NPDES Stormwater Discharges from MS4

Total Maximum Daily Load (TMDL) & Pollutant Reduction Plan (PRP) For Skippack Creek

Franconia Township

Montgomery County, Pennsylvania

September 2017

Prepared For:

Franconia Township
671 Allentown Road
Telford, PA 18969-2205
(215) 723-1137

Prepared By:

Gilmore & Associates, Inc.
Engineers ♦ Land Surveyors ♦ Planners ♦ GIS Consultants
65 East Butler Avenue, Suite 100
Franconia PA 18901
(215)345-4330

MS4 Pollutant Reduction Plan
for
Franconia Township
Montgomery County, Pennsylvania

Table of Contents

List of Tables

Appendices

Franconia Township, Montgomery County, is submitting this TMDL and Pollution Reduction Plan (PRP) in accordance with the requirements of *Individual Permit PAG-13 for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems* (MS4); specifically, in accordance with the *MS4 Requirements Table (Municipal) Anticipated Obligations for Subsequent NPDES Permit Term*. Franconia Township must create a TMDL /PRP Plan due to discharges from their MS4 to Impaired Downstream Waters, which are listed as impaired as noted below and in Appendix A:

Franconia Township Municipal MS4 Requirements PAG130005 (6/26/2017)

Unnamed Tributaries to Skippack Creek		Water/Flow Variability (4c)
Skippack Creek Watershed TMDL	TMDL Plan-Siltation (4a)	
West Branch Neshaminy Creek	Appendix E-Siltation (4a), Appendix E-Excessive Algal Growth, Nutrients, Organic Enrichment/Low D.O. (5)	Water/Flow Variability (4c)
West Branch Skippack Creek		Water/Flow Variability (4c)
Indian Creek TMDL	TMDL Plan-Nutrients (4a)	
Indian Creek	Appendix E-Siltation (4a)	Cause Unknown, TDS (4a)
Skippack Creek	Appendix E-Excessive Algal Growth, Nutrients (5)	

The intent of this MS4 PRP is to establish the existing loading of sediment and pollutants discharged from the MS4 to Impaired Downstream Waters, and to present a plan to reduce these loadings. Tributaries within the Urbanized Area within the Township drain to the East Branch Perkiomen, Indian, Skippack and West Branch Neshaminy Creeks. The Indian, Skippack and West Branch Neshaminy Creeks are deemed impaired and TMDL/PRP Plans are required for the Indian and Skippack Creeks. Reference documentation for this Plan includes the TMDL for Skippack Creek prepared by the USEPA dated April 8, 2005. This Plan is organized to follow the “Required PRP Elements” presented in the PRP Instructions included as

part of the *PAG-13 MS4 Individual Permit* instruction packages. This Plan will be evaluated and updated by Franconia Township on an as-needed basis, based on 1) its effectiveness in reducing pollutant loads in discharges from the regulated small MS4, 2) the reasonableness of achieving the reductions, and 3) the cost/benefit of the BMP(s) under consideration. If this occurs, Franconia Township will work with the Department of Environmental Protection (DEP) for review and approval of any revisions or updates.

A. Public Participation

As part of the preparation of this MS4 TMDL/PRP, public participation is required. The public participation measures that are required are:

- A complete copy of the TMDL/PRP shall be available for public review.
- A public notice containing a statement describing the plan, where it may be reviewed by the public and the length of time provided for the receipt of comments shall be published by the MS4 in a newspaper of general circulation in the area.
- Written comments shall be accepted by the MS4 for a minimum of **30 days** from the date of public notice.
- The MS4 shall accept comments from any interested member of the public at a public meeting or hearing, which may include a regularly scheduled meeting of the governing body of the municipality or municipal authority that is the permittee.
- Consider, and make a record of the consideration of, each timely comment received from the public during the public comment period concerning the plan, identifying any changes made to the plan in response to the comment.

A copy of the newspaper public notice, copies of all written comments received from the public, and a copy of the MS4's record of consideration of all timely comments received in the public comment period are included with this TMDL/PRP in Appendix B. Note that all comments received during the public comment period were considered. Revisions to the TMDL/PRP in response to those comments were made as applicable.

- Date TMDL/PRP public notice was published in newspaper: _____

- Date TMDL/PRP was made available for public review/comment: _____
- End date for receipt of written comments (30 days from the date of public notice): _____
- Date TMDL/PRP listed on the public meeting agenda: _____
- Date TMDL/PRP comments were accepted at a public meeting: _____

B. Map

Mapping is an integral part of developing the TMDL/PRP and requires a level of detail suitable to determine the existing land uses, impervious/pervious surface coverages, topography and loading for the listed impairments. The MS4 TMDL/PRP Map in Appendix C shows the PRP Planning Area, which includes all storm sewershed boundaries, as well as, the proposed locations of structural BMPs to be implemented to achieve pollutant load reductions. The storm sewershed boundaries shown on the Franconia Township MS4 TMDL/PRP Map constitute the combined storm sewershed of all MS4 outfalls within the MS4's jurisdiction that discharge to Skippack Creek Watershed, including the West Branch Skippack Creek, and the Indian Creek.

The Franconia Township's MS4 PRP Map identifies the PRP Planning Area, as well as the proposed locations of structural BMPs to be implemented to achieve required pollutant load reductions. The Township's MS4 TMDL/PRP Map excludes parsed areas, which are areas within the storm sewershed that are excluded in the calculation of land area and existing pollutant loading. BMPs located within parsed areas do not count toward achieving pollutant reduction objectives. If an accurate storm sewershed map is developed, these lands may be parsed or excluded as part of that process. Potential examples include homeowner's associations and schools which do not contain municipal roads or other municipal infrastructure.

See Appendix C of this report for the Franconia Township MS4 PRP Map.

C. Pollutants of Concern

The Skippack Creek basin is classified as a trout stocked fishery (TSF) in the Pennsylvania Chapter 93 water quality standards (WQS). The TSF classification requires that permitted discharges in the basin meet water quality criteria designed to allow for the maintenance of stocked trout and the maintenance and propagation of warm water fishes and associated flora and fauna.

Potential sources of the impairment were listed in the Clean Water Act §303d/305b reports (1996-2004) as excessive blooms of algae, siltation, and flow variability. The creek is listed for Siltation/Sediment and water/flow variability from small residential runoff and land development. Related to nutrient loading, excess nutrients, erosion and sediment from agricultural and municipal point sources impair portions of the sub-basin.

Sampling was done in 2004 (14 sites) to measure biomass, nutrient content, and species composition of periphyton assemblages (freshwater organisms indicative of water quality). The TMDL was prepared by EPA and finalized in January 2005 with close DEP oversight. The TMDL identifies "nuisance algae" as the endpoint and chlorophyll-a as the threshold for "nuisance periphyton" conditions. The algal target is the amount of plants DEP will allow to grow on rocks in this stream. Nutrient loading can be increased from human activities such as fertilizer applications, sewage discharges, and runoff from agricultural land or construction sites. Since the TMDL was developed and approved, land uses have changed, structural and non-structural BMPs have been installed, sewer improvements have been made, and stricter stormwater requirements have been established for controlling sediment during and following construction. The stricter regulations and improvements appear to have reduced pollution loadings overall. The areas where onsite stormwater controls were installed have been parsed out of the Township's Planning Area to reduce the baseline sediment load. Further, to reduce the excessive nutrients within the stream and unnamed tributaries, focus is set on protecting the existing stream morphology including stream stabilization, riparian buffer restoration to increase canopy cover, and reduction of agriculture and impervious along the stream corridor. Retrofits will also be considered to gain additional benefit from existing BMPs.

For all TMDL/PRPs, Franconia Township shall calculate the existing loading of the pollutant(s) of concern in lbs/year; calculate the minimum reduction in loading in lbs/year; select BMP(s) to reduce loading; and demonstrate that the selected BMPs will achieve the minimum reductions. A summary of the TMDL/PRP Plan Requirements are as follows:

Franconia Township Municipal MS4 Requirements

Skippack Creek Watershed TMDL	TMDL Plan for Siltation (4a)
Skippack Creek	PRP Plan for Appendix E-Excessive Algal Growth, Nutrients (5)

Additionally, the unnamed tributaries and West Branch Skippack Creek are impaired due to water and flow variability, however, no PRP is required at this time for these impairments. For TMDL/PRPs developed for impaired waters, the pollutants are based on the "Appendix E" impairment listing as provided in the *MS4 Requirements Table (Municipal) Anticipated Obligations for Subsequent NPDES Permit Term*. If the impairment is based on siltation only, a minimum of 10% sediment reduction is required. If the impairment is based on nutrients only or other surrogates for nutrients (e.g., "Excessive Algal Growth" and "Organic Enrichment/Low D.O."), a minimum 5% Total Phosphorus (TP) reduction is required. If the impairment is due to both siltation and nutrients, both sediment (10% reduction) and TP (5% reduction) must be addressed.

A minimum 10% reduction is required for Sediments within the listed impaired waters, as well as, a 5% reduction for Nutrients within the Skippack Creek. The Township is using a presumptive approach in which a 10% sediment reduction is assumed to also result in a 5% TP reduction. The total reduction required by the Sediment TMDL is 18%. A 10% reduction may be achieved within this permit term, with a carryover of 8% to the next permit term.

