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Pennsylvania Nonpoint Source Management Program
FFY2006 Annual Report

Measuring Project and Program Effectiveness

October 1, 2005 through September 30, 2006

Commonwealth of Pennsylvania
Department of Environmental Protection
Bureau of Watershed Management, Division of Watershed Protection

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Executive Summary

Section 319(h) of the federal Clean Water Act authorizes the U.S. Environmental Protection Agency (EPA) to delegate to states the authority to carry out nonpoint source management programs to restore and protect the water quality of streams and lakes within their borders. The EPA approved Pennsylvania's initial Nonpoint Source (NPS) Management Program plan and delegated this authority to the Pennsylvania Department of Environmental Protection (DEP) in 1991. Pennsylvania revised its program plan in 1999 and is currently preparing another update, scheduled for completion in late 2007.

One of EPA's primary tools in judging the adequacy of a state nonpoint source management program is an annual report on progress in implementing the state's program plan. This report focuses principally on two subjects:

- Progress in meeting goals and objectives articulated in the plan, and
- Reductions in NPS pollutant loading and improvements in water quality that have resulted from program activities.

Part I of this report describes progress made during FFY 2006 in meeting specific objectives underlying Pennsylvania's five overarching NPS management program goals:

Goal 1
Improve and protect water resources as a result of nonpoint source program implementation efforts. Show water resource improvements by measuring reductions in sediments, nutrients and metals or increases in aquatic life use, riparian habitat, wetlands, or public health benefits. By 2012, through combined program efforts, remove 500 miles of streams and 1,600 lake acres that are identified on the State's Integrated List of All Waters as being impaired because of nonpoint sources of pollution.

Goal 2
Coordinate with conservation districts, watershed groups, local governments, and others in the development and implementation of 20 watershed implementation plans meeting EPA's Section 319 criteria to protect and restore surface and groundwater quality by 2012.

Goal 3
Improve and develop monitoring efforts to determine how projects and programs improve water quality and/or meet target pollution reductions including Total Maximum Daily Loads (TMDLs).

Goal 4
Encourage development and use of new technologies, tools, and technology transfer practices, to enhance understanding and use of techniques for addressing nonpoint source pollution.

Goal 5
Assure implementation of appropriate best management practices to protect, improve and restore water quality by using or enhancing existing financial incentives, technical assistance, education and regulatory programs.

A complete listing of these goals with their supporting objectives and target dates for the accomplishment of each may be found in **Section I.C. of Pennsylvania's 2007 Nonpoint Source Management Program Update**, a final draft of which may be found on the DEP web site. Go to www.depweb.state.pa.us and click on Public Participation, Draft Technical Guidance and ID#394-2000-002 to view this document.

Part II of the report addresses improvements in water quality resulting from NPS management program activities. During FFY 2006, four additional stream segments were identified as having achieved substantial improvements in water quality:

Water Body	County	Impairment Source – Cause
Mount Rock Spring Creek	Cumberland	Agriculture – Siltation Construction – Siltation
Mount Rock Spring Creek	Cumberland	Agriculture – Nutrients
South Branch Blacklick Creek	Cambria	AMD - Metals AMD - Siltation
North Branch Little Mahoning Creek	Indiana	AMD - Siltation

These and other streams identified in an ongoing search for restored streams by the NPS program staff will be reassessed by DEP biologists during FFY 2007, to determine whether they qualify to be removed from the State's impaired streams list.

Pennsylvania's Section 319 Program has documented the following cumulative load reductions for nutrients, sediment, metals and acidity for the period October 1, 2002 – September 20, 2006:

Nitrogen (lbs)	Phosphorus (lbs)	Sediment (tons)	Aluminum (tons)	Iron (tons)	Acidity (tons)
105,758	51,064	19,685	325	211	2,842

Watershed restoration "success stories" describe significant water quality improvements have been achieved in individual watersheds and serve as another measure of NPS program accomplishment. Three new success stories are included in Part II of this report:

The **Mill Creek watershed** in Bradford County is the location of several 319-funded agriculture and stream restoration projects. BMP implementation has been achieved on the majority of farms in Mill Creek, and monitoring indicates significant decreases in sediment and nutrient loading to Stephen Foster Lake.

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The **Revloc Refuse Pile Reclamation** project in Cambria County has restored an AMD-impacted watershed in the South Branch of Blacklick Creek. Downstream water quality monitoring has shown remarkable improvement, with the stream pH rising from 4.3 to 6.4.

The **Cessna Run Abandoned Mine Drainage Treatment System** is on the second largest of the three main tributaries that form Cessna Run (aka the North Branch of Little Mahoning Creek) in northern Indiana County. After treatment, the acidity of the discharges has been totally eliminated and 50.98 lbs/day of alkalinity added to the stream. In addition, aluminum and manganese loadings have been reduced 65% and 52% respectively.

Pennsylvania's Section 319 Program is currently entering Phase III of its Watershed Implementation Planning process, begun in FFY 2004. During Phases I and II, 24 TMDL watersheds with previous studies and active watershed groups were targeted for development of Watershed-Based Implementation Plans. Watershed groups, conservation districts, and others prepared these plans with financial and technical support from DEP central office NPS program staff. Phase III will target 10 additional watershed and technical support will be provided by DEP regional office watershed management staff. As of September 30, 2006, 12 plans had been completed and implementation of several had begun.

Funding for Pennsylvania's nonpoint source management activities comes from a variety of sources. Chief among these is Section 319 funding, which has totaled nearly $68 million since FFY 1991, including $5.9 million in FFY 2006. Other significant sources of support are shown in the table below.

NPS Funding Sources and Amounts

CWA Section 319	$69 million since FFY 1991
Pennsylvania's Growing Greener Initiative	$181 million in watershed protection grants for 1,592 projects since 1999
Conservation Reserve Enhancement Program	$200 million (2002 Farm Bill funding)
Chesapeake Bay Program	$34 million (since 1984-1985)
PDA Nutrient Management	$13 million
Chesapeake Bay Small Watershed Program	$530,000 in 2006
USDA Farm Bill Programs	$5-$10 million for FFY 2006 conservation programs

The Nonpoint Source Liaison Workgroup is comprised of environmental professionals and interested parties from federal, state and local government, academia, consulting firms, watershed groups and other non-profits. See **Appendix A**. **NPS Liaison Work Group Partners** for a more complete listing. It meets twice a year, in June and October, to discuss NPS-related issues, review DEP policy proposals and share individual initiatives and accomplishments. This group breaks out into seven subgroups (Agriculture, Construction and Urban Runoff, Hydromodification, Lakes, Land Disposal, Resource Extraction, and Silviculture) to provide substantive input to both the multi-year NPS Management Program Plan and the NPS Management Program Annual Report.

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PART I.

Progress in Meeting NPS Management Program Objectives

U.S. Environmental Protection Agency (EPA) program guidance requires that state nonpoint source (NPS) management programs annually report progress in meeting the goals and objectives of their approved program plans. For this FFY2006 Annual Report, Pennsylvania will use the Goals and Objectives included in its **2007 NPS Management Program Update**, a final draft of which may be found on the DEP web site. Go to www.depweb.state.pa.us and click on Public Participation, Draft Technical Guidance and ID#394-2000-002 to view this document.

The five principal goals of this program plan include:

Goal 1
Improve and protect water resources as a result of nonpoint source program implementation efforts. Show water resource improvements by measuring reductions in sediments, nutrients and metals or increases in aquatic life use, riparian habitat, wetlands, or public health benefits. By 2012, through combined program efforts, remove 500 miles of streams and 1,600 lake acres that are identified on the State's Integrated List of All Waters as being impaired because of nonpoint sources of pollution.

Goal 2
Coordinate with conservation districts, watershed groups, local governments, and others in the development and implementation of 20-watershed implementation plans meeting EPA's Section 319 criteria to protect and restore surface and groundwater quality by 2012.

Goal 3
Improve and develop monitoring efforts to determine how projects and programs improve water quality and/or meet target pollution reductions including TMDLs.

Goal 4
Encourage development and use of new technologies, tools, and technology transfer practices, to enhance understanding and use of techniques for addressing nonpoint source pollution.

Goal 5
Assure implementation of appropriate best management practices to protect, improve and restore water quality by using or enhancing existing financial incentives, technical assistance, education and regulatory programs.

Objectives supporting these goals are specific to the seven functional areas of the State program, including Agriculture, Construction and Urban Runoff, Hydromodification, Lakes, Land Disposal, Resource Extraction and Silviculture. For this reason, progress reported on these objectives will be organized under functional headings in the following discussion.

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A. Agriculture Objectives

Goal 1

Objective: Track Ag BMP implementation and estimate sediment and nutrient reductions.

- **This is being documented in final reports where Section 319 NPS implementation projects are completed. Data is also input to the GRTS database as prescribed by the EPA.**

- **The GRTS database has been upgraded to an Oracle database platform. Reporting software has been upgraded to Business Objects. The STEPL load reduction model has been improved and is supported by the EPA for estimating pollutant reductions.**

- **SSWAP data provides current stream assessment conditions, which are used to update Pennsylvania's Integrated List of All Waters data. The 2006 Integrated List is available on the DEP website, www.dep.state.pa.us and includes data through 2005. Pennsylvania utilizes this data to focus implementation in both areas that have agricultural-impaired waters and in watersheds with approved Total Maximum Daily Loads (TMDLs).**

Goal 2

Objective: Increase involvement of agricultural producers in watershed planning and implementation.

- **Visits to farms to obtain access for stream assessment and restoration work and targeting farmers for education efforts and watershed group formation have increased their participation in planning and implementation projects in several watersheds.**

Goal 3

Objective: Increase accessibility of water quality data to help target water quality restoration and protection efforts.

- **The DEP Integrated List of All Waters provides current water quality assessment data to the public. A POWR database is available to the public as a clearinghouse for water quality monitoring data that has been made available by local watershed organizations. DEP is working on a comprehensive water quality database, entitled WAVE or Water Attribute Viewer for the Enterprise, which will be web available.**

Objective: Establish local water quality monitoring sites to obtain baseline data and assess the effectiveness of ag practices or actions to obtain baseline data.

- **The Section 319 NPS Management Program targets watershed implementation and water quality monitoring to small sub-basins where watershed implementation planning has been completed. In many cases, project sponsors conduct water quality monitoring both pre-, during, and post-implementation.**

Goal 4

Objective: Assess nutrient credit trading feasibility using Conestoga River watershed pilot project.

- **DEP has decided that nutrient trading is a viable option for reducing nutrient and sediment impacts. The DEP Nutrient Trading Policy is due to be published in the Pennsylvania Bulletin on November 25, 2006.**

Objective: Facilitate four projects using market-based approaches to address ag water quality problems.

- **Under ACT 38 of 2005 (Agriculture, Community, and Rural Environment or ACRE Initiative) funding has been provided for several nutrient trading projects in Pennsylvania's portion of the Chesapeake Bay watershed. County Conservation Districts (CCDs), municipal authorities, and private entities are working on pilot projects.**

Objective: Demonstrate implementation of technology and management systems identified as environmentally and economically feasible.

- **The USDA-NRCS updates Pennsylvania Technical Guide standards on a consistent basis. Many Standards have been updated during the past year. Existing funding sources, including Section 319 NPS Implementation funds, are being utilized to implement proven technology and systems that help both farmer and the environment.**

Objective: Assess feasibility of new technology and BMPs to address nutrient imbalances on ag lands.

- **Pennsylvania's State Conservation Commission (SCC) is strongly in favor of applying new and innovative technologies for manure utilization. DEP supports manure export to help address nutrient overloading from animal manure sources in specific watersheds. Nutrient trading projects with County Conservation Districts and other entities are addressing nutrient and manure imbalances. The USDA-NRCS has awarded Conservation Innovation Grants to support nutrient trading. Pennsylvania watersheds in the Chesapeake Bay basin are part of this proposal.**

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Goal 5

Objective: Increase farmer participation in the Pennsylvania Environmental Agricultural Conservation Certification of Excellence (PEACCE) program by 250 producers.

- **PEACCE promotes environmentally safe agricultural practices, minimizes personal liability and risks to the environment, and uses educational and on-farm assessments to ensure operations are farming in an environmentally responsible manner. The PSU continues its training and outreach program for poultry and dairy farmers, although the On-Farm Assessment and Environmental Review (OFAER) component has been temporarily suspended. The PEACCE program recognized 26 Pennsylvania farms in 2005-2006.**

Objective: Maintain and increase nutrient management (NM), soil conservation and agronomic management education efforts to producers, program staff and agri-business.

- **For both of the above Objectives: The purpose of the Agriculture, Communities and Rural Environment (ACRE) grants are to explore ways to bring agricultural operations into baseline compliance with the Clean Streams Law and Chapters 91 and 92. ACRE is also known as Act 38 of 2005. It incorporates provisions of the Nutrient Management Act (Act 6 of 1993).**
  Over $$800,000 was distributed to 21 projects that received funding. Funding received from ACRE grants will not be used for BMPs but will be used to attempt different approaches to bring Pennsylvania farms into compliance on a voluntary basis. The projects include working within targeted watersheds, collecting sampling data, creating GIS databases, and working with plain sects such as Mennonite and Amish farmers.
  A multi-county statewide project to help farms comply with state regulations was also funded. This project will create a tool consisting of booklets, fact sheets and a checklist to be used statewide to help bring agricultural operations into compliance. This "toolbox" can be used by conservation districts throughout the state to evaluate farms, and suggest BMPs that will bring these operations into compliance, and in so doing protect both surface and groundwater quality.

Objective: Track NM plan implementation on Concentrated Animal Operations (CAOs) and Concentrated Animal Feeding Operations (CAFOs) where required by mandate.

- **DEP Regional Office staff track CAO and CAFO permitting and NM plans required by permits. Regional Office staff are supporting compliance and enforcement activities for farms needing a permit, and where consent orders have been issued.**

- **The CAFO program final regulations have been published and public input received. DEP, Bureau of Watershed Management, Division of Conservation Districts and Nutrient Management staff are responsible for Pa's CAFO program administration.**

- **The Pennsylvania NM Program web site http://panutrientmgmt.cas.psu.edu/ and Penn State University College of Agriculture Nutrient Management web site http://nutrient.psu.edu provide up-to-date information on the State NM program. Annual workshops for NM personnel also provide progress in meeting program goals. This information is publicized on the above referenced websites.**

Objective: Fully implement Pennsylvania's Conservation Reserve Enhancement Program (CREP) in the Susquehanna and Ohio River basins and investigate possible future CREP in the Delaware River basin.

- **CREP funds were included in the 2002 Farm Bill. No provisions were included for a Delaware River basin CREP. The Susquehanna River basin CREP must utilize all funding allocations by December 31, 2007. As of July 2006, the USDA reported the following: 12,603 acres have been contracted of the 65,000 acre goal in Ohio River basin; 152,335 acres have been contracted of the 200,000 acre goal in the Chesapeake Bay basin (both Upper and Lower Susquehanna River).**

Objective: Develop and fully implement a Manure Hauler and Broker Certification program by 2006.

- **Act 49 of 2004, the Commercial Manure Hauler and Broker Certification Act, was approved on June 28, 2004. This legislation required development of a Manure Hauler and Broker Certification program. The PDA anticipates final certification program approval in early 2007. Program criteria including a training and interim certification program have been developed.**

- **An interim certification program has been developed and in being implemented. A statewide training and certification program has been developed based on draft regulations and over 700 persons have been temporarily certified. A series of certification programs were held in early 2006.**

Objective: Facilitate conservation planning and implementation efforts and track conservation planning and implementation to help producers comply with USDA-NRCS and conservation district requirements by 2012.

- **The USDA-NRCS and CCDs utilize the NRCS Toolkit, a database developed to collect and report this information. The USDA-NRCS database is used at the local level by county and field office staff.**

Objective: Develop and implement Mushroom Farm Environmental Management Plans (MFEMP) on all sites utilizing mushroom substrate and spent mushroom substrate.

