressed through other programs that could adversely affect water quality (FY 2014-2016).
- d. Provide adequate technical assistance to implement water quality BMPs through collaborative partnerships among local, state and federal agencies and conservation organizations (implement in FY 2014-2019).
- e. Maintain a statewide monitoring program (e.g. Watershed Assessment Program) to assess water quality conditions and determine fulfillment of water quality standards. As the NPS Program relies on the Watershed Assessment Program to conduct Delaware's water quality monitoring, additional collaboration and support will be provided. (FY 2014-2019).
- f. Inform local and state decision-makers of program accomplishments through publication and dissemination of NPS Program Annual Reports, targeted fact sheets and other media during budget development (June), Delaware State Fair (July), and other outreach events (four events annually) (annually FY 2014-2019).
- g. Support youth and adult NPS through the participation in such activities as the Delaware State Fair (July), the Delaware Envirothon (May), the Clean Water Festival (April), and Coast Day (October) (FY 2014-2019).
- h. Support youth education through programs that instill an understanding and appreciation for water resource protection, restoration and conservation in future generations (FY 2014-2019).
- i. Include information and education components in all local NPS plans (e.g. PCSs, NPS Watershed Plans FY 2014-2019).
- j. Coordinate with local extension and other outreach programs at the community level that address water quality education for youth and adults (FY 2014-2019).

- k. Support community efforts to recognize individuals involved in local water quality restoration and protection projects and celebrate local project successes (FY 2014-2019).
- l. Continue to actively utilize existing coordination mechanisms, including (FY2014-2019):
  - i. Delaware PCSs Implementation
  - ii. Delaware Association of Conservation Districts
  - iii. Delaware State Technical Advisory Committee
  - iv. Delaware Nutrient Management Commission
- m. Expand opportunities for enhanced collaboration with NPS partner organizations (FY2014-2019).
- n. Establish more direct interaction with state agricultural, urban and environmental organizations on NPS issues and management needs at annual meetings, conferences, etc. (initiate in FY 2014-2019).
- o. Conduct biennial NPS Program meetings to enhance collaboration with existing and potential NPS partners (FY 2016, 2018, 2020).
- p. Improve information sharing among existing programs to track the status of NPS program implementation (FY2014-2019).
- q. Identify information needs shared by multiple agencies and organizations (FY 2014-2017).
- r. Establish a mechanism to efficiently report and share program information among interested parties (e.g. NEIEN Process) (complete in FY 2015).
- s. Continue to utilize the Delaware Water Pollution Control Revolving Fund for NPS projects and explore opportunities to expand use of this program in the future (FY 2014-2019).
- t. Seek opportunities to collaborate with other agencies and organizations to leverage funding that can accomplish multiple environmental objectives, in addition to NPS pollution control, water quality improvement, wildlife habitat and stormwater/flood management. (FY 2014-2019).
- u. Develop and implement pollutant specific strategies for sediment and nutrients to restore impaired waters and protect Delaware's Watersheds that have a draft or approved PCS. (FY 2014-2017).
- v. Work collaboratively with agencies and stakeholder groups in Delaware to facilitate implementation of PCSs (FY2014-2015).

- w. Integrate pollutant-specific strategies with ongoing programs including the DDA, Delaware Conservation Districts, FSA, NRCS and other applicable programs to facilitate PCS implementation (FY 2014-2015).

### **7.3 General Short Term Milestones**

The following general short term milestones will be utilized for plan evaluation. The goals contained in this section are statewide in nature and account for waterbodies that do not have EPA approved watershed plans. These waters remain valuable and should not be discounted from NPS targeted activities. These milestones will be revisited annually and revised as appropriate.

- A. *Short-Term Milestone:* Estimated pollutant load reductions achieved for sediment, phosphorus and nitrogen from BMPs implementation in Delaware's watersheds.
  - a. Interim goal: Establish baseline load reductions based on current monitoring data achieved in select Delaware watersheds (to be determined as funding allows) for FY2015.
  - b. 2015 milestone: increase annual load reductions in Delaware watersheds by 2% annually from the FY2015 baseline
- B. *Short Term Milestone:* Number of Delaware citizens educated with regards to nonpoint source pollution, best management practices and reductions strategies.
  - a. Interim goal: establish baseline outreach and education interactions as accomplished in 2015.
  - b. 2016 milestone: Increase number of outreach and education interactions by 10% over FY 2015 baseline

### **7.4 Watershed Specific NPS Program**

Targeting of NPS practices to priority watersheds is instrumental in both restoration and protection efforts. The primary priorities for targeting applicable NPS plans and programs include:

- *Restoration*
  - a. Priority watersheds that have a EPA approved, 9 Element Watershed Plan
  - b. Priority watersheds listed as impaired on the 303(d) List of Impaired Waters

- *Protection*
  - a. Source water protection areas for public water supplies
  - b. High value resources including Special Aquatic Life Use waters, Exceptional State Waters and high quality wetland and riparian

Implementation of water quality Restoration and Protection measures to address targeted NPS priorities will be accomplished through:

- 1) Development of targeted NPS watershed plans including:
  - a. *Watershed Plans (watershed plans that fulfill the 9 elements)*. NPS projects are stakeholder driven, watershed based projects that provide a planning and management framework to address water quality issues. Projects implemented go through a process of review and prioritization based upon watershed opportunities; inclusion within a watershed plan that outlines goals, objectives and strategies to address priority issues; implementation of the plan; and tracking progress. The watershed plans developed by the Delaware NPS Program are compliant with EPA's 9 required elements for restoration of impaired waters. A major focus of watershed plans is the restoration of water quality impaired water bodies and achievement of pollutant load reductions to address the specific impairments.
  - b. *Source Water Protection Plans*. These plans are focused on protection of surface and groundwater sources that provide public water supply. Source water protection plans can be implemented through local, state or federal assistance programs, depending on the specific protection measures included in the plan. <http://delawaresourcewater.org/>
- 2) Integration of targeted areas with existing program and plan implementation, including:

State Programs:

- a. Conservation districts are encouraged to consider prioritizing watersheds and NPS related practices and projects for their cost share funding allocations.
- b. The Delaware Nutrient Management Commission is encouraged to consider prioritizing watersheds and NPS related practices and projects for their cost share funding allocations and program prioritization. <http://dda.delaware.gov/nutrients/>
- c. Delaware Department of Transportation is encouraged to consider BMP implementation above and beyond those required by MS4 coverage.

Federal Programs: USDA Farm Bill Programs, USGS and other applicable federal programs

- a. State water quality restoration and protection priorities are included as factors in the ranking criteria for funding applications for USDA Farm Bill Programs, primarily the Environmental Water Quality Incentives Programs (EQIP). State water quality priority areas were also considered in selecting Conservation Priority Areas for the Conservation Reserve Program.

- b. Other federal agencies such as the U.S. Geological Survey conduct a number of assessment and monitoring studies addressing TMDLs and other water quality issues through cooperative agreements with state and local partners.

Local Programs: Conservation Districts, the Nutrient Management Commission, urban storm water programs, local comprehensive plans and other applicable local programs.

- a. A number of locally developed plans and programs can be utilized to address restoration of impaired water bodies. Local plans developed by county conservation districts and protection plans developed by local environmental groups are examples of local plans and programs that can be utilized to target resources to priority water quality watersheds.

### 3) Water Quality Monitoring

Water quality monitoring provides evidence of changes in water quality and necessary data to develop models and TMDLs to meet the Clean Water Act goals or restoring the physical, chemical, and biological properties of the Delaware's waters. Monitoring will be needed to document changes as the priority watershed plans are implemented. Currently, Delaware has an array of water quality monitoring components

- a. Delaware Water Quality Monitoring Network. In order to assess the quality of Delaware's surface waters, the state's bays, ponds, streams, and rivers are monitored on a regular basis. Much of the monitoring is done by DNREC, though other groups, including federal agencies, academic institutions, and citizen volunteer monitoring programs, also contribute to these efforts. The State Water Quality Monitoring Network is used for the tracking water quality improvements in impaired water bodies for 303(d) delisting purposes. Water bodies meeting water quality standards are removed from the List of Impaired Waters. Achievement of water quality protection goals will also be determined via this network through maintenance of water quality conditions. Additional listing of water bodies on the 303(d) list may also occur in the future where water quality data indicates impairment of designated uses.

In addition to the monitoring conducted by DNREC, several partner organizations also collect water quality data. These partners include:

- a. The US Geological Survey maintains a [National Water Information System \(NWIS\)](#) and has several active stations within Delaware where stream flow, tidal stage, and chemical and physical data are collected.
- b. The University of Delaware coordinates a [Citizen Monitoring Program](#) of volunteers who actively collect data on water quality conditions in the Broadkill River and Inland Bays Watersheds.
- c. The Nanticoke Watershed Alliance coordinates the [Creekwatcher Citizen Monitoring Program](#) where volunteers collect water quality samples from across the Nanticoke Watershed in both Delaware and Maryland.

- d. The Delaware Nature Society maintains a [Technical Monitoring Program](#) that allows volunteers to monitor stations in the Christina River Basin as well as in both the Appoquinimink River and Mispillion River Watersheds too.

## 7.5 Watershed Specific NPS Program Goals

Delaware establishes the following Watershed specific short term goals for the 2014 NPS Management Plan:

- A. *Short Term Goal:* Enhance targeting of federal, state and local programs that provide technical and financial assistance for the implementation of BMPs in priority watersheds.
- B. *Short Term Goal:* Over the next two years, reduce annual load reductions of total nitrogen and total phosphorous loads in Delaware’s priority watersheds (watersheds that have 9 element watershed plans) as reported within the NPS Annual Report (Refer Table Below).

<u>Watershed</u>	<u>NPS Program Annual Report Load Reduction</u>	
	<u>Nitrogen (lbs/year)</u>	<u>Phosphorus (lbs/year)</u>
<u>Chesapeake Bay</u>	<u>741,792</u>	<u>14,820</u>
<u>St. Jones River</u>	<u>13,306</u>	<u>675</u>
<u>Inland Bays</u>	<u>144,638</u>	<u>5,019</u>
<u>Broadkill River</u>	<u>46,414</u>	<u>1,195</u>
<u>Appoquinimink River</u>	<u>11,273</u>	<u>584</u>
<u>Christina Basin</u>	<u>1.15</u>	<u>1.77</u>
<b><u>TOTAL</u></b>	<b><u>957,424</u></b>	<b><u>22,295</u></b>

- C. *Short Term Goal:* Target the implementation of BMPs in priority watersheds, as described within EPA approved 9 element Watershed Plans, to prevent the occurrence of pollution problems affecting quality water to avoid future impairment of state waters.
- D. *Short Term Goal:* Increase current funding levels of the Delaware Surface Water Quality Monitoring Program for regular sampling in priority watershed headwaters that would clearly demonstrate changes in water quality that occur as the result of implementation of BMPs.
- E. *Short Term Goal:* Establish a continuous monitoring for selected parameters at key points in priority watersheds to collect important data for future modeling efforts.

### 7.5.1 Delaware NPS Program Short Term Strategies - Watershed

The following Watershed specific Short Term Strategies will be utilized to implementing short term 2014 NPS Management Plan goals:

- a. Implement approved 9 element Watershed Plans in an effort to fund programs/projects in targeted, priority watersheds (FY 2014- 2017).
- b. Track progress of water quality improvements in priority watersheds through targeted monitoring and/or modeling programs (FY 2014- 2017).
- c. Target technical and financial assistance to implement BMPs in priority watersheds (FY 2014-2017).
- d. Establish NPS Program priorities and ranking criteria that focus BMP implementation to priority watersheds for the purpose of restoration or protection (2014-2017).
- e. Enhance NPS Program coordination to address BMP Implementation priorities in partnership with applicable federal, state and local programs (FY 2014-2017).
- f. Develop an inventory of NPS BMP needs in priority watersheds (FY 2014-2019).
- g. Support targeted BMP implementation efforts in partnership with Delaware Conservation Districts, DDA, FSA, NRCS and other applicable programs, agencies or organizations (FY 2014-2019).
- h. Work with the NPS Program partners to explore opportunities and mechanisms to protect priority watersheds (FY 2014-2017).
- i. Continue interagency support for watershed, wetland, and riparian area protection including inventory, assessment, prioritization and planning projects through Delaware's Watershed Assessment Program (FY 2014-2017).
- j. Support a statewide monitoring program (e.g. Watershed Assessment Program) to assess water quality conditions and determine fulfillment of water quality standards. As the NPS Program relies on the Watershed Assessment Program to conduct Delaware's water quality monitoring, additional collaboration and support will be provided. The Department will work with the partners to identify Federal and state funding sources that can be used to develop and implement a comprehensive monitoring plan for headwater streams and continuous monitoring programs at key locations (Continuous).
- k. The Department will work with stakeholders, including volunteer monitoring organizations, to address current gaps in water quality monitoring (Continuous).

## 7.6 Watershed Specific NPS Program Milestones

The following watershed specific short term milestones will be utilized for plan evaluation. These milestones will be revisited annually and revised as appropriate.

- A. *Short-Term Milestone:* Estimated pollutant load reductions achieved for sediment, phosphorus and nitrogen from BMPs implementation in priority watersheds.
  - a. Interim goal: Establish baseline load reductions achieved in priority watersheds for FY2015.
  - b. 2015 milestone: increase annual load reductions in non-Chesapeake Bay priority watersheds by 2% annually from the FY2015 baseline.
  - c. 2015 milestone: increase annual load reductions in Chesapeake Bay priority watersheds by 20% annually from the FY2015 baseline.
- B. *Short Term Milestone:* Reduce nutrient loads from NPS sources in Delaware's priority watersheds.
  - a. Interim goal: Establish baseline of load reductions from BMP implementation in FY 2015 for the following priority watersheds:
    - Inland Bays
    - Little Assowoman Bay
    - St. Jones River
    - Appoquinimink River
    - Christina River
    - Broadkill River
    - Cool Run
  - b. 2017 milestone: increase estimated nutrient load reductions from implementation of NPS BMPS in the above listed priority watersheds by 5% or greater.
    - Upper Chesapeake Bay
    - Chester River/Choptank River
    - Nanticoke
    - Lower Chesapeake
  - c. 2017 milestone: increase estimated nutrient load reductions from implementation of NPS BMPS in the above listed Chesapeake Bay priority watersheds by 20% or greater.
- C. *Short Term Milestone:* Number of 9 element watershed plans and source water protection plans approved.
  - a. Interim goal: Current Approved 9 element watershed plans include:
    - Inland Bays
    - Little Assowoman Bay
    - St. Jones River
    - Appoquinimink River
    - Christina River

- b. 2014 Milestone: Additional 9 element watershed plans scheduled for approval in 2014:
    - Upper Chesapeake Bay
    - Chester River/Choptank River
    - Nanticoke
    - Lower Chesapeake
  - c. 2015 Milestone: Additional 9 element watershed plans scheduled for approval in 2015:
    - Broadkill River
    - Cool Run
- D. *Short Term Milestone:* Number of priority watersheds identified in 9 element plans showing water quality improvement based on water quality milestones identified in the watershed plans
- a. Interim goal: Coordinate with DNREC’s Watershed Assessment Section to establish baseline monitoring/modeling strategies in priority watersheds to estimate current water quality conditions (FY 2014-2016)
  - b. 2015 milestone: Characterize baseline conditions and establish timeframe for subsequent monitoring following BMP implementation in priority watersheds that do not have established baselines
- E. *Short Term Milestone:* Identify trends in water quality data for priority watersheds.
- a. Interim goal: complete trend analysis for nitrogen, phosphorus, total suspended solids and bacteria in priority watersheds.
  - b. 2016 milestone: Demonstrate stable or improving water quality trends for the sub watersheds of the Inland Bays and Chesapeake Bay relative to data established 1990 to present.
- F. *Short Term Milestone:* Number of impaired waters removed from the impaired waters list due to NPS BMP implementation
- a. Interim goal: remove one water body annually from impaired waters list
  - b. 2014 milestone: remove an identified impairment from a Land River Segment currently included on Delaware’s list of impaired waterways.
- G. *Short Term Milestone:* Number of Delaware citizens educated with regards to nonpoint source pollution, best management practices and reductions strategies.
- a. Interim goal: establish baseline outreach and education interactions as accomplished in 2015.
  - b. 2016 milestone: Increase number of outreach and education interactions by 10% over FY 2015 baseline

## **7.7 NPS Program Long Term Goals**

Delaware establishes the below long term goals for the 2014 NPS Management Plan. These are general and over-reaching long term goal that will be assessed, measured and amended on a 5

year rotation. No dates are or should be associated with these activities/actions towards these goals are continual. Additionally, success in these endeavors is likely to exceed the contents of the 2014 NPS Management Plan.

- 1) All the state's bays, ponds, streams, and rivers that are adversely affected by NPS pollutants shall be restored to all designated uses;
- 2) Delaware will use monitoring and a targeted watershed approach to identify, prioritize and initiate restoration of impaired waters;
- 3) Delaware will use monitoring and a targeted watershed approach to identify, prioritize and initiate protection from further degradation of water quality or 'hold the line' on impaired waters of the state;
- 4) Delaware surface and ground water is protected from all nonpoint pollutant sources through the implementation of water quality best management practices (BMPs);
- 5) Objectives outlined within this plan are achieved by:
  - a. Reducing the levels of nutrients and sediments that adversely affect the water quality of the state's bays, ponds, streams, and rivers
  - b. Reducing the levels of nutrients that adversely affect the quality of Delaware ground water
  - c. Maintaining water quality conditions for unimpaired waters at a level equal to or better than existing conditions

#### 7.7.1 Delaware NPS Long Term Strategies

The following Long Term Strategies will be utilized in implementing strategies to achieve long term 2014 NPS Management Plan goals:

- Utilize a watershed approach for restoring and protecting priority watersheds using a method that engages stakeholders within the affected watersheds;
- Integrate the management of surface and ground water to achieve comprehensive environmental protection and restoration, including full support of designated uses of water;
- Target financial and technical resources to priority watersheds for restoration of impaired waters and protection of high value waters;
- Protect public water supplies, surface and ground water, through the development and implementation of Delaware source water protection plans;
- Encourage proper management of the state's bays, ponds, streams, and rivers to help achieve and maintain properly functioning watersheds;
- Promote voluntary, locally-led, incentive-based strategies to address NPS issues while ensuring that regulatory requirements are adhered to when applicable;
- Establish and strengthen partnerships among stakeholders at local, state and federal levels that play a role in the management of NPS pollution sources;

#### 7.7.2 Delaware NPS Long Term Priorities

The following priorities will be considered in the implementation of the 2014 NPS Management Plan to achieve the above identified long term goals:

- Restoration of high priority TMDL watersheds
- Protection of public water supply watersheds and wellhead protection areas used for public water supply
- Protection of high value water bodies designated for exceptional state waters (e.g. ERES designation)
- Restoration and protection of watersheds designated under Federal Executive jurisdiction (e.g. Chesapeake Bay)

## **7.8 NPS Program Long Term Milestones**

In addition to the Short-Term Milestones identified above, the following long term milestones will be utilized for plan evaluation. These milestones will be revisited during each 5 year review period and revised as appropriate.