D. Existing Loading, Wasteload Allocations, and Analysis of TMDL Objectives

Existing loading must be calculated and reported as of the date of the development of this TMDL/PRP. The date of development of this TMDL/PRP is July 12, 2017. Any methodology that calculates existing pollutant loading in terms of pounds per year, evaluates BMP-based pollutant reductions utilizing BMP effectiveness values contained in Document 3800-PM-BCW0100m (see Appendix D-1) or Chesapeake Bay Program expert panel reports, uses average annual precipitation conditions and is based on sound science may be considered acceptable. If a modeling tool will be used to estimate existing loading, the same tool should be used to estimate future pollutant loading for different BMP implementation scenarios to ensure consistency with input parameters between existing and future loading.

MS4s may not claim credit for street sweeping and/or other non-structural BMPs implemented in the past. If BMPs were implemented prior to development of this TMDL/PRP and continue to be operated and maintained, an MS4 may not reduce its obligation for achieving pollutant load reductions but the MS4 may claim pollutant reduction "credit" in the form of reduced existing loading. In order to claim a credit, identify all such BMPs in Section D of the TMDL/PRP along with the following information:

- Detailed description of the BMP;
- Latitude and longitude coordinated for that BMP;
- Location of the BMP on the storm sewershed map;
- The permit number, if any, that authorized installation of the BMP;
- Calculations demonstrating the pollutant reduction achieved by the BMP;
- The date the BMP was installed and a statement that the BMP continues to serve the function(s) it was designed for; and
- The operation and maintenance (O&M) activities and O&M frequencies associated with the BMP.

The MS4 may optionally submit design drawings of the BMP for previously installed or future BMPs with the TMDL/PRP.

The Township has converted farmland to meadow within the 15.34-acre Leidy/Harrington Village Open Space which drains to a riparian corridor (40.298714, -75.324463). This was completed in 2010 and incorporated into the plan as a reduced existing sediment load.

Franconia Township's permit obligation applies only to runoff collected by and discharged from the MS4. The storm sewershed land area that is collected by and discharges from the MS4 to the Skippack and West Branch Skippack Creeks has been delineated using PAMAP Light Detection and Ranging (LiDAR) contours. LiDAR contours were also utilized in determining the areas for parsing. The following table summarizes the storm sewershed land loadings. The sediment loads generated from the non-tributary areas are subtracted (parsed) from the total storm sewershed load to determine what is attributed to the MS4. The existing loading totals subject to the requirement was multiplied by 10% to determine the required sediment reduction. Table D-4 is a summary of the reduction requirements based on the Total Maximum Daily Load for Skippack Creek dated April 9, 2005.

TABLE D-1: SUMMARY OF SEDIMENT TMDL REQUIREMENTS

TMDL	39,320,019
Wasteload Allocation (WLA)(for all MS4s)	35,388,017
Load Allocation (LA)	0
Margin of Safety (MOS)	3,932,002
Franconia Township Calculated Sediment Loading	3,329,329
WLA for Franconia Township	2,728,310
Gross TMDL Sediment Load Reduction	601,019

TABLE D2: SUMMARY OF SEDIMENT LOADING

Area Description	**Acres**	**Existing Sediment Load (lbs/yr)**
Skippack and West Branch Skippack Creek Total Watershed	10,806	7,236,151
Franconia Twp Skippack Creek Watershed	3,903	2,597,480
Franconia Twp PRP Planning Area (Minus Parsed Lands) and Loading	548	65,648

If a combined PRP/TMDL Plan is developed and the planning areas are combined into one, the existing loads may only be derived using a new modelling effort such as MapShed. This modeling must utilize the same land use/land cover information that was used in development of the TMDL. In modeling the existing load, MapShed is a customized GIS interface that is used to create input data for an enhanced version of the GWLF watershed model originally developed at Cornell University. MapShed was improved by Dr. Barry Evans and his group at PSIEE using AVGWLF, a GIS-based watershed modeling tool that uses hydrology, land cover, soils, topography, weather, pollutant discharges, and other critical environmental data to model sediment and nutrient transport within a watershed. Figures 1 and 2 display the source area and existing loading for the portion of the MS4 that drains to the impaired creek; with calculations below:

TABLE D-4: SUMMARY OF SEDIMENT REDUCTION REQUIREMENTS

2004 FT Calculated Sediment Loading	3,329,329 lb/yr
2004 WLA For FT	2,728,310 lb/yr
2004 Gross TMDL Sediment Load Reduction	601,019 lb/yr
2017 FT Calculated Sediment Loading from Mapshed*	2,597,480 lb/yr (22% Reduction)
FT Sediment Load Reduction Required*	468,915 lb/yr (22% Reduction)
Planning Area is 14% of the Township	65,648 lb/yr
Percent Reduction Required by TMDL	18% or 11,817 lb/yr
Minimum Reduction Required	10% or 6,565 lb/yr

*((3,329,329- 2,597,480 lb/yr)/3,329,329)= 0.22 or 22% Reduction, therefore, 0.22*601,019 lb/yr

Based on the information provided above, it appears that the Township has already met the reduction requirement of 18% with a reduction of 22% due to improvements implemented since 2005, whether public or private. However, the Township will implement additional BMPs to reduce sediment loads as required for the PRP.

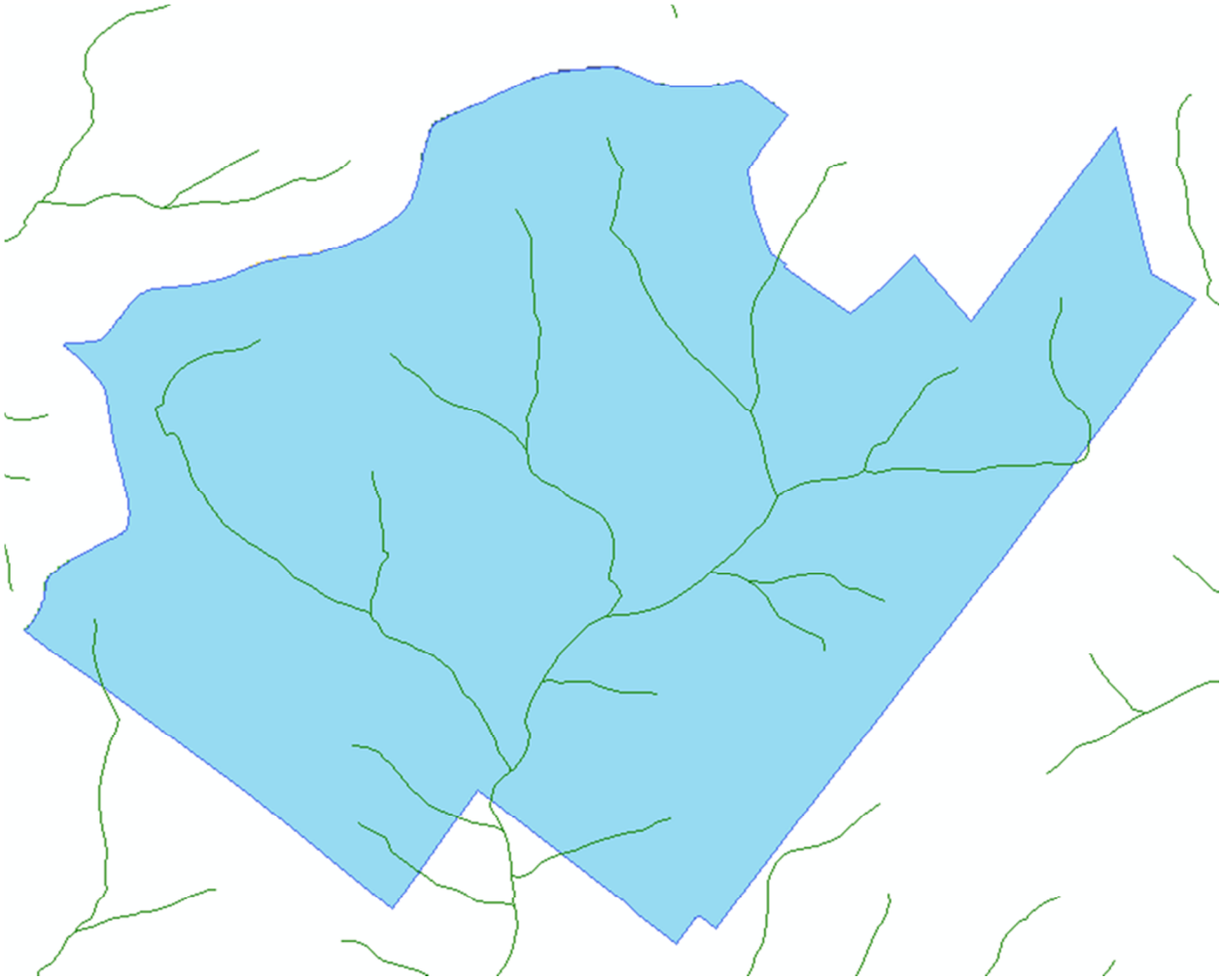
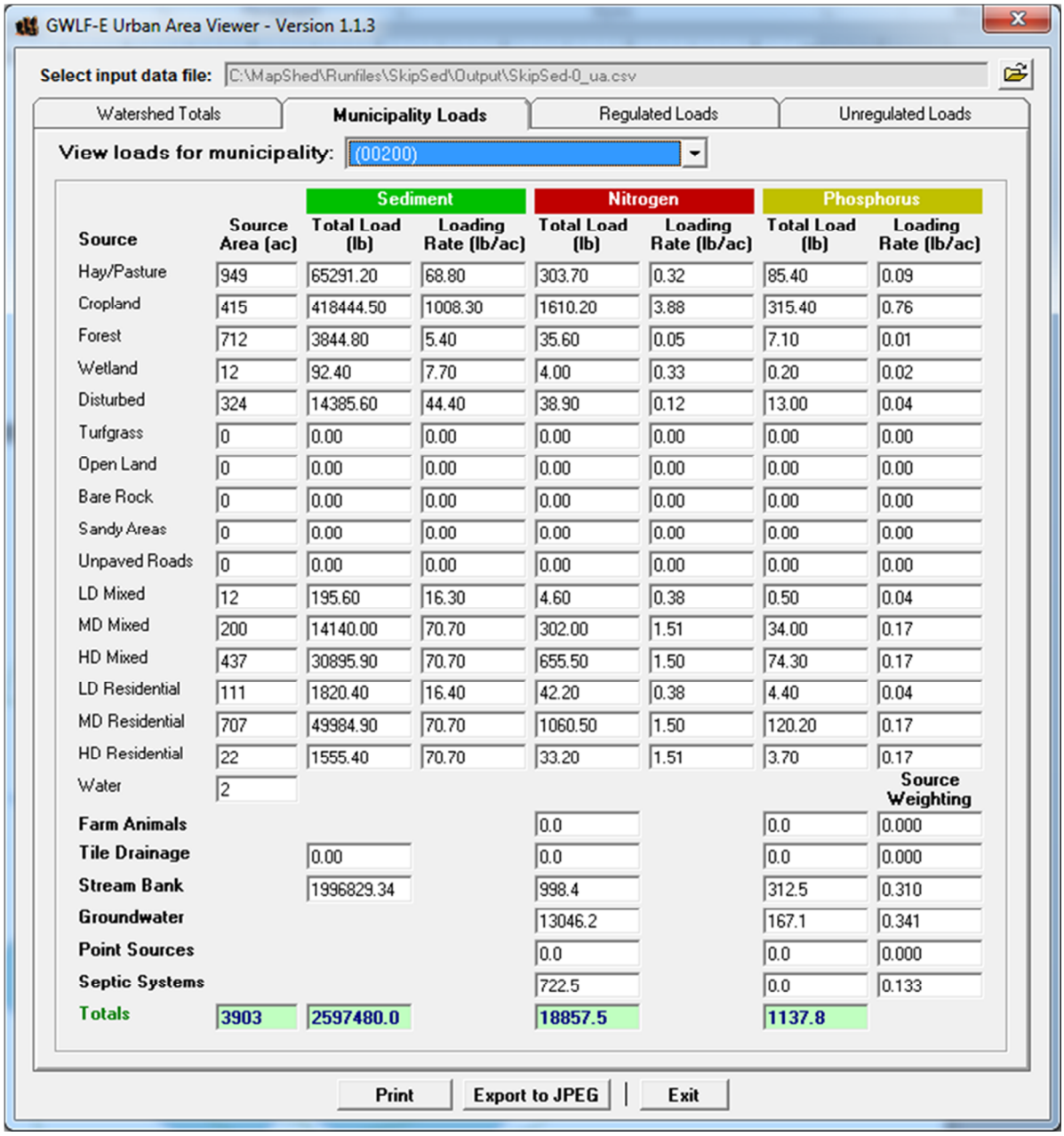


