MS4 ANNUAL REPORT

For the Period July1, 2024 to June 30, 2025
NPDES Permit No. PAI-133546

Prepared for:

MAIDENCREEK TOWNSHIP
PO Box 319
Blandon, PA 19510

Prepared by:

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1032 James Drive, Leesport, PA 19533

September 2025

25-0019-0191

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

ANNUAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) STATUS REPORT

FOR THE PERIOD July 1, 2024 TO JUNE 30, 2025

GENERAL INFORMATION			
Permittee Name:	Maidencreek Township	NPDES Permit No.:	PAI133546
Mailing Address:	PO Box 319	Effective Date:	November 1, 2024
City, State, Zip:	Blandon, PA 19510	Expiration Date:	October 31, 2029
MS4 Contact Person:	Diane Hollenbach	Renewal Due Date:	May 4, 2029
Title:	Manager	Municipality:	Maidencreek Township
Phone:	(610) 926-4920	County:	Berks
Email:	d.hollenbach@maidencreek.net		
Co-Permittees (if applicable):			
Appendix(ces) that permittee is subject to (select all that apply): ☐ Appendix A ☒ Appendix B ☒ Appendix C ☐ Appendix D ☒ Appendix E ☐ Appendix F			

WATER QUALITY INFORMATION

Are there any discharges to waters within the Chesapeake Bay Watershed? ☐ Yes ☐ No

Identify all surface waters that receive stormwater discharges from the permittee's MS4 and provide the requested information (see instructions).

Receiving Water Name	Ch. 93 Class.	Impaired?	Cause(s)	TMDL?	WLA?
Lake Ontelaunee	WWF, MF	yes	Nutrients, Suspended Solids	yes	TP/TSS
Willow Creek and unnamed tributaries	HQ - CWF/MF	yes	Pathogens, Nutrients	no	no
Maiden Creek	WWF, MF	yes	Pathogens	no	no

GENERAL MINIMUM CONTROL MEASURE (MCM) INFORMATION

Have you completed all MCM activities required by the permit for this reporting period? ☒ Yes ☐ No

List the current entity responsible for implementing each MCM of your SWMP, along with contact name and phone number.

MCM	Entity Responsible	Contact Name	Phone
#1 Public Education and Outreach on Storm Water Impacts	Maidencreek Township	Diane Hollenbach	610-926-4920
#2 Public Involvement/Participation	Maidencreek Township	Diane Hollenbach	610 926-4920
#3 Illicit Discharge Detection and Elimination (IDD&E)	Maidencreek Township	Keith Shuman	610 926-4920
#4 Construction Site Storm Water Runoff Control	Berks County Conservation District	Dean Druckenmiller	610 372-4657
#5 Post-Construction Storm Water Management in New Development and Redevelopment	Maidencreek Township	Diane Hollenbach	610 926-4920
#6 Pollution Prevention / Good Housekeeping	Maidencreek Township	Keith Shuman	610 926-4920

MCM #1 – PUBLIC EDUCATION AND OUTREACH ON STORM WATER IMPACTS

BMP #1: Develop, implement and maintain a written Public Education and Outreach Program.

1. For new permittees only, has the written PEOP been developed and implemented within the first year of permit coverage?

   ☐ Yes ☐ No

2. Date of latest annual review of PEOP: 06/13/2024 Were updates made? ☒ Yes ☐ No

3. What were the plans and goals for public education and outreach for the reporting period?

   Educate residents on the location of the new yard waste dropoff site and what is accepted at the site. Continue to provide education on what illicit discharge is and how to report it. Educate the public on the health of our streams and keeping our drinking water clean.

4. Did the MS4 achieve its goal(s) for the PEOP during the reporting period? ☒ Yes ☐ No

5. Identify specific plans and goals for public education and outreach for the upcoming year:

   Continue to provide education on yard waste drop off and county run recycling events. Focus education on illicit discharge and maintaining and caring for septic systems.

BMP #2: Develop and maintain lists of target audience groups present within the areas served by your MS4.

1. For new permittees only, have the target audience lists been developed and implemented within the first year of permit coverage?

   ☐ Yes ☐ No

2. Date of latest annual review of target audience lists: 06/13/2024 Were updates made? ☐ Yes ☒ No

BMP #3: Annually publish at least one educational item on your Stormwater Management Program.

1. For new permittees only, were stormwater educational and informational items produced and published in print and/or on the Internet within the first year of permit coverage?

☐ Yes ☐ No

2. Date of latest annual review of educational materials: 06/13/2024 Were updates made? ☐ Yes ☒ No

3. Do you have a municipal website? ☒ Yes ☐ No (URL: www.maidencreek.net)

If Yes, what MS4-related material does it contain?

PEOP, PIPP, When It Rains It Drains, Annual Report, PRP, TMDL, Septic Care & Maintenance, Swimming Pool Water Disposal Guide, Caring for a Streamside Property, Proper Disposal of Hazardous Waste

4. Describe any other method(s) used during the reporting period to provide information on stormwater to the public:

The Township mailed three newsletters and a calendar that contained educational material. We partnered with Fleetwood Borough and Richmond Township to distribute a newsletter to the Fleewood Area School District. MS4 Steering Committee Activities.

5. Identify specific plans for the publication of stormwater materials for the upcoming year:

The Township will continue to send quarterly newsletters and the calendar. New homeowners will receive a welcome packet containing storm water education.

BMP #4: Distribute stormwater educational materials to the target audiences.

Identify the two additional methods of distributing stormwater educational materials during the previous reporting period (e.g., displays, posters, signs, pamphlets, booklets, brochures, radio, local cable TV, newspaper articles, other advertisements, bill stuffers, posters, presentations, conferences, meetings, fact sheets, giveaways, or storm drain stenciling).

The township refurbished the signs in the open space. A storm water bulletin board is maintained in the township building lobby and magnets and educationl materials are available in the lobby.

MCM #1 Comments:

MCM #2 – PUBLIC INVOLVEMENT/PARTICIPATION

BMP #1: Develop, implement and maintain a written Public Involvement and Participation Program (PIPP)

1. For new permittees only, was the PIPP developed and implemented within one year of permit coverage?

☐ Yes ☐ No

2. Date of latest annual review of PIPP: 06/13/2024 Were updates made? ☐ Yes ☒ No

BMP #2: Advertise to the public and solicit public input on ordinances, SOPs, Pollutant Reduction Plans (PRPs) (if applicable) and TMDL Plans (if applicable), including modifications thereto, prior to adoption or submission to DEP:

1. Was an MS4-related ordinance, SOP, PRP or TMDL Plan developed during the reporting period? ☒ Yes ☐ No

2. If Yes, describe how you advertised the draft document(s) and how you provided opportunities for public review, input and feedback:

The renewal of the MS4 Individual Permit along with the TMDL and PRP Plan was reviewed at a public meeting and a 30 day comment period was advertised in the Reading Eagle Newspaper.

3. If an ordinance, SOP or plan was developed or amended during the reporting period, provide the following information:

Ordinance / SOP / Plan Name	Date of Public Notice	Date of Public Hearing	Date Enacted or Submitted to DEP

Pollutant Reduction Plan	07/16/2024	08/08/2024	08/22/2024
Lake Ontelaunee TMDL Plan	07/16/2024	08/08/2024	08/22/2024

BMP #3: Regularly solicit public involvement and participation from the target audience groups using available distribution and outreach methods.

1. At least one public meeting or other MS4 event must be held during the 5-year permit coverage period to solicit participation and feedback from target audience groups. Was this meeting or event held during the reporting period?

   ☐ Yes ☒ No If Yes, Date of Meeting or Event:

2. Report instances of cooperation and participation in MS4 activities; presentations the permittee made to local watershed and conservation organizations; and similar instances of participation or coordination with organizations in the community.

   Maidencreek Township provided the Blandon Lions Club in August of 2024 with a municipal update which included discussion of flooding, storm water and MS4 activity.

3. Report activities in which members of the public assisted or participated in the meetings and in the implementation of the SWMP, including education activities or efforts such as cleanups, monitoring, storm drain stenciling, or others.

   October of 2024 Met-Ed assisted with the fall tree planting in the Community Park and April 15, 2025, the Tiny Thinkers Daycare participated in a tree planting event along the Willow Creek in the Community Park.

MCM #2 Comments:

MCM #3 – ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDD&E)

BMP #1: Develop and implement a written program for the detection, elimination, and prevention of illicit discharges into the regulated small MS4.

1. For new permittees only, was the written IDD&E program developed within one year of permit coverage?

   ☐ Yes ☐ No

2. Date of latest annual review of IDD&E program: 07/2019 Were updates made? ☒ Yes ☐ No

BMP #2: Develop and maintain map(s) that show permittee and urbanized area boundaries, the location of all outfalls and, if applicable, observation points, and the locations and names of all surface waters that receive discharges from those outfalls. Outfalls and observation points shall be numbered on the map(s).

1. Have you completed a map(s) that includes all components of BMP #2? ☒ Yes ☐ No

   If Yes and you are a new permittee and have not submitted the map(s) previously, attach the map(s) to this report.

   If No, date by which permittee expects map(s) to be completed:

2. Date of last update or revision to map(s): 04/2019

3. Total No. of Outfalls in MS4: 56 Total No. of Outfalls Mapped: 56

4. Total No. of Observation Points: 11 Total No. of Observation Points Mapped: 11

5. During the reporting period, have you identified any existing outfalls that have not been previously reported to DEP in an NOI, application or annual report, or are any new MS4 outfalls proposed for the next reporting period?

   ☐ Yes ☒ No If Yes, select: ☐ Existing Outfall(s) Identified ☐ New Outfall(s) Proposed

BMP #3: In conjunction with the map(s) created under BMP #2 (either on the same map or on a different map), the permittee shall develop and maintain map(s) that show the entire storm sewer collection system within the permittee's jurisdiction that are owned or operated by the permittee (including roads, inlets, piping, swales, catch basins, channels, and any other components of the storm sewer collection system), including privately-owned components of the collection system where conveyances or BMPs on private property receive stormwater flows from upstream publicly-owned components.

1. Have you completed a map(s) that includes all components of BMP #3? ☒ Yes ☐ No

   If Yes and you are a new permittee and have not submitted the map(s) previously, attach the map(s) to this report.

   If No, date by which permittee expects map(s) to be completed:

2. If Yes to #1, is the map(s) on the same map(s) as for outfalls and receiving waters? ☒ Yes ☐ No

3. Date of last update or revision to map(s): 04/01/2019

BMP #4: Conduct dry weather screenings of MS4 outfalls to evaluate the presence of illicit discharges. If any illicit discharges are present, the permittee shall identify the source(s) and take appropriate actions to remove or correct any illicit discharges. The permittee shall also respond to reports received from the public or other agencies of suspected or confirmed illicit discharges associated with the storm sewer system, as well as take enforcement action as necessary. The permittee shall immediately report to DEP illicit discharges that would endanger users downstream from the discharge, or would otherwise result in pollution or create a danger of pollution or would damage property.

For new permittees, all identified outfalls (and if applicable observation points) must be screened during dry weather at least twice within the 5-year period following permit coverage. For existing permittees, all identified outfalls (and if applicable observation points) must be screen during dry weather at least once within the 5-year period following permit coverage and, for areas where past problems have been reported or known sources of dry weather flows occur on a continual basis, outfalls must be screened annually during each year of permit coverage.

1. How many unique outfalls (and if applicable observation points) were screened during the reporting period? 11

2. Indicate the percentage of all outfalls screened in the past five years. 100%

3. Indicate the percent of outfalls screened during the reporting period that revealed dry weather flows: 0%

4. Did any dry weather flows reveal color, turbidity, sheen, odor, floating or submerged solids? ☐ Yes ☐ No

5. If Yes for #4, attach all sample results to this report with a map identifying the sample location. Explain the corrective action(s) taken in the attachment.

6. Do you use the MS4 Outfall Field Screening Report form (3800-FM-BCW0521) provided in the permit?

   ☒ Yes ☐ No

   If No, attach a copy of your screening report form.

BMP #5: Enact a Stormwater Management Ordinance or SOP to implement and enforce a stormwater management program that includes prohibition of non-stormwater discharges to the regulated small MS4.

1. Do you have an ordinance (municipal) or SOP or other mechanism (non-municipal) that prohibits non-stormwater discharges? ☒ Yes ☐ No

   If Yes, indicate the date of the ordinance or SOP: 09/14/2023

2. If Yes to #1, is the ordinance or SOP consistent with DEP's 2022 Model Stormwater Management Ordinance (3800-PM-BCW0100j) with respect to authorized non-stormwater discharges? ☒ Yes ☐ No

   If Yes to #2 and the ordinance or SOP has not been submitted to DEP previously, attach the ordinance or SOP.

3. Were there any violations of the ordinance or SOP during the reporting period? ☐ Yes ☒ No

If Yes to #3, complete the table below (attach additional sheets as necessary).

Violation Date	Nature of Violation	Responsible Party	Enforcement Taken

4. Did you approve any waiver or variance during the reporting period that allowed an exception to non-stormwater discharge provisions of an ordinance or SOP? ☐ Yes ☒ No

If Yes to #4, identify the entity that received the waiver or variance and the type of non-stormwater discharge approved.

BMP #6: Provide educational outreach to public employees, business owners and employees, property owners, the general public and elected officials (i.e., target audiences) about the program to detect and eliminate illicit discharges.

1. Was IDD&E-related information distributed to public employees, businesses, and the general public during the reporting period? ☒ Yes ☐ No

If Yes, what was distributed? Summer 2025 newsletter

2. Is there a well-publicized method for employees, businesses and the public to report stormwater pollution incidents?

☒ Yes ☐ No

3. Do you maintain documentation of all responses, action taken, and the time required to take action? ☒ Yes ☐ No

MCM #3 Comments:

MCM #4 – CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

Are you relying on PA's statewide program for stormwater associated with construction activities to satisfy this MCM?

☒ Yes ☐ No

(If Yes, respond to questions for BMP Nos. 1, 2 and 3 only in this section. If No, respond to questions for all BMPs in this section)

BMP #1: The permittee may not issue a building or other permit or final approval to those proposing or conducting earth disturbance activities requiring an NPDES permit unless the party proposing the earth disturbance has valid NPDES Permit coverage (i.e., not expired) under 25 Pa. Code Chapter 102.

During the reporting period, did you comply with 25 Pa. Code § 102.43 (relating to withholding building or other permits or approvals until DEP or a county conservation district (CCD) has approved NPDES permit coverage)?

☒ Yes ☐ No ☐ Not Applicable (no building permit applications received)

BMP #2: A municipality or county which issues building or other permits shall notify DEP or the applicable CCD within 5 days of the receipt of an application for a permit involving an earth disturbance activity consisting of one acre or more, in accordance with 25 Pa. Code § 102.42.

During the reporting period, did you comply with 25 Pa. Code § 102.42 (relating to notifying DEP/CCD within 5 days of receiving an application involving an earth disturbance activity of one acre or more)?

☒ Yes ☐ No ☐ Not Applicable (no building permit applications received)

BMP #3: Enact, implement and enforce an ordinance or SOP to require the implementation and maintenance of E&S control BMPs, including sanctions for non-compliance, as applicable.

1. Do you have an ordinance (municipal) or SOP or other mechanism (non-municipal) that requires implementation and maintenance of E&S control BMPs? ☒ Yes ☐ No

   If Yes, indicate the date of the ordinance or SOP: 09/14/2023

2. If Yes to #1, is the ordinance or SOP consistent with DEP's 2022 Model Stormwater Management Ordinance (3800-PM-BCW0100j)? ☒ Yes ☐ No

3. If Yes to #2 and the ordinance or SOP has not been submitted previously, attach a copy of the ordinance or SOP.

BMP #4: Review Erosion and Sediment (E&S) control plans to ensure that such plans adequately consider water quality impacts and meet regulatory requirements.

Specify the number of E&S Plans you reviewed during the reporting period:

BMP #5: Conduct inspections regarding installation and maintenance of E&S control measures during earth disturbance activities. Maintain records of site inspections, including dates and inspection results, in accordance with the record retention requirements in this permit.

Specify the number of E&S inspections you completed during the reporting period:

BMP #6: Conduct enforcement when installation and maintenance of E&S control measures during earth disturbance activities does not comply with permit and/or regulatory requirements.

Specify the number of enforcement actions you took during the reporting period for improper E&S:

BMP #7: Develop and implement requirements for construction site operators to control waste at construction sites that may cause adverse impacts to water quality. The permittee shall provide education on these requirements to construction site operators.

Specify the method(s) by which you are educating construction site operators on controlling waste at construction sites:

BMP #8: Develop and implement procedures for the receipt and consideration of public inquiries, concerns, and information submitted by the public to the permittee regarding local construction activities.

1. A tracking system has been established for receipt of public inquiries and complaints. ☐ Yes ☐ No

2. Specify the number of inquiries and complaints received during the reporting period:

MCM #4 Comments:

MCM #5 – POST-CONSTRUCTION STORM WATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT

BMP #1: Enact, implement and enforce an ordinance or SOP to require post-construction stormwater management from new development and redevelopment projects, including sanctions for non-compliance.

1. Do you have an ordinance (municipal) or SOP or other mechanism (non-municipal) that requires implementation and maintenance of post-construction stormwater management (PCSM) BMPs? ☒ Yes ☐ No

   If Yes, indicate the date of the ordinance or SOP: 09/14/2023

2. If Yes to #1, is the ordinance or SOP consistent with DEP's 2022 Model Stormwater Management Ordinance (3800-PM-BCW0100j)? ☒ Yes ☐ No

3. If Yes to #2 and the ordinance or SOP has not been submitted previously, attach a copy of the ordinance or SOP.

BMP #2: Develop and implement measures to encourage and expand the use of Low Impact Development (LID) in new development and redevelopment. Measures should also be included to encourage retrofitting LID into existing development. Enact ordinances consistent with LID practices and repeal sections of ordinances that conflict with LID practices.

1. Do you have an ordinance (municipal) or SOP or other mechanism (non-municipal) that encourages and expands the use of LID in new development and redevelopment? ☒ Yes ☐ No

   If Yes, indicate the date of the ordinance or SOP: 09/14/2023

2. If Yes to #1, is the ordinance or SOP consistent with DEP's 2022 Model Stormwater Management Ordinance (3800-PM-BCW0100j)? ☒ Yes ☐ No

3. If Yes to #2 and the ordinance or SOP has not been submitted previously, attach a copy of the ordinance or SOP.

BMP #3: Ensure adequate O&M of all post-construction stormwater management BMPs that have been installed at development or redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale.

1. Do you have an inventory of all PCSM BMPs that were installed to meet requirements in NPDES Permits for Stormwater Discharges Associated with Construction Activities approved since March 10, 2003? ☒ Yes ☐ No

   If Yes to #1, complete Table 1 on the next page.

2. Has proper O&M occurred during the reporting period for all PCSM BMPs? ☐ Yes ☒ No

3. If No to #2, explain what action(s) the permittee has taken or plans to take to ensure proper O&M.

   Inspections were conducted and letters sent to all property owners who needed to take corrective action.

If you are relying on PA's statewide program for stormwater associated with construction activities, you may skip to MCM #6, otherwise complete all questions for BMPs #4 - #6 in this section.

BMP #4: Require the implementation of a combination of structural and/or non-structural BMPs that are appropriate to the local community, that minimize water quality impacts, and that are designed to maintain pre-development runoff conditions.

1. Specify the number of PCSM Plans reviewed during the reporting period for projects disturbing greater than or equal to one acre (including projects less than one acre that are part of a larger common plan of development or sale):

2. Has a tracking system been established and maintained to record qualifying projects and their associated BMPs?

   ☐ Yes ☐ No

PCSM BMP INVENTORY

Table 1. To complete the information needed for MCM #5, BMP #3, list all existing structural BMPs that discharge stormwater to the permittee's MS4 that were installed to satisfy PCSM requirements for earth disturbance activities under Chapter 102, and provide the requested information (see instructions).

BMP No.	BMP Name	DA (ac)	Entity Responsible for O&M	Latitude	Longitude	Date Installed	O&M Requirements	NPDES Permit No.
1	Detention Basin - no infiltration because of geology	2.76	Angelo Corrado and Omega builders lots 1-10 Crossings at Maidencreek	40°26'25"	75°52'15"	October 2010	Inspection by Township	PAG02 0006 15 017
2	Infiltration Basin	1.96	Giorgio Waste Water Treatment	40°26'10"	75°54'18"	2015	Maintenance	PAG02 0006 04 033R(1)
3	Infiltration Basin, amended soils, rain gardens		Stefano Folino - Melrose Place - to be turned over to a homeowner's association	40°26'44"	75°52'11"	2008	Maintenance	
4	Infiltration Basin	.85	Norm Flamm - Microair Computers	40°26'38"	75°51'53"	2014	Maintenance	
5	Infiltration Basin	2.85	David Small - Small Spaces Storage	40°26'38"	75°51'53"	2005	Maintenance	PAG2 0006 05 025
6	Infiltration Basin	8	Adam Wojcicki - Boyer Place	40°27'04"	75°52'25"	June 2007	Operate and Maintain	
7	Infiltration Basin	3.15	Bill Gross - Brandywine Transportation	40°26'02"	75°53'47"	June 2015	Inspect immediately following significant storm water event, remove debris, restore eroded areas	PAG02 0006 15 018
8	Landscape restoration, soil restoration, subsurface infiltration bed	5.5	Tom Psarros - Maidencreek Business Park	40°26'02"	75°53'31"	Summer 2019	Maintenance	PAG2 PAC060121

9	Seepage Beds	.41	Monica Schick - Schick Dental	40°26'40"	75°51'35"	Summer 2020		
10	Rain Garden & Underfround Bed		Kara Dobson - Keystone Villa at Fleetwood	40°26'36"	75°51'48"	2010	Maintenance	
11	Underground Bed & Forebay	5.29	GSP Properties - North Bethlehem LLC	40°26'58"	75°53'28"	2020	Maintenance	
12	Underground Infiltration Bed		VEF 222 LLC-Coliseum Plaza	40°27'04"	75°53'38"	2000	Maintenance	
13	Detention Basin		Stefano Folino - CVS	40°27'09"	75°53'28"	2008	Maintenance	
14	Detention Basin		Carl Richard - Esbenshade	40°26'44"	75°51'05"	2016	Maintenance	
15	Detention Basin		Isidore & Ma Guadalupe Polanco - Shadow Ridge	40°27'01"	75°52'38"		Maintenance	
16	Detention Basin		Maidencreek Apt LLC - Golden Manor III	40°26'42"	75°51'47"		Maintenance	

BMP No.	BMP name	DA(ac)	Entity Responsible for O&M	Latitude	Longitude	Date Installed	O&M Requirements	NPDES Permit No.
17	Detention Basin		Maidencreek Place Senior Living – Hearthstone Assisted Living	40° 26' 22"	75° 54' 33"	2005	Maintenance	
18	Detention Basin		Jared & Lauren Clugston - MeadowBrook	40° 27' 08"	75° 52' 38"	2005	Maintenance	
19	Detention Basin		Maidencreek Township – Ontelaunee Heights Pond 2	40° 27' 13"	75° 53' 57"		Maintenance	
20	Infiltration Basin	1.09	SCRP, LLC – Stoney Creek Rentals	40° 26' 30"	75° 52' 30"	2020	Maintenance	
21	Detention Basin		Jeffery & Emily Charlebois / Jessica Shane – Thon Subdivision	40° 26' 23"	75° 53' 13"		Maintenance	
22	Detention Basins		John A. Fielding, Trust Deed & Agreement – Tree Tops	40° 26' 17"	75° 52' 26"		Maintenance	

BMP #5: Ensure that controls are installed that shall prevent or minimize water quality impacts. The permittee shall inspect all qualifying development or redevelopment projects during the construction phase to ensure proper installation of the approved structural PCSM BMPs. A tracking system (e.g., database, spreadsheet, or written list) shall be implemented to track the inspections conducted and to track the results of the inspections (e.g., BMPs were, or were not, installed properly).

1. During the reporting period have you inspected all qualifying development and redevelopment projects during the construction phase to ensure proper installation of approved structural BMPs?

   ☐ Yes ☐ No ☐ Not Applicable (no qualifying projects during reporting period)

2. Has a tracking system been established and maintained to record results of inspections?

   ☐ Yes ☐ No

BMP #6: Develop a written procedure that describes how the permittee shall address all required components of this MCM.

Have you developed a written plan that addresses: 1) minimum requirements for use of structural and/or non-structural BMPs in plans for development and redevelopment; 2) criteria for selecting and standards for sizing stormwater BMPs; and 3) implementation of an inspection program to ensure that BMPs are properly installed? ☐ Yes ☐ No

MCM #5 Comments:

MCM #6 – POLLUTION PREVENTION / GOOD HOUSEKEEPING

BMP #1: Identify and document all operations that are owned or operated by the permittee and have the potential for generating pollution in stormwater runoff to the MS4. This includes activities conducted by contractors for the permittee.

1. Have you identified all facilities and activities owned and operated by the permitee that have the potential to generate stormwater runoff into the MS4? ☒ Yes ☐ No

2. When was the inventory last reviewed? 09/27/2022

3. When was it last updated? 07/26/2019

BMP #2: Develop, implement and maintain a written O&M program for all operations that could contribute to the discharge of pollutants from the MS4, as identified under BMP #1. This program shall address stormwater collection or conveyance systems within the regulated MS4.

1. Have you developed a written O&M program for the operations identified in BMP #1? ☒ Yes ☐ No

2. Date of last review or update to written O&M program: 09/27/2022

BMP #3: Develop and implement an employee training program that addresses appropriate topics to further the goal of preventing or reducing the discharge of pollutants from operations to the regulated small MS4. All relevant employees and contractors shall receive training.

1. Have you developed an employee training program? ☒ Yes ☐ No

2. Date of last review or update to training program: 09/27/2022 Date of latest training: 10/03/2024

3. Training topics covered:

   Berks Conservation District Riparian Buffer

4. Name(s) of training presenter(s):

   Dean Druckenmiller

5. Names of training attendees:

   Keith Shuman, Tyler Nolt, Brian Wise, Mike Stern, Eal Weber, Josh Meck, Christopher Weiss, Julie Dietrich

MCM #6 Comments:

The Township Manager, Diane Hollenbach, attended Center for Watershed Protection Draft PAG-13 NPDES MS4 General Permit Informational Webinar on March 13, 2025 presented by Beth Uhler

POLLUTANT CONTROL MEASURES (PCMs)

Indicate the status of implementing PCMs in Appendices A, B and/or C by completing the table below. Skip this section if PCMs are not applicable.

Task	Date Completed	Attached	Anticipated Completion Date
Storm Sewershed Map(s)		☐	
Source Inventory		☐	
Investigation of Suspected Sources		☐	
Ordinance/SOP for Controlling Animal Wastes		☐	

PCM Comments:

POLLUTANT REDUCTION PLANS (PRPs) AND TMDL PLANS

1. Complete this section if the development and submission of a PRP and/or TMDL Plan was required as an attachment to the latest NOI or application or was required by the permit, regardless of whether DEP has approved the plan(s).

Type of Plan	Submission Date	DEP Approval Date	Surface Waters Addressed by Plan
☐ Chesapeake Bay PRP (Appendix D)			Chesapeake Bay
☐ Impaired Waters PRP (Appendix E)			
☐ TMDL Plan (Appendix F)			
☐ Combined Chesapeake Bay / Impaired Waters PRP			Chesapeake Bay,
☐ Combined PRP / TMDL Plan			

☐ Joint Plan *(if checked, list the name of the MS4 group or names of all entities participating in the joint plan below)*

Joint Plan Participants:

2. Identify the pollutants of concern and pollutant load reduction requirements under the permit (see instructions).

Type of Plan	TSS Load Reduction (lbs/yr)	TP Load Reduction (lbs/yr)	TN Load Reduction (lbs/yr)
☐ Chesapeake Bay PRP (Appendix D)			
☐ Impaired Waters PRP (Appendix E)			
☐ TMDL Plan (Appendix F)			
☐ Combined Chesapeake Bay / Impaired Waters PRP			
☐ Combined PRP / TMDL Plan			

3. Date Final Report Demonstrating Achievement of Pollutant Load Reductions Due:

4. Have any modifications to the plan(s) occurred since DEP approval? ☐ Yes ☐ No

   If Yes to #4, was the updated plan(s) submitted to DEP? ☐ Yes ☐ No

   If Yes to #4, did you comply with the public participation requirements of the applicable appendix? ☐ Yes ☐ No

   If Yes to #4, describe the plan modifications.

5. Summary of progress achieved during reporting period.

6. Anticipated activities for next reporting period.

PRP/TMDL Plan Comments:

NEW BMPs FOR PRP/TMDL PLAN IMPLEMENTATION

Table 2. List all new structural BMPs installed and ongoing non-structural BMPs implemented during the reporting period that are being used toward achieving load reductions in the permittee's PRP and/or TMDL Plan (see instructions).

BMP No.	BMP Name	DA (ac)	% Imp.	BMP Extent	Units	Latitude	Longitude	Date Installed or Implemented	Planning Area?	Ch. 102?	Annual Sediment Load Reduction (lbs/yr)
						° ' "	° ' "		☐	☐	
						° ' "	° ' "		☐	☐	
						° ' "	° ' "		☐	☐	
						° ' "	° ' "		☐	☐	
						° ' "	° ' "		☐	☐	

BMP INVENTORY FOR PRP/TMDL PLAN IMPLEMENTATION

Table 3. List all existing structural BMPs that have been installed in prior reporting periods and are eligible to use toward achieving load reductions in the permittee's PRP and/or TMDL Plan (see instructions).

BMP No.	BMP Name	DA (ac)	% Imp.	BMP Extent	Units	Latitude	Longitude	Date Installed	Annual Sediment Load Reduction (lbs/yr)	Date of Latest Inspect -ion	Satis-factory?
						° ' "	° ' "				☐
						° ' "	° ' "				☐
						° ' "	° ' "				☐
						° ' "	° ' "				☐
						° ' "	° ' "				☐
						° ' "	° ' "				☐

CERTIFICATION

For PAG-13 Permittees: I have read the latest PAG-13 General Permit issued by DEP and agree and certify that (1) the permittee continues to be eligible for coverage under the PAG-13 General Permit and (2) the permittee will continue to comply with the conditions of that permit, including any modifications thereto. I understand that if I do not agree to the terms and conditions of the PAG-13 General Permit, I will apply for an individual permit within 90 days of publication of the General Permit. I also acknowledge that any facility construction needed to comply with the General Permit requirements shall be designed, built, operated, and maintained in accordance with operative laws and regulations.

For All Permittees: I certify under penalty of law that this report was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).

Diane Hollenbach	Diane Hollenbach
Name of Responsible Official	Signature
610 926 4920	9-22-2025
Telephone No.	Date

3800-PM-BCW0200c Rev. 8/2022
Application Checklist

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) INDIVIDUAL PERMIT TO DISCHARGE STORMWATER FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4s) CHECKLIST

APPLICANT'S ✓ CHECKLIST

Applicant Name	Maidencreek Township

Check the following list to make sure you have included all the required information. Place a checkmark in the box provided for all items completed and/or provided. Failure to provide all of the requested information will delay the processing of the application.

ENCLOSE THIS CHECKLIST WITH YOUR COMPLETED APPLICATION.

	REQUIREMENTS FOR ALL DISCHARGES	Check ✓ If Included	DEP Use Only
1.	One original and two copies of the completed application (3800-PM-BCW0200b) (One copy if submitted electronically through OnBase).	☑	
2.	Application fee ($5,000 for new applications only).	☐	
3.	One original and two copies of the completed Waiver Application (3800-PM-BCW0100e), if applicable.	☐	
4.	Stormwater map(s) (existing permittees) or topographic map(s) (MS4s with previous waivers and new applicants).	☑	
5.	Memorandum of Understanding (MOU) or other written agreement with parties that will implement one or more BMPs, if applicable.	☑	
6.	Chesapeake Bay Pollutant Reduction Plan (PRP), if applicable. (In addition, submit an electronic version or hard copy to DEP's Bureau of Clean Water).	☐	
7.	PRP for Impaired Waters, if applicable. (In addition, submit an electronic version or hard copy to DEP's Bureau of Clean Water).	☑	
8.	TMDL Plan, if applicable. (In addition, submit an electronic version or hard copy to DEP's Bureau of Clean Water).	☑	
9.	Stormwater Management Ordinance (municipal applicants seeking renewed coverage only).	☑	
10.	Stormwater Management Ordinance Checklist (3800-PM-BCW0100g), if applicable.	☐	
11.	Standard Operating Procedure(s) (non-municipal applicants seeking renewed coverage only).	☐	
12.	Complete application packages for each co-applicant (joint applications only).	☐	

MAIDENCREEK TOWNSHIP
BERKS COUNTY, PA
STORMWATER MANAGEMENT PROGRAM (SWMP)

Prepared for

MAIDENCREEK TOWNSHIP
PO Box 319
Blandon, PA 19510
NPDES Permit No. PAI-133546

Updated September 2025

SDE SYSTEMS DESIGN ENGINEERING, INC
"A Passion for Engineering Excellence"
sdei.net

I. INTRODUCTION

A. Discharges of stormwater from regulated small municipal separate storm sewer systems (small MS4s), are required under the federal stormwater regulations and state regulations incorporating those federal requirements by reference to submit an application and obtain a NPDES permit to discharge stormwater into surface waters of the Commonwealth of Pennsylvania.

B. The NPDES permit authorizes discharges from regulated small MS4s to surface waters of the Commonwealth, when such discharges are composed entirely of stormwater. The permittee is required to submit reports to document the implementation of a Stormwater Management Program (SWMP), designed to reduce the discharge of pollutants from the regulated small MS4 to the Maximum Extent Practicable (MEP); and when required, the development of, submission to DEP for approval, and activity to ensure implementation of an MS4 Pollutant Reduction Plan (PRP) and/or Total Maximum Daily Load (TMDL) Plan consistent with the TMDL.

C. Common pollutants found in stormwater runoff include oil and grease from roadways, pesticides from lawns, sediment from construction sites, discarded trash, such as cigarette butts, paper wrappers, and plastic bottles, and sediment from waterway erosion. When these kinds of pollutants are carried by stormwater into regulated small MS4s that discharge into nearby waterways, the waterways can become impaired for uses, such as habitat for fish and other aquatic wildlife, drinking water supplies, and water-contact recreational use.

D. The federal regulations establish six (6) Minimum Control Measures (MCMs) that must be satisfied by the permittee through implementation of a SWMP consisting of Best Management Practices (BMPs) designed to reduce the discharge of pollutants from the regulated small MS4 to the MEP. Rather than numeric “end of pipe” limits, the “narrative” BMPs are designed to reduce the amount of pollutants discharged in stormwater runoff. Permittees meet the regulatory and permit requirements by implementing the BMPs in the permittees’ SWMP to the MEP, and demonstrating that such BMPs consistently reduce pollutants in stormwater runoff. The six (6) MCMs are:

- MCM #1 Public education and outreach on storm water impacts
- MCM #2 Public involvement and participation
- MCM #3 Illicit discharge detection and elimination (IDD&E)
- MCM #4 Construction site storm water runoff control
- MCM #5 Post-construction storm water management in new development and redevelopment
- MCM #6 Pollution prevention and good housekeeping for municipal operations

E. This SWMP outlines regulations, policies and procedures for meeting MCMs #1

through #6, for the Township of Maidencreek, Berks County, Pennsylvania.

MCM #1
Public Education and Outreach Program

1.0 MCM #1 – Public Education and Outreach Program (PEOP)

1.1 Description

MCM #1 requires the MS4 municipality to implement the following BMPs:

1.1.1 Develop, implement and maintain a written Public Education and Outreach Program.

1.1.2 Develop and maintain lists of target audience groups that are present within the areas served by the permittee's regulated small MS4.

1.1.3 Annually publish at least one issue of a pamphlet, a flyer, or a website that includes general stormwater educational information, a general description of the permittee's stormwater management plan, and/or information about the permittee's stormwater management activities.

1.1.4 Distribute stormwater educational materials and/or information to the target audiences using two methods annually.

1.2 BMP #1 – Develop, Implement and Maintain the PEOP

Maidencreek Township will update and maintain this PEOP annually at a minimum.

1.3 BMP #2 – Target Audience

Maidencreek Township's target audience includes the following:

- Residents
- Business Owners & Employees
- Municipal Employees
- Developers
- Emergency Services Organizations

Maidencreek Township reaches its target audience via the following:

- Stormwater photographs and information provided via the Township's Facebook page. This page is available to anyone via Facebook: (https://www.facebook.com/pages/category/Community/Maidencreel-Township-379072138773107/)
- Stormwater link on the Township's Website. This page is available to anyone with internet access: (www.maidencreek.net/Stormwater.html)

- Pamphlets are available year-round to the public on the counter at Township Hall; a sample is provided in the Appendix. (https://www.dot.state.pa.us/public/Bureaus/BOMO/raindrainbrochure.pdf)
- Posters are on display in the public area at Borough Hall; samples are provided in Appendix.
- Maidencreek Township is a member of the Berks County MS4 Steering Committee, which provides a clearinghouse of county-wide stormwater information and activities that are available to the public. A summary is included in the Appendix. Relevant information and/or activities will be listed in the MS4 Annual Reports.
- Direct contact with target audience members can be accomplished as deemed necessary via search engine research (e.g., "Google") by the Township Manager.

Maidencreek Township's Manager is responsible for collection, publication and dissemination of stormwater-related materials to the target audiences.

1.4 BMP #3 – Published Materials

1.4.1 Facebook

- The photos section of the Township's Facebook page includes brochures dealing with stormwater pollution and clean water.
- Photos appear on the page timeline as they are posted.
- The page URL is here (screenshots are provided in the Appendix): (https://www.facebook.com/pages/category/Community/Maidencreel-Township-379072138773107/)

1.4.2 Website

- A link to MS4 Stormwater Regulations appears on the Township's home page. This link connects to Berks County's Stormwater Management Program web page, which in turn contains several links to state and federal stormwater resources.
- The page URL is here (screenshots are provided in the Appendix): (www.maidencreek.net)

1.4.3 Pamphlets

- A stormwater pollution pamphlet is available year-round to the public at the counter at Township Building; a sample appears in the Appendix.

1.4.4 Posters

- Posters are on display year-round in the public area at Township Building; samples are provided in the Appendix.

1.4.5 Quarterly Utility Billing Statements

- Utility and trash billing statements include a short reminder on stormwater; e.g., "When it rains it drains."

1.4.6 Berks County MS4 Steering Committee

- The BCMS4SC meets quarterly to discuss stormwater-related regulations, activities and documentation. Maidencreek Township's engineering staff attends these meetings.

1.5 BMP #4 – Additional Educational Materials

- Maidencreek Township reaches its target audience via pamphlets and its website.
- In addition to the BMP #3 outreach requirements, the Township distributes stormwater information via posters, Facebook and billing statements.

APPENDIX A

MCM #1 – PUBLIC EDUCATION AND OUTREACH ON STORM WATER IMPACTS

BMP #1 – PUBLIC EDUCATION AND OUTREACH PLAN (MS4 STEERING COMMITTEE)

MAIDENCREEK TOWNSHIP

MUNICIPAL STORM SEWER SYSTEM PUBLIC EDUCATION AND OUTREACH PLAN

PUBLIC EDUATION AND OUTREACH PROGRAM (PEOP) BMP#1

Maidencreek Township, Berks County (pop. 9172) is home to a portion of Lake Ontelaunee, which serves as the drinking water supply for the City of Reading, three water wells and two wells in development which serve as Maidencreek Township's drinking water supply and the Willow Creek, a high-quality cold-water stream. Storm water runoff is collected through inlets, pipes, swales, and basins with much of the storm water discharging into the Willow Creek and its tributaries which flow into the Maidencreek, Lake Ontelaunee and eventually the Schuylkill River. **The purpose of this Public Education and Outreach Plan is to build support for Maidencreek Township's stormwater management program, increase awareness about issues that affect water quality and increase compliance so that water quality can be improved through collective action.**

MCM #1 requires Maidencreek Township to:

"Implement a public education program to distribute educational materials to the community or conduct equivalent outreach activities about the impacts of stormwater discharges on water bodies and the steps that the public can take to reduce pollutants in stormwater runoff." There are four Best Management Practices required under this MCM.

GOALS

To communicate effectively and achieve positive results, Maidencreek Township has set the following goals:

1. Meet the requirements of the MS4 Individual Permit.
2. Make target audiences aware that their daily activities impact the quality of the water in the ground and in the streams and lakes.
3. Educate target audiences about the causes of storm water pollution and how to recognize and report illicit discharge.
4. Offer cost efficient and natural based solutions with simple techniques to common practices and problems.

This PEOP identifies Maidencreek Township's target audience and determines the most effective ways to convey information to each group. In June of each year, Maidencreek Township staff will review and update the PEOP, the target audience list and content of the website and published articles.

RESIDENTS:

Home Owners – a list is found on Township server at T:\Tax Rolls\Tax Year 2024 and is maintained yearly by the County of Berks Assessment Office. This group will receive newsletters, education when picking up building and zoning permits and have access to the webpage. The Township will develop a list of homeowners with BMPs on their property and provide them with the booklet "Homeowners Guide to Storm water BMP Maintenance." Homeowners with on-lot septic systems will receive additional education on maintaining their septic systems.

Renters - a list is found on Township server at T:\Addresses & Rentals\RENTALS\Rental List and is maintained by the Township receptionist by mailing letters in the fall of each year to landlords asking for an update on who is renting the property. Landlords are listed in the Propertyowners.xls spreadsheet. This group will receive newsletters and have access to the webpage.

Agricultural Security Area and Agricultural Community – a list is found on Township server at T:\Ag Security and is maintained by the Township manager. Farmers not in the Ag Security Area are listed in the Propertyowners.xls spreadsheet. This group will receive newsletters, education when picking up building and zoning permits and have access to the webpage. Because sediment is a large contributor to stream impairment, this group will receive an additional mailing each year.

BUSINESSES:

Commercial, Retail and Industrial Properties - a list is found on Township server at T:\Addresses & Rentals and is maintained yearly by the County of Berks Assessment Office. The Township also keeps a list of businesses for recycling purposes. This group will receive newsletters, education when picking up building and zoning permits and have access to the webpage.

DEVELOPERS:

Developer/Building Permittees – all active building permits for the year are kept in the filing cabinet in the manager's office, top drawer, right side in a folder titled, "Building Permits". This group will receive education when picking up building and zoning permits and have access to the webpage. Additionally, the Berks County Conservation District offers workshops annually to contractors.

SCHOOLS:

Community Groups – Boy Scouts, Girl Scouts, Fleetwood Area School District, area churches and Home Owners Associations. Communication with these groups is primarily through email to leaders and executive boards. This group usually has individuals looking for community service and merit badge activities and is the first place the Township will target for waterway cleanup projects and riparian restoration activities. The Berks County MS4 Steering Committee through the Berks County Conservation District and Berks Nature coordinates educational opportunities such as the Envirothon for school age children and it is important to remember that future generations hold the key to success in improving water quality.

MUNICIPAL EMPLOYEES:

Municipal Employees – a list is found on Township server at T:\MS4 Education\Target Audiences\Municipal Employees.xls and is maintained by the Township manager. The list is updated yearly in January. Municipal employees will have access to all materials supplied by the Township and will receive annual training from the Berks County Public Works Association and the Berks County Conservation District. The Township will continue to implement proper operational practices to reduce impacts on water quality through its Good Housekeeping Operation and Maintenance Program.

ANNUAL PUBLICATION BMP#3

Maidencreek Township maintains a webpage at Stormwater Management - Maiden Creek. On this webpage are links to the Berks County MS4 Steering Committee webpage, links to articles regarding agricultural storm water runoff, septic systems, the PA DEP publication When It Rains, It Drains and proper disposal of prescription medications. The page also contains the most recent MS4 annual report and information on the Reading Area Water Authority's Source Water Protection Program. The Township will publish a storm water article in the spring and fall newsletter and annual calendar each year that will be mailed to residential, agricultural, commercial, industrial and institutional property owners, and renters.

DISTRIBUTION OF STORM WATER EDUCATION TO TARGET AUDIENCES BMP#4

Additional educational efforts beyond the Township newsletter and website are:

1. A public meeting will be held once a year to educate municipal officials on the MS4 Program, update the Public Education and Outreach Plan and to accept public comment and questions on the Maidencreek Township's MS4 Program.
2. Maidencreek Township will continue membership in the Berks County Municipal Separate Storm Sewer System Steering Committee, utilize and make available to its target audiences all educational opportunities the Berks County MS4 Steering Committee provides through the Berks County Conservation District and Berks

Nature. The Steering Committee is instrumental in outreach to the Fleetwood Area School District and combines the efforts of thirty-six municipalities within the county to implement public education, outreach and involvement.

3. Educational materials on storm water runoff and construction will be sent out with every building and zoning permit issued in the Township.
4. The Township Park and Recreation Board will assist in education efforts by handing out Storm Water Education materials at the annual National Night Out event at the Schuylkill Valley School Campus in August and at Safe Halloween Event held at the Blandon Fire Company, 36 W Wesner Road, Blandon in October.
5. Signs will be maintained to educate the public as well. All storm drains are marked with a circle that states "Drains to Stream" and the Willow Creek Stream Restoration Project has six educational signs about aquatic life that are maintained along the stream corridor.
6. A bulletin board will be at the Township office specifically for storm water education.

Educational Effort	Information Conveyed	How and When Conveyed	Target Audience Reached
Website	Includes information on storm water runoff, septic tank maintenance and water source protection.	Online all year at Stormwater Management - Maiden Creek	All Target Audience Groups
"Homeowner's Tips on Improving Water Quality"	Information on reducing pollution to protect drinking water.	Handed out with all building permits all year.	All Target Audiences except Community Groups.
Public Meeting	The meeting will cover the purpose of the MS4 Program and review the PEOP.	Advertised in the Reading Eagle.	All Target Audiences
"Agriculture and Your Drinking Water"	Includes information on agricultural storm water BMPs.	Mailed in July	Agricultural Community
"Protecting Your Drinking Water"	Includes information about on lot septic systems	Mailed in July	Properties with on lot systems
Newsletter and "Homeowner's Guide to BMP Maintenance"	Includes information on storm water runoff and how to identify illicit discharge.	Mailed in August and as homes with BMPs are occupied by new owners.	All Target Audience Groups except Developers and Community Groups
Handout/Love your Stream Poster, Pens	Illustrates actions everyone of any age	Park and Rec Board Members will attend	All Target Audiences

with Township phone # to report illicit discharge	can take to care for the stream.	National Night Out in August and Safe Halloween in October.	
Signs	Fish Circles on each drain and 6 signs in the Willow Creek Stream Corridor	Permanently affixed to a physical location all year.	All Target Audiences
Bulletin Board	Information on taking care of streams, what storm water pollution is and how to report illicit discharge.	Hung in Township Office lobby all year and updated with new material as published.	All Target Audiences

APPENDIX B

MCM #1 – PUBLIC EDUCATION AND OUTREACH ON STORM WATER IMPACTS

BMP #3 – PUBLISHED EDUCATIONAL ITEMS

Pamphlet Available Year-Round on Counter at Township Hall

What is Storm Water?

Storm water is water from precipitation that flows across the ground and pavement when it rains or when snow and ice melt. The water seeps into the ground or drains into what we call storm sewers. These are the drains you see at street corners or at low points on the sides of streets. Collectively, the draining water is called storm water runoff.

Why is Storm Water "Good Rain Gone Wrong?"

Storm water becomes a problem when it picks up debris, chemicals, dirt, and other pollutants as it flows or when it causes flooding and erosion of stream banks. Storm water travels through a system of pipes and roadside ditches that make up storm sewer systems. It eventually flows directly to a lake, river, stream, wetland, or coastal water. All of the pollutants storm water carries along the way empty into our waters, too, because storm water does not get treated!



Pet wastes left on the ground get carried away by storm water, contributing harmful bacteria, parasites and viruses to our water.

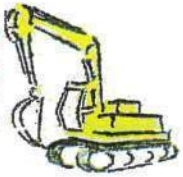


Vehicles drip fluids (oil, grease, gasoline, antifreeze, brake fluids, etc.) onto paved areas where storm water runoff carries them through our storm drains and into our water.



Chemicals used to grow and maintain beautiful lawns and gardens, if not used properly, can run off into the storm drains when it rains or when we water our lawns and gardens.

Waste from chemicals and materials used in construction can wash into the storm sewer system when it rains. Soil that erodes from construction sites causes environmental degradation, including harming fish and shellfish populations that are important for recreation and our economy.



Where To Go To Continue the Information Flow

Your community is preventing storm water pollution through a storm water management program. This program addresses storm water pollution from construction, new development, illegal dumping to the storm sewer system, and pollution prevention and good housekeeping practices in municipal operations. It will also continue to educate the community and get everyone involved in making sure the only thing that storm water contributes to our water is ... water! Contact your community's storm water management program coordinator or the Pennsylvania Department of Environmental Protection for more information about storm water management.

Pennsylvania Department of Environmental Protection
www.dep.state.pa.us

Answers to Test Your Storm Sewer System Savvy:

1. Ditch – Part of the storm sewer system. Most people think that the system is just a series of underground pipes. It can also include ditches used to convey storm water from the land to a receiving lake, river, or stream.

2. Fire hydrant – Not part of the storm sewer system. Water sprayed from fire hydrants is not wasted water, but is allowed by law to enter the sanitary sewer system.

3. Curb with Storm Drain Inlet – Part of the storm sewer system. Many people do not realize that this is an opening leading to the storm sewer system. Anything going into this inlet (e.g., trash, leaves, improperly disposed of hazardous materials) would directly to a receiving lake, river, or stream without being treated first. Many communities around storm drains with "Do Not Dump" messages to let people know.

4. Storm Sewer Outfall – Part of the storm sewer system. An outfall is where storm water drains from the storm sewer system into a receiving lake, stream, or river. If there is a flow from an outfall when it isn't raining, there could be a problem with the system or someone has used a storm drain for illegally disposing of materials.

5. Toilet – Not part of the storm sewer system. Wastewater from sinks and toilets in houses and businesses usually travels to a sewer system constructed to carry sanitary wastes. In some instances, older communities may have a combined sewer system designed to carry both storm water and sanitary wastes.

6. Septic System – Not part of the storm sewer system. Homeowners use septic tanks to manage sanitary wastes on-site. Improperly maintained septic systems can leak and contribute pollutants to the storm sewer system, as well as directly to lakes, rivers, and streams.

7. Roads and Other Paved Areas – Not part of the storm sewer system. Roads and other developed surfaces such as parking lots and sidewalks can accumulate pollutants (e.g., oil, grease, dirt, pet wastes) that wash off during storms and flow into the storm sewer system.

8. Storm Drain Inlet – Part of the storm sewer system. This is another example of what a storm drain may look like. Like the storm drain inlet shown in picture #3, anything that enters this drain will go directly to streams, rivers, and lakes without being treated first. It is important to recognize this as a storm drain to prevent it from being used as a trash can.

When It Rains. It Drains

Understanding Storm Water and How It Can Affect Your Money, Safety, Health, and the Environment





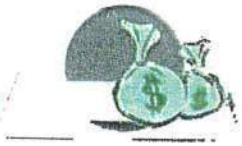
What Happens When It Rains?

Rain is an important part of nature's water cycle, but there are times it can do more damage than good. Problems related to storm water runoff can include:



Flooding caused by too much storm water flowing over hardened surfaces such as roads and parking lots, instead of soaking into the ground.

Increases in spending on maintaining storm drains and the storm sewer system that become clogged with excessive amounts of dirt and debris.





Decreases in sportfish populations because storm water carries sediment and pollutants that degrade important fish habitat.

More expensive treatment technologies to remove harmful pollutants carried by storm water into our drinking water supplies.



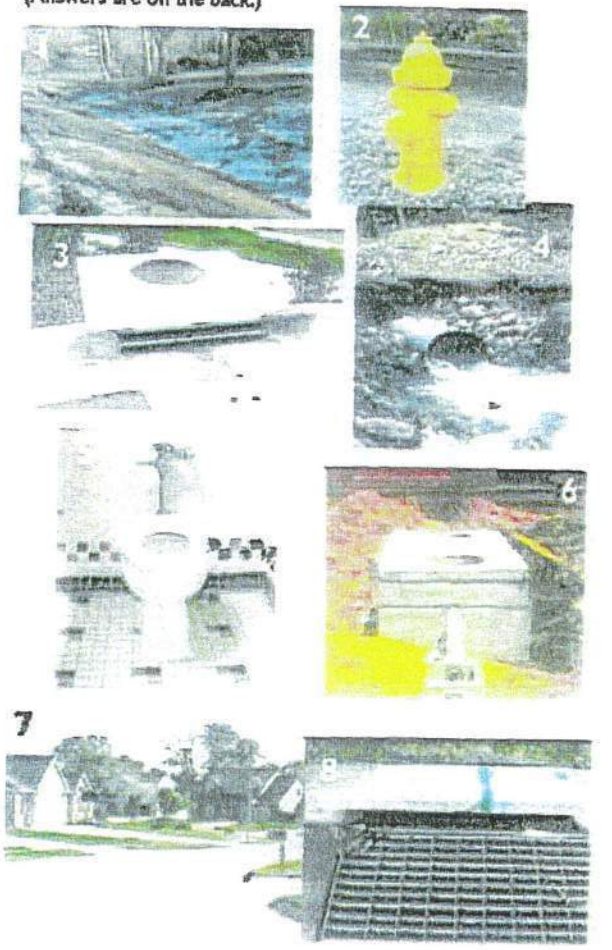


Closed beaches due to high levels of bacteria carried by storm water that make swimming unsafe.

We can help rain restore its good reputation while protecting our health and environment while saving money for ourselves and our community. Keep reading to find out how...

Test Your Storm Sewer System Savvy!

What does the storm sewer system look like in your community? See if you can identify which pictures are part of the storm sewer system. (Answers are on the back.)



Restoring Rain's Reputation: What Everyone Can Do To Help

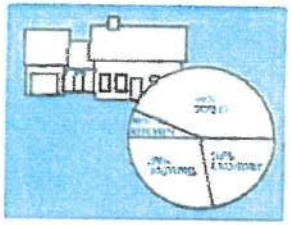
Rain by nature is important for replenishing drinking water supplies, recreation, and healthy wildlife habitats. It only becomes a problem when pollutants from our activities like car maintenance, lawn care, and dog walking are left on the ground for rain to wash away. Here are some of the most important ways to prevent storm water pollution:

- Properly dispose of hazardous substances such as used oil, cleaning supplies and paint—never pour them down any part of the storm sewer system and report anyone who does.
- Use pesticides, fertilizers, and herbicides properly and efficiently to prevent excess runoff.
- Look for signs of soil and other pollutants, such as debris and chemicals, leaving construction sites in storm water runoff or tracked into roads by construction vehicles. Report poorly managed construction sites that could impact storm water runoff to your community. (See the back of this brochure for contact information.)
- Install innovative storm water practices on residential property, such as rain barrels or rain gardens, that capture storm water and keep it on site instead of letting it drain away into the storm sewer system.
- Report any discharges from storm water outfalls during times of dry weather—a sign that there could be a problem with the storm sewer system.
- Pick up after pets and dispose of their waste properly. No matter where pets make a mess—in a backyard or at the park—storm water runoff can carry pet waste from the land to the storm sewer system to a stream.
- Store materials that could pollute storm water indoors and use containers for outdoor storage that do not rust or leak to eliminate exposure of materials to storm water.

Caring for Your System

Remember that the Homeowner is responsible for the care and maintenance of the septic system! Here are some ideas to keep your system in top shape:

- Inspect the entire system every 1 to 3 years to ensure good working order.
- Pump the solids from the tank every three (3) years to avoid overfilling and failing tanks.
- Keep service and pumping records handy.
- Repair the system as soon as trouble signs appear, such as sluggish toilets, sewer odors, spongy ground around septic tank, or raw sewage backups.
- Conserve water and follow directions to prevent malfunctions.
- Visit the PA Department of Environmental Protection website for more information at http://www.portal.state.pa.us/portal/server.pt?open=514&objID=554156&mode=2



Septic System Maintenance Record

Date	Company	Service	Comments

Do's and Don'ts

DO dispose of motor oil at a garage that will recycle it. Never pour oil down the sink or in a storm drain or sewer on the street.

DO limit the use of household chemicals. These substances can reduce the necessary bacteria that breaks down the waste solids. Resulting sludge can clog the drainfield.

DON'T dispose of non-degradable solids in the system. Examples include tissues, sanitary supplies, cigarette butts, and paper towels. A buildup will clog the inlet and effluent pipes.

DO regularly check faucets and toilets for leaks. This extra drainage can overload your system.

DO substitute less toxic substances like baking soda or borax for household hazardous wastes like ammonia and other cleaners. Use a phosphate-free laundry detergent.

DON'T clean paint brushes or dispose of paint into the septic system. Both latex-based and oil-based paint can clog the system and create problems.

For more information

Pennsylvania DEP Factsheet
http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-77465/3800-FS-DEP1414.pdf

On-lot System Operation and Maintenance
http://www.portal.state.pa.us/portal/server.pt?open=514&objID=554156&mode=2

HOMEOWNER GUIDE

Septic Systems Care and Maintenance



Reading Area Water Authority
Source Water Protection Program

For more information
Reading Area Water Authority
1801 Kutztown Road
Reading, PA 19604
(610) 406-6300

RAWA

What is a Septic System?

Households that are not on a public sewer system use an on-lot septic system to dispose of their wastewater. Household wastewater contains all the wastes from our homes, including toilet use, bathroom and kitchen use, laundry, and other activities. It contains human waste, detergents, chemicals, grease, oils, and many other substances. If not treated properly, these substances can travel through soil and potentially contaminate local waterways.

Most systems have three components:

- **Septic Tank** – Tanks can be constructed from plastic, fiberglass, or concrete. Tank size and specifications are determined by state regulation, and systems are permitted and approved by local agencies.

- **Drainfield** – a drainfield is constructed from a series of perforated pipes buried in gravel-filled trenches in the soil. When wastewater enters the septic tank, an equal amount (known as *effluent)* is forced into the drainfield for treatment.

- **Soil** – the soil encompassing the trenches treats the wastewater by allowing infiltration of the liquids to neutralize most of the pollutants. The effluent eventually is incorporated into groundwater.

RAWA
REGIONAL AREA WATER AUTHORITY

SSM
SSM GROUP, INC.
Engineering and Environmental Services
ssmgroup.com

Example of Typical Septic System

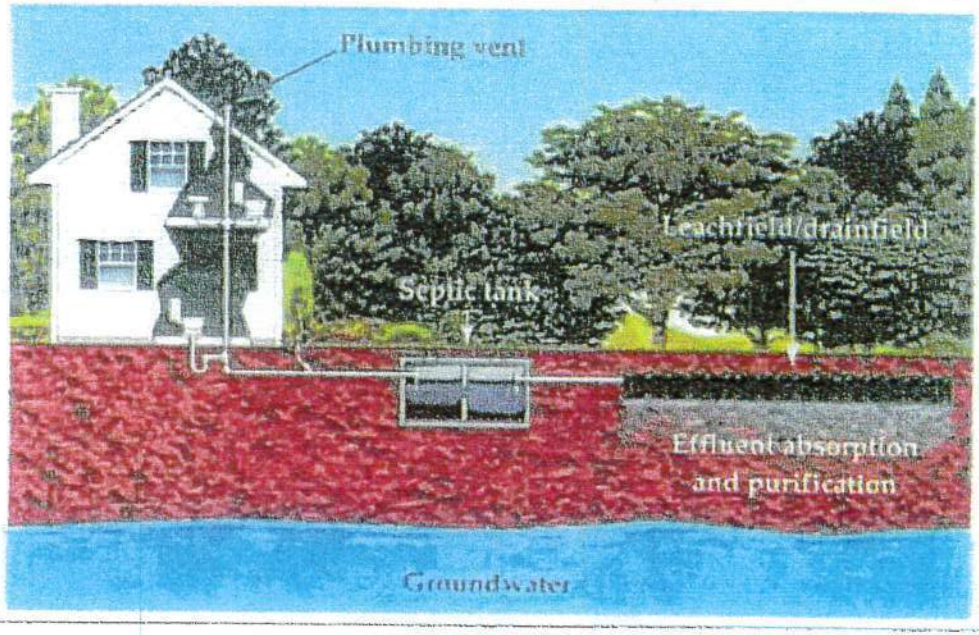


Photo courtesy of Infiltrator Systems, Inc.

Why Should I Maintain My Septic System?

- ***Saves Money!*** Repairing or replacing a septic system can be very expensive. Inspecting and pumping the system every 3 years helps keep the components working correctly.

- ***Protects Your Health!*** Bacteria and viruses are found in the wastewater, and a functional septic system removes most of the organisms during treatment.

- ***Protects the Environment!*** What goes into your septic system may end up in your drinking water source. Refrain from using cleaners and other chemicals that may eventually be discharged from your system and soak into the ground.

Township Website

website

(https://maidencreek.net)

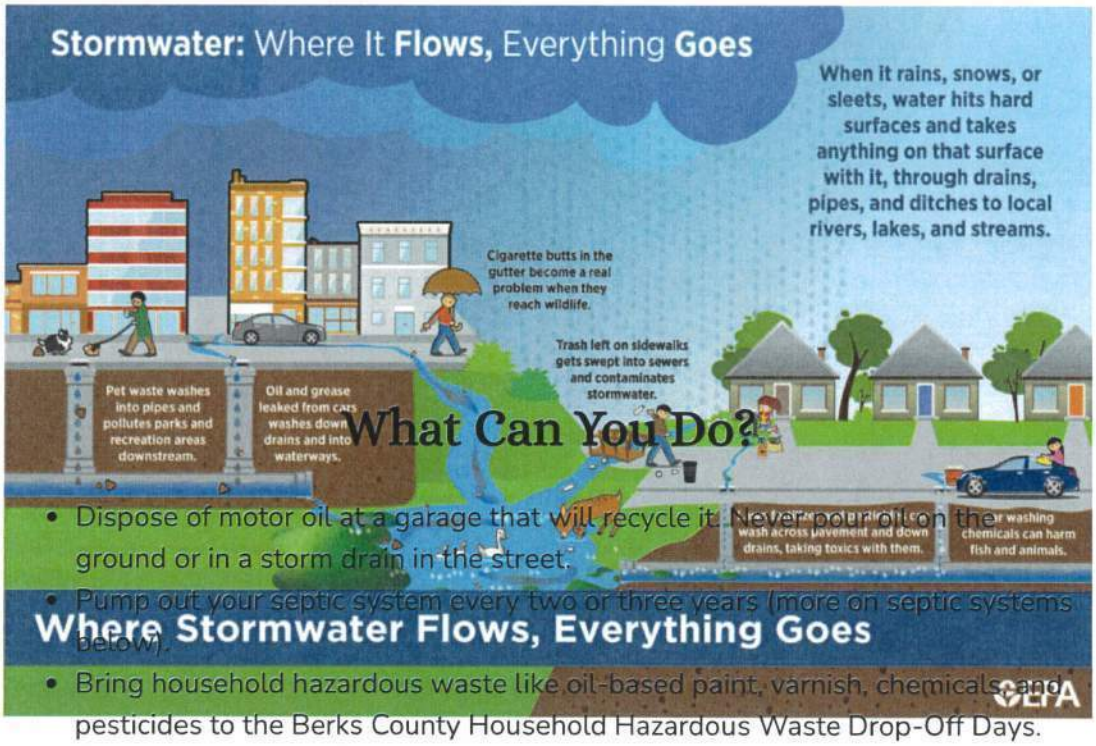
Stormwater Management

What Is MS4?

- Stormwater runoff from snowmelt or rain can pick up pollutants such as motor oil, lawn chemicals, and pet waste before entering streams untreated.
- Large amounts of untreated water entering the storm sewer system, and eventually our streams, have lasting health, safety, environmental, and economic impacts on our community.
- Polluted stormwater runoff is commonly transported through **Municipal Separate Storm Sewer Systems (MS4s)**, where it is often discharged untreated into local waterbodies.
- To prevent harmful pollutants from being washed or dumped into the stormwater system, Maidencreek Township was required to obtain an NPDES permit from the PA Department of Environmental Protection and develop a stormwater management program.
- The township has developed a **Public Education and Outreach Plan** (/wp-content/uploads/2024/05/Public-Education-and-Outreach-Plan.pdf) as well as a **Public Involvement and Participation Plan** (/wp-content/uploads/2024/05/Public-Involvement-and-Participation-Plan.pdf) to help share the significance of keeping stormwater clean and preventing pollution in our streams.

Below, you will find some public outreach resources regarding stormwater, source water protection, and MS4.

Privacy - Terms



- Dispose of motor oil at a garage that will recycle it.
- Pump out your septic system every two or three years (more on septic systems below).
- Bring household hazardous waste like oil-based paint, varnish, chemicals and pesticides to the Berks County Household Hazardous Waste Drop-Off Days. Check their website for the next scheduled day.
- Minimize the use of pesticides and herbicides on your lawn and gardens.
- Do not dump swimming pool water into a creek or storm drain at the end of the season. Wait until the chlorine diminishes, then direct pool water into grass, woodland, or other natural areas.
- Remember – anything you throw or store on the ground can find its way into the water supply. Store and handle chemicals properly.
- Do not let grass clippings, leaves, and other waste enter storm drains

NOTHING IN THE DRAIN BUT RAIN!
REPORT ILLEGAL DISCHARGE TO THE TOWNSHIP OFFICE AT
610-926-4920 (tel:610-926-4920)

Helpful Projects

How often do you think about the water that runs off your roof? Have you ever considered creating a rain collection system for stormwater? During a storm, the ground can become oversaturated, and water runs directly to the streams. What we want to happen is for all the water to enter into the soil. Soil naturally filters so it can return clean water to the watershed. One way to decrease runoff is a **rain barrel**. By setting one of these up to your downspout, you can redirect some of the water to a barrel. You can then use the water for gardening or return it to the soil on a dry day.

Another system that helps is a **rain garden.** This is an aesthetically pleasing approach that can be as elaborate as you like. The principle is to lead the drainage water from the downspout to a garden that can help the soil absorb and filter the

water. As an example of a more complicated garden, you can create a small basin and designate rings of soil to plant in. The innermost ring contains plants that need the most water and the outer plants need the least.

Both of these methods are tried and true and can help make a small improvement to our water supply. If they sound interesting, there are many online resources that go over different approaches to these projects.

Septic System

Do you have a septic system on your property? As of 2023, there are 396 septic systems in Maidencreek Township. Unlike public sewers, these systems cannot be actively monitored and maintained by the township. If you do have a septic system, make sure that it is inspected and pumped every 3 years. Tanks left unchecked leave a chance of unsafe water for use and drink. It is also recommended to take proper records of maintenance. Sometimes septic tanks are partially buried or not specified when a property changes hands, increasing the risk toward your health and potentially damaging the septic tank. Proper maintenance every 3 years is safer and cheaper than waiting for a septic system to fail entirely.

For a more detailed description of how to maintain your On-Lot Disposal System, you can view this guide here from the Pennsylvania Septage Management Association which explains in detail (https://www.psma.net/maintain-your-septic-system/).

Relevant Documents

- Caring for Streamside Property (/wp-content/uploads/2024/05/Caring-for-Streamside-Property.pdf)
- MS4 Annual Report (https://www.dropbox.com/scl/fi/t4l014pjsgs1biti7b7wh/Annual-Report-2022-2023-Signed.pdf?rlkey=rr9j6adfh9wwuioq0r60lqf8w&st=uyhccbpm&dl=0)
- Pollution Reduction Plan (/wp-content/uploads/2024/05/Pollution-Reduction-Plan.pdf)
- Proper Disposal of General and Hazardous Waste (/wp-content/uploads/2024/05/Proper-Disposal-of-General-and-Hazardous-Waste.pdf)
- Total Maximum Daily Load Plan (/wp-content/uploads/2024/05/Total-Maximum-Daily-Load-Plan.pdf)
- Septic System Care and Maintenance (/wp-content/uploads/2024/05/Septic-System-Care-and-Maintenance.pdf)
- Swimming Pool Water Disposal Guidelines (/wp-content/uploads/2024/05/Swimming-Pool-Water-Disposal-Guidelines.pdf)
- When It Rains It Drains (/wp-content/uploads/2024/05/When-It-Rains-It-Drains.pdf)
- Public Education and Outreach Plan (/wp-content/uploads/2024/05/Public-Education-and-Outreach-Plan.pdf)

- Public Involvement and Participation Plan (/wp-content/uploads/2024/05/Public-Involvement-and-Participation-Plan.pdf)

Upcoming Events

Recycling Day for Red Zone

September 5

INFORMATION (HTTPS://MAIDENCREEK.NET/CALENDAR/RECYCLING-DAY-FOR-RED-ZONE/2025-09-05/)

Food Truck Fridays

September 5 @ 4:00 pm

INFORMATION (HTTPS://MAIDENCREEK.NET/CALENDAR TRUCK-FRIDAYS/)

Northern Berks Regional Police Commission Meeting

September 8 @ 6:00 pm

INFORMATION (HTTPS://MAIDENCREEK.NET/CALENDAR/NORTHERN-BERKS-REGIONAL-POLICE-COMMISSION-MEETING/2025-09-08/)

Board of Supervisors Re Meeting

September 11 @ 6:00 pm

INFORMATION (HTTPS://MAIDENCREEK.NET/CALENDAR OF-SUPERVISORS-REGULAR-MEETING/2 11/)

EVENT CALENDAR (/CALENDAR/)

Election Day, November 5th, Polls Open 7:00 AM to 8:00 PM

Precinct #1 Blandon Fire Co., 28 W. Wesner Rd

Precinct #2 Maidencreek Township Bldg., 1 Quarry Rd

Precinct #3 Trinity Bible Fellowship, 220 Main St

Precinct #4 Maidencreek Church, 261 Main St.

Last Day to register before Election Day is Monday, October 21, 2024.

Have you Considered a Rain Barrel?

Storm runoff poses a risk to our community when it collects pollutants from waste in our yards and along our roads. One way to reduce runoff is creating a rain barrel. Rain barrels take water from your gutter and collect it so that you can make sure the water is clean before returning to the watershed. For example, if you use this collected water for gardening then the water will be filtered by the soil and help your plants to grow. There are several articles and videos online to reference if it sounds interesting. Every barrel helps to make our community water clean.

New Recycling Technology!

J.P. Mascaro and Sons upgraded their technology so flexible plastics can now be placed into your recycling bins. These include pet food bags, food storage bags, baby food pouches, cereal bags, detergent pouches, bread bags, paper towel overwrap, case wrap, shopping bags, food pouches, diaper wrap packaging (no diapers), salad bags, snack food pouches, wipes pouches, bubble wrap, meat and cheese bags, pet treat pouches, air pillows, chip bags, and drink pouches, candy pouches, and shrink film.

Make sure they are empty, clean, and dry before putting out for pickup.

2024 Paper Shredding Event (Oct. 12th 8-Noon)

2024 Hazardous Waste Event (Oct. 19th 8 - Noon)

Both are free to Berks County residents located at

Berks County Agricultural Center

1238 County Welfare Rd.

Leesport, PA 19533

Pre-Registration and more information please visit

www.berkspa.gov/departments/solid-waste-authority



Spring 2025 Newsletter

Understanding Source Water Protection

The source water for the Maidencreek Township Authority is from several groundwater wells. Your water system has volunteered to participate in the Pennsylvania Department of Environmental Protection's Source Water Protection Technical Assistance Program.

The Goal: Prevent contaminants from entering waterways that serve as sources for our drinking water.

The Benefits: Protects our drinking water supplies, ensures a healthy habitat for countless species and decreases the need for costly, complex treatments to remove pollutants.

A plan was developed to guide Maidencreek Township Authority's source water protection efforts. More information will be posted on the Authority's website in the future.

RESIDENTIAL CURBSIDE LEAF COLLECTION

Leaf collection will be held Monday, March 24, 2025

Please do not bag leaves. Leaves should be piled by the side of the road by 7am. Please do not park vehicles on or in front of leaf piles. If it rains/snows road crew will pick up the next nice day.

RESIDENTIAL CURBSIDE BRUSH COLLECTION

Brush collection will be held Monday, March 31st, April 21st & April 28th

Please do not put out the following for brush pick up: ornamental grass, garden plants (will be picked up with leaves), trees or brush with a diameter greater than 12", or anything with dirt & roots attached.

Projects & Permits

To start a building project, you can find permit forms on our website or at the Township Building. Once you fill out the application and plan the project, the Township will send your permit to Systems Design Engineering where they will review the permit. After it is complete, the permit will be returned to the Township and we will contact you that your permit is ready. Please visit our webpage at www.maidencreek.net then click on Zoning and Permits

EVENTS

April 18th

Good Friday – Township Offices Closed

April 19th

Blandon Fire Co. Egg Hunt

May 3rd

Craft Show & Flea Market

(May 10th rain date)

May 10th

Blandon Fire Co. Fish Rodeo

May 20th

Election Day – Township Offices closed.

May 26th

Memorial Day –

Township Offices closed.



Have you Considered a Rain Garden?

Stormwater runoff can easily be polluted by various chemicals and wastes that are in our yards from pet waste, herbicides, pesticides, or are washed away when washing a car or changing motor oil. Before stormwater returns to the watershed, it is important to try and clean as much as possible. One awesome way to do this is a rain garden! Create a trail from your storm gutter that leads to a garden. When stormwater enters the soil, it naturally filters out the chemicals and waste in the water. Altogether, it makes for a garden that helps our community and helps the wildlife.

Yard Waste Site Instruction

The township provides a yard waste drop-off site at 61 Lakeshore Drive, adjacent to the Township building. To receive access, fill out the Yard site form which can be found on the recycling page of the Township website. Physical forms can also be obtained at the township office. You will receive a keycard for the site when turning in the form.

Use the keycard to open the gate to the yard waste site. Make sure to take the key in with you in case the gate closes while you are inside. The gate can also be held open by leaving a car between the gate or bringing the car in and reopening the gate with the pressure sensor.

Fire Chief's Message to the Community

It is an honor to serve as Chief of Blandon Fire Department at this time in history, when so many departments are faced with difficult challenges. Like most departments across the country, Blandon Fire Department faces new challenges each day to provide efficient and effective services to our community and surrounding communities as budget constraints become more prevalent. However, we remain focused on our mission of: Unselfish dedicated service to the Citizens of Maidencreek Township.

As the Chief of Blandon, I have been extremely privileged that the Blandon Fire Department consists of a group of highly trained, caring, and compassionate professionals who place the interests of our citizens and community stakeholders before their own. This is exhibited through our quick response to emergency calls along with our extensive training and our community outreach and community risk reduction efforts. The Blandon Fire Department members are proud of their service to the community and demonstrate their commitment to success by researching new ways of providing the most efficient and professional services possible to those who reside in, work in, or visit our community.

We look forward to serving the community for many years to come, implementing our core principles of: Education, Training, Health & Safety, Effective Communication and Quality Customer Service that will enhance excellence in public safety.

Sitting Dates for Tax Collector: Tammy Gilfert

Wednesdays March 12th to April 30th (5pm to 7pm)

Saturdays March 15th to April 26th (9am to 11am)

Monday, April 28th & April 29th (9am to 11am)

Summer 2025 Newsletter

National Night Out 2025

The Northern Berks Regional Police Department and other partner Police Departments will be hosting a National Night Out celebration to thank law enforcement for their work in our community.

TUESDAY, AUGUST 5, 2025

AT 6:00 PM

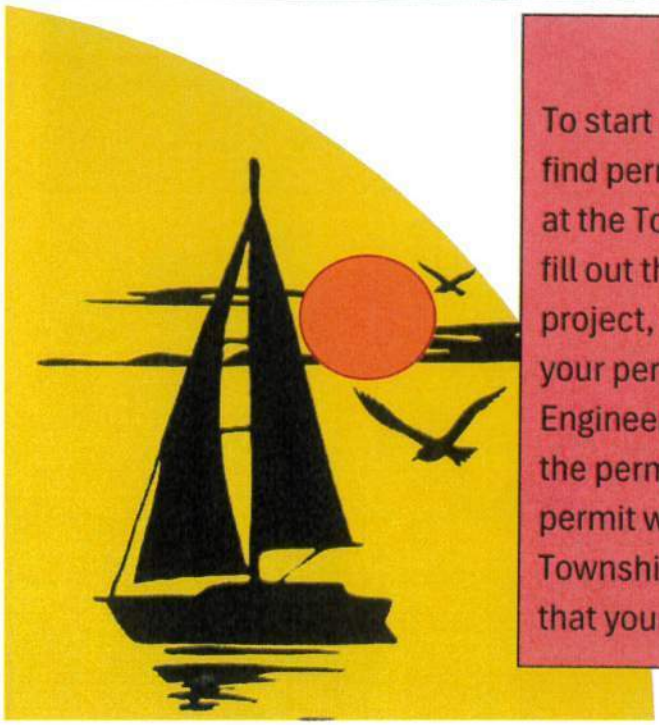
BERKS COUNTY FAIRGROUNDS

Stormwater Education

Stormwater runoff can quickly become polluted from a number of avoidable sources: motor oil leakage, lawn chemicals, pet waste, failing septic systems, car wash wastewater, improper oil disposal, radiator flushing disposal, spills from roadway accidents, improper disposal of household toxics, and improper use of pesticides and herbicides.

These substances drain to the creeks and streams and may be harmful and toxic. Pollutants degrade water quality and threaten wildlife and human health. Not only does it harm our community but prohibitors are subject to a fine in violation of the Storm Water Management Ordinance. Try to be mindful how you dispose of these substances for your own health and the community.

Suspected violations can be reported to 610-926-4920



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EVENTS

June 8th

Blandon Lions Club Car Show

July 4th

Independence Day

Township Offices

Closed

August 5th

National Night Out

August 16th

Blandon Fire Co. Golf Tournament

August 24th

Blandon Lions Club Chicken BBQ

September 1st

Labor Day

Township Offices Closed

September 13th

Fall Clean Up at the Township

7am to 11am

Electronic Recycling Center
1316 Hilltop Road, Leesport
Open Every Tuesday, Thursday, & Saturday
from 8:00 AM – Noon

Take all electronics in the truck of your car or bed of pickup truck (Max 10 Items per vehicle)

For more information, go to Berks County Solid Waste Authority website and view the electronics brochure

Township Building Annual Drop Off: 7 AM – 11 AM on 9/13/2025

Accepted: Furniture, clothing, lumber scraps, carpet, metal, household items, mowers, tires without rims, automotive, SUV & truck batteries, latex paint (must be dried or filled with kitty litter), hot water heaters, hot tubs, appliances (Freon must be removed and tagged with technician's ID # and date).

Not accepted: Computers, TV sets, hazardous waste, daily garbage, concrete, brick/blocks, grass, leaves, motor oil, lubricants, paints, paint thinner, turpentine, pesticides, noxious, caustic, and acidic chemicals, asbestos, metal drums, propane tanks, items containing oil or gas, any type of explosive, including gun loading materials.

WE ARE LOOKING FOR OLD PHOTOGRAPHS OF MAIDENCREEK TOWNSHIP, BLANDON, AND MOLLTOWN TO USE FOR THE 2026 CALENDAR.

PLEASE CALL CHRISTINA

AT 610-926-4920 IF YOU HAVE ANY WE COULD USE.

ALL PHOTOGRAPHS WILL BE RETURNED.

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Blandon Lions Club Chicken Bar-B-Q

Hresko's Bar-B-Q Pit

Maier's Grove, Blandon

August 24th at 0:30 am to 2:30 pm

Rain or Shine

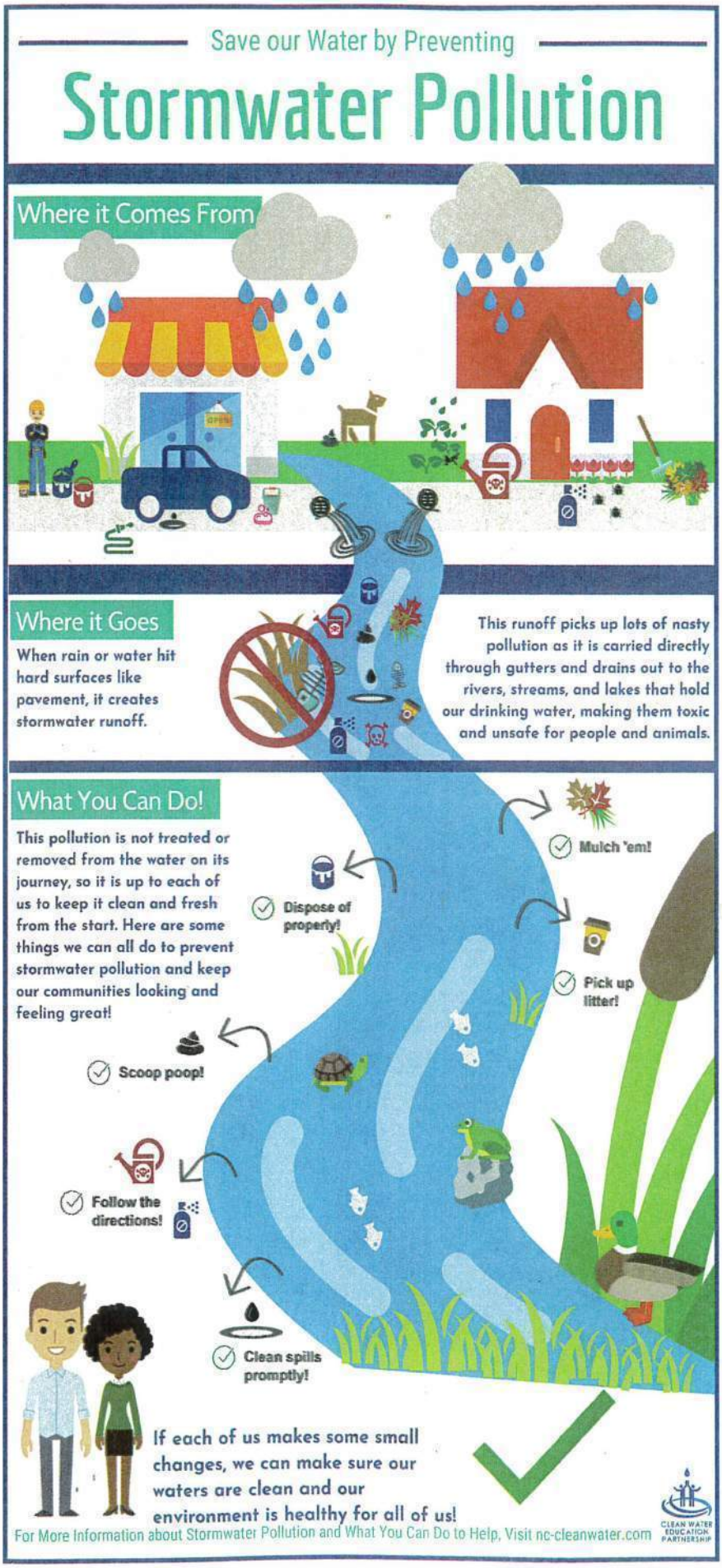
$16.00 ½ Chicken, Corn on the Cob, Baked Potato, Applesauce, Roll, Desserts

Extra: Ice Cream quarts Vanilla or chocolate

For advanced tickets call

610-764-6510





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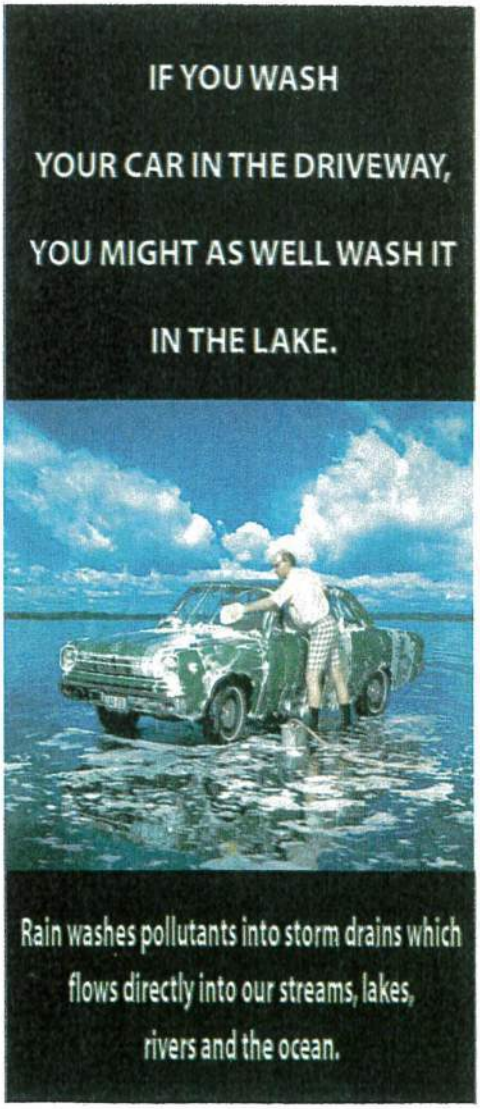


SignPros PA Inc
729 Park Road
Fleetwood, PA 19522 US
+16109219300
sales@gosignpros.com
www.gosignpros.com

INVOICE

BILL TO
Maidencreek Township
PO Box 319
Blandon, PA 19510

INVOICE # 178694
DATE 04/07/2025
DUE DATE 04/07/2025
TERMS Due on receipt

ACTIVITY	QTY	RATE	AMOUNT
ACM 2' x 3' single sided sign panel - Material: 3 mil (1/8") ACM - Digital print with gloss anti graffiti laminate	4	125.00	500.00
File setup File/art work setup for Vandalism panel. - Includes proofing prior to print	1	375.00	375.00

Pay invoice

SUBTOTAL	875.00
TAX (0.06)	0.00
TOTAL	875.00
BALANCE DUE	**$875.00**

APPENDIX C

MCM #1 – PUBLIC EDUCATION AND OUTREACH ON STORM WATER IMPACTS

BMP #4 – ADDITIONAL EDUCATIONAL MATERIALS DISTRIBUTED

Posters On Display, Year-Round



Polluted runoff threatens the health of Berks County water resources. Please do your part at home, work and play to help keep our waterways clear of pollution after rain and snow melt.