- A. *Long-Term Milestone:* Show significant progress towards completion of implementation activities for all Delaware's priority watersheds with approved 9 element watershed plans (by FY 2019)

Strategy: Implement 9 element Watershed Plans to fund programs/projects in priority watersheds.

- B. *Long-Term Milestone:* Demonstrate water quality improvement in 20% or more of the monitored priority watersheds as reported in the NPS Annual Report. Water quality will be improved and demonstrated through a measure of increased load reductions. Load reductions will be calculated via Delaware's nutrient reduction calculation table (example attached). (by FY 2019)

Strategy: Implement 9 element Watershed Plans to fund programs/projects in priority watersheds and support monitoring efforts to demonstrate improvements.

- C. *Long-Term Milestone:* Show water quality improvement in 20% or more of the priority watersheds as reported within the NPS Annual Report. Water quality will be improved and demonstrated through a measure of increased load reductions. Load reductions will be calculated via Delaware's nutrient reduction calculation table (example attached). (by FY 2019)

Strategy: Implement 9 element Watershed Plans to fund programs/projects in targeted priority watersheds and model/calculate load reductions achieved.

- D. *Long-Term Milestone:* Show annual increases in funding and quantities of BMPs implemented in priority watersheds (annually through FY 2019)

Strategy: Research, apply and secure additional funding for BMP implementation in Delaware's priority watersheds.

- E. *Long-Term Milestone:* Remove one water body currently listed for nutrient pollutants from the 303(d) list (annually through FY 2019)

Strategy: Implement 9 element Watershed Plans to fund programs/projects in targeted, high priority watersheds. Partner with DNREC Watershed Assessment Section to demonstrate priority watershed is worthy of 303(d) list removal.

## **7.9 NPS Program Extended Term Milestones**

In addition to the Long-Term Goals identified above, the following Extended-Term milestones will be utilized for plan evaluation. Although no specific goals are associated with the Extended Term Milestones, these represent a successful implementation of a many Goals mentioned above. As such, they are included as Milestone measures of success to assess the 2014 NPS Management Plan as implemented over the extended term of Program implementation. These milestones will be revisited during each 5 year review period and revised as appropriate.

- A. *Extended-Term Milestone:* Demonstrate water quality improvement in 50% or more of the monitored priority watersheds as reported within the NPS Annual Report. Water quality will be improved and demonstrated through a measure of increased load reductions. Load reductions will be calculated via Delaware's nutrient reduction calculation table. (FY 2019 – 2030)

Strategy: Implement 9 element Watershed Plans to fund programs/projects in targeted, high priority watersheds and support monitoring efforts to demonstrate improvements.

- B. *Extended-Term Milestone:* Show water quality improvement in in 50% or more of the high priority watersheds as reported within the NPS Annual Report. Water quality will be improved and demonstrated through a measure of increased load reductions. Load reductions will be calculated via Delaware's nutrient reduction calculation table. (FY 2019 – 2030)

Strategy: Implement 9 element Watershed Plans to fund programs/projects in targeted, high priority watersheds and model/calculate load reductions achieved.

- C. *Extended-Term Milestone:* Remove two water bodies currently listed for nutrient pollutants from the 2030 303(d) list (FY 2019 – 2030)

Strategy: Implement 9 element Watershed Plans to fund programs/projects in targeted, priority watersheds. Partner with DNREC Watershed Assessment Section to demonstrate priority watershed is worthy of 303(d) list removal.

# 8 PARTNERSHIPS & COLLABORATION

## 8.1 Partnerships

NPS pollution in Delaware is a shared responsibility among numerous local, state and federal agencies, organizations and individuals (Partners). As such, Delaware has established an extensive partnership to assist in the effort of water quality improvement. Successful partnerships are one of the most important keys to implementing NPS Program goals to restore or protect Delaware's water quality. Initially, watershed planning projects often provide an important mechanism for partnership development at the local watershed level.

The NPS Program also provides important partnership roles in many implementation projects, including local initiatives, which are generally larger in scope than watershed grant projects and may not be limited to solely NPS Program funding. Local implementation partnerships are important and can differ greatly among watersheds depending on watershed, pollutants of concern and their sources, and the specific participating organizations. The NPS Program seeks to enhance cooperation and partnerships with stakeholders in priority watersheds to the maximum extent possible in order to best utilize available expertise, interest, and funding.

The statewide NPS Program's interaction with watershed management decision makers and advocates at all levels provides staff with a diverse network from which to foster partnerships with local watershed efforts.

NPS Program staff will maintain an active presence in ongoing watershed management efforts for each priority watershed. This may often include participation in one of the following types of meetings:

- Technical or restoration committee.
- Local government planning committee.
- Project committee for a specific BMP implementation activity.
- Internal meetings of involved organizations.
- Watershed outreach and education events.
- Educational forums.

Due to limited NPS staff time, it is not always possible to attend meetings of all active partner groups. In those cases, where possible, staff should attempt to stay involved by reading related newsletters or project updates, talking with participants by phone, and commenting on documents or watershed actions as appropriate.

Long term efforts will be made to identify opportunities to build and sustain partnership capacity at the watershed scale. Capacity in this sense is critically dependent upon the number of people and organizations involved in addressing NPS issues in priority watersheds, the available funding, technical support, public expectations, political will, and commitment to continual

improvement and protection of Delaware’s water quality. The NPS Program will focus on the following:

- Work with partners to develop sustainable funding strategies and mechanisms for priority watershed management.
- Encourage partners that develop or conduct volunteer water quality monitoring to seek coordination and guidance assistance.
- Assist partners with assembling diverse and representative steering committees as needed
- Participate on partner technical/steering meetings.
- Continue to serve on the committees of NPS-funded grant projects/activities.
- Provide networking assistance related to NPS pollution control and establishing working partnerships.
- Where no watershed planning effort exists and the NPS Program has identified a need, bring together key partners and facilitate a discussion to promote a watershed planning effort.
- Encourage interstate partnerships and participation on multi-state watershed projects.

## **8.2 Federal Partners**

The NPS Program will strengthen its working partnerships with appropriate federal agencies to consolidate and update watershed plans in priority watersheds where there is a clear water quality improvement benefit. The following is a descriptive summary of federal partner agencies and programs that have significant NPS Program responsibilities:

### **8.2.1 Natural Resources Conservation Service (NRCS) Delaware**

Originally established by Congress in 1935 as the Soil Conservation Service (SCS), the National NRCS has expanded to become a conservation leader for all natural resources, ensuring private lands are conserved, restored, and more resilient to environmental challenges, like climate change.

Seventy percent of the land in the United States is privately owned, making stewardship by private landowners absolutely critical to the health of our Nation’s environment.

NRCS's natural resource conservation programs help people reduce soil erosion, enhance water supplies, improve water quality, increase wildlife habitat, and reduce damages caused by floods and other natural disasters.

Delaware NRCS Program provides technical consultation and planning assistance to help landowners make beneficial decisions about natural resource management. Secondly, they assist in “conservation implementation” by helping landowners install conservation practices and systems that meet established technical standards and specifications. The third business line is “natural resource inventory and assessment”. By collecting, analyzing and providing landowners

with natural resource data, the program helps establish the best conservation plans and resource-use decisions for all landscapes. Fourth is, “natural resource technology transfer”. The Delaware NRCS develops and distributes a wide array of technology pertaining to resource assessment, conservation planning, and conservation system installation and evaluation. This also includes training, and certification in standards and procedures. The last of the five business lines is “financial assistance”. The Delaware Office provides financial assistance to encourage the adoption of beneficial land-treatment practices that conserve and protect our nation’s valuable natural resources.

Financial assistance is awarded to those who voluntarily enter into contracts, easements and agreements to conserve natural resources. Financial assistance is provided through cost-share/incentives, easements, grants and stewardship payments.

The Delaware NRCS Program works closely with the NPS Program and the Conservation Districts within Delaware to assist in the implementation NRCS programs and BMPs. Annually, the NPS Program funds District Planners to work with landowners and farmers to assist volunteers in participation of NRCS programs. Implementation of these programs serves to reduce nutrients within the Delaware watersheds. The NPS Program assists in the implementation of NRCS programs by offering guidance and technical assistance at a programmatic level. The NPS Program attends NRCS Technical Committee meetings to provide such guidance. Additionally, the NPS Program leverages funding and resources available through the collaboration of cost share programs that result in the implementation of agriculture related BMPs. Examples include cover crop programs, structural BMP programs and soil health initiatives.

Type of support provided to the NPS Program:

- Financial
- Technical
- Educational
- Monitoring
- Policy and Planning
- Assessment

*Type of Program:* Financial assistance (cost share) and technical assistance

*Web:* <http://www.de.nrcs.usda.gov/about/index.html>

*BMP Types:*

- Comprehensive Nutrient Management Planning
- Waste Storage Facility
- Composting Facility
- Conservation Cover
- Conservation Crop Rotation
- Residue and Tillage Management
- Cover Crop
- Atmospheric Resource Quality Management

- Windbreak/Shelterbelt Establishment
- Fence
- Filter Strip
- Irrigation Management (micro irrigation)
- Irrigation (sprinkler)
- Irrigation Water Management
- Forage Harvest Management
- Forage and Biomass Planting
- Pipeline Installation
- Prescribed Burning
- Roof Runoff Structure
- Heavy Use Area Protection
- Animal Trails and Walkways
- Nutrient Management
- Amendments for Treatment of Ag Waste
- Integrated Pest Management
- Tree and Shrub Establishment
- Watering Facility
- Waste Treatment (windrowing)
- Waste Recycling
- Waste Transfer
- Water Well
- Upland Wildlife Habitat Management
- Shallow Water Management
- Wetland Restoration
- Forest Stand Improvement
- Seasonal High Tunnel System for Crops
- Irrigation Water Conveyance

The NRCS in Delaware administers a broad range of programs to assist landowners and communities with conserving and protecting natural resources. NRCS conservation programs are voluntary and provide technical and payment assistance for the planning and implementation of conservation systems. NRCS also administers several easement programs and grant programs aimed at collaborative conservation efforts.

### 8.2.2 Agricultural Management Assistance (AMA) Program

The Agricultural Management Assistance (AMA) provides cost share assistance to agricultural producers to voluntarily address issues such as water management, water quality, and erosion control by incorporating conservation into their farming operations.

USDA's Natural Resources Conservation Service (NRCS) has leadership for the conservation provisions of AMA. The Agricultural Marketing Service (AMS) is responsible for an organic certification cost-share program and the Risk Management Agency (RMA) is responsible for mitigation of financial risk.

Web: [www.de.nrcs.usda.gov/programs/ama/AMA%202011/2011\\_agrl\\_man\\_Asst\\_Pro.html](http://www.de.nrcs.usda.gov/programs/ama/AMA%202011/2011_agrl_man_Asst_Pro.html)

*Type of Program:* Financial assistance (cost share) and technical assistance

*Agriculture BMPS Offered:*

- Manure transport
- Agricultural Nutrient Management Applications
- Ammonia Emissions Reductions - Litter treatments
- Tree planting – Agricultural and Urban
- Conservation Tillage
- Stream Protection with Fencing
- Carbon Sequestration/Alternative Crops
- Continuous No-Till
- Precision Agriculture
- Agricultural Enhanced Nutrient Management
- Conservation Plans
- Cover Crops and Commodity Small Grain Enhancement
- Stream Protection without Fencing – Grazing Management Systems - Watering system alone
- Stream protection fencing and Prescribed Grazing – Grazing Management Systems - Exclusion plus upland grazing management
- Upland Rotational or Prescribed Grazing
- Barnyard Runoff Control/Loafing Lot Management
- Mortality Composters
- Horse Pasture Management
- Forest Harvesting Practices
- Riparian Forest Buffer
- Riparian Grass Buffer
- Wetland Restoration and Creation

The AMA Program is not a direct working partner with the Delaware NPS program, but a programmatic partner which helps to reduce NPS pollution within the State. The AMA is a program managed by NRCS. Although the objectives of the program do not specifically focus on NPS pollutant reduction, implementation does indeed effectively do so. As such, the NPS Program assists in the implementation of AMA by offering guidance and technical assistance at a programmatic level. The NPS Program attends NRCS Technical Committee meetings to provide such guidance.

### 8.2.3 Wetland Reserve Program (WRP)

The Wetlands Reserve Program (WRP) provides an opportunity for landowners to receive financial assistance to protect, restore and enhance wetlands on their property. These wetlands provide food and shelter for migratory birds and other wetland dependent species, including state

and federally listed species, and species of concern. In addition to providing wildlife benefits, WRP helps to reduce flooding, improve water quality by filtering sediment and chemicals, recharge groundwater and more.

The program offers three enrollment options:

- Permanent Easement is a conservation easement in perpetuity. USDA pays 100% of the easement value and up to 100% of the restoration costs.
- 30-Year Easement is an easement that expires after 30 years. USDA pays up to 75% of the easement value and up to 75% of the restoration costs. For both permanent and 30-year easements, USDA pays all costs associated with recording the easement in the local land records office, including recording fees, charges for abstracts, survey and appraisal fees, and title insurance.
- Restoration Cost-Share Agreement is an agreement to restore or enhance the wetland functions and values without placing an easement on the enrolled acres. USDA pays up to 75% of the restoration costs.

*Web Page:*     [www.de.nrcs.usda.gov/programs/wetreserve/wet\\_res\\_pro.html](http://www.de.nrcs.usda.gov/programs/wetreserve/wet_res_pro.html)

*Type of Program:*     Financial assistance (cost share) and technical assistance

*Agriculture BMPS Offered:*

- Riparian Forest Buffer
- Riparian Grass Buffer
- Wetland Restoration and Creation

The WRP Program is not a direct working partner with the Delaware NPS program, but a programmatic partner which helps to reduce NPS pollution within the State. The WRP is a program managed by NRCS. Although the objectives of the program do not specifically focus on NPS pollutant reduction, implementation and establishment of wetlands does indeed effectively do so. As such, the NPS Program assists in the implementation of WRP by offering guidance and technical assistance at a programmatic level. The NPS Program attends NRCS Technical Committee meetings to provide such guidance.

#### 8.2.4 Wildlife Habitat Incentives Program (WHIP)

The Wildlife Habitat Incentive Program (WHIP) is a voluntary program for conservation-minded landowners who want to develop and improve wildlife habitat on agricultural land, nonindustrial private forest land, and Indian land. The Food, Conservation, and Energy Act of 2008 reauthorized WHIP as a voluntary approach to improving wildlife habitat in our Nation. The Natural Resources Conservation Service administers WHIP to provide both technical assistance and up to 75% cost-share assistance to establish and improve fish and wildlife habitat. WHIP cost-share agreements between NRCS and the participant generally last from one year after the last conservation practice is implemented but not more than 10 years from the date the agreement is signed. Priorities are:

• *Restore and manage upland grassland habitat to benefit ground-nesting birds and associated wildlife* - This priority was identified because the loss of undisturbed herbaceous cover (grasses and other non-woody plants) has resulted in declining populations of grassland nesting birds such as quail, meadowlarks, field sparrows, goldfinches, and pheasants, as well as other small animals such as rabbits. Since 1975, for example, the Delaware Breeding Bird Survey has shown a 72% decrease in bobwhite quail populations, while ring-necked pheasants have declined more than 95% in the same time period. This decline has been attributed to habitat loss through urbanization and more intensive agricultural production. Practices eligible for cost-sharing include field borders as well as whole-field plantings of grasses, legumes, and wildflowers, with management schedules that will benefit ground-nesting birds and other wildlife. Additional practices may include plantings of trees and shrubs where needed for woody cover.

• *Control of invasive species* - This priority was identified because thousands of acres of Delaware's wildlife habitat have been invaded by invasive species. These species are replacing Delaware's native plant species that provide quality wildlife habitat. One of the biggest invasive species problems in Delaware is phragmites, or common reed, covering over 20,000 acres of fresh and tidal wetland in our state. Phragmites is both fast growing and extremely hardy. It has taken over large areas of Delaware wetlands by displacing native plants that provide better wildlife food and cover. Its extensive root system holds dormant reeds in place during the winter, which causes a fire hazard.

*Web Page:* [www.de.nrcs.usda.gov/programs/whip/WHIP\\_2010/wildlife\\_hab\\_inc\\_pro.html](http://www.de.nrcs.usda.gov/programs/whip/WHIP_2010/wildlife_hab_inc_pro.html)

*Type of Program:* Financial assistance (cost share) and technical assistance

*BMPS Offered:*

- Forest Conservation
- Riparian Forest Buffer
- Riparian Grass Buffer
- Wetland Restoration and Creation

The WHIP Program is not a direct working partner with the Delaware NPS program, but a programmatic partner which helps to reduce NPS pollution within the State. The WHIP is a program managed by NRCS. Although the objectives of the program do not specifically focus on NPS pollutant reduction, implementation and establishment of wildlife habitat does indeed effectively do so. As such, the NPS Program assists in the implementation of WHIP by offering guidance and technical assistance at a programmatic level. The NPS Program attends NRCS Technical Committee meetings to provide such guidance.

### 8.2.5 Environmental Quality Incentives Program (EQIP)

*Web Page:* [www.de.nrcs.usda.gov/programs/eqip/index.html](http://www.de.nrcs.usda.gov/programs/eqip/index.html)

*Type of Program:* Financial assistance (cost share) and technical assistance

The Environmental Quality Incentives Program (EQIP) was reauthorized in the Farm Security and Rural Investment Act of 2002 (Farm Bill) to provide a voluntary conservation program for farmers and ranchers that promotes agricultural production and environmental quality as compatible national goals. EQIP offers financial and technical help to assist eligible participants install or implement structural and management practices on eligible agricultural land.

EQIP offers contracts with a minimum term that ends one year after the implementation of the last scheduled practices and a maximum term of ten years. These contracts provide incentive payments and cost-shares to implement conservation practices. Landowners and operators who are engaged in livestock or agricultural production on eligible land may participate in the EQIP program. EQIP activities are carried out according to an environmental quality incentives program plan of operations. The plan is developed in conjunction with the producer and identifies the appropriate conservation practice or practices to address the resource concerns. All EQIP conservation practices are subject to NRCS technical standards in the Field Office Technical Guide (FOTG) that are adapted to Delaware conditions.

EQIP provides payments up to 75% of the incurred costs and income foregone of certain conservation practices and activities. However certain historically underserved producers (Limited resource farmers/ranchers, beginning farmers/ranchers, socially disadvantaged producers) may be eligible for payments up to 90% of the estimated incurred costs and income foregone. Farmers and ranchers may elect to use a certified Technical Service Provider (TSP) for technical assistance needed for certain eligible activities and services. The new Farm Bill established a new payment limitation for individuals or legal entity participants who may not receive, directly or indirectly, payments that, in the aggregate, exceed \$300,000 for all program contracts entered during any six year period. Projects determined as having special environmental significance may, with approval of the NRCS Chief, have the payment limitation raised to a maximum of \$450,000.

