



Making Our Client's Vision a Reality

WYOMING VALLEY SANITARY AUTHORITY

Regional Chesapeake Bay Pollutant Reduction Plan Amendment No. 1

September 2020



You 'otter know...
we all live downstream.

FOR PUBLIC REVIEW

Lehigh Valley
Pittsburgh
Wilkes-Barre

Wyoming Valley Sanitary Authority
1000 Wilkes-Barre Street
Hanover Township, Luzerne County, Pennsylvania

Wilkes-Barre
613 Baltimore Drive
Suite 300
Wilkes-Barre, PA 18702

P: 570.821.1999
F: 570.821.1990

**Regional Chesapeake Bay Pollutant Reduction Plan
Amendment No. 1
September 2020**

WYOMING VALLEY SANITARY AUTHORITY
LUZERNE COUNTY, PENNSYLVANIA

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INTRODUCTION & EXECUTIVE SUMMARY

As authorized by Pennsylvania Act 68 of 2013, the Wyoming Valley Sanitary Authority (WVSA) expanded their purpose and powers to include stormwater management in 2017. This Chesapeake Bay Pollutant Reduction Plan (CBPRP) **Amendment No. 1** represents a regional effort by WVSA to meet a component of the Pennsylvania Department of Environmental Protection (PADEP) Municipal Separate Storm Sewer System (MS4) permitting requirements. More specifically, the permitting requirements covered by this plan include Pollutant Reduction Plans (PRPs) for stormwater discharges to local surface waters that are impaired for nutrients and/or sediment, and Chesapeake Bay Pollutant Reduction Plans (CBPRPs) for stormwater discharges to surface waters located within the Chesapeake Bay watershed. As a regional plan, this CBPRP **Amendment No. 1** addresses both the local impairment PRP and CBPRP requirements.

This document serves to **amend** WVSA's CBPRP dated September 2017, revised August 2019, and approved by PADEP in December 2019. Specifically, this CBPRP **Amendment No. 1** addresses changes limited to the proposed Best Management Practices (BMPs) Projects to achieve annual pollutant load reduction goals.

In summary, the changes to the proposed list of BMPs in this **Amendment No. 1** are as follows:

1. Revisions to segments of Stream Restoration projects, resulting in a net addition of 3,010 linear feet (LF) of proposed stream restoration work.
2. Addition of two (2) Stormwater Basin Retrofit/Restoration projects.
3. Change in location of one (1) Community Based Rain Garden project.

The **Annual Pollutant Load Reduction Goal is 2,373,102** Total Suspended Solids in pounds per year (TSS lbs/ Year). Inclusion of the proposed BMP changes in this **Amendment** will have an estimated net increase on the projected Annual Pollutant Load Reduction of TSS (lbs/ Year) from 2,402,900 lbs to **2,647,916 TSS (lbs /Year)**.

This CBPRP **Amendment No. 1** was prepared following the guidance provided in the Pennsylvania Department of Environmental Protection (PADEP) Document 3800-PM-BCW0100k - National Pollutant Discharges Elimination Systems (NPDES) Stormwater Discharges from Small Municipal Separate Storm Sewer Systems Pollutant Reduction Plan (PRP) Instructions, as well as Expert Panel papers on stormwater basin retrofits/restorations and stream restoration.

The general format of this **Amendment** presents only the sections and appendices from the December 2019 approved CBPRP that are being revised and are material to the proposed BMP Project changes. All revisions are shown in **strikeout (e.g. xxx)** format, and/or **RED** or **GREEN** font as indicated in the respective sections.

General Information	
Plan Administrator: Wyoming Valley Sanitary Authority	Consulting Engineer: Borton-Lawson Engineering, Inc.
Mailing Address: PO Box 33A	Mailing Address: 613 Baltimore Drive
City, State Zip: Wilkes-Barre, PA 18703-1333	City, State Zip: Wilkes-Barre, PA 18702
Contact: James B. Tomaine, PE	Contact: Samantha Albert, PE
Title: Executive Director	Title: Water & Municipal Services Leader
Phone: 570.825-0366	Phone: 570.821.1994 Ext 1243
Email: jim.tomaine@wvsa.net	Email: salbert@borton-lawson.com

SECTION A: PUBLIC PARTICIPATION

A complete copy of the CBPRP, dated September 2017, revised August 2019, and this **Amendment No. 1 dated September 2020** is available for the public to review at Wyoming Valley Sanitary Authority from September 20, 2020 to October 20, 2020 and on their website at <https://www.wvsa.org/>. These documents will be available on the WWSA website for 30 days as advertised in the Wilkes-Barre Citizens' Voice on September 18, 2020. The published public notice contained a brief description of the plan amendment, the dates and locations at which the plan amendment was available for review by the public, and the length of time provided for the receipt of comments. Copies of the public notice as posted on the WWSA website and published in Wilkes-Barre Citizen's Voice are included in Appendix II.

Written comments will be accepted for 30 days following the publication date of the public notice. A public meeting will be held on October 19, 2020, 1PM EST at Wyoming Valley Sanitary Authority's public meeting room at 1000 Wilkes-Barre Street, Hanover Township, Luzerne County, PA to present the information contained in this report to the public. Comments and questions regarding the CBPRP Amendment No. 1 will be addressed during the public presentation. A copy of the CBPRP Amendment No. 1 presentation and meeting minutes will be included in Appendix II.

[ADD OCTOBER 2020 PUBLIC PARTICIPATION COMMENTS AND RESPONSES HERE AFTER PUBLIC COMMENT PERIOD HAS EXPIRED]

SECTION E.2: PROPOSED BMPs

This section outlines the BMP implementation strategy developed to achieve the required annual pollutant load reduction goals. The proposed BMPs were determined through a review of previously submitted PRPs from municipalities included in the CBPRP planning area, in-field stream assessments, meetings with the Luzerne Conservation District, and public outreach meetings with elected officials and municipal staff.

The proposed BMP projects have not been designed. The project descriptions are conceptual and are intended for planning purposes. Proposed projects have been evaluated in terms of preliminary feasibility and anticipated pollutant load reductions in order to meet the goals of this plan. During plan implementation, the proposed BMPs will be designed in accordance with the Pennsylvania BMP Manual design guidance and all local ordinances. Additionally, as many of the proposed projects include stream restoration, all proposed stream restoration projects will be designed in accordance with the requirements listed in PADEP's stream restoration guidance⁶. Additional details and calculations for each proposed project developed during the design and implementation project phases will be documented in the Annual MS4 Status Reports. All existing basin retrofit projects will require a hydraulic evaluation to ensure that modifications for stormwater quality improvements will not negatively impact rate mitigation or detrimentally affect neighboring properties.

Multiple BMPs can be retrofitted and or created to reduce the pollutant load entering the CBPRP Planning Area. Several publically owned basins already exist within the CBPRP Planning Area; however, they are designed primarily for flood management and rate attenuation. These basins could be retrofitted to increase the water quality management of each basin, which in turn increases the pollutant load reduction. Basin retrofits can be achieved by retrofitting outfall structures, increasing flow paths, creating sediment forebays, introduce meanders to existing low flow channels, amend soils, install water quality vegetation plantings, and develop operations and maintenance programs to ensure the long-term efficacy of the retrofitted BMPs. New basins within the CBPRP area will follow the same pollutant load reduction strategies as retrofit basins; however, they will be constructed in locations where basins do not already exist. The details for these proposed basins can be found in Appendix VI-A.

Community Based BMPs are also planned as a more local, small-scale BMP installation. Rain gardens typically have significantly smaller drainage areas compared to basins. The smaller drainage area leads to a smaller footprint for the proposed BMP, making them easier to fit into a developed areas. A project summary and project sheets for proposed rain garden locations and anticipated TSS removal credit can be found in Appendix VI-B.