FIGURE 1: FRANCONIA TOWNSHIP'S SKIPPACK CREEK WATERSHED



GWLF-E Urban Area Viewer - Version 1.1.3

Select input data file: C:\MapShed\Runfiles\SkipSed\Output\SkipSed-0_ua.csv

Watershed Totals | **Municipality Loads** | Regulated Loads | Unregulated Loads

View loads for municipality: (00200)

Source	Source Area (ac)	Sediment Total Load (lb)	Sediment Loading Rate (lb/ac)	Nitrogen Total Load (lb)	Nitrogen Loading Rate (lb/ac)	Phosphorus Total Load (lb)	Phosphorus Loading Rate (lb/ac)
Hay/Pasture	949	65291.20	68.80	303.70	0.32	85.40	0.09
Cropland	415	418444.50	1008.30	1610.20	3.88	315.40	0.76
Forest	712	3844.80	5.40	35.60	0.05	7.10	0.01
Wetland	12	92.40	7.70	4.00	0.33	0.20	0.02
Disturbed	324	14385.60	44.40	38.90	0.12	13.00	0.04
Turfgrass	0	0.00	0.00	0.00	0.00	0.00	0.00
Open Land	0	0.00	0.00	0.00	0.00	0.00	0.00
Bare Rock	0	0.00	0.00	0.00	0.00	0.00	0.00
Sandy Areas	0	0.00	0.00	0.00	0.00	0.00	0.00
Unpaved Roads	0	0.00	0.00	0.00	0.00	0.00	0.00
LD Mixed	12	195.60	16.30	4.60	0.38	0.50	0.04
MD Mixed	200	14140.00	70.70	302.00	1.51	34.00	0.17
HD Mixed	437	30895.90	70.70	655.50	1.50	74.30	0.17
LD Residential	111	1820.40	16.40	42.20	0.38	4.40	0.04
MD Residential	707	49984.90	70.70	1060.50	1.50	120.20	0.17
HD Residential	22	1555.40	70.70	33.20	1.51	3.70	0.17
Water	2						
							Source Weighting
Farm Animals				0.0		0.0	0.000
Tile Drainage		0.00		0.0		0.0	0.000
Stream Bank		1996829.34		998.4		312.5	0.310
Groundwater				13046.2		167.1	0.341
Point Sources				0.0		0.0	0.000
Septic Systems				722.5		0.0	0.133
Totals	3903	2597480.0		18857.5		1137.8	

Print | Export to JPEG | Exit

FIGURE 2: FRANCONIA TOWNSHIP'S SKIPPACK CREEK WATERSHED LOADING

Parsing – Using Mapshed, a revised baseline load can be determined from parsing out direct discharge areas, areas from Private/PennDOT/Pennsylvania Turnpike Commission drainage areas, areas addressed under a Chapter 102 NPDES Permit, areas which do not drain to the MS4, etc.:

Total Franconia Twp. Skippack Creek Watershed Acreage =	3,903 Acres	100%
Parsed Areas* =	3,355 Acres	86%
Franconia Twp Planning Area (MS4 System Watershed) =	548 Acres	14%

*See Franconia Township Pollution Reduction Plan and Appendix E for a list of parsed areas.

2017 Adjusted TMDL Sediment Load Reduction for FT = .14*468,915 =	65,648 lbs/yr
10% Required Sediment Reduction = 0.10 * 65,648 lb/yr =	6,565 lbs/yr

FIGURE 3 FRANCONIA TOWNSHIP PLANNING AREA

TABLE D-4: SUMMARY OF PRP PLANNING AREA LOADINGPER MAPSHED

PRP Planning Area	TSS Load (lbs)
Sewershed 0	33,197
Sewershed 1	1,653
Sewershed 2	79,182
Sewershed 3	788
Sewershed 4	145,215
Sewershed 5	661
Sewershed 6	116,072
Sewershed 7	17,072
TOTAL	394,064

Long Term Reduction – The Skippack Creek Sediment TMDL requires an 18% sediment reduction. It appears that the required loading is met, however, the Township remains fully committed to meeting applicable water standards. We reserve the ability to revise the plan and include additional BMPs for consideration if additional controls are required in the long-term.

Short Term Reduction – The MS4 can choose to achieve the WLA or reduce the existing load by 10% (sediment) or 5% (TP), as well as, the pollutant reduction. Under a combined PRP/TMDL Plan, the Township can propose a 10% sediment reduction for this permit term and assume a 5% total phosphorus reduction.

E. BMP Selection to Achieve the Minimum Required Reductions in Pollutant Loading

Franconia Township has a requirement to reduce siltation and nutrient pollution from their MS4 draining to impaired streams. Implementation of BMPs or land use changes are required that will result in meeting the minimum required reduction in pollutant loading within the storm sewershed(s) identified by the MS4. These BMP(s) must be implemented within five (5) years of DEP's approval of coverage under the PAS-13 General Permit, and must be located within the storm sewersheds of the applicable impaired waters.

If the applicant is aware of BMPs that will be implemented by others (either in cooperation with the applicant or otherwise) within the storm sewersheds that will result in net pollution loading reductions (not E&S BMPs to satisfy Chapter 102 requirements), the applicant may propose those BMPs within its TMDL/PRP. In calculating future pollutant loading, the applicant must be

cognizant of planned changes to land uses or BMPs. For example, if a tract of land (<1 acre) currently in pasture will be converted within the next few years to residential land use, and there are no ordinances in place to control the rate, volume or quality of stormwater draining from the tract, the potential net increase in pollutant loading must be factored into the future loading estimate. This means that BMPs must be implemented on the tract or elsewhere within the storm sewersheds to compensate for this change.

