Pennsylvania Nonpoint Source Management Program
FFY2007 Annual Report

Measuring Project and Program Effectiveness

October 1, 2006 through September 30, 2007

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 Department of Environmental Protection (DEP) in 1991. Pennsylvania revised its program plan in 1999 and is currently preparing another update, scheduled for completion in mid-2008.

This Annual Report is a summary of the Commonwealth's efforts to implement its current NPS Management Program Plan during federal fiscal year 2007. It focuses principally on two subjects:

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

PART I. Water Quality Improvements addresses improvements in water quality resulting from NPS management program activities. Specific measures include:

- Water bodies removed from the State's 303(d) list of impaired waters,
- Streams now meeting designated uses and water quality standards, and
- Nonpoint source load reductions achieved.

Water quality data are referenced throughout the report.

During FFY 2007, 32 additional streams were identified as having achieved substantial improvements in water quality. Four have been determined to be fully restored and have been removed from the State's 303(d) impaired streams list. Six others have been classified as partially restored and the remaining 22 as improved. A number of other streams identified in an ongoing search for restored water bodies will be reassessed by DEP biologists during FFY 2008, 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, 2000 – September 30, 2007.

Nitrogen (lbs)	Phosphorus (lbs)	Sediment (tons)	Aluminum (tons)	Iron (tons)	Acidity (tons)
693,473	221,054	48,494	286	410	2,323

PART II. Progress in Meeting NPS Management Program Goals and Objectives describes progress made during FFY 2007 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 34 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.

Pennsylvania's Section 319 Program is currently engaged in Phase III of its Watershed Implementation Planning process, begun in FFY 2004. During Phases I and II, 24 TMDL watersheds with active watershed groups and previous studies 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 targets 10 additional watersheds, and technical support is being provided by DEP regional office watershed

management staff. As of September 30, 2007, 18 plans had been completed and implementation of several had begun. BMP implementation in these watersheds will help to meet TMDL load allocation goals.

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 $74 million since FFY 1991, including $5.7 million in FFY 2007.

Pennsylvania's Environmental Stewardship and Watershed Protection Act (Growing Greener) is providing a significant source of funding for the purposes of watershed protection and restoration and to help reduce nonpoint sources of water pollution. Since the inception of the Growing Greener program in 1999, over $200 million has been awarded to local project sponsors to implement watershed restoration and protection projects. A 2005 amendment to Growing Greener created Growing Greener II, a $625 million bond program providing funding for an additional six years.

Since its inception, Pennsylvania's Chesapeake Bay Program has provided over $35 million in cost-share funding to county conservation districts to implement BMPs in the state's portion of the Chesapeake Bay drainage area. The Conservation Reserve Enhancement Program (CREP) brings over $200 million in federal funding through the 2002 Farm Bill to decrease soil erosion, improve water quality and enhance wildlife habitat on farms. Chesapeake Bay Program Small Watershed grants have also provided funding for improving water quality. A host of other programs provide financial resources to address NPS pollution problems in the State. A brief summary of NPS funding sources is included in Part I of this report.

Pennsylvania's 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. 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.

Watershed improvement stories describe significant water quality improvements achieved in individual watersheds and serve as another measure of NPS program accomplishment. Nine new watershed restoration stories and two watershed protection stories are included in Part III of this report. Many of these projects were started several years ago, and streams are now beginning to show signs of improving water quality. Our NPS watershed improvement stories are also included on the following web sites:

Pennsylvania DEP NPS Management Program:
http://www.depweb.state.pa.us/watershedmgmt/cwp/view.asp?a=1430&q=482303
EPA Region III: http://www.epa.gov/reg3wapd/nps/success/index.htm
EPA Headquarters: http://www.epa.gov/owow/nps/Success319/

PART I.

Water Quality Improvements

Introduction and Background Information

The Commonwealth of Pennsylvania has a total of 83,160 stream miles, 3,956 lakes covering approximately 161,445 acres, and approximately 403,924 acres of fresh water wetlands.

Documenting water quality improvements is an important part of our efforts. PART I. Water Quality Improvements includes current Pennsylvania DEP and Section 319 NPS Program data which documents the improvements that are being made to the Commonwealth's surface waters. Many of these improvements are the result of the Section 319 NPS Management Program's concerted efforts to restore impaired watersheds. The information provided in Part I of this report includes references to data that were originally included with Pennsylvania's FY2005 and FY2006 NPS Annual Reports.

The 2006 Integrated List of All Waters (formerly 303(d) Report) includes current water quality assessment data and information on all Commonwealth waters. We use this information to document baseline conditions for measuring water quality improvements. The 2006 Integrated List of All Waters is available on the Pennsylvania DEP website, http://www.dep.state.pa.us, by selecting 'Water Topics' and then selecting 'Water Quality'. The Integrated List of All Waters includes several specific lists:

- List 1: All Uses Attained
- List 2: At Least One Use Attained
- List 3: Unassessed
- List 4: Impaired for One of More Designated Uses, Not Needing a TMDL
- List 5: Pollutants

Lists 4 and 5 include the majority of waters where Pennsylvania is focusing its watershed restoration efforts.

Status of Surface Water Assessment Program

The largest nonpoint source contributors to surface water quality impairments, for Aquatic Life Use, continue to be:

- Abandoned Mine Drainage (AMD)
- Agriculture
- Urban Runoff/Storm Sewers
- Road Runoff
- Small residential Runoff
- Atmospheric Deposition

Abandoned mine drainage, agriculture and urban runoff/storm sewers are the three primary sources of reported impairments to streams. Agriculture and atmospheric deposition (mercury) are the two major sources of Aquatic Life Use impairments to lakes.

Table 1. Statewide Assessment Summary provides data from Pennsylvania's 2006 Integrated Water Quality Monitoring and Assessment Report (formerly 305(b) Report). This information summarizes Pennsylvania's assessment data for the four designated use categories in Pennsylvania's water quality assessment program.

The four designated use categories in the water quality assessment program are:

- Aquatic Life Use
- Fish Consumption Use
- Recreational Use
- Potable Water Supply Use

Table 1. Statewide Assessment Summary

	Designated Use Category			
	Aquatic Life Use	**Fish Consumption Use**	**Recreational Use**	**Potable Water Supply Use**
Streams (miles)				
Assessed	83,602	2,261	337	271
Supporting	68,333	581	150	168
Impaired	11,136	1,366	184	93
** Approved TMDL	3,355	314	3	10
Compliance (1)	39	---	---	---
*Pollution	2,304	---	---	---
Lakes (acres)				
Assessed	56,182	35,119	56,600	6,866
Supporting	26,941	2,610	55,329	6,866
Impaired (List 5)	5,441	27,026	1,271	---
Impaired (List 4c)	11,902	---	---	---
Approved TMDL	11,898	5,483	---	---

(Source: 2006 Pennsylvania Integrated Water Quality Monitoring and Assessment Report)

(1) Point Source related to Waste Water Treatment Plants and stream miles impacted.

* 1,562 miles have both pollution and pollutant problems
** TMDL miles reported here are only those overlapping impaired segments. A watershed TMDL includes all streams in a watershed including those listed as attained or not assessed.

Data in this table shows that 11,136 miles are reported as being impaired and requiring a TMDL. A total of 14,942 stream miles are impaired if all designated use categories are combined (minus the pollutant and pollution overlaps.) Approximately 13% of stream

miles assessed for Aquatic Life Use are **impaired**. In addition, 82% of stream miles assessed for Aquatic Life Use are **supporting** designated uses.

A total of 56,182 acres of Commonwealth lakes have been assessed for fish and aquatic life use. Of these, 26,941 acres (48%) support the designated aquatic life use. There are 5,441 acres (10%) of assessed lakes that are impaired and require a TMDL.

A. Delisting NPS Impaired Waters

The EPA Strategic Plan for Water has set national goals for both fully meeting and partially meeting designated uses by 2008 and 2012. To help meet these goals we are using a process to identify and reassess waters where we feel there is a good chance of a water body meeting its designated use(s). In this part of the annual report, we have tried to identify NPS-impacted water bodies that are both Fully Restored (fully meeting designated uses) and Partially Restored (partially meeting designated uses) as a result of Section 319 NPS program implementation efforts.

Term	Definition
Fully Restored	Used to designate a water body where all sources of impairment have been addressed and the water body has been fully restored. All designated uses are now being achieved.
Partially Restored	Used to designate a water body that is impaired by more than one sources or for more than one designated use, and where one or more (but not all) of these sources has been addressed and the use(s) have been restored.
Water body	Used to designate surface waters including very small stream segments.

Tables 2 through 6 on the following pages include data on water bodies that are fully and partially restored, and locations where water quality improvements have been documented. The Sources and Causes of Impairment are included. The Aquatic Life Use is the Designated Use that has been fully or partially restored.

Stream Codes System

The Pennsylvania Department of Environmental Protection (DEP) has recently adopted the 1/24,000 National Hydrographic Data (NHD) streams GIS layer. This nomenclature was developed in 2005-2006 with assistance from the United States Geological Survey (USGS) and contractors.

The new NHD streams layer is based upon national geo-database standards. The new system is attributed by stream name or a fixed combination of NHD fields known as the Reachcode and ComID. The NHD is aggregated by Hydrologic Unit Code (HUC) watersheds which are now used to group streams together. This system has replaced the old system which used Segment IDs and five-digit DEP Stream Codes.

NHD streams layer data is used in the Tables in Part I. Some old DEP Stream Codes may be used in Tables that include FY2005 and FY2006 information.

Table 2. Fully restored water bodies since 2000 (Cumulative)

Waterbody Name (County)	S. 319 funds used	319 Grant / Project #	Impairment Source and Cause	Year First Listed on 303(d) as Impaired	Hydrologic Unit Code (HUC)	NHD Stream Reach Code/ ComID
FY2006						
Manatawney Creek (Berks, Montgomery)	Yes	FY2000/ 44	Agriculture - Nutrients, Organic Enrichment, Low D.O.	1996	02040203	02040203000103 / 25965530
UNT to Manatawney Creek (Berks, Montgomery)	Yes	FY2000/ 44	Hydromodification - Thermal Modification		02040203	02040203002507 / 25965244
FY2007						
North Branch Little Mahoning (Indiana)	No	n/a	AMD-Siltation	2006	05010006	05010006001231/ 123853442
Parks Run (Jefferson)	No	n/a	AMD-pH	1996	05010005	05010005001066 / 102669443
Semiconon Run (Butler)	No	n/a	AMD-Metals	2002	05030105	05030105000787 / 126218422
Step Run (Clarion)	No	n/a	AMD-pH	2006	05010005	05010005000441 / 102668735

Note: The waters identified under FY2007 have been approved for delisting and will be officially removed from the State's 303(d) list when it is republished in 2008. (Personal communication with Gary Walters, DEP)

Table 3. Partially restored water bodies since 2000 (Cumulative)

Waterbody Name (County)	S. 319 funds used	319 Grant / Project #	Impairment Source and Cause	Year Listed on 303(d)	Hydrologic Unit Code (HUC)	NHD Reach Code and ComID
FY2006						
Mt. Rock Spring Creek (Cumberland)	Yes	FY1999/ 20	Agriculture-Nutrients	1996	02050305	02050305000841 / 56407741
FY2007						
Elk Creek (Elk)	No		Abandoned Mine Drainage - Metals	1996, 2002, 2006	05010006	05010006000365/ 102665445
Lick Creek (Tioga)	Yes	FY1999/ 65 FY2000/ 25 FY2002/ 18 FY2005/ 01	Abandoned Mine Drainage - Metals, pH	1996	02050205	02050205000236/ 66537093
Long's Run (Bedford)	Yes	FY2004/ 20	Abandoned Mine Drainage - Metals, pH	1996	02050303	02050303000433/ 65844151
Upper Swatara Creek (Schuylkill)	Yes	FY2000 / 16 and others	Abandoned Mine Drainage- Metals, pH	1996	02050305	02050305001269/ 56395237
Upper Mill Creek (Jefferson)	Yes	FY2005/ 29	Abandoned Mine Drainage - Metals	1996, 2002, 2004, 2006	05010005	05010005000289/ 102669445
Wells Creek (Somerset)	Yes	FY2003/ 22 FY2003/ 23	Abandoned Mine Drainage - Metals	1996, 2002	05010007	05010007000399/ 123722467

B. Improvements to NPS Impaired Waters

Stream Water Quality Improvements

Pennsylvania is working hard to identify surface waters of the Commonwealth where water quality is improving. Water quality improvements can be documented through both natural processes and long-term watershed restoration programs. Water quality improvements are generally indicated by looking at water quality monitoring data and/or the return of aquatic species, i.e. fish, to a stream ecosystem.

These water bodies are then referred to DEP water pollution biologists to determine whether they merit a reassessment for possible removal from the Pennsylvania DEP 303(d) list of impaired streams. Streams that are determined to be improving during the FY2005, FY2006 and FY2007 time periods are identified in the following Tables.

Table 4. Stream Water Quality Improvements – FY2005

Water body (County)	S. 319 funds used	319 grant / project #	Impairment Source and Cause	Year listed on 303(d) list	Hydrologic Unit Code (HUC)	State Waterbody ID
Donegal Creek (Lancaster)	Yes	FY1997/ 15	Agriculture-Suspended Sediment	1996	02050306	07920
Glenwhite Run (Blair)	Yes	FY1999/ 15	AMD-Metals AMD-pH, Siltation AMD-Metals, pH	1996 2002 2004	02050302	16428 16429, 16430 16431
Lititz Run (Lancaster)	Yes	FY1998/ 21 FY1999/ 60 FY2003/ 26	Agriculture-Nutrients, Sediment Urban Runoff	2002, 1996	02050306	07647 07646
Mill Creek (Bradford)	Yes	FY2001/ 51	Agriculture-Nutrients, Susp. Sediment	1996	02050106	
Millers Run (Huntingdon)	Yes	FY2002/ 17 FY2004/ 19 FY2005/ 21	Abandoned Mine Drainage-	1996		
Upper Slippery Rock Creek (Butler)	Yes	FY1997/ 18 FY1998/ 13	AMD-Metals	2004	05030105	34032 Multiple IDs

Table 5. Stream Water Quality Improvements – FY2006

Water body (County)	S. 319 funds used	319 grant / project #	Impairment Source and Cause	Year listed on 303(d) list	Hydrologic Unit Code (HUC)	NHD Reach Code and ComID
Mt. Rock Spring Creek (Cumberland)	Yes	FY1999/ 20	Agriculture - Siltation Construction - Siltation	1998 1998	02050305	02050305000841/ 56407741
Mt. Rock Spring Creek (Cumberland)	Yes	FY1999/ 20	Agriculture – Siltation Construction - Siltation	1996	02050305	02050305000842/ 56407709
South Branch Blacklick Creek (Cambria)	Yes	FY2003/ 24	AMD - Metals, pH	1996	05010007	05010007000176/ 123720836

Table 6. Stream Water Quality Improvements – FY2007

Water body (County)	S. 319 funds	319 grant / project #	Impairment Source and Cause	Year listed on 303(d) list	Hydrologic Unit Code (HUC)	NHD Reach Code and ComID
Benninger Creek (Elk)	No		AMD-Metals	2002	05010005	05010005000965/ 102666801
Big Run (Butler)	Yes	FY2004/ 23 FY1996/ 18	AMD-Metals, Siltation	2004	05030105	05030105000117/ 126221959
Coal Run (Bradford)	Yes	FY2000/ 16 FY1996/ 21	Abandoned Mine Drainage - Metals, pH	2002	02050106	02050106001011/ 66407497
Gilmore Run (Venango)	No		AMD-Metals	2004	05010003	05010003000510/ 100479739
Glenwhite Run (Blair)	Yes	FY1999/ 08 FY1999/ 15	AMD-Metals, pH	2002	02050302	02050302000382/ 65608026
Johnson Run (Elk)	No		AMD-Metals, pH	2004	05010005	05010005000765/ 102667849
Laurel Run (Indiana)	No		AMD - metals	2006	05010007	05010007000723/ 123714948006
Little Scrubgrass Creek (Venango)	No		AMD-Metals	1996, 2004	05010003	05010003000294/ 100479593
Little Toby Creek (Elk)	Yes	FY1992/ 07 FY1992/ 12 FY1999/ 18 FY2000/ 12 FY2002/ 16	AMD-Metals, pH, Suspended Solids	1996, 2002, 2004, 2006	05010005	05010005000043/ 102668853
Long Valley Run (Bradford)	No		Abandoned Mine Drainage – pH	2004	02050106	02050106001008/ 66406453

Water body (County)	S. 319 funds	319 grant / project #	Impairment Source and Cause	Year listed on 303(d) list	Hydrologic Unit Code (HUC)	NHD Reach Code and ComID
Mead Run (Elk)	Yes	FY1992/ 07	Abandoned Mine Drainage - Metals, pH	2002	05010005	05010005000268/ 102668297
Middle Creek (Schuykill)	Yes	FY1996/ 21 FY2000/ 19 FY2002/ 20, 25	AMD-Metals	2004	02050305	02050305001808/ 133783950
Miller Run (Huntingdon)	Yes	FY2002/ 17, 34 FY2004/ 19 FY2005/ 21, 33	AMD-Metals, pH	1996, 2006	02050303	02050303000420/ 65842287
McCune Run (Westmoreland)	No		AMD-Metals, pH, Suspended Solids	1996, 2002, 2004	05010008	05010008000434/ 125292304
Murrin Run (Butler)	No		Surface Mining, Metals		05030105	05030105000376/ 126223768
Rattlesnake Creek (Elk & Jefferson)	No		AMD-Metals	2002, 2004	05010005	05010005000297/ 102669077
Richey Run (Clarion)	No		AMD-Salinity, TDS, Chlorides	1996	05010003	05010003001250/ 100479753
Roaring Run (Armstrong)	Yes	FY2003/ 30	AMD-Metals, pH	2004	05010008	05010008000157/ 125290640
Seaton Creek (Butler)	No		AMD-Metals, pH, other Inorganics	1996, 2004	05030105	05030105000203/ 126222903
Shreves Run (Bedford)	Yes	FY2006/ 15	AMD – metals and pH	1996	02050303	02050303000427/ 65843509
Sugarloaf Creek (Schuylkill)	Yes	FY2000/ 02 FY1999/ 17	AMD- pH	1996, 1998, 2006	02050107	02050107003701/ 65640741

Water body (County)	S. 319 funds	319 grant / project #	Impairment Source and Cause	Year listed on 303(d) list	Hydrologic Unit Code (HUC)	NHD Reach Code and ComID
Upper Slippery Rock Creek (Butler)	Yes	FY2005/ 22, 24 FY1996/ 20 FY1997/ 18 FY1998/ 13	AMD-Metals, Siltation	2004	05030105	05030105000373/ 126220032

Lake Water Quality Improvements

Twenty-four lakes have been recategorized on Pennsylvania's Integrated List of All Waters as the result of a change in application of the dissolved oxygen standard in Pennsylvania's Chapter 93.Water Quality Standards. This change has resulted in the lakes being removed from List 4: Impaired for One or More Designated Uses, Not Needing a TMDL (Category 4C: Pollution Impairments) and added to List 2: At Least One Use Attained on Pennsylvania's 2006 Integrated List of All Waters.

Table 7 includes all lakes that have been recategorized. No additional changes have taken place since those completed during FY2006.