Additionally, stream restoration projects are proposed. Stream restoration projects seek to stabilize channels within their present environmental context, and seek to accomplish the goal of reducing erosion of channel bed and banks, reducing downstream sedimentation from in-stream erosion, managing invasive plant species encountered, and providing enhancements to wildlife habitat. TSS reduction calculations, site photos, and project locations for these proposed stream restoration segments can be found in Appendix VI- C.

A summary of the type and scale of BMP projects included in the WWSA strategy is listed in Table 7. The pollutant loading reductions for the each proposed BMP were calculated in terms of pounds per year using PADEP’s standard BMP Effectiveness Values and the Chesapeake Bay Program Expert Panel Report⁷. Details on individual BMP projects to be implemented in each planning area is provided in Appendix VI.

Edits shown in **GREEN** are additions or increases and edits shown in **RED** are reductions.

Table 7: WWSA BMP Strategy Summary – Amendment No. 1

BMP Type	Planning Area **	Stream	Watershed	# of Projects	Pollutant Load Reduction TSS (lbs/yr)
Toby Creek Impoundment	CBPRP	Toby Creek	Toby Creek	1	133,600
Exeter – Donna’s Way Basin Retrofit	CBPRP	Hicks Creek	Hicks Creek	1	10,300
Swoyersville – Townsend Avenue Basin Retrofit	CBPRP	Abrahams Creek	Abrahams Creek	1	143,100
Swoyersville – Creek Street Basin Retrofit	CBPRP	Abrahams Creek	Abrahams Creek	1	138,200
Swoyersville – Dana Street Basin Retrofit	CBPRP	Abrahams Creek	Abrahams Creek	1	69,000
Swoyersville – Simpson Street Basin Retrofit	CBPRP	Abrahams Creek	Abrahams Creek	1	28,700
Swoyersville – Slocum Street Basin Retrofit	CBPRP	Toby Creek	Swoyersville Borough / Susquehanna River	1	101,000
Jenkins – Main Street Basin	CBPRP	Susquehanna River	City of Wilkes-Barre / Susquehanna River	1	83,500
Jenkins – Northeast Extension Basin	CBPRP	Susquehanna River	City of Wilkes-Barre / Susquehanna River	1	77,400
Plains – Wyndtree Oaks Basin Retrofit	CBPRP	Susquehanna River	City of Wilkes-Barre / Susquehanna River	1	22,700
Stormwater Park	CBPRP	Susquehanna River	City of Wilkes-Barre / Susquehanna River	1	30,000
Stream Restoration	CBPRP	Unnamed Trib from Abrahams Creek	Abrahams Creek	1 2	80,700 151,200
	CBPRP	Abrahams Creek	Abrahams Creek	3	176,960
	CBPRP	Mill Creek	City of Wilkes-Barre / Susquehanna River	1 3	12,100 89,600
	CBPRP	Unnamed Tributary To Susquehanna River	Susquehanna River	1	12,096

Newport Creek	Newport Creek	Newport Creek	3	107,700 76,160
Warrior Creek/ Susquehanna River	Warrior Creek	Warrior Creek/ Susquehanna River	16 3	234,000 244,160
Sugar Notch Run/ Solomon Creek	Spring Run	Sugar Notch Run/ Solomon Creek	6 3	157,000 100,800
City of Wilkes-Barre/ Mill Creek	Laurel Run	City of Wilkes-Barre/ Mill Creek	2 1	67,300 26,880
City of Wilkes-Barre/ Mill Creek	Gardner Creek	City of Wilkes-Barre/ Mill Creek	2	116,600 71,680
Lackawanna River/ Susquehanna River	Unnamed Tributary & Mill Creek	Lackawanna River/ Susquehanna River	1 2	35,900 26,880
Harveys Lake/ Harveys Creek	E. Fork Harveys Creek	Harveys Lake/ Harveys Creek	1	31,400
Street Sweeping/ Catch Basin Cleaning	CBPRP	Each Stream within the Planning Area	Each Watershed within the Planning Area	Various 800,000
Community Based BMPs	CBPRP	Various *	Various *	18 34,000
TOTALS			60 52	2,402,900 2,647,916

*See BMP Maps in CBPRP, dated August 2019.

** All Planning Areas are included in the CBPRP planning area as outlined in Section E.1. of PRP, dated August 2019.

⁶ PADEP, "Consideration of Stream Restoration Projects in Pennsylvania for Eligibility as an MS4 Best Management Practice" (June 22, 2017)

⁷ PADEP Document 3899-PM-BCW0100M, NPDES Stormwater Discharges from Small MS4s, BMP Effectiveness Values (6/2018) Chesapeake Bay Program Expert Panel, Recommendation of the Expert Panel to Define Removal Rates for Street and Storm Drain Cleaning Practices (5/26/2016)

The BMP strategy outlined in Table 7 represents the best selection of projects after evaluation with respect to various criteria including cost-effectiveness, feasibility of implementing MS4 BMP design requirements, environmental impact, property ownership, opportunity for public education, and ability to obtain easements and/or partnerships. This BMP strategy will meet the required annual pollutant reductions while also improving the quality of local impaired waterways. The proposed BMPs includes large regional BMPs (Basin Retrofits and Stream Restoration Projects) to achieve a major sediment load reduction and smaller Community Based BMPs to target specific impaired waters.

The **Annual Pollutant Load Reduction goal is 2,373,102 TSS (lbs/year)**. The pollutant load reductions achieved by the proposed BMPs changes listed above exceed the pollutant load reduction requirement by **274,814 TSS (lbs/yr)**. As allowed during the five (5) year permit cycle, it is anticipated that the plan will be revised on an annual basis based upon actual progress made and new project opportunities.

For Public Review

APPENDIX II
PUBLIC PARTICIPATION DOCUMENTATION



**WYOMING VALLEY SANITARY
AUTHORITY**

Together, we put water in its place.

SEPTEMBER 18, 2020

**NOTICE OF PUBLIC PARTICIPATION AND PUBLIC MEETING FOR
AMENDED CHESAPEAKE BAY POLLUTANT REDUCTION PLAN**

Wyoming Valley Sanitary Authority (WVSA) hereby gives notice of the 30-day public comment period for its amended National Pollutant Discharge Elimination (NPDES) Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) Pollutant Reduction Plan (PRP). Best Management Practices (BMPs) are proposed in the regional Plan to satisfy PRP requirements for the Chesapeake Bay and local stream impairments.

The public is invited to review this document and provide written comments to:

James B. Tomaine, PE
Executive Director
1000 Wilkes-Barre Street
Hanover Township, PA 18703
Email: jim.tomaine@wvsa.net

The 30-day public comment period begins September 20, 2020 and ends October 20, 2020.

The Plan will be discussed at a public meeting on October 19, 2020, beginning 1PM at the offices of WVSA in Hanover Township.

The municipalities participating in the regional Plan include the Cities of Nanticoke, Pittston, and Wilkes-Barre; the Boroughs of Ashley, Courtdale, Duryea, Edwardsville, Exeter, Forty Fort, Harveys Lake, Hughestown, Kingston, Laflin, Larksville, Luzerne, Plymouth, Pringle, Sugar Notch, Swoyersville, West Pittston, West Wyoming, Wyoming, and Yatesville; and the Townships of Hanover, Jackson, Jenkins, Newport, Pittston, Plains, Plymouth, and Wilkes-Barre.