SCOOP IT!

Pet waste is gross and can make you sick. Bag and dispose of solid pet waste in trash cans.



CLOSE IT!

Rain water running off of trash cans sends waste into nearby streams. Close your trash can lids, cover dumpsters, and properly dispose of trash to keep pollution locked away.



CATCH IT!

Industries and businesses can keep oil, gas, and grease from washing into streams. Use drip pans to catch fluids. Keep absorbent materials close by to clean up small spills. Fix leaks and clean up spills quickly.


THANK YOU FOR RECYCLING
IT HELPS PROTECT OUR WATERSHEDS
MS4
BERKS COUNTY
STEERING COMMITTEE
Recently, the Berks County MS4 Steering Committee with assistance from Sign Pros completed the installation of the "Keeping Our Watersheds Clean" sign at the Berks County Electronic Recycling Center in Bern Township. The sign's purpose is to thank users of the facility for correctly disposing their electronic waste and other waste properly which protects our water resources from pollution. The correct disposal of electronic waste prevents contamination of surface water when rainwater dissolves toxic chemicals such as heavy metal compounds of barium, lead, and mercury that rushes down to ponds, rivers, and lakes. Additionally, electronic waste that is disposed of inappropriately produces chemicals once heated which are absorbed into the ground and into groundwater. The Steering Committee invites you to visit the Electronic Recycling center at 1316 Hilltop Rd., in Leesport and view our sign.
To find out what is accepted at the Center please visit
https://bit.ly/CleanWatersheds

The Benefits of a Native Landscape



Native plants and animals sustain the environment on which we ourselves depend. By planting native species in your streamside buffer, you are providing an excellent opportunity for our native birds, insects and other wildlife to thrive in the habitat they need. Seeds from your native species can travel throughout the watershed, promoting a healthier community environment.

Furthermore, native plants are much better adapted to our specific environment — the climate and conditions of this area. Natives are therefore easier to grow and require far less maintenance than their non-native counterparts.

Native plants can provide year-round color and texture in your streamside area or garden. Vibrant flowers in the spring, colorful berries in the summer, deep colors in the fall, and contrasting bark and branch patterns in the winter are just some of the diverse characteristics of the many native plants available.

Use the chart of plants inside as a guide to select ferns, flowers, grasses, shrubs and trees native to Pennsylvania. They are beautiful, easy to maintain, and they attract wildlife. Important local resources for native plants are listed on the back of this brochure.



For more information contact:

Berks County Conservation District
1238 County Welfare Rd.
Suite 200
Leesport, PA 19533
610-372-4657
www.co.berks.pa.us/conservation

Hay Creek Watershed Association
P. O. Box 162
Geigertown, PA 19523
610-404-4292
www.haycreekwatershed.org

Maiden Creek Watershed Association
P. O. Box 68
Kutztown, PA 19530
610-683-3795
www.maidencreekwatershed.org

To purchase native plants in Berks County:

Hawk Mountain Sanctuary — Plant Sale
1700 Hawk Mountain Road — 3rd Weekend of May
Kempton, PA 19529
610-756-6961
www.hawkmountain.org

Sugarbush Nursery
4272 Morgantown Road
Mohnton, PA 19540
610-856-0998
www.sugarbushnursery.com

Brochure funded by Reading Area Water Authority (RAWA)

Brochure produced by Lehigh County Conservation District
Customized by Berks County Conservation District



Streamside Buffers

Taking good care of a stream involves taking care of the land around it. A streamside buffer (or riparian buffer) is a planted area along the edge of the stream.

A well-planted streamside buffer:

- absorbs nutrients and pollutants
- stabilizes the bank and prevent erosion
- reduces floodwater damage
- filters out sediment
- helps control the temperature of the stream

Creating a Streamside Buffer

Begin with a "no mow" or "no graze zone" along your stream banks. A buffer of any width is more beneficial than grass. Make yours as wide as possible.

Plant trees and shrubs in your buffer area. They provide many long-lasting benefits and can be quite inexpensive to establish and maintain.

Using shrubs will give your buffer a quick start; many reach full size in just a few years.

Where you do have lawn, set your mower blades at least three inches high. Taller grass slows runoff, resists drought and needs less fertilizer.

Stabilizing Your Streambank

It is best to work with professionals when looking for the causes of and solutions to erosion problems. Where buffers alone aren't enough, there are many new and innovative techniques to help solve the problem. Contact your regional office of the Pennsylvania Department of Environmental Protection (DEP) before making plans to alter a streambank. Permits are likely to be required.

Top Reasons Not to Mow

Promotes bank stability —
Deep rooted native plants hold soil in place and keep banks stable. Turf grass has roots only an inch or two deep - not very effective at preventing erosion!

Flood flow reduction —
Fully grown vegetation slows the velocity of overland flows by providing enough resistance to allow some of the water to infiltrate the soil. This helps to recharge groundwater and reduces flood damage downstream.

Water quality —
Natural vegetation removes pollutants and fine sediment from the waterway, leaving water cleaner and clearer.

Reduction of mosquito habitat —
Turf grass does not absorb water as well as full-height vegetation; consequently, ponding occurs which makes ideal habitat for mosquito breeding. Higher vegetation may absorb more water and decrease the opportunity for mosquitos to breed.

Wildlife habitat —
Stream banks in a natural state provide habitat for a diversity of reptiles, amphibians, birds, and small mammals. Fish and aquatic insects are also protected by the purifying function of a buffer.

Reduce Pollution

Most stream pollution comes from manure, fertilizers, road salts, oil and other chemicals. Called *non-point source pollution*, these come from the entire watershed rather than from any one point. Together, these pollutants add up in the streams and become a big problem. Other accumulated pollution includes trash and yard debris that washes into the streams.

To protect a stream from pollution:

- don't overuse fertilizers - more is not better - and don't use fertilizer near streams.
- limit your overall use of pesticides and herbicides, and use extreme caution when using them near streams.
- compost, don't bag, yard waste. Leave lawn trimmings in place for effective recycling of nutrients.
- don't burn refuse near streambanks.
- don't store or dump manure, garden waste, or grass clippings near streams.
- store firewood, trash, or other materials away from streams.
- never dump trash or chemicals into streams, storm drains or sewers.
- keep farm animals out of and away from the stream. Contact the county conservation office to find out about farm fencing programs.

Prevent Excess Sediment

Every stream carries with it, fine particles of soil. But too much soil can clog the streambed, covering rocks and gravel where fish lay their eggs. Excess sediment can choke out the life of a stream. A major source of silt and sediment is construction or any project that disturbs the soil. Farming activities can also cause soil runoff.

To protect the stream from silt:

- use hay bales or a special silt fence to prevent soil from washing off a work site.
- never store loose piles of soil near a stream
- cover piles of soil with tarps to protect them from rain
- use good farm practices like no-till cropping and planting winter cover crops to conserve soil.
- contact your local county conservation office if you see soil run-off from a construction site.

Ticks are an unpleasant and potentially dangerous reality in this area of Pennsylvania. Deer ticks can carry Lyme disease and are often found in areas of high grass and shrubs. Fear of ticks, however, should not be a reason to mow your streambank to the edge. Some basic precautions will minimize this danger:

- consider mowing a path through the buffer to access the stream without having to walk through high grass.
- learn to recognize deer ticks and check yourself and your pet thoroughly if you have been walking through the woods or fields.

Caring for Streamside Buffers — What to Plant?

Often, when left to grow up on its own, a streamside buffer will contain mostly weeds and other undesireable plants. One way to make sure this doesn't happen is to plant native plants. The plants below represent just a limited selection of Pennsylvania's native species appropriate for planting throughout the state along streams and in adjacent floodplains and wetlands. Choose plants adapted for your soil conditions, and your garden will thrive with less watering and without the need for chemical fertilizers or pesticides. There are many resources to help homeowners with native plantings. For some help, contact one of the organizations on the back of this brochure, or visit one of the following websites: PA Department of Conservation and Natural Resources - www.dcnr.state.pa.us or PA Native Plant Society - www.pawildflower.org

Illustrations by Erin Predrick, Lehigh County Conservation District

Grasses



Cinnamon Fern
Osmunda cinnamomea
Full sun to shade
Wet to moist soils
Cinnamon-colored fertile fronds moist acidic soils
Photo: Robert Mohlenbrock, USDA



Royal Fern
Osmunda regalis
Part shade
Consistently wet or saturated soils
Unique form and texture
Photo: Robert Mohlenbrock, USDA



Sensitive Fern
Onoclea sensibilis
Full sun to shade
Wet to moist soils
Sunny or shaded swamps, marshes, moist meadows
Forms colonizing masses



Wild Bergamot
Monarda fistulosa
Blooms May to September
Full sun to light shade
Moist to dry soils
Dry open woods, wet meadows, ditches, edge of woods and marshes



Black-eyed Susan
Rudbeckia hirta
Blooms May to June
Moist to dry soils
Full sun to light shade
Attracts birds and butterflies



Blue Lobelia
Lobelia siphilitica
Blooms from July to October
Light shade
Wet to moist soils
Attracts hummingbirds



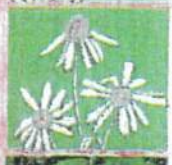
Blue Vervain
Verbena hastata
Blooms June to September
Full sun to light shade
Dry soils
Bright flowers; herbal uses; streambanks and moist meadows



Bergamot
Eupatorium perfoliatum
Blooms July to August
Light shade to full shade
Wet to moist soils
Wet meadow species



Wild Geranium
Geranium maculatum L.
Blooms Spring and early Summer
Common in woods and meadows
Photo: Jennifer Anderson @ USDA-NRCS PLANTS Database



Purple Coneflower
Echinacea purpurea
Blooms April to September
Full sun to light shade
Moist soils
Herbal uses



Ironweed
Vernonia noveboracensis
Blooms August to September
Full sun
Wet to moist soils
Tall plant with brilliant late summer flowers



Joe-Pye Weed
Eupatorium fistulosum
Blooms August to September
Light shade
Wet to moist soils
Attracts beneficial insects; herbal uses



Blue Mist Flower
Conoclinium coelestinum
Blooms July to November
Full sun to light shade
Moist soils
Good border plant or colonizing ground cover; attracts butterflies



New England Aster
Aster novae-angliae
Blooms August to October
Full sun to light shade
Wet to moist soils
Showy and frequently cultivated; dry to moist meadows



Common Sneezeweed
Helenium autumnale
Blooms July to September
Full sun Consistently wet to moist soils
Moist open areas along swales & ponds; wet meadows



Sedge
Carex lightfoot
Blooms Summer
Full sun
Consistently wet or saturated soils
Swampy areas



Switch Grass
Panicum virgatum
Blooms August to September
Moist soils
Clump grass; can help to control erosion
Sandy and clay soils
Photo: Pamela Hagan, Lady Bird Johnson Wildflower Center



Virginia Wild Rye
Elymus virginicus
Blooms June to September
Full sun to light shade
Wet to moist soils
Moist woods, meadows, stream banks
Perennial



Arrowwood
Viburnum dentatum
Blooms May
Full sun to full shade Moist soils
Dark blue fruits in fall; high wildlife value; streambanks, pastures
Photo: Cranberry and Bryan Longenecker, Lady Bird Johnson Wildflower Center



Buttonbush
Cephalanthus occidentalis
Blooms June to September
Full sun Consistently wet or saturated soils
Multi-stemmed; tolerates inundation
Photo: Nancy Ross, Lady Bird Johnson Wildflower Center



Nightmash Blueberry
Vaccinium corymbosum
Blooms May to June
Light shade
Wet to moist soils
Multi-stemmed; edible berries fall color; very high wildlife value



Nine Bark
Physocarpus opulifolius
Blooms May to July
Full sun to part shade
Wet to moist soils
Wet woods, sandy or rocky stream banks
Photo: Stefan Bloodworth, Lady Bird Johnson Wildflower Center



Red Chokeberry
Aronia arbutifolia
Blooms May
Part shade
Wet to moist soils
Red berries; high value for wildlife
Photo: Robert Mohlenbrock, USDA



Serviceberry
Amelanchier arborea
Blooms March to April
Part shade Moist soil
Small tree with early spring flowers; delicious edible berries in summer
Photo: Stefan Bloodworth, Lady Bird Johnson Wildflower Center



Silky Dogwood
Cornus amomum
Blooms May to July
Full sun Wet to moist soils
Flowers in summer; blue berries multi-stemmed; very high wildlife value
Photo: Sally & Andy Wasowski, Lady Bird Johnson Wildflower Center



Spice Bush
Lindera benzoin
Blooms March to May
Light shade to shade
Wet to moist soils
Bright red berries in fall; berried urns; wildlife value



Winterberry Holly
Ilex verticillata
Blooms May to June
Part shade Wet to moist soils
Showy berries in winter; high wildlife value; good colonizing shrubs for stream banks
Photo: George Bruns, Lady Bird Johnson Wildflower Center

Trees



American Beach
Fagus grandifolia
Blooms April to May
Full sun to full shade
Moist, but well-drained soils
Large tree with handsome gray bark; high wildlife value
Foliage photo: Bill Cook, Michigan State University



American Sycamore
Platanus occidentalis
Blooms April
Full sun
Wet to moist soils
Large tree with showy mottled bark; riverbanks, floodplains and alluvial soils



Black Gum
Nyssa sylvatica
Blooms April to May
Full sun to part shade
Moist soils
Tall tree with outstanding fall color; high wildlife value
Photo: Keith Kanoti, Maine Forest Service



Green Ash
Fraxinus pennsylvanica
Blooms April to May
Part shade
Wet to moist soils
Fast growth; good fall color
Photo: Robert Mohlenbrock, USDA



Pagoda Dogwood
Cornus alternifolia
Blooms May to June
Part shade
Moist soils
Small tree for moist woods and shaded ravines; dark blue fruit



Red Maple
Acer rubrum
Blooms March to April
Full sun to full shade
Moist soils
Adapts to a range of moisture conditions; good fall color
Photo: Bill Cook, Michigan State University



River Birch
Betula Nigra
Blooms May
Full sun to part shade
Wet to moist soils
Notable for its peeling bark; floodplains, streambanks, wet woods, swamps
Photo: Steven Katovich, USDA Forest Svc.



Shagbark Hickory
Carya ovata
Blooms in May
Full sun to part shade
Moist soils
Shaggy gray exfoliating bark; very high wildlife value
Photo: Keith Kanoti, Maine Forest Service



Swamp White Oak
Quercus bicolor
Blooms in May
Part shade
Wet to moist soils
Large tree with very high wildlife value; good wetland oak
Photo: Mark Brand, Univ. of CT

MCM #2
Public Involvement and Participation Program

2.0 MCM #2 – Public Involvement / Participation Program

2.1 Description

MCM #2 requires the MS4 municipality to implement the following BMPs:

2.1.1 Develop, implement and maintain a written Public Involvement and Participation Program (PIPP).

2.1.2 Provide adequate public notice and opportunities for public review, input, and feedback prior to adoption of any ordinance, SOP or plan required by the General Permit.

2.1.3 Regularly solicit public involvement and participation from the target audience groups using available distribution and outreach methods.

2.2 BMP #1 – Develop, Implement and Maintain the PIPP

Maidencreek Township will update and maintain this PIPP annually at a minimum.

2.3 BMP #2 – Meetings, Public Notice and Advertisement

Maidencreek Township will utilize both the local newspaper (Reading Eagle) and social media (Facebook) to advertise public meetings that concern stormwater. The regular July meeting of the Township Supervisors will be established beginning in 2022 as the meeting for stormwater related issues to be discussed.

Council meets the second Thursday of each month at 7:00 p.m., in the Township Building at 1 Quarry Road.

Meeting minutes are kept and will document stormwater-related topics and discussions. Township Council discusses stormwater catch basin cleaning at every meeting.

Any special meetings of Township Council to discuss stormwater will be advertised via Facebook.

Maidencreek Township adopted its Stormwater Management Ordinance, Ordinance Number 214, on June 12, 2008. Any updates will be properly advertised.

2.4 BMP #3 - Public Involvement and Participation

Maidencreek Township has stormwater-related flyers and related information available on display. Attendees are made aware of the Township's Facebook page and website.

Additional public involvement and solicitations for participation will be made during the August “stormwater meeting” of Township Supervisors.

APPENDIX D

MCM #2 – PUBLIC INVOLVEMENT/PARTICIPATION

BMP #3 – PUBLIC INVOLVEMENT/PARTICIPATION PLAN (MS4 STEERING COMMITTEE)

Public Involvement & Participation Plan

Maidencreek Township is a participating member of the Berks County MS4 Steering Committee. This committee combines the efforts of multiple agencies and thirty-six municipalities to implement public education, outreach and involvement as required in their respective MS4 Permits. This combined effort has provided more resources and opportunities to educate the public than any one municipality could do alone. While Berks County Planning Commission, Berks County Conservation District and Berks Nature implement the Berks County Cooperative Education Program on behalf of the steering committee members, Maidencreek Township realizes the importance of developing its own Public Involvement and Participation Plan to work in conjunction with the steering committee efforts.

GOAL

The goal of this plan is to provide the opportunity for the various target groups identified in the Public Education and Outreach Plan to be actively involved with MS4 decision making process for the development, implementation and update of MS4 programs, ordinances, the Lake Ontelaunee TMDL plan and pollutant reduction plans.

STRATEGIES TO ACHIEVE GOALS

1. When updates and decisions are required, the public will be given the opportunity to provide input at an advertised public meeting. Advertisements will be placed in the Reading Eagle and on the Township website. Public meetings will be held on new ordinances, revisions to the Lake TMDL Plan and revisions to the Willow Creek pollutant reduction plan.

2. Annually, the township will hold an advertised public meeting to solicit feedback on the current storm water management program and to review the PEOP and PIPP.

3. Membership in the Berks County MS4 Steering Committee will be maintained, and this organization will provide activities, stream cleanups, educational events such as Aquapalooza and the Envirothon to educate and engage the target audience.

METHODS OF COMMUNICATING WITH THE TARGET AUDIENCE

1. The Berks County MS4 Steering Committee will distribute through emails and newsletters and maintain a website that educates and makes the target audience aware of stormwater related activities throughout the county.
2. Maidencreek Township will make stormwater information available on its website, and through newsletters, the annual calendar, and through handouts at National Night Out and Safe Halloween. Handouts will also be available in the township lobby where a stormwater bulletin board is maintained.
3. Signs will be Maintained in the Willow Creek Greenway. These signs were developed by Berks Nature and PA Fish Commission and provide information on the stream and stormwater.
4. A special meeting will be held annually to review the storm water management plan.

TARGET AUDIENCE

The target audience is described in detail in the Public Education and Outreach Plan. It includes:

- Homeowners
- Renters
- The Farming Community
- Commercial, Industrial and Retail Businesses
- Developers and Building Permit Holders
- Schools and Community Groups
- Municipal Employees and Officials

Berks County Municipal Separate Storm Sewer System Steering Committee
Public Involvement and Participation Program

Background

Portions of municipalities throughout Berks County are located within the United States Bureau of the Census' designated urbanized areas. Therefore, the specific municipality is required to have a Small Municipal Separate Storm Sewer System (MS4) permit as outlined by Pennsylvania Department of Environmental Protection's (PA DEP) National Pollutant Discharge Elimination System (NPDES) Program. The MS4 permit includes the development of a stormwater management program. This program requires that each MS4 permittee develop a Public Involvement and Participation Program (PIPP), which is detailed below and in the attached table entitled *General Public Involvement and Participation Program Plan.*

In accordance with the PA DEP MS4 Permit requirements, the municipalities that comprise the Berks County MS4 Steering Committee are implementing the public education, outreach, and involvement requirements of the Permit through a cooperative effort. (See attached list for municipalities) Each MS4 Permit Holder, who is located within Berks County and has signed an intergovernmental agreement, are participating in the Berks County Cooperative Education Program. The Berks County Planning Commission, Berks County Conservation District and Berks Nature (formally the Berks Conservancy) (in this document, referred to as the Education Program Partners) implement the Berks County Cooperative Education Program on behalf of and in cooperation with the participating MS4 Permit Holders. The Berks County Cooperative Education Program will implement the various items that are described in this PIPP document. The PIPP was developed by the Berks County MS4 Steering Committee and follows the PA DEP Protocol for the education/outreach portions of the Minimum Control Measures (MCM) #2.

Goals and Intended Use of this Plan & Matrix

By the implementation of this PIPP, the Berks County MS4 Steering Committee will provide the opportunity for the target groups/individuals, which were identified in the Public Education and Outreach Document to have an active involvement with MS4 operations, ordinances, and help prevent and/or reduce the discharge of pollutants contained in the stormwater runoff. The Goal of this PIPP document is intended to meet the measurable goals of MCM2, BMP 1. This narrative and matrix PIPP is to be reviewed, amended, and adopted by each participating member municipality that is a member of the Berks County MS4 Steering Committee on an annual basis. **Any review, amendments, and/or changes to the narrative and/or matrix should be done so at a public meeting to allow for appropriate public comment.**

Strategies to Achieve Measurable Goals

The PIPP program for Berks County MS4 Steering Committee Members initially followed the worksheets provided by PA DEP. As in the Public Education and Outreach Plan, there were sections to identify the target audiences (residents, schools, businesses, developers, municipal employees), identifications of local organizations that the target audiences interact with, and strategies/opportunities to partner with those organizations on public involvement. Developing the initial program consisted of filling in the work sheet, determining the audiences, and brainstorming which community groups would be most interested in joint efforts. The below list and the included matrix details the plan and actions that the Berks County MS4 Committee will take to fulfill MCM #2

- Public Participation in the Decision-Making Processes
  - When decisions are needed at a local municipal level in regards the development, implementation, and update of programs and activities related to the municipal MS4 Permit, then the public will be given the opportunity to participate at various public meetings. The public will be notified of these public meetings by means of traditional notice in the newspaper and on the municipality's website.
  - This PIPP will be publicly reviewed annually in order to keep it up to date and effective. The PIPP will be posted on the Berks County MS4 Steering Committee Webpage. Each participating municipality in the MS4 Steering Committee will have a link to this PIPP on their respective websites.
- Methods of Routine Communication with Target Audiences
  - The Berks County MS4 Steering Committee has identified that the target audiences primarily interact with the Berks County Planning Commission, the Berks County Conservation District and Berks Nature. Other groups that target audiences interact with include:
    - Residents: Watershed Associations, Trout Unlimited, Land Conservancies

Approved by the Berks County MS4 Steering Committee January 15, 2015
Reviewed, updated, and approved by Berks County MS4 Steering Committee, April 28, 2016
Reviewed by Maidencreek Township June 13, 2024

  - Business/Developers: Chamber of Commerce, Economic Development Agencies
  - Schools: Berks County Intermediate Unit
  - Municipal Employees: Berks County Public Works Association, Albright College's Center for Excellence in Local Government, PA State Association of Township Supervisors
- As with the Public Education and Outreach Plan, the Education Program Partners submit a quarterly update to each participating municipality on the public involvement opportunities that the Education Program Partners have offered in the corresponding quarter. The municipalities are to file this information for their records and progress reports, as well as include any other public involvement efforts in which they participated.
- The Berks County MS4 Steering Committee Education Program Partners responsibilities are outlined below in regards to Routine Communication. Municipalities and Education Program Partners will communicate with target audiences directly (i.e., a stream clean up) or they may partner with another group for the public involvement effort (i.e., a presentation at the Berks County Public Works Association meeting)
  - *General Public*
    - Schools (All educational partners)
    - Residents/Homeowners (Lead: Berks Nature, all educational partners)
    - Agricultural Community (Lead: Berks County Conservation District, all educational partners)
  - *Businesses*
    - Developers/Engineers (Lead: Berks County Conservation District, all educational partners)
  - *Municipal Employees*
    - Public Works(Lead: Berks County Planning Commission, all educational partners)
    - Solicitors (Lead: Berks County Planning Commission, all educational partners)

The enclosed Matrix details specific activities that will be accomplished on a yearly basis to satisfy MCM #2 BMPs #1-3. This matrix as well as the above narrative are to be updated yearly.

Approved by the Berks County MS4 Steering Committee January 15, 2015
Reviewed, updated, and approved by Berks County MS4 Steering Committee, April 28, 2016
Reviewed by Maidencreek Township June 13, 2024

Berks County Municipal Separate Storm Sewer System Steering Committee
Public Involvement and Participation Program

General Public Involvement and Participation Program

MCM #2 – Public Involvement / Participation					
	Residents	Businesses	Developers	Schools	Municipal Employees
BMP #1 Develop, implement and maintain a written Public Involvement and Participation Program (PIPP)	- Annually review current PIPP practices - Update practices to expand public involvement where possible	- Annually, review current PIPP practices - Work with business community to encourage input	- Annually review current PIPP practices - Work with development community to encourage input	- Annually review current PIPP practices - Work with educational facilities to encourage input	- Annually review current PIPP practices - Determine effectiveness of practices and re-vise where needed
BMP #2 Prior to any adoption of ordinances with regard to the Permit provide notice & opportunities for review input and feedback	- Advertise any proposed MS4 Stormwater Management Ordinance in local newspaper and document comments and response. - Encourage public review, input and feedback	- Advertise any proposed MS4 Stormwater Management Ordinance in local newspaper and document comments and response. - Encourage review, input and feedback	- Advertise any proposed MS4 Stormwater Management Ordinance in local newspaper and document comments and response. - Encourage review, input and feedback	- Advertise any proposed MS4 Stormwater Management Ordinance in local newspaper and document comments and response. - Encourage review, input and feedback	- Review advertising requirements with municipalities for ordinance adoption process - Determine if other opportunities exist for encourage involvement
BMP #3 Solicit public involvement and participation from the target audience groups	- Conduct one public meeting each year to discuss the Stormwater Management Plan and to solicit public reporting of suspected illicit discharges - Encourage feedback for future meetings - Document all PIPP activities.	- Conduct one public meeting each year to discuss the Stormwater Management Plan and to solicit public reporting of suspected illicit discharges - Conduct one public meeting each year to discuss the Stormwater Management Plan	- Conduct one public meeting each year to discuss the Stormwater Management Plan and to solicit public reporting of suspected illicit discharges - Conduct one public meeting each year to discuss the Stormwater Management Plan	- Conduct one public meeting each year to discuss the Stormwater Management Plan and to solicit public reporting of suspected illicit discharges - Conduct education programs regarding	- Review effectiveness of public meeting to determine content and format for future meetings and activities - Document all PIPP activities

Approved by the Berks County MS4 Steering Committee January 15, 2015
Reviewed, updated, and approved by Berks County MS4 Steering Committee, April 28, 2016
Reviewed by Maidencreek Township June 13, 2024

		- Encourage feedback for future meetings - Document all PIPP activities. -	- Encourage feedback for future meetings - Document all PIPP activities.	water topics at various schools - Encourage feedback for future meetings - Document all PIPP activities.	

Approved by the Berks County MS4 Steering Committee January 15, 2015
Reviewed, updated, and approved by Berks County MS4 Steering Committee, April 28, 2016
Reviewed by Maidencreek Township June 13, 2024

REPORTS

Northern Berks Regional Police Report – Chief James Keiser

David Franke announced that Chief Keiser is not attending the meeting tonight and read the June 2024 Activity Report for Northern Berks Regional Police Department. Mr. Voorhies asked if anyone had been pulled over after the break-retarder signs were put up and did PennDOT approve the signs. Mr. Franke said he did not know if NBRPD pulled anyone over for the break-retarder violation. He said that PennDOT has to approve all the signs on state roads and the Township does not have a choice.

Maidencreek Township Water Authority

Patrick Donovan said he is retiring from MTA, stating it's been wonderful serving the community hoping he has left it in a better way than when he started. He said his replacement is Ray Palumbo. Ray Palumbo thanked the Board for having him at the meeting, stating he was a finance manager for a car dealership. When the MTA manager position became available, he said he wanted to apply and is now training with Patrick Donovan, learning much about the job. The Board welcomed him aboard and thanked him for coming to the meeting.

Engineering & Zoning Reports – Thomas Unger, P.E. & Pamela Stevens

Tom Unger said he is also retiring, and Pamela Stevens will be his replacement.

Discussion/direction regarding Penn DOT's approved sign for fines.

Pamela Stevens said the $1000.00 fine to be placed on the brake retarder signs that was denied by PennDOT but approved as "fines higher," and the size of the sign is 30" x 36." Keith Shuman installed the signs and PennDOT will be out to look at the signs. The ordinance has been adopted and it is enforceable. Ms. Fielder had complaints about the signs, noting the lettering should be bigger, there is a blank space at the bottom of the sign and the location of the signs is questionable. The Board discussed the issues including fines, enforcement, and that PennDOT has control over signs on state roads. The signs meet Penn DOT specifications.

Motion to authorize the advertisement of the 30-day public comment period for the TMDL and PRP Plans.

A motion was made by Joshua Meck to authorize the advertisement of the 30-day public comment period for the TMDL and PRP Plans. Eric Bauman seconded the motion and hearing no questions on the motion, all members voted "Aye." The motion carried.

Discussion/direction regarding Cornerstone Bridge replacement.

Pamela Stevens reviewed the cost estimates with the Board, including different types of bridge replacement. Ms. Stevens recommended purchasing the Contech ALBC System. The Board discussed labor, how it is constructed, permitting, and grants with Pamela Stevens. The Board is in favor of moving forward with the Cornerstone Bridge replacement.

BERKS COUNTY
STEERING COMMITTEE

TO: DEP

FROM: Ashley Showers, Berks County MS4 Steering Committee and Cooperative Education Program

RE: Berks County MS4 Steering Committee 2024-2025 Annual Report Information

DATE: August 25, 2025

The Berks County MS4 Steering Committee and Cooperative Education Program was formalized through an Intergovernmental Agreement and Cost Sharing Agreement in 2018. The member municipalities pay annual fees toward education programs provided by the three educational partners. The educational partners are the Berks County Planning Commission, Berks County Conservation District and Berks Nature. (**See member list on Pg. 2)**

The attached excel worksheets depict the numerous educational programs that were held from July 2024 through June 2025 by the educational partners which educate the target audience groups on topics related to stormwater. It should be noted that the Steering committee convened 3 meetings throughout this reporting period. The meetings include discussions on education goals for the year as well as stormwater issues amongst members. Additionally, the Steering Committee sponsored an award for the project that best captured the mission of the MS4 Steering Committee in support of the 2024 Reading-Berks Science Fair. The Steering Committee also became a member of the Center for Watershed Protection to gain access to additional education opportunities.

Attached are several outreach items and presentations that were produced by the educational partners for circulation and use by the member municipalities. The Steering Committee established a YouTube channel to promote the video entries of the Student MS4 Video contest as well as municipal training videos prepared by the education partners.

You can view the videos here: https://www.youtube.com/@berksms4/videos

If you have any questions regarding these activities, please feel free to contact me at ashowers@berkspa.gov .

The Berks County MS4 Steering Committee is comprised of the following municipalities:

Alsace Township-GP	Mt. Penn Borough-GP
Amity Township-GP	Maidencreek Township-IP
	Mohnton Borough-IP
Bern Township-GP	Muhlenberg Township-GP
Birdsboro Borough-GP	Ontelaunee Township-IP
Boyertown Borough-GP	
City of Reading-IP	Robeson Township-GP
Colebrookdale Township-GP	Robesonia Borough-GP
Cumru Township-IP	
Exeter Township-GP	Shillington Borough-IP
Fleetwood Borough-GP	Sinking Spring Borough-GP
	South Heidelberg Township-GP
Heidelberg Township-GP	Spring Township-IP
Kenhorst Borough-GP	
Laureldale Borough-GP	Topton Borough-IP
Leesport Borough-GP	Washington Township-IP
Lower Heidelberg Township-GP	West Reading Borough -IP
	Womelsdorf Borough-IP
	Wyomissing Borough-IP

2025 MS4 1st QUARTER PROGRAMMING Berks Nature

Date	Program and description	Target Audience	**MCM 1** (Public Education & Outreach)					**MCM 2** (Public Involvement & Participation)					**MCM 3 (IDD&E)**					**MCM 4** (Construction Site Stormwater Runoff Control)					**MCM 5** (Post Construction Stormwater Mangement)					**MCM 6** (Pollution Prevention & Good housekeeping for Municipal Operations)				
	FT = field trip Programs were public and County Wide	School District or Municipality	Residents	Businesses	Developers	Schools	Municipal Empl.	Residents	Businesses	Developers	Schools	Municipal Empl.	Residents	Businesses	Developers	Schools	Municipal Empl.	Residents	Businesses	Developers	Schools	Municipal Empl.	Residents	Businesses	Developers	Schools	Municipal Empl.	Residents	Businesses	Developers	Schools	Municipal Empl.
1/17/2025	BN Ft: Pre-K	Mifflin	X	X		X	X	X	X		X	X																				
1/31/2025	BN FT: Elaine and Penn Bernville	TSD	X	X		X	X	X	X		X	X																				
2/19/2025	BN IC: Rieffton 5th Enviroscape	Exeter SD	X	X		X	X	X	X		X	X																				
3/5/2025	Bn FT: Wiser west elementry	Weiser SD	X	X		X	X	X	X		X	X																				
3/7/2025	N FT: Kirsten from Sacred Heart 1st grac	Reading PA	X	X		X	X	X	X		X	X																				
3/13/2025	BN FT: Miff, 2nd grade Cumru	Gov Mifflin SD	X	X		X	X	X	X		X	X																				
3/19/2025	BN FT: Carol Fernandez and Common wealth charter. K-5	County Wide	X	X		X	X	X	X		X	X																				
3/21/2025	BN FT: Carol Fernandez and Common wealth charter. 6-12th	County Wide	X	X		X	X	X	X		X	X																				
3/24/2025	BN FT: Brecknock Gov Miff	Gov Mifflin SD	X	X		X	X	X	X		X	X																				
3/26/2025	BN FT: Wilson Kinder 100 kids	Wilson SD	X	X		X	X	X	X		X	X																				
3/28/2025	BN FT: Green Valley	Wilson SD	X	X		X	X	X	X		X	X																				

2025 MS4 2nd QUARTER PROGRAMMING Berks County Conservation District

* funded partially by BCMS4 Education Program ^ Completely funded by other program	Targeted Audience	MCM 1 (Public Education & Outreach)					MCM 2 (Public Involvement & Participation)					MCM 3 (IDD&E)					MCM 4 (Construction Site Stormwater Runoff Control)					MCM 5 (Post Construction Stormwater Mangement)					MCM 6 (Pollution Prevention & Good housekeeping for Municipal Operations)				
Program Name, Date and Description	**School District, Municipalities, Countywide**	Residents	Businesses	Developers	Schools	Municipal Empl.	Residents	Businesses	Developers	Schools	Municipal Empl.	Residents	Businesses	Developers	Schools	Municipal Empl.	Residents	Businesses	Developers	Schools	Municipal Empl.	Residents	Businesses	Developers	Schools	Municipal Empl.	Residents	Businesses	Developers	Schools	Municipal Empl.
Berks County Sewer & Water Association/Source Water	Watershed Professionals/Municipal Water and Sewer		X			X																						X			X
Hereford Elementary Rain Garden Presentation (05/22/25)	Students and teachers				X																										
MDC Reading City Counsil Meeting Mosquito Program	General Public	X																													
MDC Berks Earth Day Mosquito and Tick Table (4/26/25)	General Public	X																													
MDC Wyomissing Earth Day Celebration Moquito and Tick	General Public	X																													
MDC Wyomissing Boro Park and Shade Commission Mosquito Presnetation (5/28/25)	Commission Members	X				X																									
SWAG BUS at Farm City Days (5/7-5/8/25)	General Public	X	X		X																										
Wilson West Field and Stream Day (5/21/25)	School District				X																										
SWAG Bus to Kempton Fair (6/12-6/13/25)	General Public	X	X																												
SWAG BUS 4H Camp Manatawny (6/18/25)	General Public	X																													
SWAG BUS-Love Your Lake at Blue Marsh (6/27/25)	General Public	X	X																												

2024 MS4 3rd QUARTER PROGRAMMING Berks Nature

Date	Program and description	Target Audience	**MCM 1** (Public Education & Outreach)					**MCM 2** (Public Involvement & Participation)					**MCM 3 (IDD&E)**					**MCM 4** (Construction Site Stormwater Runoff Control)					**MCM 5** (Post Construction Stormwater Mangement)					**MCM 6** (Pollution Prevention & Good housekeeping for Municipal Operations)						
	FT = field trip Programs were public and County Wide	School District or Municipality	Residents	Businesses	Developers	Schools	Municipal Empl.	Residents	Businesses	Developers	Schools	Municipal Empl.	Residents	Businesses	Developers	Schools	Municipal Empl.	Residents	Businesses	Developers	Schools	Municipal Empl.	Residents	Businesses	Developers	Schools	Municipal Empl.	Residents	Businesses	Developers	Schools	Municipal Empl.		
7/3/2024	BN FT: Millmont Melissa Running	Reading SD	X	X		X	X	X	X		X	X																						
7/11/2024	BN FT: Reading Rec (Melissa)	Reading SD	X	X		X	X	X	X		X	X																						
7/19/2024	BN FT: Reading Rec (Melissa)	Reading SD	X	X		X	X	X	X		X	X																						
7/20/2024	BN Program: Nature Explorers Water Nutrients	County Wide	X	X		X	X	X	X		X	X																						
7/23/2024	BN FT: Reading Library	Reading SD	X	X		X	X	X	X		X	X																						
7/24/2024	BN FT: Reading Rec (Melissa)	Reading SD	X	X		X	X	X	X		X	X																						
7/26/2024	BN FT: Olivets	Reading SD	X	X		X	X	X	X		X	X																						
7/31/2024	BN FT: hold opp house.	Reading SD	X	X		X	X	X	X		X	X																						
7/31/2024	BN PROGRAM: Scouts in the creek	County	X	X		X	X	X	X		X	X																						
8/2/2024	BN FT: Teacher Parent Groups about 15 kids	Wyomissing	X	X		X	X	X	X		X	X																						
8/13/2024	BN FT: Hold Kindercare	Wyomissing	X	X		X	X	X	X		X	X																						
8/14/2024	BN FT: hold Learning Ladder 40 kids	Wyomissing	X	X		X	X	X	X		X	X																						
9/20/2024	BN FT: Laurel Life Gov Mifflin	Gov Mifflin SD	X	X		X	X	X	X		X	X																						
9/26/2024	BN FT: Daniel Boone	Daniel Boone SD	X	X		X	X	X	X		X	X																						
9/27/2024	BN FT: Daniel Boone	Daniel Boone SD	X	X		X	X	X	X		X	X																						

2024 MS4 4th QUARTER PROGRAMMING Berks Nature

Date	Program and description	Target Audience	**MCM 1** (Public Education & Outreach)					**MCM 2** (Public Involvement & Participation)					**MCM 3 (IDD&E)**					**MCM 4** (Construction Site Stormwater Runoff Control)					**MCM 5** (Post Construction Stormwater Mangement)					**MCM 6** (Pollution Prevention & Good housekeeping for Municipal Operations)				
	FT = field trip Programs were public and County Wide	School District or Municipality	Residents	Businesses	Developers	Schools	Municipal Empl.	Residents	Businesses	Developers	Schools	Municipal Empl.	Residents	Businesses	Developers	Schools	Municipal Empl.	Residents	Businesses	Developers	Schools	Municipal Empl.	Residents	Businesses	Developers	Schools	Municipal Empl.	Residents	Businesses	Developers	Schools	Municipal Empl.
10/3/2024	BN FT: Schuylkill Valley 7th grade	Schuylkill Valley SD	X	X		X	X	X	X		X	X																			
10/4/2024	BN FT: Schuylkill Valley 7th grade	Schuylkill Valley SD	X	X		X	X	X	X		X	X																			
10/11/2024	BN Ft: Brandywine 1st grade	BHASD	X	X		X	X	X	X		X	X																			
10/18/2024	BN FT: Pre-K	Mifflin	X	X		X	X	X	X		X	X																			
10/24/2024	BN FT: Bethel	TSD	X	X		X	X	X	X		X	X																			
12/10/2024	BN Program: Homeschool Watersheds	County Wide	X	X		X	X	X	X		X	X																			



WHAT YOU NEED TO KNOW ABOUT STORMWATER

Albany Township EAC
September 2024

- **BRIEF** OVERVIEW OF STORMWATER REQUIREMENTS & THE MS4 PERMIT
- AN UNDERSTANDING OF WHAT MUNICIPALITIES ARE REQUIRED TO DO FOR THEIR MS4 PERMIT
- WHO CAN HELP YOU WITH YOUR MS4 REQUIREMENTS

OVERVIEW



WHAT IS STORMWATER?

STORMWATER OCCURS WHEN PRECIPITATION FROM RAIN OR SNOWMELT FLOWS OVER THE GROUND

WHY IS STORMWATER A PROBLEM?

- EROSION AND SEDIMENTATION
- FLOODING
- POLLUTION CARRIED TO ALL WATERWAYS
- INHIBITS HABITATS OF AQUATIC WILDLIFE
- MAKES WATER RESOURCES UNSAFE FOR RECREATION AND DRINKING





LAWS AND REGULATIONS

STORMWATER MANAGEMENT ACT OF OCTOBER 1978 NO. 167

PROVIDING FOR THE REGULATION OF LAND AND WATER USE FOR FLOOD CONTROL AND STORM WATER MANAGEMENT PURPOSES, IMPOSING DUTIES AND CONFERRING POWERS ON THE DEPARTMENT OF ENVIRONMENTAL RESOURCES, MUNICIPALITIES AND COUNTIES, PROVIDING FOR ENFORCEMENT, AND MAKING APPROPRIATIONS.



CLEAN WATER ACT 1987

Established the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Additionally, created a new permitting system for anybody discharging pollutants into the waters covered by the Act.

CHAPTER 102. EROSION AND SEDIMENT CONTROL § 102.2. SCOPE AND PURPOSE.

(A) THIS CHAPTER REQUIRES PERSONS PROPOSING OR CONDUCTING EARTH DISTURBANCE ACTIVITIES TO DEVELOP, IMPLEMENT AND MAINTAIN BMPS TO MINIMIZE THE POTENTIAL FOR ACCELERATED EROSION AND SEDIMENTATION AND TO MANAGE POST CONSTRUCTION STORMWATER.

(B) THE BMPS SHALL BE UNDERTAKEN TO PROTECT, MAINTAIN, RECLAIM AND RESTORE WATER QUALITY AND THE EXISTING AND DESIGNATED USES OF WATERS OF THIS COMMONWEALTH

WHAT IS AN MS4

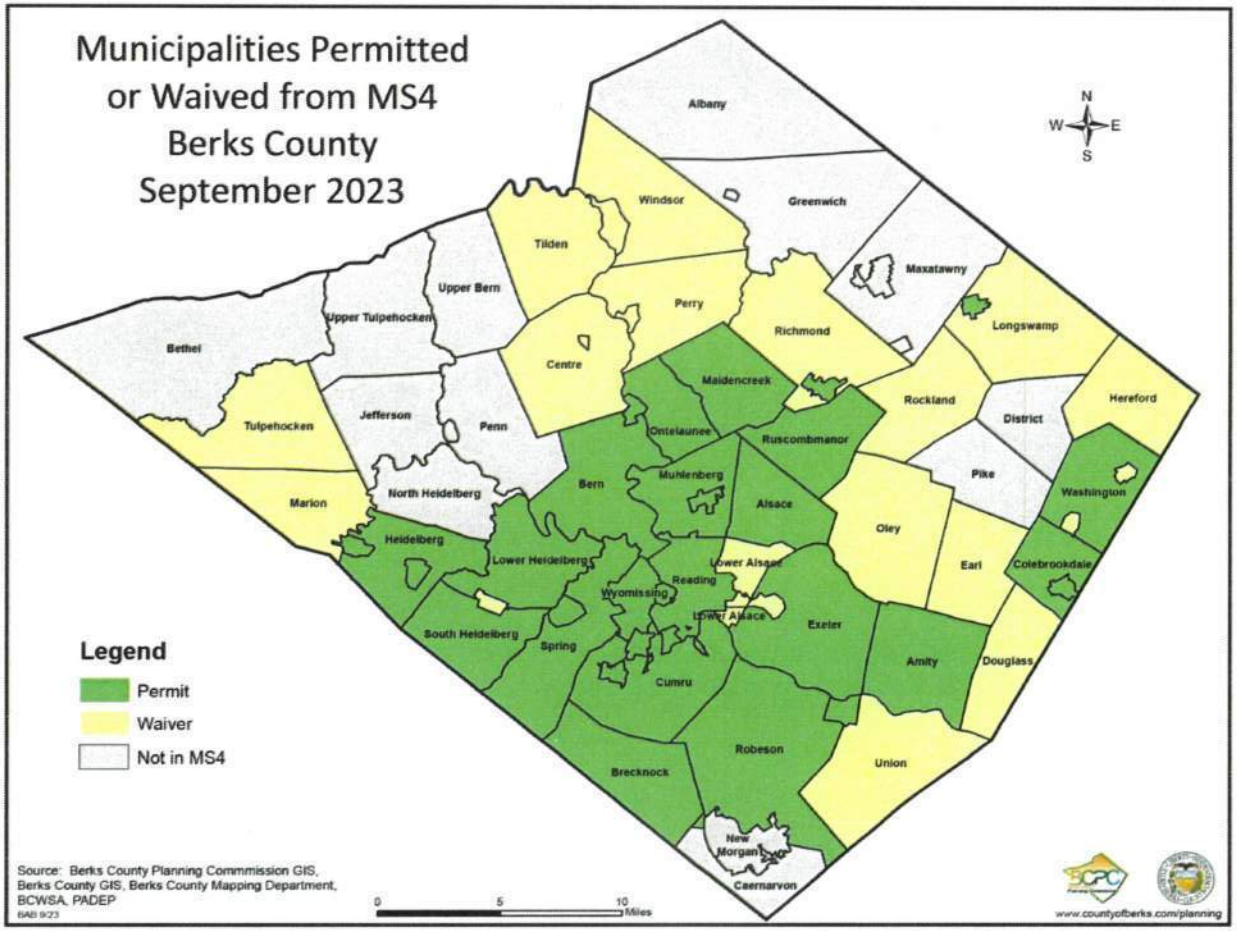
MUNICIPAL **S**EPARATE **S**TORM **S**EWER **S**YSTEM

AN MS4 IS :

A STATE, CITY, TOWN, BOROUGH, COUNTY, PARISH, DISTRICT, ASSOCIATION, OR OTHER PUBLIC BODY

ANY DRAINAGE SYSTEM WHICH CONVEYS ONLY STORM WATER. (CURBS, GUTTERS, BASINS, STORM PIPES, DITCHES, SWALES, MUNICIPAL STREETS ETC..)

DOES NOT INCLUDE PIPES THAT CONVEY SANITARY SEWER.


Municipalities Permitted
or Waived from MS4
Berks County
September 2023
N
W
E
S
Albany
Windsor
Greenwich
Tilden
Maxatawny
Upper Bern
Perry
Upper Tulpehocken
Richmond
Longswamp
Bethel
Centre
Maidencreek
Rockland
Hereford
Jefferson
Penn
Ontelaunee
District
Tulpehocken
Ruscombmanor
Pike
Muhlenberg
Bern
Washington
Marion
North Heidelberg
Alsace
Oley
Heidelberg
Lower Heidelberg
Lower Alsace
Earl
Colebrookdale
Reading
Wyomissing
Exeter
Lower Alsace
South Heidelberg
Spring
Amity
Douglass
Cumru
Robeson
Union
Brecknock
New Morgan
Caernarvon
Legend
Permit
Waiver
Not in MS4
Source: Berks County Planning Commission GIS, Berks County GIS, Berks County Mapping Department, BCWSA, PADEP
BAB 9/23
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Miles
www.countyofberks.com/planning

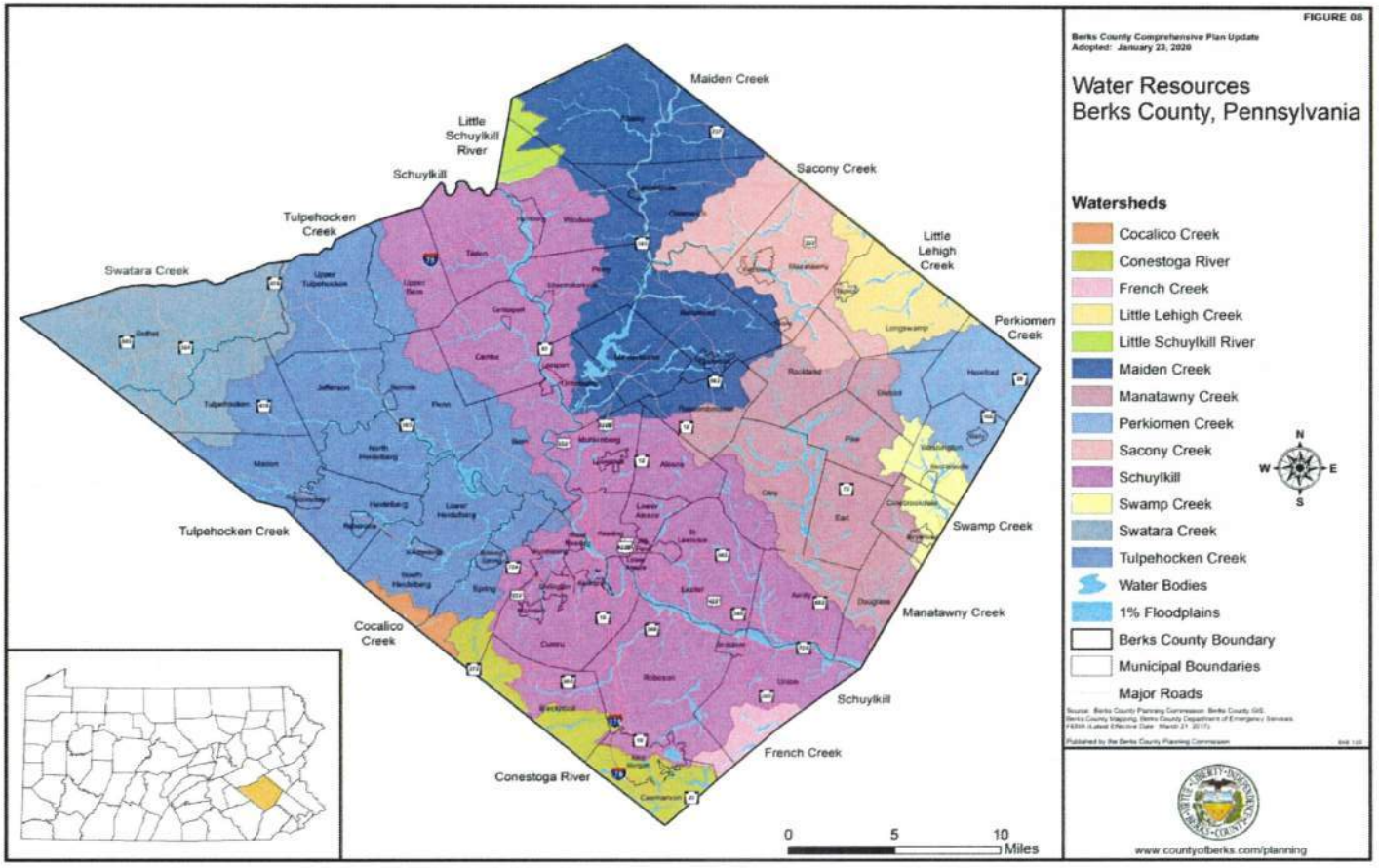
FIGURE 08
Berks County Comprehensive Plan Update
Adopted: January 23, 2020
Water Resources
Berks County, Pennsylvania
Watersheds
Cocalico Creek
Conestoga River
French Creek
Little Lehigh Creek
Little Schuylkill River
Maiden Creek
Manatawny Creek
Perkiomen Creek
Sacony Creek
Schuylkill
Swamp Creek
Swatara Creek
Tulpehocken Creek
Water Bodies
1% Floodplains
Berks County Boundary
Municipal Boundaries
Major Roads
Maiden Creek
Little Schuylkill River
Schuylkill
Sacony Creek
Tulpehocken Creek
Swatara Creek
Little Lehigh Creek
Perkiomen Creek
Swamp Creek
Manatawny Creek
Cocalico Creek
Schuylkill
French Creek
Conestoga River
Tulpehocken Creek
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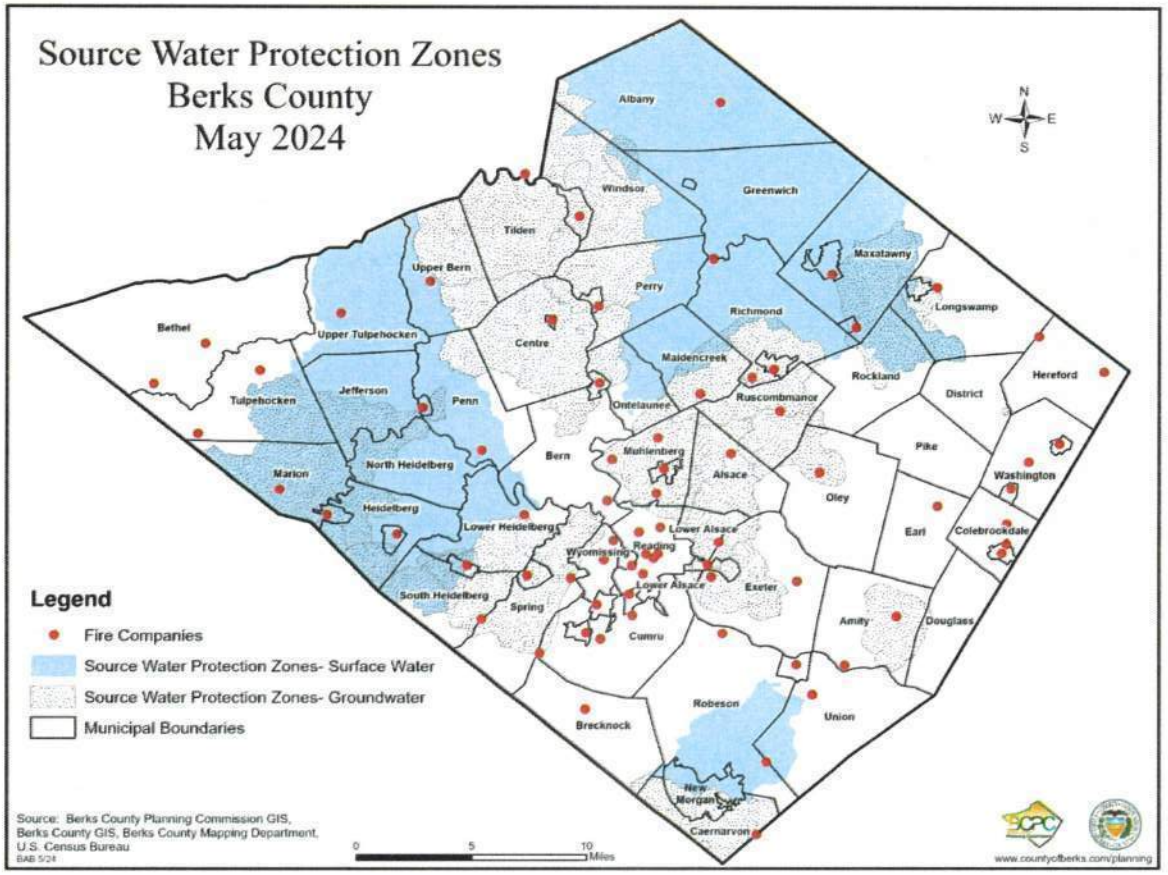
www.countyofberks.com/planning


Source Water Protection Zones
Berks County
May 2024
N
W
E
S
Albany
Windsor
Greenwich
Tilden
Upper Bern
Perry
Maxatawny
Longswamp
Richmond
Bethel
Upper Tulpehocken
Centre
Maidencreek
Rockland
Hereford
District
Tulpehocken
Jefferson
Penn
Ontelaunee
Ruscombmanor
Pike
Bern
Muhlenberg
Alsace
Washington
Marion
North Heidelberg
Oley
Heidelberg
Lower Heidelberg
Lower Alsace
Earl
Colebrookdale
Reading
Wyomissing
Exeter
South Heidelberg
Spring
Amity
Douglass
Cumru
Robeson
Union
Brecknock
New Morgan
Caernarvon
Legend
Fire Companies
Source Water Protection Zones- Surface Water
Source Water Protection Zones- Groundwater
Municipal Boundaries
Source: Berks County Planning Commission GIS, Berks County GIS, Berks County Mapping Department, U.S. Census Bureau
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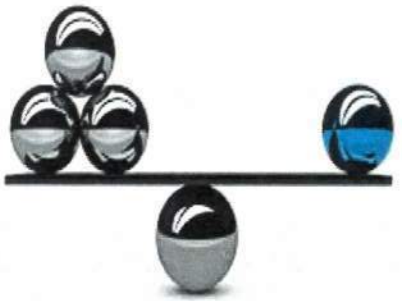
www.countyofberks.com/planning

GOALS OF MS4



&



QUALITY

QUANTITY





WHAT IS SOURCEWATER?

SOURCE WATER IS WHERE DRINKING WATER SYSTEMS OBTAIN RAW WATER FOR TREATMENT.

THE BIG PICTURE!



SAME GOALS FOR STORMWATER AND SOURCE WATER……..CLEAN WATER!



STORMWATER IS SOURCE WATER!

MUNICIPAL REQUIREMENTS





QUESTIONS TO CONSIDER

- DO YOU HAVE AN APPROVED STORMWATER MANAGEMENT PLAN?
- HOW ARE YOU PAYING FOR IT?
- WHERE CAN YOU GET HELP?

MCM #1
Public education and outreach

MCM #2
Public Participation and Involvement

MCM #3
Illicit Discharge Detection and Elimination

MCM #4
Construction site stormwater runoff control

MCM #5
Post-construction stormwater management

MCM #6
Pollution prevention & Good housekeeping for municipal operations

MINIMUM CONTROL MEASURES

EXAMPLES OF LANDS AND FACILITIES

- PARKS
- MUNICIPAL BUILDING & GROUNDS; PUBLIC WORKS YARDS
- STREETS
- PIPES, INLETS, SWALES, DITCHES
- PAINTS, SOLVENTS, CLEANERS
- ROAD SALT, ANTI-SKID MATERIALS
- WHAT ELSE??







EXAMPLES OF ACTIVITIES

- FLEET MAINTENANCE, FUEL STORAGE AND FILLING
- OUTDOOR STORAGE OF MATERIALS & WASTES
- LANDSCAPING
- STREET SWEEPING
- INLETS & CATCH BASIN CLEANING
- RECYCLING & WASTE TRANSFER
- WHAT ELSE??





MCM 1
PUBLIC EDUCATION AND OUTREACH

DISTRIBUTE EDUCATION MATERIALS AND PERFORM OUTREACH TO INFORM THE PUBLIC ABOUT THE IMPACTS OF POLLUTED STORMWATER RUNOFF DISCHARGES CAN HAVE ON WATER

TOOLS TO USE TO FULFILL THIS REQUIREMENT:

- MUNICIPAL NEWSLETTERS, MUNICIPAL WEBSITES, PUBLIC MEETINGS, UTILITY BILL INSERTS, MUNICIPAL STORMWATER EVENTS

MCM 2
PUBLIC INVOLVEMENT AND PARTICIPATION

PROVIDING OPPORTUNITIES FOR THE PUBLIC TO PARTICIPATE IN THE STORMWATER MANAGEMENT PROGRAM DEVELOPMENT AND IMPLEMENTATION

TOOLS TO USE TO FULFILL THIS REQUIREMENT:

- PUBLICIZING PUBLIC MEETINGS DISCUSSING STORMWATER PROGRAM, INCORPORATING STORMWATER INTO AN EXISTING COMMUNITY EVENT COMMUNITY STORMWATER PROGRAM/CLEAN UP

MCM 3
ILLICIT DISCHARGE DETECTION AND ELIMINATION

INFORMING YOUR RESIDENTS ABOUT HAZARDS ASSOCIATED WITH ILLICIT DISCHARGES

TOOLS TO USE TO FULFILL THIS REQUIREMENT:

- ILLICIT DISCHARGE HOTLINE
- ILLICIT DISCHARGE REPORT FORM
- ILLICIT DISCHARGE ORDINANCE

EDUCATE EMPLOYEES/RESIDENTS **WHO** TO REPORT THE ILLICIT DISCHARGE TO

EDUCATE EMPLOYEES **WHAT** MUST BE DONE TO ELIMINATE THE ILLICIT DISCHARGE

MCM 4&5
CONSTRUCTION AND POST CONSTRUCTION STORMWATER MANAGEMENT

MCM 6
GOOD HOUSEKEEPING

DEVELOPING, IMPLEMENTING AND ENFORCING A PROGRAM TO ADDRESS CONSTRUCTION ACTIVITIES THAT DISTURB 1 ACRE OR MORE OF LAND AND TO ADDRESS DISCHARGES OF POST CONSTRUCTION STORMWATER RUNOFF

- TOOLS TO USE TO FULFILL THESE REQUIREMENTS
  - ACT 167 STORMWATER MANAGEMENT ORDINANCE, SUBDIVISION AND LAND DEVELOPMENT ORDINANCE
  - MEMORANDUM OF UNDERSTANDING WITH THE BERKS COUNTY CONSERVATION DISTRICT (MOU)

DEVELOP AND IMPLEMENT A PROGRAM WHICH REDUCES AND PREVENTS POLLUTANT RUNOFF FROM MUNICIPAL OPERATIONS

TOOLS TO USE TO FULFILL THIS REQUIREMENT:

- REGULAR MUNICIPAL STAFF TRAINING OPPORTUNITIES
- LTAP TRAINING PROGRAM THROUGH COUNTY PLANNING COMMISSION
- SIGNAGE
- WRITTEN OPERATIONS AND MAINTENANCE PLAN

WHO CAN HELP YOU



- IS A FEE-BASED MEMBERSHIP
- 3 EDUCATION PARTNERS : BERKS NATURE, BERKS COUNTY CONSERVATION DISTRICT, BERKS COUNTY PLANNING COMMISSION
- PROVIDES TO THE BEST OF THEIR ABILITY PROGRAMS WHICH ADDRESS MCM 1, MCM 2 AND MCM 6
- ARTICLES FOR YOUR NEWSLETTERS
- PRESENTATIONS AT YOUR PUBLIC MEETINGS ALONG WITH PRESENTATION MATERIALS
- TRAININGS/WORKSHOPS FOR MUNICIPAL EMPLOYEES, OFFICIALS, SCHOOLS AND OTHER TARGET AUDIENCES
- YOUTUBE MUNICIPAL EMPLOYEE TRAINING SERIES
- STUDENT VIDEO CONTEST TRAINING SERIES
- **CONTACT ASHLEY SHOWERS 610-478-6300 EXT. 6312**

MS4

BERKS COUNTY
STEERING COMMITTEE

- DEDICATED TO THE ENCOURAGEMENT AND INSTRUCTION OF THE WISE STEWARDSHIP OF THE SOILS AND WATERS OF BERKS COUNTY SO THAT PRESENT AND FUTURE GENERATIONS MAY HAVE HEALTHY LAND ON WHICH TO LIVE AND WORK AND CLEAN WATER FOR DRINKING AND RECREATION.

- EDUCATIONAL WORKSHOP OPPORTUNITIES, EROSION AND SEDIMENTATION REVIEWS WITH MUNICIPAL MOU'S, SWAG BUS RENTAL, RIPARIAN BUFFER VOLUNTEER TRAILER RENTAL

- **CONTACT JENNIFER BROOKS** JENNIFER.BROOKS@BERKSCD.COM

- MAIN RESOURCE FOR TRAINING IN SCHOOLS, LUNCH AND LEARNS FOR BUSINESSES, MUNICIPALITIES, TRAINING FOR GIRL SCOUTS, BOY SCOUTS, OUTDOOR CLUBS

- **CONTACT MICHAEL GRIFFITH: 610-372-4992 EXT. 108**

BERKS COUNTY CONSERVATION DISTRICT

Berks Nature

WHO CAN HELP YOU DO IT

- **SCHUYLKILL RIVER ACTION NETWORK (SAN)**
  - HAVE ONLINE RESOURCES FOR NEWSLETTERS, HANDOUTS
  - **CONTACT MEGHAN ROGALUS AT MROGALUS@DELAWAREESTUARY.ORG**

- **PENN STATE EXTENSION: MASTER WATERSHED STEWARDS**
  - THIS PROGRAM HAS RESIDENT VOLUNTEERS THAT ARE TRAINED ON VARIOUS WATER TOPICS AND ARE REQUIRED TO HAVE A CERTAIN AMOUNT OF VOLUNTEER HOURS TO MAINTAIN THEIR STEWARD STATUS.
  - **CONTACT MATT NEUMAIER MPN5547@PSU.EDU**

- **PA CLEAN WATER ACADEMY**
  RA-EPPACLNWTRACADEMY@PA.GOV

- **YOUR MUNICIPAL** ENVIRONMENTAL ADVISORY COUNCIL
- **YOUR MUNICIPAL** PARK AND RECREATION STAFF
- SCHOOL DISTRICT
- BOY SCOUTS AND GIRL SCOUTS

FINANCIAL ASSISTANCE



- DCED SMALL WATER AND SEWER GRANTS: 85/15 MATCH $30,000 TO MAX OF $500,000, APPLICATION PERIOD SEPTEMBER THRU DECEMBER
  HTTPS://DCED.PA.GOV/PROGRAMS/PA-SMALL-WATER-SEWER/

- DCED H20: 50/50 MATCH PROJECTS $500,000 OR MORE APPLICATION PERIOD SEPTEMBER THRU DECEMBER

  HTTPS://DCED.PA.GOV/PROGRAMS/H20-PA-WATER-SUPPLY-SANITARY-SEWER-STORM-WATER-PROJECTS/

- SCHUYLKILL RIVER RESTORATION FUND 25% MATCH, VARIES BASED ON ANNUAL GUIDELINES, APPLICATION PERIOD JANUARY THRU APRIL
  HTTPS://SCHUYLKILLRIVER.ORG/CONSERVATION/THE-RESTORATION-FUND/

- PENNVEST
  HTTPS://WWW.PENNVEST.PA.GOV/INFORMATION/FUNDING-PROGRAMS/PAGES/DEFAULT.ASPX

- DELAWARE RIVER RESTORATION FUND
  HTTPS://WWW.NFWF.ORG/DELAWARE/PAGES/HOME.ASPX

- DEP GROWING GREENER PLUS GRANTS NOVEMBER THRU DECEMBER
  HTTPS://WWW.DEP.PA.GOV/CITIZENS/GRANTSLOANSREBATES/GROWING-GREENER/PAGES/DEFAULT.ASPX

QUESTIONS?

ASHLEY SHOWERS, ASSISTANT DIRECTOR

BERKS COUNTY PLANNING COMMISSION

ASHOWERS@BERKSPA.GOV

610-478-6300 EXT. 6312

VISIT OUR WEBSITE:
HTTPS://WWW.BERKSPA.GOV/DEPARTMENTS/PLANNING-COMMISSION

THANK YOU



MS4 AND WATER RESOURCES

February 20,2025

WATER INITIATIVES

CZIP

Act 167 Planning

Comprehensive Planning

Water and Sewer Regionalization Study

Berks County Sourcewater Protection Plan

Berks County Chesapeake Bay Action Plan

Berks County Water and Sewer Association

Berks County MS4 Steering Committee

FEMA Firm Panel Review

PSU Master Watershed Stewards

ACTIVE WATER INITIATIVES

Imagine Berks/County Greenway, Park and Recreation Plan Placemaking Awards

Joint Comprehensive Planning Program/County Comprehensive plan

LTAP Courses

Perkiomen Creek Flood Study

MS4 Steering Committee Education Sessions/Training Videos

Support of PSU Master Watershed Stewards

Land development review

Letters of Consistency for funding

Education and awareness of funding opportunities

PARTNERS IN WATER INTIATIVES



Berks County Conservation District

Berks County Department of Agriculture

County of Berks Parks & Recreation Department

Berks County Department of Emergency Services

Berks Nature

SAN

PSU Master Watershed Stewards

NRCS

SRGA

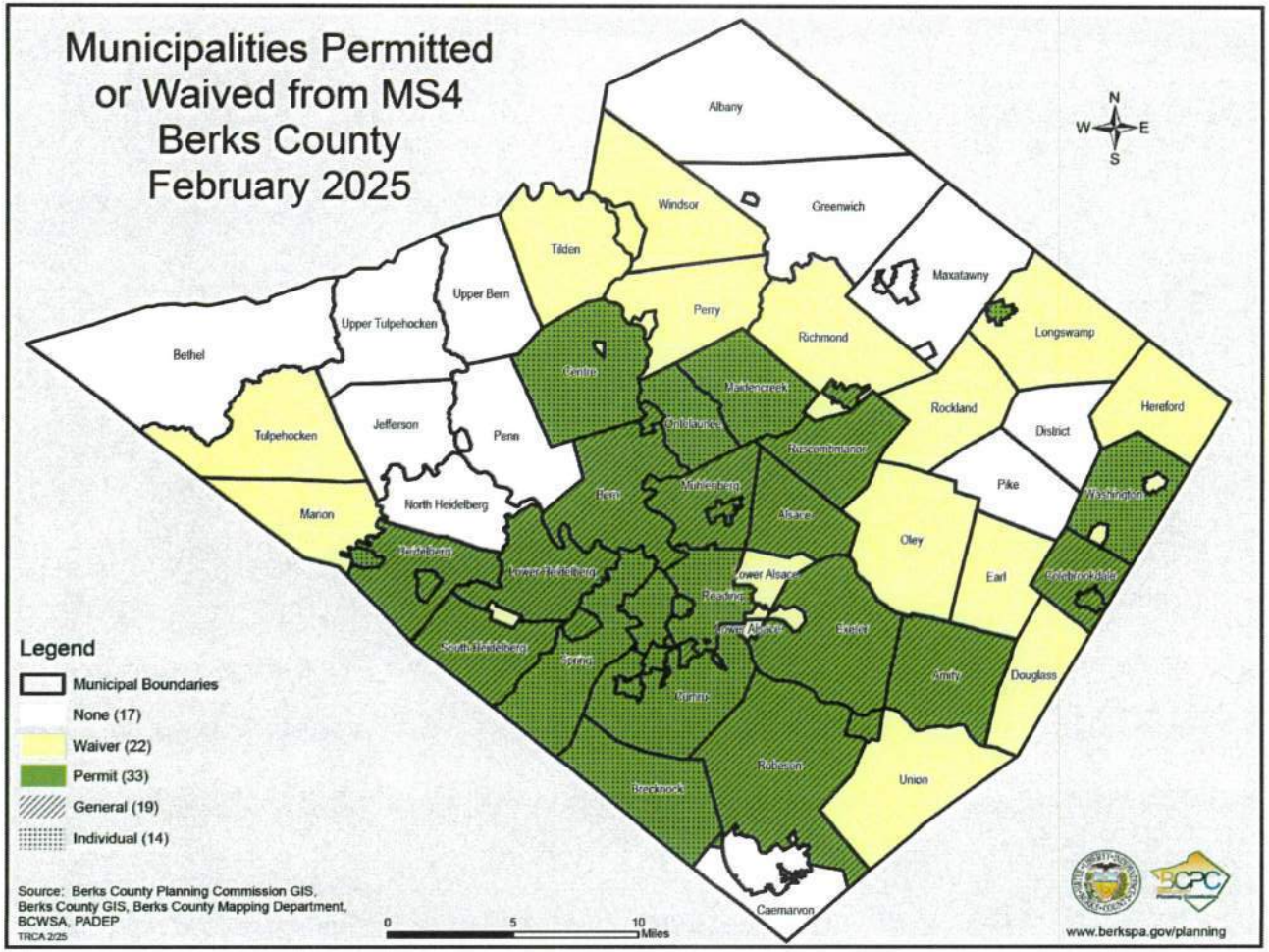
CHALLENGES

- Designated staff within municipality
- Inundated with requests and information
- Lack of understanding requirements for various regulated water programs
- Overlapping/Duplicative regulations
- Fatigue of submitting data
- No one place for data/information
- Failing infrastructure

MS4

BERKS COUNTY STEERING COMMITTEE

- Is a fee-based membership
- 3 Education Partners : Berks Nature, Berks County Conservation District, Berks County Planning Commission
- Provides to the best of their ability programs which address MCM 1, MCM 2 and MCM 6
- Presentations at your public meetings along with presentation materials
- Trainings/workshops for municipal employees, officials, schools and other target audiences
- YouTube Training Series
- **Contact Ashley Showers 610-478-6300 ext. 6312**


Municipalities Permitted or Waived from MS4 Berks County February 2025
N
W
E
S
Albany
Windsor
Greenwich
Tilden
Maxatawny
Upper Bern
Perry
Richmond
Longswamp
Upper Tulpehocken
Bethel
Centre
Maidencreek
Rockland
Hereford
Jefferson
Penn
Ontelaunee
Tulpehocken
District
Muhlenberg
Pike
Marion
North Heidelberg
Alsace
Oley
Heidelberg
Lower Heidelberg
Lower Alsace
Earl
Reading
Exeter
South Heidelberg
Spring
Amity
Douglass
Robeson
Brecknock
Union
Caernarvon
Legend
Municipal Boundaries
None (17)
Waiver (22)
Permit (33)
General (19)
Individual (14)
Source: Berks County Planning Commission GIS, Berks County GIS, Berks County Mapping Department, BCWSA, PADEP
TRCA 2/25
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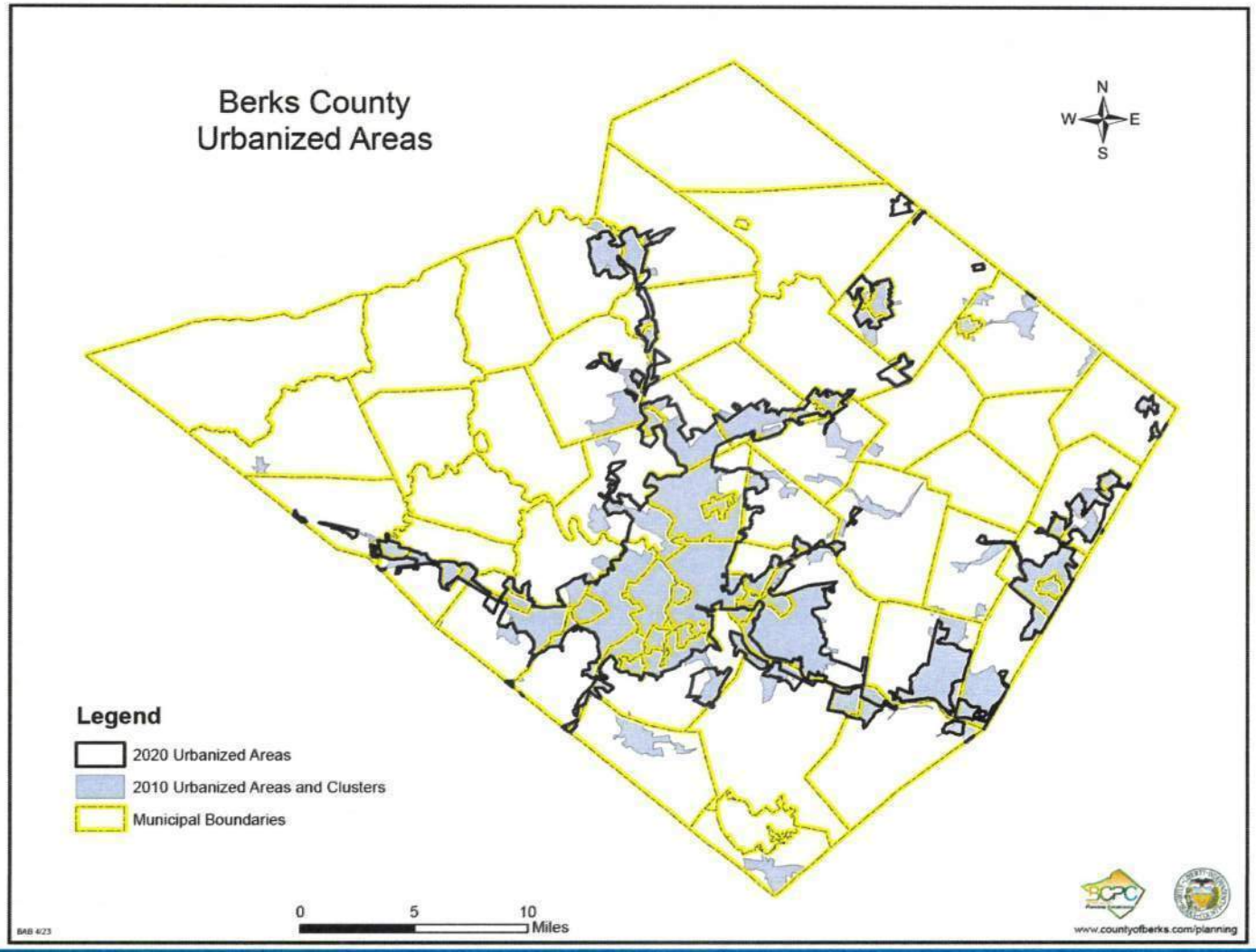
Miles
www.berkspa.gov/planning


Berks County
Urbanized Areas
N
W
E
S
Legend
2020 Urbanized Areas
2010 Urbanized Areas and Clusters
Municipal Boundaries
0
5
10
Miles
BAB 4/23
www.countyofberks.com/planning

BERKS COUNTY CONSERVATION DISTRICT

- Dedicated to the encouragement and instruction of the wise stewardship of the soils and waters of Berks County so that present and future generations may have healthy land on which to live and work and clean water for drinking and recreation.
- Educational workshop opportunities
- Erosion and Sedimentation Reviews with Municipal MOU's
- SWAG Bus Rental
- Riparian Buffer Volunteer Trailer Rental
- **Jennifer Brooks : 610.372.4657 ext. 212**
- **Contact David Osgood: 610.372.4657 ext. 204**

Berks Nature

- Main resource for training in Schools
- Lunch and Learns for businesses, municipalities
- Training for girl scouts, boy scouts, outdoor clubs
- **Contact Michael Griffith: 610-372-4992 Ext. 108**







How you as a volunteer can help

- Participate in municipal public meetings regarding stormwater
- Help municipalities identify storm drains, outfalls
- Report illicit discharges (erosion coming off a construction site)
- Participate in clean up days, rain garden projects, tree plantings

How you as a volunteer can help

- Introduce organizations you work with to your municipal stormwater program and events
- Offer to be a stormwater exhibitor table at municipal events
- Be a good example and steward by installing BMP's on your own property
- Outreach to your child's school



When you volunteer



Please notify the municipality in which you are volunteering



If you are handing out brochures, stickers, etc. count how many you started with and ended with



Save copies of brochures, stickers, etc. to put in municipal file



Take a picture of the booth, table, activity in which you volunteered at

Financial Assistance

- DCED Small Water and Sewer Grants: 85/15 match $30,000 to max of $500,000, application period September thru December
  https://dced.pa.gov/programs/pa-small-water-sewer/

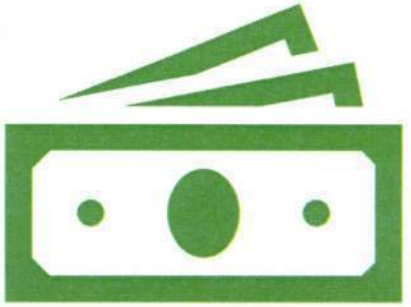
- DCED H20: 50/50 match projects $500,000 or more application period September thru December
  https://dced.pa.gov/programs/h20-pa-water-supply-sanitary-sewer-storm-water-projects/

- Schuylkill River Restoration Fund 25% match, varies based on annual guidelines, Application period January thru April
  https://schuylkillriver.org/conservation/the-restoration-fund/

- PennVest
  https://www.pennvest.pa.gov/Information/Funding-Programs/Pages/default.aspx

- Delaware River Restoration Fund
  https://www.nfwf.org/delaware/Pages/home.aspx

- DEP Growing Greener Plus Grants November thru December
  https://www.dep.pa.gov/Citizens/GrantsLoansRebates/Growing-Greener/Pages/default.aspx



MS4 BERKS COUNTY STEERING COMMITTEE

BCPC BERKS COUNTY Planning Commission

Questions?