Franconia Township plans to achieve a reduction in sediment and nutrients by designing, constructing, operating and maintaining Best Management Practices (BMPs) over the next five (5) years. Table E-1 for the Skippack Creek summarizes the proposed BMPs under consideration, including location, type, and areas treated. The sediment loads are assumed to be reduced after proposed BMPs are implemented for the Storm Sewersheds. Credit can be taken for Street Sweeping if performed at least 25 times per year. The following tables summarize the required pollutant reduction strategy for the Storm Sewersheds.

TABLE E-1: SUMMARY OF BMPS

SELECTED BMP	BMP LOCATION	LENGTH/AREA TREATED BY BMP
Streambank Stabilization	2928 Allentown Rd, (40.289, -75.342)	Up to 470 LF
Wet Pond Retrofit	Godshall Park (40.300, -75.337)	25.56 ac
Riparian Buffer Restoration	898 Laurel Lane (40.285, -75.373)	Up to 29.64 ac

TABLE E-2: MS4 TMDL/PRP STRATEGY SUMMARY

DESCRIPTION	VALUE
Skippack Creek Watershed, FT, Total	3,903 acres
Parsed Area - Total	3,355 acres
Skippack Creek PRP Planning Area	548 acres
Existing Sediment Load	65,648 acres
Minimum Required Sediment Pollutant Load Reduction (%)	10%
Minimum Required Pollutant Load Reduction	6,565 lbs/yr

F. Funding Mechanism(s)

The Municipality intends to apply for related grants, such as TreeVitalize, and Growing Greener Grants, to implement BMPs. The Municipality intends to utilize general fund money to cover the construction costs for the proposed BMPs should grant money not be awarded. Once the PRP has been approved by PADEP, the Municipality intends to authorize design of the BMP(s) depending on whether or not grant funding has been awarded to the Township. At that time a feasibility and cost analysis will be prepared and shared with PADEP.

G. Responsible Parties for Operation and Maintenance (O&M) of BMPs

Once implemented, the BMPs must be maintained in order to continue producing the expected pollutant reductions. Applicants must identify the following for each selected BMP:

- The parties responsible for ongoing O&M;
- The activities involved with O&M for each BMP; and
- The frequency at which O&M activities will occur.

Actual O&M activities will be identified by the MS4 in their Annual MS4 Status Reports, submitted under the Permit.

Table G-1 OPERATION AND MAINTENANCE OF BMPs

NAME OF BMP	LOCATION OF BMP	OWNER/ RESPONSIBLE PARTY	O&M ACTIVITY & FREQUENCY
Streambank Stabilization	Allentown Road	Franconia Sewer Authority	Per PABMP Manual, latest edition
Wet Pond Retrofit	Godshall Park	Franconia Township	Per PABMP Manual, latest edition
Riparian Buffer Restoration	898 Laurel Lane	Franconia Township	Per PABMP Manual, latest edition

H. GENERAL INFORMATION

Terms: The term "nutrients" refers to "Total Nitrogen" (TN) and "Total Phosphorus" (TP) unless specifically stated otherwise in DEP's latest Integrated Report. The terms "sediment," "siltation," and "suspended solids" all refer to inorganic solids and are hereinafter referred to as "sediment."

Pollutants of Concern and Required Reductions: For all TMDL/PRPs, MS4s shall calculate existing loading of the pollutant(s) of concern, in lbs/year; calculate the minimum reduction in loading, in lbs/year; select BMP(s) to reduce loading; and demonstrate that the selected BMP(s) will achieve the minimum reductions.

For PRPs developed for impaired waters (Appendix E), the pollutant(s) are based on the impairment listing, as provided in the MS4 Requirements Table. If the impairment is based on siltation only, a minimum 10% sediment reduction is required. If the impairment is based on nutrients only or other surrogates for nutrients (e.g., "Excessive Algal Growth" and "Organic Enrichment/Low D.O."), a minimum 5% TP reduction is required. If the impaired is due to both siltation and nutrients, both sediment (10% reduction) and TP (5% reduction) must be addressed.

Existing Pollutant Loading: Existing loading must be calculated and reported as of the date of the development of the TMDL/PRP. MS4s may not claim credit for street sweeping and other non-structural BMPs implemented in the past. If structural BMPs were implemented prior to development of the TMDL/PRP and continue to be operated and maintained, the MS4 may claim pollutant reduction credit in the form of reduced existing loading.

> **NOTE** – An MS4 may not reduce its obligations for achieving pollutant load reductions through previously installed BMPs. An MS4 may only use such BMPs to reduce its estimate of existing pollutant loading. For example, if a rain garden was installed ten years ago and is expected to remove 100 lbs of sediment annually, and the overall annual loading of sediment in the storm sewershed is estimated to be 1,000 lbs without specifically addressing the rain garden, an MS4 may not claim that the rain garden satisfies its obligations to reduce sediment loading by 10%. The MS4 may, however, use the rain garden to demonstrate that existing loading is 900 lbs instead of 1,000 lbs, and 90 lbs rather than 100 lbs needs to be reduced during the term of permit coverage.

BMP Effectiveness: All MS4s must use the BMP effectiveness values contained within DEP's BMP Effectiveness Values document (3800-PM-BCW0100m) or Chesapeake Bay Program expert panel reports for BMPs listed in those resources when determining pollutant load reductions in TMDL/PRPs. For BMPs not listed in 3800-PM-BCW0100m or expert panel reports, MS4s may use effectiveness values from other technical resources; such resources must be documented in the TMDL/PRP.

Combining PRPs: If the MS4 discharges into multiple local surface waters impaired for nutrients and/or sediment, one PRP may be submitted to satisfy Appendix E but calculations and BMP selections must be completed independently for the storm sewershed of each impaired water. If, for example, an MS4 permittee must complete three PRPs according to the MS4 Requirements Table for three separate surface waters, storm sewershed maps must be

developed, existing loads must be calculated, and BMPs must be implemented for pollutant reductions independently within those storm sewersheds. In other words, BMPs cannot be implemented in one storm sewershed to count toward pollutant reductions in an entirely separate storm sewershed for a different impaired water.

Where local surface waters are impaired for nutrients and/or sediment, and those waters are tributary to a larger body of water that is also impaired, MS4s can propose BMPs within the upstream impaired waters to meet the pollutant reduction requirements of both the upstream and downstream waters. For example, if Stream A flows through a municipality that is tributary to Stream B, both are impaired and the MS4 has discharges to both streams, the MS4 can implement BMPs in the storm sewershed of Stream A to satisfy pollutant reduction requirements for both Streams A and B. In general, the MS4 permittee would not be able to satisfy pollutant reduction requirements for both streams if BMPs were only implemented in the storm sewershed of Stream B; however, on a case by case basis DEP will consider such proposals where it can be demonstrated that implementing BMPs in the upstream storm sewershed is infeasible.

If, however, Stream A does not flow into Stream B, both are impaired and the MS4 has discharges to both streams, in general DEP would expect that BMPs be implemented in the storm sewershed of both streams to meet pollutant reduction requirements.

MS4s participating in collaborative efforts are encouraged to contact DEP's Bureau of Clean Water during the PRP development phase for feedback on proposed approaches.

Joint PRPs: MS4s may develop and submit a joint PRP, regardless of whether the MS4s will be submitting a "joint NOI" or are already co-permittees. In general, the MS4s participating in a joint PRP should have contiguous land areas. The "study area" to be mapped is the combined storm sewershed for all MS4 jurisdictions.

BMP Selection: MS4s may propose and take credit for only those BMPs that are not required to meet regulatory requirements or otherwise go above and beyond regulatory requirements. For example, a BMP that was installed to meet Chapter 102 NPDES permit requirements for stormwater associated with construction activities may not be used to meet minimum pollutant reductions unless the MS4 can demonstrate that the BMP exceeded regulatory requirements; if this is done, the MS4 may take credit for only those reductions that will occur as a result of exceeding regulatory requirements.

> **NOTE** – Street sweeping may be proposed as a BMP for pollutant loading reductions if 1) street sweeping is not the only method identified for reducing pollutant loading, and 2) the BMP effectiveness values contained in 3800-PM-BCW0100m or Chesapeake Bay Program expert panel reports are utilized.

Submission of PRP: Attach one copy of the PRP with the NOI or individual permit application that is submitted to the regional office of DEP responsible for reviewing the NOI or application. In addition, one copy of the PRP (not the NOI or application) must be submitted to DEP's Bureau of Clean Water (BCW). BCW prefers electronic copies of PRPs, if possible. Email the electronic version of the PRP, including map(s) (if feasible), to RA-EPPAMS4@pa.gov. If the MS4 determines that submission of an electronic copy is not possible, submit a hard copy to:

PA Department of Environmental Protection, Bureau of Clean Water, 400 Market Street, PO Box 8774, Harrisburg, PA 17105-8774.

PRP Implementation and Final Report: Under the PAG-13 General Permit, the permittee must achieve the required pollutant load reductions within 5 years following DEP's approval of coverage under the General Permit, and must submit a report demonstrating compliance with the minimum pollutant load reductions as an attachment to the first Annual MS4 Status Report that is due following completion of the 5th year of General Permit coverage. For example, if DEP issues written approval of coverage to a permittee on June 1, 2018, the required pollutant load reductions must be implemented by June 1, 2023 and the final report documenting the BMPs that were implemented (with appropriate calculations) must be attached to the annual report that is due September 30, 2023. In general, the same methodology used to calculate the existing pollutant loads should be used in the final report to demonstrate the reductions. If BMP effectiveness values are updated in DEP's BMP Effectiveness Values document or Chesapeake Bay Program expert panel reports between the time the PRP is approved and the time the final report is developed, those updated effectiveness values may be used.

