Tredyffrin Township Pollution Reduction Plan

FINAL

December 20, 2017

Table of Contents

Attachments

Introduction

Tredyffrin Township is required to develop a Pollution Reduction Plan (PRP) for Municipal Separate Stormwater System (MS4) discharges to impaired surface waterways within the Urbanized Area of the township. The PRP is a requirement and condition of the application for the 2018 National Pollution Discharge Elimination System (NPDES) MS4 Permit to the Pennsylvania Department of Environmental Protection (PADEP). The MS4 Permit authorizes the township to discharge stormwater to surface waters of the Commonwealth, the majority of which are classified as "impaired" according to PADEP's 2014 Integrated Water Quality Monitoring and Assessment Report.

PADEP prepared an MS4 Requirements Table (Table I-1) which defines the specific requirements Tredyffrin Township must undertake to address impaired waters under the forthcoming new permit. Municipalities with impaired streams for siltation or nutrients are required to submit a Pollutant Reduction Plan (PRP) to PADEP along with their permit application. The PRP is a planning document which guides the selection and implementation of operational changes and stormwater projects (either new construction or retrofits) that reduce pollutants entering surface waters. Under the PRP, the township must develop a plan to reduce its existing sediment (also referred to as total suspended solids, or TSS) load to surface waterways in the Urbanized Area by 10% over the 5-year permit term (June 1, 2018 to June 1, 2023). Figure I-1 shows the impaired watersheds in Tredyffrin requiring a PRP (those listed with "Appendix E" require a PRP for the forthcoming permit).

Table I-1.

MS4 Requirements Table listing out the causes of stream impairment and permit required planning activity (Source: PADEP, January 12, 2017)

Impaired Downstream Waters or Applicable TMDL Name	Requirement(s)	Other Cause(s) of Impairment
Valley Creek	Appendix C-PCB (4a), Appendix B-Pathogens (5), Appendix E-Siltation (5)	Cause Unknown (5), Other Habitat Alterations, Water/Flow Variability (4c)
Trout Creek	Appendix E-Siltation (5)	Cause Unknown (4a), Water/Flow Variability (4c)
Schuylkill River	Appendix C-PCB (4a)	
Little Valley Creek	Appendix C-PCB (4a), Appendix B-Pathogens (5), Appendix E-Siltation (5)	Cause Unknown (5), Other Habitat Alterations, Water/Flow Variability (4c)
Little Darby Creek	Appendix C-PCB (5)	Cause Unknown (5), Water/Flow Variability (4c)
Gulph Creek	Appendix E-Siltation (5)	Water/Flow Variability (4c)
Darby Creek	Appendix C-PCB (5), Appendix E-Siltation (5)	Cause Unknown (5), Other Habitat Alterations, Water/Flow Variability (4c)
Crum Creek	Appendix E-Siltation (5)	Cause Unknown (5), Water/Flow Variability (4c)
Crow Creek	Appendix E-Siltation (5)	Water/Flow Variability (4c)

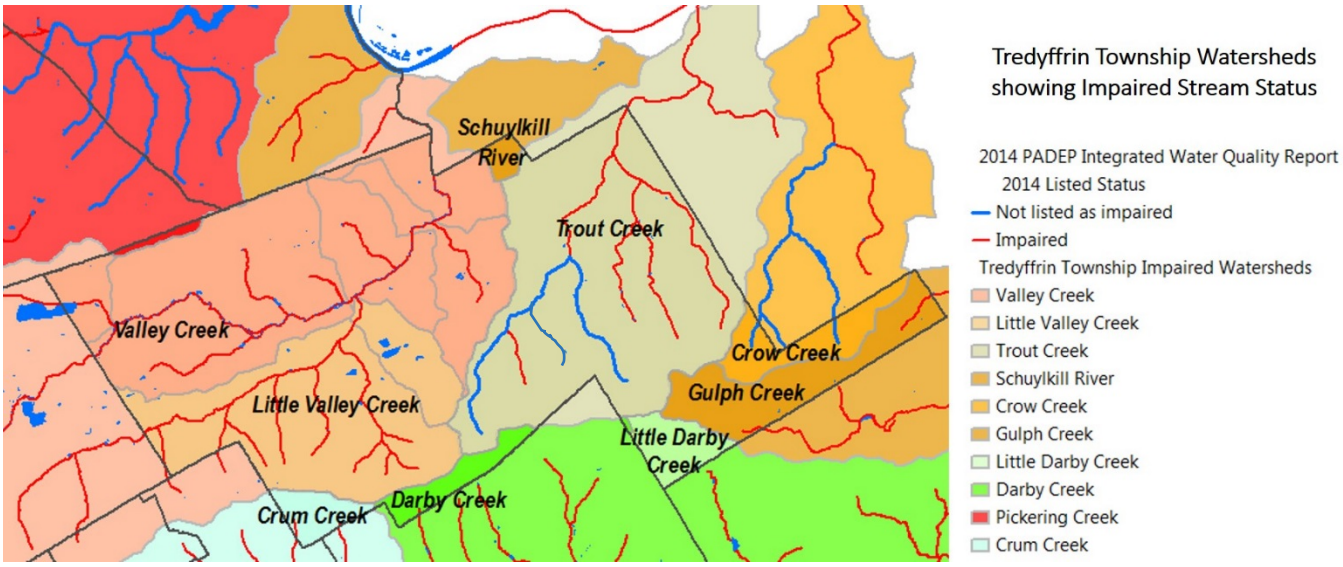


Figure I-1

The surface waterways in Tredyffrin Township that are impaired or drain to an impaired stream require the development of a PRP.

Tredyffrin Township is not alone, as this requirement has been mandated by PADEP onto all MS4 municipalities with impaired waters in the Commonwealth. The township believes that the best way to achieve the requirement is through a mixture of operational activities and capital projects primarily on township-owned property. The township's stormwater ordinance which requires comprehensive stormwater management requirements will also result in private land development projects that will help achieve the required reduction of pollutants. Throughout the PRP planning process, the township sought to develop strategies that meet the PRP requirements with an understanding of the financial implications for each strategy. The township also recognizes that while public land available for siting projects is limited, working on private property involves significant legal issues and can take a significant amount of time and resources. Therefore, this PRP is primarily focused on projects that can be developed on public lands.

With these goals in mind, the township prepared a strategic plan which can guide township staff to develop specific projects on an annual basis. This strategic approach provides a foundation by which progress can be planned and tracked over time and allows flexibility in the development of the most cost-effective projects that provide the largest sediment removal and most overall benefit to the township. Specific potential projects are included to demonstrate that the township can and will meet its regulatory obligation, and progress will be calculated and communicated to PADEP in the required MS4 annual report.

This document was prepared in accordance with the guidance provided in the "National Pollutant Discharges Elimination System (NPDES) Stormwater Discharges from Small Municipal Separate Storm Sewer Systems Pollutant Reduction Plan (PRP) Instructions" (PADEP DOC#3800-PM-BCW0100k; rev. 3/2017).

Section A. Public Participation

A complete copy of the draft PRP was available for public review at the township Building and posted on the township Website (http://www.tredyffrin.org) from November 8, 2017 to December 8, 2017 and was available for a 30-day public comment period. The PRP was discussed at a regularly scheduled advertised Board of Supervisors meeting held on November 8, 2017. Attachment A-1 includes a copy of the official Public Notice. Attachment A-2 includes a copy of all written comments received during the public comment period. Attachment A-3 includes a summary of the township's consideration and response to each comment received.

Section B. Map

As required by the PRP, the township prepared a map (Attachment B-1) that identifies impervious surfaces and the storm sewershed (drainage area) boundaries associated with each MS4 outfall. “MS4 outfall” is defined by PADEP as a location where stormwater discharges to a surface waterway and may not be an actual structure discharging to a stream. In future years, the township will be reviewing the locations of mapped outfalls and will make refinements as necessary.

Once the drainage areas were delineated, the township parsed out all non-MS4 drainage area including:

- PENNDOT and Turnpike Commission roads and right of ways (ROWs)
- Amtrak and Norfolk Southern
- Areas discharging directly to surface waters which include no flow from municipal infrastructure. According to PADEP, this can include home owner associations (HOAs), industries and schools if they receive no municipal flow and contain no municipal infrastructure (municipally-owned property, roads or stormwater infrastructure).

In reviewing the drainage areas associated with sub-basin boundaries, the township has identified an error in the PA-DEP mapping associated with Darby Creek and Gulph Creek. The corrected watersheds are included in all mapping and reporting for this PRP.

Section C. Pollutants of Concern

Table C-1 shows the MS4 Requirements Table prepared by PADEP to identify the pollutants of concern. The MS4 Requirements Table lists each waterbody within 5 miles of the urbanized area which is impaired. PADEP aggregated each impaired water into Hydrologic Unit Code 12 (HUC-12) watersheds which the township will use to report pollutant loadings as well as a guide for implementing PRP projects over the permit term.

