Non-Point Source Management Program

Annual Report FFY 2014

Pennsylvania Department of Environmental Protection
Bureau of Conservation and Restoration

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Cover photo: A riparian area in the process of reforestation. This project is located in the Steven Foster Lake watershed.

I. Executive Summary

In Federal Fiscal Year 2014 (FFY 2014), Pennsylvania, through the efforts of the Department of Environmental Protection (DEP) and our valuable nonpoint source program partners, continued to invest time, money and effort to address the ever present challenge of non-point source pollution. FFY 2014 was a year of progressive programmatic implementation, continued attempts to strengthen ties with existing partners, and the continued reduction of NPS pollutant loads entering the streams, creeks, rivers, lakes, and reservoirs of Pennsylvania. Over **3.4 million pounds of Nitrogen**, **175,000 pounds of Phosphorous**, and **3,700 tons of sediment** were prevented from entering our streams and lakes through the implementation of NPS management practices in 2014!

FFY 2014 was a year of renewed focus; both the Integrated List and the NPS Program Management Plan were updated during this time. At the drafting of this report, the NPS Program Management Plan was scheduled for release in the spring of 2015. Along with the renewed focus found though updating and revising existing documents, DEP continued to seek new ways of focusing efforts devoted to NPS pollution management. To that end, work continued in conjunction with EPA on the development of the Restoration Potential Index (RPI), a geographically based system developed to provide water resource professionals a tool to focus restoration activities on watersheds most likely to respond to restoration activities.

Within this Annual Report, you will find a discussion on a number of interesting and promising programs, projects, and results stemming from the work performed by those involved with NPS pollution abatement. Specifically, you will find in Section III, the pollutant load reductions resulting from on the ground BMPs constructed with public and private funds under the oversight of the Bureau of Conservation and Restoration (BCR). You will also read about only a few of the nearly three hundred AMD treatment facilities constructed and operated through partnerships between BCR, local governments and other entities. These collaborative efforts and the treatment facilities they produce are responsible for the restoration of many miles of streams. You will also read how one borough in particular, Etna Borough, found the enthusiasm and leadership necessary to address stormwater management and CSO issues within its community. Throughout this document you will read about initiatives like the Regional Agricultural Watershed Assessment Program Initiative (RAWAPI), designed to assist farmers as they work to not only produce food, but also protect water.

You will read about how the Lackawanna County Conservation District worked collaboratively with state agencies and non-profits to assess a watershed flowing through its county. Also, among other things, you will find in Section VI and Appendix A, the many goals established collaboratively by BCR and its nonpoint source program partners and the ways we are working to accomplish these goals.

The NPS Management Program is a program of much success. These successes are borne largely out of the willing collaboration between multiple state, federal and local government partnerships as well as the absolutely critical support from citizens and NGOs. Unfortunately, the NPS Program is not without its challenges. While the pollutant load reductions calculated by BCR are significant and impressive, there are many BMPs which have been implemented throughout the state which remain unaccounted for. BCR continues to make attempts to forge productive and mutually beneficial relationships with other agencies; agencies that have direct and specific involvement with BMP implementation at the "parcel" scale.

Given the size of Pennsylvania, the amount of water in Pennsylvania, and other significant factors, the responsibility of addressing NPS pollution can be a daunting task. The amount of work required to restore the waters of the Commonwealth is considerably greater than any single fiscal year's budget. The funds available to do the work are overshadowed by the amount of work that needs done. Never the less, Pennsylvania has made some progress in this area. The Dirt and Gravel Road program now called the Dirt, Gravel, and Low Volume Road program, received a seven fold increase in funding through the Act 13 impact fees.

Non-point source pollution management is a challenging task. The pollution "source" is ever present, originating from many activities both past and present and stemming from many industries. Compounding the challenge is geographical realities of Pennsylvania; the miles of stream, acres of lake, quantity of municipalities…the sheer size of the objective. Pennsylvania is successful in addressing this pollution "source" primarily through the many partners involved and their tireless efforts. As you read through the following annual report, know that you are reading a testament to the productive and collaborative work of many concerned, active and involved entities.

II. Overview

Pennsylvania is a diverse and dynamic Commonwealth. As the home of over 86,000 miles of streams and rivers as well as 161,455 acres of lakes and reservoirs, Pennsylvania has a tremendous amount of water requiring protection and balanced use. And while a significant portion of Pennsylvania is forested, many industries such as agriculture, forestry, energy production, construction, transportation and logistics as well as various forms of manufacturing thrive within the borders of this Commonwealth.

Vision Statement

Pennsylvania's Non-point Source Management Program is a guide to those actively involved with the protection and restoration of the water resource in Pennsylvania as that resource is impacted by non-point source pollution. This program is a hub, coordinating and encouraging program partners as they actively engage in watershed restoration and protection. The Non-point Source Management Program emphasizes partnering to most effectively address non-point source pollution issues impacting Pennsylvania's water resource.

The unique combination of a large population, large and successful industries and a large quantity of the water resource culminate in the creation of, and need to actively manage, non-point source pollution. Further, that mix of desired and needed uses for water (recreation, potable consumption, and industrial process) further drives the need for balanced protection and focused restoration.

Goals of the Non Point Source Management Program

Goal 1

Improve and protect the Waters of the Commonwealth from non-point source pollution associated with Acid Mine Drainage and other energy resource extraction activities.

Goal 2

Improve and protect the Waters of the Commonwealth from non-point source pollution associated with Agricultural activities.

Goal 3

Improve and protect the Waters of the Commonwealth from non-point source pollution associated with stormwater run-off, as well as, streambank and shoreline degradation.

Goal 4

Verify the efficacy of Pennsylvania's non-point source pollution management efforts through enhanced data collection.

Goal 5

Demonstrate Pennsylvania's non-point source pollution management efforts through enhanced data dissemination efforts.

III. Major Accomplishments

Throughout FFY 2014, Pennsylvania's DEP and its many partners began numerous projects, continued a number of successful multi-year projects and maintained familiar and well received programs all for the purpose of reducing the amount of NPS pollutants entering the waters of this Commonwealth. **These efforts resulted in the one year reduction of 3.4 million pounds of Nitrogen, over 176,000 pounds of Phosphorus and over 3,700 tons of sediment!** Significant load reductions were observed throughout the Commonwealth, but especially in the Counties of: Adams, Berks, Blair, Center, Chester, Cumberland, Franklin, Fulton, Lancaster, Lebanon, Perry, Somerset, and York. This prevention of pollution improves water quality and provides the resource an opportunity to "heal." As the citizens of these areas continue to rely on the water resource for health and happiness, the DEP and program partners have literally millions of reasons (or tons if you look at the sediment load reduction) to be proud of the work accomplished in FFY 2014.

Statewide Load Reductions

Nitrogen (lbs/year)	Phosphorus (lbs/year)	Sediment (tons/year)
3,420,700.9	**176,228.6**	**3,737.9**

Sum of all modeled load reductions which occurred in the Commonwealth of Pennsylvania during FFY 2014.

Partnership in practice as this floating wetland island is assembled lake-side by conservationists of all ages.

Best Management Practices (BMPs) like this **floating wetland island** remove non-point source pollutants such as Nitrogen (N) and Phosphorus (P) from our water supply. This particular island was assembled lake-side at **Frances Slocum Lake** in the Spring of 2013. Projects like this one, not only **improve water quality**, but also provide citizens of all ages an opportunity to come together and **improve their community.**

IV. Effective Programs

To be successful at the task of managing NPS pollution the Bureau of Conservation and Restoration (BCR) works collaboratively with many other entities. Below is a brief discussion on just a few of the programs implemented by BCR and other partners.

Dirt Gravel and Low Volume Roads Program

In 2013, the Pennsylvania Legislator passed into law HB1060. This bill focused on the transportation network within Pennsylvania and made possible a significant increase in funds available to address travel issues and non-point source management on dirt, gravel and low volume roads. Prior to HB1060, Pennsylvania implemented "The Dirt and Gravel Road Program." This program focused on the maintenance of dirt and gravel roads as well as education of municipal employees engaged in such maintenance. The update of the program (now called the Dirt, Gravel and Low Volume Roads (DGLV) program) also provides for improvement to "low volume" roads.

HB1060 provided a seven-fold increase in the funding of the DGLV program, as shown in the table below.

	D&G Program prior to HB1060 of 2013	DGLV Program after HB1060 of 2013
Annual Funding	$5 million annual	$35 million annual
Funding to SCC	$4 million annual	$28 million annual
Funding to Forestry	$1 million annual	$7 million annual
Low-volume paved roads	$0.00 annual	$8 million annual

Funding comparison between the D&G Road program prior to HB 1060 of 2013 and the DGLV program after HB1060. Note, "low volume" roads are defined as roads with less than 500 adt (average daily traffic count).

The funding provided to the DGLV program became effective in State fiscal year 2014. This year marks the first year that projects under this revised program are being considered and funded. At the time of the writing of this report, projects under the DGLV program have not yet broke ground, but are anticipated to start in the Spring of 2015.

AMD Pollution Abatement

Metals originating from Abandoned Mine Drainage (AMD) are one of two primary culprits impacting the waters of this Commonwealth; the other is sediment pollution from agriculture. Pennsylvania maintains a robust network of interested partners and facilities that constructs, operates and maintains treatment facilities focused on curtailing pollution resulting from the legacy of resource extraction within Pennsylvania.

The following vignettes describe a few of the hundreds of AMD treatment projects in operation in Pennsylvania. Unifying these particular facilities is the fact that they are all operated by the Bureau of Conservation and Restoration, that bureau within PA's DEP which spearheads the fight against NPS pollution within Pennsylvania.

The Cresson AMD Treatment Plant

The Cresson AMD Treatment Plant is being designed to collect the water from three different mine pools: The Cresson No. 9, The Gallitzin Shaft, and the Argyle/Stone Bridge mine pools. In doing so, this treatment plant will eliminate three acid mine drainage discharges shown in the pictures below. The Argyle/ Stone Bridge discharge currently flows into Sugar Run which is a tributary to the Juniata River. The other two discharges, The Gallitzin Shaft and the Cresson No. 9 are within the Clearfield Creek watershed.

The discharge from the Argyle/Stone Bridge mine pool as it flows into Sugar Run.

The Gallitzin Shaft discharge as it flows into the Bradley Run.

The treatment plant will convey the water from the mine pools, treat it with hydrogen peroxide and hydrated lime, and then discharge it into Trapp Run which is a tributary to Clearfield Creek. The treatment plant will discharge at an average rate of about 2,200 gallons per minute. This water will help supplement the Susquehanna River during low flow periods. The treatment plant is scheduled to begin construction in the Fall of 2015 and will be located on a piece of property that was previously a coal refuse pile.

The Cresson No. 9 discharge as it flows into a UNT of the Clearfield Creek (locally called Trapp Run).

BCR's AMD Program:

265 Passive Treatment Systems

77.2 billion gallons/year of water treated

626 acres of AML land reclaimed

$19.1 mil. (cost of reclamation)

The elimination of these three discharges will help restore approximately 15 miles of Clearfield Creek and approximately 6.5 miles of Sugar Run.

Little Conemaugh Project

The Little Conemaugh River is located in Cambria County and flows for approximately 29 miles from the headwaters near Cresson to its junction with the Stonycreek River in Johnstown. The basin drains approximately 190 square miles. While the first six miles of the headwaters are largely free of degradation, the balance of approximately 23 miles is severely impacted by mine drainage. The impact results primarily from multiple discharges emanating from abandoned deep mines along the main stem of the river and South Fork. The largest discharge, known locally as the St. Michael Discharge located on the South Fork, accounts for over 29% of the total pollution load to the Little Conemaugh River from abandoned mine lands (AML). This discharge is already being successfully addressed by a treatment plant built and operationally funded through a Consent Order and Agreement between the Department and Rosebud Mining Company. Potential exists and is being pursued by the Department to address, via the existing treatment plant, the Sulfur Creek Discharge, which is the second largest source of impact to the South Fork and accounts for nearly 11% of the AML pollution load to the Little Conemaugh River.

South Fork River in the foreground discharging into the main stem of the Little Conemaugh River near the town of South Fork.

In order to more comprehensively address the entire watershed and in conjunction with the treatment already occurring on the South Fork, the Department, using AMD Set-Aside

Funds, is working to complete a project to restore the main stem of the Little Conemaugh River upstream of the South Fork. This project will address the three largest sources of mining related degradation to this portion of the main stem, including the Hughes, Miller Shaft and combined Sonman discharges. Combined, these discharges account for nearly 31% of the AMD pollution load to the Little Conemaugh River. Please refer to Photo B showing the Hughes Discharge. The project will involve connecting these mine pools underground and creating a new discharge which will be addressed at a treatment plant similar to the one noted above, to be constructed near the town of Portage. Based on modelling the Department expects to restore stream quality supportive of a recreational fishery downstream to the junction with the South Fork and potentially further downstream to Johnstown and possibly along the Conemaugh River to Bolivar.

The Hughes discharge, a discharge of AMD pollutants to the Little Conemaugh River.

Pennsylvania's Non-point source Management Program is in the business of making dirty streams clean!

Blacklick Creek Treatment Facility

The Blacklick Creek Treatment Facility (BCTF) project, including collection, conveyance, and combining of the Vinton No. 6, the Commercial No. 16 (Red Mill) discharge, and Wehrum Mine Pools, located in Buffington and East Wheatfield Townships, Indiana County **will allow for future treatment of all of the mine water at one location**. The three discharges are the largest and greatest sources of AMD loading in the Blacklick Creek Watershed. The Commercial No. 16 and the Vinton No. 6 discharges are located in the North Branch of Blacklick Creek. The Wehrum Shaft discharge is located approximately three miles downstream on the main stem of Blacklick Creek.

The first (and current) phase of the project is the design and construction of the mine pool collection and conveyance system. The design is expected to be completed in September 2015, with construction of the conveyance system to follow. The second phase of the project will be the design and construction of the treatment plant. The expected completion time for construction of the treatment plant is 2018. **The <u>project will restore approximately 20 miles</u> of Blacklick Creek to a viable fishery.**

A view of the Commercial No. 16 (Red Mill) discharge.

A view of the Vintondale boreholes discharging from the Vinton No. 6 mine.

A view of the Wehrum Shaft discharge/Ramsey Run as it enters Blacklick Creek.

2014 Pennsylvania Integrated Water Quality Monitoring and Assessment Report

In FFY 2014 the DEP released its most current edition of the Pennsylvania Integrated Water Quality Monitoring and Assessment Report (Integrated Report). This report, produced in satisfaction of sections 305(b) and 303(d) of the Clean Water Act (CWA) details the condition of all the waters within Pennsylvania and notes whether or not those waters are attaining designated uses. The 2014 version of the Integrated Report states that "83,438 miles of streams and rivers [in Pennsylvania] are assessed for aquatic life use with 67,556 miles listed as attaining that water use." Agriculture and abandoned mine drainage continue to be the two most significant sources of NPS pollution to the surface waters of the Commonwealth. Siltation and metals were observed to be the two largest stressors to Pennsylvania's water bodies.

The 2014 Integrated Report indicates that of the 79,986 acres of lakes which have been assessed for aquatic life, 42,225 acres are attaining that designated use. Agriculture was determined to be the most significant source of pollution to lakes with nutrients, suspended solids, and organic enrichment (low D.O.) as the most common and significant pollutants.

	Assessed	Attaining	% Attaining
Streams and Rivers	83,438 miles	67,556 miles	81%
Lakes and Reservoirs	79,986 acres	42,225 acres	53%

The amount of streams and lakes assessed for the aquatic life use and the percent to which those water bodies are attaining that designated use.

Water in PA is used for many things, drinking water, boating, industry, food source (fishing) and other activities. The Integrated Report further indicates that 1,784 miles of stream and river as well as 29,766 acres of lake are under a fish consumption advisory in need of TMDLs.

http://www.portal.state.pa.us/portal/server.pt/community/water_quality_standards/10556/draft_integrated_water_quality_report_-_2014/1702856

Water Quality Network

The Pennsylvania Department of Environmental Protection collaborates with the Susquehanna River Basin Commission (SRBC) and the United States Geological Survey (USGS) to collect water chemistry data as part of its Water Quality Network (WQN) monitoring. The WQN currently has **173 fixed sample sites** with periods of record extending back several decades. **A few sites have been sampled continuously since the 1950s**. Most of these sites are sampled every other month on even numbered months in even years and odd months in odd years. Complimentary to the WQN sites, there exists a second set of sites which are part of DEP's **Statewide Surface Water Assessment Program (SSWAP) program.** There are approximately **1,100 sites** in the SSWAP program; these sites are used to determine if protected uses are being attained. The results from this monitoring effort culminate in the bi-annual release of the Integrated Report produced in satisfaction of 303(d) and 305(b) of the Clean Water Act.

In FFY 2014, the Department maintained a total of 1,114 monitoring stations. These stations are maintained as part of the WQN and SSWAP referenced above. Individuals from all six DEP regions and central office collect samples for DEP's Division of Water Quality Standards. Samples and data collected at these monitoring sites are primarily focused on the biological quality of the water body as shown by macroinvertebrate data. But several hundred sites are pathogen sample stations that are used to assess recreational use. Further, there were also approximately 50 fish sampling stations active during FFY 2014. This level of effort has been maintained for the past five years and is expected to continue in future years.

DEP's Monitoring Program Highlights

(Note, this is not the entirety of the monitoring performed by the DEP and its program partners, but does capture a significant amount of monitoring as that work is performed by the WQN and SSWAP programs).

- 173 Fixed sites under the WQN
- 1,100 Sites under the SSWAP
- 50 fish tissue sampling sites in FFY 2014
- 1,114 sites used in FFY 2014
- Continuous sampling of some sites since the 1950's!
- Leverage of additional manpower and expertise through agreements with the SRBC and USGS

National Water Quality Index

The National Water Quality Initiative (NWQI), which began in FFY 2012, is a partnership between the federal Environmental Protection Agency (EPA), USDA's Natural Resources Conservation Service (NRCS) and states' Nonpoint Source Programs to restore priority small watersheds negatively impacted by agricultural activities. Historically, NRCS, EPA, and states, have worked in varying degrees of partnership to restore water quality affected by agricultural nonpoint sources. The NWQI formalizes this collaboration nationally.

Approximately 5% of NRCS's Environmental Quality Incentives Program (EQIP) financial assistance funding is dedicated annually to this initiative. That funding is used for implementation of conservation practices designed to address excess nutrient and sediment discharges as well as livestock related-pathogens on agricultural lands in HUC-12 watersheds.

An important element of the NWQI is measuring water quality changes resulting from the focused conservation actions brought on by the NWQI. EPA's Nonpoint Source Program supports states' efforts to help implement NWQI and monitor water quality to assess potential improvements in the selected watersheds.

An important element of the NWQI is measuring water quality changes resulting from focused conservation actions.

Pennsylvania has three watersheds selected to participate in NWQI: the Upper Kishacoquillas Creek in Mifflin County, the Upper Maiden Creek in Berks and Lehigh counties, and Sacony (also spelled as "Saucony") Creek in Berks County. These watersheds were identified collaboratively by state agencies, the NRCS State Technical Committee, and other partners in consideration of the significant natural resource challenges found in these watersheds as well as the potential for response to restoration efforts.

NWQI Watersheds

Upper Kishacoquillas

The Upper Kishacoquillas watershed or "Upper Kish" watershed is a cold water fishery in Mifflin County that is part of the Chesapeake Bay watershed. Consisting of 58.6 miles of stream, the Upper Kish watershed drains approximately 19,064 acres or 30 square miles of Kishacoquillas Valley, known locally as "Big Valley." Agriculture (60%), forested land (36%), developed land (approx. 2%), and transitional land (approx. 2%) compose the main land use types in this watershed. Major portions of this watershed have been designated as impaired by the PA Department of Environmental Protection (DEP).

Pennsylvania's 319 Nonpoint Source Program designated this watershed as a priority for action. A Watershed Implementation Plan (WIP) was developed by the Mifflin County Conservation District and accepted by EPA in 2006. In 2014 that WIP was updated. The Upper Kishacoquillas WIP outlines projects determined to be necessary to restore water

quality. The Mifflin County Conservation District has been very active in this watershed. BMP implementation consistent with the approved WIP began in 2006 and continues without interruption. This 319 Program activity supports the enhanced NRCS activities being carried out under the NWQI in this watershed.

In addition to the NWQI, the 319 Program and general EQIP funding, this watershed is also a recipient of National Fish and Wildlife Foundation (NFWF) funding to enhance efforts to address nutrient and sediment loadings coming from farm operations, with an emphasis on addressing Amish and Mennonite operations.

Upper Maiden Creek

The Upper Maiden Creek watershed comprises 55 square miles in the northern corner of Berks County and the western tip of Lehigh County. There is a mixed land use of agricultural (58%), woodlands (39%), scattered villages and boroughs, and the forested Blue Mountain area. Lake Ontelaunee, a 1,082-acre impoundment on lower Maiden Creek is managed as a public water supply for the City of Reading. There is a strong and historic initiative in the Lake Ontelaunee watershed to protect and improve the water quality in this area to protect the public water supply for the 125,000 residents in and around Reading PA that are serviced by Lake Ontelaunee.

Sacony Creek

The Sacony Creek is a 55.3 square mile watershed located in the north-east central portion of Berks County. The predominant land use is agriculture (51%), with other major land uses including forest land (27%), meadow, and residential. Sacony Creek along with Upper Maiden Creek are two of the primary headwater areas that join to form the main lower stem of the Maiden Creek and Lake Ontelaunee. The historic efforts described in the Upper Maiden Creek summary to protect Lake Ontelaunee have been carried out in the Sacony Creek watershed as well.

Stream Monitoring Projects

PA DEP initiated two projects in support of the efforts of the local conservation districts to monitor the streams within these NWQI areas. Monitoring efforts purpose to determine if there are noticeable stream improvements that may be attributed to this new, focused BMP implementation initiative. All three watersheds included in the NWQI in PA are being monitored at numerous locations throughout the watershed to assess any changes in water and habitat quality. These monitoring projects are nearing the end of their second year of data collection.