- **DEP and PDA funds support MFEMP development and implementation. Section 319 funds targeted the Christina River basin, and specifically the Red and White Clay Creek watersheds. The Chester County Conservation District works with the**

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commercial mushroom industry, providing staff technical assistance to help develop a MFEMP for producers.

- **Application was made for a PDA Non Animal Health Grant to implement alternative uses for SMS.**

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B. Construction and Urban Runoff Objectives

Goal 1

Objective: Reduce storm water impairments that are caused by construction, dirt and gravel roads, and urban runoff by 2009.

- **DEP Stormwater BMP Manual training includes PowerPoint on stormwater BMPs for highways.**
- **Pilot enforcement efforts are in progress to require municipalities to implement Act 167 plan requirements for one county and three municipalities.**
- **Eighteen countywide Act 167 plans are in progress and an additional 24 plans are expected to begin within the next 24 months.**
- **New stormwater management model ordinance was developed in 2006. This model ordinance serves as a template to MS4 municipalities and for development of Act 167 plans. The ordinance supports water quality protection and encourages more stringent protection in high quality and exceptional value waters.**
- **Pennsylvania completed a new Stormwater Best Management Practices Manual. Nine two-day training sessions are planned across the state to provide training on the new BMP manual. Training is open to municipal officials, engineers and local planning officials.**

Goal 2

Objective: Involve municipal officials, county planning officials, conservation district, local stakeholders, watershed groups, and other local advocate groups by 2009.

- **Fifteen sessions were held with developers, designers, solicitors, engineers and municipal officials on implementing sound stormwater management methods as part of Act 167 planning.**
- **Outreach efforts to promote water quality protection are completed by all 725 municipalities that have an MS4 permit. Also promoting water quality are Penn DOT and the PA Turnpike Commission.**

Objective: Past and present planning efforts by federal and state transportation agencies have concentrated primarily on addressing interstate road standards. Identify practical applications of good design criteria, construction and or maintenance standards that can be adopted by local governments by 2009.

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- **The Center for Dirt and Gravel Road provided a two-day training session directed toward municipalities for dirt and gravel road maintenance.**

- **The Center for Dirt and Gravel Road has developed brochures and maintains project summaries on its web site. The two-page brochures summarize a demonstration or research project including work that was done, cost information and directions to the site.**

Goal 4

Objective: As resources allow, continue support of the Villanova Urban Stormwater Partnership (VUSP) and other educational institutions as resource centers to identify and research appropriate best management practices.

- **The VUSP joined forces with Temple University to create the Temple-Villanova Sustainable Stormwater Initiative.**

- **Participation of DEP staff on the VUSP board continued in 2006.**

- **The VUSP web site provides information on BMP research, technical outreach and stormwater references.**

- **Pennsylvania completed a new Stormwater Best Management Practices Manual in 2006. Several training sessions are scheduled for 2007.**

- **A BMP stormwater research and demonstration park exists at Villanova, including a stormwater wetland, bioinfiltration traffic island, porous concrete site and infiltration trench.**

Goal 5

Objective: Continue to support long-range planning, technical assistance, financial assistance, and compliance for storm water management systems and programs for local governments as resources allow.

- **The Pennsylvania Infrastructure Investment Authority (PennVest) approved loans for funding municipal storm water projects in four municipalities totaling $4,289,800.**

- **DEP adopted a compliance and enforcement policy for Act 167 watershed stormwater management planning and implementation in 2006.**

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C. Hydromodification Objectives

Goal 1

Objective: Modify or remove dams and implement Natural Stream Channel Design (NSCD) measures when applicable.

- **Growing Greener projects for freeing the flow of Pennsylvania streams are shown in Appendix B. Growing Greener Free Flowing Projects Map**

Objective: Where new and existing flood protection projects are necessary, promote NSCD measures to minimize ecological impacts.

- **The McLaughlin Run Stream Restoration project in Allegheny County was funded under Section 319 in FFY 2002 and is an excellent example of local flood protection projects that have utilized NSCD restoration measures.**

Objective: Promote remediation on waterways that are impacted by sediment.

- **Sediment impacts are addressed on impaired water bodies through stream bank restoration, riparian buffer planting, and NSCD projects to improve stream channel stability and function. Section 319 funds are targeted to impaired water bodies where TMDLs and Watershed Implementation Plans have been completed.**

- **Growing Greener II, through the County Initiative allocations, has made it possible for many creative approaches. For example, Bradford County has been allocated $600,000.00 of that funding to address stream sites that are contributing significant sediment loads. It is also utilizing NRCS, County and Conservation District resources to address those sites.**

Goal 2

Objective: Continue to update the Guidelines For Natural Stream Channel Design for Pennsylvania Waterways.

- **Revision of the Guidelines document continued throughout 2006. A group of six members of the Keystone Stream Team are updating and clarifying the information to be more useful to watershed associations and other volunteer groups interested in implementing NSCD projects. The estimated completion date is April 2007.**

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Goal 3

Objective: Establish monitoring protocol for Natural Stream Channel Design, with the goal of measuring environmental results.

- **The Citizens Volunteer Monitoring Program (CVMP) has evaluated and selected several monitoring protocols appropriate for use with volunteers and is field-testing their use on NSCD projects located on the South Branch of Codorus Creek in York County.**

Goal 4

Objective: Promote the Keystone Stream Team (KST) as the mechanism to facilitate the transfer of information on Natural Stream Channel Design (NSCD).

- **During 2006, the KST researched and documented a range of costs for assessment, design and construction of NSCD projects and posted it on its web site at www.keystonestreamteam.org.**

- **Currently there are two databases accessible through the KST web site. One contains engineering design data and reference reach data for designing NSCD projects around the State. The other contains information on NSCD projects that have been constructed in the North Central and South Central regions of Pennsylvania. The creation of these databases was supported by a Section 319 grant.**

Objective: Promote an understanding of BMPs available for channel restoration and where they are appropriate.

- **The Keystone Stream Team continues to be the focal point for NSCD information, education, and outreach. A wealth of information is available and maintained on www.keystonestreamteam.org .**

Objective: As resources allow, continue definition of regional characteristics related to sediment transport, regional curves, reference reaches, etc.

- **Pennsylvania funded development of regional geometry curves for State physiographic regions under the FFY2004 Section 319 grant. The U.S. Geological Survey published these curves in October 2005.**

- **Current reference reach and sediment transport data for new and existing projects is included in the NSCD repository www.keystonestreamteam.org.**

Goal 5

Objective: Promote a general understanding of channel maintenance and its impact on channel function.

- **A set of educational modules entitled "Environmentally Sensitive Maintenance for Streams" was developed by Bradford County, utilizing a mini grant from the Pennsylvania Association of Conservation Districts. This project targeted municipal officials and contractors and was done in cooperation with DEP, COE, PFBC, Stroud Water Research Center and others. The tools have been distributed to Conservation Districts and Watershed Specialists throughout the State, and several workshops have been held.**

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D. Lakes Objectives

Goal 1

Objective: By 2008, develop a comprehensive Pennsylvania Lake Classification and Lake Criteria System, and remove from the impaired list lakes that have good water quality and meet designated uses but violate stream-based criteria of dissolved oxygen and temperature.

- **The reclassification of lakes is a lengthy process, requiring in-depth review, formal presentation of pertinent lake data and eventual approval by the Environmental Quality Board. This task is an ongoing effort of DEP's Bureau of Watershed Management (Clean Lakes Program) and Bureau of Water Standards and Facility Regulation (Water Quality Standards Division). The Division of Assessment and Standards has recently developed a template for the reclassification process. Three lakes (Blue Marsh Lake, Lake Luxembourg, and Walker Lake) have been reclassified since 2005. See the following site for more information:** http://www.depweb.state.pa.us/watersupply/lib/watersupply/Streamevaltblcomplete.pdflt**.**

- **The Chapter 93 Water Quality Standards (**http://www.pacode.com**) now recognize the natural process of stratification in lakes, ponds and impoundments and apply dissolved oxygen (DO) criteria only in the epilimnion. In non-stratified lakes, ponds and impoundments, the criteria apply throughout. Water temperature criteria now apply only to heated discharges. These changes have resulted in the removal of 34,060 lake acres from impaired status to meeting aquatic uses. Total impaired lake acres were reduced from 45,197 in the 2004 listing to 11,137 in the 2006 listing.**

Goal 3

Objective: By 2006, develop standardized monitoring protocols that adequately assess the status of lakes' aquatic life use.

- **DEP's Lake Monitoring Protocols are expanding. Presently they include most of EPA's recommended "Elements of a State Water Monitoring and Assessment Program" (EPA 841-B-03-003, March 2003, p. 52) for each of the four designated uses. DEP's lake sampling protocols may be found at** http://www.depweb.state.pa.us/watersupply/cwp/view.asp?a=1261&q=480056**. Pennsylvania will participate in EPA's National Lake Survey in 2007, and some of the survey and assessment methods used in that program may adapted for future DEP use.**

- **DEP's Citizen Volunteer Monitoring Program has developed protocols for monitoring Natural Stream Design projects and CREP projects and is field testing the methods at DEP sites in the Codorus Creek watershed (York County), Mill Creek/Stephen Foster Lake watershed (Bradford County), McLaughlin Run**

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watershed (Westmoreland County), Muddy and Morgan Run watersheds (Clearfield County) and others. Results should be available in 2007 or 2008. Protocols are designed so that citizen monitors can track improvements to restoration areas and provide benchmarks for DEP reassessments to determine water body use attainment.

Objective: Continue monitoring and tracking efforts to determine if projects implemented to address NPS impairments are making water quality improvements and addressing TMDLs.

- **Three TMDL lakes are receiving follow-up monitoring to determine water quality improvement. 1. Stephen Foster Lake (Bradford County) has been intensely monitored since BMP implementation began in 2004, utilizing 319 funding. Monthly in-lake and tributary water quality grab samples and flow data are collected from April through October. The loading and comparative data analyses are being complied through consultant services, and results should be available in late 2007. To date, slight improvements of in-lake total phosphorus have been noted. 2. Lake Luxembourg (Bucks County) has been sampled almost annually since the TMDL was completed in 1999. BMPs in that rapidly developing watershed now focus on wetland enhancements and stormwater retrofits. 3. Harveys Lake (Luzerne County) has been monitored for stormwater mitigation, as that is the main focus of BMP implementation. To date, the Lake's total phosphorus loadings have been reduced by more than 30%.**

<u>Goal 4</u>

Objective: By 2007, develop a strategy to control, prevent, and mitigate aquatic invasive species that affect aquatic life and recreational uses of Pennsylvania's water bodies and riparian areas.

- **In 2006, PA developed and adopted an Aquatic Species Management Plan, to be approved by the national Aquatic Nuisance Species Task Force. When approved by the national council (sometime in 2007), dedicated funding sources will be available for projects to control and mitigate invasive species.**

- **DEP has a seat as one of six State agencies represented on the Pennsylvania Invasive Species Council (PISC), in addition to 10 public members. Meetings are held quarterly.**

- **The PISC has also completed a management plan for Terrestrial Invasive Species, which has gone to the Governor for his approval.**

- **The Pennsylvania Fish and Boat Commission has played an active role in the PISC and is now putting information about Aquatic Nuisance Species on their web site, as well as publishing educational materials on aquatic invasives.**

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- **The PISC formed an Aquatic Invasive Species Workgroup in 2006. One of the first items on their agenda is to look at the parameters of the new Aquatic Species Management Plan and identify priorities. This workgroup is open to the public and will be a viable means to coordinate outreach initiatives Statewide.**

- **In 2006, DEP and DCNR conducted three Plant Identification Workshops, designed for Watershed Specialists and others, which included presentations about the impacts of invasive species, both terrestrial and aquatic, and identification of plants in the field. This program could be adapted to target aquatics very easily, if Department resources were available. Information and outreach items on aquatic invasives were also available at the 2006 annual Conservation District Watershed Specialist Meeting (October 17 and 18, 2006) and the 2006 Pennsylvania Lake Management Society (PALMS) annual conference (October 25 and 26, 2006).**

Objective: Support conferences and outreach events for dissemination of current information on innovative technologies for lake management.

- **PALMS held its 2006 annual conference on Oct. 25 and 26 in State College, PA. Topics covered were aquatic plant distribution and management, dredging, in-lake management and treatments, fisheries management, lake monitoring and assessment, volunteer monitoring, working with municipalities for lake protection and dam maintenance. Three regional workshops are scheduled for March and April 2007.**

Objective: By 2007, expand the availability of technical and educational resources on lake management and restoration issues through a public clearinghouse, to provide outreach to public and private lake managers, owners, and stakeholders.

- **PALMS and the Lake Wallenpaupack Watershed Management District websites offer educational materials on lake protection and management, offer BMP manuals for free downloading, and offer other contacts and links for further information.**

- **DEP very soon will offer some historical lake resources on the web. A 1917 lake inventory publication has been electronically converted for web presentation. Other lake data for use by the public will be posted as information becomes available. Some of this will be available through DEP's eFacts public web resource.**

- **The Consortium for Scientific Assistance to Watersheds (C-SAW) in 2006 assisted two lake associations to monitor their lakes using DEP lake protocols. Lake data will be used in the next DEP Integrated Report.**

<u>Goal 5</u>

Objective: By 2007, disseminate new information and outreach materials on NPS issues for municipalities, watershed groups and local stakeholders.

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- **DEP provided speakers and literature resources for the annual conference of the Pennsylvania Lake Management Society, the premier lake stakeholder workshop in the State, in October 2006.**

- **The Chesapeake Bay Foundation developed a new model riparian buffer ordinance in 2006, by for use by municipalities and local governments.**

- **Through DEP's Growing Greener grant program, a model riparian protection easement document was developed for use by municipalities, land trusts and conservation groups and private citizens.**

- **At the annual Watershed Specialist Meeting (October 2006), a Lake Issues session was offered to enhance the understanding of basic lake concepts and to direct further resources and trainings.**

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E. Land Disposal Objectives

Goal 3

Objective: By 2009, incorporate basic water quality monitoring provisions into the work plans of at least three sizable streamside dump cleanup proposals.

- **During 2006, three Penn State University water resource faculty members agreed to work on creating a simple, low cost protocol that can be used by students or volunteers for surveying illegal dump sites to determine whether they are contributing chemical or biological contaminants to nearby streams. Once this protocol has been developed, existing dump clean up programs and funding agents will be contacted to select specific sites and arrange for monitoring before and after dump removal.**

Goal 4

Objective: Evaluate denitrification and other alternate wastewater treatment technologies as they are submitted, using DEP Experimental On-lot Technology Verification Protocols.

- **Field-testing of the Oranco AdvanTex AX-20 denitrification unit continued during 2006 at 11 sites throughout Pennsylvania.**

- **Delaware Valley College is currently evaluating several alternative on-lot treatment technologies and has formed a broad-based work group to review its findings**

Goal 5

Objective: Provide continued training of 1,152 local sewage enforcement officers (SEOs) biannually, and promote increased participation by other municipal officials.

- **During 2006, 1,340 SEOs and municipal officials received training in the SEO Pre-certification Academy (111), classroom classes (659) and web-based courses (570).**

- **Six web-based courses are currently being offered which deal with alternative treatment technologies.**

- **One new classroom course on site evaluation testing and one web-based course on alternative treatment technologies were developed in the last year.**
- **A thorough revision of the Pre-certification Academy curriculum was begun during 2006.**

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- **A workshop entitled, "Comprehensive Planning and Sewage Facilities Planning" was developed to alert municipal officials to the need for and benefits of timely facilities planning.**

Objective: Encourage an additional 100 municipalities to develop and update Sewage Management Programs (SMPs) in accordance with Act 537 by 2010. (An estimated 85 municipalities had programs planned or operational in 2003.)