Ashley Showers, Assistant Director

Berks County Planning Commission

ashowers@berkspa.gov

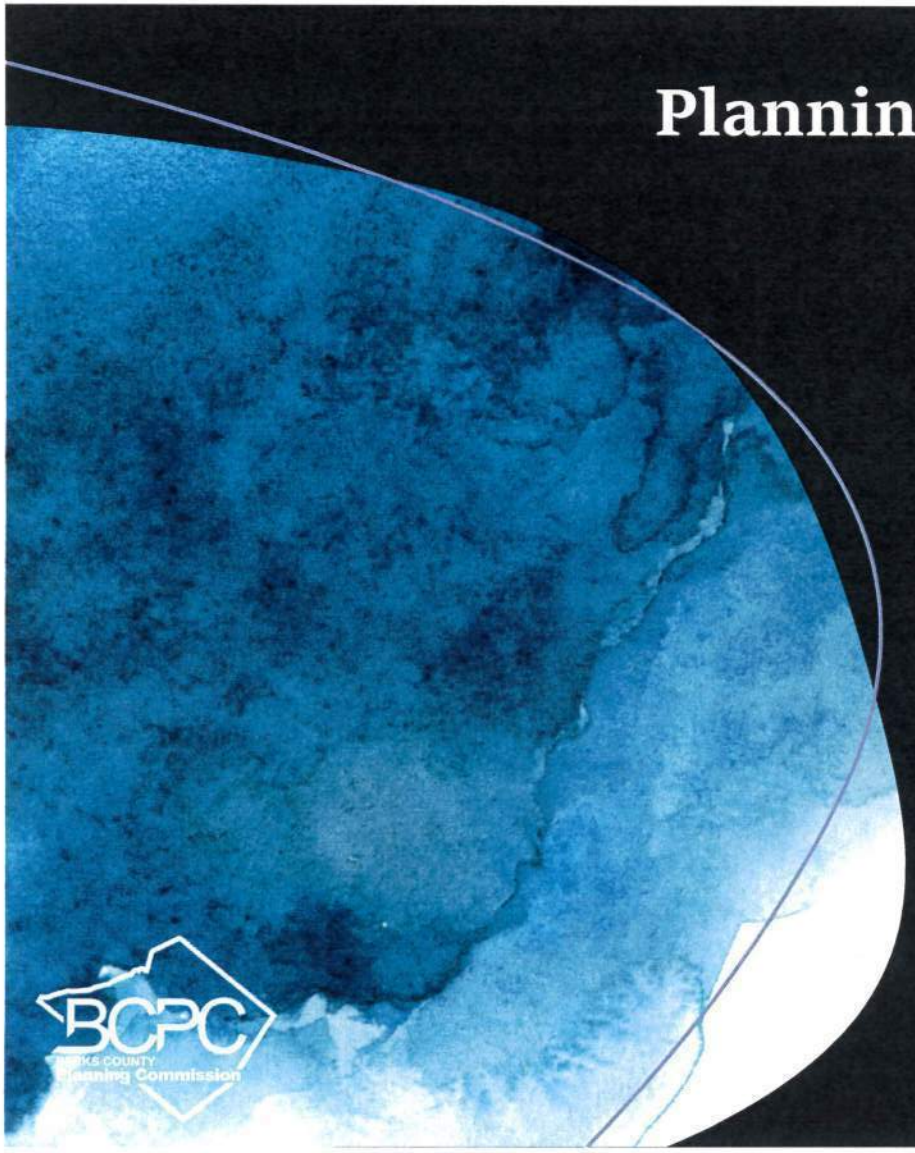
Thank you

Addressing Key Community Challenges in Berks County Watersheds

Ashley Showers
Assistant Director
Berks County Planning Commission

BCPC
BERKS COUNTY
Planning Commission

Planning Commission Water Initiatives



CZIP

Act 167 Planning

Comprehensive Planning

Water and Sewer Regionalization Study

Berks County Sourcewater Protection Plan

Berks County Chesapeake Bay Action Plan

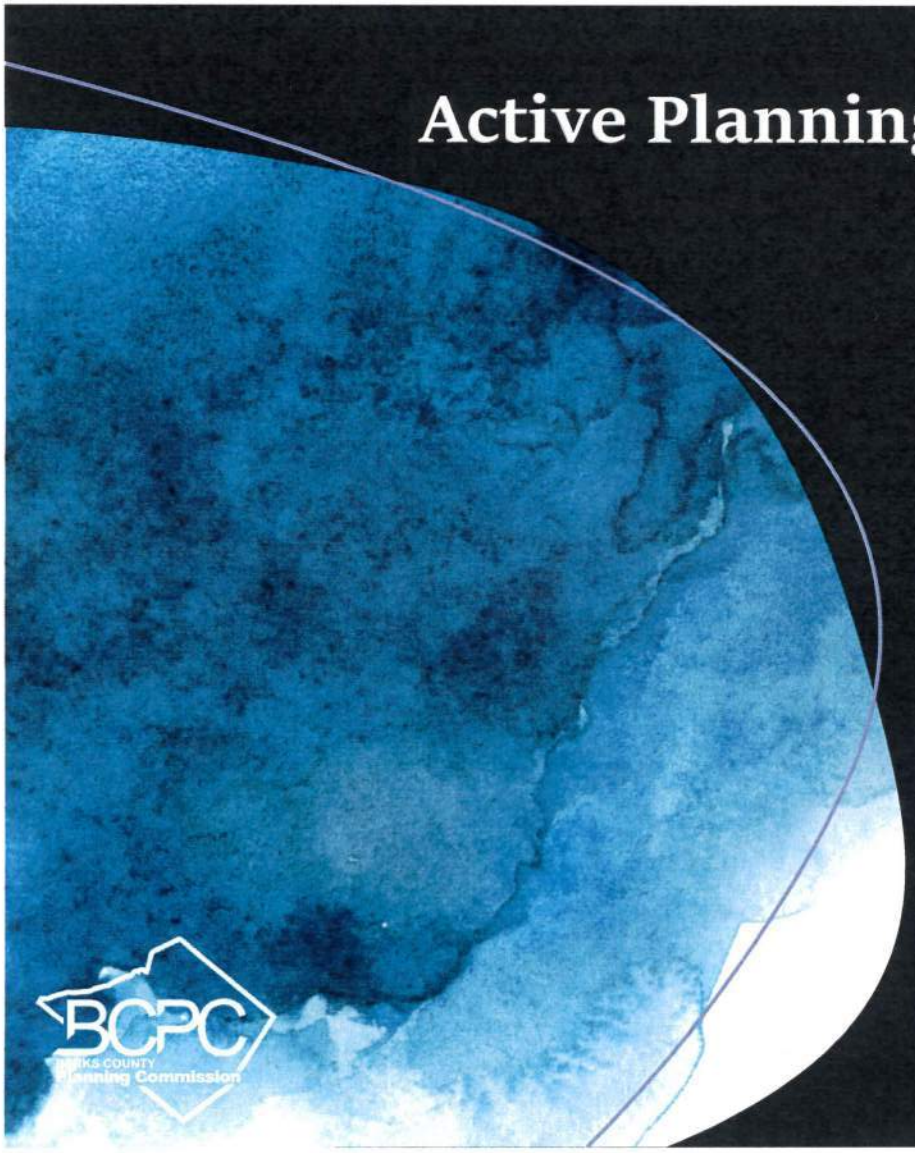
Berks County Water and Sewer Association

Berks County MS4 Steering Committee

FEMA Firm Panel Review

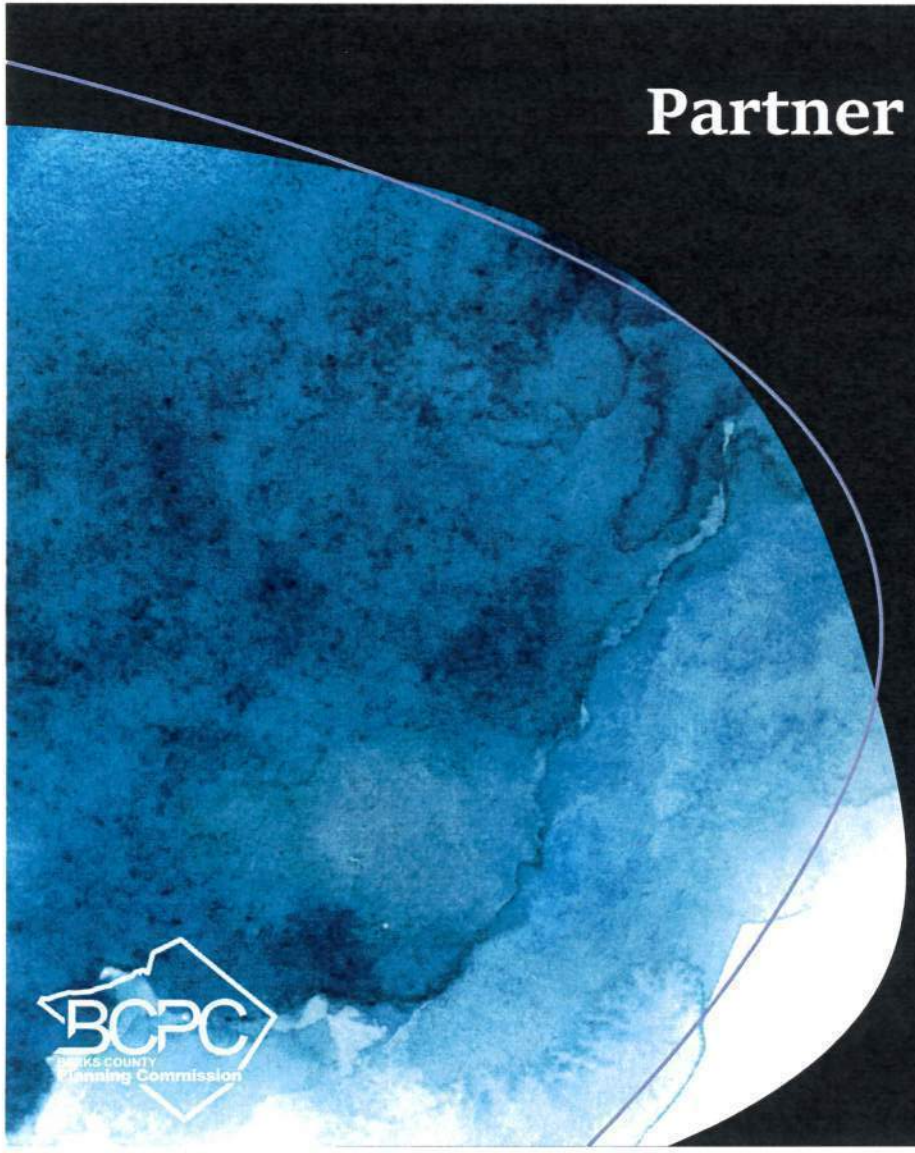
PSU Master Watershed Stewards

Active Planning Commission Water Initiatives



- Imagine Berks/County Greenway, Park and Recreation Plan Placemaking Awards
- Joint Comprehensive Planning Program/County Comprehensive plan
- LTAP Courses
- Perkiomen Creek Flood Study
- MS4 Steering Committee Education Sessions/Training Videos
- Support of PSU Master Watershed Stewards
- Land development review
- Letters of Consistency for funding
- Education and awareness of funding opportunities

Partner Water Initiatives



Berks County Conservation District

Berks County Department of Agriculture

County of Berks Parks & Recreation Department

Berks County Department of Emergency Services

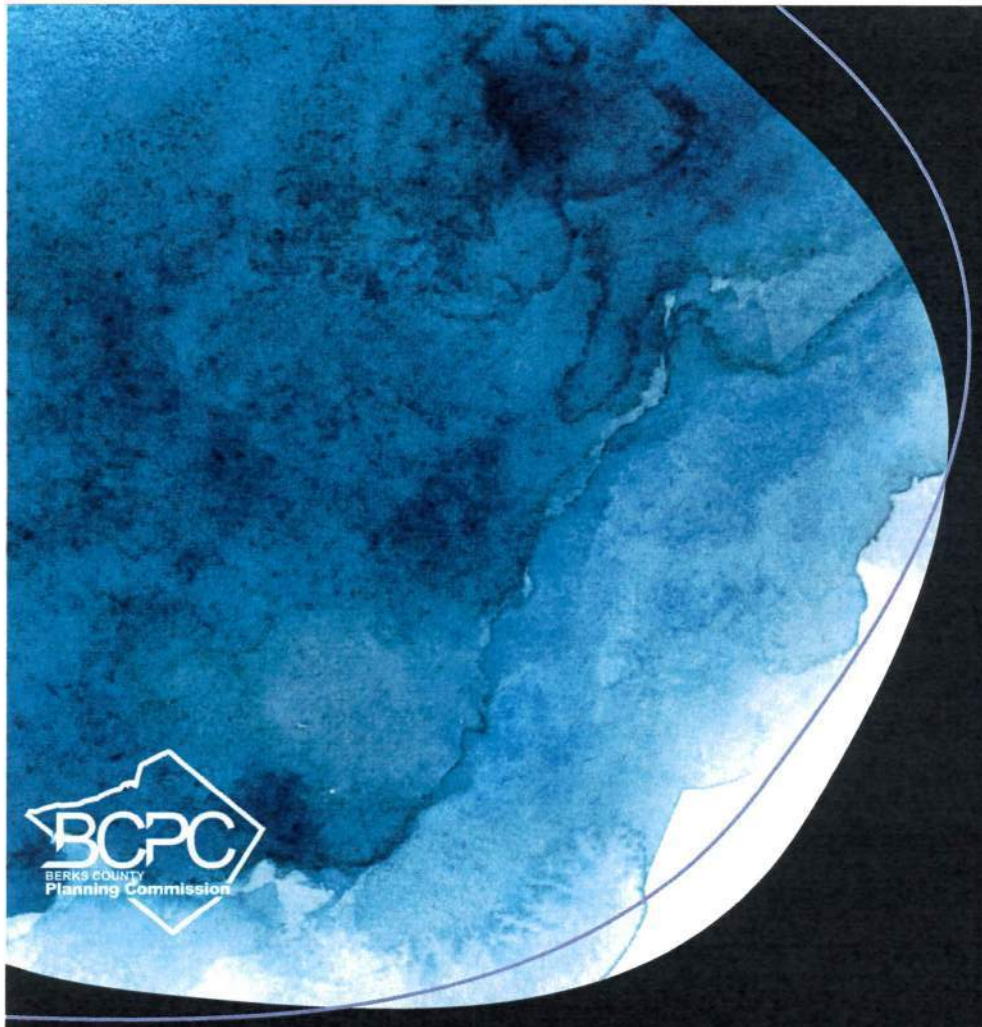
Berks Nature

SAN

PSU Master Watershed Stewards

NRCS

SRGA



Challenges

Designated staff within municipality

Inundated with requests and information

Lack of understanding requirements for various regulated water programs

Overlapping/Duplicative regulations

Fatigue of submitting data

No one place for data/information

Failing infrastructure

Thank you

ashowers@berkspa.gov

Ashley Showers
Assistant Director
Berks County Planning Commission







MS4, Source Water Protection and Municipal Emergency Management



What is Stormwater?

Stormwater occurs when precipitation from rain or snowmelt flows over the ground.





What is Sourcewater?

Source water is where drinking water systems obtain raw water for treatment.

The BIG PICTURE!



SAME GOALS FOR STORMWATER AND SOURCE WATER……..CLEAN WATER!



STORMWATER IS SOURCE WATER!

How your operations impact MS4/SWP

- Fire stations, Police stations, Ambulance buildings may be included in the municipal operations and management plan
- Police may issue violations
- Hydrant flushing
- Chemicals stored at your facility and how they are used in your individual response
- Training of your employees
- Recordkeeping and Reports

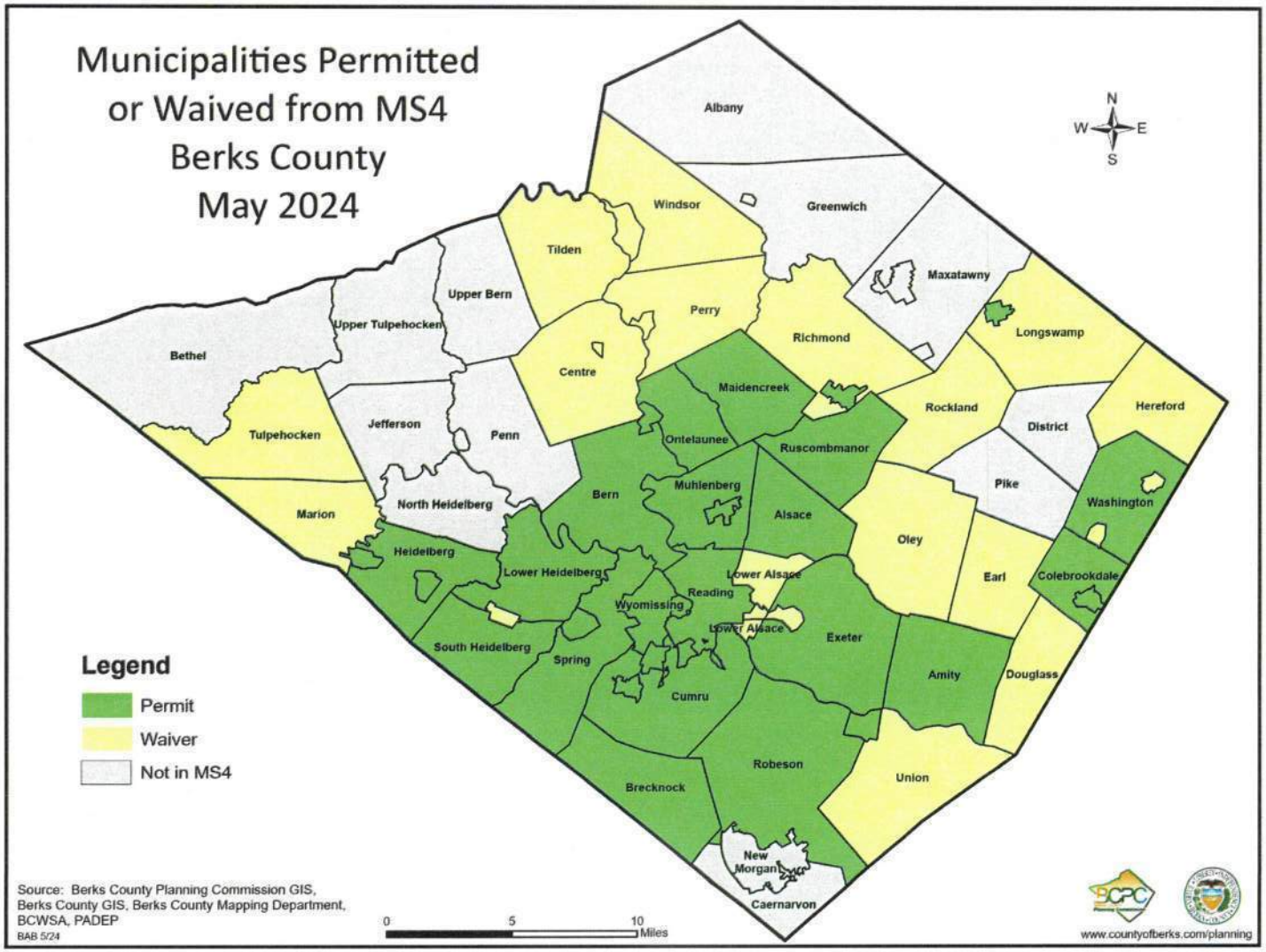
Events that Impact MS4/Source water

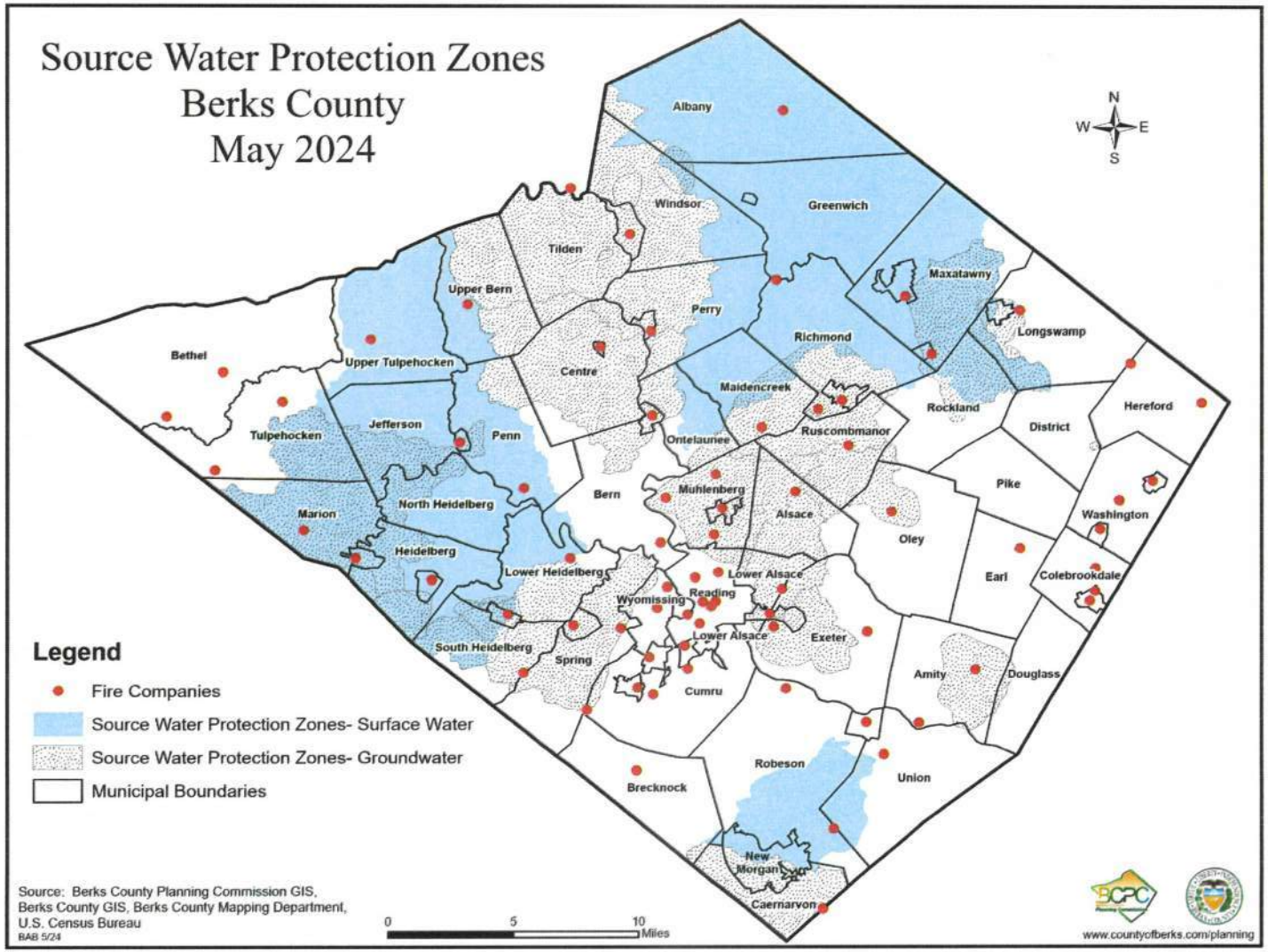
- Fire Hydrant flushing
- Transportation Accidents (Vehicle, Train)
- Pipeline releases
- Fire Training practices/materials








Municipalities Permitted
or Waived from MS4
Berks County
May 2024
N
W
E
S
Albany
Windsor
Greenwich
Tilden
Maxatawny
Upper Bern
Perry
Upper Tulpehocken
Richmond
Longswamp
Bethel
Centre
Maidencreek
Rockland
Hereford
Jefferson
Penn
Ontelaunee
Ruscombmanor
District
Tulpehocken
Bern
Muhlenberg
Pike
Washington
Marion
North Heidelberg
Alsace
Oley
Heidelberg
Lower Heidelberg
Lower Alsace
Earl
Colebrookdale
Reading
Wyomissing
Exeter
Lower Alsace
South Heidelberg
Spring
Amity
Douglass
Cumru
Robeson
Union
Brecknock
New
Morgan
Caernarvon
Legend
Permit
Waiver
Not in MS4
Source: Berks County Planning Commission GIS,
Berks County GIS, Berks County Mapping Department,
BCWSA, PADEP
BAB 5/24
0
5
10
Miles
www.countyofberks.com/planning


Source Water Protection Zones
Berks County
May 2024
N
W
E
S
Albany
Windsor
Greenwich
Tilden
Upper Bern
Perry
Maxatawny
Longswamp
Richmond
Bethel
Upper Tulpehocken
Centre
Maidencreek
Rockland
Hereford
Jefferson
Tulpehocken
Penn
Ontelaunee
Ruscombmanor
District
Pike
Bern
Muhlenberg
Alsace
Washington
Marion
North Heidelberg
Oley
Heidelberg
Lower Heidelberg
Lower Alsace
Earl
Colebrookdale
Wyomissing
Reading
Lower Alsace
Exeter
South Heidelberg
Spring
Amity
Douglass
Cumru
Robeson
Union
Brecknock
New Morgan
Caernarvon
Legend
Fire Companies
Source Water Protection Zones- Surface Water
Source Water Protection Zones- Groundwater
Municipal Boundaries
Source: Berks County Planning Commission GIS, Berks County GIS, Berks County Mapping Department, U.S. Census Bureau
BAB 5/24
0
5
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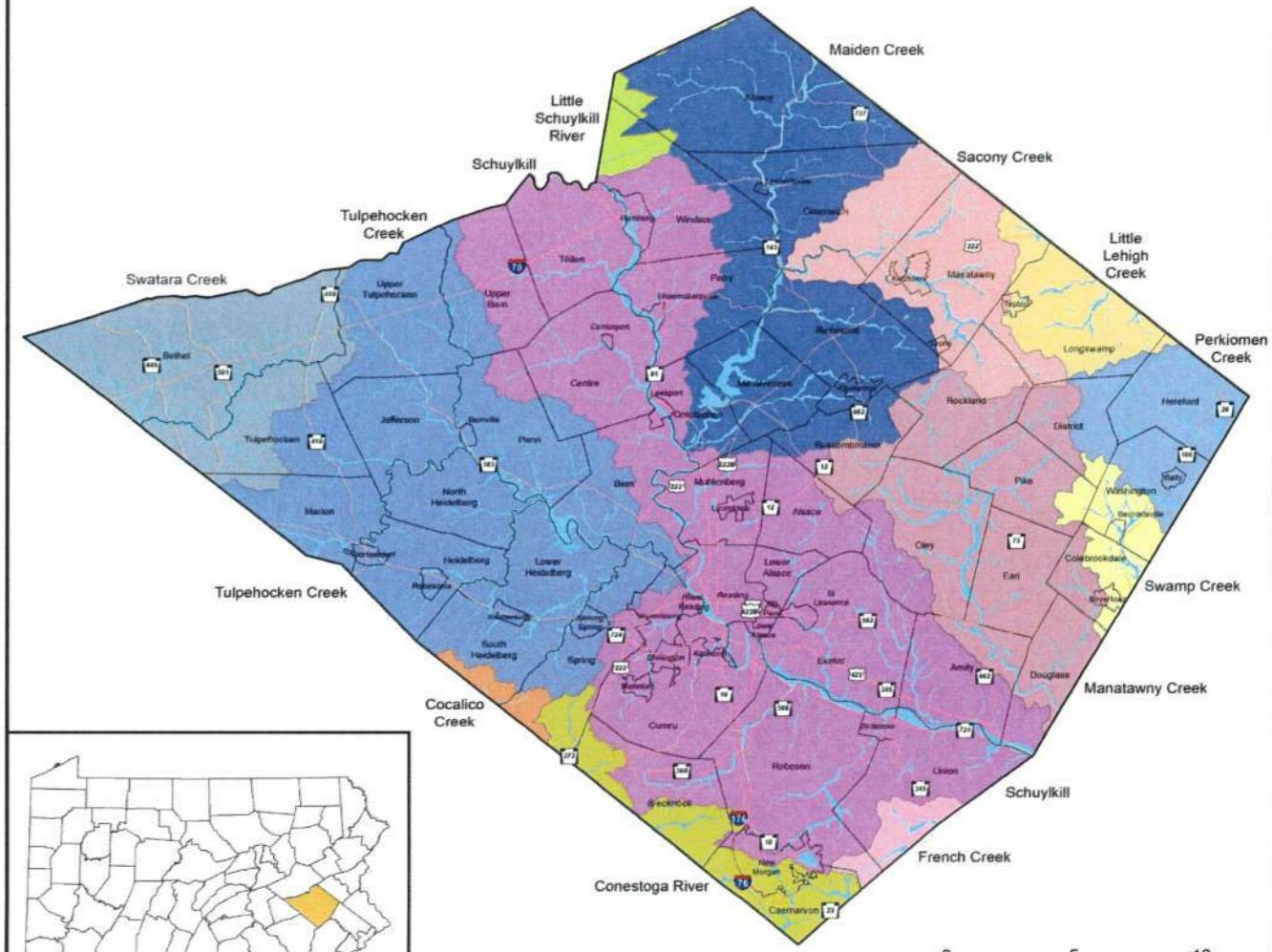
Miles
www.countyofberks.com/planning

FIGURE 08

Berks County Comprehensive Plan Update
Adopted: January 23, 2020

Water Resources
Berks County, Pennsylvania



Watersheds

- Cocalico Creek
- Conestoga River
- French Creek
- Little Lehigh Creek
- Little Schuylkill River
- Maiden Creek
- Manatawny Creek
- Perkiomen Creek
- Sacony Creek
- Schuylkill
- Swamp Creek
- Swatara Creek
- Tulpehocken Creek
- Water Bodies
- 1% Floodplains
- Berks County Boundary
- Municipal Boundaries
- Major Roads

N
W
E
S

Source: Berks County Planning Commission, Berks County GIS, Berks County Mapping, Berks County Department of Emergency Services, FEMA (Latest Effective Date: March 21, 2017)

Published by the Berks County Planning Commission

BAE 1/22

www.countyofberks.com/planning

Items to consider which apply to MS4 and SWP

- **How do you do the things below**:

  Spill Response/Spill Prevention (both at your facility and emergency events)

  Proper disposal of spill materials at your facility/after event

  Washing areas (commercial car wash, grass/gravel area, or drained area)

  Employee Protocol/Training

  Vehicle Maintenance



What to provide to water supplier or MS4 municipal representative

- Specific location of event (description of area including is there a creek nearby)
- Date, time and weather conditions
- Description of the pollution (what is it and how much)
- Who is at risk (people, property or the environment)
- What watershed are you in
- Is it a source for drinking water (whose source is it)
- What are you using to clean up the spill, leak, accident debris
- Description of violator (license plate number, company name)
- Pictures
- Use PA WARN

*** Notify DEP no later than 4 hours after event if potential for down stream contamination**

*** New DEP Emergency Phone Number: 866-825-0208**

Recordkeeping and Information Sharing

- If it's not in writing, it didn't happen!
- Provides accounting of activities as they occur
- Proof of compliance with permit, sourcewater protection plan
- Sharing of information provides consistency for municipal program





MS4

BERKS COUNTY
STEERING COMMITTEE

BCPC

BERKS COUNTY
Planning Commission

Thank You!
Questions?

Ashley Showers
Berks County Planning Commission
ashowers@berkspa.gov
610-478-6300 ext. 6312

Township Tree Planting Events

Outlook

invoice

From Larry Lloyd <Larry.lloyd@berksnature.org>
Date Fri 10/11/2024 8:15 AM
To Diane Hollenbach <d.hollenbach@maidencreek.net>

1 attachments (126 KB)
Maidencreek Twp invoice_10.10.24.pdf;

Diane,
The plantings went well last week. We (Keith, Julie, and Berks Nature) had things well prepared and Met Ed had an excellent work force
Attached is the invoice for the trees and we stayed under the $2,000.
We have a site visit on the 25th with Keith and Julie and perhaps Rec Board people for the Community Park.
We think it's best to make a simple management plan for the site to guide future decisions and plantings. I will send a proposal before then for $450 to develop the plan based on the input and site conditions .
Berks Nature did submit a proposal to East Penn for trees for this site for next year.
Thanks Now we need some rain to get the water table back up .
Larry

Larry Lloyd
Senior Ecologist
Berks Nature
575 St. Bernardine Street, Reading, PA 19607
610-372-4992 ext. 116
www.berksnature.org



Tiny Thinkers
April 15 ·

School Age helped the Township today with tree planting. Thank you so much for asking us to help with this! The kids had an absolute blast! Such an amazing opportunity!

Sarah Althouse, Bob Wood and 73 others 4 comments

Like Comment Send

Jennifer Schwegler
April 14 ·

APPENDIX E

MCM #2 – PUBLIC INVOLVEMENT/PARTICIPATION

BMP #3 – PUBLIC MEETING NOTICES AND MINUTES

21ST CENTURY media

MediaNews Group

PHILADELPHIA GROUP

AFFIDAVIT OF PUBLICATION

390 Eagleview Boulevard • Exton, PA 19341

MAIDENCREEK TWP SUPERVISORS
TOWNSHIP SECRETARY
PO BOX 319
BLANDON, PA 19510
Attention:

STATE OF PENNSYLVANIA,

The undersigned Richard L. Crowe, being duly sworn the he/she is the principal clerk of Reading Eagle, Reading Eagle Digital, published in Berks County for the dissemination of local or transmitted news and intelligence of a general character, which are duly qualified newspapers, and the annexed hereto is a copy of certain order, notice, publication or advertisement of:

MAIDENCREEK TWP SUPERVISORS

Published in the following edition(s):

Reading Eagle, Reading Eagle Digital
07/16/24

MAIDENCREEK TOWNSHIP NOTICE OF 30 DAY COMMENT PERIOD

Maidencreek Township is accepting comments on their MS4 required Pollutant Reduction Plan for the Willow Creek and the Total Maximum Daily Load Plan for Lake Ontelaunee until August 26, 2024. The plan is available for viewing at the Township Office, 1 Quarry Road, Reading, PA 19605 between the hours of 8 am and 4pm. Comments must be submitted in writing via US mail to Maidencreek Township, PO Box 319, Blandon, PA 19510 or via email to admin@maidencreek.net.
Board of Supervisors
Maidencreek Township
RE July 16 A-1

Sworn to the subscribed before me this 7/16/2024

Mary D Allison

Notary Public, State of Pennsylvania
Acting in County of Delaware

Commonwealth of Pennsylvania - Notary Seal
Mary D. Allison, Notary Public
Delaware County
My commission expires October 7, 2025
Commission number 1406447
Member, Pennsylvania Association of Notaries

Advertisement Information

Client Id: 1335499 **Ad Id:** 2622748 **PO:** **Sales Person:** PRC307

calendar 2025

August 2025

National Water Quality Month –Protect Your Water

Wash your car at a car wash. Pick up after your pet. Don't hose down your driveway, use a broom or blower. Don't use fertilizer made with phosphorus. Don't flush expired or unwanted medication down the toilet. Take used oil or antifreeze to a service station or recycling center. Avoid using antibacterial soaps/cleaning products in your drain as they are toxic to marine life.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1	2
3	4	5 **National Night Out Hosted by NBRPD**	6	7	8	9
10	11 Northern Berks Regional Police Commission Meeting 6pm at Ontelaunee Township	12	13	14 Board of Supervisors Meeting 6pm	15	16 **Blandon Fire Co. Golf Tournament**
17	18	19	20	21 Water Authority Meeting 11am	22	23
24 **Blandon Lions Club Chicken BBQ**	25	26	27 Planning Commission Meeting 7pm	28 Park & Recreation Meeting 7pm	29	30
31 						

MCM #3
Illicit Discharge Detection and Elimination

3.0 Illicit Discharge Detection and Elimination Program

3.1 Description

MCM #3 requires the MS4 municipality to:

3.1.1 Develop and implement a written program for the detection, elimination, and prevention of illicit discharges into the regulated MS4.

3.1.2 Develop and maintain a map of the regulated small MS4's outfalls and surface waters.

3.1.3 In conjunction with the map(s) created above (either on the same map or on a different map), permittees shall show and update the entire storm sewer collection system, including roads, inlets, piping, swales, catch basins, channels, basins, and any other features of the permittee's storm sewer system including municipal boundaries and/or watershed boundaries.

3.1.4 The permittee shall conduct outfall field screenings, identify the source of any illicit discharges, and remove or correct any illicit discharges.

3.1.5 Enact a Stormwater Management Ordinance to implement and enforce a stormwater management program that includes prohibition of non-stormwater discharges to the regulated small MS4.

3.1.6 Provide educational outreach to public employees, business owners and employees, property owners, the general public and elected officials (i.e., target audiences) about the program to detect and eliminate illicit discharges.

3.2 Illicit Discharges

3.2.1 EPA defines "illicit discharge" as "any discharge to a municipal separate storm sewer that is not composed entirely of storm water, except discharges pursuant to a NPDES permit and discharges resulting from firefighting activities".

3.2.2 The municipal Act 167 and/or MS4 ordinance contains a list of authorized discharges, and provides penalties for violators.

3.2.3 Illicit discharges are critical because they make their way to waterways untreated. Discharges such as paint or oil dumped into storm drains, septic effluent, car wash wastewater and illegally connected wastewater piping can cause serious pollution issues. Pollutants include heavy metals, bacteria, viruses, nutrients, oil and grease, solvents and toxins.

3.3 IDD&E Program

There are six (6) Best Management Practices (BMPs) required under MCM #3. BMP #1 is a written program for the detection, elimination, and prevention of illicit discharges into the regulated MS4. The following items comprise the written program for the municipality.

3.3.1 MS4 System Map – The map is included in Appendix F, and depicts the following:

- The extents of the regulated MS4 within the municipality
- The locations of all outfalls, numbered
- Streams, named and unnamed
- Other surface waters
- Catch basins, swales and channels that receive stormwater discharges
- Roads, municipal boundaries and watershed boundaries

This map has been supplied to municipal employees and the local fire and EMS responders.

3.3.2 Identify Priority Areas for Outfall Screenings – Priority areas consist of so-called "hot spots", which are areas having the potential to generate pollutants.

Any outfalls near construction sites or logged resident complaints will be added to the priority list.

3.3.3 Procedures for Screening Outfalls – All outfalls will be screened at least once during each five-year permit cycle, by Township staff. Outfall screenings are generally conducted in February or March each year, when there has been no measurable precipitation within the 72 hours prior to the screening. Efforts are also made to avoid screenings during periods of snowmelt. Screenings are recorded on field sheets, a sample of which is included in Appendix G.

Any outfall that is discovered to have continuous dry weather flow or a history of problems must be screened annually.

3.3.4 Outfall Accessibility – To date, there have been no issues with inaccessibility of outfalls due to private property restrictions. If access to an outfall or a suspected illicit discharge source, is denied by a private property owner, the following course of action will be followed:

- Outfall inspector to contact the Township Street Supervisor and try to gain voluntary access.

- Street Supervisor to contact police if access remains prohibited.
- A search warrant shall be obtained if needed to complete the investigation into the discharge. District magistrate to be contacted.
- DEP is to be contacted at 866-825-0208 if illicit discharges constitute an immediate threat to the population, as well as 9-1-1, regardless of whether access is denied.

3.3.5 Procedures for Identifying an Illicit Discharge – Historically, the outfalls in Maidencreek Township's MS4 have been dry during screenings, or carry a perennial stream and intermittent underground spring flow. Therefore, to date, no illicit discharges have been identified.

If a questionable discharge is encountered, either during routine screenings or in response to a complaint or investigation, the following procedure shall be followed:

3.3.5.1 Visual or odor characteristics shall be recorded. Observations shall be made, either in the field or via the system map of possible sources of the discharge, based on its characteristics (for example, milky discharge downstream of a dairy).

Laboratory sampling is required when odor or appearance indicate that the outfall is polluted.

3.3.5.2 When laboratory testing is necessary, the Township engineering staff will consult with Township staff as to what parameters to test for. Common sampling parameters include pH (where extreme values can indicate commercial or industrial sources), conductivity (dissolved salts and inorganics like alkalis, chlorides and sulfides), optical brighteners (which can identify presence of detergents) and bacteria (which can indicate presence of sanitary wastewater).

3.3.6 Procedures for Identifying the Source of an Illicit Discharge – Once the type of pollutant(s) in the discharge has been identified, its source may be clearly evident, or an in-depth investigation may be necessary. Using the above example, a milky discharge downstream of a dairy may indicate the source without further investigation. However, many times, illicit discharges result from unseen pipe interconnections, sporadic illegal dumping, or other clandestine activities.

Following is a partial list of investigative tools; which or how many to use will be determined on a case-by-case basis:

- Map or historical document review by Township staff or engineering consultant
- Pipe video using in-house equipment by Township staff
- Smoke or dye tests ("Mr. Rehab" or similar service)
- Public interviews/word of mouth; interview nearby residents, by Township staff.
- Surveillance by Township staff, police and/or engineering staff.

3.3.7 Procedures for Eliminating an Illicit Discharge – Once the source of the illicit discharge is identified, measures must be taken to stop the source. Through this IDD&E Plan, the municipality will respond to the discovery of an illegal connection in a graduated manner. Often, home or business owners are not aware of the existence of illegal connections between their buildings and the storm sewer system. The initial step will involve providing the responsible party with information about the connection, its environmental consequences, the applicable regulations, and how the problem may be corrected in an effort to secure voluntary compliance. In the event that voluntary compliance cannot be secured, the municipality will move to enforcement provisions as outlined within the Act 167/MS4 Ordinance.

When the source of the illicit discharge is due to illegal dumping, elimination of the source becomes more difficult. It is often difficult to identify and locate the individuals responsible for illegal dumping. In these cases, the procedure to eliminate the discharge focuses on prevention, supported by enforcement to the extent possible.

Prevention can often be accomplished through education. Implementation of MCMs #1 and #2 via their respective programs is intended to educate the public on the consequences of illegal dumping. The ordinance developed as part of MCM #3 provides the legal basis for penalties, should they become necessary.

3.3.8 Complaints – The Township has in place a system for logging complaints. Any stormwater-related complaints are referred to the Township's engineering staff for response and may be in conjunction with the Streets Supervisor. Complaints must be made in-person at Township Building. Records of all complaints are maintained at Township Building; any stormwater-related complaints are made part of this SWMP.

3.3.9 Records Retention – All MS4 records are retained by the Maidencreek Township Manager at Township Building, with duplicates stored in the Township Engineer's office. Record retention and disposal is subject to Pennsylvania's Municipal Records Act, and rules promulgated thereunder.

3.4 Ordinance Adoption

Maidencreek Township adopted its Stormwater Management Ordinance, which includes documentation on illicit discharges and penalties, as Ordinance Number 214, on June 12, 2008. Any updates will be properly advertised.

3.5 Reaching Target Audiences about IDD&E

The Township will primarily use Facebook to disseminate information about IDD&E, including what illicit discharges are, how to report them, and how to file complaints.

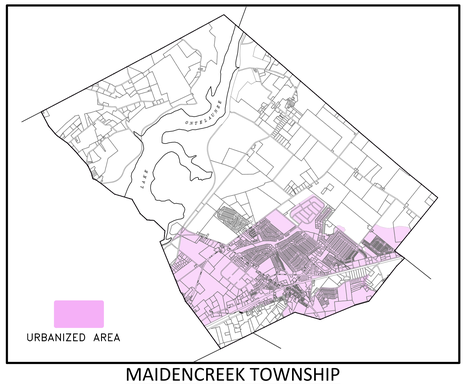
3.6 Evaluation of the IDD&E Program

The IDD&E plan will be evaluated annually throughout the permit term. New outfalls will be mapped as discovered, and will be screened with the others during the routine inspection period. The map will be updated as changes occur. Investigations, enforcement and other actions will be documented and reported.

APPENDIX F

MCM #3 – ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDD&E)

BMP #2 & #3 – MS4 & OUTFALL MAP

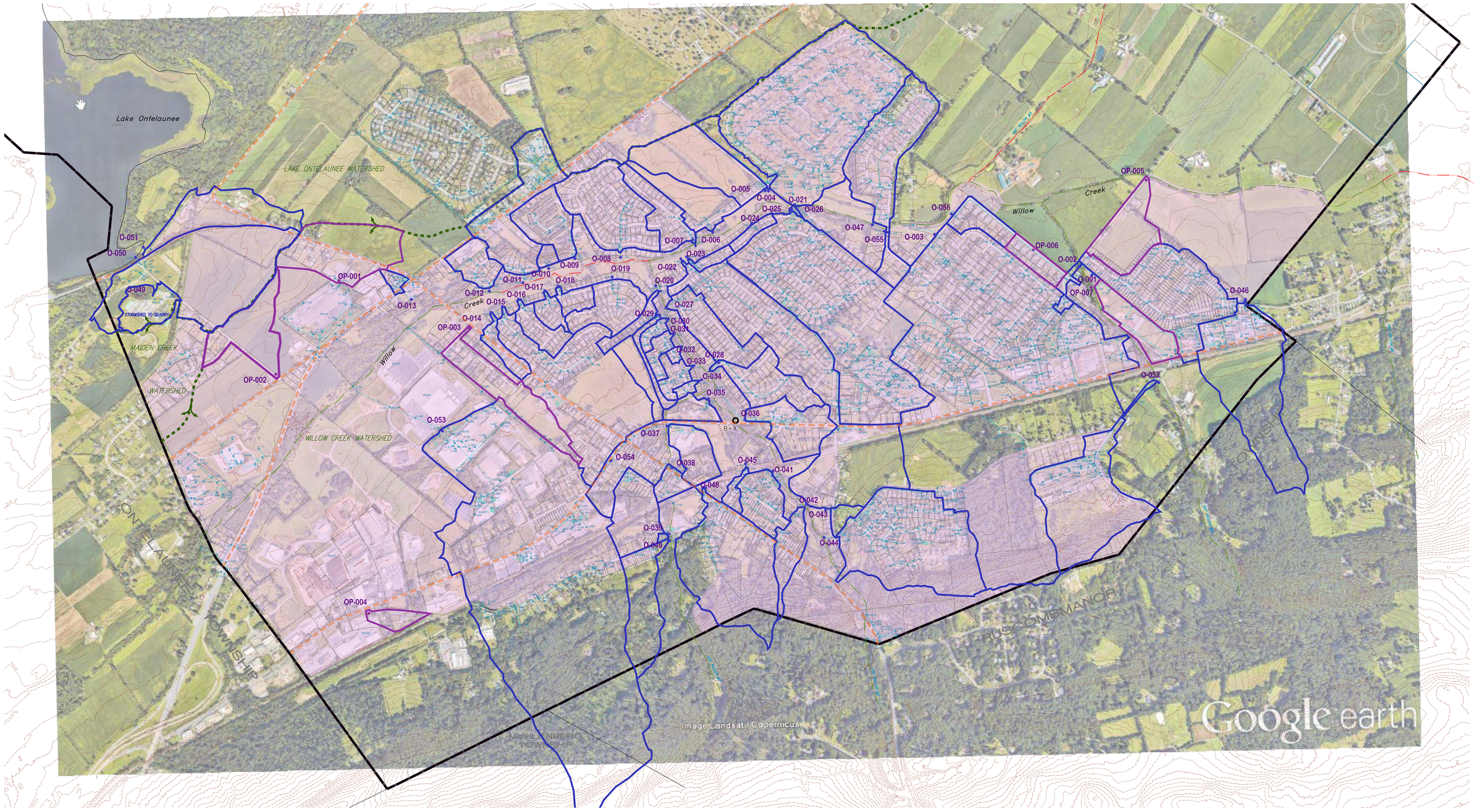


MAIDENCREEK TOWNSHIP

MS4 REQUIREMENTS TABLE		
IMPAIRED DOWNSTREAM WATERS OR APPLICABLE TMDL NAME	REQUIREMENTS	OTHER CAUSE(S) OF IMPAIRMENT
UNNAMED TRIBUTARIES TO WILLOW CREEK	APPENDIX B-PATHOGENS (5)	NONE LISTED
SCHUYLKILL RIVER	APPENDIX C-PCB (4a)	NONE LISTED
MAIDEN CREEK	APPENDIX B-PATHOGENS (5)	OTHER HABITAT ALTERATIONS (4c)
LAKE ONTELAUNEE TMDL	TMDL PLAN-NUTRIENTS, SUSPENDED SOLIDS (4a)	OTHER HABITAT ALTERATIONS (4c)
WILLOW CREEK	APPENDIX B-PATHOGENS(5), APPENDIX E-NUTRIENTS (5)	FLOW ALTERATIONS (4c)

LEGEND

- O-001 MS4 OUTFALL & ID #
- OP-001 MS4 OBSERVATION POINT & ID #
- G-1 EXISTING STORMWATER COLLECTION SYSTEM
- EXISTING STORM PIPE AND FLOW DIRECTION
- EXISTING CHANNEL
- EXISTING STREAM (IMPAIRED-NUTRIENTS)
- EXISTING STREAM (IMPAIRED-PATHOGENS)
- TOWNSHIP ROAD
- STATE ROAD
- ACT 167 WATERSHED BOUNDARY
- STORM SEWERSHED (OUTFALL)
- STORM SEWERSHED (OBSERVATION POINT)
- MUNICIPAL BOUNDARY
- "READING" URBANIZED AREA



SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533 BOYERTOWN, PA 610.369.1319
PHONE: 610.916.8500 FAX: 610.916.8501 SCHUYKILL HAVEN, PA 570.385.5549
SDE Project No.: 17-0019-0191

500 0 250 500 1000

MS4 MAP
MAIDENCREEK TOWNSHIP
BERKS CO., PA.

UPDATED 04/01/19
05/25/2017

SDE, Inc. - J:\Civil Projects\Maidencreek Township\GIS\MS4 & Act 167 Mapping\MS4Map.mxd, April 03, 2019 - 3:37 pm, by "mwelk"

APPENDIX G

MCM #3 – ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDD&E)

BMP #4 – OUTFALL FIELD SCREENING

Maidencreek Township
Illicit Discharge Detection & Elimination Program

Basis for the Program

Maidencreek Township began an IDD & E Program in 2003 for the Municipal Separate Storm Sewer System (MS4) as part of the requirements under the NPDES permit. The Township's MS4 consists of inlets, pipes, swales and outfalls that collect and convey storm water runoff to surface waters like the Willow Creek and its tributaries, the Maidencreek and Lake Ontelaunee. This program lays out strategies to find, correct and prevent discharge that contains pollutants.

Best Management Practice #1 under Minimum Control Measure #3 requires that the Township develop and implement an IDD & E program for the detection, elimination and prevention of illicit discharges in the regulated MS4. The program must be evaluated each year. Outfalls must be inspected, flows observed, and records kept of the inspections, test results, investigations and corrective measures. The Public Works Foreman is responsible for completion of the annual inspections.

Screening Outfalls

All storm water outfalls regulated by the Township's MS4 NPDES permit must be inspected at least once in the five year permit term. The four digit outfall numbers correspond to the Maidencreek Township outfall map. The Township will inspect eight to twelve outfalls a year for the length of the permit. Appendix A contains the Outfall Reconnaissance Inventory/Sample Collection Field Sheet (ORI) to be used in this process.

Outfall screening shall consist of the Township staff visiting the selected outfalls and observing current conditions. They shall look for dry weather flows (no rainfall within the last 48 hours) and/or other evidence of illicit discharge. If illicit discharge is observed or suspected, the discharge will be traced back to the probable source. A sample of suspected illicit discharge will be taken and tested by a certified lab. Collection and laboratory testing will be performed by Suburban Testing Labs 610-375-TEST. Confirmation of illicit discharge by test results will signal the need for follow up action.

Gaining Access to Private Property to Inspect Outfalls

Chapter 182 Article IX Section 182-40 of the Code of Maidencreek Township states:

> *Upon presentation of proper credentials, duly authorized representatives of the Township of Maidencreek may enter at reasonable times upon any property within the Township of Maidencreek to inspect the implementation, condition, or operation and maintenance of the storm water controls or BMPs in regard to any aspect governed by this chapter.*

Eliminating an Illicit Discharge through Prevention and Complaint Tracking

Policing every property's runoff every day is not a realistic expectation of the Township's five member Public Works Department. A combination approach of inspection and public involvement is needed. Prevention of illicit discharge begins with educating the general public. An informed citizenry is a responsible citizenry. Through the Public Education and Outreach Program (PEOP), the Township will educate residents and businesses on how the storm sewer system works, where it drains to and why dumping any substance into it has a negative impact on the waterways. A growing problem is grass in the roadway. The Township will send letters to homeowners who are blowing grass onto roadways when the incident is reported by private citizens or Township personnel.

Residents will be asked to report any illicit discharges to the Township at 610-926-4920. All reported incidents will be written up on a complaint form (Appendix B) and a copy given to the Manager

and the Road Master. The Complaint Form will also be available on the Township Website for residents to email or fax to the township 24 hours a day. A prompt visual inspection of the site will take place, photos and a sample will be taken, and the discharge tracked back to the source. A separate voice mailbox has been set up for illicit discharge complaints.

Record Keeping

All records of illicit discharge will be kept in the annual progress report and a second copy will be filed in the property file where the discharge occurred.

Annual Program Evaluation & Assessment

In May of each calendar year, an activity report of the previous year's IDD & E Program will be compiled. This report will include:

1. the Outfall Reconnaissance Inventory forms,
2. photos,
3. lab reports if samples are taken,
4. citizen complaints and follow up, and
5. the most current outfall map.

APPENDIX A

Updated October 26, 2017, July 25, 2019

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed:		Outfall ID:	
Today's date:		Time (Military):	
Investigators:		Form completed by:	
Temperature (°F):	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

☐ Industrial
☐ Ultra-Urban Residential
☐ Suburban Residential
☐ Commercial
☐ Open Space
☐ Institutional
Other: _____
Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☐ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☐ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

APPENDIX B

COMPLAINT FORM

Brief Description of Problem:-

Complainant's Name: _____

Address: _____

Phone Number: _____

FOR OFFICE USE ONLY:

Date Received: _____ Time: _____

Complaint Received By: _____

Complaint Referred To:

- o Street Department
- o Zoning Department
- o Police Department
- o Water/Sewer Authority
- o Board of Supervisors
- o Other

Action Taken:

Contact Made By: _____

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MS4 OUTFALL FIELD SCREENING REPORT

BACKGROUND INFORMATION

Permittee Name: MCT	NPDES Permit No.: PA
Date of Inspection: 6-26-25	Outfall ID No.: **0-001**
Land Uses in Outfall Drainage Area (Select All):	Latitude: 40° 26' 52N"
☐ Industrial ☐ Urban Residential	Longitude: 75° 51' 39W"
☐ Commercial ☒ Suburban Residential	Dry Weather Inspection? ☑ Yes ☐ No
☐ Open Space ☐ Other:	Date of Previous Precipitation: 6-25-25
	Amount of Previous Precipitation: 1.5 in
Inspector Name(s): BRIAN WISE	Were Photographs Taken? ☑ Yes ☐ No
	Are Photographs Attached? ☑ Yes ☐ No

OUTFALL DESCRIPTION

TYPE	MATERIAL	SHAPE	DIMENSIONS	SUBMERGED
☒ Closed Pipe	☐ RCP ☒ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other	☒ Circular ☒ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other ☐ Other	Diameter: **48** in	☒ In Water ☐ With Sediment
☒ Open Channel	☐ Concrete ☒ Earthen ☐ Rip-Rap ☐ Other	☐ Trapezoid ☒ Parabolic ☐ Other	Depth: **19' 0** in Top Width: **4' 0** in Bottom Width: **7' 6 in**	

Dry Weather Flow Present at Outfall During Inspection? ☐ Yes ☒ No *(If No, skip to Certification Section)*

Description of Flow Rate: ☐ Trickle ☐ Moderate ☐ Significant ☐ N/A

DRY WEATHER FLOW EVALUATION

Does the dry weather flow contain color? ☐ Yes ☐ No If Yes, provide a description below.

Does the dry weather flow contain an odor? ☐ Yes ☐ No If Yes, provide a description below.

Is there an observed change in the receiving waters as a result of the discharge? ☐ Yes ☐ No
If Yes, provide a description below.

Does the dry weather flow contain floating solids, scum, sheen or substances that result in deposits? ☐ Yes ☐ No
If Yes, provide a description below.



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MS4 OUTFALL FIELD SCREENING REPORT

BACKGROUND INFORMATION

Permittee Name: MC Twp	NPDES Permit No.: PA
Date of Inspection: 6-26-2025	Outfall ID No.: **0-002**
Land Uses in Outfall Drainage Area (Select All):	Latitude: 40° 26' 54N"
☐ Industrial ☐ Urban Residential	Longitude: 75° 51' 41W"
☐ Commercial ☒ Suburban Residential	Dry Weather Inspection? ☒ Yes ☐ No
☐ Open Space ☐ Other:	Date of Previous Precipitation: 6-25-25
	Amount of Previous Precipitation: 1.5 in
Inspector Name(s): Brian Wise	Were Photographs Taken? ☒ Yes ☐ No
	Are Photographs Attached? ☐ Yes ☐ No

OUTFALL DESCRIPTION

TYPE	MATERIAL	SHAPE	DIMENSIONS	SUBMERGED
☒ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☒ HDPE ☐ Steel ☐ Other	☒ Circular ☐ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other ☐ Other	Diameter: **16** in	☐ In Water ☐ With Sediment
☒ Open Channel	☐ Concrete ☐ Earthen ☒ Rip-Rap ☐ Other	☒ Trapezoid ☐ Parabolic ☐ Other	Depth: **5' 0** in Top Width: **4' 0** in Bottom Width: **7' 6 in**	

Dry Weather Flow Present at Outfall During Inspection? ☐ Yes ☒ No *(If No, skip to Certification Section)*

Description of Flow Rate: ☐ Trickle ☐ Moderate ☐ Significant ☐ N/A

DRY WEATHER FLOW EVALUATION

Does the dry weather flow contain color? ☐ Yes ☐ No If Yes, provide a description below.

Does the dry weather flow contain an odor? ☐ Yes ☐ No If Yes, provide a description below.

Is there an observed change in the receiving waters as a result of the discharge? ☐ Yes ☐ No
If Yes, provide a description below.

Does the dry weather flow contain floating solids, scum, sheen or substances that result in deposits? ☐ Yes ☐ No
If Yes, provide a description below.


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MS4 OUTFALL FIELD SCREENING REPORT

BACKGROUND INFORMATION

Permittee Name: MET	NPDES Permit No.: PA
Date of Inspection: 6-26-25	Outfall ID No.: **0-003**
Land Uses in Outfall Drainage Area (Select All):	Latitude: 40° 26' 58N"
☐ Industrial ☐ Urban Residential	Longitude: 75° 52' 10W"
☐ Commercial ☒ Suburban Residential	Dry Weather Inspection? ☒ Yes ☐ No
☐ Open Space ☐ Other:	Date of Previous Precipitation: 6-25-25
	Amount of Previous Precipitation: 1.5 in
Inspector Name(s):	Were Photographs Taken? ☒ Yes ☐ No
	Are Photographs Attached? ☒ Yes ☐ No

OUTFALL DESCRIPTION

TYPE	MATERIAL	SHAPE	DIMENSIONS	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☒ HDPE ☐ Steel ☐ Other	☐ Circular ☐ Single ☐ Elliptical ☐ Double ☐ Box ☒ Triple ☐ Other ☐ Other	Diameter: **1 at 48in 2 at 24** in	☒ In Water ☒ With Sediment
☐ Open Channel	☐ Concrete ☒ Earthen ☒ Rip-Rap ☐ Other	☐ Trapezoid ☒ Parabolic ☐ Other	Depth: **61' 0** in Top Width: **8' 0** in Bottom Width: **13' 0**	

Dry Weather Flow Present at Outfall During Inspection? ☒ Yes ☐ No *(If No, skip to Certification Section)*

Description of Flow Rate: ☒ Trickle ☐ Moderate ☐ Significant ☐ N/A

DRY WEATHER FLOW EVALUATION

Does the dry weather flow contain color? ☐ Yes ☒ No If Yes, provide a description below.

Does the dry weather flow contain an odor? ☐ Yes ☒ No If Yes, provide a description below.

Is there an observed change in the receiving waters as a result of the discharge? ☐ Yes ☒ No
If Yes, provide a description below.

Does the dry weather flow contain floating solids, scum, sheen or substances that result in deposits? ☐ Yes ☒ No
If Yes, provide a description below.

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MS4 OUTFALL FIELD SCREENING REPORT

BACKGROUND INFORMATION

Permittee Name: ~~[illegible]~~ MC Twp	NPDES Permit No.: PA
Date of Inspection: 6-26-25	Outfall ID No.: **0-004**
Land Uses in Outfall Drainage Area (Select All):	Latitude: 40° 27' 06N"
☐ Industrial ☐ Urban Residential	Longitude: 75° 52' 43W"
☐ Commercial ☐ Suburban Residential	Dry Weather Inspection? ☒ Yes ☐ No
☐ Open Space ☐ Other:	Date of Previous Precipitation: 6-25-25
	Amount of Previous Precipitation: 1.5 in
Inspector Name(s):	Were Photographs Taken? ☒ Yes ☐ No
	Are Photographs Attached? ☒ Yes ☐ No

OUTFALL DESCRIPTION

TYPE	MATERIAL	SHAPE	DIMENSIONS	SUBMERGED
☒ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☒ HDPE ☐ Steel ☐ Other	☒ Circular ☒ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other ☐ Other	Diameter: **18"** in	☐ In Water ☒ With Sediment
☒ Open Channel	☐ Concrete ☒ Earthen ☒ Rip-Rap ☐ Other	☒ Trapezoid ☐ Parabolic ☐ Other	Depth: **3' 0** in Top Width: **1' 6** in Bottom Width: **3'**	

Dry Weather Flow Present at Outfall During Inspection? ☒ Yes ☐ No *(If No, skip to Certification Section)*

Description of Flow Rate: ☐ Trickle ☐ Moderate ☐ Significant ☐ N/A

DRY WEATHER FLOW EVALUATION

Does the dry weather flow contain color? ☐ Yes ☐ No If Yes, provide a description below.

Does the dry weather flow contain an odor? ☐ Yes ☐ No If Yes, provide a description below.

Is there an observed change in the receiving waters as a result of the discharge? ☐ Yes ☐ No
If Yes, provide a description below.

Does the dry weather flow contain floating solids, scum, sheen or substances that result in deposits? ☐ Yes ☐ No
If Yes, provide a description below.

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MS4 OUTFALL FIELD SCREENING REPORT

BACKGROUND INFORMATION

Permittee Name: MC Twp	NPDES Permit No.: PA
Date of Inspection: 6-26-25	Outfall ID No.: **0-005**
Land Uses in Outfall Drainage Area (Select All):	Latitude: 40° 27' 06N"
☐ Industrial ☐ Urban Residential	Longitude: 75° 52' 43W"
☐ Commercial ☐ Suburban Residential	Dry Weather Inspection? ☒ Yes ☐ No
☒ Open Space ☐ Other:	Date of Previous Precipitation: 6-25-25
	Amount of Previous Precipitation: 1.5 in
Inspector Name(s):	Were Photographs Taken? ☒ Yes ☐ No
	Are Photographs Attached? ☒ Yes ☐ No

OUTFALL DESCRIPTION

TYPE	MATERIAL	SHAPE	DIMENSIONS	SUBMERGED
☒ Closed Pipe	☐ RCP ☒ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other	☒ Circular ☒ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other ☐ Other	Diameter: _____ in	☐ In Water ☐ With Sediment
☒ Open Channel	☐ Concrete ☒ Earthen ☒ Rip-Rap ☐ Other	☐ Trapezoid ☒ Parabolic ☐ Other	Depth: **20' 0** in Top Width: **5' 0** in Bottom Width: **6' 6"**	

Dry Weather Flow Present at Outfall During Inspection? ☐ Yes ☒ No *(If No, skip to Certification Section)*

Description of Flow Rate: ☐ Trickle ☐ Moderate ☐ Significant ☐ N/A

DRY WEATHER FLOW EVALUATION

Does the dry weather flow contain color? ☐ Yes ☐ No If Yes, provide a description below.

Does the dry weather flow contain an odor? ☐ Yes ☐ No If Yes, provide a description below.

Is there an observed change in the receiving waters as a result of the discharge? ☐ Yes ☐ No
If Yes, provide a description below.

Does the dry weather flow contain floating solids, scum, sheen or substances that result in deposits? ☐ Yes ☐ No
If Yes, provide a description below.


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MS4 OUTFALL FIELD SCREENING REPORT

BACKGROUND INFORMATION

Permittee Name: MC Twp	NPDES Permit No.: PA
Date of Inspection: 6-26-25	Outfall ID No.: **0-024**
Land Uses in Outfall Drainage Area (Select All):	Latitude: 40° 27' 01N"
☐ Industrial ☐ Urban Residential	Longitude: 75° 52' 45W"
☐ Commercial ☒ Suburban Residential	Dry Weather Inspection? ☒ Yes ☐ No
☐ Open Space ☐ Other:	Date of Previous Precipitation: 6-25-25
	Amount of Previous Precipitation: 1.5 in
Inspector Name(s):	Were Photographs Taken? ☒ Yes ☐ No
	Are Photographs Attached? ☒ Yes ☐ No

OUTFALL DESCRIPTION

TYPE	MATERIAL	SHAPE	DIMENSIONS	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other	☐ Circular ☒ Single ☒ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other ☐ Other	Diameter: **30x16** in	☐ In Water ☒ With Sediment
☒ Open Channel	☐ Concrete ☒ Earthen ☐ Rip-Rap ☐ Other	☒ Trapezoid ☐ Parabolic ☐ Other	Depth: **5' 0** in Top Width: **3' 3** in Bottom Width: **8' 0 in**	

Dry Weather Flow Present at Outfall During Inspection? ☐ Yes ☒ No *(If No, skip to Certification Section)*

Description of Flow Rate: ☐ Trickle ☐ Moderate ☐ Significant ☐ N/A

DRY WEATHER FLOW EVALUATION

Does the dry weather flow contain color? ☐ Yes ☐ No If Yes, provide a description below.

Does the dry weather flow contain an odor? ☐ Yes ☐ No If Yes, provide a description below.

Is there an observed change in the receiving waters as a result of the discharge? ☐ Yes ☐ No
If Yes, provide a description below.

Does the dry weather flow contain floating solids, scum, sheen or substances that result in deposits? ☐ Yes ☐ No
If Yes, provide a description below.


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MS4 OUTFALL FIELD SCREENING REPORT

BACKGROUND INFORMATION

Permittee Name: MC TWP	NPDES Permit No.: PA
Date of Inspection: 6-26-25	Outfall ID No.: **0-026**
Land Uses in Outfall Drainage Area (Select All):	Latitude: 40° 27' 03N"
☐ Industrial ☐ Urban Residential	Longitude: 75° 52' 38W"
☐ Commercial ☐ Suburban Residential	Dry Weather Inspection? ☒ Yes ☐ No
☒ Open Space ☐ Other:	Date of Previous Precipitation: 6-25-25
	Amount of Previous Precipitation: 1.5 in
Inspector Name(s):	Were Photographs Taken? ☒ Yes ☐ No
	Are Photographs Attached? ☐ Yes ☐ No

OUTFALL DESCRIPTION

TYPE	MATERIAL	SHAPE	DIMENSIONS	SUBMERGED
☒ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☒ HDPE ☐ Steel ☐ Other	☒ Circular ☒ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other ☐ Other	Diameter: **18** in	☐ In Water ☐ With Sediment
☒ Open Channel	☐ Concrete ☐ Earthen ☒ Rip-Rap ☐ Other	☒ Trapezoid ☐ Parabolic ☐ Other	Depth: **22' 0** in Top Width: **9' 0** in Bottom Width: **5' 0 in**	

Dry Weather Flow Present at Outfall During Inspection? ☐ Yes ☒ No *(If No, skip to Certification Section)*

Description of Flow Rate: ☐ Trickle ☐ Moderate ☐ Significant ☐ N/A

DRY WEATHER FLOW EVALUATION

Does the dry weather flow contain color? ☐ Yes ☐ No If Yes, provide a description below.

Does the dry weather flow contain an odor? ☐ Yes ☐ No If Yes, provide a description below.

Is there an observed change in the receiving waters as a result of the discharge? ☐ Yes ☐ No
If Yes, provide a description below.

Does the dry weather flow contain floating solids, scum, sheen or substances that result in deposits? ☐ Yes ☐ No
If Yes, provide a description below.


0-026

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MS4 OUTFALL FIELD SCREENING REPORT

BACKGROUND INFORMATION

Permittee Name: MCT	NPDES Permit No.: PA
Date of Inspection: 6-26-25	Outfall ID No.: **0-046**
Land Uses in Outfall Drainage Area (Select All):	Latitude: 40° 26' 46N"
☐ Industrial ☐ Urban Residential	Longitude: 75° 51' 07W"
☐ Commercial ☐ Suburban Residential	Dry Weather Inspection? ☑ Yes ☐ No
☒ Open Space ☐ Other:	Date of Previous Precipitation: 6-25-25
	Amount of Previous Precipitation: in
Inspector Name(s):	Were Photographs Taken? ☒ Yes ☐ No
	Are Photographs Attached? ☒ Yes ☐ No

OUTFALL DESCRIPTION

TYPE	MATERIAL	SHAPE	DIMENSIONS	SUBMERGED
☒ Closed Pipe	☒ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other	☐ Circular ☒ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☒ Other ☐ Other	Diameter: **36x21** in	☒ In Water ☒ With Sediment
☐ Open Channel	☐ Concrete ☐ Earthen ☐ Rip-Rap ☒ Other	☐ Trapezoid ☒ Parabolic ☐ Other	Depth: **5' 0** in Top Width: **3' 0** in Bottom Width: **3' 0 in**	

Dry Weather Flow Present at Outfall During Inspection? ☒ Yes ☐ No *(If No, skip to Certification Section)*

Description of Flow Rate: ☐ Trickle ☒ Moderate ☐ Significant ☐ N/A

DRY WEATHER FLOW EVALUATION

Does the dry weather flow contain color? ☐ Yes ☒ No If Yes, provide a description below.

Does the dry weather flow contain an odor? ☐ Yes ☒ No If Yes, provide a description below.

Is there an observed change in the receiving waters as a result of the discharge? ☐ Yes ☒ No
If Yes, provide a description below.

Does the dry weather flow contain floating solids, scum, sheen or substances that result in deposits? ☐ Yes ☒ No
If Yes, provide a description below.


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MS4 OUTFALL FIELD SCREENING REPORT

BACKGROUND INFORMATION

Permittee Name: MCTwp	NPDES Permit No.: PA
Date of Inspection: 6-26-25	Outfall ID No.: **0-052**
Land Uses in Outfall Drainage Area (Select All):	Latitude: 40° 44' 34N"
☐ Industrial ☐ Urban Residential	Longitude: 075° 85' 765W"
☐ Commercial ☐ Suburban Residential	Dry Weather Inspection? ☑ Yes ☐ No
☒ Open Space ☐ Other:	Date of Previous Precipitation: 6-25-25
	Amount of Previous Precipitation: 1.5 in
Inspector Name(s): Brian Wise	Were Photographs Taken? ☒ Yes ☐ No
	Are Photographs Attached? ☒ Yes ☐ No

OUTFALL DESCRIPTION

TYPE	MATERIAL	SHAPE	DIMENSIONS	SUBMERGED
☐ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☒ Steel ☐ Other	☒ Circular ☒ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other ☐ Other	Diameter: **36** in	☐ In Water ☐ With Sediment
☐ Open Channel	☐ Concrete ☐ Earthen ☐ Rip-Rap ☒ Other	☐ Trapezoid ☐ Parabolic ☐ Other	Depth: _____ in Top Width: _____ in Bottom Width: _____	

Dry Weather Flow Present at Outfall During Inspection? ☑ Yes ☐ No *(If No, skip to Certification Section)*

Description of Flow Rate: ☑ Trickle ☐ Moderate ☐ Significant ☐ N/A

DRY WEATHER FLOW EVALUATION

Does the dry weather flow contain color? ☐ Yes ☒ No If Yes, provide a description below.

Does the dry weather flow contain an odor? ☐ Yes ☑ No If Yes, provide a description below.

Is there an observed change in the receiving waters as a result of the discharge? ☐ Yes ☑ No
If Yes, provide a description below.

Does the dry weather flow contain floating solids, scum, sheen or substances that result in deposits? ☐ Yes ☒ No
If Yes, provide a description below.


O-052

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

MS4 OUTFALL FIELD SCREENING REPORT

BACKGROUND INFORMATION

Permittee Name: MC Twp	NPDES Permit No.: PA
Date of Inspection: 6-26-25	Outfall ID No.: **0-053**
Land Uses in Outfall Drainage Area (Select All):	Latitude: 40° 26' 31N"
☐ Industrial ☐ Urban Residential	Longitude: 75° 53' 48W"
☒ Commercial ☐ Suburban Residential	Dry Weather Inspection? ☒ Yes ☐ No
☐ Open Space ☐ Other:	Date of Previous Precipitation: 6-25-25
	Amount of Previous Precipitation: 1.5 in
Inspector Name(s):	Were Photographs Taken? ☒ Yes ☐ No
	Are Photographs Attached? ☒ Yes ☐ No

OUTFALL DESCRIPTION

TYPE	MATERIAL	SHAPE	DIMENSIONS	SUBMERGED
☒ Closed Pipe	☐ RCP ☒ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other	☒ Circular ☒ Single ☐ Elliptical ☐ Double ☐ Box ☐ Triple ☐ Other ☐ Other	Diameter: **24** in	☒ In Water ☒ With Sediment
☒ Open Channel	☐ Concrete ☒ Earthen ☐ Rip-Rap ☐ Other	☐ Trapezoid ☒ Parabolic ☐ Other	Depth: **15' 0** in Top Width: **2' 6** in Bottom Width: **3' 6 in**	

Dry Weather Flow Present at Outfall During Inspection? ☐ Yes ☒ No *(If No, skip to Certification Section)*

Description of Flow Rate: ☐ Trickle ☐ Moderate ☐ Significant ☐ N/A

DRY WEATHER FLOW EVALUATION

Does the dry weather flow contain color? ☐ Yes ☐ No If Yes, provide a description below.

Does the dry weather flow contain an odor? ☐ Yes ☐ No If Yes, provide a description below.

Is there an observed change in the receiving waters as a result of the discharge? ☐ Yes ☐ No
If Yes, provide a description below.

Does the dry weather flow contain floating solids, scum, sheen or substances that result in deposits? ☐ Yes ☐ No
If Yes, provide a description below.


0-053

SAMPLE OUTFALL SCREENING FORM

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed:		Outfall ID:	
Today's date:		Time (Military):	
Investigators:		Form completed by:	
Temperature (°F):	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: _____
- Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☐ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☐ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☐ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

COMPLAINT FORM

Brief Description of Problem:-

_____

_____

_____

_____

_____

_____

_____

Complainant's Name: _____

Address: _____

Phone Number: _____

FOR OFFICE USE ONLY:

Date Received: _____ Time: _____

Complaint Received By: _____

Complaint Referred To:

- o Street Department
- o Zoning Department
- o Police Department
- o Water/Sewer Authority
- o Board of Supervisors
- o Other

Action Taken:

_____

_____

_____

_____

Contact Made By: _____

APPENDIX H

MCM #3 – ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDD&E)

BMP #5 – ACT 167 AND MS4 ORDINANCE #214

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ORDINANCE NO. 256

AN ORDINANCE OF THE TOWNSHIP OF MAIDENCREEK, BERKS COUNTY, PENNSYLVANIA, AMENDING THE CODE OF ORDINANCES OF THE TOWNSHIP, BY AMENDING AND REPLACING CHAPTER 182, STORMWATER MANAGEMENT

WHEREAS, Maidencreek Township is a Township of the Second Class located in the County of Berks, Commonwealth of Pennsylvania; and

WHEREAS, pursuant to Act of October 4, 1978, P.L. 864 (Act 167), 32 P.S. § 680.1, et seq., as amended, the "Storm Water Management Act" and the Second Class Township Code, 53 P.S. §65101 et seq., as amended; and

WHEREAS, the Board of Supervisors of Maidencreek Township have enacted regulations regarding Stormwater Management, which are codified within Chapter 182 of the Code of Ordinance of the Township of Maidencreek; and

Whereas, The Board of Supervisors has determined that it is in the best interest of Maidencreek Township, to amend its Code of Ordinances to amend and replace the regulations related to Stormwater Management, for violations of its Code and the enforcement of the same.

NOW, THEREFORE, BE IT ENACTED AND ORDAINED, the Board of Supervisors of the Township of Maidencreek, Berks County, Pennsylvania, pursuant to the authority granted under and pursuant to the Stormwater Management Act and the Second Class Township Code, hereby amends its Code of Ordinances as follows:

SECTION 1. Chapter 182, Stormwater Management, shall be amended and replaced to read as set forth in Exhibit "A," attached hereto.

SECTION 2. Severability. The provisions of this Ordinance are severable, and if any provision, section, sentence, clause, pr part of this Ordinance shall be held to be invalid, illegal, or unconstitutional by a court of competent jurisdiction, such decision of the court shall not affect or impair the remaining provisions, sections, sentences, clauses, or parts of this Ordinance.

SECTION 3. Repealer. All existing ordinances and parts thereof which are contrary to the provisions of this Ordinance are hereby repealed to the extent necessary to give this Ordinance full force and effect.

SECTION 4. Ratification. All existing ordinances and parts thereof which are not impacted by the provisions of this Ordinance are hereby ratified and affirmed and shall remain in full force and effect.

SECTION 5. Effective Date. The effective date of this Ordinance shall be immediately upon its adoption.

ORDAINED and ENACTED as an Ordnance by the Board of Supervisors of Maidencreek Township, County of Berks, Pennsylvania in lawful Session duly assembled, this 14th day of September, 2023.

MADIENCREEK TOWNSHIP
BOARD OF SUPERVISORS

By: _____
David Franke, Chairman

By: _____
Joshua Meck, Vice - Chairman

By: _____
Heidi, Fiedler, Supervisor

Attest:

_____
Christina Hafer, Secretary

MAIDEN CREEK WATERSHED

STORMWATER MANAGEMENT

ORDINANCE

ORDINANCE NO. 256

MAIDENCREEK TOWNSHIP, BERKS COUNTY,

PENNSYLVANIA

Adopted at a Public Meeting Held on

September 14, 2023

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ARTICLE I
General Provisions

§ 182-1. Short Title.

This Ordinance shall be known and may be cited as the "Maiden Creek Watershed Stormwater Management Ordinance").

§ 182-2. Statement of Findings.

The governing body of the Township of Maidencreek finds that:

A. Inadequate management of accelerated stormwater runoff resulting from development throughout a watershed increases runoff volumes, flows and velocities, contributes to erosion and sedimentation, overtaxes the carrying capacity of existing streams and storm sewers, greatly increases the cost of public facilities to convey and manage stormwater, undermines floodplain management and flood reduction efforts in downstream communities, reduces groundwater recharge, threatens public health and safety, and increases nonpoint source pollution of water resources.

B. Inadequate planning and management of stormwater runoff resulting from land development and redevelopment throughout a watershed can also harm surface water resources by changing the natural hydrologic patterns, accelerating stream flows (which increase scour and erosion of stream-beds and stream-banks thereby elevating sedimentation), destroying aquatic habitat and elevating aquatic pollutant concentrations and loadings such as sediments, nutrients, heavy metals and pathogens. Groundwater resources are also impacted through loss of recharge.

C. A comprehensive program of stormwater management (SWM), including minimization of impacts of development, redevelopment and activities causing accelerated erosion, is fundamental to the public health, safety, welfare, and the protection of the people of the Municipality and all the people of the Commonwealth, their resources, and the environment.

D. Inadequate management of accelerated stormwater runoff resulting from development throughout a watershed poses a threat to surface and groundwater quality.

E. Stormwater can be an important water resource by providing groundwater recharge for water supplies and base flow of streams, which also protects and maintains surface water quality.

F. Through project design, impacts from stormwater runoff can be minimized to maintain the natural hydrologic regime, and sustain high water quality, groundwater recharge, stream baseflow and aquatic ecosystems. The most cost effective and environmentally advantageous way to manage storm water runoff is through nonstructural project design, minimizing impervious surfaces and sprawl, avoiding sensitive areas (i.e. stream buffers, floodplains, steep slopes), and designing to topography and soils to maintain the natural hydrologic regime.

G. Public education on the control of pollution from stormwater is an essential component in successfully addressing stormwater.

H. The use of green infrastructure and low impact development (LID) are intended to address the root cause of water quality impairment by using systems and practices which use or mimic natural processes to: 1) infiltrate and recharge, 2) evapotranspiration, and/or 3) harvest and use precipitation

near where it falls to earth. Green infrastructure practices and LID contribute to the restoration or maintenance of pre-development hydrology.

I. Federal and state regulations require certain municipalities to implement a program of stormwater controls. These municipalities are required to obtain a permit for stormwater discharges from their separate storm sewer systems under the National Pollutant Discharge Elimination System (NPDES) program.

J. Non-stormwater discharges to municipal separate storm sewer systems can contribute to pollution of waters of the Commonwealth by the Municipality.

§ 182-3. Purpose.

The purpose of this Ordinance is to promote the public health, safety, and welfare within the Maiden Creek Watershed by maintaining the natural hydrologic regime by minimizing the impacts described in § 182-2 of this chapter through provisions designed to:

A. Promote alternative project designs and layout that minimizes impacts to surface and ground water.

B. Promote nonstructural BMPs.

C. Minimize increases in stormwater volume.

D. Minimize impervious surfaces.

E. Manage accelerated runoff and erosion and sedimentation problems at their source by regulating activities that cause these problems.

F. Utilize and preserve the existing natural drainage systems.

G. Manage stormwater impacts close to the runoff source, reduce runoff volumes and mimic predevelopment hydrology.

H. Provide procedures and performance standards for stormwater planning and management.

I. Focus on infiltration of stormwater, to maintain groundwater recharge, to prevent degradation of surface and groundwater quality and to otherwise protect water resources.

J. Strive to maintain existing base flows and quality of streams and watercourses.

K. Meet legal water quality requirements under state law, including regulations at 25 Pa. Code Chapter 93.4a to protect and maintain "existing uses" and maintain the level of water quality to support those uses in all streams, and to protect and maintain water quality in "special protection" streams.

L. Address the quality and quantity of stormwater discharges from the development site.

M. Provide a mechanism to identify controls necessary to meet the NPDES permit requirements.

N. Implement an illegal discharge detection and elimination program to address non-stormwater discharges into the Township of Maidencreek's separate storm sewer system.

O. Preserve and restore the flood-carrying capacity of streams.

P. Prevent scour and erosion of streambanks and streambeds.

Q. Provide proper operation and maintenance of all permanent stormwater management facilities and BMPs that are implemented in the Township of Maidencreek.

R. Provide performance standards and design criteria for watershed-wide stormwater management and planning.

S. NPDES Requirements. Federal regulations approved October 1999 require operators of small municipal separate storm sewer systems (MS4s) to obtain NPDES Phase II permits from DEP by March 2003. (NPDES II is an acronym for the National Pollutant Discharge Elimination System Phase II Stormwater Permitting Regulations.) This program affects all municipalities in "urbanized areas" of the state. This definition applies to all Maiden Creek watershed municipalities identified in Table III-1 of the Maiden Creek Stormwater Management Plan Volume II as NPDES Phase II municipalities. Therefore, these identified municipalities will be subject to the NPDES Phase II requirements mandated by the Federal Clean Water Act as administered by DEP. For more information on NPDES II requirements, contact the DEP Regional Office.

§ 182-4. Statutory Authority.

A. Primary Authority. The Township of Maidencreek is empowered to regulate these activities by the authority of the Act of October 4, 1978, P.L. 864 (Act 167), 32 P.S. Section 680.1, et seq., as amended, the "Storm Water Management Act" and the Second Class Township Code, 53 P.S. Section 65101 et seq., as amended.

B. Secondary Authority. The Township of Maidencreek also is empowered to regulate land use activities that affect runoff by the authority of the Act of July 31, 1968, P.L. 805, No. 247, The Pennsylvania Municipalities Planning Code, as amended.

§ 182-5. Applicability/Regulated Activities.

All Regulated Activities and all activities that may affect stormwater runoff, including Land Development and Earth Disturbance Activity, are subject to regulation by this chapter.

§ 182-6. Compatibility With Other Requirements.

Approvals issued and actions taken under this chapter do not relieve the Applicant of the responsibility to secure required permits or approvals for activities by any other code, law, regulation, or ordinance.

ARTICLE II
Terminology

§ 182-7. Word usage; interpretation.

For the purposes of this chapter, certain terms and words used herein shall be interpreted as follows:

A. Words used in the present tense include the future tense; the singular number includes the plural, and the plural number includes the singular; words of masculine gender include feminine gender; and words of feminine gender include masculine gender.

B. The word "includes" or "including" shall not limit the term to the specific example but is intended to extend its meaning to all other instances of like kind and character.

C. The word "person" includes an individual, firm, association, organization, partnership, trust, company, corporation, unit of government, or any other similar entity.

D. The words "shall" and "must" are mandatory; the words "may" and "should" are permissive.

E. The words "used or occupied" include the words "intended, designed, maintained, or arranged to be used, occupied or maintained."

§ 182-8. Definitions.

As used in this chapter, the following terms shall have the meanings indicated:

ACCELERATED EROSION - The removal of the surface of the land through the combined action of man's activity and the natural processes of a rate greater than would occur because of the natural process alone.

AGRICULTURAL ACTIVITIES - The work of producing crops and raising livestock including tillage, plowing, disking, harrowing, pasturing and installation of conservation measures. For purposes of regulation by this chapter, construction of new buildings or impervious area is not considered an agricultural activity.

ALTERATION - As applied to land, a change in topography as a result of the moving of soil and rock from one location or position to another; also, the changing of surface conditions by causing the surface to be more or less impervious; land disturbance.

APPLICANT - A person who has filed an application for approval to engage in any Regulated Activities as defined in § 182-5 of this chapter.

AS-BUILT DRAWINGS - Those maintained by the Contractor as he constructs the project and upon which he documents the actual locations of the building components and changes to the original contract documents. These, or a copy of same, are turned over to the Engineer at the completion of the project.

BANKFULL - The channel at the top-of-bank or point where water begins to overflow onto a floodplain.

BASE FLOW - Portion of stream discharge derived from groundwater; the sustained discharge that does not result from direct runoff or from water diversions, reservoir releases, piped discharges, or other human activities.

BIORETENTION - A stormwater retention area which utilizes woody and herbaceous plants and soils to remove pollutants before infiltration occurs.

BEST MANAGEMENT PRACTICE (BMP) – Activities, facilities, designs, measures, or procedures used to manage stormwater impacts from regulated activities, to meet state water quality requirements, to promote groundwater recharge, and to otherwise meet the purposes of this chapter. Stormwater BMPs are commonly grouped into one of two broad categories or measures: "structural" or "non-structural." In this chapter, non-structural BMPs or measures refer to operational and/or behavior-related practices that attempt to minimize the contact of pollutants with stormwater runoff, whereas structural BMPs or measures are those that consist of a physical device or practice that is installed to capture and treat stormwater runoff. Structural BMPs include, but are not limited to, a wide variety of practices and devices, from large-scale retention ponds and constructed wetlands to small-scale underground treatment systems, infiltration facilities, filter strips, low impact design, bioretention, wet ponds, permeable paving, grassed swales, riparian or forested buffers, sand filters, detention basins, and manufactured devices. Structural stormwater BMPs are permanent appurtenances to the project site.

BUFFER - The area of land immediately adjacent to any stream, measured perpendicular to and horizontally from the top-of-bank on both sides of a stream.

CARBONATE BEDROCK (AREAS) - Rock consisting chiefly of carbonate minerals, such as limestone and dolomite; specifically a sedimentary rock composed of more than 50% by weight of carbonate minerals that underlies soil or other unconsolidated, superficial material.

CHANNEL - A drainage element in which stormwater flows with an open surface. Open channels include, but shall not be limited to, natural and man-made drainage ways, swales, streams, ditches, canals, and pipes flowing partly full.

CHANNEL EROSION - The widening, deepening, and headward cutting of small channels and waterways, caused by stormwater runoff or bankfull flows.

CISTERN - An underground reservoir or tank for storing rainwater.

CONSERVATION DISTRICT - The Berks County Conservation District, has the authority under a delegation agreement executed with DEP to administer and enforce all or a portion of the regulations promulgated under 25 Pa. Code 102.

CULVERT - A structure with appurtenant works, which carries water under or through an embankment or fill.

DAM - An artificial barrier, together with its appurtenant works, constructed for the purpose of impounding or storing water or another fluid or semifluid, or a refuse bank, fill or structure for highway, railroad or other purposes which does or may impound water or another fluid or semifluid.

DEPARTMENT (DEP) - The Pennsylvania Department of Environmental Protection.

DESIGNATED WATERSHED (ACT 167) - A Watershed which is listed under the Pennsylvania Department of Environmental Protection's "Index of Designated Watersheds (Stormwater Management)" pursuant to the Stormwater Management Act P.L. 864, No. 167, October 4, 1978, and published in the Pennsylvania Bulletin on May 31, 1980 and August 9, 1980, as amended on November 19, 1991, April 21, 1992, June 21, 1994, April 16, 1996, April 15, 1997 and December 16, 1997.

DESIGNEE - The agent of the Berks County Planning Commission, Berks County Conservation District and/or agent of the governing body involved with the administration, review or enforcement of any provisions of this ordinance by contract or memorandum of understanding.

DESIGN PROFESSIONAL (QUALIFIED) - Any person licensed by the Pennsylvania Department of State or otherwise qualified by law to perform the work required by this chapter.

DESIGN STORM - The magnitude and temporal distribution of precipitation from a storm event measured in probability of occurrence (e.g., a five-year storm) and duration (e.g., 24-hours), used in the design and evaluation of stormwater management systems. Also see Return Period.