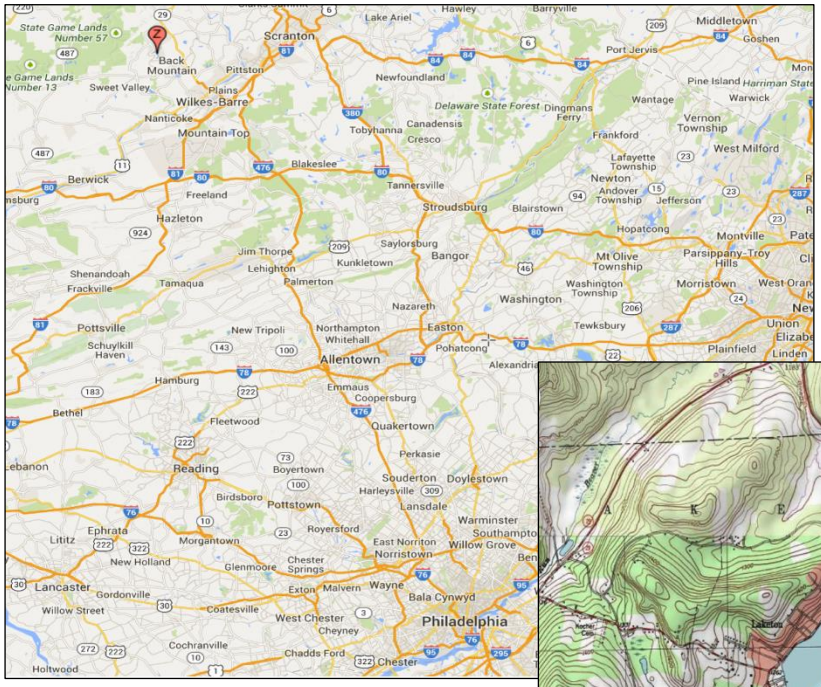
PA DEP continues to discuss with the state-level NRCS office existing barriers to the collection of BMP implementation data. The ability to locate and quantify the BMPs implemented by NRCS will provide Pennsylvania with the capacity to more accurately estimate expected nutrient and sediment load reductions attributed to this new initiative. Further, increased collaboration between NRCS and Pennsylvania will provide for more focused monitoring efforts such that changes in stream health attributed to this program will be more accurately identified.

V. Highlighted Projects

BCR and its many program partners implement unique and effective projects annually. Projects tend to focus on specific pollution sources (bank erosion, urban runoff, AMD, agriculture and so on). Further, projects tend to focus on clearly defined areas (a local watershed or urbanized area) and are all implemented with the intent of "making dirty streams clean." Below is a description of just a few projects and initiatives implemented by BCR and other program partners which have or are resulting in the improvement of water quality throughout Pennsylvania.

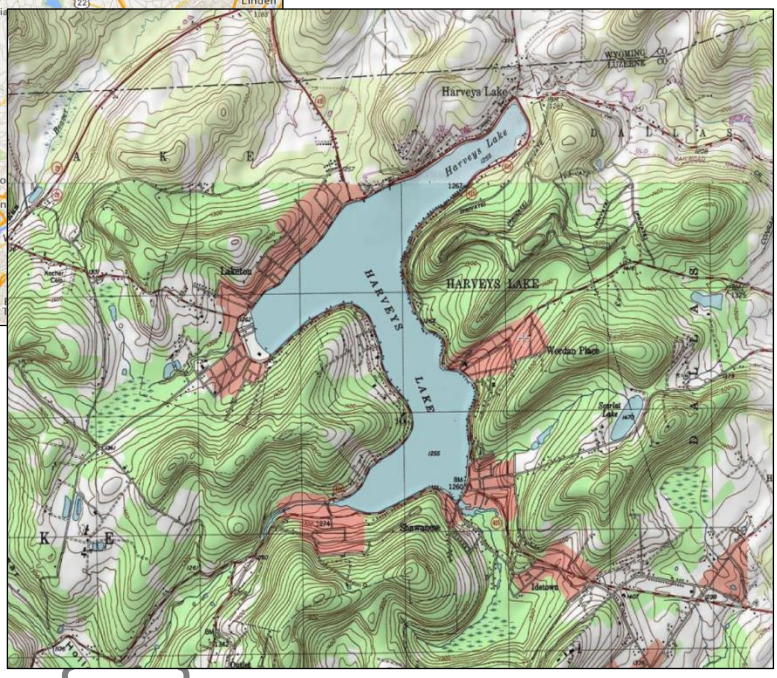
Harveys Lake

Nutrients in runoff from urban areas impaired Pennsylvania's Harveys Lake prompting the Pennsylvania Department of Environmental Protection to add this lake to the Section 303(d) list of impaired waters in 1996. Since that time, project partners stabilized degraded portions of shoreline and stream channels, managed urban stormwater and deployed floating wetland islands to reduce nutrients. Water quality improved in Harveys Lake; as of the 2014 Integrated Report, Harveys Lake is no longer listed as impaired!



Point Z on the map to the left marks the location of Harveys Lake with respect to Southeast Pennsylvania.

The topographic map below shows the area around Harveys Lake.



As of the 2014 Integrated Report Harveys Lake is no longer impaired!

Long's Run

Longs Run is a tributary of Six Mile Run and is located in Broad Top Township in an area known as **the Broad Top Coal Region**. The watershed is affected by abandoned mine drainage and was listed as **impaired in 1996**. In 2000 Broad Top Township completed an assessment and restoration plan on the watershed and in 2006 an EPA Watershed Implementation Plan was completed. **Fifteen AMD discharges were identified and sampled** for a year in the Long's Run watershed. Since 2001, Broad Top Township received funds from EPA's **Section 319 Nonpoint Source Program ($470,439)** and Pennsylvania's **Growing Greener Grant Program ($102,016)** to construct passive treatment systems on 14 of the 15 discharges. Various passive treatments systems are used to treat the 14 discharges and include limestone ponds, anoxic limestone drains (ALD), Vertical Flow Wetlands (VFW) and corresponding settling ponds. **In FFY 2014, Long's Run was de-listed.**

All this work has paid off! In FFY 2014, Long's Run was de-listed!

This year in the 2014 Pennsylvania Integrated Water Quality Monitoring and Assessment Report, Long's Run was removed from Category 5 as impaired (in 2012 report) to attaining and no longer impaired in 2014. Fish have been observed in Longs Run. **This is 5.3 miles of stream restored!** Broad Top employees built the systems and continue to perform the O,M&R at these facilities. Since Broad Top Township is a local municipality, they have the manpower and equipment to ensure the passive systems work properly. **Broad Top Township continues to work on Six Mile Run and Sandy Run, the other 2 watersheds affected by AMD in their township.**

Facilities such as this polishing wetland contributed to the success of the Long's Run restoration effort.

Etna Borough and their Green Infrastructure Master Plan

The Borough of Etna is a small but vibrant borough of approximately 3,924 residents located north and east of downtown Pittsburgh. Etna is challenged by its position in the watershed. Sometimes referred to as "Wetna" by borough officials, Etna Borough is located at the point of convergence of the Little Pine Creek and the Pine Creek about a half-mile upstream of the point where Pine Creek discharges into the Allegheny River.

That Etna receives a lot of water after most run-off events would not be a significant issue if it weren't for the fact that Etna's stormwater management system, like many throughout the Commonwealth, was built many years ago with the out-dated philosophy of **collect and discharge**, and technology that combined stormwater with greywater. This allows for combined sewer overflows (CSOs) during more rainfall events. Etna is unique however, in that Etna is a community *enthused* about addressing the issue of stormwater management. Over the past decade, **Etna produced a Green Infrastructure Master Plan and has obtained Section 319 grants** as well as grants from other partners for the purpose of designing and implementing contemporary stormwater management BMPs.

Ribbon Cutting on Walnut Street in downtown Etna Borough, celebrating the continued implementation of the Borough's Green Infrastructure Master Plan.

In FFY 2014, Etna Borough celebrated the **implementation of certain green infrastructure** with a ribbon cutting ceremony attended by representatives from the local business community, local government, and citizens, the PA legislature, DEP, and EPA. This ribbon cutting took place at two distinct locations; the first was the location of roof water disconnect facilities and porous paver blocks located a commercial district on Butler street follow by a separate ribbon cutting for a rain garden on Walnut Street.

Throughout the afternoon of the ribbon cutting, the energy and enthusiasm resulting from the community involvement was undeniable. As, the community of Etna continues to implement its Green Infrastructure Master Plan, further improvements to the waters of the Commonwealth and the community itself will be realized.

http://www.etnaborough.org/storm-water-management.html

Urban stormwater management BMPs like those constructed in Etna Borough are a critical factor in the stream restoration equation; likewise, the restoration of degraded stream channels, like the work performed on Barshinger Creek (depicted above), is necessary to undo the damage caused by unmanaged stormwater.

Regional Agricultural Watershed Assessment Program Initiative

The Regional Agricultural Watershed Assessment Program Initiative (RAWAPI) is a comprehensive approach to assess all farms in small watersheds with water quality impaired by agriculture. Each DEP region began the effort in 2014. These assessments are geared toward assisting farming operations in achieving compliance with regulatory requirements and correcting significant problems impacting water quality. Each of the six watersheds is being monitored for water quality changes as implementation of the RAWAPI continues.

The RAWAPI approach is to seek voluntary compliance first, but to follow-up with enforcement approaches as appropriate. The Department has allocated $600,000 in Growing Greener money to each of the six watersheds for assisting farmers in achieving regulatory compliance and abating significant water quality concerns.

> "These assessments are geared toward assisting farming operations in achieving compliance with regulatory requirements and correcting significant problems impacting water quality…"

In 2014, a total of 146 farms were assessed. Thirty-four (34) farms were determined to have direct water quality concerns. The 34 farms with water quality concerns were given 90 days to either correct or make satisfactory progress toward correcting these violations. At the time of the writing of this report, seventeen (17) of the 34 complied with or are making satisfactory progress toward voluntary compliance, six (6) were still within their initial 90-day compliance window, and eleven (11) were issued field orders because voluntary progress was not initially achieved.

The remaining 112 farms that did not have significant water quality concerns were not all in compliance with all regulatory requirements. Regional staff will continue to track progress and take necessary compliance actions on those farms that were significantly impacting water quality, and conduct follow-up with the other farms as time and resources allow.

> The Department has allocated $3.6 million in Growing Greener funds for assisting farmers!

2013-2014 Coldwater Conservation Planning Grant
Lackawanna River Tributaries

In 2011 **Lackawanna County Conservation District (LCCD)** requested the assistance of Trout Unlimited's Eastern Abandoned Mine Technical Assistance Program, in conducting a biological assessment of the Lackawanna River. LCCD partnered with ***DCNR, Lackawanna River Corridor Association (LRCA)*** and ***the Lackawanna Valley Chapter of Trout Unlimited*** in this effort. Nine sites along the Lackawanna and three sites along Roaring Brook (a major tributary of the river) were assessed for habitat, fish (presence and absence) and macroinvertebrates. The habitat was surveyed using DEP's Water Quality Network Habitat Assessment Form. Benthic Macroinvertebrates were collected using DEP's Instream Comprehensive Evaluation (ICE) protocol. The Fishery Survey was conducted using a Smith-Root, Model LR-24 backpack electrofisher. The final report on the river was issued in September of 2012.

Results of the 2011 assessment suggested that three sites (the southernmost portion of the river) represented the most degraded portion of the river. Through the ***Coldwater Conservation Planning Grant (a grant offered by Trout Unlimited, PA Fish and Boat Commission and DCNR)***, LCCD has performed a focused assessment that sought to identify the source(s) of this measured degradation of the Lackawanna River.

Collecting Macros in Leggetts Creek

Building on the 2011 assessment, LCCD continued this effort by collecting chemistry data, benthic macroinvertebrate data and habitat information on the tributaries located within the most degraded portion of the Lackawanna River and used this information to identify the source(s) of any degradation and to create a plan to minimize or eliminate those sources. The LCCD hypothesized that urban runoff and AMD contributed to the degradation of the river. For example, Eddy Creek runs above abandoned mine pools and, during rain events, possibly carries highly acidic water to the river and a waste water treatment plant sits on the bank of Leggetts Creek where treated water is regularly released. Additionally, all of the streams flow within very urbanized watersheds and are not diluted to any degree by cleaner mountain runoff, potentially adding to the contamination of the river.

The District collected chemistry data and conducted habitat assessments using ***PA DEP's Water Quality Network Habitat Assessment Form*** along the six main tributaries that feed the most degraded portion of the Lackawanna River. Benthic macroinvertebrate surveys using ***DEP's***

Instream Comprehensive Evaluation (ICE) protocol were conducted by LCCD along with ***NEPA Trout Unlimited*** members on Leggetts Creek, Hulls Creek and two locations along the river within the monitoring area. Of the six tributaries assessed, Leggetts and Hulls were the only two streams capable of supporting aquatic life. Chemistry data was collected approximately once per month, for a period of one year (March of 2013-March 2014) and habitat assessments and benthic macroinvertebrate surveys were conducted once during this one year period. The habitat assessments were conducted in the spring of 2013 and the macro collection was conducted in November of 2013. Results of the macro survey were completed in April 2014. The final report was completed in July 2014.

Leggetts Creek at South Abington Park

Leggetts Creek was found to be a major contributor to the degraded portion of the Lackawanna River as evidenced by the TDS/EC and salinity data and will require more intensive studies to determine if the waste water treatment plant improvements will, in time, reverse any contamination the sub-adequate treatment may have caused.

Additionally as expected, urbanization contributes to the degradation of the river and Leggetts Creek and to some degree all tributaries in this study. These streams are not diluted to any degree by cleaner mountain runoff. However, AMD did not seem to have much of an effect on water quality, as originally expected, as evidenced by the pH data, contained in the final report.

Therefore at this time, there is no tangible evidence that would justify upgrading any of these tributaries or the affected portion of the Lackawanna River in order to provide them with increased protection. However LCCD will continue its efforts to improve these watersheds.

The complete report is available at Lackawanna County Conservation District upon request.

http://www.lccd.net/

VI. Programmatic Goals

In FFY 2014 BCR began a process of updating Pennsylvania's Nonpoint Source Program Management Plan. This Plan specifically states the five goals listed on page 6 of this report. Along with the establishment of those goals, BCR in conjunction with other program partners has established numeric objectives that, once achieved will clearly define victory. A summation of those Goals, Objectives, and Strategies, taken from the draft 2014 Management Plan is found in Appendix B of this document.

While most of the objectives established are numeric and accomplishment of those goals is easily determined, several of the objectives are less quantifiable. The following section of this report discusses the less quantifiable objectives as well as the means by which Pennsylvania has achieved success.

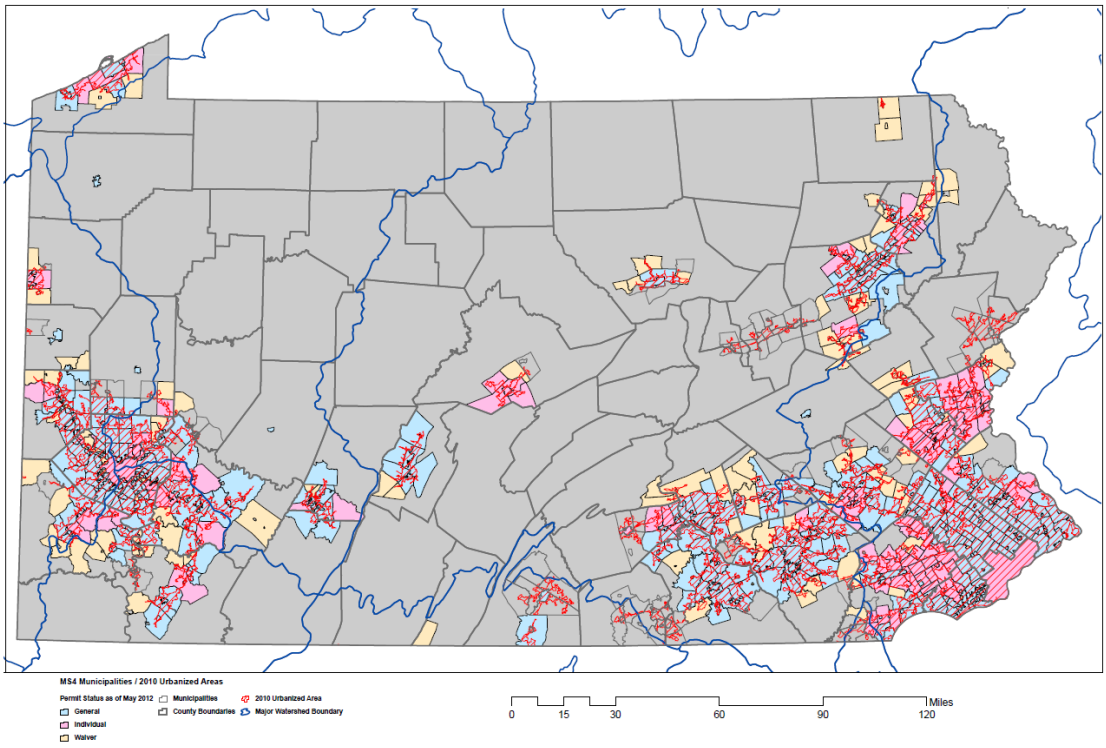
DEP, conservation district staff and interns engage in electrofishing on the Swatara Creek to confirm improvements to the biotic community. Read more about the Swatara Creek in Appendix C of this report.

Objective 3.2: MS4 Update

A significant number of MS4 communities exist within the borders of Pennsylvania. While the majority of the land surface of Pennsylvania is not considered an "urbanized area" (see map below) the majority of the citizens living in this Commonwealth do live in urbanized areas. In June of 2014, the EPA announced that it sent orders to 85 municipalities in Pennsylvania requiring those municipalities to improve their stormwater management programs. Pennsylvania, through the efforts of MS4 communities and the DEP, continues to implement the educational, best practice and structural requirements of the MS4 permit program. As time and staffing resources allow, DEP continues to accept annual reports prepared by MS4 communities. Through a cooperative effort, the requirements of this program will be met.

A link to the press release referenced above is found here:
http://yosemite.epa.gov/opa/admpress.nsf/0/7D5440B5ED7F309885257D010065F753 .

URBANIZED AREAS OF PENNSYLVANIA

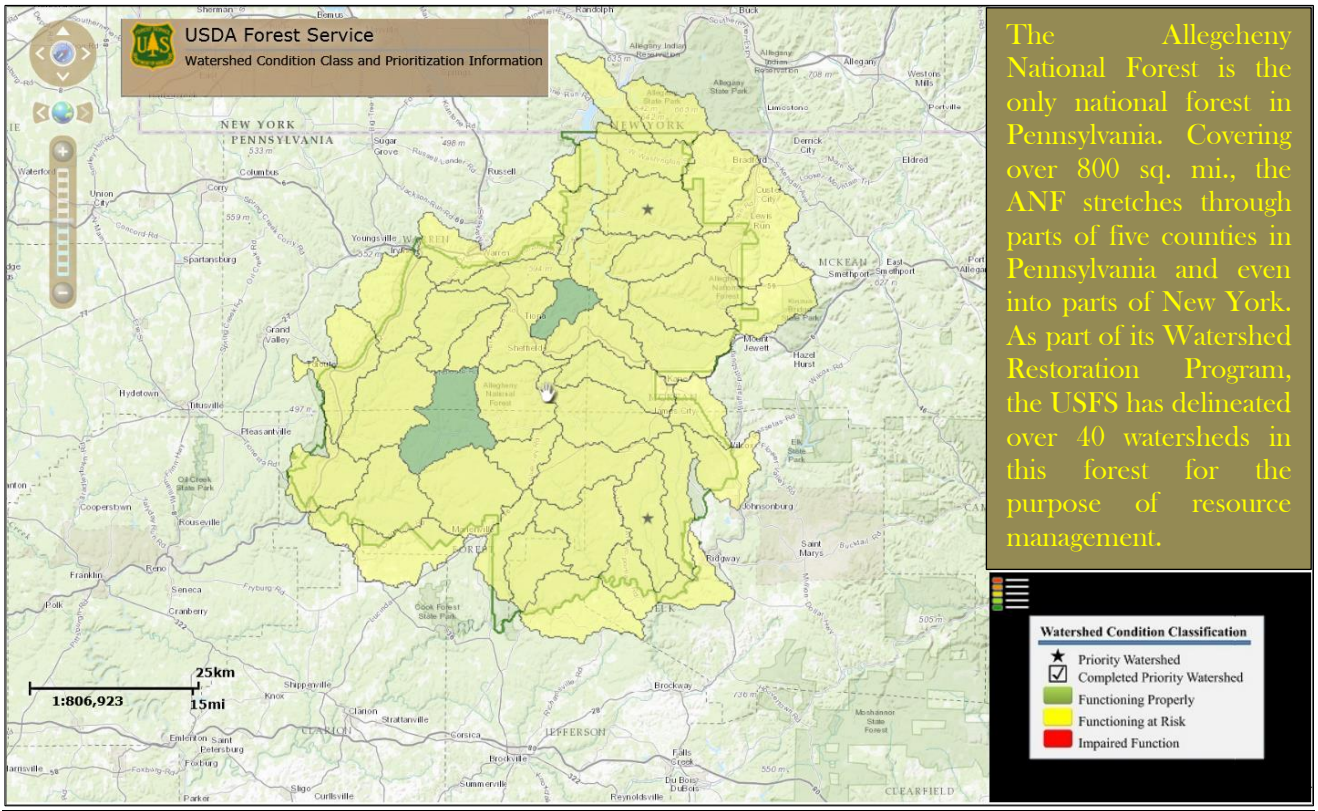


http://www.portal.state.pa.us/portal/server.pt/community/ms4_information_resources/21380

Objective 3.11: USFS Watershed Condition Framework

The United States Forest Service (USFS) is tasked with many goals. Among them is the protection of watersheds found within the National Forest System by "implementing practices designed to improve watershed condition" (FSM 2520.2). The USFS was directed by national policy to consider watershed condition to prioritize watersheds and to consider resource factors, risks, and partnership opportunities among other factors when prioritizing watersheds.

The Watershed Condition Framework was developed to facilitate the selection of watersheds for focused restoration activities. This framework is a comprehensive approach used for: evaluating watershed condition, prioritizing watersheds for restoration and maintenance efforts, strategically implementing integrated restoration, and tracking, monitoring and reporting on outcome-based programmatic accomplishments.