Table 7. Recategorized Lakes

FY2006			
Hydrologic Unit Code (HUC)	**Name of Lake**	**Acres**	**Listing Date**
02040104	Lake Minisink	35	2002
02040203	Hopewell Lake	68	2002
	Scotts Run Lake	21	2002
	Trout Run Reservoir	42	2002
02040205	Marsh Creek Lake	535	2002
02050104	Beechwood Lake	67	2002
02050106	Cooks Pond	33	2002
	Lake Wesuking	57.8	2002
	Rockwell Pond	22.4	2002
	Unnamed Lake (State Game Lands 250)	18.9	2002
02050107	Curtis Reservoir	75	2002
	Dunmore Lake #7	17.4	2002
	Lake Scranton	225	2002
	Mountain Mud Pond	24.6	2002
02050305	Laurel Forge Pond	20	2002
02050206	Bear Wallow Pond	25	2002
	Elk Lake	31.5	2002
02050206	Hunters Lake	117	2002
02050302	Canoe Creek Lake	157.3	2002
05010005	Laurel Run Reservoir	100	2002
05010006	Kyle Lake	150	2002
05010007	Quemahoning Reservoir	900	2002
05030105	Lower Hereford Manor Lake	43	2002
	Thorn Run Reservoir	49	2002

C. NPS Pollutant Load Reductions

Pennsylvania has documented NPS pollutant load reductions for implementation projects in the FY2001 through FY2007 Section 319 NPS Management Program grants. Project load reductions are documented in two specific categories:

- Projects resulting in nitrogen, phosphorus and sediment reductions, and
- Projects affecting abandoned mine drainage (AMD) that have resulted in metals and acidity reductions.

Nitrogen, phosphorus and sediment load reductions are required by the EPA for all NPS implementation projects, where applicable. The AMD reductions are not required by the EPA but Pennsylvania tracks these since this information is required and provided in project work plans and final reports. NPS pollutant load reductions are included for all Section 319-funded projects, where appropriate, in the EPA/State NPS program's Grants Reporting and Tracking System (GRTS) database.

Table 8 and Table 9 provide cumulative load reductions for Pennsylvania's FY2001 through FY2007 Section 319 NPS program grants. Cumulative load reductions represent NPS pollutant load reductions applicable to projects in a specific federal fiscal year, i.e. FY2001. Where there is no data shown in a cell in the table, either there is no data associated with a project or no data has been recorded for the project to date. Data in the following tables was extracted from the GRTS database in January 2008. Appendix C includes more detail on individual project load reductions.

Table 8. Nitrogen, Phosphorus and Sediment Load Reductions

	Nonpoint Source Pollutant			
	Nitrogen (lbs./year)	Phosphorus (lbs./year)	Sediment (tons/year)	Suspended Solids (lbs./year) (1)
Grant Year				
FY2001	358,294.	124,521.	21,098.	n/a
FY2002	217,937.	44,065.	5,324.	n/a
FY2003	56,383.	34,810.	8,769.	n/a
FY2004	26,516.	7,165.	3,388.	281.
FY2005	22,251.	7,810.	6,752.	n/a
FY2006	9,836.	2,060.	1,963.	n/a
FY2007	2,256.	623.	1,200.	n/a
Totals	693,473.	221,054.	48,494.	281.

(1) Suspended Solids data was provided by the project grantee for a single project in the FY2004 Section 319 grant. No other project reported Suspended Solids load reductions.

Table 9. Abandoned Mine Drainage Pollutant Load Reductions

	Nonpoint Source Pollutant							
	Iron		Aluminum		Manganese		Acidity	
	(lb/day)	(tons/year)	(lb/day)	(tons/year)	(lb/day)	(tons/year)	(lb/day)	(tons/year)
Grant Year								
FY2001	-	-	-	-	-	-	-	-
FY2002	173.6	31.6	58.7	10.7	2.5	0.5	194.5	35.5
FY2003	129.0	23.5	49.3	9.0	-	-	88.9	16.2
FY2004	678.6	123.8	1,022.7	186.7	402.0	73.4	8,307.0	1516.0
FY2005	1,090.3	199.0	55.6	10.1	36.4	6.6	520.0	0.1
FY2006	16.1	2.9	15.7	2.9	2.1	0.4	265.8	48.5
FY2007	160.0	29.2	364.0	66.4	0.8	0.1	3,873.8	707.0
Totals	2,232.6	410.0	1,520.1	285.8	443.8	81.0	13,250.0	2,323.3

Abandoned Mine Drainage (AMD) TMDL Units of Measure are in lb/day for metals and acidity loadings. The NPS program's Grants Reporting and Tracking System (GRTS) load reduction data are also in lb/day to be consistent with the TMDLs.

PART II.

Progress in Meeting NPS Management Program Goals and Objectives

NPS Liaison Work Group Action Plans:

Agriculture
Construction and Urban Runoff
Hydromodification
Lakes
Land Disposal
Resource Extraction
Silviculture

Pennsylvania Nonpoint Source Management Program Goals

Part II of the report summarizes the current DRAFT NPS Management Program Plan Objectives and accomplishments for FY2007.

Pennsylvania's current DRAFT NPS Management Program Plan includes the five overarching Goals that are shown following this paragraph. The Environmental Protection Agency (EPA) Strategic Plan for Water, published in September 2003, was used as a guideline to help Pennsylvania's NPS Management Program develop these Goals. The five goals create a framework within which each of the seven NPS category work groups (Agriculture, Construction and Urban Runoff, Hydromodification, Lakes, Land Disposal, Resource Extraction, and Silviculture) developed an Action Plan. Each Action Plan includes specific Objectives and Action Items.

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 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.

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 the existing financial incentives, technical assistance, education and regulatory programs.

A. Agriculture Objectives

Goal 1

Objective: Track agricultural BMP implementation and estimate reductions in sediment and nutrients. Track designated use attainment in watersheds where agriculture is the major source of impairment. Further develop or refine existing Section 319 NPS GRTS database to collect this information on a watershed basis, by 2008.

- **GIS layers have been developed by county conservation districts for long-term planning.**
- **The Pennsylvania NRCS is working with the Pennsylvania DEP to provide better access to local conservation practice data.**
- **The Pennsylvania NPS Management Program utilizes the EPA/State Grants Reporting and Tracking System (GRTS) to document environmental results.**
- **Several models assist the Pennsylvania NPS Management Program with nutrient and sediment load reduction estimates. Modeling is a critical component. The Pennsylvania DEP provides training to county conservation districts (CCD) and local sponsors on the use of models with WIP development.**
- **Local water quality monitoring helps document water quality improvements and helps the Pennsylvania DEP target streams for reassessment and de-listing.**

Goal 2

Objective: Increase involvement of agricultural producers in watershed planning and implementation efforts by 2008.

- **The USDA-NRCS actively promotes conservation planning to farmers. The agricultural community needs more education to target resources to impaired watershed areas.**
- **The Agriculture, Communities & Rural Environment (Act 38) of 2005 has lead to Growing Greener providing additional resources to CCD to work with farmers in targeted impaired watersheds. Three CCD cooperated on an "ACRE grant" to develop a simple planning tool.**
- **CCDs are using ACRE and Growing Greener funds to provide conservation planning to agricultural producers in impaired watersheds.**
- **Additional effort is needed to help farmers and watershed organizations work together in watershed planning efforts.**
- **Pennsylvania Fish and Boat Commission (PFBC) regional habitat biologists assist local organizations and farmers with stream and habitat restoration projects.**

Goal 3

Objective: Increase accessibility of local, state, and regional water quality data to decision makers, watershed organizations and producers to target water quality restoration and protection efforts.

- **The Pennsylvania DEP website www.dep.state.pa.us includes stream assessment data on the eMapPA GIS tool. Watersheds information is also available by selecting Water Topics and then Water Quality. The 2006 Integrated List of All Waters includes current statewide water quality assessment data.**

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

- **Projects in agricultural watersheds utilize local organizations' water quality monitoring programs to monitor water quality.**
- **The Schuylkill Action Network's agricultural work group is collecting water samples upstream and downstream of BMP installation, both before and after the project is completed.**
- **Several "ACRE grant" sponsors collect water quality data as part of their agriculture watershed projects.**
- **The Citizens Volunteer Monitoring Program (CVMP) has established monitoring points at several CREP CP-22 Riparian Forest Buffer sites.**
- **The Pennsylvania State University and local watershed organizations have monitored riparian restoration projects in the Spring Creek, Centre County, to measure the success of agricultural BMP implementation.**
- **The Conservation Effects Assessment Project (CEAP) quantifies the environmental benefits of conservation practices used by private landowners participating in select USDA conservation programs, although water quality monitoring data is not a component.**

Goal 4

Objective: Assess the feasibility of nutrient reduction credit trading using the Conestoga River watershed pilot project by 2008.

- **The Conestoga River Pilot Program has helped the Pennsylvania DEP to develop the rules and mechanisms for Pennsylvania's Nutrient and Sediment Trading Program. Pennsylvania has determined nutrient reduction credit trading to be feasible.**
- **Pennsylvania's Nutrient and Sediment Trading Program policy was finalized in December 2006. (Trading is a market-based program that provides incentives for entities to create credits by going beyond statutory or regulatory goals. The credits then can be traded to others to help them meet their obligations. The program offers farmers, communities and industries a tool to help them meet, or exceed, state and federal water quality goals.) Since the publication of the policy, 26 proposals have been approved for**

potentially 476,359 nitrogen credits, 57,216 phosphorous credits and 129 sediment credits. Three contracts for credits have also been entered into.

- **Pennsylvania's Nutrient and Sediment Trading Program provided funds to 17 Berks county farmers to plant winter cover crops in 2007. This was year 2 of the county's program for farmers in the Chesapeake Bay drainage area.**

Objective: Increase the adoption of cost-effective best management practices to minimize ammonia emissions and protect/improve air quality on 1,000 farms by 2012.

- **Forthcoming regulations will govern the implementation of odor control practices, such as vegetative buffer planting, for certain farming operations. Alternative manure handling strategies such as incineration or utilizing manure resources for abandoned mine reclamation projects can also reduce ammonia emissions.**
- **New and updated conservation practice standards for ammonia emission-reducing BMPs can improve air quality.**

Objective: Facilitate four projects demonstrating market-based opportunities to address agricultural water quality issues by 2008.

- **Pennsylvania's Nutrient and Sediment Trading Program is actively engaged in facilitating trading proposals. Several contracts have been entered into (See first Objective under Goal 4).**

Objective: Demonstrate the implementation of technologies and management systems (conservation tillage, composting, etc.) identified to be environmentally sound and economically feasible.

- **The Pennsylvania No-Till Alliance promotes no-till and conservation planting.**
- **Manure and livestock composting have proven to be sound economic methods of managing agricultural by-products. More emphasis needs to be given to separation of solids and marketing them through compost or other methods, community biogas digesters, using manure as a heating source, and additional "pushing the envelope" treatments.**
- **Pennsylvania State University Cooperative Extension (CE) and CCDs promote new technologies and practices to farmers at local field days.**
- **An effort is being made with USDA-NRCS FY2008 EQIP to target water quality issues with the implementation of core cropland conservation practices: Cover crops; No-till; Nutrient Management; IPM; and Buffers.**

Objective: Assess the feasibility of new technology and BMPs to address the nutrient imbalance on agricultural lands.

- **The Resource Enhancement and Protection (REAP) program was passed by the state legislature in July 2007 and is a new tool to assist farmers with agricultural conservation work.**

Goal 5

Objective: Increase farmer participation by 250 producers in the Pennsylvania environmental Assessment and conservation Certification of Excellence (PEACCE) program by 2012.

- **The objective to increase participation by 250 producers may not be feasible due to the decreased funding for the On-Farm Assessment and Environmental Review (OFAER) component of the PEACCE program.**

Objective: Maintain and increase nutrient management, soil conservation and agronomic management educational efforts to producers, program and technical support staff and agribusiness by 2012.

- **The need to improve environmental protection will necessitate increased technical assistance (TA) to farmers. All conservation organizations and agencies will need to focus planning and implementation efforts to achieve goals.**
- **Approximately 45 Agricultural Conservation Technician (ACT) FTEs now provide TA through PDA funds to CCDs, 42 Nutrient Management Technicians provide TA through State Conservation Commission funds to CCDs, and 38 Chesapeake Bay Technicians provide TA through DEP funds to CCDs.**

Objective: Track nutrient management plan implementation on Concentrated Animal Operations (CAOs) and Concentrated Animal Feeding Operations (CAFOs) where required by state and/or federal mandate.

- **The CAO and CAFO program has successfully been implemented and outreach continues.**
- **Nutrient management planning and BMP implementation are being completed or updated for all CAOs and CAFOs where required.**

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

- **Accomplishments included 827 contracts for 17,281.9 acres in the Ohio River Basin CREP and 8,483 contracts for 160,993.9 acres in the Chesapeake Bay Basin CREP from program inception through November 15, 2007.**
- **Pa.'s Growing Greener Program provided $6.5 million, and the USDA-FSA provided over $4.4 million for cost-share of CREP practices, during FFY2007.**

Objective: Develop and fully implement a Manure Hauler and Broker Certification Program by 2008.

- **Final program criteria were published through Commercial Manure Hauler and Broker Certification Program regulations on January 13, 2007.**
- **The PDA issued 'interim' certification status to over 800 individual manure haulers and brokers in 2006. Final certification was provided to over 700 when program criteria were finalized and published in early 2007.**

- **A statewide continuing education and certification program is provided by PDA and Penn State Cooperative Extension staff.**

Objective: Increase accessibility to agriculture research data and information on the water-air pollutant mechanisms through workshops, print media, and the internet by 2012.

- **The Penn State University may be able to host a clearinghouse within the College of Agriculture's Agriculture and Environment Policy and Science Center. Information on nutrient management related topics is currently available via http://panutrientmgmt.cas.psu.edu/ and http://agenvpolicy.aers.psu.edu/.**

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.

- **A total of 21 ACRE funded projects are progressing well. Some projects target agriculture-impaired watersheds for nutrient management and conservation plan implementation.**
- **The Pennsylvania Water Quality Action Packet for Agriculture was written under an ACRE grant by Bedford and Lancaster Counties and was published with the help of Westmoreland County Conservation District. The Action Packet was developed to assist non-CAO/CAFO farmers in meeting the Pennsylvania baseline water quality requirements. It is set up to help organize and document how farmers are meeting the baseline requirements and protecting water resources.**
- **The PDA Agriculture Conservation Technician program increased technical assistance for conservation planning and implementation.**
- **The USDA-NRCS "Put Planning First" program promotes conservation plan development before prior to participation in USDA and other programs.**

Objective: Develop and implement Mushroom Farm Environmental Management Plans (MFEMP) on all sites utilizing mushroom substrate (MS) and spent mushroom substrate (SMS) by 2012.

- **The Chester and Berks CCD are leaders in promoting MFEMP development and implementation. The Chester CCD had funded a staff position to promote MFEMP development, through the Pennsylvania DEP's Bureau of Land Recycling.**

Objective: Complete four projects that implement alternative-use technologies for spent mushroom substrate (SMS) by 2008.

- **The American Mushroom Institute's Community Awareness Committee promotes research and practical applications to farmers, the landscape industry and the turfgrass industry on SMS.**
- **The Penn State University, Rodale Institute, Giorgi Mushroom Company and the landscape industry have supported research to demonstrate and apply SMS beneficial uses.**

- **The Pennsylvania Department of Transportation utilized SMS to reestablish vegetation on highway embankments in southeastern Pennsylvania Success has been excellent.**

B. Construction and Urban Runoff Objectives

Goal 1

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

- **Pennsylvania conducted nine two day training sessions on the PA Stormwater Best Management Practices Manual. These sessions were held across the state and were open to municipal officials, engineers, and local planning officials.**

- **DEP has began work to revise and update the Chapter 102 regulations to incorporate post construction stormwater, buffer, and antidegradation requirements.**

- **DEP began the development of a draft delegation agreement for conservation districts to conduct reviews of post construction stormwater management plans.**

- **During 2007, 63 conservation districts administered the Dirt and Gravel Roads Pollution Prevention Program in Pennsylvania.**

- **DEP is working to revise and reauthorize the PAG-2 (NPDES General Permit) for stormwater discharges associated with construction activities.**

Goal 2

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.

- **DEP meet with PennDOT staff to plan an Erosion and Sediment Control course for PennDOT road maintenance activities.**

- **The Center for Dirt and Gravel Roads continued to provide training sessions directed toward municipalities for dirt and gravel road maintenance.**

- **The Center for Dirt and Gravel Roads remains a clearinghouse for information on dirt and gravel road maintenance and maintains project summaries on its website.**

- **DEP and PennDOT jointly developed antidegradation and implementation guidance for use on roadway projects.**

Goal 3

Objective: Track and report on existing regulatory and non-regulatory program requirements and the potential effect they have on protecting and maintaining water quality on an annual basis.

- **DEP staff has begun efforts to revise its Erosion and Sediment Pollution Control Program Manual to ensure all BMP standards and specifications are up to date.**

- **Conservation districts and DEP Regional offices issued over 2,000 NPDES General Permits, and over 400 NPDES Individual Permits for stormwater discharges associated with construction activities. They also conducted over 13,000 site inspections and responded to over 2,800 complaints. Enforcement actions were taken for non-compliance in over 500 cases.**

- **The NPDES Permit application form and permit application process is being revised to include addressing TMDL issues.**

Goal 4

Objective: As resources allow, continue support of Villanova University Stormwater Partnership and other educational institutions as a resource center to identify and research appropriate best management practices.

- **Participation of DEP staff on the Villanova University Stormwater Partnership continued in 2007.**

- **Research on BMPs continues at the BMP Stormwater Research and Demonstration Park at Villanova University.**

- **The DEP Villanova University Stormwater Partnership Stormwater Symposium was held in 2007.**

Goal 5

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

- **DEP staff continued to revise the development of a draft Pennsylvania Model Stormwater Management Ordinance to serve as a model ordinance or template for municipalities developing municipal stormwater management ordinances.**

- **55 counties have been identified as either in progress on the development of a countywide stormwater plan or proposing to submit a request for stormwater planning.**

- **DEP is revising its PAG-13 General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (Ms4s).**

- **DEP staff assisted in the development of the Pennsylvania Standards for Residential Development Handbook through the Pennsylvania Housing and Research/Resource Center at Penn State University. The project's objective was to develop residential site standards that are tailored to Pennsylvania and to promote reasonable and affordable development with standards based on current science and engineering.**

C. Hydromodification Objectives

Goal 1

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

- **A total of 17 dams were removed or modified, 15,032 feet of stream channel were restored and over 104 miles of streams were opened for the passage of fish and other aquatic organisms.**
- **Information relating to removal of dams in Pennsylvania is maintained at the American Rivers webpage http://www.americanrivers.org/site/PageServer?pagename=AR7_Region_MidAtlantic_depth**

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 Environmental 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. This information should be promoted to municipal officials in the future.**

Goal 2

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

- **The KST completed the Natural Stream Channel Design Guidelines in March 2007. This document can found on their webpage at www.keystonestreamteam.org.**

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.

- **Representatives of Aquatic Resources Restoration Company have held post NSCD Project construction monitoring workshops in October, 2007 on the East Branch Codorus Creek and South Branch Codorus Creek.**

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 KST continues to be the focal point for NSCD information, education, and outreach. A wealth of information is available and maintained on www.keystonestreamteam.org. Specific information regarding BMP's relating to NSCD can be found in the Natural Stream Channel Design Guidelines, Chapters 6, "Creating the Final Design".**

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

- **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.

- **The KST completed the Natural Stream Channel Design Guidelines in March 2007. This document can found on their webpage at www.keystonestreamteam.org. Topics relating to channel maintenance and**

its impact on channel function are included in Chapter 2, “Reading the River” and Chapter 4, “Data Collection and Analysis”.

