

# **Presentation on Whitpain Township's Pollutant Reduction Plan**



***July 13, 2017***

**Whitpain Township Public Meeting**

# **QUESTIONS TO BE ANSWERED TONIGHT**

- ▶ What is a PRP?
- ▶ Why is a PRP being enacted in the Stony Creek, Sawmill Run, Mermaid Run and Plymouth Creek Watersheds?
- ▶ What is in our PRP?
- ▶ How long will it take to complete the Plan?
- ▶ What are the next steps in the process?

# What is a PRP?

- ▶ PRP is the abbreviation for Pollutant Reduction Plan
- ▶ **"For the next permit term (effective March 16, 2018), small MS4s that discharge to surface waters impaired for certain pollutants need to develop Pollutant Reduction Plans or TMDL plans" - U.S. Department of Environmental Protection, 2017**
- ▶ "A PRP is an estimation of pollutant loads that the MS4 is responsible to manage." - U.S. Department of Environmental Protection, 2016 MS4
- ▶ Essentially, it is an environmental analysis that determines how much pollutant (Nitrogen, Phosphorus, and Sediment) is currently entering the creeks and how much should be allowed to enter the creeks based upon the study's calculations.
- ▶ Examples of Pollutants
  - Nitrogen – pet waste, fertilizers
  - Phosphorus – detergents, treatment plants
  - Sediment – construction activities, erosion in the streams from storm runoff

# What is a PRP?

## ▶ Acronyms

- Municipal Separate Storm Sewer System (MS4)
- Best Management Practice (BMP)
- Clean Water Act (CWA)
- Environmental Protection Agency (EPA)
- Department of Environmental Protection (DEP)

## ▶ Background

- Municipal Separate Storm Sewer Systems
- 2003 Phase II NPDES
- Total Maximum Daily Load TMDL (Wissahickon Creek)

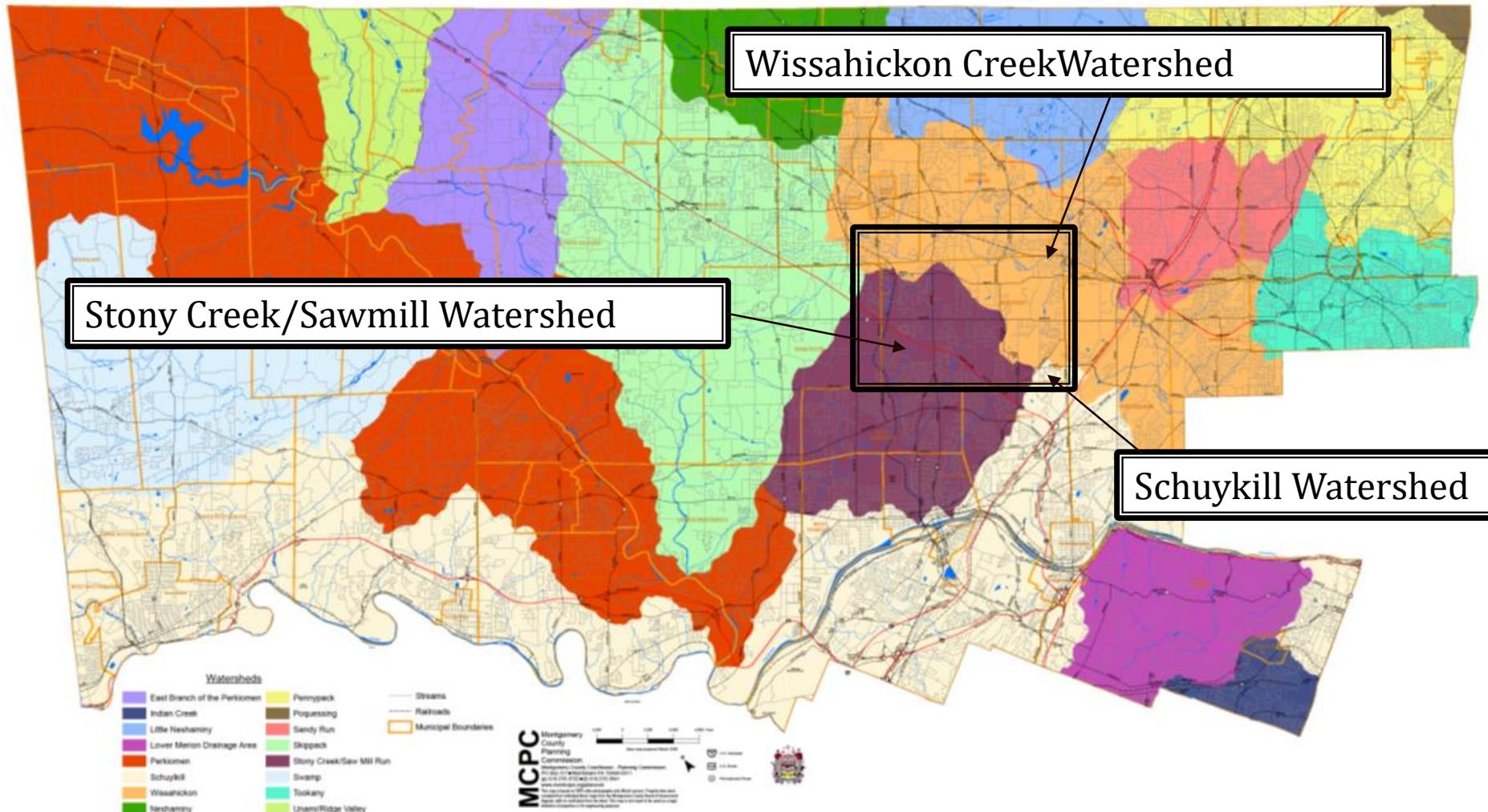
## **Why is a PRP being enacted in the Stony Creek, Sawmill Run, Mermaid Run and Plymouth Creek Watersheds?**

“BMP’s minimizing pollutant loads did not require specific load calculations or percentage reductions. Pennsylvania was falling short of pollutant reduction goals and lagging behind its neighbors and the nation on improving water quality.” – PA Township News March 2017

- ▶ Primary sources of impairment:
  - Plymouth Creek, Stony Creek - Siltation
  - Stony Creek - Nutrients
  - Plymouth Creek, Schuykill River -PCB – pesticides, organic compounds

# MAP OF THE WATERSHEDS IN WHITPAIN TOWNSHIP

Montgomery County, Pennsylvania



# Why is a PRP being enacted in the Stony Creek, Sawmill Run, Mermaid Run and Plymouth Creek Watersheds?

## Department of Environmental Protection MS4 Municipal Requirements Tables

WHITPAIN TWP	PAG130137	Plymouth Creek-Schuylkill River, Stony Creek	Plymouth Creek, Sawmill Run, Stony Creek	Appendix E-Nutrients, Siltation
		Plymouth Creek-Schuylkill River	Schuylkill River	Appendix C-PCB
		Lower Wissahickon Creek, Upper Wissahickon Creek	Wissahickon Creek, Wissahickon TMDL	Appendix B-Pathogens, Appendix E-Nutrients, Siltation, TMDL Plan-Siltation, Suspended Solids