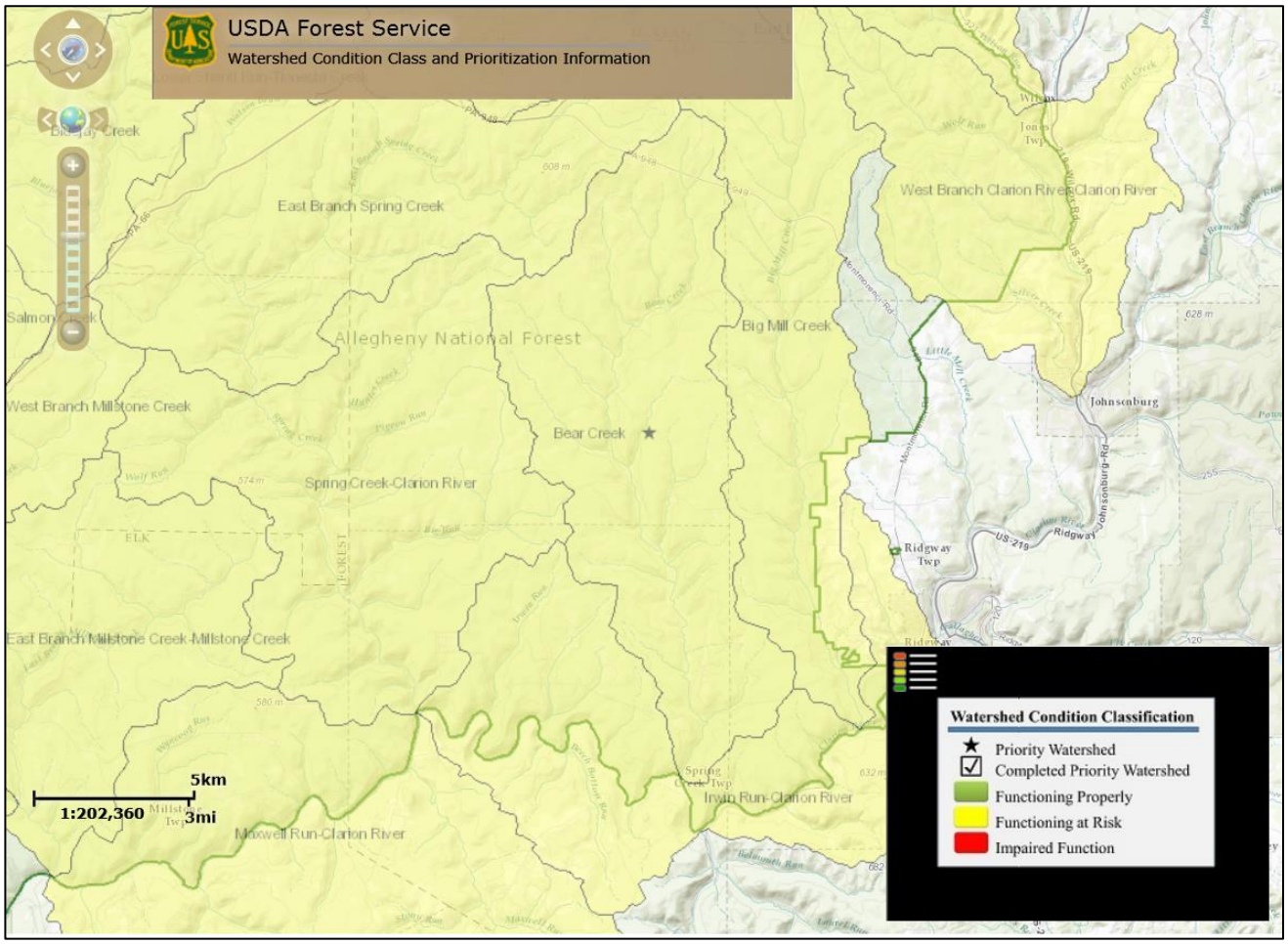


The Allegheny National Forest is the only national forest in Pennsylvania. Covering over 800 sq. mi., the ANF stretches through parts of five counties in Pennsylvania and even into parts of New York. As part of its Watershed Restoration Program, the USFS has delineated over 40 watersheds in this forest for the purpose of resource management.

Bear Creek Watershed

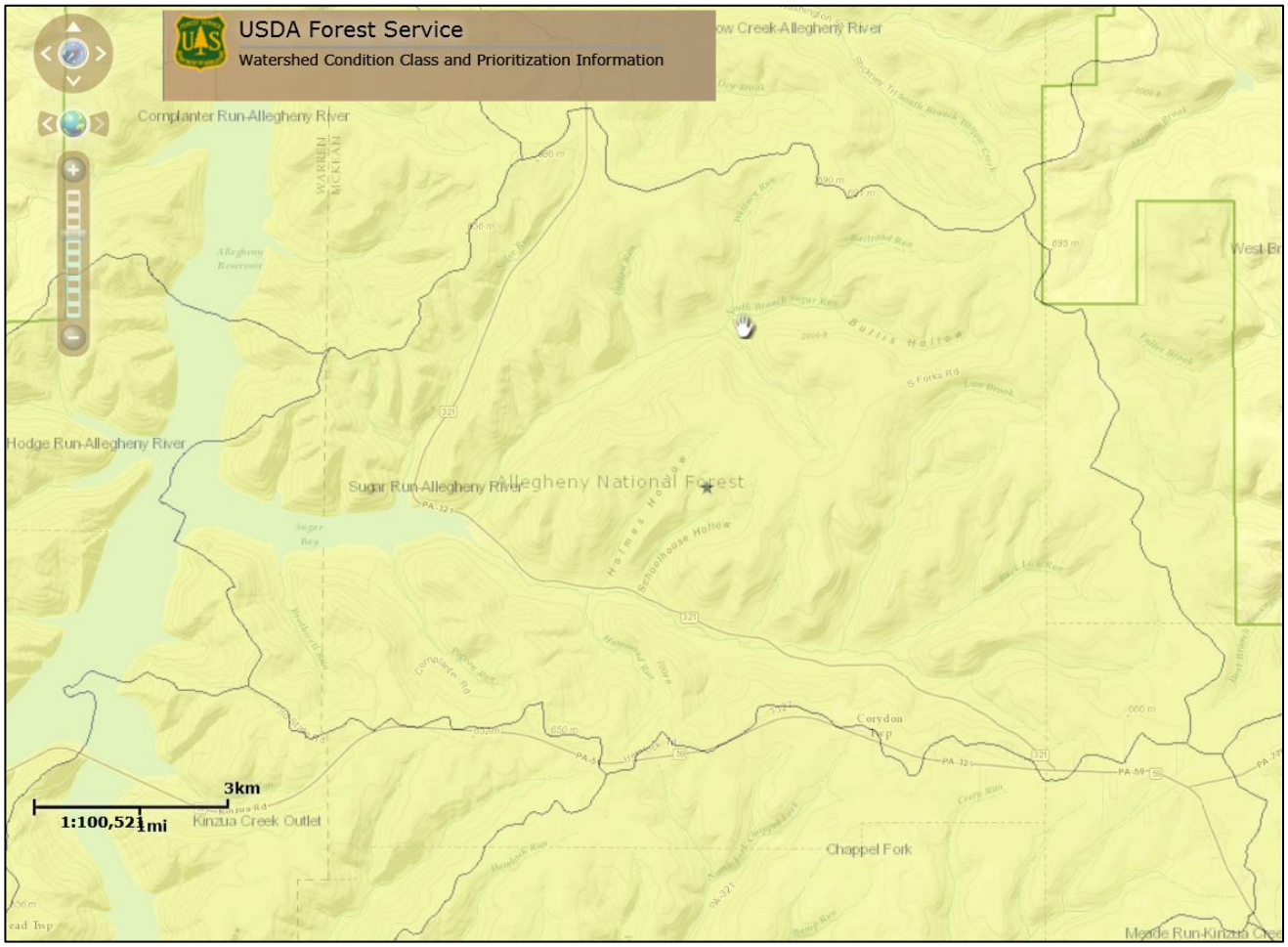
The USFS chose the Bear Creek Watershed in the Allegheny National Forest (ANF) as a location of focused restoration efforts. The Bear Creek Watershed was chosen in part because of the threats that exist to the water quality on Bear Creek as well as the opportunities that exist to address those concerns. The USFS lists several threats to the water quality of Bear Creek including: acidic deposition and low buffering capacity of natural geology, habitat fragmentation by culvert crossings, sedimentation from stream crossings and channel degradation at dispersed recreation sites, lack of sufficient large wood in streams to create quality pools, slow flood flows, or create channel diversity, and non-native invasive plant populations established in approximately 40% of the watershed.

It appears the USFS considered a number of factors when assessing these watersheds, including the size of the watershed (40.5 sq. mi.), the amount of land within the watershed owned by the USFS (93%), and the existence of potential or current partners. The USFS listed several potential partners including: Elk County Freshwater Association, Watershed Improvement Needs Coalition, Trout Unlimited, Western Pennsylvania Conservancy, Seneca Resources Corporation, Pennsylvania Fish & Boat Commission, and others.



Sugar Run Watershed, Allegheny River

The USFS also selected the Sugar Run Watershed to be an area where focused restoration work would occur. It was noted that the USFS owns approximately 92% of the land in this watershed and it is of a manageable size (43.5 sq. mi.). Many concerns were noted by the USFS in this watershed, including: habitat fragmentation by culvert crossings, lack of sufficient large wood in streams to create quality pools, slow flood flows, or create channel diversity, and non-native invasive plant populations established in approximately 10% of the watershed. Further, the USFS noted a number of potential partners to address the problems found in the Sugar Run Watershed. The partners listed by the USFS include: Trout Unlimited, Western Pennsylvania Conservancy, McKean County Conservation District, and Pennsylvania Department of Transportation.



Objective 4.14: Protection through Regulation

The NPDES Permits referenced in the table below are permits for the discharge of stormwater during construction, those permits also require the construction of certain post construction stormwater management BMPs. That regulatory requirement works to prevent future exacerbation of the existing urban stormwater management problem being addressed by the Section 319 program and other program partners. Further, while Chapter 105 general permits are permits for encroachments and obstructions, certain Chapter 105 "GP's" deal with NPS pollution. The GP3 for instance, addresses streambank stabilization, the GP7 addresses minor road crossings, and the GP6 and GP9 are specific to agricultural activities, but designed to permit the construction of facilities that in many cases address non-point source pollution issues. (Note, the ANF cited habitat fragmentation resulting from poorly installed culverts as a source of impairment in those priority watersheds. Adherence to current permit conditions when installing culverts prevents that habitat fragmentation).

	FFY 2014	FFY 2013	FFY 2012	FFY 2011	FFY 2010
E&S/PCSM/105/Nutrient Mgt					
NPDES General Permits (Stormwater)	2,182	1983	1,573	1,498	1,853
NPDES Individual Permits (Stormwater)	298	277	292	288	320
Site inspections	12,092	12493	14,142	13,804	15,321
Complaint Response	1,784	1995	2,330	2,279	2,706
NMPs (CAO)		825	1,140	1,071	1044
CAFOs (total in Pa)	362	371	362	363	350
Volunteer Operations		1020	1,837	1,871	1801
Chapter 105 Technical Assistance Contacts	6,823	7404			
Total No. of GP's Issued	1,160	1290			
Chapter 105 Complaint Response	363	413			
Chapter 105 Total Inspections	629	717			

Table listing various regulatory actions or activities (inspections, permit issuance, etc.) and the amount of those activities over four specified years.

Complimentary to the NPDES permit program and the Chapter 105 program is the Chapter 102 program which focuses on erosion and sedimentation (E&S). Sometimes referred to as the E&S program, these regulations address earth disturbance activities including agricultural plowing and tilling as well as land development and others. In fact, individuals performing work under the previously mentioned NPDES permit and/or Chapter 105 general permit programs are also regulated by Chapter 102 and required to obtain and implement a written Erosion and Sediment Pollution Control Plan (E&S Plan).

Specific examples could be given elaborating on how each of the regulatory actions referenced in the table above is connected to the NPS management program. It seems unfeasible or unnecessary to do so. However, it is important to point out that these regulatory programs do have a significant impact on the protection of the water resources in Pennsylvania, and these regulatory actions do also function to limit or otherwise prevent future damage to our water resource.

IV. The Future of Non-Point Source Management in PA

The DEP through the focused efforts of the Bureau of Conservation and Restoration in association with the many partners engaged in NPS pollution management in Pennsylvania, have made significant strides over the past decades in reducing pollutant loads, fortifying partnerships, educating citizens and improving the ways in which nonpoint source pollution is addressed. However, the work is far from complete and the road ahead will not be without challenges.

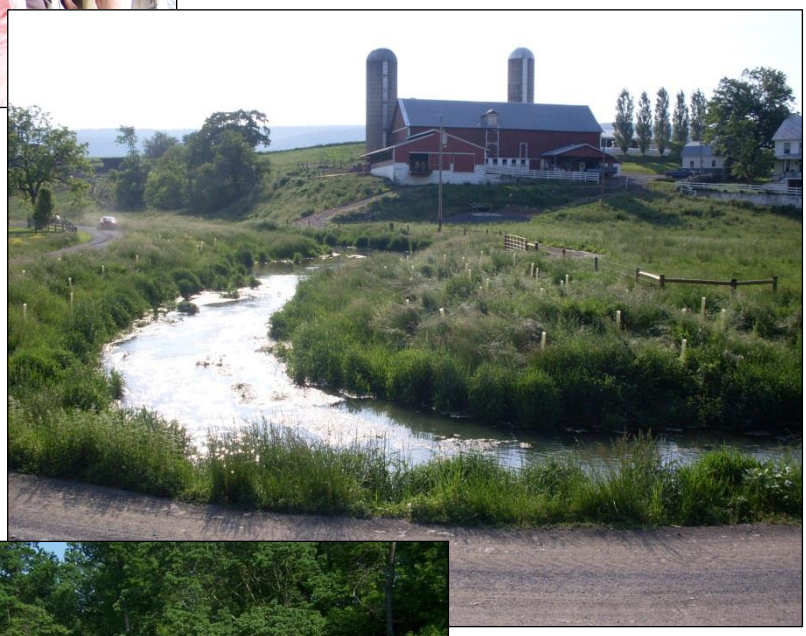
Pennsylvania is impacted by numerous sources of nonpoint pollution including agriculture, abandoned mine drainage (AMD), urban stormwater runoff, stream bank degradation, and lakes degradation. While local, state and federal resources are directed to address all of these sources, it is recognized that agriculture and AMD are the two priority sources that require additional focus to restore degraded streams.

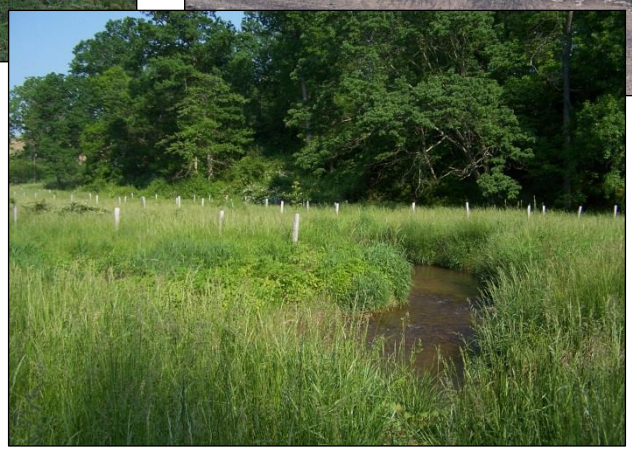
Pennsylvania has initiated restoration programs to address nonpoint source pollution in the state with a particular focus on agriculture and AMD impacts. Programs being implemented in the state addressing nonpoint pollution sources include the Pennsylvania Growing Greener Program, the 319 Program, PENNVEST's Nonpoint Source Program, the Chesapeake Bay Program, USDA-NRCS's Environmental Quality Incentives Program, the Watershed Restoration and Protection Program and the AMD Abatement Program under the Commonwealth Financing Authority, and Pennsylvania's Resource Enhancement and Protection Program. These programs alone provided over $69.1 million dollars for nonpoint source abatement projects across Pennsylvania in fiscal year 2014 alone. These programs are expected to continue to provide significant funding in the years to come for these efforts to support the restoration and protection of streams, lakes and rivers throughout the state.

The Section 319 Program targets funds to 35 high priority, restorable watersheds with approved Watershed Implementation Plans. These EPA approved Watershed Implementation Plans detail the efforts needed to restore impaired waters in these select watersheds. The Section 319 program focus will continue to be on targeted, small scale watersheds. This program direction, of focusing support on small scale, restorable, targeted watersheds is being incorporated into other program initiatives across the state recognizing the opportunity for success using this program model.

For Pennsylvania's nonpoint source management program to succeed, consistent and defined regulatory oversight on newly developing sites and industries is necessary. Pennsylvania intends to continue to implement regulatory programs designed to protect and maintain water quality and designated uses to minimize the potential for creating newly polluted waters.

Lastly, because of the size of Pennsylvania, the amount of the water resource to be restored/protected, and the variety of the activities in the state which can impact the water resource, effective and efficient partnering is a mandatory key-component of nonpoint source pollution control in Pennsylvania. DEP and its nonpoint source program partners will continue to look to create new, and strengthen existing partnerships in order to provide for a coordinated and unified effort to control nonpoint source pollution throughout the state.





V. Appendices

A. Appendix A: Goals, Objectives, and Milestones tracking sheet
B. Appendix B: Description of Goals, Objectives, and Milestones
C. Appendix C: WIP Watershed Progress Report
D. Appendix D: Funding sources and Amounts

Appendix A-Tracking Table

Goal	Objective	FFY 2014
		Actual Amount Achieved
Improve and protect the Waters of the Commonwealth from non-point source pollution associated with Acid Mine Drainage and other energy resource extraction activities.	1.1 Provide for the operation and maintenance of 46 Pennsylvania-operated AMD treatment systems each year for the next five years.	**BCR is providing operation, maintenance, and repair (O,M&R) for 49 systems**
	1.2 Engage in land reclamation projects resulting in the reclamation of 500 acres of abandoned mine lands (AML) each year for the next five years.	**626 acres**
	1.3 Provide funding and other assistance for the installation of four new AMD treatment systems annually for the next 5 years.	**5 systems completed in 2014**
	1.4 Authorize 7 WPCAMR Quick Response projects each year for the next five years.	**6 projects**
	1.5 Plug 40 oil and gas wells each year for the next five years.	**51 wells**
	1.6 Annually, through load-reduction efforts with the installation of four new AMD treatment systems, an additional 10,000 lbs of Iron will be reduced from the non-point source pollutant stream each year.	**6,935 lbs**
	1.7 Annually, through load-reduction efforts with the installation of four new AMD treatment systems, an additional 3,000 lbs of Aluminum will be reduced from the non-point source pollutant stream each year.	**11,096 lbs**
	1.8 Annually, through load-reduction efforts with the installation of four new AMD treatment systems, an additional 10,000 lbs of Acidity will be reduced from the non-point source pollutant stream each year.	**127,531 lbs**

	1.9 Annually, through load-reduction efforts with the current operational passive treatment systems, 1,000,000 lbs of Iron will continue to be reduced from the non-point source pollutant stream each year.	**16,745,455 lbs** **With 265 systems**
	1.10 Annually, through load-reduction efforts with the current operational passive treatment systems, 200,000lbs of Aluminum will continue to be reduced from the non-point source pollutant stream each year.	**3,314,314 lbs** **With 265 systems**
	1.11 Annually, through load-reduction efforts with the current operational passive treatment systems, 9,000,000lbs of Acidity will continue to be reduced from the non-point source pollutant stream each year.	**18,086,174 lbs** **With 265 systems**
	1.12 Annually, through load-reduction efforts with state operated active treatment systems, 750,000lbs of Iron will continue to be reduced from the non-point source pollutant stream each year.	**1,369,480 lbs**
	1.13 Annually, through load-reduction efforts with state operated active treatment systems, 150,000 lbs of aluminum will continue to be reduced from the non-point source pollutant stream each year.	**265,355 lbs**
	1.14 Annually, through load-reduction efforts with state operated active treatment systems, 6,500,000 lbs of Acidity will continue to be reduced from the non-point source pollutant stream each year.	**8,179,650 lbs**
	1.15 Annually, through load-reduction efforts with state operated active and passive treatment systems, 8 billion gallons per year (BGY) of water will be treated reducing non-point source pollutant entering Waters of the Commonwealth each year.	**12.3 BGY**

Improve and protect the Waters of the Commonwealth from Non-Point Source Pollution associated with Agricultural activities.	2.1 Implement the Regional Agricultural Watershed Assessment Program Imitative (RAWAPI) in one ag-impaired watershed per DEP region per year for the next five years.	**The RAWAPI is being implemented statewide on 6 different targeted watersheds covering a total of 49 acres for the 2014-2015 state fiscal year. All farms in these watersheds are being evaluated for Ag E&S and Manure Management Planning compliance and to ensure that all water quality concerns are addressed on these farms.**
	2.2 Conduct inspections on 350 CAFO operations in the Commonwealth within the next five years.	**242 inspections**
	2.3 Implement BMPs on 50 agricultural operations per year using state directed funds. These BMPs will be for the mitigation of soil loss and/or wise management of nutrients.	**13+ §319 funded projects** **15+ CBP funded projects** **18 Growing Greener funded projects**
	2.4 Support the review of 30 Nutrient Credit trade applications annually.	**151 Trades (N and P combined)** **805,000 N credits traded** **85,000 P credits traded**
	2.5 Conduct 2,000 agricultural compliance outreach/education visits on farms in the Chesapeake Bay watershed each year until all farms in the Chesapeake Bay watershed have been visited.	**4,272 outreach** **22,000+ contacts**
	2.6 Provide 6 FTEs under the PACD TAG Grant for designing and installing Ag BMPs.	**9 full time engineering and technical positions**
	2.7 Support a minimum of 35 Chesapeake Bay Program Agricultural Technicians and 4 Agricultural Engineers each year for the next five years.	**43 ag techs** **6 ag engineers in the Chesapeake Bay watershed**
	2.8 Provide support for the implementation of five innovative environmental technology projects (focused on agriculture) within the next five years.	**USDA-NRCS Conservation Innovation Grants (CIG):** **2013: 5 CIG Grants** **2014: 1 CIG Grant**