Appendix A

MS4 Requirements Table (Municipal) Excerpt

Appendix B: Public Participation

Appendix B-1	Public Notice & Proof of Advertisement
Appendix B-2	Public Comments Received
Appendix B-3	Public Meeting Agenda and Meeting Minutes
Appendix B-4	Record of Consideration

Appendix C

Franconia Township MS4 PRP Map

Appendix D

3800-PM-BCW0100m BMP Effectiveness Values

NPDES Stormwater Discharges from MS4

Total Maximum Daily Load (TMDL) & Pollutant Reduction Plan (PRP) For Indian Creek

Franconia Township

Montgomery County, Pennsylvania

September 2017

Prepared For:

Franconia Township
671 Allentown Road
Telford, PA 18969-2205
(215) 723-1137

Prepared By:

Gilmore & Associates, Inc.
Engineers ♦ Land Surveyors ♦ Planners ♦ GIS Consultants
65 East Butler Avenue, Suite 100
Franconia PA 18901
(215)345-4330

MS4 Pollutant Reduction Plan
for
Franconia Township
Montgomery County, Pennsylvania

Table of Contents

List of Tables

Appendices

Franconia Township, Montgomery County, is submitting this TMDL and Pollution Reduction Plan (PRP) in accordance with the requirements of *Individual Permit PAG-13 for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems* (MS4); specifically, in accordance with the *MS4 Requirements Table (Municipal) Anticipated Obligations for Subsequent NPDES Permit Term*. Tributaries within the Urbanized Area within the Township drain to the East Branch Perkiomen, Indian, Skippack and West Branch Neshaminy Creeks. The Indian, Skippack and West Branch Neshaminy Creeks are deemed impaired and TMDL/PRP Plans are required for the Indian and Skippack Creeks. Franconia Township is required to create a TMDL and PRP due to discharges from their MS4 to Impaired Downstream Waters, which are listed as impaired as noted below and in Appendix A. The plan was developed using the modeling program, Mapshed, to determine the adjusted baseline sediment loading as permitted by DEP based on the land use files provided. Based on the results, the Township's required Wasteload Allocation (WLA) was reduced by 67%. Based on the Total Maximum Daily Loading for Indian Creek, Franconia Township is required to reduce the sediment loading by 74%. Therefore, Franconia Township has met the required sediment loading reduction requirement. Regardless, the Township is still required to submit a TMDL/PRP Plan.

Franconia Township Municipal MS4 Requirements PAG130005 (6/26/2017)

Unnamed Tributaries to Skippack Creek		Water/Flow Variability (4c)
Skippack Creek Watershed TMDL	TMDL Plan-Siltation (4a)	
West Branch Neshaminy Creek	Appendix E-Siltation (4a), Appendix E-Excessive Algal Growth, Nutrients, Organic Enrichment/Low D.O. (5)	Water/Flow Variability (4c)
West Branch Skippack Creek		Water/Flow Variability (4c)
Indian Creek TMDL	TMDL Plan-Nutrients (4a)	
Indian Creek	Appendix E-Siltation (4a)	Cause Unknown, TDS (4a)
Skippack Creek	Appendix E-Excessive Algal Growth, Nutrients (5)	

The intent of this MS4 PRP is to establish the existing loading of sediment and pollutants discharged from the MS4 to Impaired Downstream Waters, and to present a plan to reduce these loadings. This Plan is organized to follow the "Required PRP Elements" presented in the PRP Instructions included as part of the *PAG-13 MS4 Individual Permit* instruction packages. This Plan will be evaluated and updated by Franconia Township on an as-needed basis, based on 1) its effectiveness in reducing pollutant loads in discharges from the regulated small MS4, 2) the reasonableness of achieving the reductions, and 3) the cost/benefit of the BMP(s) under consideration. If this occurs, Franconia Township will work with the Department of Environmental Protection (DEP) for review and approval of any revisions or updates.

A. Public Participation

As part of the preparation of this MS4 TMDL/PRP, public participation is required. The public participation measures that are required are:

- A complete copy of the TMDL/PRP shall be available for public review.
- A public notice containing a statement describing the plan, where it may be reviewed by the public and the length of time provided for the receipt of comments shall be published by the MS4 in a newspaper of general circulation in the area.
- Written comments shall be accepted by the MS4 for a minimum of **30 days** from the date of public notice.
- The MS4 shall accept comments from any interested member of the public at a public meeting or hearing, which may include a regularly scheduled meeting of the governing body of the municipality or municipal authority that is the permittee.
- Consider, and make a record of the consideration of, each timely comment received from the public during the public comment period concerning the plan, identifying any changes made to the plan in response to the comment.

A copy of the newspaper public notice, copies of all written comments received from the public, and a copy of the MS4's record of consideration of all timely comments received in the public comment period are included with this TMDL/PRP in Appendix B. Note that all comments

received during the public comment period were considered. Revisions to the TMDL/PRP in response to those comments were made as applicable.

- Date TMDL/PRP public notice was published in newspaper: _____
- Date TMDL/PRP was made available for public review/comment: _____
- End date for receipt of written comments (30 days from the date of public notice): _____
- Date TMDL/PRP listed on the public meeting agenda: _____
- Date TMDL/PRP comments were accepted at a public meeting: _____

B. Map

Mapping is an integral part of developing the TMDL/PRP and requires a level of detail suitable to determine the existing land uses, impervious/pervious surface coverages, topography and loading for the listed impairments. The MS4 TMDL/PRP Map in Appendix C shows the PRP Planning Area, which includes all storm sewershed boundaries, as well as, the proposed locations of structural BMPs to be implemented to achieve pollutant load reductions. The storm sewershed boundaries shown on the Franconia Township MS4 TMDL/PRP Map constitute the combined storm sewershed of all MS4 outfalls within the MS4's jurisdiction that discharge to Skippack Creek Watershed, including the West Branch Skippack Creek, and the Indian Creek.

The Township's MS4 TMDL/PRP Map includes parsed areas, which are areas within the storm sewershed that are excluded in the calculation of land area and existing pollutant loading. BMPs located within parsed areas do not count toward achieving pollutant reduction objectives. The PRP Planning Area was calculated as shown below:

Franconia Township Indian Creek Watershed Acreage	3,013 Acres	
Non-Regulated, Direct Discharge, Private Areas	2,227 Acres	74%
MS4 Watershed	786 Acres	26%

Examples of land area that have been parsed include:

- The land area associated with non-municipal stormwater NPDES permit coverage that exists within the urbanized area of a municipality;

- Land area associated with PennDOT roadways and the Pennsylvania Turnpike (roads and right of ways);
- Land areas in which stormwater runoff does not enter the MS4. If an accurate storm sewershed map is developed, these lands may be parsed or excluded as part of that process. Potential examples include homeowner's associations and schools which do not contain municipal roads or other municipal infrastructure.

C. Pollutants of Concern

For all TMDL/PRPs, Franconia Township shall calculate the existing loading of the pollutant(s) of concern (lb/year); calculate the minimum reduction in loading (lb/year); select BMP(s) to reduce loading; and demonstrate that the selected BMPs will achieve the minimum reductions.

For TMDL/PRPs developed for impaired waters, the pollutants are based on the "Appendix E" impairment listing as provided in the *MS4 Requirements Table (Municipal) Anticipated Obligations for Subsequent NPDES Permit Term*. If the impairment is based on siltation only, a minimum of 10% sediment reduction is required. If the impairment is based on nutrients only or other surrogates for nutrients (e.g., "Excessive Algal Growth" and "Organic Enrichment/Low D.O."), a minimum 5% Total Phosphorus (TP) reduction is required. If the impairment is due to both siltation and nutrients, both sediment (10% reduction) and TP (5% reduction) must be addressed. The Indian Creek is impaired for siltation and nutrients as follows:

Franconia Township Municipal MS4 Requirements

Indian Creek TMDL	TMDL Plan-Nutrients (4a)
Indian Creek	Appendix E-Siltation (4a)

Therefore, in this case, a minimum 5% reduction is required for Nutrients, as well as, a 10% reduction for Siltation within the Indian Creek. The Township is using a presumptive approach in which a 10% sediment reduction is assumed to also result in a 5% TP reduction. The MS4 TMDL/PRP presents the minimum reduction in loading for each impairment as pounds per year.

Indian Creek was placed on Pennsylvania's 1996, 2004 and 2006 Clean Water Act's 303(d) list of impaired waterbodies for not meeting designated aquatic life use due to various pollutants, including salinity, siltation, and nutrients. Impairment classifications were supported by chemical and biological sampling from 1996 to 2004. Impairments included municipal point sources, agriculture, urban and residential stormwater runoff, and sewage effluent at two locations. Based on the 2008 TMDL, the sediment TMDL was developed to meet loading targets established from a reference watershed (and subsequently remanded). The nutrient TMDL was developed to meet the seasonal average concentration targets for total phosphorus. There was a Remand for Sediment TMDL so no Sediment TDML is currently required. Franconia Township is still required to submit a TMDL Plan for Nutrients and a PRP Plan for Sediment.