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WHITPAIN TWP	PAG130137	Yes	TMDL Plan	Wissahickon TMDL	TMDL Plan-Siltation, Suspended Solids (4a)	Cause Unknown (4a)
				Plymouth Creek	Appendix E-Siltation (5)	Water/Flow Variability (4c)
				Sawmill Run	Appendix E-Siltation (5)	Turbidity (5), Water/Flow Variability (4c)
				Schuylkill River	Appendix C-PCB (4a)	
				Stony Creek	Appendix E-Siltation (5)	Cause Unknown, Turbidity (5), Water/Flow Variability (4c)
				Unnamed Tributaries to Wissahickon Creek		Other Habitat Alterations (4c)
				Willow Run		Water/Flow Variability (4c)
				Wissahickon Creek	Appendix E-Nutrients (4a), Appendix B-Pathogens (5)	Water/Flow Variability (4c)

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Department of Environmental Protection MS4 Municipal Requirements Tables

[http://files.dep.state.pa.us/Water/BPNPSM/StormwaterManagement/MunicipalStormwater/MS4\\_Requirements\\_Table\\_Instructions.pdf](http://files.dep.state.pa.us/Water/BPNPSM/StormwaterManagement/MunicipalStormwater/MS4_Requirements_Table_Instructions.pdf)

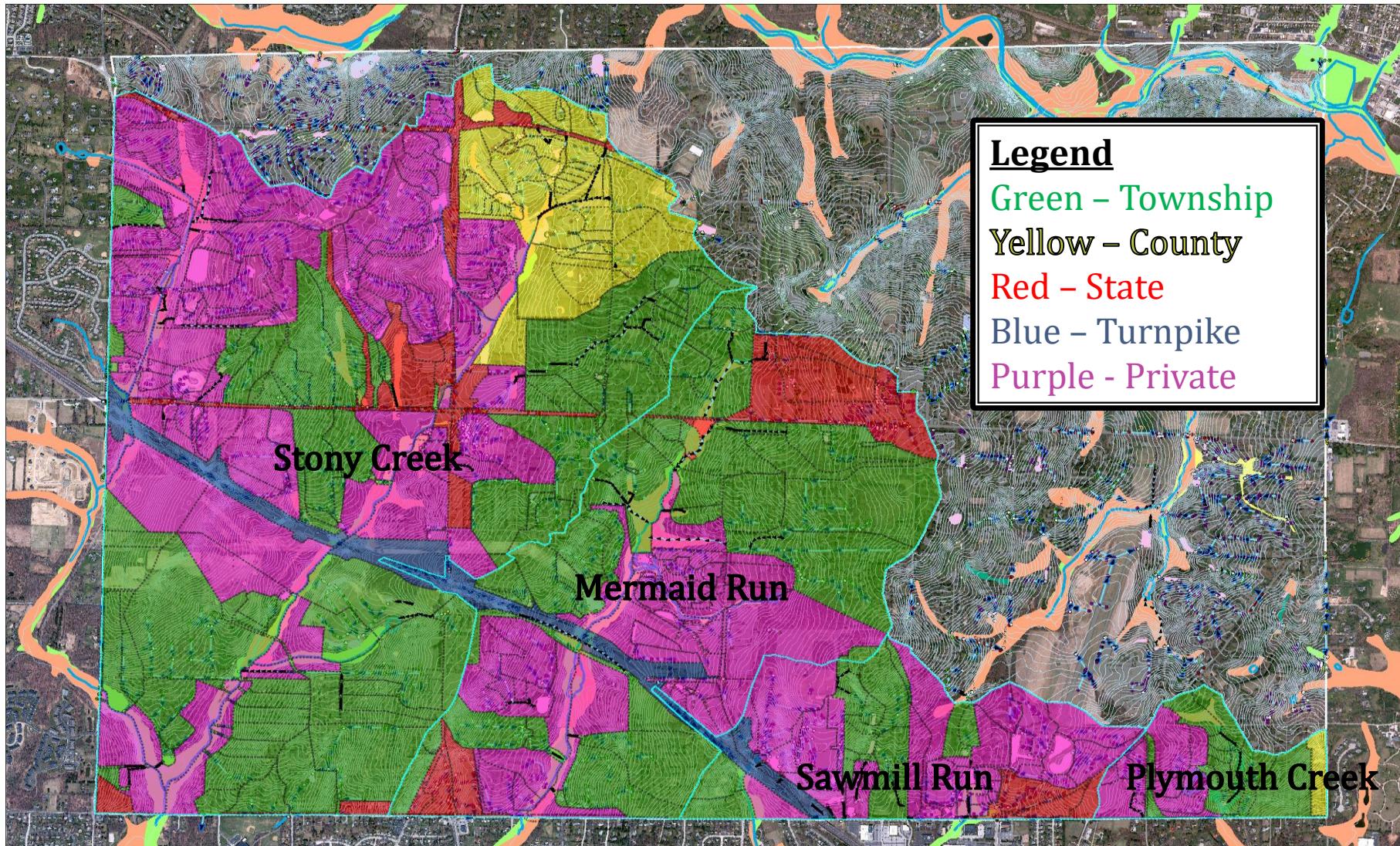
# What is in our PRP Plan?

1. DESCRIPTION OF PRP STUDY
2. ESTABLISHMENT OF TOWNSHIP MS4 AREAS OF RESPONSIBILITY
3. DETERMINATION OF POLLUTANTS OF CONCERN LOADINGS AND REQUIRED REDUCTIONS
4. IDENTIFY FUNDING
5. WHAT HAS BEEN DONE/EXISTING BMPS
6. IMPLEMENTATION PLAN WITH APPROXIMATE TIMELINE

- ▶ Township will be submitting the PRP Plan to PA DEP for review and approval by September 16, 2017

# PRP MS4 Areas of Responsibility Map



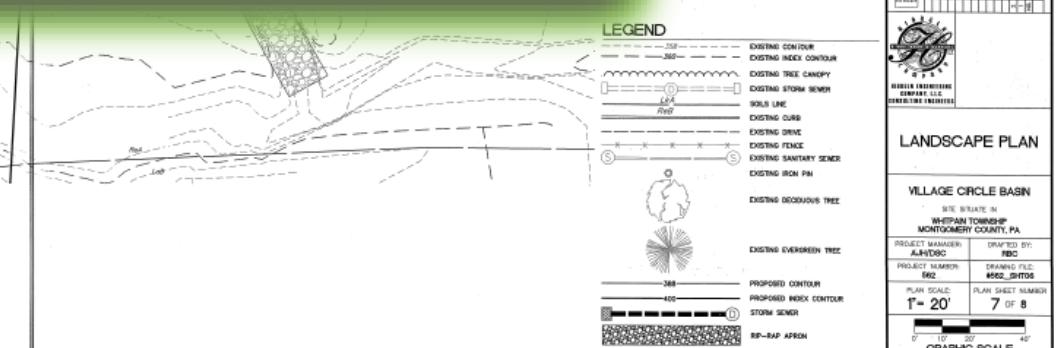
# Areas of Responsibility

Watershed	Tract Area (Acres)	County	Private	State	Township	Turnpike
Stony Creek	2,817	11%	42%	5%	39%	3%
Mermaid Run	1,386	0%	32%	12%	52%	4%
Sawmill Run	491	0%	61%	7%	25%	7%
Plymouth Creek	178	7%	41%	0%	52%	0%

# Whitpain Township... A Proactive Municipality

- ▶ **What have we done and what are we currently doing?**
- ▶ Wissahickon TMDL
  - Village Circle Basin
  - Valentine Estates Basin
- ▶ Centre Square Park
- ▶ Blue Bell Run Basin retrofit
- ▶ Residential BMP's
  - Because we have been proactive, we were able to lower our responsibilities by a small percentage!