- **At the end of 2006, there were 157 SMPs on record, serving at least 183 Pennsylvania municipalities. Without verification, it cannot be concluded that every SMP is valid, or active, or that there are not other SMPs in the State as yet undiscovered.**

- **Informal surveys of SMPs were conducted in Clearfield and Lebanon Counties, to assess how well these programs are working and what benefits are accruing to the participating municipalities.**

- **Technical assistance was provided to groups in Lackawanna and Juniata Counties in resolving issues related to the development of SMPs.**

- **DEP and SMP peer assistants supported the Canaan Valley Institute in a presentation on decentralized sewage management principles at the Pennsylvania State Association of Township Supervisors annual convention in April 2006.**

- **DEP and four peer assistants (representing five communities) addressed a workshop entitled, "Sewage Management Alternatives in Rural Pennsylvania" in Fulton County in November 2006. This was the third such workshop presented in the State, others having been located in Crawford and Huntingdon Counties.**

- **Assistance continues to be provided to all municipalities seeking support in developing new SMPs.**

Objective: Increase use of the PENNVEST Individual On-lot Sewage Disposal Funding Program for repair and replacement of malfunctioning systems by 2007. (An average of 32 projects per year were financed between 1994 and 2004). Explore regional options for the treatment and disposal of pumped septic wastes.

- **In 2006, PENNVEST closed on 15 new loans for repair and replacement of on-lot treatment systems, totaling $185,715. Since the program's inception in 1994, the agency has closed on 376 loans totaling $4,118,714.**

- **PENNVEST promotes its Individual On-lot Sewage Disposal Funding Program through DEP, the Pennsylvania Housing Finance Authority, local Sewage Enforcement Officers, conference exhibits, meetings with legislators, county planners, etc.**

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- **DEP's Act 537 Management Program began including a promotional paragraph for PENNVEST on-lot repair and replacement loans in its periodic SEO newsletter, beginning with the October 2006 issue.**

Objective: Enhance public awareness of household hazardous waste (HHW), and increase the number of participants in HHW collections by 2007. (33,934 participants were reported in 2003.)

- **Preliminary data for 2006 indicate that 111 HHW collections were held in 46 communities, involving 58,226 participants and collecting 6,739,866 pounds of HHW, electronics and tires.**

- **DEP staff speaking at regional roundtables and working one-on-one with individual communities accomplishes expansion of HHW collections and intermunicipal and public/private partnerships.**

- **At the end of 2006, there were 848 oil recycling collection stations registered in Pennsylvania. These are promoted on the DEP web site and through communications with citizens and regional and county recycling coordinators.**

Objective: Increase the number of regional (inter-municipal, public/private partnership) HHW collections by 2009. (Two were reported in 2003.)

- **There were eight intermunicipal and public/private collection partnerships in Pennsylvania at the end of 2006: the SW PA HHW Task Force (HHW), the SE PA Regional HHW Program (HHW), the Loyalhanna Watershed Association (electronics), the Northern Tier Solid Waste Authority (electronics), PA CleanWays (electronics), Bedford/Fulton/Huntingdon Counties (HHW and electronics), Elk/Cameron Counties (electronics) and Snyder/Union Counties (electronics).**

Objective: Expand on-farm assessments and collections of the Farm-A-Syst and Chemsweep programs, emphasizing performance-based approaches to environmental management. By 2010, increase the total amount of waste pesticides collected by the Chemsweep program to 4.0 million pounds.

- **Two Farm-A-Syst worksheets were revised and updated during 2006. Worksheet 6, "Stream and Drainage Way Management", was printed mid-year. Worksheet 4, "Barnyard Conditions and Management", was renamed "Animal Concentration Area Management" and is scheduled to be released sometime during 2007.**

- **The Farm-A-Syst materials are used extensively in Penn State University Cooperative Extension's nutrient management education program.**

- **The Chemsweep program collected 99,087 pounds of pesticides during 2006, slightly above the 1999-2005 average of 95,156 pounds per year. Of this total, 37,169 pounds were collected at nine Chemsweep/HHW partnership events, averaging 4,130 pounds per event. The four-year average amount of homeowner pesticides**

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collected per partnership event now has increased from 2,139 pounds to 2,910 pounds.

- **Chemsweep sends out pesticide inventory packets each year to licensed dealers and applicators in selected counties. This list includes professional applicators, golf courses, landscape services and pest exterminators. Also, Chemsweep is promoted to all applicators at update training and recertification meetings throughout the year.**

Objective: Investigate sustainable funding options for the statewide biosolids program and for biosolids recycling research, training and program delegation to county conservation districts by 2007.

- **DEP's Biosolids Program continued to provide formal training for biosolids generators and land appliers in recommended procedures for producing and applying biosolids during 2006.**

- **The program also continued to register haulers of residential septage in an effort to eliminate illegal disposal practices.**

Objective: Reclaim additional acres of disturbed or degraded lands using biosolids or other recycled by-products by 2008. (An average of 200 acres per year were reclaimed from 2001 to 2003

- **During 2006, 232 acres of mine lands were reported to have been reclaimed using biosolids as a soil supplement.**

Objective: Utilize existing programs to clean up 50 illegal dumps threatening lakes, streams, groundwater or wetlands by 2012.

- **PA CleanWays cleaned up 67 dump sites and Project COALS 27 sites during 2006, for a total of 94 projects, which collected 2,767 tons of assorted refuse and over 25,000 tires. Since 1990, these programs and the Susquehanna River Basins Commission have restored 747 sites, collecting 32,470 tons of refuse and more than 338,000 tires.**

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F. Resource Extraction Objectives

Goal 1

Objective: If resources allow, restore 100 stream miles to designated uses by improving aquatic habitats to support fish and associated aquatic life in streams impaired by Abandoned Mine Drainage (AMD).

- **Chesapeake Bay Small Watershed Grant Projects that finished between October 2005 and September 2006:**
  - **Morgan Run, Clearfield County (Restoration Plan)**
  - **Morgan Run, Clearfield County (Design and permitting for MRTUFF and MRFROG AMD discharges)**
  - **Loop Run, Clinton County (Design and permitting on LR5/6 AMD discharge)**
  - **Emigh Run, Clearfield County (Design and permitting on relocation of headwaters away from spoil piles)**

- **Growing Greener Projects that began between October 2005 and September 2006:**
  - **Miller Run and Fishing Run, Allegheny County (Gladdin Discharge mine seal and reestablishment of channel for Fishing Run)**
  - **Upper Saint Clair Township, Allegheny County (Design, permit and construction of passive treatment system and iron precipitate will be recovered and sold)**
  - **Turtle Creek-Piersons Run, Allegheny County (Construct a treatment facility to treat 3 AMD discharges that flow into Piersons Run)**
  - **Montour Run-South Fork Montour Run, Allegheny County (Design and construction of a passive treatment system to treat the Wilson School discharge)**
  - **Sugar Run, Blair County (The Blair county Conservation District will use 7 weeks of salary to coordinate contractors who will design and install contour ditches and rock channels to repair a 29-acre bond forfeiture site that is poorly reclaimed and eroding acid sedimentation into the stream)**
  - **Slippery Rock Creek, Butler County (O & M on Jennings Environmental Education Center AMD treatment facility)**
  - **Little Paint Creek, Cambria County (This is the design and implementation of a stream grouting project aimed at eliminating an AMD discharge at BAMR's Jandy Refuse Pile Reclamation Project)**
  - **Sterling Run, Cameron County (Design and permitting for the May Hollow 49 AMD discharge)**
  - **Trout Run, Centre County (Design and permitting for two AMD discharges)**
  - **Licking Creek, Clarion County (Design of a passive treatment system for AMD discharge)**
  - **Karthaus Township, Clearfield County (Funds to develop an environmental sampling program for waste coals in the region for a new waste coal fired CFB power facility)**

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- **Emigh Run, Clearfield County (Relocation of the headwater of the stream away from acidic mine spoils using natural stream design techniques)**
- **Long Run, Clearfield County (Design, permitting and construction of diversion wells)**
- **Morgan Run, Clearfield County (Construction of passive treatment systems on MRTUFF and MRFROG AMD discharges)**
- **Little Toby Creek, Elk County (Upgrade of existing Brandy Camp Treatment Plant)**
- **Dunbar Township, Fayette County (Complete construction of a Passive treatment system on AMD discharges)**
- **Roaring Run, Huntingdon County (Evaluate failure of Jollier AMD treatment facility and design a rehab plan)**
- **Yellow Creek, Indiana County (Redesign and reconstruction of the malfunctioning 2C passive treatment system)**
- **South Branch Bear Run, Indiana County (Design a passive treatment system and reclamation plan for the top priority AMD seep in the watershed)**
- **Blacklegs Creek, Indiana County (Design of a passive treatment system to treat a deep mine discharge and add more limestone to an existing limestone pond to create more detention time)**
- **Sugar Camp Run, Jefferson County (Feasibility Study and development of a conceptual design to treat an AMD discharge in order to use a portion for a municipal water supply)**
- **Mill Creek, Jefferson County (Design of two passive treatment systems for AMD to be implemented with PL566 funding)**
- **Shamokin Creek, Northumberland County (Assessment and design for a treatment system of the Maysville borehole)**
- **Blacklick Creek, Indiana and Cambria County (Drill nine borings and study a shallow deep mine using wells and dye to correlate rainfall and seven AMD seeps)**
- **Turtle Creek, Westmoreland County (Eliminate the Export discharge by draining the mine pool through a barrier into the Irwin mine pool)**
- **Lehigh River, Luzerne County (Design a passive treatment system to treat the Owl Hole mine discharge)**
- **Hanover Township, Luzerne County (Continue the reclamation of a large tract of mine scarred land for recreational areas and residential development)**
- **Mahanoy Creek, Schuylkill County (Design for a passive treatment system on the #5 borehole)**
- **Fall Brook Creek, Tioga County (Design and permitting for a AMD passive treatment system)**
- **Scrubgrass Creek, Venango County (Plugging of 10 oil wells)**

- **Projects funded by Section 319 between October 2005 and September 2006:**
  - **Hubler Run, Clearfield County (Construction of a passive treatment system on three AMD discharges)**

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- **Hartman Run, Huntingdon County (Limestone dosing in addition to limestone riprap and stream crossing)**
- **Six Mile Run, Bedford County (Design of AMD treatment system for SX0-D6)**
- **Six Mile Run, Bedford County (Design of AMD treatment system for SX2-D6, D7, D8)**
- **Six Mile Run, Bedford County (Design of AMD treatment system for SX2-D5)**
- **Six Mile Run, Bedford County (Passive treatment systems on AMD discharges in Shreves Run)**
- **Six Mile Run, Bedford County (Passive treatment systems for SX3-D9 and SX0-D16)**

- **Section 319 projects completed between October 2005 and September 2006:**
  - **Longs Run, Bedford County – Six discharges were treated with five separate passive treatment systems. The various treatments used were vertical flow wetlands, limestone ponds, anoxic limestone drain and settling wetlands. This project, along with two past Growing Greener projects, will restore the entire six-mile length of Longs Run.**
  - **Six Mile Run, Bedford County – Treatment of the SXO-D2 discharge was completed, using a limestone pond followed by a settling basin. This project restores 0.1 mile of stream and, along with another project further upstream, aids in the restoration of 1.1 miles of the headwaters of Six Mile Run.**

- **AMD treatment systems and other projects completed between October 2005 and September 2006:**
  - **Six Mile Run, Bedford County – Finleyville Project – Two limestone ponds and two settling basins were constructed to treat three AMD discharges, improving 1.0 mile of stream.**
  - **Little Mahoning, Indiana County – Cessna Run project -- A limestone pond, limestone ditch and a settling basin was constructed to treat an AMD discharge improving 1 mile of stream.**
  - **Two Mile Run, McKean County – Passive treatment System – Two vertical flow wetlands and limestone basin was constructed to treat an AMD discharge**
  - **Laurel Run, Somerset County –Reitz 1 Project – A Vertical Flow Pond and Bioreactor was constructed to treat an AMD discharge improving 1.0 mile of stream.**
  - **Babb Creek, Tioga County – Arnot SAPS ALD OM &R – Funds were used to provide operation and maintenance on an anoxic limestone drain**
  - **Babb Creek, Tioga County – Arnot #2 Mine #1 discharge – Site evaluation, design and permits for remediation of AMD discharge**
  - **Montour Run, Allegheny County – Clinton Road Acid Mine Drainage Remediation System – A passive treatment system located on Pittsburgh International Airport property removing 44,000 pounds of acidity and more than 6,000 pounds of metal, mainly aluminum annually from the West Fork of Enlow Run.**

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- **DEP's Bureau of Abandoned Mine Reclamation (BAMR) completed 12 AMD projects between October 2005 and September 2006 that resulted in four AMD treatment systems and other reclamation work related to existing and planned systems:**
- **Slippery Rock Creek, Butler County – DeSale North AMD Abatement Project – Surface reclamation with alkaline ash for AMD abatement**
- **Indian Creek, Fayette County – Melcroft - Directional drilling project to relocate a discharge**
- **Indian Creek, Fayette County – Melcroft Mine Pool Lowering – Draw down and chemical treatment of a mine pool**
- **Indian Creek, Fayette County – Romney North (Kalp Discharge) – Passive treatment facility**
- **Blacklick Creek, Indiana County – Tide Mine Pool Treatment – Experimental in-situ bioremediation**
- **Quemahoning Creek, Somerset County – Jenner Passive Treatment System – Upgrade existing passive system**
- **Somerset County – Metro Phase III – A number of bench-scale and pilot tests to evaluate resource recovery**
- **Mill Creek, Jefferson County – REM Coal Co. – Passive treatment facility**
- **Laurel Run (Blacklick Creek), Indiana County – Laurel Run Phase II – Backfill highwall with alkaline ash and construct passive treatment system**
- **North Branch Little Beaver Creek, Lawrence County – South Wells McCready Phase III - Surface reclamation**
- **Quemahoning Creek, Somerset County – Boswell 2 AMD treatment – Passive treatment facility**
- **East Branch Big Run and Middle Branch Big Run, Clinton County – Passive treatment facility**

Objective: If resources allow, reclaim 2,500 acres of Abandoned Mine Lands (AML).

- **Number of acres reclaimed from October 2005 to September 2006: 929**
- **McCready Phase III, Lawrence County – 14 acres of land reclamation restoring a highwall using Growing Greener II funding (BAMR also contributed – see above – this acre count is included in the figure below).**
- **BAMR completed 44 AML surface reclamation projects during the period to reclaim approximately 411 acres.**
- **The District Mining Offices facilitated the reclamation of 518 AML acres during the period through Government Financed Construction Contracts, Remining Permits and Bond Forfeiture Reclamation.**

Objective: Plug 1,100 of the 6,600 known abandoned oil and gas wells to improve water quality, eliminate safety hazards, and eliminate pollution resulting from uncontrolled discharges into ground and surface water, contingent on having adequate resources.

- **From October 2005 to September 2006, 79 wells were plugged using Abandoned Well, Orphan Well, and Growing Greener funds.**

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Goal 2

Objective: Develop 20 integrated watershed management plans that incorporate AMD/AML assessments by the end of 2009.