For Public Review

APPENDIX III
PROPOSED BMP MAPS

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LEGEND

-  BASIN TO BE RETROFITTED
-  BASIN DRAINAGE SHED
-  EXISTING STREAM
-  URBANIZED AREA BOUNDARY
-  MUNICIPAL BOUNDARY
-  WATERSHED BOUNDARY



BMP MAP SERIES

PRP AMENDMENT NO.1

DONNA'S WAY BASIN RETROFIT

WYOMING VALLEY SANITARY AUTHORITY

EXETER BOROUGH, LUZERNE COUNTY, PENNSYLVANIA

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PROJECT NUMBER	2018-3759-001
DRAWING NUMBER	

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- BASIN DRAINAGE SHED
- EXISTING STREAM
- URBANIZED AREA BOUNDARY
- MUNICIPAL BOUNDARY

DRAWING TITLE & PROJECT NAME

BMP MAP SERIES

PRP AMENDMENT NO.1
SLOCUM STREET BASIN RETROFIT
WYOMING VALLEY SANITARY AUTHORITY
 SWOYERSVILLE BOROUGH, LUZERNE COUNTY, PENNSYLVANIA

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PROJECT NUMBER	2018-3759-001
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- Stream Restoration Segment, ADDED
- Stream Restoration Segment, REMOVED
- PARCEL BOUNDARY
- URBANIZED AREA BOUNDARY
- MUNICIPAL BOUNDARY



DRAWING TITLE & PROJECT NAME

STREAM RESTORATION MAP SERIES

PRP AMENDMENT NO.1

ABRAHAMS CREEK

WYOMING VALLEY SANITARY AUTHORITY

WYOMING BOROUGH, LUZERNE COUNTY, PENNSYLVANIA

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STREAM RESTORATION MAP SERIES

PRP AMENDMENT NO.1
 ABRAHAMS CREEK
 WYOMING VALLEY SANITARY AUTHORITY
 FORTY FORT BOROUGH, LUZERNE COUNTY, PENNSYLVANIA

LEGEND	
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	Stream Restoration Segment, REMOVED
	PARCEL BOUNDARY
	URBANIZED AREA BOUNDARY
	MUNICIPAL BOUNDARY



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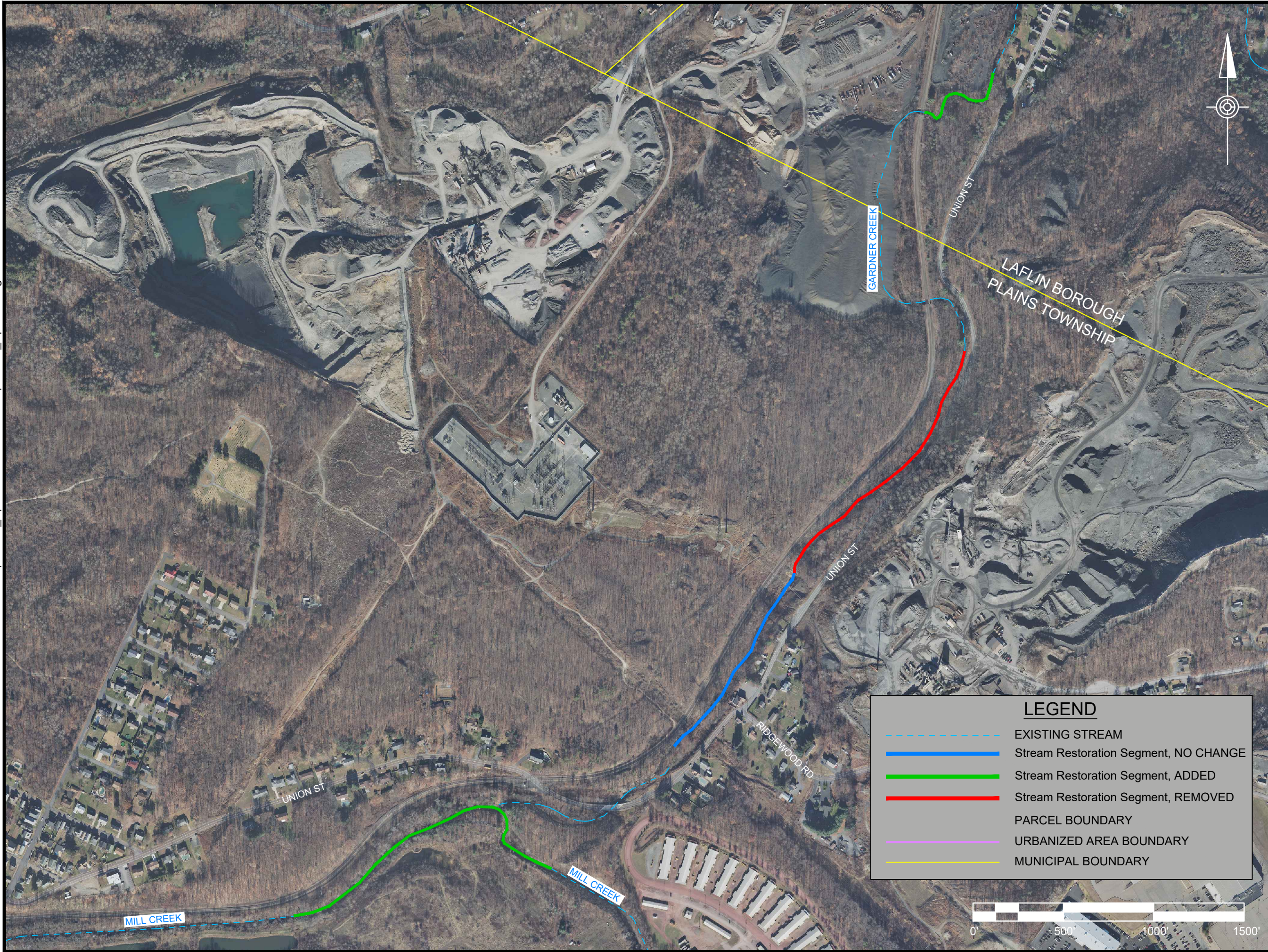
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- PARCEL BOUNDARY
- URBANIZED AREA BOUNDARY
- MUNICIPAL BOUNDARY



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STREAM RESTORATION MAP SERIES

PRP AMENDMENT NO.1
 GARDNER CREEK / MILL CREEK
 WYOMING VALLEY SANITARY AUTHORITY
 PLAINS TOWNSHIP, LUZERNE COUNTY, PENNSYLVANIA

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STREAM RESTORATION MAP SERIES

PRP AMENDMENT NO.1

LAUREL RUN

WYOMING VALLEY SANITARY AUTHORITY
PLAINS TOWNSHIP, LUZERNE COUNTY, PENNSYLVANIA

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DATE SEPTEMBER 5, 2020

PROJECT NUMBER

2018-3759-001

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- Stream Restoration Segment, ADDED
- Stream Restoration Segment, REMOVED
- PARCEL BOUNDARY
- URBANIZED AREA BOUNDARY
- MUNICIPAL BOUNDARY



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STREAM RESTORATION MAP SERIES

PRP AMENDMENT NO.1
MILL CREEK
WYOMING VALLEY SANITARY AUTHORITY
 PLAINS TOWNSHIP, LUZERNE COUNTY, PENNSYLVANIA

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STREAM RESTORATION MAP SERIES

PRP AMENDMENT NO.1
MILL CREEK (LACKAWANNA RIVER)
WYOMING VALLEY SANITARY AUTHORITY
 PITTSBURGH TOWNSHIP, LUZERNE COUNTY, PENNSYLVANIA