EQIP applications are accepted throughout the year at Delaware USDA Service Centers. The following are State Resource Priorities and Management Systems offered under the Delaware State EQIP Program:

- Reduction of non-point source pollutants including nutrients, sediment, and pesticides in impaired watersheds consistent with TMDL's as well as the reduction of groundwater contamination.
  - Agricultural Waste Management Systems - Nutrients, Sediments
  - Integrated Crop Management Systems - Nutrients, Pesticides
  - Planned Grazing Management Systems - Nutrients, Sediments
- Conservation of ground and surface water resources
  - Irrigation Water Management Systems - Water conservation
- Reduction of emissions such as particulate matter and volatile organic compounds that contribute to air quality impairment.
  - Agricultural Waste Management Systems - Volatile organic compounds
  - Poultry House Windbreak Management Systems - Particulate matter
- Reduction in soil erosion and sedimentation from erodible land.
- Erosion Control Systems - Sediments
- Promotion of at-risk species habitat recovery

- Biodiversity Management Systems - Habitat recovery

*Agriculture BMPs:*

- Manure transport
- Agricultural Nutrient Management Applications
- Ammonia Emissions Reductions - Litter treatment
- Tree planting – agricultural and urban
- Conservation Tillage
- Stream protection with fencing - Exclusion alone
- Carbon sequestration/alternative crops
- Continuous No-till
- Precision Agriculture
- Agricultural Enhanced Nutrient Management
- Cover Crops and Commodity Small Grain Enhancement
- Stream Protection without Fencing –Watering system alone
- Stream Protection Fencing Prescribed Grazing –Exclusion plus upland grazing management
- Upland Rotational or Prescribed Grazing
- Barnyard Runoff Control/Loafing Lot Management
- Mortality Composters
- Horse Pasture Management
- Forest Harvesting Practices
- Riparian Forest Buffer
- Riparian Grass Buffer
- Wetland Restoration and Creation

The Delaware NRCS Program works closely with the NPS Program and the Conservation Districts within Delaware to assist in the implementation of the EQIP program. Annually, the NPS Program funds District Planners to work with landowners and farmers to assist volunteers in participation of this valuable agriculture BMP implementation program. Implementation of the EQIP program directly serves to reduce nutrients and sediment loads within the Delaware watersheds. The NPS Program supports EQIP through funding mechanisms, guidance and technical assistance is also offered at the programmatic level through the attendance of NRCS Technical Committee meetings.

### 8.2.6 Chesapeake Bay Watershed Initiative (CBWI)

The 2008 Farm Bill will provide \$188 million through the Chesapeake Bay Watershed Initiative (CBWI) over the next four years to support restoration of the Chesapeake Bay and its watershed, which represents one of the largest single federal investments in the clean-up effort and an unprecedented targeting of Farm Bill resources to a specific watershed. Congressionally authorized future funding levels are \$43 million in 2010, \$72 million in 2011 and \$50 million in 2012.

Supported agricultural conservation practices such as nutrient management, cover crops, crop residue management and vegetative buffers will improve water quality, preserve and enhance natural resources, and reduce the pollutants flowing into the streams and rivers that feed the Chesapeake Bay.

Under the CBWI, eligible landowners can use available technical and financial assistance to address excess nutrients in streams and waterways, as well as other related natural resource concerns. CBWI cost share funds are available to all landowners in the Delaware portion of the Chesapeake Bay watershed. The program is run exactly like the regular EQIP program. The only difference is that caps on units and acreage are removed on select practices and producers can apply for unlimited units.

*Web:* [www.de.nrcs.usda.gov/programs/CBWI/chesapeake\\_bay\\_watershed\\_initiative.html](http://www.de.nrcs.usda.gov/programs/CBWI/chesapeake_bay_watershed_initiative.html)

*Type of Program:* Financial assistance (cost share) and technical assistance

*Agriculture BMPS Offered:*

- Manure transport
- Agricultural Nutrient Management Applications
- Ammonia Emission Reductions - Litter treatment
- Tree planting – agricultural and urban
- Conservation Tillage
- Stream protection with fencing
- Carbon sequestration/alternative crops
- Continuous No-till
- Precision Agriculture
- Agricultural Enhanced Nutrient Management
- Cover Crops and Commodity Small Grain Enhancement
- Stream Protection without Fencing
- Stream Protection Fencing Prescribed Grazing – Exclusion plus upland grazing management
- Upland Rotational or Prescribed grazing – no exclusion, just upland grazing management
- Barnyard Runoff Control/Loafing Lot Management
- Mortality Composters
- Horse Pasture Management
- Forest Harvesting Practices
- Riparian Forest Buffer
- Riparian Grass Buffer
- Wetland Restoration and Creation

*Compliance Rates:* All practices are applied according to NRCS standards and specifications. Practice maintenance is the responsibility of the landowner. Annual status reviews and spot checks are used to monitor practice maintenance.

*Goals and Objectives (2014-2019):* In the last funding cycle, 123 applications went unfunded. If all were funded (using \$31,550 as the average cost of funded contract), the total cost of these

additional projects would have been \$3,880,665. Only \$1,020,093 was available, therefore, funding could be quadrupled. Long term funding is not guaranteed, making it difficult to add fulltime staff beyond the two years remaining on the funding cycle. NRCS has contribution agreements with conservation districts, allowing for more capacity to deal with workload issues.

The CBWI Program is not a direct working partner with the Delaware NPS program, but a programmatic partner which helps to reduce NPS pollution within the State. The CBWI is a program managed by NRCS. The objectives of CBWI specifically focus on NPS pollutant reduction in the Chesapeake Bay watershed. As such, the NPS Program assists in the implementation of CBWI by offering guidance and technical assistance at a programmatic level. The NPS Program attends NRCS Technical Committee meetings to provide such guidance.

### 8.2.7 Conservation Reserve Program (CRP) and the Conservation Reserve Enhancement Program (CREP)

The Conservation Reserve Program is a voluntary program available to agricultural producers to help them safeguard environmentally sensitive land. Producers enrolled in CRP plant long-term, resource-conserving covers to improve the quality of water, control soil erosion, and enhance wildlife habitat. CRP is a major contributor to increased wildlife populations. CRP also protects groundwater and helps improve the condition of lakes, rivers, ponds and streams by reducing water runoff and sedimentation.

Participants and the offered land must be certain eligibility requirements for land to be enrolled. FSA provides participants with payments on contracts with durations of 10 to 15 years. CRP payments consist of an annual rental payment that is based on the relative productivity of the soils and the average dry land cash rent, cost-share assistance of not more than 50% of the participants' costs in establishing approved practices, and other incentives where the payment amount is based on the practice. The Conservation Reserve Enhancement Program (CREP) is a part of CRP and is administered under the same statutes and Federal regulations. The primary goal of CREP is to establish a unique CRP program initiative to address specific high priority conservation and environmental objectives. Delaware's CREP was established to facilitate nutrient and sediment reduction, provide conservation buffers on Delaware's waterways and drainage systems, increase wildlife habitat, and restore natural conditions for water temperature and dissolved oxygen in areas protected by riparian forested buffers. CREP provides enhanced rental rates, enhanced cost share and enhanced incentives based on the practice. Details regarding Delaware's CREP are found in Section 9.3.10 below.

There are two signup types.

- General Signup---This is a designated sign-up period and is a competitive bid process during which producers may offer eligible land to be enrolled into CRP. Each offer is ranked in comparison to all other offers and selections made from that ranking. FSA uses Environmental Benefits Index factors to assess the environmental benefits for the land offered. Producers may offer land at the calculated rental rate or offer a lower rate to increase the likelihood that the offer will be accepted.
- Continuous Signup---Environmentally desirable land devoted to certain conservation practices may be enrolled at any time under CRP continuous sign-up. Offers are not subject to competitive bidding. *All CREP practices are continuous signup.*

*Type of Program:* Funding, outreach, education

*Annual Budget:* The annual budget for CRP is controlled at the federal level.

*Technical and Administrative Staff:* FSA administers CRP, while technical support functions are provided by USDA's Natural Resources Conservation Service, USDA's Cooperative Extension Service, State forestry agencies, local soil and water conservation districts and other non-Federal providers of technical assistance. FSA has a state program specialist, and each county has staff that administers CRP.

*Future:* CRP and CREP Fact Sheets and the Delaware CREP brochure will continue to be updated and made available to all interested parties. As acres expire, producers will be offered the chance to reenroll. Due to the increased payment rate for acreage enrolled in CREP, every effort is made to encourage producers to take advantage of that program if possible. It is anticipated that CRP will be continued in the next Farm Bill.

*Goals and Objectives (2014-2019):* Land rents have increased substantially in Delaware, making the rental rate offered for CRP not as competitive as in the past. Currently, due to the increased payment rate for acreage enrolled in CREP, every effort is made to encourage producers to take advantage of that program if possible (refer to above).

The Delaware NPS program has a fulltime CREP coordinator on staff. The CREP coordinator works closely with FSA, NRCS, USDA, State Forestry, Conservation Districts and the local land owner. This is a program demonstrating a lot of partners working together to help reduce NPS pollution.

Type of support provided to the NPS Program:

- Financial
- Technical
- Educational
- Staffing
- Policy and Planning
- Assessment

### 8.2.8 U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (<http://www.epa.gov/reg3wapd/nps/>) provides Funding for implementation of the State's NPS Management Program through an annual CWA Section 319 grant to Delaware. EPA personnel also provide program guidance and implementation assistance through review of 319 project implementation plans for subgrants to local project sponsors.

Other federal agencies involved in water quality related activities and projects include:

- U.S. Geological Survey ([www.usgs.gov](http://www.usgs.gov)) - e.g. water quality monitoring and assessment
- U.S. Fish and Wildlife Service ([www.fws.gov](http://www.fws.gov)) - e.g. water quality activities that benefit Wildlife

Type of support provided to the NPS Program:

- Financial
- Technical
- Educational
- Monitoring
- Staffing
- Grant Allocation
- Policy and Planning
- Assessment

### **8.3 State NPS Partners**

The NPS Program will strengthen its working partnerships with appropriate state partners to consolidate and update watershed plans in priority watersheds where there is a clear water quality improvement benefit. The following is a descriptive summary of state Partner agencies and programs that have significant NPS Program responsibilities:

#### **8.3.1 DNREC, Delaware Coastal Management Program**

The mission of the Delaware Coastal Programs Section is to preserve, protect, develop and enhance the resources of our state's coastal zone through effective administration of the Delaware Coastal Management Program and the Delaware National Estuarine Research Reserve.

The **Delaware Coastal Management Program** (DCMP) is designed to protect, develop, and where possible, enhance the coastal resources of the state. Specifically, DCMP:

- Manages coastal resources through innovative research projects, education and grant programs, and policy development
- Administers the Coastal Zone Federal Consistency Certification program
- Provides special area management planning
- Provides assistance to state and local governments for local land use planning
- Offers other special on-the-ground projects related to Delaware's coastal resources

Within the DCMP is the Coastal Nonpoint Pollution Program (CNPCP). The United States Coastal Zone Act Reauthorization Amendments of 1990 included a new section (6217) requiring states with approved coastal management programs to develop and implement a Coastal Nonpoint Pollution Control Program (CNPCP). A state's 6217 Program should build on existing

state coastal management and nonpoint source pollution programs to reduce and prevent coastal water quality problems. Congress charged the National Oceanic and Atmospheric Administration (NOAA) and the Environmental Protection Agency (EPA) with oversight of 6217 development and implementation. The Delaware Coastal Management Program (DCMP) now coordinates the network of state agencies with regulatory authority over coastal nonpoint pollution control. DCMP is responsible for Delaware's CNPCP. DCMP works cooperatively with the 319 Nonpoint Source (NPS) Program and other state agencies to implement this program.

The CNPCP must be coordinated with specific sections of the Federal Water Pollution Control Act (also known as the Clean Water Act). These are: Section 208 (Water Quality Management Planning Program); Section 303(d) (Total Maximum Daily Load Program (TMDL)); Section 319 (Delaware Nonpoint Source Program); and Section 320 (National Estuary Program). Various sections within the Delaware's Department of Natural Resources and Environmental Control (DNREC) are responsible for carrying out these programs. For example, the Division of Watershed Stewardship implements the Water Quality Management Program, TMDLs Program and section 319 grants through the NPS Program.

In Delaware, the CNPCP can be viewed as a wagon wheel with the Coastal Management Program at the center, with oversight and management responsibilities, and the other divisions, sections, and programs within the DNREC as the spokes implementing the actual rules, regulations, and programs that fulfill the management measures. The spokes are many and include the County Conservation Districts, the Site Remediation Program, the Pesticide Control Program, the Delaware Sea Grant Education and Outreach Program, the Stormwater Management and Permitting Program, and all associated permits issued by that Department, the Dam Safety Program, programs within the Delaware Department of Transportation, and others. The Coastal Management Program is both at the center of the wheel as well as one of the spokes as it also plays a role in implementation of many of the management measures.

### 8.3.2 DNREC, Division of Watershed Stewardship

The Division of Watershed Stewardship is mandated to preserve and protect the state's soil, water and coastal resources. The Division manages Delaware's shoreline, coastal zone and navigable waterways by regulating coastal and urban land use and construction activities, and by promoting wise agricultural and urban land management practices. They also promote wise water management practices to preserve agricultural interests, protect urban communities and provide for public safety.

The Division of Watershed Stewardship houses the Delaware NPS Program. The NPS Program assists in the implementation of Division level programs by offering guidance and technical assistance at a programmatic level. The NPS Program invites many attendees from the Division to the NPS Annual meeting to solicit guidance and input regarding further collaboration of NPS targeted programs.

Web: <http://www.dnrec.delaware.gov/swc/Pages/Portal.aspx>

What the Division does:

- Provide for the development and implementation of new and innovative wetland and stream restoration techniques and concepts
- Provide administrative and technical assistance for the development and maintenance of group drainage projects
- Provide for the preservation and enhancement of Delaware's beaches
- Improve and maintain navigational channels in the state's inland waterways
- Provide technical assistance to landowners about sound conservation practices
- Administer the state's Sediment and Stormwater and Nonpoint Source Pollution Programs

Sections within the Division:

- *Drainage and Stormwater*  
<http://www.dnrec.delaware.gov/swc/Drainage/Pages/Drainage.aspx> provides management and implementation of regulatory and non-regulatory programs to improve drainage, stormwater, water quality and dam safety.
- *Shoreline and Waterway Management*  
<http://www.dnrec.delaware.gov/swc/Shoreline/Pages/Shoreline.aspx> responsibilities include beach and shoreline management, beach nourishment, dune protection and maintenance, flood mitigation, coastal storm response, coastal construction, beach grass planting, NFIP compliance and assessments, dredging, Macroalgae Harvesting, Tax Lagoons, Channel Marking, Indian River Sand Bypass system and more.
- *District Operations*  
<http://www.dnrec.delaware.gov/swc/district/Pages/District.aspx> provides technical and financial assistance to Delaware's farmers, landowners, and homeowners to protect and enhance Delaware's soil and water resources. Some of this work is completed by DOS staff, while in other cases, DOS provides funding to other entities to achieve its goals. Funding is made available through the Delaware Legislature and EPA's Section [319 federal grant](#).
- *Watershed Assessment*  
<http://www.dnrec.delaware.gov/swc/wa/Pages/WatershedAssessment.aspx> conducts Clean Water Act requirements (including Water Quality Standards, 305(b) Watershed Assessment Reports and 303(d) Lists of Impaired Waters, and Total Maximum Daily Loads [TMDLs]), watershed plans, restoration projects, wetland monitoring and assessment, shellfish and recreational water programs, and more.

Type of support provided to the NPS Program:

- Financial
- Technical
- Educational

- Monitoring
- Staffing
- Grant Allocation
- Policy and Planning
- Assessment

### 8.3.3 DNREC, Division of Water Resources

The Division of Water Resources manages and protects water resources through various programs by providing technical assistance, laboratory services, regulatory guidance and implementation, educational services; performing applied research; and helping finance water pollution control measures. Our staff serves through the protection of water resources for Delaware's visitors and residents.

The DNREC, Division of Water Resources is an NPS statewide partner that helps to restore and protect water quality within the state. The Division of Water Resources works independently with the common purpose of reducing NPS pollutants to waters of the State. The NPS Program assists in the implementation of Division of Water Resources programs by offering guidance and technical assistance at a programmatic level. The NPS Program invites many attendees from the Division of Water Resources to the NPS Annual meeting to solicit guidance and input regarding further collaboration of NPS targeted programs.

Web: <http://www.dnrec.delaware.gov/wr/Pages/Default.aspx>

Sections within the Division:

- *Management Section*  
<http://www.dnrec.delaware.gov/wr/Pages/DivisionManagement.aspx> coordinates division operations and provides centralized information management, fiscal, personnel, and legal services. The section also administers the water utility certification program and provides a link with external programs including the Delaware River Basin Commission and Delaware Emergency Management Agency.
- *Environmental Laboratory Section*  
<http://www.dnrec.delaware.gov/wr/Services/Pages/EnvironmentalLaboratory.aspx> operates a full-service environmental laboratory to test and assess water, air, soil, hazardous materials, and biological samples. Water quality and biological monitoring of surface waters is an important section function. Fee-for service quality environmental testing is provided to a variety of customers in a cost-effective manner. The section performs basic water quality testing for Delaware citizens at no charge.
- *Ground Water Discharges Section*  
<http://www.dnrec.delaware.gov/wr/Services/Pages/GroundWaterDischarges.aspx> conducts site reviews, field checks and approves site evaluations for the installation of septic systems, underground injection wells, spray irrigation wastewater systems, and

other systems associated with wastewater treatment. This section also issues sludge transport permits and licenses to septic system designers, percolation testers, site evaluators, and system installers.

- *Surface Water Discharges Section*  
<http://www.dnrec.delaware.gov/wr/Services/Pages/SurfaceWaterDischarges.aspx> issues permits for industrial and municipal wastewater treatment systems (including storm water) and sludge management. Technical assistance is provided directly to wastewater treatment facilities to help address operational problems. The section also provides support to the Board of Certification that licenses wastewater treatment plant operators.
- *Water Supply Section*  
<http://www.dnrec.delaware.gov/wr/Services/Pages/WaterSupply.aspx> issues well and water allocation permits and licenses to well contractors/drillers and pump contractors/installers. Section responsibilities also include statewide drought management, ground water quality monitoring, wellhead and source water protection programs, and water withdrawal quantities in coordination with the Delaware River Basin Commission.
- *Wetlands and Subaqueous Lands Section*  
<http://www.dnrec.delaware.gov/wr/Services/Pages/WetlandsAndSubaqueousLands.aspx>  
The Wetlands and Subaqueous Lands Section provides permitting services for activities in Delaware's wetlands, bays, rivers, streams, lakes, ponds and other waterways that might require a permit pursuant to Delaware law. These activities include marina construction and operation, as well as the construction of docks and piers, shoreline stabilization projects, dredging, filling, bridge or culvert construction, utility crossings of streams, and a myriad of other projects that could affect Delaware's waters and wetlands.

Type of support provided to the NPS Program:

- Financial
- Technical
- Educational
- Monitoring
- Staffing
- Grant Allocation
- Policy and Planning

#### 8.3.4 DNREC, Division of Fish and Wildlife

This Division of Fish and Wildlife (DFW) provides for the conservation and wise use of the state's fish and wildlife resources such as the protection of wild living resources and habitats.