- **Completed Implementation Plans meeting EPA criteria:**
  - **Catawissa Creek, Schuylkill and Columbia Counties**
  - **Shoup Run, Huntingdon County**
  - **Six Mile Run/Sandy Run, Bedford County**
  - **Upper Schuylkill River, Schuylkill County**
  - **Bear Creek, Dauphin County**
  - **Pine Run, Jefferson and Armstrong Counties**
  - **Upper Swatara Creek, Schuylkill County**
  - **Anderson Creek Assessment and Implementation Plan, Clearfield County**
  - **Little Laurel Run Implementation Plan, Cambria County**

- **Implementation Plans meeting EPA's Section 319 Criteria that are underway:**
  - **Hubler Run, Clearfield County**
  - **Johnson Creek, Tioga County**
  - **Blacks Creek, Butler County**
  - **Montgomery Creek, Clearfield County**
  - **Hartshorn Run, Clearfield County**

- **Other restoration plans completed or close to completion:**
  - **Morgan Run, Clearfield County**
  - **Trout Run, Centre County**
  - **Beech Creek Assessment and Restoration Plan, Centre and Clinton Counties**
  - **Restoration Plan for Large Mine Discharges to Lower Chartiers Creek, Allegheny and Washington Counties**
  - **Thompson Run Watershed Restoration Plan, Allegheny County**
  - **Crooked Creek Watershed Nonpoint Source Pollution Assessment, Armstrong and Indiana Counties**
  - **Loyalhanna Creek Watershed Assessment and Restoration Plan, Westmoreland County**
  - **Licking Creek Assessment, Clarion County**

- **Other restoration plans funded in 2006 or planned to begin in 2007:**
  - **Shimmel Run Restoration Plan, Clearfield County**
  - **Deer Creek Restoration Plan, Clearfield County**
  - **Moshannon Creek Headwaters, Clearfield and Centre Counties**

- **AMD TMDLs approved in 2006:**
  - **Grassy Island Creek (05A), Nescopeck Creek Watershed (05D), Unnamed tributary 26641 WB Susquehanna River (08B), Alder Run Watershed (08C), Blue Run (08C), Sixmile Run Watershed (11D), Elk Creek Watershed (17A),**

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Little Mill Creek (17B), Plum Creek Watershed (18A) and Penn Run Watershed (18D)

- **AMD TMDLs proposed in 2006:**
  - **There were 29 TMDLs awaiting EPA approval in September 2006.**

Objective: Develop operation, maintenance and replacement (OM&R) plans and funding sources for AMD remediation projects, as resources allow, by the end of 2009.

- **OM&R Planning:**
  - **The Mill Creek Watershed OM&R Plan, Clarion County, was completed by the Mill Creek Coalition. It is a GIS-based comprehensive plan for management of 20+ AMD treatment systems.**
  - **The Western Pennsylvania Coalition for Abandoned Mine Reclamation (WPCAMR) was awarded a $350,000 grant for a Quick Response Repair Program. It is for repairs on systems that are failing and need emergency repair to prevent imminent damage to the receiving stream. By using this program, groups can receive funds needed for repairs more before too much damage can occur to a stream. The watershed group needs to get a cost estimate, contact its watershed manager and fill out a request form.**

<u>Goal 3</u>

Objective: Utilize a single Statewide clearinghouse to coordinate the sharing of monitoring and tracking data by the end of 2009.

- **The federal Office of Surface Mining updates and maintains the AML/AMD Treatment Inventory for the Appalachian Region, which includes Pennsylvania. The inventory contains information on location, treatment type, cost and funding partners. The database was developed in cooperation with DEP DMO, BAMR and WPCAMR. The goal of this database is to have all passive treatment systems in the state entered.**

- **WPCAMR continues to work on the Funding AMD Chemistry for Treatment Systems Project. This funding is used to develop a comprehensive O&M data management system to keep track of all relevant data for passive treatment systems in Pennsylvania. The system currently has some water quality data on various passive treatment systems. Included with that is a "early warning system" which will help predict if a treatment system is in decline, hopefully well before failure. The program will also assist watershed groups with the costs of laboratory chemical analyses of system water samples.**

- **The Section 319 National Monitoring program (NMP) on Swatara Creek has been extended through 2007 to continue to document results of treatment systems. Fish and macroinvertebrates are sampled in October; water chemistry sampling is**

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conducted year-round. Sampling of the Swatara Creek watershed by the USGS, funded through the NMP, has documented improvements in both water quality and the number of fish species in Swatara Creek at Good Spring Creek, Lorberry Creek and at Ravine, the downstream end of the coal mined area, after installation of passive treatment systems and land reclamation.

- **Many watershed groups, Senior Environment Corps, colleges and universities, district mining offices, BAMR and other conservation groups continue to monitor various passive treatment systems and receiving streams to detect changes in water quality.**

Goal 4

Objective: Encourage development and implementation of new technologies and technology transfer with a goal of more cost effective AMD remediation by 2009.

- **WPCAMR continued to use their email subscription service called "Abandoned Mine Posts", a free e-mail subscription service with information related to abandoned mine reclamation in Pennsylvania. Subscribers receive periodic articles and notices via e-mail that inform them about a variety of topics and current events related to abandoned mine drainage and reclamation including new technology to treat AMD. Topics of interest can be selected via a user profile to receive only editions related to those interests. WPCAMR continues to be involved in the Eastern Coal Regional Roundtable and is part of the Mine Pool Task Force subcommittee of the Mining and Reclamation Advisory board. It is also a member of C-SAW, where they help groups set up websites to sustain themselves.**

- **The Eastern Pennsylvania Coalition for Abandoned Mine Reclamation (EPCAMR) finished up a NFWF Small Watersheds Grant for implementation of 20 GIS workshops with municipalities in the EPCAMR region. They disseminated valuable GIS information in the form of poster- sized maps. EPCAMR also promoted abandoned mine land redevelopment, the Mining Safety and Health Administration's "Stay Out Stay Alive" campaign, and the Mine Subsidence Insurance program to name a few. EPCAMR also put on an art show in Luzerne County to showcase works that used AMD sediments as pigment, including iron oxide and manganese oxide, in several media. The goal here was to encourage the re-use of AMD sediments that are collected in treatment systems and create a local market for the material.**

- **In 2004-2005 BAMR requested proposals for innovative in-situ or ex-situ mine drainage treatment or abatement or enhanced metals recovery. Seven projects were awarded and began work in 2006:**

  - **Innovative Enhanced Metals Recovery from Acid Mine Drainage -- Concurrent Technologies Corporation and R.J. Lee Group, Inc. – Bobtown, Greene County**

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- **Feasibility for Use of Fe/Ca Acid Mine Drainage Residual in the Powdered Metals Industry – North Central Pa. Regional Planning & Development Commission and St. Mary's Pressed Metals -- Ridgeway, Elk County**

- **Nutrient and Metals Removal Using Iron Oxide Solids From Acidic Mine Drainage Treatment: A Market-Based Pollution Solution Approach -- Saint Vincent College and Iron Oxide Technologies, LLC -- Unity Township Municipal Authority**

- **Manganese Resource Recovery -- Stream Restoration, Inc. -- DeSalle Phase II, Venango Township, Butler County and Erico Bridge Restoration Area, Venango Township, Butler County**

- **Innovative Ex-Situ Activated Iron Solids Treatment & Enhanced Iron Oxide Recovery From Various Types of High Flow Acidic Mine Drainage -- Western Pennsylvania Coalition for Abandoned Mine Reclamation and Iron Oxide Technologies, LLC -- S.W. Borehole, Solomon Creek, Wilkes-Barre, Lackawanna County; Excelsior Mine Discharge, Shamokin, Northumberland County; Hayes Run Discharge, Brockway, Jefferson County; Phillips Mine Discharge, Uniontown, Fayette County; Saxman Run, Latrobe, Westmoreland County**

- **In-Situ Treatment of Abandoned Mine Drainage Utilizing Indigenous Bacteria in a Reduced Environment -- Western Pennsylvania Coalition for Abandoned Mine Reclamation and Winner Energy and Environmental Services, LLC -- Various mine discharges in Western Pennsylvania**

- **Optimizing the Design and Operation of Self-Flushing Limestone Systems for Mine Drainage Treatment -- Western Pennsylvania Coalition for Abandoned Mine Reclamation and Hedin Environmental -- Henry Run, Farmington Township, Clarion County and Bear Creek, Allegheny Township, Butler County**

Objective: Improve and encourage education and outreach programs for information dissemination to the general public by 2006.

- **The Pennsylvania Statewide Conference on Abandoned Mine Reclamation was held in August. The theme this year was "Back to Basics" and, as the title implies, it was to provide attendees basic information on AMD issues. Over 200 participants had numerous breakout sessions from which to choose, with conference workshops in Water, Resources, Land, Outreach, Funding, Monitoring, Management, Watershed Tools and The Big Picture of AMD. The planning for the conference was also unique. WPCAMR, using more modern methods of communication, set up a process in which most of the planning could be done by email and a few conference calls. Everyone on the steering committee signed up to participate in a group set up by WPCAMR on an internet site. Therefore a person could send out an email message to the steering committee and everybody would see it and have an**

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opportunity to comment on it. This saved people travel time and also money they normally would have spent traveling to various locations for meetings to plan the conference.

- **The 5th Ohio River Watershed Celebration was held in September 2006. More than 800 people attended, including approximately 100 home-schooled children. It focused on the efforts of small local watershed organizations and the impacts they have had on the restoration of the Three Rivers in Pittsburgh. Stream Restoration Inc. was one of the many partners involved in the celebration.**

- **Clean up Our American Lands and Streams (COALS) is a partnership among environmental groups, the coal and waste industries, and local, county and state governments. The initiative was developed in Columbia and Northumberland counties after a December 2004 tour of illegal dumpsites on county and coal company properties. The program now includes Schuylkill County. The COALS initiative includes cleanup, recycling, education, surveillance and enforcement of illegal dumping on old mine sites. DEP has developed a coalition of committed partners to direct and fund the COALS program.**

Goal 5

Objective: Encourage sound science and innovative technology in the beneficial use of biosolids, alkaline coal ash, dredge spoil, and other by-product materials in mine land reclamation by 2009.

- **Revloc Refuse Pile Reclamation, Cambria County – Coal refuse piles near the town of Revloc had degraded the South Branch of Blacklick Creek. In the 1990's, permits were issued to Ebensburg Power Company to haul the refuse to a nearby cogeneration plant and haul coal ash back to the refuse site. Eroding refuse was removed from the stream bank and the piles have been largely reclaimed. A downstream monitoring point showed remarkable improvements, with the stream pH rising from 4.3 up to 6.4.**

Objective: Promote the new Pennsylvania Energy Harvest Program, funded by a combination of sources including the Clean Air Fund, Growing Greener and U.S. Department of Energy, as a means to use environmental problems as economic opportunities.

- **Pennsylvania Energy Development Authority Grants:**
  - **PFBC Environmental Energy Technology, Inc., Allegheny County – This project will design, construct and commission a Process Test Facility (PTF) at CONSOL Energy's R&D facility in South Park, PA. The PTF will be capable of burning a wide variety of waste coals, so that a Fuel Impact Model can be developed then used in the design and building of commercial-scale pressurized fluidized bed combined gas cycle generating units.**
  - **EMARR Inc., Luzerne County, one of EPCAMR's partnering organizations, received an Energy Harvest Grant to develop hydroelectric power sources on an**

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abandoned mine discharge in the Eastern Middle Anthracite Region. The equipment has been developed and they are currently in the process of locating a site.

Objective: Encourage industry to establish and implement a means for beneficial use of abandoned mine pools and mine discharges by 2009.

- **The Saxman Run project in Westmoreland County (funded by Growing Greener I in Nov 2005) intends to use mine drainage flow, which is presently polluting Saxman Run, to generate electricity. The power will then be used by an AMD treatment system in place and one that will be built in the future. Any excess power will supply systems at the Latrobe Sewage treatment plant, where the AMD systems are located.**

- **Can Do Inc., Luzerne County received a grant to use Green Mountain Tunnel water as an industrial water supply for their Humboldt Industrial Park, as part of BAMR's AMR 05 Economic Development Grant Program.**

- **The Susquehanna River Basin Commission (SRBC) completed a study of mine pools in the West Branch of the Susquehanna to assess their potential to supply treated water to consumptive agricultural uses during periods of low stream flow. The situation was determined to be a win-win for all parties. AMD-affected streams will be restored, the cost of treatment will be provided by a trust fund and the SRBC will receive needed water for agricultural use during low flow periods on the river.**

- **The Toby Creek Watershed, Elk and Jefferson Counties, finished a project using water from a deep mine discharge for a trout hatchery. The discharge is alkaline with high iron, and half of the flow is being treated at this time. The group is raising about 7,000 trout.**

Objective: Encourage and implement the redevelopment of abandoned mine lands for recreational, industrial, commercial and residential uses by 2009.

- **Rock Run Recreation Area is located in Cambria and Clearfield County. The abandoned mine land is being converted to ATV use and a County park. Over 50 miles of ATV trails are being constructed and will be maintained. Also, four AMD discharges on the site are being treated, improving the quality of Rock Run and Chest Creek.**

- **EPCAMR completed a 1/4-acre AML redevelopment site on Avondale Hill, Plymouth Township in Luzerne County. The project also incorporated a memorial plaque to remember the Avondale Mine Disaster, community gardens and a stormwater best management practice (BMP). The project had many partners including OSM, the Americorps VISTA Program, many local businesses and community volunteers.**

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- **EPCAMR has seen quite an increase in AML redevelopment, especially in Luzerne and Lackawanna Counties. They are often called to the table during E&S meetings and plan reviews to make suggestions on BMPs. Some examples of projects they have been involved in:**
  - **Center Point Industrial Development near Pittston, Luzerne County**
  - **Whitney Point Residential Development in Newport Township near Nanticoke, Luzerne County**
  - **Valley View Industrial Park near Scranton, Lackawanna County**
  - **Humboldt Industrial Park (Humboldt North Expansion)**
  - **Industrial/Commercial Sites near Hazleton, Luzerne County**
  - **Buttonwood Development, Small Industrial Site in Hanover Township near Wilkes-Barre, Luzerne County**

Objective: Continue to encourage the use of coal refuse and waste coal to generate electricity and refine technology that will convert waste coal into energy, thereby cleaning up refuse piles and reducing surface production of AMD.

- **Pennsylvania has numerous plants that are using coal refuse to produce electricity. More are being planned for the future. A Growing Greener grant was awarded to Karthaus Township to develop an environmental sampling program for waste coals in the region to supply a new waste coal-fired CFB power facility in Clearfield County.**

Objective: Use existing sources of funding and encourage establishment of new sources of funding for reclamation and mine drainage treatment.

- **A number of groups (the AML Campaign, which includes WPCAMR and EPCAMR) have been working together towards the reauthorization of Title IV of SMCRA. The program was extended but was due to expire June 30, 2006. As of the end of September the bill had not been passed.**

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G. Silviculture Objectives

Goal 1

Objective: Provide effective communications with 520,000 woodlot owners and 4,000 forest practitioners, managing 13 million acres of private woodland, on forest best management practices for silvicultural activities.

- **Two new landowner groups were established in 2006. This brings to twenty-five the number of forest landowner groups in Pennsylvania.**

- **During 2006, 1,449 SFI packets were distributed to landowners prior to timber harvesting.**

- **Penn State Natural Resources Cooperative Extension continues to provide monthly Forest Stewardship News Releases on forest best management practices to forest landowners and agencies**.

- **An in-service training unit on "Converting Land--Protecting Water" was presented to 22 members of the Pennsylvania Forest Stewards program. In August 2006, 16 volunteers attended a silviculture in-service refresher course. Thirty-six new Pennsylvania Forest Stewards completed core training in 2006.**

Goal 2

Objective: Provide training to forest practitioners on using water quality best management practices for silvicultural activities.