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DATE SEPTEMBER 5, 2020

PROJECT NUMBER

2018-3759-001

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- Stream Restoration Segment, ADDED
- Stream Restoration Segment, REMOVED
- PARCEL BOUNDARY
- URBANIZED AREA BOUNDARY
- MUNICIPAL BOUNDARY



DRAWING TITLE & PROJECT NAME

STREAM RESTORATION MAP SERIES

PRP AMENDMENT NO.1
NEWPORT CREEK
WYOMING VALLEY SANITARY AUTHORITY
 CITY OF NANTICOKE, LUZERNE COUNTY, PENNSYLVANIA

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STREAM RESTORATION MAP SERIES

PRP AMENDMENT NO.1
 SPRING RUN / SOLOMON CREEK
 WYOMING VALLEY SANITARY AUTHORITY
 HANOVER TOWNSHIP, LUZERNE COUNTY, PENNSYLVANIA

LEGEND

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- Stream Restoration Segment, NO CHANGE
- Stream Restoration Segment, ADDED
- Stream Restoration Segment, REMOVED
- PARCEL BOUNDARY
- URBANIZED AREA BOUNDARY
- MUNICIPAL BOUNDARY



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- Stream Restoration Segment, REMOVED
- - - PARCEL BOUNDARY
- URBANIZED AREA BOUNDARY
- MUNICIPAL BOUNDARY



DRAWING TITLE & PROJECT NAME

STREAM RESTORATION MAP SERIES

PRP AMENDMENT NO.1
UNT TO LACKAWANNA RIVER
WYOMING VALLEY SANITARY AUTHORITY
 DURYEA BOROUGH, LUZERNE COUNTY, PENNSYLVANIA

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LEGEND

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- URBANIZED AREA BOUNDARY
- MUNICIPAL BOUNDARY



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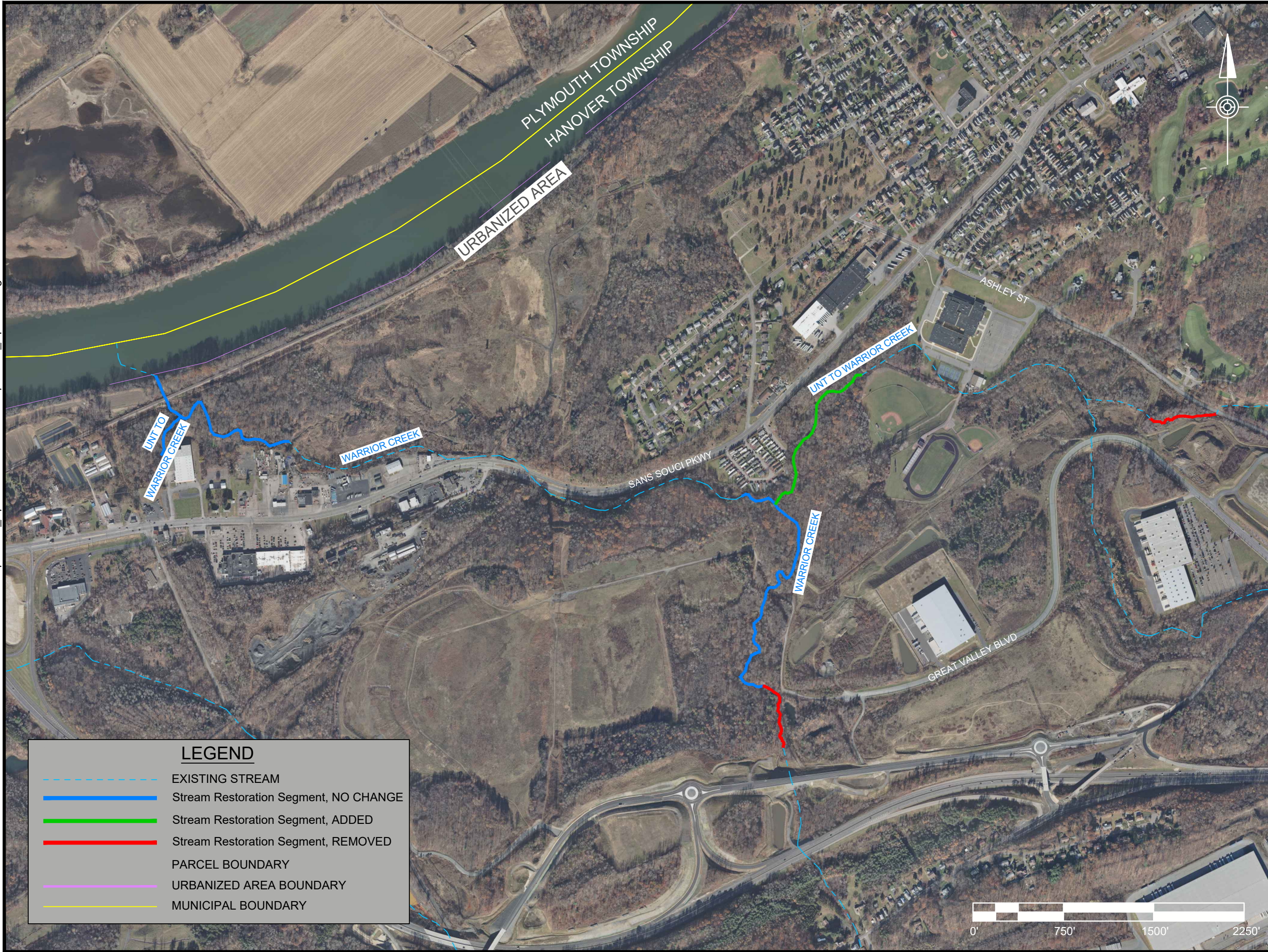
STREAM RESTORATION MAP SERIES

PRP AMENDMENT NO.1
UNT TO SUSQUEHANNA RIVER
WYOMING VALLEY SANITARY AUTHORITY
 PITTSBURGH TOWNSHIP, LUZERNE COUNTY, PENNSYLVANIA

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STREAM RESTORATION MAP SERIES

PRP AMENDMENT NO.1
 WARRIOR CREEK
 WYOMING VALLEY SANITARY AUTHORITY
 HANOVER TOWNSHIP, LUZERNE COUNTY, PENNSYLVANIA

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DRAWING NUMBER	

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APPENDIX VI-A
PROPOSED BMPS
BASIN RETROFIT PROJECTS
POLLUTANT LOAD REDUCTION CALCULATIONS