Table C-1

MS4 Requirements Table showing Pollutants of Concern for the PRP Planning Area. Streams with Requirement of "Appendix E Siltation" are the subject of this PRP

IMPAIRED DOWNSTREAM WATERS	HUC 12 WATERSHED	OTHER CAUSE(S) OF IMPAIRMENT	REQUIREMENT(S)
Valley Creek	Schuylkill River Drainage	Cause Unknown, Other Habitat Alterations, Water/Flow Variability	Appendix C-PCB, Appendix B-Pathogens, **Appendix E-Siltation**
Trout Creek	Schuylkill River Drainage	Cause Unknown, Water/Flow Variability	**Appendix E-Siltation**
Little Valley Creek	Schuylkill River Drainage	Cause Unknown, Other Habitat Alterations, Water/Flow Variability	Appendix C-PCB, Appendix B-Pathogens, **Appendix E-Siltation**
Gulph Creek	Schuylkill River Drainage	Water/Flow Variability	**Appendix E-Siltation**
Crow Creek	Schuylkill River Drainage	Water/Flow Variability	**Appendix E-Siltation**
Little Darby Creek	Darby Creek	Cause Unknown, Water/Flow Variability	Appendix C-PCB
Darby Creek	Darby Creek	Cause Unknown, Other Habitat Alterations, Water/Flow Variability	Appendix C-PCB, **Appendix E-Siltation**
Crum Creek	Crum Creek	Cause Unknown, Water/Flow Variability	**Appendix E-Siltation**
Schuylkill River	n/a		Appendix C-PCB
Pickering Creek	n/a	Not Listed	Not Listed

Section D. Existing Loading for Pollutants of Concern

Tredyffrin Township calculated existing sediment loading, which was then used to calculate the 10% reduction requirement and determine the strategies to achieve the required reduction (see Section E). The existing PRP planning area was analyzed and the total impervious area, pervious area, and forested area within each PRP basin and corresponding HUC-12 watershed was calculated. The township is heavily wooded, and given the stormwater and sediment benefits that forest provides, the sediment load from forest was calculated separately from "pervious developed" lands.

The township used TSS loading rates for Chester County (provided in *Attachment B: Developed Land Loading Rates for PA Counties* of the PADEP PRP Instructions) to calculate the sediment load. TSS loading rates for forest were developed from Nutrient Load Estimator from Water Stewardship. Table D-1 shows the sediment loading rates used for the calculations. Tredyffrin Township elected to reduce its baseline pollutant loading by calculating the reduction provided by some of the previously installed, existing stormwater best management practices (BMPs). A detailed list of the existing BMPs and the sediment reduction calculated for each is found in Attachment D-1. It should be noted that this list represents only a partial analysis of existing constructed BMPs in the MS4 Planning Area. The township may update the existing loading analysis to incorporate additional BMPs in future annual reports.

BMP effectiveness values contained within PADEP's BMP Effectiveness Values document (3800-PM-BCW0100m) were used for these calculations (Attachment D-2). Table D-2 shows the sediment loading calculations for all township impaired basins and their HUC-12 watershed, along with the required 10% reduction. Based on this analysis, the total sediment load that the township must reduce is 280,717 pounds per year. This value could potentially be refined with additional data on existing BMPs, alternate sources of sediment loading/reduction values, new land cover / impervious area data, or using an alternate calculation methodology.

Table D-1.
Annual sediment loading rates used in the PRP analysis

LAND COVER CATEGORY	LBS/AC/YR
*** PERVIOUS DEVELOPED**	185
*** IMPERVIOUS DEVELOPED**	1,505
****FORESTED**	136

* Source: PRP Instructions Attachment B: Developed Land Loading Rates for PA Counties

** Source: Nutrient Load Estimator from Water Stewardship

Table D-2.
Baseline Pollutant Loading

Impaired Watersheds	HUC-12 Watershed	Impervious Area, Ac	Pervious Area, Ac	Forested Area, Ac	Total Planning Area, Ac	Sediment Loads (Lbs/Yr)	Sediment Reduction from Existing BMPs (Lbs/Yr)	10% Required Reduction (Lbs/Yr)
CRUM CREEK	**CRUM CREEK**	49	14	29	92	80,252	25,800	5,445
DARBY CREEK	**DARBY CREEK**	167	165	177	509	306,247	1,787	30,446
VALLEY/ LITTLE VALLEY CREEK	**SCHUYLKILL RIVER DRAINAGE**	583	748	1,445	2,775	1,212,028	47,004	244,833
TROUT CREEK		529	508	1,359	2,396	1,075,104		
GULPH CREEK		100	74	319	493	208,203		
TOTAL MS4 PLANNING AREA:		***1,429***	***1,508***	***3,329***	***6,266***	***2,881,834***	***74,591***	***280,724***

DEP permits reporting 10% reduction requirement goals at the HUC-12 watershed scale

Section E. BMPs To Achieve the Minimum Required Reductions in Pollutant Loading

Tredyffrin Township proposes the implementation of a number of strategies within the PRP Planning Area to achieve the required reduction in pollutant loading. Per PADEP requirements, specific BMPs will be implemented within 5 years of PADEP's approval of coverage under the MS4 Permit (June 1, 2018 – June 1, 2023). As discussed previously, the proposed strategies are primarily focused on public property, with the exception of a potential private detention basin retrofit and Strategy 1, which accounts for private redevelopment projects that are anticipated to be constructed within the permit term. The township calculated the reduction benefits of the strategies using the values for analogous BMPs contained within PADEP's BMP Effectiveness Values document (3800-PM-BCW0100m). Attachment E-1 includes a list of potential projects and the associated sediment removal values calculated for each project. A summary of pollutant load reduction for each watershed is also provided. As currently shown, the township can meet the required 280,724 lbs per year of sediment removal by implementing potential projects listed. The township will provide PADEP with annual progress reports documenting the incremental achievement of the sediment reduction target.

Strategic Approach to 5-year PRP Planning

To determine the costs and benefits associated with different PRP strategies, the township developed a planning matrix to guide decision making for the PRP. The township created a list of pollutant removal strategies, consisting of types of projects that township was committed to evaluating as part of the stormwater permit PRP planning process. The strategies were categorized into two main types: operational and capital projects. The costs of both operational and capital strategies could be compared on an equal playing field through a standard "costs per pound of sediment removed" metric. Attachment E-2 shows two strategic matrices, one for a higher operational/lower capital project scenario and one for a lower operational/higher capital project scenario, used to plan for a mix of strategy options. The matrices show a description of implementation levels, the total sediment reduction by each strategy, and the percent of the total sediment reduction goal. This strategic approach provides a guide for the township to use in long-term and short-term planning, and provides a means to track progress year after year.

Strategy 1: Future Private Redevelopment and Ordinance Requirements

The township tracks privately constructed stormwater projects which are required by the Tredyffrin Township 2009 Chapter 174 Stormwater Management Ordinance. The stormwater ordinance is one of the most comprehensive stormwater ordinances in the region, requiring infiltration-based systems for any disturbance (new, additional or replacement impervious surfaces) over 500 square feet. To determine how much sediment could be reduced from future projects, the township analyzed partial data on the existing BMP projects constructed over the last 5 years and determined a trend that could be used in predicting the sediment reduction that will likely occur during the permit cycle. In addition, the township reviewed significant current projects working through the Subdivision and Land Development process to assess which specific private land development projects might provide sediment reductions. Table E-1 presents a summary of the analysis to determine the past trend for private BMP construction and implementation. This information will be updated by the township periodically as additional project data is gathered.

Table E-1.

Analysis of partial private BMP construction in Tredyffrin Township as a result of 2009 stormwater ordinance.

	EXISTING BMPS (SINCE 2009)	EXISTING BMPS 2012-2017
TOTAL NUMBER OF PROJECTS	86	54
TOTAL DRAINAGE AREA MANAGED (AC)	160	21
TOTAL IMPERVIOUS AREA MANAGED (AC)	64	11
TOTAL SEDIMENT REMOVAL (LBS/YR)	74,662	16,022

A summary of the sediment reduction estimates associated with this strategy is provided below, and the full pollutant removal analysis table is provided in Attachment E-1.

Watershed Location	Project/Strategy	Est. Sediment Load Reduction (lbs/year)	Est. Construction Year
Crum Creek	Chestnut Road Apartments	761	2018
Schuylkill (Trout Creek)	Wayne Glen	17,597	2019
Schuylkill (Trout Creek)	Wayne Glen (Private land development) 995 ft stream restoration	44,656	2019
Schuylkill (Valley Creek)	Station Square	3,774	2020

Strategy 2: Street Sweeping

The township recently purchased a new street sweeping vehicle and is committed to enhancing their current program of sweeping approximately 18 miles of streets to perform sweeping at the PADEP required frequency of 25 times per year. This strategy will yield a TSS reduction of 14,719 lbs per year. The township is also considering expanding their street sweeping program to sweep additional township owned streets in the planning area at the PADEP required frequency of 25 times per year. If implemented, this strategy will yield a TSS reduction of up to 69,908 pounds per year. By performing street sweeping of all township roads, approximately 85,000 lbs/year of sediment would be reduced, for a total of 30% of the overall PRP requirement.

A summary of the sediment reduction estimates associated with this strategy is provided below, and the full pollutant removal analysis table is provided in Attachment E-1.