Web: <http://www.dnrec.delaware.gov/fw/Pages/FWPortal.aspx>

The Priorities of the DFW are:

- *Administration:* DFW works to administer its programs and activities effectively and efficiently. Our funding is used to promote the highest return on the investment of state, federal and constituent based fees and funds. Our administrative and management framework is specifically designed to facilitate DFW's complex and interrelated programs, projects and activities, while ensuring compliance with state and federal programmatic, financial and accounting practices and procedures. The development of policy and the documentation of program accomplishments provide the basis for evaluating the success of Division programs.
- *Applied Habitat Research, Management and Restoration:* The Division is committed to promoting and practicing the conservation of biological diversity by protecting against the unnecessary threat to or extinction of living species. DFW conducts research, and develops and implements policies that contribute to the maintenance, enhancement, restoration and management of natural habitats. Our habitat management practices benefit many fish and wildlife species and control undesirable species like mosquitoes or invasive vegetation that degrades wildlife and fisheries habitats.
- *Species Research, Monitoring and Management:* The Division promotes the understanding of fish and wildlife stocks and populations through species-specific research and monitoring programs. We recognize the diversity of our fisheries and wildlife constituencies and strive to actively involve these groups in policy development and public decision-making processes. DFW works to balance human concerns with the need to prevent over-harvesting and exploitation of species to maintain and, if necessary, rebuild species stocks and populations to sustainable levels for both commercial and recreational users. DFW also works to provide Delaware's citizens and visitors with an environment that minimizes nuisance or health impacts from pest species, as well as undesirable or invasive vegetation, in an environmentally-sensitive manner.
- *Enforcement:* The Division provides public safety services in the areas of boating, hunting, fishing, shell fishing and disaster response. The intent of these programs is to protect the public's safety, as well as that of the states' wildlife, finfish, shellfish, non-game and endangered species, including marine mammals, within the state's lands and waters.
- *Education and Training:* DFW administers education and training programs to improve awareness, appreciation and conservation of Delaware's natural resources. Through coordinated programs like hunter education, aquatic resource education and boating safety, our objective is to encourage sportsmanship, instill an environmental ethic and promote public safety among Delaware's citizens.
- *Acquisition, Facilities Development and Construction:* The Division develops and maintains public areas and facilities to ensure access to Delaware's natural resources. Our intent is to provide public hunting, fishing and wildlife viewing areas and boating access sites that are environmentally sensitive, modern, safe, clean and convenient so that Delaware's natural resources are available to all.

The DNREC, DFW is a NPS statewide partner that helps to restore and protect water quality within the state. The DFW works independently with the common interest of reducing NPS pollutants to waters of the State. The NPS Program assists in the implementation of DFW programs by offering guidance and technical assistance at a programmatic level. The NPS Program invites many attendees from the DFW to the NPS Annual meeting to solicit guidance and input regarding further collaboration of NPS targeted programs.

Type of support provided to the NPS Program:

- Technical
- Educational

### 8.3.5 DNREC, Division of Parks and Recreation

This Division protects and manages Delaware's State Parks. Its mission is to protect valuable natural resources within the state parks and to provide for the wise use of lands appropriate for outdoor recreation. The Division also provides park acquisition financial assistance to municipal and county agencies.

Web: <http://www.dnrec.delaware.gov/parks/Pages/Default.aspx>

The DNREC, Division of Parks and Recreation is a NPS statewide partner that helps to restore and protect water quality within the state. The Division of Parks and Recreation works independently with the common interest of reducing NPS pollutants to waters of the State. The NPS Program assists in the implementation of Division of Parks and Recreation programs by offering guidance and technical assistance at a programmatic level. The NPS Program invites many attendees from the Division of Parks and Recreation to the NPS Annual meeting to solicit guidance and input regarding further collaboration of NPS targeted programs.

Type of support provided to the NPS Program:

- Technical
- Educational

### 8.3.6 DNREC, Financial Assistance Branch

The Financial Assistance Branch administers the Clean Water State Revolving Fund, making funding available to municipalities, private organizations, nonprofit organizations and private individuals. The Financial Assistance Branch provides planning, engineering and financial assistance in the form of low-interest loans, as well as grants to eligible applicants that request assistance to promote water quality projects, including all types of nonpoint source, watershed protection, restoration, and estuary management projects, as well as more traditional municipal wastewater treatment projects

Web: <http://www.dnrec.delaware.gov/fab/Pages/default.aspx>

Programs offered:

- *Wastewater Matching Planning Grant*: The Wastewater Planning Matching Grants are designed to assist municipal and county wastewater utilities to prepare wastewater projects for funding. The funding can be used to assist with wastewater planning in general, and for specific project planning. The grant can also be used to assist municipal and county wastewater utilities to continue the process of updating wastewater facility plans, prepare preliminary engineering reports, or conduct planning studies.

Only municipal and county wastewater utilities are eligible to obtain a Wastewater Planning Matching Grant.

Grant applications will be solicited four times per year, January; May; August; and November based on funding availability.

- *Community Water Quality Improvement Grants*: The program is designed to assist municipalities, government agencies, and non-profit organizations with implementing projects or programs within Delaware's developed landscape to improve water quality.

Applicants may be any Delaware state or municipal government, agency or program, non-profit organization, educational institution, community organization, and/or homeowner's association within the state of Delaware.

A Community Water Quality Improvement Grant Workshop will be held in mid-July to early-August to solicit grant applications.

- *Clean Water State Revolving Fund (CWSRF)*: Provides planning, engineering and financial assistance in the form of low-interest loans, as well as grants to eligible applicants that request assistance to promote water quality projects, including all types of nonpoint source, watershed protection, restoration, and estuary management projects, as well as more traditional municipal wastewater treatment projects.

Funding available to municipalities, private organizations, nonprofit organizations and private individuals.

Project Notice-Of-Intend (NOIs) are solicited twice per year, due by the end of January and August.

- *Drinking Water State Revolving Fund (DWSRF)*: The Drinking Water State Revolving Fund (DWSRF) provides infrastructure improvement loans and grants to eligible water systems. Set-aside funds from the grant support Safe Drinking Water Act goals through technical assistance, training, state program management, capacity development, public water system supervision, underground injection control and water source protection functions.

All community water systems, both publicly and privately owned, and non-profit noncommunity water systems are eligible. The entity applying for the loan must own the system if the water system is currently in operation. If the application is for a proposed water system, the entity applying for the loan must hold the Certificate of Public Convenience and Necessity for the area. Federally owned and State owned systems are not eligible to receive assistance.

DWSRF accepts pre-applications in August of each year with full applications due the following March.

The FAB is a statewide partner that assists in NPS activities by matching funds (e.g. Community Water Quality Improvement Grant) and providing low interest loans for the purpose of water quality. The NPS Program assists in the implementation of FAB programs by offering guidance and technical assistance at a programmatic level. The NPS Program invites many attendees from FAB to the NPS Annual meeting to solicit guidance and input regarding further collaboration of NPS targeted programs.

Type of support provided to the NPS Program:

- Financial
- Technical
- Educational
- Grant Allocation

### 8.3.7 Delaware Department of Agriculture, Nutrient Management Program

The Delaware Nutrient Management Program was established in June 1999 as a result of the Delaware Nutrient Management Law. The Delaware Nutrient Management Commission was established to direct the program and develop regulations pertaining to nutrient management, waste management for Animal Feeding Operations (AFOs) and National Pollutant Discharge Elimination System (NPDES) permits for concentrated animal feeding operations (CAFOs).

The DDA and the DNREC are working collaboratively with the Nutrient Management Program to examine the management of wastes from confined animal facilities. Through this effort, Delaware will be able to provide the best management techniques for these facilities which will meet the needs of our state and the agricultural industry. Currently, the Nutrient Management Program is working with EPA to finalize a set of regulations that will satisfy the provisions in the Clean Water Act that pertain to CAFOs, by protect water quality without placing an undue burden of effort on producers. The Nutrient Management Program also administers the Nutrient Management Relocation Program, the Nutrient Management Plan Cost Assistance Program, certification of landowners and consultants as well as education programs.

Proper application of nutrients to farmland and urban turf areas is vital to prevent the runoff of excess nutrients into the waters of Delaware. The Nutrient Planning Program provides financial reimbursement to farmers and property managers for the writing of nutrient management plans

for farms, golf courses and urban turf facilities. The application process validates eligible nutrient applicators and plan writers.

Currently 100% of Delaware farmland is required to have a nutrient management plan written by a certified plan writer. The Delaware Nutrient Management Commission is the certifying entity. Further reductions in nutrient runoff may be achieved by continued research into manure application and handling as well as increased outreach to help farmers implement their plans. Furthermore, the development and implementation of additional and new BMPs are expected to improve nutrient use efficiency and lessen nutrient runoff. Under EPA direction, DDA is spearheading an effort to assess and re-draft when necessary the State Technical Standards (BMPs) for nutrient handling and environmentally conscience farm operation.

Web: <http://dda.delaware.gov/nutrients/index.shtml>

*Oversight of AFOs and CAFOs:* The Delaware CAFO regulations and program are promulgated and implemented under the authority of DNREC (7 Del.C. 60) and the Nutrient Management Program (3 Del.C. 2200). DNREC is the EPA delegated agency charged with NPDES CAFO oversight and administration. The DDA through a Memorandum of Agreement signed in 2010 with DNREC primarily manages the CAFO program under the supervision of DNREC. In accordance with the MOA, the DDA is the initial point of contact with the regulated community, reviews and makes initial permit determinations, performs most inspections and enforcement actions if warranted, and reviews and makes Nutrient Management Plan (NMP) determinations. In accordance with the MOA, among other activities, DNREC retains supervision and enforcement authority, jointly promulgates CAFO regulations, approves final permit issuance and is the Delaware point of contact with EPA. DDA and DNREC are committed to maintaining and updating an MOA to address the roles and responsibilities of both parties as appropriate for programmatic oversight. DDA and DNREC along with NRCS and other stakeholders worked collaboratively to evaluate federal requirements for state CAFO permits and update state CAFO regulations. Delaware's regulations were first revised in 2010, but EPA expressed concerns as related to definitions and inspection protocols in the 2010 version of the regulations. Delaware's newly revised CAFO regulations were published in the [State Register of Regulations](#) on November 1, 2011 and became effective on the same date.

In accordance with the new state CAFO regulations, animal feeding operations (AFOs) include any operation in which animals have been, are, or will be stabled or confined, fed, or maintained for a total of 45 days or more in any twelve month period. The confinement area must not sustain crops, vegetation, or forage growth, and post residues, such as corn stubble left over after a crop is harvested, cannot be sustained in the normal growing season. Two or more animal feeding operations under the same ownership are considered to be one operation if the production areas adjoin each other or if they use a common area or system for the disposal of manure or wastes. Initially, animal feeding operations determine their need to obtain permit coverage in accordance with the state's CAFO regulations. Through inspections, DDA and/or DNREC may also require an AFO to seek a CAFO permit. DNREC and DDA have also made [EPA's CAFO Duty to Apply Guidance](#) available to the regulated community to help owners and operators assess their need to apply for a CAFO permit. We will make adjustments in the guidance provided to our agricultural community as EPA adjusts their published guidance documents.

*Goals and Objectives (2014-2019:* Delaware will identify the number of animals confined in CAFOs by county. Almost the entire population of animals in CAFOs has NPDES permits; there are 382 currently being permitted statewide, and 61 of them are large poultry farms. (At the time of this update, there are actually over 400 NOIs with more coming in every week.)

The DDA, the DNMC, and DNREC have been working with EPA over the last year to prepare for modifying the state's current CAFO regulations in response to changes in the federal regulations. The regulations are now final and are currently available for review on DDA's and DNREC's websites. The regulations will result in a higher level of management for permitted CAFOs, almost identical to federal regulations. As a result of the modified regulations, medium-sized CAFOs and poorly managed AFOs of any size will also be covered under the CAFO regulations. Animals confined by CAFOs that currently do not have NPDES permits will be permitted soon. Permits will be reviewed once every five years, with the attached NMP required to be reviewed every three years at a minimum.

Additional controls may also be required. State Technical Standards, BMP manuals, permitting strategies, minimum practice requirements within a nutrient management plan, and/or contract conditions for receiving cost-share assistance are currently being modified. The State Technical Standards have been modified and are currently under EPA review. To assure that adequate resources are available for the rewriting of State Technical Standards, Delaware will rely on EPA and USDA grants to provide additional necessary funds. Two new positions and the filling of a long vacant position for the nutrient management program will benefit from these funds, as well as from restoration of state general funds for nutrient planning reimbursements.

Since 2000, all DE Nutrient Management Plans (NMP) are required to be P based. Delaware is proposing to use the NRCS Nutrient Management Code 590 within the nutrient management plan requirements. This standard provides information on managing the amount, source, placement, form, and timing of the application of nutrients and soil amendments. Code 590 serves multiple purposes: to budget and supply nutrients for plant production, to properly utilize manure or organic by-products as a plant nutrient source, to minimize agricultural non-point source pollution of surface and ground water resources, and to maintain or improve the physical, chemical, and biological condition of soil. The use of Code 590 is new, and augments the Nutrient Management Law on CAFOs, which does not cover the elements in as great of detail. Delaware uses an animal waste management plan that includes the nine elements required by EPA for nutrient management planning.

To verify that controls are installed and maintained, CAFO permits will be monitored at a frequency that will be agreed upon between EPA and Delaware through the 106 work plan process. It is anticipated that (1) compliance inspections of all permitted CAFOs will occur at least once every five years, (2) CAFO determination inspections of all unpermitted large CAFOs and all medium AFOs will be conducted as complaints warrant, and based on the Secretary of Agriculture's yet to be determined schedule and (3) on-site visits of AFOs for the purpose of evaluating criteria for designation will be conducted as warranted. The Nutrient Management Program, dependent upon staffing levels, has a goal to inspect every facility with a Nutrient Management Plan at least once during its lifecycle, therefore, at a minimum, once every three years. It is important to note that most NMPS in Delaware are one year plans and as such are

assessed yearly. With current staffing levels in place, this is a reasonable and achievable goal. The Nutrient Management Program staff will perform all compliance inspections of AFOs and most inspections of permitted and unpermitted CAFOs as warranted. Like DNREC, the DDA NM Program staff follows an education program before regulating the compliance strategy. When fines and or penalties are warranted and appropriate, Del. C., Title 7, Chapter 60 sets out the schedule.

The DDA is a NPS statewide partner that helps to restore and protect water quality within the state. DDA works independently with the common interest of reducing NPS pollutants to waters of the State. The NPS Program assists in the implementation of DDA programs by offering guidance and technical assistance at a programmatic level. The NPS Program invites many attendees from DDA to the NPS Annual meeting to solicit guidance and input regarding further collaboration of NPS targeted programs.

Type of support provided to the NPS Program:

- Technical
- Educational

### 8.3.8 Delaware Department of Agriculture, Nutrient Relocation Program

The Relocation Program provides financial reimbursement to farmers, brokers, and trucking businesses for the transportation cost of relocating litter from a Delaware farm to an alternative use project or another farm for land application. The application process validates eligible senders, receivers, truckers, and alternative use projects. Excess litter continues to be transported for land application throughout Delaware as well as Maryland, New Jersey, and Virginia. Alternative use projects are also essential for managing excess poultry litter. Over 50% of the excess litter went to alternative use projects such as the Perdue AgriRecycle fertilizer plant in Blades, DE.

Web: [http://dda.delaware.gov/nutrients/nm\\_reloc.shtml](http://dda.delaware.gov/nutrients/nm_reloc.shtml)

The NPS program has partnered with the Department of Agriculture by helping to finance many projects. Examples include cover crop, nutrient relocation, nutrient management and ag land irrigation.

Type of support provided to the NPS Program:

- Financial
- Technical
- Educational
- Monitoring
- Staffing

### 8.3.9 Delaware Department of Agricultural Lands Preservation Program

House Bill No. 200 was signed into law by then Governor Michael Castle in June of 1991, and established the Delaware Agricultural Lands Preservation Program (DALPP). Initial funding for the program was provided in 1995, and the first farmland preservation easements were purchased and settled in 1996.

The DALPP is a voluntary program that allows landowners to sell their “development rights” to the state, thus preserving the land forever for farming, forestry, and related activities. Although the program allows very limited residential use on the land, by purchasing the development rights, the state has effectively purchased any rights to develop the land for a residential subdivision or commercial/industrial use.

This program provides a number of benefits to both Delaware farmers and taxpayers. For farmers, it allows them to unlock some of the equity in their land, but continue to own it, and farm it for income. Studies have shown that many farmers reinvest the money they receive for preserving their land back into the farm operation, stimulating local agricultural support businesses. In addition, because the state owns the developments rights, if the land is sold, it is priced as farmland, not as developable land. Consequently, the program has created a “bank” of farmland that future farmers can afford to buy because they are not competing with developers, who can afford to pay much more per acre because they are going to develop it.

For taxpayers, preserving farmland supports and ensures a viable agricultural industry in Delaware. Agriculture is Delaware’s number one industry, and provides employment, revenue, and tax base in the state. In addition, agricultural land use represents a much lower cost to taxpayers because it does not require the infrastructure and services needed by residential and other land uses, such as: schools, roads, transit, utilities, etc. Keeping agricultural areas rural, and steering population growth to existing urban areas that are prepared for growth, helps keep government costs low, and minimizes the conflict between dissimilar land uses such as residential and agricultural.

And finally, preserving agricultural farmland has numerous intangible benefits. It provides open “green space” that can be enjoyed by everyone. A significant number of the parcels preserved through the program contain forestland and even wetlands. This provides wildlife habitat, and trees to help sequester carbon from the atmosphere. Open farmland helps reduce impervious surface and runoff. And agricultural soils help filter the precipitation that replenish the state’s aquifers. These aquifers not only provide drinking water, but they replenish streams and ponds through base flow. It should also be recognized that there are studies that show land conversion from agriculture to residential developments (lawns) result in a net increase in nutrient loads.

The NPS Program assists in the implementation of the DALPP by offering guidance and technical assistance at a programmatic level. The NPS Program invites many attendees from the DALPP to the NPS Annual meeting to solicit guidance and input regarding further collaboration of NPS targeted programs.

Type of support provided to the NPS Program:

- Technical
- Educational

### 8.3.10 Delaware Department of Agriculture, Forest Service

Annually, Delaware Department of Agriculture, Forest Service has state funds available for forestry practices statewide. Half of these funds are allocated toward urban forestry practices, including tree planting sub-grants and tree maintenance sub-grants. The other half is allocated to rural forestry projects. Sub-grant recipients are required to match with non-state funds at a 1:1 ratio. The Program is available statewide, with no special considerations based on watershed location.

*Web:* <http://dda.delaware.gov/forestry/index.shtml>

The Department of Agriculture is a statewide partner because planting of trees has the benefit of the uptake of nutrients and reducing sediment to the waters of the state. As stated earlier, the forest service also assists the CREP program with facilities and staff during planting for CREP projects.