Appendix VI – Table A: Proposed Basin Retrofit Load Reduction Calculations

BMP Type*	Area				Land Use**					Pollutant Loading Rate (lbs. TSS/ac/yr)**		Total Pollutant Load (TSS) (lbs/yr)	BMP Efficiency (RR Stormwater Retrofit)**	Pollutant Load Reduction TSS (lb/yr)
	Drainage Area (acres)	Project Area (acres)	Loading Ratio	Length (ft)	Planning Area (acres)	% Imperv.	Imperv. (acres)	% Pervious	Pervious (acres)	Impervious	Pervious			
Pringle-Toby Creek Basin Retrofit	9,964.39	8.1	0.08%	2503	2,014.58	17.71%	356.87	82%	1,657.71	1,648.22	221.19	954,872	14%***	133,682
Exeter – Donna’s Way Basin Retrofit	17.91	0.50	35.8	175	17.91	32.74%	5.86	67%	12.0	1,648.22	221.19	12,328	84%	10,356
Swoyersville – Townsend Avenue Basin Retrofit	640.44	6.1	1.0%	2504	462.12	8.35%	38.58	92%	423.53	1,648.22	221.19	157,275	91%	143,120
Swoyersville – Creek Street Basin Retrofit	622.34	7.7	1.2%	6924	349.77	14.94%	52.25	85%	297.52	1,648.22	221.19	151,929	91%	138,255
Swoyersville – Dana Street Basin Retrofit	119.84	2.4	2.0%	1385	119.84	36.94%	44.27	63%	75.57	1,648.22	221.19	89,680	77%	69,053
Swoyersville – Simpson St Basins Retrofit	56.64	1.2	2.1%	1229	56.64	44.06%	24.95	56%	31.69	1,648.22	221.19	48,135	60%	28,785
Swoyersville – Slocum St Basin Retrofit	223.80	6.5	2.9%	1154	206.40	25.35%	52.30	75%	154.10	1,648.22	221.19	120,276	84%	101,032
Jenkins – Main St Basin	258.19	4.4	1.7%	2172	258.19	22.30%	57.57	78%	200.62	1,648.22	221.19	139,257	60%	83,554
Jenkins – Northeast Extension Basin	553.51	5.5	1.0%	2353	553.51	45.74%	253.15	54%	300.36	1,648.22	221.19	129,024	60%	77,414
Plains – Wyndtree Oaks Basin Retrofit	41.58	1.1	3%	848	41.58	29.08%	12.09	71%	29.49	1,648.22	221.19	26,447	86%	22,744
Total												1,829,222		807,996

*BMP Concept Designs have been prepared to provide information on a planning level for each BMP. Final BMP Designs may include revisions to the concept designs.

**Pollutant Loading Rates, and BMP Efficiency figures are from PADEP guidance documents.

***Per request by PADEP, BMP Efficiency for sediment removal according to Figure 5. "Removal Adjustor Curve for Sediment Removal," as seen in the Expert Panel Report, will be utilized for the Toby Creek Basin Retrofit

Appendix VI – Table B: Proposed Basin Retrofit Runoff Treatment

BASIN	WATER SURFACE ELEVATION (FT)	AREA (SQ. FT.)	AVERAGE AREA (SQ. FT.)	ELEVATION DIFFERENCE (FT)	STORAGE VOLUME (CUBIC FEET)		STORAGE VOLUME (ACRE FEET)		RUNOFF TREATED (IN) (RS*12)/IA	SEDIMENT REMOVAL (%)
					INCREMENTAL	TOTAL	INCREMENTAL	TOTAL		
Swoyersville - Slocum Street Basin Retrofit	534	23,229				0		0	0.00	0%
	535	87,368	55,299	1	55,299	55,299	1.27	1.27	0.29	33%
	536	286,274	186,821	1	186,821	242,120	6.84	5.56	1.28	75%
	537	309,729	298,002	1	298,002	540,121	7.28	12.40	2.85	84%*
	538	324,678	317,204	1	317,204	857,325	7.74	19.68	4.52	85%
	539	349,781	337,230	1	337,230	1,194,554		27.42	6.29	85%
Exeter - Donna's Way Basin Retrofit	546	11,426				0		0	0.00	0%
	547	15,119	13,273	1	13,273	13,273	0.30	0.30	0.62	62%
	548	16,957	16,038	1	16,038	29,311	0.41	0.67	1.38	80%
	549	18,480	17,719	1	17,719	47,029	0.44	1.08	2.21	84%*
	550	20,032	19,256	1	19,256	66,285	0.48	1.52	3.12	85%
	551	21,912	20,972	1	20,972	87,257		2.00	4.10	85%

*Sediment Removal for RR and ST Stormwater Retrofit Practice graph is capped at 2.5 inches for Runoff Depth Treated per Impervious Acre and at ~~91%~~ 84% for Sediment Removal.

Exeter – Donna’s Way Basin Retrofit

Donna’s Way, Exeter Borough (41.2834, -75.8857)

General Information

Ownership:	Public
Outfall:	Hicks Creek
Stream Impairment:	Impaired
Designated Use:	CWF, MF

BMP General Information

Drainage area to BMP:	17.9 acres
Total footprint:	0.5 acres

Estimated Pollutant Load Reduction

	TSS (lbs/yr)
Total Estimated Load to Basin	12,328
BMP Efficiency (Expert Panel Report)	84%
Basin Retrofit Load Reduction	10,356

Existing Conditions

Post construction stormwater management basin.

No water quality design featured in this basin.

Outlet control structure discharges to Hick’s Creek.

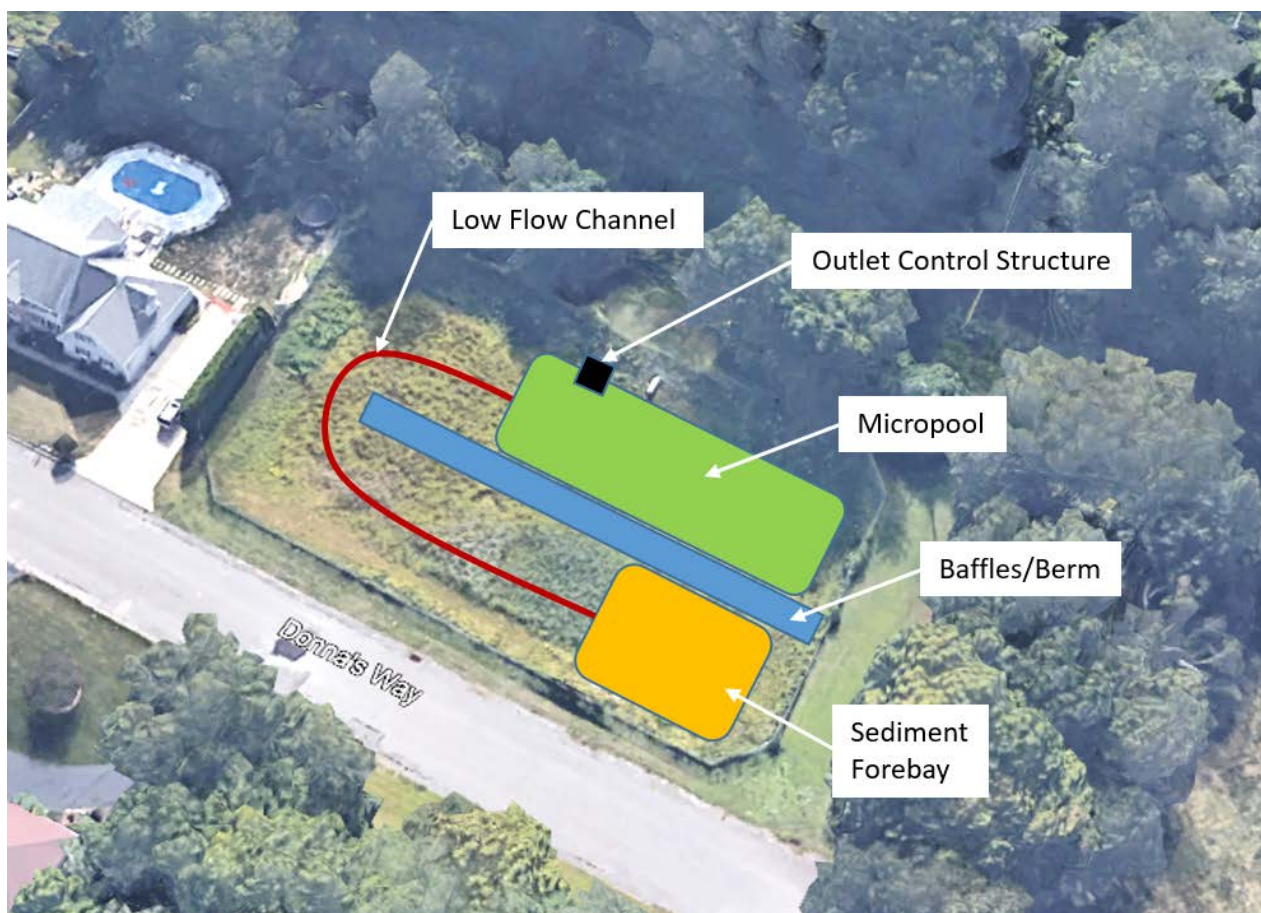
Parts of the basin have developed wetland flora.



