

MS4 NPDES Permit Pollution Reduction Plan (PRP)

FOR

Topton Borough
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19562

Prepared by
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Table of Contents

Purpose

Pollution Prevention

Pollution Reduction Plan Elements

- A. Public Participation
- B. Mapping
- C. Pollutants of Concern
- D. Determine Existing Loading for Pollutants of Concern
- E. Select BMPs to Achieve the Minimum Required Reductions in Pollutant Loading
- F. Identify Funding Mechanisms
- G. Identify Responsible Parties for Operation and Maintenance (O&M) of BMPs
- H. General Information

List of Tables

- Table 1 Total PRP Planning Area
- Table 2 DEP MS4 Requirements Table (last revised 2/8/17)
- Table 3 Land Uses, Impervious Coverage and Loading Rates – Toad Creek & Tributary
- Table 4 Existing Pollution Load to Toad Creek & Tributary
- Table 5: BMP Option #1 – Stream Restoration Sediment Reduction Calculations
- Table 6: BMP Option #2A – Bioswale Sediment Reduction Calculations
- Table 7: BMP Option #2B – Basin Enhancement Sediment Reduction Calculations
- Table 8: BMP Option #3 - Tributary Stream Restoration Calculations
- Table 9: Summary Proposed BMPs – Toad Creek T
- Table 10: BMP #1 - Summary of Funding Sources for Toad Creek Stream Restoration
- Table 11: BMP #2 - Summary of Funding Sources for Toad Creek BMPs
- Table 12: BMP #3 - Summary of Funding Sources for Tributary Stream
- Table 13: Responsible Parties for Operation and Maintenance of BMPs

List of Maps

- Map 1 Storm Sewer & Street Map
- Map 2 Topo & Impaired Stream Map
- Map 3 Storm Drainage Areas Map
- Map 4 Land Use Map

- Appendix A DEP Municipal MS4 Requirement Table
- Appendix B Public Advertisements
- Appendix C Sign in Sheet from Public Meeting
- Appendix D PA DEP, Attachment B ‘Developed Land Loading Rates for PA Counties’

List of Acronyms

BMP	Best Management Practices
CBW	Chesapeake Bay Watershed
CWA	Clean Water Act
DEP	Department of Environmental Protection
GIS	Geographic Information System
IDDE	Illicit Discharge Detection and Elimination
MCM	Minimum Control Measure
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
PRP	Pollution Reduction Plan
SOP	Standard Operating Procedure
TMDL	Total Maximum Daily Load
UA	Urbanized Area

Common Terms related to Stormwater Management
(*As defined by PA Code 25, Chapter 92a. and Chapter 96)

Best Management Practice (BMP) – schedules of activities, prohibitions of practices, maintenance procedures and other management practices to prevent or reduce pollutant loading to surface waters of the Commonwealth.

Buffer (Vegetated) – A permanent strip of dense perennial vegetation established parallel to the contours of and perpendicular to the dominant slope of the field for purposes that include slowing water runoff, enhancing water infiltration and minimizing risk of any potential pollutants from leaving the field and reaching surface waters.

Intermittent Stream – A body of water flowing in a channel or bed composed primarily of substrates associated with flowing water, which, during period of the year, is below the local water table and obtains its flow from both surface runoff and groundwater discharges.

Loading Capacity * - the greatest amount of loading that a surface water can receive without violating a water quality standard

MS4 – Municipal Separate Storm Sewer System – A separate storm sewer (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels or storm drains) which is all of the following:

- (i) Owned or operated by a State, City, town, Borough, County District association or other public body (created by or under State Law) having jurisdiction over disposal of sewage, industrial wastes, stormwater or other wastes, including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or a designated and approved management agency under section 208 of the Federal Act (33 U.S.C.A. 1288) that discharges surface waters of this Commonwealth.
- (ii) Designed or used for collecting or conveying stormwater
- (iii) Not a combined sewer
- (iv) Not part of a POTW (Publicly Owned Treatment Works)

Perennial Stream – A body of water flowing in a channel or bed composed primarily of substrates associated with flowing waters and capable, in the absence of pollution or other manmade stream disturbances, of supporting benthic macroinvertebrate community which is composed of two or more recognizable taxonomic groups of organisms which are large enough to be seen by the unaided eye and can be retained by a United States Standard No. 30 sieve and live at least part of their life cycles within or upon available substrates in a body of water or water transport system.

Separate Storm Sewer – A conveyance or system of conveyances including pipes, conduits, ditches and channels, primarily used for collecting and conveying stormwater runoff.

Storm Sewershed – The land area which drains to the municipal separate storm sewer system from within the jurisdiction of the MS4 permittee.

Stormwater – runoff from precipitation, snow melt runoff and surface runoff and drainage.

Surface Waters – Perennial and intermittent streams, rivers, lakes, reservoirs, ponds, wetlands, springs, natural seeps and estuaries, excluding water at facilities approved for wastewater treatment such as wastewater treatment impoundments, cooling water ponds and constructed wetlands used as part of a wastewater treatment process.

Purpose

The submission of this Pollution Reduction Plan (PRP) is in accordance with the requirements as defined in the *General Permit PAG-13 Authorization to Discharge Under the National Pollutant Discharge Elimination System (NPDES)*. This general permit, issued by the PA Department of Environmental Protection (DEP), grants municipalities the authority to discharge its stormwater into Waters of the Commonwealth under a *Stormwater Discharges from Small Municipal Storm Sewer Systems (MS4)* permit. For June 2018, Tipton Borough is required to obtain an NPDES MS4 permit for its stormwater discharges into the Little Lehigh Creek Watershed.

The majority of Tipton Borough (67%) discharges to the Little Lehigh Creek Watershed. There are two drainage areas that contribute flows downstream to the Little Lehigh Creek, Toad Creek and an unnamed tributary that feeds into Toad Creek. Both of these creeks have been listed by PA DEP as being impaired for sediment and for nutrient enrichment. In accordance with the 2018 NPDES MS4 permit, municipalities shall prepare a Pollution Reduction Plan (PRP) to address how the Borough intends to implement water quality initiatives to reduce further degradation of downstream receiving waters.

This Pollution Reduction Plan (PRP) may be evaluated by Tipton Borough at any time for its effectiveness in reducing pollutant loads from its stormwater discharges. If the Borough believes the PRP should be revised or best management practices (BMP) updated, Tipton Borough shall work with the Regional Office of DEP for review and approval of any revisions and/or updates.

Pollution Prevention

By developing guidelines to help Tipton Borough manage its stormwater objectives, the 'front end' planning and design process becomes an important tool to assist in the thoughtful prevention of additional pollutants discharging into the Borough's impaired streams. Controls and management solutions shall be reviewed to limit cases of removing pollutants from one location and medium, only to transfer them and their possible liabilities to another location. Addressing water quality and pollution concerns at the beginning of a project can decrease the cost, risks and environmental concerns in managing a problem after it has been created.

Implementation of Tipton Borough's PRP plan shall be a multimedia approach, in that program requirements shall integrate educational materials, opportunities for the public to participate, include operation and maintenance measures, and training events, whenever possible.

POLLUTION REDUCTION PLAN ELEMENTS

A. PUBLIC PARTICIPATION

Public participation is an essential part of the PRP because it enhances buy-in from landowners that may have an impact on pollutant discharges, it can uncover missing elements or errors in the calculations, and builds cooperative partnerships among the municipality and other local entities.

On June 12th, 2017, Topton Borough scheduled an MS4 presentation by the Borough Engineer's office to provide an overview on the MS4 NPDES permit to the public as the Borough would be a new permittee starting in 2018. The presentation also reviewed the requirement of a Pollution Reduction Plan (PRP), why it was being required and the drainage areas affected within Borough limits.

On July 10th, 2017 at Borough Hall, Topton Borough scheduled the MS4 presentation and public meeting. The meeting reviewed the Pollution Reduction Plan (PRP), focusing on the required sediment reduction and proposed BMPs anticipated to address the impaired stream impacts. The meeting was publicly advertised in the Reading Eagle on July 3rd. A copy of the public notice is included in Appendix B.

At the meeting copies of the presentation were handed out and available for residents in attendance. Copies of the report and presentation remained at Borough Hall for review. The public was given 30 days to provide commentary on the report's contents. The residents were able to submit comments directly to Borough Hall in writing, or by email to Topton Borough's office.

B. MAPPING

In order to determine how much existing sediment was being contributed by the municipality to its receiving streams, the Borough needed to first examine how stormwater runoff was entering its boundaries, how the stormwater runoff was being impacted once inside its boundaries, and how the stormwater was then collected and discharged from the municipality. The Borough was not an MS4 reporting community prior and needed to develop a storm sewer and drainage map. This map was a key component for showing the locations of storm outfalls, inlets, manholes, pipes, swales and pipe discharge locations. This map was used as a base to identify land uses and/or impervious/pervious surfaces and the drainage areas associated with each MS4 outfall.

The map needed to be sufficiently detailed to identify the "planning area" relevant to satisfying the requirements of Appendix D and/or Appendix E in the *Municipal Requirements MS4 Table* published by PA DEP and last updated on February 8, 2017 (See Table 2). The map shall also be able to demonstrate the proposed BMPs were located in appropriate storm sewersheds to meet the requirements.