# Village Circle Basin – Wissahickon Creek





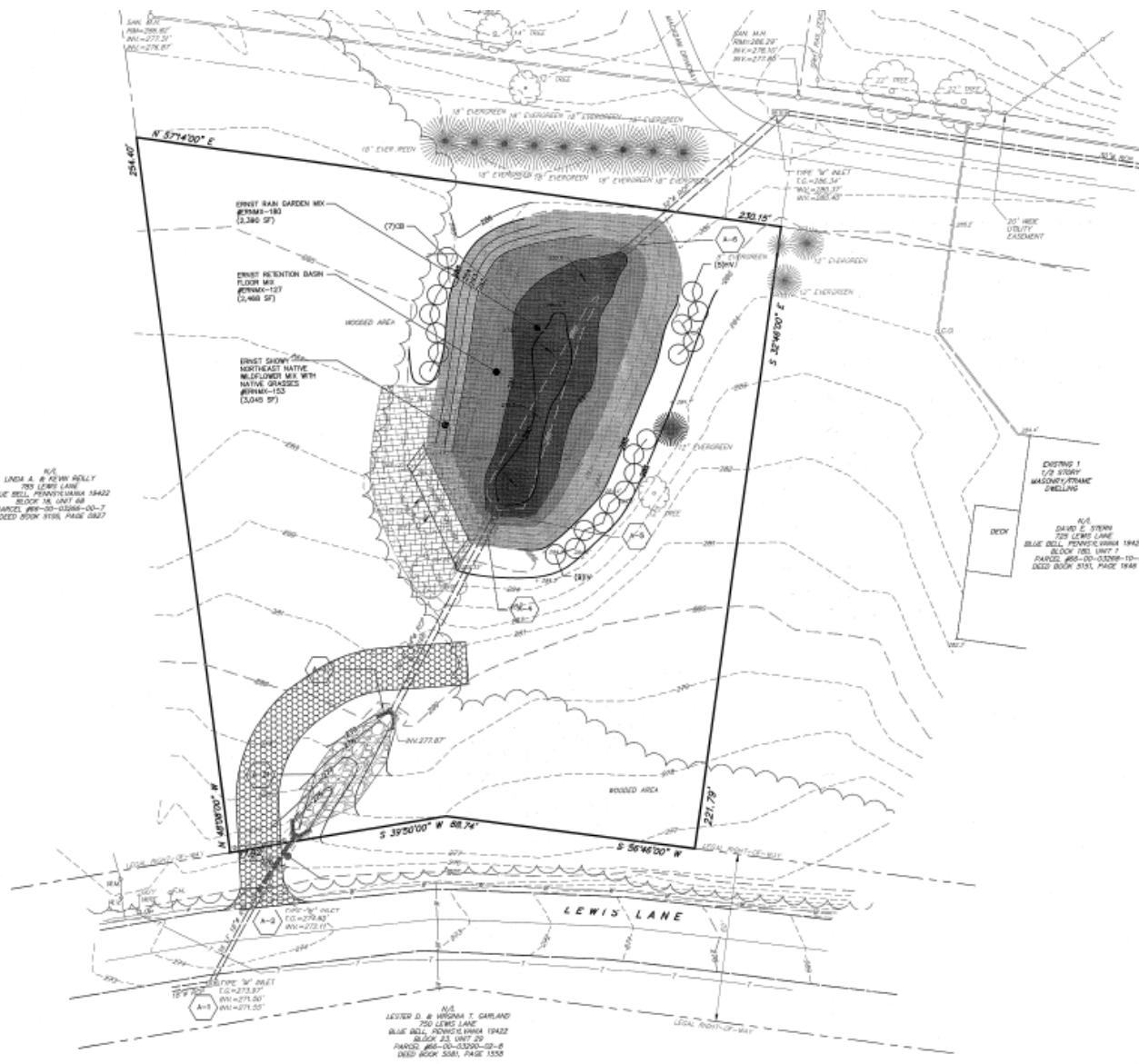
Forebay



Infiltration Pit

06/27/2017

# Valentine Estates Basin – Wissahickon Creek



# Installed BMP Control Measures – Basin Retrofit



Valentine Estates Infiltration Basin



# Centre Square Park

- Centre Square Park
  - ▶ Approx. \$4.5 million of improvements built without tax dollars
  - ▶ Approx. \$1.0 million of the park improvements was spent on stormwater management enhancements and improvements.
  - ▶ Improvements include: 7 fields, a dog park, paved and woodland walking trails, sophisticated stormwater management system, and a state of the art irrigation system which uses rainwater.