	2.9 Support the certification of 600 certified manure haulers within the Commonwealth annually.	**569 certified haulers**
	2.10 Support the certification of 300 certified Nutrient Management Specialists within the Commonwealth annually.	**306 certified Specialists**
	2.11 Maintain the implementation of approved Act 38 Nutrient Management Plans on 300,000 acres of farmland regulated as CAOs and CAFOs each year for the next five years.	**300,000+ acres (CAO and VAO) through 2013**
	2.12 Establish a baseline number of non-CAO/CAFO farmed-acres under an NMP or MMP by the end of FFY 2015 and increase that number by 5% annually.	**Data for this reporting element is not currently available. Program staff continues to discuss how best to collect this information. NMP/MMP training programs for being held for farmers to develop plans. Over the past year 1,088 farms have developed MMPs under this initiative. Given that the average farm size in PA is 130 acres, this would equate to 141,000 acres reported as planned over the past year.**
	2.13 Continue the use of the PA One Stop program such that the number of fields entered into that system increase by 10% each year over the next five years.	**60,000+ fields through 2014**
Improve and protect the Waters of the Commonwealth from non-point source pollution associated with stormwater run-off, as well as streambank and shoreline degradation.	3.1 Conduct 11,000 inspections under the Chapter 102 and Chapter 105 programs annually for the next five years.	**12,082 inspections**
	3.2 Continue to implement the MS4 program through oversight and verification that MS4 communities abide by their permit requirements.	**See program summary in text of Annual Report.**

	3.3 Continue to administer the Act 167 program directing counties to obtain and implement county wide stormwater management plans.	**This past year a major Act 167 storm water plan was adopted by Chester County and some other Act 167 plans in the City of Philadelphia, Montgomery and Bucks Counties, are moving towards completion. The Northwest Regional office has gotten each of its regional counties (10) to adopted an Act 167 Storm Water Management plans.**
	3.4 Implement 40 new, state-funded stream restoration and/or stormwater management projects annually for the next five years.	**30 stream restoration** **18 stormwater management** **4 buffer**
	3.5 Address 500 new Dirt, Gravel, and Low Volume (DGLV) Road sites each year for the next five years.	**167 sites**
	3.6 Support using state managed funds, the completion of 15 miles of stream restoration and/or bank stabilization projects over the next five years.	**As stated previously, the FFY2014 version of this appendix is a draft and considered by the DEP to be a trial run. It is the DEP's full intent to establish an annual project using a temporary work force to track the data described in Objective 3.6; that process does not yet exist.**
	3.7 State wide, enroll and maintain 50,000 acres of new land in the CREP program over the next five years.	**4,883.7 acres**
	3.8 Plant and protect 5,000 acres of riparian forest buffer for the next five years.	**392.1 acres (Forest Riparian Buffer-CREP Program only)**
	3.9 Through a forest land-owner stewardship program, develop 30 new plans annually which should account for 5,000 new acres of privately owned forest land each year for the next five years.	**72 plans** **8,500 acres**
	3.10 Plant 10,000 new trees under the TreeVitalize program each year for the next five years.	**37,818 trees**

	3.11 Encourage activities within US Forest Service selected priority watersheds identified under the USFS Watershed Condition Framework within the borders of the Allegheny National Forest (ANF) to the extent that these priority watersheds within the ANF are categorized as "Functioning Properly."	**See Program summary in text of Annual Report.**
Demonstrate the efficacy of Pennsylvania's non-point source pollution management efforts through enhanced data collection.	4.1 Establish a process to collect BMP data at the state, watershed and sub-watershed level.	**Pennsylvania collects and documents BMP data from select programs such as the 319 NPS Program. Practices installed under non-included programs are not fully integrated into a statewide BMP tracking database. The NPS program in PA is working with partner programs in the state to research the development of a BMP tracking database to collect all BMP reporting data into one system. A universal BMP tracking system being designed by PSU is currently under assessment and testing.**
	4.2 Further develop and maintain PA One Stop to allow the NPS Program to collect the number of fields and acres planned through the use of this tool and to spatially summarize data by watershed.	**PAOneStop can document # farm fields planned; 60,000+ through 2014.**
	4.3 Continue to develop and improve our Reclaimed Abandoned Mine Land Inventory System (RAMLIS) GIS Tool.	**Version 14 completed**
	4.4 Ensure that the Datashed GIS web tool adequately describes available information relating to the approximate 300 AMD Treatment Systems sites that are treating mine discharges across PA, and ensure that access to this information is available to the public.	**265 systems are currently in Datashed**

	4.5 In addition to monitoring efforts implemented outside of DEP, the DEP will monitor 900 sites each year for the next five years.	**1,114 sites**
	4.6 In addition to other monitoring efforts, the DEP will monitor 20 lakes each year for the next five years.	**10 lakes/region = 60 lakes** **13 lakes (WQN)** **2 Lakes (RAWAPI)**
	4.7 Through monitoring and assessment efforts conducted by the DEP, 60 miles of streams previously impacted by NPS related causes shall be documented as newly delisted from Category 5 and/or Category 4a in the bi-annual Pennsylvania Integrated Water Quality and Monitoring Report.	**198.6 stream miles in 2014**
	4.8 Through monitoring and assessment efforts conducted by the DEP, 1,500 lake acres previously impacted by NPS related causes shall be documented as newly delisted from Category 5 or Category 4a over the next five years.	**12,301.15 Lake Acres in 2014**
	4.9 Implement grant funded projects designed to determine BMP effectiveness on at least three priority watersheds.	**Pennsylvania is currently working in 3 targeted watersheds under the NWQI to monitor chemical and biological stream changes relating to the BMPs implemented in these small watersheds.**
	4.10 Within the next five years, establish a process to input all monitoring data collected by the PA DEP NPS Program into STORET.	**Pennsylvania's DEP enters monitoring data into the database known as Sample Information System (SIS). Most, but not yet all, of DEP generated assessment data is downloaded periodically from SIS into STORET. Periodically, select data stored in SIS is uploaded into STORET. While the process of systematically and completely uploading monitoring data into STORET has yet to be developed, the basic infrastructure is in place.**

	4.11 Annually, through state-wide NPS pollutant load-reduction efforts, 1,000,000 lbs of Nitrogen will be reduced from the non-point source pollutant stream each year.	**2,875,854.15 lbs**
	4.12 Annually, through state-wide load-reduction efforts, 50,000 lbs of Phosphorus will be reduced from the non-point source pollutant stream each year.	**145,293.08 lbs**
	4.13 Annually, through state-wide load-reduction efforts, 15,000 tons of sediment will be reduced from the non-point source pollutant stream each year.	**162.51 tons**
	4.14 Prevent waterbodies currently not listed as impaired for the aquatic life use designation from being listed as impaired for that designated use through implementation of existing regulatory programs.	**See program summary in text of Annual Report.**
	4.15 Establish a data collection framework by which information regarding the obtainment of nutrient and manure management plans (NMPs/MMPs) on non-CAO/non-CAFO farms is collected and counted in terms of acres covered.	**This initiative is being discussed and several options are being assessed for future tracking in our NPS programs. We currently track plans developed through our planning training sessions run at the county level.**
	4.16 Establish a process by which data regarding the quantity of biosolids which are mechanically land applied is tracked and reported to program partners and the public on an annual basis. The process should be established within the five year life of this Management Plan.	**Discussions are taking place between the NPS program staff and waste management program staff to determine an efficient process for collecting and reporting this data. Currently the information is not available at the statewide level.**

Demonstrate Pennsylvania's non-point source pollution management efforts through enhanced data dissemination efforts.	5.1 Annually provide a clear and concise report to the EPA, the general public, regulators, partners and others interested in Pennsylvania's NPS pollution abatement efforts outlining the major accomplishments of Pennsylvania's NPS Program consistent with EPA reporting guidelines.	**See above report**
	5.2 Develop 2 success stories per year.	**In FFY 2014 BCR submitted a success story specific to the work performed on Harveys Lake, that success story is currently in draft form and under review by the EPA.**
	5.3 Provide detailed BMP implementation reporting on 10 approved WIPs per year.	**10+ per year (2010 to present)**
	5.4 Implement the BMPs believed to be necessary to restore four sub-watersheds covered under §319 approved WIPs by the end of the 2019 Federal Fiscal Year. (Achievement of this goal may be measured against full implementation of the BMPs listed in those §319 approved WIPs).	**30+ §319 WIPs approved; BMP implementation ongoing.**
	5.5 Implement the BMPs believed to be necessary to restore three (3) watersheds supported under the Growing Greener Program's Renaissance Initiative by the end of the 2019 Federal Fiscal Year.	**The Growing Greener Program is currently implementing two (2) Renaissance projects to fully implement all the BMPs recognized as necessary to restore select priority stream reaches. These Initiatives are being implemented in the Birch Island Run (Cameron County) and Upper West Branch of Brandywine Creek (Chester County) watersheds. These projects are expected to be completed by October 2019. Additional Renaissance projects are expected to be submitted for funding annually, with high priority sites selected for implementation.**

	5.6 Document farmer compliance with erosion and sedimentation control and manure management regulations in 15 watersheds be the end of the 2019 Federal Fiscal Year.	**This work has been initiated under the state's new RAWAPI program. Currently all the farmers in 6 priority watersheds are being assessed and overseen to ensure E&S and Manure Management compliance.**
	5.7 Report semi-annually on progress implementing active Section 319 grant work plans ensuring status reports are current for at least 90% of the active grant projects in the GRTS database.	**(2) SAPR / yr. completed. 90+ % current status reports goal.**
	5.8 Complete Watershed Plan Tracker (WPT) data entry for all active WIPs by the end of 2017. The DEP will continue to input current information in the WPT throughout the five year life of this Plan to ensure accuracy of data.	**30+ active WIPs are updated in WPT to include both GRTS and non-319 project data.**

Appendix B: Goals, Objectives, and Strategies as found in the draft 2014 NPS Program Management Plan

Goal 1: Improve and protect the Waters of the Commonwealth from non-point source pollution associated with Acid Mine Drainage and other energy resource extraction activities.

Objectives and Strategies to meet Goal 1:

1.1 Provide for the operation and maintenance of 46 Pennsylvania-operated AMD treatment systems each year for the next five years.

A significant number of AMD treatment facilities exist within the bounds of the Commonwealth. While many of these facilities are owned and operated by local government entities, NGO's and private entities the Commonwealth of Pennsylvania does own and operate a significant number of such facilities. To accomplish the above stated objective, Pennsylvania will continue to own, operate and maintain these facilities. To that end, funding necessary to perform O&M will continue to be provided using the AMD Set-Aside funds. Further the necessary personnel to operate these facilities will be maintained and training will be provided to these state employees as well as to others involved with the O&M of other, non-state owned AMD treatment facilities.

1.2 Engage in land reclamation projects resulting in the reclamation of 500 acres of abandoned mine lands (AML) each year for the next five years.

Land reclamation is the best way to reduce and even permanently control AMD by preventing the formation of the contaminated water. This can remove the need for passive or active treatment. Bureau of Abandoned Mine Drainage (BAMR) uses funding from the Title IV of the Surface Mine Control and Reclamation Act of 1977 (SMCRA) to reclaim priority sites. The Bureau of District Mining Operations (BDMO) has programs to encourage active mine operators to re-mine and reclaim where possible. They do this through Government Financed Construction Contracts, Re-mining permits and Bond Forfeiture Reclamation. Growing Greener, Section 319 Nonpoint Source and CFA grants can also be used for reclamation activities.

1.3 Provide funding and other assistance for the installation of four new AMD treatment systems annually for the next 5 years.

Watershed groups, County of Municipality, County Conservation Districts and other non-profit conservation minded groups can obtain funding from Growing Greener, Section 319 Nonpoint Source, CFA and PennVest to build new systems on AMD sites. The same entities can apply for SMCRA Bond forfeiture grants for sites that defined as

"ABS Legacy Sites". If a specific project is located in a Qualified Hydrologic Unit then the entity can apply for AMD Set-Aside funds. Also the Bureau of Conservation and Restoration; Watershed Restoration Division, will use some of this funding for construction of treatment systems. Every year EPCAMR/WPCAMR provide a conference for both government and non-profits groups to exchange ideas on the best treatment options.

1.4 Authorize 7 WPCAMR Quick Response projects each year for the next five years.

WPCAMR will continue to apply for Growing Greener funds to operate the Quick Response program. They will continue to partner with other entities that can provide match funds for the projects. The Bureau of Conservation and Restoration, Division of Watershed Restoration will continue to serve as advisor to the Quick Response program.

1.5 Plug 40 oil and gas wells each year for the next five years.

Abandoned wells that do not have a responsible party to take care of them are addressed by the Well Plugging Program administered by the Office of Oil and Gas Management.

1.6 Annually, through load-reduction efforts with the installation of four new AMD treatment systems, an additional 10,000 lbs. of Iron will be reduced from the non-point source pollutant stream each year.

The reduction of Iron from the Waters of the Commonwealth is a collaborative effort from all entities engaged in the abatement of AMD. Pennsylvania's DEP in association with the Department of Interior's Office of Surface Mine Reclamation and Watershed groups, County Conservation Districts, Conservation groups and other non-profit and for profit groups will continue to partner to remove iron as a pollutant from the water resource. Financial assistance will come from Growing Greener, Section 319 Nonpoint Source, CFA, Pennvest and SMCRA funding sources. Watershed Implementation Plans, Watershed Restoration Plans, Qualified Hydrologic Unit Plans and other plans will be followed so priorities can be addressed.

1.7 Annually, through load-reduction efforts with the installation of four new AMD treatment systems, an additional 3,000 lbs. of Aluminum will be reduced from the non-point source pollutant stream each year.

The reduction of Aluminum from the Waters of the Commonwealth is a collaborative effort from all entities engaged in the abatement of AMD. Pennsylvania's DEP in association with the Department of Interior's Office of Surface Mine Reclamation and Watershed groups, County Conservation Districts, Conservation groups and other non-profit and for profit groups will continue to partner to remove aluminum as a

pollutant from the water resource. Financial assistance will come from Growing Greener, Section 319 Nonpoint Source, CFA, Pennvest and SMCRA funding sources. Watershed Implementation Plans, Watershed Restoration Plans, Qualified Hydrologic Unit Plans and other plans will be followed so priorities can be addressed.

1.8 Annually, through load-reduction efforts with the installation of four new AMD treatment systems, an additional 10,000 lbs. of Acidity will be reduced from the non-point source pollutant stream each year.

The reduction of Acidity from the Waters of the Commonwealth is a collaborative effort from all entities engaged in the abatement of AMD. Pennsylvania's DEP in association with the Department of Interior's Office of Surface Mine Reclamation and Watershed groups, County Conservation Districts, Conservation groups and other non-profit and for profit groups will continue to partner to remove acidity as a pollutant from the water resource. Financial assistance will come from Growing Greener, Section 319 Nonpoint Source, CFA, Pennvest and SMCRA funding sources. Watershed Implementation Plans, Watershed Restoration Plans, Qualified Hydrologic Unit Plans and other plans will be followed so priorities can be addressed.

1.9 Annually, through load-reduction efforts with the current operational passive treatment systems, 1,000,000 lbs. of Iron will continue to be reduced from the non-point source pollutant stream each year.

The continued reduction of iron from the Waters of the Commonwealth is a collaborative effort from all entities engaged in the abatement of AMD. Pennsylvania's DEP in association with the Department of Interior's Office of Surface Mine Reclamation and Watershed groups, County Conservation Districts, Conservation groups and other non-profit and for profit groups will continue to provide Operation, Maintenance and Replacement (O,M&R) activities to continue to remove iron as a pollutant from the water resource. Financial assistance for O,M&R will come from Growing Greener, Section 319 Nonpoint Source, CFA, Pennvest and SMCRA funding sources.

1.10 Annually, through load-reduction efforts with the current operational passive treatment systems, 200,000 lbs. of Aluminum will continue to be reduced from the non-point source pollutant stream each year.

The continued reduction of Aluminum from the Waters of the Commonwealth is a collaborative effort from all entities engaged in the abatement of AMD. Pennsylvania's DEP in association with the Department of Interior's Office of Surface Mine Reclamation and Watershed groups, County Conservation Districts, Conservation groups and other non-profit and for profit groups will continue to provide Operation, Maintenance and Replacement (O,M&R) activities

to continue to remove aluminum as a pollutant from the water resource. Financial assistance for O,M&R will come from Growing Greener, Section 319 Nonpoint Source, CFA, Pennvest and SMCRA funding sources.

1.11 Annually, through load-reduction efforts with the current operational passive treatment systems, 9,000,000 lbs. of Acidity will continue to be reduced from the non-point source pollutant stream each year.

The continued reduction of Acidity from the Waters of the Commonwealth is a collaborative effort from all entities engaged in the abatement of AMD. Pennsylvania's DEP in association with the Department of Interior's Office of Surface Mine Reclamation and Watershed groups, County Conservation Districts, Conservation groups and other non-profit and for profit groups will continue to provide Operation, Maintenance and Replacement (O,M&R) activities to continue to remove acidity as a pollutant from the water resource. Financial assistance for O,M&R will come from Growing Greener, Section 319 Nonpoint Source, CFA, Pennvest and SMCRA funding sources.

1.12 Annually, through load-reduction efforts with state operated active treatment systems, 750,000 lbs. of Iron will continue to be reduced from the non-point source pollutant stream each year.

Pennsylvania DEP, Bureau of Conservation and Restoration, is responsible for active treatments plants that are providing the continued reduction of Iron from the Waters of the Commonwealth. AMD Set-Aside funds will be used to provide Operation, Maintenance and Replacement (O,M&R) activities to continue to remove iron as a pollutant from the water resource.

1.13 Annually, through load-reduction efforts with state operated active treatment systems, 150,000 lbs of aluminum will continue to be reduced from the non-point source pollutant stream each year.

Pennsylvania DEP, Bureau of Conservation and Restoration, is responsible for active treatments plants that are providing the continued reduction of Aluminum from the Waters of the Commonwealth. AMD Set-Aside funds will be used to provide Operation, Maintenance and Replacement (O,M&R) activities to continue to remove iron as a pollutant from the water resource.

1.14 Annually, through load-reduction efforts with state operated active treatment systems, 6,500,000 lbs. of Acidity will continue to be reduced from the non-point source pollutant stream each year.

Pennsylvania DEP, Bureau of Conservation and Restoration, is responsible for active treatments plants that are providing the continued reduction of Acidity from the Waters of the Commonwealth. AMD Set-Aside funds will be used to provide Operation, Maintenance and Replacement (O,M&R) activities to continue to remove iron as a pollutant from the water resource.

1.15 Annually, through load-reduction efforts with state operated active and passive treatment systems, 8 billion gallons per year (BGY) of water will be treated reducing non-point source pollutant entering Waters of the Commonwealth each year.

Pennsylvania DEP, Bureau of Conservation and Restoration, is responsible for active treatments plants and 46 passive treatment systems that are treating 8 BGY of AMD affected water. AMD Set-Aside funds will be used to provide Operation, Maintenance and Replacement (O,M&R) activities to continue to treat the water.

Goal 2: Improve and protect the Waters of the Commonwealth from non-point source pollution associated with Agricultural activities.

Objectives and strategies to Meet Goal 2:

2.1 Implement the Regional Agricultural Watershed Assessment Program in 15 ag-impaired watersheds within the next 5 years.

As Pennsylvania continues to develop and implement a strategy of targeted watershed compliance, 15 watersheds throughout the state will be selected for targeted compliance work. This work will involve the performance of Compliance Inspections on each farm in the targeted watershed with the intent of identifying significant negative environmental impacts and addressing those impacts through voluntary compliance or, if necessary, through enforcement of existing regulations.

2.2 Conduct inspections on 350 CAFO operations in the Commonwealth within the next five years.

The DEPs existing organizational structure provides for the implementation of the portion of the National Pollution Discharge Elimination System (NPDES) aimed at limiting discharges from point sources identified as CAFOs. In the process of implementing this program, each CAFO operator will be encouraged to continue to perform routine self-inspections and submit reports documenting the findings of those self-inspections.

2.3 Implement BMPs on 50 agricultural operations per year using state directed funds. These BMPs will be for the mitigation of soil loss and/or wise management of nutrients.

A myriad of programs and partners are actively engaged in the performance of resource conservation work on farms in the Commonwealth of Pennsylvania. To accomplish the above stated Objective, the DEP, SCC, PACD, CDs, and certain watershed associations will partner to provide technical and financial assistance to farmers to perform work such as barnyard stabilization, stream bank stabilization, the installation of manure storage facilities, the installation of other conservation practices (waterways, terraces and the like).

2.4 Support the review of 30 Nutrient Credit trade applications annually.

A Nutrient Credit Trading Program continues in Pennsylvania. This program continues to be an alternative means for members of the agricultural program to obtain funding once they have achieved a base-line of compliance with erosion control and nutrient management regulations on their property.

2.5 Conduct 2,000 agricultural compliance outreach/education visits on farms in the Chesapeake Bay watershed each year until all farms in the Chesapeake Bay watershed have been visited.

Pennsylvania, through a collaborative effort between the DEP and the CDs will continue to engage 100 farmers per county with the intent of providing education and encouragement for those farm operators to enter into voluntary compliance with existing state and federal regulations regarding erosion control and nutrient management. These 100 visits are separate from other CAFO inspections or inspections conducted for other purposes and will simply serve as an education and outreach effort, not as a compliance and enforcement effort.

2.6 Provide 6 FTEs under the PACD TAG Grant for designing and installing Ag BMPs.

The PACD Engineering Technical Assistance Grant (TAG) program, in conjunction with NRCS technical assistance funding, was started in 2001 and has since been providing engineering technical assistance to members of the conservation community including watershed organizations, county conservation districts, 501(c) 3 non-profit organizations, municipalities, and educational institutions. The purpose of this grant is to provide high level engineering technical assistance to our conservation partners such as conservation districts, RC&Ds, watershed organizations and other conservation partners to develop or implement a watershed assessment, watershed restoration

plan, watershed protection plan, conservation plan or comprehensive nutrient management plan.