Type of support provided to the NPS Program:

- Financial
- Technical
- Educational
- Monitoring
- Staffing
- Policy and Planning
- Assessment

### 8.3.11 Delaware Department of Transportation, Stormwater Quality Program

The mission of the Delaware Department of Transportation's (DelDOT) Stormwater Quality Program is to minimize the run off of pollutants from the roadway drainage system into surface waters of the State of Delaware. DelDOT is committed to engaging the public in stormwater pollution prevention. Below you will find materials developed for our public outreach and education efforts.

Additionally, DelDOT has been delegated by DNREC to administer its own Sediment and Storm Water Management Program. The program requires all construction activities and development that disturbs over 5,000 square feet to develop a stormwater management and sediment control plan to be submitted for review and approval. The submission requires a summary of field conditions, hydrologic and hydraulic computations, a plan checklist and details for sediment control and storm water management practices. During construction DelDOT inspects the site regularly for compliance with the approved plans.

To assure programmatic compliance, DelDOT focuses on the following monitoring programs:

- *Illicit Discharge Detection and Elimination Program:* A "dry weather condition" is the period following at least 72-hours after the most recent precipitation event measuring at least 0.10 inches or more.

Dry weather screening involves locating, marking, and testing all stormwater outfalls in the NPDES Phase I and Phase II permitted areas of the state. Stormwater outfall coordinates are recorded with a Global Positioning System (GPS), uploaded into a Geographic Information System (GIS) and the data is used to create a map of the system.

Screening involves recording physical characteristics of the outfall such as size, shape and location, and testing for the presence of pollutants if flow is present in the outfall during a dry day. The purpose of the dry weather screening is to identify any potential illicit discharges into stormwater drainage system and to investigate and eliminate the sources of the illicit discharge.

- *Storm Event Monitoring:* "Wet weather sampling" is the collection of stormwater samples following a dry weather condition, commencing within 20 minutes of the start of precipitation with continued precipitation for 3.0 hours.

The purpose of our wet weather monitoring program is to collect stormwater samples for use in estimating stormwater pollutant loads in New Castle County. This program is conducted jointly with New Castle County government.

Five sites in New Castle County were selected for monitoring: two in residential areas, one in an industrial area, one in a commercial area, and one along a highway. Samples are collected twice a year during representative rain events. The stormwater samples are analyzed to determine the concentrations of various pollutants present in the stormwater. This concentration data is used to estimate the amount of pollutants being discharged to waterbodies in New Castle County annually via stormwater.

- *Best Management Practices (BMP) Performance Monitoring:* Stormwater Best Management Practices are practices that are used to reduce pollutants typically present in stormwater runoff, prior to the runoff entering streams and rivers.

DelDOT has a long-term Best Management Practice (BMP) performance monitoring and research program. This includes wet weather monitoring of stormwater outfalls and BMPs, as well as chemical and biological monitoring of streams that receive stormwater discharges from DelDOT maintained BMP's. Long-term objectives of DelDOT's BMP monitoring program include the following:

- Quantifying pollution removal abilities of BMPs
- Identifying types and amounts of pollutants present in stormwater discharges from DelDOT maintained roads.
- Determining potential impact of stormwater discharges on water quality

- Assuring compliance with regulatory standards
- Provide design engineers with additional treatment options for difficult site-specific situations
- Evaluating emerging stormwater treatment technologies
- Determining unique problems, and solutions to problems, that occur with structural BMP retrofits.
- Integrating DelDOT monitoring with watershed monitoring already being done by the Delaware Department of Natural Resources and Environmental Control (DNREC) and others an integrated biological, physical and chemical monitoring and assessment approach

Web: <http://deldot.gov/stormwater/index.shtml>

The DelDOT is a NPS statewide partner that helps to restore and protect water quality within the state. DelDOT works independently with the common interest of reducing NPS pollutants to waters of the State. The NPS Program assists in the implementation of DelDOT programs by offering guidance and technical assistance at a programmatic level. The NPS Program invites many attendees from DelDOT to the NPS Annual meeting to solicit guidance and input regarding further collaboration of NPS targeted programs.

Type of support provided to the NPS Program:

- Financial
- Technical
- Educational
- Monitoring
- Staffing
- Grant Allocation

## **8.4 Local NPS Partners**

The NPS Program will strengthen its working partnerships with appropriate local partners to consolidate and update watershed plans in priority watersheds where there is a clear water quality improvement benefit. The following is a descriptive summary of local partner groups, agencies and programs that have significant NPS Program responsibilities:

### **8.4.1 Kent Conservation District**

The Kent Conservation District Cost-Share Program assists landowners and land managers with design and installation of site-specific conservation practices on their property within Kent County, Delaware. A site visit by a KCD planner, a completed application, and approval from the Board of Supervisors is required prior to construction. The cost-share rates and limitations vary according to the practice; cost-share rates range from 25-75%.

Web Page: [www.kentcd.org](http://www.kentcd.org)

*Agriculture BMPS Offered:* KCD's cost-share program can provide financial and/or technical assistance for any agricultural best management practice as approved by the KCD's Board of Supervisors. Examples of these BMPs include, but are not limited to:

*Water Management Practices*

- Open Ditching
- Tile Drainage
- Land Grading and/or Smoothing

*Animal & Agricultural Waste Management Systems*

- Poultry Composter
- Poultry Manure Storage Structure
- Dairy Waste Systems
- Equine Manure Storage Structure
- Animal & Agricultural Waste Handling Equipment
- Heavy Use Area Protection (Concrete Pads) for Poultry
- Equine Manure Dump Wagons
- Spray Irrigation Equipment
- Heavy Use Area Protection for Dairy

*Water Quality Practices*

- Drainage Ditch Impoundments
- Ponds – NRCS Type 3 CRP, CP3A & CP23

*Erosion and Sediment Control Practices*

- Water and Sediment Control Basins
- Critical Area Treatment
- Erosion and Sediment Control Structures
- Sod Waterways
- Windbreaks

*Goals and Objectives (2014-2019):* KCD will continue to promote its Cost Share Program to all of Kent County, including the Chesapeake Bay watershed. Currently, cover crops are the number one priority of the KCD Cost Share Program. Sign-ups for cover crops are offered for two weeks in August since they are only planted during the fall. All other cost share applications are accepted throughout the year. These producers go on a waiting list and once all cover crop requests are funded, if there is cost share funding remaining, District staff call the producers on the waiting list to determine if they are still interested in the BMP. Due to this process, it is difficult to quantify the funding gap(s) for the KCD Cost Share Program, but this waiting list which has been present for at least the past 7 years, demonstrates that more BMPs are requested than funding allows for installation. This list and BMPs requests varies and at any given time, the waiting list can contain requests for \$3,500 to \$425,000 in total cost share requests. If additional funds are available, the time spent on the waiting list will shorten and more implementation will occur.

The KCD is a NPS county partner active in Kent County that helps to restore and protect water quality within the state. KCD works independently with the common interest of reducing NPS pollutants to waters of the Kent County. The NPS Program assists in the implementation of KCD programs by offering guidance and technical assistance at a programmatic level. The NPS Program invites many attendees from KCD to the NPS Annual meeting to solicit guidance and input regarding further collaboration of NPS targeted programs.

The Conservation District Planners are funded by the Delaware NPS 319 grant. The Delaware NPS Program believes that the work that the planners do to reduce nutrients and sediments into the waterways of Delaware far exceeds the funding. The District Planners work with many partners to install site-specific conservation practices for landowner and land managers. Type of support provided to the NPS Program:

- Financial
- Technical
- Educational
- Monitoring
- Staffing
- Cost Share
- Policy and Planning
- Assessment

#### 8.4.2 Sussex Conservation District

The Sussex Conservation District Cost-Share Program provides financial assistance to landowners to implement best management practices to improve or enhance water quality and other natural resource concerns. A conservation/SWAT planner will conduct an on-farm visit to assess the resource concerns on the farm. The planner will then develop a conservation plan and make recommendations on how to address those concerns. The Sussex Conservation District holds an annual sign-up for usually two weeks during the month of August. Once the applications for cost-share assistance are received, the applications are ranked and presented to the Board of Supervisors for approval. Cost-Share approval must be received before construction or implementation of the conservation practice can begin. When the practice is completed, the landowner will bring in the bills for reimbursement. The cost-share rates range from 50% to 75% depending on the practice.

*Web Page:* [www.sussexconservation.org](http://www.sussexconservation.org)

*Agriculture BMPs Offered:* The Sussex Conservation District can provide financial assistance for the following best management practices as approved by the SCD Board of Supervisors and the Director of the Division of Watershed Stewardship:

- Cover Crop
- Permanent Vegetative Cover
- Field Terraces
- Diversions
- Field Windbreak

- Critical Area Plantings
- Water and Sediment Control Basins
- Grade Stabilization Structures
- Grassed Waterways
- Poultry Windbreaks
- Shoreline Stabilization
- Agricultural Waste Control Systems
- Roofed Animal Waste Structures
- Ag Composting Facilities
- Poultry Incinerators
- Heavy Use Area Protections
- Additions to Existing Structures
- Access Roads
- Roof Runoff Structure
- Water Control Structures
- Wildlife Plantings
- Wildlife Ponds
- Constructed Wetlands

*Compliance Rates:* The Sussex Conservation District has a compliance inspector on staff to conduct inspections of all BMPs in the county. Since hiring this inspector, program compliance has increased significantly. An estimate of the compliance rate is about 85% for those conservation practices within the lifespan of the contract. When a landowner is found to be out of compliance, the inspector begins an education process. If the landowner refuses to bring the practice into compliance, then a series of letters are sent out requiring repayment of cost-share and informing the participant that they will not be able to participate in future programs.

*Goals and Objectives (2014-2019):* SCD will continue to promote its Cost Share Program to all of Sussex County, with priority given to targeted watersheds. Currently, cover crops are the number one priority of the SCD Cost Share Program. Sign-ups for cover crops are offered in the early fall annually.

The Sussex Conservation District Cost-Share Program provides financial assistance to landowners to implement best management practices to improve or enhance water quality and other natural resource concerns. A conservation/SWAT planner will conduct an on-farm visit to assess the resource concerns on the farm. The planner will then develop a conservation plan and make recommendations on how to address those concerns. The Sussex Conservation District holds an annual sign-up. Once the applications for cost-share assistance are received, the applications are ranked and presented to the Board of Supervisors for approval. Cost-Share approval must be received before construction or implementation of the conservation practice can begin. When the practice is completed, the landowner will bring in the bills for reimbursement. The cost-share rates range from 50% to 75% depending on the practice.

The SCD is a NPS county partner active in Sussex County that helps to restore and protect water quality within the state. SCD works independently with the common interest of reducing NPS

pollutants to waters of the Sussex County. The NPS Program assists in the implementation of SCD programs by offering guidance and technical assistance at a programmatic level. The NPS Program invites many attendees from SCD to the NPS Annual meeting to solicit guidance and input regarding further collaboration of NPS targeted programs.

The Conservation District Planners are funded by the Delaware NPS 319 grant. The Delaware NPS Program believes that the work that the planners do to reduce nutrients and sediments into the waterways of Delaware far exceeds the funding. The District Planners work with many partners to install site-specific conservation practices for landowner and land managers. Type of support provided to the NPS Program:

- Financial
- Technical
- Educational
- Monitoring
- Staffing
- Cost Share
- Policy and Planning
- Assessment

#### 8.4.3 New Castle Conservation District

The New Castle Conservation District (NCCD) Cost-Share Program assists landowners and land managers do design and install site-specific conservation practices on their property within New Castle County. A site visit by a NCCD planner, a completed application, and approval from the Board of Supervisors is required prior to construction. The cost-share rates and limitations vary according to the practice; cost-share rates range from 30-75%.

*Web:* [www.newcastleconservationdistrict.org](http://www.newcastleconservationdistrict.org)

*Agriculture BMPS Offered:* NCCD's cost-share program can provide financial and/or technical assistance for any agricultural best management practice as approved by the NCCD's Board of Supervisors. Examples of these BMPs include, but are not limited to:

- Critical Area Treatment Manure Storage Ponds
- Manure Storage Structures
- Composters
- Winter Cover Crops
- Riparian Forest Buffer
- Filter Strips
- Roof Water Management
- Fencing
- Wetland Creation
- Ponds construction (agricultural only)
- Upland Wildlife Habitat Plantings
- Wetland Wildlife Habitat Plantings (agricultural only)
- Tree planting

- Hedgerows
- Windbreaks
- Woodland Improvement
- Wetland Creation or Restoration (agricultural only)
- Grassed Waterways
- Terraces
- Grade Control Structures
- Water and Sediment Control Basins
- Streambank Protection

*Goals and Objectives (2014-2019):* The Board of NCCD and its Agricultural Advisory Committee are allocating approximately 62% of our FY13 Conservation Cost-share funds for the District’s Cover Crop Program. These programs are funded slightly above the levels in Kent and Sussex.

The NCCD is a NPS county partner active in New Castle County that helps to restore and protect water quality within the state. NCCD works independently with the common interest of reducing NPS pollutants to waters of the Kent County. The NPS Program assists in the implementation of NCCD programs by offering guidance and technical assistance at a programmatic level. The NPS Program invites many attendees from NCCD to the NPS Annual meeting to solicit guidance and input regarding further collaboration of NPS targeted programs. The District Planners work with many partners to install site-specific conservation practices for landowner and land managers. Type of support provided to the NPS Program:

- Financial
- Technical
- Educational
- Monitoring
- Staffing
- Cost Share
- Policy and Planning
- Assessment

#### 8.4.4 Tributary Action Teams and Pollution Control Strategies

All DNREC TMDL regulations stipulate that nutrient reductions will be achieved through the development of a Pollution Control Strategy (PCS) developed by DNREC in concert with the affected public.

A PCS, similar to a Tributary Strategy, is a set of actions designed improve water quality, and specifically achieve a TMDL. A PCS may include both voluntary and regulatory actions that can reduce pollution from current and future land practices. In Delaware, local Tributary Action Teams (TATs) are diverse groups of stakeholders with various interests, concerns, knowledge, and



to

beliefs. They were formed to recommend PCS actions and best management practices (BMPs) appropriate for their own individual watersheds. TAT consists of farmers, developers, town managers, conservationists, residents with homes along the tributaries, tax ditch managers, local business owners, and others.

The process used by Delaware's TATs was based on "Public Take – Real Choices, Real Strategies," which was primarily designed by representatives from DNREC and the University of Delaware's Cooperative Extension Service and Marine Advisory Service, the Center for the Inland Bays (Appendix A). Using this form of public process, the public is brought together and given the opportunity to address the process in the beginning rather than at the end. The process includes six steps: organization of work teams; education; issue framing; evaluation of the issue framework; public forums/choice work; and recommendations. Once teams were formed, they identified common threads and core values to guide their work. During the education portion of the process, teams listened to presentations on multiple topics such as wastewater treatment plants, septic systems, stormwater, golf courses, and agriculture. Teams then worked through ranking priorities, gathering wider public input, and drafting recommendations for DNREC's consideration.

In Delaware's previous water quality improvement efforts, after the TMDL was developed, the implementation mechanism, the Pollution Control Strategy, was formulated. The current EPA TMDL approach requires the implementation mechanism – the Watershed Implementation Plan – to be identified during the TMDL development process. The PCS work that was started with Delaware's TATs in the Chesapeake has been reviewed, updated, and enhanced to better assist Delaware's WIP.

Although the TATs are currently not active, they are on stand-by should the need to reinvigorate be realized. When active, the NPS Program serves as a critical member to offer guidance and technical information regarding NPS pollution and assuring NPS issues are addressed during the development of PCS documents.

Type of support provided to the NPS Program:

- Technical
- Educational

#### 8.4.5 Delaware Center For the Inland Bays

The Delaware Center for the Inland Bays was established as a nonprofit organization in 1994 under the auspices of the [Inland Bays Watershed Enhancement Act \(Title 7, Chapter 76\)](#). The creation of the Center for the Inland Bays was the culmination of more than 20 years of active public participation and investigation into the decline of the Inland Bays and the remedies for the restoration and preservation of the watershed.

The Center for the Inland Bays was created to oversee the implementation of the [Comprehensive Conservation and Management Plan for Delaware's Inland Bays \(CCMP\)](#) and to promote the wise use and enhancement of the Inland Bays watershed by conducting public outreach and education, developing and implementing restoration projects, encouraging scientific inquiry and

sponsoring needed research, and establishing a long-term process for the protection and preservation of the inland bays watershed.

Web: <http://www.inlandbays.org/>

*The goals of the Center for the Inland Bays are:*

1. To sponsor and support educational activities, restoration efforts, and land acquisition programs that lead to the present and future preservation and enhancement of the Inland Bays watershed.
2. To build, maintain, and foster the partnership among the general public; the private sector; and local, state, and federal governments, which is essential for establishing and sustaining policy, programs, and the political will to preserve and restore the resources of the Inland Bays watershed.
3. To serve as a neutral forum where Inland Bays watershed issues may be analyzed and considered for the purposes of providing responsible officials and the public with a basis for making informed decisions concerning the management of the resources of the Inland Bays watershed.

The CIB is a NPS watershed partner active in the Inland Bays watershed that helps to restore and protect water quality within the Inland Bays drainage area. CIB works independently with the common interest of reducing NPS pollutants to waters of the Inland Bays. The NPS Program assists in the implementation of CIB programs by offering guidance and technical assistance at a programmatic level. The NPS Program invites many attendees from CIB to the NPS Annual meeting to solicit guidance and input regarding further collaboration of NPS targeted programs.

Type of support provided to the NPS Program:

- Financial
- Technical
- Educational
- Monitoring
- Policy and Planning
- Assessment

#### 8.4.6 Partnership for the Delaware Estuary

The Partnership for the Delaware Estuary (PDE) is a nonprofit organization established in 1996 to take a leadership role in protecting and enhancing the Delaware Estuary, where fresh water from the Delaware River mixes with salt water from the Atlantic Ocean. It is one of 28 Congressionally designated National Estuary Programs throughout the coastal United States working to improve the environmental health of the nation's estuaries. Its staff works with partners in three states to increase awareness, understanding, and scientific knowledge about the Delaware Estuary, the region's most important cultural, economic, and recreational resource.

The Partnership for the Delaware Estuary, a National Estuary Program, leads science-based and collaborative efforts to improve the tidal Delaware River and Bay, which spans Delaware, New Jersey, and Pennsylvania.

Web: <http://www.delawareestuary.org/>

The PDE is a NPS watershed partner active in the Delaware Bay watershed. PDE works independently with the common interest of reducing NPS pollutants to waters of the Delaware Bays. The NPS Program assists in the implementation of PDE programs by offering guidance and technical assistance at a programmatic level. The NPS Program invites many attendees from PDE to the NPS Annual meeting to solicit guidance and input regarding further collaboration of NPS targeted programs.

Type of support provided to the NPS Program:

- Financial
- Technical
- Educational
- Monitoring
- Policy and Planning
- Assessment

## **8.5 Collaborations**

Several mechanisms exist for facilitating program coordination and collaboration. The following is a list of coordination mechanisms commonly utilized for NPS management in Delaware.