D. Lakes Objectives

Section 314 of the Clean Water Act focuses on lakes. Clean Lakes initiatives have since 1995 been funded through Section 319. Public and non-public lake initiatives have also been funded through PA's Growing Greener Program. Other funding sources used for assessment and restoration of lakes include EPA's special 106 appropriation funds, the Natural Resources Conservation Service (NRCS) PL566 program, and other programs such as the Chesapeake Bay Program, and PENNVEST (Clean Water State Revolving Funds). Pennsylvania has approximately 1500 lakes and reservoirs that total about 161,000 acres, with 370 lakes open to the public, 150 within 72 different State Parks. Boating, fishing, swimming and other recreational activities are typically integral to a lake community. PA's lake management regulation is codified in the Department of Environmental Protection's Rules and Regulations, Section 95.6- Discharges to Lakes, Ponds and Impoundments, which sets forth treatment requirements for point source discharges necessary to control eutrophication. As aquatic life, recreational, and potable water resources, lakes need to be protected and maintained for the resources be fully usable in the future. The challenge in lake management is to involve the stakeholders in the watershed to prevent nonpoint source pollution and restore the riparian habitat, as well as to identify and permit in-lake practices that can mitigate lake problems while the watershed is restored.

Goal 1

Objective: By 2012, 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**) do recognize the natural process of stratification in lakes, ponds and impoundments and apply dissolved oxygen (DO) criteria only in the epilimnion of lakes. In non-stratified lakes, ponds and impoundments, the criteria apply throughout. Water temperature criteria 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.

- **The reclassification of lakes is a state issue and needs internal resources for researching what has worked in other states before deciding on a final reclassification system.**

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 refined and expanded every two-yr. cycle for the Integrated Report. 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 participated 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. See EPA's website for protocols and updates: http://www.epa.gov/owow/lakes/lakessurvey/**

- **The Department's switch to the National Hydrography Data Layer (NHD) and new electronic data storage and retrieval systems based on GIS (SLIMS, ICE, eFacts, eMap, and WAVE) in 2006 allows for efficient data sharing, both internally and with the public. The lake portion needs significant updates to accept data to be up-to-date, but the process has begun.**

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

- **Most TMDL lakes are being tracked using protocols designed to detect water quality improvements as soon as they are achieved:**
  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 also within DEP. 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. An updated

Report is due in late 2007. 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%. Other TMDL lakes sampled on an intermittent basis include Pinchot Lake (York County), Lake Nockamixon (Bucks County), Conneaut Lake (Crawford County), and Lake Jean (Luzerne County). These lakes do not have restoration grants associated with them at this time.

Goal 4

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.

This goal has largely been accomplished by the development and adoption of a formal Aquatic Species Management Plan and the efforts of PA's working Committee – the PA Aquatic Invasive Species Council. 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 group has identified their priorities and is seeking funds to implement their first objectives. This workgroup is open to the public and will be a viable means to coordinate outreach initiatives Statewide.

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.**

- **The 2007 Pennsylvania Lake Management Society (PALMS) annual conference was held on October 10-11, 2007, providing current information on the PSIC council, and invasive species controls (as well as other topics).**

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

- **PALMS held its 2007 annual conference on Oct. 10-11 in State College, Pennsylvania. Topics covered were algae and aquatic plant distribution 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 were held in 2007. Regional workshops are being planned for 2008.**

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.**

- **In 2007, the Consortium for Scientific Assistance to Watersheds (C-SAW), using the PA Lake Management Society (PALMS) assisted five lake associations with watershed and lake management issues, and facilitated three Lake & Pond Workshops. Seven Workshops and two citizen lake monitoring trainings are planned for 2008.**

- **The PA Senior Environment Corps (PASEC) database of citizen and watershed group monitoring data that was maintained by the Environmental Alliance for Senior Involvement (EASI) is being considered by DEP for inclusion on the web as part of eFacts and eMapPA. (The parent organization, EASI, is no longer operating). Data input and retrieval would be available on DEP's web resources.**

Goal 5

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

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

- **The PALMS website, www.palakes.org, provides information on lake and watershed BMPs, water quality parameters, and other outreach material.**

- **DEP revised and disseminated its new Stormwater BMP manual in 2007, and provided numerous regional training sessions.**

E. Land Disposal Objectives

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 2007 at 11 sites throughout Pennsylvania and will continue until at least the fall of 2008.**

- **Delaware Valley College prepared and submitted its final Phase II report in 2007. DEP is currently evaluating how to utilize the information gathered in Phase II in its alternate and experimental systems programs.**

Goal 5

Objective: Provide continued training of 1,266 local sewage enforcement officers (SEOs) biannually, and promote increased participation by other municipal officials.

- **During 2007, 821 SEOs and municipal officials received training in the SEO Pre-certification Academy (86), classroom classes (420), posttests (41) and web-based courses (274).**

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

- **One new classroom course dealing with on-lot system component selection and one web-based course on alternative treatment technologies were developed in the last year. However, both courses are awaiting the results of impacting DEP policy development before being finalized.**

- **A new format for the Pre-certification Academy is currently under development. The Orientation Course for the new format is in the final development stage.**

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.) Explore regional options for the treatment and disposal of pumped septic wastes.

- **At the end of 2007, there were 203 SMPs on record, serving at least 260 Pennsylvania municipalities. Without full verification, it cannot be concluded that every SMP is valid, or implemented, or that there are not other SMPs in the State as yet undiscovered.**

- **In April 2007 SMP peer assistants from Lebanon County, York County, Washington Township, Franklin County, and Maxatawny Township, Berks County participated in the workshop, "Overcoming the Roadblocks to Sewage Management" at the PSATS Annual State Convention in Hershey, Dauphin County. This workshop was a facilitated session between the audience and an expert panel to discuss municipal barriers and working solutions to implementing SMPs. Attendance was in excess of 75 township officials and associated attendees.**

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

- **Efforts are ongoing to improve availability and access to SMP education and resource materials for municipalities in need.**

- **Regarding cooperative inter-municipal approaches to the management of on-lot sewage treatment systems:**

    - **Lebanon County Planning Department is now administering SMPs for three of their participating townships: North Lebanon, West Cornwall, and South Annville, and more are likely to join.**

    - **The Juniata Sewage Committee, Juniata County is moving towards a multimunicipal SMP effort involving at least three of their participating townships.**

    - **Erie County Department of Health is administering an SMP for small flow treatment facilities that reportedly has 21 townships participating.**

    - **Chester County Health Department provides access to a database that tracks septage pumper/hauler activities and treatment tank pumping for Chester County municipalities administering 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.)

- **In 2007, PENNVEST closed on 12 new loans for repair and replacement of on-lot treatment systems, totaling $171,525. Since the program's inception in 1994, the agency has closed on 388 loans totaling $4,027,739.**

- **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.**

- **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 2007 indicate that 121 HHW collections were held in 53 communities, involving 62,440 participants and collecting 7,250,000 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 inter-municipal and public/private partnerships.**

- **At the end of 2007, there were 854 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 inter-municipal and public/private collection partnerships in Pennsylvania at the end of 2007: the SW PA HHW Task Force (HHW), the SE PA Regional HHW Program (HHW and electronics), the Loyalhanna Watershed Association (electronics), the Northern Tier Solid Waste Authority (HHW, electronics and tires), PA CleanWays of Butler and Lawrence Counties (electronics and tires), Bedford/Fulton/Huntingdon Counties (HHW and electronics), Elk/Cameron Counties (electronics) and Butler/Crawford/Venango 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 2.0 million pounds.

- **Pennsylvania Farm-A-Syst Worksheet 4, "Barnyard Conditions and Management", was revised and published as Worksheet 4, "Animal Concentration Area Management" in 2007.**
- **The Farm-A-Syst materials are used extensively in Penn State University Cooperative Extension's nutrient management education program.**

- **The Chemsweep program collected 87,760 pounds of pesticides during 2007, somewhat below the 1999-2006 average of 95,717 pounds per year. Of this total, 32,382 pounds were collected at ten Chemsweep/HHW partnership events, averaging 3,238 pounds per event. The annual average amount of homeowner pesticides collected per partnership event has increased from 2,139 pounds to 3,031 pounds over the last five years. Total pesticides collected by the Chemsweep program since its inception in 1993 now stands at 1,711,034 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: 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 2007, biosolids were used as a soil supplement on 143.9 acres of active mine lands, 135.2 acres of abandoned mine lands and 33.1 acres of agricultural lands. Paper mill sludge was used in the restoration of 31.2 acres of abandoned mine lands, and more than 1,780 cubic yards of spent mushroom compost was used in passive abandoned mine drainage treatment systems.**

- **DEP's Biosolids Program continued to provide formal training for biosolids generators and land appliers in recommended procedures for producing and applying biosolids during 2007.**

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

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

- **PA CleanWays cleaned up 95 dump sites during 2007, collecting 754 tons of assorted refuse and 10,120 tires. Fourteen of these cleanups were funded in part or in whole by DEP's Project COALS. No data were available for projects conducted exclusively by Project COALS in 2007. Since 1990, these**

programs and the Susquehanna River Basins Commission have restored more than 842 sites, collecting upwards of 33,224 tons of refuse and more than 348,120 tires.

F. Resource Extraction Objectives

Goal 1

Objective: Evaluate and categorize or prioritize watersheds with abandoned mine lands for restoration activities.

The Susquehanna River Basin Commission (SRBC), in partnership with the State of Pennsylvania and Trout Unlimited, developed a remediation strategy for the West Branch Susquehanna Subbasin in Pennsylvania, which focused on recommendations for improving water quality conditions in areas affected by abandoned mine drainage (AMD).

As part of this strategy development, SRBC compiled a geo-referenced data inventory of AMD discharges for the watershed using ArcGIS version 9.2 and Pennsylvania's 1:24,000 scale National Hydrography Dataset (NHD) stream layer. With nearly 2,000 discharges identified, the inventory represents the most comprehensive effort to date in Pennsylvania for a watershed area of this size. The GIS data inventory has been used to determine the extent and severity of AMD impacts. Additionally, through the use of several analytical approaches coupled with GIS data manipulation, a subset of the inventory has served as the basis for determining (1) existing water-quality conditions, (2) the potential for improving those conditions through remediation, and (3) the resulting downstream effects. Additionally, the data inventory will be available to provide guidance for a range of management-related decisions. Examples could include identifying water-quality improvements for discharges associated with Priority I and II Health and Safety Problem sites, identifying opportunities for industrial treatment and use, or targeting optimal areas for ecological restoration.

DEP has specific priorities for Growing Greener. One priority is projects that are in watersheds that are impaired especially where Total Maximum Daily Loads (TMDLs) have been developed.

Another priority is projects in watersheds that implement a plan. In the mining offices, priorities have also been chosen. They are as follows:

- **Great Lakes and Upper Ohio River Basin – East Branch Clarion River, Little Toby Creek, Mill Creek, Beaver Run, Scrubgrass Creek, North Branch bear Creek, Slippery Rock Creek.**

- **Upper Susquehanna River Basin – West Branch Susquehanna River Basin for AMD, Clearfield Creek; Emigh Run and Trout Run tributaries to Moshannon Creek; Johnson Creek and Fall Brook Creek tributaries of the Upper Tioga River; Morgan Run tributary of Clearfield Creek; Tioga River, Schrader Creek, Loyalsock Creek, Tomhicken Creek, Shamokin Creek,**

Bennett Branch, Kettle Creek, Babb Creek, Anderson Creek, Lycoming Creek.

- **Upper Delaware River Basin – Lehigh River**
- **Ohio River Basin – Casselman River, Stony Creek, Blacklick Creek, Aultman Run, Little Mahoning Creek, Little Conemaugh River, Loyalhanna Creek, Crooked Creek, Raccoon Creek, Indian Creek and Turtle Creek**
- **Lower Susquehanna and Potomac River Basins – Catawissa Creek, Wisconisco Creek, Mahanoy Creek and Swatara Creek**
- **Lower Delaware Basin – Schuylkill River and Little Schuylkill River**

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). (By the end of 2009)

The following is a list of projects that will go towards restoring 100 miles to designated uses:

Chesapeake Bay Small Watershed Grant Projects that began in 10/06-9/07:

- **Reducing Nutrient Levels in Chesapeake Bay, Stroud Research Center, Tioga County – This project will investigate the relationship between abandoned mine drainage (AMD) and nutrient processing within the Chesapeake Bay watershed. This research will investigate potential links between AMD pollution, stream integrity/quality, and increased nutrient fluxes to the Bay. The information can then be used when developing strategies for addressing AMD within the Bay watershed.**
- **Contrary Run Reclamation and Restoration, Beech Creek Watershed Association, Centre County – This project is design the restoration of 3,000 feet of stream corridor and 7.8 acres of mine lands. This will improve water quality and aquatic life on Contrary Run by abating acid mine drainage and revegetation of mine areas.**

Growing Greener projects that were awarded from 10/06 to 9/07:

- **South Branch Blacklick Creek, Cambria County (Treatment of the Webster Mine Drainage)**
- **West Branch Susquehanna River, Cambria (design Passive Treatment System for AMD)**
- **Trout Run, Cambria Co. (design Passive Treatment System for AMD)**
- **Beech Creek Watershed, Centre County (Design and permitting of a large stream reconstruction and surface mine reclamation project. Construction to begin in 2008)**
- **Mahles Run, Clarion County (Complete remediation of the impacts of AMD)**
- **Morgan Run, Clearfield County (Design and permitting to treat the ROSS AMD Discharge)**

- **Morgan Run, Clearfield County (County Environmental Initiative Grant – Construction of wetlands and reclamation of spoil)**
- **Little Toby Creek, Elk County (Brady Camp Treatment Plant 4 project which includes the design, construction, and water evaluation for an additional sedimentation pond for dewatering)**
- **Clarion River or Little Toby Creek, Elk County (Construction of a passive treatment system)**
- **Bear Run , Indiana Co. (Construct Passive Treatment System for AMD) (County Environmental Initiative Grant and GG grants)**
- **Lucerne #3a , Indiana Co. (Construct lime silo for AMD)**
- **Reeds Run, Indiana Co. (Construct Passive Treatment System for AMD) County Environmental Initiative Grant)**
- **Little Mill Creek, Jefferson County (Construct 2 ALD's in place of existing ponds to treat AMD)**
- **Beaver Run, Jefferson County (Project will address clogging of the Conifer 1 AMD treatment system)**
- **Borough of Taylor, Lackawanna County (Design and construction of the Colliery Property Channel Restoration and Culvert)**
- **Hicks Run, Luzerne County (Restore 3100 feet of stream channel utilizing fluvial geomorphic methods to prevent infiltration into deep mines)**
- **Black Creek, Luzerne County (Construct a passive treatment system to treat AMD discharge)**
- **Fox Run, Mercer County (County Environmental Initiative Grant to address AMD pollution from a deep mine)**
- **Sharp Mountain, Schuylkill County (Reclamation project to reclaim dangerous cropfall subsidence in the City of Pottsville)**
- **O&M Somerset, Somerset Co. (Rehab of Oven Run Passive Treatment System)**
- **Coal Run, Somerset, Co. (Construct lime silo for AMD)**
- **Dark Shade Ck., Somerset Co. (Limestone sand dosing)**
- **Babb Creek Watershed, Tioga County (Rehabilitation of the Klondike SAPS including removal of spent compost and replacement with fresh material)**
- **Jacobs Creek, Westmoreland County (Stauffer Run AMD Project. Began design and permitting for a passive treatment system to treat four discharges)**
- **Tubmill Run, Westmoreland County (Design and construction of a self-regulating lime doser to treat the largest AMD discharge in this watershed)**

Growing Greener Projects completed between October 2006 and September 2007:

- **West Branch Schuylkill River, Schuylkill County (Evaluation of sources of infiltration to the Pine Knot discharge and completion of the Mackeysburg project line drainage channels to reestablish runoff to the river)**
- **Birch Run, Sullivan County (Completed the construction of passive treatment for the Bernice Mining Lewis Mine discharge. System is treating a 50 gal/minute discharge which will clean up 4 miles of AMD impacted steam)**

- **Six Mile Run, Bedford County (Rehab of N. Point discharge was completed)**
- **Lorberry Creek, Schuylkill County (Pocono Northeast RC&D completed the refit of the Orchard Limestone Drain Treatment System seen directly from route 81 south of the Pine Grove Exit)**

Projects funded by 319 that began in 10/06-9/07:

- **West Branch Schuylkill River, Schuylkill County (Design and Construction of a passive limestone treatment system on Neumeister Discharge)**
- **Catawissa Creek, Schuylkill County (Remediation of the Oneida #3 Tunnel Discharge)**
- **Bear Creek, Dauphin County (Phase II Bear Creek treatment system)**
- **Six Mile Run, Bedford County (Design/construct for SX2-D5)**
- **Six Mile Run, Bedford County (Design/construct for SXO-D6)**
- **Six Mile Run, Bedford County (Design/construct for SXO-D7)**
- **Six Mile Run, Bedford County (Design/construct for SXO-D8)**
- **Six Mile Run, Bedford County (Design/construct for SAO-D4)**
- **Ferris Wheel, Cambria County (Design/reclaim abandoned mine land)**
- **Green Garden, Huntington county (Design/construct for discharge)**
- **Bilger Run ALD (Design and permitting completed in July 2007. (Construction starts 12/07)**

Projects funded by 319 that finished in 10/06-9/07:

- **Mill Creek, Schuylkill County: (Pine Forest Discharge – Anoxic Drain with 4 settling ponds/wetlands.)**
- **Wabash Creek, Schuylkill County (Reevesdale Discharge – Construction of an oxic limestone drain)**
- **Bear Creek, Dauphin (Bear Creek Phase I : Construction of a limestone channel and settling ponds to remove iron from the Williamstown Shaft discharge(Lykens Water Level Tunnel))**
- **Mahanoy Creek, Schuylkill County: (Bolich Wetland Project – Construction of a settling pond/wetland along Mahanoy Creek to remove metals).**
- **Six Mile Run, Bedford County (Treatment of the SX2-D5 discharge was completed, using a Vertical Flow Pond)**
- **Six Mile Run, Bedford County (Treatment of the SX8-D2 discharge was completed, using a wetland)**
- **Six Mile Run, Bedford County (Treatment of the SX3-D4,5,6 discharge was completed, using limestone ponds)**
- **Six Mile Run, Bedford County (Treatment of the SX3-D7,8 discharge was completed, using limestone ponds)**
- **Johnson Creek, Tioga County (The Arnot No.2 Mine AMD Treatment system Construction for 200 gpm deep mine discharge was completed)**

- **Blackleggs Creek, Indiana County (Construction of a vertical flow pond to treat Big Run #7 deep mine discharge was completed)**

AMD Treatment systems and other projects completed in 10/06-9/07:

- **Schuylkill River, Schuylkill County: (Bell Colliery Phase II – Construction of a flushing pond to capture solids from the vertical flow ponds.)**
- **South Fork Bens Creek, Somerset County (used emergency contracting procedures to continue dewatering of the Lion Mining Company underground mine pool and upgraded chemical treatment facilities on an large underground mine discharge when the mine operator abandoned the site. Plans are to relocate and modify the system to be treated with a passive treatment system saving $300,000 years in annual maintenance costs.)**
- **Raccoon Creek, Washington County (Raccoon Creek Watershed Restoration – JB1 (Phase I) Discharge Project in Smith Township. Constructed a four acre passive wetland treatment system to treat an acidic discharge that averages 950 gpm. The treatment system removes 300 – 1000 ppd of iron, 25 – 200 ppd of aluminum and 300 – 5000 ppd of acidity.)**
- **Dunkard Creek, Greene County (Mathews Discharge Restoration Area Project in Dunkard Township. The passive treatment system treats two acidic discharges with a combined average flow of 300 gpm. The treatment system neutralizes 1,300 ppd of acidity, 170 ppd of iron, 60 ppd of aluminum and 4 ppd of manganese. The treatment system consists of three limestone only automatic flushing vertical flow ponds, one mixed media vertical flow pond, a settling pond, a 122 foot oxidation-precipitation channel, a ¾ acre aerobic wetland and a horizontal flow limestone bed).**
- **Sewickley Creek, Westmoreland County (Lowber Passive Remediation Project, Phases II & III in Sewickley Township. Constructed a passive treatment system to treat an alkaline- iron (75 mg/l) discharge that flows between 1,000 to 2,500 gpm. The treatment system consists of six settling ponds (5.5 acres) and a large wetland (7.7 acres). The system was designed to facilitate iron oxide recovery)**
- **Kiskiminetas River, Westmoreland County (Tinsmill AMD Site Project. Completed the design for the reconstruction of the existing passive treatment system. The net acidic discharge flows between 200 – 300 gpm. The system was re-designed to facilitate iron oxide recovery)**
- **Loyalhanna Creek, Westmoreland County (Latrobe Foundation Property AMD Project. Completed the evaluation and design for a passive treatment system to treat the Ridilla Discharges and the Adelphoi Village Discharge. The system will treat between 400 – 500 gpm of mine water)**