2.7 Support a minimum of 35 Chesapeake Bay Program Agricultural Technicians and 4 Agricultural Engineers in the Chesapeake Bay watershed each year for the next five years.

Technicians and Engineers embedded in Conservation District offices perform a variety of necessary and effective work to limit soil loss and the improper use of nutrients on farms. Pennsylvania, through the continued implementation of the Chesapeake Bay Program will continue to support, over the next five years, these Technicians and Engineers.

2.8 Provide support for the implementation of five innovative environmental technology projects (focused on agriculture) within the next five years.

Pennsylvania recognizes the significant progress we can make in addressing NPS pollution through the use and encouragement of innovative technologies and practices. To that end, we facilitate discussions and encourage and support where possible the implementation of these types of activities throughout the Commonwealth. Funding reductions to state programs in the recent past have slowed down the rate of implementation of these innovative technologies but with the assistance of private funding sources and the federal Conservation Innovation Grants program, several projects a year continue to be implemented to address some of our more difficult issues such as localized and regional nutrient imbalances.

2.9 Support the certification of 600 certified manure haulers within the Commonwealth annually.

Created under Act 49 of 2004, (the Commercial Manure Hauler and Broker Certification Act) the Commercial Manure Hauler and Broker Certification Program requires all owners and employees of a commercial manure hauler or broker business, that commercially haul, land-apply, or broker manure in Pennsylvania to hold a valid certificate issued by the Pennsylvania Department of Agriculture (PDA) in order to provide their services in Pennsylvania. The intent of this regulatory program is to ensure that manure generated by agricultural operations is transported and applied in an environmentally safe manner. Commercial manure haulers or brokers handling or applying manure on behalf of agricultural operations in Pennsylvania must do so according to state environmental laws and this certification program ensures that these commercial haulers and brokers are fully aware of and can follow the state's nutrient management, erosion control and related environmental and road usage laws.

2.10 Support the certification of 300 certified Nutrient Management Specialists within the Commonwealth annually.

Created under Act 38 of 2005, the Nutrient Management Program, administered by the State Conservation Commission (Commission), requires certain agricultural operations to develop a nutrient management plan following nutrient management planning criteria established under Act 38. Act 38 requires that a trained and certified Nutrient Management Specialist develop the nutrient management plan in order to ensure that farm specific nutrient management plans written for farms falling under Act 38 are completed in compliance with state environmental laws. The PDA is mandated under Act 38 to administer the nutrient management certification program. The requirements for the Nutrient Management Certification Program are created by regulation establishing nutrient management specialist categories (commercial, public and individual); training and examination requirements and planning requirements that demonstrate a person's competency in developing or reviewing nutrient management plans.

2.11 Maintain the implementation of approved Act 38 Nutrient Management Plans on 300,000 acres of farmland regulated as CAOs and CAFOs each year for the next five years.

Pennsylvania's Nutrient Management Law and CAFO program requires high density and larger animal operations in the state to develop and implement an approved nutrient management plan. This required planning integrates the selected manure, fertilizer and green manure crop management options into a nutrient management plan that has a one to three year lifespan. The plan developed according to state regulations involves inventorying farm conditions and operations, and allocating nutrient sources to the fields based on farmer specifications, field conditions, operational feasibilities and regulatory criteria. Required plan implementation represents the day-to-day activities carried out by the farmer to execute the decisions made in the plan. Conservation Districts and DEP assess the farmers' actions to implement the plan and direct the farmer to make necessary changes in order to meet state required nutrient management laws. The number of acres covered under these approved plans does not change significantly from year to year as the acres farmed by CAOs and CAFOs in the state have stayed relatively stable over time.

2.12 Establish a baseline number of non-CAO/non-CAFO farmed-acres under an NMP or MMP by the end of FFY 2015 and increase the number of farm acres by 5% annually.

In association with the program's goal of establishing a framework to track NMPs and MMPs developed for farms not regulated as CAOs or CAFOs. Pennsylvania, through the DEP, will track and establish a baseline number of acres covered under an NMP or MMP that are not already accounted for in the state's CAO and CAFO tracking efforts.

Once this baseline number is established, the DEP will support outreach and compliance related activities expected to result in a 5% annual increase in the number of non-CAO/non-CAFO farm acres under an NMP or MMP.

2.13 Continue to encourage the use of the PA One Stop program such that the number of fields entered into that system increase by 10% each year over the next five years.

PA One Stop is a progressive effort occurring in Pennsylvania and represents a collaboration between the Department of Environmental Protection and Penn State University. This project provides conservation and nutrient management planning opportunities to farm operators through the World Wide Web. Farmers, and other interested individuals can log onto PA One Stop and enter the necessary information to create their own Ag E&S Plan or Manure Management Plan. Pennsylvania intends to see the use of this on-line tool increase incrementally by 10% each year for the next five years. This objective will be accomplished through continued education and outreach efforts performed by many partners (including PSU, DEP, SCC, CDs, and NRCS).

Goal 3: Improve and protect the Waters of the Commonwealth from non-point source pollution associated with stormwater run-off, as well as streambank and shoreline degradation.

Objectives and strategies to accomplish Goal 3:

3.1 Conduct 11,000 site inspections under the Chapter 102 and Chapter 105 programs annually for the next five years.

Pennsylvania, through the implementation of the Chapter 102 and Chapter 105 programs and will conduct 11,000 inspections on earth disturbance sites each year for the next five years. These inspections may be carried out by employees of delegated County Conservation Districts. These inspections may be routine partial inspections, follow-up inspections, response to complaints received by the Department or delegated conservation districts and performed to ensure that activities regulated by Chapter 102 and Chapter 105 are being conducted in accordance with those regulations and in a manner that minimizes NPS pollution impacts to the waters of the Commonwealth.

3.2 Continue to implement the MS4 program through oversight and verification that MS4 communities abide by their permit requirements.

Municipal Separate Storm Sewer Systems (MS4's) are stormwater conveyance systems comprised of roads, ditches, pipes, and other means of conveyance which have been designed or otherwise do

engage in the transport and discharge of stormwater. Municipalities which own MS4s may be required to obtain a permit or permit waiver. The Bureau of Point and Non-point Source Management in Pennsylvania's DEP is responsible for the oversight of this program. As such, annual review of reports submitted by MS4's is conducted. Further inspections are conducted by DEP's regional offices to determine whether or not a municipality categorized as an MS4 is meeting its permit requirements. The link below will provide additional information on this program.

http://www.portal.state.pa.us/portal/server.pt/community/municipal_stormwater/21380

3.3 Continue to administer the Act 167 program directing counties to obtain and implement county wide stormwater management plans.

Act 167 requires counties to prepare and adopt a watershed based stormwater management plan for each watershed within its boundaries. The responsibility for implementing this program is placed on the Bureau of Point and Non-Point Source Management who then coordinates with DEP regional offices for enforcement of this legislation. Over the past five years significant progress was made at achieving compliance with this legislation in the North West Regional Office (NWRO). The DEP will, over the course of the next five years, continue to work with County governments to achieve additional compliance. The link below will provide additional information on this program.

http://www.portal.state.pa.us/portal/server.pt/community/act_167/21378

3.4 Implement 40 new, state-funded stream restoration and/or stormwater management projects annually for the next five years.

Stream restoration projects are implemented by a number of partners. Often times, each individual project is the result of a collaborative effort between NGOs such as local watershed associations, state government entities such as the Department of Conservation of Natural Resources (DCNR), Commonwealth Finance Authority (CFA), DEP, federal entities such as the EPA and NRCS, colleges and universities. Pennsylvania will strive to implement 40 new stream-restoration projects per year for the next five years through the dissemination of funds and partnering with the aforementioned entities. Pennsylvania will encourage these projects through E&O efforts, permitting, collaboration with CDs, implementation of WIPs and other such efforts.

3.5 Address 500 new DGLV Road sites each year for the next five years.

Through the continued implementation of the Dirt, Gravel, and Low Volume Roads program, which includes partnering with local government entities, County Conservation Districts, and DEP Pennsylvania will continue to address NPS pollution originating from dirt, gravel, and low volume roads. This program includes a significant education and outreach program (eg: ESM Training), technological developments (eg: use of DSA and other such materials) as well as on-the-ground implementation of certain maintenance-focused BMPs.

3.6 Support, using state managed funds, the completion of 15 miles of stream restoration and/or bank stabilization projects over the next five years.

Pennsylvania will leverage through the partnering-web a significant amount of funds for the purpose of streambank stabilization and stream restoration work. Many partners are involved with stream improvement work, such partners include: Fish and Boat Commission, DCNR, numerous Watershed Associations, NGOs, the DEP, County Conservation Districts, CFA, local government entities and others. Funds commonly come in the form of grants which originate at either the Federal of State level. These funds are multiplied through match-contributions. Streambank stabilization and stream restoration work leverages financial assistance and technical assistance while providing pollutant load reductions, education, and outreach efforts.

3.7 Statewide, enroll 50,000 acres of new land in the CREP program over next five years.

The Conservation Reserve Enhancement Program (CREP) is a program requiring the involvement of local, state and federal partners. This program involves the leveraging of Federal funds and the coordination between NRCS, County Conservation Districts, DEP and a willingness on the part of private land owners. Through the continued and potentially increased implementation of this program, Pennsylvania will protect and restore water quality through the construction of riparian buffers.

3.8 Plant and protect 5,000 acres of riparian forest buffer over the next five years.

Through the implementation of the CREP program and similar support programs, Pennsylvania will strive to construct 1,000 acres of new riparian forest buffer each year for the next five years. Further, through the implementation of these programs many other unaccounted for existing forested riparian acres will be preserved.

3.9 Through a forest land-owner stewardship program, develop 30 new plans annually addressing approximately 5,000 new acres of privately owned forest land each year for the next five years.

Pennsylvania, through the efforts of the DCNR will continue to implement a forest stewardship program aimed at conservation-minded forest resource management. This program will work with private landowners and encourage those land owners to obtain and implement forest stewardship plans.

3.10 Plant 10,000 new trees under the TreeVitalize program each year for the next five years.

TreeViatlize continues to be an active and vital program in Pennsylvania's plan to address non-point source pollution. Through the efforts of those involved with this program thousands of trees will be planted near streams and creeks providing shade and mitigation of thermal pollution while decreasing stormwater volume and the destabilization of stream banks.

3.11 Encourage NPS pollution control activities within US Forest Service selected priority watersheds identified under the USFS Watershed Condition Framework within the borders of the Allegheny National Forest (ANF) to the extent that these priority "Functioning at Risk" watersheds within the ANF may be re-categorized as "Functioning Properly."

The USFS Watershed Condition Framework identified two "Functioning at Risk" watersheds within the ANF as priority watersheds for restoration. Those watersheds are the Sugar Run (predominantly McKean County) and Bear Creek (predominantly Elk County). The NPS issues of concern include habitat fragmentation due to passage barriers (culvert crossings), lack of sufficient large wood in streams, non-native plants, water quality including acidic pH levels, and sedimentation from stream crossings and potentially other sources.

Goal 4: Verify the efficacy of Pennsylvania's non-point source pollution management efforts through enhanced data collection.

Objectives and strategies to Accomplish Goal 4:

4.1 Establish a process to collect BMP data at the state, watershed and sub-watershed level.

Pennsylvania's Nonpoint Source Program has struggled in collecting comprehensive data identifying the nonpoint source related BMPs that are being implemented across the Commonwealth. This problem is especially true as we look to collect data at the sub-watershed level where the water quality results of stream and lake restoration work can be realized in a shorter timeframe. This effort will include working with our local, state and federal partners to develop processes and

mechanisms that can be used to collect and report this data to better demonstrate the progress Pennsylvania is making in addressing nonpoint source stream and lake impairments.

4.2 Further develop and maintain PA One Stop to allow the NPS Program to collect the number of acres planned through the use of this tool and to spatially summarize data by watershed.

The PA One Stop planning tool is proving to be a valuable resource to help the agricultural community recognize resource concerns on farms and BMPs that could be used to address those concerns. This tool will be relied upon by individuals in the agricultural community to help meet regulatory compliance with Pennsylvania's Erosion and Sedimentation Control regulations and Manure Management regulations. Tracking the progress of the implementation of the use of this planning tool will support the Commonwealth's efforts to demonstrate industry compliance with these environmental regulations.

4.3 Continue to develop and improve our Reclaimed Abandoned Mine Land Inventory System (RAMLIS) GIS Tool.

Every year a new version of RAMLIS will be developed and released by EPCAMR. All GIS data is refreshed annually and the most recent version of GIS is used. Also the Abandoned Mine Land Inventory Sites (AMLIS) will be updated by Pennsylvania DEP Bureau of Mining and Reclamation to be used in the updated version.

4.4 Ensure that the Datashed GIS web tool adequately describes available information relating to the approximate 300 AMD Treatment Systems sites that are treating mine discharges across Pennsylvania, and ensure that access to this information is available to the public.

Pennsylvania DEP will continue to work with the site's administrator, which at this time is Stream Restoration Inc., to ensure the site is continually functional. DEP will continue to share sampling results with the public and will encourage watershed group's to input data. Through a recent policy revision it is now a requirement for all group's that construct passive treatment systems using Growing Greener funds to submit an AMD Treatment System Form that will be sent to the Datashed administrator for input into the system.

4.5 Through the implementation and maintenance of the Water Quality Monitoring Network (WQN), water quality field observations and data collection will occur on 173 monitoring sites each year over the next five years.

Tasked with assessing the water quality of Pennsylvania's 86,000 stream miles every other year, the DEP will maintain the Water Quality Network (WQN). The WQN is, a network of monitoring sites (focused

on biology, pathogens, chemistry or physical habitat characteristics). The WQN is composed of approximately 173 sites. To further bolster the monitoring and data collection efforts of Pennsylvania, the DEP contracts with the SRBC and the USGS to collect water chemistry data as part of the Water Quality Network monitoring. In total, over 1,100 sites are monitored annually.

4.6 In addition to other monitoring efforts, the DEP will monitor 20 lakes each year for the next five years.

Monitoring is an activity that is performed by many NPS Program partners in Pennsylvania such as the Senior Environmental Corps, schools, conservation districts, private businesses, and state and federally funded grantees. Further, state agencies other than DEP also perform monitoring. Given the variety of entities involved with monitoring, the variety of monitoring schedules and differences in purpose and techniques it is more reasonable for the DEP to track monitoring performed by DEP only while still acknowledging and, when appropriate engaging in bi-lateral sharing of data produced from the other entities carrying out monitoring efforts. DEP monitoring sites are selected to best assess water resources across the Commonwealth recognizing our limited staffing and funding available for this activity. The data obtained helps direct resource protection and restoration efforts and is used to support the development of the bi-annual Pennsylvania Integrated Water Quality and Monitoring Report.

4.7 Through monitoring and assessment efforts conducted by the DEP, 60 miles of streams previously impacted by NPS related causes shall be documented as newly delisted from Category 5 and/or Category 4a in the bi-annual Pennsylvania Integrated Water Quality and Monitoring Report.

Pennsylvania's NPS program partners throughout the Commonwealth implement restoration initiatives throughout Pennsylvania in order to improve water quality and restore our impaired stream reaches. DEP is informed by staff at the county conservation districts and many of our other NPS Program partners when they have observed conditions or performed preliminary testing that leads them to believe that the particular stream reach is no longer impaired or is significantly improved. At that time, and as resources permit, DEP dispatches biologists out to those sites to determine the impairment or attainment status of the stream reach and provide any updated stream quality information for inclusion in the next publication of the Pennsylvania Integrated Water Quality and Monitoring Report.

4.8 Through monitoring and assessment efforts conducted by the DEP, 1,500 lake acres previously impacted by NPS related causes shall be documented as newly delisted from Category 5 or Category 4a over the next five years.

Pennsylvania's NPS program partners throughout the Commonwealth implement restoration initiatives throughout Pennsylvania in order to improve water quality and restore our impaired lakes. DEP is informed by staff at the county conservation districts and many of our other NPS Program partners when they have observed conditions or performed preliminary testing that leads them to believe that the particular lake is no longer impaired or is significantly improved. At that time, and as resources permit, DEP will dispatch biologists out to those sites to determine the impairment or attainment status of the lake and provide any updated lake quality information for inclusion in the next publication of the Pennsylvania Integrated Water Quality and Monitoring Report.

4.9 Implement grant funded projects designed to determine BMP effectiveness on at least three priority watersheds.

Pennsylvania has committed support, using EPA provided NPS program funds, to a new effort to monitor stream segments expected to be impacted by BMPs implemented under the USDA National Water Quality Initiative (NWQI). This effort allows the Commonwealth to measure the effectiveness of practices installed in these watershed areas. In addition DEP is carrying out other monitoring efforts on additional areas expected to be improved by the implementation of water quality related BMPs such as riparian buffers, in order to document the improvements associated with the implementation of these practices.

4.10 Within the next five years, establish a process to input all monitoring data collected by the PA DEP NPS Program into STORET.

The STORET (short for STOrage and RETrieval) Data Warehouse is a repository for water quality, biological, and physical data and is used by state environmental agencies, EPA and other federal agencies, universities and private citizens. Pennsylvania's NPS program collects data relating to water quality on important and priority streams and lakes throughout the Commonwealth. State program staff will enter that information into STORET in order to allow for more ready access to that information.

4.11 Annually, through state-wide NPS pollutant load-reduction efforts, 850,000 lbs. of Nitrogen will be reduced from the non-point source pollutant stream each year.

The PA NPS program initiated an effort in 2013 to collect statewide aggregated BMP data annually from over 15 state and federal programs supporting the implementation of BMPs throughout the Commonwealth. Through the assistance of Penn State a process was developed to calculation expected nutrient savings that can be attributed to the implemented BMPs reported to us annually. This process is expected to show that Pennsylvania is newly removing an additional 1,000,000lbs of Nitrogen a year from streams and lakes within the Commonwealth. Recognizing the inability of the program staff to collect all BMP activities implemented throughout the Commonwealth, these estimates are recognized as under reporting the annualized loading reductions occurring in Pennsylvania.

4.12 Annually, through state-wide load-reduction efforts, 50,000 lbs. of Phosphorus will be reduced from the non-point source pollutant stream each year.

The PA NPS program initiated an effort in 2013 to collect statewide aggregated BMP data annually from over 15 state and federal programs supporting the implementation of BMPs throughout the Commonwealth. Through the assistance of Penn State a process was developed to calculation expected nutrient savings that can be attributed to the implemented BMPs reported to us annually. This process is expected to show that Pennsylvania is newly removing an additional 50,000 lbs. of Phosphorus a year from streams and lakes within the Commonwealth. Recognizing the inability of the program staff to collect all BMP activities implemented throughout the Commonwealth, these estimates are recognized as under reporting the annualized loading reductions occurring in Pennsylvania.

4.13 Annually, through state-wide load-reduction efforts, 15,000 tons of sediment will be reduced from the non-point source pollutant stream each year.

The PA NPS program initiated an effort in 2013 to collect statewide aggregated BMP data annually from over 15 state and federal programs supporting the implementation of BMPs throughout the Commonwealth. Through the assistance of Penn State a process was developed to calculation expected sediment load reductions that can be attributed to the implemented BMPs reported to us annually. This process is expected to show that Pennsylvania is newly removing an additional 15,000 tons of sediment a year from streams and lakes within the Commonwealth. Recognizing the inability of the program staff to collect all BMP activities implemented throughout the Commonwealth, these estimates are recognized as under reporting the annualized loading reductions occurring in Pennsylvania.

4.14 Prevent waterbodies currently not listed as impaired for the aquatic life use designation from being listed as impaired for that designated use through implementation of existing regulatory programs.

Pennsylvania has rigorous and comprehensive regulatory programs addressing activities known to produce nonpoint source pollution. These programs address activities such as resource extraction, earth moving, post construction stormwater, agricultural activities and construction activities adjacent to or within streams. These regulations are enhanced on our identified special protection waters. These regulatory programs are continually being refined to better address the changing nature of the industries associated with these activities. The PA DEP has implemented new initiatives including the Regional Agricultural Watershed Assessment Program (RAWAPI) to ensure that regulated communities are aware of their statutory obligations and are following through as required.

4.15 Establish a data collection framework by which information regarding the obtainment of nutrient and manure management plans (NMPs/MMPs) on non-CAO/non-CAFO farms is collected and counted in terms of acres covered or farms planned.

Currently, Pennsylvania requires all livestock farms and farms using manure as a nutrient source, to obtain either an NMP or MMP depending on certain specific factors of the agricultural operation. This includes farms that do not fall into the category or a CAO or CAFO. At the time of the development of this management plan, there is no process available to collect data on the number of farms or acres of these non-CAO/non-CAFO farms covered under these plans. Pennsylvania, through the efforts of the DEP, will strive to create a system by which the acres covered by these non-CAO/non-CAFO nutrient or manure management plans (and other similar plans) will be tracked.

4.16 DEP will develop a process to collect and report on the amount of biosolids land applied following the water quality criteria established under DEP's Municipal Waste regulations.

Pennsylvania, through the efforts of the Bureau of Point and Non-point Source Pollution will continue to implement a regulatory program (including permitting and inspections) which will regulate the safe land-application of bio-solids. Where applicable, the Department attempts to maximize the beneficial use of sewage sludge by land application pursuant to the Department's Bureau of Waste Management Municipal Waste regulations. There currently is no consistent process to collect and report on the amount of biosolids applied statewide to the land under the state's general permitting requirements. Efforts will be taken by the Department to establish a consistent process to collect and report on this information.

Goal 5: Demonstrate Pennsylvania's non-point source pollution management efforts through enhanced data dissemination efforts.

Objectives and strategies to accomplish Goal 5:

5.1 Annually provide a clear and concise report to the EPA, the general public, regulators, partners and others interested in Pennsylvania's NPS pollution abatement efforts outlining the major accomplishments of Pennsylvania's NPS Program consistent with EPA reporting guidelines.