DETENTION BASIN - An impoundment designed to collect and retard stormwater runoff by temporarily storing the runoff and releasing it at a predetermined rate. Detention basins are designed to drain completely shortly after any given rainfall event and are dry until the next rainfall event.

DETENTION VOLUME – The volume of runoff that is captured and released into the waters of the Commonwealth at a controlled rate.

DETENTION DISTRICT - Those subareas in which some type of detention is required to meet the plan requirements and the goals of Act 167.

DEVELOPER - A person that seeks to undertake any Regulated Earth Disturbance activities at a project site in the Township of Maidencreek.

DEVELOPMENT - See "Earth Disturbance Activity." The term includes redevelopment.

DEVELOPMENT SITE - The specific tract of land where any Earth Disturbance activities in the Township of Maidencreek are planned, conducted, or maintained.

DIFFUSED DRAINAGE DISCHARGE - Drainage discharge not confined to a single point location or channel, such as sheet flow or shallow concentrated flow.

DISCHARGE - To release water from a project, site, aquifer, drainage basin or other point of interest (verb); The rate and volume of flow of water such as in a stream, generally expressed in cubic feet per second (volume per unit of time) (noun). See also Peak Discharge.

DISCHARGE POINT - The point where stormwater flow into.

DISTURBED AREAS - Unstabilized land area where an earth disturbance activity is occurring or has occurred.

DITCH - An artificial waterway for irrigation or stormwater conveyance.

DOWNSLOPE PROPERTY LINE - That portion of the property line of the lot, tract, or parcels of land being developed located such that overland or pipe flow from the site would be directed towards it.

DRAINAGE CONVEYANCE FACILITY - A Stormwater Management Facility designed to transmit stormwater runoff and shall include channels, swales, pipes, conduits, culverts, storm sewers, etc.

DRAINAGE EASEMENT - A right granted by a landowner to a grantee, allowing the use of private land for stormwater management purposes.

DRAINAGE PERMIT - A permit issued by the Municipal governing body after the drainage plan has been approved.

DRAINAGE PLAN - The documentation of the stormwater management system, if any, to be used for a given development site, the contents of which are established in § 182-22.

EARTH DISTURBANCE ACTIVITY - A construction or other human activity which disturbs the surface of land, including, but not limited to, clearing and grubbing, grading, excavations, embankments, land development, agricultural plowing or tilling, timber harvesting activities, road maintenance activities, mineral extraction, and the moving, depositing, stockpiling, or storing of soil, rock or earth materials.

EMERGENCY SPILLWAY - A conveyance area that is used to pass peak discharge greater than the maximum design storm controlled by the stormwater facility.

ENCROACHMENT - A structure or activity that changes, expands or diminishes the course, current or cross section of a watercourse, floodway or body of water.

EROSION - The process by which the surface of the land, including channels, is worn away by water, wind, or chemical action.

EROSION AND SEDIMENT CONTROL PLAN - A plan for a project site which identifies BMPs to minimize accelerated erosion and sedimentation.

EXCEPTIONAL VALUE WATERS - Surface waters of high quality which satisfy Pennsylvania Code Title 25 Environmental Protection, Chapter 93, Water Quality Standards, § 93.4b(b) (relating to anti-degradation).

EXISTING CONDITIONS - The initial condition of a project site prior to the proposed alteration. If the initial condition of the site is undeveloped land, the land use shall be considered as "meadow" unless the natural land cover is proven to generate lower curve numbers or Rational "C" value, such as forested lands.

FEMA – Federal Emergency Management Agency.

FLOOD - A temporary condition of partial or complete inundation of land areas from the overflow of streams, rivers, and other waters of this Commonwealth.

FLOODPLAIN - Any land area susceptible to inundation by water from any natural source or delineated by applicable Department of Housing and Urban Development, Federal Insurance Administration Flood Hazard Boundary Map, as being a special flood hazard area.

FLOODWAY - The channel of the watercourse and those portions of the adjoining floodplains, which are reasonably required to carry and discharge the 100-year frequency flood. Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by FEMA. In an area where no FEMA maps or studies have defined the boundary of the 100-year frequency floodway, it is assumed - absent evidence to the contrary - that the floodway extends from the stream to 50 feet from the top-of-bank.

FLUVIAL GEOMORPHOLOGY - The study of landforms associated with river channels and the processes that form them.

FOREST MANAGEMENT/TIMBER OPERATIONS - Planning and activities necessary for the management of forest land with no change of land use proposed. These include timber inventory and preparation of forest management plans, silvicultural treatment, cutting budgets, logging road design and construction, timber harvesting and reforestation.

FREEBOARD - A vertical distance between the elevation of the design high-water and the top of a dam, levee, tank, basin, swale, or diversion berm. The space is required as a safety margin in a pond or basin.

GRADE –

A. A slope, usually of a road, channel or natural ground specified in percent and shown on plans as specified herein.

B. (To) Grade - to finish the surface of a roadbed, top of embankment or bottom of excavation.

GRASSED WATERWAY - A natural or constructed waterway, usually broad and shallow, covered with erosion-resistant grasses, used to convey surface water.

GREEN INFRASTRUCTURE – Systems and practices that use or mimic natural processes to infiltrate, evapotranspiration, or reuse stormwater on the site where it is generated.

GROUNDWATER - Water beneath the earth's surface, often between saturated soil and rock that supplies wells and springs.

GROUNDWATER RECHARGE - Replenishment of existing natural underground water supplies without degrading groundwater quality.

HEC-HMS - The U.S. Army Corps of Engineers, Hydrologic Engineering Center (HEC) - Hydrologic Modeling System (HMS). This model was used to model the Maiden Creek watershed during the ACT 167 Plan development and was the basis for the Standards and Criteria of this chapter.

HIGH QUALITY WATERS - Surface waters having quality which exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water by satisfying Pennsylvania Code Title 25 Environmental Protection, Chapter 93 Water Quality Standards, § 93.4b(a).

HOTSPOTS - Areas where land use or activities generate highly contaminated runoff, with concentrations of pollutants in excess of those typically found in stormwater.

HYDROGRAPH - A graph of discharge versus time for a selected point in the drainage system.

HYDROLOGIC REGIME (NATURAL) - The hydrologic cycle or balance that sustains quality and quantity of stormwater, baseflow, storage, and groundwater supplies under natural conditions.

HYDROLOGIC SOIL GROUP - A classification of soils by the Natural Resources Conservation Service, formerly the Soil Conservation Service, into four runoff potential groups. The groups range from A soils, which are very permeable and produce little runoff, to D soils, which are not very permeable and produce much more runoff.

IMPERVIOUS SURFACE - A surface that prevents the infiltration of water into the ground. Impervious surface includes, but is not limited to, any roof, parking or driveway areas, swimming pools, ponds, patios, garages, storage sheds and similar structures; and any new streets and sidewalks. Decks are not counted as impervious areas if they do not prevent infiltration. Any surface areas designed to be gravel or crushed stone shall be assumed to be impervious surfaces.

IMPOUNDMENT - A retention or detention basin designed to retain stormwater runoff and release it at a controlled rate.

INFILL - Development that occurs on smaller parcels that remain undeveloped but are within or very close proximity to urban areas. The development relies on existing infrastructure and does not require an extension of water, sewer, or other public utilities.

INFILTRATION - Movement of surface water into the soil, where it is absorbed by plant roots, evaporated into the atmosphere, or percolates downward to recharge groundwater.

INFILTRATION STRUCTURES - A structure designed to direct runoff into the underground water (e.g., french drains, seepage pits, seepage trench).

INLET - The upstream end of any structure through which water may flow.

INTERMITTENT STREAM - A stream that flows only part of the time. Flow generally occurs for several weeks or months in response to seasonal precipitation, due to groundwater discharge.

KARST – A type of topography or landscape characterized by surface depressions, sinkholes, rock pinnacles/uneven bedrock surface, underground drainage, and caves. Karst is formed on carbonate rocks, such as limestone or dolomite.

LAND DEVELOPMENT –

A. The improvement of one lot or two or more contiguous lots, tracts, or parcels of land for any purpose involving

    (1) A group of two or more residential or nonresidential buildings, whether proposed initially or cumulatively, or a single nonresidential building on a lot or lots regardless of the number of occupants or tenure or

    (2) The division or allocation of land or space, whether initially or cumulatively, between or among two or more existing or prospective occupants by means of, or for the purpose of streets, common areas, leaseholds, condominiums, building groups, or other features;

B. A subdivision of land;

C. Development in accordance with Section 503(1.1) of the PA Municipalities Planning Code.

LIMITING ZONE - A soil horizon or condition in the soil profile or underlying strata which includes one of the following:

A. A seasonal high water table, whether perched or regional, determined by direct observation of the water table or indicated by soil mottling.

B. A rock with open joints, fracture or solution channels, or masses of loose rock fragments, including gravel, with insufficient fine soil to fill the voids between the fragments.

C. A rock formation, other stratum or soil condition which is so slowly permeable that it effectively limits downward passage of effluent.

LOT - A part of a subdivision or a parcel of land used as a building site or intended to be used for building purposes, whether immediate or future, which would not be further subdivided.

LOW IMPACT DEVELOPMENT (LID) – Site design approaches and small-scale stormwater management practices that promote the use of natural systems for infiltration, evapotranspiration, and reuse of rainwater. LID can be applied to new development, urban retrofits, and revitalization projects. LID utilizes design techniques that infiltrate, filter, evaporate, and store runoff close to its source. Rather than rely on costly

large-scale conveyance and treatment systems, LID addresses stormwater through a variety of small, cost-effective landscape features located on-site.

MAIN STEM (MAIN CHANNEL) - Any stream segment or other runoff conveyance facility used as a reach in the Maiden Creek hydrologic model.

MANNING EQUATION (MANNING FORMULA) - A method for calculation of velocity of flow (e.g., feet per second) and flow rate (e.g., cubic feet per second) in open channels based upon channel shape, roughness, depth of flow and slope. "Open channels" may include closed conduits so long as the flow is not under pressure.

MUNICIPAL ENGINEER - A professional engineer licensed as such in the Commonwealth of Pennsylvania, duly appointed as the engineer for a municipality, planning agency or joint planning commission.

MUNICIPALITY - Township of Maidencreek, Berks County, Pennsylvania.

NATURAL HYDROLOGIC REGIME – See "hydrologic regime."

NATURAL RECHARGE AREA - Undisturbed surface area or depression where stormwater collects, and a portion of which infiltrates and replenishes the underground and groundwater.

NON-POINT SOURCE POLLUTION - Pollution that enters a water body from diffuse origins in the watershed and does not result from discernible, confined, or discrete conveyances.

NON-STORMWATER DISCHARGES - Water flowing in stormwater collection facilities, such as pipes or swales, which is not the result of a rainfall event or snowmelt.

NONSTRUCTURAL BEST MANAGEMENT PRACTICE (BMPS) - Methods of controlling stormwater runoff quantity and quality, such as innovative site planning, impervious area and grading reduction, protection of natural depression areas, temporary ponding on site and other techniques.

NPDES - National Pollutant Discharge Elimination System, the federal government's system for issuance of permits under the Clean Water Act, which is delegated to DEP in Pennsylvania.

NRCS - Natural Resource Conservation Service (previously "SCS").

OUTFALL - "Point source" as described in 40 CFR § 122.2 at the point where the Township of Maidencreek's storm sewer system discharges to surface waters of the Commonwealth.

OUTLET - Points of water disposal to a stream, river, lake, tidewater, or artificial drain.

PARENT TRACT - The parcel of land from which a land development or subdivision originates, determined from the date of municipal adoption of this chapter.

PARKING LOT STORAGE - Involves the use of parking areas as temporary impoundments with controlled release rates during rainstorms.

PEAK DISCHARGE - The maximum rate of stormwater runoff from a specific storm event.

PENN STATE RUNOFF MODEL - The computer-based hydrologic model developed at the Pennsylvania State University.

PERVIOUS AREA – Any area not defined as impervious.

PIPE - A culvert, closed conduit, or similar structure (including appurtenances) that conveys stormwater.

PLANNING COMMISSION - The Planning Commission of the Township of Maidencreek.

POINT SOURCE - Any discernible, confined, and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, or conduit from which stormwater is or may be discharged, as defined in State regulations at 25 Pa. Code § 92.1.

POST CONSTRUCTION - Period after construction where disturbed areas are stabilized, stormwater controls are in place and functioning and all proposed improvements in the approved land development plan are completed.

PREDEVELOPMENT - Undeveloped/Natural Condition.

PRETREATMENT - Techniques employed in stormwater BMPs to provide storage or filtering to trap coarse materials and other pollutants before they enter the system, but not necessarily meet the water quality volume requirements of § 182-14.

PROJECT SITE - The specific area of land where any regulated earth disturbance activities in the Township of Maidencreek are planned, conducted, or maintained.

RATIONAL FORMULA - A rainfall-runoff relation used to estimate peak flow.

RECHARGE - The replenishment of groundwater through the infiltration of rainfall, other surface waters, or land application of water or treated wastewater.

RECORD DRAWINGS - Original documents revised to suit the as-built conditions and subsequently provided by the engineer to the client. The engineer takes the contractor's as-builts, reviews them in detail with his/her own records for completeness, then either turns these over to the client or transfers the information to a set of reproducibles, in both cases for the client's permanent records.

REDEVELOPMENT - The demolition, construction, reconstruction, alteration, or improvement exceeding 2,000 square feet of land disturbance performed on sites where existing land use is commercial, industrial, institutional, or multifamily residential. Maintenance activities such as top-layer grinding and re-paving are not considered to be redevelopment. Interior remodeling projects and tenant improvements are also not considered to be redevelopment. Utility trenches in streets are not considered redevelopment unless more than 50% of the street width is removed and re-paved.

REGULATED ACTIVITIES - Any actions or proposed actions that involve the alteration or development of land in a manner that may affect stormwater runoff.

REGULATED EARTH DISTURBANCE ACTIVITY - Activity involving Earth Disturbance subject to regulation under 25 PA Code Chapters 92, Chapter 102, or the Clean Streams Law.

RELEASE RATE - The percentage of existing conditions peak rate of runoff from a site or subarea to which the proposed condition peak rate of runoff must be reduced to protect downstream areas.

RETENTION BASIN - A structure in which stormwater is stored and not released during the storm event. Retention basins do not have an outlet other than recharge and must infiltrate stored water in no more than 4 days.

RETENTION VOLUME/REMOVED RUNOFF – The volume of runoff that is captured and not released directly into the surface waters of this Commonwealth during or after a storm event.

RETURN PERIOD - The average interval, in years, within which a storm event of a given magnitude can be expected to recur. For example, the 25-year return period rainfall would be expected to recur on the average of once every twenty-five years.

RIPARIAN BUFFER – A permanent area of trees and shrubs located adjacent to streams, lakes, ponds, and wetlands.

RISER - A vertical pipe extending from the bottom of a pond that is used to control the discharge rate from the pond for a specified design storm.

ROAD MAINTENANCE – Earth disturbance activities within the existing road cross-section, such as grading and repairing existing unpaved road surfaces, cutting road banks, cleaning, or clearing drainage ditches and other similar activities.

ROOF DRAINS - A drainage conduit or pipe that collects water runoff from a roof and leads it away from the structure.

ROOFTOP DETENTION - Temporary ponding and gradual release of stormwater falling directly onto flat roof surfaces by incorporating controlled-flow roof drains into building designs.

RUNOFF - Any part of precipitation that flows over the land surface.

SALDO - Subdivision and Land Development Ordinance; Chapter 190 of the Code of the Township of Maidencreek.

SEDIMENTATION – The process by which mineral or organic matter is accumulated or deposited by the movement of water or air.

SEDIMENT BASIN - A barrier, dam, retention, or detention basin located and designed to retain rock, sand, gravel, silt, or other material transported by water during construction.

SEDIMENT POLLUTION - The placement, discharge, or any other introduction of sediment into the waters of the Commonwealth.

SEEPAGE PIT/SEEPAGE TRENCH - An area of excavated earth filled with loose stone or similar coarse material, into which surface water is directed for infiltration into the underground water.

SEPARATE STORM SEWER SYSTEM - A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) primarily used for collecting and conveying stormwater runoff.

SHALLOW CONCENTRATED FLOW - Stormwater runoff flowing in shallow, defined ruts prior to entering a defined channel or waterway.

SHEET FLOW - A flow process associated with broad, shallow water movement on sloping ground surfaces that is not channelized or concentrated.

SOIL COVER COMPLEX METHOD - A method of runoff computation developed by the NRCS that is based on relating soil type and land use/cover to a runoff parameter called "curve number" (CN).

SOURCE WATER PROTECTION AREAS (SWPA) - The zone through which contaminants, if present, are likely to migrate and reach a drinking water well or surface water intake.

SPECIAL GEOLOGIC FEATURES - Carbonate bedrock features, including but not limited to closed depressions, existing sinkholes, fracture traces, lineaments, joints, faults, caves, and pinnacles, which may exist and must be identified on a site when stormwater management BMPs are being considered.

SPECIAL PROTECTION SUBWATERSHEDS - Watersheds for which the receiving waters are exceptional value (EV) or high quality (HQ) waters.

SPILLWAY - A conveyance that is used to pass the peak discharge of the maximum design storm controlled by the stormwater facility.

STATE WATER QUALITY REQUIREMENTS - The regulatory requirements to protect, maintain, reclaim, and restore water quality under PA Code Title 25 and the Clean Streams Law.

STORAGE INDICATION METHOD - A reservoir routing procedure based on solution of the continuity equation (inflow minus outflow equals the change in storage) with outflow defined as a function of storage volume and depth.

STORM FREQUENCY - The number of times that a given storm "event" occurs or is exceeded on the average in a stated period of years. See "Return Period".

STORM SEWER - A system of pipes and/or open channels that convey intercepted runoff and stormwater from other sources, but excludes domestic sewage and industrial wastes.

STORMWATER - The surface runoff generated by precipitation or snow or ice melt reaching the ground surface.

STORMWATER MANAGEMENT FACILITY - Any structure, natural or man-made, that, due to its condition, design, or construction, conveys, stores, or otherwise affects stormwater runoff quality, rate or quantity. Typical stormwater management facilities include, but are not limited to, detention and retention basins, open channels, storm sewers, pipes, and infiltration structures.

STORMWATER MANAGEMENT PLAN - The plan for managing those land use activities that will influence stormwater runoff quality and quantity and that would impact the Maiden Creek Watershed adopted by Berks County, and Lehigh County as required by the Act of October 4, 1978, P.L. 864, (Act 167), and known as the "Maiden Creek Watershed Act 167 Stormwater Management Plan".

STORMWATER MANAGEMENT SITE PLAN - The plan prepared by the Applicant or his representative indicating how stormwater runoff will be managed at the particular site of interest according to this chapter. **Stormwater Management Site Plan** will be designated as **SWM Site Plan** throughout this chapter.

STREAM - A natural watercourse.

STREAM BUFFER - The land area adjacent to each side of a stream, essential to maintaining water quality. (See Buffer)

STREAM ENCLOSURE - A bridge, culvert, or other structure in excess of 100 feet in length upstream to downstream which encloses a regulated water of this Commonwealth.

SUBAREA (SUBWATERSHED) - The smallest drainage unit of a watershed for which stormwater management criteria have been established in the Stormwater Management Plan.

SUBDIVISION - The division or redivision of a lot, tract, or parcel of land by any means into two or more lots, tracts, parcels or other divisions of land including changes in existing lot lines for the purpose, whether immediate or future, of lease, partition by the court for distribution to heirs or devisees, transfer of ownership, or building or lot development: Provided, however, that the subdivision by lease of land for agricultural purposes into parcels of more than 10 acres, not involving any new street or easement of access or any residential dwelling, shall be exempted.

SURFACE WATERS OF THE COMMONWEALTH - Any and all rivers, streams, creeks, rivulets, ditches, watercourses, storm sewers, lakes, dammed water, wetlands, ponds, springs, and all other bodies or channels of conveyance of surface, or parts thereof, whether natural or artificial, within or on the boundaries of this Commonwealth.

SWALE - A low lying stretch of land which gathers or carries surface water runoff.

TIMBER OPERATIONS - See Forest Management.

TIME-OF-CONCENTRATION (Tc) - The time for surface runoff to travel from the hydraulically most distant point of the watershed to a point of interest within the watershed. This time is the combined total of overland flow time and flow time in pipes or channels, if any.

TOP-OF-BANK - Highest point of elevation in a stream channel cross section at which a rising water level just begins to flow out of the channel and over the floodplain.

USDA – United States Department of Agriculture.

VERNAL POND - Seasonal depressional wetlands that are covered by shallow water for variable periods from winter to spring, but may be completely dry for most of the summer and fall.

WATERCOURSE - A channel or conveyance of surface water having defined bed and banks, whether natural or artificial, with perennial or intermittent flow.

WATERSHED - Region or area drained by a river, watercourse, or other body of water, whether natural or artificial.

WATERS OF THE COMMONWEALTH - Any and all rivers, streams, creeks, rivulets, impoundments, ditches, watercourses, storm sewers, lakes, dammed water, wetlands, ponds, springs, and all other bodies or channels of conveyance of surface and underground water, or parts thereof, whether natural or artificial, within or on the boundaries of this Commonwealth.

WELLHEAD –

A. A structure built over a well,

B. The source of water for a well.

WELLHEAD PROTECTION AREA - The surface and subsurface area surrounding a water supply well, well field, spring or infiltration gallery supplying a public water system, through which contaminants are reasonably likely to move toward and reach the water source.

WET BASIN - Pond for urban runoff management that is designed to detain urban runoff and always contains water.

WETLAND - Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, fens, and similar areas.

ARTICLE III
Stormwater Management Standards

§ 182-9. General Requirements.

A. Applicants proposing regulated activities in Maiden Creek Watershed which do not fall under the exemption criteria shown in § 182-21 shall submit a drainage plan consistent with the Maiden Creek Watershed Stormwater Management Plan to the Township of Maidencreek for review. These criteria shall apply to the total proposed development even if development is to take place in stages.

B. Stormwater Management Site Plans approved by the Township of Maidencreek shall be on site throughout the duration of the regulated activity.

C. For all regulated earth disturbance activities, erosion and sediment control BMPs shall be designed, implemented, operated, and maintained during the regulated earth disturbance activities (e.g., during construction) to meet the purposes and requirements of this chapter and to meet all requirements under Title 25 of the Pennsylvania Code and the Clean Streams Law. Various BMPs and their design standards are listed in the *Erosion and Sediment Pollution Control Manual* (E&S Manual), No. 363-2134-008, as amended and updated.

D. Impervious areas:

(1) The measurement of impervious areas shall include all of the impervious areas in the total proposed development even if the development is to take place in stages.

(2) For development taking place in stages, the entire development plan must be used in determining conformance with this chapter.

(3) For projects that add impervious area to a parcel, the total impervious area on the parcel is subject to the requirements of this chapter; except that the volume controls in § 182-22 and the peak rate controls of § 182-23 do not need to be retrofitted to existing impervious areas that are not being altered by the proposed regulated activity.

E. The Applicant is required to evaluate practicable alternatives to the surface discharge of stormwater, the creation of impervious surfaces and the degradation of waters of the Commonwealth, and must maintain as much as possible the natural hydrologic regime.

F. The Drainage Plan must be designed consistent with the sequencing provisions of § 182-12 to ensure maintenance of the natural hydrologic regime and to promote groundwater recharge and protect groundwater and surface water quality and quantity. The Drainage Plan designer must proceed sequentially in accordance with Article III of this chapter.

G. The existing points of concentrated drainage that discharge onto adjacent property shall not be altered in any manner which could cause property damage without permission of the affected property owner(s) and shall be subject to any applicable discharge criteria specified in this chapter.

H. All regulated activities shall include such measures as necessary to:

(1) Protect health, safety, and property.

(2) Meet the water quality goals of this chapter by implementing measures to:

(a) Minimize disturbance to floodplains, wetlands, and wooded areas.

(b) Maintain or extend riparian buffers.

(c) Avoid erosive flow conditions in natural flow pathways.

(d) Minimize thermal impacts to waters of this Commonwealth.

(e) Disconnect impervious surfaces by directing runoff to pervious areas, wherever possible.

(3) Incorporate methods described in the *Pennsylvania Stormwater Best Management Practices Manual* (BMP Manual). If methods other than green infrastructure and LID methods are proposed to achieve the volume and rate controls required under this chapter, the SWM Site Plan must include a detailed justification demonstrating that the use of LID and green infrastructure is not practicable.

I. The design of all facilities over karst shall include an evaluation of measures to minimize adverse effects.

J. Infiltration BMPs should be spread out, made as shallow as practicable, and located to maximize use of natural on-site infiltration features while still meeting the other requirements of this chapter.

K. Normally dry, open top, storage facilities shall completely drain both the volume control and rate control capacities over a period of time not less than 24 and not more than 72 hours from the end of the design storm.

L. Areas of existing diffused drainage discharge shall be subject to any applicable discharge criteria in the general direction of existing discharge, whether proposed to be concentrated or maintained as diffused drainage areas, except as otherwise provided by this chapter. If diffused drainage discharge is proposed to be concentrated and discharged onto adjacent property, the Applicant must document that adequate downstream conveyance facilities exist to safely transport the concentrated discharge, or otherwise prove that no erosion, sedimentation, flooding or other impacts will result from the concentrated discharge.

M. Where a development site is traversed by existing watercourses, drainage easements shall be provided conforming to the line of such watercourses. The terms of the easement shall conform to the stream buffer requirements contained in § 182-14F of this chapter.

N. Any stormwater management facilities regulated by this chapter that would be located in or adjacent to waters of the Commonwealth or wetlands shall be subject to approval by Pennsylvania DEP through the Joint Permit Application process, or, where deemed appropriate by Pennsylvania DEP, the General Permit process. When there is a question whether wetlands may be involved, it is the responsibility of the Applicant or his agent to show that the land in question cannot be classified as wetlands, otherwise approval to work in the area must be obtained from Pennsylvania DEP.

O. Any alteration that affects stormwater flow directly or indirectly toward a PennDOT facility shall be subject to PennDOT regulations.

P. Minimization of impervious surfaces and infiltration of runoff through seepage beds, infiltration trenches, etc. are encouraged, where soil conditions permit, to reduce the size or eliminate the need for detention facilities or other structural BMPs.

Q. Roof drains shall not be connected to impervious surfaces in order to promote overland flow and infiltration/percolation of stormwater where advantageous to do so. When site conditions preclude infiltration/percolation, then it shall be permitted on a case by case basis by the municipality.

R. All stormwater runoff shall be treated for water quality.

S. Transference of runoff to or from an EV/HQ watershed is prohibited unless otherwise authorized by DEP, DRBC or SRBC.

T. The design storm volumes to be used in the analysis of peak rates of discharge should be obtained from the latest version of the Precipitation-Frequency Atlas of the United States, National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Spring, Maryland.

NOAA's Atlas 14 can be accessed at: http://hdsc.nws.noaa.gov/hdsc/pfds/.

U. For all regulated activities, SWM BMPs shall be designed, implemented, operated, and maintained to meet the purposes and requirements of this chapter and to meet all requirements under Title 25 of the Pennsylvania Code, the Clean Streams Law, and the Storm Water Management Act.

V. Various BMPs and their design standards are listed in the BMP Manual.

§ 182-10. Permit to comply with requirements by other government entities.

Permits must comply with any and all applicable local, county, state and federal regulations.

§ 182-11. Erosion and Sediment Control During Regulated Earth Disturbance Activities.

A. No Regulated Earth Disturbance activities within the Township of Maidencreek shall commence until the Township of Maidencreek receives an approval from the Conservation District of an Erosion and Sediment Control Plan for construction activities.

B. The DEP has regulations that require an Erosion and Sediment Control Plan for any earth disturbance activity of 5,000 square feet or more, under 25 Pa. Code § 102.4(b).

C. In addition, under 25 Pa. Code Chapter 92, a DEP "NPDES Construction Activities" permit is required for Regulated Earth Disturbance activities for any earth disturbance activity disturbing one (1) acre or more.

D. Evidence of any necessary permit(s) for Regulated Earth Disturbance activities from the appropriate DEP regional office or County Conservation District must be provided to the Township of Maidencreek. The issuance of an NPDES Construction Permit [or permit coverage under the statewide General Permit (PAG-2)] satisfies the requirements Subsection A of this section.

E. A copy of the Erosion and Sediment Control plan and any required permit, as required by DEP regulations, shall be available at the project site at all times.

F. Additional erosion and sediment control design standards and criteria are recommended to be applied where infiltration BMPs are proposed shall include the following:

(1) Areas proposed for infiltration BMPs shall be protected from sedimentation and compaction during the construction phase to maintain maximum infiltration capacity.

(2) Infiltration BMPs shall not be constructed nor receive runoff until the entire contributory drainage area to the infiltration BMP has achieved final stabilization

§ 182-12. Nonstructural Project Design (Sequencing to Minimize Stormwater Impacts).

A. For projects disturbing one acre or more, the design of all regulated activities shall include evaluation of practicable alternatives to the surface discharge of stormwater, the creation of impervious surfaces, and the degradation of waters of the Commonwealth, and must maintain as much as possible the natural hydrologic regime of the site.

(1) An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes, and other municipal requirements.

(2) All practicable alternatives to the discharge of stormwater are presumed to have less adverse impact on quantity and quality of waters of the Commonwealth unless otherwise demonstrated.

B. The Applicant shall demonstrate that the design of the Regulated Activities that disturb one acre or more include consideration of the following issues:

(1) Prepare an Existing Resource and Site Analysis Map (ERSAM), showing environmentally sensitive areas including, but not limited to, steep slopes, ponds, lakes, streams, wetlands, hydric soils, vernal pools, flood plains, stream buffer zones, hydrologic soil groups A and B (areas conducive to infiltration), special geologic features, any existing recharge areas and any other requirements outlined in Chapter 190, Subdivision and Land Development, of the Code of the Township of Maidencreek.

(2) Establish appropriate buffers for each of the delineated environmentally sensitive areas per Chapter 220, Zoning, of the Code. (See § 182-14D for stream buffers and § 182-13K for special geologic feature buffers.)

(3) Prepare a draft project layout avoiding sensitive areas identified in Subsection B(1).

(4) Identify site specific existing conditions drainage areas, discharge points, recharge areas and hydrologic soil groups A and B.

(5) Evaluate Nonstructural Stormwater Management Alternatives

(a) Minimize earth disturbance.

(b) Minimize impervious surfaces.

(c) Break up large impervious surfaces.

(6) Satisfy infiltration objective (§ 182-13) and provide for stormwater pretreatment prior to infiltration. Pretreatment may not be necessary for rooftop runoff which enters the infiltration facility directly from a roof leader (rain spout/drain).

(7) Satisfy water quality (§ 182-14) and streambank erosion protection objective (§ 182-15).

(8) Determine what Management District the site falls into (Appendix D of this chapter) and conduct an existing conditions runoff analysis.

(9) Prepare final project design to maintain existing conditions drainage areas and discharge points, to minimize earth disturbance and impervious surfaces, and to the maximum extent possible, to ensure the remaining site development has no surface or point discharge.

(10) Conduct a proposed condition runoff analysis based on the final design and to meet the release rate and in turn the overbank flow and extreme event requirements (§ 182-16).

(11) Manage any remaining runoff through treatment prior to discharge, as part of detention, bioretention, direct discharge or other structural control.

§ 182-13. Groundwater recharge (infiltration; recharge; bioretention).

Design of the infiltration stormwater management facilities shall give consideration to providing groundwater recharge to compensate for the reduction in the percolation that occurs when the ground surface is disturbed or impervious surface is created. It is recommended that roof runoff be directed to infiltration BMPs which can be over-designed to compensate for the infiltration requirements of the parking areas. However, the runoff from the parking lot would still be required to meet the water quality provisions of this chapter, § 182-14. These measures are required to be consistent with § 182-3 and take advantage of utilizing any existing recharge areas. Infiltration may not be feasible on every site due to site-specific limitations such as soil type. If it cannot be physically accomplished, due to seasonal high water table, soil permeability rate, soil depth or setback distances from special geologic features, then the design professional shall be responsible to show that this cannot be physically accomplished. If it can be physically accomplished, then the volume of runoff to be infiltrated shall be determined from Subsection A(3) depending on demonstrated site conditions and shall be the greater of the two volumes.

A. Infiltration BMPs shall meet the following minimum requirements:

(1) Infiltration Requirements:

(a) Regulated activities will be required to infiltrate, where site conditions permit, a portion of the runoff created by the development as part of an overall stormwater management plan designed for the site. The volume of runoff to be infiltrated shall be determined from Subsection A(3)(a) or (b), depending upon demonstrated site conditions.

(2) Infiltration BMPs intended to receive runoff from developed areas shall be selected based on suitability of soils and site conditions and shall be constructed on soils that have the following characteristics:

(a) A minimum depth of 24 inches between the bottom of the BMP and the limiting zone.

(b) An infiltration and/or percolation rate sufficient to accept the additional stormwater load and drain completely as determined by field tests conducted by the Applicant's design professional.

(c) The infiltration facility shall be capable of completely infiltrating the required retention (infiltration) volume within 4 days (96 hours).

(d) Pretreatment shall be provided prior to infiltration.

(3) The size of the infiltration facility shall be based upon the following volume criteria:

(a) NRCS Curve Number equation. The NRCS runoff equation shall be utilized to calculate infiltration requirements (I) in inches.

Equation No. 1 of 182-13A(3)(a)
I (Infiltration requirement, in inches) = (200 / CN) – 2

Where:

CN = SCS (NRCS) curve number of existing conditions contributing to the infiltration facility.

This equation is displayed graphically in, and the infiltration requirement can be determined from Figure 182-13A(3)(a).

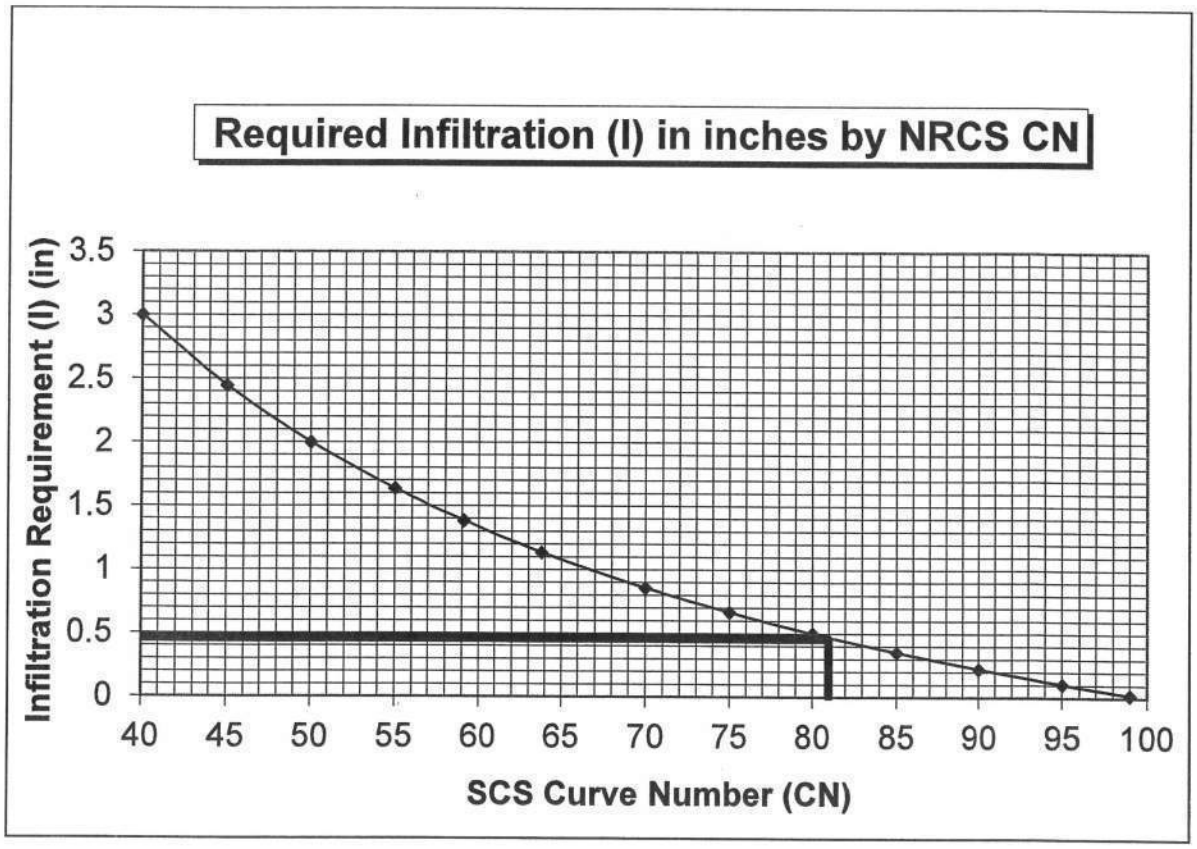


Figure 182-13A(3)(a)

Infiltration Requirement Based Upon NRCS Curve Number

Equation No. 2 of 182-13A(3)(a)
The retention (infiltration) volume (Re_v) required to meet the infiltration requirement would therefore be computed as:

Re_v (Cubic Feet) = I * impervious area (square feet) / (12 in/ft)

Where:
I = infiltration requirements (in inches)

(b) Annual Recharge – Water Budget Approach. It has been determined that infiltrating 0.46 inches of runoff from the impervious areas will aid in maintaining the hydrologic regime of the watershed. If the goals of Subsection A(2)(a) cannot be achieved, then 0.46 inches of rainfall shall be infiltrated from all impervious areas, up to an existing site conditions curve number of 81. Above a curve number of 81, Equation No. 1 of 182-13A(3)(a) or the curve in Figure 182-13A(3)(a) should be used to determine the infiltration requirement.

B. Soils. A detailed soils evaluation of the project site shall be required where practicable to determine the suitability of infiltration facilities. The evaluation shall be performed by a qualified design professional, and at a minimum, address soil permeability, depth to bedrock and subgrade stability. The general process for designing the infiltration BMP shall be:

(1) Analyze hydrologic soil groups as well as natural and man-made features within the site to determine general areas of suitability for infiltration practices. In areas where development on fill material is under consideration, conduct geotechnical investigations of subgrade stability; infiltration is not permitted to be ruled out without conducting these tests.

(2) Provide field tests such as double ring infiltrometer or hydraulic conductivity tests (at the level of the proposed infiltration surface) to determine the appropriate hydraulic conductivity rate. Percolation tests are not recommended for design purposes.

(3) Design the infiltration structure for the required retention (Re_v) volume based on field determined capacity at the level of the proposed infiltration surface.

(4) If on-lot infiltration structures are proposed by the Applicant's design professional, it must be demonstrated to the Township of Maidencreek that the soils are conducive to infiltrate on the lots identified.

C. Carbonate Areas.

(1) The Applicant shall investigate non-carbonate areas of the site for the suitability of infiltration and, if feasible, proceed to undertake infiltration pursuant to § 182-13A. If infiltration in noncarbonate areas is not feasible, the Applicant shall investigate areas of the site underlain by carbonate bedrock for infiltration purposes. If a suitable area is identified that meets the requirements of this provision and Table B-5, infiltration shall be conducted in accordance with the requirements of this chapter. Only if infiltration proves infeasible in both carbonate and noncarbonate areas of the site may the applicant be granted a waiver from the infiltration requirements of this chapter without structural BMPs.

(2) Infiltration BMP loading rate percentages in Table B-5 in Appendix B of this chapter shall be calculated as follows:

$$\left(\frac{\text{Area tributary to the infiltration BMP}}{\text{Base Area of the infiltration BMP}}\right) * 100\%$$

(3) The area tributary to the infiltration BMP shall be weighted as follows:

Area Description	**Weighting**
All disturbed area to be made impervious	100%
All disturbed areas to be made pervious	50%
All undisturbed impervious areas	100%
All undisturbed pervious areas	0%

(4) Soil thickness is to be measured from the bottom of any proposed infiltration BMP. The effective soil thickness in Table B-5 in Appendix B is the measured soil thickness multiplied by the thickness factor based on soil permeability, as follows:

Permeability Range	Thickness Factor
6.0 to 12.0 inches/hr	0.8
2.0 to 6.0 inches / hr	1.0
1.0 to 2.0 inches / hr	1.4
0.75 to 1.0 inches/hr	1.2
0.5 to 0.75 inches/hr	1.0

(5) The design of all facilities over Karst shall include an evaluation of measures to minimize adverse effects.

D. Stormwater Hotspots. Following is a list of examples of designated hotspots. If a site is designated as a hotspot, it has important implications for how stormwater is managed. First and foremost, untreated stormwater runoff from hotspots shall not be allowed to recharge into groundwater where it may contaminate water supplies. Therefore, the Re_v requirement shall not be applied to development sites that fit into the hotspot category (the entire WQv must still be treated). Second, a greater level of stormwater treatment shall be considered at hotspot sites to prevent pollutant washoff after construction. EPAs NPDES stormwater program requires some industrial sites as well as 923 municipalities and other entities to prepare and implement a stormwater pollution prevention plan.

(1) Examples of Hotspots:

(a) Vehicle salvage yards and recycling facilities.
(b) Vehicle fueling stations.
(c) Vehicle service and maintenance facilities.
(d) Vehicle and equipment cleaning facilities.
(e) Fleet storage areas (bus, truck, etc.).
(f) Industrial sites (based on Standard Industrial Codes).
(g) Marinas (service and maintenance).
(h) Outdoor liquid container storage.
(i) Outdoor loading/unloading facilities.
(j) Public works storage areas.
(k) Facilities that generate or store hazardous materials.
(l) Commercial container nursery.
(m) Other land uses and activities as designated by an appropriate review authority.

(2) The following land uses and activities are not normally considered hotspots:

(a) Residential streets and rural highways.
(b) Residential development.
(c) Institutional development.
(d) Office developments.
(e) Non-industrial rooftops.
(f) Pervious areas, except golf courses and nurseries (which may need an Integrated Pest Management (IPM) Plan).

(3) While large highways (average daily traffic volume (ADT) greater than 30,000) are not designated as a stormwater hotspot, it is important to ensure that highway stormwater management plans adequately protect groundwater.

E. Caution shall be exercised where infiltration is proposed in Source Water Protection Areas as defined by the local Municipality or Water Authority.

F. Infiltration facilities shall be used in conjunction with other innovative or traditional stormwater control facilities that are found within the PADEP State BMP Manual.

G. Caution shall be exercised where salt or chloride (municipal salt storage) would be a pollutant since soils do little to filter this pollutant and it may contaminate the groundwater. The qualified design professional shall evaluate the possibility of groundwater contamination from the proposed infiltration facility and perform a hydrogeologic justification study if necessary. A hydrogeologic justification study would entail: Field reconnaissance, in which local geology, topographic features, local wall characteristics, surface water flows, potential contamination, and nature of impermeable areas are determined. Data review of collected pertinent information such as geologic information, hydrologic data concerning both surface and groundwater, and geophysical data. With the collected data, a hydrologic model may be developed to determine the extent to which salt or chloride affects the groundwater.

H. The infiltration requirement in High Quality or Exceptional Value waters shall be subject to the Department's Chapter 93 Antidegradation Regulations.

I. Dependent upon certain land use or hotspots an impermeable liner will be required in detention basins where the possibility of groundwater contamination exists. A detailed hydrogeologic investigation may be required by the Township of Maidencreek.

J. The Township of Maidencreek shall require the Applicant to provide safeguards against groundwater contamination for land uses that may cause groundwater contamination should there be a mishap or spill.

K. For projects that disturb one (1) acre or more, unless otherwise specified in the zoning ordinance, the following setbacks for infiltration facilities shall apply:

(1) 100 feet from water supply wells.

(2) 10 feet downslope or 100 feet upslope from building foundations.

(3) 50 feet from septic system drainfields.

(4) 50 feet from a geologic contact with carbonate bedrock, unless a preliminary site investigation is done in the carbonate bedrock to show the absence of special geologic features within 50 feet of the proposed infiltration area.

(5) 100 feet from the property line unless documentation is provided to show all setbacks from wells, foundations and drainfields on the neighboring property will be met.

§ 182-14. Water Quality Requirements.

The applicant shall comply with the following water quality requirements of this Article.

A. Developed areas shall provide adequate storage and treatment facilities necessary to capture and treat stormwater runoff. The infiltration volume computed under § 182-13 may be a component of the water quality volume if the Applicant chooses to manage both components in a single facility. If the infiltration volume is less than the water quality volume, the remaining water quality volume may be captured and treated by methods other than infiltration BMPs. The required water quality volume (WQ_v) is the storage capacity needed to capture and treat a portion of stormwater runoff from the developed areas of the site. To achieve this goal, the following criterion is established:

(1) The following calculation formula is to be used to determine the water quality storage volume, (WQ_v), in acre-feet of storage for the Maiden Creek watershed:

Equation No. 1 of 182-14A(1)

$$WQv=[(P)(R_v)(A)]/12$$

Where:

WQ_v	=	Water Quality Volume (acre-feet)
P	=	1 inch
A	=	Total contributing drainage area to the water quality BMP (acres)
R_v	=	0.05 + 0.009(I) where I is the percent of the area that is impervious surface ((impervious area/A)*100)

(2) This volume requirement can be accomplished by the permanent volume of a wet basin or the detained volume from other BMPs.

(3) Release of water can begin at the start of the storm (i.e., the invert of the water quality orifice is at the invert of the facility). The design of the facility shall provide for protection from clogging and unwanted sedimentation.

B. For areas within defined Special Protection subwatersheds which include Exceptional Value (EV) and High Quality (HQ) waters, Cold Water Fishery (CWF) the temperature and quality of water and streams shall be maintained.

C. To accomplish the above, the Applicant shall use innovative or traditional stormwater control facilities that are found within the PADEP State BMP Manual.

D. If a perennial or intermittent stream passes through the site, the applicant shall create a stream buffer extending a minimum of fifty (50) feet to either side of the top-of-bank of the channel. The buffer area shall be maintained with appropriate native vegetation (reference Appendix F of this chapter, Pennsylvania Handbook of Best Management Practices for Developing Area, for plant lists). If the applicable rear or side yard setback is less than fifty (50) feet, the buffer width may be reduced to twenty-five (25%) percent of the setback to a minimum of ten (10) feet. If an existing buffer is legally prescribed (i.e. deed, covenant, easement, etc.) and it exceeds the requirements of this chapter, the existing buffer shall be maintained. This does not include lakes or wetlands.

E. Evidence of any necessary permit(s) for regulated earth disturbance activities from the appropriate DEP regional office must be provided to the Township of Maidencreek. The issuance of an NPDES construction permit (or permit coverage under the statewide general permit) satisfies the requirements of Subsection A.

§ 182-15. Streambank Erosion Requirements.

A. In addition to control of the water quality volume, in order to minimize the impact of stormwater runoff on downstream streambank erosion, the primary requirement is to design a BMP to detain the proposed condition two-year, twenty-four-hour design storm to the existing conditions one-year peak flow using the NRCS Type II distribution. Additionally, provisions shall be made (such as adding a small orifice at the bottom of the outlet structure) so that the proposed condition one-year storm takes a minimum of 24 hours to drain from the facility from a point where the maximum volume of water from the one-year storm is captured (i.e., the maximum water surface elevation is achieved in the facility). Release of water can begin at the start of the storm (i.e., the invert of the water quality orifice is at the invert of the facility).

B. The minimum orifice size in the outlet structure to the BMP shall be a three (3") inch diameter orifice and a trash rack shall be installed to prevent clogging. On sites with small contributing drainage areas to this BMP that do not provide enough runoff volume to allow a twenty-four-hour attenuation with the three-inch orifice, the calculations shall be submitted showing this condition. Orifice sizes less than three inches can be utilized provided that the design will prevent clogging of the intake.

§ 182-16. Stormwater Management Districts.

A. The Maiden Creek Watershed has been divided into stormwater management districts as shown on the Management District Map in Appendix D of this chapter. Corresponding release rate percentages associated with each Stormwater Management District is provided as well.

(1) In addition to the requirements specified in Table 182-16A(2) below, the groundwater recharge (§ 182-13), water quality (§ 182-14), and streambank erosion control (§ 182-15), requirements shall be implemented.

(2) Standards for managing runoff from each subarea in the Maiden Creek Watershed for the two-year through one-hundred-year design storms are shown in Table 182-16A(2). Development sites located in each of the Districts must control proposed condition runoff rates for to existing conditions runoff rates for the design storms in accordance with Table 182-16A(2).

TABLE 182-16A(2)

Water Quantity Requirements

Management District	Proposed Condition Design Storm		Existing Condition Design Storm	Equivalent Release Rate
A	2 - year	Reduce To	1 - year	-
	5 - year		5 - year	100 %
	10 - year		10 - year	100 %
	25 - year		25 - year	100 %
	100 - year		100 - year	100 %
B-1	2 - year	Reduce To	1 - year	-
	10 - year		5 - year	75 %
	25 - year		10 - year	75 %
	50 - year		25 - year	75 %
	100 - year		100 - year	100 %
B-2	2 - year	Reduce To	1 - year	-
	5 - year		2 - year	30 %
	25 - year		5 - year	50 %
	50 - year		10 - year	50 %
	100 - year		100 - year	100 %
B-3	2 - year	Reduce To	1 - year	-
	5 - year		2 - year	30 %
	10 - year		5 - year	75 %
	50 - year		25 - year	75 %
	100 - year		100 - year	100 %
C*	2-year	Reduce To	1-year	100%
	5-year		5-year	100%
	10-year		10-year	100%
	25-year		25-year	100%
	50-year		50-year	100%
	100-year		100-year	100%

NOTES:

**The minimum performance standard for development sites in District C is that stormwater management controls must be provided to limit the post-development peak rate of stormwater runoff to a rate that is equal to or less than the existing peak rate of stormwater runoff. This minimum performance criteria was set through a policy directive of the Pennsylvania Department of Environmental Protection. However, in the previous development of the Act 167 Plan, this district was originally established as a conditional no-detention district such that development sites which could discharge directly to the main channel of the Maiden Creek and its major tributaries, or indirectly to the main channel through an existing stormwater drainage system (i.e., storm sewer or open channel) could do so without control of the post-development peak rate of runoff.*

(3) All areas, regardless of the release rate, must still meet the requirements of the groundwater recharge criteria (§ 182-13), water quality criteria (§ 182-14), and streambank erosion criteria (§ 182-15).

B. General. Proposed condition rates of runoff from any regulated activity shall not exceed the peak release rates of runoff prior to development for the design storms specified on the Stormwater Management District Watershed Map (Appendix D of this chapter) and in this section.

C. District Boundaries. The boundaries of the Stormwater Management Districts are shown on an official map that is available for inspection at the municipal office. A copy of the official map at a reduced scale is included in Appendix D. The exact location of the Stormwater Management District boundaries as they apply to a given development site shall be determined by mapping the boundaries using the two-foot topographic contours (or most accurate data required) provided as part of the Drainage Plan.

D. Sites Located in More Than One District. For a proposed development site located within two or more stormwater management district category subareas, the peak discharge rate from any subarea shall meet the Management District Criteria for which the discharge is located, as indicated in this section. The calculated peak discharges shall apply regardless of whether the grading plan changes the drainage area by subarea. An exception to the above may be granted if discharges from multiple subareas recombine in proximity to the discharge site. In this case, peak discharge in any direction shall follow Management District A criteria provided that the overall site discharge meets the Management District Criteria for which the discharge is located.

E. Off-Site Areas. Off-site areas that drain through a proposed development site are not subject to release rate criteria when determining allowable peak runoff rates. However, on-site drainage facilities shall be designed to safely convey off-site flows through the development site.

F. Site Areas. Where the site area to be impacted by a proposed development activity differs significantly from the total site area, only the proposed impact area utilizing stormwater management measures shall be subject to the Management District Criteria. In other words, unimpacted areas bypassing the stormwater management facilities would not be subject to the Management District Criteria.

§ 182-17. Design Criteria for Stormwater Management and Conveyance BMPs.

A. Applicants may select a combination of runoff control techniques that are most suitable to control stormwater runoff from the site. All controls shall be subject to approval of the Township of Maidencreek. The municipal engineer may request specific information on design and/or operating features of the proposed stormwater controls in order to determine their suitability and adequacy in terms of the standards of this Section.

B. The Applicant shall consider the effect of the proposed stormwater management techniques on any special soil conditions or geological hazards that may exist on the development site. In the event such conditions are identified on the site, the municipal engineer may require in-depth studies by a Geotechnical Engineer.

C. Basins and Impoundments. Any BMP that is a dam, as defined in 25 Pa. Code Chapter 105, shall be designed according to the requirements in those regulations. Any stormwater BMP that does not constitute a dam under 25 Pa. Code Chapter 105, but is designed to store runoff and requires a berm or earthen embankment (i.e. detention basin), shall be designed to comply with the following:

(1) Basins with earthen embankments shall be designed with an emergency spillway that has capacity and stability to accommodate the one-hundred-year post-development hydrograph, in a manner that will not damage the integrity of the facility and will not create a downstream hazard. Emergency spillways shall be designed to safely convey the post-development one-hundred-year basin inflow hydrograph assuming the principal outlet is completely blocked, and the basin water surface elevation is equal to the spillway invert elevation. Spillway calculations shall be provided to show depth of flow through spillway. Emergency spillways shall be constructed in undisturbed earth wherever possible. When constructed in fill, emergency spillways and all adjacent embankment slopes must be armored, based on calculated velocities, use of riprap shall not be permitted. Alternative armoring design options shall include pegged sod, reinforced turf, precast concrete paving blocks, or cast-in-place concrete. Regardless of location, appropriate stabilization measures shall be provided.

(2) Eighteen (18") inches of freeboard shall be provided between the crest of the 100-year routed storm and the invert of the emergency spillway. The primary riser shall be set at the 100-year routed storm elevation unless approved by the Township Engineer.

(3) The height of the embankment shall be designed to provide a minimum 1.0 foot of freeboard above the maximum elevation computed when the one-hundred-year peak post-development flow passes through the emergency spillway. Embankment heights shall not exceed 15 feet, unless approved by the Township of Maidencreek.

(4) The minimum top width of earthen embankments shall be equal to three-fourths (3/4) of the embankment height, but in no case shall the top width be less than ten feet (10').

(5) Interior and exterior embankment side slopes shall not be greater than three (3) horizontal to one (1) vertical.

(6) The maximum impoundment depth in a basin shall not exceed six feet from basin bottom to the maximum stage of the routed one-hundred-year event.

(7) All pipes, conduits, etc. passing through basin embankments shall have properly spaced concrete anti-seep collars. Properly spaced anti-seep collars shall be installed around the principal basin outlet pipe within the normal saturation zone of the detention basin embankments. The anti-seep collars and their connections to the pipe shall be watertight. A minimum of one (1) concrete anti-seep collar shall be required. Pre-cast collars shall have a minimum thickness of eight (8) inches; field poured collars shall have a minimum thickness of twelve (12) inches. Collars may not be installed within two (2) feet of pipe joints. Collars must be designed to project a minimum of two (2) feet around the perimeter of the pipe. The maximum spacing between the collars shall be fourteen (14) times the design projection of the collar measured perpendicular to the pipe. One collar shall be placed within the cut-off trench. Design calculations shall be provided. Sand filter diaphragms shall be required for all wet ponds. Diaphragms shall be designed in accordance with PaDEP standards.

(8) All basin embankments and key trench shall be constructed of compacted relatively impervious (Unified Soil Classification CL-ML or CL) soils. Embankment shall be compacted to no less than 95% of the determined dry weight density per ASTM D-1557. The key trench shall extend at least two feet into undisturbed subsoil (below topsoil layer) and shall have a minimum width of four feet. The side slopes of the key trench shall not exceed one horizontal to one vertical,

shall extend for the full length of the embankment and the top elevation of the core shall be set at or above the emergency spillway elevation.

(9) All basins shall be structurally sound and shall be constructed of durable materials. The completed structure and the foundation of all basins shall be stable under all probable conditions of operation. Embankments shall be placed in maximum eight-inch (8") lifts to a minimum of 95 percent of maximum dry density, as established by ASTM D-1557. Compaction test results shall be provided to the Township of Maidencreek upon request. Embankments shall be constructed six inches (6") above design elevations to allow for settlement.

(10) All basins not including groundwater recharge and/or water quality storage shall include an outlet structure to permit draining the basin to a completely dry condition within twenty-four (24) hours following the end of the design rainfall. The outlet structure shall be recessed into basin embankments so as to be less noticeable.

(11) All risers within basins which will control peak discharge flows and distribute the flows by pipes to discharge areas shall be constructed of concrete or masonry material. The risers shall be designed so that the rate of outflow is controlled by the pipe barrel through the basin berm when the depth of water within the basin exceeds the height of the riser. Risers shall have child-proof, non-clogging trash racks over all design openings, except those openings designed to carry perennial stream flows. Trash rack material should be hot dip galvanized or stainless steel. Other materials are subject to approval by the Township Engineer. All risers shall have a concrete base attached with a watertight connection. The base shall be of sufficient weight to prevent flotation of the riser. An anti-vortex device, consisting of a thin vertical plane normal to the basin berm, shall be provided on top of the riser.

(12) All discharge control devices with appurtenances (except discharge pipes) shall be made of reinforced concrete and stainless or hot dip galvanized steel. Bolts/fasteners and any orifice plates are to be stainless or hot dip galvanized steel. Outlet barrels/pipes shall have a minimum diameter of twenty-four-inches. All pipe materials shall be Class III reinforced O-ring concrete pipe unless otherwise approved by the Township. Trash racks and vortex devices shall be permanently secured. The Township may require structures to prevent access to large drainage pipes. Where installation conditions merit, structural calculations that address the actual design requirements will be required.

(13) Energy Dissipating devices (rip-rap, etc.) shall be placed at all basin outlets. Any pipe or other component which discharges directly into the basin shall be equipped with energy dissipating devices and shall outlet into the bottom of the basin.

(14) All basins employing small orifices (i.e., less than six inches diameter or equivalent area), shall be provided with an apron of concrete or similar durable material which abuts the orifice invert and extends a minimum of 18 inches in all directions from the orifice, to prevent potential blockage by vegetative growth or debris, and to allow for easy cleaning of the area approaching the orifice. Appropriate trash racks are required for all orifice openings. Under no conditions shall orifices less than three inches diameter be provided unless approved by the Township Engineer.

(15) Basin outlet structures shall be designed to provide secondary orifices and/or weirs to manage each storm. Unless approved by the Township Engineer, the top of the outlet structure shall not

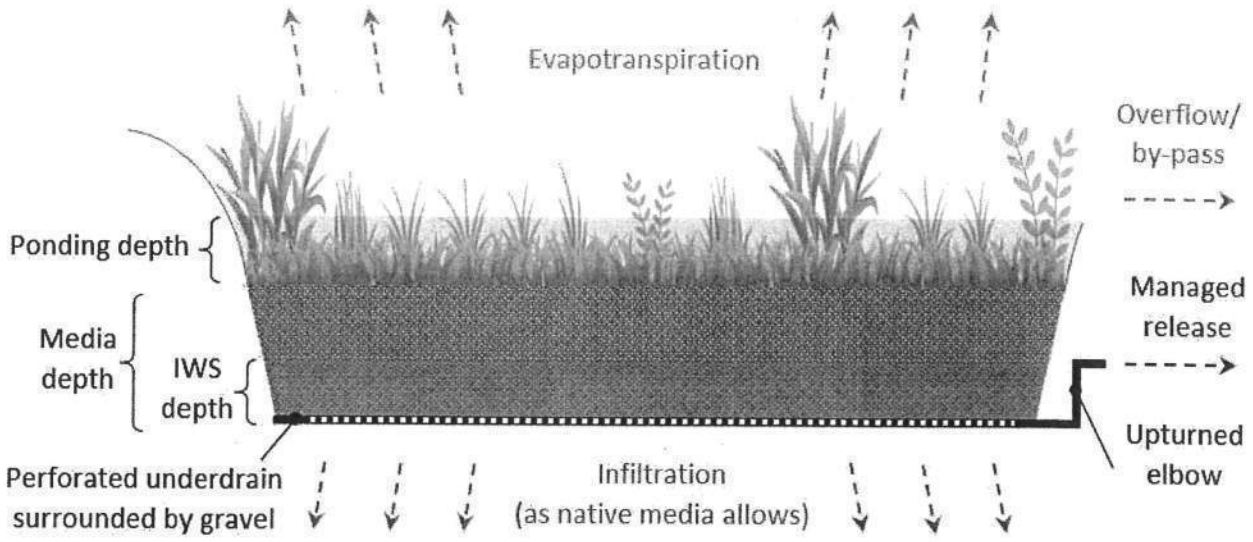
be used to discharge storms from the 2-year through the 100-year storm events. The primary raiser shall be set at the routed 100-year storm elevation.

(16) Low flow channels shall be provided from each water carrying facility to the outlet structure for all basins that do not include Groundwater Recharge and/or Water Quality storage. Low flow channels shall be one (1%) percent minimum slope and shall be designed to enable ease of maintenance. All basins that do include Groundwater Recharge and/or Water Quality storage shall not be required to have a low flow channel.

(17) Minimum slope within a basin that does not include Groundwater Recharge and/or Water Quality storage shall be 2% positive grade to the low flow channel.

(18) Infiltration Basin shall be capable of completely infiltrating the required retention (infiltration) volume within 3 days (72 hours). Infiltration basin shall be designed to include an underdrain pipe or managed release concept (MRC) with an upturned elbow connecting into the outlet structure to ensure infiltration basin dewaters in the required allotted time. The length of the underdrain pipe shall be equal to 1/3 the basin bottom length or at a minimum of fifteen feet whichever is greater. Figure 1 – 5 illustrates the components of a typical underdrain or managed release concept (MRC) BMP.

Figure 1: Managed Release Concept with Internal Water Storage (IWS) and Upturned Elbow for a Vegetated BMP



At least one foot of separation distance should be maintained between groundwater or the seasonally high-water table and the bottom footprint of the MRC BMP's soil media; however, a two-foot separation is preferred. There is no minimum separation required between bedrock or hardpan and the MRC BMP's soil media. See Figures 2 – 5 for a demonstration of how the separation distances relate to the soil media. (Refer to Pennsylvania Department of Environmental Protection Managed Release Concept for design.)

Figure 2: Managed Release Concept Where In-Situ Soils <u>are</u> Suitable in Relation to Groundwater/Seasonal High Water Table

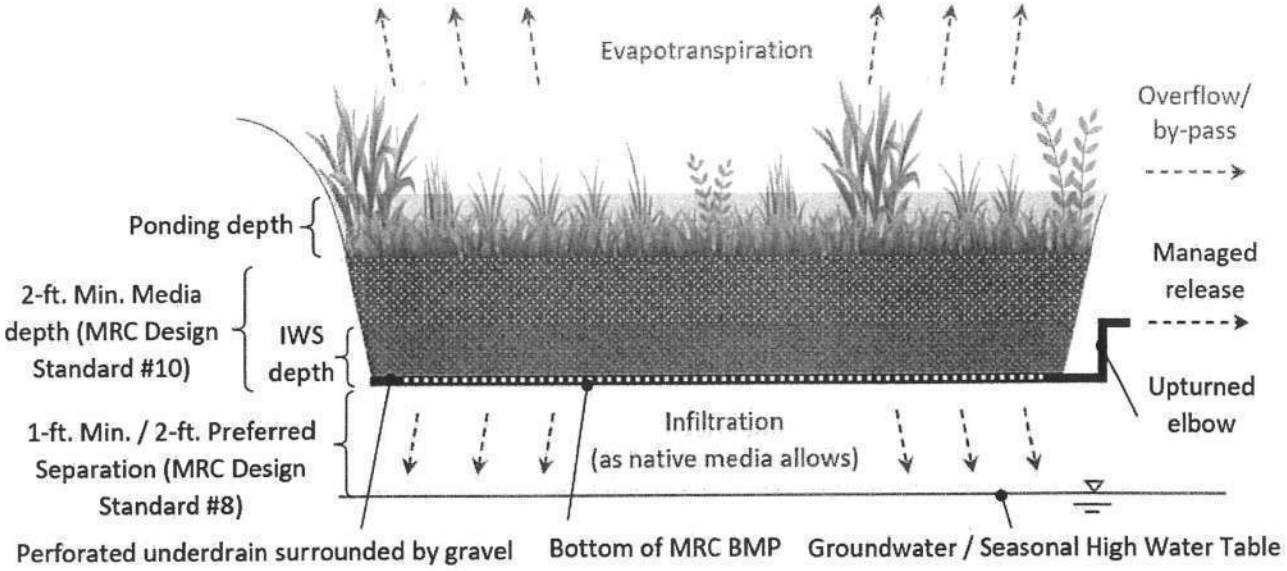


Figure 3: Managed Release Concept Where In-Situ Soils <u>are not</u> Suitable in Relation to a Groundwater/Seasonal High Water Table

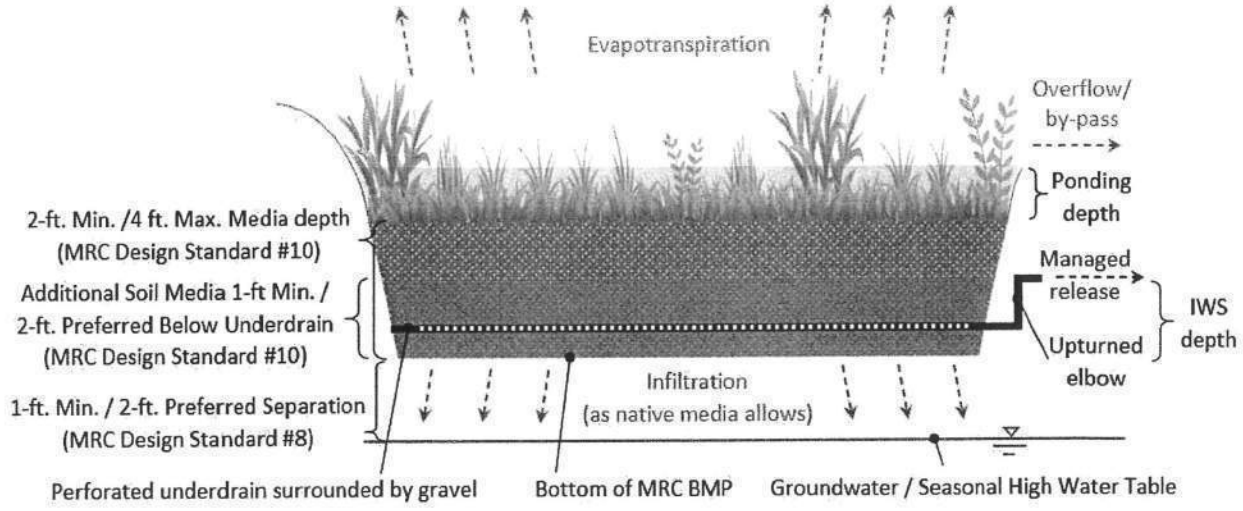


Figure 4: Managed Release Concept Where In-Situ Soils <u>are</u> Suitable in Relation to Bedrock/Hardpan

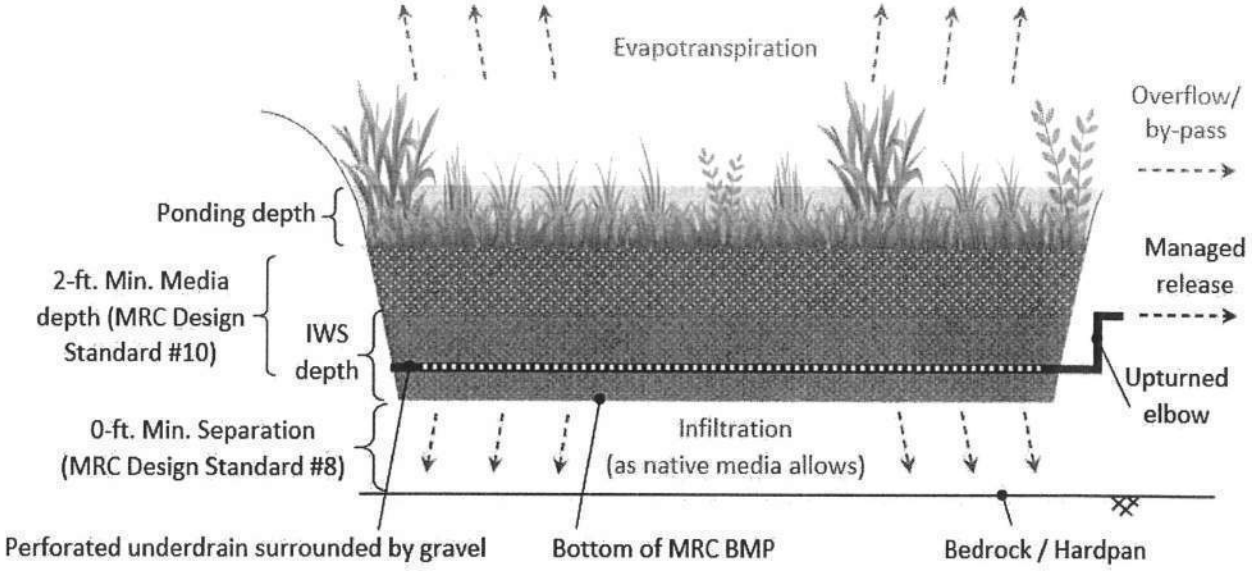


Figure 5: Managed Release Concept Where In-Situ Soils <u>are not</u> Suitable in Relation to Bedrock/Hardpan

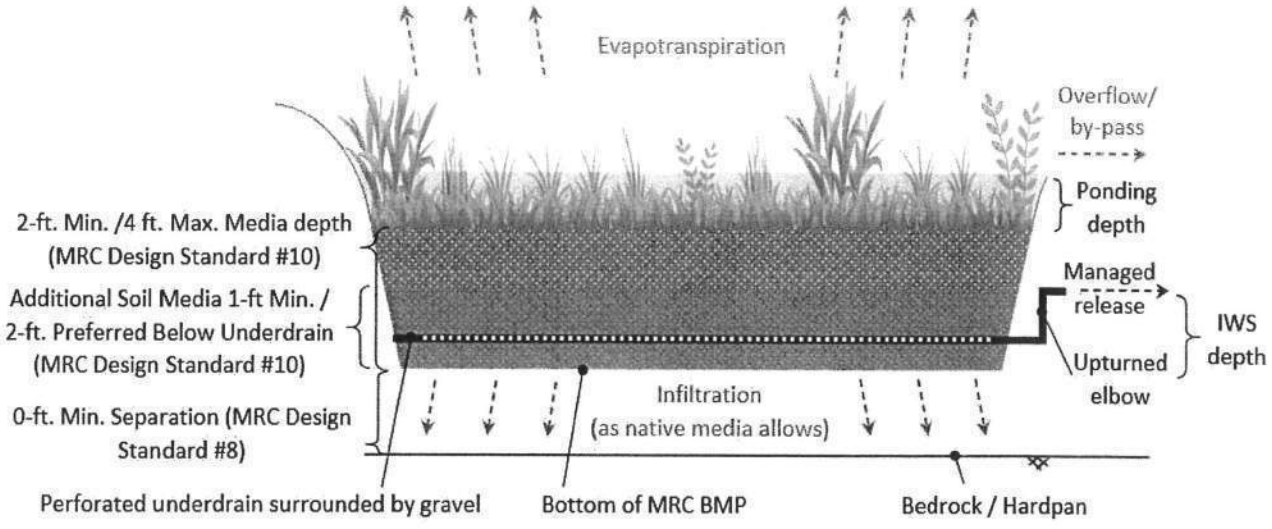
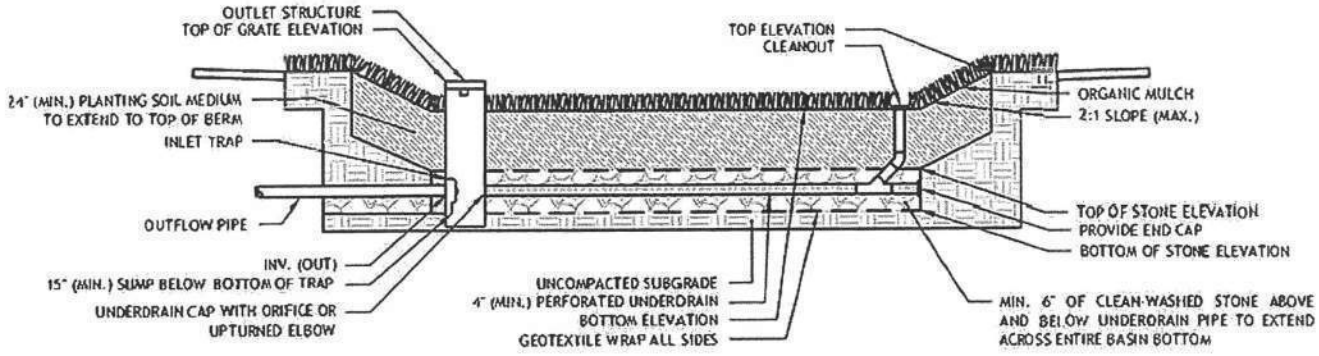


Figure 6 below provides an example of an underdrain detail.

Figure 6: Example Underdrain Detail (courtesy of Philadelphia Water Department's *Stormwater Management Guidance Design Manual*)



(19) Design storms for the computation of retention basin volumes shall be based upon a twenty-four-hour storm with one-hundred-year return period (NRCS Type II storm).

(20) The effect on downstream areas if the basin embankment fails shall be considered in the design of all basins. The basin shall be designed to minimize the potential damage caused by such failure of the embankment.

(21) All structures (detention basins, cisterns, etc.), other than those used for Groundwater Recharge Volume and Water Quality Volume, must completely drain within 24 hours after the end of the design storm.

(22) Soils used for the construction of basins shall have low erodibility factors ("K" factors).

(23) Minimum floor elevations for all structures that would be affected by a basin, other temporary impoundments, or open conveyance systems where ponding may occur shall be two (2) feet above the 100-year water surface. If basement or underground facilities are proposed, detailed calculations addressing the effects of stormwater ponding on the structure and waterproofing and/or flood-proofing design information shall be submitted for approval.

D. Stormwater Collection and Conveyance Systems. Gutters, inlets, pipes, conduits, swales, ditches and any other means for collecting and/or conveying stormwater shall be designed to comply with the following:

(1) All storm sewer pipes, culverts and bridges (excluding detention and retention basin outfall structures), gutters and swales conveying water originating only from within the boundaries of the development site shall be designed for a twenty-five-year storm event. All storm sewer pipes, culverts and bridges (excluding detention and retention basin outfall structures) conveying water originating from off-site shall be designed for a one-hundred-year storm event. Facilities that convey runoff to stormwater management facilities (e.g., detention basins, etc.) shall be designed for the one-hundred-year storm event, unless adequate alternate means for conveying one-hundred-year flow to the facilities are provided. Drainage easements having widths no less than 20 feet shall be provided to contain and convey the one-hundred-year frequency flood throughout the

development site. Easements shall begin at the furthest upstream property line of the proposed development site in a watershed.

(2) Water obstructions shall convey runoff from the twenty-five-year design storm with a minimum of 2.0 feet of freeboard measured below the lowest point along the top of the roadway, without damage to the drainage structure or the roadway, unless more restrictive local, state and/or federal regulations apply. A concentrated discharge of stormwater to an adjacent property shall be within an existing watercourse or otherwise an easement and appropriate agreements shall be required.

(3) Storm sewer pipes other than those used as roof drains, detention basin underdrains, and street subbase underdrains, shall have a minimum diameter of fifteen (15) inches and be either Class III reinforced concrete pipe (RCP) or smooth-lined corrugated high-density polyethylene pipe (HDPE). Corrugated metal pipe is not permitted. HDPE pipe joints shall be silt-tight at a minimum (e.g., ADS N-12 ST/IB, or equal), and RCP joints shall have pre-lubed O-ring gaskets. Water-tight specification is required in areas of carbonate geology and elsewhere as may be specified by the Township Engineer. Where installation conditions merit (e.g., deep fills), structural calculations that address the actual design requirements will be required.

(4) Storm sewer pipes and culverts shall be installed on sufficient slopes to provide a minimum velocity of three (3) feet per second when flowing full. The minimum grade of the pipe shall be 1%. A minimum grade of one half (½) percent may be used where approved in advance by the Township Engineer.

(5) Storm sewers shall be placed within the cartway of curbed streets and parallel to the road shoulders of streets without curbs. At curbed street intersections, inlets shall be placed on the tangent and not on the curved portion of the curbing. Storm sewer crossings of streets shall be perpendicular to the street centerline to the maximum extent practicable.

(6) Storm facilities not located within a public right-of-way shall be contained in and centered within an easement not less than 20 feet wide. Easements shall follow property boundaries where possible.

(7) Manning "n" values used for design of pipes and culverts shall be in accordance with generally accepted engineering practice. Adequate documentation shall be provided in support of the chosen values.

(8) A minimum of twenty-four (24) inches of cover shall be maintained over all storm pipes in paved areas and a minimum of eighteen (18") inches of cover shall be maintained non-paved areas. The top of storm pipes shall be at least six-inches below subgrade elevation. Embedment for all storm sewer pipe and culverts shall consist of AASHTO No. 8 (1B) aggregate from a minimum of six (6) inches of bedding beneath the pipe, to a minimum of 12 inches over the pipe. Aggregate requirements for street construction shall take precedence over the 1B specification, but in no case shall total aggregate cover over the pipe be less than 12 inches. Compaction shall be in conformance with manufacturer's specifications. Pipes located in the Township right-of-way shall be

backfilled with PennDOT 2A aggregate in four-inch lifts to pavement subgrade. Pipes located in grass areas shall be backfilled with select backfill to topsoil layer.

(9) Curves, tees, elbows and wyes are not permitted in pipes other than those used as roof drains, detention basin underdrains, and street subbase underdrains. Manholes or inlets are required to facilitate such configurations.

(10) Manholes and/or inlets shall not be spaced more than 300 feet apart on pipe sizes up to 36 inches, and not more than 400 feet apart for pipes of greater diameter. Ladder rungs shall be placed in manholes and inlets with depths exceeding five feet (5').

(11) When there is a change in the pipe size in a manhole or inlet, the elevations of the top inside elevation of the outlet pipe shall be at or below the top inside elevations of all incoming pipes. There shall be a minimum drop of two-tenth foot (0.20') provided from the inlet invert elevation(s) to the outlet invert elevation.

(12) Manholes, inlets, headwalls, endwalls and end sections proposed for dedication or located along streets or subject to vehicular traffic, shall conform to the requirements of PennDOT, or to specifications as otherwise modified by the Township of Maidencreek. Manhole covers shall have the word "STORM" cast clearly on the lid.

(13) Inlets along curbed streets shall be spaced to limit depth along the curb to a maximum of three inches (3") during a 10-year storm. Inlet capacities and by-pass calculations shall be determined by PennDOT design techniques.

(14) Pipe underdrains and/or pavement base drains shall be provided in areas known or otherwise documented to have a seasonal high-water table, and as directed by the Township of Maidencreek Engineer.

(15) Appropriate headwalls, endwalls or end sections shall be used where stormwater runoff enters or leaves the storm sewer horizontally from a natural or manmade channel. Such facilities shall conform to the requirements of PennDOT, or to specifications as otherwise modified by the Township of Maidencreek.

(16) Adequate erosion and sediment control protection shall be provided along all open channels, and at all points of discharge.

(17) Stormwater roof drains, sump pumps, and pipes shall not directly discharge water into a street right-of-way or discharge into a sanitary sewer or storm sewer.

(18) All existing and natural watercourses, channels, drainage systems, wetlands and areas of surface water concentration shall be maintained in their existing condition unless an alteration is approved by the Township of Maidencreek and any other necessary approving body.

(19) Flow velocities from any storm sewer may not result in erosion of the receiving channel.

(20) Energy dissipaters shall be placed at the outlets of all storm sewer pipes, culverts, and bridges where flow velocities exceed maximum permitted channel velocities as specified in the Pennsylvania DEP Erosion and Sediment Pollution Control Manual, as amended.

(21) The following conditions shall be met for all swales:

a. Capacities and velocities shall be computed using the Manning equation. Stabilization (i.e., linings, etc.) shall be as specified in the Pennsylvania DEP Erosion and Sediment Pollution Control Manual, as amended.

b. All vegetated swales shall have a minimum slope of 2% unless approved by the Township Engineer.

c. "n" factors shall be based upon accepted engineering design practices as approved by the Township Engineer.

d. All swales shall be designed to concentrate low flows to minimize siltation and meandering.

§ 182-18. Calculation Methodology.

A. Stormwater runoff from all development sites with a drainage area of greater than 200 acres shall be calculated using a generally accepted calculation technique that is based on the NRCS Soil Cover Complex Method. Table 182-18A summarizes acceptable computation methods and the method selected by the design professional shall be based on the individual limitations and suitability of each method for a particular site. The Township of Maidencreek may allow the use of the Rational Method to estimate peak discharges from drainage areas that contain less than 200 acres where approved in advance by the Township Engineer. The Soil Complex Method shall be used for drainage areas greater than 200 acres and to meet the requirements for groundwater recharge (§ 182-13), water quality (§ 182-14), and streambank erosion control (§ 182-15).

TABLE 182-18A

Acceptable Computation Methodologies For Stormwater Management Plans

METHOD	METHOD DEVELOPED BY	APPLICABILITY
TR-20 (or commercial computer package based on TR-20)	USDA NRCS	Applicable where use of full hydrology computer model is desirable or necessary.
TR-55 (or commercial computer package based on TR-55)	USDA NRCS	Applicable for land development plans within limitations described in TR-55.
HEC-1 / HEC-HMS	US Army Corps of Engineers	Applicable where use of full hydrologic computer model is desirable or necessary.
PSRM	Penn State University	Applicable where use of a hydrologic computer model is desirable or necessary; simpler than TR-20 or HEC-1.
Rational Method (or commercial computer package based on Rational Method)	Emil Kuichling (1889)	For sites less than 200 acres and with time of concentration less than 60 minutes (tc < 60 min), or as approved by the Municipality
Other Methods	Varies	Other computation methodologies approved by the Municipality

*** Note: Successors to the above methods are also acceptable. These successors include WINNTR55 for TR55 and WINTR20 for TR20 and SWMM.**

B. All calculations consistent with this chapter using the Soil Cover Complex Method shall use the appropriate design rainfall depths for the various return period storms according to the region in which they are located as presented in Table B-1 in Appendix B of this chapter. If a hydrologic computer model such as PSRM or HEC-1/ HEC-HMS is used for stormwater runoff calculations, then the duration of rainfall shall be 24 hours. The NRCS "S" curve shown in Figure B-1, Appendix B of this chapter, shall be used for the rainfall distribution.

C. For the purposes of existing conditions flow rate determination, undeveloped land shall be considered as "meadow" in good condition, unless the natural ground cover generates a lower curve number or Rational 'C' value (i.e., forest), as listed in Table B-2 or B-3 in Appendix B of this chapter.

D. All calculations using the Rational Method shall use rainfall intensities consistent with appropriate times-of-concentration for overland flow and return periods from the Design Storm Curves from the Pennsylvania Department of Transportation Design Rainfall Curves (1986) and NOAA Atlas 14 (Figures B-2 to B-3). Times-of-concentration for overland flow shall be calculated using the methodology presented in Chapter 3 of Urban Hydrology for Small Watersheds, NRCS, TR-55 (as amended or replaced from time to time by NRCS). Times-of-concentration for channel and pipe flow shall be computed using Manning's Equation. NRCS lag equation divided by 0.6 as acceptable method for Tc in undeveloped areas.

E. Runoff Curve Numbers (CN) for both existing and proposed conditions to be used in the Soil Cover Complex Method shall be obtained from Table B-2 in Appendix B of this chapter.

F. Runoff coefficients (C) for both existing and proposed conditions for use in the Rational Method shall be obtained from Table B-3 in Appendix B of this chapter.

G. Where uniform flow is anticipated, the Manning Equation shall be used for hydraulic computations, and to determine the capacity of open channels, pipes, and storm sewers. Values for Manning's roughness coefficient (n) shall be consistent with Table B-4 in Appendix B of this chapter. Full flow shall be assumed for closed conduits.

H. Outlet structures for stormwater management facilities shall be designed to meet the performance standards of this chapter using any generally accepted hydraulic analysis technique or method.

I. The design of any stormwater detention facilities intended to meet the performance standards of this chapter shall be verified by routing the design storm hydrograph through these facilities using the Storage Indication Method. For drainage areas greater than 200 acres in size, the design storm hydrograph shall be computed using a calculation method that produces a full hydrograph (i.e. TR-20, TR-55, HEC-1, PSRM). The municipality may approve the use of any generally accepted full hydrograph approximation technique that shall use a total runoff volume that is consistent with the volume from a method that produces a full hydrograph.

§ 182-19. Other Requirements.

A. All wet basin designs shall incorporate biologic minimization controls consistent with the West Nile Guidance found in Appendix G of this chapter.

B. Any facilities that constitute water obstructions (e.g., culverts, bridges, outfalls, or stream enclosures), water encroachments, and any work involving wetlands governed by Pennsylvania DEP Chapter 105 regulations (as amended or replaced from time to time by Pennsylvania DEP), are subject to Pennsylvania DEP Chapter 105 regulations.

C. Adequate erosion protection shall be provided along all open channels, and at all points of discharge (DEP Erosion and Sediment Pollution Control Program Manual).

D. The Township of Maidencreek reserves the right to disapprove any design that would result in the construction in or continuation of a stormwater problem area.