Watershed Location	Project/Strategy	Est. Sediment Load Reduction (lbs/year)	Est. Implementation Year
All	Enhanced Street Sweeping for Existing Routes (18 Miles)	14,719	Multiple
All	Enhanced Street Sweeping (up to an additional 112 Miles)	69,908	Multiple

Strategy 3: Inlet Cleaning and Solids Removal

Tredyffrin Township is already undertaking some storm inlet cleaning and solids removal as part of their standard operating procedures. Under this strategy, the township will consider enhancing their current practice to achieve greater sediment reduction. This strategy involves the collection and proper disposal of solid material within the storm system to prevent discharge to surface waters. As noted by PADEP, in order to use this BMP for pollutant removal credits, the township will "demonstrate that they have developed and are implementing a standard operating procedure (SOP) for tracking the material removed from the sewer system." This SOP will be prepared and discussed in a subsequent MS4 Annual Report along with estimated sediment removal calculations.

The township is considering annual cleaning of up to 80% of the inlets in the Planning Area. If implemented, this strategy is estimated to provide up to 123,729 lbs/year of sediment reduction which is 44% of the total PRP requirement. A summary of the sediment reduction estimates associated with this strategy is provided below, and the full pollutant removal analysis table is provided in Attachment E-1. The township will also evaluate the use of manufactured devices to increase the removal of solids from the storm sewer system and potentially improve the cost efficiency of this strategy.

Watershed Location	Project/Strategy	Est. Sediment Load Reduction (lbs/year)	Est. Implementation Year
All	Annual Inlet Cleaning of up to 80% of the total stormwater inlets	123,729	Multiple

Strategy 4: Tree Planting

The township, through its Environmental Advisory Council (EAC) and other partnership groups, has a regular tree planting program based on volunteer labor and donated materials and services. For the permit term, the township assumes a total of 800 trees would be planted at no cost to the township. Using PADEP values, this strategy has minimal effect on meeting the sediment removal requirement (0.1% of the total requirement), but increasing tree canopy has other benefits to township residents. A summary of the sediment reduction estimates associated with this strategy is provided below, and the full pollutant removal analysis table is provided in Attachment E-1.

Watershed Location	Project/Strategy	Est. Sediment Load Reduction (lbs/year)	Est. Implementation Year
All	Tree Planting	296	Multiple

Strategy 5: Green Streets on Township ROW

Township owned roads and ROW are a significant contributing land area and component of the stormwater system, and offer a unique opportunity to manage stormwater through green street projects. BMPs that could be employed for this strategy include bioretention, infiltration trenches, tree trenches, vegetated curb bumpouts, rain gardens, swales and more. A summary of the sediment reduction estimates associated with 2 planned projects in this strategy is provided below, and the full pollutant removal analysis table is provided in Attachment E-1.

Watershed Location	Project/Strategy	Est. Sediment Load Reduction (lbs/year)	Est. Construction Year
Schuylkill (Valley Creek)	Infiltration Trenches at Friendship Drive & Hilltop Road	4,667	2018
Schuylkill (Valley Creek)	Infiltration Trenches at Dayleview Road	2,388	2018

Strategy 6: Detention Basin Retrofits

The township owns several detention basins that are suitable for retrofit for increased sediment removal. Most of the detention basins reviewed under this strategy would be converted from dry detention basins (with a 10% sediment removal efficiency value) to wet ponds, wetlands, or dry extended detention basins (with a 60% sediment removal efficiency value) or an infiltration basin (with an 80% sediment removal efficiency value). Privately owned detention basins offer challenges for retrofitting including owner approvals, maintenance agreements, liability considerations, etc. One basin in the Crum Creek watershed has been identified as a potential privately owned detention basin retrofit project which can provide significant sediment reduction. Should other opportunities arise within the permit term to retrofit privately-owned basins, the township will consider undertaking a PRP project with the willing landowner. A summary of the sediment reduction estimates associated with this strategy is provided below, and the full pollutant removal analysis table is provided in Attachment E-1.

Watershed Location	Project Location	Est. Sediment Load Reduction (lbs/year)	Est. Construction Year
Schuylkill (Valley Creek)	Duportail Rd	849	2018
Schuylkill (Gulph Creek)	Upper Gulph Rd	10,663	2018
Crum Creek	Leopard Rd	23,033	2020

Strategy 7: Stream Restoration

The stream restoration strategy involves restoring, protecting, and/or enhancing banks of streams against scour and erosion by using vegetative plantings, soil bioengineering, and/or structural systems. One private redevelopment project is committed to restoring 995-ft of tributary to Trout Run. A number of potential township-owned locations have also been identified and are included in the analysis. A summary of the sediment reduction estimates associated with 4 potential projects in this strategy is provided below, and the full pollutant removal analysis table is provided in Attachment E-1.

Watershed Location	Project Location	Est. Sediment Load Reduction (lbs/year)	Est. Construction Year
Schuylkill (Trout Creek)	Teegarden Park – 200 ft	8,976	2020
Schuylkill (Valley Creek)	Crabby Creek Park – 200 ft	8,976	2021

Darby Creek	Westover Park (Bird Sanctuary) – 200 ft	8,976	2023

Strategy 8: Retrofit Township Owned Facilities

The township owns a number of facilities in the planning area, including a library, the township building campus, and a number of parks and associated parking lots/structures. Under this strategy, the township would seek to retrofit existing uncontrolled drainage areas or would upgrade existing stormwater structures. Two potential locations have been identified and a summary of the sediment reduction estimates associated with these 2 projects is provided below. The full pollutant removal analysis table is provided in Attachment E-1.

Watershed Location	**Project Location**	**Est. Sediment Load Reduction (lbs/year)**	**Est. Construction Year**
Schuylkill (Valley Creek)	Township Building Retrofit Project (Rain gardens)	2,468	2018
Schuylkill (Valley Creek)	Township Building Retrofit Project (vegetated swales)	1,919	2018

Section F. Funding Mechanisms

The design and construction of capital projects, as well as the investment needed to meet operational enhancements, will be funded through a number of sources including grants, capital bonds, and/or general fund revenue, and other sources that have yet to be discussed or identified.

Section G. Operation and Maintenance

The operation and maintenance (O&M) of the public projects will be undertaken by Township staff and/or contractors. A summary of anticipated activities and frequencies is provided in Table G-1.

Table G-1

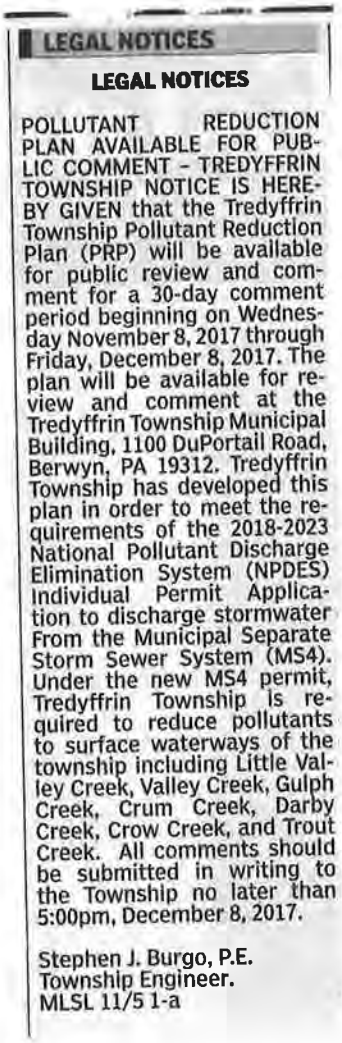
Operations and Maintenance Activities

PRP Strategy Type	O&M Responsibility	O&M Activity	O&M Frequency
Future Redevelopment	Property Owner	Dependent on BMP type	Dependent on BMP type
Street Sweeping	Municipality	Street sweeping for sediment removal	streets swept 25x/yr
Inlet Cleaning	Municipality	Solids removal from stormwater inlets	inlets cleaned, typically 1x/year
Tree Planting	Municipality	Inspection, Watering/mulching,	Inspection: 1x/year Water/mulch: As needed during establishment
Green Streets	Municipality	Inspection, Clean/replace water quality filter, Clean/clear inlets and outlet structure, herbaceous plant weeding/mulching	Inspect: 2x/yr WQ filter: 2x/ yr Structure: 1x/yr Vegtation: 4x/yr
Detention Basin Retrofit	Property Owner (Municipality or Private)	Inspection, Debris removal, Erosion control and repair, sediment removal, Clean/clear inlets and outlet structures, vegetation mowing/replacement, Invasives and vector control	Inspect: 2x/yr Debris: 4x/yr Erosion: 1x/yr Sediment: As needed Structure: 1x/yr Veg. Mow: 2x/yr Invasives: As needed
Stream Restoration	Property Owner (Municipality or Private)	Inspection, Debris removal, erosion control and repair, vegetation mowing/replacement, Invasives and vector control	Inspect: 2x/yr Debris: 4x/yr Erosion: 1x/yr Veg. Mow: 2x/yr Invasives: As needed
Retrofit Township Properties (Parks and Facilities)	Municipality	Dependent on BMP type	Dependent on BMP type

Attachments

Attachment A-1. Public Notice

Suburban News
PRP Notice published 11/05/2017



LEGAL NOTICES

LEGAL NOTICES

POLLUTANT REDUCTION PLAN AVAILABLE FOR PUBLIC COMMENT – TREDYFFRIN TOWNSHIP NOTICE IS HEREBY GIVEN that the Tredyffrin Township Pollutant Reduction Plan (PRP) will be available for public review and comment for a 30-day comment period beginning on Wednesday November 8, 2017 through Friday, December 8, 2017. The plan will be available for review and comment at the Tredyffrin Township Municipal Building, 1100 DuPortail Road, Berwyn, PA 19312. Tredyffrin Township has developed this plan in order to meet the requirements of the 2018-2023 National Pollutant Discharge Elimination System (NPDES) Individual Permit Application to discharge stormwater From the Municipal Separate Storm Sewer System (MS4). Under the new MS4 permit, Tredyffrin Township is required to reduce pollutants to surface waterways of the township including Little Valley Creek, Valley Creek, Gulph Creek, Crum Creek, Darby Creek, Crow Creek, and Trout Creek. All comments should be submitted in writing to the Township no later than 5:00pm, December 8, 2017.