By July 1 of each year, PA DEP will, with the assistance of many NPS program partners, prepare an annual report describing the reported major accomplishments of the NPS Program in Pennsylvania. This report will include a brief description of restored and improved waters and will provide a brief summary of information contained in the most recent Pennsylvania Integrated Water quality and Monitoring Report. While it is understood that this report will not truly be comprehensive, far too many projects occur in Pennsylvania to truly account for every NPS related activity that occurs in one fiscal year and not all information available is made available to the PA DEP NPS Program. Regardless, this Annual Report will include all load reductions accounted for as well as certain notable efforts to address and mitigate NPS pollutants.

5.2 Develop 2 success stories per year.

Pennsylvania DEP, watershed associations, County Conservation Districts, and other partners, will focus on describing in detail to EPA guidance specification, activities that took place in at least two watersheds each year that have achieved "restored" or "significantly improved" status as a result of NPS pollutant load reduction and resource protection and restoration efforts. These "Success Stories" will be reported on annually in the Annual Report and separately to EPA consistent with EPA guidance relating to reporting success stories.

5.3 Provide detailed BMP implementation reporting on 10 approved WIPs per year.

Each year, as part of the Annual Report, the DEP will provide a detailed report on the progress of achieving implementation of at least ten of the 35 WIPs currently approved by EPA in Pennsylvania.

5.4 Implement the identified BMPs expected to restore four sub-watersheds included within §319 approved WIPs by the end of the 2019 Federal Fiscal Year. (Achievement of this goal may be measured against full implementation of the BMPs listed in the select sub-watersheds included in §319 approved WIPs).

Throughout the next five years the DEP will continue to collaborate with partnering entities focused on the implementation of BMPs included in §319 WIPs. The DEP will prioritize these four select sub-watersheds and track progress with respect to the completion of the BMPs included in the WIPs developed for these areas with the intent of implementing the identified BMPs by the end of FFY 2019.

5.5 Fully implement the BMPs expected to restore three select watersheds supported under Pennsylvania's Growing Greener Program's Renaissance Initiative by the end of the 2019 Federal Fiscal Year.

The DEP will continue to implement the Renaissance Initiative *under the commonwealth's Growing Greener grant program. This initiative provides a commitment by the commonwealth to support the full implementation of BMPs necessary to restore identified watersheds within a relatively short timeframe. Through this program, over the next five years, the DEP will support the implementation of the BMPs that have been determined necessary to restore three watersheds.*

5.6 Document farmer compliance with agricultural erosion and sedimentation control and manure management regulations in 15 watersheds by the end of the 2019 Federal Fiscal Year.

As the DEP continues to collaborate with the agricultural community and the various partners engaged in resource conservation on agricultural operations, the DEP will verify or otherwise ensure that every farm in 15 select priority watersheds throughout the commonwealth are operating in compliance with the Commonwealth's erosion and sedimentation control and nutrient management regulations (as those regulations pertain to agricultural operations).

5.7 Report semi-annually on progress on implementing the active Section 319 grant work plans ensuring status reports are current for at least 90% of the active grant projects in the GRTS database.

Pennsylvania will continue to report semi-annually (due dates January 31st and July 31st) on the progress the Commonwealth is making in implementing the active projects within the approved §319 grant work plans. The program staff at PA DEP will continue to input the required project reports into the GRTS database system to allow for easy access and monitoring of the program activities by our EPA Section 319 Program Project Officer and other interested parties.

5.8 Complete Watershed Plan Tracker (WPT) data entry for all active WIPs by the end of 2017. The DEP will continue to input current information in the WPT throughout the five year life of this Plan to ensure accuracy of data.

Pennsylvania continues to be a leader in working with EPA Region 3 staff to fully populate the Watershed Plan Tracker tool developed by EPA. PA DEP program staff worked with EPA Region 3 staff and a contracted agent to support the full implementation of this tool intended to track progress in meeting the goals of the EPA approved Watershed Implementation Plans and TMDLs. PA DEP will continue to dedicate staff to support this effort and participate in regional and national meetings associated with this effort.

The Big Ten

The Department of Environmental Protection has traditionally reported on approximately one third of the WIP watersheds located within the boarders of the Commonwealth in this Annual Report. While ten watersheds is not exactly one third (there are 35 WIP watersheds in PA), reporting on ten watersheds annually provides Pennsylvania an opportunity to highlight the work being done and progress being made in a reasonable amount of these watersheds. To minimize any sort of bias that might exist in reporting of this nature, the DEP strives to report on these watersheds in sequence and with relative equality between watersheds impacted by abandoned mine drainage and those impacted by other forms of NPS pollution.

Every year, the Bureau of Conservation and Restoration, as the spearhead of Pennsylvania's NPS pollution management program, selects ten watersheds from the 35 WIP watersheds to be highlighted in this Annual Report. These watersheds, the "Big Ten" watersheds, represent an accurate and complete **cross section of the Section 319 funded work** that is performed in Pennsylvania. In choosing these watersheds, consideration was given to the **type of land use** found in the watershed, the dominant **sources of pollution** and **pollutant types** found in the watersheds as well as the **geographic location** of the watersheds. As always, it was the goal of BCR, for the purposes of this report, to represent the six different DEP regions and to provide a detailed glimpse at the work performed to abate NPS pollutants originating from **Abandoned Mind Drainage**, **Urban Stormwater**, and **Agriculture**. This year's Big Ten includes: The West Branch of the Antietam, the Little Wiconisco Creek, the South Branch of Plum Creek, Abrahams Creek (a tributary to Frances Slocum Lake), Upper Kishacoquillas Creek, Jacob's Creek, the Upper Schulkill River, Catawissa Creek, Upper Swatara Creek and Hubler Run.

West Branch Antietam

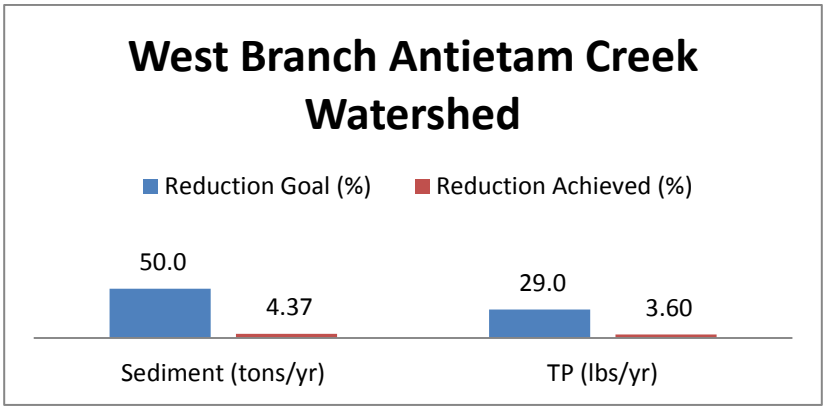
The West Branch Antietam Creek of Franklin County is a small agricultural watershed in south-central PA. The Antietam Creek is tributary to the Potomac River. The West Branch area is marked by small crop farms and livestock enterprises, woodlands, and growing development. In 2011 the PA DEP completed a TMDL for the West Branch Antietam Creek watershed. The primary goal of the TMDL is to establish quantifiable pollutant load reduction goals. The West Branch Antietam Creek TMDL sets goals for sediment. Prior to completion of the TMDL, a comprehensive watershed assessment was completed in 2008 by the Antietam Watershed Association (AWA) and partners for the West Branch. Most of the West Branch is 303(d) listed for sediment and nutrient related impairments due to agricultural sources. Multiple project sites are identified and prioritized for BMP

	Modeled Loads			Reduced Loads			Percent Reductions		
	Sed (ton)	TP (lb)	TN (lb)	Sed (ton)	TP (lb)	TN (lb)	Sed (%)	TP (%)	TN (%)
Base Model Runs (no BMPs)	8,817.0	13,417.6	244,540.5						
Runs with all BMPs	8,432.1	12,934.1	238,908.4	384.9	483.5	5,632.2	4.4	3.6	2.3

implementation that will help to meet the TMDL and WIP goals. Agricultural and stream restoration projects comprise the majority of project sites. **Currently partners are working with the USDA/FSA CREP program to install conservation practices, agricultural BMPs and to continue outreach to the agricultural communities throughout the watershed.** The Chesapeake Bay Foundation, Franklin County Conservation District, Antietam Watershed Association, USDA-NRCS and USDA-FSA, landowners and PA DEP are working together to improve water quality in this priority watershed.

Pollutant Load Reduction Goals and Achieved

As a percent (%) of total pollutant loads



BMP Goals and Accomplishments Table

West Branch Antietam Creek

Sub Watershed	BMP/Action	Goal Amount	Implemented Amount	% Action Implemented
West Trib #1 PA WBAC59260	Riparian Forest Buffer (ac)	16.10	0.00	0.0
	Stream Exclusion with Grazing Land Management (ft)	4,426.00	0.00	0.0
	Streambank & Shoreline Protection (ft)	2,827.00	0.00	0.0
	Stripcropping (ac)	12.50	0.00	0.0
	Wetland Restoration (ac)	2.60	0.00	0.0
West Trib #2 PA WBAC59264	Riparian Forest Buffer (ac)	24.00	0.00	0.0
	Stream Exclusion with Grazing Land Management (ft)	9,107.00	0.00	0.0
	Streambank & Shoreline Protection (ft)	10,109.00	0.00	0.0
	Wetland Restoration (ac)	6.60	0.00	0.0
Lower and Upper West Tribs #3 PA WBAC59267	Conservation Tillage (ac)	92.00	0.00	0.0
	Grazing Planned Systems (ac)	133.00	0.00	0.0
	Riparian Forest Buffer (ac)	118.00	0.00	0.0
	Stream Exclusion with Grazing Land Management (ft)	38,030.00	0.00	0.0
	Streambank & Shoreline Protection (ft)	34,465.00	0.00	0.0
	Terrace (ac)	20.00	0.00	0.0
	Wetland Restoration (ac)	3.00	0.00	0.0
Mainstem MontAlto, East Tribs #3 and #4 PA WBAC59281	Prescribed Grazing (ac)	9.00	0.00	0.0
	Riparian Forest Buffer (ac)	28.20	1.80	6.4
	Stream crossing (units)	1.00	0.00	0.0
	Stream Exclusion with Grazing Land Management (ft)	6,029.00	0.00	0.0
	Streambank & Shoreline Protection (ft)	7,395.00	0.00	0.0
	Terrace (ac)	128.00	0.00	0.0
	Wetland Restoration (ac)	17.60	0.00	0.0
Entire West Branch Antietam Creek PA WBACEntire	Conservation Plan (ac)		723.80	
	Grazing Planned Systems (ac)		19.40	
	Nutrient Management (ac)		280.00	
	Riparian Forest Buffer (ac)		1.80	
	Stream Channel Stabilization (ft)		1,730.00	
	Stream Exclusion with Grazing Land Management (ft)		1,500.00	
	Streambank & Shoreline Protection (ft)		3,095.00	
Mainstem Reaches, ET #1 and #2 PA WBACMainstem	Conservation Tillage (ac)	23.00	0.00	0.0
	Cover Crop (ac)	23.00	0.00	0.0
	Grazing Planned Systems (ac)	121.00	19.40	16.0
	Nutrient Management (ac)		280.00	
	Riparian Forest Buffer (ac)	114.40	23.09	20.2
	Stream Channel Stabilization (ft)		1,730.00	
	Stream Exclusion with Grazing Land Management (ft)	39,170.00	1,500.00	3.8
	Streambank & Shoreline Protection (ft)	44,640.00	3,095.00	6.9
	Terrace (ac)	83.00	0.00	0.0
	Waste Management System (units)		1.00	
	Waste Storage Facility (units)		1.00	
	Wetland Restoration (ac)	17.00	0.00	0.0

Little Wiconisco

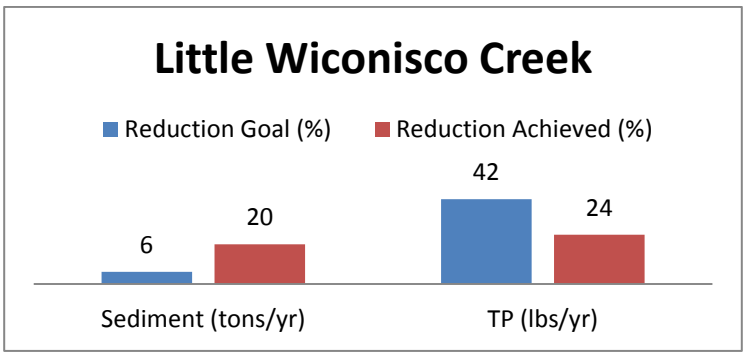
The Little Wiconisco Creek watershed is a tributary to the middle Susquehanna River in Dauphin County. The Dauphin County Conservation District and NRCS staff have been working with farmers in the watershed for many years and have been successful in getting conservation practices implemented. A TMDL for the Wiconisco Creek watershed, including some portions of the Little Wiconisco Creek, was developed for the PA DEP in March 2007 and approved by the EPA. Upon completing several Section 319 and Growing Greener funded agricultural BMP grants, the Dauphin County Conservation District drafted a

	Modeled Loads			Reduced Loads			Percent Reductions		
	Sed (ton)	TP (lb)	TN (lb)	Sed (ton)	TP (lb)	TN (lb)	Sed (%)	TP (%)	TN (%)
Base Model Run (no BMPs)	2,372.1	8,944.9	104,300.7						
Run with all BMPs	1,903.7	6,760.1	87,195.59	468.4	2,184.8	17,105.1	19.7	24.4	16.4

Watershed Implementation Plan (WIP) in May 2012. The WIP goal is to reduce sediment and phosphorus loadings to improve water quality especially in impaired stream reaches. A Quality Assurance Project Plan (QAPP) enabled the Dauphin County Conservation District to continue a very successful water quality monitoring initiative in the Little Wiconisco Creek and county-wide. **Significant sediment and nutrient load reductions have been achieved** and are expected to increase with continued Ag E&S and Manure Management Plan implementation. The current Section 319 NPS-funded Phase IV grant continues the long-term commitment to develop and implement conservation and nutrient management plans to meet baseline compliance and improve aquatic life uses.

Pollutant Load Reduction Goals and Achieved

As a percent (%) of total pollutant loads



BMP Goals and Accomplishments Table

South Branch Plum Creek

Sub Watershed	BMP/Action	Goal Amount	Implemented Amount	% Action Implemented
Little Wiconisco Creek - Attaining	Conservation Tillage (ac)	52.00	0.00	0.00
	Cover Crop (ac)	5.00	0.00	0.00
	Nutrient Management (ac)	672.00	0.00	0.00
	Planned Grazing System (ac)	104.00	0.00	0.00
	Riparian Forest Buffer (ac)	11.80	0.00	0.00
	Stream Exclusion with Grazing Land Management (ft)	5280.00	0.00	0.00
	Stripcropping (ac)	25.00	0.00	0.00
Little Wiconisco Creek-Entire	Animal Trails and Walkways (ft)		2924.00	
	Conservation Plan (ac)		979.60	
	Conservation Tillage (ac)		920.60	
	Cover Crop (ac)		14.90	
	Fence (ft)		2041.00	
	Grazing Planned Systems (ac)		966.00	
	Livestock Stream Crossing (units)		4.00	
	Nutrient Management (ac)		802.90	
	Riparian Forest Buffer (ac)		18.57	
	Streambank & Shoreline Protection (ft)		13139.00	
	Watering Facility (units)		1.00	
Little Wiconiscos Creek-Lower	Access Road (ft)		150.00	
	Animal Trails and Walkways (ft)		5674.00	
	Barnyard Runoff Management (ac)		1.00	
	Conservation Plan (ac)		215.70	
	Conservation Tillage (ac)	552.00	148.10	26.83
	Cover Crop (ac)	49.00	0.00	0.00
	Diversion (ft)		203.00	
	Fence (ft)		2041.00	
	Grassed Waterway (ft)		2144.90	
	Grazing Planned Systems (ac)	443.00	0.00	0.00
	Heavy Use Area Protection (ac)		0.20	
	Heavy Use Area Protection (units)		1.00	
	Livestock Stream Crossing (units)		5.00	
	Manure Transfer (units)		1.00	
	Nutrient Management (ac)	3837.00	0.00	0.00
	Pipeline (ft)		2300.00	
	Riparian Forest Buffer (ac)	50.90	0.70	1.38
	Roof Runoff Management (ft)		210.00	
	Stream Exclusion with Grazing Land Management (ft)	46992.00	5141.00	10.94
	Streambank & Shoreline Protection (ft)		10082.00	
	Stripcropping (ac)	260.00	0.00	0.00
	Subsurface Drain (ft)		4071.00	
	Tree/Shrub Establishment (ac)		3.00	
	Underground Outlet (ft)		560.00	
	Waste Management System (units)		2.00	
	Waste Storage Facility (units)		2.00	
	Watering Facility (units)		3.00	
Little Wiconisco Creek-Upper	Animal Trails and Walkways (ft)		249.00	
	Barnyard Runoff Management (units)		2.00	
	Conservation Plan (ac)		91.00	
	Conservation Tillage (ac)		1321.00	
	Cover Crop (ac)	55.00	46.30	84.18
	Filter Strip (ac)		0.10	
	Grassed Waterway (ac)		0.40	
	Grazing Planned Systems (ac)	353.00	0.00	0.00
	Heavy Use Area Protection (ac)		67.00	
	Lined Waterway or Outlet (ft)		100.00	
	Livestock Stream Crossing (units)		3.00	
	Nutrient Management (ac)	3613.00	1708.90	47.30
	Pasture & Hayland Management (ac)		319.00	
	Residue Management, No-till & Strip Till (ac)	628.00	14.90	2.37
	Riparian Forest Buffer (ac)	59.40	7.27	12.24
	Roof Runoff Management (ft)		280.00	
	Stream Exclusion with Grazing Land Management (ft)	31680.00	12574.00	39.69
	Streambank & Shoreline Protection (ft)		16057.00	
	Stripcropping (ac)	295.00	0.00	0.00
	Subsurface Drain (ft)		50.00	
	Tree/Shrub Establishment (ac)		2.80	
	Upland Wildlife Habitat Management (ac)		95.00	
	Waste Storage Facility (units)		1.00	
	Watering Facility (units)		1.00	

South Branch Plum Creek

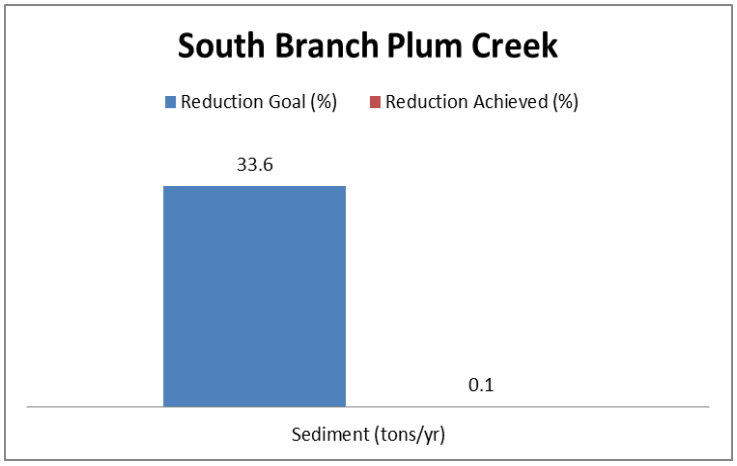
The South Branch Plum Creek is a small tributary to the Crooked Creek watershed, located in Indiana and Armstrong Counties in northwestern PA. A TMDL for the South Branch Plum Creek was completed in August 2011. The TMDL addresses sediment loadings from construction, grazing related agriculture and vegetation removal sources, while organic enrichment and low dissolved oxygen are attributable to on-site wastewater sources. A watershed implementation plan (WIP) was completed in 2010 by the Crooked Creek Watershed Association in partnership with the Indiana County Conservation District.

	Modeled Loads			Reduced Loads			Percent Reductions		
	Sed (ton)	TP (lb)	TN (lb)	Sed (ton)	TP (lb)	TN (lb)	Sed (%)	TP (%)	TN (%)
Base Model Run (no BMPs)	9,912.9	10,924.9	210,233.7						
Run with all BMPs	9,899.0	10,776.9	208,753.1	13.9	148.0	1,480.6	0.1	1.4	0.7

The goals of this WIP include the reduction of NPS pollutants from agricultural and stream bank erosion on well over 100 sites. The District is also working with township road departments to minimize the discharge of sediment from the many unimproved roads in the watershed. Manure management planning, Agricultural E&S Plan development, and BMP implementation funding was provided through the DEP Rapid Watershed Assessment (RWA) initiative. That effort focused on the Goose Run sub-basin. Additional Section 319 NPS funding is currently being used throughout the upper reaches of the watershed primarily dirt and gravel road improvements and on agricultural operations.