- **In 2006, 157 individuals took Environmental Logging/Advanced Environmental Logging training. Through continuing education courses, 672 individuals have taken training.**

- **A Land Use Training was held for 78 Department of Conservation and Natural Resources (DCNR) Bureau of Forestry service foresters. This training was designed to help foresters work more effectively with municipal planning commissions to address watershed, urban tree canopy and timber harvesting issues.**

- **A 1998 silviculture BMP demonstration site on Bald Eagle State Forest and Pennsylvania Game Commission lands is being updated to reflect the changes in the forest over the years. New topics are being introduced, including invasive plant species and hemlock wooly adelgid treatments. Over 600 people are estimated to visit this site annually.**

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- **A 40-acre block of a 266-acre timber harvest site is being converted to a demonstration site in Sproul State Forest. The site will feature 15 different silvicultural treatments with interpretive signage. Plans include disabled-accessible trails and parking as well as a potential picnic pavilion to facilitate tours and events.**

Goal 3

Objective: To assure that timber harvesting activities are carried out in such a way that the potential for polluted runoff during harvesting is minimized.

- **A form has been developed to establish a silviculture BMP implementation baseline, which would be reevaluated five years later to assess the effectiveness of BMP training.**

Goal 4

Objective: To provide the tools to forest landowners and timber harvesters to help them manage forest lands for water quality protection and sustainability.

- **Free planting stock continues to be offered to landowners planting riparian buffers within the Chesapeake Bay drainage basin in Pennsylvania. Plants are provided through organizations working to restore the Bay.**

- **Potomac Watershed Conservancy's "Growing Native" program is being expanded into Pennsylvania, including areas outside of the Potomac River watershed.**

- **The goal to restore 600 miles of riparian forested buffers by the year 2010 has been met. To date, a total of 1,953 miles of forested riparian buffers have been added in the Chesapeake Bay watershed. More than 2,374 miles of forested riparian buffers have been added Statewide. During 2006, 137 miles were added in the Chesapeake Bay watershed, with a total of 156 miles added Statewide.**

- **Landowner enrollment in the Forest Stewardship Program (FSP) continues. One hundred thirty-one new stewardship plans were written between October 2005 and September 2006.**

Goal 5

Objective: To encourage people outside the forest landowner/practitioners/logger constituency to utilize trees for water quality improvements.

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- **By June 30, 2006, 1,723 people had attended "tree-tender" training classes through the TreeVitalize program. This number is very close to the program goal for training 2,000 individuals.**

- **Plants were also provided through TreeVitalize, a program launched in Pennsylvania to plant more than 20,000 shade trees and add 1,000 acres of forested riparian buffers in Bucks, Chester, Delaware, Montgomery and Philadelphia counties. As of June 30, 2006, 9,002 trees had been planted, and 104 acres of riparian buffer had been restored.**

- **Over 10,000 packets of red oak acorns were handed out to visitors to the 2006 Philadelphia Flower Show where the TreeVitalize/DCNR exhibit encouraged visitors to "Plant a Native Tree."**

- **The Alliance for the Chesapeake Bay is developing a brochure and outreach program to promote the new Forestry for the Bay Program and other backyard forestry programs. Forestry for the Bay will require a commitment to riparian management in woodland management plans.**

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H. Watershed-Based Implementation Plans

Watershed-based planning has been supported under Pennsylvania's Section 319 Program since FFY2003. The number of plans developed and implemented through September 30, 2006 is reported here as a measure of progress in that element of the program. EPA will calculate water miles and acres covered based on the EPA Grants Reporting and Tracking System (GRTS) project numbers listed.

At the end of FFY2006, 12 watershed implementation plans had been completed in Pennsylvania. All but one of these focused on TMDL watersheds having active watershed groups and previous studies available. Twelve additional plans were in various stages of development. Several groups had initiated implementation projects, but none of the plans were yet substantially implemented.

Tables II-01 and Table II-02 provide the interim measures that Pennsylvania used to chart watershed implementation planning progress beginning with the FFY2005 annual report. Watershed plans completed and accepted by EPA are identified in Table II-01. These plans deal primarily with agricultural and abandoned mine drainage (AMD) issues. Plans still being developed are shown in Table II-02. They are also located primarily in agricultural and AMD-impaired watersheds.

In addition to these 24 watershed-based plans, there is another group of 10 plans awaiting start-up. These represent the third round of planning in the State program, and are targeted on watersheds chosen by the six DEP Regional Offices.

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Table I-01. Watershed Implementation Plans Completed and Accepted by EPA

Watershed	Nonpoint Source Impairment(s)	319 grant project(s) implementing the plan
Catawissa Creek (Schuylkill County)	AMD	003498990_17 003498040_17 003498060_19
Shoup Run (Huntingdon County)	AMD	003498020_17 003498040_19 003498050_18 003498050_19 003498050_21 003498060_18
Six Mile Run/Sandy Run/Longs Run (Bedford County)	AMD	003498040_20 003498050_12 003498050_13 003498060_12 003498060_13 003498060_14 003498060_15 003498060_16
Core Creek/Lake Luxembourg (Bucks County)	Nutrients, Sediment	003498040_29
Bear Creek (Dauphin County)	AMD	003498040_18
Upper Schuylkill River (Schuylkill County)	AMD	003498020_15 003498030_21 003498040_16 003498040_21
Little Laurel Run (Cambria County)	AMD	003498050_15
Upper Kishacoquillas Creek (Mifflin County)	Nutrients, Sediment	003498020_24 003498020_28 003498050_26 003498050_27
Pine Run (Jefferson and Armstrong Counties)	AMD	003498050_23
Conewago Creek (Dauphin, Lancaster, and Lebanon Counties)	Nutrients, Sediment	
Upper Swatara Creek (Schuylkill County)	AMD	003498050_14
Mill Creek (Lancaster County)	Nutrients, Sediment	003498050_28 003498050_29

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Table I-02. Watershed Implementation Plans Being Developed[1]

Watershed	Nonpoint Source Impairment(s)	319 grant project(s) implementing the plan
Conowingo Creek (Lancaster County)	Nutrients, Sediment	
Anderson Creek (Clearfield County)	AMD	
Codorus Creek (York County)	Nutrients, Sediment	003498040_26 003498040_28 003498040_32 003498040_42
Hubler Run (Clearfield County)	AMD	003498050_17 003498060_17
Johnson Creek (Tioga County)	AMD	003498050_16
Hungry Run (Mifflin County)	Nutrients, Sediment	
Black's Creek (Butler County)	AMD	003498050_24
Mill Creek/Stephen Foster Lake (Bradford County)	Phosphorus, Sediment	
Harvey's Lake (Luzerne County)	Nutrients, Sediment	003498050_36
Montgomery Creek (Clearfield County)	AMD	
Hartshorn Run (Clearfield County)	AMD	
Abrahams Creek/ Francis Slocum Lake (Luzerne County)	Nutrients, Sediment	

[1] This includes plans in final revision, under DEP/EPA review, competing a draft or being developed as of August 25, 2006.

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I. NPS Management Program Funding

Funding for Pennsylvania's nonpoint source management activities comes from a variety of sources. Chief among these is Section 319 funding, which has totaled nearly $68 million since FFY 1991, including $5.9 million in FFY 2006. Other significant sources of support are shown in the Table I-03 below.

Table I-03. NPS Funding Sources and Amounts

CWA Section 319	$69 million since FFY 1991
Pennsylvania's Growing Greener Initiative	$181 million in watershed protection grants for 1,592 projects since 1999
Conservation Reserve Enhancement Program	$200 million (2002 Farm Bill funding)
Chesapeake Bay Program	$34 million (since 1984-1985)
PDA Nutrient Management	$13 million
Chesapeake Bay Small Watershed Program	$530,000 in 2006
USDA Farm Bill Programs	$5-$10 million for FFY 2006 conservation programs

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J. NPS Activities on Federal Lands

DEP's Section 319 Program works closely with the U.S. Geological Survey, Natural Resource Conservation Service, Office of Surface Mining and Environmental Protection Agency, all of which are represented on the Department's NPS Liaison Work Group. It maintains good working relationships with other federal agencies and works cooperatively in addressing NPS issues arising on federal lands, but there is no specific program in place to focus on these areas. See **Appendix C. Federal Lands in Pennsylvania** for the location of these lands within the State.

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PART II.

Water Quality Improvements Achieved by the 319 Program

Pennsylvania is estimated to have 86,161 miles of streams, 3,956 lakes covering 161,445 acres and 403,924 acres of freshwater wetlands.

As of September 2006, water quality assessments had been completed on 79,746 miles (92.5%) of the State's stream miles. Monitoring data indicate that 83 percent of these stream miles meet their designated water use classifications. Nonpoint source impairments are reported in 15 percent of the assessed stream miles.

The largest sources of water quality impairments for the A*quatic Life* designated use continue to be abandoned mine drainage (AMD), agriculture, urban runoff/storm sewers, road runoff, small residential runoff, and atmospheric deposition:

- Abandoned mine drainage – 4,645 miles
- Agriculture – 4,161 miles
- Urban runoff/storm sewers – 1,470 miles
- Road runoff – 687 miles
- Small residential runoff – 554 miles
- Atmospheric deposition – 305 miles

More specifically, the causes of these water quality problems are due to:

- Siltation – 6,617 miles
- Metals – 4,160 miles
- PH – 2,113 miles
- Nutrients – 1,757 miles

Approximately 890 miles of streams are impaired for the *Human Health* designated use fish consumption, out of the 1,523 stream miles assessed for this designated use. The causes of impairment to these stream miles are:

- Mercury – 541 miles
- Polychlorinated biphenyls (PCBs) – 392 miles
- Chlordane – 101 miles
- Dioxins – 35 miles

DEP could not identify the specific causes for the impairment for 907 miles of impaired stream reaches. Pollution due to industrial point sources is listed as the source of impairment for 10 additional stream miles.

There are approximately 98,942 acres of significant, publicly owned lakes in Pennsylvania. Approximately 53 percent of the 62,342 acres of lakes assessed by September 2006 were found

to meet water use classifications, according to the 2006 Integrated Water Quality and Assessment Report (formerly known as the 305(b) report).

The primary sources of impairment to lakes are agriculture or "unknown." The "unknown" source code is often associated with low dissolved oxygen levels in the hypolimnion of naturally stratified lakes and is not necessarily caused by a nonpoint source (NPS) pollutant. Additional nonpoint sources of lake impairment are urban runoff/storm sewers and on-site wastewater treatment systems.

The primary causes of A*quatic Life* designated use impairment in lakes are nutrients, pH, suspended solids and organic enrichment/low dissolved oxygen.

A Statewide summary of use support status for four designated uses in assessed streams and lakes is shown in Table II-01.

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Table II-01. 2006 Integrated Water Quality Monitoring and Assessment Data

	Aquatic Life Use	Fish Consumption Use	Recreational Use	Potable Water Supply Use
Streams (miles)				
Assessed	79,746	1523	266	278
Supporting	66,342	591	195	172
Impaired	11,137	890	71	106
Approved TMDL	1,667	42	----	----
Compliance	42	----	----	----
Pollution	2,223	----	----	----
Lakes (acres)				
Assessed	62,433	35,615	61,040	6,916
Supporting	34,855	2,649	59,769	6,916
Impaired	5,661	27,483 [2]	1,271	0
Approved TMDL	11,837	5,483	----	----

[2]. This does not include the 271,866 acres in Presque Isle Bay on Lake Erie

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A. Delisting and Improvement of NPS Impaired Waters

Water bodies are listed in Table II-02 and Table II-03 that are either fully or partially restored to their designated uses, as a result of 319 program implementation efforts. During 2006, Pennsylvania adopted the National Hydrographic Data System for locating streams and lakes throughout the State and now utilizes 14-digit HUC codes and Com IDs in place of the State Water Body IDs formerly used. Notations from both systems appear throughout this report.

Table II-02. Fully Restored Waters Since 2000 (cumulative)

Water body	Section 319 funds used	GRTS project number(s)	Impairment Source -Cause	Year first listed on 303(d) list	State Water Body ID	Segments Delisted
Manatawny (1) Creek (Berks and Montgomery Counties)	Yes	003498000_44	Agriculture-Nutrients, Organic Enrichment/ Low D.O.	1996	PA 03D01655	0-0.5863 0.5863-2.3562 2.3562-3.9389 3.9389-8.7667 8.7667-10.0992 10.0992-11.1338 11.1338-12.009 12.009-13.5946 13.5946-13.9374 13.9374-15.8023 15.8023-16.6422 16.6422-16.7137 16.7137-17.2256 17.2256-18.039 18.039-18.7813 18.7813-20.2993
UNT to (1) Manatawny Creek (Berks and Montgomery Counties)	Yes	003498000_44	Hydromodification-Thermal Modification		PA 03D01656	0-2.2708

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Table II-03. Partially Restored Waters Since 2000 (cumulative)

Water body	Section 319 funds used	GRTS project number(s)	Impairment Source - Cause	Year first listed on 303(d) list	NHD Reach Code and Com_ID
Mt. Rock Spring Creek (Cumberland County)	Yes	003498990_20	Agriculture-Nutrients	1996	02050305000841 / 56407741

Definitions:
Fully restored = all sources of impairment have been cleaned up or restored, and designated uses are being achieved.
Partially restored = impaired by more than one source, or for more than one designated use, and one or more (but not all) of these sources has been cleaned up or uses have been restored.
Water body = any body of surface water as small as a stream segment.

Pennsylvania's NPS program also is working to identify surface waters where water quality is believed to be improving through natural processes or sustained restoration efforts. These water bodies are then referred to DEP biologists to determine whether they merit reassessment and removal from the impaired streams list. Streams judged to be improving during FFY2005 and FFY2006 are listed in Table II-04 and Table II-05 below:

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Table II-04. Stream Water Quality Improvements – FFY2005

Water body	Section 319 funds used	GRTS project number(s)	Impairment Source - Cause	Year first listed on 303(d) list	State Waterbody ID
Millers Run (Huntingdon County)	Yes	003498020_17 003498040_19 003498050_21	AMD	1996	
Longs Run (Bedford County)	Yes	003498040_20	AMD-Metals, pH	1996	PA11D13791
Lititz Run (Lancaster County)	Yes	003498980_21 003498990_60 003498030_26	Agriculture-Nutrients, Sediment Urban Runoff	2002 1996	PA07J07647 PA07J07646
Donegal Creek (Lancaster County)	Yes	003498970_15	Agriculture-Suspended Sediment	1996	PA07G07920
Mill Creek (Bradford County)	Yes	003498010_51	Agriculture-Nutrients, Suspended Sediment	1996	N/A
Upper Slippery Rock Creek (Butler County)	Yes	003498970_18 003498980_13	AMD- Metals	All are 2004	PA20C34032 Multiple IDs
Glenwhite Run (Blair County)	Yes	003498990_15	AMD Metals AMD pH, Siltation AMD pH AMD Metals	1996 2002 2002 2004	PA11A16428 PA11A16429 PA11A16430 PA11A16431
Wells Creek (Somerset County)	Yes	003498030_22 003498030_23	AMD- Metals, pH	2002	PA18E45675-78, 92-99, 700-701

Table II-05. Stream Water Quality Improvements – FFY2006

Water body	Section 319 funds used	GRTS project number(s)	Impairment Source - Cause	Year first listed on 303(d) list	NHD Reach Code and Com_ID
Mt. Rock Spring Creek (Cumberland County)	Yes	003498990_20	Agriculture – Siltation; Construction – Siltation	1998	02050305000841 / 5
Mt. Rock Spring Creek (Cumberland County)	Yes	003498990_20	Agriculture – Nu	1996	02050305000840 / 5
South Branch Blacklick Creek (Cambria County)	Yes	003498030_24	AMD-Metals, pH	1996 2002	05010007000176 / 123720836
North Branch Little Mahoning Creek (Indiana County)	No	N/A	AMD-Siltation	2006	05010006001232 / 123853444

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Table II-06 lists lakes that have been reclassified on the State's Integrated List of All Waters as a result of having attained at least one formerly impaired use:

Table II-06. Lake Water Quality Improvements – FFY2006

SWP Code	Lake Name(s)	Acres	List Date
01-D			
	Lake Minisink	35	2002
03-D			
	Hopewell Lake	68	2002
	Scotts Run Lake	21	2002
	Trout Run Reservoir	42	2002
03-H			
	Marsh Creek Lake	535	2002
04-A			
	Beechwood Lake	67	2002
04-D			
	Cooks Pond	33	2002
	Lake Wesuking	57.8	2002
	Rockwell Pond	22.4	2002
	Unnamed (State Game Lands 250)	18.9	2002
05-A			
	Curtis Reservoir	75	2002
	Dunmore #7	17.4	2002
	Lake Scranton	225	2002
	Mountain Mud Pond	24.6	2002
07-E			
	Laurel Forge Pond	20	2002
10-B			
	Bear Wallow Pond	25	2002
	Elk Lake	31.5	2002
10-D			
	Hunters Lake	117	2002
11-A			
	Canoe Creek Lake	157.3	2002
17-A			
	Laurel Run Reservoir	100	2002
17-C			
	Kyle Lake	150	2002
18-E			
	Quemahoning Reservoir	900	2002
20-C			
	Hereford Manor Lake (Lower)	43	2002
	Thorn Run Reservoir	49	2002

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B. NPS Pollutant Loading Reductions

EPA requires states receiving Section 319 grant funds to report estimated load reductions for nitrogen, phosphorus and sediment for all implementation projects. DEP also reports on reductions of abandoned mine drainage (AMD) pollutants such as aluminum, iron, manganese, and acidity.