Stephen J. Burgo, P.E.
Township Engineer.
MLSL 11/5 1-a

Daily Local News

PRP Notice published 11/03/2017

LEGAL NOTICES

POLLUTANT REDUCTION PLAN AVAILABLE FOR PUBLIC COMMENT – TREDYFFRIN TOWNSHIP NOTICE IS HEREBY GIVEN that the Tredyffrin Township Pollutant Reduction Plan (PRP) will be available for public review and comment for a 30-day comment period beginning on Wednesday November 8, 2017 through Friday, December 8, 2017. The plan will be available for review and comment at the Tredyffrin Township Municipal Building, 1100 DuPortail Road, Berwyn, PA 19312. Tredyffrin Township has developed this plan in order to meet the requirements of the 2018-2023 National Pollutant Discharge Elimination System (NPDES) Individual Permit Application to discharge stormwater From the Municipal Separate Storm Sewer System (MS4). Under the new MS4 permit, Tredyffrin Township is required to reduce pollutants to surface waterways of the township including Little Valley Creek, Valley Creek, Gulph Creek, Crum Creek, Darby Creek, Crow Creek, and Trout Creek. All comments should be submitted in writing to the Township no later than 5:00pm, December 8, 2017.

Stephen J. Burgo, P.E.
Township Engineer.
DLN 11/3 1-a

LEGAL NOTICES

LEGAL NOTICES POLLUTANT REDUCTION PLAN AVAILABLE FOR PUBLIC COMMENT – TREDYFFRIN TOWNSHIP NOTICE IS HEREBY GIVEN that the Tredyffrin Township Pollutant Reduction Plan (PRP) will be available for public review and comment for a 30-day comment period beginning on Wednesday November 8, 2017 through Friday, December 8, 2017. The plan will be available for review and comment at the Tredyffrin Township Municipal Building, 1100 DuPortail Road, Berwyn, PA 19312. Tredyffrin Township has developed this plan in order to meet the requirements of the 2018-2023 National Pollutant Discharge Elimination System (NPDES) Individual Permit Application to discharge stormwater From the Municipal Separate Storm Sewer System (MS4). Under the new MS4 permit, Tredyffrin Township is required to reduce pollutants to surface waterways of the township including Little Valley Creek, Valley Creek, Gulph Creek, Crum Creek, Darby Creek, Crow Creek, and Trout Creek. All comments should be submitted in writing to the Township no later than 5:00pm, December 8, 2017. Stephen J. Burgo, P.E. Township Engineer. DLN 11/3 1-a

Appeared in: ***Daily Local News*** on Friday, 11/03/2017

Back

Attachment A-2. Public Comments Received

Finneran, Courtney/PHL

From: Stephen Burgo <sburgo@tredyffrin.org>
Sent: Wednesday, December 6, 2017 4:47 PM
To: Finneran, Courtney/PHL; Potts, Andrew/PHL; Marengo, Brian/PHL; Engineering Dept
Subject: Fwd: Comment on Tredyffrin's MS4 Application

FYI - ms4 comments

Sent from my iPhone

Begin forwarded message:

> **From:** Chuck and Gay Marshall <cgmarshall1@verizon.net>
> **Date:** December 6, 2017 at 4:25:52 PM EST
> **To:** William Martin <wmartin@tredyffrin.org>, Stephen Burgo <sburgo@tredyffrin.org>, Erin McPherson <emcpherson@tredyffrin.org>
> **Subject: Comment on Tredyffrin's MS4 Application**
>
> Bill, Steve and Erin, Can this email be entered into the record as a comment on the MS4 permit application? Chuck Marshall
>
> ### Comments on Tredyffrin MS4 Pollution Reduction Plan
>
> I am glad to see that the application of the permit package of Tredyffrin Township for the MS4 program includes a Pollution Reduction Plan that will reduce sediment into Valley Creek. The only recommendation I have for this plan is to suggest that the implementation of a street sweeping program will reduce the effectiveness of the inlet cleaning program that is used in Tredyffrin to remove sediments. I am not suggesting to not implement the sweeping program but merely to question the removal of sediment rates at a high rate because the street sweeping will remove sediments that would normally travel to the storm sewers. If you follow this suggestion, a lower effectiveness rate for the inlet cleaning would have to be assigned and additional sediment removal would have to be targeted.
> The only other comment I would make does not suggest you make any changes to the PRP; it's to realize the situation from the viewpoint of Valley Creek. Under the DEP guidelines for the PRP, Tredyffrin is allowed to parse land from the PRP whose responsibility is that of the PA Dept. of Transportation (PennDOT) and the PA Turnpike Commission (PTC). PennDot's application was due on January 1, 2016, before PAG-13 requiring the reductions in impaired waters was finalized. It's unlikely their permit requires reductions in each watershed. PTC's application was due on September 16, 2017, along with most other permittees. While DEP may want PTC to demonstrate reductions in each impaired watershed, PTC will likely push back against it as too burdensome. Thus, it is impossible to calculate the reduction in sediments to be experienced by Valley Creek because 1) Tredyffrin doesn't have to show reductions by watershed, 2) because PennDOT doesn't have to show reductions by watershed and 3) PTC will not likely show reductions by watershed.

Finneran, Courtney/PHL

From: Stephen Burgo <sburgo@tredyffrin.org>
Sent: Friday, December 8, 2017 1:44 PM
To: Finneran, Courtney/PHL; Potts, Andrew/PHL; Marengo, Brian/PHL; Engineering Dept
Subject: Fwd: Comments on MS4 Pollution Reduction Plan

FYI - comments from Ray Clarke - resident of township and OLC member.

Stephen.

Sent from my iPhone

Begin forwarded message:

> **From:** Ray Clarke <raymond.clarke@outlook.com>
> **Date:** December 8, 2017 at 12:54:57 PM EST
> **To:** Steve Burgo <sburgo@tredyffrin.org>
> **Cc:** Bill Martin <wmartin@tredyffrin.org>, Mac Wilson <acwmwilson@comcast.net>
> **Subject: Comments on MS4 Pollution Reduction Plan**
>
> Dear Steve
>
> Many thanks for all your work on the Township's MS4 Pollution Reduction Plan. I have just a couple of comments from my *personal* perspective, informed by my position as a neighbor to Valley Creek, and as a Director of my neighborhood home-owners' association and of Open Land Conservancy, both of which are influenced by and influence Valley Creek.
>
> I'd like to let you know that I support the investment that the Township is making to address this issue, and that actions being taken by the above community organizations support your objective.
>
> 1. The Township should rightly be proud of its stormwater ordinance that will lead to pollution reduction from new developments such as Wayne Glen and Station Square.
> 2. The focus on street sweeping and inlet cleaning to clean up the flows before they get to the creeks seems a sound approach. Prioritizing streets that are closer to the creeks might be a good practice. For example, streets like Overlook Place, Treeline Drive and Hayfield Road that have storm drains that lead directly, or through detention basins, to Valley Creek might receive an increased frequency of cleaning.
> 3. I share Trout Unlimited's opinion that stream bank restoration projects have mixed success, and I would definitely prefer projects that reduce the flow rate into the creek rather than try to stabilize the banks to deal with high flows.
> 4. Also, I can say that Open Land Conservancy (OLC), which has a large number of uncontrolled stormwater flows into its Nature Preserves, recommends that the Township address stormwater flows before they reach the Preserves and cause erosion.
> 5. That being said, Open Land Conservancy has worked with the Township on one such attempt to reduce flows and erosion caused by the stormwater from Maude Circle, by supporting the installation of a Township infiltration trench in the Airdrie Forest Preserve. Experience showed that even this limited project did have a significant adverse environmental impact in the

construction area, and the capacity proved insufficient to absorb heavy rainfalls. However, the Conservancy continues to look for improvements to the erosion in the Preserve, and has recently been awarded a Growing Greener grant for a modification designed to further reduce erosion and sediment.

6. One major flow in my neighborhood runs from the broad North Valley Road/Yellow Springs Road intersection area into the NE corner of OLC's Valley Creek Preserve, with heavy rainfalls generating significant rise in the level of Valley Creek and associated high flow rates and erosion. This area should be a future focus for the Township, with co-operation of all neighbors. OLC is currently evaluating a tree planting project to replace the invasive *Phragmites* grass in the Preserve downstream from the outflow, which may in the long run reduce sediment loads. OLC has recently completed a similar project to plant 750 native trees in the riparian buffer along Cedar Hollow Run and Valley Creek in the Cedar Hollow Nature Preserve, and we plan to supplement these trees (with a much smaller number) in future years.
7. My HOA (Valley Creek Farm) has two small retention basins that outflow within 50-100 yards of Valley Creek. We would be interested in discussing with the Township the operation and potential improvement of these basins.
8. One administrative question: just glancing at the first page of Attachment D1, with addresses of existing BMPs, shows many properties in my area that drain into Valley Creek/Schuylkill River that are listed as being in the Crum Creek or Darby Creek watersheds. Maybe there is some different watershed definition in the table and/or I'm not reading it right, but please check the watersheds for roads such as Fennerton, Biddle, Georgetown, Carrie, East Central, etc., as that may influence the various watershed calculations in the plan.