Pollutant Load Reduction Goals and Achieved

As a percent (%) of total pollutant loads



BMP Goals and Accomplishments Table

South Branch Plum Creek

Sub Watershed	BMP/Action	Goal Amount	Implemented Amount	% Action Implemented
Goose Run	Barnyard Runoff Management (units)	2.00	0.00	0.0
	Conservation Tillage (ac)	698.00	0.00	0.0
	Cover Crop (ac)	698.00	0.00	0.0
	Nutrient Management (ac)	520.00	0.00	0.0
	Planned Grazing System (ac)	68.00	0.00	0.0
	Stripcropping (ac)	31.00	0.00	0.0
	Waste Storage Facility (units)	2.00	0.00	0.0
Leisure Run	Livestock Stream Crossing (units)	8.00	4.00	50.0
	Nutrient Management (ac)		50.00	
	Road Ditch Creation/ Improvements (ft)	300.00	1,300.00	433.3
	Roof Runoff Management (ft)		100.00	
	Spring Development (units)	9.00	1.00	11.1
	Stream Channel Stabilization (ft)	8,976.00	0.00	0.0
	Stream Exclusion with Grazing Land Management (ft)	7,920.00	4,600.00	58.1
	Streambank & Shoreline Protection (ft)	11,088.00	125.00	1.1
	Structure for Water Control (units)		2.00	
	Surface Drainage, Main or Lateral (ft)	1,600.00	0.00	0.0
	Watering Facility (units)		2.00	
Mudlick Run	Conservation Tillage (ac)	23.00	0.00	0.0
	Cover Crop (ac)	23.00	0.00	0.0
	Riparian Forest Buffer (ft)	3,292.00	0.00	0.0
	Streambank & Shoreline Protection (ft)	3,292.00	0.00	0.0
	Stripcropping (ac)	23.00	0.00	0.0
Reddings Run	Barnyard Runoff Management (units)	4.00	0.00	0.0
	Conservation Tillage (ac)	165.00	0.00	0.0
	Cover Crop (ac)	165.00	0.00	0.0
	Nutrient Management (ac)	609.00	0.00	0.0
	Planned Grazing System (ac)	391.00	0.00	0.0
	Riparian Forest Buffer (ac)	55.00	0.00	0.0
	Road Ditch Creation/ Improvements (ft)	0.00	4,800.00	
	Spring Development (units)	5.00	1.00	20.0
	Stream Exclusion with Grazing Land Management (ft)	10,091.00	0.00	0.0
	Streambank & Shoreline Protection (ft)	11,752.00	0.00	0.0
	Structure for Water Control (units)		1.00	
	Waste Storage Facility (units)	1.00	0.00	0.0
	Watering Facility (units)	5.00	1.00	20.0
S. Br. Plum Main Stem and UNTs	Access Road (sq.ft.)		840.00	
	Barnyard Runoff Management (units)	5.00	0.00	0.0
	Conservation Tillage (ac)	2,585.00	0.00	0.0
	Cover Crop (ac)	2,506.00	0.00	0.0
	Fence (ft)	0.00	3,000.00	
	Heavy Use Area Protection (sq. ft.)	0.00	1,800.00	
	Livestock Stream Crossing (units)	11.00	3.00	27.3
	Nutrient Management (ac)	832.00	200.00	24.0
	Pipeline (ft)	0.00	300.00	
	Riparian Forest Buffer (ac)	81.00	0.00	0.0
	Road Ditch Creation/ Improvements (ft)	600.00	760.00	126.7
	Roof Runoff Management (ft)		124.00	
	Stream Exclusion with Grazing Land Management (ft)	9,360.00	2,380.00	25.4
	Streambank & Shoreline Protection (ft)	52,320.00	100.00	0.2
	Stripcropping (ac)	146.00	0.00	0.0
	Structure for Water Control (units)		1.00	
	Subsurface Drain (ft)	500.00	0.00	0.0
	Waste Storage Facility (units)	10.00	0.00	0.0
	Watering Facility (units)		1.00	
Sugercamp Run	Conservation Tillage (ac)	341.00	0.00	0.0
	Cover Crop (ac)	341.00	0.00	0.0
	Planned Grazing System (ac)	50.00	0.00	0.0
	Riparian Forest Buffer (ac)	53.00	0.00	0.0
	Stream Exclusion with Grazing Land Management (ft)	4,201.00	0.00	0.0
	Streambank & Shoreline Protection (ft)	25,960.00	0.00	0.0

Abrahams Creek and Frances Slocum Lake

The Abrahams Creek and Francis Slocum Lake watersheds are located in Luzerne County in northeastern PA. Frances Slocum Lake was designated as eutrophic in the early 1970s and became hyper-eutrophic by the early 1990's. Water quality assessments were completed in the mid-1990s using Section 319 NPS funding. Significant BMP implementation did not occur during that time. In an effort to increase BMP implementation and document needs, the Luzerne County Conservation District completed a watershed implementation plan (WIP) for the Abrahams Creek watershed upstream of and including Frances Slocum Lake in March

	Modeled Loads			Reduced Loads			Percent Reductions		
	Sed (ton)	TP (lb)	TN (lb)	Sed (ton)	TP (lb)	TN (lb)	Sed (%)	TP (%)	TN (%)
Base Model Run (no BMPs)	945.1	8515.3	57831.5						
Run with all BMPs and FWIs	441.5	3693.0	32451.4	503.6	4822.3	25380.1	53.3	56.6	43.9

2010. A goal was established in that WIP to reduce the amount of phosphorus entering the watershed from both upstream and in-lake sources. Reduction of phosphorus loads should attenuate eutrophication. Growing Greener grants were awarded to the Luzerne County Conservation District for the implementation of BMPs. Few projects have yet to be completed in the Abrahams Creek watershed under those Growing Greener grants. A FFY2015 Section 319 grant should provide for the installation of BMPs that will help reduce phosphorus in the lake. Interestingly, while few projects were constructed under previously

BMP Goals and Accomplishments Table

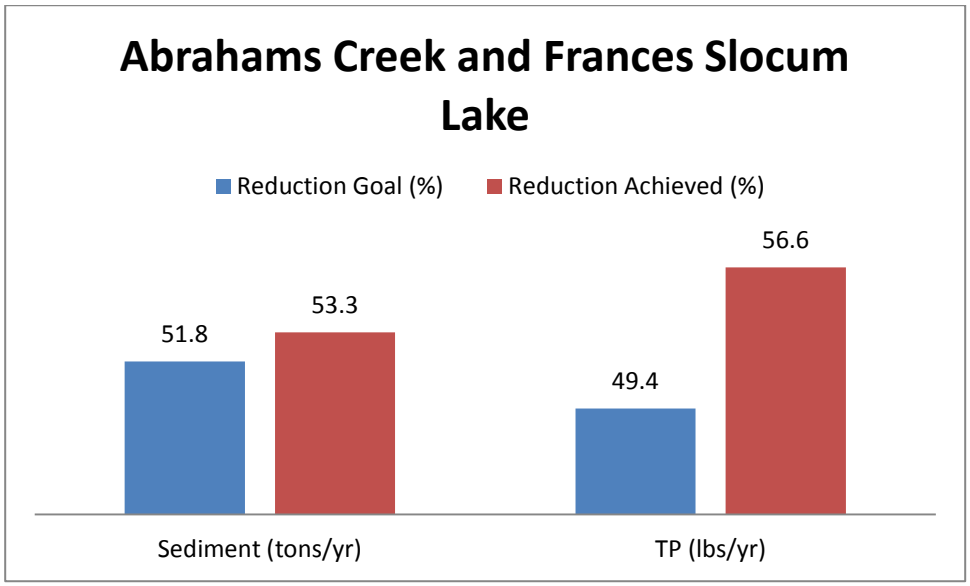
Abrahams Creek and Frances Slocum Lake

Sub Watershed	BMP/Action	Goal Amount	Implemented Amount	% Action Implemented
PA FSLKAbrahamsCR	Alternative Water Sources (ft)	1.00	0.00	0
	BMPs in MapShed model run thru 2014 (ac)	0.00	0.00	0
	Fence (ft)	0.00	0.00	0
	Floating Weltand Island (units)	0.00	2.00	
	Livestock Stream Crossing (units)	1.00	0.00	0
	Riparian Forest Buffer (ac)	1.20	0.00	0
	Road Ditch Creation/Improvements (ft)	1,500.00	0.00	0
	Stream Exclusion with Grazing Land Management (ft)	1,000.00	0.00	
	Streambank & Shoreline Protection (ft)	2,800.00	0.00	

issued Growing Greener grants and work has yet to begin under a FFY 2015 Section 319 Grant, modeled water quality improvements have been realized through intentional work performed in the lake, that is the installation of two floating wetland islands, as well as unintentional watershed improvements through the conversion of land from agricultural use to other land uses.

Pollutant Load Reduction Goals and Achieved

As a percent (%) of total pollutant loads



Upper Kishacoquillas Creek

The Upper Kishacoquillas Creek is located in an intensely farmed valley with highly productive soils. The "Upper Kish" flows into the Juniata River in the eastern part of Mifflin County. Most of the farmed acres in this watershed are dedicated to corn, small grain, legumes and grass. There are many dairy farms and a wide diversity of other types of farming operations, many of which are owned and operated by plain sect families. A significant portion of the Upper Kish is listed as impaired on the 303(d) list for nutrients and sediments originating from agricultural sources. This stream has been listed as impaired since it was first assessed in the late 1990's by the PA DEP. The Mifflin County Conservation District completed a watershed implementation plan (WIP) in 2005. That WIP includes the entire watershed upstream of Belleville, PA. The WIP identifies agricultural and stream bank restoration projects to reduce sediment and nutrient loadings. Subsequent to WIP approval, the PA DEP contracted with the Susquehanna River Basin Commission (SRBC) to develop the Kishacoquillas Creek TMDL which was completed in 2011. The TMDL provides load

	Modeled Loads			Reduced Loads			Percent Reductions		
	Sed (ton)	TP (lb)	TN (lb)	Sed (ton)	TP (lb)	TN (lb)	Sed (%)	TP (%)	TN (%)
Base Model Run (no BMPs)	**3,878.3**	**16,909.3**	**194,327.3**						
Run with all BMPs and FWIs	**2,943.1**	**12,151.4**	**155,181.8**	**935.2**	**4,757.9**	**39,145.5**	**24.1**	**28.1**	**20.0**

reduction goals for both sediment and phosphorus. Significant §319 NPS funding has been directed to this watershed through the conservation district and local entities both prior to and since completion of the WIP. The Penn State University, USDA-NRCS, PA Fish and Boat Commission and the Western PA Conservancy are working together to implement the WIP and the National Fish and Wildlife Foundation funded additional projects through the Chesapeake Bay Stewardship Fund. The Mifflin County Conservation District has taken the lead with the watershed restoration programs and deserves credit for successfully reaching out to agricultural communities in the Upper Kish Creek. Upper Kishacoquillas Creek WIP progress was previously included in the 2011 NPS Annual Report.

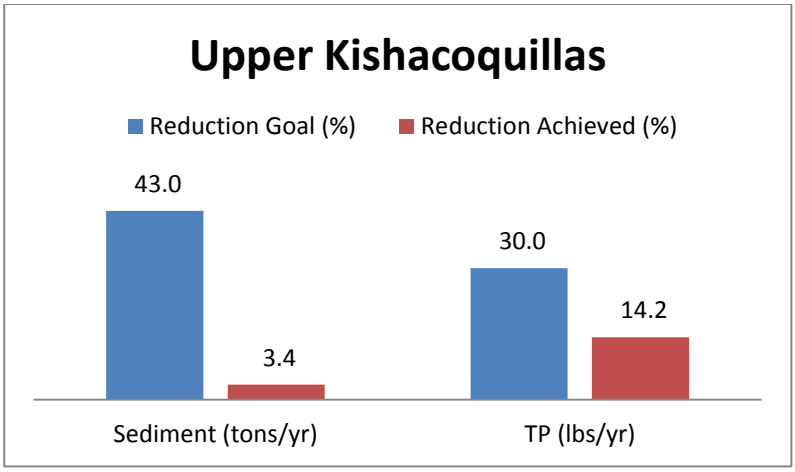
BMP Goals and Accomplishments Table

Upper Kishacoqillas Creek Watershed

Sub Watershed	BMP/Action	Goal Amount	Implemented Amount	% Action Implemented
Soft Run	Erosion and Sediment Control (ac)		0	
	Nutrient Management (ac)		0	
Upper Kish Creek Entire Watershed	Access Road (ft)		1,800.00	
	Animal Trails and Walkways (sq ft)		5,520.00	
	Barnyard Runoff Management (ac)		6.57	
	Conservation Crop Rotation (ac)	992.00	357.00	36.0
	Conservation Plan (ac)		392.00	
	Conservation Tillage (ac)	763.00	927.00	121.5
	Contour Farming (ac)	458.00	134.00	29.3
	Cover Crop (ac)	992.00	1,708.00	172.2
	Diversion (ft)		100.00	
	Erosion and Sediment Control (ac)		491.00	
	Heavy Use Area Protection (ac)		1.54	
	Lined Waterway or Outlet (ft)		150.00	
	Livestock Stream Crossing (units)		22.00	
	Manure Transfer (units)		1.00	
	Milking Center Wastewater Treatment System (units)		2.00	
	Nutrient Management (ac)	5,168.00	2,664.00	51.5
	Planned Grazing System (ac)		48.50	
	Riparian Forest Buffer (ac)	220.00	37.03	16.8
	Roof Runoff Management (ft)		2,592.00	
	Spring Development (units)		9.00	
	Stream Channel Stabilization (ft)	3,168.00	16.00	0.5
	Stream Exclusion with Grazing Land Management (ft)	143,616.00	30,057.00	20.9
	Streambank & Shoreline Protection (ft)	6,336.00	23,172.00	365.7
	Structure for Water Control (units)		1.00	
	Underground Outlet (ft)		675.00	
	Waste Management System (units)		9.00	
	Waste Storage Facility (units)		6.00	
	Watering Facility (units)		6.00	

Pollutant Load Reduction Goals and Achieved

As a percent (%) of total pollutant loads



Jacobs Creek

Jacobs Creek is a tributary to Youghiogheny River; located in Western Pennsylvania south and east of Pittsburgh. The Jacobs Creek Watershed Association (JCWA) has been aggressively pursuing watershed restoration since the 1990's. In 2009, the JCWA finalized and has since been implementing the Jacobs Creek WIP. Since FFY 2009 the JCWA was awarded approximately $2.7 million in Section 319 program funds and with those funds designed, permitted, and implemented a variety of BMPs focused on stormwater management and stream restoration. With that funding the JCWA has obtained the design for over a dozen projects resulting in the construction of over **10,000 feet of stabilized or restored stream channel**, **7.5 acres of riparian buffers**, over **half an acre of infiltration trenches**, **20,000 cubic feet of storage in rain gardens**, and **an acre of porous pavement**.

	Modeled Loads			Reduced Loads			Percent Reductions		
	Sed (ton)	TP (lb)	TN (lb)	Sed (ton)	TP (lb)	TN (lb)	Sed (%)	TP (%)	TN (%)
Base Model Run (no BMPs)	8,175.6	7,367.6	22,5914.1						
Run with all BMPs and FWIs	6,998.3	6,688.1	21,9332.6	1,177.3	679.5	6,581.5	14.4	9.2	2.9

The BMPs implemented as a result of the work performed by the JCWA has resulted in **sediment load reductions nearing 150,000 lbs/year, 4,000lbs/year of total Nitrogen and 200 lbs/year of phosphorous.**

Equally impressive is the citing of these facilities. The JCWA works seamlessly with local governments like Scottdale Borough and Mount Pleasant Borough as well as local social clubs, business owners and schools to find locations that benefit not only the streams, but also the community.

http://www.jacobscreekwatershed.org/

Since FFY 2009 the JCWA has implemented BMPs resulting in the following load reductions:

150,000lbs/year of sediment

4,000 lbs/year of Nitrogen

200 lbs/year of Phosphorus

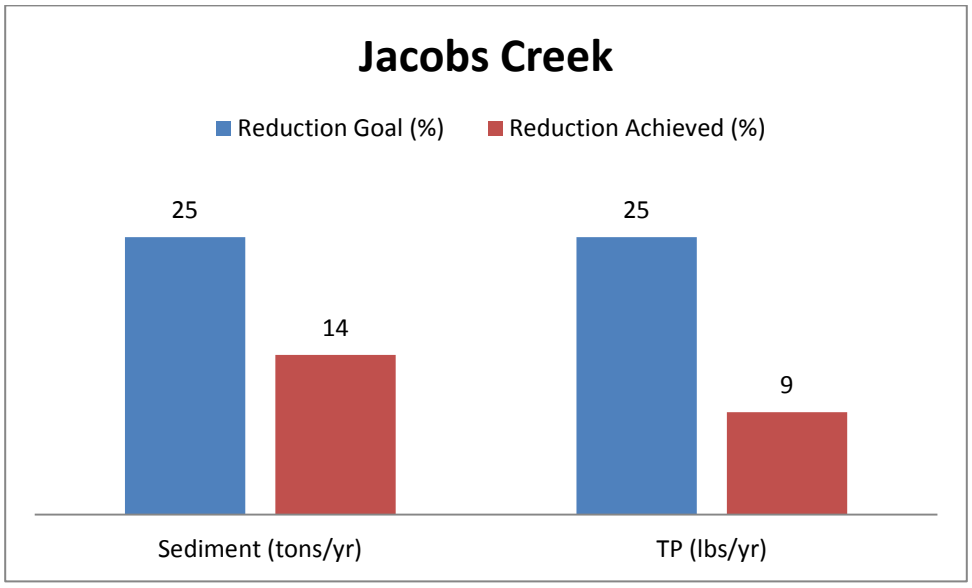
BMP Goals and Accomplishments Table

Jacobs Creek Watershed Association

Sub Watershed	BMP/Action	Goal Amount	Implemented Amount	% Action Implemented
PA Brush Run	Access Road (ft)		4000	
	Conservation Crop Rotation (ac)		60	
	Contour Farming (ac)	920	0	0.0
	Grazing Planned Systems (ac)		25	
	Livestock stream crossing (units)		2	
	Nutrient Management (ac)		382	
	Riparian Forest Buffer (ac)	16.7	2	12.0
	Stream Exclusion with grazing land (ft)	3000	2,500.00	83.3
	Streambank & shoreline protection (ft)	7450	1,200.00	16.1
	Stripcropping (ac)	130	3.00	2.3
PA JacobsCrAll	Conservation Plan (ac)		777.40	
	Conservation Tillage (ac)		584.80	
	Stripcropping (ac)		340.74	
PA JacobsCrMain	Countour Farming (ac)	50	0.00	0.0
	Infiltration trench (units)	1	0.00	0.0
	Porous Pavement (square)	3050	0.00	0.0
	Raingarden/biorention basin (units)	2	0.00	0.0
	Riparian Forest Buffer (ac)	24	0.00	0.0
	Streambank & shoreline protection (ft)	10520	0.00	0.0
PA MockHollow	Conservation Crop Rotation (ac)		268.00	
	Contour Farming (ac)	170	0.00	0.0
	Grazing Planned Systems (ac)		43.00	
	Riparian Forest Buffer (ac)	13.40	1.00	7.5
	Streambank & shoreline protection (ft)	710.00	714.00	100.6
PA SherrickRun	Contour Farming (ac)	100	0.00	0.0
	Grazing Planned Systems (ac)	300	0.00	0.0
	Riparian Forest Buffer (ac)	12.7	0.00	0.0
	Stream Exclusion and Grazing Land (ft)	3,000.00	5,146.00	171.5
	Streambank & shoreline protection (ft)	7160	0.00	0.0
PA ShupeRun	Contour Farming (ac)	250	0.00	0.0
	Green Roof System (sq ft)	8550	0.00	0.0
	Infiltration basin (units)		1.00	
	Porous Pavement (sq ft)	1,000.00	0.00	0.0
	Raingarden / bioretention basin (units)	16	16.00	100.0
	Riparian Forest Buffer (ac)	13.00	1.80	13.8
	Stream Channel Stabiliztion (ft)		2,000.00	
	Streambank & shoreline protection (ft)	4,940.00	2,000.00	40.5
PA Stauffer Run	Animal Trails and Walkways (ft)		1,000.00	
	Conservation Crop Rotation (ac)	280.00	209.00	74.6
	Conservation Tillage (ac)		500.00	
	Cover crop (ac)		300.00	
	Grazing Planned Systems (ac)		150.00	
	Heavy Use Area Protection (units)		3.00	
	Infiltration trench (sq ft)		800.00	
	Nutrient Management (ac)		211.00	
	Porous Pavement (sq ft)		800.00	
	Raingarden / bioretention basin (units)		3.00	
	Riparian Forest Buffer (ac)	20		0.0
	Stream Exclusion with grazing land (ft)		2,000.00	
	Streambank & shoreline protection (ft)	3,230.00	0.00	0.0
	Stripcropping (ac)	280	197.00	70.4
	Watershed management Plan (units)	1	1.00	100.0

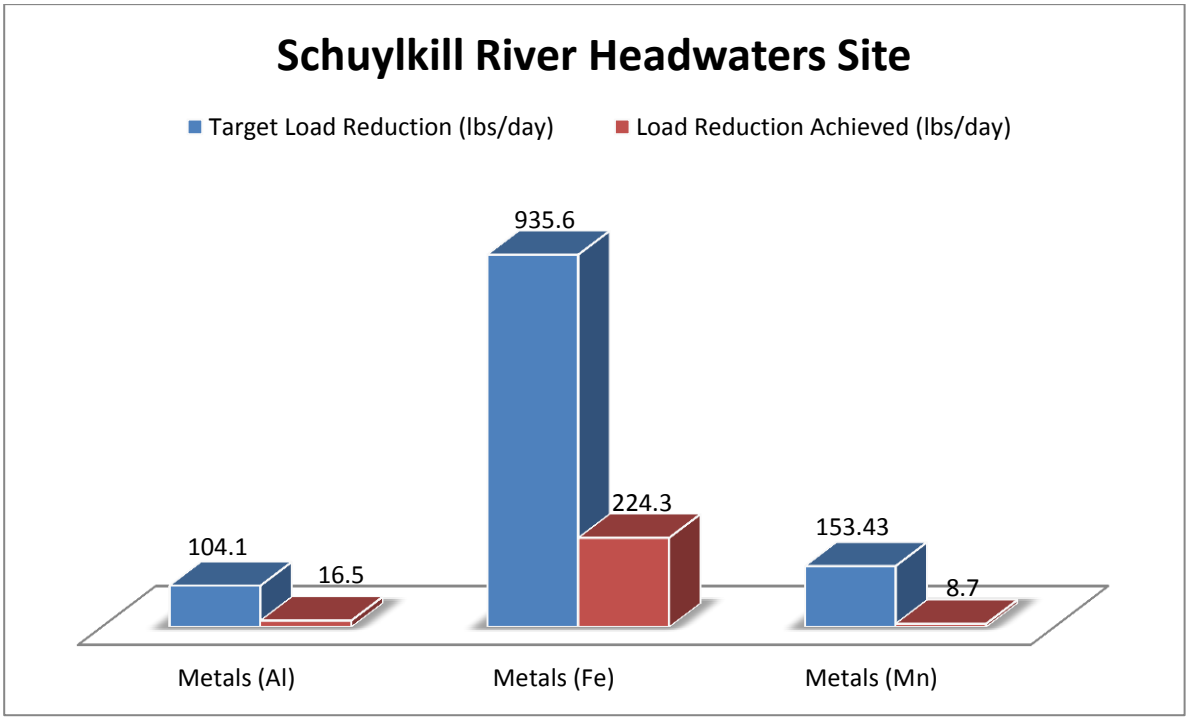
Pollutant Load Reduction Goals and Achieved

As a percent (%) of total pollutant loads



Upper Schuylkill River

The Upper Schuylkill River Watershed Implementation Plan (WIP) was completed in May 2005 to address the upper reaches of the Schuylkill River watershed that are largely impacted by abandoned mine drainage (AMD) discharges. The AMD discharges contribute large amounts of metals (iron, aluminum and manganese) and acidity to the streams. To combat those pollutants, several Section 319 funded projects have been completed in this watershed. The most recent project is the Bell Colliery AMD Restoration, Phase III project. This project retrofitted the old passive treatment system which in turn increased the treatment efficiency. Recent water sampling downstream of the project has shown the pH in the headwaters of the Schuylkill River increase from a 4.8 to a 6.7. Both iron and aluminum concentrations have dropped below the level of impairment.