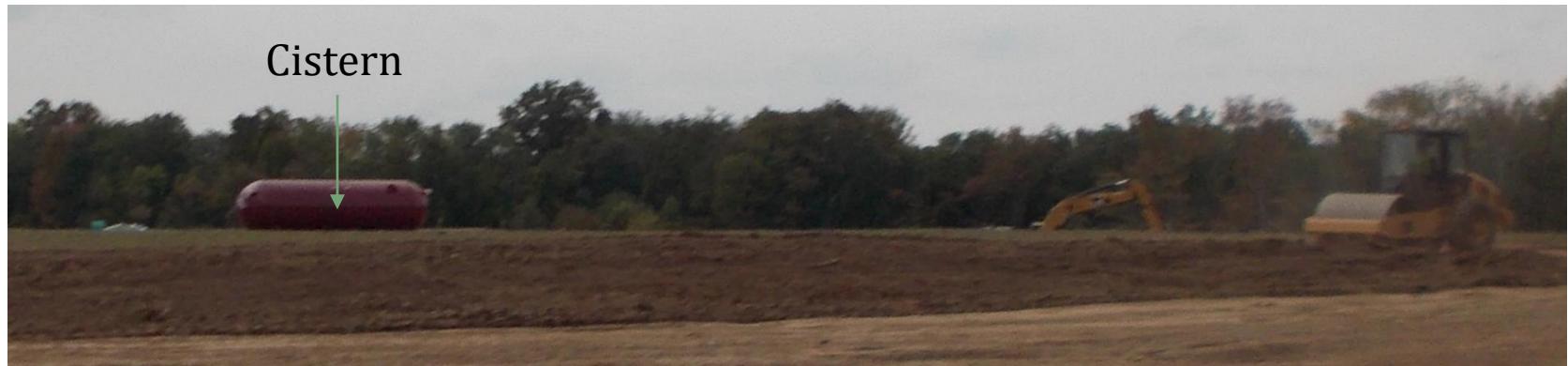
## SITE PLAN

SCALE: 1" = 100' OCTOBER 19, 2011

LANDCONCEPTS - HIRSCHL ENGINEERING COMPANY, LLC.  
593 SKIPPICK PINE SUITE 300  
BLUE BELL, PA 19422

COOK TRACT ATHLETIC FIELDS  
WHITPAIN TOWNSHIP, MONTGOMERY COUNTY, PA

# Centre Square Park

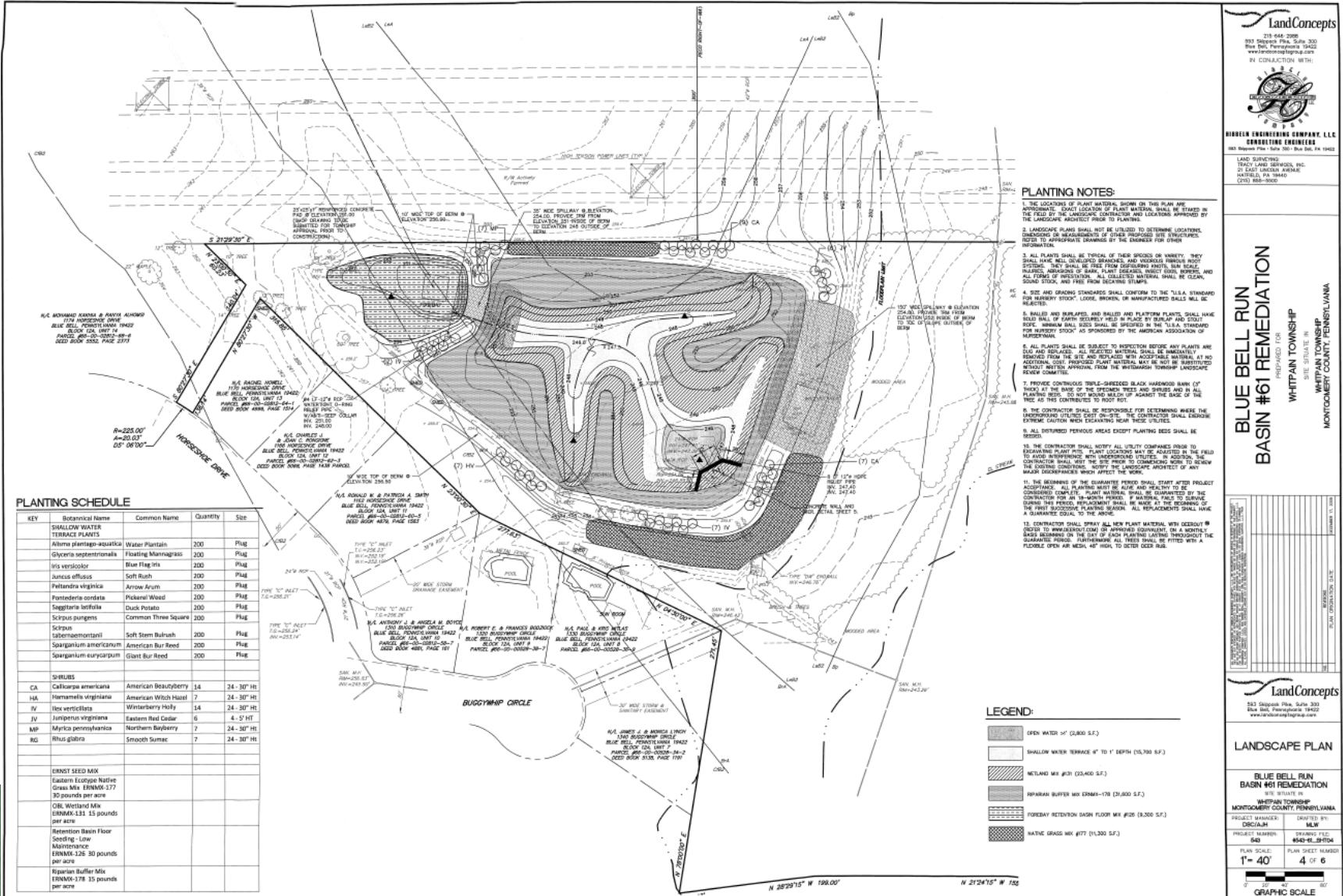


# Centre Square Park

Basin with Level spreader



# Blue Bell Run Basin



# Installed BMP Control Measures – Basin Retrofit



Blue Bell Run Basin Retrofit







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# What is in our PRP Plan?

- ▶ PRP REQUIRED LOAD REDUCTIONS FOR WHITPAIN TOWNSHIP
  - Pollutants of Concern Percent reduction requirements:
    - Total Nitrogen - TN – 3%
    - Total Phosphorus - TP – 5%
    - Total Suspended Solids (sediment) - TSS – 10%
- ▶ Examples of Pollutants
  - Nitrogen – pet waste, fertilizers
  - Phosphorus – detergents, treatment plants, car particles
  - Sediment – construction activities, erosion in the streams from storm runoff

# What is in our PRP Plan?

## Existing Loads discharged into the Creeks from Township Areas of Responsibility

Watershed	Total Nitrogen	Total Phosphorus	Total Suspended Solids
Stony Creek	24,274.66	1,751.20	1,190,979.09
Mermaid Run	15,224.94	1,053.77	722,326.17
Sawmill Run	2,697.04	185.44	121,843.85
Combined Total (Tributaries Drain To Stony Creek)	42,196.64	2,990.41	2,035,149.11
Plymouth Creek	1,985.11	110.41	59,790.74

## Using All Other County Information from PRP Appendix B Township Responsibility

Watershed	Total Nitrogen	Total Phosphorus	Total Suspended Solids
Stony Creek	728.24	87.56	119,097.91
Mermaid Run	456.75	52.69	72,232.62
Sawmill Run	80.91	9.27	12,184.39
Combined Total (Tributaries Drain To Stony Creek)	1,265.90	149.52	203,514.91
Plymouth Creek	59.55	5.52	5,979.07

# What is in our PRP Plan?

- ▶ MS4 RENEWAL PERMIT APPLICATION INCLUDES LIST OF PRP CONTROL MEASURES THAT MAY BE COMPLETED TO MEET SEDIMENT LOAD REMOVAL REQUIREMENTS



BMP Name
Wet ponds and wetlands
Dry Detention Basins and Hydrodynamic Structures
Dry Extended Detention Basins
Infiltration Practics w/ sand, Veg.
Filtering Practices
Filter Strip Runoff Reduction
Filter Strip Stormwater Treatment
Bioretention-Raingarden (C/D soils w/ underdrain)
Bioretention-Raingarden (CA/B soils w/ underdrain)
Bioretention / Raingarden (A/B soils w/o underdrain)
Vegetated Open Channels (C/D Soils)
Vegetated Open Channels (A/B Soils)
Bioswale
Permeable Pavement w/o Sand or Veg. (C/D Soils w/ underdrain)
Permeable Pavement w/o Sand or Veg. (A/B Soils w/ underdrain)
Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)
Permeable Pavement w/ Sand or Veg. (A/B Soils w/ underdrain)
Permeable Pavement w/ Sand or Veg. (A/B Soils w/o underdrain)
Permeable Pavement w/ Sand or Veg. (C/D Soils w/ underdrain)
Stream Restoration
Forest Buffers
Tree Planting
Street Sweeping
Storm Sewer System Solids Removal