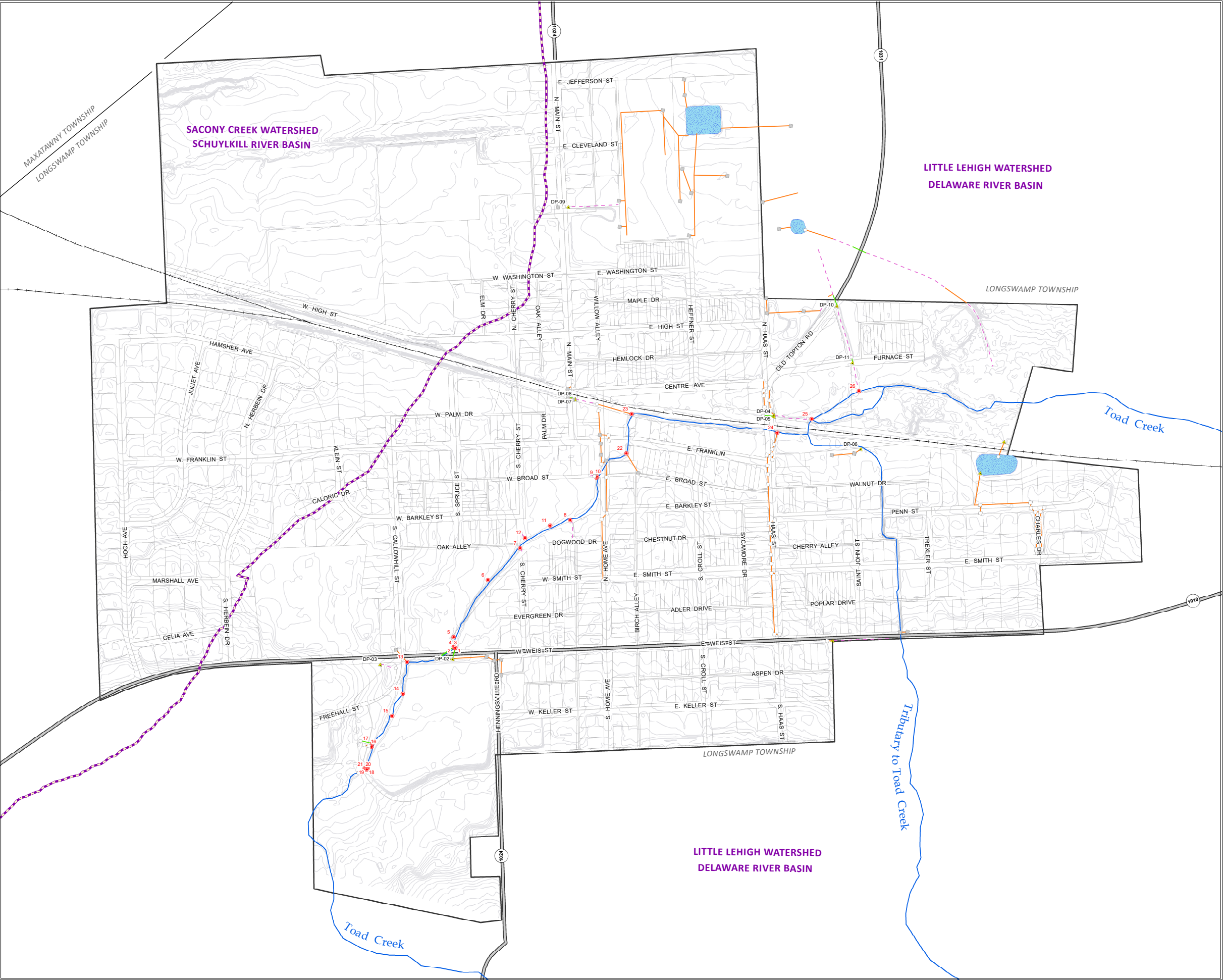
The following GIS platform maps were utilized for analysis and development of the Borough's PRP.

1. Storm Sewer & Street Map – existing basemap showing the municipal storm sewer system with outfall locations, streams and drainage channels.
2. Topo & Impaired Stream Map – contour information was provided by LIDAR shapefile information downloaded from Pennsylvania Spatial Data Access (PASDA) website. The contours provide information on the general grading and how stormwater is directed through the Borough. The impaired stream information was provided by PA DEP online GIS mapping service eMAP. The DEP site provides information on the reach extent and location of impaired streams.
3. Storm Drainage Areas Map – drainage areas to each MS4 outfall were evaluated by the Borough Engineer's office using the topographic information and assessing how the stormwater runoff entered and traveled through the storm sewer system by street inlets and pipes. The drainage areas also include 'dispersed discharges' where runoff is not piped and does not have single point source, but is allowed to flow across a surface into a stream or receiving body of water, such as ponds, wetlands, tributary streams.
4. Impairment Area Map – after the drainage areas were outlined, a storm sewershed boundary was delineated. This boundary shows which areas of the Borough drain to and impact each stream, specifically Toad Creek. Any land use areas draining to non-impaired streams were not included in the PRP calculations.
5. Land Use Map – land uses were evaluated for two different sewersheds: Toad Creek and the tributary of Toad Creek. Determining the land use for a property is essential for calculating the pervious and impervious areas within each drainage area since different types of land uses will have different levels of impervious coverage.
6. Parsing – the map may show areas that are to be "parsed" from the planning area. At the MS4's discretion, certain areas may be shown on the map that are within the storm sewershed but are not included in the calculation of land area or the existing pollution loading. These areas are already covered by an NPDES permit for the control of stormwater. If, however, the land is removed from the planning area, BMPs implemented on that land may not be used as credit toward meeting the MS4's pollutant loading reduction requirements.

Topton Borough did not parse out any properties as part of this PRP.

BOROUGH OF TOPTON
Berks County, Pennsylvania

STORM SEWER MAP
Drainage to Little Lehigh Creek



LEGEND

Local Road

State Road

Railroads (Active Lines)

Streams

StormwaterBMPs

Watershed Boundary

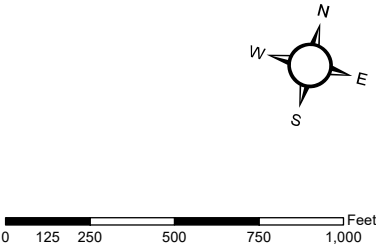
Sub-Drainage Areas

Parcels

Tipton Boundary

Stormwater Structures

- OUTFALL
- DISCHARGE POINT
- PIPE OPENING
- C INLET
- M INLET
- STORM PIPE
- ROAD CULVERT
- SWALE



Source Information:

Municipal Boundaries, State Roads, Local Roads, Railroad Data:
Pennsylvania Department of Transportation, Bureau of Planning and Research, Cartographic Information Division, last updated 2010.

Stream Centerline Data:
FEMA Digital Flood Insurance Rate Map Database for Berks County PA, last updated 2012

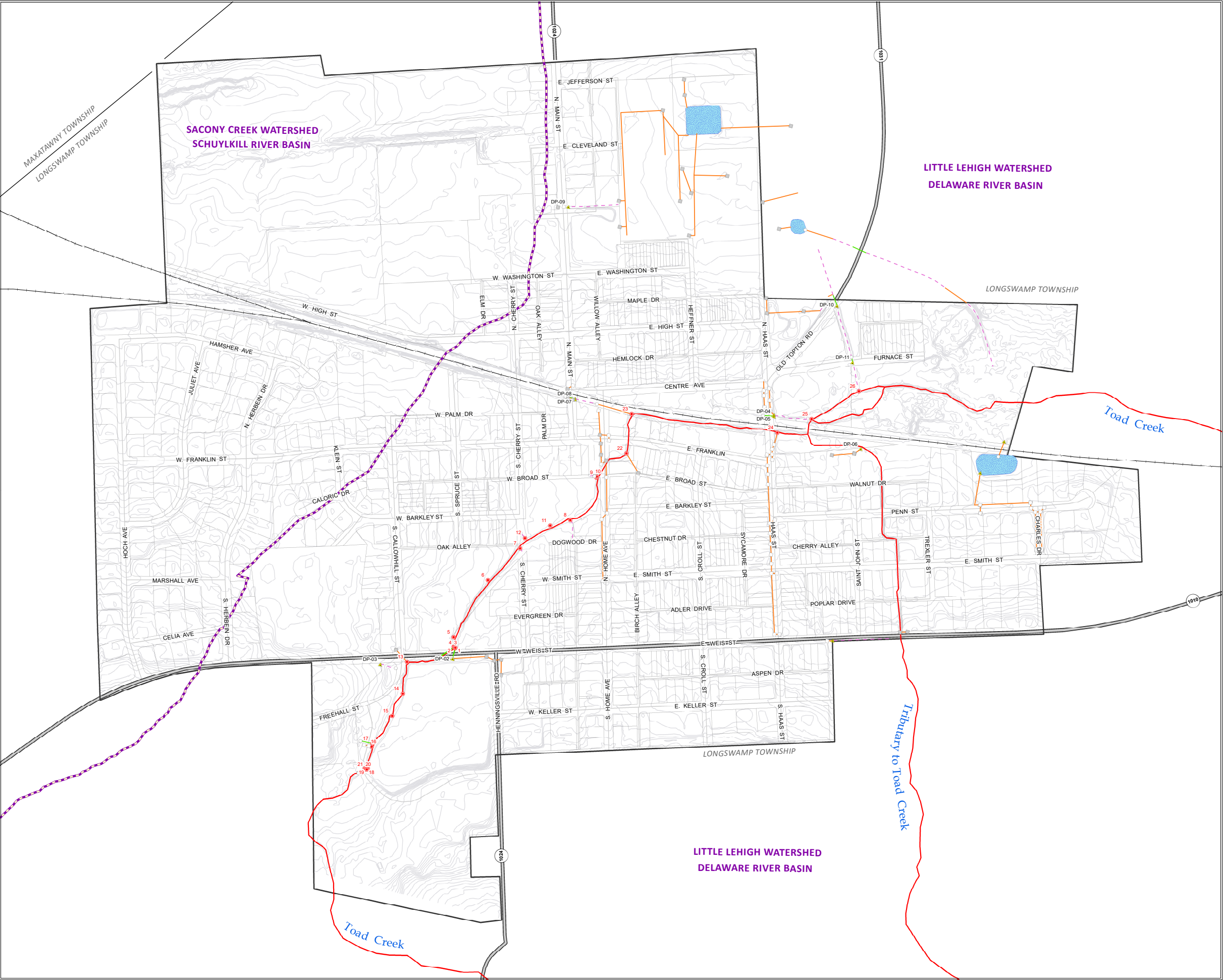
Land Uses: Land categories taken from WikiWatershed, Model My Watershed Online Tool, Site Storm Model Scenarios. Transferred to GIS shapefiles by Barry Isett & Associates Inc.

Outfalls: Field located by Barry Isett & Associates Inc. last updated June 2017

BOROUGH OF TOPTON
Berks County, Pennsylvania

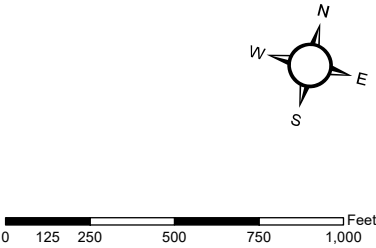
IMPAIRED STREAM MAP

Drainage to Little Lehigh Creek



LEGEND

Local Road	Stormwater Structures
State Road	OUTFALL
Railroads (Active Lines)	DISCHARGE POINT
Streams	PIPE OPENING
Impaired Streams	C INLET
StormwaterBMPs	M INLET
Watershed Boundary	STORM PIPE
Parcels	ROAD CULVERT
Tipton Boundary	SWALE



Source Information:

Municipal Boundaries, State Roads, Local Roads, Railroad Data:
Pennsylvania Department of Transportation, Bureau of Planning and Research, Cartographic Information Division, last updated 2010.