Thanks so much for all you do for our Township.

Ray

--
Raymond F. Clarke
1564 Overlook Place
Malvern, PA 19355
o: 610 578 0358
c: 610 247 7090

Attachment A-3. Summary of Township Response to Public Comments

Tredyffrin Township Pollutant Reduction Plan (PRP) Comment Review Form (CRF) - December 20, 2017					
Comment No.	**Page No.**	**Review/ Commenter**	**Review Comment**	**Response**	**Final Adjudication**
1	General	Ray Clarke	The focus on street sweeping and inlet cleaning to clean up the flows before they get to the creeks seems a sound approach. Prioritizing streets that are closer to the creeks might be a good practice. For example, streets like Overlook Place, Treeline Drive and Hayfield Road that have storm drains that lead directly, or through detention basins, to Valley Creek might receive an increased frequency of cleaning.	Comment noted. Tredyffrin Township will consider this when implementing the enhanced street sweeping BMP.	No change required
2	General	Ray Clarke	I share Trout Unlimited's opinion that stream bank restoration projects have mixed success, and I would definitely prefer projects that reduce the flow rate into the creek rather than try to stabilize the banks to deal with high flows.	Comment noted.	No change required
3	General	Ray Clarke	I can say that Open Land Conservancy (OLC), which has a large number of uncontrolled stormwater flows into its Nature Preserves, recommends that the Township address stormwater flows before they reach the Preserves and cause erosion. That being said, Open Land Conservancy has worked with the Township on one such attempt to reduce flows and erosion caused by the stormwater from Maude Circle, by supporting the installation of a Township infiltration trench in the Airdrie Forest Preserve. Experience showed that even this limited project did have a significant adverse environmental impact in the construction area, and the capacity proved insufficient to absorb heavy rainfalls. However, the Conservancy continues to look for improvements to the erosion in the Preserve, and has recently been awarded a Growing Greener grant for a modification designed to further reduce erosion and sediment.	Comment noted.	No change required
4	General	Ray Clarke	One major flow in my neighborhood runs from the broad North Valley Road/Yellow Springs Road intersection area into the NE corner of OLC's Valley Creek Preserve, with heavy rainfalls generating significant rise in the level of Valley Creek and associated high flow rates and erosion. This area should be a future focus for the Township, with co-operation of all neighbors. OLC is currently evaluating a tree planting project to replace the invasive Phragmites grass in the Preserve downstream from the outflow, which may in the long run reduce sediment loads. OLC has recently completed a similar project to plant 750 native trees in the riparian buffer along Cedar Hollow Run and Valley Creek in the Cedar Hollow Nature Preserve, and we plan to supplement these trees (with a much smaller number) in future years.	Comment noted.	No change required
5	General	Ray Clarke	My HOA (Valley Creek Farm) has two small retention basins that outflow within 50-100 yards of Valley Creek. We would be interested in discussing with the Township the operation and potential improvement of these basins.	Comment noted.	No change required
6	General	Ray Clarke	One administrative question: just glancing at the first page of Attachment D1, with addresses of existing BMPs, shows many properties in my area that drain into Valley Creek/Schuylkill River that are listed as being in the Crum Creek or Darby Creek watersheds. Maybe there is some different watershed definition in the table and/or I'm not reading it right, but please check the watersheds for roads such as Fennerton, Biddle, Georgetown, Carrie, East Central, etc., as that may influence the various watershed calculations in the plan.	Attachment D-1 has been corrected.	Change Completed
7	General	Chuck Marshall	I am glad to see that the application of the permit package of Tredyffrin Township for the MS4 program includes a Pollution Reduction Plan that will reduce sediment into Valley Creek. The only recommendation I have for this plan is to suggest that the implementation of a street sweeping program will reduce the effectiveness of the inlet cleaning program that is used in Tredyffrin to remove sediments. I am not suggesting to not implement the sweeping program but merely to question the removal of sediment rates at a high rate because the street sweeping will remove sediments that would normally travel to the storm sewers. If you follow this suggestion, a lower effectiveness rate for the inlet cleaning would have to be assigned and additional sediment removal would have to be targeted.	Comment noted.	No change required
8	General	Chuck Marshall	The only other comment I would make does not suggest you make any changes to the PRP; it's to realize the situation from the viewpoint of Valley Creek. Under the DEP guidelines for the PRP, Tredyffrin is allowed to parse land from the PRP whose responsibility is that of the PA Dept. of Transportation (PennDOT) and the PA Turnpike Commission (PTC). PennDot's application was due on January 1, 2016, before PAG-13 requiring the reductions in impaired waters was finalized. It's unlikely their permit requires reductions in each watershed. PTC's application was due on September 16, 2017, along with most other permittees. While DEP may want PTC to demonstrate reductions in each impaired watershed, PTC will likely push back against it as too burdensome. Thus, it is impossible to calculate the reduction in sediments to be experienced by Valley Creek because 1) Tredyffrin doesn't have to show reductions by watershed, 2) because PennDOT doesn't have to show reductions by watershed and 3) PTC will not likely show reductions by watershed.	Comment noted.	No change required

Attachment B-1. Map of Tredyffrin Township MS4 Planning area, outfalls, and sewersheds

Tredyffrin Township, PA
Municipal Separate Stormwater System Permit

Pollution Reduction Plan
Sewershed Mapping by HUC-12 Watershed

December 2017

Legend

- MS4 Outfalls
- Existing BMPs
- Future BMPs
- Existing BMPs (ROW)
- Storm Sewer
- Connectivity Assumptions
- Impaired Streams (2014 PA DEP)
- Unimpaired Streams (2014 PA DEP)
- Parcels
- Urbanized Area Boundary
- Township Boundary
- Surface Water Features (1993)
- Impervious Area

MS4 Stormsheds by HUC-12 Watershed

- Crum Creek
- Darby Creek
- Little Valley Creek - Valley Creek /Schuylkill River
- Trout Creek - Schuylkill River
- Gulph Creek - Schuylkill River

N

0 1,000 2,000
Feet

ch2m

Attachment C-1. (not used)

Attachment D-1. Sediment Reduction Calculations for Existing Best Management Practices