- **Ayelsworth Creek, Lackawanna River, Lackawanna County (Ayeslworth Creek Discharge Treatment System- It is an anoxic limestone drain which adds alkalinity to the mine water)**
- **Youghiogheny River, Fayette County (Jonathan Run AMD Remediation Project - Completed the design and permitting of a passive treatment system to treat up to 30 gpm of acidic mine water)**
- **Camp Hope Run and Morgan Run, Clearfield County (Through settlement with Al Hamilton Construction Company, completed reconstruction of two passive treatment systems on nine AMD discharges on Camp Hope Run and Morgan Run in the Clearfield Creek watershed)**

BAMR Completed Acid Mine Drainage Abatement Projects from 10/05-9/07:

- **Cambria County – Johnstown Redevelopment Project**
- **Huntingdon County – Jollier Project**
- **Indiana County – Judy 14 Treatment System Rehabilitation**
- **Indiana County – Tide Mine In-situ Treatment**
- **BAMR also completed various mine subsidence control, water line extensions and AML deep mine reclamation projects in Allegheny, Beaver, Clearfield, Indiana, Luzerne and Washington Counties. These would have minimal to no surface restoration.**

Objective: If resources allow, reclaim 2,500 acres of Abandoned Mine Lands (AML). (By the end of 2009)

Number of Acres (1,204) reclaimed from 10/06-9/07:

- **The District Mining Offices facilitated the reclamation of 731 AML acres during the reporting period through Government Financed Construction Contracts, Remining permits, and Bond Forfeiture Reclamation projects.**
- **BAMR reclaimed 473 acres through various AML Surface Mine Reclamation Projects in Armstrong, Butler, Carbon, Centre, Clarion, Clearfield, Fayette, Greene, Luzerne, Northumberland and Schuylkill Counties.**

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. (By the end of 2009)

- **From 10/01/07 – 9/30/07 DEP's Bureau of Oil and Gas plugged 290 abandoned wells.**
- **Clarion County Conservation District received GG II grant to plug oil and gas wells in the Clarion River Watershed**
- **Western Pennsylvania Coalition of Abandoned Mine Reclamation (WPCAMR) sponsored an OSM Watershed Cooperative Agreement**

Program Grant in cooperation with Farmington Twp (Clarion Co.) which was responsible for plugging of 2 wells (LC20D and LC35D) along Little Coon Run and Wally Run which abate 2 of the most significant discharges in that watershed

- **Venango County Conservation District received GG II grant to plug 4 abandoned wells on Scrubgrass Creek, South Branch, and Trout Run**
- **Venango County Conservation District received a Sole Source Grant award for an Orphan Wells Expansion Project. Project will continue to expand senior citizen environmental activities and expertise in the search for abandoned oil and gas wells. Also with a partnership with Interstate Oil and Gas Compact Commission (IOGCC) it is hoped this program can be extended to other states.**

Objective: Restore losing streams to the surface to reduce surface water infiltration into underground mines and restore aquatic habitat.

- **Redstone Creek, Fayette County (Bute Run GFCC Project (Franks Site) - Bute Run currently enters a subsidence hole that connects to the Pittsburgh Coal deep mine workings. The project will restore the Bute Run flow to the surface)**
- **Lydick Sink Hole, Westmoreland County (Conservation Environmental Initiative Grant to help with a BAMR effort to eliminate 550 acres of surface water from entering an abandoned underground coal mine. The project will restore approx. 1,000 feet of stream channel)**

<u>Goal 2</u>

Objective: Develop 20 integrated watershed management plans that incorporate AMD/AML Assessments by 2009.

Completed Implementation Plans meeting EPA's Section 319 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**
- **Hubler Run, Clearfield County**
- **Johnson Creek, Tioga County**
- **Blacks Creek, Butler County**

Implementation Plans meeting EPA's Section 319 Criteria that are underway:

- **Montgomery Creek, Clearfield County**
- **Hartshorn Run, Clearfield County**
- **Fall Brook, Tioga County**
- **South Branch Plum Creek, Indiana County**
- **South Sandy Creek, Venango County**

Restoration Plans either completed or close to completion:

- **Shimmel Run Restoration Plan, Clearfield County**
- **Deer Creek Restoration Plan, Clearfield County**
- **Moshannon Creek –Headwaters, Clearfield and Centre County**
- **Rankin Run Mine Drainage Assessment Report, Fayette County (Redstone Creek Watershed). Completed an assessment and restoration plan for the Rankin Run AMD discharges.**
- **Robinson Run Watershed Assessment and Restoration Plan, Allegheny and Washington Counties (Chartiers Creek Watershed). Began the assessment of AMD discharges in the Robinson Run Watershed.**
- **Nescopeck Creek, Luzerne County**

AMD TMDLs approved in 2007:

- **Paint Creek, Cambria and Somerset County**
- **Bear Run, Clearfield, Indian and Jefferson County**
- **Beaverdam Branch, Blair County**
- **Boone Run, Shafer Run and Unnamed trib to Stonycreek River, Somerset County**
- **Brewer Run, Indiana County**
- **Clearfield Creek, Clearfield and Cambria County**
- **Coal Bank Run and Unnamed trib to Buffalo Creek, Armstrong County**
- **Dooley Run and Dunkard Creek, Greene County**
- **East Branch Mahoning Creek, Cambria and Jefferson County**
- **Foundry Run, Armstrong and Jefferson County**
- **Freeman Run, Westmoreland County**
- **Harmon Creek, Washington County**
- **Kettle Creek, Clinton, Potter and Tioga County**
- **Laborde Branch, Laurel Branch Run, Laurel Run (Moshannon Creek), Sandy Creek, Unnamed trib to Trout Run, Clearfield County**
- **Little Deer Creek, Allegheny County**
- **Little Schuylkill River and Upper Schuylkill River, Schuylkill County**
- **Little Scrubgrass Creek, Butler and Venango County**
- **Mahanoy Creek, Schuylkill and Northumberland County**
- **North Branch Bear Creek, Butler County**
- **Otto Run, Cambria County**

- **Pine Run, Armstrong and Jefferson County**
- **Reeds Run and Richards Run, Indiana County**
- **Solomon Creek, Luzerne County**
- **Spring Run and West Creek, Elk County**
- **Stump Creek, Jefferson and Clearfield County**
- **Walley Run, Clarion County**

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

- **Pottsville DMO: The Schuylkill Headwaters Association was awarded a grant from the William Penn Foundation to develop a OM&R plan and funding mechanism for projects in the Schuylkill River Watershed.**
- **Cambria DMO: Broad Top Township received a Growing Greener grant to develop a Six Mile Run M&R Fund (O&M Fund for long-term maintenance)**
- **The Bureaus of Mining and Reclamation and District Mining Operations are attempting to secure a stable source of funding for annual OM&R activities at existing and proposed treatment systems on 91 abandoned discharges on bond forfeiture sites that were bonded under the old Alternate Bonding System. There are currently 35 existing treatment systems requiring annual OM&R activities.**
- **Under the new Full Cost Bonding system, the District Mining Offices have required mine operators with post mining discharges to post a separate financial guarantee which will insure sufficient funds to continue annual operational, maintenance and replacement activities on AMD treatment facilities in perpetuity even if the operator should abandoned the facility. To date, the DMOs have collected over $108 million in bond guarantees and $88 million in Trust guarantees with an additional $42 million in partially funded Trusts.**
- **WPCAMR continues to administer 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.**
- **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 maintains water quality data on a growing number passive treatment systems. The program also assists watershed groups with the costs of laboratory chemical analyses of system water samples so that the systems are well characterized which will provide a variety of benefits including a better ability to identify potential system problems quickly and triggering maintenance activities, perhaps when they're more manageable.**

New O&M Plans Developed Between October 2006 and September 2007:

- **Raccoon Creek Watershed, Allegheny County - Hamilton Discharge Passive Treatment System**
- **Raccoon Creek Watershed, Washington County - JB#2 Discharge Passive Treatment System in Washington County (Raccoon Creek Watershed).**
- **Raccoon Creek Watershed, Washington County - Langeloth Borehole Discharge Passive Treatment System**
- **Raccoon Creek Watershed, Allegheny County - Solar Passive Treatment System**
- **Mill Creek Watershed, Clarion County, was completed by the Mill Creek Coalition. It is a GIS-based comprehensive plan for management of 20+ AMD treatment systems.**

Objective: Ensure that operation and maintenance plans are followed so that remediation systems are functioning properly.

Cambria DMO - Made site visits and field evaluations of the O&M operation of three PTS projects at Reitz #1, Minersville, and the Swallow Farm projects. This included flushing, installation of weirs, and water sampling.

Objective: Evaluate efficiency of constructed passive treatment systems on a regular basis and develop and implement plans to make repairs if necessary.

Greensburg DMO - Passive Treatment Systems Repaired Utilizing WPCAMR Quick Response Repair Program Between October 2006 and September 2007:

- **JB#2 Discharge Passive Treatment System in Washington County (Raccoon Creek Watershed). The vertical flow pond was repaired to prevent flooding of a state road.**
- **Latrobe Foundation Property Project in Westmoreland County (Loyalhanna Creek Watershed). The eroded embankment and emergency spillway of the settling pond was repaired. The system damage was caused by flood waters.**

Objective: Help local watershed groups or other responsible parties to establish funding sources to implement the OM&R plans for their treatment systems.

Cambria DMO - Assisted the Broad Top Township to set up a long term OM&R fund to service 16 passive treatment systems

AMD Treatment Projects Revamped in EPCAMR Region

- **Several AMD Treatment Systems were damaged in the Flood of 2006 and had to be revamped, one of them was the newly constructed Audenreid Treatment System. The Schuylkill Conservation District received $ ½ Million from FEMA to revamp the project in 2 phases (design is complete, no repairs yet). Also the Columbia County Conservation District received a grant from the Western PA Watershed Program and Eastern Pennsylvania**

Coalition of Abandoned Mine Reclamation (EPCAMR) provided money from an OSM grant to replace approximately 1,500 tons of limestone that had been expended by normal operation of the system. Currently the system is working at about 40% capacity, but is still producing good water quality results.

- **The Oneida #1 Treatment System, a second system in the Catawissa Creek Watershed, received an Emergency Repair Grant from WPCAMR and Funds from FEMA to repair the system. Repairs are complete and water quality has returned to pre flood results.**
- **In Sullivan County the Mine Drainage Treatment System "B" was revamped with new compost to fix short circuiting.**

Goal 3

Objective: Utilize a single, statewide database (clearinghouse) to coordinate the sharing of monitoring and tracking data by 2009.

- **Office of Surface Mining continues to update and maintain the AML-AMD Treatment Inventory for the Appalachian Region, which includes Pennsylvania but also West Virginia, Maryland, Tennessee and Ohio. The inventory contains information on location, treatment type, cost and funding partners. Out of the 400 projects listed, 258 of those are in Pennsylvania costing over $77 Million to construct with an additional $3 Million in rehabilitation costs spent since 1994. The searchable database is available at http://amd.osmre.gov/passtreat/. EPCAMR and WPCAMR continue to submit updates and corrections as they are discovered and constructed. 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.**
- **The NMP on Swatara Creek ended September 2007. This National Monitoring Project was to document results of treatment systems. Fish and macroinvertebrates were sampled in October; water chemistry sampling was conducted year-round. Sampling of the Swatara Creek watershed by the USGS, funded through the 319 National Monitoring program (NMP), had 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. A report will be completed within the year.**
- **EPCAMR produced and distributed over 120 RAMLIS GIS Tool CDs. The Reclaimed Abandoned Mine Lands Inventory GIS Tool is a conglomeration of statewide and regional GIS Data related to mining, abandoned mines, land use and water quality which aides in gathering statistics and producing maps of mine scarred lands throughout Pennsylvania. Specifically this database shows AML Priority 1, 2 and 3 statewide with information on PA DEP BAMR's plans for reclamation. The project was made possible with funding**

from the Western PA Watershed Protection Program, PA DEP's 319 Program and the use of OSM's ArcGIS License. Updates are produced yearly with updated datasets and future development may lead to an online ARC IMS System.

- **Schuylkill Headwaters Regional Streamgaging Initiative – The USGS and the Schuylkill County Conservation District completed the streamgaging and water quality monitoring project for 5 sites in Schuylkill County using a $129,178 EPA FY 2005 Regional Geographic Initiative Grant. The project goals for establishing flow gages, collecting flow data, water chemistry data, and biological data have been achieved. The Schuylkill County Conservation District will continue to collect flow data from these sites. Continued collection of water quality data will be on hold pending the request for a growing greener grant from PADEP to collect this data and to develop a ground water model for this area. One of the outcomes of the study was a potential modification or supplemental actions to the AMD remediation plans for the area. It was discovered that the Oak Hill Boreholes discharge contributes an equivalent loading of metals as the Pine Knot Discharge (previously indicated to be the largest source of metals in the Upper Schuylkill) and that clean surface water is diverted from the West Branch via the Oak Hill Colliery to the Oak Hill. The metals loading to the West Branch may be reduced by preventing the leakage of clean surface water into the Oak Hill Colliery . This would prevent AMD contamination and add high quality water to the flow of the West Branch and downstream points on the West Branch.**
- **Many watershed groups, Senior Environment Corps, colleges and universities, district mining offices, BAMR and other conservation groups continue to monitor various passive treatment systems along with the 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.

- **Cambria DMO - Assisted the Shade Creek Watershed Assoc. develop technical information for a permit for a cost effective limestone sand dosing project.**
- **Cambria DMO - Assist watersheds in developing sites for use of a new variety of limestone bed which utilizes an incline bed; called Fealmn Beds.**
- **Moshannon DMO – Working with the Al Hamilton Contracting Treatment Trust Fund under the Clean Streams Foundation, developed and constructed a Baffled Limestone Ramp for treatment of AMD discharge from Bond Forfeited site.**
- **EPCAMR and WPCAMR both have developed and continue to maintain very informative and up-to-date websites to disseminate information to the World Wide Web. EPCAMR's www.OrangeWaterNetwork.org and WPCAMR's www.AMRClearinghouse.org are excellent conduits for distributing information and news in a cost effective, paperless way. As a**

part of these websites, AMD/AML related news is distributed through EPCAMR's "EC Express" and WPCAMR's "Abandoned Mine Posts" to readers statewide and beyond. "Abandoned Mine Posts" is a free e-mail subscription service with information related to abandoned mine reclamation in Pennsylvania. Subscribers receive weekly 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 and serves on the board of the Eastern Coal Regional Roundtable, a support organization serving coal communities in Appalachia adversely affected by past coal mining practices. WPCAMR 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.**

In March 2007, DEP funded four innovative mine drainage treatment projects with Growing Greener II. The projects are to try to come up with cost effective ways to treat abandoned mine discharges.

These are from the News Release dated 3/30/07:

- **The Pennsylvania State University - $186,392 to develop a passive pretreatment technology for high-flow acid mine drainage discharges that exploit natural biological low-pH Fe (II) oxidation. This "aeration terrace" mimics the physical features of natural iron mounds, where oxidation has been measured to be most rapid. The project will be located at the Hughes Borehole in Portage, Cambria County which discharges up to 3,000 gallons per minute of highly-acidic high-metal content mine drainage into the Little Conemaugh River.**
- **Stream Restoration Inc. - $157,153 for feasibility analysis of combining and conveying abandoned underground mine discharges at the Erie, Langeloth and Francis mines to a single location in Washington County. Treatment of the combined discharges will be more cost-effective at one facility, rather than four and relocation of the discharges will restore approximately six miles of stream in the Raccoon Creek Watershed. A power plant under construction in the area may be able to use and treat the water, thus eliminating the need to build and maintain passive treatment systems. Future use or treatment of the relocated discharge will restore approximately 26 miles of Raccoon Creek.**
- **Western Pennsylvania Coalition for Abandoned Mine Reclamation - $182,595 to test a new type of low-cost aeration system with low energy requirements. The technology has the potential to improve performance at existing aerobic settling ponds, decrease the size of new installations and increase the amount of solids captured. The system will be tested at sites in Westmoreland and Allegheny counties.**

- **Broad Top Township, Bedford County - $33,332 to evaluate the effectiveness of steel slag as a cost-effective means of neutralizing acidity and removing heavy metals from mine drainage. The steel slag will come from a currently unusable industrial site, thereby helping to clean up that site as well.**

Objective: The Department should encourage the development of new technologies for the recovery of metals, such as iron, aluminum, magnesium, and strontium, from mine discharges.

Iron Oxide Resource Recovery Initiative for NE PA: EPCAMR has been the leader in Northeastern Pennsylvania to pioneer the idea of economical recovery of various metal oxides from AMD discharges, and or from AMD Passive Treatment Systems in Eastern Pennsylvania. Armed with a baseline analysis of 25 large mine discharge metallurgical analysis and loading calculations completed in 2004 with the help of Hedin Environmental, EPCAMR Anthracite Art Intern began collecting iron oxides from several discharges. These samples were dried, ground into a pigment and distributed to approximately 40 local artists. This endeavor resulted in the first multimedia "Anthrascapes" Gallery Showing in which all of the 80 separate art pieces used the iron pigment. EPCAMR also hosted a gallery showing (lasted 2 weeks) at Widman Gallery at in Fall of 2007 in cooperation with Kings College, Luzerne County. EPCAMR has been working with EcoTech LLC to begin collecting iron precipitate from the largest discharge (based on flow) in Pennsylvania, Old Forge Borehole. Future plans for iron recovery also include the Scott Ridge Discharge (Site 19) to the Shamokin Creek in cooperation with the Northumberland County Conservation District and Dietz and Gourley LLC.

Resource Recovery Projects Between October 2006 and September 2007:

- **Greensburg DMO -Wilson Run Project in Westmoreland County (Sewickley Creek Watershed). Recovery of iron oxide sludge from the passive treatment system. The Wilson Run Discharge has an average flow of 1,050 gpm.**

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

- **WVIA Public Television produced a documentary called 'Help for Polluted Waters' documenting and informing the public of efforts to remediate acid mine drainage. This was completed using the personal stories of the many volunteers throughout the coal mining areas of Pennsylvania that are working to clean up this type of pollution. Pottsville District Mining Office also participated in the film.**
- **Video documentaries were produced and distributed for the purpose of education and outreach on AMD and AML Issues in PA. Both EPCAMR and WPCAMR were involved and partnering watershed group projects were featured in 4 DVD videos. WPCAMR Produced the "Title 4 Basics" DVD. WPSU produced "Water and Endangered Resource". WVIA produced "Hope for Polluted Waters" (See above) and "Looking to the River", both**

which had live broadcast component where viewers could have questions answered by professionals who were involved with the making of the documentary.