### **8.5.1 State Water Planning Process**

The Preliminary Land Use Service (PLUS) - PLUS provides for state agency review of major land use change proposals prior to submission to local governments.

The PLUS process involves reviews by all applicable state agencies at the start of the land development process, adding value and knowledge to the process without taking over the authority of local governments to make land use decisions.

Land use change proposals are submitted to state agencies through the Office of State Planning Coordination and are the subject of monthly PLUS meetings at which applicants meet with state agency resource experts to discuss their plans and identify possible problems, and solutions.

The process has a three-fold purpose:

- To identify and mitigate potential impacts of development which may affect areas beyond local boundaries;
- To fully integrate state and local land use plans; and

- To bring state agency staff together with developers, and local officials, early in the process.

PLUS review meetings are generally held on the fourth Wednesday of each month. The NPS Program assists in the implementation of the PLUS program by offering guidance and technical assistance at a programmatic level.

### 8.5.2 Delaware Nutrient Management Program

The mission of the Nutrient Management Program is to manage those activities involving the generation and application of nutrients in order to help maintain and improve the quality of Delaware's ground and surface waters, and to help meet or exceed federally mandated water quality standards, in the interest of the overall public welfare.

The Delaware Nutrient Management Program was established in June 1999 as a result of the [Delaware Nutrient Management Law](#). The Delaware Nutrient Management Commission ([DNMC members](#)) was established to direct the program and develop regulations pertaining to nutrient management, waste management for Animal Feeding Operations (AFO's) and National Pollutant Discharge Elimination System (NPDES) permits for Concentrated Animal Feeding Operations (CAFO's).

To manage those activities involving the generation and application of nutrients in order to help maintain and improve the quality of Delaware's ground and surface waters and to help meet or exceed federally mandated water quality standards, in the interest of the overall public welfare.

Delaware Nutrient Management Commission meetings are held the second Tuesday of every Month. The NPS Program assists in the implementation of DNMC programs by offering guidance and technical assistance at a programmatic level.

### 8.5.3 NRCS Delaware Technical Committee

The Delaware State Technical Committee serves in an advisory capacity to the Natural Resources Conservation Service (NRCS) and other agencies of the U.S. Department of Agriculture (USDA) on the implementation of the natural resources conservation provisions of Farm Bill legislation. The Delaware State Technical Advisory Committee provides recommendations on a number of issues within a variety of conservation programs. Although the State Technical Advisory Committee has no implementation or enforcement authority, USDA gives strong consideration to the Committee's recommendations.

The Technical Committee is composed of individuals and groups who represent a diverse group with interests in a variety of natural resource sciences and occupations, including the following:

- Soil
- Water
- Air
- Plants
- Wetlands

- Wildlife
- Agricultural Community
- Environmental Community

The Delaware State Technical Committee meetings are held twice a year as needed. The NPS Program assists in the implementation of NRCS programs by offering guidance and technical assistance at a programmatic level during the Delaware State Technical meetings.

#### 8.5.4 Center for the Inland Bays Scientific and Technical Advisory Committee (STAC)

The primary responsibility of the Scientific and Technical Advisory Committee (STAC) is to provide objective scientific and technical advice and guidance to the Board of Directors of the CIB and other cooperating agencies with interests in the Delaware Inland Bays and their watersheds on matters of developing public understanding, interest, and participation in the implementation of the [Comprehensive Conservation and Management Plan for Delaware's Inland Bays \(CCMP\)](#). The STAC also serves to provide advice concerning the scientific and technical merit of proposals submitted to the CIB and by the CIB to other agencies.

The STAC serves as the primary advisor to the Board on scientific and technical matters and considers all relevant scientific and technical issues brought to its attention. In all roles, the STAC strives to receive the concerns from, and to build consensus among the user groups, local, state, and federal agencies, private industries, environmental groups, the scientific community, and general public, concerning the identification of strategies and projects to implement the CCMP and to increase public participation in the work of the CIB.

The Scientific and Technical Advisory Committee (STAC) is a standing committee of the Center for the Inland Bays (CIB) and works under the authority of the Board of Directors and is subject to the bylaws of CIB.

At a minimum, the STAC meets four times each year. More as needed. The NPS Program assists in the implementation of CIB programs by offering guidance and technical assistance at a programmatic level during the STAC meetings.

#### 8.5.5 Partnership for the Delaware Estuary (PDE) - Science and Technical Advisory Committee

The Science and Technical Advisory Committee (STAC) is a diverse body of scientists and resource managers who lend their technical expertise to enhance the health of the Delaware Estuary and its resources. The STAC work collaboratively to provide expert advice and peer review for scientific and technical matters related to the National Estuary Program's activities and goals. The STAC is responsible for identifying and prioritizing science and technical needs, and it assists in PDE's efforts to raise awareness and funding resources. STAC members assist PDE by serving on other technical committees, and representing the needs of the Delaware Estuary. In addition to general quarterly meetings, STAC sub-committees get their hands dirty by meeting more frequently to work on pressing issues

#### Roles & Functions of the PDE STAC:

- Provide advice and peer review
- Advance the Delaware Estuary Management Plan (CCMP)
- Advance needs elevated in the [2006 White Paper](#)
- Development of issues papers and identifying emerging issues
- Steering group for the Delaware Estuary Science Conference
- Assist in refreshing the Partnership's estuary science needs assessment
- Integrate needs of the Delaware Estuary across physical, chemical, and biological dimensions of the system
- Facilitate communication and collaboration among other specialized science and technical committees
- Help to raise national awareness for the unique qualities and environmental importance of the Delaware Estuary
- Assist in identifying funding opportunities to address science needs and advance the overall NEP science agenda

Meetings of the PDE STAC are held approximately each quarter. The NPS Program assists in the implementation of PDE programs by offering guidance and technical assistance at a programmatic level during the PDE STAC meetings.

#### 8.5.6 Delaware NPS Program Biennial Meeting

The Delaware NPS Program hosts an advisory committee meeting every other year for the purpose of:

- Major program updates and discussion of program direction for the upcoming year and presentation of results from completed projects.
- Special issue groups would be convened to determine the most appropriate way for the NPS Program to support initiatives associated with those issues.
- Based upon a comprehensive review of the NPS Program a group will be formed to identify and develop projects that will directly address gaps in the essential activities of the program.
- Each year a ranking committee will meet to evaluate projects for grant funding.

#### 8.5.7 Delaware Association of Conservation Districts

The Delaware Association of Conservation Districts (DACD) is an organization comprised of three Delaware Conservation Districts who jointly deal with resolving conservation issues by working with state, county, federal agencies and the public. DACD hosts an annual meeting to fulfill the following mission:

- Facilitate collaboration between the districts and partners
- Develop and conduct conservation education programs for both youth and adults
- Build the fiscal independence of the districts
- Long range development plan

- Enhance Legislative support
- Develop marketing strategies

The NPS Program assists in the implementation of DACD programs by offering guidance and technical assistance at a programmatic level during the annual meeting.

### 8.5.8 Water Infrastructure Advisory Council

The Water Infrastructure Advisory Council (WIAC) [www.dnrec.delaware.gov/CWAC/Pages/CWAC.aspx](http://www.dnrec.delaware.gov/CWAC/Pages/CWAC.aspx) initiates, develops and recommends to the Delaware General Assembly projects for the planning, construction, repair, renovation or expansion of drinking water and wastewater facilities. The council provides guidance and policy advice to the Governor and Secretaries of DNREC, Delaware Health and Social Services, and Finance along with assistance in developing funding options for capital and maintenance programs related to drainage, stormwater management and flood control throughout Delaware. The Council is also charged with providing assistance in the development and evaluation of criteria for watershed-based plans for surface water management.

Meetings are held monthly. The NPS Program assists in the implementation of WIAC programs by offering guidance and technical assistance at a programmatic level during the monthly meetings.

## 9 FUNDING

The purpose of the this Chapter is to identify funding sources, including potential match sources, close funding gaps and achieve the implementation goals and milestones described in this document, coordinate grant applications when possible, and develop mechanisms to track external expenditures in the priority watersheds for future reporting.

### 9.1 Current Funding Sources

Funding for the implementation of the NPS related BMPs comes from a variety of sources, including federal grant funds from EPA, USDA, and USFWS. DNREC also receives state general funds which are used for staffing and to match federal grants. Additional funds are obtained by various partners and agencies from non-profit partners and local government partners in the form of grants, in-kind and cash match. Any reduction of state and/or federal funding for programs related to NPS BMP implementation will affect the NPS Program's ability to implement the 2014 NPS Management Plan and achieve the goals therein.

### 9.1.1 The Delaware Nonpoint Source Program (CWA Section 319)

The Delaware Nonpoint Source (NPS) Program administers a competitive grant made possible through Section 319 of the Federal Water Pollution Control Act (Clean Water Act). The grant provides funding for projects designed to reduce nonpoint source (NPS) pollution in Delaware. NPS pollution may be defined as any pollution that originates from a diffuse source (such as an open field or a road) and is transported to surface or ground waters through leaching or runoff. Reduction of NPS pollution may often be achieved through incorporation of specific best management practices (BMPs) into project workplans. Projects may target any source of NPS pollution, but most frequently involve agriculture, silviculture, construction, marinas, septic systems, and hydromodification activities.

**Eligibility for NPS Program Funding** A project can be sponsored by both public and private entities, including local governments, tribal authorities, cities, counties, regional development centers, local school systems, colleges and universities, local nonprofit organizations, state agencies, federal agencies, watershed groups, for-profit groups, and individuals. Project grants to individuals are limited to demonstration projects.

Priority will be given to those projects whose goal is to improve the water quality of priority watersheds with approved watershed management plans.

The NPS Program may also prioritize funding according to additional environmental factors, such as land use and existing best management practices, if these factors can help determine where projects will be most effective at reducing nonpoint source pollution. Projects are usually one to three years in length. Grant recipients that failed to meet program requirements in the past may be ineligible to receive additional project funding.

### 9.1.2 CWA, Section 106 Grant

Delaware and EPA have historically developed work plans for the Section 106 NPDES Permit/Enforcement activities under this grant. These work plans seek to initiate a closer coordination and integration of EPA and state permitting/enforcement activities. It is anticipated, these activities will continue through the active period of the Plan.

### 9.1.3 Clean Water State Revolving Fund Program (CWSRF)

The Federal Water Pollution Control Act (Clean Water Act), as amended in 1987, established the Clean Water State Revolving Fund (CWSRF) program. The CWSRF program offers low interest financing agreements for wastewater treatment, nonpoint source pollution control, and watershed and estuary management.

CWSRFs offer:

- Low interest rates, flexible terms
- Significant funding for nonpoint source pollution control and estuary protection
- Assistance to a variety of borrowers
- Partnerships with other funding sources

CWSRF programs combine the federal and state capitalization funds with other program resources including tax-exempt revenue bond proceeds, fund investment earnings, and loan repayments to provide low-interest loans for eligible projects. Some of the programs include:

- Wastewater Infrastructure Loans
  - Green Project Reserve reduced CWSRF Interest Rates are used as incentives to encourage borrowers to submit projects for funding consideration
  - Energy Efficiency – technologies and practices to reduce the energy consumption for water quality projects
  - Water Efficiency – technologies and practices to deliver equal or better services with less water
  - Green Infrastructure – practices that manage and treat stormwater, and that maintain and restore natural hydrology by infiltrating, capturing and using stormwater
  - Environmentally Innovative Projects – practices that demonstrate new/innovative approaches to managing water resources in a more sustainable way, including projects that achieve pollution prevention or pollutant removal with reduced costs
- Non-point Source Loan Program
  - Septic Rehabilitation Loan Program (SRLP) -- The SRLP provides financial assistance to moderate to low income homeowners to replace failing septic systems
  - Agricultural Non-Point Source Loan Program (AgNPSLP) -- AgNPSLP funds are leveraged with Federal and State Cost Share assistance from Conservation Districts, to provide loans to poultry and dairy producers for manure storage/management, dead bird composters, and front end loaders.
  - Leaking Storage Tank Remediation Loan Program (LSTRLP) -- The LSTRLP provides loans to remove, retrofit, clean up contaminated sites, and corrosion protection for leaking underground storage tanks

#### 9.1.4 Financial Assistance Branch (FAB)

The Financial Assistance Branch (FAB) of DNREC provides planning, engineering and financial assistance to a broad range of customers that request help in preventing or eliminating activities that cause water pollution. Branch activities include:

- Providing wastewater planning grants for the development of general wastewater facility plans, long range wastewater facility plans, and regional wastewater facility plans.
- Providing engineering and technical assistance for developing new sanitary sewer districts and/or solving problems in existing sewer districts. The Branch provided assistance that has led to the development of the Ellendale Sanitary Sewer District, the Northeast Sanitary Sewer District (Leipsic), the Kenton Sanitary Sewer District, and the Farmington Sanitary Sewer District. Sanitary sewer systems are either under design or

construction for each of these communities. Assistance is currently being provided for two additional areas.

- Providing financial assistance in the form of economic feasibility studies, low interest loans, and grants for wastewater projects that eliminate sources of pollution or prevent future sources of pollution. Financing is available to municipalities for community wastewater management facilities, to individuals for the rehabilitation of failing septic systems, to dairy and poultry farmers for the implementation of manure management practices on their farms, and to individuals and businesses for underground storage tank sites that need groundwater cleanup. Financial assistance in the form of determining the economic feasibility of a project is also provided to communities with water utilities.

### 9.1.5 Community Water Quality Improvement Grants

The Community Water Quality Improvement Grant (CWQIG) is an annually determined set aside in the Delaware Clean Water State Revolving Fund (CWSRF) Non-Federal Administrative Account. The program is designed to assist municipalities, government agencies, and non-profit organizations with implementing projects or programs within Delaware's developed landscape to improve water quality in designated impaired watersheds consistent with specific plans developed for watershed improvements. Programs and projects selected will demonstrate innovative and sustainable methods, techniques, and/or practices for water quality improvements with cost effective and measurable results.

In undertaking these projects, it is the intent that surface and ground water quality throughout the state of Delaware is measurably improved and that citizen education and actions regarding the waters of the state are benefited. The available funding should be used to assist with project/program implementation with a priority for projects that promote community involvement, leverage additional resources, further education and outreach, demonstrate innovative science, policy, and technology, and provide a project/program approach that is both measurable and transferable in water quality improvements obtained.

Applicants may be any Delaware state or municipal government, agency or program, non-profit organization, educational institution, community organization, and/or homeowner's association within the state of Delaware. Applicants may submit up to two project proposals per grant cycle. Preference is given to projects involving cooperative partnerships and sponsors without a dedicated source of funds for repayment of Clean Water State Revolving Fund loans. Agricultural operations and private for profit firms are not eligible for these funds. Interested parties may enter into working arrangement with eligible applicant.

While not limited to the following list, all proposals should address one or more of the following goals:

- Provide benefits to water quality within an impaired watershed;
- Implementation of non-regulatory projects listed in a watershed management plan. Examples of plans include voluntary elements of Pollution Control Strategies, watershed based restoration plans, a Whole Basin Management Preliminary Assessment, or community-based stormwater permits;
- Installation of community stormwater management improvements in existing developments and municipalities;
- Restoration for water quality benefits;

#### 9.1.6 Natural Resources Conservation Service

NRCS offers voluntary programs to eligible landowners and agricultural producers to provide financial and technical assistance to help manage natural resources in a sustainable manner. Through these programs the agency approves contracts to provide financial assistance to help plan and implement conservation practices that address natural resource concerns or opportunities to help save energy, improve soil, water, plant, air, animal and related resources on agricultural lands and non-industrial private forest land.

NRCS financial assistance programs include the following:

- The Agriculture Management Assistance (AMA) helps agricultural producers use conservation to manage risk and solve natural resource issues through natural resources conservation. NRCS administers the AMA conservation provisions while the Agricultural Marketing Service and the Risk Management Agency implement other provisions under AMA.
- The Conservation Stewardship Program (CSP) helps agricultural producers maintain and improve their existing conservation systems and adopt additional conservation activities to address priority resources concerns. Participants earn CSP payments for conservation performance—the higher the performance, the higher the payment.
- The Environmental Quality Incentive Program (EQIP) provides financial and technical assistance to agricultural producers in order to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, reduced soil erosion and sedimentation or improved or created wildlife habitat.

#### 9.1.7 Chesapeake Bay Implementation Grant (CBIG)

Chesapeake Bay funding will be used by all of Delaware’s Chesapeake Bay watersheds between June 2009 and May 2015 to manage a wide range of nutrient and sediment sources. These activities include bringing stakeholders together, evaluating progress through water quality monitoring and BMP data tracking, accelerating implementation of nutrient and sediment reducing activities, and contributing knowledge of new approaches to reduce nutrients and sediment. This work plan proposes to support both traditional and innovative BMPs that are cost effective and sustainable. Technical support and cost share funding will be provided for more traditional agricultural BMPs such as manure relocation and cover crops, while the effectiveness

of targeting irrigation to reduce nutrient loadings will be investigated. Efforts will also be expended in the urban sector to install nutrient reducing practices like rain gardens on existing developed lands. Further education and outreach will also be done to promote the use of new green development practices.

### 9.1.8 Chesapeake Bay Regulatory and Accountability Grant (CBRAP)

Delaware would not be able to achieve its water quality goals for the Chesapeake Bay without assistance from the Chesapeake Bay Regulatory and Accountability Program grant (CBRAP). The CBRAP grant addresses four objectives. The first is the development of the TMDL Watershed Implementation Plan and Milestones, which will detail the necessary steps to minimize pollutant inflow to the Bay and achieve the TMDL set by EPA. Additionally, stakeholders from partner agencies and each nutrient and sediment source sector as well as the general public will be engaged to obtain additional input into the development and implementation of the CB WIP. DNREC will work with local governments as well to model future land use to better assess and manage future loads. As a result, Delaware will be able to propose and implement effective strategies to reduce nutrient and sediment loads to local impaired waters and the Bay in accordance with the timeline provided by EPA.

The second objective is to improve and expand regulation of sources of nitrogen, phosphorus, and sediment delivered to the Bay. As a result of the grant, Delaware's regulations for industrial stormwater sites will be revised to address the Chesapeake Bay TMDLs, as well as other TMDLs established within the state of Delaware. The regulations will also establish new guidelines that reflect new federal mandates, implement stricter standards such as the inclusion of effluent limitations, and require stricter reporting requirements. In addition, the grant is providing funds to develop Technical Standards for Sediment and Stormwater Regulations which will:

- Incorporate runoff reduction approaches in the new DURMM model to provide a tool that is both unique to Delaware and serve as a practical tool for the stormwater designer. Professional engineers and designers will be more successful in meeting regulatory requirements utilizing tools that enable them to take advantage of the available science and technology.
- Provide technical specifications for Green Technology Practices that will be utilized to optimize land development toward the goal of 0% effective imperviousness for new development. The technical specifications will be consistent with other Bay area specifications that are being utilized to maximize pre-development hydrology.
- Provide training functions each year for agency review personnel to ensure they are consistently applying the standards based approach in the new regulations, provide training functions annually for the regulated design community to transfer technology associated with the new design approaches and standards. New projects associated with the use of these practices should achieve the percent load reduction to meet the TMDL as well as meet runoff reduction goals of 0% effective imperviousness.