E. No stormwater detention facility shall be placed within fifty (50) feet of a special geologic feature. No subsurface stormwater conveyance facility shall be constructed within fifty (50) feet of a special geologic feature, unless it is constructed of durable pipe utilizing watertight joints.

ARTICLE IV
Drainage Plan Requirements

§ 182-20. General Requirements.

For any of the activities regulated by this chapter, the preliminary or final approval of subdivision and/or land development plans, the issuance of any building or occupancy permit, or the commencement of any earth disturbance activity may not proceed until the Property Owner or Applicant or his/her agent has received written approval of a Drainage Plan from the Township of Maidencreek unless the project qualifies for an exemption from the requirements to submit a Drainage Plan.

§ 182-21. Exemptions.

A. General Exemptions. The following land use activities are exempt from the drainage plan submission requirements of this chapter:

(1) Use of land for gardening for home consumption.

(2) Agricultural plowing and tilling are exempt from the rate control and stormwater management site plan preparation requirements of this chapter provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.

(3) Forest Management and timber operations are exempt from the rate control and stormwater management site plan preparation requirements of this chapter provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.

B. Stormwater Quantity Control Exemption.

(1) Any Regulated Activity that meets the impervious area exemption criteria in Table 182-21B(1) shall not be required to implement the stormwater quantity controls specified in § 182-16 of this chapter. These criteria shall apply to the total development even if development is to take place in phases. The date of the municipal ordinance adoption shall be the starting point from which to consider tracts as "parent tracts" in which future subdivisions and respective impervious area computations shall be cumulatively considered. Impervious areas existing on the "parent tract" prior to adoption of this chapter shall not be considered in cumulative impervious area calculations for exemption purposes.

TABLE 182-21B(1)
Impervious Area Exemption Criteria

Total Parcel Size (acres)	Impervious Area Exemption (square feet)
0 to < 0.125	1,000
0.125 to < 0.5	2,500
0.5 to < 1	5,000
1 to < 2	7,500
2 to < 3	10,000
3 to < 4	12,500
> or = 4	15,000

(2) Submissions for projects that utilize the exemption under this Subsection B shall reference Appendix H of this chapter to meet the requirements of groundwater recharge (§ 182-13), water quality (§ 182-14), and streambank erosion (§ 182-15) controls of this chapter. Drainage plans in accordance with § 182-25A(2), B(7), (8), (11), (15), and (22) and D(2) must still be submitted. Any exemption must first be approved by the Township of Maidencreek.

C. Additional Exemption Requirement.

(1) Exemption does not relieve the Applicant from the responsibility to secure required permits or approvals for activities regulated by any other applicable code, rule, act, or ordinance. Nor does exemption relieve the Applicant from meeting the water quality requirements of this chapter.

(2) Exemption responsibilities. An exemption shall not relieve the applicant from implementing such measures as are necessary to protect the public health, safety, and property. An exemption shall not relieve the Applicant from providing adequate stormwater management for regulated activities to meet the purpose of this chapter; however, drainage plans will not have to be submitted to the municipality.

(3) HQ and EV streams.

(a) This exemption shall not relieve the applicant from meeting the special requirements for watersheds draining to high quality (HQ) or exceptional value (EV) waters, identified and Source Water Protection Areas (SWPA) and requirements for nonstructural project design sequencing (§ 182-12), groundwater recharge (§ 182-13), water quality (§ 182-14), and streambank erosion (§ 182-15). The volume and rate of the net increase in stormwater runoff from regulated activities must be managed to prevent the physical degradation of receiving waters from such effects as scour and streambank destabilization, to satisfy state water quality requirements;

(b) All regulated activities occurring in drainage areas tributary to waters designated HQ/EV pursuant to 25 Pa. Code Chapter 93, shall not change any biological, chemical, or physical characteristics, including volume, rate, velocity, course, current, cross section, or temperature of the waters, unless the activity is specifically permitted in accordance with the environmental laws of the Commonwealth.

(4) Drainage Problems. If a drainage problem is documented or known to exist downstream of, or expected from the proposed activity, then the municipality may require a drainage plan submittal.

(5) Subdivision plans for three lots or fewer are exempt from the requirement to submit a Drainage Plan at the time of the subdivision; however, development of the individual lots created by the subdivision is subject to all other provisions of this chapter.

§ 182-22. Volume Controls.

The green infrastructure and low impact development practices provided in the BMP Manual[4] shall be utilized for all regulated activities wherever possible. Water volume controls shall be implemented using the *Design Storm Method* in Subsection A or the *Simplified Method* in Subsection B below. For regulated activity areas less than one acre that do not require hydrologic routing to design the stormwater facilities, this chapter establishes no preference for either methodology; therefore, the applicant may select either methodology on the basis of economic considerations, the intrinsic limitations on applicability of the analytical procedures associated with each methodology and other factors.

A. The *Design Storm Method* (CG-1 in the BMP Manual[4]) is applicable to any size of regulated activity. This method requires detailed modeling based on site conditions.

(1) Do not increase the post-development total runoff volume for all storms equal to or less than the 2-year 24-hour duration precipitation.

(2) For modeling purposes.

(a) Existing (predevelopment) non-forested pervious areas must be considered meadow in good condition.

(b) Existing impervious areas, when present, shall be considered meadow in good condition in the model for existing conditions.

B. The *Simplified Method* (CG-2 in the BMP Manual[4]) provided below is independent of site conditions and should be used if the *Design Storm Method* is not followed. This method is not applicable to regulated activities greater than one acre or for projects that require design of stormwater storage facilities. For new impervious surfaces:

(1) Stormwater facilities shall capture at least the first two (2) inches of runoff from all new impervious surfaces.

(2) At least the first one inch of runoff from new impervious surfaces shall be permanently removed from the runoff flow, i.e., it shall not be released into the surface waters of this Commonwealth. Removal options include reuse, evaporation, transpiration, and infiltration.

(3) Wherever possible, infiltration facilities should be designed to accommodate infiltration of the entire permanently removed runoff; however, in all cases at least the first 0.5 inch of the permanently removed runoff should be infiltrated.

(4) This method is exempt from the requirements of § 182-23.

§ 182-23. Rate Controls.

A. The Maiden Creek Watershed has been divided into stormwater management districts as shown on the Management District Map in Appendix D of this chapter. Corresponding release rate percentages associated with each storm shall follow the provisions of this chapter, § 182-16.

§ 182-24. Riparian Buffers.

A. In order to protect and improve water quality, a Riparian Buffer Easement shall be created and recorded as part of any subdivision or land development that encompasses a Riparian Buffer.

B. Except as required by Chapter 102, the Riparian Buffer Easement shall be measured to be the greater of the limit of the 100 year floodplain or a minimum of 50 feet from the top of the streambank (on each side).

C. Minimum Management Requirements for Riparian Buffers.

(1) Existing native vegetation shall be protected and maintained within the Riparian Buffer Easement.

(2) Whenever practicable invasive vegetation shall be actively removed, and the Riparian Buffer Easement shall be planted with native trees, shrubs and other vegetation to create a diverse native plant community appropriate to the intended ecological context of the site.

D. The Riparian Buffer Easement shall be enforceable by the municipality and shall be recorded in the Berks County Recorder of Deeds Office, so that it shall run with the land and shall limit the use of the property located therein. The easement shall allow for the continued private ownership and shall count toward the minimum lot area as required by Zoning, unless otherwise specified in the municipal Zoning Ordinance.

E. Any permitted use within the Riparian Buffer Easement shall be conducted in a manner that will maintain the extent of the existing 100-year floodplain, improve or maintain the stream stability, and preserve and protect the ecological function of the floodplain.

F. The following conditions shall apply when public and/or private recreation trails are permitted within Riparian Buffers.

(1) Trails shall be for non-motorized use only.

(2) Trails shall be designed to have the least impact on native plant species and other sensitive environmental features.

G. Septic drainfields and sewage disposal systems shall not be permitted within the Riparian Buffer Easement and shall comply with setback requirements established under 25 Pa. Code Chapter 73.

§ 182-25. Drainage Plan Contents.

The Drainage Plan shall consist of a general description of the project including sequencing items described in § 182-12, calculations, maps and plans. A note on the maps shall refer to the associated computations and erosion and sediment control plan by title and date. The cover sheet of the computations and erosion and sediment control plan shall refer to the associated maps by title and date. All drainage plan materials shall be submitted to the Township of Maidencreek in a format that is clear, concise, legible, neat, and well organized; otherwise, the drainage plan shall not be accepted for review and shall be returned to the applicant. The following items shall be included in the Drainage Plan:

A. General.

(1) General description of the project including those areas described in § 182-12.

(2) General description of permanent stormwater management techniques, including construction specifications of the materials to be used for stormwater management facilities.

(3) Complete hydrologic, hydraulic, and structural computations for all stormwater management facilities.

(4) An Erosion and Sediment Control Plan, including all reviews and approvals by the Conservation District.

(5) A general description of nonpoint source pollution controls.

B. Maps. Map(s) of the project area shall be submitted on 24-inch x 36-inch sheets and/or shall be prepared in a form that meets the requirements for recording at the offices of the Recorder of Deeds of Berks County. If Chapter 190, Subdivision and Land Development (SALDO), of the Code of the Township of Maidencreek has more stringent criteria then the more stringent criteria shall apply. The contents of the map(s) shall include, but not be limited to:

(1) The location of the project relative to highways, municipalities, or other identifiable landmarks.

(2) Existing contours at intervals of two feet. In areas of steep slopes (greater than 15%), five-foot contour intervals may be used.

(3) Existing streams, lakes, ponds or other waters of the commonwealth within the project area.

(4) Other physical features including flood hazard boundaries, stream buffers, existing drainage courses, areas of natural vegetation to be preserved, and the total extent of the upstream area draining through the site.

(5) The locations of all existing and proposed utilities, sanitary sewers, and water lines within fifty (50) feet of property lines.

(6) An overlay showing soil names and boundaries.

(7) Limits of earth disturbance, including the type and amount of impervious area that would be added.

(8) Proposed structures, roads, paved areas, and buildings.

(9) Final contours at intervals of two feet. In areas of steep slopes (greater than 15%), five-foot contour intervals may be used.

(10) The name of the development, the name and address of the owner of the property, and the name of the individual or firm preparing the plan.

(11) The date of submission.

(12) A graphic and written scale of one (1) inch equals no more than fifty (50) feet; for tracts of twenty (20) acres or more, the scale shall be one (1) inch equals no more than one hundred (100) feet.

(13) A North arrow.

(14) The total tract boundary and size with distances marked to the nearest foot and bearings to the nearest degree.

(15) Existing and proposed land use(s).

(16) A key map showing all existing man-made features beyond the property boundary that would be affected by the project.

(17) Location of all open channels.

(18) Overland drainage patterns and swales.

(19) A twenty (20) foot wide access easement around all stormwater management facilities that would provide ingress to and egress from a public right-of-way.

(20) The location of all erosion and sediment control facilities.

(21) A note on the plan indicating the location and responsibility for maintenance of stormwater management facilities that would be located on/off-site. All on/off-site facilities shall meet the performance standards and design criteria specified in this chapter.

(22) The following statement, signed by the landowner, shall be provided on the plan:

"I, (Property Owner), on this date (date of signature), acknowledges that any revisions to the approved Drainage Plan must be approved by the Township of Maidencreek and the Berks County Conservation District."

(23) The following signature block for the Design Engineer:

"I, (Design Engineer), on this date (date of signature), hereby certify that the Drainage Plan meets all design standards and criteria of the Maiden Creek Watershed Act 167 Stormwater Management Ordinance."

C. Supplemental Information.

(1) A written description of the following information shall be submitted.

(a) The overall stormwater management concept for the project designed in accordance with § 182-12.

(b) Stormwater runoff computations as specified in this chapter.

(c) Stormwater management techniques to be applied both during and after development.

(d) Expected project time schedule.

(e) Development stages (project phases) if so proposed.

(f) An operation and maintenance plan in accordance with § 182-34 of this chapter.

(2) An erosion and sediment control plan.

(3) The effect of the project (in terms of runoff volumes and peak flows) on adjacent properties and on any existing municipal stormwater collection system that may receive runoff from the project site.

D. Stormwater Management Facilities.

(1) All stormwater management facilities must be located on a plan and described in detail.

(2) When infiltration facilities such as seepage pits, beds or trenches are used, the locations of existing and proposed septic tank infiltration areas and wells must be shown.

(3) All calculations, assumptions, and criteria used in the design of the stormwater management facilities must be shown.

(4) A justification must be included in the SWM Site Plan if BMPs other than green infrastructure methods and LID practices are proposed to achieve the volume, rate and water quality controls under this chapter.

E. Responsibilities for Operations and Maintenance of Stormwater Controls and BMPs.

(1) No Regulated Earth Disturbance activities within the Township of Maidencreek shall commence until approval by the Township of Maidencreek of a stormwater control and BMP operations and maintenance plan which describes how the permanent (e.g., post-construction) stormwater controls and BMPs will be properly operated and maintained.

(2) The following items shall be included in the Stormwater Control and BMP operations and maintenance plan:

(a) Map(s) of the project area, in a form that meets the requirements for recording at the offices of the Recorder of Deeds of Berks County, and shall be submitted on 24-inch x 36-inch sheets. The contents of the maps(s) shall include, but not be limited to:

[1] Clear identification of the location and nature of permanent stormwater controls and BMPs,

[2] The location of the project site relative to highways, municipal boundaries or other identifiable landmarks,

[3] Existing and final contours at intervals of two feet, or others as appropriate,

[4] Existing streams, lakes, ponds, or other bodies of water within the project site area,

[5] Other physical features including flood hazard boundaries, sinkholes, streams, existing drainage courses, and areas of natural vegetation to be preserved,

[6] The locations of all existing and proposed utilities, sanitary sewers, and water lines within fifty (50) feet of property lines of the project site,

[7] Proposed final changes to the land surface and vegetative cover, including the type and amount of impervious area that would be added,

[8] Proposed final structures, roads, paved areas, and buildings, and

[9] A twenty (20) foot wide access easement around all stormwater controls and BMPs that would provide ingress to and egress from a public right-of-way.

(b) A description of how each permanent stormwater control and BMP will be operated and maintained, and the identity of the person(s) responsible for operations and maintenance,

(c) The name of the project site, the name and address of the owner of the property, and the name of the individual or firm preparing the plan, and

(d) The following statement, signed by the landowner, shall be provided on the plan:

"I, (Property Owner), acknowledge that the stormwater controls and BMPs are permanent fixtures that can be altered or removed only after approval by the Township of Maidencreek."

(3) The stormwater control and BMP operations and maintenance plan for the project site shall establish responsibilities for the continuing operation and maintenance of all permanent stormwater controls and BMPs, as follows:

(a) If a plan includes structures or lots which are to be separately owned and in which streets, sewers and other public improvements are to be dedicated to the Township of

Maidencreek, stormwater controls and BMPs may also be dedicated to and maintained by the Township of Maidencreek;

(b) If a plan includes operations and maintenance by a single ownership, or if sewers and other public improvements are to be privately owned and maintained, then the operation and maintenance of stormwater controls and BMPs shall be the responsibility of the owner or private management entity.

(4) The Township of Maidencreek shall make the final determination on the continuing operations and maintenance responsibilities. The Township of Maidencreek reserves the right to accept or reject the operations and maintenance responsibility for any or all of the stormwater controls and BMPs.

F. Municipality Review of stormwater control and BMP operations and maintenance plan.

(1) The Township of Maidencreek shall review the stormwater control and BMP operations and maintenance plan for consistency with the purposes and requirements of this chapter, and any permits issued by DEP.

(2) The Township of Maidencreek shall notify the applicant in writing whether the stormwater control and BMP operations and maintenance plan is approved.

(3) The Township of Maidencreek may require a "record drawing" of all stormwater controls and BMPs, and an explanation of any discrepancies with the operations and maintenance plan.

§ 182-26. Plan Submission.

The Township of Maidencreek shall require receipt of a complete plan, as specified in this chapter. For any activities that require an NPDES Permit for stormwater discharges from construction activities, a Pennsylvania DEP joint permit application, a PennDOT highway occupancy permit, or any other permit under applicable state or federal regulations are regulated under Chapter 105 (Dam Safety and Waterway Management) or Chapter 106 (Floodplain Management) of Pennsylvania DEPs Rules and Regulations, or the proof of application for said permit(s) or approvals shall be part of the plan. The plan shall be coordinated with the state and federal permit process and the municipal SALDO review process.

A. For projects which require SALDO approval, the drainage plan shall be submitted by the applicant as part of the preliminary plan submission where applicable for the regulated activity.

B. For these regulated activities that do not require SALDO approval, See § 182-20, Approval required.

C. Six (6) copies of the drainage plan shall be submitted and distributed as follows:

(1) Two copies to the Township of Maidencreek accompanied by the requisite municipal review fee, as specified in this chapter.

(2) Two (2) copies to the Conservation District.

(3) One (1) copy to the Municipal Engineer.

(4) One (1) copy to the Berks County Planning Commission.

§ 182-27. Drainage Plan Review.

A. The Township of Maidencreek shall review the Drainage Plan for consistency with the adopted Maiden Creek Watershed Act 167 Stormwater Management Plan. Any found incomplete shall not be accepted for review and shall be returned to the applicant.

B. For activities regulated by this chapter, the Township of Maidencreek shall notify the applicant in writing, within 90 calendar days, whether the drainage plan is consistent with the stormwater management plan.

(1) Should the Drainage Plan be determined to be consistent with the stormwater management plan, the Municipal Engineer shall forward an approval letter to the Municipal Secretary who will then forward a copy to the applicant.

(2) Should the Drainage Plan be determined to be inconsistent with the stormwater management plan, the Municipal Engineer shall forward a disapproval letter to the Municipal Secretary who will then forward a copy to the applicant. The disapproval letter shall cite the reason(s) and specific ordinance sections for the disapproval. Disapproval may be due to inadequate information to make a reasonable judgment as to compliance with the stormwater management plan. Any disapproved drainage plans may be revised by the applicant and resubmitted consistent with this chapter.

C. For Regulated Activities specified in § 182-5 of this chapter, which require a building permit, the Municipal Engineer shall notify the Municipal Building Permit Officer in writing, within a time frame consistent with the Municipal Building Code and/or Chapter 190, Subdivision and Land Development, whether the drainage plan is consistent with the stormwater management plan and forward a copy of the approval/disapproval letter to the applicant. Any disapproved drainage plan may be revised by the applicant and resubmitted consistent with this chapter.

D. For regulated activities under this chapter that require an NPDES permit application, the applicant shall forward a copy of the Municipal Engineer's letter stating that the drainage plan is consistent with the stormwater management plan to the Conservation District. Pennsylvania DEP and the Conservation District may consider the Municipal Engineer's review comments in determining whether to issue a permit.

E. For any SWM Site Plan that proposes to use any BMPs other than green infrastructure and LID practices to achieve the volume and rate controls required under this chapter, the Municipality will not approve the SWM Site Plan unless it determines that green infrastructure and LID practices are not practicable.

F. The Township of Maidencreek shall not grant approval or grant preliminary approval to any subdivision or land development for regulated activities specified in § 182-5 of this chapter if the drainage plan has been found to be inconsistent with the stormwater management plan, as determined by the Township of Maidencreek. All required permits from Pennsylvania DEP must be obtained prior to approval of any subdivision or land development.

G. The Applicant shall be responsible for completing record drawings of all stormwater management facilities included in the approved drainage plan. The record drawings and an explanation of any discrepancies with the design plans shall be submitted to the Township of Maidencreek for final approval. The Township of Maidencreek may withhold approval of the record drawings until the Township of Maidencreek receives a copy of an approved highway occupancy permit from the PennDOT District Office, NPDES permit, and any other applicable permits or approvals, from Pennsylvania DEP or the Conservation District. The above permits and approvals must be based on the record drawings.

H. The Township of Maidencreek's approval of a Drainage Plan shall be valid for a period not to exceed five years, commencing on the date that the Township of Maidencreek signs the approved drainage plan. If stormwater management facilities included in the approved drainage plan have not been constructed, or if constructed, and record drawings of these facilities have not been approved within this five-year time period, then the Township of Maidencreek may consider the drainage plan disapproved and may revoke any and all permits. Drainage plans that are considered disapproved by the Township of Maidencreek shall be resubmitted in accordance with § 182-29 of this chapter.

I. For municipalities located in the Lehigh County portion of the watershed, the drainage plan must be submitted to the Lehigh Planning Commission (LVPC) for review. The municipalities shall take the LVPCs comments into consideration.

§ 182-28. Modification of Plans.

A. A modification to a Drainage Plan under review by the Township of Maidencreek for a development site that involves a change in stormwater management facilities or techniques, or that involves the relocation or re-design of stormwater management facilities, or that is necessary because soil or other conditions are not as stated on the drainage plan as determined by the Township of Maidencreek, shall require a resubmission of the modified drainage plan consistent with § 182-26 of this chapter and be subject to review as specified in § 182-27 of this chapter.

B. A modification to an already approved or disapproved drainage plan shall be submitted to the Township of Maidencreek, accompanied by the applicable municipal review and inspection fee. A modification to a drainage plan for which a formal action has not been taken by the Township of Maidencreek shall be submitted to the municipality, accompanied by the applicable municipal review and inspection fee.

§ 182-29. Resubmission of Disapproved Drainage Plans.

A disapproved drainage plan may be resubmitted, with the revisions addressing the Township of Maidencreek's concerns documented in writing and addressed to the Municipal Secretary in accordance with § 182-26 of this chapter and distributed accordingly and be subject to review as specified in § 182-27 of this chapter. The applicable municipal review and inspection fee must accompany a resubmission of a disapproved drainage plan.

ARTICLE V
Inspections

§ 182-30. Schedule of Inspections.

A. The Township of Maidencreek or its designee shall inspect all phases of the installation of the permanent stormwater management facilities as deemed appropriate by the Township of Maidencreek.

B. During any stage of the work, if the Township of Maidencreek or its designee determines that the permanent stormwater management facilities are not being installed in accordance with the approved stormwater management plan, the Township of Maidencreek shall revoke any existing building permits and issue a cease and desist order until a revised drainage plan is submitted and approved, as specified in this chapter.

C. A final inspection of all stormwater management facilities shall be conducted by the Township of Maidencreek or its designee to confirm compliance with the approved drainage plan prior to the issuance of any occupancy permit.

ARTICLE VI
Fees and Expenses

§ 182-31. Drainage Plan Review and Inspection Fee.

Fees shall be established by the Township of Maidencreek to defray plan review and construction inspection costs incurred by the Township of Maidencreek. All fees shall be paid by the applicant at the time of drainage plan submission. Review and inspection fee schedule shall be established by resolution of the municipal governing body based on the size of the regulated activity and based on the Township of Maidencreek's costs for reviewing drainage plans and conducting inspections pursuant to § 182-30. The Township of Maidencreek shall periodically update the review and inspection fee schedule to ensure that review costs are adequately reimbursed.

§ 182-32. Expenses Covered by Fees.

The fees required by this chapter shall at a minimum cover:

A. Administrative costs.

B. The review of the drainage plan by the Township of Maidencreek or its consultant.

C. The site inspections.

D. The inspection of stormwater management facilities and drainage improvements during construction.

E. The final inspection upon completion of the stormwater management facilities and drainage improvements presented in the drainage plan.

F. Any additional work required to enforce any permit provisions regulated by this chapter, correct violations, and assure proper completion of stipulated remedial actions.

ARTICLE VII
Maintenance Responsibilities

§ 182-33. Performance Guarantee.

A. For subdivisions and land developments the applicant shall provide a financial guarantee to the Township of Maidencreek for the timely installation and proper construction of all stormwater management controls as:

   (1) Required by the approved drainage plan equal to or greater than the full construction cost of the required controls or

   (2) In the amount and method of payment provided for in Chapter 190, Subdivision and Land Development, of the Code of the Township of Maidencreek.

B. For other regulated activities, the Township of Maidencreek may require a financial guarantee from the applicant.

C. At the completion of the project, and as a prerequisite for the release of the performance guarantee, the applicant or his representatives shall:

   (1) Provide a certification of completion from an engineer, architect, surveyor or other qualified person verifying that all permanent facilities have been constructed according to the plans and specifications and approved revisions thereto.

   (2) Provide a set of record drawings.

D. After the Township of Maidencreek receives the certification, a final inspection shall be conducted by the Township of Maidencreek or designee to certify compliance with this chapter.

§ 182-34. Adherence to approved stormwater control and BMP operations and maintenance plan.

It shall be unlawful to alter or remove any permanent stormwater control and BMP required by an approved stormwater control and BMP operations and maintenance plan, or to allow the property to remain in a condition which does not conform to an approved stormwater control and BMP operations and maintenance plan.

§ 182-35. Operations and maintenance agreement for privately owned stormwater controls and BMPs.

A. The property owner shall sign an operations and maintenance agreement with the Township of Maidencreek covering all stormwater controls and BMPs that are to be privately owned. The agreement shall be substantially the same as the agreement in Appendix A of this chapter.

B. Other items may be included in the agreement where determined necessary to guarantee the satisfactory operation and maintenance of all permanent stormwater controls and BMPs. The agreement shall be subject to the review and approval of the Township of Maidencreek.

§ 182-36. Stormwater Management Easements.

A. Stormwater management easements are required for all areas used for off-site stormwater control, unless a waiver is granted by the Township of Maidencreek.

B. Stormwater management easements shall be provided by the property owner if necessary for 1) access for inspections and maintenance, or 2) preservation of stormwater runoff conveyance, infiltration, and detention areas and other stormwater controls and BMPs, by persons other than the property owner. The purpose of the easement shall be specified in any agreement under § 182-35.

§ 182-37. Maintenance Agreement for Privately Owned Stormwater Facilities.

A. Prior to final approval of the site's drainage plan, the applicant shall sign and record the maintenance agreement contained in Appendix A which is attached and made part hereof, covering all stormwater control facilities that are to be privately owned.

B. Other items may be included in the agreement where determined necessary to guarantee the satisfactory maintenance of all facilities. The maintenance agreement shall be subject to the review and approval of the Municipal Solicitor and governing body.

§ 182-38. Recording of approved stormwater control and BMP operations and maintenance plan and related agreements.

A. The owner of any land upon which permanent stormwater controls and BMPs will be placed, constructed or implemented, as described in the stormwater control and BMP operations and maintenance plan, shall record the following documents in the Office of the Recorder of Deeds for Berks County, within 15 days of approval of the stormwater control and BMP operations plan by the Municipality:

(1) The Operations and Maintenance Plan, or a summary thereof,

(2) Operations and Maintenance Agreements under § 182-35, and

(3) Easements under § 182-36.

B. The Township of Maidencreek may suspend or revoke any approvals granted for the project site upon discovery of the failure of the owner to comply with this section.

§ 182-39. Municipal Stormwater Control and BMP Operation and Maintenance Fund.

A. Persons installing stormwater controls or BMPs shall be required to pay a specified amount to the Municipal Stormwater Control and BMP Operation and Maintenance Fund to help defray costs of

periodic inspections and maintenance expenses. The amount of the deposit shall be determined as follows:

(1) If the stormwater control or BMP is to be privately owned and maintained, the deposit shall cover the cost of periodic inspections performed by the Township of Maidencreek for a period of ten (10) years, as estimated by the Municipal Engineer. After that period of time, inspections will be performed at the expense of the Township of Maidencreek.

(2) If the stormwater control or BMP is to be owned and maintained by the Township of Maidencreek, the deposit shall cover the estimated costs for maintenance and inspections for ten (10) years. The Municipal Engineer will establish the estimated costs utilizing information submitted by the applicant.

(3) The amount of the deposit to the fund shall be converted to present worth of the annual series values. The Municipal Engineer shall determine the present worth equivalents, which shall be subject to the approval of the governing body.

B. If a stormwater control or BMP is proposed that also serves as a recreation facility (e.g., ballfield, lake), the Township of Maidencreek may reduce or waive the amount of the maintenance fund deposit based upon the value of the land for public recreation purpose.

C. If at some future time a stormwater control or BMP (whether publicly or privately owned) is eliminated due to the installation of storm sewers or other storage facility, the unused portion of the maintenance fund deposit will be applied to the cost of abandoning the facility and connecting to the storm sewer system or other facility. Any amount of the deposit remaining after the costs of abandonment are paid will be returned to the depositor.

D. If stormwater controls or BMPs are accepted by the Township of Maidencreek for dedication, the Township of Maidencreek may require persons installing stormwater controls or BMPs to pay a specified amount to the Municipal Stormwater Control and BMP Operation and Maintenance Fund, to help defray costs of operations and maintenance activities. The amount may be determined as follows:

(1) If the stormwater control or BMP is to be owned and maintained by the Township of Maidencreek, the amount shall cover the estimated costs for operations and maintenance for ten (10) years, as determined by the Township of Maidencreek.

(2) The amount shall then be converted to present worth of the annual series values.

E. If a stormwater control or BMP is proposed that also serves as a recreation facility (e.g. ball field, lake), the Township of Maidencreek may adjust the amount due accordingly.

F. Long-Term Maintenance. The Township of Maidencreek shall require applicants to pay a fee to the Municipal Stormwater Maintenance Fund to cover long term maintenance of stormwater control and best management practices.

G. Stormwater Related Problems. The Township of Maidencreek may require applicants to pay a fee to the Municipal Stormwater Maintenance Fund to cover stormwater related problems which may arise from the land development and earth disturbance.

ARTICLE VIII
Prohibitions

§ 182-40. Prohibited Discharges and Connections.

A. Any drain or conveyance, whether on the surface or subsurface, which allows any non-stormwater discharge including sewage, process wastewater, and wash water to enter the waters of this commonwealth is prohibited.

B. No person shall allow, or cause to allow, discharges into surface waters of this commonwealth which are not composed entirely of stormwater, except:

(1) As provided in Subsection C below, and

(2) Discharges allowed under a state or federal permit.

C. The following discharges are authorized unless they are determined to be significant contributors to pollution to the waters of this Commonwealth:

(1) Discharges from fire-fighting activities.

(2) Potable water sources including water line flushing.

(3) Irrigation drainage.

(4) Air conditioning condensate.

(5) Springs.

(6) Water from crawl space pumps.

(7) Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spill material has been removed) and where detergents are not used.

(8) Flows from riparian habitats and wetlands.

(9) Uncontaminated water from foundations or from footing drains.

(10) Lawn watering.

(11) Dechlorinated swimming pool discharges.

(12) Uncontaminated groundwater.

(13) Water from individual residential car washing.

(14) Routine external building wash down (which does not use detergents or other compounds).

D. In the event that the Township of Maidencreek or DEP determines that any of the discharges identified in Subsection C significantly contribute to pollution of the waters of this commonwealth, the Township of Maidencreek or DEP will notify the responsible person(s) to cease the discharge.

§ 182-41. Roof Drains.

Roof drains and sump pumps shall discharge to infiltration or vegetative BMPs and to the maximum extent practicable satisfy the criteria for disconnected impervious areas.

§ 182-42. Alteration of stormwater management BMPs.

No person shall modify, remove, fill, landscape, or alter any stormwater management BMPs, facilities, areas, or structures, without the written approval of the Township of Maidencreek.

ARTICLE IX
Enforcement and Penalties

§ 182-43. Right-of-Entry

A. Upon presentation of proper credentials, duly authorized representatives of the Township of Maidencreek may enter at reasonable times upon any property within the Township of Maidencreek to inspect the implementation, condition, or operation and maintenance of the stormwater controls or BMPs in regard to any aspect governed by this chapter.

B. Stormwater control and BMP owners and operators shall allow persons working on behalf of the Township of Maidencreek ready access to all parts of the premises for the purposes of determining compliance with this chapter.

C. Persons working on behalf of the Township of Maidencreek shall have the right to temporarily locate on any stormwater control or BMP in the Township of Maidencreek such devices as are necessary to conduct monitoring and/or sampling of the discharges from such stormwater control or BMP.

D. Unreasonable delays (more than 24 hours) in allowing the Township of Maidencreek access to a stormwater control or BMP is a violation of this article.

§ 182-44. Public nuisance.

A. The violation of any provision of this chapter is hereby deemed a public nuisance.

B. Each day that a violation continues shall constitute a separate violation.

§ 182-45. Notice to comply.

A. Whenever the Township of Maidencreek finds that a person has violated a prohibition or failed to meet a requirement of this chapter, the Township of Maidencreek may order compliance by written notice to the responsible person. Such notice may require without limitation:

   (1) The performance of monitoring, analyses, and reporting;

   (2) The elimination of prohibited connections or discharges;

   (3) Cessation of any violating discharges, practices, or operations;

   (4) The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property;

   (5) Payment of a fine to cover administrative and remediation costs;

   (6) The implementation of stormwater controls and BMPs; and

   (7) Operation and maintenance of stormwater controls and BMPs.

B. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of these violations(s). Said notice may further advise that, if applicable, should the

violator fail to take the required action within the established deadline, the work will be done by the Township of Maidencreek or designee and the expense thereof shall be charged to the violator.

C. Failure to comply within the time specified shall also subject such person to the penalty provisions of this chapter. All such penalties shall be deemed cumulative and shall not prevent the municipality from pursuing any and all other remedies available in law or equity.

§ 182-46. Suspension and revocation of permits and approvals.

A. Any building, land development or other permit or approval issued by the Township of Maidencreek may be suspended or revoked, in whole or in part, by the Township of Maidencreek for:

(1) Non-compliance with or failure to implement any provision of the permit;

(2) A violation of any provision of this chapter; or

(3) The creation of any condition or the commission of any act during construction or development which constitutes or creates a hazard or nuisance, pollution or which endangers the life or property of others.

B. A suspended permit or approval may be reinstated by the Township of Maidencreek, in whole or in part, when:

(1) The Township of Maidencreek or designee has inspected and approved the corrections to the stormwater controls and BMPs, or the elimination of the hazard or nuisance, and/or;

(2) The Township of Maidencreek is satisfied that the violation of the ordinance, law, or rule and regulation has been corrected.

C. A permit or approval which has been revoked in whole or in part by the Township of Maidencreek cannot be reinstated. The applicant may apply for a new permit under the procedures outlined in this chapter.

§ 182-47. Violations and penalties.

A. Any violation of the provisions of this chapter shall be enforced by action brought before a Magisterial District Judge in the same manner provided for the enforcement of summary offenses under the Pennsylvania Rules of Criminal Procedure. The Municipal Solicitor may assume charge of the prosecution without the consent of the District Attorney as required by Pa.R.Crim.P. No. 454 (relating to trial in summary cases). Upon conviction, the person shall be subject to a fine of not more than $1,000 for each violation, recoverable with costs, or imprisonment to the extent allowed by law for the punishment of summary offenses, or both. Each day that the violation continues shall be a separate offense.

B. In addition, the Township of Maidencreek, through its Solicitor, may institute injunctive, mandamus or any other appropriate action or proceeding at law or in equity for the enforcement of this chapter. Any court of competent jurisdiction shall have the right to issue restraining orders,

temporary or permanent injunctions, mandamus or other appropriate forms of remedy or relief. The imposition of a fine or penalty for any violation of, or non-compliance with, this chapter shall not excuse the violation or non-compliance, or permit it to continue, and all such persons shall be required to correct or remedy such violations and non-compliances.

§ 182-48. Notification.

In the event that a person fails to comply with the requirements of this chapter, or fails to conform to the requirements of any permit issued hereunder, the Municipality will provide notification of the violation. After notice is provided, failure to correct violations in a timely manner may result in additional violations.

§ 182-49. Enforcement.

The Township of Maidencreek Board of Supervisors is hereby authorized and directed to enforce all of the provisions of this chapter. All inspections regarding compliance with the drainage plan shall be the responsibility of the Municipal Engineer or other qualified persons designated by the Township of Maidencreek.

A. No person shall modify, remove, fill, landscape or alter any stormwater management BMPs, facilities, areas, or structures, without the written approval of the Township of Maidencreek.

B. Upon presentation of proper credentials, the Township of Maidencreek may enter at reasonable times upon any property within the Township of Maidencreek to inspect the condition of the stormwater structures and facilities in regard to any aspect regulated by this chapter.

C. It shall be unlawful for a person to undertake any Regulated Activity except as provided in an approved stormwater management site plan, unless specifically exempted from the requirement to submit a stormwater management site plan by this chapter.

D. The Developer shall be responsible for providing as-built plan of all stormwater management BMPs included in the approved stormwater management site plan. The as-built plans and an explanation of any discrepancies with the construction plans shall be submitted by the developer to the Township of Maidencreek.

E. The as-built submission shall include a certification of completion signed by a qualified professional verifying that all permanent stormwater management BMPs have been constructed according to the approved plans and specifications. If any licensed qualified professionals contributed to the construction plans, then a licensed qualified professional must sign the completion certificate.

F. After receipt of the completion certificate by the Township of Maidencreek, the Township of Maidencreek may conduct a final inspection.

G. Inspections regarding compliance with the stormwater management site plan are a responsibility of the Township of Maidencreek.

H. The Township of Maidencreek may withhold an occupancy permit until a certificate of completion has been provided by the developer.

§ 182-50. Appeals.

A. Any person aggrieved by any action of the Township of Maidencreek or its designee may appeal to the Maidencreek Township Board of Supervisors within 30 days of that action.

B. Any person aggrieved by any decision of the Maidencreek Township Board of Supervisors may appeal to the County Court of Common Pleas in the county where the activity has taken place within 30 days of the municipal decision.

ENACTED and ORDAINED at a regular meeting of the Board of Supervisors on the 14th of September, 2023. This Ordinance shall take effect immediately.

David K. Frantz

[Name] David K. Frantz

Chairman

[Title]

Joshua Meck

[Name] Joshua Meck

Vice Chairman

[Title]

[Name] Heidi Fiedler

Supervisor

[Title]

[Name]

[Title]

[Name]

[Title]

ATTEST:

Secretary

I hereby certify that the foregoing Ordinance was advertised in the Reading Eagle on Sept. 6, 2023, a newspaper of general circulation in the municipality and was duly enacted and approved as set forth at a regular meeting of the municipality's governing body held on September 14, 2023.

Secretary

ORDINANCE APPENDIX A
Stormwater Controls And Best Management Practices Operations And Maintenance Agreement

THIS AGREEMENT, made and entered into this _____ day of _____, 20__, by and between _____, (hereinafter the "Landowner"), and _____, _____ County, Pennsylvania, (hereinafter "Municipality");

WITNESSETH

WHEREAS, the Landowner is the owner of certain real property as recorded by deed in the land records of _____ County, Pennsylvania, Deed Book _____ at Page _____, (hereinafter "Property").

WHEREAS, the Landowner is proceeding to build and develop the Property; and

WHEREAS, the Stormwater Controls and BMP Operations and Maintenance Plan approved by the Municipality (hereinafter referred to as the "Plan") for the property identified herein, which is attached hereto as Appendix A and made part hereof, as approved by the Municipality, provides for management of stormwater within the confines of the Property through the use of Best Management Practices (BMPs); and

WHEREAS, the Municipality, and the Landowner, his successors and assigns, agree that the health, safety, and welfare of the residents of the Municipality and the protection and maintenance of water quality require that on-site stormwater Best Management Practices be constructed and maintained on the Property; and

WHEREAS, for the purposes of this agreement, the following definitions shall apply:

BMP – "Best Management Practice;" activities, facilities, designs, measures or procedures used to manage stormwater impacts from land development, to protect and maintain water quality and groundwater recharge and to otherwise meet the purposes of the Municipal Stormwater Management Ordinance, including but not limited to infiltration trenches, seepage pits, filter strips, bioretention, wet

ponds, permeable paving, rain gardens, grassed swales, forested buffers, sand filters and detention basins.

- Infiltration Trench – A BMP surface structure designed, constructed, and maintained for the purpose of providing infiltration or recharge of stormwater into the soil and/or groundwater aquifer,
- Seepage Pit – An underground BMP structure designed, constructed, and maintained for the purpose of providing infiltration or recharge of stormwater into the soil and/or groundwater aquifer,
- Rain Garden – A BMP overlain with appropriate mulch and suitable vegetation designed, constructed, and maintained for the purpose of providing infiltration or recharge of stormwater into the soil and/or underground aquifer, and

WHEREAS, the Municipality requires, through the implementation of the Plan, that stormwater management BMPs as required by said Plan and the Municipal Stormwater Management Ordinance be constructed and adequately operated and maintained by the Landowner, his successors and assigns. and

NOW, THEREFORE, in consideration of the foregoing promises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

1. The BMPs shall be constructed by the Landowner in accordance with the plans and specifications identified in the Plan.
2. The Landowner shall operate and maintain the BMP(s) as shown on the Plan in good working order acceptable to the Municipality and in accordance with the specific maintenance requirements noted on the Plan.
3. The Landowner hereby grants permission to the Municipality, its authorized agents and employees, to enter upon the property, at reasonable times and upon presentation of proper

identification, to inspect the BMP(s) whenever it deems necessary. Whenever possible, the Municipality shall notify the Landowner prior to entering the property.

4. In the event the Landowner fails to operate and maintain the BMP(s) as shown on the Plan in good working order acceptable to the Municipality, the Municipality or its representatives may enter upon the Property and take whatever action is deemed necessary to maintain said BMP(s). This provision shall not be construed to allow the Municipality to erect any permanent structure on the land of the Landowner. It is expressly understood and agreed that the Municipality is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the Municipality.

5. In the event the Municipality, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like, the Landowner shall reimburse the Municipality for all expenses (direct and indirect) incurred within 10 days of receipt of invoice from the Municipality.

6. The intent and purpose of this Agreement is to ensure the proper maintenance of the onsite BMP(s) by the Landowner; provided, however, that this Agreement shall not be deemed to create or effect any additional liability of any party for damage alleged to result from or be caused by stormwater runoff.

7. The Landowner, its executors, administrators, assigns, and other successors in interests, shall release the Municipality's employees and designated representatives from all damages, accidents, casualties, occurrences or claims which might arise or be asserted against said employees and representatives from the construction, presence, existence, or maintenance of the BMP(s) by the Landowner or Municipality. In the event that a claim is asserted against the Municipality, its designated representatives or employees, the Municipality shall promptly notify the Landowner and the Landowner shall defend, at his own expense, any suit based on the claim. If any judgment or claims against the Municipality's employees or designated representatives shall be allowed, the Landowner shall pay all costs and expenses regarding said judgment or claim.

8. The Municipality shall inspect the BMP(s) at a minimum of once every three years to ensure their continued functioning.

This Agreement shall be recorded at the Office of the Recorder of Deeds of _____ County, Pennsylvania, and shall constitute a covenant running with the Property and/or equitable servitude, and shall be binding on the Landowner, his administrators, executors, assigns, heirs and any other successors in interests, in perpetuity.

ATTEST:

WITNESS the following signatures and seals:

(SEAL) For the Municipality:

_____

(SEAL) For the Landowner:

_____

ATTEST:

_____ (City, Borough, Township)

County of _____, Pennsylvania

I, _____, a Notary Public in and for the County and State aforesaid, whose commission expires on the _____ day of _____, 20__, do hereby certify that _____ whose name(s) is/are signed to the foregoing Agreement bearing date of the _____ day of _____, 20__, has acknowledged the same before me in my said County and State.

GIVEN UNDER MY HAND THIS _____ day of _____, 200_.

_____ _____

NOTARY PUBLIC **(SEAL)**

ORDINANCE APPENDIX B

Stormwater Management Design Criteria

TABLE B-1
REGION 4 - DESIGN STORM RAINFALL AMOUNT
Source: "Field Manual of Pennsylvania Department of Transportation"
STORM INTENSITY-DURATION-FREQUENCY CHARTS
P D T - I D F May 1986.

FIGURE B-1
NRCS TYPE II RAINFALL DISTRIBUTION – S CURVE
Source: NRCS, TR-55, June 1986

FIGURE B-2
PENNDOT DELINEATED REGIONS
Source: "Field Manual of Pennsylvania Department of Transportation"
STORM INTENSITY-DURATION-FREQUENCY CHARTS
P D T - I D F May 1986.

FIGURE B-3
PENNDOT REGION 4 STORM INTENSITY-DURATION-FREQUENCY CURVE
Source: "Field Manual of Pennsylvania Department of Transportation"
STORM INTENSITY-DURATION-FREQUENCY CHARTS
P D T - I D F May 1986.

TABLE B-2
RUNOFF CURVE NUMBERS
Source: NRCS (SCS) TR-55

TABLE B-3
RATIONAL RUNOFF COEFFICIENTS

TABLE B-4
MANNING ROUGHNESS COEFFICIENTS

TABLE B-5
INFILTRATION REQUIREMENTS IN CARBONATE AREAS

TABLE B-1
DESIGN STORM RAINFALL AMOUNT (INCHES)

The design storm rainfall amount chosen for design should be obtained from the PennDOT region in which the site is located according to Figure B-2.

Source: "Field Manual of Pennsylvania Department of Transportation"
STORM INTENSITY-DURATION-FREQUENCY CHARTS
P D T - I D F May 1986.

Region 4

Precipitation Depth (in)

Duration	1 Yr	1.5 Yr	2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr
5 min	0.30	0.33	0.35	0.41	0.45	0.50	0.55	0.61
15 min	0.58	0.63	0.68	0.80	0.93	1.03	1.13	1.25
1 hr	1.01	1.12	1.22	1.48	1.70	1.91	2.16	2.41
2 hr	1.24	1.37	1.50	1.84	2.14	2.46	2.80	3.18
3 hr	1.38	1.55	1.71	2.10	2.43	2.82	3.24	3.69
6 hr	1.68	1.86	2.04	2.52	3.06	3.60	4.14	4.74
12 hr	2.04	2.28	2.52	3.00	3.84	4.56	5.16	6.00
24 hr	2.40	2.64	2.88	3.60	4.56	5.76	6.48	7.44

FIGURE B-1
NRCS (SCS) TYPE II RAINFALL DISTRIBUTION - S CURVE

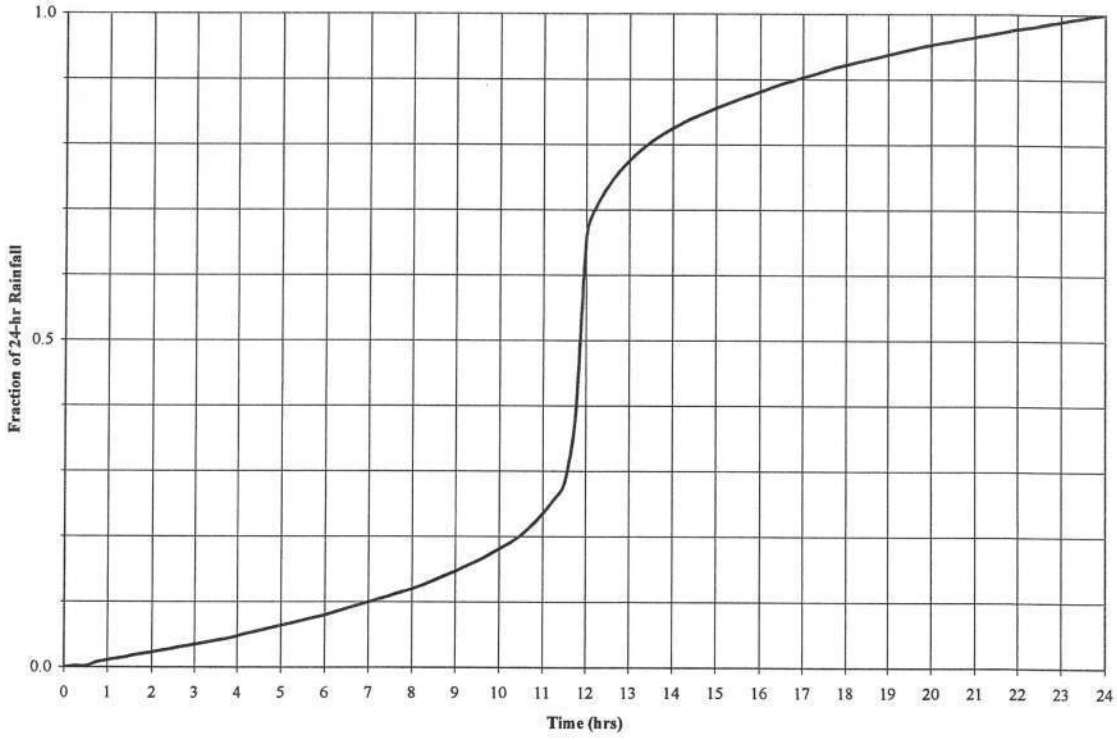


FIGURE B-2
PENNDOT DELINEATED REGIONS

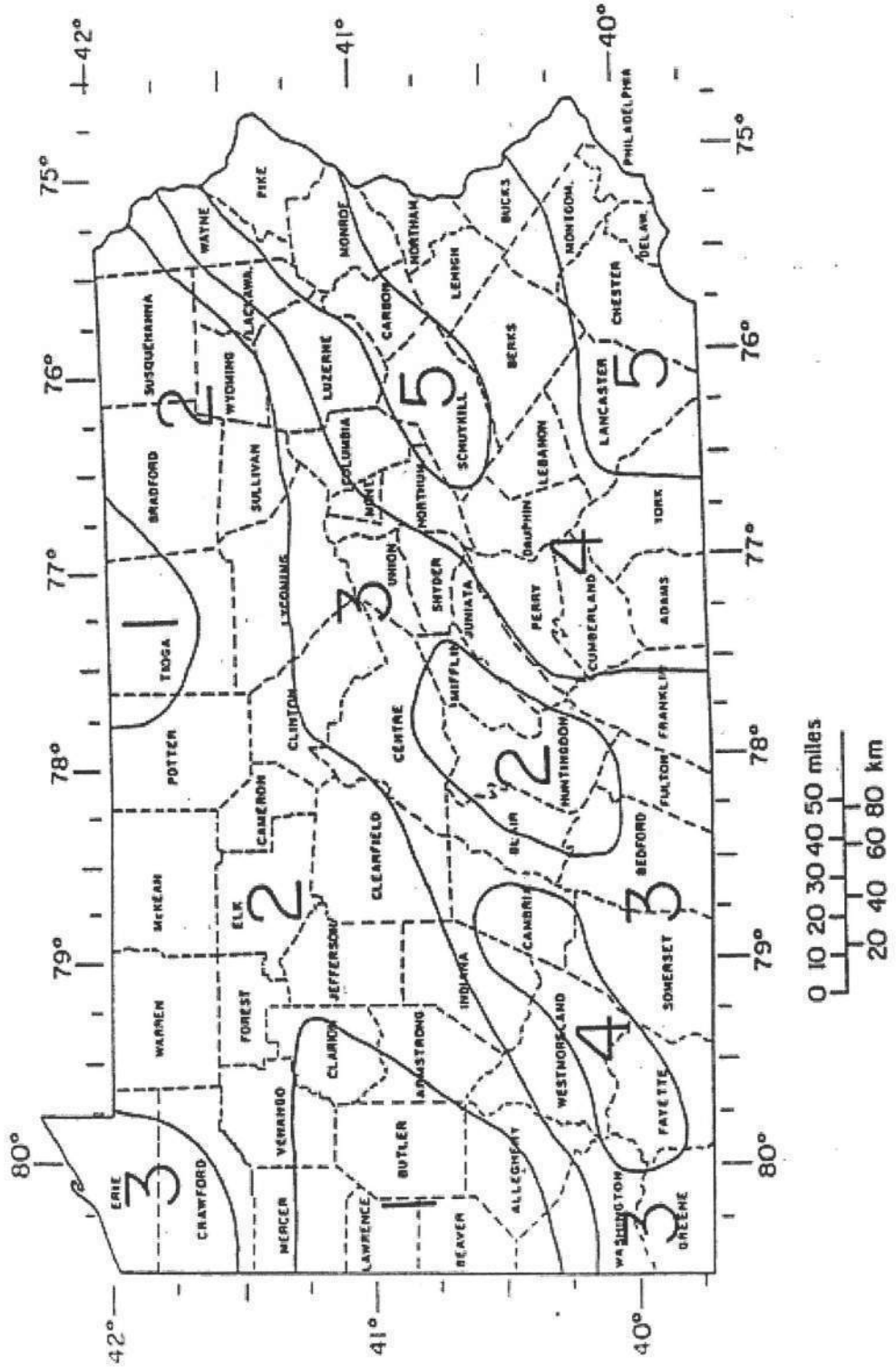


FIGURE B-3

PENNDOT REGION 4 STORM INTENSITY-DURATION-FREQUENCY CURVE

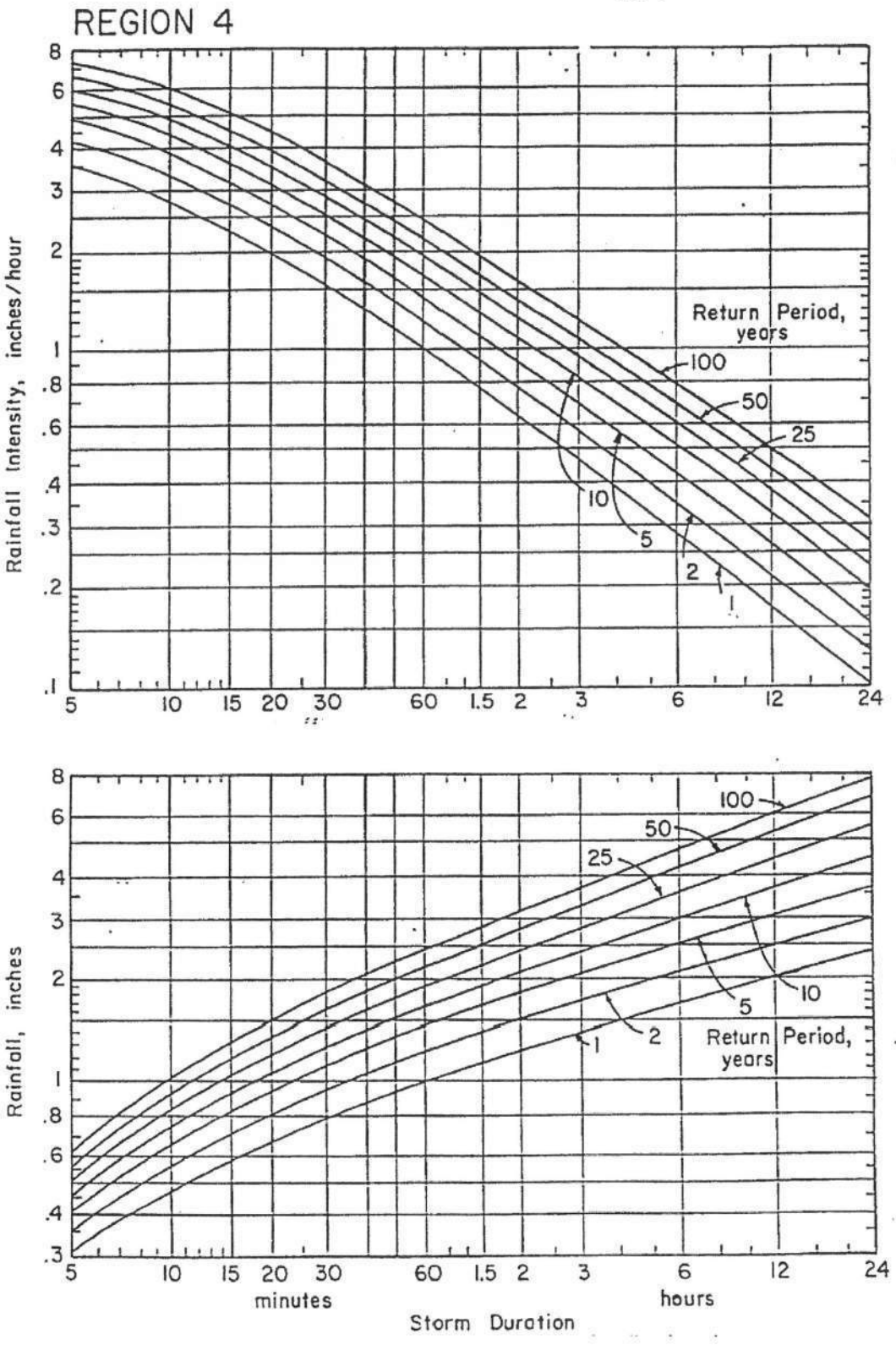


TABLE B-2
Runoff Curve Numbers
(From NRCS (SCS) TR-55)

LAND USE DESCRIPTION		HYDROLOGIC SOIL GROUP A	B	C	D
Open Space		44	65	77	82
Meadow / Orchard		30	58	71	78
Agricultural		59	71	79	83
Forest		36	60	73	79
Commercial	(85% Impervious)	89	92	94	95
Industrial	(72% Impervious)	81	88	91	93
Institutional	(50% Impervious)	71	82	88	90
Residential					
Average Lot Size	% impervious				
1/8 acre or less*	65	77	85	90	92
1/8 - 1/3 acre	34	59	74	82	87
1/3 - 1 acre	23	53	69	80	85
1 - 4 acres	12	46	66	78	82
Farmstead		59	74	82	86
Smooth Surfaces (Concrete, Asphalt, Gravel or Bare Compacted Soil)		98	98	98	98
Water		98	98	98	98
Mining/Newly Graded Areas (Pervious Areas Only)		77	86	91	94

* Includes Multi-Family Housing unless justified lower density can be provided.

Note: Existing site conditions of bare earth or fallow ground shall be considered as meadow when choosing a CN value.

TABLE B-3
RATIONAL RUNOFF COEFFICIENTS
By Hydrologic Soils Group and Overland Slope (%)

Land Use	A			B			C			D		
	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+
Cultivated Land	0.08[a]	0.13	0.16	0.11	0.15	0.21	0.14	0.19	0.26	0.18	0.23	0.31
	0.14[b]	0.18	0.22	0.16	0.21	0.28	0.20	0.25	0.34	0.24	0.29	0.41
Pasture	0.12	0.20	0.30	0.18	0.28	0.37	0.24	0.34	0.44	0.30	0.40	0.50
	0.15	0.25	0.37	0.23	0.34	0.45	0.30	0.42	0.52	0.37	0.50	0.62
Meadow	0.10	0.16	0.25	0.14	0.22	0.30	0.20	0.28	0.36	0.24	0.30	0.40
	0.14	0.22	0.30	0.20	0.28	0.37	0.26	0.35	0.44	0.30	0.40	0.50
Forest	0.05	0.08	0.11	0.08	0.11	0.14	0.10	0.13	0.16	0.12	0.16	0.20
	0.08	0.11	0.14	0.10	0.14	0.18	0.12	0.16	0.20	0.15	0.20	0.25
Residential												
Lot Size 1/8 Acre	0.25	0.28	0.31	0.27	0.30	0.25	0.30	0.33	0.38	0.33	0.36	0.42
	0.33	0.37	0.40	0.35	0.39	0.44	0.38	0.42	0.49	0.41	0.45	0.54
Lot Size 1/4 Acre	0.22	0.26	0.29	0.24	0.29	0.33	0.27	0.31	0.36	0.30	0.34	0.40
	0.30	0.34	0.37	0.33	0.37	0.42	0.36	0.40	0.47	0.38	0.42	0.52
Lot Size 1/3 Acre	0.19	0.23	0.26	0.22	0.26	0.30	0.25	0.29	0.34	0.28	0.32	0.39
	0.28	0.32	0.35	0.30	0.35	0.39	0.33	0.38	0.45	0.36	0.40	0.50
Lot Size 1/2 Acre	0.16	0.20	0.24	0.19	0.23	0.28	0.22	0.27	0.32	0.26	0.30	0.37
	0.25	0.29	0.32	0.28	0.32	0.36	0.31	0.35	0.42	0.34	0.38	0.48
Lot Size 1 Acre	0.14	0.19	0.22	0.17	0.21	0.26	0.20	0.25	0.31	0.24	0.29	0.35
	0.22	0.26	0.29	0.24	0.28	0.34	0.28	0.32	0.40	0.31	0.35	0.46
Industrial	0.67	0.68	0.68	0.68	0.68	0.69	0.68	0.69	0.69	0.69	0.69	0.70
	0.85	0.85	0.86	0.85	0.86	0.86	0.86	0.86	0.87	0.86	0.86	0.88
Commercial	0.71	0.71	0.72	0.71	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
	0.88	0.88	0.89	0.89	0.89	0.89	0.89	0.89	0.90	0.89	0.89	0.90
Streets	0.70	0.71	0.71	0.71	0.72	0.74	0.72	0.73	0.76	0.73	0.75	0.78
	0.76	0.77	0.79	0.80	0.82	0.84	0.84	0.85	0.89	0.89	0.91	0.95
Open Space	0.05	0.10	0.14	0.08	0.13	0.19	0.12	0.17	0.24	0.16	0.21	0.28
	0.11	0.16	0.20	0.14	0.19	0.26	0.18	0.23	0.32	0.22	0.27	0.39
Parking	0.85	0.86	0.87	0.85	0.86	0.87	0.85	0.86	0.87	0.85	0.86	0.87
	0.95	0.96	0.97	0.95	0.96	0.97	0.95	0.96	0.97	0.95	0.96	0.97

[a] Runoff coefficients for storm recurrence intervals less than 25 years.
[b] Runoff coefficients for storm recurrence intervals of 25 years or more.
Source : Rawls, W.J., S.L. Wong and R.H. McCuen, 1981, "Comparison of Urban Flood Frequency Procedures", Preliminary Draft, U.S. Department of Agriculture, Soil Conservation Service, Baltimore, MD.

TABLE B-4
Roughness Coefficients (Manning's "n") For Overland Flow
(U.S. Army Corps Of Engineers, HEC-1 Users Manual)

Surface Description	**n**		
Dense Growth	0.4	-	0.5
Pasture	0.3	-	0.4
Lawns	0.2	-	0.3
Bluegrass Sod	0.2	-	0.5
Short Grass Prairie	0.1	-	0.2
Sparse Vegetation	0.05	-	0.13
Bare Clay-Loam Soil (eroded)	0.01	-	0.03
Concrete/Asphalt - very shallow depths (less than 1/4 inch)	0.10	-	0.15
- small depths (1/4 inch to several inches)	0.05	-	0.10

Roughness Coefficients (Manning's "n") For Channel Flow

Reach Description	**n**
Natural stream, clean, straight, no rifts or pools	0.03
Natural stream, clean, winding, some pools or shoals	0.04
Natural stream, winding, pools, shoals, stony with some weeds	0.05
Natural stream, sluggish deep pools and weeds	0.07
Natural stream or swale, very weedy or with timber underbrush	0.10
Concrete pipe, culvert or channel	0.012
Corrugated metal pipe	0.012-0.027(1)
High Density Polyethylene (HDPE) Pipe	
Corrugated	0.021-0.029(2)
Smooth Lined	0.012-0.020(2)

(1) Depending upon type, coating and diameter
(2) Values recommended by the American Concrete Pipe Association, check Manufacturer's recommended value.

TABLE B-5
INFILTRATION REQUIREMENTS IN CARBONATE AREAS

Effective Soil Thickness (ft.)	Test Pit Density (per acre of proposed infiltration area)*	Percolation Tests (per acre of proposed infiltration area)**	Auger Grid Spacing (Feet On-Center)
8	4	8	50
4 to 8	6	12	35
2 to 4	8	16	25

*No. of Test Pits required = Infiltration sq. ft./43,560 x test pit density from chart rounded up to the nearest whole number
**No. of Percolation Tests required = Infiltration sq. ft./43,560 x percolation tests from chart rounded up to the nearest whole number

ORDINANCE APPENDIX C
Drainage Plan Application

(To be attached to the "land subdivision plan or development plan review application or "minor land subdivision plan review application")

Application is hereby made for review of the Stormwater Management and Erosion and Sedimentation Control Plan and related data as submitted herewith in accordance with the _____Township Stormwater Management and Earth Disturbance Ordinance.

_____Final Plan _____Preliminary Plan _____Sketch Plan

Date of Submission _____Submission No._____

1. Name of subdivision or development_____

2. Name of Applicant _____ Telephone No._____

   (if corporation, list the corporation's name and the names of two officers of the corporation)
   _____Officer 1
   _____Officer 2

   Address_____
   Zip_____

   Applicants interest in subdivision or development
   (if other than property owner give owners name and address)

3. Name of property owner _____Telephone No._____

   Address_____
   Zip_____

4. Name of engineer or surveyor _____Telephone No._____

   Address_____
   Zip_____

5. Type of subdivision or development proposed:

____ Single-Family Lots	____ Townhouses	____ Commercial (Multi-Lot)
____ Two Family Lots	____ Garden Apartments	____ Commercial (One-Lot)
____ Multi-Family Lots	____ Mobile-Home Park	____ Industrial (Multi-Lot)
____ Cluster Type Lots	____ Campground	____ Industrial (One-Lot)
____ Planned Residential Development	____ Other (_____)	

6. Lineal feet of new road proposed_____ L.F.

7. Area of proposed and existing impervious area on entire tract.

   a. Existing (to remain) _____ S.F. _____% of Property
   b. Proposed _____ S.F. _____% of Property

8. Stormwater

   a. Does the peak rate of runoff from proposed conditions exceed that flow which occurred for existing conditions for the designated design storm?_____

   b. Design storm utilized (on-site conveyance systems) (24 hr.)_____
   No. of Subarea_____
   Watershed Name_____

   Explain:_____
   _____
   _____

   c. Does the submission and/or district meet the release rate criteria for the applicable subarea?
   _____

   d. Number of subarea(s) from Ordinance Appendix D of the Maiden Creek Watershed Stormwater Management Plan._____

   e. Type of proposed runoff control_____

   f. Does the proposed stormwater control criteria meet the requirement/guidelines of the Stormwater Ordinances?_____

   If not, what variances/waivers are requested?_____
   _____

   Reasons_____

   f. Does the plan meet the requirements of Article iii of the Stormwater Ordinances?_____

   If not, what variances/waivers are requested?_____

   Reasons Why _____
   _____

   h. Was TR-55, June 1986 utilized in determining the time of concentration?_____
   _____

   i. What hydrologic method was used in the stormwater computations?_____
   _____

j. Is a hydraulic routing through the stormwater control structure submitted?_____
_____

k. Is a construction schedule or staging attached?_____

l. Is a recommended maintenance program attached?_____

9. Erosion and Sediment Pollution Control (E&S):

a. Has the stormwater management and E&S plan, supporting documentation and narrative been submitted to the Berks County Conservation District?_____

b. Total area of earth disturbance _____S.F.

10. Wetlands

a. Have the wetlands been delineated by someone trained in wetland delineation?_____

b. Have the wetland lines been verified by a state or federal permitting authority?_____

c. Have the wetland lines been surveyed?_____

d. Total acreage of wetland within the property _____

e. Total acreage of wetland disturbed_____

f. Supporting documentation_____

11. Filing

a. Has the required fee been submitted?_____

Amount_____

b. Has the proposed schedule of construction inspection to be performed by the Applicant's engineer been submitted?_____

c. Name of individual who will be making the inspections_____

d. General comments about stormwater management at the development_____
_____
_____

CERTIFICATE OF OWNERSHIP AND ACKNOWLEDGMENT OF APPLICATION:

COMMONWEALTH OF PENNSYLVANIA
COUNTY OF BERKS

On this the _____ day of _____, 20____, before me, the undersigned officer, personally appeared _____who being duly sworn, according to law, deposes and says that owners of the property described in this application and that the application was made with knowledge and/or direction and does hereby agree with the said application and to the submission of the same.

_____Property Owner

My Commission Expires_____20_____
Notary Public_____

THE UNDERSIGNED HEREBY CERTIFIES THAT TO THE BEST OF HIS KNOWLEDGE AND BELIEF THE INFORMATION AND STATEMENTS GIVEN ABOVE ARE TRUE AND CORRECT.

SIGNATURE OF APPLICANT_____

//

(Information Below This Line To Be Completed By The Municipality)

_____ (Name of) Municipality official submission receipt:

Date complete application received _____Plan Number_____

Fees _____ date fees paid _____ received by_____

Official submission receipt date _____

Received by_____

_____
Municipality

ORDINANCE APPENDIX D

Stormwater Management District
Watershed Map

ORDINANCE APPENDIX E
Low Impact Development (LID) Practices

Alternative Approach for Managing Stormwater Runoff

Natural hydrologic conditions may be altered radically by poorly planned development practices, such as introducing unneeded impervious surfaces, destroying existing drainage swales, constructing unnecessary storm sewers, and changing local topography. A traditional drainage approach of development has been to remove runoff from a site as quickly as possible and capture it in a detention basin. This approach leads ultimately to the degradation of water quality as well as expenditure of additional resources for detaining and managing concentrated runoff at some downstream location.

The recommended alternative approach is to promote practices that will minimize proposed condition runoff rates and volumes, which will minimize needs for artificial conveyance and storage facilities. To simulate predevelopment hydrologic conditions, infiltration is often necessary to offset the loss of infiltration by creation of impervious surfaces. The ability of the ground to infiltrate depends upon the soil types and its conditions.

Preserving natural hydrologic conditions requires careful alternative site design considerations. Site design practices include preserving natural drainage features, minimizing impervious surface area, reducing the hydraulic connectivity of impervious surfaces, and protecting natural depression storage. A well-designed site will contain a mix of all those features. The following describes various techniques to achieve the alternative approach:

- **Preserving Natural Drainage Features**. Protecting natural drainage features, particularly vegetated drainage swales and channels, is desirable because of their ability to infiltrate and attenuate flows and to filter pollutants. However, this objective is often not accomplished in land development. In fact, commonly held drainage philosophy encourages just the opposite pattern -- streets and adjacent storm sewers typically are located in the natural headwater valleys and swales, thereby replacing natural drainage functions with a completely impervious system. As a result, runoff and pollutants generated from impervious surfaces flow directly into storm sewers with no opportunity for attenuation, infiltration, or filtration. Developments designed to fit site topography also minimizes the amount of grading on site.

- **Protecting Natural Depression Storage Areas**. Depressional storage areas have no surface outlet, or drain very slowly following a storm event. They can be commonly seen as ponded areas in farm fields during the wet season or after large runoff events. Traditional development practices eliminate these depressions by filling or draining, thereby obliterating their ability to reduce surface runoff volumes and trap pollutants. The volume and release-rate characteristics of depressions should be protected in the design of the development site. The depressions can be protected by simply avoiding

the depression or by incorporating its storage as additional capacity in required detention facilities.

- **Avoiding introduction of impervious areas**. Careful site planning should consider reducing impervious coverage to the maximum extent possible. Building footprints, sidewalks, driveways and other features producing impervious surfaces should be evaluated to minimize impacts on runoff.

- **Reducing the Hydraulic Connectivity of Impervious Surfaces**. Impervious surfaces are significantly less of a problem if they are not directly connected to an impervious conveyance system (such as storm sewer). Two basic ways to reduce hydraulic connectivity are routing of roof runoff over lawns and reducing the use of storm sewers. Site grading should promote increasing travel time of stormwater runoff, and should help reduce concentration of runoff to a single point in the development.

- **Routing Roof Runoff Over Lawns**. Roof runoff can be easily routed over lawns in most site designs. The practice discourages direct connections of downspouts to storm sewers or parking lots. The practice also discourages sloping driveways and parking lots to the street. By routing roof drains and crowning the driveway to run off to the lawn, the lawn is essentially used as a filter strip.

- **Reducing the Use of Storm Sewers**. By reducing use of storm sewers for draining streets, parking lots, and back yards, the potential for accelerating runoff from the development can be greatly reduced. The practice requires greater use of swales and may not be practical for some development sites, especially if there are concerns for areas that do not drain in a "reasonable" time. The practice requires educating local citizens and public works officials, who expect runoff to disappear shortly after a rainfall event.

- **Reducing Street Widths**. Street widths can be reduced by either eliminating on-street parking or by reducing roadway widths. Municipal planners and traffic designers should encourage narrower neighborhood streets which ultimately could lower maintenance.

- **Limiting Sidewalks to One Side of the Street**. A sidewalk on one side of the street may suffice in low-traffic neighborhoods. The lost sidewalk could be replaced with bicycle/recreational trails that follow back-of-lot lines. Where appropriate, backyard trails should be constructed using pervious materials.

- **Using Permeable Paving Materials**. These materials include permeable interlocking concrete paving blocks or porous bituminous concrete. Such materials should be considered as alternatives to conventional pavement surfaces, especially for low use surfaces such as driveways, overflow parking lots, and emergency access roads.

- **Reducing Building Setbacks**. Reducing building setbacks reduces driveway and entry walks and is most readily accomplished along low-traffic streets where traffic noise is not a problem.

- **Constructing Cluster Developments**. Cluster developments can also reduce the amount of impervious area for a given number of lots. The biggest savings is in street length, which also will reduce costs of the development. Cluster development clusters the construction activity onto less-sensitive areas without substantially affecting the gross density of development.

In summary, a careful consideration of the existing topography and implementation of a combination of the above mentioned techniques may avoid construction of costly stormwater control measures. Other benefits include reduced potential of downstream flooding, water quality degradation of receiving streams/water bodies and enhancement of aesthetics and reduction of development costs. Beneficial results include more stable baseflows in receiving streams, improved groundwater recharge, reduced flood flows, reduced pollutant loads, and reduced costs for conveyance and storage.

ORDINANCE APPENDIX F

References

BMP Manuals

California

California Stormwater BMP Handbook: New Development and Redevelopment (January 2003) – separate file available at **http://www.cabmphandbooks.org/Development.asp**

Georgia

Georgia Stormwater Management Manual Volume 2: Technical Handbook (August 2001) separate file (http://www.georgiastormwater.com/)

Maryland

2000 Maryland Stormwater Design Manual – http://www.mde.state.md.us/Programs/Waterprograms/SedimentandStormwater/stormwaterdesign/index.asp

Massachusetts

Stormwater Management, Volume Two: Stormwater Technical Handbook (Massachusetts, 1997) – separate file available at http://www.state.ma.us/dep/brp/stormwtr/stormpub.htm

Minnesota

Minnesota Urban Small Sites BMP Manual: Stormwater Best Management Practices for Cold Climates (July 2001) – http://www.metrocouncil.org/environment/Watershed/BMP/manual.htm

New Jersey

Revised Manual for New Jersey: Best Management Practices for Control of Non-point Source Pollution from Stormwater (Fifth Draft May 2000) – http://www.state.nj.us/dep/watershedmgt/bmpmanual.htm

New York

New York State Stormwater Management Design Manual (2001) – http://www.dec.state.ny.us/website/dow/swmanual/swmanual.html

Pennsylvania

Pennsylvania Association of Conservation Districts, Pennsylvania Handbook of Best Management Practices for Developing Areas, November 14, 1997.

Washington

Stormwater Management Manual for Western Washington (August 2001) – http://www.ecy.wa.gov/programs/wq/stormwater/manual.html

Federal

Stormwater Best Management Practices in an Ultra-Urban Setting: Selection and Monitoring (FHWA) – http://www.fhwa.dot.gov/environment/ultraurb/3fs1.htm

USEPA Infiltration Trench Fact Sheet (September 1999) – http://cfpub.epa.gov/npdes/stormwater/menuofbmps/post.cfm

Riparian Buffer References

Alliance for the Chesapeake Bay, Pennsylvania Department of Environmental Protection, September 2000. *Forest Buffer Toolkit*, Stream ReLeaf Program.

Penn State College of Agricultural Sciences, 1996. *Establishing Vegetative Buffer Strips Along Streams to Improve Water Quality.* Publication # AGRS-67.

Fike, Jean, June 1999. *Terrestrial & Palustrine Plant Communities of Pennsylvania,* Pennsylvania Natural Diversity Inventory, The Nature Conservancy, Western

Pennsylvania Conservancy, and Pennsylvania Department of Conservation and Natural Resources.

Pennsylvania Association of Conservation Districts, Inc., Keystone Chapter, Soil and Water Conservation Society, Pennsylvania Department of Environmental Protection, Natural Resources Conservation Service, 1998. P*ennsylvania Handbook of Best Management Practices for Developing Areas.* Prepared by CH2MHill.

Palone, R. S. and A. H. Todd (eds), 1997. *Chesapeake Bay Riparian Handbook: A Guide for Establishing and Maintaining Riparian Forest Buffers.* Chesapeake Bay Program and Northeastern Area State and Private Forestry. Natural Resources Conservation Service Cooperative State Research Education and Extension Services.

The Federal Interagency Stream Restoration Working Group (FISRWG, 10/1998). Stream Corridor Restoration Principles, Processes, and Practices. GPO Item No. 0120-A; SuDocs No. A57.6/2:EN3/PT.653. ISBN-0-934213-59-3. Published October 1998. Revised August 2000.

ORDINANCE APPENDIX G
West Nile Virus Guidance

(This source is from the Monroe County, PA Conservation District who researched the potential of West Nile Virus problems from BMPs due to a number of calls they were receiving)

Monroe County Conservation District Guidance:
Stormwater Management and West Nile Virus
Source: Brodhead McMichaels Creeks Watershed Act 167 Stormwater Management Ordinance Final Draft 2/23/04

The Monroe County Conservation District recognizes the need to address the problem of non-point source pollution impacts caused by runoff from impervious surfaces. The new stormwater policy being integrated into Act 167 Stormwater Management regulations by the PA Department of Environmental Protection (DEP) will make non-point pollution controls an important component of all future plans and updates to existing plans. In addition, to meet post-construction anti-degradation standards under the state National Pollution Discharge Elimination System (NPDES) permitting program, applicants will be required to employ Best Management Practices (BMPs) to address non-point pollution concerns.

Studies conducted throughout the United States have shown that wet basins and in particular constructed wetlands are effective in traditional stormwater management areas such as channel stability and flood control, and are one of the most effective ways to remove stormwater pollutants (United States Environmental Protection Agency 1991, Center for Watershed Protection 2000). From Maryland to Oregon, studies have shown that as urbanization and impervious surface increase in a watershed, the streams in those watersheds become degraded (CWP 2000). Although there is debate over the threshold of impervious cover when degradation becomes apparent (some studies show as little as 6% while others show closer to 20%), there is agreement that impervious surfaces cause non-point pollution in urban and urbanizing watersheds, and that degradation is ensured if stormwater BMPs are not implemented.

Although constructed wetlands and ponds are desirable from a water quality perspective there may be concerns about the possibility of these stormwater management structures becoming breeding grounds for mosquitoes. The Conservation District feels that although it may be a valid concern, **municipalities should not adopt ordinance provisions prohibiting wet basins for stormwater management.**

Mosquitoes

The questions surrounding mosquito production in wetlands and ponds have intensified in recent years by the outbreak of the mosquito-borne West Nile Virus. As is the case with all vector-borne maladies, the life cycle of West Nile Virus is complicated, traveling from mosquito to bird, back to mosquito and then to other animals including humans. *Culex pipiens* was identified as the vector species in the first documented cases from New York in 1999. This species is still considered the primary transmitter of the disease across its range. Today there are some 60 species of mosquitoes that inhabit Pennsylvania. Along with *C. pipiens*, three

other species have been identified as vectors of West Nile Virus while four more have been identified as potential vectors.

The four known vectors in NE Pennsylvania are *Culex pipiens*, *C. restuans*, *C. salinarius* and *Ochlerotatus japonicus*. All four of these species prefer, and almost exclusively use, artificial containers (old tires, rain gutters, birdbaths, etc.) as larval habitats. In the case of *C. pipiens*, the most notorious of the vector mosquitoes, the dirtier the water the better they like it. The important factor is that these species do not thrive in functioning wetlands where competition for resources and predation by larger aquatic and terrestrial organisms is high.

The remaining four species, *Aedes vexans*, *Ochlerotatus Canadensis*, *O. triseriatus* and *O. trivittatus* are currently considered potential vectors due to laboratory tests (except the *O. trivittatus*, which did have one confirmed vector pool for West Nile Virus in PA during 2002). All four of these species prefer vernal habitats and ponded woodland areas following heavy summer rains. These species may be the greatest threat of disease transmission around stormwater basins that pond water for more than four days. This can be mitigated however by establishing ecologically functioning wetlands.

Stormwater Facilities

If a stormwater wetland or pond is constructed properly and a diverse ecological community develops, mosquitoes should not become a problem. Wet basins and wetlands constructed as stormwater management facilities, should be designed to attract a diverse wildlife community. If a wetland is planned, proper hydrologic soil conditions and the establishment of hydrophytic vegetation will promote the population of the wetland by amphibians and other mosquito predators. In natural wetlands, predatory insects and amphibians are effective at keeping mosquito populations in check during the larval stage of development while birds and bats prey on adult mosquitoes.

The design of a stormwater wetland must include the selection of hydrophytic plant species for their pollutant uptake capabilities and for not contributing to the potential for vector mosquito breeding. In particular, species of emergent vegetation with little submerged growth are preferable. By limiting the vegetation growing below the water surface, larvae lose protective cover and there is less chance of anaerobic conditions occurring in the water.

Stormwater ponds can be designed for multiple purposes. When incorporated into an open space design a pond can serve as a stormwater management facility and a community amenity. Aeration fountains and stocked fish should be added to keep larval mosquito populations in check.

Publications from the PA Department of Health and the Penn State Cooperative Extension concerning West Nile Virus identify aggressive public education about the risks posed by standing water in artificial containers (tires, trash cans, rain gutters, bird baths) as the most effective method to control vector mosquitoes.

Conclusion

The Conservation District understands the pressure faced by municipalities when dealing with multifaceted issues such as stormwater management and encourages the incorporation of water quality management techniques into stormwater designs. As Monroe County continues to grow, conservation design, groundwater recharge and constructed wetlands and ponds should be among the preferred design options to reduce the impacts of increases in impervious surfaces. When designed and constructed appropriately, the runoff

mitigation benefits to the community from these design options will far out weigh their potential to become breeding grounds for mosquitoes.

ORDINANCE APPENDIX H

Stormwater Management Practices for Projects Which Are Exempt Under § 182-21 of Chapter 182.

Stormwater Management Procedures
For Projects Meeting The Land Cover Exemption Criteria

What are the Act 167 Stormwater Management Requirements?

Pennsylvania Act 167 was authorized on October 4, 1978 (32 P.S., P.L. 864) and gave Pennsylvania Municipalities the power to regulate activities that affect stormwater runoff, surface and groundwater quantity and quality.

Who is affected by these requirements?

The Act 167 Stormwater Management Requirements affect all NEW development in the Maiden Creek watershed. Individual home construction projects on single family lots which result are exempt under Section 402 of this Ordinance, are not required to submit formal drainage plans to the Municipality or County; however, they are still encouraged to address Water Quality and Groundwater Recharge criteria specified in the Maiden Creek Watershed Stormwater Ordinance (Ord. Sections 305 and 306).

Do I require professional services to meet these requirements?

This brochure has been developed to assist the individual homeowner in meeting the voluntary water quality and groundwater recharge goals of the Maiden Creek Watershed Stormwater Ordinance. If the guidelines presented in this brochure are followed, the individual homeowner will not require professional services to comply with these water quality and groundwater recharge.

What do I need to Send to the Municipality?

Even though a formal drainage plan is not required for individual lot owners, a brief description of the proposed infiltration facilities, including types of material to be used, total impervious

areas and volume calculations as shown above, and a simple sketch plan showing the following information shall be submitted to the contractor prior to construction:

- Location of proposed structures, driveways or other paved areas with approximate size in square feet.
- Location of any existing or proposed on site septic system and/or potable water wells showing rough proximity to infiltration facilities.

Determination of Recharge Volume

The amount of recharge volume that should be provided can be determined by following the simple steps below. Impervious area calculations should include all areas on the individual lots that are covered by roof area or pavement which would prevent rain for naturally percolating into the ground, including sidewalks, driveways or parking areas. Sidewalks, driveways or patios that are constructed with gravel or turf pavers and will not be blacktopped in the future, need not be included in this calculation.

Example Recharge Volume:

STEP 1 – Determine Total Impervious Surfaces:

House Roof (Front)	12 ft x 48 ft	=	576 sq. ft
House Roof (Rear)	12 ft x 48 ft	=	576 sq. ft.
Driveway	12 ft x 50 ft	=	600 sq. ft.
Parking Pad	12 ft x 12 ft	=	144 sq. ft.
Walkway	6 ft x 20 ft	=	120 sq. ft.

			2,016 sq. ft.

STEP 2 – Determine Require Infiltration Volume (Rv) Using the Following Equation

Rv = 1 inch x (total impervious area in square feet) = _____ cubic feet of recharge

$$Rv = 1.0 \times 2{,}016 \text{ sq. ft.} = 2{,}016 \text{ cu. ft.}$$

STEP 3 – Sizing of Select Infiltration Method

The following pages show several methods of infiltrating stormwater runoff from residential areas. Their appropriateness depends on the amount of infiltration volume required and the amount of land available. More than one method can be implemented on a site, depending on site constraints. Dry wells should be used only for receiving runoff from roof drains. Infiltration trenches are appropriate for receiving runoff from driveways, sidewalk or parking

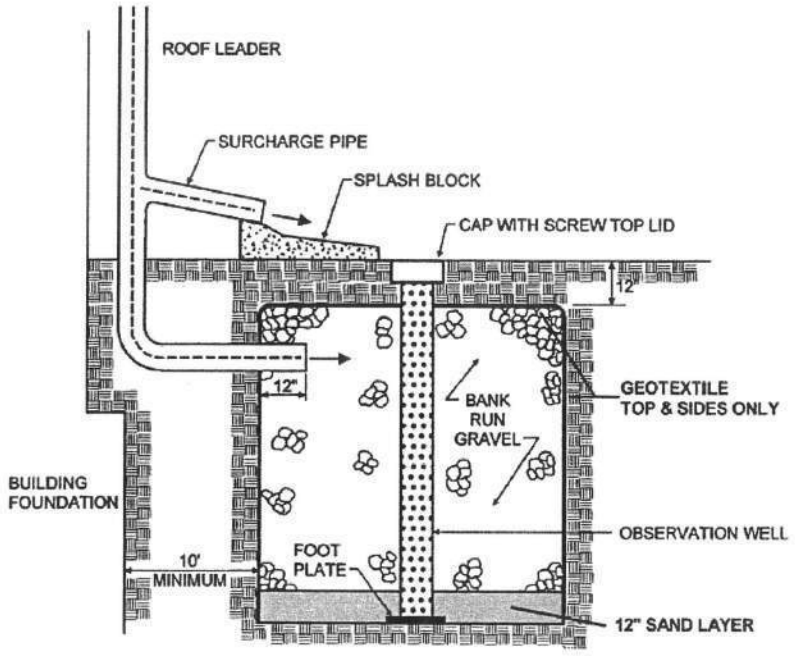
areas. Other methods may be appropriate, but these should be discussed with the municipal engineer prior to installation.