For Public Review

Proposed Site Upgrades

- Introduce a low flow channel.
- Install baffles or an earthen berm to prevent short circuiting.
- Construct a sediment forebay.
- Construct a micropool near the outlet control structure.
- Retrofit outlet structure.
- Evaluate existing soils, add amended soils as needed to promote infiltration.
- Evaluate existing vegetation, remove invasives, and supplement existing vegetation with additional water quality plantings.
- Develop an operations and maintenance (O&M) program to ensure continued functionality of basin.
- Place educational signage.



Swoyersville – Slocum St Basin Retrofit

Slocum St, Swoyersville Borough (41.2834, -75.8857)

General Information

Ownership:	Public
Outfall:	Toby Creek
Stream Impairment:	Attaining
Designated Use:	WWF, MF

BMP General Information

Drainage area to BMP:	223.8 acres
Total footprint:	8 acres

Estimated Pollutant Load Reduction

	TSS (lbs/yr)
Total Estimated Load to Basin	120,276
BMP Efficiency (Expert Panel Report)	84%
Basin Retrofit Load Reduction	101,032

Existing Conditions

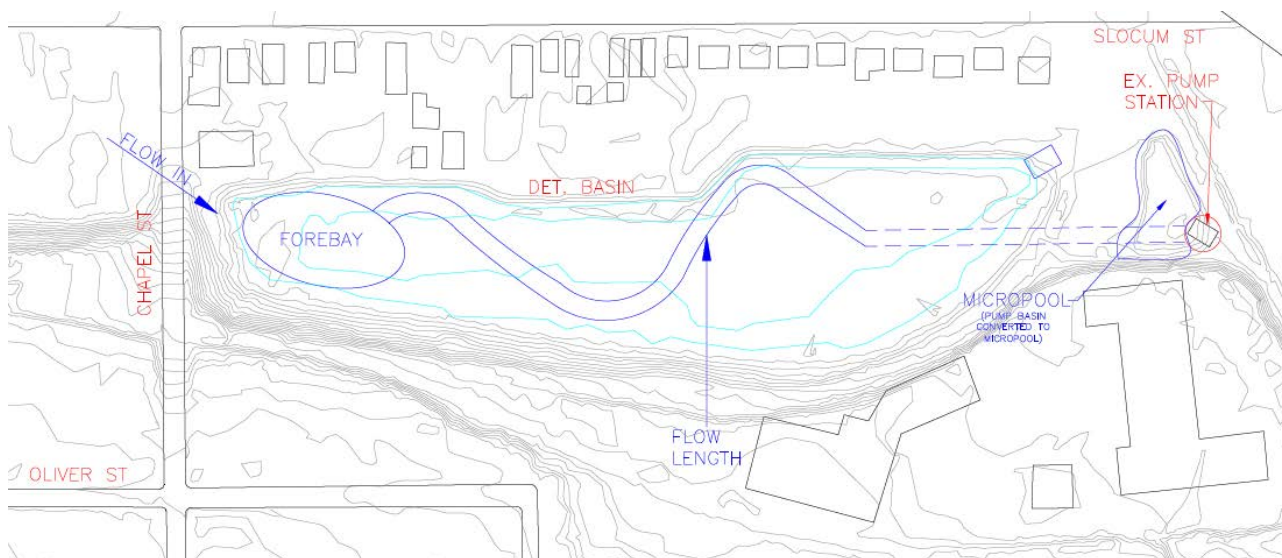
Flood control basin with sediment forebay.
Existing sediment forebay has not been maintained and is filled with sediment.
Low flow channel extends along the east side of the basin.
Groundwater collector swale extends along the west side of the basin.
Primary basin drains beneath an adjacent property and discharges to a ponding area near the existing pump station.
Stormwater conveyed to basin via a culvert at the north end of the basin. A 36" pipe serves to drain the basin into the pump station ponding area.
Parts of the basin and pump station ponding area have developed into wetlands.



For Public Review

Proposed Site Upgrades

- Introduce a meandering low flow channel.
- Retrofit outfall structure.
- Clean out and expand the existing sediment forebay.
- Convert pump basin to a micropool near the existing pump house.
- Evaluate existing soils, add amended soils as needed to promote infiltration.
- Evaluate existing vegetation, remove invasives, and supplement existing vegetation with additional water quality plantings.
- Develop an operations and maintenance (O&M) program to ensure continued functionality of basin.
- Place educational signage.



*FLOW LENGTH \approx 1000 FT

*MICROPOOL V \approx 10% OF TOTAL BASIN V

*FOREBAY V \approx 20% OF TOTAL BASIN V
FOR 2 YEAR, 24 HOUR STORM FOR SINGLE INLET

*NOTE: VALUES ARE ESTIMATES BASED ON
STANDARD ENGINEERING PRACTICES

APPENDIX VI-B
PROPOSED BMPS
COMMUNITY BASED PROJECTS
POLLUTANT LOAD REDUCTION CALCULATIONS

WVSA - SMALL SCALE COMMUNITY BASED WATER QUALITY BMPs PROJECTS SUMMARY

Project #	Project Name	Municipality	Consultant	Sediment Removal Rate (lb/yr)
1	Kingston-Korn Street Park Rain Garden	Kingston	BL	1,300
2	Ashley-Basketball Courts Rain Garden	Ashley Borough	BL	430
3	Wyoming-Butler Street Park Rain Garden	Wyoming Borough	PennEastern	270
4	Edwardsville-High Street Park Rain Garden	Edwardsville Borough	PennEastern	990
5	Duryea-Pride Mobility Products Rain Garden	Duryea Borough	PennEastern	4,400
6	Exeter-St. Anthony Parish Center Rain Garden	Exeter Borough	PennEastern	2,330
7	West Wyoming-Stites Street Park Rain Garden	West Wyoming Borough	PennEastern	4,300
8	Plymouth-Wyoming Valley West School District Rain Garden	Plymouth Township	PennEastern	1,350
9	Nanticoke-Greater Nanticoke Area School District Rain Garden	Nanticoke City	Pennoni	2,000
10	Laflin-Main Street Park Rain Garden	Laflin Borough	Pennoni	430
11	Laflin-Pinewood Drive Rain Garden	Laflin Borough	Pennoni	850
12	Plains-Wilkes-Barre Area Career and Technical Center Rain Garden	Plains Township	Pennoni	1,100
13	Forty Fort-Forty Fort Soccer Fields Rain Garden	Forty Fort Borough	Quad3	11,000
14	Larksville-Washington Avenue Rain Garden	Larksville	Quad3	2,000
15	Pittston-YMCA Pervious Pavement and Rain Garden	Pittston City	Reilly Associates	711
16	Pittston Sullivan Park Rain Garden Pittston Clark Park Rain Garden	Pittston City	Reilly Associates	1,750 234
17	West Pittston-Second Street Park Rain Garden	West Pittston Borough	Reilly Associates	920
18	Jackson Twp-Recreation Park Rain Garden	Jackson Twp	Barry Isett	1,500
			TOTAL SEDIMENT REMOVAL RATE	38,931 36,115

PITTSTON-Clark PARK RAIN GARDEN

Cliff Street, PITTSTON CITY (41.342948, -75.782583)