# **Key Parameters in the Selection Process**

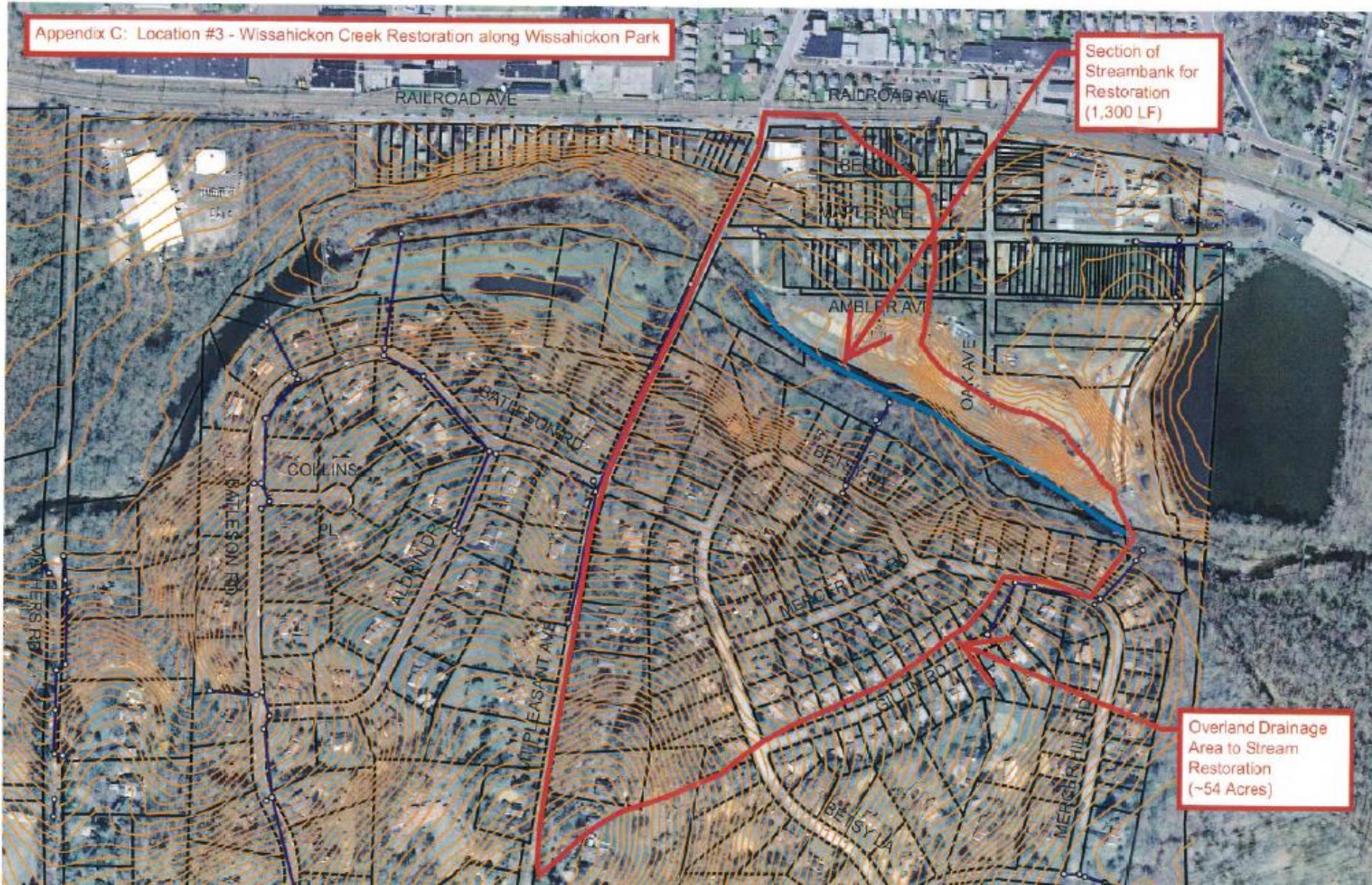
1. Overall BMP Efficiency
2. Ownership
3. Drainage Area
4. Location within the watershed
5. Access to the site
6. Permits
7. Cost
  - Maintenance Requirements

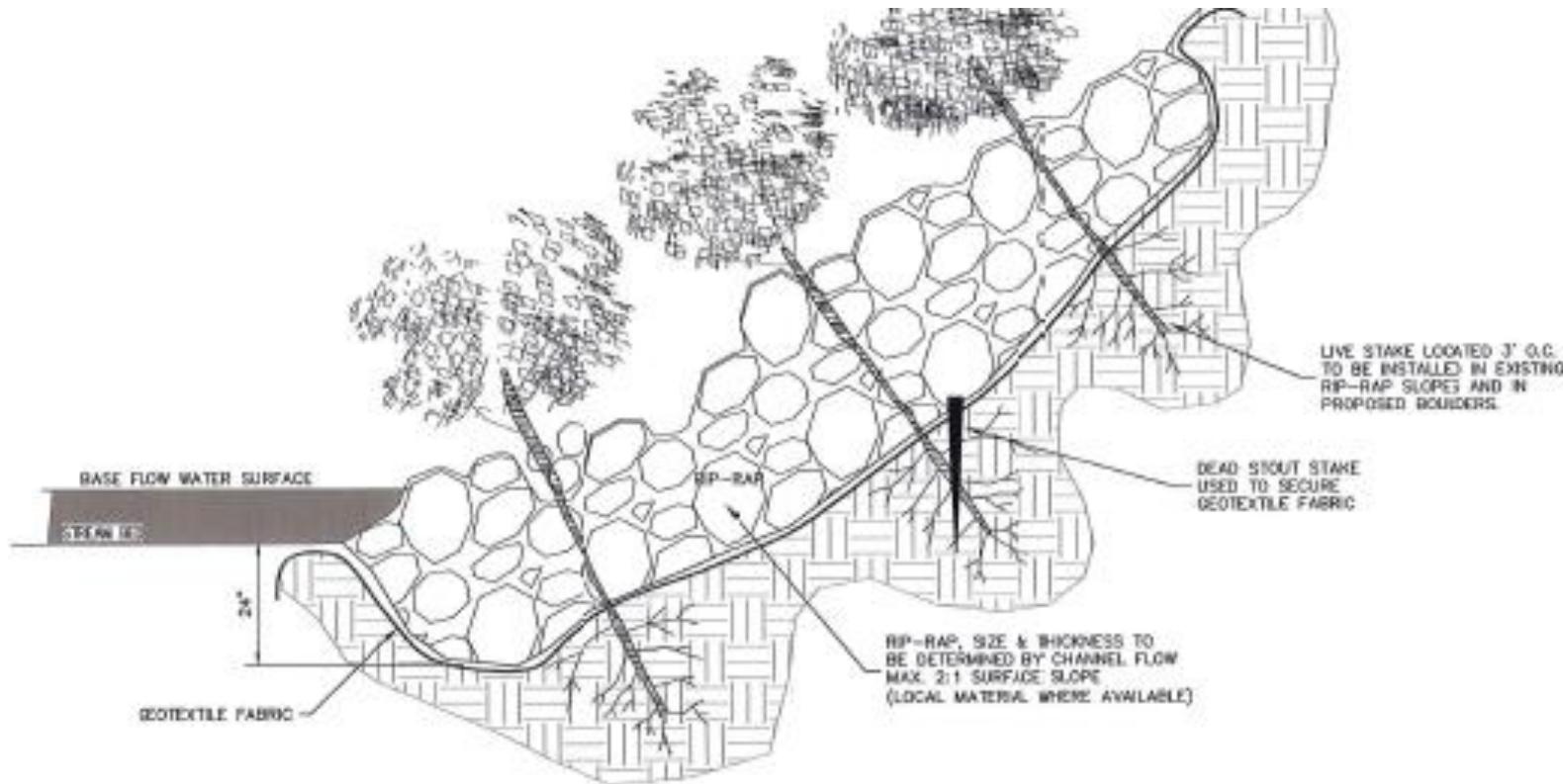
# What is in our PRP Plan?