- **The 2007 Pennsylvania AMR Conference was hosted by the AMR Conference Committee July 20 & 21, 2007 at the Ramada Inn and Conference Center, State College, Pennsylvania. Over 130 participants enjoyed the varied presentations and exhibits over the two day event. Highlights of the conference included discussions on the SMCRA Reauthorization, Draft Regulations and Roundtable Discussions, Operation, Maintenance and Replacement for AMD Treatment Systems and Permitting Considerations for AML/AMD Projects. WPCAMR, using more modern methods of communication, set up a process in which most of the planning could be done though several electronic means including email, conference calling listservs, and a local website. This saved people travel time and also money they normally would have spent traveling to various locations for meetings to plan the conference. The costs associated with the planning process have been dramatically reduced. We are now in its third year of use, and it is now the defacto method of choice.**
- **The 3rd Annual West Branch Symposium was held April 27 & 28, 2007 at the Genetti Hotel, Williamsport, Pennsylvania. The purpose of the West Branch Susquehanna Restoration Symposium is to promote the West Branch Susquehanna Restoration Initiative, which is aimed at the cleanup of abandoned mine drainage throughout the West Branch Susquehanna watershed. This event serves as a forum for the exchange of ideas regarding abandoned mine drainage abatement in the region and provides an excellent opportunity for networking among volunteers, technical experts, students, and others interested in restoring land and water impacted by abandoned mine drainage. A field tour to the Babb Creek AMD Remediation project was also available to attendees.**
- **AMD Education Curriculum Development: EPCAMR Environmental Education Intern and VISTA Volunteer collaborated together to develop, an education module for local schools aptly named "What's in Your Water?: Abandoned Mine Drainage in Local Watersheds". This module meets the Pennsylvania Department of Education Curriculum Standards and the Virginia Standards of Learning with a goal to understand the effects of abandoned mine drainage (AMD) on water chemistry, aquatic life, and human consumption by discussing it in relation to non-point source pollution. EPCAMR is also a partner in the statewide Abandoned Mine Drainage Education Coalition (AMDEC) which has just recently produced a prototype AMD Curriculum "Nature Interrupted" for grades K-12. This document also meets the Pennsylvania Department of Education Curriculum Standards.**
- **The 6th Ohio River Watershed Celebration was held in September 2007. The cruise was a chance for the 800 attendees to learn about rivers and water quality, river history, energy conservation, river resources and improvements in the Ohio River Watershed. There was music, food and**

educational programs before the boat sailed upriver. It was also an opportunity for representatives from government, academia, businesses and grassroots groups to discuss concerns in the watershed. Various environmental awards were also presented during the cruise.

- **The first COALS Summit was held Nov. 29, 2006 at Luzerne County Community College. Speakers included representatives from the EPCAMR, PA CleanWays and Keep Pennsylvania Beautiful. Attendees also learned about a new COALS high school grant program to encourage school classes to take on cleanup projects and earn money for their school. Generous donations were provided by private businesses to continue efforts and PA CleanWays was also awarded $50,000 through Growing Greener to cleanup illegal dumpsites in the Mahanoy, Shamokin and Catawissa Watersheds.**

Goal 5

Objective: If resources allow, establish a system of long-range planning, technical support, and financial assistance needs for AMD/AML systems and programs for local governments and watershed groups by 2009.

- **This is an issue that is still being resolved.**

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

- **Pottsville DMO: Reading Anthracite Company, Schuylkill County – Utilizing biosolids for land reclamation in buried trenches to facilitate a Hybrid Poplar tree farm.**
- **WPCAMR developed a brochure for public consumption on the AMR benefits of waste coal burning CFB power plants: ridding the environment of hazardous and polluting waste coal piles while producing beneficial co-product alkaline coal ash useful in AMR reclamation. (A companion brochure was also developed on the virtues of remining.)**

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.

PA Energy Development Authority Grants

- **Allegheny County - Wesley African Methodist Episcopal Charities received $80,891 for a geothermal heating and cooling system using existing mine water. This pilot project will provide a template for development of mine-water based geothermal systems. The project should result in a 70 percent energy reduction with corresponding reductions in power plant air emissions.**

- **Armstrong County – The Roaring Run Watershed Association received $153,430 for a micro-hydro turbine to power an acid mine drainage treatment system.**

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

- **Pottsville DMO: Eastern Pennsylvania Coalition for Abandoned Mine Reclamation, Luzerne County received a Growing Greener grant to characterize the quality, quantity, and flowpath of the minepools in the Anthracite Region. This will be a critical tool in promoting minewater reuse.**
- **EPCAMR received a Growing Greener Grant of $150,000 to compile, update and fill in data gaps on location of minepools in the Anthracite Region's Western Middle and Southern Coal Fields, with an emphasis on studying the economic benefits of reusing mine pool water and possibly reducing or eliminating discharges.**
- **WPCAMR serves on the Loyalhanna Creek Mine Drainage Coalition. Two projects are of note:**
    - **The first implementation of a micro-hydro generation station to generate electricity using a mine discharge as its power source. Project is currently in implementation stages.**
    - **Still in the planning stages: a marriage of technologies where sewage treatment, AMD treatment, and biodigestion will be combined in a synergistic manner. While treating a very high volume AMD discharge, mine water will be combined with part of the sewage stream, and iron products removed will be used to reduce phosphates.**

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

- **Center Point Commerce and Trade Park East Reclamation Project, Luzerne County – The project will reclaim 377 acres of abandoned mine land by utilizing on-site coal waste material for fill, constructing stormwater management facilities in order to change this grayfield site into an industrial/commercial park.**
- **Abandoned Mine Land to Community Asset, Washington County – This project will reclaim a 3-acre abandoned coal refuse pile, preventing excess sedimentation into McPherson Creek. New baseball fields will be then constructed for the community.**
- **Audubon Society and PEC are using reclaimed mine lands for grassland habitat for endangered bird species.**
- **The Appalachian Regional Reforestation Initiative (ARRI) is a coalition of groups that want to restore productive forests on coal mined lands in the Eastern United States. In Pennsylvania they have been working to use this**

approach, and in some cases planting the American Chestnut in hopes to re-establish this hardwood.

- **Cambria DMO - Assist the Dark Shade Creek Brownsfield Project in writing an assessment of local mine pools for use in a proposed Cogen Plant.**

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

- **Earth Conservancy, Luzerne County is nearing completion of the Bliss Bank Energy Harvest project. To date 96,925 tons of culm material were removed from the site providing sufficient material to harvest 37,201 megawatts of electricity.**
- **Northampton Fuels Supply has increased the amount of Spoil Pile Recovery and Fly Ash Reclamation especially in Luzerne County. While the Huber Banks Site 1 is complete, they have moved to a second Huber Banks Pile, the Looms Colliery Banks and the Bliss Banks all in the southern Wyoming Valley. Additionally 19 other refuse reprocessing operations are in progress or completed by other companies in the rest of the Wyoming Valley, a sharp increase from only 9 or 10 a few years ago.**
- **Abandoned Mine Lands Mapping Project , California DMO and Cambria BAMR - In 2005 the California District Mining Office (CDMO) and the Bureau of Abandoned Mine Reclamation (BAMR) Cambria District Office started a cooperative effort to map the locations of the abandoned coal refuse piles. The data being gathered by this project will provide coal refuse information to parties interested in reclamation and/or re-mining of the refuse piles. This project is ongoing; to date 173 abandoned refuse piles covering approximately 532 acres have been mapped.**
- **WPCAMR developed a brochure for public consumption on the AMR benefits of waste coal burning CFB power plants: ridding the environment of hazardous and polluting waste coal piles while producing beneficial co-product alkaline coal ash useful in AMR reclamation.**

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

- **On December 9th, 2006 the AML Program was reauthorized in the final hours before Congress adjourned. The AML Reauthorization, which amends the 1977 Surface Mining Control and Reclamation Act (SMCRA), extends the AML Program for at least 15 years and will triple AML funds PA receives from reclamation fees collected from every ton of coal produced. In the next 15 years Pennsylvania should receive at least 1.5 billion to clean up Priority 1 and 2 AML sites. Also states can set aside up to 30% of this funding to address AMD problems not associated with Priority 1 and 2 sites. This extra funding will increase the amount of AML problems that can be remediated. It will not be enough money though to address all of the problems in Pennsylvania. The AML Campaign was recognized for its**

strategic role in its passage. Bruce Golden of WPCAMR received a special recognition award at the 2007 Western PA Environmental Awards ceremony for his role in the AML Campaign as legislative analyst and the author of software used in evaluating legislative proposals. A synopsis of this can be found at:
http://www.orangewaternetwork.org/index.php?name=News&file=article&sid=207&mode=&order=0&thold=0.

The EPCAMR and WPCAMR participated in and helped to host 12 Surface Mining Control and Reclamation Act (SMCRA) town hall meetings run by the Department of Environmental Protection, in conjunction with the Citizens Advisory Council and the Mining and Reclamation Advisory Board. The intent of the meetings was to enable the public to provide input to help in the decision-making process for expenditure of these funds. The decision to set aside funds for mine drainage abatement and treatment, and the appropriate level, must be weighed against the need to restore sites that impact the health and safety of the Commonwealth's citizens. The new law provides for a significant increase in funds available to the Commonwealth for abandoned mine reclamation. It also offers the Commonwealth the opportunity to set aside up to 30% of these funds for abatement and treatment of abandoned mine drainage. WPCAMR's Title 4 Video was shown and EPCAMR presented the RAMLIS GIS Tool as an educational prequel to the discussions.

G. Silviculture Objectives

Goal 1

Objective: Provide effective communications with 744,000 woodlot owners and 4,000 forest practitioners, managing 13 million acres of private woodland, on forest best management practices for silvicultural activities.

- **Woodland owner groups continue to be the strongest source of peer-to-peer outreach of best practices. There are currently twenty-four forest landowner groups in Pennsylvania.**

- **During 2007, 1,123 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**.

- **Nineteen new Pennsylvania Forest Stewards completed core training in 2007.**

Goal 2

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

- **In 2007, 249 individuals took Environmental Logging/Advanced Environmental Logging training. Through continuing education courses, 659 individuals have taken training.**

- **A silviculture BMP demonstration site is being developed on Sproul State Forest in Clinton County. This new area will be utilized by the service forester to conduct forest practioner and forest landowner trainings. Silviculture and Water Quality BMP's are key features of the demonstration area. This 40 acre 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. The PA SFI program committee is also looking to develop an on-going method of monitoring BMP compliance on timber harvesting activities.**

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 and low cost 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 DCNR, Bureau of Forestry, Forest Districts have the lead for collecting native plant seeds.**

- **The goal set in 2002 to restore 500 miles of riparian forested buffers by the year 2010 has been met. To date, a total of 2,831 miles of forested riparian buffers have been added in the Chesapeake Bay watershed. More than ???? miles of forested riparian buffers have been added Statewide. During 2007, 335miles were added in the Chesapeake Bay watershed, with a total of ??? miles added Statewide.**

- **Landowner enrollment in the Forest Stewardship Program (FSP) continues. Seventy-seven new stewardship plans were written between October 2006 and September 2007.**

Goal 5

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

- **By September 30, 2007, 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 September 30, 2007, ???? trees had been planted, and acres of riparian buffer had been restored.

- **Over 25,000 packets of red oak acorns were distributed to visitors to the 2007 Philadelphia Flower Show where the TreeVitalize/DCNR exhibit encouraged visitors to "Plant a Native Tree."**

The Alliance for the Chesapeake Bay has developed a brochure and outreach program to promote the new Forestry for the Bay Program. The website www.forestryforthebay.org is up and running for landowners to join in the Forestry for the Bay program.

Other Input to Meet NPS Management Program Goals

H. Watershed-Based Implementation Plans

Pennsylvania's Section 319 NPS program has supported a watershed-based planning effort since FY2003. The number of plans developed and implemented through September 30, 2007 is reported here as a measure of progress in that element of the program. At the end of FY2007, 18 watershed implementation plans had been completed in Pennsylvania. All but one of these plans is now being implemented. Sixteen additional plans are currently in various stages of development. All watershed implementation plans focus on 303(d) listed watersheds having active watershed groups and previous studies available.

The EPA will calculate water miles and acres covered based on the EPA Section 319 NPS program grant and project numbers included in the following Tables. Table 10 and Table 11 provide the interim measures of progress to chart watershed-based implementation planning success. These interim measures were first incorporated into Pennsylvania's FY2005 NPS annual report. Watershed plans completed and accepted by EPA are identified in Table 10. These plans deal primarily with agricultural and abandoned mine drainage (AMD) issues. Plans that are still in various stages of development are shown in Table 11. These are also located primarily in agricultural and AMD-impaired watersheds, though two (Jacobs Creek and Pine Creek) have substantial urban runoff components.

The map on the following page shows the location of all watersheds where Watershed-based Implementation Plans have been or are being developed.

Figure 1. Watershed Implementation Plans

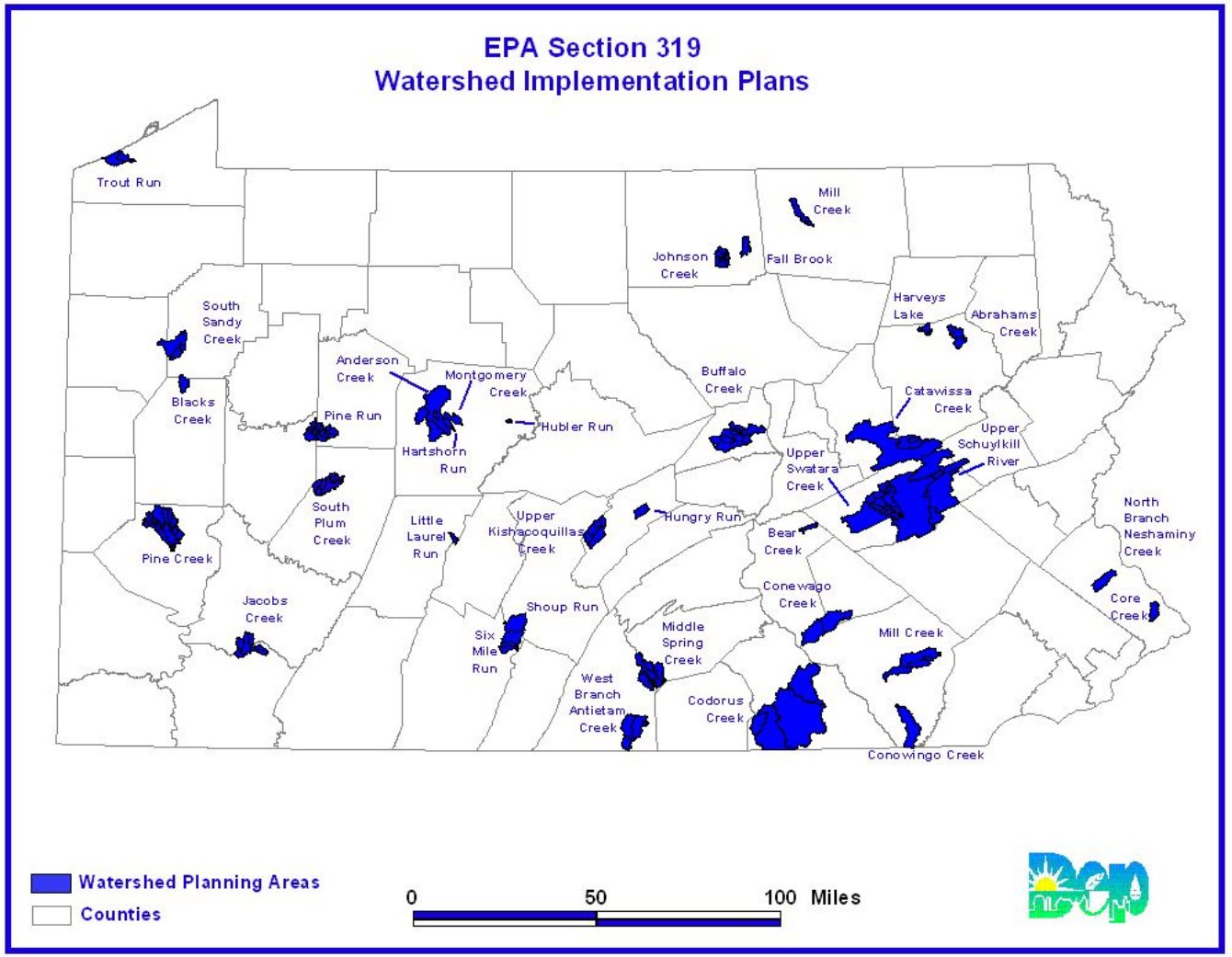


Table 10. Watershed Implementation Plans Completed and Accepted by EPA

Watershed (County)	Nonpoint Source Impairment(s)	S. 319 grant / project # implementing the plan
Catawissa Creek (Schuylkill)	AMD	1999 / 17 2001 / 55 2004 / 17 2005 / 45A 2006 / 19 2007 / 17
Shoup Run (Huntingdon)	AMD	2002 / 17 and 34 2004 / 19 2005 / 18, 19 and 21 2006 / 18 2007 / 13
Six Mile Run/Sandy Run/Longs Run (Bedford)	AMD	2004 / 20 2005 / 12, 13 2006 / 12, 13, 14, 15 and 16 2006 / 30A and 30B 2007 / 10, 11 and 12
Core Creek/Lake Luxembourg (Bucks)	Nutrients, Sediment	1999 / 38 2004 / 29
Bear Creek (Dauphin County)	AMD	2004 / 18 2006 / 30G 2007 / 16
Upper Schuylkill River (Schuylkill)	AMD	1999 / 41 2002 / 15 2003 / 21 2004 / 16 and 21 2007 / 18
Little Laurel Run (Cambria)	AMD	2005 / 15 2007 / 14
Upper Kishacoquillas Creek (Mifflin)	Nutrients, Sediment	2002 / 24, 28 and 32 2005 / 26 and 27 2006 / 30C 2007 / 23A
Pine Run (Jefferson and Armstrong)	AMD	2005 / 23
Conewago Creek (Dauphin, Lancaster and Lebanon)	Phosphorus, Sediment	2007 / 19 and 21
Upper Swatara Creek (Schuylkill)	AMD	2001 / 19 2003 / 20 2005 / 14
Mill Creek (Lancaster)	Nutrients, Sediment	1999 / 59 2005 / 28 and 29

Watershed (County)	**Nonpoint Source Impairment(s)**	**S. 319 grant / project # implementing the plan**
Codorus Creek (York)	Nutrients, Sediment	2004 / 26, 28, 32 and 42 2005 / 45B 2006 / 30D, 30E and 30F 2007 / 20
Conowingo Creek (Lancaster)	Nutrients, Sediment	
Anderson Creek (Clearfield)	AMD	2007 / 15
Johnson Creek (Tioga)	AMD	2000 / 25 2003 / 18 2005 / 16
Black's Creek (Butler)	AMD	2005 / 24
Hubler Run (Clearfield)	AMD	1999 / 62 2000 / 28 2005 / 17 2006 / 17

Table 11. Watershed Implementation Plans Being Developed[1]

Watershed (County)	Nonpoint Source Impairment(s)	S. 319 grant / project # implementing the plan
Mill Creek/Stephen Foster Lake (Bradford)	Phosphorus, Sediment	2001 / 51 2997 / 22
Hungry Run (Mifflin)	Nutrients, Sediment	
Harvey's Lake (Luzerne)	Nutrients, Sediment	2000 / 45 2001 / 45 2002 / 30 2005 / 36
Montgomery Creek (Clearfield)	AMD	
Hartshorn Run (Clearfield)	AMD	
Abrahams Creek/ Francis Slocum Lake (Luzerne)	Nutrients, Sediment	
West Branch Antietam Creek (Franklin)	Nutrients, Sediment	
Fall Brook (Tioga)	AMD	2005 / 45C
Jacobs Creek (Fayette, Westmoreland)	Nutrients, Sediment	
South Sandy Creek (Venango)	AMD	
Buffalo Creek (Union)	Nutrients, Sediment	
North Branch Neshaminy Creek/ Lake Galena (Bucks)	Nutrients, Sediment	
Trout Run and 2 UNTs (Erie)	Nutrients, Sediment	
Pine Creek (Allegheny)	Nutrients, Sediment, Pathogens	
Middle Spring Creek (Cumberland, Franklin)	Nutrients, Sediment	2001 / 49 and 50
South Branch Plum Creek (Indiana)	AMD, Sediment	

[1] This includes plans in final revision, under DEP/EPA review, completing a draft or being developed.