General Information

Ownership: Public
 Watershed: Lackawanna River
 Outfall Stream: Lackawanna River
 Stream Impairment: Metals, Siltation, pH, Flow Alterations
 Designated Use: CWF, MF

BMP General Information

Drainage area of park: 1.46 acres
 Total footprint of raingarden: 0.43 acres

Estimated Pollutant Load Reduction

TSS (lbs/yr)
 Rain Garden 233.89

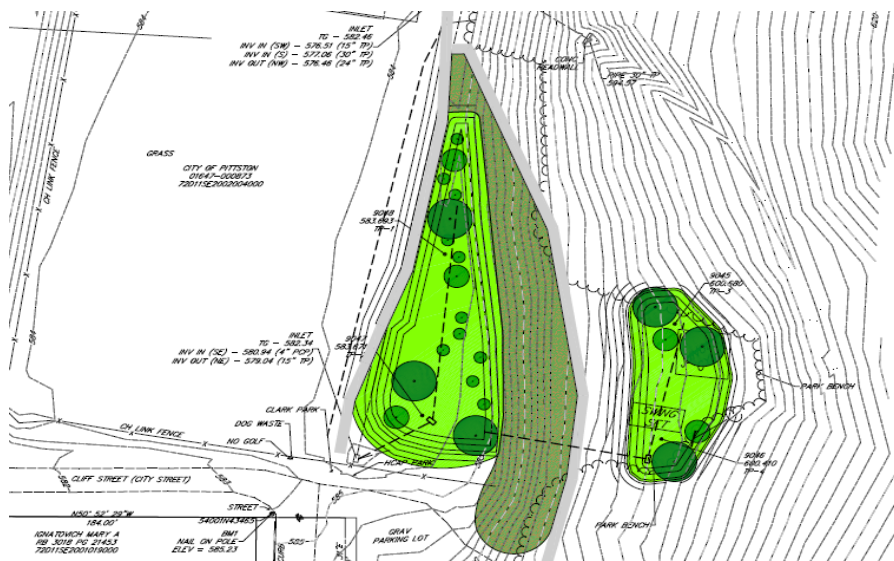
Existing Conditions

- The park is primarily comprised of a soccer field.
- The rain garden will capture runoff from the adjacent soccer field as well as from the forested area upslope.



Proposed Site Upgrades

- The proposed rain garden will include native plants to aid in the infiltration of water collected from the aforementioned tributary area.



For Public Review

APPENDIX VI-C
PROPOSED BMPS
STREAM RESTORATION PROJECTS
POLLUTANT LOAD REDUCTION CALCULATIONS

WVSA MS4 - STREAM RESTORATION PROJECTS

Appendix VI – Table C: Stream Restoration Projects

Stream Name (eMapPA)	Municipality	PRP Photo #	Amendment No. 1 Photo #	Latitude	Longitude	Description	Start Point (downstream end)	End Point (upstream end)	Total Length of Restoration (ft)	Total Sediment Load Reduction (lbs/year)		
Abrahams Creek / Old Abrahams Creek (Abrahams Creek Planning Area)												
Abrahams Creek	Forty Fort Boro		AC-1	41.29721	-75.86134	Major Erosion Area (left bank)	41.29639	-75.86131	41.29807	-75.86207	730	32,704
	Forty Fort Boro		AC-2	41.29414	-75.86373	No Riparian (left bank)	41.29295	-75.86508	41.29548	-75.86241	1,170	52,416
	Forty Fort Boro		AC-3	41.28943	-75.86769	No Riparian (left bank)	41.28597	-75.86989	41.29084	-75.86688	2,050	91,840
Trib 64676 to Susquehanna River	Wyoming Boro	SRWB - 1		41.30270	-75.84747	Start of Section	41.30053	-75.84209	41.30324	-75.84783	1,800	80,640
	Wyoming Boro	SRWB - 2		41.30298	-75.84732	Major Erosion Area (right bank)						
	Wyoming Boro	SRWB - 3		41.30291	-75.84725	Major Erosion Area (right bank)						
	Wyoming Boro	SRWB - 4		41.30275	-75.84727	Major Erosion Area						
	Wyoming Boro	SRWB - 5		41.30125	-75.84273	Major Erosion Area (right bank)						
	Wyoming Boro	SRWB - 6		41.30102	-75.84330	End of Section						
	Wyoming Boro		SRWB-10	41.30374	-75.84858	Steep banks, Major Erosion	41.30374	-75.84858	41.30557	75.85028	1,575	70,560
Wyoming Boro		SRWB-11										
East Fork Harveys Creek (Harveys Lake/Harveys Creek Planning Area)												
East Fork Harveys Creek	Jackson Twp.	HC-1		41.28330	-76.0151	Major Erosion Area (left bank)	41.28326	-76.01498	41.28506	-76.01507	700	31,360
Gardner Creek (City of Wilkes-Barre/Mill Creek Planning Area)												
Gardner Creek	Plains Twp	GC - 1		41.27878	-75.81270	Major Erosion Area (left bank)	41.27707	-75.81428	41.279786	-75.811803	2,600 1,000	116,480 44,800
	Plains Twp	GC - 2		41.27951	-75.81200	Major Erosion Area (pipe outlet to stream)						
	Lafin Boro		GC-3	41.28654	-75.80876	Major Erosion Area (left bank)	41.28662	-75.80893	41.28677	-75.80798	600	26,880
	Lafin Boro		GC-4			Erosion Area						
	Lafin Boro		GC-5			Steep right bank (Casey Casa side); riparian plantings needed in lawns on left bank						

WVSA MS4 - STREAM RESTORATION PROJECTS

Appendix VI – Table C: Stream Restoration Projects

Stream Name (eMapPA)	Municipality	PRP Photo #	Amendment No. 1 Photo #	Latitude	Longitude	Description	Start Point (downstream end)	End Point (upstream end)	Total Length of Restoration (ft)	Total Sediment Load Reduction (lbs/year)			
Laurel Run (City of Wilkes-Barre/Mill Creek Planning Area)													
Laurel Run	Plains Twp.	LR-1		41.25429	-75.82680	Major Erosion Area (right bank)	41.25496	-75.82932	41.25403	-75.82619	1,100 600	49,280 26,880	
	Wilkes-Barre	LR-2		41.25492	-75.82900	Major Erosion Area (right bank)	41.26104	-75.85618	41.26038	-75.85558	460	20,608	
Laurel Run (City of Wilkes-Barre/Mill Creek Planning Area)													
Mill Creek (Susquehanna River Watershed)	Plains Twp / Wilkes-Barre City	LR-3			-75.83294	Major Erosion Area	41.26971	-75.83294	41.27076	-75.83436	400	17,920	
		LR-4		41.26972	-75.83298	Undercut Erosion Area							
		LR-5		41.27076	-75.83408	Major Erosion Area							
		LR-6		41.27075	-75.83415	Major Erosion Area							
		LR-7		41.27075	-75.83423	Major Erosion Area (right bank)							
		LR-8		41.27077	-75.83430	Major Erosion Area (right bank)							
		LR-9		41.27078	-75.83430	Major Erosion Area (right bank)							
			LR-10		41.27076	-75.83436	Downstream End						
	Plains Twp		MC-1		41.27580	-75.81783	Major Erosion Area	41.27459	-75.82208	41.27580	-75.81783	1,600	71,680
			MC-2		41.276231	-75.81847	Major Erosion Area (right bank)						
		MC-3		41.275794	-75.81972	Major Erosion Area (left bank)							
Lackawanna River (Lackawanna River/Susquehanna River Planning Area)													
Mill Creek (Lackawanna River Watershed)	Pittston Twp	LWR-2		41.30882	-75.74375	Major Erosion Area (left bank)	41.30876	-75.74405	41.30904	-75.74343	200	8,960	
		LWR-3		41.30860	-75.74409	Major Erosion Area (left bank)							
		LWR-4		41.30860	-75.74409	Major Erosion Area (left bank)							
		LWR-5		41.30864	-75.74434	End of Section							
		LWR-6		41.30860	-75.74476	Start of Section							
		LWR-7		41.30855	-75.74505	Major Erosion Area (left bank)	41.30844	-75.74577	41.30864	-75.74436	400	17,920	
		LWR-8		41.30839	-75.74617	Major Erosion Area (right bank)							