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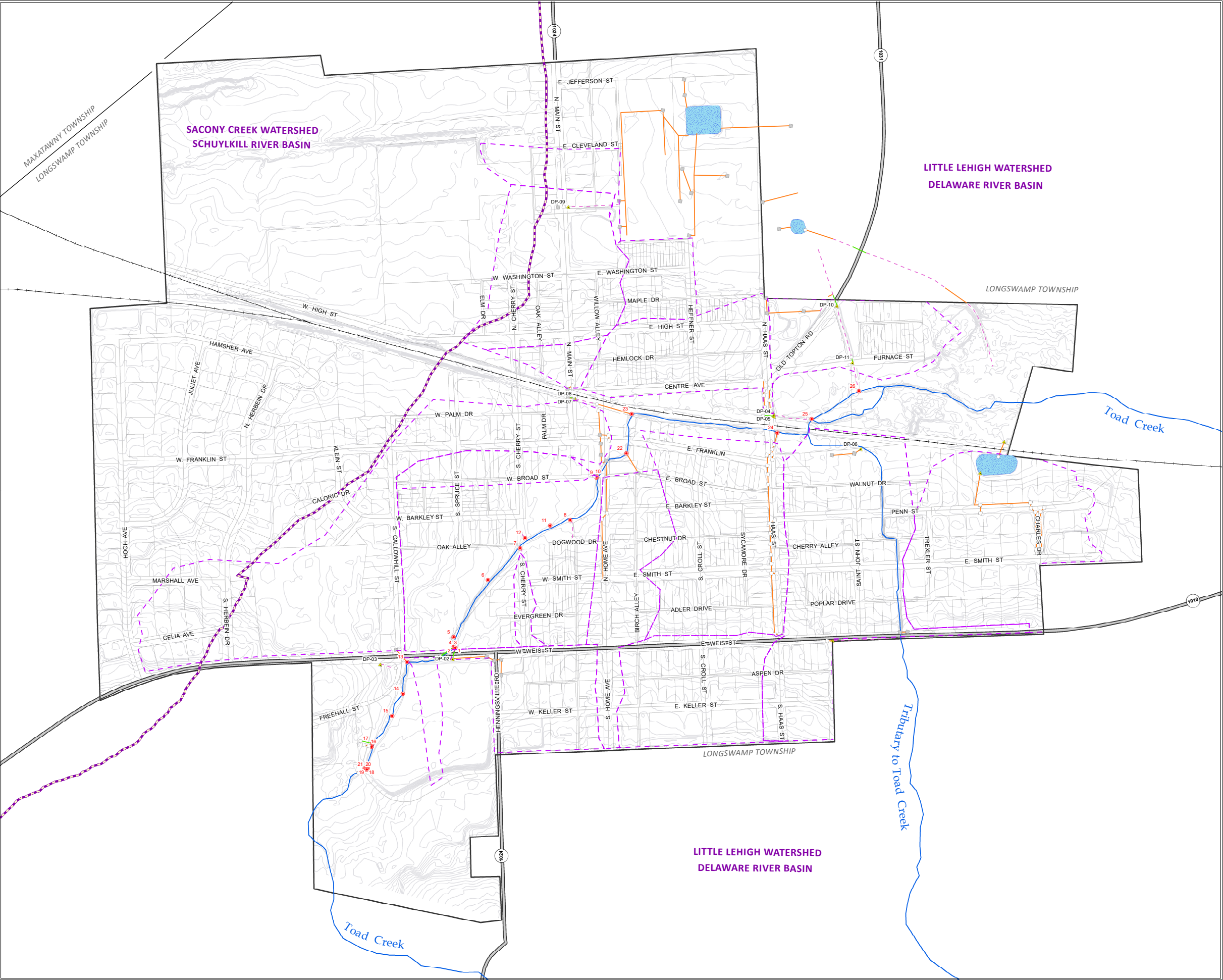
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BOROUGH OF TOPTON
Berks County, Pennsylvania

STORM DRAINAGE AREA MAP

Drainage to Little Lehigh Creek



LEGEND

Local Road	Stormwater Structures
State Road	OUTFALL
Railroads (Active Lines)	DISCHARGE POINT
Streams	PIPE OPENING
StormwaterBMPs	C INLET
Watershed Boundary	M INLET
Sub-Drainage Areas	STORM PIPE
Parcels	ROAD CULVERT
Tipton Boundary	SWALE

North arrow pointing North (N), South (S), East (E), and West (W).

Scale bar in feet: 0, 125, 250, 500, 750, 1,000.

Source Information:

Municipal Boundaries, State Roads, Local Roads, Railroad Data:
Pennsylvania Department of Transportation, Bureau of Planning and Research, Cartographic Information Division, last updated 2010.

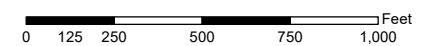
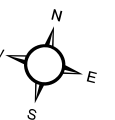
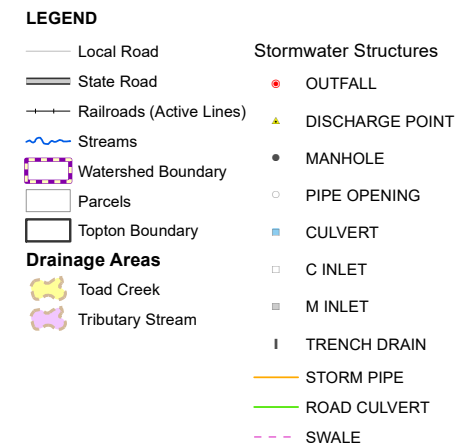
Stream Centerline Data:
FEMA Digital Flood Insurance Rate Map Database for Berks County PA, last updated 2012

Land Uses: Land categories taken from WikiWatershed, Model My Watershed Online Tool, Site Storm Model Scenarios. Transferred to GIS shapefiles by Barry Isett & Associates Inc.

Outfalls: Field located by Barry Isett & Associates Inc. last updated June 2017

Berks County, Pennsylvania

Drainage to Little Lehigh Creek



Source Information:

Municipal Boundaries, State Roads, Local Roads, Railroad Data:
Pennsylvania Department of Transportation, Bureau of Planning and Research, *Categorical Information Division*, last updated 2010.

Stream Centerline Data:
FEMA Digital Flood Insurance Rate Map Database for Berks County PA, last updated 2012

Land Uses: Land categories taken from *Watershed, Model My Watershed* Online Tool, Site Storm Model Scenarios. Transferred to GIS shapefiles by Barry Isett & Associates Inc.

Outfalls: Field located by Barry Isett & Associates Inc. last updated June 2017

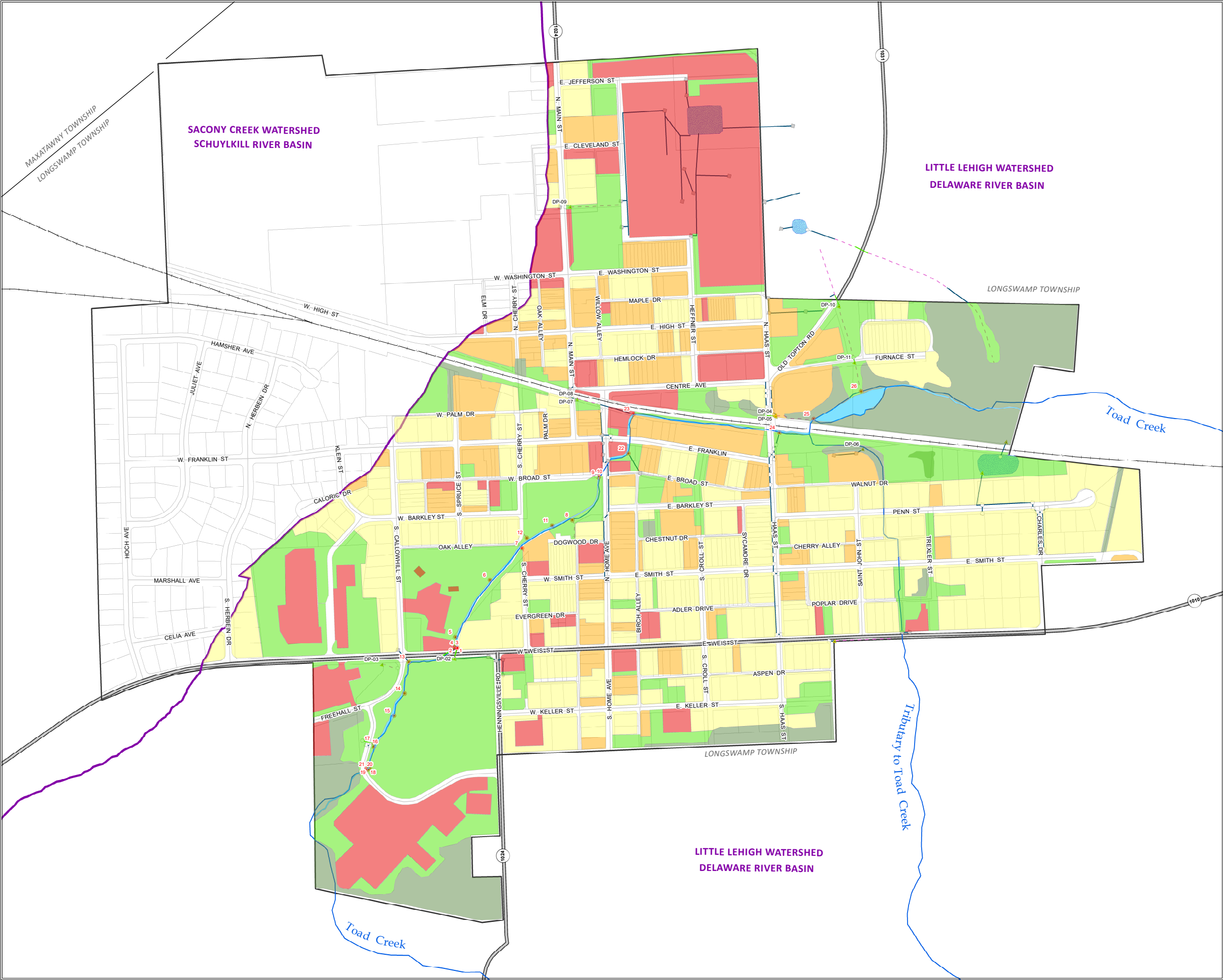
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BOROUGH OF TOPTON
Berks County, Pennsylvania

LAND USE MAP

Drainage to Little Lehigh Creek



LEGEND

Local Road

State Road

Railroads (Active Lines)

Streams

Impaired Streams

StormwaterBMPs

Watershed Boundary

Parcels

Tipton Boundary

Stormwater Structures

OUTFALL

DISCHARGE POINT

PIPE OPENING

C INLET

M INLET

STORM PIPE

ROAD CULVERT

SWALE

LEGEND - LAND USES

LU_HighIntensity

LU_MediumIntensity

LU_LowIntensity

LU_OpenSpace

LU_OpenWater

LU_Wooded

0 125 250 500 750 1,000 Feet

Source Information:

Municipal Boundaries, State Roads, Local Roads, Railroad Data:
Pennsylvania Department of Transportation, Bureau of Planning and Research, Cartographic Information Division, last updated 2010.

Stream Centerline Data:
FEMA Digital Flood Insurance Rate Map Database for Berks County PA, last updated 2012

Land Uses: Land categories taken from WikiWatershed, Model My Watershed Online Tool, Site Storm Model Scenarios. Transferred to GIS shapefiles by Barry Isett & Associates Inc.