## **IMPLEMENTATION PLAN**

- ▶ PRP CONTROL MEASURES INSTALLED & MAINTAINED BY TWP.
  - Bioswales in Township owned parks
  - Streambank restoration projects along various sections of the Stony Creek and Mermaid Run on Township owned parcels
- ▶ Alternative PRP CONTROL MEASURES TO BE INSTALLED & MAINTAINED
  - Basin retrofits on Township owned basins
  - Basin retrofits through the HOAs

## Selected BMP - Streambank Restoration - Example – Wissahickon Creek - BoRIT





JOINT PLANTING DETAIL (CROSS SECTION)

NOT TO SCALE

# Installed BMP Control Measures – Streambank Stabilization

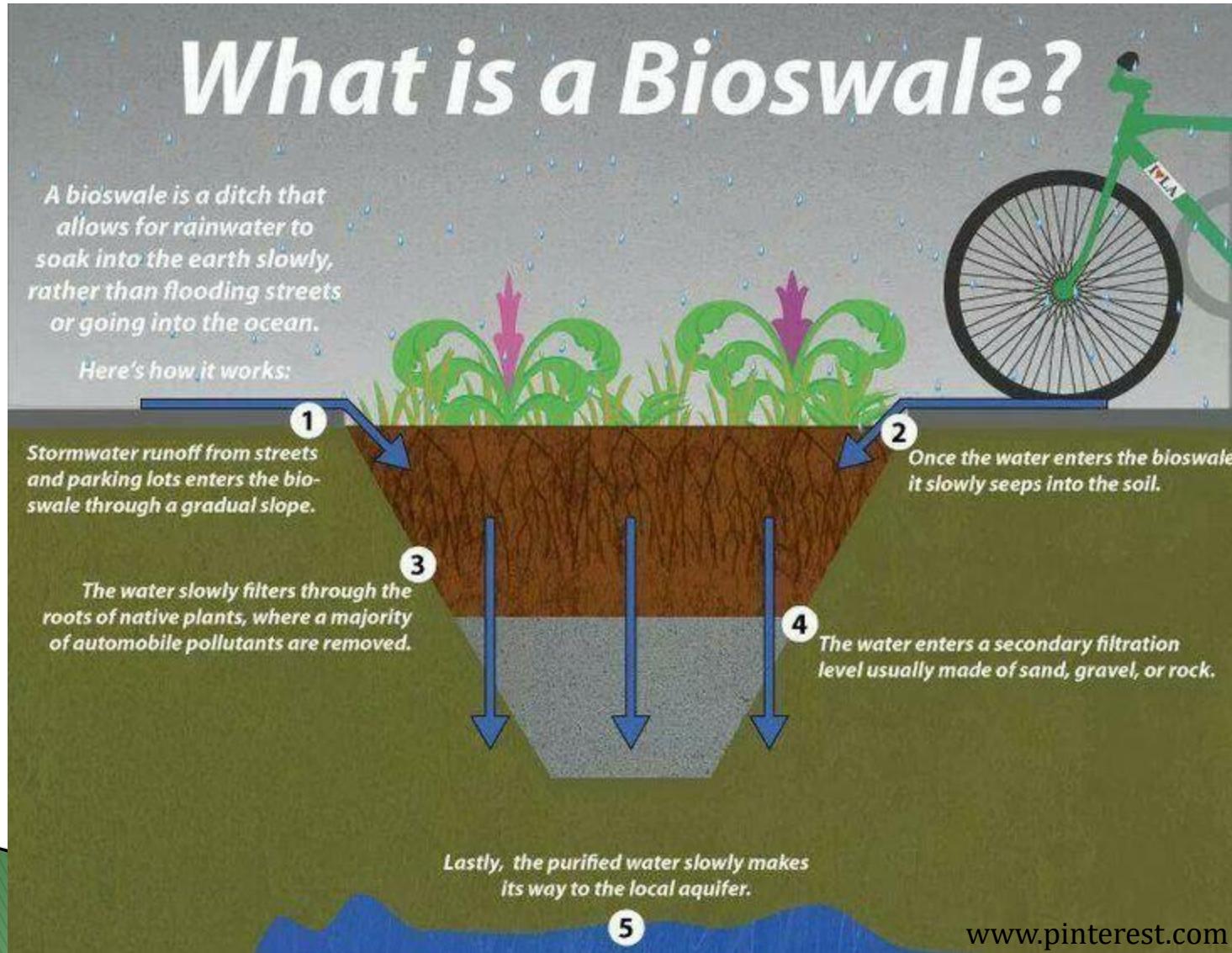


Wissahickon Creek Streambank  
Geocell & Rip-rap Installation

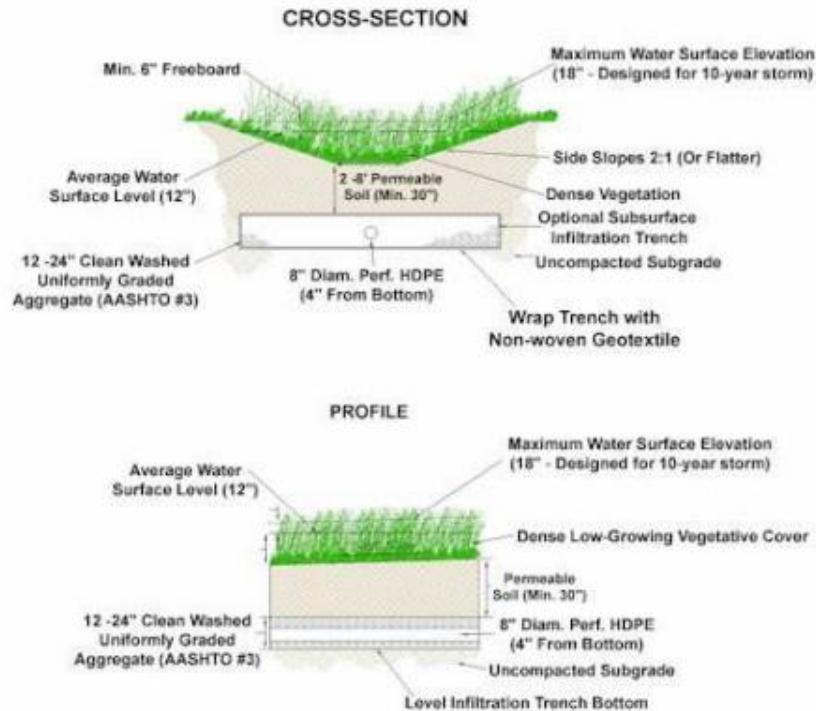
Wissahickon Creek Streambank  
UPON PROJECT COMPLETION