Dry Wells

Dry wells are effective methods of infiltrating runoff from roof leaders. These facilities should be located a minimum of 10 feet from the building foundation to avoid seepage problems. A dry well can be either a structural prefabricated chamber or an excavated pit filled with aggregate. Construction of a dry well should be performed after all other areas of the site are stabilized, to avoid clogging. During construction, compaction of the subgrade soil should be avoided and construction should be performed with only light machinery. Depth of dry wells in excess of 3 ½ feet should be avoided. Gravel fill should be an average 1.5 – 3.0 inches in diameter. Dry wells should be inspected at least four times annually as well as after large storm events.

FIGURE H-1

TYPICAL DRY WELL CONFIGURATION



Source: Maryland Stormwater Design Manual, 2000

Example Sizing:

STEP 1 – Determine Total Impervious Surfaces

House Roof Area: 12 ft x 48 ft = 576 sq. feet

STEP 2 – Determine Require Infiltration Volume using Equation

1.0 x 576 sq. ft. = 576 cu. ft.

STEP 3 – Sizing of Select Infiltration Method

Volume of facility = Depth x Width x Length

Set D = 3.5 ft; Set W = L for a square chamber

576 cu. ft. = 3.5 x L X L ; L = 10 ft

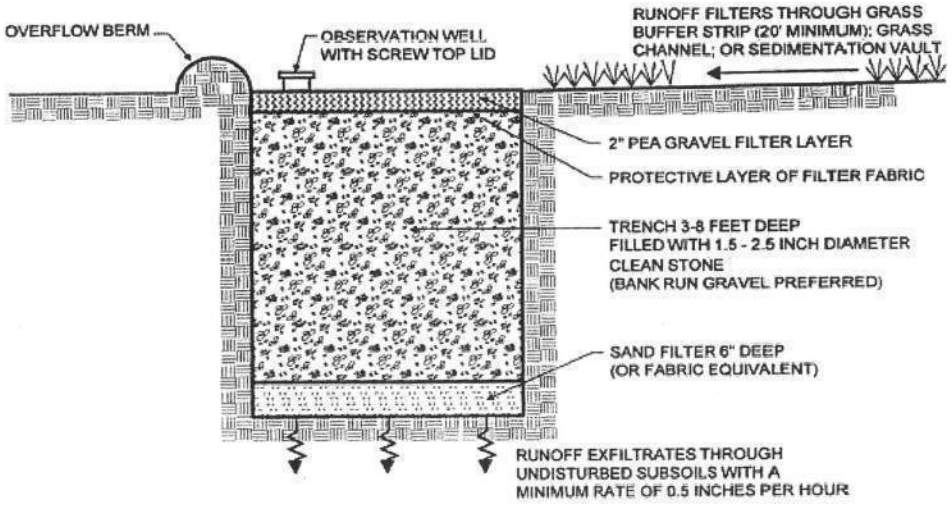
Final Facility Dimensions: 3.5 ft (D) x 12.8 ft (W) x 12.8 ft (L)

Infiltration Trenches

An infiltration trench is a long, narrow, rock-filled trench with no outlet that receives stormwater runoff. Runoff is stored in the void space between the stones and infiltrates through the bottom and into the soil matrix. Infiltration trenches perform well for removal of fine sediment and associated pollutants. Pretreatment using buffer strips, swales, or detention basins is important for limiting amounts of coarse sediment entering the trench which can clog and render the trench ineffective.

FIGURE H-2

TYPICAL INFILTRATION TRENCH CONFIGUATION



Source: Maryland Stormwater Design Manual, 2000

Example Sizing:

STEP 1 – Determine Total Impervious Surfaces

Driveway	12 ft x 50 ft	=	600 sq. ft.
Parking Pad	12 ft x 12 ft	=	144 sq. ft.
Walkway	6 ft x 20 ft	=	120 sq. ft.
			----------
			864 sq. ft.

STEP 2 – Determine Require Infiltration Volume using Equation

1.0 inch x 864 sq. ft. = 864 cu. ft.

STEP 3 – Sizing of Select Infiltration Method

Volume of facility = Depth x Width x Length

Set D = 3.5 ft; Determine Required Surface Area of Trench

864 cu. ft. / 3.5 ft. = 247 sq. ft.

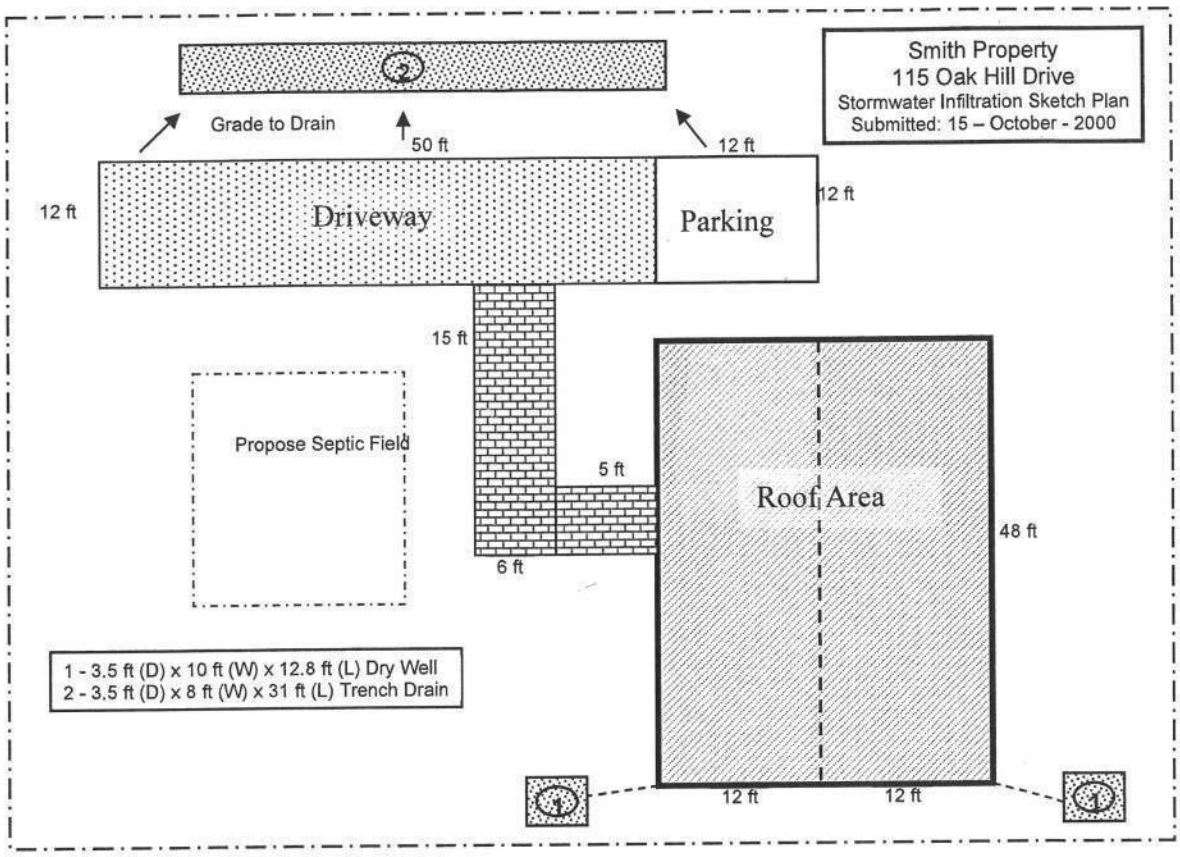
The width of the trench should be greater than 2 times it depth (2 x D); therefore in this example a trench width of 8 feet is selected;

Determine trench length: L = 247 sq. ft / 8 ft = 30.8 ft, say 31 ft.

Final Trench Dimensions: 3.5 ft (D) 8 ft (W) x 31 ft (L)

FIGURE H-3

SAMPLE SITE SKETCH PLAN



4.0 Construction Site Stormwater Runoff Control Program

4.1 Description

MCM #4 requires the MS4 municipality to:

4.1.1 If an NPDES permit is required for earth disturbance activities, do not issue a building permit or approval until confirmation that a valid NPDES permit is obtained.

4.1.2 Notify DEP or Berks County Conservation District within 5 days of the receipt of an application for a permit involving an earth disturbance activity consisting of one acre or more.

4.1.3 Enact, implement, and enforce an ordinance to require the implementation of erosion and sediment control BMPs, as well as sanctions to ensure compliance.

4.2 Memorandum of Understanding

Maidencreek Township has entered into an agreement with Berks County Conservation District (BCCD), via the Memorandum of Understanding (MOU) in Appendix H, which addresses items 1 and 2, above.

4.3 Records Retention

The Township will retain all correspondence from BCCD as part of this SWMP. Copies of all permits, inspections, complaints and any relevant stormwater information will also be retained as part of this SWMP. Permit-year copies of this correspondence appear in Appendix I.

4.4 Ordinance Adoption

Maidencreek Township adopted its Stormwater Management Ordinance, Ordinance Number 214, on June 12, 2008. The ordinance requires compliance with 25 PA Code, Chapter 102, regarding erosion and sediment control and NPDES permit requirements. Any ordinance updates will be properly advertised.

4.5 Plan Maintenance

Maidencreek Township will review and revise this Plan annually, as MOU provisions may change and ordinances are updated periodically.

APPENDIX I

MCM #4 – CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

BERKS COUNTY CONSERVATION DISTRICT/MAIDENCREEK TOWNSHIP MEMORANDUM OF UNDERSTANDING

Resolution # 18-2024

A RESOLUTION OF THE BOARD OF SUPERVISORS OF THE TOWNSHIP OF MAIDENCREEK, BERKS COUNTY, PENNSYLVANIA ENTERING INTO A MEMORANDUM OF UNDERSTANDING WITH THE BERKS COUNTY CONSERVATION DISTRICT.

WHEREAS, the Berks County Conservation District (BCCD) administers the Erosion and Sediment Control Program for the Pennsylvania Department of Environmental Protection; and

WHEREAS, the Township desires to control accelerated erosion and to prevent sediment pollution to the Waters of the Commonwealth from earth disturbance activities; and

WHEREAS, the Township of Maidencreek (Township) previously had a Memorandum of Understanding with the BCCD dated December 2002, August 9, 2012, and February 9, 2017; and

WHEREAS, new Federal and State regulations require the revision of the existing Memorandum of Understanding.

NOW, THEREFORE, be it RESOLVED by the Board of Supervisors of the Township of Maidencreek, Berks County, Pennsylvania and it is hereby resolved by the authority of the same to enter into a Memorandum of Understanding with the Berks County Conservation District and adopt the agreement attached as Exhibit A.

All other resolutions or parts of resolutions inconsistent with this Resolution are hereby repealed insofar, but only insofar as the same are inconsistent herewith.

RESOLVED AND ADOPTED by the Board of Supervisors of the Township of Maidencreek, Berks County, Pennsylvania, in lawful session duly assembled this 13th day of June, 2024.

Board of Supervisors
Maidencreek Township
Berks County, Pennsylvania

David Franke

Joshua Meck

Attest:

Christina Hafer

Eric Bauman

EXHIBIT A

MEMORANDUM OF UNDERSTANDING

Between the

BERKS COUNTY CONSERVATION DISTRICT

and

Maidencreek Township

This Memorandum has been prepared jointly and agreed upon by each party for the following purposes:

To serve as a joint commitment by the signatory parties to control accelerated erosion and to prevent sediment pollution to the Waters of the Commonwealth which may result from the conduct of earth disturbance activities in Maidencreek Township ("Municipality").

I. In carrying out the intent of this Memorandum, the Berks County Conservation District ("District") shall:

1. Provide the Municipality with District electronic project application forms, when requested, and promptly notify Municipality of any changes in the plan review fee schedule.

2. Receive and review all Erosion and Sedimentation Control Plans ("E&S Plan" or "Plan") for earth disturbance activities 5,000 square feet or greater, which are required to be written in accordance with Chapter 102.4 of the PA Code. (Less than 1 acre & Small Projects E&S Applications).

3. Within ten (10) working days of completion of review, notify the consultant, the applicant, the Municipality, and the municipal engineer of all E&S Plan/NPDES Permit approvals, deficiencies, and all determinations including all project inspection reports and valid complaint inspection reports. Providing this information supports the Municipality with respect to Municipality's MS4 reporting requirements as required to satisfy Minimum Control Measures #4 and #5 related to services provided under this Memorandum.

4. Notify the consultant, the applicant, and the Municipality that a Plan submission has been withdrawn based on either the lack of response within the specified time period or the lack of the development of a complete Plan in compliance with PA Department of Environmental Protection (PA DEP) Chapter 102 Erosion and Sediment Control Rules and Regulations.

5. Upon request, provide all applicants with electronic copies of the PA DEP Erosion and Sediment Pollution Control Program Manual and related forms, worksheets, checklists, etc., necessary to successfully prepare a Plan.

6. Upon the filing of a complaint by the Municipality and/or a third party, the following will occur:
   a. The District will inspect the complaint within (10) ten calendar days of its receipt.
   b. If warranted, the District will provide documentation of the associated findings. The source of the complaint shall remain anonymous in accordance with PA DEP policy.
   c. Stormwater discharge complaints directly associated with earth disturbance activities (NPDES sites or Sites with an approved E&S plan) should be directed to the District. All other stormwater complaints should be handled under municipal ordinance.

7. Serve as the repository for all Plans, complaints, Earth Disturbance Inspection Reports, correspondence, etc., within the limitations stated by PA DEP, that involve earth disturbance activities within the said Municipality. All such information, except the complaint forms, shall be contained in a filing system which shall be available for inspection by Municipal officials upon receipt of a formal written request.

8. When requested by the landowner or agricultural operator, provide technical assistance in the development of needed Agricultural E&S Plans and Manure Management Plans.

9. The District will be available to provide assistance for municipalities with meeting Minimum Control Measures #1, #2, #3, #4 & #5. Technical engineering assistance is available for an additional fee.

In carrying out the intent of this Memorandum, the Municipality shall:

1. Retain electronic copies of the District's project application forms and provide such forms or website links to all parties for projects that require a review. The Municipality shall provide instructions to have the Plans (residential, commercial, industrial, agricultural expansion construction, etc.) for earth disturbance activities greater than or equal to 5,000 square feet, which are required to be written in accordance with Chapter 102.4 of the PA Code, submitted to the District for review per Chapter 102 of the PA Code.

2. Notify the District within (5) five days of receipt of an application for a project disturbing greater than or equal to (1) one acre, pursuant to Chapter 102.42.

3. Pursuant to Chapter 102.43, **the Municipality** shall not issue building or other permit or approval to those proposing or conducting earth disturbance activities requiring a PA DEP permit until the PA DEP or District has issued the E&S or individual NPDES Permit or approved coverage under the general NPDES Permit for Stormwater Discharges Associated with Construction Activities under Chapter 102.5.

4. Forward all questions pertaining to the preparation of Plans and applications to the District.

5. Forward all complaints about ongoing earth disturbance activities to the District for its inspection.

6. Not issue final close-out, or grant final release of improvement/E&S escrow until the applicant has submitted a Notice of Termination (NOT) for all NPDES Permitted activates and received Permit termination correspondence from the District.

7. Forward to the District, any agricultural complaint relating to: nutrient pollution and sediment pollution.

8. The District highly recommends that the Municipality assists the District in educating landowners and agricultural operators regarding the development of written Agricultural E&S Plans, which are required under Chapter 102.4 for agricultural plowing or tilling activities and animal heavy use areas disturbing 5,000 square feet or greater of land, as well as necessitate the development of Manure Management Plans. Manure Management Plans are also required under 25 PA. Code Section 91.36 (b) for all farming operations that land apply manure or agricultural process wastewater, whether they generate the manure or import it from another operation. All farming operations that include an Animal Concentration Area (ACA) or pasture must also have a written Manure Management Plan. The District requests assistance in providing this information before any building/zoning permits for agricultural operations are approved. In addition, the Municipality should not issue a building permit, or other permit or approval, to those proposing to construct a liquid or semi-solid waste storage facility unless they have a design that has been approved and stamped by a professional engineer.

II. This Memorandum of Understanding shall become effective immediately. It shall be reviewed as the need arises by either or both parties, and may be amended by mutual consent of both parties. This Memorandum of Understanding may be terminated at any time, by either party, following a thirty (30) day written notice to the other party.

FOR Maidencreek Township (municipality)

By: Diane Hollenbach Date: June 13, 2024

Attest: _____

FOR THE BERKS COUNTY CONSERVATION DISTRICT

_____ _____

CHAIR DATE

Post Storm Water Management

Maidencreek Township
Board of Supervisors
P.O. Box 319
Blandon, PA 19510

SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Information

Project Name
Golden Manor Phase 3

Location
UPI: 61542119502686

Plan Name(s)
"Golden Manor III Subdivision" prepared by C.L. Frantz & Associates, Inc., dated August 23, 1991, last revised March 31, 1992

Owner or Responsible Party
Maidencreek Apartments, LP

Inspector
Grant Stahl, E.I.T

Date
11/06/2024

Facility Type

Type of SWM Facility
Detention Basin

Suitable Ground Cover & Maintenance
Not Acceptable

Reason Not Acceptable
Loose grass and debris present throughout basin bottom.

Earthen Embankment Condition
Acceptable

Outlet Structure Condition

Orifice Plate
Not Required

Trash Rack
Not Acceptable

Describe Issue
Trash rack missing from outlet structure.

Watertight
Not Acceptable

Describe Issue
Outlet structure riser sections are offset

Outlet Pipe
Not Acceptable

Describe Issue
Bottom orifice is completely buried.

Positive Drainage Provided
No

Drainage Swales

Sized per Approved Design
Yes

Suitable Ground Cover
Acceptable

Positive Drainage

Areas of Active Erosion

Not Acceptable

No

Describe Issue

Tree is in front of Swale #8 causing water to be re-directed and rutting the basin bottom.

Storm Sewer System

Inlet Grate Condition

Acceptable

Settlement Around Grates

No

Positive Surface Drainage

Yes

Catch Basin Condition

Acceptable

Endwall Condition

Not Acceptable

Riprap Aprons

Not Acceptable

Describe Issue

All endwalls into basin have either downstream scouring or debris accumulation.

Describe Issue

Riprap aprons are either scoured away or buried in debris.

Summary

Stormwater Management Facilities Condition

Follow-up Action is Required.

Stormwater Management Facilities are damaged, in disrepair, missing or otherwise require immediate maintenance and follow-up action.

Follow-Up Action Required By:

Property Owner

Describe Follow-Up Action

- Remove grass and loose debris in the basin.
- Expose bottom orifice of outlet structure and install a trash rack with minimum sized openings of 6"x6".
- Install a trash rack on top of the outlet structure with minimum sized openings of 6"x6".
- Reset outlet structure risers and grout the joints.
- Repair the scour hole located behind the outlet structure
- Remove debris from endwalls and riprap aprons.
- Reestablish the riprap rock aprons based on their original design.
- Remove tree near Swale #8 and reestablish a smooth bottom and swale.

Site Inspection Photos to begin on the next page

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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Inspection Photos

Site Photo	Optional Description
	Photo 1 View of the buried bottom orifice opening.

SDE SYSTEMS DESIGN ENGINEERING, INC
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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 2 View of EW1. Riprap apron is scoured away.

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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 3 View of EW2. Partially buried in debris.

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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 4 View of the tree and rutting downstream of Swale #8.

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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 5 Overall view of the basin. Grass is no longer growing in the basin bottom due to clippings left to lay.

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 6 View of the scour behind the outlet structure.

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 7 View of EW3. Riprap rock apron is buried in debris.

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 8 View of unnamed endwall, located where Swale #1A should be. Has severe downstream scouring and riprap displacement.
	Photo 9 Additional overall view of basin.

SDE SYSTEMS DESIGN ENGINEERING, INC

"A Passion for Engineering Excellence"

sdei.net

October 15, 2024

Dennis West, Trustee
PO Box 426
Blandon, PA 19510

RE: Pending Inspection of Stormwater Management Facilities
Tree Tops Basin 1 (UPI: 61542010370494) & Basin 3 (UPI: 61542005271950)
Maidencreek Township, Berks County, PA

Dear Property Owner:

This letter is to inform you that, on behalf of Maidencreek Township, a representative from Systems Design Engineering, Inc. (SDEI is the appointed engineering firm that represents the Township) will be visiting the above-referenced property in order to conduct a visual inspection of the stormwater management facilities.

The purpose of the inspection is to confirm the stormwater management facilities that were previously required as part of the Township's past approval of development plan(s) for the property are still: in place, functioning as designed and being adequately maintained. We anticipate that this inspection will occur sometime during the month of October 2024/November 2024. You do not need to be present for this inspection.

Please feel free to contact me should you have any questions or if you desire to be present during the inspection. After completion, SDEI will prepare an Inspection Report and will mail the same to you and copy the Township. This Inspection Report will identify any current deficiencies, along with corrective measures – if applicable, or if the stormwater management facilities are found to be in an acceptable condition and appear to be functioning as originally designed and constructed.

If there are any specific arrangements that need to be made to facilitate our inspector's visit, please have those arrangements made ahead of time or contact our office to set a specific date and time for the inspection.

Sincerely,
SYSTEMS DESIGN ENGINEERING, INC.

Pamela J. Stevens, P.E.
Township Engineer
p.stevens@sdei.net

cc: Diane Hollenbach Township Manager, Maidencreek Township

I:\Projects\Maidencreek Township\20-0019-0254 Stormwater Basin Inspections - 2020\Notification Letters\2024 Inspections\3 Notification Letter - Tree Tops.docx

From: Dennis West
Tree Tops Common Space Trustee
PO Box 426
Blandon PA 19510
717 598-3728

To: System Design Engineering, Inc – Pamala J Stevens <p.stevens@sdei.net>
Diane Hollenbach, Township Manager<d.hollenbach@maidencreek.net>

Dear Pamela,

I am writing to acknowledge receipt of your letter regarding the responsibilities for the detention basins. This is a follow up for the phone conversation we had on Friday.

I am only responsible for Basin Number 3. Additionally, the address for Basin Number 1 is under the care of the landowners:

Koehler Joseph B
420 Acer Dr
Blandon, Pa 19510

Woynarowski Catherine A
422 Acer Dr
Blandon, Pa 19510

I will forward your letter to them.

Please note that I would like to be present during the inspection of Basin Number 3, scheduled for October or November 2024. Could you please provide the specific date and time when System Design will be on site? I look forward to seeing Grant again as he schedules the inspection.

Thank you for your attention to this matter.

Sincerely,
Dennis West - Trustee

SDE SYSTEMS DESIGN ENGINEERING, INC
"A Passion for Engineering Excellence"
sdei.net

November 8, 2024

Massimo Caloiero
3341 Pricetown Road
Fleetwood, PA 19522

RE: Inspection of Stormwater Management Facilities
Crossings at Maidencreek Detention Basin
Maidencreek Township, Berks County, PA

Dear Property Owner:

On behalf of Maidencreek Township, Systems Design Engineering, Inc. has completed an on-site inspection of the stormwater management facilities located at the above-referenced property.

The stormwater management facilities ultimately discharge into the Municipal Separate Storm Sewer System (MS4) owned and operated by Maidencreek Township. The MS4 designation requires the Township to obtain a National Pollution Discharge Elimination System (NPDES) permit as administered by the Pennsylvania Department of Environmental Protection (PADEP). As part of the permit, the Township must ensure the MS4 is being maintained and operated in accordance with the NPDES permit requirements. This includes the routine inspection of any stormwater management facilities that were previously required as part of the Township's subdivision and land development processes are still in place, functioning as designed, and being adequately maintained.

Attached is a copy of the "On-Site Inspection Report" performed on November 6, 2024 for the stormwater facilities located on your property or that you are otherwise responsible for maintaining. Within this Report are the current conditions or deficiencies noted along with an indication of any necessary corrective actions, routine maintenance, or repairs that may be required. If any "Follow-up Action Required" other than "continue with routine site maintenance" is noted, please contact the Township prior to initiating any construction work since inspections of such are required by the PADEP to demonstrate compliance with the NPDES permit. You are required to return the stormwater management facilities back to an acceptable condition and ensure the future functioning of such as originally designed and constructed. All required work shall be scheduled within next 6 months and be completed within 1 year.

The on-site inspection Report references the original Subdivision, Land Development and/or Stormwater Management Plans (or Post construction Stormwater Management Plans) that were approved by the Township and then utilized to complete the construction of the stormwater management facilities.

Please feel free to contact me at this office should there be any questions or if you need clarification.

Sincerely,
SYSTEMS DESIGN ENGINEERING, INC.

Pamela J. Stevens, P.E.
Senior Municipal Engineer
Enclosures
cc: Maidencreek Township – 20-0019-0254.04
I:\Projects\Maidencreek Township\20-0019-0254 Stormwater Basin Inspections - 2020\Trans Ltrs for completed Reports\Crossings Basin Ltr. 2024 on Ltrhd.docx

SDE SYSTEMS DESIGN ENGINEERING, INC
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SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Information

Project Name
The Crossings at Maidencreek

Location
UPI: 61542006380693

Plan Name(s)
"Crossing at Maidencreek Subdivision" prepared by C2C Design Group, dated February 24, 2023, last revised February 14, 2024

Owner or Responsible Party
Massimo Caloiero & Moses B Glick

Inspector
Evan Charnoff

Date
11/06/2024

Facility Type

Type of SWM Facility
Detention Basin

Suitable Ground Cover & Maintenance
Acceptable

Earthen Embankment Condition
Acceptable

Outlet Structure Condition

Orifice Plate
Not Required

Trash Rack
Not Required

Watertight
Acceptable

Outlet Pipe
Acceptable

Positive Drainage Provided
Yes

Summary

Stormwater Management Facilities Condition
No Further Action is Required.

Stormwater Management Facilities appear to be installed per the approved Plans, are being maintained in an acceptable manner, and are functional.

General Comments
Basin to be modified when development occurs

Site Inspection Photos to begin on the next page

SDE SYSTEMS DESIGN ENGINEERING, INC
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SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Inspection Photos

Site Photo	Optional Description
	Photo 1 Outlet structure and skimmer

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
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SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 2 Basin

SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Information

Project Name
Ontelaunee Heights

Location
UPI: 61541114435704

Plan Name(s)
"Final Plan Phase II" prepared by Thomas R. Gibbons & Associates, Inc., dated October 26, 1993, last revised November 3, 1993

Owner or Responsible Party
Maidencreek Township

Inspector
Evan Charnoff

Date
11/06/2024

Facility Type

Type of SWM Facility
Detention Basin

Suitable Ground Cover & Maintenance
Acceptable

Earthen Embankment Condition
Acceptable

Outlet Structure Condition

Orifice Plate
Not Required

Trash Rack
Not Required

Watertight
Acceptable

Outlet Pipe
Acceptable

Positive Drainage Provided
Yes

Summary

Stormwater Management Facilities Condition
No Further Action is Required.

Stormwater Management Facilities appear to be installed per the approved Plans, are being maintained in an acceptable manner, and are functional.

Site Inspection Photos to begin on the next page

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Inspection Photos

Site Photo	Optional Description
	Photo 1 Outlet structure

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 2 Basin

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 3 Basin

SDE SYSTEMS DESIGN ENGINEERING, INC
"A Passion for Engineering Excellence"
sdei.net

November 8, 2024

GSP Properties
P.O. Box 474
Center Valley PA 18034

RE: Inspection of Stormwater Management Facilities
GSP Properties Allentown Pike Detention Basin
Maidencreek Township, Berks County, PA

Dear Property Owner:

On behalf of Maidencreek Township, Systems Design Engineering, Inc. has completed an on-site inspection of the stormwater management facilities located at the above-referenced property.

The stormwater management facilities ultimately discharge into the Municipal Separate Storm Sewer System (MS4) owned and operated by Maidencreek Township. The MS4 designation requires the Township to obtain a National Pollution Discharge Elimination System (NPDES) permit as administered by the Pennsylvania Department of Environmental Protection (PADEP). As part of the permit, the Township must ensure the MS4 is being maintained and operated in accordance with the NPDES permit requirements. This includes the routine inspection of any stormwater management facilities that were previously required as part of the Township's subdivision and land development processes are still in place, functioning as designed, and being adequately maintained.

Attached is a copy of the "On-Site Inspection Report" performed on November 6, 2024 for the stormwater facilities located on your property or that you are otherwise responsible for maintaining. Within this Report are the current conditions or deficiencies noted along with an indication of any necessary corrective actions, routine maintenance, or repairs that may be required. If any "Follow-up Action Required" other than "continue with routine site maintenance" is noted, please contact the Township prior to initiating any construction work since inspections of such are required by the PADEP to demonstrate compliance with the NPDES permit. You are required to return the stormwater management facilities back to an acceptable condition and ensure the future functioning of such as originally designed and constructed. All required work shall be scheduled within next 6 months and be completed within 1 year.

The on-site inspection Report references the original Subdivision, Land Development and/or Stormwater Management Plans (or Post construction Stormwater Management Plans) that were approved by the Township and then utilized to complete the construction of the stormwater management facilities.

Please feel free to contact me at this office should there be any questions or if you need clarification.

Sincerely,
SYSTEMS DESIGN ENGINEERING, INC.

Pamela J. Stevens, P.E.
Senior Municipal Engineer
Enclosures
cc: Maidencreek Township – 20-0019-0254.06
I:\Projects\Maidencreek Township\20-0019-0254 Stormwater Basin Inspections - 2020\Trans Ltrs for completed Reports\GSP Properties Basin Ltr. 2024 on Ltrhd.docx

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Information

Project Name
GSP Properties

Location
8520 Allentown Pike

Plan Name(s)
"As-built Survey Plan" prepared by Stackhouse Bensinger, Inc., dated July 8, 2020, last revised July 15, 2020

Owner or Responsible Party
North Bethlehem LLC

Inspector
Evan Charnoff

Date
11/06/2024

Facility Type

Type of SWM Facility
Detention Basin
Underground Infiltration

Suitable Ground Cover & Maintenance
Acceptable

Earthen Embankment Condition
Acceptable

Outlet Structure Condition

Orifice Plate
Not Required

Trash Rack
Acceptable

Watertight
Acceptable

Outlet Pipe
Acceptable

Positive Drainage Provided
Yes

Infiltration Facilities

Is Access Possible
No

Any Noticeable Ponding
No

Describe Issue
Secure manhole lids.

Any Noticeable Settlement
No

Storm Sewer System

SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Inlet Grate Condition
Acceptable

Settlement Around Grates
No

Positive Surface Drainage
Yes

Catch Basin Condition
Acceptable

Endwall Condition
Acceptable

Riprap Aprons
Acceptable

Summary

Stormwater Management Facilities Condition
No Further Action is Required.

Stormwater Management Facilities appear to be installed per the approved Plans, are being maintained in an acceptable manner, and are functional.

General Comments
Grass clippings and accumulated debris should be cleaned from rock berms and outfall riprap

Site Inspection Photos to begin on the next page

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Inspection Photos

Site Photo	Optional Description
	Photo 1 Forebay 1 outlet structure
	Photo 2 Forebay 1

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 3 Forebay 1
	Photo 4 Forebay 2

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 5 Forebay 2 outlet structure

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 6 Outfall and rip rap

November 1, 2024

Small Properties LP
21 Erhardt Rd
Fleetwood, PA 19522

RE: Inspection of Stormwater Management Facilities
Small Spaces Storage
UPI 61542118405143
Maidencreek Township, Berks County, PA

Dear Property Owner:

On behalf of Maidencreek Township, Systems Design Engineering, Inc. has completed an on-site inspection of the stormwater management facilities located at the above-referenced property.

The stormwater management facilities ultimately discharge into the Municipal Separate Storm Sewer System (MS4) owned and operated by Maidencreek Township. The MS4 designation requires the Township to obtain a National Pollution Discharge Elimination System (NPDES) permit as administered by the Pennsylvania Department of Environmental Protection (PADEP). As part of the permit, the Township must ensure the MS4 is being maintained and operated in accordance with the NPDES permit requirements. This includes the routine inspection of any stormwater management facilities that were previously required as part of the Township's land development process are still in place, functioning as designed and being adequately maintained.

Attached is a copy of the "On-Site Inspection Report" for the stormwater facilities located on your property or that you are otherwise responsible for maintaining. Within this Report are the current conditions or deficiencies noted along with an indication of any necessary corrective actions, routine maintenance, or repairs that may be required. If any "Follow-up Action Required" other than "continue with routine site maintenance" is noted, please contact the Township prior to initiating any construction work since inspections of such are required by the PADEP to demonstrate compliance with the NPDES permit. You are required to return the stormwater management facilities back to an acceptable condition and ensure the future functioning of such as originally designed and constructed. All required work shall be scheduled within the next 6 months and be completed within 1 year.

The On-site Inspection Report references the original Subdivision, Land Development and/or Stormwater Management Plans (or Post construction Stormwater Management Plans) that were approved by the Township and then utilized to complete the construction of the stormwater management facilities.

Please feel free to contact me at this office should there be any questions or if you need clarification.

Sincerely,
SYSTEMS DESIGN ENGINEERING, INC.

Pamela J. Stevens

Pamela J. Stevens, P.E.
Senior Municipal Engineer
p.stevens@sdei.net

Enclosures

cc: Maidencreek Township
I:\Projects\Maidencreek Township\20-0019-0254 Stormwater Basin Inspections - 2020\Trans Ltrs for completed Reports\David Small Transmittal Basin Insp Ltr.docx
SDE File 20-0019-0254.007

SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Information

Project Name
David Small Self Storage

Location
498 Hoch Road

Plan Name(s)
"Small Properties LP Self Storage Facility" prepared by Watkins Architect, L.T.D., dated September 13, 2005, last revised October 3, 2005

Owner or Responsible Party
Small Properties

Inspector
Grant Stahl, E.I.T.

Date
10/30/2024

Facility Type

Type of SWM Facility
Detention Basin

Suitable Ground Cover & Maintenance
Acceptable

Earthen Embankment Condition
Acceptable

Outlet Structure Condition

Orifice Plate
Not Required

Trash Rack
Not Required

Watertight
Acceptable

Outlet Pipe
Acceptable

Positive Drainage Provided
Acceptable

Other Concerns
Loose branches should be cleared from the top of inlet CB-17. See Photo 3.

SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Drainage Swales

Sized per Approved Design
Yes

Suitable Ground Cover
Acceptable

Positive Drainage
Acceptable

Areas of Active Erosion
Acceptable

Other Concerns
No deficiencies noted.

Storm Sewer System

Inlet Grate Condition
Acceptable

Settlement Around Grates
Yes

Describe Issue
Very minor settlement of asphalt surounding some grates. Owner is aware and has plans to correct settlement.

Positive Surface Drainage
Yes

Catch Basin Condition
Acceptable

Endwall Condition
Acceptable

Riprap Aprons
Acceptable

Other Concerns
No deficiencies noted.

Summary

Stormwater Management Facilities Condition
No Further Action is Required.

Stormwater Management Facilities appear to be installed per the approved Plans, are being maintained in an acceptable manner, and are functional.

Site Inspection Photos to begin on the next page

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

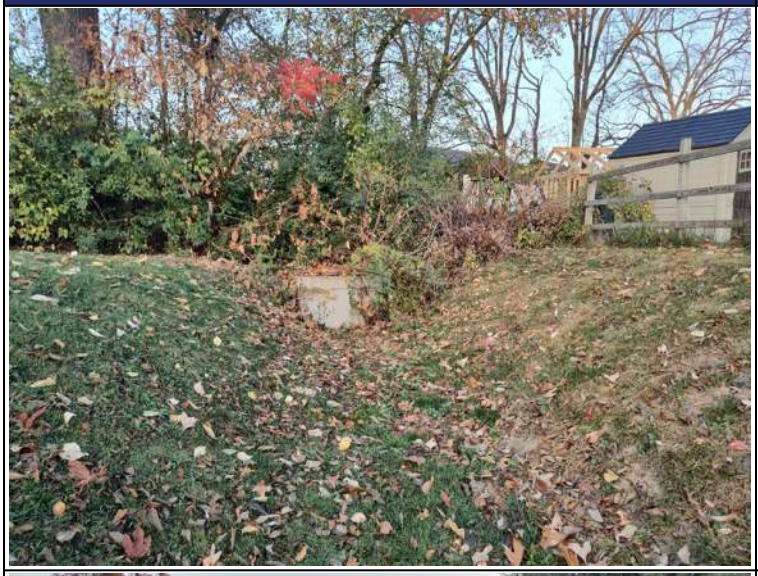
STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Inspection Photos

Site Photo	Description
	Photo 1 Northwest view of Swale B
	Photo 2 North View of Swale B

SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Description
	Photo 3 Accumulated branches on CB-17
	Photo 4 East View of Swale B

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Description
	Photo 5 East View of Swale A
	Photo 6 East View of CB-16

November 1, 2024

Isidoro Polanco & Ma Guadalupe
504 Calabria Dr
Blandon, PA 19510-9438

RE: Inspection of Stormwater Management Facilities
Shadow Ridge
UPI# 61542117120389
Maidencreek Township, Berks County, PA

Dear Property Owner:

On behalf of Maidencreek Township, Systems Design Engineering, Inc. has completed an on-site inspection of the stormwater management facilities located at the above-referenced property.

The stormwater management facilities ultimately discharge into the Municipal Separate Storm Sewer System (MS4) owned and operated by Maidencreek Township. The MS4 designation requires the Township to obtain a National Pollution Discharge Elimination System (NPDES) permit as administered by the Pennsylvania Department of Environmental Protection (PADEP). As part of the permit, the Township must ensure the MS4 is being maintained and operated in accordance with the NPDES permit requirements. This includes the routine inspection of any stormwater management facilities that were previously required as part of the Township's land development process are still in place, functioning as designed and being adequately maintained.

Attached is a copy of the "On-Site Inspection Report" for the stormwater facilities located on your property or that you are otherwise responsible for maintaining. Within this Report are the current conditions or deficiencies noted along with an indication of any necessary corrective actions, routine maintenance, or repairs that may be required. If any "Follow-up Action Required" other than "continue with routine site maintenance" is noted, please contact the Township prior to initiating any construction work since inspections of such are required by the PADEP to demonstrate compliance with the NPDES permit. You are required to return the stormwater management facilities back to an acceptable condition and ensure the future functioning of such as originally designed and constructed. All required work shall be scheduled within the next 6 months and be completed within 1 year.

The On-site Inspection Report references the original Subdivision, Land Development and/or Stormwater Management Plans (or Post construction Stormwater Management Plans) that were approved by the Township and then utilized to complete the construction of the stormwater management facilities.

Please feel free to contact me at this office should there be any questions or if you need clarification.

Sincerely,
SYSTEMS DESIGN ENGINEERING, INC.

Pamela J. Stevens

Pamela J. Stevens, P.E.
Senior Municipal Engineer
p.stevens@sdei.net

Enclosures

cc: Maidencreek Township
I:\Projects\Maidencreek Township\20-0019-0254 Stormwater Basin Inspections - 2020\8 - Shadow Ridge Phase 1\Shadow Ridge Trans Basin Insp Ltr.docx

Cc: Diane Hollenbach, Township Manager (d.hollenbach@maidencreek.net)
Eric Frey: Township Solicitor (efrey@nycelawoffice.com)
Board of Supervisors
SDE File 20-0019-0254.1-008

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Information

Project Name
Shadow Ridge Phase 1

Location
504 Calabria Drive

Plan Name(s)
"Shadow Ridge Phase 1" prepared by Thomas R. Gibbons & Associates, Inc., dated November 4, 1996, last revised November 27, 1996

Owner or Responsible Party
Isidore & Ma Guadalupe Polanco

Inspector
Grant Stahl, E.I.T

Date
11/01/2024

Facility Type

Type of SWM Facility
Detention Basin

Suitable Ground Cover & Maintenance
Acceptable

Earthen Embankment Condition
Acceptable

General Comments
Bare spot is present at location of sinkhole repair. Property owner is in the process of getting grass seed to grow.

Outlet Structure Condition

Orifice Plate
Not Required

Trash Rack
Not Required

Watertight
Acceptable

Outlet Pipe
Acceptable

Positive Drainage Provided
Yes

Other Concerns
No deficiencies noted.

Drainage Swales

Sized per Approved Design
Yes

Suitable Ground Cover
Acceptable

Positive Drainage
Acceptable

Areas of Active Erosion
Acceptable

Other Concerns

Some debris is left in the concrete channel.

SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Summary

Stormwater Management Facilities Condition

No Further Action is Required.

Stormwater Management Facilities appear to be installed per the approved Plans, are being maintained in an acceptable manner, and are functional.

General Comments

Bare spot is present at location of sinkhole repair. Property owner is in the process of getting grass seed to grow, but lack of rain is inhibiting growth. Debris in the concrete channel should be cleaned.

Site Inspection Photos to begin on the next page

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Inspection Photos

Site Photo	Optional Description
	Photo 1 Photo of basin

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 2 Photo of basin

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 3 Photo of endwall into basin.

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 4 Photo of outlet structure.

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 5 Photo of forebay

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 6 Photo of current condition of sinkhole repair.

STORMWATER ASSET COMPLETION REPORT

PREPARED FOR:

CVS

Facility #:5065
8565 Allentown Pike
Blanton, PA
12/27/2024

AQUALIS

aqualisco.com | 855.890.6390

AQUALIS

Services Proposed For: CVS

Facility # 5065
8565 Allentown Pike
Blanton, PA

Internal RO: #28705

Scope of Work

AQUALIS provided the Services and Deliverable(s) as follows:

- Mobilized all equipment and labor to the site.
- Located any utility lines in and around the work area as needed.
- Installed necessary BMPs, barricades, and signage as needed.
- Manually removed trash and debris from the detention basin.
- Used combination mower, bush hog to clear cut vegetation in detention basin.
- Removed rock filter berm from around outlet control structure.
- Backfilled and compact sinkhole in 3" lifts to match grade.
- Installed riprap aprons at basin inlet ensuring riprap aprons are below grade to allow proper flow.
- Performed general site clean-up.
- Demobilized & disposed all accumulated waste at an appropriate offsite facility.

Special Project Notes

Project was completed per the scope outlined above.

No cause for small sinkhole determined. Hole was backfilled, compacted to match existing grade.

CVS 05065-01

SDE SYSTEMS DESIGN ENGINEERING, INC

sdei.net

November 22, 2024

Lidia Folino
133 Grandview Blvd
Reading, PA 19609-1709

11/22/2024 SENT TO ATTY SALVATORE FOLINO VIA E-MAIL SF@BRENNANLAW.NET

RE: Inspection of Stormwater Management Facilities
CVS (8565 Allentown Pike)
Maidencreek Township, Berks County, PA

Dear Property Owner:

This letter is to inform you that, on behalf of Maidencreek Township, a representative from Systems Design Engineering, Inc. (SDEI is the appointed engineering firm that represents the Township) has visited the above-referenced property in order to conduct a visual inspection of the stormwater management facilities.

The purpose of the inspection is to confirm the stormwater management facilities that were previously required as part of the Township's past approval of development plan(s) for the property are still: in place, functioning as designed and being adequately maintained. This inspection was performed on November 6, 2024.

Please find attached the Inspection Report which identifies the same issues and deficiencies as identified in the 2023 Inspection. As you were unresponsive last year and the same issues and deficiencies were identified, you have thirty (30) days to address the issues. If you do not address the issues in the Inspection Report before the thirty (30) day period expires, the Township will resolve the issues and deficiencies at your cost. The costs for the Township will be $320.47 per hour for the full road crew and $125.00 per hour for each piece of heavy machinery used.

Please find below, excerpts from Chapter 182 of the Code of Ordinances citing, the Township's right of entry and the Township's right to correct the violations if not completed within the time period stated in the Notification. Please consider this letter as the Notification.

Chapter 182. Stormwater Management
Article IX. Enforcement and Penalties
§182-43. Right of entry.

A. Upon presentation of proper credentials, duly authorized representatives of the Township of Maidencreek may enter at reasonable times upon any property within the Township of Maidencreek to inspect the implementation, condition, or operation and maintenance of the stormwater controls or BMPs in regard to any aspect governed by this chapter.

B. Stormwater control and BMP owners and operators shall allow persons working on behalf of the Township of Maidencreek ready access to all parts of the premises for the purposes of determining compliance with this chapter.

C. Persons working on behalf of the Township of Maidencreek shall have the right to temporarily locate on any stormwater control or BMP in the Township of Maidencreek such devices as are necessary to conduct monitoring and/or sampling of the discharges from such stormwater control or BMP.

CVS 05065-01

D. Unreasonable delays (more than 24 hours) in allowing the Township of Maidencreek access to a stormwater control or BMP is a violation of this article.

§182-45. Notice to comply.

A. Whenever the Township of Maidencreek finds that a person has violated a prohibition or failed to meet a requirement of this chapter, the Township of Maidencreek may order compliance by written notice to the responsible person. Such notice may require without limitation:

(1) The performance of monitoring, analyses, and reporting;
(2) The elimination of prohibited connections or discharges;
(3) Cessation of any violating discharges, practices, or operations;
(4) The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property;
(5) Payment of a fine to cover administrative and remediation costs;
(6) The implementation of stormwater controls and BMPs; and
(7) Operation and maintenance of stormwater controls and BMPs.

B. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of these violations(s). Said notice may further advise that, if applicable, should the violator fail to take the required action within the established deadline, the work will be done by the Township of Maidencreek or designee and the expense thereof shall be charged to the violator.

C. Failure to comply within the time specified shall also subject such person to the penalty provisions of this chapter. All such penalties shall be deemed cumulative and shall not prevent the municipality from pursuing any and all other remedies available in law or equity.

If you have any questions, please contact the Township at 610-926-4920, and/or our office at 610-916-8500.

Sincerely,
SYSTEMS DESIGN ENGINEERING, INC.

Pamela J. Stevens, P.E.
Township Engineer
p.stevens@sdei.net

Enclosures

cc: Diane Hollenbach Township Manager, Maidencreek Township
SDE File 20-0019-0254.1-009

I:\Projects\Maidencreek Township\20-0019-0254 Stormwater Basin Inspections - 2020\Notification Letters\2024 Inspections\9 Notification Letter - CVS.revised.Lidia.Folino.docx

AQUALIS

Aerial Image

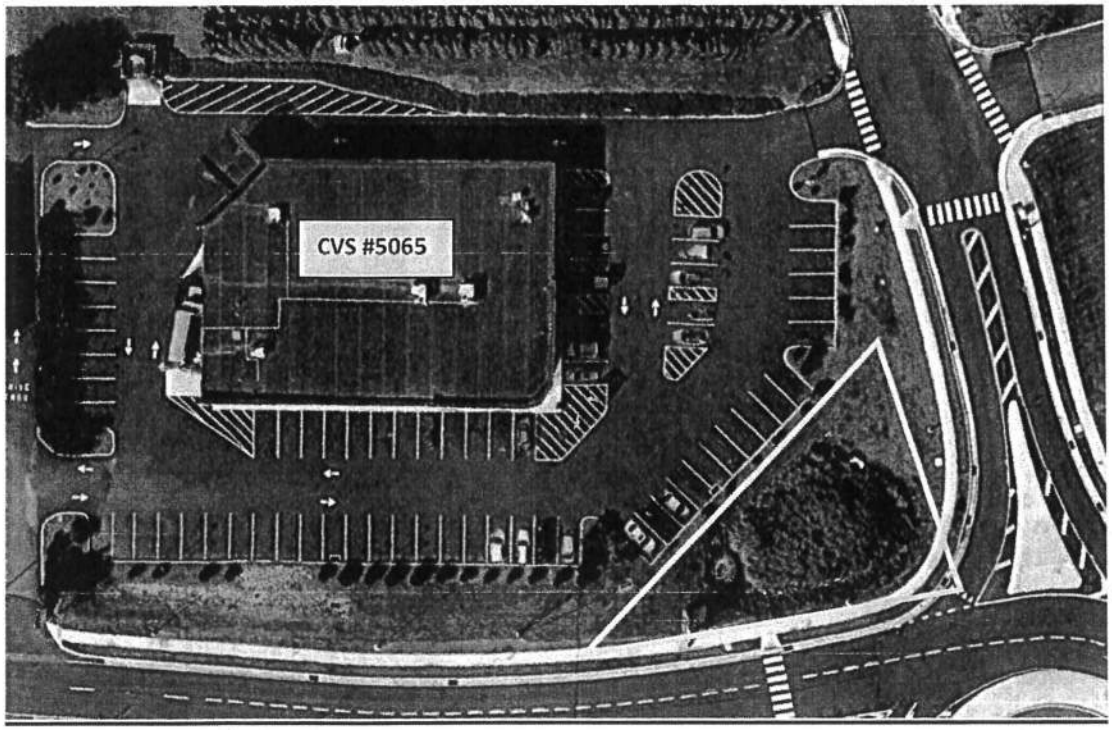
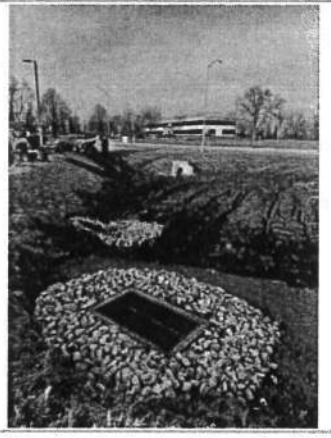


Photo Log













Scope of Work Description:

- Mobilize all equipment and labor to the site.
- Locate any utility lines in and around the work area as needed.
- Install necessary BMPs, barricades, and signage as needed.
- PPE usage and OSHA compliance is mandatory for repair.
- Manually remove trash and debris from the detention basin.
- Use combination mower, bush hog to clear cut vegetation in detention basin.
- Remove rock filter berm from around outlet control structure.
- Investigate the cause of sinkhole/scour hole behind the outlet control structure. Utilize hydraulic cement/mortar as needed.
- Backfill and compact sinkhole in 3" lifts to match grade.
- Install riprap aprons at basin inlet ensuring riprap aprons are below grade to allow proper flow.

Store Number	City, State	Date	Total Project Cost
5065	Blanton, PA	12/2/2024	$27,835.50

Labor				Materials				Equipment				Subtotals
Description	# Hours	Rate	Total	Item Description	Qty.	Rate	Total	Description / Item Name	Qty.	Rate	Total	
Supervisor	36.0	$ 75.00	$ 2,700.00	Hydraulic Cement	2.0	$ 50.00	$ 100.00	Mini Excavator /hour	36.00	$ 150.00	$ 5,400.00	
Equipment Operator	36.0	$ 65.00	$ 2,340.00	Compactible Fill	2.0	$ 55.00	$ 110.00	Bushog	3.00	$ 275.00	$ 825.00	
Laborer	36.0	$ 55.00	$ 1,980.00	Concrete	2.0	$ 250.00	$ 500.00	Dump Truck and Trailer /day	3.00	$ 624.50	$ 1,873.50	
Laborer	36.0	$ 55.00	$ 1,980.00	Riprap	4.0	$ 88.00	$ 352.00	Safety Barricades	3.00	$ 185.00	$ 555.00	
			$ -	ECM Mattting and staples	1.0	$ 320.00	$ 320.00	Roller/compactor	3.00	$ 300.00	$ 900.00	
			$ -				$ -	Skid Steer	36.00	$ 150.00	$ 5,400.00	
			$ -				$ -				$ -	
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Subtotals	144.00	$ 62.50	$ 9,000.00			$ 152.60	$ 1,382.00		84.00	280.8	$ 14,953.50	$ 25,335.50

Quote Prepared by: Jeff Urban

AQUALIS warranties all labor and materials for one year

	Qty.	Rate	Total
Mobilization:	1	$ 500.00	$ 500.00
Lodging and Per Diem:			$ -
Disposal:	1	$ 2,000.00	$ 2,000.00
Sales Tax:		0.00%	$ -
		Grand Total:	$ 27,835.50

SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Information

Project Name
CVS (at Circle)

Location
8565 Allentown Pike

Plan Name(s)
"Final Land Development Plan for CVS Maidencreek" prepared by Reilly Associates, dated November 19, 2007, last revised May 18, 2008

Owner or Responsible Party
Stefano Folino

Inspector
Evan Charnoff

Date
11/06/2024

Facility Type

Type of SWM Facility
Detention Basin

Suitable Ground Cover & Maintenance
Not Acceptable

Reason Not Acceptable
Basin is not being mowed nor maintained as a grass bottom.

Earthen Embankment Condition
Not Acceptable

Reason Not Acceptable
A sinkhole/scour hole has developed behind the outlet structure.

Outlet Structure Condition

Orifice Plate
Not Required

Trash Rack
Not Acceptable

Describe Issue
Trash rack is buried under the E&S stone filter berm that was never removed.

Watertight
Not Acceptable

Describe Issue
A sinkhole/scour hole has developed behind the outlet control structure over the location of the outlet pipe.

Outlet Pipe
Not Acceptable

Describe Issue
A sinkhole/scour hole has developed behind the outlet control structure over the location of the outlet pipe.

Positive Drainage Provided
No

Other Concerns

Basin cannot properly drain due to rock filter berm surrounding outlet control structure.

Storm Sewer System

Inlet Grate Condition
Acceptable

Settlement Around Grates
No

Positive Surface Drainage
Yes

Catch Basin Condition
Acceptable

Endwall Condition
Acceptable

Riprap Aprons
Not Acceptable

Describe Issue
Riprap aprons are missing.

Summary

Stormwater Management Facilities Condition
Follow-up Action is Required.

Stormwater Management Facilities are damaged, in disrepair, missing or otherwise require immediate maintenance and follow-up action.

Follow-Up Action Required By:
Property Owner

Describe Follow-Up Action
> Rock filter berm has not been removed from E&S phase of the project and is preventing proper drainage and function of the basin.
> Basin needs to be mowed and grass reestablished in the bottom of the basin.
> No rip rap is present at the endwalls as required.
> Trash is present throughout the basin and needs to be removed.

Site Inspection Photos to begin on the next page

SDE SYSTEMS DESIGN ENGINEERING, INC
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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Inspection Photos

Site Photo	Optional Description
	Photo 1 Rock filter berm to be removed.

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
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SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 2 Sinkhole at outlet structure

SDE SYSTEMS DESIGN ENGINEERING, INC
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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 3 Overgrown vegetation

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
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BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 4 Inflow without rip rap

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Information

Project Name
Coliseum Plaza

Location
8468/8477 Allentown Pike

Plan Name(s)
"Final Land Development Plan Coliseum Plaza II" prepared by Thomas R. Gibbons & Associates, Inc., dated January 19, 1999, last revised May 13, 1999

Owner or Responsible Party
VEF 222 LLC

Inspector
Evan Charnoff

Date
11/06/2024

Facility Type

Type of SWM Facility
Underground Infiltration

Suitable Ground Cover & Maintenance
Acceptable

Earthen Embankment Condition
Acceptable

Outlet Structure Condition

Orifice Plate
Not Acceptable

Describe Issue
No Orifice Plate was present in OS 3 or 4

Watertight
Acceptable

Positive Drainage Provided
Yes

Trash Rack
Not Acceptable

Describe Issue
No Trash Rack was present

Outlet Pipe
Acceptable

Infiltration Facilities

Is Access Possible
No

Describe Issue
No pick for manhole lids

Any Noticeable Settlement
Yes

Describe Issue

Any Noticeable Ponding
No

Inlets have noticeable sediment buildup

Summary

Stormwater Management Facilities Condition

Follow-up Action is Required.

Stormwater Management Facilities are damaged, in disrepair, missing or otherwise require immediate maintenance and follow-up action.

Follow-Up Action Required By:

Property Owner

Describe Follow-Up Action

> Orifice plates were never installed and need to be placed in the outlet structures as per plans.
> Trash racks are also required in the outlet structures.
> Sediment needs to be cleaned from the inlets on site.

Site Inspection Photos to begin on the next page

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SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Inspection Photos

Site Photo	Optional Description
	Photo 1 OS 3. No orifice or trash rack on 15" pipe. Sediment and Trash buildup up

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
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SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 2 OS 4. No orifice or trash rack on 15" pipe. Sediment and Trash buildup up

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
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SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Information

Project Name
Hearthstone Assisted Living

Location
105 Dries Road

Plan Name(s)
"Hearthstone Assisted Living Center Final Land Development Plan" prepared by Schlouch Incorporated, dated January 14, 2004, last revised February 17, 2004

Owner or Responsible Party
Maidencreek Place

Inspector
Evan Charnoff

Date
11/06/2024

Facility Type

Type of SWM Facility
Detention Basin

Suitable Ground Cover & Maintenance
Not Acceptable

Reason Not Acceptable
Leaves and debris in inlets. Grass clippings sitting in basin

Earthen Embankment Condition
Not Acceptable

Reason Not Acceptable
Extensive erosion from disconnected roof leader

Outlet Structure Condition

Orifice Plate
Not Required

Trash Rack
Acceptable

Watertight
Acceptable

Outlet Pipe
Acceptable

Positive Drainage Provided
Yes

Drainage Swales

Sized per Approved Design
Yes

Suitable Ground Cover
Acceptable

Positive Drainage
Acceptable

Areas of Active Erosion
No

Other Concerns

Discarded child pool left in swale path.

Storm Sewer System

Inlet Grate Condition
Acceptable

Settlement Around Grates
No

Positive Surface Drainage
Yes

Catch Basin Condition
Acceptable

Endwall Condition
Acceptable

Riprap Aprons
Not Acceptable

Describe Issue
Riprap aprons are missing.

Summary

Stormwater Management Facilities Condition
Follow-up Action is Required.

Stormwater Management Facilities are damaged, in disrepair, missing or otherwise require immediate maintenance and follow-up action.

Follow-Up Action Required By:
Property Owner

Describe Follow-Up Action
Priority Follow-Up Items:
> Rock wall embankment is showing signs of erosion in the ground surface and requires immediate attention.
> The roof drain from the Care Facility needs reattached.
> The corrugated plastic pipe needs to be reattached, the scour area repaired, and the broken pieces of the pipe cleaned up.
> Riprap aprons at endwalls are missing or buried by debris and shall be reestablished.

Non-Priority Action Items:
> Grass clippings need to be removed from the basin. Clippings shall be removed after every mowing.
> Inlets need to be cleaned of leaves.
> The child pool shall be removed from the basin.
> Vegetation and debris is covering the outfall riprap and shall be cleared.

Site Inspection Photos to begin on the next page

SDE SYSTEMS DESIGN ENGINEERING, INC
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BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Inspection Photos

Site Photo	Optional Description
	Photo 1 Eroding Embankment and broken roof drain

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 2 Eroding Embankment

SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 3 Basin with grass clippings

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 4 Endwall into the basin missing riprap

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
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SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 5 Overgrown vegetation and trash

SDE SYSTEMS DESIGN ENGINEERING, INC
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SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 6 Endwall into the basin missing riprap

SDE SYSTEMS DESIGN ENGINEERING, INC
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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 7 Outlet structure

SDE SYSTEMS DESIGN ENGINEERING, INC
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SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 8 Potential sinkholes at outlet structure to monitor.

SDE SYSTEMS DESIGN ENGINEERING, INC
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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 9 Vegetation and debris to be removed from around outfall and riprap apron

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SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Information

Project Name
Hearthstone Assisted Living

Location
105 Dries Road

Plan Name(s)
"Hearthstone Assisted Living Center Final Land Development Plan" prepared by Schlouch Incorporated, dated January 14, 2004, last revised February 17, 2004

Owner or Responsible Party
Maidencreek Place

Inspector
Grant Stahl, EIT

Date
04/29/2025

Facility Type

Type of SWM Facility
Detention Basin

Suitable Ground Cover & Maintenance
Acceptable

Earthen Embankment Condition
Acceptable

Outlet Structure Condition

Orifice Plate
Not Required

Trash Rack
Acceptable

Watertight
Acceptable

Outlet Pipe
Acceptable

Positive Drainage Provided
Yes

Drainage Swales

Sized per Approved Design
Yes

Suitable Ground Cover
Acceptable

Positive Drainage
Acceptable

Areas of Active Erosion
No

Storm Sewer System

Inlet Grate Condition
Acceptable

Settlement Around Grates
No

Positive Surface Drainage

Catch Basin Condition

Yes

Acceptable

Endwall Condition

Acceptable

Riprap Aprons

Acceptable

Summary

Stormwater Management Facilities Condition

No Further Action is Required.

Stormwater Management Facilities appear to be installed per the approved Plans, are being maintained in an acceptable manner, and are functional.

General Comments

No deficiencies noted during inspection after basin repairs by property owner.

Site Inspection Photos to begin on the next page

SDE SYSTEMS DESIGN ENGINEERING, INC
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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Inspection Photos

Site Photo	Optional Description
	1 Photo of Outlet Control Structure
	2 Photo of Endwall: ES 5
	3 Photo of Endwall: ES 3

SDE SYSTEMS DESIGN ENGINEERING, INC
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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	4 Photo of reestablished low flow channel
	5 Photo of repaired roof leader.
	6 Photo of repaired retaining wall

SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	7 Photo of Outlet Control Structure Endwall: ES 4

SDE SYSTEMS DESIGN ENGINEERING, INC
"A Passion for Engineering Excellence"
sdei.net

November 8, 2024

Keystone Villa
501 Hoch Road
Blandon, PA 19510

RE: Inspection of Stormwater Management Facilities
Keystone Villa at 501 Hoch Road LLC Detention Basin
Maidencreek Township, Berks County, PA

Dear Property Owner:

On behalf of Maidencreek Township, Systems Design Engineering, Inc. has completed an on-site inspection of the stormwater management facilities located at the above-referenced property.

The stormwater management facilities ultimately discharge into the Municipal Separate Storm Sewer System (MS4) owned and operated by Maidencreek Township. The MS4 designation requires the Township to obtain a National Pollution Discharge Elimination System (NPDES) permit as administered by the Pennsylvania Department of Environmental Protection (PADEP). As part of the permit, the Township must ensure the MS4 is being maintained and operated in accordance with the NPDES permit requirements. This includes the routine inspection of any stormwater management facilities that were previously required as part of the Township's subdivision and land development processes are still in place, functioning as designed, and being adequately maintained.

Attached is a copy of the "On-Site Inspection Report" performed on November 6, 2024 for the stormwater facilities located on your property or that you are otherwise responsible for maintaining. Within this Report are the current conditions or deficiencies noted along with an indication of any necessary corrective actions, routine maintenance, or repairs that may be required. If any "Follow-up Action Required" other than "continue with routine site maintenance" is noted, please contact the Township prior to initiating any construction work since inspections of such are required by the PADEP to demonstrate compliance with the NPDES permit. You are required to return the stormwater management facilities back to an acceptable condition and ensure the future functioning of such as originally designed and constructed. All required work shall be scheduled within next 6 months and be completed within 1 year.

The on-site inspection Report references the original Subdivision, Land Development and/or Stormwater Management Plans (or Post construction Stormwater Management Plans) that were approved by the Township and then utilized to complete the construction of the stormwater management facilities.

Please feel free to contact me at this office should there be any questions or if you need clarification.

Sincerely,
SYSTEMS DESIGN ENGINEERING, INC.

Pamela J. Stevens, P.E.
Senior Municipal Engineer
Enclosures
cc: Maidencreek Township – 20-0019-0254.14
I:\Projects\Maidencreek Township\20-0019-0254 Stormwater Basin Inspections - 2020\Trans Ltrs for completed Reports\Keystone Villa Basin Ltr. 2024 on Ltrhd.docx

SYSTEMS DESIGN ENGINEERING, INC
SDE
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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Information

Project Name
Keystone Villa

Location
501 Hock Road

Plan Name(s)
"Revision to Plan of Record Final Land Development Plan Villa at Maidencreek" prepared by McCarthy Engineering Associates, P.C., dated March 16, 2010, last revised September 28, 2010

Owner or Responsible Party
Kara Dobson, MSW, Executive Director

Inspector
Evan Charnoff

Date
11/06/2024

Facility Type

Type of SWM Facility
Underground Infiltration
Other

Other (Describe)
Rain Garden

Suitable Ground Cover & Maintenance
Acceptable

Earthen Embankment Condition
Acceptable

Outlet Structure Condition

Orifice Plate
Not Required

Trash Rack
Not Required

Watertight
Acceptable

Outlet Pipe
Acceptable

Positive Drainage Provided
Yes

Infiltration Facilities

Is Access Possible
Yes

Any Noticeable Ponding
No

Any Noticeable Settlement
No

Summary

SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
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SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Stormwater Management Facilities Condition

No Further Action is Required.

Stormwater Management Facilities appear to be installed per the approved Plans, are being maintained in an acceptable manner, and are functional.

Site Inspection Photos to begin on the next page

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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Inspection Photos

Site Photo	Optional Description
	Photo 1 Rain Garden

SDE SYSTEMS DESIGN ENGINEERING, INC
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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 2 Underground basin manhole
	Photo 3 Underground basin inlet

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SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Information

Project Name
Esbenshades

Location
721 Park Road

Plan Name(s)
"Final Plan Proposed Greenhouse" prepared by Ludgate Engineering Corporation, dated January 5, 2015, last revised March 28, 2015

Owner or Responsible Party
Carl Richard, Store Manager

Inspector
Evan Charnoff

Date
11/06/2024

Facility Type

Type of SWM Facility
Detention Basin

Suitable Ground Cover & Maintenance
Acceptable

Earthen Embankment Condition
Not Acceptable

Reason Not Acceptable
Area of embankment needs some minor repair and reseeding

Outlet Structure Condition

Orifice Plate
Not Required

Trash Rack
Not Required

Watertight
Acceptable

Outlet Pipe
Acceptable

Positive Drainage Provided
No

Other Concerns
Trees and other overgrown vegetation around outlet structure

Storm Sewer System

Inlet Grate Condition
Acceptable

Settlement Around Grates
No

Positive Surface Drainage
No

Catch Basin Condition
Acceptable

Describe Issue

Area's of overgrown vegetation around inflow point

Endwall Condition
Not Acceptable

Describe Issue
Flared end section missing from 8" roof drain connection

Riprap Aprons
Not Acceptable

Describe Issue
Significant erosion occurring at 15" RCP near outlet structure

Summary

Stormwater Management Facilities Condition
Follow-up Action is Required.

Stormwater Management Facilities are damaged, in disrepair, missing or otherwise require immediate maintenance and follow-up action.

Follow-Up Action Required By:
Property Owner

Describe Follow-Up Action
Mandatory
> Overgrown vegetation near outlet Structure needs to be removed. Basin is a grass bottom design and should not naturalize.
> Flared end section and riprap is missing from the 8" roof drain.
> Trash present in basin needs to be cleared.
> Area of Embankment needs to be reseeded and restabilized.
> Endwall from Happy Village Daycare needs the trash rack removed and cleaned of all debris. Pipe is 100% blocked, this must be complete prior to the next storm event.
> A smooth grade from the existing 15" RCP shall be created and the scour repaired.

Recommended
> Place R-4 riprap downstream of 15" RCP to prevent further erosion.

Site Inspection Photos to begin on the next page

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BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Inspection Photos

Site Photo	Optional Description
	Photo 1 Outlet structure

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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 2 Erosion at 15" RCP to be repaired

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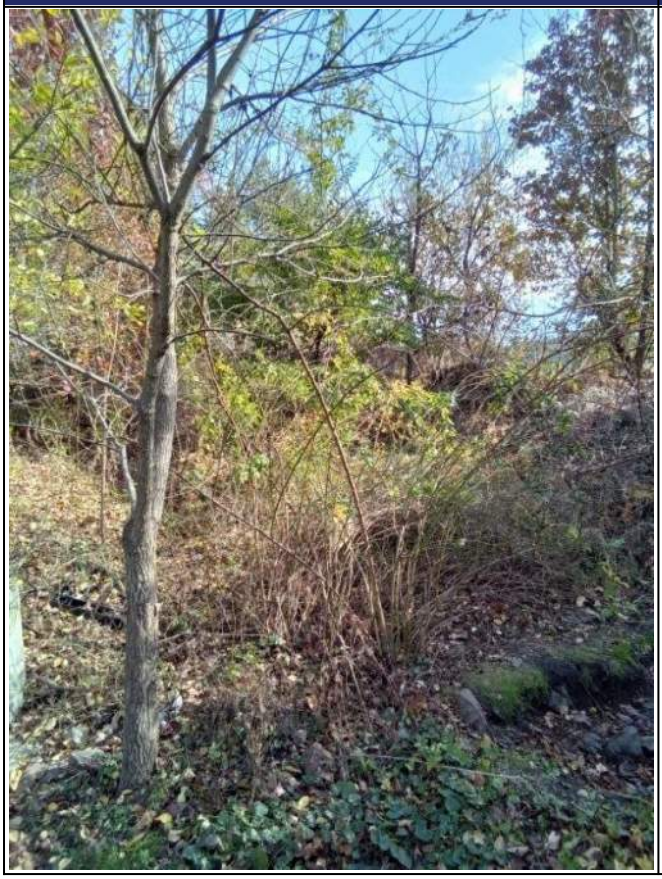
STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 3 Overgrown vegetation at outlet structure to be removed

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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 4 Roof drain without flared end section or riprap apron and trash blocking flow
	Photo 5 Eroded embankment to be reseeded.

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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 6 Inflow endwall

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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 7 Inflow endwall from Happy Village Daycare. Remove and clean behind trash rack

SDE SYSTEMS DESIGN ENGINEERING, INC
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November 8, 2024

Jeffery and Emily Charlebois
320 Lindbergh Ave
Blandon, PA 19510-9709

RE: Inspection of Stormwater Management Facilities
Thon Subdivision Basin located at their 320/322 Lindbergh Ave property.
Maidencreek Township, Berks County, PA

Dear Property Owner:

On behalf of Maidencreek Township, Systems Design Engineering, Inc. has completed an on-site inspection of the stormwater management facilities located at the above-referenced property.

The stormwater management facilities ultimately discharge into the Municipal Separate Storm Sewer System (MS4) owned and operated by Maidencreek Township. The MS4 designation requires the Township to obtain a National Pollution Discharge Elimination System (NPDES) permit as administered by the Pennsylvania Department of Environmental Protection (PADEP). As part of the permit, the Township must ensure the MS4 is being maintained and operated in accordance with the NPDES permit requirements. This includes the routine inspection of any stormwater management facilities that were previously required as part of the Township's subdivision and land development processes are still in place, functioning as designed, and being adequately maintained.

Attached is a copy of the "On-Site Inspection Report" performed on November 6, 2024 for the stormwater facilities located on your property or that you are otherwise responsible for maintaining. Within this Report are the current conditions or deficiencies noted along with an indication of any necessary corrective actions, routine maintenance, or repairs that may be required. If any "Follow-up Action Required" other than "continue with routine site maintenance" is noted, please contact the Township prior to initiating any construction work since inspections of such are required by the PADEP to demonstrate compliance with the NPDES permit. You are required to return the stormwater management facilities back to an acceptable condition and ensure the future functioning of such as originally designed and constructed. All required work shall be scheduled within the next 6 months and be completed within 1 year.

The on-site inspection Report references the original Subdivision, Land Development and/or Stormwater Management Plans (or Post construction Stormwater Management Plans) that were approved by the Township and then utilized to complete the construction of the stormwater management facilities.

Please feel free to contact me at this office should there be any questions or if you need clarification.

Sincerely,
SYSTEMS DESIGN ENGINEERING, INC.

Pamela J. Stevens, P.E.
Senior Municipal Engineer
Enclosures
cc: Maidencreek Township – 20-0019-0254.16
I:\Projects\Maidencreek Township\20-0019-0254 Stormwater Basin Inspections - 2020\Trans Ltrs for completed Reports\Thon Subd Basin 320 Lindbergh Ltr 2024 on Ltrhd.docx

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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Information

Project Name
Thon Subdivision

Location
320/322 Lindbergh Avenue

Plan Name(s)
"Thon Subdivision" prepared by Landmark Surveying, dated November 10, 1993, last revised May 12, 1994

Owner or Responsible Party
Jeffery B & Emily Charlebois / Nini G Yoanna

Inspector
Evan Charnoff

Date
11/06/2024

Facility Type

Type of SWM Facility
Detention Basin

Suitable Ground Cover & Maintenance
Not Acceptable

Reason Not Acceptable
Build up of leaves and vegetation around outlet structure

Earthen Embankment Condition
Acceptable

Outlet Structure Condition

Orifice Plate
Not Required

Trash Rack
Not Required

Watertight
Acceptable

Outlet Pipe
Acceptable

Positive Drainage Provided
No

Other Concerns
Low flow orifice is covered by leaves and debris.

Summary

Stormwater Management Facilities Condition
Follow-up Action is Required.

Stormwater Management Facilities are damaged, in disrepair, missing or otherwise require immediate maintenance and follow-up action.

Follow-Up Action Required By:
Property Owner

Describe Follow-Up Action

> Leaves and debris have covered the low flow orifice and needs to be cleared. If debris is not kept clear a trash rack will be required.

> Inflow rip rap has debris that should to be cleared.

Site Inspection Photos to begin on the next page

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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Inspection Photos

Site Photo	Optional Description
	Photo 1 Outlet structure. Low flow orifice blocked by leaves and debris.

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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 2 Basin

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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 3 Inflow point with debris on rip rap

SYSTEMS DESIGN ENGINEERING, INC

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
MAIDENCREEK TOWNSHIP, BERKS COUNTY, PA

PROJECT NAME: Melrose Place Subdivision 14 through 19 – Sofia Boulevard. **LOCATION:** "Pond A1" along the rear of Lot No's.

PLAN NAME: various "Melrose Place" plans; including, Subdivision, Land Development, Post Construction Stormwater Management, E&S Control, Corrective Action, Post Construction Stormwater Management for NPDES Permit Renewal, etc. that are on record for the project.

DWG No.: various Plans dated 2007, 2010, 2012, 2014, 2016 and 2017 as prepared by McCarthy Engineering, Inc.

OWNER or RESPONSIBLE PARTY: Melrose Place Planned Community, 1100 Berkshire Blvd, Suite 201, Reading, PA 19610

INSPECTOR: Grant Stahl, E.I.T. **DATE:** September 27, 2024

Type of SWM Facility: ☒ Detention Basins ☐ Infiltration ☐ Other (type): _____

Suitable Ground Cover and Maintenance: ☐ Acceptable ☒ Not Acceptable (reason): Entire basin is overgrown with vegetation and is not being mowed (Photos 1 & 2). A Red Maple tree in the middle berm has died and needs replaced (Photo 3). A limb of a Black Willow tree has died and need to be trimmed (Photo 4).

Earthen Embankment Condition: ☒Acceptable ☐ Not Acceptable (reason): _____

Outlet Structure (if applicable):

Required Orifice Plate:	☒ Acceptable	☐ Not	Notes: Orifice Plate not required.
Required Trash Rack:	☒ Acceptable	☐ Not	Notes: No deficiencies noted.
Watertight:	☒ Acceptable	☐ Not	Notes: No deficiencies noted.
Outlet Pipe Acceptable:	☒ Acceptable	☐ Not	Notes: No deficiencies noted.
Positive Drainage Provided:	☒ Acceptable	☐ Not	Notes: No deficiencies noted.
Any Maintenance Required:	☒ Yes	☐ No	Notes: Vegetation around outlet structure to be removed.
Other Concerns:	☐ Yes	☒ No	Explain: No deficiencies noted.

Drainage Swales (if applicable):

Sized Per Approved Design:	☒ Yes	☐ No	Notes: No deficiencies noted.
Suitable Ground Cover:	☒ Yes	☐ No	Notes: No deficiencies noted.
Positive Drainage:	☒ Yes	☐ No	Notes: No deficiencies noted.
Areas of Active Erosion:	☐ Yes	☒ No	Notes: No deficiencies noted.
Any Maintenance Required:	☐ Yes	☒ No	Notes: No deficiencies noted.

Summary:

☐ Stormwater Management Facilities appear to be installed per the approved Plans, are being maintained in an acceptable manner, and are functional. No Further Action is required.

☒ Stormwater Management Facilities are damaged, in disrepair, missing or otherwise require immediate maintenance and follow-up action.

Follow-up Action Required by:

☒ Property Owner, Specific Action Required:

- Basin needs to be mowed and the clippings removed and disposed of off-site. Property owner must keep up with minimum monthly mowings. Basin is not to be naturalized and become overgrown.
- Replace the Red Maple tree.
- Trim the dead limb of the Black Willow tree.
- Gate to the headwall has been left open and should be closed.

The Township and Engineer must be notified when these tasks are completed.

Site inspection photos to begin on the next page

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Photo 1: Overall view of basin and the overgrown vegetation



Photo 2: Overall view of basin and the overgrown vegetation



Photo 3: View of the dead Red Maple tree to be replaced.



Photo 4: View of the dead branch on the Black Willow tree to be replaced.

SYSTEMS DESIGN ENGINEERING, INC

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
MAIDENCREEK TOWNSHIP, BERKS COUNTY, PA

PROJECT NAME: Melrose Place Subdivision Drive (Commercial Lot C4), Blandon PA 19510 **LOCATION:** "Pond A2" at the rear of 104 Anna

PLAN NAME: various "Melrose Place" plans; including, Subdivision, Land Development, Post Construction Stormwater Management, E&S Control, Corrective Action, Post Construction Stormwater Management for NPDES Permit Renewal, etc. that are on record for the project.

DWG No.: various Plans dated 2007, 2010, 2012, 2014, 2016 and 2017 as prepared by McCarthy Engineering, Inc.

OWNER or RESPONSIBLE PARTY: Stefano Folino, 280 W Wesner Road, Reading, PA 19605

INSPECTOR: Grant Stahl, E.I.T. **DATE:** September 27, 2024

Type of SWM Facility: ☒ Detention Basins ☐ Infiltration ☐ Other (type): _____

Suitable Ground Cover and Maintenance: ☒ Acceptable ☐ Not Acceptable (reason): _____

Earthen Embankment Condition: ☒Acceptable ☐ Not Acceptable (reason): _____

Outlet Structure (if applicable):

Required Orifice Plate:	☒ Acceptable	☐ Not	Notes: Orifice plate not required.
Required Trash Rack:	☐ Acceptable	☒ Not	Notes: Debris is accumulating behind rack. (Photo 1)
Watertight:	☒ Acceptable	☐ Not	Notes: No deficiencies noted.
Outlet Pipe Acceptable:	☒ Acceptable	☐ Not	Notes: No deficiencies noted.
Positive Drainage Provided:	☒ Acceptable	☐ Not	Notes: Sediment has accumulated in front of the endwall and there is a small mound of stone. (Photo 2)
Any Maintenance Required:	☒ Yes	☐ No	Notes: Remove accumulated sediment and stone at the endwall.
Other Concerns:	☒ Yes	☐ No	Explain: No deficiencies noted.

Drainage Swales (if applicable):

Sized Per Approved Design:	☒ Yes	☐ No	Notes: No deficiencies noted.
Suitable Ground Cover:	☒ Yes	☐ No	Notes: No deficiencies noted
Positive Drainage:	☒ Yes	☐ No	Notes: No deficiencies noted.
Areas of Active Erosion:	☒ Yes	☐ No	Notes: A small amount of erosion is beginning at the top stone forebay. (Photo 3)
Any Maintenance Required:	☒ Yes	☐ No	Notes: Recommend installation of riprap at erosion areas

Summary:

☐ Stormwater Management Facilities appear to be installed per the approved Plans, are being maintained in an acceptable manner, and are functional. No Further Action is required.

☐ Stormwater Management Facilities are damaged, in disrepair, missing or otherwise require immediate maintenance and follow-up action.

Follow-up Action Required by:

☒ Property Owner, Specific Action Required:

- Clear and dispose of debris accumulating behind trash rack. This must be checked after every significant rain even (greater than 1-inch of rainfall).
- Remove the accumulated sediment and small stone downstream of the endwall.
- Recommend adding more riprap to the stone forebay at the erosion areas.

The Township and Engineer must be notified when these tasks are completed.

Site inspection photos to begin on the next page

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Photo 1: View of debris accumulation behind trash rack.



Photo 2: View of sediment and stone deposited downstream of endwall.



Photo 3: View of minor erosion in stone forebay.

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1032 JAMES DR. LEESPORT, PA 19533
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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Information

Project Name
Melrose Place
Basin A2

Location
104 Anna Avenue

Plan Name(s)
"Post Construction Stormwater Mangement Plan - Melrose Place Subdivision" prepared by McCarthy Engineering Associated, Inc., dated Jun 20, 2014

Owner or Responsible Party
Stefano Folino

Inspector
GS & EC

Date
02/10/2025

Facility Type

Type of SWM Facility
Detention Basin

Suitable Ground Cover & Maintenance
Acceptable

Earthen Embankment Condition
Not Acceptable

Reason Not Acceptable
Embankment is scouring at the location of the curb cut in the parking lot.

Outlet Structure Condition

Orifice Plate
Not Required

Trash Rack
Acceptable

Watertight
Acceptable

Outlet Pipe
Acceptable

Positive Drainage Provided
Yes

Other Concerns
Scouring is present in the embankment next to the outlet structure. Recommend placing riprap to prevent further scour.

Drainage Swales

Sized per Approved Design
Yes

Suitable Ground Cover
Acceptable

Positive Drainage

Areas of Active Erosion

Acceptable

No

Storm Sewer System

Inlet Grate Condition
Acceptable

Settlement Around Grates
No

Positive Surface Drainage
Yes

Catch Basin Condition
Acceptable

Endwall Condition
Not Acceptable

Riprap Aprons
Not Acceptable

Describe Issue
Endwall into the basin is clogged with debris.

Describe Issue
Riprap apron downstream of endwall into the basin has once again scoured away. Recommend placement of larger riprap to prevent future scouring. Riprap apron must be installed such that water will not pond around the discharge.

Summary

Stormwater Management Facilities Condition
Follow-up Action is Required.

Stormwater Management Facilities are damaged, in disrepair, missing or otherwise require immediate maintenance and follow-up action.

Follow-Up Action Required By:
Property Owner

Describe Follow-Up Action
> Remove debris from behind endwall trash rack.
> Reinstall riprap apron for endwall.
> Repair scour around outlet structure.
> Repair scour in embankment downstream of curb cut. (Recommend a reinforced liner or riprap.)

Site Inspection Photos to begin on the next page

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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Inspection Photos

Site Photo	Optional Description
	1 Overall Basin View 1
	2 Overall Basin View 2
	3 Endwall and riprap apron condition

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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	4 Endwall full of debris.
	5 Scouring around outlet structure.
	6 Scouring ruts have formed in the embankment below the curb cut.

SYSTEMS DESIGN
SDE ENGINEERING, INC
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November 8, 2024

Adam N Wojcicki
407 Schaefer Road
Blandon, PA 19510-9456

RE: Inspection of Stormwater Management Facilities
Boyer Place (407 Schaefer Road)
Maidencreek Township, Berks County, PA

Dear Property Owner:

On behalf of Maidencreek Township, Systems Design Engineering, Inc. has completed an on-site inspection of the stormwater management facilities located at the above-referenced property.

The stormwater management facilities ultimately discharge into the Municipal Separate Storm Sewer System (MS4) owned and operated by Maidencreek Township. The MS4 designation requires the Township to obtain a National Pollution Discharge Elimination System (NPDES) permit as administered by the Pennsylvania Department of Environmental Protection (PADEP). As part of the permit, the Township must ensure the MS4 is being maintained and operated in accordance with the NPDES permit requirements. This includes the routine inspection of any stormwater management facilities that were previously required as part of the Township's subdivision and land development processes are still in place, functioning as designed, and being adequately maintained.

Attached is a copy of the "On-Site Inspection Report" performed on November 6, 2024 for the stormwater facilities located on your property or that you are otherwise responsible for maintaining. Within this Report are the current conditions or deficiencies noted along with an indication of any necessary corrective actions, routine maintenance, or repairs that may be required. If any "Follow-up Action Required" other than "continue with routine site maintenance" is noted, please contact the Township prior to initiating any construction work since inspections of such are required by the PADEP to demonstrate compliance with the NPDES permit. You are required to return the stormwater management facilities back to an acceptable condition and ensure the future functioning of such as originally designed and constructed. All required work shall be scheduled within next 6 months and be completed within 1 year.

The on-site inspection Report references the original Subdivision, Land Development and/or Stormwater Management Plans (or Post construction Stormwater Management Plans) that were approved by the Township and then utilized to complete the construction of the stormwater management facilities.

Please feel free to contact me at this office should there be any questions or if you need clarification.

Sincerely,
SYSTEMS DESIGN ENGINEERING, INC.