Outfalls: Field located by Barry Isett & Associates Inc. last updated June 2017

Table 1: Total PRP Planning Areas

Mapped	Area	Acres
Toad Creek & Unnamed Tributary		
PRP Planning Area	13,418,029 SF	307 AC

C. POLLUTANTS OF CONCERN

The Borough shall identify the pollutants of concern for each storm sewershed or the overall PRP planning area. DEP's MS4 Requirements Table identified Topton Borough as having impaired stream waters. Toad Creek is impaired due to sediment, while the unnamed tributary is impaired due to nutrients (i.e. organic enrichment). The terms "sediment", "siltation" and "suspended solids" all refer to inorganic solids.

The table below shows the impaired waters receiving discharges from the Borough, and the pollutant(s) that are of concern to that stream.

Table 2: DEP MS4 Requirements Table (last revised 2/8/17)

MS4 Name	NPDES ID	Individual Permit Required?	Reason	Impaired Downstream Waters or Applicable TMDL Name	Requirement(s)	Other Cause(s) of Impairment
Topton Borough		Yes	SP	Little Lehigh Creek	Appendix E – Siltation (5)	
				Unnamed Tributaries to Little Lehigh Creek	Appendix E – Organic Enrichment (5)	Other Habitat Alterations, Water Flow Variability (4c)

The EPA defines sediment as *'the loose sand, clay, silt and other soil particles that settle at the bottom of a body of water. Sediment can come from soil erosion or from the decomposition of plant and animals. Wind, water and ice help carry these particles to rivers, lakes and streams.'* Sediment is a pollution of concern due to its degradation of water quality, which impacts sources of drinking water; increases water turbidity (cloudiness) causing impacts to aquatic habitat and fish health; and alters the depth and direction of drainage areas which can result in flooding issues.

The EPA notes that nitrogen pollution is *'one of America's most widespread, costly and challenging environmental problems, and is caused by excess nitrogen and phosphorous in the air and water.'* Although Nitrogen and Phosphorous are natural elements and support both animal

and plant life, too much of either can impact our air quality, alter plant growth, decrease aquatic habitat and impact our food and drinking resources.

For all PRPs, the MS4 shall calculate the existing loading of the pollutant(s) of concern in pounds per year (lbs/yr). Topton Borough utilized its mapping information to determine the existing contribution of sediment and Phosphorous being discharged into Toad Creek and its tributary.

Topton Borough is required to reduce the amount of sediment discharge by 10%, and Phosphorous by 5%. The MS4 shall select the Best Management Practices (BMPs) suited to reduce this pollution loading. The PRP shall demonstrate that the selected BMPs will achieve the minimum reductions required by DEP.

If the impairment is based on nutrients only or other surrogates for nutrients, then a minimum 5% reduction of Phosphorous is required. If the impairment is due to both sediment and nutrients, then both 10% reduction in sediment and 5% reduction in total Phosphorous must be addressed. PRP's may use a presumptive approach in which it is assumed that a 10% sediment reduction will also accomplish a 5% Phosphorous reduction. However, MS4s may not presume that a reduction in nutrients will accomplish a commensurate reduction in sediment.

D. DETERMINE EXISTING LOADING FOR POLLUTANTS OF CONCERN

There are several possible methods to estimating the existing load, ranging from the simplistic to the complex. One method to estimate existing loading is the Simplified Method. This method determines the percent of impervious and pervious surface within the urbanized area of the storm sewershed and calculates the existing loading by multiplying those land areas (acres) by pollutant loading rates (lbs/acre/yr). This method does not take into consideration the different types of land uses within the storm sewershed.

Use of the simplified method is not required. Any methodology that uses the following factors based on sound science may be considered acceptable:

- calculates existing pollutant loading in terms of pounds per year, and
- evaluates BMP-based pollution reductions utilizing DEP's BMP Effectiveness Values contained in 3800-PM-BCW0100m, or
- evaluates BMP -based pollution reduction utilizing Chesapeake Bay Program expert panel reports, and
- uses average annual precipitation conditions, and
- considers both overland flow and stream erosion

The Borough Engineer's office utilized the WikiWatershed online tool from the Stroud Water Research Center. Use of the GIS platform and WikiWatershed was an approved method noted by PA DEP. Since different land uses have different impacts on impervious coverage, the

WikiWatershed model was determined to give the Borough more accurate pollution loading calculations.

Aerial photography was utilized through a GIS platform to outline the various land use boundaries within each of the drainage areas for the planning area. The square footage of each land use was calculated by the GIS program and then compiled into a spreadsheet to get the total square footage of each land use.

The existing loading estimates were calculated on September 15, 2017 (date of NOI submission) using Attachment B of the PRP Instructions - DEP's BMP Effectiveness Values. Tables 3a and 3b show the calculation method and breakdown of land uses for determining the existing loading rates within each of the impaired sewersheds: Toad Creek and the Tributary to Toad Creek. Table 4a and 4b show what the total contribution of sediment Topton is estimated to contributing to these two streams.

Table 3: Land Uses, Impervious Coverage and Loading Rates - Toad Creek & Tributary

LAND USE CATEGORY ¹	AREA (SF)	ACRES (AC)	STROUD TOOL IMPERV (%) ¹	TYPE	AREA	LOADING RATE (LB/AC) ²	EXISTING LOAD SED.	LOADING RATE (LB/AC) ²	EXISTING LOAD PHOS.
DEVELOPED, OPEN SPACE	2,613,023.13	59.99	0.19	IMPERVIOUS	11.40	1925.79	21,949.16	2.26	25.76
				PERVIOUS	48.59	264.29	12,841.66	0.98	47.62
DEVELOPED, LOW INTENSITY	3,814,154.79	87.56	0.49	IMPERVIOUS	42.90	1925.79	82,625.76	2.26	96.96
				PERVIOUS	44.66	264.29	11,802.16	0.98	43.76
DEVELOPED, MEDIUM INTENSITY	1,548,542.15	35.55	0.79	IMPERVIOUS	28.08	1925.79	54,084.30	2.26	63.47
				PERVIOUS	7.47	264.29	1973.04	0.98	7.32
DEVELOPED, HIGH INTENSITY	2,002,745.69	45.98	1.00	IMPERVIOUS	45.98	1925.79	88,541.50	2.26	103.91
				PERVIOUS	0.00	264.29	0.00	0.98	0.00
DEVELOPED, WOODED	1,151,134.47	26.43	0.00	IMPERVIOUS	0.00	1925.79	0.00	2.26	0.00
				PERVIOUS	26.43	264.29	6,984.24	0.98	25.90
DEVELOPED, OPEN WATER	78,228.74	1.80	0.00	IMPERVIOUS	0.00	1925.79		2.26	
				PERVIOUS	0.00	264.29		0.98	
ROADS	2,210,200.85	50.74	1.00	IMPERVIOUS	50.74	1925.79	97,713.10	2.26	114.67
					TOTAL		378,514.90		529.37

1 - Wiki Watershed, Model My Watershed Online Tool, Site Storm Model Scenario

2 – PA DEP Attachment B, Developed Land Loading Rates for PA Counties –
Sediment (Impervious = 1925.79 lb/ac/yr, Pervious = 264.29 lb/ac/yr)

3 – PA DEP Attachment B, Developed Land Loading Rates for PA Counties –
Phosphorous (Impervious = 2.26 lb/ac/yr, Pervious = 0.98 lb/ac/yr)

Table 4: Existing Pollution Load and Required Reduction to Toad Creek & Tributary Planning Area

LITTLE LEHIGH CREEK WATERSHED – TOAD CREEK			
Topton Borough	Existing Load	Required Reduction	Minimum Load Reduction Required
Total Sediment	378,514.18 lb/yr	10%	37,851.42 lb/yr
Total Phosphorous	529.37 lb/yr	5%	26.47 lb/yr

Whatever tool or approach that is used to estimate existing loading from the PRP planning area must also be used to estimate loading to planned BMPs. This avoids errors in percent pollutant removal calculations that would result if different methods were used. Later BMP efforts will usually apply a more sophisticated method than used in the planning process to calculate loads to a BMP. The design loading may not however, be used to alter the assumed pollutant reduction by the BMP unless the PRP is revised to apply the more sophisticated method to the load from the storm sewer watershed as a whole.

MS4's may claim "credit" for structural BMPs implemented prior to development of the PRP to reduce existing loading estimates. In order to claim credit, the Borough shall identify all such structural BMPs in Section D of the PRP along with the following information:

- A detailed description of the BMP;
- Latitude and longitude coordinates of the 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 reductions 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 Borough may optionally submit design drawings of the BMP for previously installed or future BMPs with the PRP. Topton Borough did not claim credit for non-structural BMPs installed and implemented prior to this report.

MS4s may not claim credit for street sweeping or other non-structural BMPs implemented in the past in order to meet its reduction requirement. Instead, the MS4 may claim pollutant reduction credit in the form of reducing the existing loading being discharged by the MS4 into the stream. In order for the structural BMPs to be credited, the stormwater BMP must have been continually operated and maintained.

E. SELECT BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING

Once the MS4 identified the amount of pollution load required to be reduced, the Borough could then identify areas within the municipality to be studied for BMP improvements. The proposed implementation of BMPs or land use changes must be within the storm sewershed that will result in meeting the minimum required reductions. This means the municipality can not install a BMP outside the planning area of one sewershed and use its pollution reduction amounts toward a different impaired stream's sewershed.

These BMPs shall be implemented within five (5) years of DEP's approval date for coverage under the PAG-13 General Permit. The BMPs may be located on public or private property. If the applicant is aware of BMPs that will be installed by others, either in cooperation with the applicant or otherwise, and it will be located within the sewershed that will result in net pollutant loading reductions, then the applicant may propose those BMPs in this PRP.

As part of the Borough's annual cleaning and maintenance practices for streets, sweeping has been used to remove sediment, debris and other potential sources of pollution affecting the streams. This practice is well suited for urban environments with little land available for the installation of structural controls. However, historic street sweeping practices have been a seasonal task and should not be considered in calculating credit for future BMP practices. The method and frequency of street sweeping has changed in order to be used as credit. If street sweeping is conducted at least 25 times a year, the municipality can only count the streets that have been swept 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.

In calculating future pollutant loading, the Borough 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 estimates. This means that BMPs must be implemented on the tract or elsewhere within the storm sewershed to compensate for this change.

During the five (5) year permit, the MS4 can take credit for BMPs that are under 1 acre and are not being used to meet regulatory requirements, such as a Chapter 102 NPDES permit for construction activities. However, in cases where there is a Chapter 102 NPDES permit, the MS4 may take credit for stormwater BMPs that go above and beyond the minimum requirements. For example, a land development project was required to install a stormwater BMP as part of its Chapter 102 NPDES permit requirement. The BMP was designed and installed to exceed the minimum requirements of the permit. The MS4 may elect to take credit for the additional pollution reduction provided by that BMP. It is the responsibility of the MS4 to demonstrate that the BMP exceeds its regulatory requirements. The MS4 may take credit for only those additional reductions that result from exceeding the regulatory requirements.