The Grants Reporting and Tracking System (GRTS) is used by Pennsylvania and other states to track estimates of NPS pollutant load reductions. EPA maintains this federal/state program database, which is used to document Section 319 project progress. GRTS is linked through EPA's WATERS website, www.epa.gov/waters/, to other EPA-maintained databases and geographic information system (GIS) tools, enabling users to see where projects are spatially located and what data is associated with specific projects.

The majority of projects in Pennsylvania's FFY2002 through FFY2005 grants have provided DEP with estimates for either *Pre-implementation* or *Post-implementation* load reductions. This data is dependant upon whether a project is still in the design stage (pre-implementation) or if construction has been completed (post-implementation). These calculations are based on the use of either a) water quality monitoring data, which is typically the case with AMD projects, or b) pollutant reduction models for other types of NPS pollutants, i.e. nitrogen, phosphorus and sediment.

In many cases, Section 319 projects are designed to reduce pollutant loads identified in an approved TMDL.

Table II-07 shows Nitrogen (N), Phosphorus (P), Sediment, Aluminum (Al), Iron (Fe), and Acidity load reduction estimates for Section 319 NPS Implementation and National Monitoring Program projects. Both pre- and post-implementation load reduction estimates are included. The EPA/State Grants Reporting and Tracking System (GRTS) NPS program database is the source of this data.

Table II-07. Section 319 Project Cumulative Load Reduction Summary

	N (Lb/Yr)	P (Lb/Yr)	Sediment (Ton/Yr)	Al (Ton/Yr)	Fe (Ton/Yr)	Acidity (Ton/Yr)
Grant Year						
2003	70,892.	40,057.	11,423.	7.4	17.7	15.0
2004	80,587.	43,049.	13,360.	161.8	22.7	1,341.0
2005	95,929.	49,004.	19,070.	172.5	207.5	1,436.0
2006	105,758.	51,064.	19,685.	325.3	211.0	2,856.6

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In addition to the summary data provided in Table II-07, there is more detailed information for each project in the FFY2003 through FFY2006 grants available in **Appendix D. Progress in Meeting Section 319 Project Milestones**. Nonpoint source pollutant load reductions including Nitrogen, Phosphorus, Sediment, Aluminum, Iron, and Acidity are identified for all applicable projects in these grants in **Appendix E. Section 319 Nonpoint Source Load Reduction Estimates,** Table E-01 through Table E-04.

Pennsylvania uses the Web-based Reach Indexing Tool (WebRIT) to document geographic locations for all Section 319 implementation projects. This tool utilizes the National Hydrography Dataset (NHD) stream reach index. A linkage is made between the Section 319 project data and the specific stream reach(es) affected by a particular project.

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C. Section 319 Success Stories

DEP program staff, using information provided by Nonpoint Source Liaison Work Group partners, have prepared the following reports of 319 project accomplishments. These accounts use a standard EPA format, so that case studies can easily be included on the EPA Region III website, http://www.epa.gov/reg3wapd/nps/successstories.htm, where several other Pennsylvania success stories may be viewed.

Mill Creek Watershed, Bradford County

Title

Mill Creek and Stephen Foster Lake Watershed – Agriculture and Stream Bank Stabilization
NPS Watershed Restoration

Summary

This case study illustrates a watershed success story in the making. Water quality monitoring shows improvements in the Mill Creek watershed. Land treatment practices have been implemented over the past 10 years by landowner initiative and state / federal agriculture cost-share programs. Stephen Foster Lake is within this small watershed.

Problem

The Stephen Foster Lake impoundment was constructed in 1977. In 1993, the former Section 314 Clean Lakes Program initiated a Phase I Clean Lakes Program Watershed Assessment. The Stephen Foster assessment looked at hydrology, topography, soils, geography, nonpoint source (NPS) and point source (PS) problems. All land uses and natural resources were assessed, including agriculture, forestry, and surface waters. Stream channels were assessed and prioritized. Water quality monitoring and sediment analyses have been done and continue. Pollutant loading summary for Stephen Foster Lake indicates the majority is from nonpoint sources. Ag land conservation needs were assessed, and cost-estimates associated with these needs were developed. Educational activities were conducted with the watershed community. A management alternatives feasibility matrix focused on agricultural best management practices (BMPs), and stream bank stabilization as the best management alternatives.
In 2001, a TMDL was approved for Stephen Foster Lake, focusing on phosphorus and sediment. Following TMDL development, funds for BMP implementation were made available.

Project Highlights

Approximately 216 tons/year of sediment are being delivered to the Stephen Foster Lake from upstream sources. Based on the water quality data collected, there is a significantly higher level of nutrient loading observed during storm events.

Landowner Cooperation is being achieved through one-to-one contacts and educational programs. A digital aerial photography base layer was used to document land uses and facilitate design. The Natural Stream Channel Design (NSCD) approach was used to correct stream channel and stream bank stability problems. The NSCD approach reduces accelerated bank and

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bed erosion. Funding sources for NSCD include EPA Section 319, USDA-NRCS, and Pennsylvania Growing Greener funding. Accomplishments include:

- 2,530 linear feet of stream restored
- 5,060 feet of livestock stream bank exclusion
- 28 bank protection structures installed
- 2 stabilized stream crossings installed.

Costs averaged $47.14 per linear foot with a total cost = $120,110.

There are over the 7,500 acres (or 11 square miles) in the Mill Creek sub-basin with 13 active farms in the watershed. Eleven of the 13 have developed Nutrient Management Plans (NMPs). Nine of those have implemented NMPs covering approximately 3,220 acres or approximately 85% of the cropland in the watershed. NMP implementation requires funding. Cost-share is based on solving problems existing at the time of evaluation. Landowners have contributed the largest amount of funds for projects. Landowner share plus other government sources equal approximately $1.2 million. Conservation easements were purchased on two farms to remove livestock from sensitive areas. This use restriction is now permanently attached to the property deed. Income from these easements was used to address water quality concerns elsewhere on the farm. Farmers have been receptive to this idea. Riparian buffers have been established throughout the watershed. The Conservation Reserve Enhancement Program (CREP) has been instrumental in establishing riparian buffers.

Results

A TMDL is approved for Stephen Foster Lake, and pollutant load reductions are required. Sediment and nutrient load reductions were estimated using a watershed-based pollutant load reduction model. Reduction estimates show a high percentage of phosphorus and sediment were reduced, helping to meet TMDL goals. Water quality is monitored both at the lake outlet and in-stream. Stream water quality data shows mean total Phosphorus (TP) has decreased since 1993. The mean total suspended solid (TSS) level has also decreased.

Carlson's Trophic State Index (TSI) was used to interpret biological productivity. Total P, secchi disk and TSI readings are improving. An in-lake management plan is being developed. Management options include bottom withdrawal, winter drawdowns, alum treatment, or circulation in the lower end of the lake to keep TP from being re-suspended in the water column. Implementation continues and includes extensive CREP sign-ups, continued lake and watershed monitoring, continued farm planning and support, and evaluation of in-lake remediation options. Area universities have shown interest in the Mill Creek watershed for course material and illustrating a watershed success story.

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Figure II-01. Stream restoration using Natural Stream Channel Design.

Figure II-02. Barnyard runoff control and animal waste storage improvements.

Partners and Funding

Area farmers; Bradford County Conservation District; USDA-NRCS; PA DCNR Bureau of State Parks; Friends Labs, Inc.; PA Lake Management Society; Princeton Hydro, LLC; Chesapeake Bay Foundation; Ducks Unlimited, Inc.; PA Department of Agriculture; PA Department of Environmental Protection; EPA Region III.

Landowner Contribution: $351,010.00; Pa. Growing Greener: $295,351.00; EPA Section 319: $221,963.00; USDA EQIP: $161,874.00; CRP/CREP: $89,842.00; PA Act 6 Nutrient Management Program: $67,000.00; CBF/Ducks Unlimited: $46,647.00; Pa. DEP Chesapeake Bay Program: $20,844.00. Cost of completed BMP's: $1,254,563.00 (through July 2005).

Table II-08. Mill Creek Watershed Data: Progress in achieving water quality goals

Mean Total Phosphorus (mg/L)			
Baseline Sampling			
Station	Phase I Study	2004	2005
Mill #1	0.160	0.062	0.054
Mill #2	0.154	0.078	0.103
Mill #3	0.091	0.032	0.063
Inlet	0.120	0.055	0.035
n	3	2	4

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Barbara Lathrop, Pennsylvania Department of Environmental Protection, 717-772-5807, blathrop@state.pa.us.

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South Branch Blacklick Creek Watershed, Cambria County

Title:
Revloc Refuse Pile Reclamation

Summary:
Pre 1977 coal mining refuse piles near the town of Revloc, Pa. have historically degraded the South Branch Blacklick Creek. In the 1990's, permits were issued to Ebensburg Power Company to haul the refuse over to a nearby cogeneration plant and backhaul ash back to the refuse site. Eroding refuse was removed from the stream bank and the piles have been largely reclaimed. The downstream monitoring point SP-1 shows remarkable improvements, with the stream pH rising from 4.3 to 6.4.

Problem:
These refuse piles degraded the stream because acidic sediment eroded into the stream and refuse toe seeps discharged into the stream, resulting in a downstream pH of 4.3. Particularly damaging to the stream life was the 134 mg/l acidity and 21.0 mg/l aluminum found just downstream of the site. Consequently, the South Branch was put on the State impaired streams list and a TMDL was completed in 2005.

Project:
The Ebensburg Power Company began screening and hauling refuse off the site in 1991. Refuse outslopes along the stream were pulled back and the stream banks were reclaimed. After excavating the refuse to original ground, cogeneration ash was mixed with the remaining refuse and layered across the site. Upon completion of ash placement, the outslopes were reclaimed and site runoff was diverted to sediment ponds. Approximately ninety percent of the site has been reclaimed as of 2006.

Results:
Site reclamation helped to reduce the total loading of AMD pollution entering the stream. For example: the Revloc discharges originally showed an acid load of 2138 lbs/day, which was lowered to 157 lbs/day as the project progressed. In addition, the downstream samples measured dramatic improvements. The original pH 4.3 increased to 6.4, and the 21.0 mg/l aluminum decreased to 1.0 mg/l. This section of stream is now being recommended for reassessment in order to determine if it qualifies to be delisted due to successful remediation efforts. In addition to the water quality improvements, the project extinguished a fire in one of the piles, improving local air quality.

Funding and Partners:
Ebensburg Power Co. conducted all remediation efforts at no cost to the Commonwealth as part of their coal refuse reprocessing permit

Contact Information:
Tim Kania, PA DEP Cambria District Mining Office, 814-472-1891, tkania@state.pa.us

North Branch Little Mahoning Creek Watershed, Indiana County

Title:
Cessna Run Abandoned Mine Drainage Treatment System Project

Summary:
The North Branch, the second largest of three main tributaries that form Cessna Run (aka the North Branch of Little Mahoning Creek), contains two areas of abandoned mine drainage pollution impacts. Three discharges were treated with an oxic limestone channel or an oxic limestone drain and metals were allowed to precipitate in sedimentation ponds. After treatment, the acidity concentration of the discharges has been totally eliminated and 50.98 lbs/day of alkalinity have been added. In addition, aluminum and manganese loadings have been reduced 65% and 52% respectively.

Problem:
The North Branch, the second largest of three main tributaries that form Cessna Run, is located in northern Indiana County southeast of Punxsutawney, PA. The watershed contains two areas of abandoned mine drainage pollution impacts. The Phase I area consists of several surface mine discharges that contribute a majority of the acidity and aluminum loading to the North Branch. The Phase II area consists of several alkaline deep and surface mining discharges that contribute a majority of the iron loading to the North Branch. The Ken Sink Chapter of Trout Unlimited has been monitoring the mouth of Cessna Run for macroinvertebrates since 2003. The watershed is on the State impaired streams list for siltation from abandoned mine drainage.

Project Highlights:
The project partners received a Growing Greener Grant in 2003 to construct systems for Phase I. Discharge #1, the smaller flow of the three discharges, was treated with an oxic limestone channel (OLC). The effluent of the OLC was then allowed to precipitate its metal loading into a large forested area before it enters Cessna Run. Discharge #2 and #3 were captured and transported to the same treatment system, an oxic limestone drain (OLD) with two accompanying sedimentation ponds for metal precipitation.

Results:
The water quality of Cessna Run improved throughout its length post construction of the Phase I system. This improvement was most noticeable on the North Branch just before its confluence with Straight Run. The alkalinity concentration was increased 34%, while the acidity concentration was reduced 251%. Similar improvements were documented for aluminum and manganese concentrations, which were reduced 66% and 27% respectively.

The macroinvertebrate community of Cessna Run has shown the greatest response to the construction of the Phase I systems. A macroinvertebrate study has been completed every May at the mouth of Cessna Run since 2003. A sample collected 6 months after the Phase I systems were placed online shows great improvements in percentage of pollution-sensitive taxa. In 2003, these taxa comprised 54% of the sample, which rose to 87% in the most recent sample.

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An electro-shocking survey was completed in the spring of 2006. The two most important species collected were both native and stocked brook trout and mottled sculpin. The stocked brook trout moved into Cessna Run from stockings that occurred in Little Mahoning Creek just previous to the shocking. One of those were collected just over one mile up Cessna Run from its confluence with Little Mahoning Creek, demonstrating that water quality in Cessna Run is adequate for trout survival and hopefully propagation. Mottled sculpin, just as brook trout, are very sensitive to water quality degradation. Finding them in Cessna Run is very much like finding a mayfly. In addition, mottled sculpins have no swim bladders and feed exclusively at the substrate level. This demonstrates that the macroinvertebrate population is large enough to support this species.

Partners and Funding:

Indiana County Conservation District, Little Mahoning Creek Watershed Association, Ken Sink Chapter of Trout Unlimited, Indiana County Chapter of the Pennsylvania Senior Environment Corps, Pennsylvania Game Commission

Funding came from Pennsylvania's Growing Greener Initiative, the U.S. Office of Surface Mining and a donation from the TJS Mining Company.