I. Funding Sources for NPS Management Program

Many different sources of funding have helped Pennsylvania implement the Nonpoint Source Management Program. Local and state funding sources may more accurately reflect calendar year 2007 or state fiscal year funding cycles than federal fiscal year funding cycles. Approximate funding levels from local, state and federal sources during FY2007 are as follows:

Local Sources	**Amount (million of dollars)**
Pennsylvania Association of Conservation Districts (PACD):	
Conservation District Funding Allocation Program	$ 1.845
State Sources	
Department of Environmental Protection:	
Environmental Stewardship and Watershed Protection Act (Growing Greener)	
Conservation District Watershed Specialists	$ 1.963
Conservation Reserve Enhancement Program (GG I)	$ 1.3
(GG II)	$ 5.2
Watershed Protection (GG I)	$ 7.005
(GG II)	$13.673
Chesapeake Bay Financial Assistance Funding Program	$ 2.0
Department of Agriculture:	
Plan Development Incentives Program	$ 0.185
Agri-Link Program	$ 0.643
Nutrient Management Grant Program	$ 0.296
Pennsylvania Fish & Boat Commission:	
Stream and Habitat Restoration Projects	$ 0.618
Federal Sources	
U.S. Environmental Protection Agency:	
Section 319 NPS Management Program	$ 5.713
USDA-Natural Resources Conservation Service (NRCS):	
Environmental Quality Incentive Program	$10.8
Wetland Reserve Program	$ 1.0
Wildlife Habitat Incentive Program	$ 0.22
Conservation Security Program	$ 1.8
Federal Sources	
USDA-Farm Services Agency (FSA):	
Conservation Reserve Enhancement Program (CREP)	$ 4.4

Office of Surface Mining (OSM):	
OSM-Watershed Cooperative Agreement Projects (WCAP)	$ 0.469
OSM-AML Program that goes through DEP-BAMR	$ 5.6
U.S. Fish and Wildlife Service (USFWS):	
Stream Restoration Projects	$ 0.135
(Personal communication with USFWS on 01/14/2008)	
Total NPS Funding	$64.865

J. Federal Consistency in Implementing NPS Management Program

There is a small amount of federally owned land in Pennsylvania. The Pennsylvania DEP maintains a good working relationship with federal land management agencies in the Commonwealth. Management plans developed for federally owned lands, i.e. Allegheny National Forest, strive to be consistent with Pennsylvania's Nonpoint Source Management Program.

Federal lands in Pennsylvania are managed by the following federal agencies:

- United States Department of Agriculture, U.S. Forest Service
- United States Department of Interior, U.S. Fish and Wildlife Service
- Department of Interior, National Park Service
- Department of Defense

U.S. Department of Agriculture, U.S. Forest Service - Allegheny National Forest

The Allegheny National Forest is the single largest holding of land operated by the federal government within the state. This area is located in parts of several northwestern Pennsylvania counties and encompasses approximately 513,000 acres of land. It is a largely forested and undeveloped area. The U.S. Forest Service is responsible for managing the forest resources within the Allegheny National Forest. Nonpoint source pollution control activities are implemented through timber sale contract provisions. See the following website for more information: http://www.fs.fed.us/r9/forests/allegheny.

U.S. Department of Interior, Fish and Wildlife Service – Erie and John Heinz National Wildlife Refuges (NWR)

The Erie NWR in northwestern Pennsylvania and the John Heinz NWR in southeastern Pennsylvania are the two National Wildlife Refuges located within Pennsylvania. The John Heinz NWR is managed to protect and enhance the largest remaining freshwater tidal marsh in the Commonwealth. See the following website: http://heinz.fws.gov. The Erie NWR is located in Crawford County. Participation in the Pennsylvania Partners for Wildlife Program contributes to the goals of the Ohio River Valley Ecosystem and North American Waterfowl Management. See the following website: http://erie.fws.gov. The U.S. Fish and Wildlife Service works to conserve protect and enhance fish, wildlife, and plants and their habitats.

U.S. Department of Interior - National Park Service Sites

The U.S. Department of the Interior, National Park Service, manages 15 separate national park areas within the Commonwealth. Each National Park Service area is managed according to its enabling legislation and is under the direction of a park superintendent. The 2001 Management Policies document is the basic service-wide document used to interpret statutes and other guidance that impacts park administration and management. This document is updated and revised as necessary. The park superintendent is responsible for water resources management within each of Pennsylvania's 15 national park areas.

National Park Service managed areas within the Commonwealth include:

- Valley Forge National Historical Park
- Independence National Historical Park
- Delaware Water Gap National Recreation Area
- Lower Delaware National Wild and Scenic River

See the following website for more information: http://www.nps.gov/ .

U.S. Department of Defense – Defense Environmental Restoration Program

The Pennsylvania Department of Environmental Protection (DEP) and the U.S. Army, Navy, Air Force and Defense Logistics Agency entered into a cooperative long-term agreement in 1998. This agreement links the federal government's Defense Environmental Restoration Program with Pennsylvania's Land Recycling Program. The agreement is based on Pennsylvania's successful Multi-Site Agreement approach to voluntary cleanups. The Cooperative Multi-Site Agreement (CMSA) not only covers remedial work at current Department of Defense installations but also addresses formerly used defense sites. The primary goal of the Cooperative Multi-Site Agreement is to have all sites evaluated and a cleanup program in place at those sites in need of work by September 30, 2010. Pennsylvania had a total of 1,095 known sites with 572 having been resolved under the agreement, 96 scheduled for further remedial action and 416 deferred from any actions, as of March 2005.

Additional information is available on the Department's website at: http://www.dep.state.pa.us/dep/deputate/airwaste/wm/remserv/DOD_MSA/dod_msa.htm.

PART III.

Watershed Restoration Stories

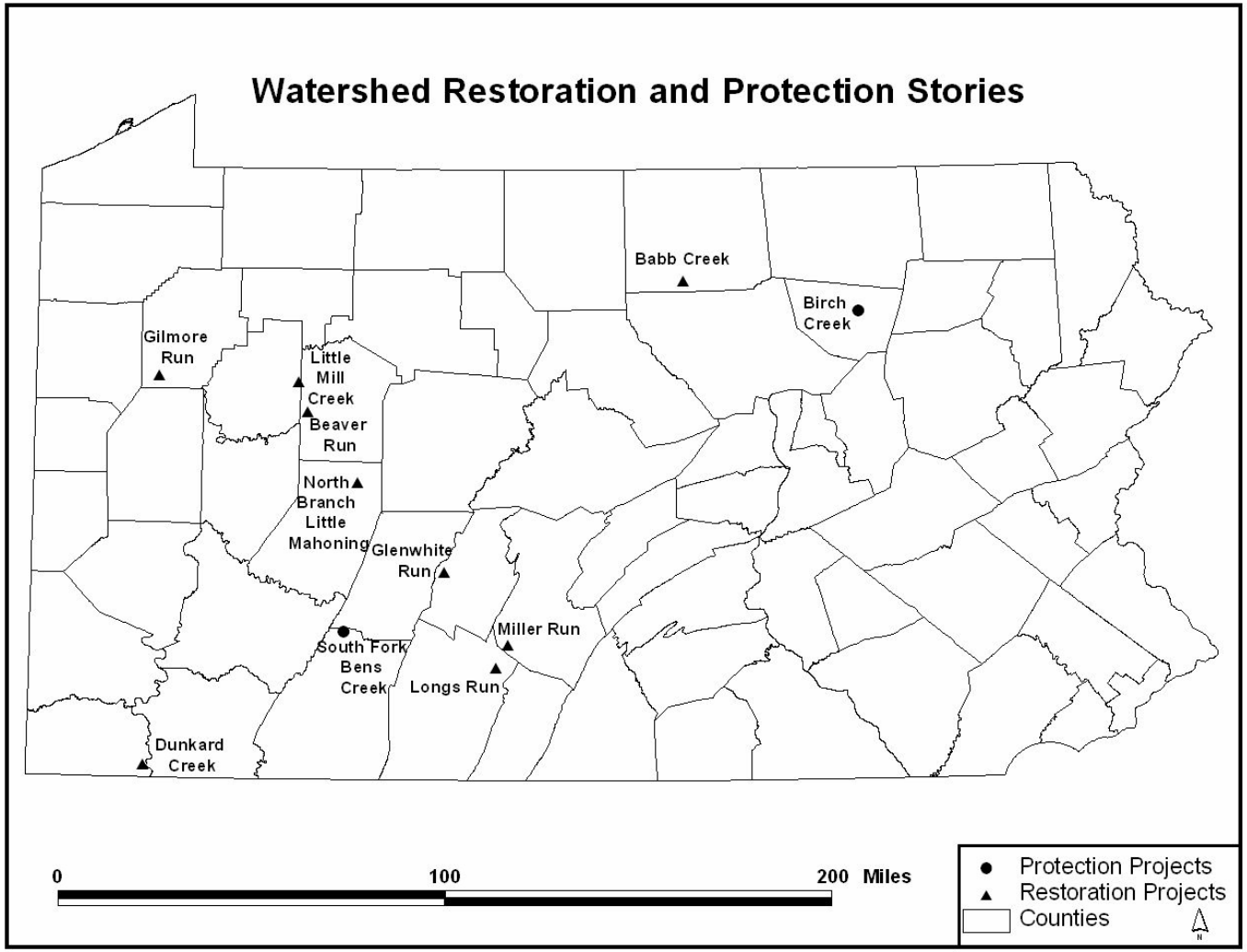
Watershed Protection Stories

Successes in Watershed Restoration and Protection

Pennsylvania's NPS Management Program staff has developed several NPS watershed improvement stories over the past year. These stories were written primarily for internal communication within the Pennsylvania DEP. In all of these watersheds, Section 319 NPS Program and other sources of funding have been used and water quality is improving. These summaries will help us to develop more comprehensive success stories that can be included on the Pennsylvania DEP NPS Management Program and EPA Region III NPS Program websites.

The locations of our watershed restoration and protection stories are shown on the map on the following page.

Figure 2. Watershed Restoration and Protection Story Locations



Watershed Restoration Stories

The following watersheds are impaired by abandoned mine drainage (AMD) sources.

Beaver Run/Redbank Creek, Indiana County

Beaver Run flows though western Jefferson County before emptying into Redbank Creek just east of the Indiana County line. Coal mining began in the watershed in the 1800's. During the early 1900's, large amounts of coal were being extracted from deep mines. In the 1960's and 1970's, extraction was nearly all from strip mining. Abandoned deep mines were the most significant cause of negative impacts to the stream. Water quality was significantly degraded downstream of the town of Conifer, where these activities had been concentrated. In 1996, Beaver Run was listed on the State's 303(d) "List of Impaired Waters". The source of impairment is Abandoned Mine Drainage (AMD) and the cause is metals.

Additional problems in the Redbank Creek watershed resulted from clay mine runoff associated with a brick manufacturer in Summerville. A settlement with the brick manufacturer funded the start up of the Red Bank Creek Watershed Trust. It was through this Trust that a number of projects were able to get off the ground and begin to improve water quality in Beaver Run.

Restoration initiatives have included construction of passive treatment systems, limestone amended wetlands, an anoxic drain and backfill of surface mines and highwalls. Growing Greener and 319 funds have supported a number of these projects.

Improved water quality has been observed. Comparing 1996 samples downstream of Conifer to 2006, aluminum levels in the stream have been reduced by 51 %, manganese by 44 % and iron by 31%. Also, Pennsylvania Fish & Boat Commission 1997 and 2001 stream surveys near Conifer indicate that populations of mayflies, stoneflies and caddisflies are returning. The stream is currently being evaluated to determine when it can be removed from the Impaired Waters List.

Dunkard Creek, Greene County

Dunkard Creek is located in extreme southwestern Pennsylvania. The headwaters are in both Pennsylvania and West Virginia. The stream meanders across the Mason Dixon Line, eventually turning north, emptying into the Monongahela River just east of Bobtown, Greene County.

There are a number of abandoned deep and surface coal mines located at the lower end of the Dunkard Creek Watershed. Some of the abandoned deep mines have become flooded. The stream was placed on the 1996 Section 303 (d) List of Impaired Waters due to iron precipitate and metals. The cause of impairment is Abandoned Mine Drainage (AMD).

Efforts to improve water quality have been the result of the Dunkard Creek Watershed Association, Greene County Watershed Alliance and Friends of Dunkard as well as a number of other public and private entities. DEP Growing Greener, EPA 319 and DCNR Rivers Conservation grants were used to support a number of remediation projects.

Restoration work has also included illegal dump cleanup, installation of agricultural BMP's, development of a comprehensive watershed plan and woodlot management.

The most significant work in the watershed targeting AMD was the Mathews Restoration Area Project, located on an unnamed tributary to Dunkard Creek. Work here included a passive treatment system consisting of three automatic flushing vertical flow ponds, a mixed media vertical flow pond, a settling pond, an oxidation precipitation channel, an aerobic treatment wetland, and a horizontal flow limestone bed. Samples downstream indicate that Iron was reduced by 98%, Manganese by 71%, and Aluminum by 97 %, and pH improved from 3.7 to 6.4.

Implementing the Mathews Restoration Area Project addresses one of the worst AMD discharges in the watershed. Future plans include treating water from mine pools in the area and using it to as a water supply for a power plant. Dunkard Creek has not yet been reassessed by DEP biologists.

Glenwhite Run, Blair County

Glenwhite Run is located just west of the historic Horseshoe Curve in Blair County and is tributary to the Kittaning Point Reservoir. A significant portion of Altoona's water supply comes from the Glenwhite Run watershed. A segment of the stream (3.8 miles) is listed on the State's 2006 Impaired Streams List. The source of impairment is Abandoned Mine Drainage (AMD), and the causes of impairment are metals and pH.

Blair County Conservation District (BCCD) completed an assessment of the watershed in 1996, and a watershed restoration plan in July, 1997, in cooperation with USDA-NRCS. The plan identified eight treatment sites and recommended six passive treatment systems and two land reclamation locations. Stream improvement project construction began in 1999 and was completed in 2002. The total cost of the project was 2.1 million dollars. Implementation money for the project was managed by DEP-BAMR and BCCD and came from several sources, including Blair County Conservation District, Growing Greener, Section 319, PADEP-BAMR, PL 83-566, Appalachian Clean Streams Initiative as well as Penalty Assessment monies.

Comparing pre-treatment and post-treatment water analyses, significant benefits to water quality in the watershed have been documented since 2002. Prior to treatment, pH levels were as low as 3.0. Natural mountain stream pH levels of 6.0 – 7.0 have since been achieved. Other measurable improvements include a significant reduction of metals. Prior to treatment, Iron, Manganese and Aluminum were documented from 5.0 to 9.0 mg/l. Post-treatment analysis indicates each of these metals are now present in the stream at less than 0.5 mg/l.

Glenwhite Run at one time supported little aquatic life. Recent macroinvertebrate studies have found mayflies, caddis flies, crayfish and other aquatic life. The watershed is on a list of streams to be reassessed this summer by DEP biologists to determine if it can be removed from the Impaired Streams List. Not only does the improvement of water quality support aquatic life, it also requires less treatment and less expense for the water

supply of Altoona. Altoona City Authority has the responsibility for long-term operation and maintenance. Additional information regarding the Glenwhite Run Watershed improvements can be found at www.altoonawater.com/water/watersheds/ws_case.html.

Babb Creek/ Pine Creek, Tioga County

Babb Creek, a tributary to Pine Creek, which flows through the Grand Canyon of Pennsylvania in Tioga County, has historically been seriously degraded from coal mining. A number of deep mines were active in the second half of the 1800's, until activities slowed down in the area when coal production increased in Clearfield County. Strip mines then became active during the 1970's and 1980's. By the early 1990's the stream could no longer support trout or macroinvertebrates. The stream now appears on the State's 2006 Impaired Streams List due to Abandoned Mine Drainage (AMD). The cause of impairment is metals and pH.

The Babb Creek Watershed Association (BCWA) was formed in 1990. The BCWA was tasked with managing funds for restoration of the watershed that were provided through a settlement with the Antrim Mining Company. BCWA was also given the operation and maintenance of the Antrim #1 Acid Mine Drainage Treatment Plant. A wide variety of projects have been utilized over the 130 square miles of Babb Creek's watershed, including anoxic drains, Successive Alkalinity Producing Systems (SAPS), and constructed wetlands. Since Growing Greener funds have been acquired, some newer technologies were implemented. These include injecting limestone sand into mine tunnels for neutralization and applying sewage sludge to the reclaimed land areas prior to revegetation.

As a result, water quality in Babb Creek is improving. Sampling in 2006 documented favorable quantities of metals (aluminum 0.37 mg/l, iron 0.19 mg/l and manganese 0.47 mg/l) and a nearly neutral pH of 6.41. The Pennsylvania Fish & Boat Commission has placed Babb Creek on its List of Wild Trout Streams. The stream is currently being evaluated to determine when it can be removed from the Impaired Waters List.

Gilmore Run/ Scrubgrass Creek, Venango County

Gilmore Run is tributary to Scrubgrass Creek, which flows into the Allegheny River in Venango County. Stream impairments occurred as a result of deep and surface mining activities and abandoned oil wells. Fish sampling at the mouth of Gilmore Run in 2000 indicated that impacts to the stream from iron and manganese deposition were inhibiting benthic populations and thereby limiting diversity of fish. The stream now appears on the State's Impaired Streams List due to Abandoned Mine Drainage (AMD). The cause of impairment is metals.

In 2002, the Scrubgrass Creek Watershed Association (SCWA) obtained Growing Greener funds for improvements throughout the entire Scrubgrass Creek Watershed. A portion of this money was used to plug five abandoned oil wells along Gilmore Run that were discharging AMD. The grant was implemented through the joint efforts of the Venango Conservation District, the Alliance for Wetlands and Wildlife and the SCWA.

Water quality improvements have been documented in Gilmore Run. A round of stream sampling in the summer of 2004 indicated significant reductions in metals. Iron levels in the stream were reduced by 32 % and manganese by 68 %. According to macroinvertebrate samples, mayfly and stonefly populations increased from 2004 to 2006. The stream was scheduled to be re-assessed this summer to determine whether it may be removed from the Impaired Waters List.

Little Mill Creek, Clarion County

The headwaters of Little Mill Creek begin in Jefferson County. Eventually the stream flows into Clarion County, joins Mill Creek and empties into the Clarion River. The watershed was subject to several deep mines from the 1870's to the 1920's and significant strip mining activities during the 1960's and 1970's. The stream was placed on the State's 1996 Impaired Waters List for metals caused by AMD.

Efforts to clean up the watershed began in 1975, when the PA Department of Environmental Resources (DER) hired a contractor to study the watershed, identify sources of pollution and recommend a course of action to improve water quality. In the next few years, the District Mining Office in Knox developed a comprehensive monitoring program that continues today.

In the early 1980's, the DER became much more restrictive in its re-permitting of mining activities where overburden analysis indicated a high likelihood of further degrading streams in a watershed with AMD. During the 1990's, a number of 319 funded treatment systems were constructed in the Upper Little Mill Creek Watershed. The systems included an anoxic limestone drain, an aerobic wetland and a vertical flow pond.

Comparing samples collected in the upper reaches of Little Mill Creek from the Fall of 1995, to Fall of 2007 indicates a 32 % reduction of Iron and a 52% reduction of Manganese. Levels of pH have been rising as well. The stream was re-assessed this summer to determine whether it may be removed from the Impaired Waters List, and those results are currently pending.