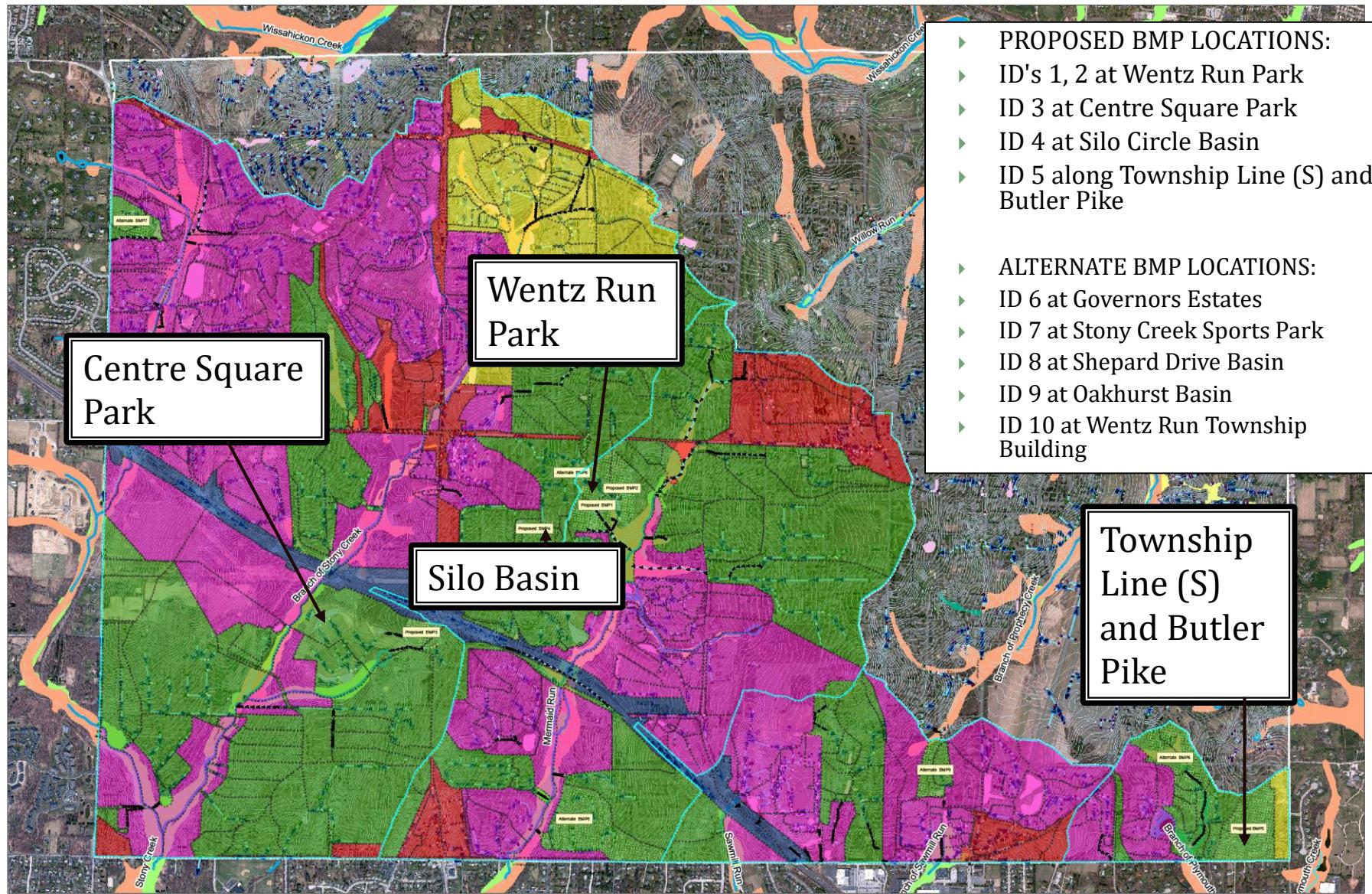
# Selected BMP – Bioswale Example



# PA BMP Manual – Vegetated Swale



# PRP Map Locations for Selected BMPs



# BMPs Selected to Meet Goals and Estimated Costs

Rank	Year	Project ID	Targeted Area	Watershed	BMP TYPE	Drainage Area (Acres)	Impervious	Pervious	TN Removed	TP Removed	TSS Lb/yr sediment removed	Owner	Easements?	Length (ft)	Cost
3	2019	1	Wentz Run Park	MERMAID RUN	bioswale	22.72	3.83	18.89	335.76	18.45	9638.14	TWP	NO	1,000	\$80,000
4	2019	2	Wentz Run Park	MERMAID RUN	bioswale	11.224	0.5	10.72	163.61	7.61	3008.74	TWP	NO	1,000	\$80,000
8	2020	3	Centre Square Park (Dog Park)	STONY CREEK	bioswale	6.363	1.04	5.32	93.99	5.13	2658.35	TWP	NO	658	\$52,640
10	2022	4	Silo Circle Basin	STONY CREEK	dry extended basin with a bioswale	17.43	5.46	11.97	261.75	16.88	10570.01	TWP	NO	500	\$231,867
11	2022	5	Township Line (S) and Butler Pike (R.O.W.)	PLYMOUTH CREEK	bioswale	29.792	3.983	25.809	438.63	23.07	11330.47	TWP	YES	1,500	\$129,000