STUDY AREAS

Topton Borough reviewed a variety of site locations and selections for BMPs to achieve its minimum required reduction of sediment and phosphorous. Borough staff and the Borough Engineer's office developed a list of priority areas for initial evaluation. These areas were either property owned by the Municipality, drainage areas not part of an NPDES permit, or areas of existing drainage concerns. The goal was to assess a BMP's potential for addressing multiple issues and opportunities. The PRP will review the proposed BMPs by each impaired stream's planning area.

TOAD CREEK PLANNING AREA

Topton Borough began the process of developing a Park Master Plan for its 10 acre Community Park, located on West Weis St, Callowhill Street and Broad Alley. This property includes the community swimming pool and ballfields which are heavily used by residents through the spring, summer and fall months. In the planning process for the Topton Borough Park Master Plan, the Borough conducted community meetings and public surveys on how the park should be improved. On the list of areas to improve within the park, stream restoration of Toad Creek was listed. Topton Borough has also been working with PA DEP offices to finalize and get approvals for a streambank restoration project already in the planning process for Toad Creek.

A tributary stream enters the Borough of Topton 400 feet East of the Locust St and East Weis Street intersection. The stream passes through 800 feet of agricultural land uses in Longswamp Township, which is not an MS4 community, before it passes under East Weis Street entering Topton Borough. This tributary stream to Toad Creek is included in the overall planning area for the Little Lehigh Creek.

BMP OPTION #1 – STREAM RESTORATION

Toad Creek enters the park property at the middle of the property on West Weis Street via a road culvert with two large corrugated metal pipes. The creek runs northeast through the middle of the park property, bisecting the park into active recreational zones on the west side and more passive recreation and open lawn areas on the east side. This section of Toad Creek within the community park is moderately to lightly vegetated along the embankments, showing varying levels of severe to moderate erosion along both sides. The more significant areas of embankment failure and erosion is found nearest W Weis Street and the parking lot. The creek exits the property at the intersection of Broad Alley and South Home Avenue where it is conveyed underneath the roads and property for approximately 150 feet where it daylights at the Toad Creek Bar and Restaurant property. The section of Toad Creek north of East Barkley Street shows less erosion and scouring along the embankments as the creek has narrowed in width here and is shaded with large, mature canopy trees.

Topton Borough

The park is owned and maintained by Topton Borough.



Photo 1: View of Toad Creek at Weis Street with eroded bank



Photo 2: View looking North of Toad Creek. Bank stabilization using geogrid not successful



Photo 3: View North of Toad Creek, East of the ballfield. Area being mowed up to creek edge



Photo 4: East side of Toad Creek reinforced with concrete wall, near E Barkley Street



Photo 5: View of Toad Creek at Broad Alley culvert. Creek directed underground from West side to East side of Home Avenue

Proposed Stream Restoration

Size: 900 LF (from West Weis St bridge to pedestrian footbridge)

Size: 400 LF (from pedestrian bridge to Broad Alley)

Soils: A/B - as noted from Web Soil Survey Information

Table 5: BMP Option #1 – Stream Restoration Sediment Reduction Calculations

LAND USE CATEGORY ¹	AREA (SF)	ACRES (AC)	STROUD TOOL IMPERVIOUS (%) ¹	TYPE	AREA (AC)	LOADING RATE (LB/AC) ²	SEDIMENT LOAD (LBS)	LOADING RATE (LB/AC) ³	PHOS. LOAD (LBS)
DEVELOPED, OPEN SPACE	404,561.13	9.29	0.19	IMPERVIOUS	1.76	1925.79	3398.28	2.26	3.99
				PERVIOUS	7.52	264.29	1988.21	0.98	7.37
DEVELOPED, LOW INTENSITY	388,331.66	8.91	0.49	IMPERVIOUS	4.37	1925.79	8412.40	2.26	9.87
				PERVIOUS	4.55	264.29	1201.62	0.98	4.46
DEVELOPED, MEDIUM INTENSITY	164,299.33	3.77	0.79	IMPERVIOUS	2.98	1925.79	5738.31	2.26	6.73
				PERVIOUS	0.79	264.29	209.34	0.98	0.78
DEVELOPED, HIGH INTENSITY	108,289.17	2.49	1.00	IMPERVIOUS	2.49	1925.79	4787.47	2.26	5.62
				PERVIOUS	0.00	264.29	0.00	0.98	0.00
STREETS/ ROADWAYS	537,870.18	12.35	1.00	IMPERVIOUS	12.35	1925.79	12.35	2.26	27.91
TOTAL:							49,514.89		66.72
BMP Effectiveness Value: (lbs/ft/yr)							44.88		0.068

Table 5 shows calculations of the drainage areas and land uses entering the 1300 LF stream between Weis Street and Broad Alley. With the selection of BMP option #1, which is to do a stream restoration to repair the eroded streambanks, stabilize the channel and provide additional planting beds for filtering and water quality benefits, the proposed BMP for that drainage area would meet and exceed the Borough's entire requirement of 37,852 lbs.

To achieve the minimum sediment reduction, the stream restoration would need to be a minimum of 844 linear feet.

37,852 lb/yr (sediment) divided by 44.88 lb/ft/yr = 844 ft of restoration

With a single planning area, the proposed stream restoration approach will also accomplish the required 5% Phosphorous reduction of 26.47 lbs/yr.

Minimum 844 LF stream restoration x 0.068 lbs/ft/yr = 57 lbs of Phosphorous reduction

With the selection of BMP option #1, the sediment & Phosphorous reductions requirement will be met.

BMP OPTION #2 – BIOSWALE AND DETENTION BASIN ENHANCEMENTS

In the event that the preferred option of BMP#1 can not be installed within the five year permit, an alternative option to the proposed stream restoration was reviewed. This BMP includes two separate BMP projects; their collective sediment reduction would meet the minimum reduction requirement.

2A. BIOSWALE

Located at the baseball field on North Main Street, a drainage ditch runs along the north side of the property, carrying storm run off from a curb inlet on Main Street. The ditch does not discharge to another collection system and holds water, which can back up into the inlet. The corrugated metal pipe where the runoff discharges is partially buried due to sediment collection in the channel. The property is owned by Lehigh Industrial Limited and the Borough would need to discuss improvements to the swale with the property owner.

The Borough proposes to improve drainage issues of this area by installing a bioswale. Construction work shall include removing accumulated sediment within the swale, possible widening of the swale to allow for more volume and holding capacity, grade the return positive flow within the channel, planting additional vegetation to the slopes and recommendation for a no-mow, vegetated buffer strip of shrubs and perennials along the top embankment to prevent washout from the parking lot mowed lawn area of the ballfield perimeter. An overflow pipe shall be reviewed connection into an existing storm system in Jefferson Street.



Photo 6: North Main Street existing ditch at Brandywine Youth Baseball Field

Topton Borough



Photo 7 (Above): Corrugated metal pipe partially submerged



Photo 8 (Right): View of drainage ditch

Photo 9 (Below): Aerial location of proposed Bioswale



Table 6: BMP Option #2A – Bioswale Sediment Reduction Calculations

LAND USE CATEGORY ¹	AREA (SF)	ACRES (AC)	STROUD TOOL IMPERVIOUS (%) ¹	TYPE	AREA (AC)	LOADING RATE (LB/AC) ²	SEDIMENT LOAD (LBS)	LOADING RATE (LB/AC) ³	PHOS. LOAD (LBS)
DEVELOPED, OPEN SPACE	113,217.00	2.60	0.19	IMPERVIOUS	0.49	1925.79	951.01	2.26	1.12
				PERVIOUS	2.11	264.29	556.40	0.98	2.06
DEVELOPED, LOW INTENSITY	78,574.90	1.80	0.49	IMPERVIOUS	0.88	1925.79	1,702.16	2.26	2.00
				PERVIOUS	0.92	264.29	243.13	0.98	0.90
DEVELOPED, MEDIUM INTENSITY	128,887.39	2.96	0.79	IMPERVIOUS	2.34	1925.79	4,501.51	2.26	5.28
				PERVIOUS	0.62	264.29	164.22	0.98	0.61
DEVELOPED, HIGH INTENSITY	83,083.37	1.91	1.00	IMPERVIOUS	1.91	1925.79	3,673.12	2.26	4.31
				PERVIOUS	0.00	264.29	0.00	0.98	0.00
STREETS	265,898.51	6.10	1.00	IMPERVIOUS	6.10	1925.79	11,755.39	2.26	13.80
TOTAL:							23,546.95		30.08

2B. DETENTION BASIN ENHANCEMENTS

The Borough of Topton owns property on Penn Street, which includes a detention basin and easement for accessing the area, which is located behind residential housing and active Norfolk Southern Railroad tracks to the north. The detention area is maintained as mowed lawn and collects drainage from the East end of the Borough; East Smith Street, Charles Drive and Penn Street. The detention area was installed in 2005 and was sized for run off volume and flood control and did not include measures for water quality.

Retrofitting of existing basins which were designed solely for peak runoff discharges can provide significant impacts to trapping additional non-point source pollutants, which is important to restoring impaired watersheds. Dry detention basins are typically less effective at removing the water pollutants because the runoff is designed to pass through the basin quickly.

The Borough of Topton proposes to enhance the detention basin with planting beds, amending the soils and extending the flow path through the basin so that the hydraulic residence time is extended. This extending time allows for increased filtering out of sediment and infiltration time back into the ground. The internal design features of the planting beds will provide nutrient absorption.



Photo 10: Aerial view of dry detention basin in Penn Street residential development



Photo 11: View West showing mowed detention basin and active Norfolk Southern Rail

Table 7: BMP Option #2B – Detention Basin Enhancement Sediment Reduction Calculations

LAND USE CATEGORY ¹	AREA (SF)	ACRES (AC)	STROUD TOOL IMPERVIOUS (%) ¹	TYPE	AREA (AC)	LOADING RATE (LB/AC) ²	SEDIMENT LOAD (LBS)	LOADING RATE (LB/AC) ³	PHOS. LOAD (LBS)
DEVELOPED, OPEN SPACE	146,747.76	3.37	0.19	IMPERVIOUS	0.64	1925.79	1,232.67	2.26	1.45
				PERVIOUS	2.73	264.29	721.19	0.98	2.67
DEVELOPED, LOW INTENSITY	597,737.44	13.72	0.49	IMPERVIOUS	6.72	1925.79	12,948.74	2.26	15.20
				PERVIOUS	7.00	264.29	1,849.58	0.98	6.86
DEVELOPED, MEDIUM INTENSITY	21,536.49	0.49	0.79	IMPERVIOUS	0.39	1925.79	752.18	2.26	0.88
				PERVIOUS	0.10	264.29	27.44	0.98	0.10
DEVELOPED, HIGH INTENSITY	8,277.40	0.19	1.00	IMPERVIOUS	0.19	1925.79	365.94	2.26	0.43
				PERVIOUS	0.00	264.29	0.00	0.98	0.00
STREETS	114,487.41	2.63	1.00	IMPERVIOUS	2.63	1925.79	5,061.49	2.26	5.94
TOTAL:							22,959.24		33.53

BMP OPTION #3 – TRIBUTARY STREAM RESTORATION

The unnamed tributary stream runs for approximately 1500 feet from East Weis Street north and northwest until it connects with Toad Creek. It passes through paper street areas, owned by the Borough of Topton, and through private properties. For the purpose of evaluating areas of the stream that would significantly benefit from improvements, the Borough studied the area of stream between East Smith Street and Penn Street.