Miller Run/ Shoup Run, Huntingdon County

Miller Run flows through the Broad Top Coal Fields in Huntingdon County. It is a tributary of Shoup's Run which empties into the Raystown Branch of the Juniata River. This area has been subject to a number of deep mining operations dating back to the early 1900's and surface mining operations that were mostly abandoned by the 1980's. Discharges from Miller Run have historically contributed a significant amount of Acid Mine Drainage (AMD) to the watershed. As a result, Miller Run was listed on the State's 303(d) "List of Impaired Waters". The source of impairment is AMD and the cause of impairment is metals and pH. The stream has not yet been de-listed, but significant improvements have been observed.

The Shoup's Run Watershed Association (SRWA) was formed in 1998. Funding provided by the Western Pennsylvania Coalition for Abandoned Mine Reclamation (WPCAMR) helped get the association started. In addition to Shoup's Run the SRWA

has also been responsible for acquiring Growing Greener and 319 funds for projects on Miller Run. The goal was to restore the stream from the AMD discharges to the mouth, a distance of approximately 1.7 miles. Projects on Miller Run include vertical flow systems and passive treatment systems.

Miller Run stream quality improved as a result of the projects. Samples from the mouth of Miller Run confirm positive trends of water quality in the stream. In 1999, pH was 4.4, Mn 0.997 mg/l and Al 0.950 mg/l. In 2006, pH had risen to 7.0 while Mn had dropped to 0.200 mg/l and Al to 0.590 mg/l. Brook trout are returning to the stream below the headwaters.

The SRWA and the Huntingdon County Conservation District acquired a 319 grant for a passive alkalinity project for a dirt road that runs along Miller Run. The road was built out of spoil from the mining activities. There were concerns that runoff from the road may reverse the positive trends in stream quality. The passive treatment system will place limestone aggregate on the road and its drainage system to help reduce AMD impacts to the stream. This project will be monitored once completed. Anticipating positive results, this technology may be used on other AMD impacted streams in the Commonwealth.

North Branch Little Mahoning Creek, Indiana County

The North Branch of Little Mahoning Creek is located in northern Indiana County. The stream is part of the Little Mahoning Creek Watershed, which was listed as a "High Priority Watershed" on the PA DEP's Environmental Futures Planning Process by the Southwest Regional Office. The North Branch of Little Mahoning Creek appears on the State's 2006 Impaired Streams List due to Abandoned Mine Drainage (AMD) and siltation.

In 2000, the Armstrong and Indiana County Conservation Districts received a Growing Greener Grant to assess a number of streams, including the North Branch Little Mahoning Creek. Additional Growing Greener funds were then secured to design and construct treatment systems for stream reclamation. Acidity, manganese and aluminum were causing significant impacts to the aquatic community. The pollutants were concentrated in three discharges to the stream. An oxic limestone drain was constructed to treat the discharges.

Post treatment monitoring indicates that acidity was eliminated from the stream. Aluminum was reduced 65% and magnesium 52%. Populations of aquatic life have returned. Comparisons of 2003 to 2006 populations indicate that mayflies, stoneflies and caddisflies have each returned in significant numbers. It was also noted that native brook trout have been migrating into the North Branch Little Mahoning Creek from a nearby stream. Post construction monitoring will continue to document stream improvements. The stream will be re-assessed this summer and will hopefully be delisted.

Longs Run, Bedford County

The Longs Run watershed has been adversely impacted by abandoned mine lands and mine drainage (AMD) for nearly a hundred years. The federal Rural Abandoned Mine

Program and the state Bureau of Abandoned Mine Reclamation worked on the remediation of high walls, mine openings, and refuse piles in the 1980's and 1990's. The state Growing Greener Program and the federal 319 Program helped fund Broad Top Township with treating AMD in the 2000's. Since the completion of projects in 2006, water quality has improved enough to again sustain macroinvertebrates. Longs Run will be evaluated in 2008 for potential delisting from the 303(d) biologically impaired streams list if it appears to be attaining its use as a Cold Water Fishery.

Extensive underground mining within Broad Top Township, Bedford County began in the 1800's. This and surface mining in the early 1900's occurred before the advent of environmental laws. The resulting land was scarred with waste rock piles and honeycombed, subsurface voids. The drainage from the disturbed land and deep mines discharges into streams. Iron, aluminum, and manganese precipitate and produce smothering sediment for macroinvertebrate habitation. An outside consulting firm has identified fifteen discharges in the AMD Assessment and Remediation Plan, 2001. The Department of Environmental Protection and the Susquehanna River Basin Commission recommended Long Run be listed on the 303(d) impaired streams list based on bioassessments conducted in 2004.

Federal and state projects have completed landscape renewal of abandoned mine lands. The federal Rural Abandoned Mine Program closed and re-graded two highwalls, five mine openings, a refuse pile, and coke ovens from 1982-1985. The state Bureau of Abandoned Mine Reclamation closed and re-graded a highwall in 1998. Broad Top Township, through funding from state and federal sources and technical consultation from an outside consulting firm , has completed twelve of the fourteen treatment systems recommended in the remediation plan. Some discharges posed a diminutive effect on Longs Run. The township diverted surface water near a mine refuse pile in 2001. They also completed the passive treatment of seven discharges in 2005 and six in 2006. A long-term fund for major maintenance and repair of fifteen discharges along Longs Run and a tributary to Sixmile Run (north of Longs Run) will be established in 2008.

Water quality has improved dramatically. Alkaline water, low in metal concentrations and sulfates is found in the majority of the stream's length. The mouth of Longs Run has some post-treatment iron precipitation. The treatment space is limited in the tight valley. The high-gradient flushing of water during major rainfall should eliminate concretion of benthic habitat during most of a normal year. The Department of Environmental Protection assessed four sampling sites on Longs Run, downstream of the treated AMD in 2007. The results showed that macroinvertebrate taxa and population richness improved to healthy levels when compared with the little or no macroinvertebrate life found in 2004. Monitoring of the recovery Longs Run will continue in 2008. Contact Broad Top Township for more information at: 187 Municipal Road, PO Box 57, Defiance, PA 16633, 814-928-5253.

Watershed Protection Stories

The following are stories submitted by some of the District Mining Offices. These are successful projects that are protecting watersheds that are not impaired, but yet could have been seriously degraded if the problems were not addressed.

Acid Mine Discharge Treated in the Loyalsock Creek Watershed, Moshannon District Mining Office (DMO)

Deep mining in the early part of the 1900's created an acid mine discharge to Birch Creek, a High Quality stream that flows to Loyalsock Creek. More recent mining by Bernice Mining Company had further degraded the discharge. The Bernice Mining Company abandoned the site and the Department forfeited the reclamation bonds for the site. Using design money provided by the Office of Surface Mining and the Loyalsock Creek Watershed Association, the Department paid to construct passive water treatment facilities at the Bernice site that remove the acidity and metals from the discharge. The treatment is improving the quality of Birch Creek and Loyalsock Creek.

The Bernice Mining site is located south of Dushore, PA in Sullivan County. The acid mine discharge from the site was contributing daily loading of 30.95 pounds of acidity, 6.85 pounds of iron, 2.19 pounds of manganese, and 1.25 pounds of aluminum to Birch Creek. Prior to construction of the treatment system, 3 miles of Birch Creek and another 10 miles of Loyalsock Creek were impaired due to acidity. The treatment facility has removed all of the acid loading and is now providing 114 milligrams per liter (mg/l) of excess alkalinity to neutralize other sources of acidity and improve the stream's buffering capacity.

Construction of the passive treatment system occurred during the summer of 2007. The treatment system includes a fore bay for iron settling followed by a vertical flow pond utilizing limestone covered with a compost layer to reduce the iron prior to flow through the limestone. The vertical flow pond was lined with a synthetic liner due to the shallow depth to bedrock and the shortage of good material for constructing the pond. Samples taken several weeks after completion of the system show a 97% reduction in iron and a net alkalinity of 114 mg/l in the final discharge. Manganese and aluminum concentrations were also reduced.

Partners in the treatment efforts included the Office of Surface Mining, who funded most of the design costs and the Loyalsock Creek Watershed Association, who obtained a grant from the Western Pennsylvania Conservancy to pay the balance of the design costs. Members of the Lewis family, owners of the property were very cooperative during the design and construction process. The construction of the treatment system was paid for with Growing Greener II funds.

Protection of Bens Creek, Cambria District Mining Office (DMO)

In August 2001 Pennsylvania State Representative Robert Bastian, the Ferndale Sportsmen's Club (FSC) and the Stonycreek-Conemaugh River Watershed Group (SCRIP) expressed concerns about mine drainage pollution (iron-staining) appearing in

South Fork Bens Creek, a High Quality trout stocked stream. After an intensive hydrologic investigation, Cambria District Mining Office (DMO) determined that Lion Mining Company was responsible for this pollution which had impaired more than three miles of High Quality stream. In June 2002, Cambria DMO ordered the company to lower the deep mine pool elevation from 1835' to 1700' to stop the infiltration of the mine drainage into the stream bottom.

Lion Mining Company took actions to comply with this order until December 31, 2005, when they abandoned their down-dip gravity drain borehole treatment facility, ceasing dewatering and treatment activities. Lion Mining Company's permit bond was forfeited and collected.

To avoid a significant public health, safety and environmental catastrophe, Cambria DMO utilized emergency contracting procedures to hire a treatment contractor on January 3, 2006, to continue mine pool dewatering, treatment and desludging activities at the Lion Treatment Facility. Unfortunately due to unexpected treatment facility problems and deficiencies, the cost to operate and maintain this system is well beyond the amount of forfeited bond monies. PADEP has committed funding to continue operating this system thru May 2008 while pursuing legal remedies that would force Lion Mining Company officials to pay for expenditures to date and long-term operation and maintenance.

Cambria DMO has upgraded the treatment system to include a venturi aeration device, moving the location of the caustic soda feed, and enlargement of existing settling basins. These upgrades have decreased treatment costs.

An evaluation of the present system's performance reveals the need for additional settling basins which would allow for nearly total iron oxidation and retention without using any chemicals. Also, the current treatment system uses two large settling basins on a steep slope that present a significant challenge to maintaining the structural integrity of the downslope pond embankments and pose a serious threat to downslope homeowners. Cambria DMO believes that relocating the treatment system to a safer site is the best long-term solution to protect the public and this High Quality stream.

Settling basins could be designed and constructed according to accepted engineering practices to allow for total iron oxidation and precipitation without using any chemicals, and sludge drying beds could be constructed that would significantly reduce desludging costs. Total treatment costs could be reduced to less than $5000/month, saving limited State resources until legal remedies force Lion Mining Company to pay for expenditures to date and long-term O&M.

Special funding has been obtained and work on the system modifications is expected to being in spring 2008.

APPENDICES

Appendix A.

Nonpoint Source Liaison Work Group Partners

The following organizations and agencies participated in 2007 NPS Liaison Work Group meetings and provided input to Pennsylvania's NPS Management Program.

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

Appendix B.

Progress in Meeting Section 319 NPS Program Project Milestones

The Tables included in Appendix B. represent the current Grant and Project status for all of Pennsylvania's active Section 319 NPS Program grants. The current project status as of December 31, 2007 is shown for each project in the FY2004 through FY2007 grants. This information is included to satisfy the EPA's requirement to include a matrix which summarizes the status of our current Section 319-funded projects, in the state's NPS Annual Report.

This same information is also used to meet the Environmental Protection Agency Region III NPS Program's Semi-annual Performance Report requirement.

Semi-Annual Performance Report - July to December 2007 FY2004 Section 319 Grant - October 1, 2003 to September 30, 2007

The EPA awarded this grant on September 15, 2004.

The grant will be closed out by February 28, 2008.

Project Number	Project Title (Project Sponsor)	Current Status
Status = COMPLETED		
2401	Conservation District Mining Program (WPCAMR)	
2402	Conservation District Mining Program (EPCAMR)	
2403	DEP Staff (Pennsylvania DEP)	
2404	Citizens Volunteer Monitoring Program (Pennsylvania DEP - CVMP)	
2405	Statewide NPS Education Office (PACD)	
2406	Watershed Education for Pollution Prevention Phase V (Pennsylvania League of Women Voters)	
2407	Regional Geometry Curves in Pa Physiographic Regions (US Geological Survey)	
2408	TMDL Watershed Restoration Plans (Pa DEP)	Three plans have been completed.
2409A	Development of an AMD Watershed Assessment Procedure (Penn State University)	
2409 B	Modification of AVNPS Tool and PreDICT (Penn State University)	
2410	Keystone Stream Team Database (Lycoming College)	
2411	Region III NPS EPA/States Meeting (Pennsylvania DEP)	
2412	Statewide Lakes Water Quality Assessments (Pennsylvania DEP)	
2413	Urban Storm Water BMP National Monitoring Program (Villanova University)	
2414	Riparian Forest Buffer National Monitoring Program (Stroud Water Research Center)	
2415	Swatara Creek National Monitoring Program (Schuylkill County CD)	
2416	Reevesdale South Dip Tunnel AMD Treatment (Schuylkill Headwaters Association)	
2417	Audenreid Mine Tunnel AMD Treatment (Catawissa Creek Watershed Association)	FY2005 funds will continue this project.
2418	Bear Creek Phase I (Dauphin County CD)	FY2005 funds will continue this project.
2419	Miller Run I and II AMD Treatment (Shoup Run Watershed Association)	FY2005 funds will continue this project.
2420	Longs Run Remediation (Broad Top Township)	
2421	Pine Forest Discharge AMD Treatment (Schuylkill Headwaters Association)	
2422	Lower Yellow Creek AMD Restoration (Blacklick Creek Watershed Association)	
2423	Big Run AMD Remediation Phase 2 (Blackleggs Creek Watershed Association)	
2424	Mahantango Creek Watershed Agricultural BMPs (Schuylkill County CD)	
2425	Little Wiconisco Creek Phase I (Dauphin County CD)	

Semi-Annual Performance Report - July to December 2007 FY2004 Section 319 Grant - October 1, 2003 to September 30, 2007

The EPA awarded this grant on September 15, 2004.
The grant will be closed out by February 28, 2008.

Project Number	Project Title (Project Sponsor)	Current Status
Status = COMPLETED		
2426	Oil Creek Stream Restoration (Codorus Creek Watershed Association)	
2427	Pequea Creek Phase III (Paradise Sportsman's Association)	
2428	South Branch Codorus Creek Restoration Phase V (Izaak Walton League of America)	
2430	Mahantango Creek Stream bank Stabilization (Schuylkill County CD)	
2431	Storm Water BMPs Retrofit (Adams County Planning Commission)	Final report completed.
2432	Kemper Park Riparian Restoration (Delaware Riverkeeper Network)	
2434	Radnor Infiltration Trench (Villanova University)	
Status = BEHIND SCHEDULE		
2429	Lake Luxembourg Watershed Implementation (Bucks County CD)	We are waiting on the final report.
2435	Brock Creek Stream Restoration (Lower Makefield Township)	All funding has been utilized. Final report needs to be completed.
Status = DISCONTINUED		
2433	White Clay Creek Restoration (Avondale Borough)	Removed from grant.
DELIVERABLES		
2408	TMDL Watershed Restoration Plans (PaDEP)	Hubler Run WIP has been completed; Three WIPs in total.
2416	Reevesdale South Dip Tunnel AMD Treatment (Schuylkill Headwaters Association)	Final report done.
2421	Pine Forest Discharge AMD Treatment (Schuylkill Headwaters Association)	Final report done.
2423	Big Run AMD Remediation Phase 2 (Blackleggs Creek Watershed Association)	Final report done.
2424	Mahantango Creek Watershed Agricultural BMPs (Schuylkill County CD)	Final report done.
2425	Little Wiconisco Creek Phase I (Dauphin County CD)	Final report done.
2431	Storm Water BMPs Retrofit (Adams County Planning Commission)	Final report done.

FY2005 Section 319 Grant

Semi-Annual Performance Report - July to December 2007 **FY2005 Section 319 Grant - October 1, 2004 to September 30, 2007**

The EPA awarded this grant on September 7, 2005.

The grant will close on September 30, 2008.

Project Number	Project Title (Project Sponsor)	Current Status
Statue = COMPLETED		
2501	Conservation District Mining Program (WPCAMR)	
2502	Conservation District Mining Program (EPCAMR)	
2503	DEP NPS Program Staff (Pennsylvania DEP)	
2504	Citizens Volunteer Monitoring Program (Pennsylvania DEP)	
2505	Statewide NPS Education Office (PACD)	
2506	Watershed Education for Pollution Prevention (Pennsylvania League of Women Voters)	
2508	Statewide Lake Water Quality Assessments (Pennsylvania DEP)	
2509	Urban Storm Water BMP National Monitoring Program (Villanova University)	
2510	Riparian Forest Buffer National Monitoring Program (Stroud Water Research Center)	
2511	Swatara Creek National Monitoring Program (Schuylkill County CD)	
2525	Bolich Wetland Project (Mahanoy Creek Watershed Association)	
2531	Eagle Scout Pasture Improvement (Bucks County CD)	Final report done.
2532	East Branch Codorus Creek Restoration Phase V (Izaak Walton League of America)	
2533	Millers Run Stream Restoration Design (Little Conestoga Watershed Alliance)	
2534	Wissahickon Creek Shade Buffer (Wissahickon Valley Watershed Association)	
2535	Monastery Stables Runoff Controls (Fairmount Park Commission)	
2537	Durham Ridge Wetland Phase I (Plumstead Township)	
2540	Magnolia Lake Shoreline Stabilization (Bucks County CD)	
2542	South / East Branch Codorus Creek Monitoring / Maintenance (Izaak Walton League of America)	
2544	Portable Timber Bridges (Wayne County Conservation District)	
Status = BEHIND SCHEDULE		

None.

Semi-Annual Performance Report - July to December 2007 **FY2005 Section 319 Grant - October 1, 2004 to September 30, 2007**

The EPA awarded this grant on September 7, 2005.
The grant will close on September 30, 2008.

Project Number	Project Title (Project Sponsor)	Current Status
Status = DISCONTINUED		
2520	Presto-Sygan AMD Remediation (Stream Restoration, Inc.)	Removed from grant.
2522	North Fork Montour Run Restoration Phase I (Montour Run WA)	Removed from grant.
2538	Brockway Natural Channel Design & Restoration (Jefferson County CD)	Removed from grant.
2539	West Mill Creek Park Restoration Phase II (Lower Merion Twsp.)	Removed from grant.
Status = DISCONTINUED		
2541	Trout Run Mushroom Wetlands (Chester County CD)	Removed from grant.
2543	Villanova University Infiltration Pit Evaluation & Restoration (Villanova U)	Removed from grant.
Status = CHANGES TO PROJECT SCOPE OR TIME FRAME		
2526	Mifflin County Farm BMPs (Mifflin County Conservation District)	A time extension was approved through 09/30/2008.
2527	Mifflin County Farm BMPs (Mifflin County Conservation District)	Included with Project 2526.
2528	Conestoga River Watershed Ag BMPs (Lancaster County Conservation District)	A time extension was approved through 09/30/2008.
2529	Sustaining the Mill Creek Farm Community (IWLA)	New farm projects have been initiated. A time extension was approved through 09/30/2008.
Status = ON SCHEDULE		
	Incremental Projects	
2507	TMDL Watershed Restoration Plans - Phase III (Pennsylvania DEP)	Seven plans are being developed. Two plans have been completed.
	AMD	
2512	Brewster Hollow AMD Remediation (Broad Top Township)	Construction is complete. Monitoring continues
2513	Six Mile Run SXO-D2 AMD Remediation (Broad Top Township)	Final report is being completed along with water monitoring

2514	Remediation of Tracey Airhole AMD Discharge (Schuylkill County CD)	Final design is complete.

Semi-Annual Performance Report - July to December 2007 **FY2005 Section 319 Grant - October 1, 2004 to September 30, 2007**

The EPA awarded this grant on September 7, 2005.