BMP Goals and Accomplishments Table

Upper Schuylkill Watershed

Sub Watershed	BMP/Action	Goal Amount (units)	Implemented Amount (Units)	% Action Implemented
Wabash Creek	Anoxic Limestone Drain	2	1	50
	Pond-Construction	1	0	0
	Vertical Flow Treatment System	1	0	0
Little Schuylkill	AMD-Passive Treatment System	2	0	0
	Diversion Wells	2	2	100
	Stream Channel Stabilization	2	0	0
	Wetland Enhancement	2	2	100
Mill Creek	Anoxic Limestone Drain	2	2	100
	Constructed Wetland Aerobic	1	0	0
	Land Reconstruction, Abandoned Mined Land (acres)	432	432	100
	Stream Channel Restoration (stream bed)	2	0	0
Muddy Branch	Constructed Wetland Aerobic	1	1	100
	Land Reconstruction, Abandoned Mined Land	1	0	0
Panther Creek	Oxic Limestone Drain	1	0	0
West Branch	Land Reconstruction, Abandoned Mined Land (acres)	43	21	49
	Land Reconstruction, Abandoned Mined Land (acres)	231	231	100
	Limestone Doser	1	0	0
	Unknown - will be provided upon implementation	1	0	0
Schuylkill River (Headwaters)	Constructed Wetland Aerobic	4	2	50
	Limestone Leach Bed/Pond	2	1	50
	Passive Treatment	1	0	0
	Sediment Basin	1	0	0
	Vertical Flow Treatment System	1	1	100

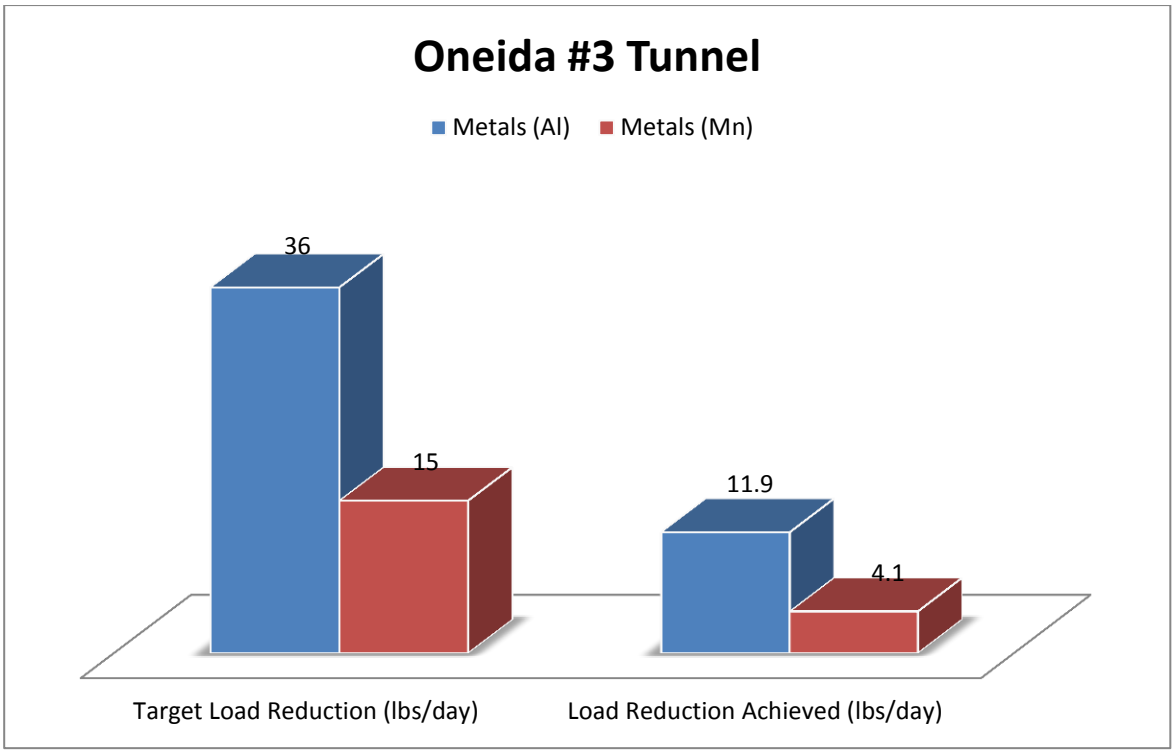
Water Quality Trend Data

Upper Schuylkill Watershed

Sub Watershed	Pollutant ID	Target Load Reduction (lbs/day)	Load Reduction Achieved (lbs/day)	% Load Reduction Achieved (%)
Wabash Creek	Acidity	757.3	0	0
	Metals (Al)	72.7	9.97	13.7
	Metals (Fe)	47.8	52	100+
	Metals (Mn)	23.1	5.8	25
Little Schuylkill	Acidity	22,944.00	0	0
	Metals (Al)	188.14	0	0
	Metals (Fe)	569	0	0
	Metals (Mn)	0	0	0
Mill Creek	Acidity	10,539.00	0	0
	Metals (Al)	227.4	30.7	13.5
	Metals (Fe)	919.6	538.1	59
	Metals (Mn)	158	152.9	97
Muddy Branch	Acidity	587.4	82.2	14
	Metals (Al)	190.5	3.8	2
	Metals (Fe)	619.1	38.4	6.2
	Metals (Mn)	131.9	0	0
Panther Creek	Acidity	0	0	0
	Metals (Al)	39.8	0	0
	Metals (Fe)	42.6	0	0
	Metals (Mn)	65.3	0	0
West Branch	Acidity	2,916.20	0	0
	Metals (Al)	354.7	0	0
	Metals (Fe)	2,295.00	0	0
	Metals (Mn)	1,201.70	0	0
Schuylkill River (Headwaters)	Acidity	10,582.00	137.8	1.3
	Metals (Al)	104.1	17.6	15.9
	Metals (Fe)	935.6	266.2	24
	Metals (Mn)	153.43	14.4	5.7

Catawissa Creek

The Catawissa Creek Watershed Restoration Plan was completed in 2005. That WIP identified load reduction goals for acidity, iron and aluminum in order to meet water quality objectives. The watershed group and Schuylkill Conservation District has targeted high priority AMD discharges such as Oneida #3 and Audenreid Tunnel passive treatment projects. The most recent project is a retrofit of the Oneida #3 system which is located on the Tomhicken Creek. This project will allow easier and safer maintenance while increasing the performance. Water quality in the Tomhicken Creek has shown an increase in pH from 6.0 to 7.1 and has changed from net acidic to net alkaline conditions.



BMP Goals and Accomplishments Table

Catawissa Creek

Sub Watershed	BMP/Action	Goal Amount (units)	Implemented Amount (Units)	% Action Implemented
Audenreid Discharge	Limestone Leach Bed/Pond	3	3	100
Catawissa Tunnel Discharge	Passive Treatment	1	0	0
Green Mt. Tunnel Discharge	Passive Treatment	1	0	0
Oneida #3 Discharge	Limestone Leach Bed/Pond	1	1	100

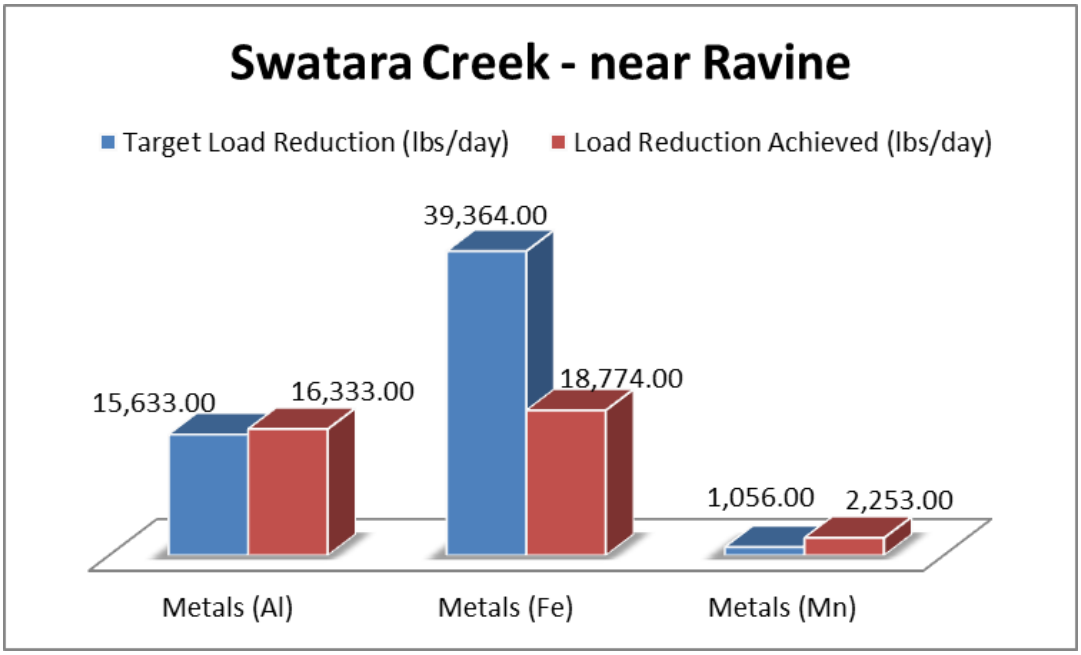
Water Quality Trend Data

Catawissa Creek

Sub Watershed	Pollutant ID	Target Load Reduction (lbs/day)	Load Reduction Achieved (lbs/day)	% Load Reduction Achieved (%)
Audenreid Discharge	Acidity	6,869.10	3,366.00	49
	Metals (Al)	767.4	229	30
	Metals (Fe)	**14.2**	**15.8**	**100+**
	Metals (Mn)	170.2	29	17
Catawissa Tunnel Discharge	Acidity	113.5	0	0
	Metals (Al)	6	0	0
	Metals (Fe)	2.9	0	0
	Metals (Mn)	0	0	0
Green Mt. Tunnel Discharge	Acidity	310	0	0
	Metals (Al)	31.7	0	0
	Metals (Fe)	2.5	0	0
	Metals (Mn)	0.3	0	0
Oneida #3 Discharge	Acidity	491.9	233.8	48
	Metals (Al)	36	11.9	33
	Metals (Mn)	15	4.1	27

Upper Swatara Creek

The Upper Swatara Creek watershed is largely impaired by AMD discharges from surface and deep mining operations. Many tributaries within the Upper Swatara Creek watershed are severely impacted from AMD sources including high levels of iron, aluminum and manganese and runoff from abandoned coal mines. The Upper Swatara Creek Watershed Implementation Plan was completed by the Schuylkill County Conservation District and finalized in May 2006. Although many projects have been completed in the watershed there has been none recently. Water quality has been monitored throughout the watershed for the last few years. A major decrease in water quality and the disappearance of fish at the mouth of Lorberry Creek prompted the Schuylkill County Conservation District to apply for a grant to look at the system and retrofit the system to increase its capabilities for treatment.



BMP Goals and Accomplishments Table

Upper Swatara Creek

Sub Watershed	BMP/Action	Goal Amount (units)	Implemented Amount (Units)	% Action Implemented
Good Spring Site (D1)	Anoxic Limestone Drain	**1**	**0**	**0**
	Constructed Wetland Aerobic	**5**	**2**	**40**
	Land Reclamation (acres)	**381**	**381**	**100**
	Limestone Sanding	**1**	**1**	**100**
Headwater Site C2	**Anoxic Limestone Drain**	**1**	**1**	**100**
	Land Reclamation (acres)	**75**	**75**	**100**
	Limestone Open Channel	**1**	**1**	**100**
	Passive Treatment	**2**	**2**	**100**
	Passive Treatment	**1**	**1**	**100**
Lorberry Site (E2-3	Anoxic Limestone Drain	**1**	**0**	**0**
	Constructed Wetland Aerobic	**3**	**2**	**67**
	Limestone Sanding	**1**	**1**	**100**
	Passive Treatment	**1**	**1**	**100**
Lower Rausch Site Ee-2	**Constructed Wetland Aerobic**	**1**	**1**	**100**
	Limestone Leach Bed/Pond	**1**	**1**	**100**
Swatara Site D2-near Ravine	Land Reclamation (acres)	**53**	**53**	**100**

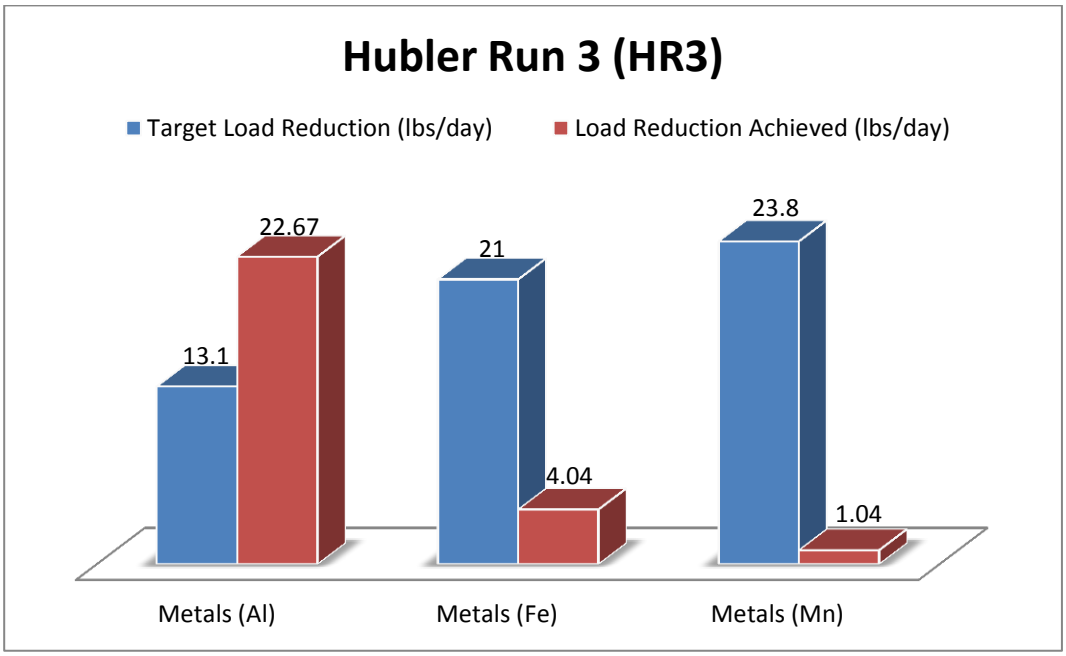
Water Quality Trend Data

Upper Swatara Creek

Sub Watershed	Pollutant ID	Target Load Reduction (lbs/day)	Load Reduction Achieved (lbs/day)	% Load Reduction Achieved (%)
Good Spring Site (D1)	Acidity	366	0	0
	Metals (Al)	**0**	**7**	**100+**
	Metals (Fe)	**0**	**231.4**	**100+**
	Metals (Mn)	**0**	**21**	**100+**
Headwater Site C2	Acidity	1,305.00	728	56
	Metals (Al)	**3**	**37**	**100+**
	Metals (Fe)	199	163	82
	Metals (Mn)	**27**	**38**	**100+**
Lorberry Site (E2-3	Acidity	1,439.00	803	56
	Metals (Al)	**3**	**40**	**100+**
	Metals (Fe)	219	179	82
	Metals (Mn)	**30**	**42**	**100+**
Lower Rausch Site Ee-2	Acidity	373	60	16
	Metals (Al)	**0**	**4.3**	**100+**
	Metals (Fe)	**18**	**25.4**	**100+**
	Metals (Mn)	**14.5**	**17.4**	**100+**
Swatara Site D2-near Ravine	Acidity	160,972.00	88,507.00	55
	Metals (Al)	**15,633.00**	**16,333.00**	**100+**
	Metals (Fe)	39,364.00	18,774.00	48
	Metals (Mn)	**1,056.00**	**2,253.00**	**100+**

Hubler Run

Hubler Run is a tributary to Alder Run in the West Branch Susquehanna River basin in Clearfield County. The Hubler Run Watershed Implementation Plan was developed following TMDL approval and was completed in August 2007. Metals and acidity loadings have been reduced through the implementation of the WIP using Section 319 funding to address the three highest priority projects. After finishing the construction of the third project (and hopefully last) this past year, it is hoped that the stream will soon meet standards and can be reassessed. The pH at the mouth of Hubler Run has increased from a 4.9 to a 6.6 after construction of the treatment systems. Aluminum has dropped below the harmful levels for aquatic organisms.



BMP Goals and Accomplishments Table

Hubler Run

Sub Watershed	BMP/Action	Goal Amount (units)	Implemented Amount (Units)	% Action Implemented
Hubler Run HR2	Limestone Open Channel	1	0	0
Hubler Run HR3	**Anoxic Limestone Drain**	**3**	**6**	**100+**
	Limestone Leach Bed/Pond	**3**	**3**	**100**
	Vertical Flow Treatment System	**1**	**1**	**100**

Water Quality Trend Data

Hubler Run

Sub Watershed	Pollutant ID	Target Load Reduction (lbs/day)	Load Reduction Achieved (lbs/day)	% Load Reduction Achieved (%)
Hubler Run HR2	Acidity	7.9	0	0
	Metals (Al)	1	0	0
	Metals (Fe)	1.4	0	0
	Metals (Mn)	0.1	0	0
Hubler Run HR3	Acidity	299.9	222.37	74.2
	Metals (Al)	**13.1**	**22.67**	**100+**
	Metals (Fe)	21	4.04	19.2
	Metals (Mn)	23.8	1.04	4.4

Appendix D: Pennsylvania Nonpoint Source Management Program Funding

(All figures pertain to the federal fiscal year unless otherwise noted)

State Sources (FY)	FFY 2012	FFY 2013	**FFY 2014**
DEP	($ millions)	($ millions)	($ millions)
Conservation District Watershed Specialists	1.963	2.079	2.136
Environment Stewardship and Watershed Protection (Growing Greener):			
Watershed Protection Grants	12.458	18.008	17.393
AMD Set-aside Grants	0.252	0.406	2.031
Sub-total	14.673	20.493	21.560
DEP			
Chesapeake Bay Implementation Grant; State Fiscal Year Funding:			
Technical and Engineering Assistance	2.715	2.723	2.925
Special Projects	0.737	1.064	0.666
Sub-total	3.452	3.787	3.591
DEP			
Conservation District Fund Allocation Program (line item plus UGWF monies)	2.856	2.506	4.381
Dirt and Gravel Roads Pollution Prevention Program	3.528	3.528	20.854
Abandoned Mine Reclamation Program Annual Projects	0.335	2.605	1.457
PA Infrastructure and Investment Authority (PENNVEST) – 2014 funds awarded by board	20.971	3.712	6.523
Sub-total	27.690	12.351	33.215
PDA			
Nutrient Management Fund (Transfer)	2.714	2.714	2.714
Conservation District Fund Allocation Program (line item plus UGWF monies)	1.019	0.869	2.744
Resource Enhancement and Protection Tax Credits Available	10.000	10.000	10.000
Sub-total	13.733	13.583	15.458
PUC			
Conservation District Funding from UGWF			3.750
Sub-total			3.750
Commonwealth Financing Authority			
Act 13 NPS Funding (WR and AMD projects)	0	10.959	3.147
Sub-total	0	10.959	3.147
State Funding Sub-total	**59.548**	**61.173**	**80.721**

Federal Sources (FFY)	FFY 2012	FFY 2013	FFY 2014
U.S. Environmental Protection Agency			
Section 319 Nonpoint Source Management Program	4.609	4.379	4.672
National Fish and Wildlife Foundation			
Chesapeake Bay Small Watershed Grant-annual Funding (PA-specific grants)	0.702	0.487	0.553
Chesapeake Bay Innovative Nutrient and Sediment Reduction Grant (PA-specific grants)	2.026	1.207	1.916
Sub-total	7.337	6.073	7.141
U.S.D.A. Natural Resources Conservation Service Obligated Funding Levels:			
Agricultural Management Assistance	0.168	0.280	1.080
Chesapeake Bay Watershed Initiative	15.533	9.100	0.0
Environmental Quality Incentive Program	18.636	21.100	21.790
Farm and Ranchland Protection Program	4.390	3.000	0.0
Agric Cons Easement Program – Ag Land Easements			4.62
Conservation Stewardship Program (new contracts)	0.832	0.700	0.350
Conservation Stewardship Program (funds obligated to pay on prior year contracts)		6.200	6.180
Grasslands Reserve Program			0.310
Healthy Forests Reserve Program			0.660
Wetlands Reserve Program	10.000	4.750	0.0
Agric Cons Easement Program – Wetland Reserve Easements			3.860
Wildlife Habitat Incentive Program	0.892	2.280	0.0
Sub-total	50.451	47.410	38.850
U.S.D.A. Farm Services Agency			
Conservation Reserve Enhancement Program Includes Financial Incentives, Cost-Share and Rental Payments.	20.690	23.753	21.885
Biomass Crop Assistance Program	0.339	0.152	0.013
Grassland Reserve Program	0.148	0.618	0.150
Sub-total	21.177	24.523	22.048
Office of Surface Mining			
AML Reclamation Funding Includes AML, Clean Streams Initiative and Watershed Cooperative Agreement Program.	67.152	61.735	52.369
Sub-total:	67.152	61.735	52.369
Federal Funding Sub-total	**146.117**	**139.741**	**120.408**
Overall Annual Total	**205.665**	**200.914**	**201.129**

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