Contact Information:

Indiana County Conservation District, (724) 463-8547 Ext. 4, indianacounty@state.pa.us

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APPENDICES

Appendix A. NPS Liaison Work Group Partners

The Pennsylvania Nonpoint Source program is indebted to these partners who have attended the 2006 Nonpoint Source Work Group meetings and provided input to DEP's Nonpoint Source Management Program:

- PA Department of Conservation and Natural Resources
  - Bureau of Forestry
  - Bureau of Topographic and Geological Survey
  - Citizens Advisory Council
- PA Department of Community and Economic Development
- Eastern PA Coalition for Abandoned Mine Reclamation
- United States Geological Survey
- PA Department of Environmental Protection
  - Bureau of Mining and Reclamation
  - Southeast Regional Office
  - Office of Water Management
  - Southcentral Regional Office
  - Bureau of Watershed Management
  - Northeast Regional Office
  - Southwest Regional Office
  - Northwest Regional Office
  - Southwest Regional Office
  - Bureau of Waterways Engineering
  - Field Operations Deputate
- PA Department of Transportation
- US Environmental Protection Agency, Region III
- PA Fish and Boat Commission
- Susquehanna River Basin Commission
- PA Forest Stewardship Program
- Skelly and Loy, Inc.
- PA Forest Products Association
- Bradford County Conservation District
- Westmoreland County Conservation District
- Western PA Coalition for Abandoned Mine Reclamation
- US Department of Agriculture, Natural Resources Conservation Service
- The Pennsylvania State University, Dept. of Ag Economics and Rural Sociology
- PA Association of Conservation Districts
- PA State Conservation Commission
- PA Department of Agriculture, Nutrient Management Program
- Western Pennsylvania Conservancy
- York County Conservation District

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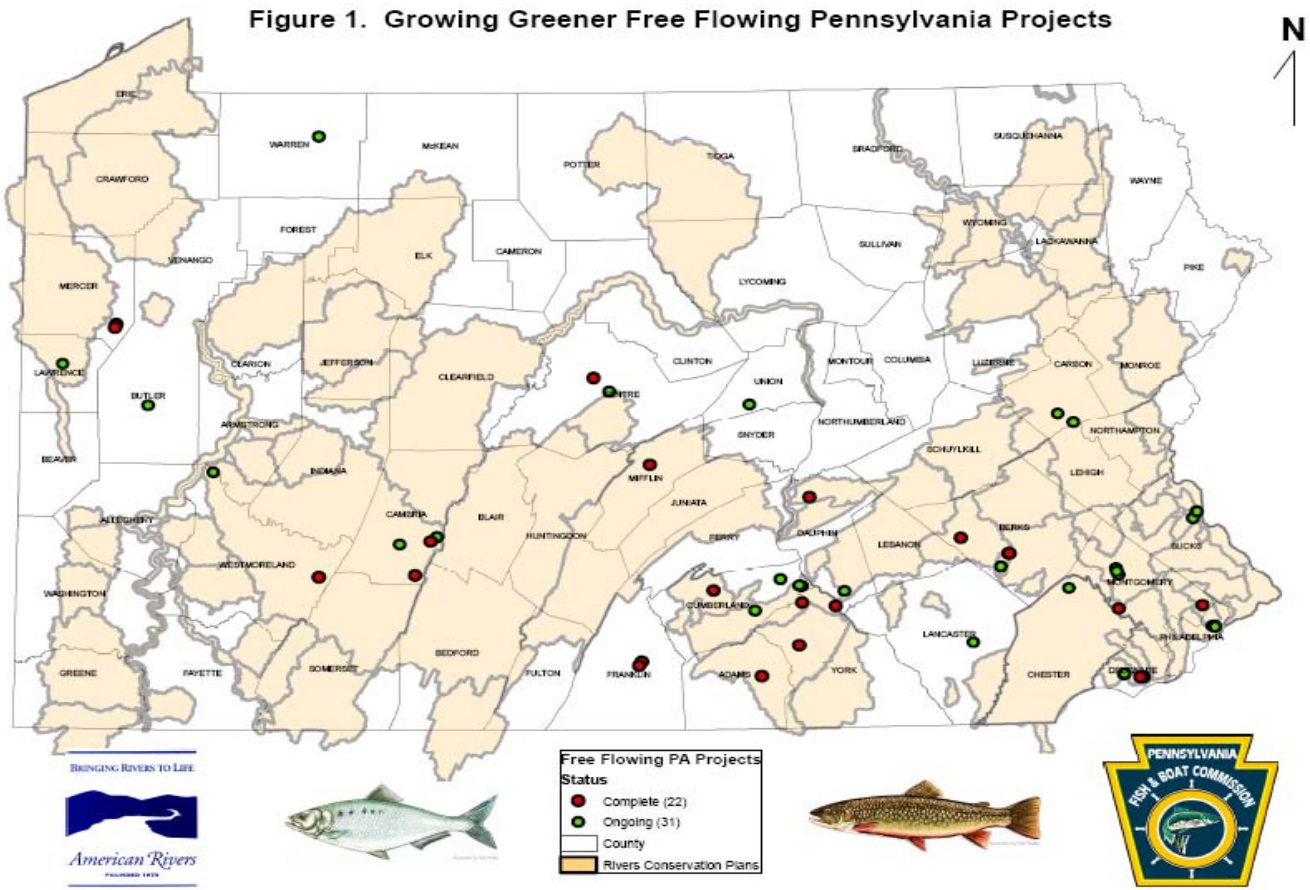
Appendix B. Growing Greener Free Flowing Projects Map



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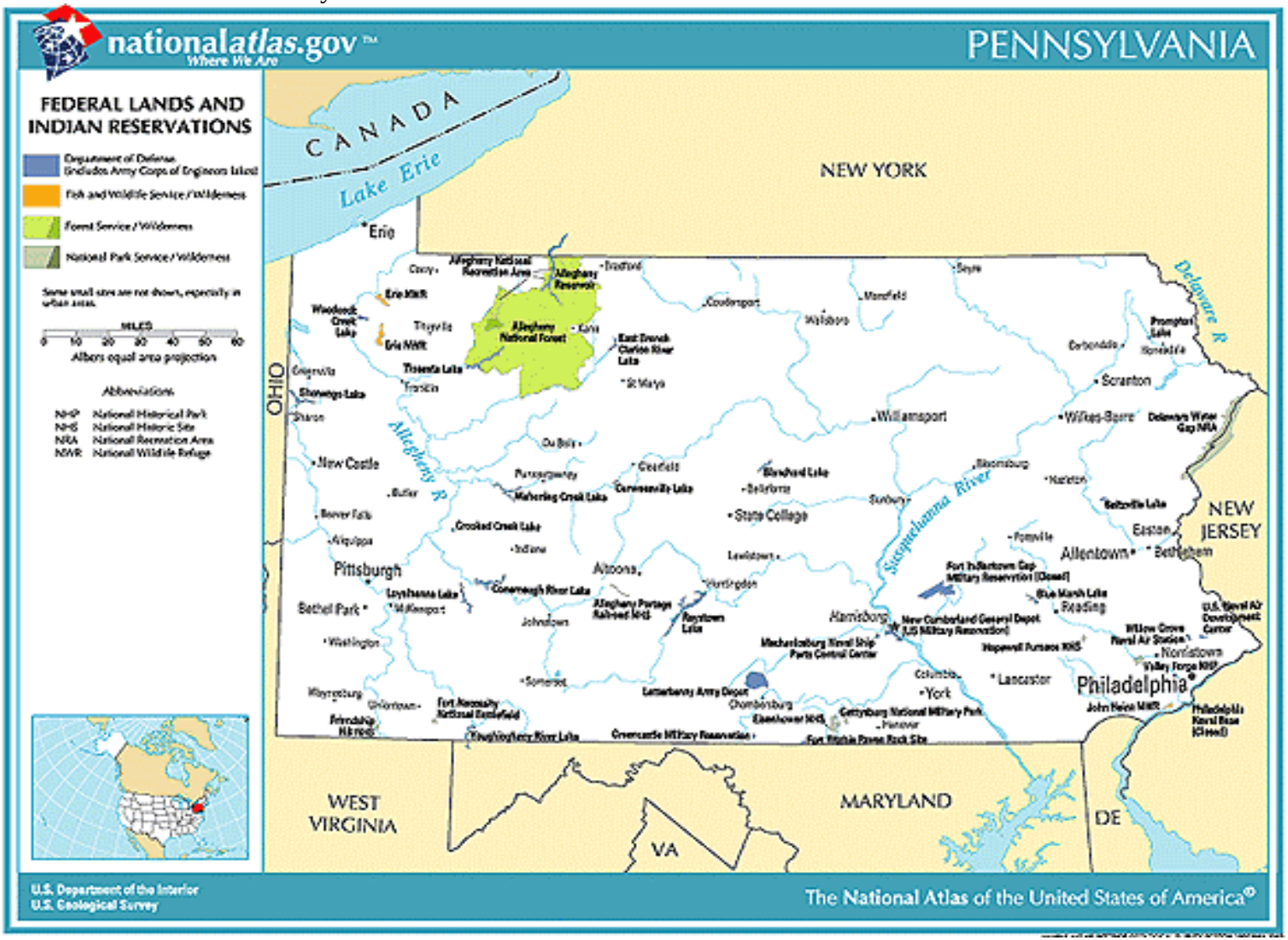
Appendix C. Federal Lands in Pennsylvania

Figure C-01. Federal Lands in Pennsylvania



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Appendix D. Progress in Meeting Section 319 Project Milestones

Table D-01. July to December 2006 Semi-Annual Performance Report

Pennsylvania FY2003 Section 319 Project Status July to December 2006

Project Identification including Project Number, Title, Status and Comments

Project Number	Project Title	Comments
Status = Completed		
	Base Projects	
2301	Conservation District Mining Program (WPCAMR)	
2302	Conservation District Mining Program (EPCAMR)	
2303	NPS Program Staff (Pa DEP)	
2304	Citizens Monitoring Program (Pa DEP - CVMP)	
2305	Statewide NPS Education Office (PACD)	Final report received.
2306	Technical Support (NRCS)	
2307	Restoring and Protecting Riparian Buffers in Pa (Pa DEP)	
2308	Watershed Eduation for Pollution Prevention (Pa LWV)	Final report received.
2309	Regional Geometry Curves in Pa Physiographic Regions (USGS)	
2310	TMDL Watershed Restoration Plans (Pa DEP)	
2311	Pequea / Mill Creek National Monitoring Program (USGS)	Fact sheet complete.
	National Monitoring Program	
2312	Riparian Forest Buffer National Monitoring Program (Stroud WRC)	
2313	Swatara Creek National Monitoring Program (Schuylkill County CD)	
	AMD	
2314	Site 15 AMD Treatment (Shamokin Creek Restoration)	Completed September 2006. Final report received.
2315	Big Mountain AMD Design (Shamokin Creek RA)	Completed basic hydrology study. Added more compost to another treatment system in Sept. 2006. Final design was started but not complete

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		due to increased flow @ site. Project complete-Final report received.
2316	Anderson Creek Assessment & Plan (Anderson Creek WA)	
2317	Tangascootack Creek AMD Phase I (Clinton County CD)	
2318	Arnot 2 Design (Arnot Sportsmen Association)	
2320	Swatara Limestone Drains (Schuylkill County CD)	
2321	Otto AMD Discharge (Schuylkill County HA)	
2322	Wells Creek Discharge #6 (Southern Alleghenies Conservancy)	
2323	Adams Deep Mine (Wells Creek Watershed Association)	

Pennsylvania FY2003 Section 319 Project Status July to December 2006

Project Identification including Project Number, Title, Status and Comments

Project Number	Project Title	Comments
Status = Completed		
2324	Coal Pit Run Phase II (Blacklick Creek Watershed Association)	
	Agriculture	
2325	Genesee River Agricultural BMPs (Potter CCD)	Completed Sept. 2006
2326	Lititz Run Watershed Restoration (Lititz Run WA)	Final report completed.
2327	Swatara Creek Agricultural BMPs (Lebanon County CD)	All projects were completed.
2328	Octoraro Creek Phase II (Lancaster County CD)	
2329	Brandywine / Christina Phase III (Chester County CD)	Awaiting final report.
2330	Stoneycreek River Phase II GPA (Somerset County CD)	The final farm project was completed.
	NSCD / FGM	
2331	Hammer Creek Natural Stream Channel Design (Hammer Creek WA)	
2332	East Branch Codorus Creek Restoration (IWLA)	Final report received.
2333	South Branch Codorus Creek Restoration (IWLA)	Final report received.
2334	Bachman Run Stream Restoration (Little Conestoga WA)	

Status = Behind Schedule

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Status = Discontinued

2319	Muddy Run AMD Phase I (Clinton County CD)	

Status = Change to Scope or Time

None noted.

Pennsylvania FY2003 Section 319 Project Status July to December 2006

Project Identification including Project Number, Title, Status and Comments

Project Number	Project Title	Comments

Status = On Schedule

Project Deliverables

2305	Statewide NPS Education Office (PACD)	Final report.
2308	Watershed Education for Pollution Prevention	Final report.
2310	TMDL Watershed Restoration Plans (Pa DEP)	12 Watershed Implementation Plans completed.
2314	Site 15 AMD Treatment (Shamokin Creek Restoration Alliance)	Final report.
2315	Big Mountain AMD Design (Shamokin Creek Restoration Alliance)	Final report.
2317	Tangascootack Creek AMD Phase I (Clinton County CD)	Final report; info. on Clinton CCD website.
2325	Genesee River Ag BMPs (Potter County CD)	Final report.
2326	Lititz Run Watershed Restoration (Lititz Run WA)	Final report.
2327	Swatara Creek Ag BMPs (Lebanon County CD)	Final report.
2330	Stoneycreek River Watershed Phase II (Somerset County CD)	Final report.
2332	East Branch Codorus Creek Restoration (IWLA)	Final report received.
2333	South Branch Codorus Creek Restoration (IWLA)	Final report received.

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Pennsylvania FY2004 Section 319 Project Status July to December 2006

Project Identification including Project Number, Title, Status and Comments

Status = Completed

Project Number	Project Title	Comments
2401	Conservation District Mining Program (WPCAMR)	
2402	Conservation District Mining Program (EPCAMR)	
2403	DEP Staff (Pa DEP)	
2404	Citizens Volunteer Monitoring Program (Pa DEP - CVMP)	
2405	Statewide NPS Education Office (PACD)	Final report.
2406	Watershed Education for Pollution Prevention Phase V (Pa LWV)	
2407	Regional Geometry Curves in Pa Physiographic Regions (USGS)	
2409-A	Development of an AMD Watershed Assessment Procedure (PSU)	
2409-B	Modification of AVNPS Tool and PreDICT (PSU)	
2410	Keystone Stream Team Database (Lycoming College)	
2411	Region III NPS EPA/States Meeting (Pa DEP)	
2412	Statewide Lakes Water Quality Assessments (Pa DEP)	Lakes: Stephen Foster, Conneaut, Luxembourg and Nockamixon
2413	Urban Storm Water BMP Nat. Mon. Program (Villanova U.)	Annual report.
2414	Riparian Forest Buffer National Monitoring Program (Stroud WRC)	Calendar year 2004 final report completed in late 2005.
2415	Swatara Creek National Monitoring Program (Schuylkill County CD)	
2422	Lower Yellow Creek AMD Restoration (Blacklick Creek WA)	Received final report Oct 2006.
2427	Pequea Creek Phase III (Paradise Sportsman's Association)	Project completed 9/30/06.
2430	Mahantango Creek Stream bank Stabilization (Schuylkill County CD)	
2432	Kemper Park Riparian Restoration (DRN)	
2434	Radnor Infiltration Trench (Villanova University)	

Status = Behind Schedule

None noted.

Status = Discontinued

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2433	White Clay Creek Restoration (Avondale Borough)	Project removed from grant.