This section of 300 linear feet of drainage has a two 90 degree bends between residential properties that are showing visual signs of erosion and multiple efforts to shore up the channel sides within the bends. Due to the stream's location through residential neighborhoods, the channel is being maintained as mowed lawn where side slopes are moderate, and maintained as riprap and overgrown volunteer plants in steep slope channel sides.

The Borough proposes establishing a no-mow zone along the channel to prevent mowing up to reducing further soil loss and erosion. Converting lawn areas of the channel with native planting beds with deep rooted grasses and perennials will benefit pollution reduction within the runoff.



Photo 12: View of Tributary north of East Smith Street



Photo 13: View of Tributary bend at alley



Photo 14: View of Tributary where steep embankment has been reinforced with rip rap

Table 8: BMP #3 – Tributary Stream Restoration Calculations

LAND USE CATEGORY ¹	AREA (SF)	ACRES (AC)	STROUD TOOL IMPERV. (%) ¹	TYPE	AREA (AC)	LOADING RATE (LB/AC) ⁴	SED. LOAD (LBS)	LOADING RATE (LB/AC) ⁴	PHOS. LOAD (LBS)
DEVELOPED, LOW INTENSITY	64,065.82	1.47	0.49	IMPERVIOUS	0.72	1925.79	1386.56	2.26	1.63
				PERVIOUS	0.75	264.29	198.21	0.98	0.74
STREETS	8,507.00	0.20	1.00	IMPERVIOUS	0.20	1925.79	385.15	2.26	0.44
TOTAL							1969.92		2.81
:									

Table 9 shows calculations for 25 acres of drainage area entering the tributary stream. Improvements made to a 300 LF portion of the tributary stream, between East Smith to Penn Streets, would provide moderate water quality benefits. Option #3 would need to be in addition to other installed BMPs to achieve the required pollutant reduction for sediment.

Sediment: 300 LF restoration area x 44.88 lb/ft = 13,464 lbs (removed)

Phosphorous: 300 LF restoration area x 0.068 lb/ft = 20.4 lbs (removed)

BMP OPTION 4 – INLET FILTER BAGS

DEP permits the use of inlet filter bags for no more than 50% of the total pollutant reduction required. This means that Topton Borough can use filter bags to satisfy up to 18,926 pounds of sediment removed. The use of filter bags are not recommended to satisfy Phosphorous reductions as the effectiveness values are very low. Bags shall be located in drainage areas that receive less than a half acre (0.5 ac) of storm runoff.



Model Shown: 2'x4' PennDOT model
(62PENNMHDFX)

Quantity: 10 bags
Removal Avg: 700 lbs/yr per bag (sediment)
Efficiency Rate: 80%
Estimated Removal: 5,600 lbs sediment

DEP may authorize the use of offsets toward meeting PRP load reduction requirements, if an individual permit application is submitted. Please refer to DEP's TMDL Plan Instructions (3800-PM-BCW0200d) for additional information.

Table 9: Summary Proposed BMPs

TOAD CREEK PLANNING AREA					
BMP Type	Proposed Load	BMP Effectiveness Value ⁴	Proposed Sediment Reduction	BMP Effectiveness Value ⁴	Proposed Phosphorous Reduction
Stream Restoration	37,852 lb/yr (10% min. req)	44.88 lb/ft/yr	844 ft (min.)	0.068 lb/ft/yr	52.83 lb/yr
Bioswale	23,546.95 lb/yr	80%	18,837 lb/yr		
	30.08 lb/yr			75%	22.56 lb/yr
Bioretention Basin	22,959.24 lb/yr	80%	18,367 lb/yr		
	335.53 lb/yr			60%	20.12 lb/yr
Tributary Restoration	13,464 lb/yr	44.88 lb/ft/yr	300 ft	0.068 lb/ft/yr	20.4 lb/yr
Inlet Filter Bags (10)	7,000 lb/yr	80%	5,600 lb/yr	NA	NA

4 – BMP Effectiveness Value – as listed per the National Pollutant Discharge Elimination System (NPDES) Stormwater Discharges from Small Municipal Separate Storm Sewer Systems BMP Effectiveness Values, by PA DEP doc 3800-PM-BCW0100m, last updated 5/2016

F. IDENTIFY FUNDING MECHANISMS

Once the Borough has identified the types of BMPs being proposed, then the municipality shall identify the types of funding needed to install these projects during the five (5) year permit. DEP shall review the feasibility and implementation of the Borough's PRP prior to DEP approving PAG-13 NPDES permit coverage. DEP will analyze the applicant's proposed method(s) by which these BMPs shall be funded. DEP does not expect that guaranteed sources are identified in the PRP, but does expect that applicants propose their preferred funding options with alternatives in the event the preferred options do not materialize.

In identifying funding sources and potential partnerships for the proposed BMP projects, the Borough reviewed local businesses, regional organizations, watershed groups and potential volunteer staff that would also support the Borough's list of target audiences for their Stormwater Management Program.

Topton Borough shall use the following five years of the PAG-13 General Permit to determine the best funding source for each proposed BMP project, and to review new opportunities as other partnerships and funding sources become available.

The following tables are a summary of potential funding sources.

Table 10: BMP #1 - Summary of Funding Sources for Toad Creek Stream Restoration

Source/ Group	Type
TOAD CREEK BMP OPTION #1 – Stream Restoration	
Enforcement Action Money Being administered by the Berks County Conservation District	Funding Source – the Toad Creek stream restoration project has been awarded \$300,000 in funding. Plans are in the design and approval process to DEP.
Berks County Conservation District	Administrating the restoration project, reviewing the proposed design, and providing educational support on the benefits of the stream improvement to the watershed
PA DEP	Reviewing the project plans and shall issue the final permit so that work can begin in 2018
Borough of Topton	Budget funds

Table 11: BMP #2 - Summary of Funding Sources for Toad Creek BMP

Source/ Group	Type
TOAD CREEK BMP OPTION #2a – Bioswale	
National Fish and Wildlife Foundation & Wells Fargo Bank	Funding Source – Environmental solutions for Communities Grant; public projects such as park enhancements, renovations to public facilities that benefit the community's 'well being'
Berks County Conservation District	(Alternative funding source to DEP Grant)
Lehigh Industrial Limited (property owner)	Easement Acquisition – preparation of a stormwater management agreement and grading easement between the property owner and the Borough
Brandywine Youth Baseball Association	Labor – players can assist with application and spreading of mulch, installation of educational signs and/or other final touches to the BMP
Esbenshade's Garden Centers & Greenhouse	Donated/ End of the season discounted plant material (local)
Edge of the Woods Nursery	Native plan material (Schnecksville)
Borough of Topton	Budget funds
Source/ Group	Type
TOAD CREEK BMP OPTION #2b –Detention Basin Enhancements	
DEP Environmental Education Grant	Funding Source – Focus of project to include environmental education to the community, lessons they can incorporate into their neighborhoods
PennDOT Stormwater Management Grant	Funding Source – Eligible projects to include detention and sediment basins
Penn State Extension Master Watershed Steward Program for Berks County	Planning & Public Outreach – organize educational information and workshop for the public on the detention basin enhancements; invasive plant control measures; assist with project installation
Topton Boy Scout Troop 510 & Brandywine High School Junior Troop 1452	Labor – Eagle Scout project and Bronze Award projects Installation of blue bird boxes and/or other habitat enhancements for the basin; provide educational information for residents in the neighborhood development; give public presentation at Borough Hall open to the community about the projects
Lenhart's Tree Farm and Foliage Farm Nurseries	Materials – planting materials (local)
Edge of the Woods Nursery	Materials – Native plant materials (Schnecksville)
Borough of Topton	Budget Funds

Table 12: BMP #3 - Summary of Funding Sources for Tributary Stream

Source/ Group	Type
TRIBUTARY RESTORATION OPTION #3 – Stream Restoration	
DEP Environmental Education Grant	Funding Source – Focus of project to include environmental education to the community, lessons they can incorporate into their neighborhoods
Berks County Conservation District	(Alternative funding source to DEP Grant)
Penn State Extension Master Watershed Steward Program for Berks County	Planning & Public Outreach – organize educational information and workshop for the public on the detention basin enhancements; invasive plant control measures; assist with project installation
Environmental Education Grant	Funding source up to \$3000
Edge of the Woods Nursery	Native plan material (Schnecksville)
Borough of Topton	Budget funds

Every project requires some level of assessment and design. Depending on the complexity and location of the project, a stream and/or channel design may contain any of the following components:

- Geomorphic Assessments and Stream Classification
- Site Surveys
- Hydrologic and Hydraulic Modeling
- Sediment Transport Assessment and Modeling
- Conceptual through final design development, including plans and specifications
- Environmental Permit development and coordination

As the permittee develops estimates on the amount of funding needed for a project, the costs are typically impacted by a variety of factors, many of which can be identified during the initial planning level. Factors that can impact a project include:

- Stream Size – larger streams require greater quantities of earthwork, stone and other materials, and more stream flow maintenance.
- Urban Watersheds – typically have more constraints to construction access, require outfall repairs, and often involve pedestrian considerations such as foot bridges and/or trails. Larger planting materials are often required for a more mature landscape than in rural areas.
- Relocation of Utilities – The presence of utilities that have to be relocated adds an additional level of construction cost to any given project

- Easement acquisition/negotiation – Acquisition of easements on private property can increase project scope and/or delay construction activities. Access easements are often required across property during construction.
- Weather – Harder to anticipate and plan for during a project, excessive rainfall or snowfall can delay projects and add costs to construction.

G. IDENTIFY 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 party(ies) responsible for ongoing O&M;
- The activities involved with O&M for each BMP; and
- The frequency at which O&M activities will occur

MS4 permittees will need to identify actual O&M activities in Annual MS4 Status Reports submitted under the PAG-13 General Permit.

All stormwater BMPs installed under this PRP are subject to the Borough's stormwater management ordinance. Typical operation and maintenance activities for each BMP are included in this PRP, however task measures may be modified during the final design of the projects. If the BMP is located on private land, the landowner must convey an easement to the municipality to allow for access for periodic inspections and maintenance, as needed. Operation and maintenance activities conducted by the Borough on the BMPs shall be listed in its annual report.