Indian Creek Sediment Allocation Project Update: Indian Creek Watershed stakeholders were notified on June 29, 2017 that EPA plans to determine the existing sediment loads and sediment allocations to attain water quality standards in the Indian Creek watershed located in Montgomery County, PA. They are calling a meeting is present the new existing sediment loads, start a discussion on possible allocation scenarios and offer stakeholders a chance to provide feedback and ask questions.

D. Existing Loading, Wasteload Allocations and Analysis of TMDL Objectives

Existing loading must be calculated and reported as of the date of the development of this TMDL/PRP. The date the existing loading was calculated is July 12, 2017. Any methodology that calculates existing pollutant loading in terms of pounds per year, evaluates BMP-based pollutant reductions utilizing BMP effectiveness values contained in Document 3800-PM-BCW0100m (see Appendix D) or Chesapeake Bay Program expert panel reports, uses average annual precipitation conditions and is based on sound science may be considered acceptable. If a modeling tool will be used to estimate existing loading, the same tool should be used to estimate future pollutant loading for different BMP implementation scenarios to ensure consistency with input parameters between existing and future loading.

MS4s may not claim credit for street sweeping and/or other non-structural BMPs implemented in the past. If structural BMPs were implemented prior to development of this TMDL/PRP and

continue to be operated and maintained, the MS4 may claim pollutant reduction "credit" in the form of reduced existing loading. An MS4 may not reduce its obligation for achieving pollutant load reductions through previously installed BMPs. In order to claim a credit, identify all such structural BMPs in Section D of the TMDL/PRP along with the following information:

- Detailed description of the BMP;
- Latitude and longitude coordinated for that BMP;
- Location of the BMP on the storm sewershed map;
- The permit number, if any, that authorized installation of the BMP;
- Calculations demonstrating the pollutant reduction achieved by the BMP;
- The date the BMP was installed and a statement that the BMP continues to serve the function(s) it was designed for; and
- The operation and maintenance (O&M) activities and O&M frequencies associated with the BMP.

The MS4 may optionally submit design drawings of the BMP for previously installed or future BMPs with the TMDL/PRP. BMPs installed by the Township since the sampling of the TMDL took place are as follows and have been incorporated into the plan as a reduced existing sediment load:

- Rain Garden (40.313263, -75.365643) 2014
- Riparian Buffer Plantings (40.298833, -75.379574) 2009

Franconia Township's permit obligation applies only to runoff collected by and discharged from the MS4. The storm sewershed land area that is collected by and discharges from the MS4 to the Indian Creek has been delineated using PAMAP data known as Light Detection and Ranging (LiDAR) contours. LiDAR contours were also utilized in determining the areas for parsing. The following table summarizes the storm sewershed land areas. The sediment loads generated from these non-tributary areas are subtracted (parsed) from the total storm sewershed load to determine what is attributed to the MS4. The existing loading totals subject to the requirement was multiplied by 10% to determine the required sediment reduction. Franconia Township has the following acreage in the Impaired Downstream Watersheds as noted below in Table D-3. Table D-4 is a summary of the reduction requirements.

TABLE D-1: SUMMARY OF NUTRIENT TMDL REQUIREMENTS FROM TMDL PLAN FOR INDIAN CREEK

TMDL	11,389 lbs/yr
Wasteload Allocation (WLA)(for all MS4s)	1,598 lbs/yr
Load Allocation (LA)	0 lbs/yr
Margin of Safety (MOS)	80 lbs/yr
Franconia Township Calculated Nutrient Loading	2,863 lbs/yr
WLA for Franconia Township	2,119 lbs/yr
Gross TMDL Nutrient Load Reduction	736 lbs/yr

Based on the TMDL Plan, the Township's existing nutrient load and reduction requirement are:

2004 Existing Franconia Township Nutrient Loading per TMDL = 2,863 lb/yr

2004 TMDL Nutrient Load Reduction for Franconia Twp (74%) = 736 lb/yr.

If a combined PRP/TMDL Plan is developed and the planning areas are combined into one, the existing loads may only be derived using a new modelling effort such as MapShed. This modeling must utilize the same land use/land cover information that was used in development of the TMDL. In modeling the existing load, MapShed was utilized in the development of this MS4 TMDL/PRP to determine the source areas and the total load of sediment based on the existing land uses. MapShed is a customized GIS interface that is used to create input data for an enhanced version of the GWLF watershed model originally developed at Cornell University. MapShed was improved by Dr. Barry Evans and his group at PSIEE using AVGWLF, a GIS-based watershed modeling tool that uses hydrology, land cover, soils, topography, weather, pollutant discharges, and other critical environmental data to model sediment and nutrient transport within a watershed. Below is the output from MapShed displaying the source area and existing loading for the portion of the MS4 that drains to the Indian Creek: As noted previously, the Township is using a presumptive approach in which a 10% sediment reduction is assumed to also result in a 5% TP reduction.

2017 Existing Franconia Township Nutrient Loading per Mapshed = 956 lb/yr

2017 TMDL Nutrient Load Reduction for Franconia Township (74%) = 248 lb/yr

The existing and reduction load comparisons show a 67% reduction from the TMDL requirement.

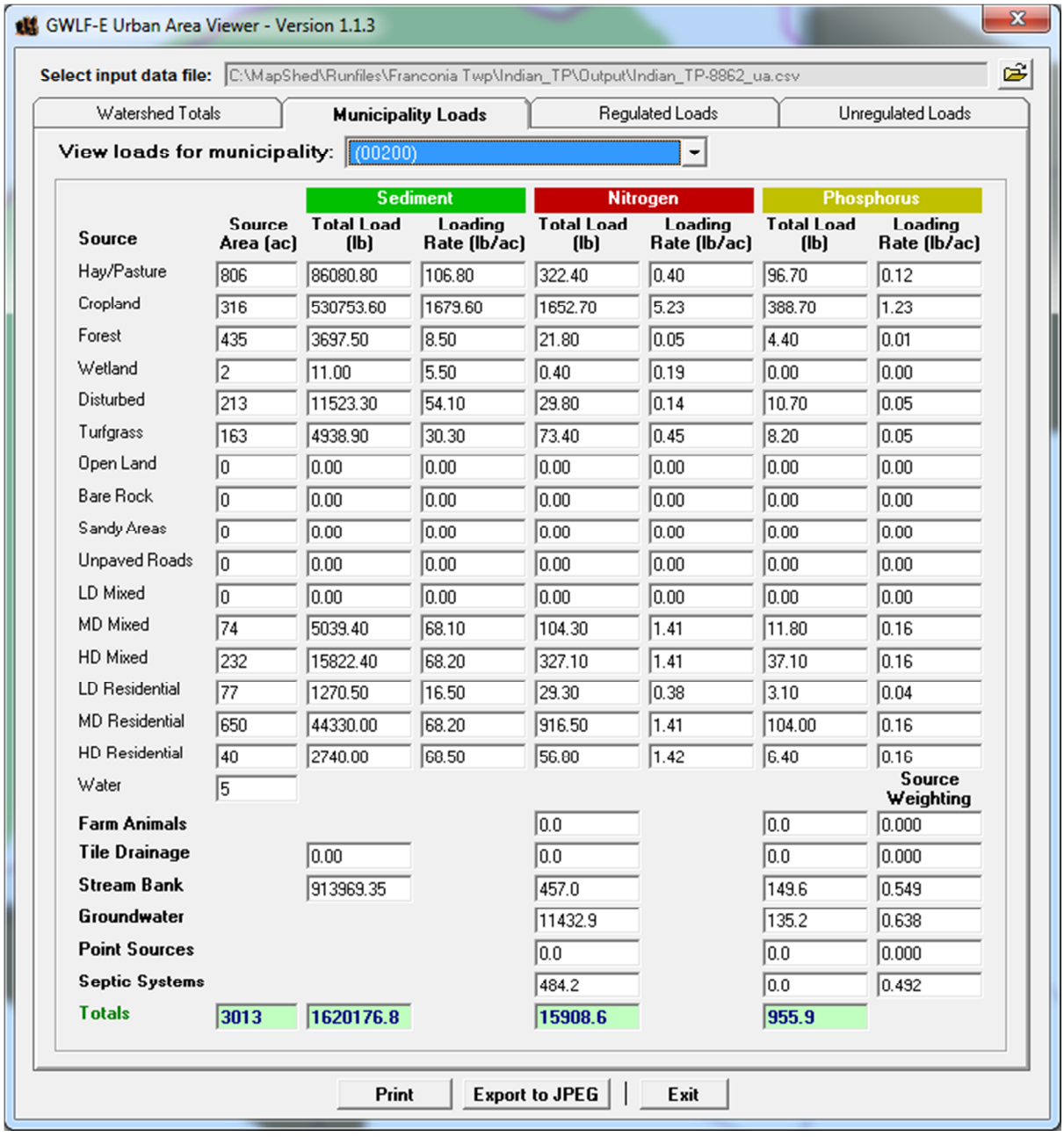
(2,863-956)/2,863 = 0.67 or 67%

The EPA issued errata to the Indian Creek Nutrient TMDL on May 19, 2015, which requires a 74% reduction (revised from 70%) of total phosphorus for Franconia Township. Therefore, the Township has achieved all but 7% of the required reduction with improvements installed since the 2004 Sampling. Regardless, the Township is also required to propose a 10% sediment reduction (which assumes a 5% reduction in nutrients) for the required PRP. Thus, the Township can carry over the remaining nutrient reduction to the next permit term. In order to address these requirements Mapshed was first used to parse out areas of the Township they are not responsible for in order to determine an adjusted loading based only on the MS4 Planning Area.