Pamela J. Stevens, P.E.
Senior Municipal Engineer
Enclosures
cc: Maidencreek Township – 20-0019-0254.19
I:\Projects\Maidencreek Township\20-0019-0254 Stormwater Basin Inspections - 2020\Trans Ltrs for completed Reports\Boyer Place Basin Ltr. 2024 on Ltrhd.docx

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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Information

Project Name
Boyer Place

Location
407 Schaefer Road

Plan Name(s)
"Boyer Place Final Overall Site Plan" prepared by Stackhouse Bensinger Inc., dated January 3, 2007, last revised May 10, 2007

Owner or Responsible Party
Adam N Wojcicki

Inspector
Evan Charnoff

Date
11/06/2024

Facility Type

Type of SWM Facility
Detention Basin

Suitable Ground Cover & Maintenance
Not Acceptable

Reason Not Acceptable
Downed trees and branches located in basin.

Earthen Embankment Condition
Acceptable

Outlet Structure Condition

Orifice Plate
Not Required

Trash Rack
Acceptable

Watertight
Acceptable

Outlet Pipe
Acceptable

Positive Drainage Provided
Yes

Other Concerns
Fallen trees around outlet structure.

Summary

Stormwater Management Facilities Condition
Follow-up Action is Required.

Stormwater Management Facilities are damaged, in disrepair, missing or otherwise require immediate maintenance and follow-up action.

Follow-Up Action Required By:

SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Property Owner

Describe Follow-Up Action

> Fallen trees shall be removed from the basin and around the downstream endwall.

Site Inspection Photos to begin on the next page

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STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Inspection Photos

Site Photo	Optional Description
	Photo 1 Outlet structure

SDE SYSTEMS DESIGN ENGINEERING, INC
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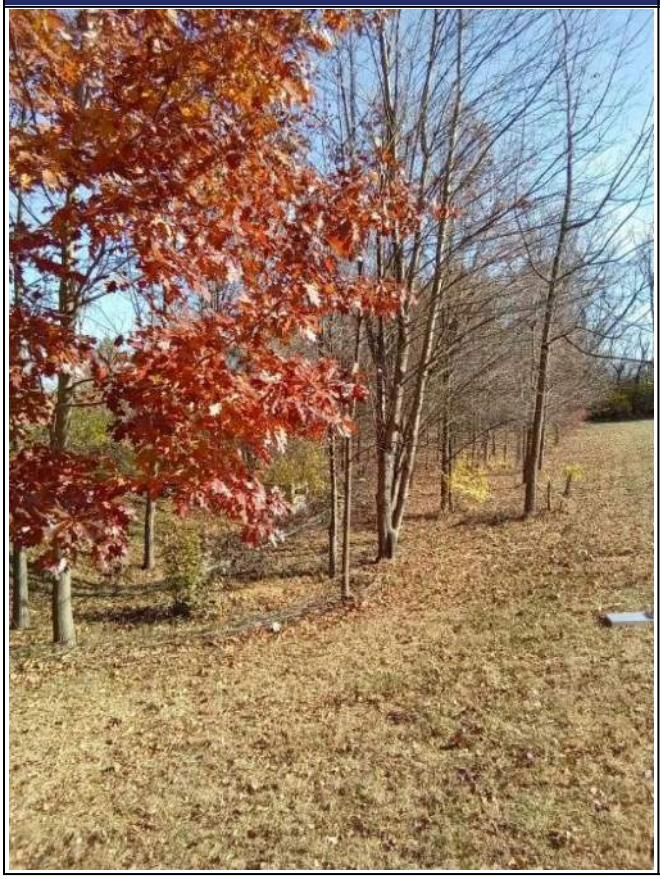
STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 2 Basin

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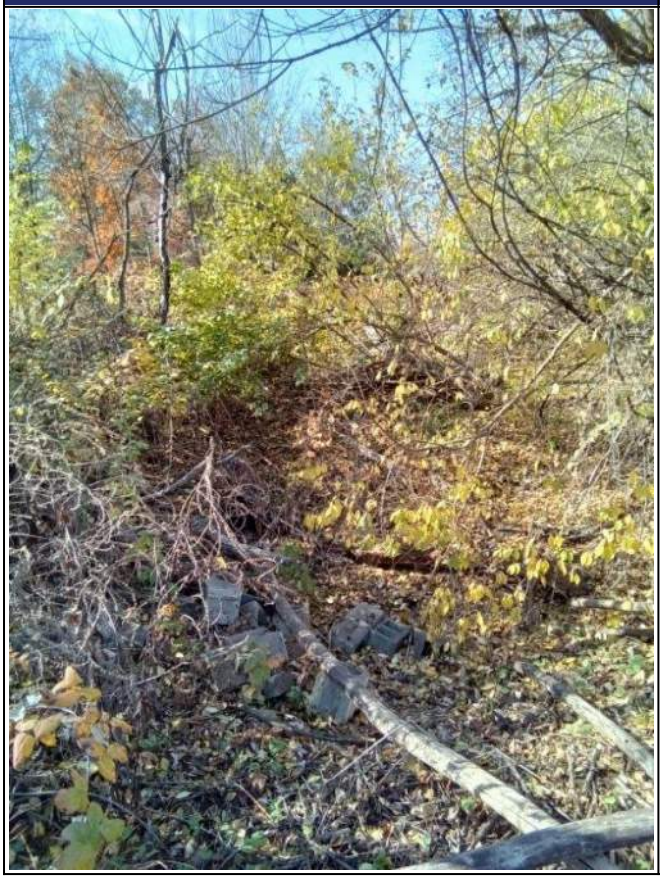
STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 3 Outfall

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November 8, 2024

Stoney Creek Rentals, SCRP LLC
872 Park Road
Blandon, PA 19510-9456

RE: Inspection of Stormwater Management Facilities
Stoney Creek Rentals Basins located at their Park Road property
Maidencreek Township, Berks County, PA

Dear Property Owner:

On behalf of Maidencreek Township, Systems Design Engineering, Inc. has completed an on-site inspection of the stormwater management facilities located at the above-referenced property.

The stormwater management facilities ultimately discharge into the Municipal Separate Storm Sewer System (MS4) owned and operated by Maidencreek Township. The MS4 designation requires the Township to obtain a National Pollution Discharge Elimination System (NPDES) permit as administered by the Pennsylvania Department of Environmental Protection (PADEP). As part of the permit, the Township must ensure the MS4 is being maintained and operated in accordance with the NPDES permit requirements. This includes the routine inspection of any stormwater management facilities that were previously required as part of the Township's subdivision and land development processes are still in place, functioning as designed, and being adequately maintained.

Attached is a copy of the "On-Site Inspection Report" performed on November 6, 2024 for the stormwater facilities located on your property or that you are otherwise responsible for maintaining. Within this Report are the current conditions or deficiencies noted along with an indication of any necessary corrective actions, routine maintenance, or repairs that may be required. If any "Follow-up Action Required" other than "continue with routine site maintenance" is noted, please contact the Township prior to initiating any construction work since inspections of such are required by the PADEP to demonstrate compliance with the NPDES permit. You are required to return the stormwater management facilities back to an acceptable condition and ensure the future functioning of such as originally designed and constructed. All required work shall be scheduled within next 6 months and be completed within 1 year.

The on-site inspection Report references the original Subdivision, Land Development and/or Stormwater Management Plans (or Post construction Stormwater Management Plans) that were approved by the Township and then utilized to complete the construction of the stormwater management facilities.

Please feel free to contact me at this office should there be any questions or if you need clarification.

Sincerely,
SYSTEMS DESIGN ENGINEERING, INC.

Pamela J. Stevens, P.E.
Senior Municipal Engineer
Enclosures
cc: Maidencreek Township – 20-0019-0254.20
I:\Projects\Maidencreek Township\20-0019-0254 Stormwater Basin Inspections - 2020\Trans Ltrs for completed Reports\Stoney Creek Basin Ltr. 2024 on Ltrhd.docx

SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Information

Project Name
Stoney Creek Rentals

Location
872 Park Road

Plan Name(s)
"Stoney Creek Rentals Parking Lot Addition" prepared by Witman Engineers & Consultants, dated April 27, 2020

Owner or Responsible Party
Stoney Creek Rentals, SCRP LLC

Inspector
Grant Stahl, E.I.T

Date
11/06/2024

Facility Type

Type of SWM Facility
Underground Infiltration

Suitable Ground Cover & Maintenance
Acceptable

Earthen Embankment Condition
Acceptable

Outlet Structure Condition

Orifice Plate
Not Required

Trash Rack
Not Required

Watertight
Acceptable

Outlet Pipe
Acceptable

Positive Drainage Provided
Yes

Other Concerns
No deficiencies noted

Infiltration Facilities

Is Access Possible
No

Any Noticeable Ponding
No

Describe Issue
Trailer parked over inlet

Any Noticeable Settlement
No

Other Concerns

SYSTEMS DESIGN ENGINEERING, INC
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PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

No deficiencies noted

SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Summary

Stormwater Management Facilities Condition

No Further Action is Required.

Stormwater Management Facilities appear to be installed per the approved Plans, are being maintained in an acceptable manner, and are functional.

Site Inspection Photos to begin on the next page

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Inspection Photos

Site Photo	Optional Description
	Photo 1 Photo of inlet/outlet structure

SDE SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYLKILL HAVEN, PA 570.385.5549

STORMWATER MANAGEMENT FACILITIES
On-Site Inspection Report
Maidencreek Township, Berks County, PA

Site Photo	Optional Description
	Photo 2 Photo of outlet pipe

APPENDIX J

MCM #4 – CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

BERKS COUNTY CONSERVATION DISTRICT CORRESPONDENCE AND RELATED DOCUMENTATION

See MCM #5, Appendix M

APPENDIX K

MCM #4 – CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

BMP #3 – ACT 167 AND MS4 ORDINANCE #214

See MCM #3, Appendix H

MCM #5
Post Construction Stormwater Management in New Development and Redevelopment

5.0 Post-Construction Stormwater Management (PCSM) in New and Redevelopment Areas Program

5.1 Description

MCM #5 requires the MS4 municipality to:

5.1.1 Enact, implement, and enforce an ordinance or other regulatory mechanism to address post-construction stormwater runoff from new development and redevelopment projects, as well as sanctions and penalties associated with non-compliance.

5.1.2 Develop and implement measures to encourage and expand the use of Low Impact Development (LID) in new development and redevelopment.

5.1.3 Ensure adequate operation and maintenance of all post-construction stormwater management BMPs installed at all development or redevelopment projects that disturb greater than or equal to one acre.

5.2 Ordinance Adoption

Maidencreek Township adopted its Stormwater Management Ordinance, Ordinance Number 214, on June 12, 2008. The ordinance requires contains technical standards that must be met for post-construction stormwater runoff and included penalties for non-compliance.

Maidencreek Township's Stormwater Management Ordinance contains guidance and requirements relative to Low Impact Development (LID). The ordinance also contains requirements for BMP inspections.

5.3 Memorandum of Understanding

Maidencreek Township has entered into an agreement with Berks County Conservation District, via the Memorandum of Understanding (MOU) in Appendix J, which addresses items 1 and 3, above.

5.4 PCSM BMP Inventory

The Township is required to maintain an inventory of all PCSM BMPs installed since March 10, 2003. There are currently no BMPs to account for during this period. The following information must be tracked at such time that PCSM BMPs are installed:

- All PCSM BMPs that were installed to meet requirements in NPDES Permits for Stormwater Discharges Associated with Construction Activities approved since March 10, 2003.
- The exact location of the PCSM BMP (e.g., latitude and longitude, with street address).
- Information (e.g., name, address, phone number(s)) for BMP owners and entities responsible for BMP O&M, if different from BMP owners.
- The type of BMP and the year it was installed.
- Maintenance required for the BMP type according to the Pennsylvania Stormwater BMP Manual or other manuals and resources.
- The actual inspection/maintenance activities conducted for each BMP.
- An assessment by the permittee if proper O&M has occurred during the year and if not, what actions the permittee has taken, or shall take, to address compliance with O&M requirements.

5.5 Records Retention

The Township will retain all correspondence from BCCD as part of this SWMP. Copies of all permits, inspections, complaints and any relevant stormwater information will also be retained as part of this SWMP. Permit-year copies of this correspondence appears in Appendix M.

5.6 Plan Maintenance

Maidencreek Township will review and revise this Plan annually, as MOU provisions may change, ordinances are updated periodically, and new PCSM BMPs may be constructed.

APPENDIX L

MCM #5 – POST-CONSTRUCTION STORMWATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT

BERKS COUNTY CONSERVATION DISTRICT/MAIDENCREEK TOWNSHIP MEMORANDUM OF UNDERSTANDING

Resolution # 18-2024

A RESOLUTION OF THE BOARD OF SUPERVISORS OF THE TOWNSHIP OF MAIDENCREEK, BERKS COUNTY, PENNSYLVANIA ENTERING INTO A MEMORANDUM OF UNDERSTANDING WITH THE BERKS COUNTY CONSERVATION DISTRICT.

WHEREAS, the Berks County Conservation District (BCCD) administers the Erosion and Sediment Control Program for the Pennsylvania Department of Environmental Protection; and

WHEREAS, the Township desires to control accelerated erosion and to prevent sediment pollution to the Waters of the Commonwealth from earth disturbance activities; and

WHEREAS, the Township of Maidencreek (Township) previously had a Memorandum of Understanding with the BCCD dated December 2002, August 9, 2012, and February 9, 2017; and

WHEREAS, new Federal and State regulations require the revision of the existing Memorandum of Understanding.

NOW, THEREFORE, be it RESOLVED by the Board of Supervisors of the Township of Maidencreek, Berks County, Pennsylvania and it is hereby resolved by the authority of the same to enter into a Memorandum of Understanding with the Berks County Conservation District and adopt the agreement attached as Exhibit A.

All other resolutions or parts of resolutions inconsistent with this Resolution are hereby repealed insofar, but only insofar as the same are inconsistent herewith.

RESOLVED AND ADOPTED by the Board of Supervisors of the Township of Maidencreek, Berks County, Pennsylvania, in lawful session duly assembled this 13th day of June, 2024.

Board of Supervisors
Maidencreek Township
Berks County, Pennsylvania

David Franke

Joshua Meck

Attest:

Christina Hafer

Eric Bauman

EXHIBIT A

MEMORANDUM OF UNDERSTANDING

Between the

BERKS COUNTY CONSERVATION DISTRICT

and

Maidencreek Township

This Memorandum has been prepared jointly and agreed upon by each party for the following purposes:

To serve as a joint commitment by the signatory parties to control accelerated erosion and to prevent sediment pollution to the Waters of the Commonwealth which may result from the conduct of earth disturbance activities in Maidencreek Township ("Municipality").

I. In carrying out the intent of this Memorandum, the Berks County Conservation District ("District") shall:

1. Provide the Municipality with District electronic project application forms, when requested, and promptly notify Municipality of any changes in the plan review fee schedule.

2. Receive and review all Erosion and Sedimentation Control Plans ("E&S Plan" or "Plan") for earth disturbance activities 5,000 square feet or greater, which are required to be written in accordance with Chapter 102.4 of the PA Code. (Less than 1 acre & Small Projects E&S Applications).

3. Within ten (10) working days of completion of review, notify the consultant, the applicant, the Municipality, and the municipal engineer of all E&S Plan/NPDES Permit approvals, deficiencies, and all determinations including all project inspection reports and valid complaint inspection reports. Providing this information supports the Municipality with respect to Municipality's MS4 reporting requirements as required to satisfy Minimum Control Measures #4 and #5 related to services provided under this Memorandum.

4. Notify the consultant, the applicant, and the Municipality that a Plan submission has been withdrawn based on either the lack of response within the specified time period or the lack of the development of a complete Plan in compliance with PA Department of Environmental Protection (PA DEP) Chapter 102 Erosion and Sediment Control Rules and Regulations.

5. Upon request, provide all applicants with electronic copies of the PA DEP Erosion and Sediment Pollution Control Program Manual and related forms, worksheets, checklists, etc., necessary to successfully prepare a Plan.

6. Upon the filing of a complaint by the Municipality and/or a third party, the following will occur:
   a. The District will inspect the complaint within (10) ten calendar days of its receipt.
   b. If warranted, the District will provide documentation of the associated findings. The source of the complaint shall remain anonymous in accordance with PA DEP policy.
   c. Stormwater discharge complaints directly associated with earth disturbance activities (NPDES sites or Sites with an approved E&S plan) should be directed to the District. All other stormwater complaints should be handled under municipal ordinance.

7. Serve as the repository for all Plans, complaints, Earth Disturbance Inspection Reports, correspondence, etc., within the limitations stated by PA DEP, that involve earth disturbance activities within the said Municipality. All such information, except the complaint forms, shall be contained in a filing system which shall be available for inspection by Municipal officials upon receipt of a formal written request.

8. When requested by the landowner or agricultural operator, provide technical assistance in the development of needed Agricultural E&S Plans and Manure Management Plans.

9. The District will be available to provide assistance for municipalities with meeting Minimum Control Measures #1, #2, #3, #4 & #5. Technical engineering assistance is available for an additional fee.

In carrying out the intent of this Memorandum, the Municipality shall:

1. Retain electronic copies of the District's project application forms and provide such forms or website links to all parties for projects that require a review. The Municipality shall provide instructions to have the Plans (residential, commercial, industrial, agricultural expansion construction, etc.) for earth disturbance activities greater than or equal to 5,000 square feet, which are required to be written in accordance with Chapter 102.4 of the PA Code, submitted to the District for review per Chapter 102 of the PA Code.

2. Notify the District within (5) five days of receipt of an application for a project disturbing greater than or equal to (1) one acre, pursuant to Chapter 102.42.

3. Pursuant to Chapter 102.43, **the Municipality** shall not issue building or other permit or approval to those proposing or conducting earth disturbance activities requiring a PA DEP permit until the PA DEP or District has issued the E&S or individual NPDES Permit or approved coverage under the general NPDES Permit for Stormwater Discharges Associated with Construction Activities under Chapter 102.5.

4. Forward all questions pertaining to the preparation of Plans and applications to the District.

5. Forward all complaints about ongoing earth disturbance activities to the District for its inspection.

6. Not issue final close-out, or grant final release of improvement/E&S escrow until the applicant has submitted a Notice of Termination (NOT) for all NPDES Permitted activates and received Permit termination correspondence from the District.

7. Forward to the District, any agricultural complaint relating to: nutrient pollution and sediment pollution.

8. The District highly recommends that the Municipality assists the District in educating landowners and agricultural operators regarding the development of written Agricultural E&S Plans, which are required under Chapter 102.4 for agricultural plowing or tilling activities and animal heavy use areas disturbing 5,000 square feet or greater of land, as well as necessitate the development of Manure Management Plans. Manure Management Plans are also required under 25 PA. Code Section 91.36 (b) for all farming operations that land apply manure or agricultural process wastewater, whether they generate the manure or import it from another operation. All farming operations that include an Animal Concentration Area (ACA) or pasture must also have a written Manure Management Plan. The District requests assistance in providing this information before any building/zoning permits for agricultural operations are approved. In addition, the Municipality should not issue a building permit, or other permit or approval, to those proposing to construct a liquid or semi-solid waste storage facility unless they have a design that has been approved and stamped by a professional engineer.

II. This Memorandum of Understanding shall become effective immediately. It shall be reviewed as the need arises by either or both parties, and may be amended by mutual consent of both parties. This Memorandum of Understanding may be terminated at any time, by either party, following a thirty (30) day written notice to the other party.

FOR Maidencreek Township (municipality)

By: Diane Hollenbach Date: June 13, 2024

Attest: _____

FOR THE BERKS COUNTY CONSERVATION DISTRICT

_____ _____

CHAIR DATE

APPENDIX M

MCM #5 – POST-CONSTRUCTION STORMWATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT

BERKS COUNTY CONSERVATION DISTRICT CORRESPONDENCE AND RELATED DOCUMENTATION

Insert any BCCD correspondence and documents or state there wasn't any.

"None This Reporting Period"

MCM #6
Pollution Prevention and Good Housekeeping

APPENDIX N

MCM #6 – POLLUTION PREVENTION / GOOD HOUSKEEPING

BMP'S #1 & #2 FACILITIES INVENTORY AND OPERATIONS AND MAINTENANCE PLAN

Municipal Inventory

Maidencreek Township
Board of Supervisors
P.O. Box 319
Blandon, PA 19510

MCM #6 Pollution Prevention/Good Housekeeping for Municipal Operations

Inventory of Facilities/Activities

Facility	Storm Sewer System	Attachment
Public Works/Office 1 Quarry Road, Reading	swale inlet, rain garden	1, 2, 3
Molltown Equipment Storage 844 Maidencreek Road, Fleetwood	inlet, swale	1, 2, 3
Maidencreek Community Park 753 Park Road, Blandon	swale	
Blandon Fire Company Neighborhood Park 36 W Wesner Road, Blandon	inlet, swale	
Treetops Neighborhood Park 407A Acer Drive, Blandon	swale	
Ontelaunee Heights Ball Field 237A Longleaf Drive, Blandon	retention areas	2
Wyatt Drive Tot Lot 533 Wyatt Drive, Blandon	swale	
Cornerstone Neighborhood Park 200 Cornerstone Drive, Blandon	swale	
Faith Drive Basketball Court 262 Faith Drive, Blandon	swale, inlet	
Shadow Ridge Detention Basin 414 Riviera Drive, Blandon	basin	2
Maidencreek Dog Park 312 Hoch Road, Fleetwood	swales, stream	
Streets	inlets, swales	4, 5
Storm Water System	pipes, swales, inlets	5, 6

Attachment 1

Public Works Garage/Office
1 Quarry Road, Reading

Storm Water enters the property from pipes under State Route 73.
Storm Water leaves the property through a swale, travels to the Redner's Warehouse detention basin and eventually discharges to the Willow Creek.

O & M Responsibilities

1. Fluid Management
    a. Minimize use of solvents.
    b. Eliminate leaks in vehicles. Use drip pans temporarily.
    c. Keep spill clean up materials in plain sight.
    d. Recycle used oil. Store oil and other fluids in a way to minimize spills and leaks.
    e. Perform maintenance on equipment in the garage.
2. Catch Basin
    a. Clean catch basins in fall and dispose of debris properly.
3. Rain Garden
    a. Pull invasive species and apply mulch in spring.
4. Fuel
    a. On cement pad with auto shut off
    b. Clean up leaks and spills immediately
    c. Inspect tank yearly for damage and needed repairs
5. Wash Water
    a. Wash equipment on grassy areas
6. Salt Storage
    a. Use a cinder – salt mix to minimize salt use
    b. Keep salt under cover and sweep up any spills
    c. Calibrate spreaders

Municipal Operation and Maintenance Plan

6.0 Pollution Prevention/Good Housekeeping for Municipal Operations Program

6.1 Description

MCM #6 requires the MS4 to identify and document all operations that are owned or operated by the municipality and have the potential for generating stormwater runoff to the regulated MS4. Also required is the development and implementation of a written Operations and Maintenance (O&M) Program for all operations that could contributed to the discharge of pollutants to the MS4. Finally, MCM #6 requires the municipality to develop and implement an employee training program that addresses topics that further the goal of preventing or reducing the discharge of pollutants from operations to the regulated MS4.

This municipal O&M and employee training program is designed to teach municipal staff about potential sources of stormwater contamination and ways to minimize the water quality impact of municipal activities, such as park and open space maintenance, fleet and building maintenance, construction and land disturbances, and storm drain system maintenance. The training program includes a general stormwater awareness message, pollution prevention/good housekeeping measures, spill response and prevention, information about the operation and maintenance of structural best management practices (BMPs), and recognizing, tracking, and reporting illicit discharges.

6.2 Applicability

Municipal employees who are directly involved in potentially polluting activities should receive both general stormwater and targeted BMP training tailored to their activities. This will increase the likelihood that receiving waters and the storm drain system will be protected from inadvertent discharges and spills. It is important to train all municipal staff, however, regardless of field responsibilities, about general stormwater awareness and the detection of illicit discharges. Very often, municipal staff are residents as well, and improving the awareness of municipal employees may reduce residential impacts and increase reporting of illicit discharges, dumping, and spills. Also, because municipalities expect residents and business owners to practice pollution prevention and good housekeeping, municipal employees should set an example for the rest of the community to follow.

6.3 General Stormwater Awareness

Municipal employees need to understand the difference between stormwater and sewage, and that not all drains go to the same places. This basic fact is often taken for granted, as municipal staff is usually well-versed in the aspects of their infrastructure, but it does not hurt to drive the point home.

Stormwater is rain or snowmelt runoff and it is usually collected by gutters, swales, ditches, pipes and catch basins and conveyed by gravity to waterways. Therefore, any pollutants placed in those conveyances will invariably end up in a waterway. Pollutants include sediment (dirt, gravel, etc.), nutrients (fertilizers, pet wastes, etc.), bacteria (animal wastes, etc.), debris (trash, cigarette butts, etc.), and hazardous wastes (oils, solvents, cleansers, etc.). Waterways are protected against pollution by state and federal laws. Employees should be made aware that there is a municipal ordinance that prohibits certain types of discharges to the storm sewer system, and provides penalties for violators.

6.4 Pollution Prevention/Good Housekeeping

General municipal operations include activities such as street sweeping, trash collection, snow plowing/deicing, fleet maintenance, infrastructure upkeep and the like. Each of these activities has the potential to create pollution in waterways. Staff needs to be aware of the proper means to operate equipment, dispose of debris, and conduct other routine activities, as it relates to prevention of pollution. For example, street sweeping debris needs to be properly disposed of at a location designated and approved to receive such debris. Similarly, fleet maintenance needs to be conducted such that fuels, oils and greases are not spilled onto the ground where rain water can wash the materials into stormwater collection facilities. See Appendix N for the Township's Operation and Maintenance (O&M) Plan.

6.5 BMP Operation and Maintenance

The municipality may be responsible for maintenance of stormwater facilities and staff need to be aware of proper measures and frequencies to conduct such maintenance. For example, stormwater detention basins need to be inspected periodically to ensure erosion is not present and that outlet structures are functional. Ditches and swales need to be stable and not contributing to sedimentation through erosion. Catch basin grates need to be cleared. See Appendix N for the Township's Operation and Maintenance (O&M) Plan.

6.6 Illicit Discharge Tracking and Reporting

Municipal staff need to be trained to recognize illicit discharges within the storm sewer systems throughout the municipality. Outfall screenings are conducted annually, but illicit discharges can occur at any time. Activities such as dumping of motor oil into a storm drain, or filling in a swale, can lead to waterway pollution. The municipality has an ordinance that provides enforcement actions against violators.

6.7 Training Resources

A number of workshops are generally available for staff to attend throughout a given year. The Berks County MS4 Steering Committee provides information on training sessions available for municipal staff. Berks County Public Works Association periodically provides training specifically relating to stormwater. In-house training is also provided. Stormwater awareness is promoted via on the job reinforcement, display materials and new-employee training. Posting reminders, such as markers above drains prohibiting discharges of vehicle fluids and wastes, or signs above faucets reminding employees not to use water to clean up spills will remind employees of proper procedures. Stickers that list important information and contact numbers for reporting illicit discharges, dumping, or spills can be adhered to all municipal vehicles. Stenciling or marking all storm drains at municipal facilities will prompt employees to be conscious of discharges. Managers should monitor status of employees' participation in training and work performance.

6.8 Training Checklist

Training should be provided annually for all municipal staff members. Clerical and administrative staff should be proficient with all MCMs. Zoning, regulatory and public works staff should be well-versed in MCM #3 (IDD&E) and MCM #6 (Housekeeping), with general familiarity of MCMs #4 and #5, as they relate to BMP inspections. The following checklist can be used by municipal managers and/or staff leaders to ensure compliance with the municipal training requirement of the NPDES permit:

6.8.1 Stormwater Awareness – The employee understands that:

- Stormwater is rain or snowmelt runoff.
- Stormwater facilities have the potential to transmit pollutants directly into waterways.

6.8.2 Pollution Prevention/Good Housekeeping – The employee will:

- Ensure that street sweeping debris and materials cleaned from catch basins, gutters, etc. are disposed of only at facilities approved to receive that material.
- Monitor applications of road salt and/or anti-skid materials to ensure waterways are protected to the extent possible.
- Conduct maintenance of municipal vehicles in a manner that minimizes the potential for pollution incidents.

- Conduct infrastructure repairs (e.g., pipe replacements, stream cleaning, etc.) in accordance with permits and/or policies in place by state and federal regulatory agencies.

- Ensure that trash haulers comply with prevailing regulations relative to collection and disposal of waste.

6.8.3 BMP Operation and Maintenance – The employee will:

- Conduct maintenance activities on stormwater facilities on a regular basis, including mowing, cleaning and inspections.

6.8.4 Illicit Discharge Tracking and Reporting – The employee will:

- Understand that the municipal ordinance includes provisions for enforcement of illicit discharges.

- Be aware of and/or participate in the conduct of annual screenings of outfalls as per the IDD&E plan for the municipality.

- Contact superiors immediately upon discovery or suspicion of an illicit discharge, evident via visual (color, consistency, etc.), odor (solvents, paints, oils, etc.), or other observation.

6.8.5 Event Tracking – The municipality will:

- Document all training, as well as routine and non-routine activities in writing; for example, keep track of the following by date, location and/or written description:
    - street sweeping, disposal locations
    - mowing
    - salt/anti-skid spreading
    - vehicle maintenance conducted on municipal grounds
    - facility maintenance (gutters, ditches, swales, catch basins)
    - pollution incidents
    - outfall screenings
    - any other activities that have the ability to impact stormwater runoff

6.9 Additional Resources/References

The municipality should make the following list available to staff for additional information on the MS4 program:

- http://water.epa.gov/polwaste/npdes/swbmp/Municipal-Employee-Training-and-Education.cfm
- http://water.epa.gov/polwaste/npdes/swbmp/Pollution-Prevention-Good-Housekeeping-for-Municipal-Operatators.cfm
- http://www.ecy.wa.gov/programs/wq/stormwater/municipal/MUNIdocs/CWPmanualGdHskpg.pdf
- http://files.dep.state.pa.us/Water/BPNPSM/StormwaterManagement/MunicipalStormwater/MuniSWResources/SampleOMPlan.docx

Construction and Land Disturbance Pollution Prevention/Good Housekeeping Practices

IMPACTS: Sediment runoff such as silt and debris can affect fish reproduction and habitat. Removal of shade trees from stream banks can increase water temperature which can result in reduced dissolved oxygen content in streams.

GOOD HOUSE KEEPING PRACTICES:

1. Plan the construction and/or land clearing activities so that soil is not exposed for long periods of time.
2. Install sediment control devices before disturbing soil.
3. Stabilize site to protect against sediment runoff. Protect against sediment flowing into storm drains. Install sediment barriers on slopes or divert storm water.
4. Maintain native vegetation – this is especially important near waterways.

INSPECTION PROCEDURES: Schedule regular inspections of sediment control devices. Inspect during and after storms. Make all necessary repairs to devices.

Hazardous Materials Storage

IMPACTS: Failure to properly store hazardous materials increases the chance that they will end up in local waterways. Typical hazardous materials such as oil, paints, thinners, antifreeze, and fuels are toxic to aquatic plants and wildlife.

GOOD HOUSE KEEPING PRACTICES:

1. Train employees in spill prevention and proper disposal methods.
2. Ensure all materials are stored in closed labeled containers. Inside storage shall be away from floor drains. Outside storage, drums shall be placed on pallets and away from storm drains and swales. Store materials away from high traffic areas.
3. Never leave a vehicle unattended when fueling.
4. Use the least toxic material to perform the job. If possible, replace toxic materials with environmentally friendly, water based products.
5. All containers must be labeled.
6. Maintain MSDS sheets and inventory hazardous materials.
7. Perform preventive maintenance on fuel tanks.
8. Properly dispose of waste.

INSPECTION PROCEDURES: Inspection of material storage areas in addition to inspection of storm water discharge areas and floor drains shall be scheduled on a regular basis by the Road Master. Leaking or defective containers shall be replaced and labels shall be replaced as needed. Check for external corrosion and structural failure of fuel tanks.

SPILL PREVENTION AND CONTROL PLAN:

Municipal Vehicle/Equipment Maintenance and Washing

IMPACTS: Trace amounts of metals, hydrocarbons and other pollutants from fuel, antifreeze, batteries, motor oils, grease and parts cleaning solvents are typically found in maintenance operations.

GOOD HOUSE KEEPING PRACTICES:

1. Train employees in spill prevention and proper disposal methods.
2. Conduct maintenance work indoors. If work is conducted outdoors, guard against spills that could discharge to a storm drain. Dedicate one bay with a floor drain for vehicle washing.
3. Maintain a clean work area.
4. Rinse grass from lawn care equipment in grass areas.
5. Perform equipment washing with pressurized cold water, with biodegradable soap.
6. Store cracked batteries in a leak-proof secondary container.
7. Seal floor drains that discharge directly to the environment if possible. In the event of a spill cover drains with drain mats.
8. Clean up spills immediately using a "dry" method.
9. Keep all liquid cleaning at a centralized station to keep solvents in one area and locate drip pans to direct solvents back into a holding tank for reuse.
10. Identify recycling/disposal options for wastes.

INSPECTION PROCEDURES: Inspect floor drains and monitor parked vehicles/equipment for leaks.

Road Salt Storage

IMPACTS: Salt is soluble in water and in high concentrations have a negative impact on aquatic life.

GOOD HOUSE KEEPING PRACTICES:

1. Salt storage facilities shall be covered.
2. Salt spreaders shall be calibrated for proper application.
3. Salt shall be unloaded in the shed or if not possible, moved inside immediately
4. Service trucks and calibrate spreaders regularly.
5. Educate and train operators on the hazards of over salting to roads and the environment.

INSPECTION PROCEDURES: The salt shed should be inspected for leaks and structural problems. Inspect the salt for lumps or contaminants. Inspect the surface areas for evidence of alt runoff near and around the salt shed.

Deicing Alternates:

Calcium Chloride – not harmful to vegetation. Lowest practical temperature 5 degrees Fahrenheit.

Urea – Will not harm vegetation. Will work below 0 degrees Fahrenheit.

Calcium Magnesium Acetate – Low toxicity and biodegradable.

Roadway, Bridge, Storm Drain and Catch Basin Maintenance

IMPACTS: Road salt, particulate and debris from roads and bridges can impact aquatic life. Grit and debris captured in catch basins can discharge during rain and snow melt events. Swales if stripped of vegetation can deposit silt in receiving waters.

GOOD HOUSE KEEPING PRACTICES:

1. Stage road operations and maintenance (patching potholes for example) to reduce spillage. Cover catchbasins and storm drains during this activity.
2. Pave in dry weather only.
3. Clean up fluid spills immediately.
4. Sweep and vacuum roads and shoulders to remove debris.
5. Regularly pick up litter along roadsides.
6. Maintain roadside vegetation and vegetation in swales by mowing.
7. Clean bridges routinely and keep them free of debris.
8. Direct runoff from bridges to vegetated areas.
9. Clean storm drains and catch basins when the depths of deposits are greater than 1/3 the depth from the bottom of the basin to the invert of the lowest pipe opening. Drains must be checked in the spring to remove debris from winter maintenance and in fall to remove leaves.
10. Repair drains and catch basins.
11. Properly dispose of debris.

INSPECTION PROCEDURES: Inspect roads and bridges regularly. Inspect catch basins, storm drains and swales spring and fall and after major storm events. MS4 required inspections to be performed in addition to routine inspections.

APPENDIX O

MCM #6 – POLLUTION PREVENTION / GOOD HOUSKEEPING

BMP #3 EMPLOYEE TRAINING DOCUMENTATION

Maidencreek Township
Pollution Prevention and Housekeeping Training Plan

All training will cover Operation, Maintenance, Inspection, Repair of the Storm Water System.

Elected Officials and Professional Staff

1. Annually, most likely in February, MS4 training will occur at a public meeting for municipal officials
2. Board members should make an effort to attend MS4 workshop at PSATS convention.
3. Annually in June, receive an update from the Township Staff on the previous year's MS4 activities in the municipality.
4. October at the County Convention, receive updates from Berks County Conservation District, legislators and PSATS

Management and Office Staff

1. Annually attend the Reading Area Water Authority Steering Committee meeting to keep informed about activities and issues in the Maidencreek Watershed.
2. Quarterly attend the Berks County MS4 Steering Committee meetings.
3. As provided, attend MS4 educational opportunities in Berks County.

Public Works

1. Attend 2 training sessions a year on MS4.

Reviewed and revised May 9, 2019, June 4, 2020

Berks County Public Works Association - Membership Renewal Reminder

The 2024 membership dues for the Berks County Public Works Association are due and payable before March 1, 2024. If you are interested in becoming a new member or renewing your current membership in the BCPWA, please complete the form below and return it along with payment.

Municipal Membership Form

Vendor Membership form

October 3, 2024 Trade Show Notice

The Berks County Public Works Association annual trade show will be held Thursday October 3, 2024 at the Oley Fairgrounds, 26 Jefferson St. Oley, PA.

You must be a current BCPWA member to attend.
T-shirts will be provided to all preregistered municipal attendees.
You must register no later than September 19, 2024 to receive a free T-shirt!
Attendance registration will be accepted through September 23, 2024.
If you register after September 23, you may attend the educational portion and trade show but lunch will not be available.

We are pleased to offer the following educational presentation:
Berks County Conservation District Repairian Buffer

The **Blood Mobile** will also be on site.
Every donor will receive two additional door prize tickets!

Schedule:
8:00 AM – 8:45 AM
Registration for Trade Show and Rodeo- Coffee and baked goods

Confirmation

March 2025 education

Invoice Number: INV-169010-M6F7

Authorization Number:

Billing Information
Diane Hollenbach
secretarygreenwichtwp@ptd.net
775 Old Route 22
Lenhartsville, PA 19534-9239
USA

Shipping Information
Diane Hollenbach
secretarygreenwichtwp@ptd.net
775 Old Route 22
Lenhartsville, PA 19534-9239
USA

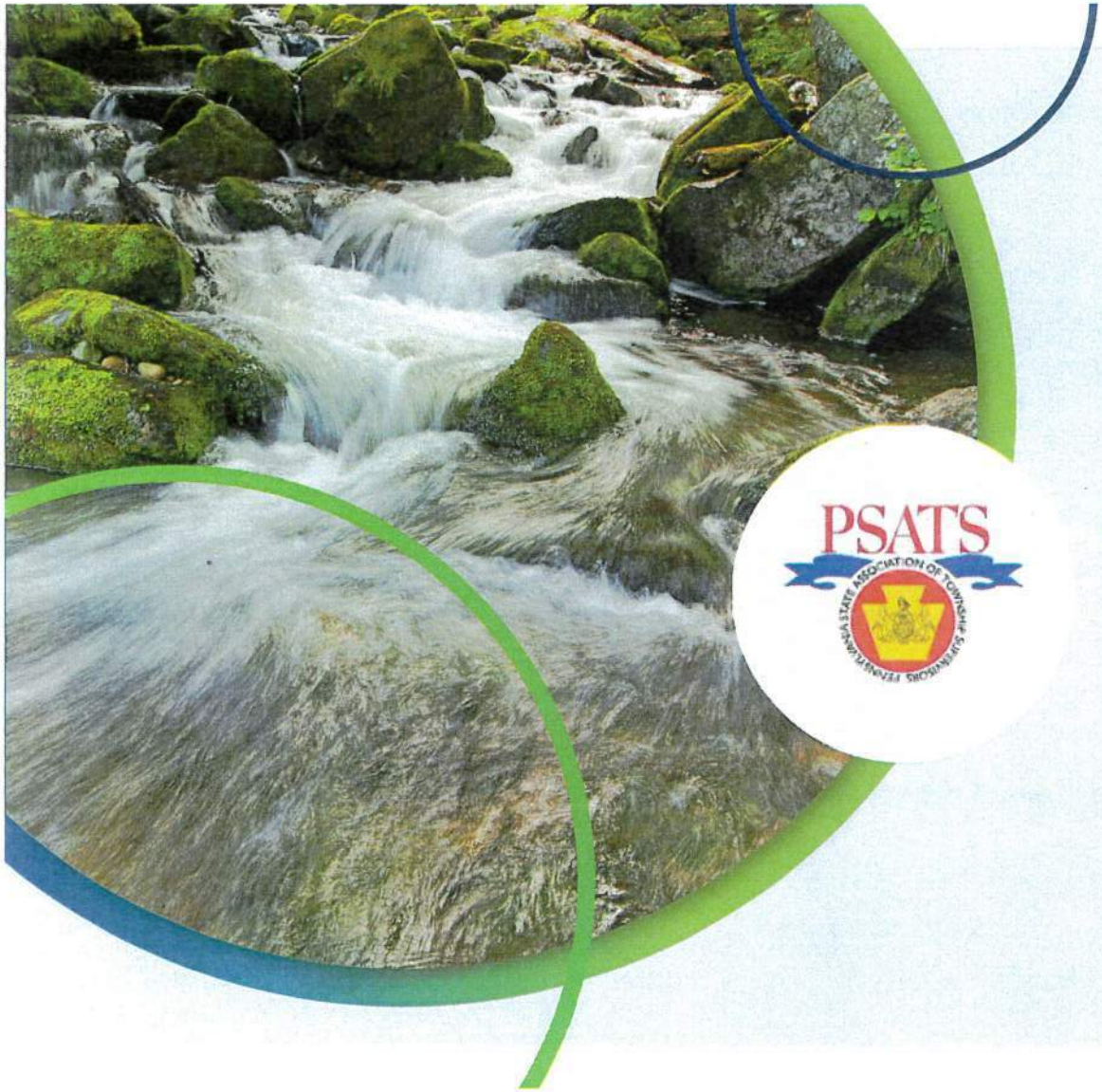
Description	Qty	Unit Price	Total Price
Webinar - The New (Draft) PA NPDES MS4 General Permit (PAG-13) - The Latest and Greatest - 3/13/25 - Diane Hollenbach	1	$0.00	$0.00

Total: $0.00

Payment: $0.00

Balance: $0.00

parse out State + County Roads



CENTER FOR
WATERSHED
PROTECTION

Draft PAG-13 NPDES MS4 General Permit Informational Webinar

Beth Uhler, Pennsylvania Director
Center for Watershed Protection

March 13, 2025

APPENDIX P

MCM #6 – POLLUTION PREVENTION / GOOD HOUSKEEPING

PA DEP STREET SWEEPING MATERIAL REUSE POLICY

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Rev. 8/19/2015

Bureau of Waste Management

Disposal/Reuse of Street-Sweeping Debris and Antiskid

Street sweepings consist of antiskid (cinders, coal (bottom) ash, rock, and sand), salt, leaves, plastic, broken glass, small pieces of metal, litter and debris. Sweepings are removed from streets, parking lots and sidewalks to improve the appearance and safety of public roadways and prevent pollution of local waterways.

Municipalities are able to reuse antiskid provided that it is screened to separate all non-reusable debris, such as silt, trash, litter, leaves, etc., from the reusable antiskid material and visually checked for contaminants, staining or odors. If the visual examination shows no staining, odors or other evidence of contaminants, the antiskid may be managed as clean fill and used in an unrestricted manner, including the following:

- Reuse as antiskid.
- Remixed with new salt mixture for winter application to roads.
- As the sub-grade beneath a paved municipal road or parking lot.
- For filling potholes.
- As shoulder repair material along roads within the municipally or privately owned public right-of-way.
- Other fill.

If the visual examination shows staining, odors or other evidence of contaminants, the antiskid material must be tested to determine if it qualifies as clean fill. Testing must be performed in accordance with Appendix A of the *Management of Fill* policy (Document No. 258-2182-773). If testing reveals that the antiskid material contains regulated substances at concentrations that exceed the limits in Tables FP-1a and 1b, the material may be managed as regulated fill, provided the person proposing to use the material obtains authorization under Waste Management General Permit WMGR096. Otherwise, the material must be disposed of at a permitted landfill.

All non-reusable debris that has been removed from the antiskid, as well as catch-basin material, must be disposed of at a landfill. For additional information, please contact the Bureau of Waste Management, Division of Municipal and Residual Waste, at 717-787-7381.

APPENDIX Q

MCM #6 – POLLUTION PREVENTION / GOOD HOUSKEEPING

POLLUTANT REDUCTION PLAN (PRP)

Maidencreek Township, Berks County

POLLUTANT REDUCTION PLAN (PRP)

Willow Creek MS4

Prepared for

MAIDENCREEK TOWNSHIP
BOARD OF SUPERVISORS

1 Quarry Road
Blandon, PA 19510
Maidencreek Township, Berks County, PA

June 29, 2017
Updated December 10, 2018
Updated April 3, 2019
Updated July 1, 2024

Project 24-0019-0191

SDE SYSTEMS DESIGN ENGINEERING, INC
"A Passion for Engineering Excellence"
sdei.net

Maidencreek Township, Berks County
POLLUTANT REDUCTION PLAN (PRP)
Willow Creek

1.0 Introduction

This MS4 Pollutant Reduction Plan (PRP) has been prepared by Systems Design Engineering, Inc. (SDE), for Maidencreek Township, Berks County, Pennsylvania (the Township), as part of the Township's obligations under its NPDES PAG-13 MS4 permit (Permit Number PAG-13-3521). Maidencreek Township has been operating under a permit since 2003.

The pollutant of concern in this PRP is "nutrients." A portion of the Township's MS4 discharges to a segment of Willow Creek that is impaired for nutrients, reportedly originating from an "industrial point source."

This plan will discuss implementation of best management practice (BMP) pollutant control measures within the storm sewersheds tributary to the impaired stream, with the intention of demonstrating a reduction in applicable pollutant loads as calculated using accepted methodologies.

2.0 Watershed/MS4 Characteristics

The MS4 area within Maidencreek Township is defined by the "Reading" Urbanized Area (UA) from the 2010 U.S. Census (see Figure 1). The UA is comprised mainly of residential developments, with some commercial development along the U.S. Route 222 and Park Road corridors, and more industry west of PA Route 73. No portion of Maidencreek Township is within the Chesapeake Bay watershed.

Maidencreek Township has two (2) impaired surface waters that need special plans, as they relate to regulated stormwater discharges: Lake Ontelaunee, which has a TMDL for nutrients and suspended sediment, and Willow Creek, a portion of which has an impairment for nutrients, as listed in the 2014 Pennsylvania Integrated Water Quality Monitoring and Assessment Report [303(d) List]. There are other reaches of Willow Creek and its unnamed tributaries that have various impairments according to the Integrated Report, but they do not currently pertain to regulated stormwater discharges.

Figure 2 depicts Maidencreek Township and its UA, as well as the impaired surface waters pertaining to regulated stormwater discharges (red segments of Willow Creek needing a PRP and yellow Lake Ontelaunee needing a TMDL Plan). Note that only the downstream segment of Willow Creek is affected by the MS4, because the UA does not include the upper tributary to Willow Creek. The downstream segment is approximately 0.5 mile in length.

Maidencreek Township's MS4 has 56 regulated outfalls and seven (7) observation points. Three (3) outfalls discharge to Lake Ontelaunee and the remainder to Willow Creek and its unnamed tributaries.

Figure 1. Maidencreek Township Urbanized Area (*from PA DEP's eMapPA online tool at http://www.depgis.state.pa.us/emappa/)*

2.1 303(d) Nutrient Listing Discussion

The 2014 Pennsylvania Integrated Water Quality Monitoring and Assessment Report lists the specific impairment to the portion of Willow Creek in question is listed as *"Industrial Point Source – Nutrients."* The Assessment ID is 2327. The only nearby potential nutrient-yielding industrial point source a private corporation's wastewater treatment facility that discharges to the Willow Creek, over one-half mile *downstream* of the stream segment identified as having the industrial point source. It is unclear to what source the "industrial point source" is attributed for the stream segment identified, as the vast majority of the storm sewersheds tributary to the segment are comprised primarily of residential properties.

3.0 PRP Calculations

The pollutant of concern in this PRP is "nutrients." Nutrients typically refer to total nitrogen and total phosphorus. However, for non-Chesapeake Bay PRPs, "nutrients" refers to total phosphorus (TP). The goal of this PRP is therefore to reduce TP by five percent (5%) through BMP implementation. It can be presumed that a sediment reduction of at least 10 percent will accomplish the 5% TP reduction.

Figure 2. Maidencreek Township Impaired Surface Waters Pertaining to Stormwater Discharges (*from PA DEP's eMapPA online tool at http://www.depgis.state.pa.us/emappa/)*

3.1 Methodology

This PRP will establish existing pollutant loadings for TP. DEP's simplified method has been selected for the majority of the computations. According to Attachment B PA DEP's Pollutant Reduction Plan (PRP) Instructions (3800-PM-BCW0100k, rev. 3/20/17) in Appendix B, Berks County's loading rates for TP are 2.26 lbs/acre/yr and 0.98 lbs/acre/yr for impervious developed and pervious developed areas, respectively. For undeveloped areas outside of the UA, a loading rate of 0.33 lbs/acre/yr is to be used for TP. Loading rates derived from the Lake Ontelaunee TMDL document are used for two (2) specific storm sewersheds (O-015 and Willow Creek Riparian Buffer Area), where pervious areas needed to be evaluated for the actual existing and proposed covers (i.e., a more detailed analysis is needed than just a "pervious" classification, as is done in the simplified method).

In order to apply the existing pollutant loading rates throughout the MS4, storm sewersheds were delineated for the 56 outfalls and seven (7) observation points tributary to Willow Creek. Each storm sewershed was then divided into portions that are developed impervious and developed pervious, as well as undeveloped areas outside the UA. This data was entered into a spreadsheet which calculates total loading for each storm sewershed, as well as total gross loading overall. Again, storm sewersheds

O-015 and Willow Creek Riparian Buffer Area are the exceptions wherein actual agricultural, pasture/meadow and forest loading rates were used for existing and proposed conditions evaluations.

Several of the storm sewersheds also have existing BMPs (for example, dry extended detention basins, vegetated swales, forest buffers). Areas tributary to these BMPs are further evaluated for pollutant reductions and the cumulative result of these reductions is applied to the gross loading to determine a net loading that is used as the baseline for the required reduction. Refer to Appendix A for the spreadsheet tables utilized to compute existing and proposed loading.

3.2 Gross TP Loading

Gross TP loading is computed for each of the storm sewersheds using the methodology discussed above. Loading rates for each outfall's individual storm sewershed are then summed to arrive at the total gross loading. Gross loading does not take into account any existing BMPs within the storm sewersheds. Total gross TP loading for the storm sewersheds tributary to Willow Creek's nutrient-impaired segment is 1,872 pounds per year. Refer to Table 1 in Appendix A.

3.3 Net TP Loading

Net TP loading is computed by taking the gross TP loading values for each outfall's storm sewershed and applying reductions as appropriate for existing BMPs with the storm sewersheds. Not all storm sewersheds have existing BMPs, and some of the existing BMPs are ineligible to be counted for reductions to loading. Existing BMPs eligible for use in this PRP include Dry Extended Detention Basins, Forest Buffers, and Vegetated Open Channels. Each of these have specific effectiveness values, as provided in DEP's BMP Effectiveness Values table (3800-PM-BCW0100m, 5/2016), Appendix B.

Storm sewersheds are subdivided into areas that are tributary to the particular BMP for reduction, and areas that by-pass the BMP. Reductions, if available, are summed for each storm sewershed and are subtracted from gross TP loadings, to arrive at net TP loading for each storm sewershed. Individual net storm sewershed loadings are then summed to arrive at total net TP loading. Total net TP loading for the storm sewersheds tributary to Willow Creek's nutrient-impaired segment is 1,644 pounds per year. This is the baseline value to which the required five percent (5%) TP reduction is applied.

3.4 TP Reductions and BMP Effectiveness

With a net TP loading of 1,644 pounds per year, the required TP reduction at five percent (5%) is about 82 pounds. Proposed BMPs must be implemented over the five-year permit duration to achieve this minimum reduction. Proposed BMPs are described below (refer also to Tables 3 and 4 in Appendix A).

3.4.1 "CONVERT" – Ag Field Retirement/Conversion to Meadow

Storm sewershed 0-015 contains a farm field that has been purchased by Maidencreek Township for development of a community well. This farm field will be retired and left to return to meadow, with no chemical applications, due to wellhead protection requirements.

This BMP reduces sediment and nutrient pollution generically from "pervious" areas within the O-015 storm sewershed, but DEP's simplified method does not break down pervious areas into the specific cropland and meadow rates that need to be evaluated for BMP effectiveness in this case. Therefore,

loading rates for this storm sewershed were computed using representative source data from the Lake Ontelaunee TMDL document, because those sources are nearby and include cropland (which is the existing use for the farm field in O-015) and hay/pasture (which is the proposed use of the farm field, as converted).

Table ES-2 from the TMDL document is reproduced in the Table 4 data in Appendix A. Sources that are common between the Lake Ontelaunee watershed and the O-015 storm sewershed are listed in Table 4.a. Data from Table ES-2 are used in Table 4.a. to develop loading rates (lb/yr/ac) for each source. In Table 4.b., the actual areal extents of the common sources within the O-015 storm sewershed are multiplied by the loading rates computed in Table 4.a., to arrive at loadings in pounds per year for each O-015 source, in the existing (agricultural cropland) condition. The sum of the individual sources' loading masses (lb/yr) is used in Table 1 (Appendix A – TP gross overall), for O-015.

In Table 2, there are no existing BMPs in O-015 being used to reduce TP; therefore, net TP is the same as gross TP. The loading value is transferred to Table 3.

Table 3 depicts the effect of the proposed conversion of a portion of the O-015 storm sewershed from cropland to hay/pasture (i.e., the "CONVERT" BMP). The TP after reduction listed in Table 3 is based on computations in Table 4.c.

Table 4.c. is a variation of Table 4.b., wherein the "Cropland" source is reduced to an area of "zero," and the area formerly cropland is added to the hay/pasture source. This simulates the conversion BMP. As in Table 4.b., individual sources' loading masses (lb/yr) are totaled to arrive at a proposed load. This value is entered in Table 3 for O-015, as the "TP After BMP Reduction."

3.4.2 "CONVERT" – Riparian Buffer Area/Conversion from Meadow to Forest

The Willow Creek Riparian Buffer Area consists of approximately 34 Maidencreek Township-owned, contiguous acres between Schaeffer Road and PA Route 73, along the Willow Creek. Prior to its conversion to a forested riparian buffer, the land was primarily pasture and meadow. See BMP 3.4.3 below for a complete description of the buffer's origin and value.

The conversion of the 34 acres of this formerly pasture and meadow area to deciduous forest is a BMP that has nutrient-reducing capability. However, as in the "Cropland" conversion BMP, DEP's simplified method is insufficient to adequately quantify nutrient loading. Therefore, as above, loading rates for this storm sewershed were computed using representative source data from the Lake Ontelaunee TMDL document, because those sources are nearby and include hay/pasture (which is the pre-existing use for the riparian buffer area) and deciduous forest (which is the proposed use of the buffer area, as converted).

Table ES-2 from the TMDL document is reproduced in the Table 4 data in Appendix A. Sources that are common between the Lake Ontelaunee watershed and the Willow Creek Riparian Buffer Area are listed in Table 4.a. Data from Table ES-2 are used in Table 4.a. to develop loading rates (lb/yr/ac) for each source. In Table 4.d., the actual areal extents of the common sources within the Willow Creek Riparian Buffer Area are multiplied by the loading rates computed in Table 4.a., to arrive at loadings in pounds per year for each buffer area, in the existing (hay/pasture) condition. The sum of the individual sources' loading masses (lb/yr) is used in Table 1 (Appendix A – TP gross overall), for Willow Creek Riparian Area.

In Table 2, there are no existing BMPs in Willow Creek Riparian Area being used to reduce TP; therefore, net TP is the same as gross TP. The loading value is transferred to Table 3.

Table 3 depicts the effect of the proposed conversion of the Willow Creek Riparian Area from hay/pasture to deciduous forest. The TP after reduction listed in Table 3 is based on computations in Table 4.e.

Table 4.e. is a variation of Table 4.d., wherein the "Hay/Pasture" source is reduced to an area of "zero," and the area formerly hay/pasture is added to the deciduous forest source. This simulates the conversion BMP. As in Table 4.d., individual sources' loading masses (lb/yr) are totaled to arrive at a proposed load. This value is entered in Table 3 for Willow Creek Riparian Area, as the "TP After BMP Reduction."

3.4.3 "FOREST BUFFER" – Riparian Forest Buffer Along Willow Creek

Maidencreek Township, with nearly a dozen partners, is revegetating the approximately 34-acre riparian buffer along Willow Creek, between Schaeffer Road and PA Route 73. Since 2011, 1,735 trees have been planted throughout the buffer, in an effort to convert open meadow areas to a forest buffer. In-stream fish habitat enhancements, stream bank stabilization, educational signage and invasive species removal have also been implemented.

This is an ongoing, "living" BMP project that is a flagship example of community involvement and public education for a riparian improvement within an MS4. See Appendix C for a full report on the project.

It is acknowledged that DEP's PRP instructions restrict the use of previously installed BMPs as credit toward the proposed percentage reductions required for the particular pollutant of concern. However, this riparian buffer project is not a static BMP. It is an ongoing, constantly evolving managed "forest buffer" BMP, the benefits of which will continue to improve over the coming five (5) year permit period and beyond. Therefore, it is believed that the use of a "forest buffer" for a "proposed" BMP is justified.

The project began in 2011, however, no credit is sought for the buffer as an existing BMP. This is evident in Table 2. As a proposed Forest Buffer BMP, a 50 percent effectiveness value for TP reduction is used in Table 3.

Recent Chesapeake Bay guidelines place limitations upon the amount of area claimed for credit in treatment provided by riparian buffers. For phosphorus, the subject of this PRP, the area credit is two times the area of the riparian buffer. The Willow Creek Riparian Buffer Area is 34 acres; therefore, pollutant loading from 68 acres of tributary storm sewershed area can be credited with the 50 percent reduction specified in DEP's BMP effectiveness tables. Accordingly, Table 3 computes TP loading reductions for storm sewersheds O-007, O-008, O-010, O-012, O-016, O-023 and O-024 (these sewersheds total is 68 acres). Remaining sewersheds tributary to the riparian buffer receive no reduction credit in Table 3 (denoted as "FP[1]" in Table 3).

4.0 Pollutant Loading Reductions

As indicated above, the pollutant of concern in this PRP is Total Phosphorus (TP), based on nutrients from an "industrial point source." The preceding calculations depict the use of DEP's simplified method to compute existing loading, with existing BMP effectiveness netted out of the baseline. The calculations also demonstrate the effectiveness of the proposed BMPs on reducing TP loading.

Results of the analyses are tabulated below:

Existing Gross Loading lb/yr (Table 1)	Existing Net Loading lb/yr (Table 2)	Proposed Loading lb/yr	Reduction in Loading
1,871.72	1,644.15	1,554.14	5.47%

5.0 Plan Implementation

Maidencreek Township and/or its designee(s) will implement the PRP in the following manner:

Ag Field Conversion

Over the five-year permit term, allow natural meadow to return to cover former agricultural field. Do not apply chemicals, fertilizers, pesticides or herbicides. Maintain field in natural state. Mowing is acceptable as needed.

Forest Buffer

Over the five-year permit term, maintain established vegetation within the Willow Creek corridor. Maintain educational signage as needed. Refer to Appendix D for a full maintenance schedule.

6.0 Funding Mechanisms

Funding for the Ag Field Conversion and Forest Buffer BMPs will be as follows:

Ag Field Conversion

Funding for current and proposed operation and maintenance of the converted field is via the Township's General Fund. Given the passive, low-maintenance nature of this BMP, funding needs are expected to be minimal.

Forest Buffer

Funding for the Forest Buffer is as specified in Appendix C, which is the Project Description for the riparian project. Current and proposed funding for operation and maintenance of the BMPs is via the Township's General Fund.

7.0 Operation and Maintenance

Maidencreek Township owns each property upon which BMPs are proposed under this PRP. Accordingly, the Township will operate and maintain the BMPs.

Ag Field Conversion

Limited maintenance will include occasional mowing as needed. Removal of invasive species will be done case-by-case. Ground cover is to remain vegetated or otherwise stabilized to prevent soil erosion. There is to be no application of any material that is contrary to regulations supporting public drinking water wellhead protection, including but not limited to herbicides, pesticides or fertilizers.

Forest Buffer

Refer to Appendix D for the Management Plan.

8.0 Additional Proposed Projects

Maidencreek Township is proposing several projects to be implemented in upcoming years for PRP credit. The projects include the following

Cornerstone Drive Bridge Replacement

A culvert/bridge located on Cornerstone Drive is in disrepair and is filled with sediment. The project will involve removal of sediment, installation of a new bridge, and armoring the upstream banks of the culvert with rip rap.

West Walnut Tree Drive Stream Realignment

A culvert/bridge has clogged with sediment due to an unnatural sharp turn in the stream. The project will involve removing the sediment from the culvert, realigning the stream to a more natural path, armoring the upstream area of the culvert with core logs and rip-rap, and installing an aquatic bench in an eroded area to support wetland vegetation.

Follow-Up Stream Restorations

Various areas of previously completed stream restorations are to have follow up restoration projects completed in upcoming years. Due to recent storm events, several areas have washed out due to minimum stabilization/armoring. Those areas will be restabilized and armored with additional materials including rip-rap.

APPENDIX A

POLLUTANT LOADING CALCULATION SPREADSHEETS

TABLE 1.
WILLOW CREEK PRP - MAIDENCREEK TOWNSHIP
MS4 OUTFALL STORM SEWERSHEDS - EXISTING POLLUTANT LOADING (GROSS BEFORE EXISTING BMPS)
APRIL 2019

			IMPERVIOUS DEVELOPED AREA			PERVIOUS DEVELOPED AREA			UNDEVELOPED AREA (OUTSIDE MS4)			
OUTFALL OR OBSERVATION POINT	STORM SEWERSHED AREA (SF)	STORM SEWERSHED AREA (AC)	% IMPERV DEV	IMPERV DEVELOPED (AC)	TP IMPERV DEV (lbs/yr)	% PERV-IOUS DEV	PERVIOUS DEVELOPED (AC)	TP PERV DEV (lbs/yr)	% UNDEV	UNDEV (AC)	TP UNDEV (lbs/yr)	TP GROSS OVERALL (lbs/yr)
0-001	1,879,646	43.15	40%	17.26	39.01	60%	25.89	25.37	0%	0.00	0.00	64.38
0-002	107,786	2.47	65%	1.61	3.63	35%	0.87	0.85	0%	0.00	0.00	4.48
0-003	12,169,849	279.38	25%	69.85	157.85	50%	139.69	136.90	25%	69.85	23.05	317.80
0-004	225,522	5.18	1%	0.05	0.12	0%	0.00	0.00	99%	5.13	1.69	1.81
0-005	1,226,799	28.16	5%	1.41	3.18	95%	26.76	26.22	0%	0.00	0.00	29.40
0-006	649,428	14.91	5%	0.75	1.68	95%	14.16	13.88	0%	0.00	0.00	15.56
0-007	555,388	12.75	45%	5.74	12.97	55%	7.01	6.87	0%	0.00	0.00	19.84
0-008	1,347,374	30.93	45%	13.92	31.46	55%	17.01	16.67	0%	0.00	0.00	48.13
0-009	637,572	14.64	20%	2.93	6.62	80%	11.71	11.48	0%	0.00	0.00	18.09
0-010	84,764	1.95	20%	0.39	0.88	80%	1.56	1.53	0%	0.00	0.00	2.41
0-011	1,303,450	29.92	10%	2.99	6.76	50%	14.96	14.66	40%	11.97	3.95	25.37
0-012	390,789	8.97	50%	4.49	10.14	50%	4.49	4.40	0%	0.00	0.00	14.53
0-013	83,105	1.91	55%	1.05	2.37	45%	0.86	0.84	0%	0.00	0.00	3.21
0-014	226,750	5.21	40%	2.08	4.71	60%	3.12	3.06	0%	0.00	0.00	7.77
0-015	2,764,452	63.46	See Table 4.b. for computation of existing gross loading.									85.66
0-016	324,495	7.45	40%	2.98	6.73	60%	4.47	4.38	0%	0.00	0.00	11.11
0-017	183,712	4.22	40%	1.69	3.81	60%	2.53	2.48	0%	0.00	0.00	6.29
0-018	185,123	4.25	40%	1.70	3.84	60%	2.55	2.50	0%	0.00	0.00	6.34
0-019	633,685	14.55	40%	5.82	13.15	60%	8.73	8.55	0%	0.00	0.00	21.70
0-020	188,630	4.33	60%	2.60	5.87	40%	1.73	1.70	0%	0.00	0.00	7.57
0-021	4,479,194	102.83	30%	30.85	69.72	65%	66.84	65.50	5%	5.14	1.70	136.92
0-022	3,668,549	84.22	30%	25.27	57.10	50%	42.11	41.27	20%	16.84	5.56	103.93
0-023	112,530	2.58	55%	1.42	3.21	45%	1.16	1.14	0%	0.00	0.00	4.35
0-024	131,152	3.01	55%	1.66	3.74	45%	1.35	1.33	0%	0.00	0.00	5.07
0-025	4,453,721	102.24	40%	40.90	92.43	60%	61.35	60.12	0%	0.00	0.00	152.55
0-026	13,421	0.31	50%	0.15	0.35	50%	0.15	0.15	0%	0.00	0.00	0.50

			IMPERVIOUS DEVELOPED AREA			PERVIOUS DEVELOPED AREA			UNDEVELOPED AREA (OUTSIDE MS4)			
OUTFALL OR OBSERVATION POINT	STORM SEWERSHED AREA (SF)	STORM SEWERSHED AREA (AC)	% IMPERV DEV	IMPERV DEVELOPED (AC)	TP IMPERV DEV (lbs/yr)	% PERV-IOUS DEV	PERVIOUS DEVELOPED (AC)	TP PERV DEV (lbs/yr)	% UNDEV	UNDEV (AC)	TP UNDEV (lbs/yr)	TP GROSS OVERALL (lbs/yr)
0-027	727,003	16.69	45%	7.51	16.97	55%	9.18	9.00	0%	0.00	0.00	25.97
0-028	730,642	16.77	45%	7.55	17.06	55%	9.23	9.04	0%	0.00	0.00	26.10
0-029	306,197	7.03	15%	1.05	2.38	85%	5.97	5.86	0%	0.00	0.00	8.24
0-030	107,060	2.46	45%	1.11	2.50	55%	1.35	1.32	0%	0.00	0.00	3.82
0-031	171,221	3.93	45%	1.77	4.00	55%	2.16	2.12	0%	0.00	0.00	6.12
0-032	42,901	0.98	45%	0.44	1.00	55%	0.54	0.53	0%	0.00	0.00	1.53
0-033	210,681	4.84	45%	2.18	4.92	55%	2.66	2.61	0%	0.00	0.00	7.53
0-034	56,981	1.31	45%	0.59	1.33	55%	0.72	0.71	0%	0.00	0.00	2.04
0-035	251,100	5.76	35%	2.02	4.56	65%	3.75	3.67	0%	0.00	0.00	8.23
0-036	762,441	17.50	30%	5.25	11.87	70%	12.25	12.01	0%	0.00	0.00	23.87
0-037	475,826	10.92	40%	4.37	9.87	60%	6.55	6.42	0%	0.00	0.00	16.30
0-038	183,879	4.22	45%	1.90	4.29	55%	2.32	2.28	0%	0.00	0.00	6.57
0-039	16,819	0.39	50%	0.19	0.44	50%	0.19	0.19	0%	0.00	0.00	0.63
0-040	826,746	18.98	5%	0.95	2.14	10%	1.90	1.86	85%	16.13	5.32	9.33
0-041	112,177	2.58	20%	0.52	1.16	80%	2.06	2.02	0%	0.00	0.00	3.18
0-042	417,913	9.59	15%	1.44	3.25	85%	8.15	7.99	0%	0.00	0.00	11.24
0-043	129,651	2.98	10%	0.30	0.67	0%	0.00	0.00	90%	2.68	0.88	1.56
0-044	2,698,750	61.95	25%	15.49	35.00	75%	46.47	45.54	0%	0.00	0.00	80.54
0-045	541,264	12.43	40%	4.97	11.23	60%	7.46	7.31	0%	0.00	0.00	18.54
0-046	1,329,921	30.53	10%	3.05	6.90	25%	7.63	7.48	65%	19.85	6.55	20.93
0-047	1,528,761	35.10	25%	8.77	19.83	60%	21.06	20.64	15%	5.26	1.74	42.20
0-048	2,095,147	48.10	15%	7.21	16.31	55%	26.45	25.92	30%	14.43	4.76	46.99
0-052	2,053,190	47.13	15%	7.07	15.98	80%	37.71	36.95	5%	2.36	0.78	53.71
0-053	7,001,386	160.73	20%	32.15	72.65	40%	64.29	63.01	40%	64.29	21.22	156.87
0-054	776,505	17.83	25%	4.46	10.07	75%	13.37	13.10	0%	0.00	0.00	23.17
0-055	189,443	4.35	25%	1.09	2.46	75%	3.26	3.20	0%	0.00	0.00	5.65
0-056	358,489	8.23	25%	2.06	4.65	75%	6.17	6.05	0%	0.00	0.00	10.70
OP-001	1,301,975	29.89	15%	4.48	10.13	35%	10.46	10.25	50%	14.94	4.93	25.32
OP-002	865,824	19.88	5%	0.99	2.25	95%	18.88	18.51	0%	0.00	0.00	20.75

			IMPERVIOUS DEVELOPED AREA			PERVIOUS DEVELOPED AREA			UNDEVELOPED AREA (OUTSIDE MS4)			
OUTFALL OR OBSERVATION POINT	STORM SEWERSHED AREA (SF)	STORM SEWERSHED AREA (AC)	% IMPERV DEV	IMPERV DEVELOPED (AC)	TP IMPERV DEV (lbs/yr)	% PERV-IOUS DEV	PERVIOUS DEVELOPED (AC)	TP PERV DEV (lbs/yr)	% UNDEV	UNDEV (AC)	TP UNDEV (lbs/yr)	TP GROSS OVERALL (lbs/yr)
OP-003	918,501	21.09	20%	4.22	9.53	80%	16.87	16.53	0%	0.00	0.00	26.06
OP-004	200,545	4.60	25%	1.15	2.60	75%	3.45	3.38	0%	0.00	0.00	5.99
OP-005	818,595	18.79	10%	1.88	4.25	90%	16.91	16.57	0%	0.00	0.00	20.82
OP-006	281,500	6.46	25%	1.62	3.65	75%	4.85	4.75	0%	0.00	0.00	8.40
OP-007	581,625	13.35	10%	1.34	3.02	90%	12.02	11.78	0%	0.00	0.00	14.79
Willow Creek Riparian Area	1,484,094	34.07	See Table 4.d. for computation of existing gross loading.									13.25
	TOTALS:	1574.42			860.3			830.42			82.13	**1871.72**

TP LOADING RATES:	Impervious Developed Area:	2.26 lbs/acre/yr
	Pervious Developed Area:	0.98 lbs/acre/yr
	Undeveloped Area:	0.33 lbs/acre/yr

0-xxx: Outfall ID
OP-xxx: Observation Point ID

NOTE: Outfalls O-049, O-050 and O-051 are outside of the PRP planning area.

TABLE 2.
WILLOW CREEK PRP - MAIDENCREEK TOWNSHIP
MS4 OUTFALL STORM SEWERSHEDS - EXISTING POLLUTANT LOADING (NET AFTER EXISTING BMPS)
APRIL 2019

OUTFALL	TP GROSS OVERALL (lbs/yr)	EX BMP TYPE	% STORM SEWERSHED TO BMP	TP GROSS TO BMP (lbs/yr)	BMP EFFECTIVE TREATMENT %	TP AFTER BMP TREATMENT (lbs/yr)	TP NOT TO ANY BMP (lbs/yr)	TP NET OVERALL (lbs/yr)
0-001	64.38	VOC-B	95.0%	61.16	45%	33.64	3.22	36.86
0-002	4.48	n/a	0.0%	0.00	0%	0.00	4.48	4.48
0-003	317.80	DED	65.0%	206.57	20%	165.25	111.23	276.48
0-004	1.81	VOC-B	50.0%	0.90	45%	0.50	0.90	1.40
0-005	29.40	n/a	0.0%	0.00	0%	0.00	29.40	29.40
0-006	15.56	n/a	0.0%	0.00	0%	0.00	15.56	15.56
0-007	19.84	n/a	0.0%	0.00	0%	0.00	19.84	19.84
0-008	48.13	n/a	0.0%	0.00	0%	0.00	48.13	48.13
0-009	18.09	n/a	0.0%	0.00	0%	0.00	18.09	18.09
0-010	2.41	n/a	0.0%	0.00	0%	0.00	2.41	2.41
0-011	25.37	n/a	0.0%	0.00	0%	0.00	25.37	25.37
0-012	14.53	n/a	0.0%	0.00	0%	0.00	14.53	14.53
0-013	3.21	DED	90.0%	2.89	20%	2.31	0.32	2.63
0-014	7.77	n/a	0.0%	0.00	0%	0.00	7.77	7.77
0-015	85.66	n/a	0.0%	0.00	0%	0.00	85.66	85.66
0-016	11.11	n/a	0.0%	0.00	0%	0.00	11.11	11.11
0-017	6.29	n/a	0.0%	0.00	0%	0.00	6.29	6.29
0-018	6.34	n/a	0.0%	0.00	0%	0.00	6.34	6.34
0-019	21.70	n/a	0.0%	0.00	0%	0.00	21.70	21.70
0-020	7.57	FB	100.0%	7.57	50%	3.78	0.00	3.78
0-021	136.92	DED	100.0%	136.92	20%	109.53	0.00	109.53
0-022	103.93	n/a	0.0%	0.00	0%	0.00	103.93	103.93
0-023	4.35	n/a	0.0%	0.00	0%	0.00	4.35	4.35
0-024	5.07	n/a	0.0%	0.00	0%	0.00	5.07	5.07
0-025	152.55	DED	90.0%	137.29	20%	109.83	15.25	125.09
0-026	0.50	n/a	0.0%	0.00	0%	0.00	0.50	0.50
0-027	25.97	FB	100.0%	25.97	50%	12.98	0.00	12.98
0-028	26.10	FB	100.0%	26.10	50%	13.05	0.00	13.05
0-029	8.24	FB	100.0%	8.24	50%	4.12	0.00	4.12
0-030	3.82	FB	100.0%	3.82	50%	1.91	0.00	1.91
0-031	6.12	FB	100.0%	6.12	50%	3.06	0.00	3.06
0-032	1.53	FB	100.0%	1.53	50%	0.77	0.00	0.77

OUTFALL	TP GROSS OVERALL (lbs/yr)	EX BMP TYPE	% STORM SEWERSHED TO BMP	TP GROSS TO BMP (lbs/yr)	BMP EFFECTIVE TREATMENT %	TP AFTER BMP TREATMENT (lbs/yr)	TP NOT TO ANY BMP (lbs/yr)	TP NET OVERALL (lbs/yr)
0-033	7.53	FB	100.0%	7.53	50%	3.76	0.00	3.76
0-034	2.04	FB	100.0%	2.04	50%	1.02	0.00	1.02
0-035	8.23	FB	100.0%	8.23	50%	4.12	0.00	4.12
0-036	23.87	DED	15.0%	3.58	20%	2.86	20.29	23.16
0-037	16.30	DED	100.0%	16.30	20%	13.04	0.00	13.04
0-038	6.57	n/a	0.0%	0.00	0%	0.00	6.57	6.57
0-039	0.63	n/a	0.0%	0.00	0%	0.00	0.63	0.63
0-040	9.33	n/a	0.0%	0.00	0%	0.00	9.33	9.33
0-041	3.18	DED	100.0%	3.18	20%	2.55	0.00	2.55
0-042	11.24	n/a	0.0%	0.00	0%	0.00	11.24	11.24
0-043	1.56	n/a	0.0%	0.00	0%	0.00	1.56	1.56
0-044	80.54	DED	80.0%	64.43	20%	51.55	16.11	67.65
0-045	18.54	n/a	0.0%	0.00	0%	0.00	18.54	18.54
0-046	20.93	DED	75.0%	15.70	20%	12.56	5.23	17.79
0-047	42.20	VOC-B	100.0%	42.20	45%	23.21	0.00	23.21
0-048	46.99	n/a	0.0%	0.00	0%	0.00	46.99	46.99
0-052	53.71	DED	75.0%	40.28	20%	32.23	13.43	45.65
0-053	156.87	n/a	0.0%	0.00	0%	0.00	156.87	156.87
0-054	23.17	n/a	0.0%	0.00	0%	0.00	23.17	23.17
0-055	5.65	n/a	0.0%	0.00	0%	0.00	5.65	5.65
0-056	10.70	n/a	0.0%	0.00	0%	0.00	10.70	10.70
OP-001	25.32	n/a	0.0%	0.00	0%	0.00	25.32	25.32
OP-002	20.75	n/a	0.0%	0.00	0%	0.00	20.75	20.75
OP-003	26.06	n/a	0.0%	0.00	0%	0.00	26.06	26.06
OP-004	5.99	n/a	0.0%	0.00	0%	0.00	5.99	5.99
OP-005	20.82	n/a	0.0%	0.00	0%	0.00	20.82	20.82
OP-006	8.40	n/a	0.0%	0.00	0%	0.00	8.40	8.40
OP-007	14.79	VOC-B	100.0%	14.79	45%	8.14	0.00	8.14
Willow Creek Riparian Area	13.25	n/a	0.0%	0.00	0%	0.00	13.25	13.25
	1871.72					**NET TP (lbs/yr) =**		**1644.15**

ABBREV.:
DED - Dry Extended Detention Basin
FB - Forest Buffer
VOC-B - Vegetated Open Channel - B Soils

TABLE 3.
WILLOW CREEK PRP - MAIDENCREEK TOWNSHIP
PROPOSED POLLUTANT LOADING (WITH PROPOSED BMPS)
APRIL 2019

OUTFALL	STORM SEWERSHED AREA (AC)	TP NET OVERALL (lbs/yr)	PROPOSED BMP TYPE	PROPOSED BMP EFFECTIVE-NESS	TP AFTER BMP REDUCTION (lbs/yr)
0-001	43.15	36.86	--	0%	36.86
0-002	2.47	4.48	--	0%	4.48
0-003	279.38	276.48	--	0%	276.48
0-004	5.18	1.40	FB[1]	0%	1.40
0-005	28.16	29.40	FB[1]	0%	29.40
0-006	14.91	15.56	FB[1]	0%	15.56
0-007	12.75	19.84	FB	50%	9.92
0-008	30.93	48.13	FB	50%	24.06
0-009	14.64	18.09	FB[1]	0%	18.09
0-010	1.95	2.41	FB	50%	1.20
0-011	29.92	25.37	FB[1]	0%	25.37
0-012	8.97	14.53	FB	50%	7.27
0-013	1.91	2.63	--	0%	2.63
0-014	5.21	7.77	FB[1]	0%	7.77
0-015	63.46	85.66	CONVERT[1] (see Table 4.c.)		58.82
0-016	7.45	11.11	FB	50%	5.56
0-017	4.22	6.29	FB[1]	0%	6.29
0-018	4.25	6.34	FB[1]	0%	6.34
0-019	14.55	21.70	FB[1]	0%	21.70
0-020	4.33	3.78	--	0%	3.78
0-021	102.83	109.53	--	0%	109.53
0-022	84.22	103.93	FB[1]	0%	103.93
0-023	2.58	4.35	FB	50%	2.18
0-024	3.01	5.07	FB	50%	2.54
0-025	102.24	125.09	--	0%	125.09
0-026	0.31	0.50	--	0%	0.50
0-027	16.69	12.98	--	0%	12.98
0-028	16.77	13.05	--	0%	13.05
0-029	7.03	4.12	--	0%	4.12
0-030	2.46	1.91	--	0%	1.91
0-031	3.93	3.06	--	0%	3.06
0-032	0.98	0.77	--	0%	0.77
0-033	4.84	3.76	--	0%	3.76
0-034	1.31	1.02	--	0%	1.02

0-035	5.76	4.12	--	0%	4.12
0-036	17.50	23.16	--	0%	23.16
0-037	10.92	13.04	--	0%	13.04
0-038	4.22	6.57	--	0%	6.57
0-039	0.39	0.63	--	0%	0.63
0-040	18.98	9.33	--	0%	9.33
0-041	2.58	2.55	--	0%	2.55
0-042	9.59	11.24	--	0%	11.24
0-043	2.98	1.56	--	0%	1.56
0-044	61.95	67.65	--	0%	67.65
0-045	12.43	18.54	--	0%	18.54
0-046	30.53	17.79	--	0%	17.79
0-047	35.10	23.21	--	0%	23.21
0-048	48.10	46.99	--	0%	46.99
0-052	47.13	45.65	--	0%	45.65
0-053	160.73	156.87	--	0%	156.87
0-054	17.83	23.17	--	0%	23.17
0-055	4.35	5.65	--	0%	5.65
0-056	8.23	10.70	--	0%	10.70
OP-001	29.89	25.32	--	0%	25.32
OP-002	19.88	20.75	--	0%	20.75
OP-003	21.09	26.06	--	0%	26.06
OP-004	4.60	5.99	--	0%	5.99
OP-005	18.79	20.82	--	0%	20.82
OP-006	6.46	8.40	--	0%	8.40
OP-007	13.35	8.14	--	0%	8.14
Willow Creek Riparian Area	34.07	13.25	CONVERT[2] (see Table 4.e.)		2.81
		1644.15			1554.14

Table Summary:

Net Overall TP:	1644.15	lbs/yr
TP Reduction Required (5%):	82.21	lbs/yr
TP After BMP Reduction:	1554.14	lbs/yr
TP Reduction Actual:	90.00	lbs/yr
% TP Reduction Actual:	**5.47%**	

Notes/Abbreviations:

CONVERT[1]	Ag Field Retirement/Conversion from Ag to Meadow (See Tables 4.a., 4.d., and 4.e.)
CONVERT[2]	Riparian Forest Buffer/Conversion from Meadow to Forest (See Tables 4.a., 4.d., and 4.e.)
FB	Forest Buffer - sewersheds counted for 50% reduction (approx. 68 acres - see note below)
FB[1]	Forest Buffer - sewershed is tributary to FB but no reduction applied (see note below)
Note:	Chesapeake Bay guidelines limit the credited area tributary to a riparian forest buffer to two times the buffer area when considering phosphorus reductions. Proposed riparian buffer area is 34 acres; therefore, 68 acres is the limit for tributary sewershed treatment credit. The sewersheds with "FB" denoted above total 68 acres; the sewersheds with "FB[1]" denoted are not credited.

TABLE 4.
WILLOW CREEK PRP - MAIDENCREEK TOWNSHIP
"CONVERT" BMP REDUCTION - STORMSHEDS O-015 & WILLOW CREEK RIPARIAN BUFFER
DECEMBER 2018

Table 4.a. Use Lake Ontelaunee TMDL Source Allocation to Estimate TP Loading Rate

Source[1]	TMDL Area ha	TMDL Ex. TP Load t/yr	TP Load Rate t/yr/ha	TP Load Rate lb/yr/ac
Hay/Pasture	9,061	3.95	0.00044	0.39
Cropland	19,994	46.93	0.00235	2.09
Deciduous Forest	14,481	1.34	0.00009	0.08
High Intensity	242	0.35	0.00145	1.29
Low Intensity	646	0.07	0.00011	0.10
MS4	54	0.13	0.00241	2.15

Notes:

1. Sources taken from the Lake Ontelaunee TMDL, Table ES-2. and are those that are in common with sources in O-015 and the Willow Creek Riparian Buffer (see below).
2. Loading Rates are computed to apply to specific O-015 sources in Table 4.b.
3. Loading Rates are computed to apply to specific Willow Creek Riparian Buffer sources in Table 4.d.
4. "t" is metric ton.

Table 4.b. Apply Loading Rate from Table 4.a. to Areas of Actual Existing Sources in O-015

Source	TP Load Rate lb/yr/ac	O-015 Area sf	O-015 Area ac	O-015 Ex. TP Load lb/yr	
Hay/Pasture	0.39	288,932	6.63	2.58	
Cropland[1]	2.09	685,697	15.74	32.96	
High Intensity	1.29	1,100,000	25.25	32.58	
Low Intensity	0.10	350,000	8.03	0.78	
MS4	2.15	339,823	7.80	16.76	
	Totals	2,764,452	63.46	85.66	*See this value in Tables 1 & 2*

Table 4.c. Compute Proposed Loading with All Cropland as Hay/Pasture in O-015

Source	TP Load Rate lb/yr/ac	O-015 Area sf	O-015 Area ac	O-015 Prop. TP Load lb/yr	
Hay/Pasture	0.39	974,629	22.37	8.70	
Cropland[1]	2.09	-	-	0.00	
High Intensity	1.29	1,100,000	25.25	32.58	
Low Intensity	0.10	350,000	8.03	0.78	
MS4	2.15	339,823	7.80	16.76	
	Totals	2,764,452	63.46	58.82	*See this value in Table 3*

Notes:

1. Cropland area is "zeroed out" and added to Hay/Pasture to simulate cropland conversion to meadow.

Table 4.d. Apply Loading Rate from Table 4.a. to Areas of Actual Existing Sources in the Willow Creek Riparian Buffer

Source	TP Load Rate lb/yr/ac	Riparian Buffer Area sf	Riparian Buffer Area ac	Rip. Buffer Ex. TP Load lb/yr	
Hay/Pasture	0.39	1,484,094	34.07	13.25	
Deciduous Forest	0.08	-	-	0.00	
	Totals	1,484,094	34.07	13.25	*See this value in Tables 1 & 2*

Table 4.e. Compute Proposed Loading with All Deciduous Forest in the Willow Creek Riparian Buffer

Source	TP Load Rate lb/yr/ac	Riparian Buffer Area sf	Riparian Buffer Area ac	Rip. Buffer Ex. TP Load lb/yr	
Hay/Pasture[1]	0.39	-	-	0.00	
Deciduous Forest	0.08	1,484,094	34.07	2.81	
	Totals	1,484,094	34.07	2.81	*See this value in Table 3*

Notes:

1. Hay/Pasture area is "zeroed out" and added to Deciduous Forest to simulate Hay/Pasture conversion to the riparian buffer.