Table 13: Responsible Parties for Operation and Maintenance of BMPs – Toad Creek

BMP Option # 1	Parties Responsible for O&M	O&M Activities	Frequency of Activities
Toad Creek Streambank (located in park property)	Topton Borough Public Works	Visually inspect the bank and any installed structures	Annually
		Note and photograph any structures, rocks, banks for accelerated weathering, displacement or significant changes since the original construction	Annually
		Inspect the bank and structures after heavy rainfall (Within 48 hours after every storm event with >1 inch rainfall depth)	As Needed
Toad Creek Streambank (located in park property)	Topton Borough Public Works Or Contracted 3 rd Party with signed agreement	Trim vegetation in grassy-herbaceous strip along top embankment for safety and prevent shrub overgrowth	Twice a Year
		Remove and suppress weeds and invasive vegetation	Bi-Monthly (first 6 months) Monthly after 6 mo.
Toad Creek Streambank (located in park property)	Brandywine Heights Middle School, Boy Scouts & Girl Scout Troops	Clean Up event to clear debris and trash from the stream and embankments	Annual event coordinated with the Borough

BMP Option #2	Parties Responsible for O&M	O&M Activities	Frequency of Activities
Detention Basin Enhancements	Topton Borough	Visually inspect the area for signs of erosion; Clear accumulation of debris at pipe openings and discharge points	As Needed following construction
		Inspect inflow area for sediment accumulation; Test planting bed pH soil, adjust as needed	Annually
		Replace dying vegetation	Annually
		Remove and replace mulch	Every 2-3 years
Detention Basin Enhancements	Adjacent Home Owners	Initial vegetation monitoring and watering program to get plantings established	First 18 months - Monitoring program to be in conjunction with Borough As Needed (after 18 months)
		Basin clean up day Event to remove invasive plantings, debris, and trash from the area	Annually - Event in conjunction with Borough, Boy Scouts/Girl Scouts and Berks County Watershed Steward
		Report illicit discharges or dumping activities to the Borough	As Needed
Bioswale At Ballfield (North Main St)	Lehigh Industrial Limited (property owner)	Review maintenance and housekeeping tasks for parking lot and truck dock areas to prevent illicit discharges and sediment from entering the inlet that	Prior to project construction - Review parking lot maintenance tasks with Borough Project Construction-Maintenance

		connects to the bioswale	agreement with the Borough
		Inspection log for recording observations and maintenance activities	Annually - submit forms to Borough for inclusion in Annual report to DEP
Bioswale At Ballfield (North Main St)	Topton Borough	Visually inspect and check cross-section and longitudinal slopes	Annually
		Replace dying vegetation	Annually
		Visually inspect the area for signs of erosion; Clear accumulation of debris at pipe overflow features and discharge points	Annually
Bioswale At Ballfield (North Main St)	Brandywine Youth Baseball Association or 3 rd party contractor	Trim vegetation to ensure safety, aesthetics, proper swale operations, and to suppress weeds and invasive plants	As Needed Mowing and trimming schedule
BMP Option #3	Parties Responsible for O&M	O&M Activities	Frequency of Activities
Tributary Streambank	Topton Borough Public Works	Visually inspect the channel; remove weeds, debris and volunteer plants; replace dead plantings	Monthly (first 6 months) Turns over to Home Owner Agreement after 6 months
		Visually inspect the bank and any installed structures	Annually
		Repair rip rap or stone areas displaced; make structural repairs to streambank	As Needed

		Remove accumulated sediment from culvert pipes and from stream when >3 inch depth	As Needed
Tributary Streambank Maintenance Agreements	Home Owners	Submit visual inspection log and maintenance task log to Topton Borough for inclusion in its Annual reports to DEP	Annually
		Clean up debris and trash from the streambank along property	As Needed
		Remove weeds, volunteer plants and invasive plants	As Needed
BMP Option #4	Parties Responsible for O&M	O&M Activities	Frequency of Activities
Filter Inlet Bags	Topton Borough	Clear debris and sediment from bag	As Needed Typical – after 2” rainstorm event Minimum – once every 3 months
		Replace filter bags	As Needed Minimum - annually

H. GENERAL INFORMATION

Study Areas

As noted earlier in the report, The Borough Manager, Council Members and Engineer's Office reviewed a list of initial locations for proposed BMP installations, which would provide an opportunity to address on-going drainage concerns or known future projects. Through the analysis process, the Engineer's office found that the most logical location for a BMP installation does not always provide a significant credit towards the required 10% reduction, thereby making the cost of its installation disproportionate to the amount of water quality reduction.

For example, The Borough reviewed the potential for a rain garden at the north end of South Cherry Street. The rain garden would be located on Park property to collect and process the street run off from Cherry St, W Smith St, Evergreen Drive and its surrounding land uses before the runoff entered Toad Creek. This location is currently showing signs of minor erosion where runoff has been cutting away at the grass turf, creating washout above the creek. The location is logical, but calculations attribute only 1815 lbs/yr of sediment being removed by this BMP, which is 4.7% of the total 37,852 lbs required.

Moving forward, the scope of water quality projects should address local drainage issues that have a significant impact on properties within our communities. These projects may not have an individual impact on the overall watershed due to their drainage areas being smaller, however the application of multiple small scale BMPs may have an accumulative affect. Multiple small scale BMPs may be the remaining option for urban MS4 communities that are fully developed.

Stormwater Fee

The Borough has informally discussed the actions taken by other Pennsylvania municipalities to implement a fee to provide a long term sustainable funding source to cover the increasing maintenance and programming tasks required by its NPDES MS4 permit. The fee would be based on the area of impervious surface associated with each tax parcel. Properties that are exempt from school tax or property taxes would not be exempt from the stormwater fee. The fee could also be offset by the property owner through the installation of on-site BMPs, which would reduce the rate and volume of stormwater runoff from their property.

Topton Borough requires more information on the use of stormwater fees in Pennsylvania. Specifically, information is needed on how other municipalities have implemented the fee with or without establishing a separate Stormwater Authority, review of the current legislative bills under consideration by the State on Stormwater Authorities, and if the Little Lehigh Watershed would be establishing a joint municipal partnership to manage the entire area and share resources.

PRP Implementation and Final Report

Under the PAG-13 Individual Permit, the permittee must achieve the required pollutant load reductions within five (5) years following DEP's approval of coverage, 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 coverage.

Which means Topton Borough is required to submit a summary report by September 30, 2023 to DEP. This summary will review the work completed by the municipality between the years 2018 and 2023 in full, and how the required pollution load reduction was satisfied. Report submission dates shall be verified once the municipality receives its approved coverage dates, which is listed on the PAI-13 NPDES permit.

Topton Borough shall submit the PRP in accordance with the above requirements. This plan shall be dynamic and changing as unforeseen projects may be added as new opportunities arise during the next five year permit

APPENDIX A

DEP Municipal MS4 Requirements Table

MS4 Name	NPDES ID	Individual Permit Required?	Reason	Impaired Downstream Waters or Applicable TMDL Name	Requirement(s)	Other Cause(s) of Impairment
Berks County						
SOUTH HEIDELBERG TWP	PAG133709	No		Cocalico Creek	Appendix E-Nutrients, Siltation (5)	Cause Unknown (5)
				Blue Marsh Lake	Appendix B-Pathogens (5), Appendix E-Nutrients, Organic Enrichment/Low D.O. (5)	
				Cacoosing Creek	Appendix B-Pathogens (5), Appendix E-Nutrients, Siltation (5)	
				Chesapeake Bay Nutrients/Sediment	Appendix D-Nutrients, Siltation (4a)	
				Little Cacoosing Creek	Appendix E-Nutrients, Siltation (4a)	
				Manor Creek	Appendix E-Nutrients, Siltation (4a)	
				Spring Creek	Appendix E-Nutrients, Siltation (5)	
				Tulpehocken Creek	Appendix E-Nutrients (5)	
				Schuylkill River	Appendix C-PCB (4a)	
SPRING TWP	PAI133503	Yes	TMDL Plan, SP, IP	Wyomissing Creek TMDL	TMDL Plan-Siltation (4a)	Cause Unknown (4a)
				Cacoosing Creek	Appendix B-Pathogens (5), Appendix E-Nutrients, Siltation (5)	
				Chesapeake Bay Nutrients/Sediment	Appendix D-Nutrients, Siltation (4a)	
				Cocalico Creek	Appendix E-Nutrients, Siltation (5)	
				Little Muddy Creek	Appendix E-Siltation (5)	
				Schuylkill River	Appendix C-PCB (4a)	
				Wyomissing Creek		
				Tulpehocken Creek	Appendix E-Nutrients (5)	
ST LAWRENCE BORO	PAG133508	No		Schuylkill River PCB TMDL	Appendix C-PCB (4a)	
				Schuylkill River	Appendix C-PCB (4a)	
				Antietam Creek	Appendix B-Pathogens (5)	
TILDEN TWP		No		Mill Creek	Appendix B-Pathogens (5)	
				Schuylkill River	Appendix C-PCB (4a)	
					Appendix B-Pathogens (5)	
TOPTON BORO		Yes	SP	Little Lehigh Creek	Appendix B-Pathogens (5), Appendix E-Siltation (5)	Cause Unknown (5), Other Habitat Alterations, Water/Flow Variability (4c)
				Unnamed Tributaries to Little Lehigh Creek	Appendix E-Organic Enrichment/Low D.O. (5)	
TULPEHOCKEN TWP		No				
				Little Swatara Creek	Appendix B-Pathogens (5)	
				Chesapeake Bay Nutrients/Sediment	Appendix D-Nutrients, Siltation (4a)	
				Unnamed Tributaries to Little Swatara Creek	Appendix E-Nutrients, Organic Enrichment/Low D.O., Siltation (4a)	
UNION TWP	PAG133526	Yes	SP	Schuylkill River PCB TMDL	Appendix C-PCB (4a)	
				Schuylkill River	Appendix C-PCB (4a)	

APPENDIX B

Public Advertisement



Borough of Tipton

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6 Replies



Jenn Marie Lentz Chris Lentz Joy Sterner-Lick James Mercuri Tammy Masters. Let's go!

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Borough of Tipton

August 4, 2017 ·

Information regarding the Borough of Tipton Proposed MS4 Plan can be found on our website at toptonborough.com

2

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Borough of Tipton

August 2, 2017 ·

STARTING IMMEDIATELY THERE IS A 24 HOUR BOIL WATER ADVISORY ON FRANKLIN STREET IN BETWEEN HOME AVENUE AND MAIN STREET. ALSO IN THE AREAS OF HOME AVENUE AND MAIN STREET. PLEASE BOIL WATER BEING USED WITHIN THE NEXT 24 HOURS AND THERE AFTER RUN WATER TO CLEAR LINES. THERE ALSO COULD BE PERIODS OF TIME WITH LOW TO NO WATER PRESSURE. ANY QUESTIONS PLEASE CONTACT THE BOROUGH OFFICE AT 610-682-2541. THANK YOU FOR YOUR UNDERSTANDING AND COOPERATION.