Status = Change to Scope or Time

Pennsylvania FY2004 Section 319 Project Status July to December 2006

Project Identification including Project Number, Title, Status and Comments

Project Number	Project Title	Comments
Status = On Schedule		
	Base Projects	
2408	TMDL Watershed Restoration Plans (Pa DEP)	6 plans are being developed and 2 are completed.
	Incremental Projects	
	AMD	
2416	Reevesdale South Dip Tunnel AMD Treatment (SHA)	Majority of project complete
2417	Audenreid Mine Tunnel AMD Treatment (Catawissa CWA)	Majority of project complete. Some repairs needed as result of storms.
2418	Bear Creek Phase I (Dauphin County CD)	Construction is underway. Majority of project is complete.
2419	Miller Run I and II AMD Treatment (Shoup Run WA)	Miller 2 is complete. Minersville site has been upgraded to a limestone pond.
2420	Longs Run Remediation (Broad Top Township)	Completed September 2006 - final report has not been received yet
2421	Pine Forest Discharge AMD Treatment (SHA)	Construction began in fall 2006
2423	Big Run AMD Remediation Phase 2	Construction continues.
	Agriculture	
2424	Mahantango Creek Watershed Agricultural BMPs	Project implementation ongoing.
2425	Little Wiconisco Creek Phase I (Dauphin County CD)	Project implementation ongoing.
	NSCD / FGM	
2426	Oil Creek Stream Restoration (Codorus Creek WA)	Design and permitting ongoing.
		construction to begin in summer 2006.
2428	South Branch Codorus Creek Restoration Phase V (IWLA)	Design and permitting are ongoing.

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	Multiple NPS	
2429	Lake Luxembourg Watershed Implementation (Bucks County CD)	BMP implementation underway.

Pennsylvania FY2004 Section 319 Project Status July to December 2006

Project Identification including Project Number, Title, Status and Comments

Project Number	Project Title	Comments
	Urban Runoff / Stormwater	
2431	Storm water BMPs Retrofit (County of Adams)	Construction cost-estimates exceeded budgeted grant amount.
2435	Brock Creek Stream Restoration (Lower Makefield Township)	Permitted. Needs more $. Time extension through September 2007.

Project Deliverables

2405	Statewide NPS Education Office (PACD)	Final report.
2406	Watershed Education for Pollution Prevention Phase V (Pa LWV)	Final report including summary of mini-grant projects completed.
2408	TMDL Watershed Restoration Plans (PaDEP)	2 Watershed Implementation Plans completed.
2412	Statewide Lakes Water Quality Assessments	Data spreadsheets (Final) should be in GRTS. Project completed.
2413	Urban Storm Water BMP Nat. Mon. Program (Villanova U.)	Annual report.
2430	Mahantango Creek Stream bank Restoration (Schuyklill CCD)	Final report.

Pennsylvania FY2005 Section 319 Project Status July to December 2006

Project Identification including Project Number, Title, Status and Comments

Project Number	Project Title	Comments
Status = Completed		
2501	Conservation District Mining Program (WPCAMR)	Project is ongoing
2502	Conservation District Mining Program (EPCAMR)	Project is ongoing

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2503	DEP NPS Program Staff (Pa DEP)	Coordination with EPA NPS program staff.
2504	Citizens Volunteer Monitoring Program (Pa DEP)	
2505	Statewide NPS Education Office (PACD)	Products included in GRTS as attachments.
2506	Watershed Education for Pollution Prevention (Pa LWV)	
2509	Urban Storm Water BMP Nat. Mon. Program (Villanova U.)	
2510	Riparian Forest Buffer National Monitoring Program (Stroud WRC)	
2511	Swatara Creek National Monitoring Program (Schuylkill CCD)	
2532	East Branch Codorus Creek Restoration Phase V (IWLA)	Final report 12/2006.
2533	Millers Run Stream Restoration Design (Little Conestoga WA)	Design and permit complete.
2534	Wissahickon Creek Shade Buffer (Wissahickon Valley WA)	
2535	Monastery Stables Runoff Controls (Fairmount Park Commission)	
2537	Durham Ridge Wetland Phase I (Plumstead Township)	
2542	S. & E. Br. Codorus Creek Monitoring & Maintenance (IWLA)	Citizen training completed. Final report received.
2544	Portable Timber Bridges (Wayne County CD)	Project is complete. Final report needs some additional information.

Status = Behind Schedule

None noted.

Status = Discontinued

2520	Presto-Sygan AMD Remediation (Stream Restoration, Inc.)
2522	North Fork Montour Run Restoration Phase I (Montour Run WA)
2538	Brockway FGM Design & Restoration (Jefferson County CD)
2539	West Mill Creek Park Restoration Phase II (Lower Merion Twsp.)
2541	Trout Run Mushroom Wetlands (Chester County CD)
2543	Villanova U. Infiltration Pit Evaluation & Restoration (Villanova U.)

Status = Change to Project Scope

Pennsylvania FY2005 Section 319 Project Status July to December 2006

Project Identification including Project Number, Title, Status and Comments

Project Number	Project Title	Comments

Status = On Schedule

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	Base Projects	
2507	TMDL Watershed Restoration Plans (Pa DEP)	Plans being developed.
2508	Statewide Lake Water Quality Assessments (Pa DEP)	Continued TMDL WQ monitoring in Bradford County, plus Lake Luxembourg and Pine Creeks (Bucks County). Sampling is complete, data entry is not.
	National Monitoring Program	
	Incremental Projects	
	AMD	
2512	Brewster Hollow AMD Remediation (Broad Top Township)	One passive system is complete. The other will be built spring 2007
2513	Six Mile Run SXO-D2 AMD Remediation (Broad Top Township)	Construction is complete. Waiting on final report.
2514	Remediation of Tracey Airhole AMD Discharge (Schuylkill CCD)	Permit work continues
2515	Klondike Mine AMD Treatment Construction	Received DEP permit but waiting on ACOE. Construction will begin in Spring - Summer 2007.
2516	Arnot No. 2 Mine AMD Treatment System (Babb Creek WA)	WIP is being developed.
2517	Hubler Run I AMD Treatment System (Emigh Run/Lakeside WA)	WIP is being developed.
2518	Benedict Mine AMD Treatment (Huntingdon County CD)	Contractor has been choosen. Construction will begin in spring 2007
2519	Old Never Sweat Mine AMD Treatment (Huntingdon County CD)	Contractor has been choosen. Construction will begin in spring 2007
2521	Passive Alkalinity SGL#67 (Shoups Run WA)	Project will begin in spring 2007.
2523	Corbettown Constructed Wetlands (Jefferson County CD)	Final design is complete. The project will soon be bid out for construction.
2524	Blacks Creek: BC16 Remediation (Stream Restoration Inc.)	Watershed implementation plan is being developed.
2525	Bolich Wetland Project (Mahanoy Creek WA)	Project is complete. Final Report submitted.

Pennsylvania FY2005 Section 319 Project Status July to December 2006

Project Identification including Project Number, Title, Status and Comments

Project Number	Project Title	Comments

Status = On Schedule

Agriculture

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2526	Mifflin County Farm BMPs (Mifflin County Conservation District)	Project construction is underway.
2527	Mifflin County Farm BMPs (Mifflin County Conservation District)	Same as project 2526.
2528	Conestoga River Watershed Ag BMPs (Lancaster County CD)	Project construction is underway. Some new projects to be approved.
2529	Sustaining the Mill Creek Farm Community (IWLA)	One SB fencing project completed in May 2006.
2530	Spring Run Agricultural BMPs (Fulton County CD)	Construction completed on one project. Additional bmps to be completed.
	NSCD / FGM / Wetland Restoration	
2531	Eagle Scout Pasture Improvement (Bucks County CD)	Little progress to date. Difficulty in lining up contractor.
2536	Harveys Lk. BMPs/Watershed Protection (Harveys Lake Borough)	Ongoing; are preparing WIP before implementation.
2540	Magnolia Lake Shoreline Stabilization (Bucks County CD)	Design and permitting now; final received.

Project Deliverables

2504	Citizen Volunteer Monitoring Program (Pa DEP)	Annual report.
2505	Statewide NPS Education Office (PACD)	Final report.
2506	Watershed Education for Pollution Prevention (PaLWV)	Final report.
2509	Urban Storm Water BMP Nat. Mon. Program (Villanova U.)	
2510	Riparian Forest Buffer National Monitoring Program (Stroud WRC)	Calendar Year 2005 Annual report.
2534	Wissahickon Creek Shade Buffer (Wissahickon Creek WA)	Final report.
2535	Monastery Stables Runoff Controls (Fairmount Park Commission)	
2537	Durham Ridge Wetland Phase I (Plumstead Township)	Final report, including project design.
2542	S. and E. Br. Codorus Creek Monitoring and Maintenance (IWLA)	Final report received.

Pennsylvania FY2006 Section 319 Project Status July to December 2006

Project Identification including Project Number, Title, Status and Comments

Project Number	Project Title	Comments
Status = Completed		
2609	Urban Storm Water BMP Nat. Mon. Program (Villanova U.)	Completed September 2006.

Status = Behind Schedule

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Statue = Discontinued

2620	Oneida/Green Mountain Discharges AMD Treatment	Removed from grant.
2623	Godfrey Pasture Stream Restoration	Removed from grant.
2624	McClelland Pasture Stream Restoration	Removed from grant.

Status = Change to Project Scope

none noted.

Status = On Schedule

	Base Projects	
2601	Conservation District Mining Program (WPCAMR)	
2602	Conservation District Mining Program (EPCAMR)	
2603	NPS Program-Bureau of Watershed Management/Regional Offices	
2604	Citizen Volunteer Monitoring Program	
2605	Statewide NPS Education Office	
2606	Watershed Education for Pollution Prevention VIII	
2607	TMDL Watershed Restoration Plans - Phase III	Revising work plans/budgets to address EPA comments.
2608	Statewide Lake Water Quality Assessments	
	National Monitoring Program	
2610	Riparian Forest Buffer National Monitoring Program	
2611	Swatara Creek National Monitoring Program	

Pennsylvania FY2006 Section 319 Project Status July to December 2006

Project Identification including Project Number, Title, Status and Comments

Project Number	Project Title	Comments
Status = On Schedule		
	Incremental Projects	
	AMD	
2612	Six Mile Run SX0-D6 AMD Remediation	Work on design continues.
2613	Six Mile Run SX3-D9 AMD Remediation	Conceptual and final design work continues along with permitting

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2614	Six Mile Run Discharge SX2-D6, D7, D8 AMD Remediation	Conceptual and final design work continues
2615	Shreves Run Regional AMD Remediation	Construction is completed on 3 out of the 5 AMD discharges
2616	Six Mile Run SX2-D5 AMD Remediation	Conceptual and final design work continues
2617	Hubler Run 2 AMD Treatement System Construction	Waiting on WIP
2618	Hartman Run Alkalinity Addition Project	Construction is complete. Limestone sand continues to be added
2619	Limestone Supplement for the Audenreid Mine Tunnel	
2621	Hartshorn Run Assessment and Restoration Plan	Collecting available data and conducting water quality sampling.
	Agriculture	
2622	Agriculture BMP Implementation Program - Phase II	All projects are in design or construction. A significant amount of work has been completed.
	Stream Restoration	
2625	Pequea Creek Restoration Phase II Construction	
2626	Durham Ridge Wetland - Phase II	Creating public education materials. Construction to begin April 2007.
2627	Mahoning Creek Stream Channel Stabilization	
	Stormwater/Urban Runoff	
2628	Energy Resource Center - Green Building Project	Still have no revised workplan from sponsor. Will consider removing project from grant.
	Watershed Implementation Plans/ TMDL	
2629	Francis Slocum Lake/Abrahams Creek Assessment	Contractor hired. GIS mapping underway.
2630	BMP Implementation to Address TMDLs - Phase I and II	Specific projects have been selected. EPA has reviewed draft work plans and made coments. Final scope of works being developed.
2631	BMP Implementation to Address TMDLs - Phase III	Specific projects have been selected. EPA has reviewed draft work plans and made coments. Final scope of works being developed.

Pennsylvania FY2006 Section 319 Project Status July to December 2006

Project Identification including Project Number, Title, Status and Comments

Project Number	Project Title	Comments
Project Deliverables		
2609	Urban Storm Water BMP National Monitoring Program (Villanova U.)	Annual report.

Appendix E. Section 319 NPS Load Reduction Estimates

Table E-01. NPS Load Reduction Estimates (Actual) – FY2003 projects

	N (Lb/Yr)	**P (Lb/Yr)**	**Sediment (Ton/Yr)**	**Al (Ton/Yr)**	**Fe (Ton/Yr)**	**Acidity (Ton/Yr)**
Project #						
11	19,766	6,146	----			
12	741	297	210			
13	----	----	----			
14				4	9	
15				----	----	
16				NA	NA	
17				1.55	0.25	
18				NA	NA	
19				NA	NA	
20				ND	ND	
21				0.7	7	15
22	2,409	949	547			
23	4,416	9,855	1,898			
24				1.19	1.49	
25	8,576	12,517	64.3			
26	ND	ND	ND			
27	22,920	7,383	961			
28	8,768	1,705	309			
29	ND	ND	ND			
30	3,296	1,205	97			
31			776			
32			981			
33			5,300			
34			280			
Totals:	**70,892**	**40,057**	**11,423**	**7.44**	**17.74**	**15**

NA = not applicable
ND = no data

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Table E-02. NPS Load Reduction Estimates (Actual and Projected) – FY2004 Projects

	N (Lb/Yr)	**P (Lb/Yr)**	**Sediment (Ton/Yr)**	**Al (Ton/Yr)**	**Fe (Ton/Yr)**	**Acidity (Ton/Yr)**
Project #						
17				127	NA	1046
18				ND	ND	ND
19				0.33	NA	5
20				1.0	5	NA
21				ND	ND	ND
22				ND	ND	ND
23				26	NA	275
24	3,390	952	334			
25	6,305	2,040	289			
26			230			
27			385			
28			300			
29			ND			
30			171			
31			ND			
32			60			
35			168 (projected)			
Totals:	**9,695.**	**2,992.**	**1,937.**	**154.33**	**5**	**1326**

NA = not applicable
ND = no data

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Table E-03. NPS Load Reduction Estimates (Actual and Projected) – FY2005 Projects

	N (Lb/Yr)	P (Lb/Yr)	Sediment (Ton/Yr)	Al (Ton/Yr)	Fe (Ton/Yr)	Acidity (Ton/Yr)
Project #						
9						
10						
11						
12				ND		
13				----	----	3
14				----	35	----
15				----	----	25
16				1	----	9
17				6	----	53
18				ND		
19				1	----	5
21				ND	ND	ND
23				----	116	----
24				ND		
25				2.7	33.8	----
26 / 27	3,079.	707	111			
28	7,135.	1,567.	618			
29	2,360.	2,360.	4,719.			
30	2,347.	1,245.	23			
31	ND					
32	ND					
33	NA					
34	----	----	320			
35	421	52	19			
36	----	24	----			
37	ND					
40	ND					
42	ND					
44	ND					
45	ND					
Totals:	**15,342.**	**5,995.**	**5,710.**	**10.7**	**184.8**	**95.**

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Table E-04. NPS Load Reduction Estimates (Projected) – FY2006 Projects

	N (Lb/Yr)	P (Lb/Yr)	Sediment (Ton/Yr)	Al (Ton/Yr)	Fe (Ton/Yr)	Acidity (Ton/Yr)
Project #						
12				ND	ND	ND
13				2	2	26
14				0.5	0.4	7
15				0.4	0	5
16				ND	ND	ND
17				0.2	0.53	NA
18				0.27	0.5	17.2
19				140.8	NA	1196.8
20	Removed from grant.					
21				8.6	NA	168.6
22	9,829.	2,042.	551.			
23	Removed from grant.					
24	Removed from grant.					
25	ND	ND	3			
26	7	18	2,284 lb/yr.			
27	NA	NA	60			
28	ND					
29	NA					
30	NA					
31	ND					
Totals:	9,829.	2,060.	615.1	152.8	3.43	1420.6

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