TABLE D-2: SUMMARY OF SEDIMENT LOADING

Area Description	**Acres**	**Existing Sediment Load (lbs/yr)**
Indian Creek Total Watershed	4,485	2,404,337
Indian Creek Watershed in Franconia Township	3,013	1,620,177
FT PRP Planning Area (Minus Parsed Land)	786	233,475
Minimum 10% Reduction Requirement		23,378

Franconia Township Indian Creek Watershed Acreage	3,013 Acres	
Non-Regulated, Direct Discharge, Private Areas	2,227 Acres	74%
MS4 Watershed	786 Acres	26%



GWLF-E Urban Area Viewer - Version 1.1.3

Select input data file: C:\MapShed\Runfiles\Franconia Twp\Indian_TP\Output\Indian_TP-8862_ua.csv

Watershed Totals | **Municipality Loads** | Regulated Loads | Unregulated Loads

View loads for municipality: (00200)

		Sediment		Nitrogen		Phosphorus	
Source	**Source Area (ac)**	**Total Load (lb)**	**Loading Rate (lb/ac)**	**Total Load (lb)**	**Loading Rate (lb/ac)**	**Total Load (lb)**	**Loading Rate (lb/ac)**
Hay/Pasture	806	86080.80	106.80	322.40	0.40	96.70	0.12
Cropland	316	530753.60	1679.60	1652.70	5.23	388.70	1.23
Forest	435	3697.50	8.50	21.80	0.05	4.40	0.01
Wetland	2	11.00	5.50	0.40	0.19	0.00	0.00
Disturbed	213	11523.30	54.10	29.80	0.14	10.70	0.05
Turfgrass	163	4938.90	30.30	73.40	0.45	8.20	0.05
Open Land	0	0.00	0.00	0.00	0.00	0.00	0.00
Bare Rock	0	0.00	0.00	0.00	0.00	0.00	0.00
Sandy Areas	0	0.00	0.00	0.00	0.00	0.00	0.00
Unpaved Roads	0	0.00	0.00	0.00	0.00	0.00	0.00
LD Mixed	0	0.00	0.00	0.00	0.00	0.00	0.00
MD Mixed	74	5039.40	68.10	104.30	1.41	11.80	0.16
HD Mixed	232	15822.40	68.20	327.10	1.41	37.10	0.16
LD Residential	77	1270.50	16.50	29.30	0.38	3.10	0.04
MD Residential	650	44330.00	68.20	916.50	1.41	104.00	0.16
HD Residential	40	2740.00	68.50	56.80	1.42	6.40	0.16
Water	5						**Source Weighting**
Farm Animals				0.0		0.0	0.000
Tile Drainage		0.00		0.0		0.0	0.000
Stream Bank		913969.35		457.0		149.6	0.549
Groundwater				11432.9		135.2	0.638
Point Sources				0.0		0.0	0.000
Septic Systems				484.2		0.0	0.492
Totals	**3013**	**1620176.8**		**15908.6**		**955.9**	

Print | Export to JPEG | Exit

FIGURE 1: LOADING TO INDIAN CREEK WATERSHED WITHIN FRANCONIA TOWNSHIP

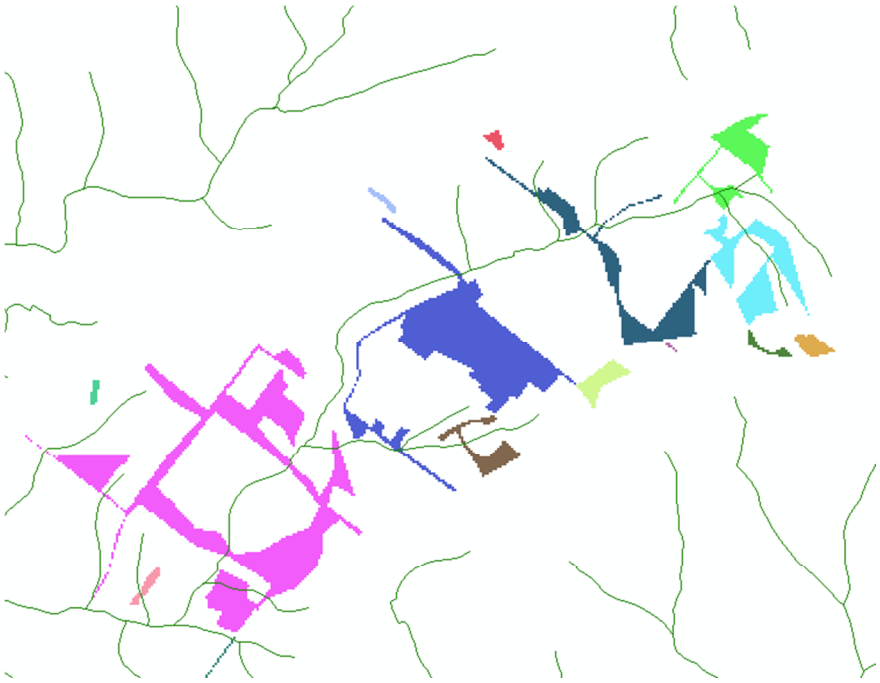


TABLE D-3: SUMMARY OF FRANCONIA TOWNSHIP PLANNING AREA LOADING

Parcel	TSS Load (lbs)	TP Load (lbs)
1	8,743	4
2	16,343	9
3	2,497	1
5	19,503	10
6	425	0
7	60,867	34
8	7,501	4
9	1,703	0
11	112,280	69
12	1,116	0
13	2,497	1
14	0	0
Total Baseline Load	**233,475.00**	**132.00**
Required Sediment Reduction (10%)	**23,347.50**	

E. BMP Selection to Achieve the Minimum Required Reductions in Pollutant Loading

Franconia Township has a requirement to reduce siltation and nutrient pollution from their MS4 draining to impaired streams. Implementation of BMPs or land use changes are required that will result in meeting the minimum required reduction in pollutant loading within the storm sewershed(s) identified by the MS4. These BMP(s) must be implemented within five (5) years of DEP's approval of coverage under the PAS-13 General Permit, and must be located within the storm sewersheds of the applicable impaired waters.

If the applicant is aware of BMPs that will be implemented by others (either in cooperation with the applicant or otherwise) within the storm sewersheds that will result in net pollution loading reductions (not E&S BMPs to satisfy Chapter 102 requirements), the applicant may propose those BMPs within its TMDL/PRP. In calculating future pollutant loading, the applicant must be cognizant of planned changes to land uses or BMPs. For example, if a tract of land (<1 acre) currently in pasture will be converted within the next few years to residential land use, and there are no ordinances in place to control the rate, volume or quality of stormwater draining from the tract, the potential net increase in pollutant loading must be factored into the future loading estimate. This means that BMPs must be implemented on the tract or elsewhere within the storm sewersheds to compensate for this change.

Franconia Township plans to achieve a reduction in sediment by designing, constructing, operating and maintaining Best Management Practices (BMPs) over the next five (5) years. Table E-1 for Indian Creek summarizes the proposed BMPs under consideration, including location, type, and areas treated. The sediment loads are assumed to be reduced after proposed BMPs are implemented for the Storm Sewersheds. Credit may be taken for Street Sweeping if performed at least 25 times per year. The following tables summarize the required pollutant reduction strategy for the Storm Sewersheds.

TABLE E-1: SUMMARY OF POTENTIAL BMPS

SELECTED BMP	BMP LOCATION	LENGTH/AREA TREATED BY BMP
Bioswale	593 Godshall Rd (40.315752, -75.361377)	Up to 10.8 ac
Streambank Stabilization	Public Works, 496 Indian Creek Road (40.315996, -75.367522)	Up to 500 LF

TABLE E-2: MS4 TMDL/PRP STRATEGY SUMMARY

DESCRIPTION	VALUE
Total Indian Creek Watershed in Franconia Twp	3,013 acres
Parsed Area - Total	2,227 acres
Indian Creek PRP Planning Area	786 acres
Existing Sediment Load To FT's Indian Crk MS4	233,475 lb/yr
Required Sediment Pollutant Load Reduction (%)	10%
Minimum Required Pollutant Load Reduction	23,348 lb/yr

F. Funding Mechanism(s)

The Municipality intends to apply for related grants, such as TreeVitalize, and Growing Greener Grants, to implement BMPs. The Municipality intends to utilize general fund money to cover the construction costs for the proposed BMPs should grant money not be awarded. Once the PRP has been approved by PADEP, the Municipality intends to authorize design of the BMP(s) depending on whether or not grant funding has been awarded to the Township. At that time a feasibility and cost analysis will be prepared and shared with PADEP.

G. Responsible Parties for Operation and Maintenance (O&M) of BMPs

Once implemented, the BMPs must be maintained in order to continue producing the expected pollutant reductions. Applicants must identify the following for each selected BMP:

- The parties responsible for ongoing O&M;
- The activities involved with O&M for each BMP; and

- The frequency at which O&M activities will occur.

Actual O&M activities will be identified by the MS4 in their Annual MS4 Status Reports, submitted under the Permit.