Project Address	X Coordinates	Y Coordinates	HUC 12 Watershed	Date Constructed	BMP Name Corresponding to PADEP Table	Pervious Drainage Area	Impervious Drainage Area	Sediment Removal
						AC	AC	lbs/yr
8 East Golf Club Lane, Paoli, PA 19301	2606258.334	265846.9325	Crum Creek	2014	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.00	0.06	71
12 Fairway Rd, Paoli, PA 19301	2605812.811	265724.743	Crum Creek	2014	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.05	0.13	178
18 West Golf Club Lane, Paoli, PA 19301	2605619.053	265575.86	Crum Creek	2014	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.07	0.08	119
19 Fairway Rd, Paoli, PA 19301	2606293.548	265618.135	Crum Creek	2006	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.15	0.10	146
20 Paoli Pike, Paoli, PA 19301	2602072.018	265902.083	Crum Creek	2006	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	1.01	0.35	601
20 West Golf Club Ln, Paoli, PA 19301	2605697.595	265520.15	Crum Creek	2015	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.14	0.08	126
27 Leopard Road, Paoli, PA 19301	2605367.111	265020.474	Crum Creek	unknown	Dry Extended Detention Basin	8.64	24.45	23,033
42 East Lancaster Ave, Paoli, PA 19301	2603514.371	266127.422	Crum Creek	2002	Dry Extended Detention Basin	0.16	0.51	478
54 West Lancaster Ave, Paoli, PA 19301	2602406.436	266125.061	Crum Creek	2004	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.02	0.24	310
98 Darby Rd, Paoli, PA 19301	2603754.197	265441.759	Crum Creek	2004	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.06	77
69 Darby Rd, Paoli, PA 19301	2603763.54	265802.868	Crum Creek	2008	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.08	0.51	660
801 Conestoga Rd, Berwyn, PA	2613194.14202	268466.030767	Darby Creek	1905	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	1.48	1.04	1,566
32 Cassatt Ave, Berwyn, PA 19312	2614146.39027	268913.454883	Darby Creek	2014	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.05	59
38 Berkley Rd, Devon, PA 19333	2622463.92091	268444.038752	Darby Creek	2015	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.03	41
70 E. Conestoga Rd, Devon, PA 19333	2621918.74536	269783.526685	Darby Creek	2014	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.06	0.03	51
35 W. Conestoga Rd, Devon, PA 19333	2621028.24862	270187.695646	Darby Creek	2011	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.02	29
1337 Berwyn Paoli Rd, Berwyn, PA 19312	2610032.71787	265915.266219	Darby Creek	2009	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.02	26
85 Berkley Rd, Devon, PA 19333	2621700.09897	268266.668984	Darby Creek	2009	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.01	15
185 Devonshire Rd, Devon, PA 19333	2616553.93750	274650.409433	Schuylkill River	2012	Bioretention / Raingarden (A/B soils w/o underdrain)	-	0.02	30
10 Gateview Rd, Wayne, PA 19087	2618882.50123	275700.203385	Schuylkill River	2008	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.02	26
838 W. Conestoga Rd, Berwyn, PA 19312	2612580.05141	268902.967324	Schuylkill River	2015	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.08	0.02	38
235 Cassatt Rd, Berwyn, PA 19312	2612238.65204	269604.644503	Schuylkill River	2009	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.17	0.02	52
812 Dresher Way, Wayne, PA 19087	2623917.58051	277983.297708	Schuylkill River	2014	Bioretention / Raingarden (A/B soils w/o underdrain)	0.03	0.02	32
336 Devonshire Rd, Devon, PA 19333	2615302.31183	273830.323117	Schuylkill River	2011	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.02	24
260 Forest Hills Cir, Devon, PA 19333	2617191.55957	271832.418451	Schuylkill River	2011	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.02	21
38 Arbor Ln, Wayne, PA 19087	2621964.24121	274399.358715	Schuylkill River	2016	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.02	25
820 Caldwell Rd, Wayne, PA 19087	2624779.13859	278795.715562	Schuylkill River	2008	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.00	4
410 Contention Ln, Berwyn, PA 19312	2615552.41442	271296.016431	Schuylkill River	2014	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.03	42
594 Contention Ln, Berwyn, PA 19312	2614589.55635	272927.164543	Schuylkill River	2016	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.02	28
554 Dannaker Rd, Wayne, PA 19087	2621288.52724	272913.017918	Schuylkill River	2014	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.03	42
558 Dannaker Rd, Wayne, PA 19087	2621288.52724	272913.017918	Schuylkill River	2014	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.02	28
20 E. Central Ave, Paoli, PA 19301	2603449.91541	267403.275198	Schuylkill River	2014	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.17	0.09	140
348 Fairfield Rd, Devon, PA	2616864.26509	271168.737953	Schuylkill River	2012	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.06	72
600 Cassatt Rd Berwyn, PA 19312	2609980.58737	272298.683345	Schuylkill River	2010	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.08	102
428 Glenwyth Rd, Wayne, PA 19087	2622531.68328	271854.662045	Schuylkill River	2014	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.05	62
533 Beechtree Ln, Wayne, PA 19087	2627124.36709	269816.453576	Schuylkill River	2009	Bioretention / Raingarden (A/B soils w/o underdrain)	0.14	0.13	200
865 Box Hill Rd, Radnor, PA 19087	2631749.97779	273380.990996	Schuylkill River	2012	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.06	75
10 Cypress Ln, Berwyn, PA 19312	2608229.35736	270367.946818	Schuylkill River	2009	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.11	0.07	112
969 Fairview Ave, Wayne, PA 19087	2628610.27409	273966.790700	Schuylkill River	2010	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.06	0.04	66
209 Deepdale Rd, Wayne, PA 19087	2627791.97528	271528.418551	Schuylkill River	2016	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.03	44
119 Deepdale Rd, Wayne, PA 19087	2626743.28639	271201.194015	Schuylkill River	2009	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.02	20
486 School Ln, Wayne, PA 19087	2624218.53384	272144.360141	Schuylkill River	2008	Bioretention / Raingarden (A/B soils w/o underdrain)	-	0.03	44
586 Conestoga Rd, Berwyn, PA 19312	2614736.33867	270007.737199	Schuylkill River	2011	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.02	29
297 Adams Dr, Wayne, PA 19087	2612016.85856	279331.644989	Schuylkill River	2009	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.05	63

Project Address	X Coordinates	Y Coordinates	HUC 12 Watershed	Date Constructed	BMP Name Corresponding to PADEP Table	Pervious Drainage Area	Impervious Drainage Area	Sediment Removal
						AC	AC	lbs/yr
11 Crow Creek Ln, Radnor, PA 19087	2631664.43735	275028.698658	Schuylkill River	2009	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.02	22
838 W. Conestoga Rd, Berwyn, PA 19312	2611505.58400	267754.785000	Schuylkill River	Unknown	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)		6.42	8,209
500 Lee Rd, Berwyn, PA	2621028.24862	270187.695646	Schuylkill River	2002/2003	Wet Ponds and Wetlands	59.50	15.90	20,964
105 W Walker Rd, Wayne, PA	2614603.28100	278619.197000	Schuylkill River	1905	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.14	181
123 Biddle Rd, Paoli, PA 19301	2602855.16000	268199.828000	Schuylkill River	2016	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.08	98
280 Dayleview Rd, Berwyn, PA 19312	2609280.91178	268572.775566	Schuylkill River	2016	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.01	0.05	63
507 Howellville Rd, Berwyn, PA	2610756.33800	271683.250000	Schuylkill River	1905	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.21	264
550 Upper Gulph Rd, Wayne, PA	2625414.45900	272309.790000	Schuylkill River	1905	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.21	274
550 Upper Gulph Rd, Wayne, PA	2625814.45900	272230.626000	Schuylkill River	1905	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	2.13	2.50	3,532
349 Beechwood Ln, Berwyn, PA 19312	2608584.15097	270716.664325	Schuylkill River	2014	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.10	0.04	68
651 N Wayne Ave, Wayne, PA	2628790.45000	270890.107000	Schuylkill River	2001/2002	Dry Extended Detention Basin	10.50	6.00	6,587
310 Greene Rd, Berwyn, PA 19312	2609475.36718	269943.283561	Schuylkill River	2012	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.09	0.04	64
1350 Anthony Wayne Dr, Wayne, PA 19087	2616141.04850	280115.541526	Schuylkill River	2012	Bioretention / Raingarden (A/B soils w/o underdrain)	0.05	0.04	56
1078 Catalpa Dr, Malvern, PA 19355	2596760.41048	272200.419970	Schuylkill River	2008	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.03	42
423 Churchill Dr, Berwyn, PA 19312	2612905.20630	275795.151591	Schuylkill River	2008	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.02	27
120 Fennerton Rd, Paoli, PA 19301	2602999.95023	268259.245635	Schuylkill River	2009	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.02	24
26 Cypress Ln, Berwyn, PA 19312	2607336.60581	270819.754760	Schuylkill River	2013	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.02	20
105 Agnew Rd, Paoli, PA 19301	2605729.40651	267211.161011	Schuylkill River	2014	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.10	122
16 Bodine Rd, Berwyn, PA 19312	2608836.18743	267067.137824	Schuylkill River	2014	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.07	93
2 Carrie Ln, Malvern, PA 19355	2594375.72109	274329.000608	Schuylkill River	2012	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.02	28
625 Cassatt Rd, Berwyn, PA 19312	2611806.93050	273308.330604	Schuylkill River	2013	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	1.43	1,834
1101 Church Rd, Malvern, PA 19355	2595658.12877	272302.099681	Schuylkill River	2016	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.09	117
409 Churchill Dr, Berwyn, PA 19312	2613124.89779	275869.383899	Schuylkill River	2015	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.03	44
1200 Chesterbrook Blvd, Wayne, PA 19087	2609216.41567	275564.740461	Schuylkill River	2009	Bioretention / Raingarden (A/B soils w/o underdrain)	-	0.16	218
444 Donalyn Ln, Berwyn, PA 19312	2609160.32425	270654.323246	Schuylkill River	2016	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.02	22
2221 Georgetown Dr, Malvern, PA 19355	2597828.18059	272286.075030	Schuylkill River	2015	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.53	0.15	270
1584 Franklin Ln, Wayne, PA 19087	2613289.59926	280709.608662	Schuylkill River	2015	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.03	39
233 Friendship Dr, Paoli, PA 19301	2605615.45467	267661.581741	Schuylkill River	2013	Bioretention / Raingarden (A/B soils w/o underdrain)	-	0.02	26
296 Greene Rd, Berwyn, PA 19312	2610306.79454	270137.425664	Schuylkill River	2015	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.02	27
342 Greene Rd, Berwyn, PA 19312	2607804.24502	270457.008189	Schuylkill River	2013	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.02	19
24 Bodine Rd, Berwyn, PA 19312	2608342.84787	267321.877682	Schuylkill River	2010	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.25	0.14	222
488 Bair Rd, Berwyn, PA 19312	2613064.28485	271840.191541	Schuylkill River	2012	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.50	0.30	462
653 Fernfield Cir, Wayne, PA 19087	2625655.00318	274080.760758	Schuylkill River	2009	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.25	0.12	191
441 Berwyn Baptist Rd, Berwyn, PA 19312	2616668.53827	271244.339252	Schuylkill River	2015	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.26	0.10	169
449 Berwyn Baptist Rd, Berwyn, PA 19312	2616656.71582	271345.581639	Schuylkill River	2014	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.07	0.10	139
339 Colket Ln, Wayne, PA 19087	2622164.65281	273329.183325	Schuylkill River	2009	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.32	0.09	166
125 Colket Ln, Devon, PA 19333	2620321.09430	272944.908514	Schuylkill River	2010	Bioretention / Raingarden (A/B soils w/o underdrain)	0.09	0.05	83
501 Contention Ln, Berwyn, PA 19312	2615154.52083	272412.255494	Schuylkill River	2009	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.04	0.04	57
570 Coldstream Dr, Berwyn, PA 19312	2611872.63553	274554.240363	Schuylkill River	2011	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.04	51
492 Coldstream Dr, Berwyn, PA 19312	2612863.90911	275143.787891	Schuylkill River	2013	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.04	45
346 Bair Rd, Berwyn, PA 19312	2612724.47254	270464.673124	Schuylkill River	2012	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.03	43
371 Bair Rd, Berwyn, PA 19312	2612922.24373	270788.466661	Schuylkill River	2015	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	0.04	0.03	48
115 Colket Ln, Devon, PA 19333	2620243.06186	273070.651654	Schuylkill River	2013	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.03	39