New regulations for a Nutrient Offset and Trading program will be developed in accordance with EPA guidance to address future growth and unmitigated loads. Finally, the Department will continue to work to develop and issue permits and provide technical assistance for permit compliance.

Thirdly, the CBRAP grant will provide for enforcement and compliance assurance. Compliance inspectors will make certain that agricultural, wastewater, and storm water related practices have been installed properly and are being maintained to achieve adequate nutrient or sediment goals. This grant will provide:

A compliance inspector in Sussex County to inspect every acre to ensure that cover crops are planted at the appropriate time and that no manures or fertilizers are spread on the cover cropped fields. In the spring, the inspector will again inspect each field for compliance for approved destruction methods and to ensure that no manure or fertilizer applications occurred. In the fall of 2009, there were over 15,000 acres of cover crops planted in the Chesapeake Bay Watershed in Sussex County.

Delaware has nearly 400 industrial storm water sites. The addition of an environmental scientist will allow for increased inspections of these sites. It is estimated that the addition of this staff will result in completion of up to 250 inspections per year. Although the Industrial Stormwater Program currently requires that sites be inspected once every three years, the Surface Water Discharges Section has a goal of inspecting each site at least annually to provide updated data to the Chesapeake Bay Program.

A staff person to work with approximately 240 CAFO permittees in the Chesapeake Bay Watershed through the NOI and permit approval process. Schedule public workshops and hearings as necessary to review NOIs, conduct audits and inspections as necessary at each operation to ensure compliance with the new CAFO regulations and provide educational and technical support.

A Targeted Onsite Wastewater Inspection Compliance Program will be developed, focusing on conducting inspections in areas with high levels of nutrients and those within 1,000 feet of tidal waters and wetlands. The purpose is to identify failing systems and work with property owners to repair or replace systems with better treatment.

Lastly, a portion of funding from the grant is improving tracking and accountability. Sussex and Kent Conservation Districts have delegation over the Sediment and Stormwater Program. The Conservation Districts' responsibilities include review and approval of sediment and storm water management plans, construction inspection, maintenance inspection, and outreach and education. Funding will provide for:

Inspection of all closed out projects constructed in the Chesapeake Bay Watershed since 1991 and provides storm water maintenance report/technical guidance on how the BMP is designed to function and its proper maintenance. Recommendations will be generated on improvements that can be made to increase removal of nutrients through the implementation of practices such as buffers, meadows, native landscaping, and other practices.

### 9.1.9 National Fish and Wildlife Foundation Chesapeake Bay Stewardship Fund

In 2010, DNREC was awarded a \$100,000 Small Watershed Grant from the NFWF. DNREC partnered with federal, state, local, and non-governmental groups to reduce nutrients and sediment from urban and rural nonpoint sources in the headwaters of the Chesapeake Bay using innovative storm water retrofits and riparian, channel, and wetland restoration techniques. The proposal included prioritization of urban retro-fit and restoration opportunities within the Delaware portion of the Chesapeake Bay Watershed, targeting sub-watersheds primarily in the Nanticoke, Chester and Choptank Watersheds to focus implementation using innovative techniques. This approach addressed two of the key challenges identified by the National Fish and Wildlife Foundation, focuses within the geographic priority areas and provides holistic strategies to address all major sources of nutrients while providing outreach, technical assistance, implementation and monitoring.

Annually, the NFWF program has over \$10 million in grants and technical assistance available for projects in the Chesapeake Bay Watershed. Projects focused on green infrastructure improvements, conservation on private lands, urban Stormwater management, improving local government capacity and citizen based stewardship will be funded. DNREC intends to work with our local government partners as well as other partners to submit proposals for this funding.

### 9.1.10 Resource Conservation and Development Fund

The state has utilized a special fund named the 21st Century Resource Conservation and Development (RCD) fund to finance major and minor flooding and drainage projects throughout the state for the past 16 years. While these funds are limited, there should be a concerted effort to integrate water quality management in a retro-fit manner into projects funded through this revenue stream.

## 9.2 Funding Available

The table below summarizes the programs described above and the estimated levels of funding available for TMDL and WIP implementation between 2014 and 2016. The funds identified are typically not available to all sources sectors, therefore the total estimated funds available does not necessarily cover the estimated funds that will be needed to implement the 2014 NPS Management Plan through 2017 levels. As applicable, the NPS Program will support the following funding sources and encourage the use for implementation projects and BMPs found within the EPA approved 9 element Watershed Plans.

<b>Source of Funds</b>	<b>Funding Amount (FY2014) Estimated</b>	<b>Activities Eligible</b>
Delaware Nonpoint Source Program (CWA 319)	\$1,200,000	Implementation and Program Administration
Chesapeake Bay Regulatory	\$1,500,000	Regulatory Development, IT

and Accountability Grant (CBRAP)		Support, Planning, permitting, technical assistance
State General Funds	\$14,000,000	Implementation, Education/Outreach, Program Administration, Technical Assistance, Monitoring, State Cost Share/Match.
National Fish and Wildlife Foundation Small Watershed Grants (NFWF)	\$175,000	Implementation and Planning. Grant requires 25% local match. This is a competitive grant which can be applied for annually.
Clean Water SRF	\$268,000,000	Total loan portfolio available statewide through 2016 for municipal loans related to wastewater and surface water management.
Chesapeake Bay Implementation Grant	\$3,000,000	Implementation
Community Water Quality Improvement Grant	\$450,000	Innovative BMP Implementation
USDA NRCS Farm Bill Programs	\$47,000,000	Technical and Financial Assistance, Cost Share, staff
CWA 106	\$700,000	Monitoring
Delaware Forest Service <sup>37</sup>	\$950,500	Cost Share, grants available statewide to qualified landowners, communities, and municipalities.
DelDOT	Unk	Mitigation, Stormwater Improvements
Private	Unk	Unk
Other	Unk	Unk
Local Governments	Unk	Unk

### 9.3 Funding Milestones

The following funding milestones will be utilized for plan evaluation. These milestones will be revisited during each 5 year review period and revised as appropriate.

- DNREC and DDA will continue to coordinate with the NRCS State Conservationist to develop a plan to better leverage USDA Farm Bill funding with existing state cost share programs.

- EPA is working to identify costs associated TMDL implementation on many of the priority watersheds by end of CY2015.
- *CB WIP Implementation:* Delaware will review EPA’s analysis and further develop and refine the estimate of the annual and total costs associated with achievement of the TMDL goals and milestones through 2025 and 2017 according to the approved WIP.
- Coordinate and leverage restoration expenditures with the Forest Service, NRCS, DelDOT, mitigation funds, in-lieu funds, penalty funds, etc. (On-going).
- Develop a comprehensive list of funding sources including grants, loans, etc for partners (2015).
- Develop a prioritization tool to assist decision makers better direct funding, including the future CBRAP and Implementation grants to achieve CB WIP goals and milestones.
- Develop a mechanism to track annual spending in the Chesapeake Watersheds on an annual basis through collaboration and cooperation from local, state, federal and nonprofit agencies.
- Work with partners, including local governments, non-profit partners, and partner agencies to develop and submit grant applications for implementation of water quality projects. (On-going).

## 10 MONITORING

The NPS Program recognizes the need to use its personnel and financial resources efficiently and effectively. To that end, the NPS Program supports DNREC’s surface water quality monitoring is conducted in a manner that focuses available resources on the Whole Basin Management concept. The Whole Basin Management Program in Delaware operates on a 5-year rotating basis (section 10.4). This approach enables the DNREC to comprehensively monitor and assess the condition of the state environment with due consideration to all facets of the ecosystem.

Elements of the Delaware's specific Surface Monitoring Program include:

- TMDL-Related Monitoring
- General Assessment Monitoring
- Toxics in Biota Monitoring
- Toxics in Sediment Monitoring
- Biological Assessment Monitoring

### ***10.1 General Changes or Trends in Water Quality***

As a result of water quality protection programs that are in place in Delaware, surface water quality in general has remained fairly stable in spite of increasing development and population growth. Impacts to waters are generally the result of past practices or contamination events, activities that are neither regulated nor otherwise managed, or changes that are occurring on a

larger regional scale. For example, air pollutants from sources outside of Delaware contaminate Delaware's surface waters via rainfall.

Improvements in water quality have been documented in localized areas where a discharge was eliminated or better treatment installed. Watershed level water quality improvements in waters that are being impacted by historical contamination and nonpoint pollution sources are very difficult to detect over a short period of time. Targeted monitoring over long time periods (years) is necessary in order to detect changes.

Although Delaware's surface water quality may not have changed significantly over the last several years, there have been many improvements made in watershed assessment approaches and methodologies. Additionally, many water quality criteria are stricter as a result of amendments to the State's Water Quality Standards. Therefore, we have become more proficient at identifying water quality problems and, at the same time, are calling for higher quality waters.

The stability of Delaware's surface water quality is likely the result of increased efforts to control both point and nonpoint sources of pollution. In addition to the significant investments in wastewater treatment technologies previously mentioned, many private business interests are investing in practical and cost-effective nonpoint source pollution control practices (Best Management Practices) on farms, residential developments, and commercial and industrial sites. Likewise, public agencies such as the Delaware Department of Transportation are investing revenues in improved storm water management practices and wetlands creation to mitigate the impacts of maintenance and new highway construction activities.

## **10.2 Programs to Assess Impairments**

### **10.2.1 State of Delaware Total Maximum Daily Load Program (TMDL)**

Section 303(d) of the Federal Clean Water Act (CWA) requires states to develop a list of water bodies for which existing pollution control activities are not sufficient to attain applicable water quality standards (303(d) List) and to develop Total Maximum Daily Loads (TMDLs) for pollutants of concern. A TMDL sets a limit on the amount of a pollutant that can be discharged into a waterbody such that water quality standards are met.

The state of Delaware was operating under a court-approved Consent Decree that required establishment of nutrient, dissolved oxygen, bacteria, and zinc TMDLs for all impaired streams that were listed on the Delaware 1996 303(d) list by the year 2006. The Department met the requirements of the Consent Decree by December 2006 and completed TMDLs for all waters of the state that were impaired as the result of high nutrients, low dissolved oxygen, high bacteria levels, or high concentration of zinc.

The Department is currently developing TMDLs for toxics according to a schedule provided in the 303(d) List. Furthermore, the Department is taking the necessary steps to address habitat

and/or biological degradation of the state's waters according to a schedule provided in the 303(d) list.

### 10.2.2 Pollution Control Strategies

Pollution Control Strategies (PCSs) are plans to achieve the nutrient and bacteria load reductions delineated by Total Maximum Daily Loads (TMDLs). They describe the specific actions that are needed to achieve water quality standards and provide a schedule for implementing those actions. PCSs have been developed for seven watersheds: Christina (Brandywine Creek, Red Clay Creek, White Clay Creek, and Christina River), Appoquinimink River, St. Jones River, Murderkill River, Mispillion River and Cedar Creek, Nanticoke River (including Broad Creek and their tributaries), and the Inland Bays (Rehoboth Bay, Indian River and Bay, Little Assawoman Bay, and their tributaries). The PCSs, for these watersheds except for Mispillion and Cedar Creek Watersheds, have been recommended by diverse groups of citizens (including government officials) called Tributary Action Teams (TATs). These TATs work with the Department's Whole Basin Management Teams and other experts during the process of formulating, assessing and implementing the PCSs. Although most are currently inactive, the TATs can and will be reinvigorated as needed.

## 10.3 Monitoring Programs

### 10.3.1 Surface Water Monitoring Programs

Water quality and biological data for Delaware's surface waters are collected under Delaware's Ambient Surface Water Quality Monitoring Program and Biological Monitoring Program within DNREC. Several active citizen monitoring programs have also been developed throughout Delaware that augment the data collected by DNREC. These programs are discussed below.

Section 303(d) of the Clean Water Act (CWA), as amended by the Water Quality Act of 1987, requires States to identify those waters within their boundaries that are water quality limited, to prioritize them, and to develop a Total Maximum Daily Load (TMDL) for pollutants of concern. A TMDL limit is placed on a waterbody in which water quality does not meet applicable water quality standards, and/or is not expected to meet applicable standards, even after application of technology-based effluent limitations for Publicly Owned Treatment Works (POTW) and other point sources.

Delaware DNREC has developed a list of water quality limited waters (303(d) List) completed nutrient and bacterial TMDLs for all segments on the 1996 list over a ten-year period. The TMDL development schedule is coordinated with the Department's Whole Basin Management Program.

The TMDL related monitoring is designed to provide the necessary information to develop, calibrate, and verify hydrodynamic and water quality models and/or to support the existing models. The Department uses the hydrodynamic and water quality models as management tools for establishing total maximum daily loads; for allocating loads between point and nonpoint

sources of pollutants; and for monitoring progress toward achieving water quality goals and standards.

### 10.3.2 General Assessment Monitoring

The General Assessment Monitoring Network (GAMN) provides for routine water quality monitoring of surface waters throughout Delaware. Each station is monitored for conventional parameters such as nutrients, bacteria, dissolved oxygen, pH, alkalinity, hardness, and metals. The data from this monitoring is entered into the EPA's STORET database, is reviewed and then analyzed in assessing the water quality condition of each water body system.

## **10.4 Changes for Surface Water Quality Monitoring Plan**

Over the past several years, a main objective of the Watershed Assessment Section's Ambient Surface Water Quality Monitoring Program was to collect water quality data that could be used for developing and calibrating hydrodynamic and water quality models. These models were used to establish Total Maximum Daily Loads (TMDLs) for nutrients and bacteria in impaired waters of Delaware.

Now, with the establishment of nutrient and bacteria TMDLs for most impaired waters of the state, a major objective of the Ambient Surface Water Quality Monitoring Program is to collect appropriate data that can be used to track water quality changes and to determine if TMDL requirements are being met.

Considering this (and other emerging) needs, and since the Department's monitoring budget is limited, surface water quality monitoring plan has been prepared with the following changes:

1. Monitoring stations in earlier monitoring plans were reviewed to determine which stations were critical to meet data needs and which could be dropped.
2. The retained stations fall into 2 categories;
  - a. C1 – Category 1 stations are high priority stations that will be used for calculating annual loads and/or long-term trends. These stations are generally co-located with a USGS stream gaging station, or are located at the mouth of a tidal river. Because of importance of these stations, monitoring at these stations will be conducted monthly, regardless of priority basin schedule (23 stations)
  - b. C2 – The remaining stations are part of Category 2 stations and monitoring frequency at these stations follow Priority Basin schedule.
3. A Rotating Basin Monitoring Plan is implemented. In this scheme of monitoring, the state is divided into 5 Monitoring Basins. Every year, two of the Basins are considered "Priority Basins" and all stations in a Priority Basin are monitored monthly. Monitoring

frequency for stations in other basins is conducted bimonthly. Priority Basin monthly monitoring will be conducted according to the following schedule:

- a. FY 2014 – Lower Delaware River/Bay, Piedmont
- b. FY 2015 – Piedmont, Chesapeake
- c. FY 2016 – Chesapeake, Inland Bays
- d. FY 2017 – Inland Bays, Upper Delaware River/Bay
- e. FY 2018 – Upper Delaware, Lower Delaware River/Bay

The SWQMP follows the TMDL and PCS programs. The Delaware NPS Program does not monitor or guide the SWQMP. The Delaware NPS Program uses the data of the SWQMP. The Delaware NPS Program cannot improve upon the SWQMP but can advise and ask for funding to monitor watersheds. Each approved EPA 9-element watershed plans has a monitoring component. During the rotating basin monitoring plan, when funding becomes available, the Delaware NPS Program will request stations be selected/sited within approved watersheds to evaluate water quality.

## ***10.5 Special Project Monitoring***

Special project monitoring is needed from time to time in specific watersheds to address specific concerns. These projects are generally short term in nature.

### **10.5.1 Special Surveys**

The purpose of special survey monitoring is to collect data that are not obtained using other monitoring activities and are needed for modeling purposes as described above. Special surveys include deployment of continuous monitors and sediment sampling.

### **10.5.2 Continuous Monitoring**

DNREC is implementing a network of continuous water quality monitoring stations to collect data for dissolved oxygen and other parameters several times each day using YSI (or similar) datasondes. DNREC is cooperating with the Delaware Geological Survey (DGS) and the United States Geological Survey (USGS) in operating a number of continuous monitors in the state. The information from these continuous monitoring sites is available on real-time basis via the USGS website and via the Delaware Environmental Observing System (DEOS) website. DNREC also put into place a special highly sophisticated on-site monitoring station/automated lab device to collect and analyze samples for nutrients and other parameters at the outlet to Millsboro Pond. The data from this station were used to assess nutrient loads leaving the pond and entering the Delaware Inland Bays and thereby monitor TMDL implementation progress.

### 10.5.3 Biological Assessment Monitoring

The assessment of the quality of surface waters utilizes a multi-disciplinary approach involving physical, chemical, and biological measures. The biological monitoring program is a major tool used by the Department to assess the conditions of surface waters. It includes the assessment of indigenous biological communities and physical habitats of streams, ponds, estuaries and wetlands. The goal of the program is to establish numeric biological criteria in state water quality standards to complement both existing chemical criteria and other assessments focused on fish tissue monitoring and bioassay testing. Standard methods have been developed and tested for assessing the biological community and habitat quality of nontidal streams, and draft numeric criteria are under development. Efforts over the next few years will focus on the development of methods for assessing estuaries and ponds and for assessing the quality and quantity of wetlands.

## **10.6 Monitoring Coordination/Collaboration**

### 10.6.1 Delaware Center for the Inland Bays

The Delaware Center for the Inland Bays was established as a nonprofit organization in 1994 under the Inland Bays Watershed Enhancement Act (Chapter 76 or Del. C. S7603). The mission of the Center for the Inland Bays is to oversee the implementation of the Inland Bays Comprehensive Conservation and Management Plan and to facilitate a long-term approach for the wise use and enhancement of the Inland Bays watershed by conducting public outreach and education, developing and implementing conservation projects, and establishing a long-term Process for the preservation of the Inland Bays watershed.

The goals of the Center for the Inland Bays are:

- To sponsor and support educational activities, restoration efforts, and land acquisition programs that lead to the present and future preservation and enhancement of the Inland Bays watershed.
- To build, maintain, and foster the partnership among the general public; the private sector; and local, state, and federal governments, which is essential for establishing and sustaining policy, programs, and the political will to preserve and restore the resources of the Inland Bays Watershed.
- To serve as a neutral forum where Inland Bays watershed issues may be analyzed and considered for the purposes of providing responsible officials and the public with a basis for making informed decisions concerning the management of the resources of the Inland Bays watershed.

The establishment of the Center was the culmination of more than 20 years of active public participation and investigation into the decline of the Inland Bays and the remedies for the restoration and preservation of the watershed. A key element of this progression was the

publication of a *Decision for Delaware: Sea Grant Looks at the Inland Bays (1983)* and the participation by Sea Grant researchers and outreach personnel in the problem-solving process. The last six years of this work were accomplished as part of the National Estuary Program.