WVSA MS4 - STREAM RESTORATION PROJECTS

Appendix VI – Table C: Stream Restoration Projects

Stream Name (eMapPA)	Municipality	PRP Photo #	Amendment No. 1 Photo #	Latitude	Longitude	Description	Start Point (downstream end)	End Point (upstream end)	Total Length of Restoration (ft)	Total Sediment Load Reduction (lbs/year)		
Newport Creek (Newport Creek Planning Area)												
South Branch Newport Creek	Nanticoke City	NC-1		41.18772	-76.0134	Major Erosion area	41.19978	-76.01377	41.19442	-76.01051	2400 1,700	107,520 76,160
		NC-2		41.19123	-76.0121	Major Erosion area						
		NC-3		41.20165	-76.0138	Major Erosion area						
			SBNC-1	41.19572	-76.01123	Minor Erosion	41.196567	-76.01192	41.19572	-76.01123		
			SBNC-2	41.19927	-76.01366	Major Erosion (left bank)	41.199279	-76.01366	41.199279	-76.01366		
Spring Run (Sugar Notch Run / Solomon Creek Planning Area)												
Spring Run	Wilkes-Barre City	SR - 1		41.22602	-75.89140	Major Erosion along Anthracite Street	41.225908	-75.891423	41.228835	-75.88794	1,650	73,920
	Hanover Twp.	SR - 2		41.22341	-75.90300	Major Erosion (stream cutbank)	41.222961	-75.904154	41.223759	-75.902604	650	29,120
	Hanover Twp.	SR - 3		41.25429	-75.82680	Major Erosion (left bank)						
Spring Run / Solomon Creek	Hanover Twp.	SR - 4		41.22300	-75.90470	Downstream end of culvert blocked	41.223120	-75.905804	41.223005	-75.904629	600	26,880
	Hanover Twp.	SR - 5		41.22276	-75.90530	Major Erosion Area						
Solomon Creek	Hanover Twp.	SR - 6		41.22966	-75.90960	Major Erosion Area					600 400	22,400 17,920
	Hanover Twp.		SC-1	41.22389	-75.90616	Minor/Major Erosion	41.225087	-75.905573	41.223570	-75.905841	600	26,880
Lackawanna River (Lackawanna River/Susquehanna River Planning Area)												
UNT to Lackawanna River	Duryea Borough	LWR-1		41.34969	-75.77280	Major Erosion Area (left bank)	41.34974	-75.77297	41.34928	-75.77258	200	8,976
Susquehanna River (City of Wilkes-Barre Planning Area)												
UNT to Susquehanna River	Pittston Twp.	SRWB-7		41.30909	-75.76646	Major Erosion Area (left bank)	41.30928	-75.76698	41.30972	-75.76778	270	12,096
	Pittston Twp.	SRWB-8		41.30915	-75.76691	Major Erosion Area (right bank)						
	Pittston Twp.	SRWB-9		41.30958	-75.76778	Major Erosion Area (left bank)						

WVSA MS4 - STREAM RESTORATION PROJECTS

Appendix VI – Table C: Stream Restoration Projects

Stream Name (eMapPA)	Municipality	PRP Photo #	Amendment No. 1 Photo #	Latitude	Longitude	Description	Start Point (downstream end)	End Point (upstream end)	Total Length of Restoration (ft)	Total Sediment Load Reduction (lbs/year)		
Warrior Creek (Warrior Creek/Susquehanna River Planning Area)												
Warrior Creek and UNT to Warrior Creek	Hanover Twp.	WC - 1		41.20555	-75.95020	Major Erosion area	41.21003	-75.95631	41.2039	-75.95523	4,250	213,180 190,400
	Hanover Twp.	WC - 2		41.20564	-75.95630	Major Erosion area						
	Hanover Twp.	WC - 3		41.20628	-75.95660	Major Erosion area						
	Hanover Twp.	WC - 4		41.20633	-75.95610	Major Erosion area						
	Hanover Twp.	WC - 5		41.20653	-75.95610	Major Erosion area						
	Hanover Twp.	WC - 6		41.20673	-75.95620	Major Erosion area						
	Hanover Twp.	WC - 7		41.20723	-75.95600	Major Erosion area						
	Hanover Twp.	WC - 8		41.20743	-75.95590	Major Erosion area						
	Hanover Twp.	WC - 9		41.20814	-75.95540	Major Erosion Area (left bank)						
	Hanover Twp.	WC - 10		41.20884	-75.95520	Major Erosion Area (right bank)						
	Hanover Twp.	WC - 11		41.21006	-75.95500	Major Erosion Area (right bank)						
	Hanover Twp.	WC - 12		41.20998	-75.95490	Major Erosion Area (right bank)						
	Hanover Twp.	WC - 13		41.20985	-75.95540	Major Erosion Area (left bank)						
	Hanover Twp.	WC - 14		41.21030	-75.96280	Major Erosion area (left side of culvert)						
	Hanover Twp.	WC - 15		41.21153	-75.97430	Trib to Warrior Creek Erosion (both sides)	41.21248	-75.9741	41.2112	-75.97438		
	Hanover Twp.	WC - 16		41.21233	-75.97400	Major Erosion area	41.21301	-75.97483	41.21131	-75.97084		
	Hanover Twp.	WC - 17		41.21168	-75.94193	Major Erosion Area (right bank)	41.21141	-75.94402	41.21191	-75.94255	465	20,869
	Hanover Twp.	WC - 18		41.21168	-75.94193	Major Erosion Area (left bank)						
	Hanover Twp.	WC - 19		41.21162	-75.94220	Major Erosion Area (left bank)						
	Hanover Twp.	WC - 20		41.21163	-75.94257	Major Erosion Area (right bank)						
	Hanover Twp.	WC - 21		41.21165	-75.94278	Major Erosion Area (left bank)						
	Hanover Twp.	WC - 22		41.21152	-75.94344	End of Section						
Hanover Twp.		WC-23	41.21033	-75.85483	Major Erosion Area	41.21033	-75.85483	41.2128	-75.95264	1,200	53,760	
Hanover Twp.		WC-24	41.21372	-75.95342	Major Erosion Area							
Hanover Twp.		WC-25	41.21238	-75.95326	Major Erosion Area							

GREEN text = ADDED stream section to PRP
 RED text = DELETED or REVISED stream section from PRP

TOTAL LF	TOTAL LBS
18,785	842,700
21,795	976,416

STREAM RESTORATION PROJECT PHOTOS

Abrahams Creek



AC-1



AC-2



AC-3

Tributary 64676 to Susquehanna River (Old Abrahams Creek)



SRWB-10



SRWB-11

Gardner Creek



GC-3



GC-4



GC-5

Mill Creek (Susquehanna River Watershed)



MC-1



MC-2



MC-3

South Branch Newport Creek



SBNC-1



SBNC-2

Solomon Creek



SC-1

Unnamed Tributary to Warrior Creek



WC-23



WC-24



WC-25