Project Address	X Coordinates	Y Coordinates	HUC 12 Watershed	Date Constructed	BMP Name Corresponding to PADEP Table	Pervious Drainage Area	Impervious Drainage Area	Sediment Removal
						AC	AC	lbs/yr
427 Glenwyth Rd, Wayne, PA 19087	2622676.21433	272108.181531	Schuylkill River	2016	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.03	38
380 Castlewood Dr, Devon, PA 19333	2615002.42066	273452.059755	Schuylkill River	2009	Bioretention / Raingarden (A/B soils w/o underdrain)	0.11	0.03	58
825 Glenn Circle, Wayne, PA 19087	2620817.55931	285208.903115	Schuylkill River	2016	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	-	0.03	36
785 Gulph Rd, Wayne, PA 19087	2621146.57849	284731.558741	Schuylkill River	2008	Bioretention / Raingarden (A/B soils w/o underdrain)	0.05	0.03	46
544 Gulph Rd, Wayne, PA 19087	2617151.94703	284605.966639	Schuylkill River	2009	Bioretention / Raingarden (A/B soils w/o underdrain)	-	0.02	31
Tree Planting	n/a	n/a	Schuylkill River	n/a	Tree Planting	8.00	-	296
					TOTAL	**96**	**64**	**74,591**

Attachment D-2. PADEP's BMP Effectiveness Values

Source: 3800-PM-BCW0100m

Bioretention/Rain Garden Effectiveness Value

BMP Name	BMP Effectiveness Values			BMP Description
	TN	TP	Sediment	
Bioretention / Raingarden (A/B soils w/o underdrain)	80%	85%	90%	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporarily ponded and then treated by filtering through the bed components, and through biological and biochemical reactions within the soil matrix and around the root zones of the plants. This BMP has no underdrain and is in A or B soil.

Dry Detention Basins and Hydrodynamic Structures Effectiveness Value

BMP Name	BMP Effectiveness Values			BMP Description
	TN	TP	Sediment	
Dry Detention Basins and Hydrodynamic Structures	5%	10%	10%	Dry Detention Ponds are depressions or basins created by excavation or berm construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. Hydrodynamic Structures are devices designed to improve quality of stormwater using features such as swirl concentrators, grit chambers, oil barriers, baffles, micropools, and absorbent pads that are designed to remove sediments, nutrients, metals, organic chemicals, or oil and grease from urban runoff.

Dry Extended Detention Basin Effectiveness Value

BMP Name	BMP Effectiveness Values			BMP Description
	TN	TP	Sediment	
Dry Extended Detention Basins	20%	20%	60%	Dry extended detention (ED) basins are depressions created by excavation or berm construction that temporarily store runoff and release it slowly via surface flow or groundwater infiltration following storms. Dry ED basins are designed to dry out between storm events, in contrast with wet ponds, which contain standing water permanently. As such, they are similar in construction and function to dry detention basins, except that the duration of detention of stormwater is designed to be longer, theoretically improving treatment effectiveness.

Storm Sewer System Solids Removal Effectiveness Value

BMP Name	BMP Effectiveness Values			BMP Description
	TN	TP	Sediment	
Storm Sewer System Solids Removal	0.0027 for sediment, 0.0111 for organic matter	0.0006 for sediment, 0.0012 for organic matter	1 – TN and TP concentr-ations	This BMP (also referred to as "Storm Drain Cleaning") involves the collection or capture and proper disposal of solid material within the storm system to prevent discharge to surface waters. Examples include catch basins, stormwater inlet filter bags, end of pipe or outlet solids removal systems and related practices. Credit is authorized for this BMP only when proper maintenance practices are observed (i.e., inspection and removal of solids as recommended by the system manufacturer or other available guidelines). The entity using this BMP for pollutant removal credits must demonstrate that they have developed and are implementing a standard operating procedure for tracking the material removed from the sewer system. Locating such BMPs should consider the potential for backups onto roadways or other areas that can produce safety hazards. To determine pollutant reductions for this BMP, these steps must be taken: 1) Measure the weight of solid/organic material collected (lbs). Sum the total weight of material collected for an annual period. Note – do not include refuse, debris and floatables in the determination of total mass collected. 2) Convert the annual wet weight captured into annual dry weight (lbs) by using site-specific measurements (i.e., dry a sample of the wet material to find its weight) or by using default factors of 0.7 (material that is predominantly wet sediment) or 0.2 (material that is predominantly wet organic matter, e.g., leaf litter). 3) Multiply the annual dry weight of material collected by default or site-specific pollutant concentration factors. The default concentrations are shown in the BMP Effectiveness Values columns. Alternatively, the material may be sampled (at least annually) to determine site-specific pollutant concentrations. DEP will allow up to 50% of total pollutant reduction requirements to be met through this BMP. The drainage area treated by this BMP may be no greater than 0.5 acre unless it can be demonstrated that the specific system proposed is capable of treating stormwater from larger drainage areas. For planning purposes, the sediment removal efficiency specified by the manufacturer may be assumed, but no higher than 80%.

Permeable Pavement Effectiveness Value

BMP Name	BMP Effectiveness Values			BMP Description
	TN	TP	Sediment	
Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	75%	80%	85%	Pavement or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through open voids in the pavement surface to a washed gravel subsurface storage reservoir, where it is then slowly infiltrated into the underlying soils or exits via an underdrain. This BMP has no underdrain, no sand or vegetation and is in A or B soil.

Stream Restoration Effectiveness Value

BMP Name	BMP Effectiveness Values			BMP Description
	TN	TP	Sediment	
Stream Restoration	0.075 lbs/ft/yr	0.068 lbs/ft/yr	44.88 lbs/ft/yr	An annual mass nutrient and sediment reduction credit for qualifying stream restoration practices that prevent channel or bank erosion that otherwise would be delivered downstream from an actively enlarging or incising urban stream. Applies to 0 to 3rd order streams that are not tidally influenced. If one of the protocols is cited and pounds are reported, then the mass reduction is received for the protocol.

Street Sweeping Effectiveness Value

BMP Name	BMP Effectiveness Values			BMP Description
	TN	TP	Sediment	
Street Sweeping	3%	3%	9%	Street sweeping must be conducted 25 times annually. Only count those streets that have been swept at least 25 times in a year. The acres associated with all streets that have been swept at least 25 times in a year would be eligible for pollutant reductions consistent with the given BMP effectiveness values.

Tree Planting Effectiveness Value

BMP Name	BMP Effectiveness Values			BMP Description
	TN	TP	Sediment	
Tree Planting	10%	15%	20%	The BMP effectiveness values for tree planting are estimated by DEP. DEP estimates that 100 fully mature trees of mixed species (both deciduous and non-deciduous) provide pollutant load reductions for the equivalent of one acre (i.e., one mature tree = 0.01 acre). The BMP effectiveness values given are based on immature trees (seedlings or saplings); the effectiveness values are expected to increase as the trees mature. To determine the amount of pollutant load reduction that can credited for tree planting efforts: 1) multiply the number of trees planted by 0.01; 2) multiply the acreage determined in step 1 by the pollutant loading rate for the land prior to planting the trees (in lbs/acre/year); and 3) multiply the result of step 2 by the BMP effectiveness values given.

Vegetated Open Channels Effectiveness Value

BMP Name	BMP Effectiveness Values			BMP Description
	TN	TP	Sediment	
Vegetated Open Channels (A/B Soils)	45%	45%	70%	Open channels are practices that convey stormwater runoff and provide treatment as the water is conveyed, includes bioswales. Runoff passes through either vegetation in the channel, subsoil matrix, and/or is infiltrated into the underlying soils. This BMP has no underdrain and is in A or B soil.

Wet Ponds and Wetlands Effectiveness Value

BMP Name	BMP Effectiveness Values			BMP Description
	TN	TP	Sediment	
Wet Ponds and Wetlands	20%	45%	60%	A water impoundment structure that intercepts stormwater runoff then releases it to an open water system at a specified flow rate. These structures retain a permanent pool and usually have retention times sufficient to allow settlement of some portion of the intercepted sediments and attached nutrients/toxics. Until recently, these practices were designed specifically to meet water quantity, not water quality objectives. There is little or no vegetation living within the pooled area nor are outfalls directed through vegetated areas prior to open water release. Nitrogen reduction is minimal.