Table G-1 OPERATION AND MAINTENANCE OF BMPs

NAME OF BMP	LOCATION OF BMP	OWNER/ RESPONSIBLE PARTY	O&M ACTIVITY & FREQUENCY
Bioswale	593 Godshall Road	Franconia Township	Per PABMP Manual, latest edition
Streambank Stabilization	Public Works 496 Indian Creek Road	Franconia Township	Per PABMP Manual, latest edition

H. GENERAL INFORMATION

Terms: The term "nutrients" refers to "Total Nitrogen" (TN) and "Total Phosphorus" (TP) unless specifically stated otherwise in DEP's latest Integrated Report. The terms "sediment," "siltation," and "suspended solids" all refer to inorganic solids and are hereinafter referred to as "sediment."

Pollutants of Concern and Required Reductions: For all TMDL/PRPs, MS4s shall calculate existing loading of the pollutant(s) of concern, in lbs/year; calculate the minimum reduction in loading, in lbs/year; select BMP(s) to reduce loading; and demonstrate that the selected BMP(s) will achieve the minimum reductions.

For PRPs developed for impaired waters per Appendix E, the pollutant(s) are based on the impairment listing, as provided in the MS4 Requirements Table. If the impairment is based on siltation only, a minimum 10% sediment reduction is required. If the impairment is based on nutrients only or other surrogates for nutrients (e.g., "Excessive Algal Growth" and "Organic Enrichment/Low D.O."), a minimum 5% TP reduction is required. If the impaired is due to both siltation and nutrients, both sediment (10% reduction) and TP (5% reduction) must be addressed.

Existing Pollutant Loading: Existing loading must be calculated and reported as of the date of the development of the TMDL/PRP. MS4s may not claim credit for street sweeping and other non-structural BMPs implemented in the past. If structural BMPs were implemented prior to development of the TMDL/PRP and continue to be operated and maintained, the MS4 may claim pollutant reduction credit in the form of reduced existing loading.

> **NOTE** – An MS4 may not reduce its obligations for achieving pollutant load reductions through previously installed BMPs. An MS4 may only use such BMPs to reduce its estimate of existing pollutant loading. For example, if a rain garden was installed ten years

ago and is expected to remove 100 lbs of sediment annually, and the overall annual loading of sediment in the storm sewershed is estimated to be 1,000 lbs without specifically addressing the rain garden, an MS4 may not claim that the rain garden satisfies its obligations to reduce sediment loading by 10%. The MS4 may, however, use the rain garden to demonstrate that existing loading is 900 lbs instead of 1,000 lbs, and 90 lbs rather than 100 lbs needs to be reduced during the term of permit coverage.

BMP Effectiveness: All MS4s must use the BMP effectiveness values contained within DEP's BMP Effectiveness Values document (3800-PM-BCW0100m) or Chesapeake Bay Program expert panel reports for BMPs listed in those resources when determining pollutant load reductions in TMDL/PRPs. For BMPs not listed in 3800-PM-BCW0100m or expert panel reports, MS4s may use effectiveness values from other technical resources; such resources must be documented in the TMDL/PRP.

Combining PRPs: If the MS4 discharges into multiple local surface waters impaired for nutrients and/or sediment, one PRP may be submitted to satisfy Appendix E but calculations and BMP selections must be completed independently for the storm sewershed of each impaired water. If, for example, an MS4 permittee must complete three PRPs according to the MS4 Requirements Table for three separate surface waters, storm sewershed maps must be developed, existing loads must be calculated, and BMPs must be implemented for pollutant reductions independently within those storm sewersheds. In other words, BMPs cannot be implemented in one storm sewershed to count toward pollutant reductions in an entirely separate storm sewershed for a different impaired water.

Where local surface waters are impaired for nutrients and/or sediment, and those waters are tributary to a larger body of water that is also impaired, MS4s can propose BMPs within the upstream impaired waters to meet the pollutant reduction requirements of both the upstream and downstream waters. For example, if Stream A flows through a municipality that is tributary to Stream B, both are impaired and the MS4 has discharges to both streams, the MS4 can implement BMPs in the storm sewershed of Stream A to satisfy pollutant reduction requirements for both Streams A and B. In general, the MS4 permittee would not be able to satisfy pollutant reduction requirements for both streams if BMPs were only implemented in the storm sewershed of Stream B; however, on a case by case basis DEP will consider such proposals where it can be demonstrated that implementing BMPs in the upstream storm sewershed is infeasible.

If, however, Stream A does not flow into Stream B, both are impaired and the MS4 has discharges to both streams, in general DEP would expect that BMPs be implemented in the storm sewershed of both streams to meet pollutant reduction requirements.

MS4s participating in collaborative efforts are encouraged to contact DEP's Bureau of Clean Water during the PRP development phase for feedback on proposed approaches.

Joint PRPs: MS4s may develop and submit a joint PRP, regardless of whether the MS4s will be submitting a "joint NOI" or are already co-permittees. In general, the MS4s participating in a joint PRP should have contiguous land areas. The "study area" to be mapped is the combined storm sewershed for all MS4 jurisdictions.

BMP Selection: MS4s may propose and take credit for only those BMPs that are not required to meet regulatory requirements or otherwise go above and beyond regulatory requirements. For example, a BMP that was installed to meet Chapter 102 NPDES permit requirements for stormwater associated with construction activities may not be used to meet minimum pollutant reductions unless the MS4 can demonstrate that the BMP exceeded regulatory requirements; if this is done, the MS4 may take credit for only those reductions that will occur as a result of exceeding regulatory requirements.

> **NOTE** – Street sweeping may be proposed as a BMP for pollutant loading reductions if 1) street sweeping is not the only method identified for reducing pollutant loading, and 2) the BMP effectiveness values contained in 3800-PM-BCW0100m or Chesapeake Bay Program expert panel reports are utilized.

Submission of PRP: Attach one copy of the PRP with the NOI or individual permit application that is submitted to the regional office of DEP responsible for reviewing the NOI or application. In addition, one copy of the PRP (not the NOI or application) must be submitted to DEP's Bureau of Clean Water (BCW). BCW prefers electronic copies of PRPs, if possible. Email the electronic version of the PRP, including map(s) (if feasible), to RA-EPPAMS4@pa.gov. If the MS4 determines that submission of an electronic copy is not possible, submit a hard copy to: PA Department of Environmental Protection, Bureau of Clean Water, 400 Market Street, PO Box 8774, Harrisburg, PA 17105-8774.

PRP Implementation and Final Report: Under the PAG-13 General Permit, the permittee must achieve the required pollutant load reductions within 5 years following DEP's approval of coverage under the General Permit, and must submit a report demonstrating compliance with the minimum pollutant load reductions as an attachment to the first Annual MS4 Status Report that is due following completion of the 5th year of General Permit coverage. For example, if DEP issues written approval of coverage to a permittee on June 1, 2018, the required pollutant load reductions must be implemented by June 1, 2023 and the final report documenting the BMPs that were implemented (with appropriate calculations) must be attached to the annual report that is due September 30, 2023. In general, the same methodology used to calculate the existing pollutant loads should be used in the final report to demonstrate the reductions. If BMP effectiveness values are updated in DEP's BMP Effectiveness Values document or Chesapeake Bay Program expert panel reports between the time the PRP is approved and the time the final report is developed, those updated effectiveness values may be used.

Appendix A

MS4 Requirements Table (Municipal) Excerpt

Appendix B: Public Participation

Appendix B-1	Public Notice & Proof of Advertisement
Appendix B-2	Public Comments Received
Appendix B-3	Public Meeting Agenda and Meeting Minutes
Appendix B-4	Record of Consideration

Appendix C

Franconia Township MS4 PRP Map

Appendix D

3800-PM-BCW0100m BMP Effectiveness Values

FRANCONIA TOWNSHIP POLLUTANT REDUCTION PLAN (PRP)

INDIAN CREEK, SKIPPACK CREEK, & WEST BRANCH NESHAMINY CREEK WATERSHEDS

BUCKS COUNTY
WEST ROCKHILL TOWNSHIP
MONTGOMERY COUNTY
FRANCONIA TOWNSHIP
TELFORD BOROUGH
BUCKS COUNTY
HILLTOWN TOWNSHIP
SOUDERTON BOROUGH
WEST BRANCH NESHAMINY CREEK
Perkiomen Creek
East Branch
SALFORD TOWNSHIP
HATFIELD TOWNSHIP
SOUDERTON BOROUGH
TOWAMENCIN TOWNSHIP
LOWER SALFORD TOWNSHIP
UPPER SALFORD TOWNSHIP
INDIAN CREEK
SKIPPACK CREEK
WEST BRANCH SKIPPACK CREEK
BMP 1 – BIOSWALE
RAIN GARDEN – 2014
BMP 2 – STREAMBANK STABILIZATION
BMP 3 RIPARIAN BUFFER RESTORATION
RIPARIAN BUFFER PLANTINGS – 2029
BMP 3 – RIPARIAN BUFFER
CONVERSION FROM FARM TO MEADOW
BMP 2 – BASIN RETROFIT
BMP 1 – STREAMBANK STABILIZATION

LEGEND

- INDIAN CREEK PLANNING AREA
- SKIPPACK CREEK PLANNING AREA
- URBANIZED AREA
- WATERSHED BOUNDARY LINE

DATE: JULY 10, 2017