The National Estuary Program, established under the Clean Water Act and administered by the U.S. Environmental Protection Agency (EPA), provided approximately \$2 million to study the Inland Bays, characterize and set priorities for addressing the environmental problems in the watershed, and develop a Comprehensive Conservation and Management Plan (CCMP) to protect and restore the bays. The underlying theme of the program is that a collaborative, consensus-building effort involving citizens; private interests; organized groups; and federal, state, and local governments is essential to the successful development and implementation of the CCMP. Recently completed through a highly successful participatory effort, the Inland Bays CCMP has now been approved by Governor Thomas Carper and the EPA. Funding is provided by the EPA, the state of Delaware and private donations.

### 10.6.2 Delaware Nature Society (DNS) Watershed Stewardship Program

The DNS Watershed Stewardship Program comprised of Stream Adoption, Technical monitoring, and Backyard Habitat – is designed to engage citizens statewide in the protection of Delaware’s watersheds.

#### 10.6.2.1 DNS Stream Adoption

The Stream Watcher Adoption program educates individuals, families, scout, and school groups about stream ecology, the threats to stream health, and their individual role in protecting water quality. Currently, 70 stream segments are “adopted” in 20 watersheds statewide. In 2009, Nature Society staff provided workshops and presentations reaching over 277 individuals. The Nature Society made over 6,278 contacts with school students and scout groups through Water Quality education programs.

#### 10.6.2.2 DNS Technical Monitoring

Established in 1995, Technical Monitoring is a nationally recognized example of the acceptance and use of citizen science data by the state and the Environmental Protection Agency (EPA). Technical Monitoring was developed to supplement the state’s monitoring efforts in other locations by providing reliable baseline values for several different chemical and physical parameters. The monthly sampling frequency, strategic site selection, rigorous quality assurance and control measures, and technical equipment allow for more subtle trend analysis.

Technical monitoring data is collected at 37 sites in the Christina River Basin, which includes the Brandywine, Red Clay, and White Clay Creeks, all in northern New Castle County. There are 4 sites monitored on the Mispillion River in Kent & Sussex counties. Technical Monitoring volunteers started monitoring 5 sites on the Appoquinimink River in southern New Castle County in 2008. The Christina Basin Technical Monitoring data is being incorporated into a non-point source pollution water quality model used by DNREC’s Division of Water Resources and

the US Geological Survey for the Delaware – Pennsylvania Total Maximum Daily Load (TMDL) effort for the Upper Christina Watershed. Data collected in the Mispillion Watershed is providing supplementary data to the Division of Water Resources. In 2009, Technical Monitoring volunteers logged 457 hours. In addition, the data in both watersheds is published every five years in the Nature Society’s State of the Watershed reports. Data collected in the Christina Basin Watershed from 2001-2005 is available online at [www.delawarenaturesociety.org](http://www.delawarenaturesociety.org). The report summarizing the data from the Mispillion Basin Watershed from 2004-2008 is also available online.

### 10.6.2.3 DNS Backyard Habitat

Backyard Habitat, launched in September 2001, provides official certification for properties or residences that provide food, cover, water, and places for wildlife to raise their young. By adopting practices beneficial to wildlife such as landscaping with native plants and limiting use of pesticides, participants help to improve local water quality by reducing their reliance on products that contribute to non-point source pollution. The Nature Society offers homeowners interested in Backyard Habitat certification free, one-on-one technical assistance through our trained Habitat Stewards volunteer corps.

## ***10.7 Citizens Monitoring Programs in Delaware***

In recent years, many citizens' groups have been formed nationwide in response to the growing concerns about degraded water quality. Delaware was one of the first states to initiate citizens' water quality monitoring program of streams to augment fixed monitoring by state agencies. The involvement of citizens in collecting data and making observations on their streams results in an educated public with an appreciation for their watersheds and awareness of pollution threats to vital resources. Data and observations collected by citizens with a strong sense of environmental stewardship will contribute to the long-term success of environmental strategies.

Delaware has five programs that use citizens to monitor water quality. The Delaware Nature Society in cooperation with DNREC established Delaware Stream Watch in 1985. The Inland Bays Citizen Monitoring program was established in 1990 as part of the Inland Bays Estuary Program. The Broadkill River Citizen Monitoring Program established in 2009. Concerned citizens of the City of Seaford in cooperation with DNREC founded the Nanticoke Citizen Monitoring Program in 1991. The Adopt A Wetland Program initiated in May 1993 by the Division of Water Resources and later transferred to the division of Fish and Wildlife.

### 10.7.1 DNS Stream Watcher

Stream Watchers in the Stream Adoption Program are volunteers, concerned individuals, families, community organizations, businesses, youth groups, and school groups, all helping to monitor the health of our streams. By adopting a waterway, volunteers make a commitment to survey, learn about, and care for that stream.

Volunteers choose Level 1 or Level 2 survey options based on their time, resources, and experience. Level 1 Stream Adoption is most suitable for those with limited time or working with elementary-aged children and requires only a few materials. Adults, or those working with older students, may choose the more detailed options in Level 2.

Stream Adoptors measure for:

- Visual Survey: Watch for signs of visible pollution including litter, water discoloration, discharging pipe
- Water Chemistry: Measure chemical parameters including temperature, pH, nitrate, oxygen
- Macroinvertebrates: Survey the aquatic insects, worms, and crustaceans that indicate the health of the water.

### 10.7.2 DNS Technical Stream Monitor

The DNS Technical Monitoring program was established to supplement the state's monitoring efforts in other locations by providing reliable baseline values for several different physical and chemical parameters. Volunteers monitor assigned sites on a monthly basis, testing for dissolved oxygen, pH, alkalinity, nitrates, phosphates, conductivity, salinity in tidal reaches, temperature, and flow. Quality control is ensured through additional procedures.

Technical Monitoring data has been collected at thirty locations within the Delaware portion of the Christina River Basin since 1995. The data from the program is used by DNREC in their efforts to develop/implement a PCS for the Christina Basin.

The program also provides valuable volunteer-collected data is incorporated into a nonpoint source pollution water quality model used by DNREC and the US Geological Society for the Delaware TMDL effort for the Upper Christina Watershed. The DNS has analyzed and published collected data in a watershed report series (<http://www.delawarenaturesociety.org>). The data is also published every two years as part of DNREC's [Watershed Assessment Report](#) (305(b)).

### 10.7.3 Inland Bays Citizen Monitoring Program

The Inland Bays Citizen Monitoring Program is managed by the University of Delaware, Sea Grant Marine Advisory Service (SGMAS) through an MOU with DNREC, Division of Water Resources. The program was established in 1991. The goals of the Inland Bays Citizen Monitoring Program are: 1) to collect verifiable water quality data to be used to support public policy decisions with regard to the management of the Inland Bays and 2) to increase public awareness and support for the protection and management of these aquatic resources through public participation.

About 30 citizen monitors make observations at 25 sites encompassing the Inland Bays watershed, evaluating dissolved oxygen, surface water and air temperature, salinity, secchi depth and water depth. Additional site observations include weather, tides and the abundance of

macroalgae in near-shore waters. Volunteers collect samples on a weekly basis from mid-April to mid-October, and every two weeks otherwise, if weather permits. Rainfall data are collected daily at three designated locations in the watershed. Volunteers complete data collection sheets and send them to SGMAS for data entry. Volunteer data are reviewed for errors and entered by the field coordinator into a Microsoft Excel spreadsheet on a microcomputer.

#### 10.7.4 Broadkill River Citizen Monitoring Program

Patterned after the successful Inland bays Program, the University of Delaware established the Broadkill River Citizen Monitoring Program in 2009. With Milton at its hub and bordered by Lewes, Georgetown, Ellendale and Prime Hook National Wildlife Refuge, the Broadkill River watershed and its streams, freshwater wetlands, saltwater marshes and estuary are under increasing pressure from the impact of human activity and development. Nutrients, suspended solids, bacteria and other pollutants enter the river and tributaries degrading water quality, the habitat, and the aquatic life it sustains.

At assigned monitoring sites throughout the watershed, citizen monitors collect important data including dissolved oxygen, nutrient concentrations, water clarity, bacteria levels, and other environmental data.

The information that is collected is stored in a database at the University of Delaware in Lewes for access by potential users. Water quality reports include up to date summaries of water quality data — are provided on a semi-monthly basis through summer months.

#### 10.7.5 Delaware Adopt a Wetland Program

The Delaware Adopt-a-Wetland is a volunteer program where participants adopt a wetland to care for and watch over. The goal of the program is to teach Delaware residents about the importance of wetlands to humans and the natural world, all while helping to protect these same resources. Activities carried out by Adopt-A-Wetland groups vary widely, depending on the interest and background of the adopters and the particular needs of the wetland site being cared for. Clean-ups, habitat enhancements for wildlife, wetland planting, invasive species removal, water quality testing, and biomonitoring are among the activities and projects undertaken. The Delaware Adopt-A-Wetland program has grown to over 90 sites and over 3,000 volunteers.

### **10.8 Future Needs and Activities to Improve Water Quality Monitoring in Delaware**

*Short term Goal:* The state of Delaware will continue to focus on nonpoint source pollution problems such as urban and agricultural runoff, erosion and sedimentation and ground water contamination. The Department of Natural Resources and Environmental Control will emphasize pollution prevention, education, and both voluntary and regulatory efforts to improve the quality of surface and ground water resources. Additional research and assessment efforts will be necessary to better understand the response of aquatic systems to certain pollutants. Additionally,

because of the relationship of stream flow to ecological health, the development of a surface water withdrawal/minimum stream flow maintenance policy is a priority. Improved assessment and management of biological health and physical habitat quality are also priorities.

*Short Term Goal:* The health of Delaware's aquatic systems and ground water resources will be assessed and managed within the framework of the Department of Natural Resources and Environmental Control's Whole Basin Management Program. This program calls for the Department, in partnership with other governmental entities, private interests, and all stakeholders, to focus its resources on specific watersheds and basins (groups of watersheds) within specific time frames.

*Short term goal:* Move the Millsboro Pond automatic data analyzer to the Nanticoke River Watershed and deploy it at the Bridgeville stream flow gaging site.

*Long Term Goal:* Five basins and 45 watersheds have been delineated. The Whole Basin Management activities in the state started within the Piedmont Basin in 1996, and were followed by the Chesapeake Basin in 1997, the Inland Bays in 1998 and the Delaware Bay Drainage Basin started in 1999. Similar activities have begun for the Delaware Estuary.

In addition to the planning and preliminary assessment steps, Whole Basin Management will include intensive basin monitoring, comprehensive analyses, management option evaluations, and resource protection strategy development. Public participation and ongoing implementation activities will occur throughout the Whole Basin Management process.

*Long Term Goal:* The long term goal of the Surface Water Quality Monitoring Program is to collect water quality data for status and trends assessment on all basins within Delaware. The data will also be compared to water quality standards to assess designated use support, as mandated by Section 305(b) of the Clean Water Act. In addition, the data will be used to calculate annual nutrient loads and to track progress toward achieving TMDL targets.

## **11 ASSESSING PROGRESS**

The short and long term goals identified within the 2014 NPS Management Plan will be used to determine success of the program over the next 5 years and will result in actual and measurable changes in water quality at the watershed scale. Actual water quality standards achievement is the end-goal but may take years to achieve and is difficult to demonstrate in the short term (i.e., the 5-year timeframe) given the variability of , geology, natural systems, the resources available to address the problems, and extent and nature of the NPS pollution problem. Therefore, interim goals (5-year goals) beyond water quality monitoring are important measures of progress.

The NPS Program currently has three main mechanisms for measuring the progress and successes of the NPS Program:

1. The NPS Program uses EPA's Grant Reporting and Tracking System to document project level information that addresses progress achieved through the expenditure of federal CWA Section 319 funding provided by EPA to the state of Delaware.
2. The NPS Program documents progress in achieving NPS Program goals within annual reports submitted annually to EPA.
3. The NPS Program requires sub-grantees to complete project specific annual reports to track progress of water quality restoration efforts in priority watersheds.

While tracking progress made toward achieving NPS Program goals is relatively straightforward when we are the responsible party, there are significant challenges in attempting to track progress in addressing NPS pollution by other organizations. For example, NRCS, the Conservation Districts, DDA, etc. undertake a multitude of efforts to reduce NPS pollution and improve water quality. However, obtaining information from projects undertaken by various other partners has proven difficult in the past. The NPS Program attempts, however, to track progress within the scope of specific priority watersheds of interest, such as the Chesapeake Bay.

EPA also evaluates Delaware's NPS Management Program using its own strategic targets and program activity measures and works with The NPS Program in reporting on the progress toward accomplishing those measures. These include the

- number of waterbodies partially or fully supported
- number of watershed-based plans supported by the Section 319 Program
- estimated pounds of nitrogen reduced from Section 319 projects in N-impaired waters
- estimated pounds of phosphorus reduced from Section 319 projects in P-impaired waters
- estimated tons of sediment reduced from Section 319 projects in sediment-impaired waters
- watershed trends toward meeting water quality standards

## ***11.1 Measuring Progress***

The following indicators will be utilized to measure programmatic success of Delaware's 2014 NPS Management Plan. Annual or interim goals and 2015 milestones are listed for each indicator. Interim goals and milestones will be measured on a state fiscal year basis (June 30 – July 1).

A summary schedule of 2015 goals, objectives, strategies and program indicators is provided in the Table below.

<b>Short, Mid and Long Term Milestones</b>	
<b>Short and Mid Term Milestones (2015 – 2019)</b>	<b>Estimate Due Date</b>
• Establish baseline conditions for program indicators	2015
• Complete approval of all existing watershed plans	2015
• Complete baseline sampling for initial priority watersheds	2015
• Remove NPS related impairments from stream segments	2019
• Assess interim and 2015 progress milestones	2019
• Review and update plan as needed	2019
• Show relative progress towards BMP implementation activities for all the EPA approved watershed plans	2019
• Demonstrate water quality improvement in the priority watersheds resulting from plan implementation activities	2019
• Show a 10% decrease of pollutant loadings in 50% or more of the priority watersheds	2019
• Show annual increases in funding and quantities of BMPs implemented in priority watersheds	Annual through 2019
• Remove one stream segments per year from the 303(d) list through 2019	Annual through 2019
<b>Long Term Milestones (2019-2030)</b>	
• Complete BMP implementation for 75% of the EPA approved watershed plans	2030
• Remove 50% or more of high priority TMDLs from 2010 303(d) list	2030

### 11.1.1 Program Indicators

#### A. Amount of state and federal BMP funding spent in priority watersheds

- i. Interim goal – establish baseline in FY2015
- ii. 2019 goal – increase by 5% from FY 2015 baseline funding

#### B. Amount of estimated pollutant load reductions achieved for sediment, phosphorus and nitrogen from state and federal funded BMPs in high priority TMDL and WRAPS watersheds, including priority subwatersheds

- i. Interim goal: establish a FY2015 load reduction baseline for nitrogen, phosphorus and sediments in priority watersheds
- ii. 2019 milestone: increase load reductions annually in non-Chesapeake Bay priority watersheds by 2% from FY2015 baseline
- iii. 2019 milestone: increase annual load reductions in Chesapeake Bay priority watersheds by 20% annually from the FY2015 baseline.

C. Number of EPA approved watershed plans

- i. Interim goal: 1) 50% of NPS Program approved projects active in 2014 address priority watershed activity
- ii. 2015 milestone: 2) Eleven priority watershed plans approved in Delaware by FY2015

D. Number of priority watersheds identified in EPA approved watershed plans showing water quality improvement based on water quality milestones identified within in the watershed plans

- i. Interim goal: Initiate targeted monitoring in priority watersheds to establish baseline conditions (FY2015)
- ii. 2019 milestone: Characterize baseline conditions and establish timeframe for subsequent monitoring following BMP implementation in priority watersheds

E. Number of stream reach segments containing previously impaired water bodies that show water quality improvement as a result of BMP implementation.

- i. Interim goal: By December 2015, one stream segment will be identified as having improved water quality baseline assessment.
- ii. 2019 milestone: A total of five stream segments will be identified as having improved water quality baseline assessment.

F. Reductions in nutrient loads to Delaware's priority watersheds

- i. Interim goal: Establish baseline of load reductions from BMP implementation in FY 2015 for the following priority watersheds:
  - Little Assawoman Bay
  - St. Jones River
  - Appoquinimink River
  - Christina River
  - Upper Chesapeake Bay

- Chester River/Choptank River
  - Nanticoke
  - Lower Chesapeake
  - Broadkill River
  - Cool Run
- ii. 2019 milestone: increase estimated nutrient load reductions from implementation of NPS BMPS in the priority watersheds by 10% or greater.

G. Trends in water quality data for priority watersheds

- i. Interim goal: complete trend analysis for nitrogen, phosphorus, sediment and bacteria (where applicable) in priority watersheds in FY2015
- ii. 2019 milestone: show stable or improving water quality trends for 50% of the eleven priority watersheds relative to established baselines

## **11.2 NPS Program Administration**

The Delaware NPS Program provides support for the administration of the Federal CWA Section 319 funds, including evaluation of proposals, budget work, quality control, tracking, and reporting. An annual workplan/grant application will be submitted to EPA for the request of CWA Section 319 funding. The annual workplan/grant application will outline the specific components of the NPS Program Management Plan to be accomplished during that fiscal year. Adjustments to strategies and timelines may be made on a year to year basis as needed.

Applications for 319 funding will be solicited annually for sub grantee projects to implement the strategies outlined in this document. Sub grantee Workplans will be developed and approved for subgrant projects outlining the project objectives, tasks, deliverables and timeframes.

The following grant commitment responsibilities are included:

- Implementation of the 2014 NPS Management Plan
- Administration of the CWA Section 319 grant program
- All on the ground projects that are funded wholly or in part with CWA Section 319 funding will be spatially located and tracked. All other locatable projects will be entered at the 12 digit HUC scale.
- Complete GRTS data entry for EPA annual Winter data pull
- Complete semi-annual performance report
- Hosting the biennial NPS Program meetings,
- Development of the NPS Annual Report,
- Maintain EPA's watershed plan tracker, and
- Assist in the development of Watershed Plans and/or Pollution Control Strategies.

Federal CWA Section 319 funds used for the implementation of BMPs will be administered by the Delaware NPS Program. All accounting and financial transactions are conducted in accordance with the state of Delaware accounting procedures and guidelines. Grant management utilizes automated financial management systems titled First State Financial Systems.

### ***11.3 Plan Evaluation and Revisions***

The progress made in implementing the 2014 NPS Management Plan will be reviewed in 2019 by an ad hoc committee consisting of representatives from the following organizations:

- Delaware Department of Agriculture
- Delaware Association of Conservation Districts
- DNREC, Watershed Stewardship Section

The primary purpose of the review will be to consider the current status of goals, strategies and milestones outlined within 2014 NPS Management Plan. Representatives will be tasked with identifying areas that may need additional emphasis, additions, corrections, or amendments. This will include a review of the above references milestones to determine the level of program success achieved during the preceding 5 year period. Results of the ad hoc committee review will be considered by the NPS Program and adjustments made as needed.