9

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Borough of Tipton No only in areas where water service is turned off

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TOPTON BOROUGH
ATTN: MARCUS DOLNY
205 S CALLOWHILL ST
TOPTON, PA 19562

{ No.0000586114

Page 1 of 1

Proof of Publication of Notice in Reading Eagle

Under Act No. 587, Approved May 16, 1929.

Commonwealth of Pennsylvania,
County of Berks

} SS:

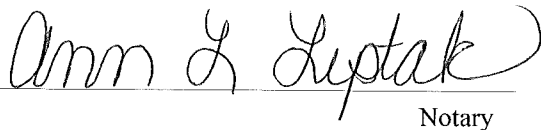
Lynn Schittler, Assistant Secretary, READING EAGLE COMPANY, of the County and Commonwealth aforesaid, being duly sworn, deposes and says that the READING EAGLE established January 28, 1868 is a newspaper of general circulation published at 345 Penn Street, City of Reading, County and State aforesaid, and that the printed notice or publication attached hereto is exactly the same as printed and published in the regular edition and issues of the said READING EAGLE on the following dates, viz.:

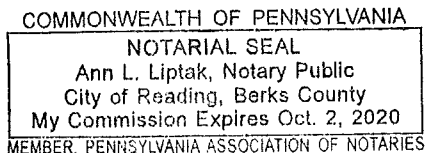
Reading Eagle Monday, July 03, 2017, A.D.

Affiant further deposes that this person is duly authorized by READING EAGLE COMPANY, a corporation, publisher of said READING EAGLE, a newspaper of general circulation, verify the foregoing statement under oath, and affiant is not interested in the subject matter of the aforesaid notice or advertisement, and that all allegations in the foregoing statements as to time, place, character of publication are true.


Lynn Schittler

Sworn to and subscribed before me on this day of July 03, 2017


Notary



NOTICE IS HEREBY GIVEN that the Borough of Tipton, Berks County, Pennsylvania, will hold a public meeting to discuss its Municipal Separate Storm Sewer System (MS4) program on July 10th, 2017 at 7pm during its regularly scheduled monthly council meeting at the Borough Hall. The public is encouraged to attend and discuss storm water issues in and around the Borough of Tipton.

APPENDIX C

Sign In Sheet from Public Meeting Presentation



85 South Route 100, Allentown, PA 18106
 610.398.0904 610.481.9098
 barryisett.com

Date: 7/10/17

Meeting Topic: Municipal Separate Storm Sewer System (MS4)
Location: Topton Borough – Borough Hall Meeting Room
Purpose: Public Presentation of the Pollution Reduction Plan (PRP)

Attendees

NAME	CONTACT EMAIL (OPTIONAL)
Taylor Delechanty	taylordelechanty@yahoo.com
ROBERT RAKENZAHN	
MICHAEL C WELDMAN	
William GERMAN	borobill@dejazzd.com
Michelle Korah	chocka@dejazzd.com
Marcus Dolny	toptonmanager@ptd.net
Michael Vagamon	mike@stutementapparel.net
Joan London	jlonon@kozloffstoudt.com
Robert Arndt	UNDY38@AOL.COM

Sign In Sheet

APPENDIX D

Developed Loading Rates for PA Counties
PA DEP Form 3800-PM-BCW0100k

ATTACHMENT B

DEVELOPED LAND LOADING RATES FOR PA COUNTIES^{1,2,3}

County	Category	Acres	TN lbs/acre/yr	TP lbs/acre/yr	TSS (Sediment) lbs/acre/yr
Adams	impervious developed	10,373.2	33.43	2.1	1,398.77
	pervious developed	44,028.6	22.99	0.8	207.67
Bedford	impervious developed	9,815.2	19.42	1.9	2,034.34
	pervious developed	19,425	17.97	0.68	301.22
Berks	impervious developed	1,292.4	36.81	2.26	1,925.79
	pervious developed	5,178.8	34.02	0.98	264.29
Blair	impervious developed	3,587.9	20.88	1.73	1,813.55
	pervious developed	9,177.5	18.9	0.62	267.34
Bradford	impervious developed	10,423	14.82	2.37	1,880.87
	pervious developed	23,709.7	13.05	0.85	272.25
Cambria	impervious developed	3,237.9	20.91	2.9	2,155.29
	pervious developed	8,455.4	19.86	1.12	325.3
Cameron	impervious developed	1,743.2	18.46	2.98	2,574.49
	pervious developed	1,334.5	19.41	1.21	379.36
Carbon	impervious developed	25.1	28.61	3.97	2,177.04
	pervious developed	54.2	30.37	2.04	323.36
Centre	impervious developed	7,828.2	19.21	2.32	1,771.63
	pervious developed	15,037.1	18.52	0.61	215.84
Chester	impervious developed	1,838.4	21.15	1.46	1,504.78
	pervious developed	10,439.8	14.09	0.36	185.12
Clearfield	impervious developed	9,638.5	17.54	2.78	1,902.9
	pervious developed	17,444.3	18.89	1.05	266.62
Clinton	impervious developed	7,238.5	18.02	2.80	1,856.91
	pervious developed	11,153.8	16.88	0.92	275.81
Columbia	impervious developed	7,343.1	21.21	3.08	1,929.18
	pervious developed	21,848.2	22.15	1.22	280.39
Cumberland	impervious developed	8,774.8	28.93	1.11	2,065.1
	pervious developed	26,908.6	23.29	0.34	306.95
Dauphin	impervious developed	3,482.4	28.59	1.07	1,999.14
	pervious developed	9,405.8	21.24	0.34	299.62
Elks	impervious developed	1,317.7	18.91	2.91	1,556.93
	pervious developed	1,250.1	19.32	1.19	239.85
Franklin	impervious developed	13,832.3	31.6	2.72	1,944.85
	pervious developed	49,908.6	24.37	0.76	308.31
Fulton	impervious developed	3,712.9	22.28	2.41	1,586.75
	pervious developed	4,462.3	18.75	0.91	236.54
Huntington	impervious developed	7,321.9	18.58	1.63	1,647.53
	pervious developed	11,375.4	17.8	0.61	260.15
Indiana	impervious developed	589	19.29	2.79	1,621.25
	pervious developed	972	20.1	1.16	220.68
Jefferson	impervious developed	21.4	18.07	2.76	1,369.63
	pervious developed	20.4	19.96	1.24	198.60
Juniata	impervious developed	3,770.2	22.58	1.69	1,903.96
	pervious developed	8,928.3	17.84	0.55	260.68
Lackawana	impervious developed	2,969.7	19.89	2.84	1,305.05
	pervious developed	7,783.9	17.51	0.76	132.98
Lancaster	impervious developed	4,918.7	38.53	1.55	1,480.43
	pervious developed	21,649.7	22.24	0.36	190.93
Lebanon	impervious developed	1,192.1	40.58	1.85	1,948.53
	pervious developed	5,150	27.11	0.4	269.81
Luzerne	impervious developed	5,857	20.43	3	1,648.22
	pervious developed	13,482.9	19.46	0.98	221.19
Lycoming	impervious developed	10,031.7	16.48	2.57	1,989.64
	pervious developed	19,995.5	16	0.84	277.38

County	Category	Acres	TN lbs/acre/yr	TP lbs/acre/yr	TSS (Sediment) lbs/acre/yr
McKean	impervious developed	38.7	20.93	3.21	1,843.27
	pervious developed	5.3	22.58	1.45	249.26
Mifflin	impervious developed	5,560.2	21.83	1.79	1,979.13
	pervious developed	16,405.5	21.13	0.71	296.07
Montour	impervious developed	5,560.2	21.83	1.79	1,979.13
	pervious developed	16,405.5	21.13	0.71	296.07
Northumberland	impervious developed	8,687.3	25.73	1.54	2,197.08
	pervious developed	25,168.3	24.63	0.54	367.84
Perry	impervious developed	5,041.1	26.77	1.32	2,314.7
	pervious developed	9,977	23.94	0.51	343.16
Potter	impervious developed	2,936.3	16.95	2.75	1,728.34
	pervious developed	2,699.3	17.11	1.09	265.2
Schuylkill	impervious developed	5,638.7	30.49	1.56	1,921.08
	pervious developed	14,797.2	29.41	0.57	264.04
Snyder	impervious developed	4,934.2	28.6	1.11	2,068.16
	pervious developed	14,718.1	24.35	0.4	301.5
Somerset	impervious developed	1,013.6	25.13	2.79	1,845.7
	pervious developed	851.2	25.71	1.14	293.42
Sullivan	impervious developed	3,031.7	19.08	2.85	2,013.9
	pervious developed	3,943.4	21.55	1.31	301.58
Susquehanna	impervious developed	7,042.1	19.29	2.86	1,405.73
	pervious developed	14,749.7	20.77	1.21	203.85
Tioga	impervious developed	7,966.9	12.37	2.09	1,767.75
	pervious developed	18,090.3	12.22	0.76	261.94
Union	impervious developed	4,382.6	22.98	2.04	2,393.55
	pervious developed	14,065.3	20.88	0.69	343.81
Wayne	impervious developed	320.5	18.69	2.89	1,002.58
	pervious developed	509	21.14	1.31	158.48
Wyoming	impervious developed	3,634.4	16.03	2.53	2,022.32
	pervious developed	10,792.9	13.75	0.7	238.26
York	impervious developed	10,330.7	29.69	1.18	1,614.15
	pervious developed	40,374.8	18.73	0.29	220.4
All Other Counties	impervious developed	-	23.06	2.28	1,839
	pervious developed	-	20.72	0.84	264.96

Notes:

- 1 These land loading rate values may be used to derive existing pollutant loading estimates under DEP's simplified method for PRP development. MS4s may choose to develop estimates using other scientifically sound methods.
- 2 Acres and land loading rate values for named counties in the Chesapeake Bay watershed are derived from CAST. (The column for Acres represents acres within the Chesapeake Bay watershed). For MS4s located outside of the Chesapeake Bay watershed, the land loading rates for "All Other Counties" may be used to develop PRPs under Appendix E; these values are average values across the Chesapeake Bay watershed.
- 3 For land area outside of the urbanized area, undeveloped land loading rates may be used where appropriate. When using the simplified method, DEP recommends the following loading rates (for any county) for undeveloped land:
 - TN – 10 lbs/acre/yr
 - TP – 0.33 lbs/acre/yr
 - TSS (Sediment) – 234.6 lbs/acre/yr

These values were derived by using the existing loads for each pollutant, according to the 2014 Chesapeake Bay Progress Run, and dividing by the number of acres for the unregulated stormwater subsector.