The grant will close on September 30, 2008.

Project Number	**Project Title (Project Sponsor)**	**Current Status**
Status = ON SCHEDULE		
2515	Klondike Mine AMD Treatment Construction (Clearfield Creek Watershed Association)	Construction is 95% complete.
2516	Arnot No. 2 Mine AMD Treatment System (Babb Creek Watershed Associatoin, Inc.)	Repairs being made to system
2517	Hubler Run I AMD Treatment System (Emigh Run/Lakeside Watershed Association)	WIP is completed. Design is complete
2518	Benedict Mine AMD Treatment (Huntingdon County CD)	Construction ongoing.
2519	Old Never Sweat Mine AMD Treatment (Huntingdon County CD)	Construction is ongoing.
2521	Passive Alkalinity SGL#67 (Shoups Run Watershed Association)	Construction ongoing.
2523	Corbettown Constructed Wetlands (Jefferson County CD)	Construction is complete. Monitoring continues
2524	Blacks Creek: BC16 Remediation (Stream Restoration Inc.)	Construction is ongoing.
	Agriculture	
2526	Mifflin County Farm BMPs (Mifflin County Conservation District)	A new farm project has been selected by the sponsor.
2527	Mifflin County Farm BMPs (Mifflin County Conservation District)	Included with Project 2526.
2528	Conestoga River Watershed Ag BMPs (Lancaster County Conservation District)	Project installation is ongoing.
2529	Sustaining the Mill Creek Farm Community (Izaak Walton League of America)	Several new projects have been started.
2530	Spring Run Agricultural BMPs (Fulton County Conservation District)	One project has been completed. Additional projects are expected
	NSCD / FGM / Wetland Restoration	
2536	BMP Priorities and Watershed Protection for Harveys Lake (Harveys Lake Borough)	A watershed-based plan is being developed.
DELIVERABLES		
2531	Eagle Scout Pasture Improvement (Bucks County CD)	Final report done.

FY2006 Section 319 Grant

Semi-Annual Performance Report - July to December 2007 FY2006 Section 319 Grant - October 1, 2005 to September 30, 2008

The EPA awarded this grant on September 6, 2006.

The grant will close on September 30, 2008.

Project Number	Project Title (Project Sponsor)	Current Status
Status = COMPLETED		
2601	Conservation District Mining Program (WPCAMR)	Final report received.
2602	Conservation District Mining Program (EPCAMR)	Final report received.
2604	Citizen Volunteer Monitoring Program (Pennsylvania CVMP)	
2606	Watershed Education for Pollution Prevention VIII (Pennsylvania League of Women Voters)	Final report received.
2605	Statewide NPS Education Office (PACD)	
2608	Statewide Lake Water Quality Assessments (Pennsylvania DEP)	
2609	Urban Storm Water BMP National Monitoring Program (Villanova University)	
2611	Swatara Creek Watershed (Schuylkill County Conservation District)	Funding from FFY2007 grant.
2625	Pequea Creek Restoration Phase II Construction (Paradise Sportsman Association)	Final report received.
2626	Durham Ridge Wetland - Phase II (Plumstead Township)	Final report received.
Status = BEHIND SCHEDULE		
2628	Energy Resource Center - Green Building Project (SEDA-Council of Governments)	Work plan and grant agreement completed.
Status = DISCONTINUED		
2620	Oneida/Green Mountain Discharges AMD Treatment (Schuylkill County CD)	Project removed from grant.
2623	Godfrey Pasture Stream Restoration (Izaak Walton League of America)	Project removed from grant.
2624	McClelland Pasture Stream Restoration (Izaak Walton League of America)	Project removed from grant.
Status = CHANGES TO PROJECT SCOPE OR TIME FRAME		
		None.
Status = ON SCHEDULE		

	Base Projects	
2603	NPS Program-Bureau of Watershed Management/Regional Offices (Pennsylvania DEP)	

Semi-Annual Performance Report - July to December 2007 FY2006 Section 319 Grant - October 1, 2005 to September 30, 2008

The EPA awarded this grant on September 6, 2006.

The grant will close on September 30, 2008.

Project Number	**Project Title (Project Sponsor)**	**Current Status**
Status = On SCHEDULE		
2607	TMDL Watershed Restoration Plans - Phase III (Pennsylvania DEP)	Five plans are being developed.
	National Monitoring Program	
2610	Riparian Forest Buffer Monitoring Program (Stroud Water Research Center)	Monitoring has been completed. Technical dociment , final report being prepared. Grant agreement through 12/31/2007.
Status = ON SCHEDULE		
	Incremental Projects	
	AMD	
2612	Six Mile Run SX0-D6 AMD Remediation (Broad Top Township)	Final design is complete. Working on permitting
2613	Six Mile Run SX3-D9 AMD Remediation (Broad Top Township)	Construction is around 90% complete.
2614	Six Mile Run Discharge SX2-D6, D7, D8 AMD Remediation (Broad Top Township)	Work on design continues.
2615	Shreves Run Regional AMD Remediation (Broad Top Township)	Construction is complete. Some repairs need to be made.
2616	Six Mile Run SX2-D5 AMD Remediation (Broad Top Township)	Final design is complete. Waiting on final report
2617	Hubler Run 2 AMD Treatement System Construction (Emigh Run/Lakeside Watershed Assn.)	Final design is complete.
2618	Hartman Run Alkalinity Addition Project	Construction is complete. Addition of limestone sand continues.
2619	Limestone Supplement for the Audenreid Mine Tunnel (Schuylkill County CD)	Project is complete
2621	Hartshorn Run Assessment and Restoration Plan (Clearfield County CD)	A watershed-based plan is being developed.
	Agriculture	
2622	Agriculture BMP Implementation Program - Phase II (Centre County CD)	Many BMPs implemented in targeted area.
	Stormwater/Urban Runoff	
2627	Mahoning Creek Stream Channel Stabilization (Montour County CD)	Growing Greener Program grant agreement. S. 319 funding in par

	Other Projects	
2629	Francis Slocum Lake / Abrahams Creek Assessment (Luzerne County CD)	A watershed-based plan is being developed.

Semi-Annual Performance Report - July to December 2007 FY2006 Section 319 Grant - October 1, 2005 to September 30, 2008

The EPA awarded this grant on September 6, 2006.

The grant will close on September 30, 2008.

Project Number	**Project Title (Project Sponsor)**	**Current Status**
Status = ON SCHEDULE		
2630	BMP Implementation to Address TMDLs - Phase I and II (Multiple)	Work plans are being completed and projects are ongoing.
2631	BMP Implementation to Address TMDLs - Phase III (Combined with Project 2630)	Work plans are being completed and projects are ongoing.
DELIVERABLES		
2601	Conservation District Mining Program (WPCAMR)	Final report received.
2602	Conservation District Mining Program (EPCAMR)	Final report received.
2606	Watershed Education for Pollution Prevention VIII (Pennsylvania League of Women Voters)	Final report received.
2625	Pequea Creek Restoration Phase II Construction (Paradise Sportsman Association)	Final report received.
2626	Durham Ridge Wetland - Phase II (Plumstead Township)	Final report received.

FY2007 Section 319 Grant

Semi-Annual Performance Report - July to December 2007 FY2007 Section 319 Grant - October 1, 2006 to September 30, 2010

The EPA awarded this grant in September 2007.

The grant will close out on September 30, 2010.

Project Number	Project Title (Project Sponsor)	Current Status
Status = COMPLETED		
2708	Urban Storm Water BMP National Monitoring Program (Villanova University)	Final report received.
Status = BEHIND SCHEDULE		
		None
Status = DISCONTINUED		
		None
Status = CHANGES TO PROJECT SCOPE OR TIME FRAME		
		None noted.
Status = ON SCHUDULE		
	Base Projects	
2701	Conservation District Mining Program (WPCAMR)	
2702	Conservation District Mining Program (EPCAMR)	
2703	Nonpoint Source Program-BWM/Regional Offices (Pennsylvania DEP)	
2704	Citizen Volunteer Monitoring Program (Pennsylvania DEP-CVMP)	
2705	Statewide NPS Education Office (PACD)	
2706	Watershed Education for Pollution Prevention IX (PENNSYLVANIA LWV)	
2707	Statewide Lake Water Quality Assessments (Pennsylvania DEP)	Lake monitoring/assessment completed for 2007.
	National Monitoring Program	
2709	Swatara Creek Watershed (Schuylkill County Conservation District)	Waiting for final report
	Incremental Projects	

Semi-Annual Performance Report - July to December 2007 FY2007 Section 319 Grant - October 1, 2006 to September 30, 2010

The EPA awarded this grant in September 2007.

The grant will close out on September 30, 2010.

Project Number	Project Title (Project Sponsor)	Current Status
Status = ON SCHEDULE		
	AMD	
2710	Six Mile Run SX0-D6 AMD Remediation (Broad Top Township)	Permitting work is complete and construction has started
2711	Six Mile Run Discharge SX0-D7 AMD Remediation (Broad Top Township)	Surveying and mapping is complete
2712	Six Mile Run Discharge SX2-D5 AMD Remediation (Broad Top Township)	Construction is complete. Monitoring of system will continue
2713	Green Garden Road AMD (Huntingdon County Conservation District)	Wetland delineation is complete
2714	Ferris Wheel Revegetation Project (Clearfield Creek Watershed Association)	E&S plan is being developed. Permitting has begun.
2715	Bilger Run BR3.9 AMD Discharge Treatment System (Pike Township)	Project has been bid.
2716	Bear Creek AMD Phase II (Dauphin County Conservation District)	Contract has been signed and project will begin soon.
2717	Oneida #3 Mine Tunnel Discharge Remediation (Schuylkill County CD)	Meetings with project partners have occurred.
2718	Neumeister Discharge AMD Remediation (Schuylkill Headwaters)	Plans are complete. Work on E&S and permitting continues.
	Agriculture	
2719	Conewago Creek Restoration Phase I (Dauphin County Conservation District)	Construction is ongoing.
	Stormwater / Urban Runoff	
2720	East Branch Codorus Creek Stream Restoration Phase V (Izaak Walton League of America)	
2721	Hershey Meadows Stream Restoration Phase I (Tri-County Conewago Creek WA)	Survey has been completed, design is ongoing.
2724	Villanova University Porous Concrete BMP Monitoring Project (Villanova University)	
	Other	
2722	Design/Implementation of In-Lake Stephen Foster Lake Restoration Plan (Bradford County CD)	WIP is being developed.
2723	BMP Implementation identified in Approved Watershed Implementation Plans (Pennsylvania DEP)	
2725	TMDL Planning (Pennsylvania DEP)	
2726	Social Marketing (Clearfield County Conservation District)	Phone survey was started.

Semi-Annual Performance Report - July to December 2007 FY2007 Section 319 Grant - October 1, 2006 to September 30, 2010

The EPA awarded this grant in September 2007.

The grant will close out on September 30, 2010.

Project Number	Project Title (Project Sponsor)	Current Status
DELIVERABLES		
2708	Urban Storm Water BMP National Monitoring Program (Villanova University)	Final report.

Appendix C.

Section 319 NPS Project Load Reduction Estimates

Abandoned Mine Drainage (AMD) Load Reductions

FY2002 Load Reductions – AMD Projects

	Iron (lb/day)	Aluminum (lb/day)	Manganese (lb/day)	Acidity (lb/day)
Project #				
2213	.49	1.26	--	11.53
2214	--	--	--	--
2215	9.8	5.4	--	--
2216	72.3	--	--	--
2217	2	20	2.5	183
2218	89	32	--	--
2219	--	--	--	--
Totals	173.6	58.7	2.5	194.5

FY2003 Load Reductions - AMD Projects

	Iron (lb/day)	Aluminum (lb/day)	Manganese (lb/day)	Acidity (lb/day)
Project #				
2314	51.5	20.3	--	--
2315	--	--	--	--
2316	--	--	--	--
2317	1.34	--	--	--
2318	--	--	--	--
2319	--	--	--	--
2320	--	--	--	--
2321	38.4	3.8	--	82.2
2322	2.6	6.6	--	1.5
2323	27	12.1	--	5.2
2324	8.16	6.5	--	--
Totals	129	49.3	0	88.9

FY2004 Load Reductions - AMD Projects

	Iron (lb/day)	Aluminum (lb/day)	Manganese (lb/day)	Acidity (lb/day)
Project #				
2416	52	9.97	5.8	--
2417	--	771.5	--	6557.8
2418	--	--	--	--
2419	.48	11.39	3.99	143.7
2420	67.2	4.6	n/a	--
2421	538.1	30.7	152.9	--
2422	20.8	26.9	239.3	--
2423	--	167.7	--	1605.5
Totals	678.6	1,022.76	402	8,307

FY2005 Load reductions - AMD Projects

	Iron (lb/day)	Aluminum (lb/day)	Manganese (lb/day)	Acidity (lb/day)
Project #				
2512	.24	--	--	--
2513	--	2.2	--	18.1
2514	191.8	--	20	--
2515	25.9	--	--	128.6
2516	--	2.7	--	49.3
2517	--	32.9	--	290.
2518	--	0.28	--	6.6
2519	--	2.7	--	27.4
2520	--	--	--	--
2521	--	--	--	--
2522	--	--	--	--
2523	635.6	--	--	--
2524	52.1	--	16.4	--
2525	184.7	14.8	--	--
2545 A	--	--	--	--
2545 C	--	--	--	--
Totals	1,090.3	55.6	36.4	520.

FY2006 Load reductions - AMD Projects

	Iron (lb/day)	Aluminum (lb/day)	Manganese (lb/day)	Acidity (lb/day)
Project #				
2612	--	--	--	--
2613	10.25	11.23	--	144.7
2614	--	--	--	--
2615	0.22	1.97		26.85
2616	--	--	--	--
2617	2.9	1.0	--	--
2618	2.7	1.5	2.1	94.2
2619	--	--	--	--
2620	--	--	--	--
2621	--	--	--	--
2630 A	--	--	--	--
2630 B	--	--	--	--
2630 G	--	--	--	--
Totals	16.1	15.7	2.1	265.8

FY2007 Load reductions - AMD Projects

	Iron (lb/day)	Aluminum (lb/day)	Manganese (lb/day)	Acidity (lb/day)
Project #				
10	5.2	8.9	0.1	60.3
11	3.6	0.5	0.22	34.5
12	1.5	2.1	0.5	13.4
13	5.5	--	--	70.1
14	4.1	5.5	--	74.5
15	0.4	0.6	--	6.4
16	--	256.4	--	--
17	68.5	--	--	643.8
18	71.2	89.9	--	2,970.
Totals	160.	364.	0.8	3,873.8

Nitrogen, Phosphorus and Sediment Load Reductions

FY2001 Load Reductions – Nitrogen, Phosphorus and Sediment

	Nitrogen (lb/year)	Phosphorus (lb/year)	Sediment (tons/year)
Project #			
2123	1,527.	514	339.
2124	600.	693	1,281.
2125	22.4	7.4	4.7
2126	11,228.	475.	27.
2127	--	--	--
2128	--	--	1,252.
2129	1,863.	693.	547.
2130	2,549.	608.	75.
2131	39,913.	13,122.	4,378.
2132	--	--	2,900.
2133	--	--	166.
2134	--	--	2.
2135	382.	191.	191.
2136	--	--	--
2137	--	--	2.5
2138	--	--	--
2139	--	--	--
2140	--	--	142.
2141	--	--	750.
2142	--	--	140.
2143	--	--	--
2144	--	--	--
2145	--	132.	--
2146	--	--	--
2147	--	--	--
2148	--	--	--
2149	34,405.	9,085.	2,076.
2150	72,883.	21,668.	5,591.
2151	187,313.	72,588.	216.
2152	3,109.	745.	18.1
2153	2,500.	4,000.	650.
2154	--	--	350.
2155	--	--	--
2156	--	--	--
Totals	358,294.4	124,521.4	21,098.3

FY2002 Load Reductions – Nitrogen, Phosphorus and Sediment

	Nitrogen (lb/year)	Phosphorus (lb/year)	Sediment (tons/year)
Project #			
2220	--	--	270.
2221	10,960.	2,590.	282.
2222	3,197.	527.	29.6
2223	444.	222.	222.
2224	101.	22.	12.2
2225	21,917.	5,800.	1,277.4
2226	17,450.	3,058.	--
2227	9,343.	3,114.	21.3
2228	3,291.	1,562.	102.5
2229	150,116.	26,560.	899.
2230	--	66	--
2231	--	--	350.
2232	410.	204.	204.
2233	--	--	119.
2234	40.	7.	750.
2235	170.	85.	85.
2236	24.	12.	12.
2237	--	--	--
2238	--	--	249.
2239	474.	236.	236.
2240	--	--	203.
2241	--	--	--
2242	--	--	--
Totals	217,937.	44,065.	5,324.

FY2003 Load Reductions – Nitrogen, Phosphorus and Sediment

	Nitrogen (lb/year)	Phosphorus (lb/year)	Sediment (tons/year)
Project #			
2325	8,576.	12,517.	64.
2326	140.	--	--
2327	22,920.	7,383.	961.
2328	8,718.	1,705.	309.
2329	12,733.	12,000.	--
2330	3,296.	1,205.	98.
2331	--	--	776.
2332	--	--	981.
2333	--	--	5,300.
2334	--	--	280.
Totals	56,383.	34,810.	8,769.

FY2004 Load Reductions – Nitrogen, Phosphorus and Sediment

	Nitrogen (lb/year)	Phosphorus (lb/year)	Sediment (tons/year)	Suspended Solid (lb/year)
Project #				
2424	11,713.	3,111.	757.	
2425	14,802.	4,053.	354.4	
2426	--	--	230	
2427	--	--	1,348	
2428	--	--	300.	
2429	--	--	--	
2430	--	--	171.	
2431	0.9	0.6	--	281.3
2432	--	--	60.	
2433	--	--	--	
2434	--	--	--	
2435	--	--	168.	
Totals	26,516.	7,165.	3,388.4	281.3

FY2005 Load Reductions – Nitrogen, Phosphorus and Sediment

	Nitrogen (lb/year)	Phosphorus (lb/year)	Sediment (tons/year)
Project #			
2526	3,621.	829.	115.
2527	--	--	--
2528	13,370.	3,245.	558.
2529	2,360.	2,360.	4,718.
2530	2,347.	1,245.	23.
2531	132.	55.	7.5
2532	--	--	--
2533	--	--	--
2534	--	--	320.
2535	421.	52.	19.
2536	--	24.	--
2537	--		
2538	--		
2539	--		
2540	--		
2541	--		
2542	--		
2543	--		
2544	--	--	10.
2545	--	--	--
2545 B	--	--	981.
Totals	22,251.	7,810.	6,752.

FY2006 Load Reductions – Nitrogen, Phosphorus and Sediment

	Nitrogen (lb/year)	Phosphorus (lb/year)	Sediment (tons/year)
Project #			
2622	9,829.	2,042.	551.
2623	--	--	--
2624	--	--	--
2625	--	--	601.
2626	7.	18.	1.1
2627	--	--	60.
2628	--	--	--
2629	--	--	--
2630	--	--	--
2631	--	--	--
2630 C	--	--	--
2630 D	--	--	--
2630 E	--	--	750.
2630 F	--	--	--
Totals	9,836.	2,060.	1,963.

FY2007 Load Reductions – Nitrogen, Phosphorus and Sediment

	Nitrogen (lb/year)	Phosphorus (lb/year)	Sediment (tons/year)
Project #			
19	2,256.	623.	200.
20	--	--	1,000.
21	--	--	--
22	--	--	--
23	--	--	--
24	--	--	--
25	--	--	--
Totals	2,256.	623.	1,200.