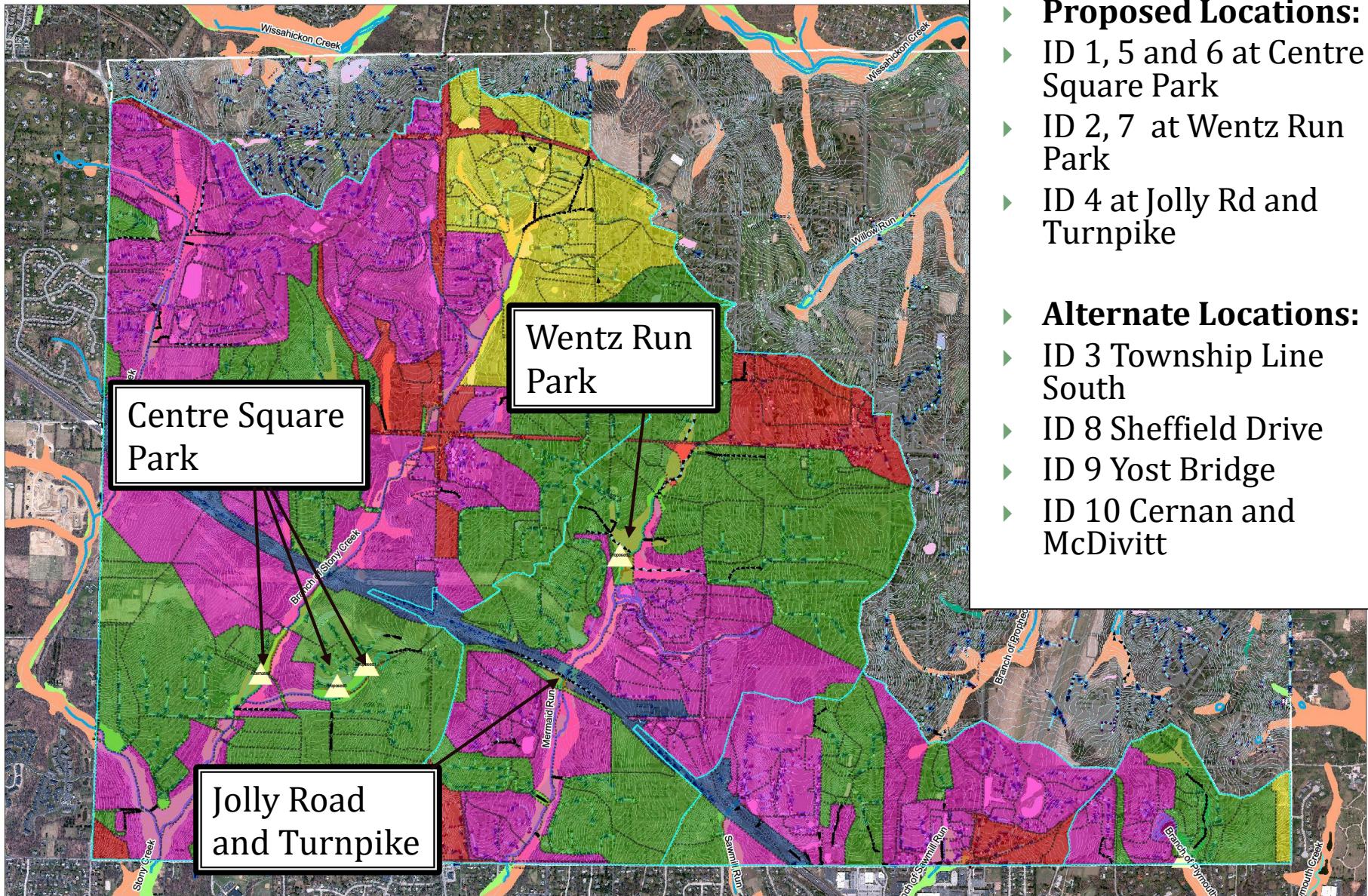
Total Estimated Cost for these BMPs

**\$630,857.06**

## Alternates

Project ID	Targeted Area	Watershed	BMP TYPE	Drainage Area (Acres)	Impervious	Pervious	TN	TP	TSS	OWNER	Easment?	COST
5	Governors Way	PLYMOUTH CREEK	bioswale	32.062	5.23	26.832	473.59	25.85	13381.90	PRIVATE	YES	\$320,937
Option2	TWP BLDG Parking Lot	STONY CREEK	bioswale	0.673	0.33	0.343	10.301732	0.78039	558.201024	TOWNSHIP	NO	\$10,480
6	Stony Creek Sports Park	STONY CREEK	bioswale	9.72	2.9	6.82	145.72908	9.2556	5712.10176	TOWNSHIP	NO	\$125,600
7	Shepard Drive basin	MERMAID RUN	basin	42.11	10.38	31.73	179.36168	10.06392	16497.60048	TOWNSHIP	NO	\$132,094
8	Royal Oak Drive	SAWMILL RUN	basin	13.35	3.33	10.02	56.88084	3.20184	5267.26152	PRIVATE	YES	\$253,390

# PRP Map Locations for Stream Restoration



# Streambank Project Areas and Estimated Costs

Ranking	Year	Project ID	Targeted Area	Watershed	Length of Area (ft)	TN Removed	TP Removed	Lb/yr sediment removed	OWNER	Easement Required?	COST
7	2021	1	Ctr Sq. Park	STONY CREEK	539.21	80.88	73.33	47,644.60	St. Helenas Church and TWP	Yes	\$107,842
5	2020	5	Ctr Sq. Park	STONY CREEK	817.25	122.59	111.15	72,212.48	TOWNSHIP	No	\$163451
6	2020	6	Ctr Sq. Park closer to Turnpike	STONY CREEK	463.28	69.49	63.01	40,935.60	TOWNSHIP	No	\$92,657
1	2019	2	Wentz Run Park	Mermaid Run (Tributary of Stony Creek)	455.77	68.37	61.98	40,271.84	TOWNSHIP	No	\$91,154
2	2019	7	Wentz Run Park	Mermaid Run (Tributary of Stony Creek)	392.74	58.91	53.41	34,702.51	TOWNSHIP	No	\$78,548
9	2022	4	Jolly rd and Turnpike	Mermaid Run (Tributary of Stony Creek)	133.44	20.02	18.15	11,790.49	TOWNSHIP	No	\$26,688

Total Estimated Cost for Streambank Projects

**\$616,372.24**

ALTERNATES											
Project ID	Targeted Area		Watershed	Length of Area (ft)		TN Removed	TP Removed	Lb/yr sediment removed	OWNER	Easement required?	COST
3 (Option2)	Twp Line Rd (S)		Plymouth Creek	25.00		3.75	3.40	2,209.00	TOWNSHIP	No	\$5,000
0	Sheffield Drive		Sawmill Run (Tributary of Stony Creek)	255.00		38.25	34.68	22,531.80	PECO	Yes	\$51,000
0	Creek View Ln near Yost bridge		STONY CREEK	920.00		138.00	125.12	81,291.20	Township and Borkowski	Yes	\$184,000
0	Near Cernan and McDivitt		Mermaid Run (Tributary of Stony Creek)	127.60		19.14	17.35	11,274.74	TOWNSHIP	No	\$25,520

## **How long will it take to complete the PRP Plan?**

- ▶ As required by DEP, the overall implementation plan has a five year timeline with several “on the ground” improvements already completed or scheduled to be completed within the next two years
- ▶ We expect to have addressed 100% of the required discharge rates within the next five years to meet the requirements
- ▶ Township plan will achieve full PRP compliance by 2023 as required by DEP

# What are the next steps ?

- ▶ Address any public comments during public comment period from July 10 – August 24, 2017
  - The plan is available at Whitpain Township Administration Offices, 960 Wentz Road, Blue Bell PA 19422 weekdays from 8:30AM – 4:30PM or on the Township website ([www.whitpaintownship.net](http://www.whitpaintownship.net))
- ▶ Submit Pollutant Reduction Plan to PA DEP for review by the September 16, 2017
- ▶ Obtain PA DEP approval of the Pollutant Reduction Plan by obtaining the issuance of the new MS4 Individual Permit in March 16, 2018
- ▶ Apply for grant opportunities
- ▶ Coordinate and construct projects included in PRP Implementation Plan

**THANK YOU.  
ANY QUESTIONS?**