Attachment E-1. Potential PRP Projects for Sediment Reduction

	PRP Watershed	PRP Project Name	Project Address	Land Ownership	PRP Strategy	Project Type (DEP description)	PRP Implementation Year	Impervious DA Managed (ac)	Pervious DA Managed (ac)	Sediment Removal (lbs/yr)	Percent of Required Reduction
1	Schuylkill River (Valley Creek)	Township Building Retrofit Project	1100 Duportail Road, Berwyn PA 19312	Twp	Detention Basin retrofit, Public	Dry Extended Detention Basin	2018	0.85	0.75	849	0.3%
2	Schuylkill River (Valley Creek)	Township Building Retrofit Project	1100 Duportail Road, Berwyn PA 19312	Twp	Retrofit Township Properties	Bioretention / Raingarden (A/B soils w/o underdrain)	2018	1.64	1.46	2,468	0.9%
3	Schuylkill River (Valley Creek)	Township Building Retrofit Project	1100 Duportail Road, Berwyn PA 19312	Twp	Retrofit Township Properties	Vegetated Open Channels (A/B Soils)	2018	1.64	1.46	1,919	0.7%
4	Schuylkill River (Valley Creek)	Crabby Creek Infiltration trenches along Roadway	Friendship Drive & Hilltop Road	Twp	Green Street	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	2018	1.86	14.54	4,667	1.7%
5	Schuylkill River (Valley Creek)	Crabby Creek Infiltration trenches along Roadway	Dayleview Road	Twp	Green Street	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	2018	1.19	5.50	2,388	0.9%
6	Crum Creek	Leopard Road Basin Retrofit	Leopard Road	Private/Various Owners	Detention Basin retrofit, Private	Dry Extended Detention Basin	2020	24.45	8.64	23,033	8.2%
7	Crum Creek	Chestnut Road Apartments Land Development	37 - 43 Chestnut Road	Private	Private Land Development	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	2018	0.56	0.25	461	0.2%
8	Schuylkill River (Trout Creek)	Wayne Glen Land Development 995 Ft Streambank Restoration	675 E. Swedesford Road	Private	Streambank Restoration	Stream Restoration	2019	na	na	44,656	15.9%
9	Schuylkill River (Trout Creek)	Wayne Glen Land Development	675 E. Swedesford Road	Private	Private Land Development	Dry Detention Basins and Hydrodynamic Structures	2019	88.26	233.18	17,597	6.3%
9	Schuylkill River (Valley Creek)	Station Square Land Development	37 N. Valley Road and 7/9 E. Central Avenue	Private	Private Land Development	Bioretention / Raingarden (A/B soils w/o underdrain)	2020	2.45	2.53	4,551	1.6%
10	All	Enhanced Street Sweeping of Existing Routes (18 Miles)	Multiple	Township	Street Sweeping	Street Sweeping	Multiple	108.69	0.00	14,719	5.2%
11	All	Enhanced Street Sweeping (up to 112 Miles)	Multiple	Township	Street Sweeping	Street Sweeping	Multiple	516.19	0.00	69,908	24.9%
12	All	Inlet Cleaning	Multiple	Township	Inlet Cleaning	Storm Sewer System Solids Removal	Multiple	913.60	0.00	123,729	44.1%
13	All	Tree Planting @ 200 per year	Multiple	Township	Tree Planting	Tree Planting	Multiple	na	na	296	0.1%
14	Gulph Creek	Upper Gulph Road Detention Basin Modification	550 Upper Gulph Rd, Wayne, PA	Township	Detention Basin retrofit, Public	Dry Extended Detention Basin	2018	0	96	10,663	3.8%
15	Schuylkill River (Trout Creek)	Teegarden Park – 200 ft	440 Old State Road	Township	Streambank Restoration	Stream Restoration	2020	na	na	8,976	3.2%
16	Schuylkill River (Valley Creek)	Crabby Creek Park – 200 ft	Walnut Lane	Township	Streambank Restoration	Stream Restoration	2021	na	na	8,976	3.2%
17	Darby Creek	Westover Park (Bird Sanctuary) – 200 ft	55 Old Lancaster Road	Township	Streambank Restoration	Stream Restoration	2023	na	na	8,976	3.2%
18	Schuylkill River (Valley Creek)	Friendship Park Infiltration basin under Parking	107 Bearhill Road	Township	Retrofit Township Properties	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	2021	1.09	3.54	1,955	0.7%
19	Schuylkill River (Trout Creek)	Teegarden Park infiltration basin	440 Old State Road	Township	Retrofit Township Properties	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	2023	0.38	1.14	660	0.2%
20	All	Future Redevelopment	Multiple	Private	Private Land Development	Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	Multiple	11.32	9.28	15,934	5.7%
										367,381	**131%**

NOTE: Projects included on this list exceed the required reduction target of 280,724 lbs/year;

Attachment E-1. Potential PRP Projects for Sediment Reduction

Summary of Potential PRP Projects for Sediment Reduction by HUC-12 Watershed

HUC-12 Watershed	Sediment Loads (Lbs/Yr)	Sediment Reduction from Existing BMPs (Lbs/Yr)	10% Required Reduction (Lbs/Yr)	Targeted Reduction from Potential Projects	Targeted Reduction from Street Sweeping and Inlet Cleaning	Total Sediment Reduction
Crum Creek	80,252	25,800	5,445	23,494	6,254	29,748
Darby Creek	306,247	1,787	30,446	8,976	23,866	32,842
Schuylkill River Drainage	2,495,335	47,004	244,833	110,324	194,466	304,790
Total MS4 Planning Area:	***2,881,834***	***74,591***	***280,724***	***142,794***	***224,586***	***367,381***

Attachment E-2. PRP Strategy Matrix

ATTACHMENT E-2

Tredyffrin Township Pollutant Reduction Plan

Potential for Sediment Reduction from Select BMP Strategies - Lower Operations/Higher Capital Projects

Baseline Sediment Loading	**2,807,243**
Sediment Reduction GOAL	**280,724**

CELLS SHADED GREEN ARE USED TO ADJUST PROGRAM

Strategy	Strategy Type	Impervious Drainage Area	Pervious Drainage Area	Amount Treated	Description of Implementation Level		TSS Loading to BMP	TSS (Sediment) Reduction	Total Reduction by Strategy	Percent of TOTAL Goal
		ACRES	ACRES	(%)	Quantity	Unit	(lbs./yr.)	(lbs./yr.)	(lbs/yr)	
Future Development Trend plus 3 current SLDO projects	Operations	**11**	**9**	100%	54	applications	18,746	15,934	83,707	30%
Enhanced Street Sweeping (Existing Routes at DEP Required Frequency)	Operations	109	0	**100%**	18	street miles	163,548	14,719	32,825	12%
Enhanced Street Sweeping with additional new routes	Operations	516	0	**26%**	29		201,180	18,106		
Inlet Cleaning - Solids Removal	Operations	1,142	n/a	**45%**	1,028	# of inlet cleanings/year (2,284 total inlets)	1,374,767	69,598	69,598	25%
Tree Planting	Operations	0	8	**100%**	800	new trees planted	1,481	296	296	0.1%
Green Streets on Township ROW	Capital	625	2,004	**1.0%**	6	1-acre projects	13,113	11,146	11,146	4%
Detention Basin retrofit, Township owned	Capital	2.5	2	**200%**	2	basin retrofits	8,315	4,989	28,022	10%
Detention Basin retrofit, Non-Township Owned	Capital	24.4	8.6	**100%**	1		38,388	23,033		
Stream Restoration on Township Property	Capital	N/A	N/A	**9.6%**	1,200	linear feet	N/A	53,850	53,850	19%
Retrofit Township Properties (Parks and Facilities)	Capital	27	0	**6%**	1.5	1-acre projects	2,218	1,886	1,886	1%
TOTAL									**281,330**	**100.2%**

ATTACHMENT E-2
Tredyffrin Township Pollutant Reduction Plan
Potential for Sediment Reduction from Select BMP Strategies - High Operations/Low Capital Projects

Baseline Sediment Loading	**2,807,243**
Sediment Reduction GOAL	**280,724**

CELLS SHADED GREEN ARE USED TO ADJUST PROGRAM

Strategy	Strategy Type	Impervious Drainage Area	Pervious Drainage Area	Amount Treated	Description of Implementation Level		TSS Loading to BMP	TSS (Sediment) Reduction	Total Reduction by Strategy	Percent of TOTAL Goal
		ACRES	ACRES	(%)	Quantity	Unit	(lbs./yr.)	(lbs./yr.)	(lbs/yr)	
Future Development Trend plus 3 current SLDO projects	Operations	**11**	**9**	100%	54	applications	18,746	15,934	83,707	30%
Enhanced Street Sweeping (Existing Routes at DEP Required Frequency)	Operations	109	0	**100%**	18	street miles	163,548	14,719	49,673	18%
Enhanced Street Sweeping with additional new routes	Operations	516	0	**50%**	56		388,378	34,954		
Inlet Cleaning - Solids Removal	Operations	1,142	n/a	**75%**	1,713	# of inlet cleanings/year (2,284 total inlets)	1,374,767	115,996	115,996	41%
Tree Planting	Operations	0	8	**100%**	800	new trees planted	1,481	296	296	0.1%
Green Streets on Township ROW (Crabby Creek Trenches Only)	Capital	625	4,107	**0.5%**	3	1-acre projects	8,298	7,054	7,054	3%
Detention Basin retrofit, Township owned	Capital	2.5	2	**100%**	1	basin retrofits	4,157	2,494	2,494	1%
Detention Basin retrofit, Non-Township Owned	Capital	24.4	8.6	**0%**	0		0	0		
Stream Restoration on Township Property	Capital	N/A	N/A	**3.9%**	490	linear feet	N/A	22,012	22,012	8%
Retrofit Township Properties (Parks and Facilities)	Capital	27	0	**0.0%**	0	1-acre projects	0	0	0	0%
TOTAL									**281,232**	**100.2%**