Table ES-1. Lake Ontelaunee Phosphorus TMDL Table (metric tons per year) (from EPA TMDL Lake Ontelaunee, Berks and Lehigh Counties, PA)

Source	Area (ha)	Existing Load (t/yr)	% of Total Existing Load	Existing UAL (t/yr*ha)	Allocated Load (t/yr)	% of Total Allocated Load	Allocated UAL (t/yr*ha)	Percent reduction (%)
Hay/Pasture	9,061	3.95	4.8	0.00044	1.00	9.9	0.00011	75
Cropland	19,994	46.93	57.0	0.00235	2.35	23.2	0.00012	95
Coniferous	1,135	0.02	0.0	0.00002	0.02	0.2	0.00002	0
Mixed Forest	948	0.09	0.1	0.00009	0.09	0.9	0.00010	0
Deciduous Forest	14,481	1.34	1.6	0.00009	1.34	13.2	0.00009	0
Unpaved Roads	44	0.37	0.4	0.00841	0.02	0.2	0.00042	95
Quarry	16	0.06	0.1	0.00375	0.00	0.0	0.00022	93
Transitional	1,490	16.27	19.8	0.01092	0.81	8.0	0.00054	95
Low Intensity	646	0.07	0.1	0.00011	0.07	0.7	0.00011	0
High Intensity	242	0.35	0.4	0.00145	0.05	0.5	0.00022	85
MS4	54	0.13	0.2	0.00232	0.01	0.1	0.00015	94
Point Source	--	3.65	4.4	--	2.76	27.2	--	24
Groundwater	--	6.06	7.4	--	1.52	15.0	--	75
Septic Systems	--	3.03	3.7	--	0.09	0.9	--	97
Total	48,111	82.31	100.0	0.00171	10.13	100.0	0.00021	88

TABLE 5.
WILLOW CREEK PRP - MAIDENCREEK TOWNSHIP
EXISTING BMP DATA
DECEMBER 2018

OUTFALL SHED AREA	EX BMP TYPE	LAT	LONG	PERMIT #	DATE INSTALLED	O&M REQUIREMENTS (T=TWP.; P=PRIVATE)
0-001	VOC-B	40-26-53.91	-75-51-41.11	None	1991	Mow, clean, repair as needed (T)
0-003	DED(1)	40-26-45.76	-75-52-10.68	PA-R-10-C449	2007	Maintain amended soils; manage vegetation (P)
0-003	DED(2)	40-26-38.01	-75-52-06.43	PA-R-10-C449	2007	Mow, clean, repair as needed (P)
0-003	DED(3)	40-26-30.93	-75-52-01.68	None	1985	"
0-003	DED(4)	40-26-42.21	-75-51-47.41	None	1992	Clean, repair as needed, manage vegetation (P)
0-004	VOC-B	40-27-07.72	-75-52-43.62	PA-S-10-C051	2003	Mow, clean, repair as needed (P)
0-013	DED	40-26-54.07	-75-53-55.23	None	2000	"
0-015	DED	40-26-35.27	-75-53-25.64	None	1991	"
0-020	FB	40-26-51.99	-75-53-05.43	None	1990	Manage woodland (T)
0-021	DED	40-27-08.39	-75-52-37.79	PA-S-10-C051	2003	Mow, clean, repair as needed (P)
0-025	DED(1)	40-26-49.10	-75-52-40.29	None	2000	Mow, clean, repair as needed (T)
0-025	DED(2)	40-27-01.35	-75-52-38.48	None	1998	Mow, clean, repair as needed (P)
0-025	DED(3)	40-26-41.63	-75-52-23.66	PAG2000607022	2004	Maintain amended soils; manage vegetation (P)
0-027	FB	40-26-48.90	-75-53-03.74	None	1995	Manage woodland (T)
0-028	FB	40-26-39.28	-75-52-55.40	None	1995	"
0-029	FB	40-26-48.08	-75-53-04.85	None	1995	"
0-030	FB	40-26-47.30	-75-53-03.31	None	1995	"
0-031	FB	40-26-45.08	-75-53-02.19	None	1995	"
0-032	FB	40-26-43.05	-75-53-00.76	None	1995	"
0-033	FB	40-26-40.10	-75-52-58.40	None	1995	"
0-034	FB	40-26-37.95	-75-52-57.18	None	1995	"
0-035	FB	40-26-35.02	-75-52-55.71	None	1995	"
0-036	DED	40-26-31.68	-75-52-38.19	None	1990	Mow, clean, repair as needed (P)
0-037	DED	40-26-30.19	-75-53-01.24	None	1988	"
0-041	DED	40-26-22.61	-75-52-43.47	None	1992	"
0-044	DED	40-26-17.06	-75-52-24.66	None	1994	Clean, repair as needed, manage vegetation (P)
0-046	DED(1)	40-26-45.28	-75-51-12.62	None	1999	Mow, clean, repair as needed (P)
0-046	DED(2)	40-26-45.77	-75-51-06.46	None	1995	"
0-047	VOC-B	40-27-01.49	-75-52-22.28	None	1990	Clean, repair as needed, manage vegetation (P)
0-052	DED	40-26-24.62	-75-51-41.26	PA-R-10-C309R	2003	Mow, clean, repair as needed (P)
OP-007	VOC-B	40-26-50.49	-75-51-38.50	None	2007	Mow, clean, repair as needed (T)

ABBREV.: DED - Dry Extended Detention Basin
FB - Forest Buffer
VOC-B - Vegetated Open Channel - B Soils

NOTE: All BMPs used for existing credit are functioning as designed.

APPENDIX B

DEP DOCUMENTATION

MS4 Name	NPDES ID	Individual Permit Required?	Reason	Impaired Downstream Waters or Applicable TMDL Name	Requirement(s)	Other Cause(s) of Impairment
Berks County						
HEREFORD TWP		Yes	SP	Swabia Creek	Appendix B-Pathogens (5), Appendix E-Siltation (5)	Other Habitat Alterations (4c)
				Perkiomen Creek	Appendix E-Nutrients, Siltation (5)	Thermal Modifications (5)
				Green Lane Reservoir	Appendix E-Organic Enrichment/Low D.O. (4a)	
				Little Lehigh Creek	Appendix E-Siltation (5)	
KENHORST BORO	PAG133515	No		Schuylkill River	Appendix C-PCB (4a)	
				Schuylkill River PCB TMDL	Appendix C-PCB (4a)	
LAURELDALE BORO	PAG133518	No		Laurel Run	Appendix E-Siltation (5)	Other Habitat Alterations (4c)
				Schuylkill River	Appendix C-PCB (4a)	
				Schuylkill River PCB TMDL	Appendix C-PCB (4a)	
				Bernhart Creek TMDL	Appendix A-Metals (4a)	TDS (4a)
LEESPORT BORO	PAG133527	No		Schuylkill River	Appendix C-PCB (4a)	
				Unnamed Tributaries to Schuylkill River		Water/Flow Variability (4c)
				Schuylkill River PCB TMDL	Appendix C-PCB (4a)	
LONGSWAMP TWP	PAI133512*	Yes	SP, W-I	Little Lehigh Creek	Appendix B-Pathogens (5), Appendix E-Siltation (5)	
				Unnamed Tributaries to Little Lehigh Creek	Appendix E-Organic Enrichment/Low D.O. (5)	Cause Unknown (5), Other Habitat Alterations, Water/Flow Variability (4c)
				Swabia Creek	Appendix B-Pathogens (5), Appendix E-Siltation (5)	Other Habitat Alterations (4c)
LOWER ALSACE TWP	PAG133519	No		Antietam Creek	Appendix B-Pathogens (5)	
				Schuylkill River PCB TMDL	Appendix C-PCB (4a)	
				Unnamed Tributaries to Schuylkill River		Other Habitat Alterations (4c)
				Schuylkill River	Appendix C-PCB (4a)	
LOWER HEIDELBERG TWP	PAG133520	No		Blue Marsh Lake	Appendix B-Pathogens (5), Appendix E-Nutrients, Organic Enrichment/Low D.O. (5)	
				Manor Creek	Appendix E-Nutrients, Siltation (4a)	
				Schuylkill River	Appendix C-PCB (4a)	
				Spring Creek	Appendix E-Nutrients, Siltation (5)	
				Tulpehocken Creek	Appendix E-Nutrients (5)	
				Cacoosing Creek	Appendix B-Pathogens (5), Appendix E-Nutrients, Siltation (5)	
				Little Cacoosing Creek	Appendix E-Nutrients, Siltation (4a)	
MAIDENCREEK TWP	PAG133521	No		Willow Creek	Appendix B-Pathogens (5), Appendix E-Nutrients (5)	Flow Alterations (4c)
				Lake Ontelaunee TMDL	TMDL Plan-Nutrients, Suspended Solids (4a)	
				Maiden Creek	Appendix B-Pathogens (5)	Other Habitat Alterations (4c)
				Schuylkill River	Appendix C-PCB (4a)	
				Unnamed Tributaries to Willow Creek	Appendix B-Pathogens (5)	

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

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.

BMP Name	BMP Effectiveness Values			BMP Description
	TN	TP	Sediment	
Infiltration Practices w/ Sand, Veg.	85%	85%	95%	A depression to form an infiltration basin where sediment is trapped and water infiltrates the soil. No underdrains are associated with infiltration basins and trenches, because by definition these systems provide complete infiltration. Design specifications require infiltration basins and trenches to be built in good soil, they are not constructed on poor soils, such as C and D soil types. Engineers are required to test the soil before approval to build is issued. To receive credit over the longer term, jurisdictions must conduct yearly inspections to determine if the basin or trench is still infiltrating runoff.
Filtering Practices	40%	60%	80%	Practices that capture and temporarily store runoff and pass it through a filter bed of either sand or an organic media. There are various sand filter designs, such as above ground, below ground, perimeter, etc. An organic media filter uses another medium besides sand to enhance pollutant removal for many compounds due to the increased cation exchange capacity achieved by increasing the organic matter. These systems require yearly inspection and maintenance to receive pollutant reduction credit.
Filter Strip Runoff Reduction	20%	54%	56%	Urban filter strips are stable areas with vegetated cover on flat or gently sloping land. Runoff entering the filter strip must be in the form of sheet-flow and must enter at a non-erosive rate for the site-specific soil conditions. A 0.4 design ratio of filter strip length to impervious flow length is recommended for runoff reduction urban filter strips.
Filter Strip Stormwater Treatment	0%	0%	22%	Urban filter strips are stable areas with vegetated cover on flat or gently sloping land. Runoff entering the filter strip must be in the form of sheet-flow and must enter at a non-erosive rate for the site-specific soil conditions. A 0.2 design ratio of filter strip length to impervious flow length is recommended for stormwater treatment urban filter strips.
Bioretention – Raingarden (C/D soils w/ underdrain)	25%	45%	55%	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporarily ponded and then treated by filtering through the bed components, and through biological and biochemical reactions within the soil matrix and around the root zones of the plants. This BMP has an underdrain and is in C or D soil.
Bioretention / Raingarden (A/B soils w/ underdrain)	70%	75%	80%	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporarily ponded and then treated by filtering through the bed components, and through biological and biochemical reactions within the soil matrix and around the root zones of the plants. This BMP has an underdrain and is in A or B soil.

BMP Name	BMP Effectiveness Values			BMP Description
	TN	TP	Sediment	
Bioretention / Raingarden (A/B soils w/o underdrain)	80%	85%	90%	An excavated pit backfilled with engineered media, topsoil, mulch, and vegetation. These are planting areas installed in shallow basins in which the storm water runoff is temporarily ponded and then treated by filtering through the bed components, and through biological and biochemical reactions within the soil matrix and around the root zones of the plants. This BMP has no underdrain and is in A or B soil.
Vegetated Open Channels (C/D Soils)	10%	10%	50%	Open channels are practices that convey stormwater runoff and provide treatment as the water is conveyed, includes bioswales. Runoff passes through either vegetation in the channel, subsoil matrix, and/or is infiltrated into the underlying soils. This BMP has no underdrain and is in C or D soil.
Vegetated Open Channels (A/B Soils)	45%	45%	70%	Open channels are practices that convey stormwater runoff and provide treatment as the water is conveyed, includes bioswales. Runoff passes through either vegetation in the channel, subsoil matrix, and/or is infiltrated into the underlying soils. This BMP has no underdrain and is in A or B soil.
Bioswale	70%	75%	80%	With a bioswale, the load is reduced because, unlike other open channel designs, there is now treatment through the soil. A bioswale is designed to function as a bioretention area.
Permeable Pavement w/o Sand or Veg. (C/D Soils w/ underdrain)	10%	20%	55%	Pavement or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through open voids in the pavement surface to a washed gravel subsurface storage reservoir, where it is then slowly infiltrated into the underlying soils or exits via an underdrain. This BMP has an underdrain, no sand or vegetation and is in C or D soil.
Permeable Pavement w/o Sand or Veg. (A/B Soils w/ underdrain)	45%	50%	70%	Pavement or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through open voids in the pavement surface to a washed gravel subsurface storage reservoir, where it is then slowly infiltrated into the underlying soils or exits via an underdrain. This BMP has an underdrain, no sand or vegetation and is in A or B soil.
Permeable Pavement w/o Sand or Veg. (A/B Soils w/o underdrain)	75%	80%	85%	Pavement or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through open voids in the pavement surface to a washed gravel subsurface storage reservoir, where it is then slowly infiltrated into the underlying soils or exits via an underdrain. This BMP has no underdrain, no sand or vegetation and is in A or B soil.
Permeable Pavement w/ Sand or Veg. (A/B Soils w/ underdrain)	50%	50%	70%	Pavement or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through open voids in the pavement surface to a washed gravel subsurface storage reservoir, where it is then slowly infiltrated into the underlying soils or exits via an underdrain. This BMP has an underdrain, has sand and/or vegetation and is in A or B soil.

BMP Name	BMP Effectiveness Values			BMP Description
	TN	TP	Sediment	
Permeable Pavement w/ Sand or Veg. (A/B Soils w/o underdrain)	80%	80%	85%	Pavement or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through open voids in the pavement surface to a washed gravel subsurface storage reservoir, where it is then slowly infiltrated into the underlying soils or exits via an underdrain. This BMP has no underdrain, has sand and/or vegetation and is in A or B soil.
Permeable Pavement w/ Sand or Veg. (C/D Soils w/ underdrain)	20%	20%	55%	Pavement or pavers that reduce runoff volume and treat water quality through both infiltration and filtration mechanisms. Water filters through open voids in the pavement surface to a washed gravel subsurface storage reservoir, where it is then slowly infiltrated into the underlying soils or exits via an underdrain. This BMP has an underdrain, has sand and/or vegetation and is in C or D soil.
Stream Restoration	0.075 lbs/ft/yr	0.068 lbs/ft/yr	44.88 lbs/ft/yr	An annual mass nutrient and sediment reduction credit for qualifying stream restoration practices that prevent channel or bank erosion that otherwise would be delivered downstream from an actively enlarging or incising urban stream. Applies to 0 to 3rd order streams that are not tidally influenced. If one of the protocols is cited and pounds are reported, then the mass reduction is received for the protocol.
Forest Buffers	25%	50%	50%	An area of trees at least 35 feet wide on one side of a stream, usually accompanied by trees, shrubs and other vegetation that is adjacent to a body of water. The riparian area is managed to maintain the integrity of stream channels and shorelines, to reduce the impacts of upland sources of pollution by trapping, filtering, and converting sediments, nutrients, and other chemicals. (Note – the values represent pollutant load reductions from stormwater draining through buffers).
Tree Planting	10%	15%	20%	The BMP effectiveness values for tree planting are estimated by DEP. DEP estimates that 100 fully mature trees of mixed species (both deciduous and non-deciduous) provide pollutant load reductions for the equivalent of one acre (i.e., one mature tree = 0.01 acre). The BMP effectiveness values given are based on immature trees (seedlings or saplings); the effectiveness values are expected to increase as the trees mature. To determine the amount of pollutant load reduction that can credited for tree planting efforts: 1) multiply the number of trees planted by 0.01; 2) multiply the acreage determined in step 1 by the pollutant loading rate for the land prior to planting the trees (in lbs/acre/year); and 3) multiply the result of step 2 by the BMP effectiveness values given.
Street Sweeping	3%	3%	9%	Street sweeping must be conducted 25 times annually. Only count those streets that have been swept at least 25 times in a year. The acres associated with all streets that have been swept at least 25 times in a year would be eligible for pollutant reductions consistent with the given BMP effectiveness values.

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

APPENDIX C

RIPARIAN BUFFER – HABITAT RESTORATION REPORT

WILLOW CREEK HABITAT RESTORATION PROJECT

Sponsor: Fish & Wilflife Service Office: Northeast Fisheries Center

Project Partners: Pennsylvania Fish & Boat Commission, Eastern Brook Trout Joint Venture, Berks Conservancy, Fleetwood High School Outdoor Club, Fleetwood Middle School, Maidencreek Township Parks and Recreation Board, Maidencreek Watershed Association, Reading Area Community College, Reading Area Water Authority, Schuylkill River National and State Heritage Area, Trout Unlimited (Tulpehocken Chapter), Maidencreek Township Authority, Boy Scouts of America Troop 183

Project Costs:

Total Cost - $121,800 - projected $161,246.36 - actual
Non Federal Amount - $71,800 – projected
$74,031.70 – in kind service and actual paid by Twp.
$37,214.66 – additional expenses covered by other grants
Federal Amount - $0

Funding Sources:

Partner	Activity	Cash Match	In Kind	Totals
PA Fish Commission	Materials for fish habitat, project oversight & design	7,214.66 (CHIP Grant)	32,500.95	39,715.61
Maidencreek Township	Materials, labor, equipment	16,919.38	12,703.17	29,622.55
Schuylkill River Heritage	Equipment Rental, riparian planting, materials	30,000.00 (SRGA Grant)		30,000.00
PA EBTJV	Equipment Rental, riparian planting, materials, signs	50,000.00		50,000.00
Berks County Conservancy	Riparian Planting		982.56	982.56

	design & oversight, trees and shrubs			
Maidencreek Watershed Association/Kutztown University	Volunteer hours for buffer planting	0	427.20	427.20
Trout Unlimited	Volunteer hours for buffer planting	0	1,110.72	1,110.72
Fleetwood High School/Outdoor Club	Volunteer hours for buffer planting	0	4,902.12	4,902.12
Fleetwood Middle School	Volunteer hours for buffer planting	0	2,221.44	2,221.44
Reading Area Community College	Volunteer hours for buffer planting	0	875.76	875.76
Reading Area Water Authority	Volunteer hours for invasive species removal	0	1,388.40	1,388.40
		104,134.04	57,112.32	161,246.36

Action Strategy Implemented In the Project:

Improve fish habitat and stabilize stream bank to narrow and deepen the channel which will encourage macroinvertebrate habitation and reproduction.

Plant a riparian buffer to provide shade so temperatures stay at trout suitable levels all year. Promote diversity and overall abundance of flora and fauna.

Educate and inform the public of the project

Provide angling opportunities.

Priority Score of the Sub-Watershed: Gray

State Wildlife Action Plan Listed Habitat Conservation Goal Supported by the Project: The restoration actions will help restore the Willow Creek, a high priority lotic and riparian habitat and improve water quality in the Schuylkill River Watershed.

Methods Used: Used volunteers and Maidencreek Township Road Crew to re-vegetate the riparian buffer and install fish habitats. PA Fish Commission provided project oversite for the habitat installation and Berks Conservancy provided project oversite for the riparian buffer design and installation. Educated the public through mailings, newspaper articles and informational kiosks in the project area.

Project Outcomes: Fish habitat and stream bank stabilization were addressed by Maidencreek Township Road Crew and the PA Fish Commission installing 16 mud sills, 100 random boulders and 65 deflectors along 1.2 miles of the Willow Creek. These devices will help narrow and deepen the channel which will encourage macroinvertebrate habitation and reproduction.

A riparian buffer (native trees and shrubs) was planted in six acres by Maidencreek Township Road Crew, the Berks Conservancy and volunteers. Vegetation was allowed to grow without cutting and invasive species were removed from plantings by volunteers. Once mature, the trees will provide shade so temperatures stay at trout suitable levels all year. Grass was cut to provide a twelve foot wide trail for access to the stream for fishing.

Pamphlets were distributed to everyone along the stream corridor via mail and several articles were published in the Township newsletters as well as local newspapers. This spurred additional interest in the project and two members of Boy Scout Troop 183 installed three bat boxes and fifteen birdhouses within the project area.

Informational signs were installed throughout the project area to commemorate the effort and educate trail users on the project.

PA Fish Commission will continue to monitor the site after completion. An Open Space Management Plan was created and adopted so future generations have a manual to follow.

Brook Trout Population Response to the Project Outcome: Sampling was taken in July 2014 and there has been no significant increase in trout population to date. However, stream bank erosion has stabilized and the riparian buffer is growing at a steady pace.

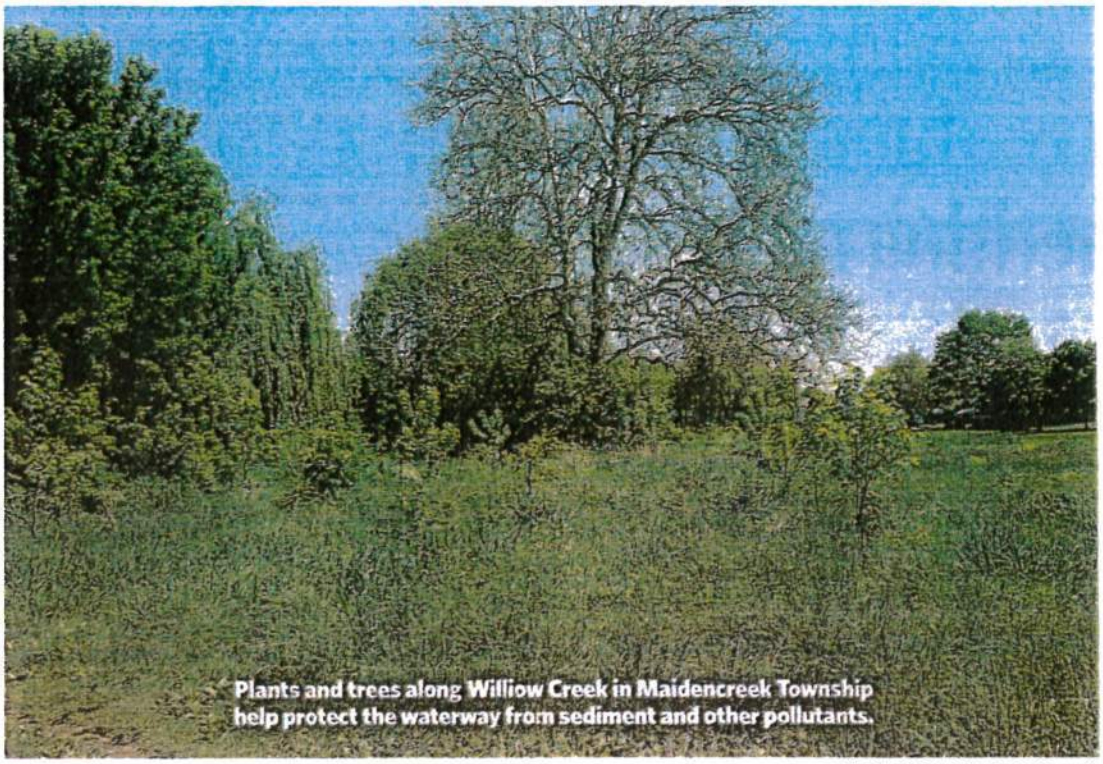
Number of Stream Miles: 1.2 miles

List of Accomplishments

- Larry Lloyd of the Berks Conservancy treated noxious weeds on June 10, September 12, 13, and 14, 2011 between Schaeffer Road to 150ft further downstream from the tributary at the playground on the South side of the creek. Weeds treated included poison hemlock, Canada thistle, crown vetch, mile a minute, teasel, bindweed, tree of heaven and Japanese knotweed. The Township Road Crew mowed along areas of the stream to prevent thistle from going to seed in untreated areas.
- A pamphlet was created by John Buzzar of PA Fish and Boat. The pamphlet titled, "Willow Creek Habitat Restoration Project – Improving Your Water Resources" and mailed by the Township staff to the ninety property owners along the stream corridor on June 22, 2011. It has also been posted on the Township website and put at the municipal building for residents and visitors to take.
- Fish habitats and stream bank stabilization were installed in the area from Schaeffer Road to the Cornerstone Drive Playground by PA Fish and Boat and Township Road Crew June 20 to June 29, 2011.
- John Buzzar of PA Fish and Boat attended the July 14, 2011 Maidencreek Township Board of Supervisors meeting to answer questions from the public.
- A riparian buffer was designed by Larry Lloyd of the Berks Conservancy.
- The Township ordered 450 trees and shrubs for the riparian buffer. The Township Road Crew dug holes and volunteers installed the plants on October 15, 2011 on the Cornerstone Drive side of the stream from Schaeffer Road to the Cornerstone Playground. Volunteer hours totaled 253.5 hours. Volunteers from the Fleetwood High School and Middle School (185.5 hours), Kutztown University (20 hours), and Trout Unlimited (48 hours) participated and were overseen by the Berks Conservancy and PA Fish and Boat.
- May 25, 2012 a walking trail was marked out by Keith Shuman of the Maidencreek Township Road Crew and Larry Lloyd and was mowed by the Township Road Crew.

- Larry Lloyd of the Berks Conservancy treated noxious weeds on June 8, and September 11-13, 2012. The June treatment was to remove vegetation that was growing around the plantings between Schaeffer Road to 150ft further downstream from the tributary at the playground on the South side of the creek, some of which was done chemically and some pulling by hand. The September treatment occurred between the playground at Cornerstone Drive and Route 73. Weeds treated included poison hemlock, Canada thistle, crown vetch, mile a minute, teasel, bindweed, tree of heaven and Japanese knotweed. This treatment was in preparation for fall planting of 600 trees and shrubs.
- The pamphlet created by John Buzzar of PA Fish and Boat titled, "Willow Creek Habitat Restoration Project – Improving Your Water Resources" is posted on the Township website and put at the municipal building for residents and visitors to take. All new homeowners receive this information upon moving into the Township and pamphlets were also distributed at Community Day.
- June 26 to 29, 2012 the Township Road Crew mowed the meadow along the stream.
- July 1 to 6, 2012 the Township Road Crew staged all materials in meadow for the fish habitat structures.
- Fish habitats and stream bank stabilization were installed in the area from the Cornerstone Drive Playground to Route 73 by PA Fish and Boat and Township Road Crew between July 9 and July 12, 2012.
- July 11 and 12, 2012 the stream bank was planted with a 50/50 mix of annual rye grass and stream bank rye grass under the direction of Larry Lloyd.
- The Township Road Crew dug the holes on October 1 to 4, 2012 and volunteers installed 600 trees and plants on October 13 and 20, 2012 on the Cornerstone Drive side of the stream from Cornerstone Drive Playground to Route 73.
- The Township Road Crew set boulders in the stream in February 2013. This completed the installation of all trout habitat structures.
- This project has drawn the attention of local Boy Scout Troops and in March, one leader, Geoffrey Price, constructed and installed three bat boxes in the project limits. The Township paid for all materials.

- From March 21, 2013 through April 13, 2013, the Township purchased and planted another 600 trees in the riparian buffer area with the help of volunteers from Reading Area Community College.
- The Road Crew mowed and maintained the grass trail through the project in May, June and August of 2013.
- In June and September of 2013 Larry Lloyd of Berks Conservancy pulled invasive species from along the Willow Creek.
- The Township purchased 29 trees, each 12 feet in height, in September 2013 and were planted by the Township Road Crew in October 2013 along the stream.
- A local Boy Scout, Brandon Beshore, proposed an Eagle Scout Project to build 15 bird houses along the Willow Creek from Cornerstone Drive to Schaeffer Road. The Township Park and Recreation Board approved the project and Brandon Beshore completed the project in October 2013, with all materials purchased by the Township.
- The Road Crew mowed and maintained the grass trail through the project in May, June and August of 2014.
- In June and September of 2014 Larry Lloyd of Berks Conservancy, along with interns from Albright College and volunteers from the Reading Area Water Authority pulled invasive species from along the Willow Creek.
- September 15 and 16, 2014 Township Road Crew installed informative signs along the walking trail of the Willow Creek.
- Larry Lloyd of the Berks Conservancy will complete the riparian planting of 56 native trees in October 2014 to replace those lost to animal activity.



Plants and trees along Willow Creek in Maidencreek Township help protect the waterway from sediment and other pollutants.

COURTESY OF BERKS COUNTY CONSERVANCY

It takes a community to clean a stream



Larry Lloyd *is a senior ecologist with the Berks County Conservancy.*

BY LARRY LLOYD

IT IS puzzling how water, our most precious and essential natural resource, is at the same time our most taken-for-granted gift. With the human body composed of greater than 95 percent water and with all aspects of health and life on planet Earth dependent on water, it would stand to reason that clean, sustainable drinking water would be a top priority. Do you know where your drinking water comes from and how it got there?

Today, there are many stressors to water quality, and our lack of attention and lack of action to protect our water quality is negatively impacting the availability of clean water.

Water is a community value, because it takes respect and action by all members of our communities to ensure quality drinking water. What we drink is the result of positive and negative human behaviors on the land, and everyone is downstream from someone.

There are some local communities in Berks County that are taking their link in the chain of protecting our water seriously. Among those forward-thinking communities using best management practices to enhance drinking water quality, Maidencreek Township is a shining and instructive example.

The Willow Creek runs through Ruscombmanor Township, Fleetwood, and Maidencreek and Ontelaunee townships on its way to join the Maiden Creek near its confluence with the Schuylkill River. The Willow Creek has stream segments that support breeding native brook trout. Native, as opposed to stocked, trout are bio-indicators of good water quality. Their presence in a stream means the process of cleaning water is functioning. The Willow Creek, like many streams, is an impaired waterway, primarily because of storm runoff from residential, commercial, industrial and agricultural impervious surfaces.

Instead of feeling daunted by these many challenges, Maidencreek officials and the state Fish and Boat Commission procured grant funding to help improve the water quality of the Willow Creek by installing aquatic habitat structures to reduce erosion and the accumulation of sediment, and by planting native trees along the stream to shade and cool the water, stabilize soil and serve as a riparian buffer from surrounding residences.

The Berks Conservancy helped the Fish and Boat Commission and the township develop a plan to manage Maidencreek's milelong, 44 acre riparian buffer along the creek. Between fall 2011 and spring 2013, more than 1,900 5-foot-tall native trees were planted.

Participating in the tree planting were the Fish and Boat Commission; Maidencreek Township supervisors and management staff; the township Parks and Recreation Board; Conservancy staff and members; the Maiden Creek Watershed Association; students from Kutztown University, Albright College, Reading Area Community College and Exeter High School; Tulpehocken Trout Unlimited; and students from the Fleetwood School District's elementary school, middle school and high school, who participated in all four plantings from start to finish.

This extraordinary participation proved contagious and was the impetus for other positive actions for water quality to be undertaken in the watershed. An upstream dairy farmer installed agricultural best management practices to keep animal manures from mixing with storm water runoff and entering the stream, reducing the nutrient load in the stream.

Downstream, the Maidencreek Township Authority and its staff planted more than 85 native trees, averaging 12 feet tall, creating a riparian buffer on their portion of the creek. In addition, Giorgio Foods plans to plant native trees in the fall along its portion of the creek.

Congratulations to all the partners for participation in this Willow Creek water quality project and for demonstrating the importance of talking individual and collective responsibility for the water quality in their watershed. Everyone can play a part in and add value to the sustainability of clean drinking water. Catch the wave.

We welcome letters and commentary. Letters should be brief (about 200 words) and should respond to a news item published in *Berks Country* or address a specific topic of interest to the rural community. For verification purposes, include your full name, the municipality in which you reside, and phone number (day and evening). **Online:** Go to berkscountry.readingeagle.com, click on the "Submit News" tab, select "Letters to the Editor," email: country@readingeagle

APPENDIX D

WILLOW CREEK PROJECT MANAGEMENT PLAN

MAIDENCREEK TOWNSHIP OWNED PROPERTIES

WILLOW CREEK PROJECT MANAGEMENT PLAN

I. Background, overview

A. Project and Property Summary - open space in multiple residential subdivisions- Blandon Meadows, Willow Gardens, Creekside Manor, Maiden Creek Estates, Georgetown Village

B. Donor wishes - open space in Maidencreek Township

II. Property Description

A. Location - Road Map

B. Size – 44.19 acres with ~ 5,250 linear feet of the main stem Willow Creek and ~ 2,500 linear feet of an unnamed tributary of the Willow Creek. ; see also, aerial map , tax parcel map , topo map, approved Subdivision Plan map

C. Watershed – Primary watershed – Schuylkill River; Secondary watershed - Maiden Creek ; Local watershed – Willow Creek, a Cold Water Fishery (CWF) ; see also the Maiden Creek Watershed map with the Willow Creek Project location

D. Historic Land use – Farm pasture

E. Current Land Use – open space in residential subdivisions

F. Species of concern - breeding brook trout

G. Site Specific Studies – Pennsylvania Fish and Boat Commission as basis for grant award to Maidencreek Township for Expanding Brook Trout within Willow Creek as per the NFHAP and PA ABTJV State Conservation Strategy

III Management Goals and Objectives

A. Real Estate Aspects

1. Agreements – 20 year Operations and Maintenance Agreement within grant award which is applicable to the main stem of the Willow Creek; see also the grant award agreement
2. Easements - Buckeye Pipeline and UGI; see also the Subdivision Plan map
3. Storm water outfalls – see MS4 Stormwater Management Plan
4. Liability/Structures - playground and court and floodplain
5. Neighbor Relations- No Homeowners Association. This Management Plan is being developed in part to present to all Township residents the Township's intended uses for this Township owned property
6. School District - Fleetwood

7. Property Taxes – N/A
8. Municipality- Maidencreek Township
9. Municipal Zoning- High Density Residential
10. Title Report - clear
11. Environmental Assessment, Phase I- not required
12. Insurance- Township coverage (PIRMA for Liability and EMC for Property)

B. Ecological Aspects

Zone 1 - Riparian area/buffer of unnamed tributary of the Willow Creek , between Cornerstone Drive and Park Rd. ; 6.91 acres

1. Resource Management objectives - manage as wooded riparian buffer with no public access
2. Resource Management considerations –
   a. Encroachment by neighboring residences; e.g. dumping of yard waste and failure to respect property boundaries
   b. Stormwater runoff from neighboring residences
3. Resource Management actions-
   a. Identify and mark property line boundaries
   b. Contact neighboring residences by mail to inform neighbors of the Township's desires for the Township property and include educational materials - " Caring for your streamside property" and " When it rains , it drains"

Zone 2 – playground and court area , north of Cornerstone Drive; 1.2 acres

1. Resource Management objectives- manage for playground activities and active recreation
2. Resource Management considerations - provide a safe environment with vegetation management suited to playground activities
3. Resource Management actions-
   a. Perform regular maintenance
   b. Marking of property boundaries
   c. Posting of Regulations

Zone 3 - ~ 10 foot wide mowed access trail; 3.34 acres

1. Resource Management objectives – manage as public access corridor/trail in vicinity of the property line boundary; in addition, establish a few trail spurs from the main corridor/trail to the stream to provide stream access

2. Resource Management considerations – encroachment by neighboring residences ; e.g. dumping of yard waste and failure to respect property boundaries
3. Resource Management actions
    a. Identify and mark property line boundaries
    b. Contact neighboring residences by mail to inform neighbors of Township's desires for the Township property and include educational materials – " Caring for your streamside property", " When it rains , it drains", "Willow Creek Habitat Restoration Project"
    c. Identify and mark mowing limits

Zone 4 – Riparian area/buffer of Willow Creek, mainstem between Schaeffer Rd and Main St.; 32.74 acres

1. Resource Management objectives - manage as riparian buffer, as per 20 year O&M Agreement through grant award. Provide a few trail spurs from the main public access corridor/trail to the stream to provide for stream access
2. Resource Management considerations
    a. In cooperation with Pa. Fish and Boat Commission, monitoring and maintenance of installed practices as part of Grant Agreement
    b. Establishment of riparian buffer with special attention to installed trees and shrubs and also invasive species which may negatively effect riparian buffer function
    c. Provide access to stream
3. Resource Management actions –
    a. Identify and mark mowing limits for trail spurs
    b. Monitor and maintain installed stream and streambank practices
    c. Monitor and maintain riparian buffer; develop program for dealing with alien invasive species and Pa. Noxious weeds.
    d. Monitor effects of increased usage and develop program for dealing with emerging issues. E.g. increased trash ; durability of trail surfaces

Zone 5 – Parking locations for access to project area (note , to date, no parking areas have been chosen ; TBD)

1. Resource Management objectives- manage for parking to provide public access
2. Resource Management considerations - floodplain proximity and stormwater runoff from impervious surfaces

3. Resource management actions - identify possible locations and analyze relative to floodplain ; consider pervious surfaces and stormwater retention for any parking lot

C. Programmatic Aspects

1. Public access - open to all residents in Zones 2,3,4,5
2. Permitted uses - fishing with valid Pa, Fish and Boat fishing license in Zone 4; no hunting and trapping throughout
3. Authorized users – pipeline maintenance
4. Signage - to be determined; make a note on sketch plan and with photo and photo map entry
5. Rules posting and site maps – playground regulations and Willow Creek riparian buffer regulations(to be determined) , make note on Sketch map and with photo and photo map entry
6. Education – participation in Willow Creek Project by the Fleetwood School District; project area could be made available for field trips by Fleetwood School District
7. Research - ongoing by Pa. Fish and Boat Commission
8. Surveillance /Security – none currently; any future installation should be noted on Sketch Map and with photo and photo map entry

IV Operations and Maintenance

1. Work Plan, 3-5 year
2. Management Fund and/or Annual Stipend- Park and Rec Board has annual budget
3. Work Plan Project budgets
4. Staff and Board(s) responsibilities

V. Reporting

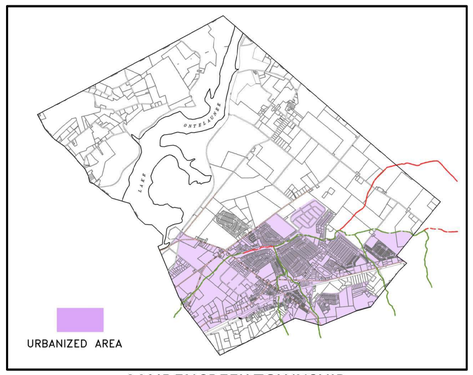
1. internal annual report form - playground form

   a. photo stations with photos annually; see also Photo stations map

2. owned property reports files

APPENDIX E

PRP MAPS – EXISTING & PROPOSED CONDITIONS



MAIDENCREEK TOWNSHIP

LEGEND

- O-001 MS4 OUTFALL & ID #
- OP-001 MS4 OBSERVATION POINT & ID #
- G-1 EXISTING STORMWATER COLLECTION SYSTEM
- EXISTING STORM PIPE AND FLOW DIRECTION
- EXISTING CHANNEL
- EXISTING STREAM (IMPAIRED–NUTRIENTS)
- EXISTING STREAM (IMPAIRED–PATHOGENS)
- TOWNSHIP ROAD
- STATE ROAD
- ACT 167 WATERSHED BOUNDARY
- STORM SEWERSHED (OUTFALL)
- STORM SEWERSHED (OBSERVATION POINT)
- 0-001 STORM SEWERSHED ID
- STORM SEWERSHED OUTSIDE OF PLANNING AREA
- MUNICIPAL BOUNDARY
- "READING" URBANIZED AREA
- DED E-1 EXISTING DRY EXTENDED DETENTION BASIN
- VOCB VEGETATED OPEN CHANNEL – "B" SOILS
- FB FOREST BUFFER

MS4 REQUIREMENTS TABLE		
IMPAIRED DOWNSTREAM WATERS OR APPLICABLE TMDL NAME	REQUIREMENTS	OTHER CAUSE(S) OF IMPAIRMENT
UNNAMED TRIBUTARIES TO WILLOW CREEK	APPENDIX B–PATHOGENS (5)	NONE LISTED
SCHUYLKILL RIVER	APPENDIX C–PCB (4a)	NONE LISTED
MAIDEN CREEK	APPENDIX B–PATHOGENS (5)	OTHER HABITAT ALTERATIONS (4c)
LAKE ONTELAUNEE TMDL	TMDL PLAN–NUTRIENTS, SUSPENDED SOLIDS (4a)	OTHER HABITAT ALTERATIONS (4c)
WILLOW CREEK	APPENDIX B–PATHOGENS(5), APPENDIX E–NUTRIENTS (5)	FLOW ALTERATIONS (4c)

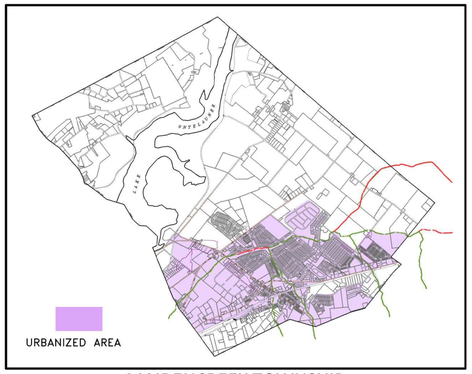
SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533 PHONE: 610.916.8500 FAX: 610.916.8501
BOYERTOWN, PA 610.369.1319
SCHUYKILL HAVEN, PA 570.385.5549
SDE Project No.: 17-0019-0191

500 0 250 500 1000
1" = 500'

PRP MAP - EXISTING CONDITIONS
MAIDENCREEK TOWNSHIP
BERKS CO., PA.

UPDATED 04/01/2019
06/25/2017

SDE, Inc. – L:\Civil Projects\Maidencreek Township\GIS & Act 167 Maps\ArcMap\Maidencreek map April 03, 2019 – 3:15 pm by "mwhi"



MAIDENCREEK TOWNSHIP

LEGEND

- O-001 MS4 OUTFALL & ID #
- OP-001 MS4 OBSERVATION POINT & ID #
- G-1 EXISTING STORMWATER COLLECTION SYSTEM
- EXISTING STORM PIPE AND FLOW DIRECTION
- EXISTING CHANNEL
- EXISTING STREAM (IMPAIRED–NUTRIENTS)
- EXISTING STREAM (IMPAIRED–PATHOGENS)
- TOWNSHIP ROAD
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- STORM SEWERSHED OUTSIDE OF PLANNING AREA
- MUNICIPAL BOUNDARY
- "READING" URBANIZED AREA
- FB FOREST BUFFER
- AGC AGRICULTURAL CONVERSION BMP

MS4 REQUIREMENTS TABLE		
IMPAIRED DOWNSTREAM WATERS OR APPLICABLE TMDL NAME	REQUIREMENTS	OTHER CAUSE(S) OF IMPAIRMENT
UNNAMED TRIBUTARIES TO WILLOW CREEK	APPENDIX B–PATHOGENS (5)	NONE LISTED
SCHUYLKILL RIVER	APPENDIX C–PCB (4a)	NONE LISTED
MAIDEN CREEK	APPENDIX B–PATHOGENS (5)	OTHER HABITAT ALTERATIONS (4c)
LAKE ONTELAUNEE TMDL	TMDL PLAN–NUTRIENTS, SUSPENDED SOLIDS (4a)	OTHER HABITAT ALTERATIONS (4c)
WILLOW CREEK	APPENDIX B–PATHOGENS(5), APPENDIX E–NUTRIENTS (5)	FLOW ALTERATIONS (4c)

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PHONE: 610.916.8500 FAX: 610.916.8501 SCHUYLKILL HAVEN, PA 570.385.5549
SDE Project No.: 17-0019-0191

1" = 500'

PRP MAP - PROPOSED CONDITIONS
MAIDENCREEK TOWNSHIP
BERKS CO., PA.

UPDATED 04/01/2019
06/25/2017

APPENDIX R

MCM #6 – POLLUTION PREVENTION / GOOD HOUSKEEPING

MS4 TMDL PLAN

Maidencreek Township, Berks County

MS4 TMDL Plan

Lake Ontelaunee TMDL

Prepared for

MAIDENCREEK TOWNSHIP BOARD OF SUPERVISORS

1 Quarry Road
Blandon, PA 19510
Maidencreek Township, Berks County, PA

June 29, 2017
Updated December 10, 2018
Updated June 3, 2024

SYSTEMS DESIGN ENGINEERING, INC
SDE
Project 18-0019-0191
"A Passion for Engineering Excellence"
sdei.net

Maidencreek Township, Berks County
MS4 TMDL Plan
Lake Ontelaunee Watershed

1.0 Introduction

This MS4 TMDL Plan has been prepared by Systems Design Engineering, Inc. (SDE), for Maidencreek Township, Berks County, Pennsylvania (the Township), as part of the Township's obligations under its NPDES PAG-13 MS4 permit (Permit Number PAG-13-3521).

This TMDL Plan is required due to a small portion of the Township's MS4 being located within the watershed of Lake Ontelaunee, which has a TMDL specified for nutrients and suspended solids. The MS4 contributing to Lake Ontelaunee in Maidencreek Township consists of three (3) outfalls.

This plan will provide background wasteloads and propose a strategy for implementation of best management practice (BMP) control measures, with the intention of demonstrating a reduction in applicable pollutant loads as specified in the Lake Ontelaunee TMDL document.

2.0 TMDL Summary

A Total Maximum Daily Load (TMDL) report was prepared by Tetra Tech, Inc., for the U.S. Environmental Protection Agency (EPA) for the Lake Ontelaunee watershed, Berks and Lehigh Counties, Pennsylvania, on August 9, 2004. The report, referred herein as "TMDL report" is entitled "*Total Maximum Daily Load For Nutrients and Suspended Sediment Lake Ontelaunee, Berks and Lehigh County, Pennsylvania*".

The TMDL report indicates that the lake is impaired due to nutrients and suspended solids. Contributing to the impairment are agriculture, municipal point sources, on-site wastewater treatment systems, and urban runoff. Table 1-1 is reprinted from the TMDL report:

Table 1-1. 303(d) Listing for Lake Ontelaunee

Assessment ID	Causes	Listing Date	TMDL Date	Size	Use Assessed
Lake Ontelaunee 19910001-0004-LAK	Agriculture/Nutrients Agriculture/Suspended Solids Municipal Point Source/Nutrients Municipal Point Source/Suspended Solids On site Wastewater/Nutrients On site Wastewater/Suspended Solids Urban Runoff/Storm Sewers/Nutrients Urban Runoff/Storm Sewers/Suspended Solids	1996	2005	1080 acres	Aquatic Life

2.1 Nutrient Impairments

Nutrient impairments in water bodies tend to lead to excessive algal biomass which in turn reduces content of dissolved oxygen, potentially causing death of aquatic organisms. The TMDL report indicates that phosphorus is the limiting nutrient for algae control. The two largest nonpoint sources of the phosphorus nutrient are croplands and transitional areas, with point sources accounting for around 4.5 percent of Total Phosphorus. Nitrate is another nutrient that is often present with phosphorus contamination, and is of particular concern in this case, since Lake Ontelaunee is a public water supply. However, the report indicates that water quality data do not indicate nitrate concentrations in excess of EPA established maximum contaminant levels, leading to a determination that a nitrate TMDL was not necessary.

2.2 Sediment Loading

Sediment loading is a concern as it reduces storage capacity in the lake and impairs fish food sources and spawning areas. Excess sediment in drinking water supplies can lead to odor and taste issues, and can interfere with proper water treatment facilities. The TMDL report indicates that, as with nutrients, croplands and transitional areas are the largest sources of sediment. Pasturelands and unpaved roads are also significant sediment contributors. Point sources are responsible for less than one percent of the sediment load.

2.3 Affected Municipalities

Table 2 lists municipalities and counties subject to the TMDL within the same Hydrologic Unit Code (HUC) 02040203.

Table 1. Municipalities Subject to the Lake Ontelaunee TMDL for HUC 02040203

Municipality	County	Municipality	County
Albany Township	Berks	Maxatawny Township	Berks
Greenwich Township	Berks	Perry Township	Berks
Kutztown Borough	Berks	Richmond Township	Berks
Lenhartsville Borough	Berks	Rockland Township	Berks
Lynn Township	Lehigh	Windsor Township	Berks
Lyons Borough	Berks	Weisenberg Township	Lehigh
Maidencreek Township	Berks		

3.0 Watershed Characteristics

According to the TMDL report, the Lake Ontelaunee watershed consists of approximately 123,104 acres of land in Berks and Lehigh Counties. The lake itself has a surface area of approximately 1,100 acres. The watershed is within the Schuylkill River basin, Hydrologic Unit Code (HUC) 02040203. All discharges to the lake from the Maidencreek Township MS4 are from within this HUC area. Figure 1 is a graphical depiction of the watershed, from the TMDL report.

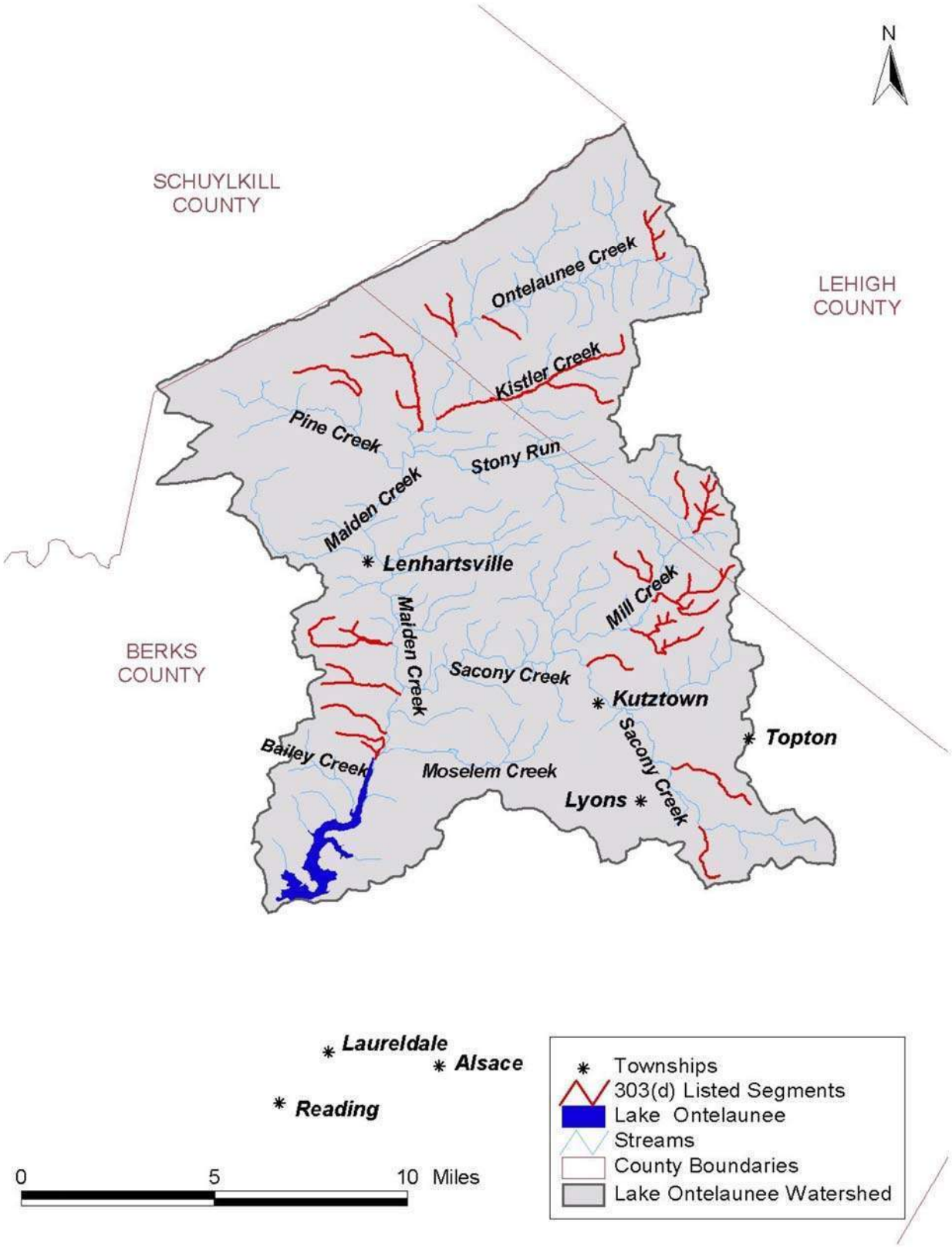


Figure 1. Lake Ontelaunee Watershed (*from USEPA Total Maximum Daily Load For Nutrients and Suspended Sediment Lake Ontelaunee Berks and Lehigh County, Pennsylvania, 8/9/04)*

Lake Ontelaunee supplies drinking water for the City of Reading and several surrounding municipalities. Fishing and hunting are primary recreational uses on and around the lake. The majority of the watershed is rural, dominated by agriculture.

The Maidencreek Township MS4 storm sewersheds within the Lake Ontelaunee watershed are depicted in Figure 2. Of the 123,104-acre watershed to the lake, a total of approximately 98 acres, or 0.08 percent, contribute from the storm sewersheds, and only about 57 acres (0.05 percent) contribute from the Urbanized Area within Maidencreek Township. Figure 3 depicts the areal breakdown to the three outfalls, and areas to the outfalls are tabulated in Table 2.

Table 2. Storm Sewersheds Tributary to Lake Ontelaunee from Maidencreek Township UA

Stormshed/Outfall	**Area, Ac.**
O-049	11.1
O-050	62.9
O-051	23.6
Total	**97.6**

Figure 4 superimposes Figure 2 onto Figure 1, to depict a relative comparison of drainage area size. The intent is to demonstrate the relative insignificance of Maidencreek Township's MS4 contribution to the lake's watershed.

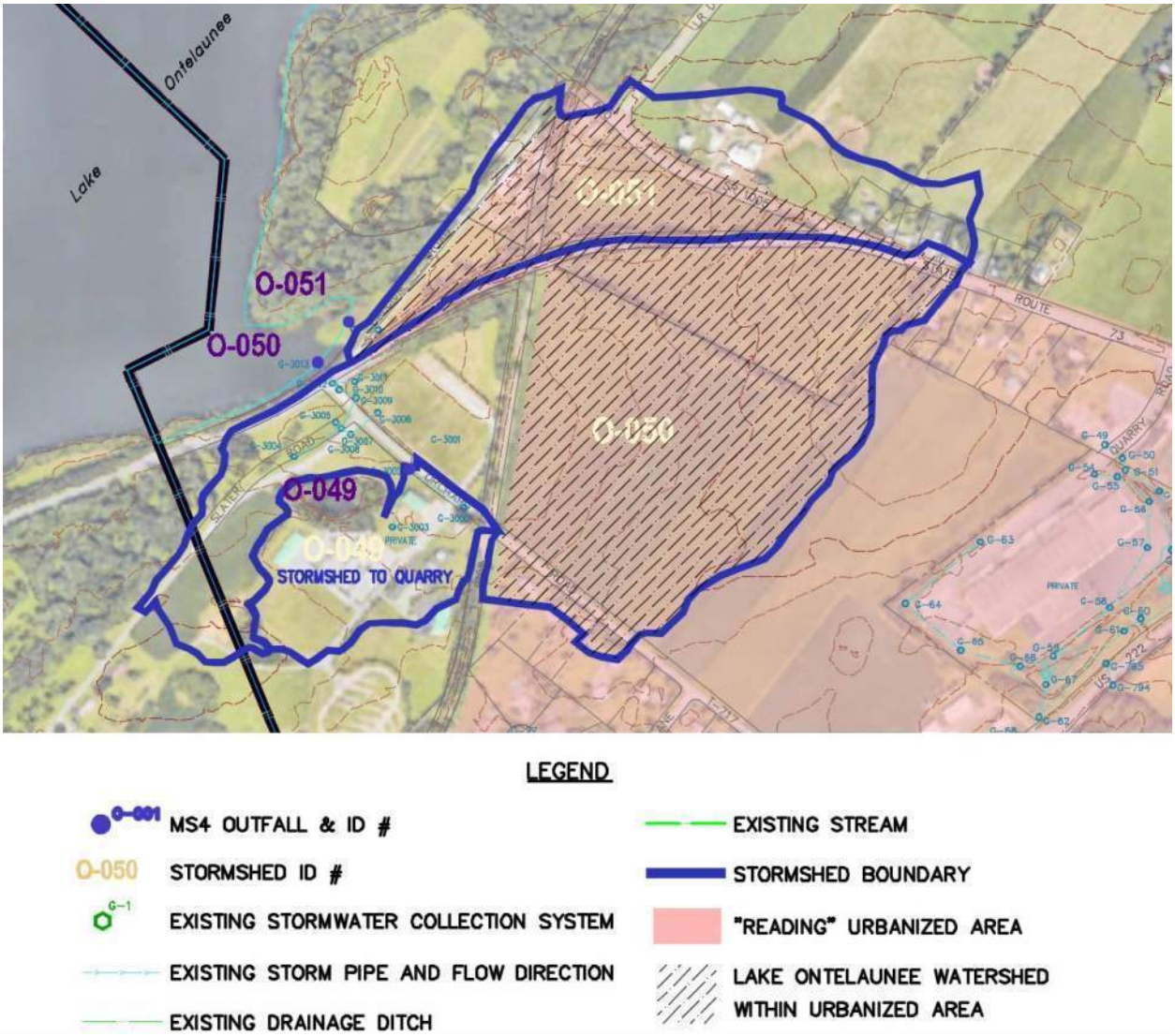


Figure 2. Maidencreek Township MS4 Area within Lake Ontelaunee Watershed

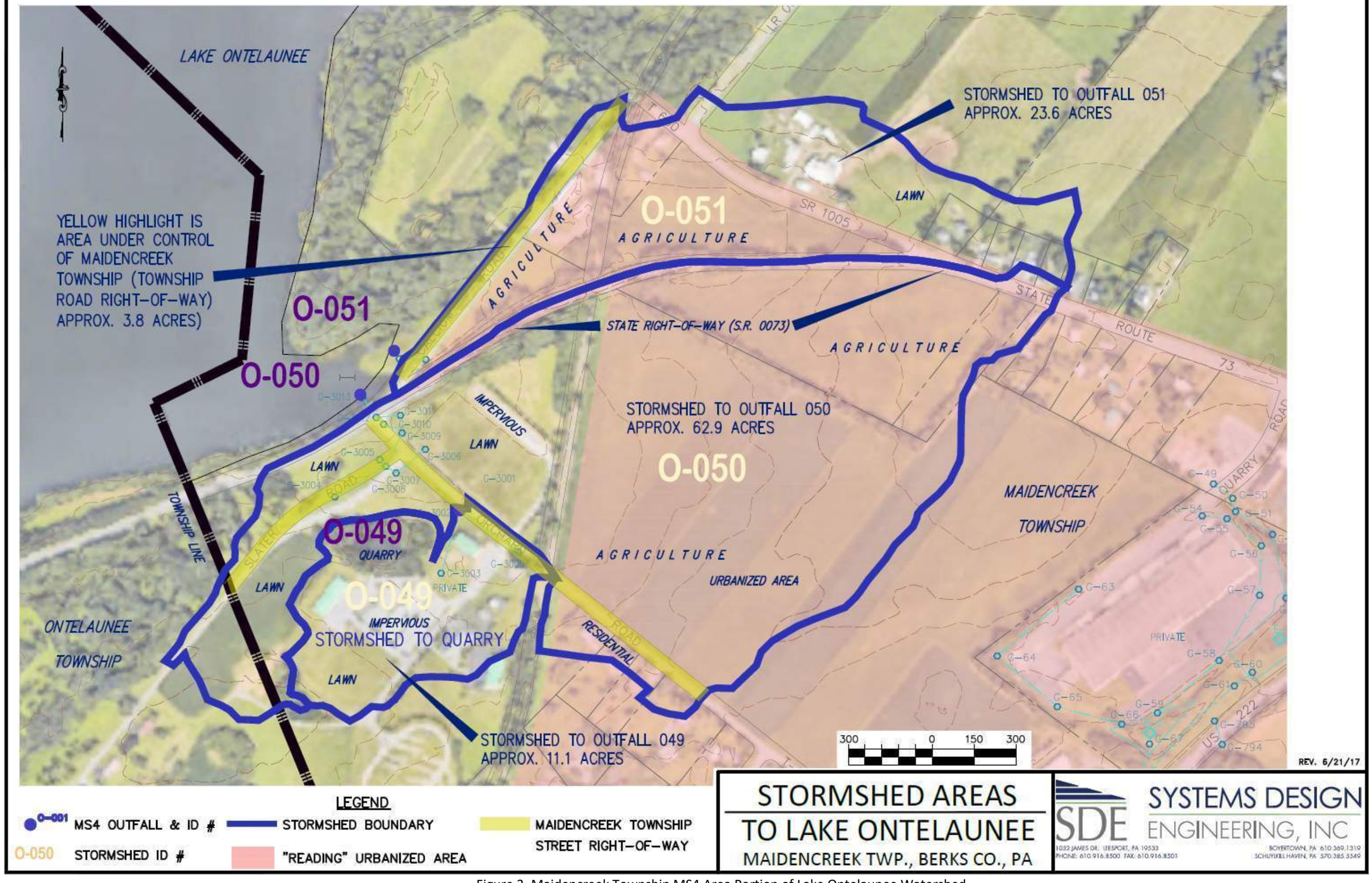


Figure 3. Maidencreek Township MS4 Area Portion of Lake Ontelaunee Watershed

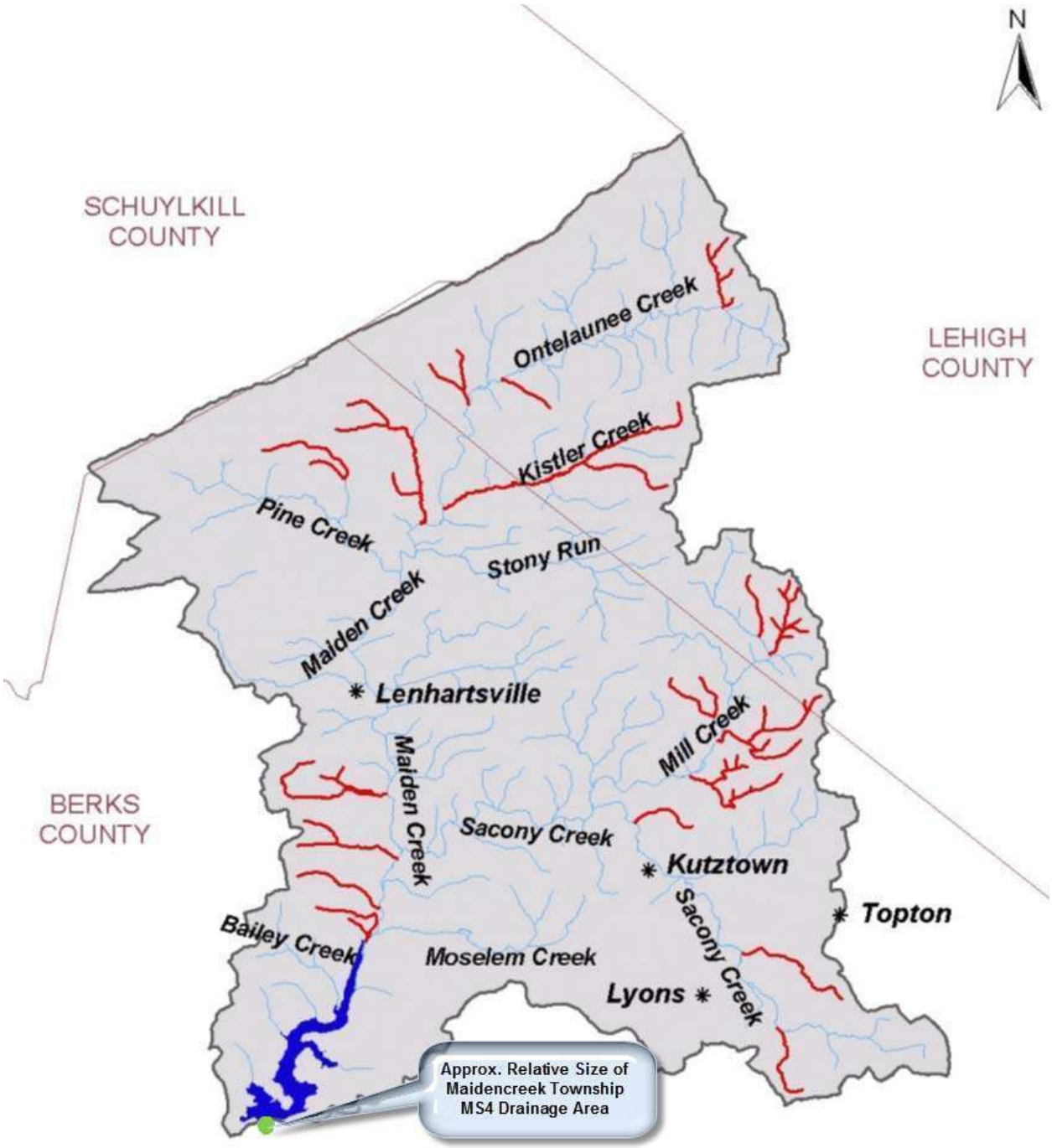


Figure 4. Maidencreek Township MS4 Area Relative to Lake Ontelaunee Watershed

4.0 Waste Load Allocations

The following tables are reprinted from the Lake Ontelaunee TMDL report, and depict various load and waste load allocations by pollutant. Recall that phosphorus was determined as the controlling nutrient in the nutrient loading component of the TMDL – nitrates were determined to be within acceptable levels.

Table ES-1. Lake Ontelaunee Phosphorus TMDL Table (metric tons per year)

TMDL (t/yr)	LA (t/yr)	WLA (t/yr)	MOS (t/yr)
10.65	7.36	2.77	0.52

Table ES-2. Lake Ontelaunee Phosphorus TMDL, Source Allocation Summary (metric tons/year)

Source	Area (ha)	Existing Load (t/yr)	% of Total Existing Load	Existing UAL (t/yr*ha)	Allocated Load (t/yr)	% of Total Allocated Load	Allocated UAL (t/yr*ha)	Percent reduction (%)
Hay/Pasture	9,061	3.95	4.8	0.00044	1.00	9.9	0.00011	75
Cropland	19,994	46.93	57.0	0.00235	2.35	23.2	0.00012	95
Coniferous	1,135	0.02	0.0	0.00002	0.02	0.2	0.00002	0
Mixed Forest	948	0.09	0.1	0.00009	0.09	0.9	0.00010	0
Deciduous Forest	14,481	1.34	1.6	0.00009	1.34	13.2	0.00009	0
Unpaved Roads	44	0.37	0.4	0.00841	0.02	0.2	0.00042	95
Quarry	16	0.06	0.1	0.00375	0.00	0.0	0.00022	93
Transitional	1,490	16.27	19.8	0.01092	0.81	8.0	0.00054	95
Low Intensity	646	0.07	0.1	0.00011	0.07	0.7	0.00011	0
High Intensity	242	0.35	0.4	0.00145	0.05	0.5	0.00022	85
MS4	54	0.13	0.2	0.00232	0.01	0.1	0.00015	94
Point Source	--	3.65	4.4	--	2.76	27.2	--	24
Groundwater	--	6.06	7.4	--	1.52	15.0	--	75
Septic Systems	--	3.03	3.7	--	0.09	0.9	--	97
Total	48,111	82.31	100.0	0.00171	10.13	100.0	0.00021	88

Table ES-3. WLA for Total Phosphorus, MS4s

Township	Permit ID	WLA, TP kg/yr	% Reduction
Maiden Creek	PAG133521	5.98	94
Ontelaunee	PAG133512	1.96	93

Table ES-6. Lake Ontelaunee Sediment Loading Characteristics, Existing and TMDL Conditions

	Existing Conditions	TMDL Conditions
Years until 30 percent full	43	92
Sedimentation Rate (cm/yr)	0.91	0.44
Annual Load (kg/m3)	10,772	5,149

Table ES-7. Lake Ontelaunee Sediment TMDL Table (metric tons)

TMDL tons/yr	LA tons/yr	WLA tons/yr
19,587	19,444	143

Table ES-8. Lake Ontelaunee Sediment TMDL, Source Allocation Summary

Source	Area (ha)	Existing Load (t/yr)	Existing UAL (t/ha-yr)	% of Existing Load	Allocated Load (t/yr)	Reduced UAL (t/yr-ha)	% of Allocated Load	% Reduction
Hay/Pasture	9,061	2,146.8	0.24	3.13	1,629.7	0.18	8.32	24
Cropland	19,994	44,973.1	2.25	65.53	11,243.3	0.56	57.40	75
Coniferous	1,135	24.2	0.02	0.04	24.2	0.02	0.12	0
Mixed Forest	948	104.6	0.11	0.15	104.6	0.11	0.53	0
Deciduous Forest	14,481	1,467.3	0.10	2.14	1,467.3	0.10	7.49	0
Unpaved Roads	44	416.7	9.47	0.61	104.2	2.37	0.53	75
Quarry	16	56.7	3.55	0.08	22.6	1.41	0.12	60
Transitional	1,490	19,244.2	12.92	28.04	4,811.0	3.23	24.56	75
Low Intensity Developed	646	19.8	0.03	0.03	19.8	0.03	0.10	0
High Intensity Developed	242	17.1	0.07	0.02	17.1	0.07	0.09	0
MS4	54	127.8632	2.37	0.19	33.494118	0.62	0.17	74
Point Sources	--	36.0	--	0.05	109.6	--	0.56	0
Total Existing Load (t/yr)	68,634							
Total Allocated Load (t/yr)	19,587							
Total % Reduction	71							
Existing Channel Deposition (t/yr)	53,071							
Reduced Channel Deposition (t/yr)	12,782							

Table ES-9. WLA for TSS, MS4s (metric tons)

Township	Permit ID	WLA, TSS t/yr	% Reduction
Maiden Creek	PAG133521	26.6	74
Ontelaunee	PAG133512	6.9	73

5.0 MS4 TMDL Strategy

5.1 MS4 Drainage Area

Lake Ontelaunee's watershed area is approximately 123,104 acres. Maidencreek Township's MS4 storm sewershed area to the lake is about 98 acres, or 0.08 percent. The 98 acres drain to a three outfalls (#s O-049, O-050 and O-051). See Figures 2, 3, and 4 for a graphical depiction of the MS4 drainage area.

The MS4 watershed consists predominantly of agricultural lands. The next largest land user is the Rajah Temple property, which consists of large areas of open grass (athletic fields and parking areas), as well as some significant paved areas for parking and access. Much of this area is tributary to a quarry on the Rajah property, which does not have an overland outlet, but is included in the contributing storm sewershed area nonetheless. Several detached residential homesites and roadways occupy the remaining portion of the watershed.

Figure 3 also depicts the extent of Township-owned land within the MS4 drainage area to the lake; approximately 3.8 acres, comprised solely of streets and adjoining rights-of-way – strips of land less than 50 feet wide. This severely limits the type and number of BMPs that can be implemented and directly controlled by the Township.

5.2 Prior TMDL Plans for Maidencreek Township's MS4

SDE, Inc. developed an initial TMDL Plan for the Maidencreek Township MS4 tributary to Lake Ontelaunee in September 2012. The strategy employed in that plan relied heavily on street sweeping as a means to reduce nutrient and sediment loading to the lake, because this was the only reasonable physical BMP that the Township had at its disposal on the limited areas of the MS4 under their ownership.

DEP subsequently deemed the street sweeping approach to be insufficient, and in December 2015, Great Valley Consultants (GVC) developed a supplement to the original plan. The supplement relies more on public education and outreach than on physical BMPs, and seeks voluntary cooperation with the implementation of conservation practices from private property owners, to achieve nutrient and sediment reductions. The GVC strategy is paraphrased in the following sections.

5.3 Waste Load Allocations and Sources

The Lake Ontelaunee TMDL waste load allocation (WLA) for sediment is 26.6 metric tons/year (58,643 pounds per year) and the WLA for phosphorous is 5.98 kg/year (13.18 pounds/year). The TMDL requires reductions in sediment and phosphorus loading of 74% and 94%, respectively. These reductions are applied MS4-wide; however, it should be abundantly clear that the 3.8 acres of Township-owned streets and rights-of-way are incapable of generating any significant quantities of sediment and nutrients. These reductions are the long-term (i.e., more than five years) goals of the TMDL strategy.

Principal land uses within the MS4 storm sewersheds tributary to the lake include privately-owned agricultural facilities and lawn areas. These uses are significantly more likely to contribute to the waste loads identified in the TMDL report. See Table 3 for an approximate distribution of land uses throughout the MS4 storm sewersheds tributary to Lake Ontelaunee, from Maidencreek Township.

Table 3. Contributing Land Uses to Lake Ontelaunee from Maidencreek Township MS4 Storm Sewersheds

Land Use Type	Approx. Area, ac	% of Total Area
Agriculture	**57.6**	**59.0**
Maintained Lawn	**14.3**	**14.7**
Woods/Quarry	**8.5**	**8.7**
Street ROW (State)	**5.2**	**5.3**
Impervious (Private)	**4.3**	**4.4**
Residential	**3.9**	**4.0**
Street ROW (Municipal)	**3.8**	**3.9**
Total	**97.6**	**100.0**

5.4 TMDL Strategy

It has been established that the Maidencreek Township MS4 has little, if any, impact to the wasteloads attributable to the Township in the Lake Ontelaunee TMDL. In addition, the Township owns very little property within the MS4 tributary to the lake, limited solely to the narrow strips of street rights-of-way depicted in Figure 3.

In consideration of these limitations, Maidencreek Township proposes public education and outreach as its principal BMP in the effort to reduce wasteloads to the lake. This approach will involve education of private landowners within the MS4 area about the effects of nutrient and sediment pollution on the lake, and encouragement of those landowners to voluntarily implement BMPs to reduce quantities of phosphorus and sediment in stormwater runoff from lands they control.

For agricultural lands, practices including contour cropping, no-till farming, cover crops and fertilizer reductions contribute greatly to sediment and nutrient reductions. In residential and commercial areas, landscaping practices can be altered to reduce the amounts of fertilizers and pesticides applied to "green" areas, and better housekeeping techniques can be implemented, such as refraining from disposal of grass clippings in or near waterways and dry cleanup of oils and debris from paved surfaces.

Education and outreach can be accomplished through the assistance of conservation agencies that specialize in agricultural education, including Berks Nature and Berks County Conservation District. These agencies often offer or have connections to agencies that offer funding opportunities and support for these efforts. Additional avenues for outreach are available to the Township via its membership in the Berks County MS4 Steering Committee, which provides continuous updates and opportunities for public education throughout Berks County.

5.4.1 Potential Loading Reductions

The TMDL strategy relies heavily upon cooperation of private property owners. The largest contiguous land block within the Maidencreek Township UA portion of the Lake Ontelaunee watershed consists of farmland. As farmland also happens to be the greatest potential contributor of sediment and nutrient loading within the planning area, WikiWatershed's "Model My Watershed" was utilized to gauge

effectiveness of applying several conservation measures to the agricultural lands. Results will help in the future discussions with the landowner(s).

The model was set up to cover the agricultural portion of the Maidencreek Township UA, an area of approximately 57.6 acres (233,277 sq. meters). Of this area, the model database characterized 9.9 acres (4.0 hectares) as "cropland." Based on Google Earth and other aerial imagery, the cropland acreage appears low, but the goal of the model runs are to gauge percentage loading reductions; therefore, the relative comparisons should be reflective of actual area.

The following scenarios were evaluated:

1. Current Condition
2. Add Cover Crop Only
3. Add Conservation Tillage Only
4. Add Nutrient Management Only
5. Add Cover Crop, Conservation Tillage and Nutrient Management ("All 3")
6. Add Cover Crop and Conservation Tillage
7. Add Cover Crop and Nutrient Management
8. Add Conservation Tillage and Nutrient Management

As would be expected, number 5 ("All 3" scenarios) achieved the highest wasteload reductions of 65% for sediment and 84% for phosphorus, which would meet the short term (permit term) reduction percentage requirements for sediment (10%) and phosphorus (5%). Long term reductions are those stipulated in the TMDL (74% for sediment and 94% for phosphorus). It is important to note that this evaluation assumes that none of the conservation measures are currently being used.

Table 4 summarizes the results of the model run for the different scenarios, and Appendix A contains the WikiWatershed screenshots with supporting documentation.

5.4.2 Plan Implementation

Maidencreek Township and/or its designee(s) will implement the TMDL Plan in the following manner ("Year x" designations refer to the end of the particular "Permit Year" by which foregoing activities will be completed):

Year 1 Collect and compile data regarding ownership and uses of properties within the storm sewersheds leading to Outfalls O-049, O-050 and O-051. Rank target audiences as to their pollutant potential, based on geographic locations within the sewersheds, and relative to public or private storm sewer systems.

Year 2 Model the agricultural portion of the planning area to gauge effectiveness of load reductions in response to various scenarios of conservation management measures and focus efforts on outreach accordingly. Contact local agricultural landowners to determine types and extents of conservation measures actually being utilized, as well as areal extent of application, and compare to model results. Contact local agencies including Berks County Conservation District and Berks Nature, and attend the quarterly meetings of the Berks County MS4 Steering Committee to gauge interest and ability for the agencies to reach out to and/or meet with

property owners, in conjunction with Maidencreek Township, in an order of timeliness based on severity of ranking in the Year 1 effort.

Year 3 Within the years leading up to and including Year 3, more detailed mapping of existing public and private stormwater conveyance and management facilities will be performed, to refine the concentration of private property owners to target with education and outreach, and seek voluntary cooperation with BMP implementation. BMP modeling will also be refined based on contact with landowners and evaluations of actual existing land use and/or conservation measures. Types of BMPs will be dictated by the type of property(ies) cooperating. Properties whose owners agree to participate in the plan will be mapped and a scheme will be devised to concentrate efforts based on topography and contributions of potential wasteloads to the outfalls. A baseline wasteload can then be computed for areas on and around the subject property(ies), to be used as a gauge to measure BMP effectiveness over time. The end of Year 3 will be the conclusion of efforts to solicit voluntary cooperation from private landowners.

Year 4 Properties whose owners do not wish to implement BMPs voluntarily will be mapped and any resulting "gaps" in potential BMP coverage will be evaluated. At this point, the Township will seek alternatives as needed for compliance with TMDL wasteload allocations. The Township will assess the "untreated" land uses and evaluate particular types of BMPs that could be effective in the given areas. Due to the need to establish an inventory of non-participating properties and a wasteload baseline in the preceding years, it will not be until this stage that the Township can begin the assessment of what actual BMPs will be effective in achieving the short term reductions of 10% sediment and 5% phosphorus, as well as the long term TMDL requirements of 74% reduction in sediment and a 94% reduction in phosphorous.

Year 5 By the end of Year 5, it is hoped that the Township will have succeeded in obtaining enough cooperation from private landowners that BMP implementation will have a positive effect on reducing sediment and phosphorus loadings to the short term goals of 10% and 5%, respectively. As needed and as available, the Township will also have established a BMP program to supplement reductions achieved by the private properties.

Long Term Beyond the permit term, the Township will continue to focus on any remaining pollutant sources and means to encourage private property cooperation to meet the TMDL waste load allocations.

5.4.3 Facilities Inventory

Several sources of data to refine the storm sewershed mapping are already available and include record plans for development of one of the larger private facilities. In addition, it is hoped that Agricultural Erosion and Sediment Control Plans and/or Conservation Plans are available at the Berks County Conservation District for the farms located within the sewersheds. Township and consultant staffs are also available for more detailed field investigations that will occur throughout the permit cycle.

5.4.4 Other MS4-Related Activities

The Township will also continue in its MS4 permit obligations, public education, outreach and participation, outfall inspections (IDD&E), erosion and sediment control and post-construction stormwater management inspections, and good housekeeping at all of its properties. Street-sweeping

of the two (2) Township roads within the delineated storm sewersheds will also be incorporated into the Township's sweeping program.

5.4.5 Ongoing Projects

A dredging project completed in 2017 removed approximately 50,000 cubic yards of sediment from Lake Ontelaunee. This equates to over 50,000 tons of dry sediment. Much of the sediment has been attributed to upstream farmland. This may have an impact on any future updates to the TMDL document.

5.4.6 Funding

Funding sources will be dependent upon the type and number of BMPs that will voluntarily be placed by private landowners on private property. Township-related efforts will be reimbursed via the general fund, unless any necessary alternative BMPs can be covered by grants.

6.0 Summary and Conclusions

The 2010 Census Urbanized Area (UA) within Maidencreek Township encompasses a small portion of the Lake Ontelaunee watershed; about 57 acres. The UA is part of three (3) MS4 storm sewersheds that include both UA and non-UA, totaling about 98 acres. The total Lake Ontelaunee watershed is approximately 123,104 acres, so it can be seen that Maidencreek Township's wasteload contribution is exceptionally slight. Couple this with the fact that the actual land owned by Maidencreek Township within the UA is less than 4 acres and it is evident that Maidencreek Township has very little opportunity to make an impact on wasteloads to the lake through traditional structural BMPs.

A strategy has been devised to adapt to this limitation and it involves public education and outreach to the approximately 96 percent of the tributary storm sewersheds that consist of private property. This audience will be targeted in hopes of obtaining voluntary cooperation and implementation of BMPs within their properties. Based on the results of the loading analyses, concentration will be focused on the agricultural landowners within the planning area. Short of succeeding in gaining cooperation and/or in conjunction with those properties who will participate, the Township will continue to investigate BMPs that it can implement, types and locations of which will be determined once it is know where and how many of the private landowners will participate.

In the interim, Maidencreek Township intends to continue to meet its Minimum Control Measure obligations under its current and anticipated renewed NPDES PAG-13 permit.

TABLE 4.
LAKE ONTELAUNEE TMDL STRATEGY- MAIDENCREEK TOWNSHIP
CROPLAND LOADING SCENARIOS
DECEMBER 2018

	CURRENT CROPLAND		ADD COVER CROP			ADD CONSERVATION TILLAGE			ADD NUTRIENT MANAGEMENT			ADD ALL (3) SCENARIOS		
POLLUTANT	ANNUAL LOAD (kg)	ANNUAL LOAD (lb)	ANNUAL LOAD (kg)	ANNUAL LOAD (lb)	PERCENT REDUCTION	ANNUAL LOAD (kg)	ANNUAL LOAD (lb)	PERCENT REDUCTION	ANNUAL LOAD (kg)	ANNUAL LOAD (lb)	PERCENT REDUCTION	ANNUAL LOAD (kg)	ANNUAL LOAD (lb)	PERCENT REDUCTION
SEDIMENT	13,197.0	29,094.4	8,580.8	18,917.4	**35.0%**	9,240.3	20,371.4	**30.0%**	13,197.0	29,094.4	0.0%	4,624.0	10,194.2	**65.0%**
PHOSPHORUS	34.7	76.5	17.4	38.4	**49.9%**	27.1	59.7	**21.9%**	19.4	42.8	**44.1%**	5.5	12.1	**84.1%**

	CURRENT CROPLAND		ADD COVER CROP & NUTRIENT MGMT.			ADD COVER CROP & CONSERVATION TILLAGE			ADD CONSERVATION TILLAGE & NUTRIENT MGMT.		
POLLUTANT	ANNUAL LOAD (kg)	ANNUAL LOAD (lb)	ANNUAL LOAD (kg)	ANNUAL LOAD (lb)	PERCENT REDUCTION	ANNUAL LOAD (kg)	ANNUAL LOAD (lb)	PERCENT REDUCTION	ANNUAL LOAD (kg)	ANNUAL LOAD (lb)	PERCENT REDUCTION
SEDIMENT	13,197.0	29,094.4	8,580.8	18,917.4	**35.0%**	4,624.0	10,194.2	**65.0%**	9,240.3	20,371.4	**30.0%**
PHOSPHORUS	34.7	76.5	9.7	21.4	**72.0%**	9.7	21.4	**72.0%**	15.2	33.5	**56.2%**

Notes:

1. **Bold** values indicate percent reductions meeting the short term (permit term) sediment and phosphorus reductions of 10% and 5%, respectively.
2. Lake Ontelaunee TMDL WLAs long term reductions are 74% for Sediment and 94% for Phosphorus.
3. Appendix A includes WikiWatershed screenshots supporting above data.

Sources

"Pennsylvania Stormwater Best Management Practices Manual", Pennsylvania Department of Environmental Protection, Bureau of Watershed Management, December 30, 2006.

"Total Maximum Daily Load For Nutrients and Suspended Sediment Lake Ontelaunee, Berks and Lehigh County, Pennsylvania", by Tetra Tech, Inc. for the U.S. Environmental Protection Agency, August 9, 2004.

"Model My Watershed," Version 1.23.1, WikiWatershed, by Stroud Water Research Center, https://wikiwatershed.org/model/

Appendix A

WikiWatershed Model My Watershed Documentation

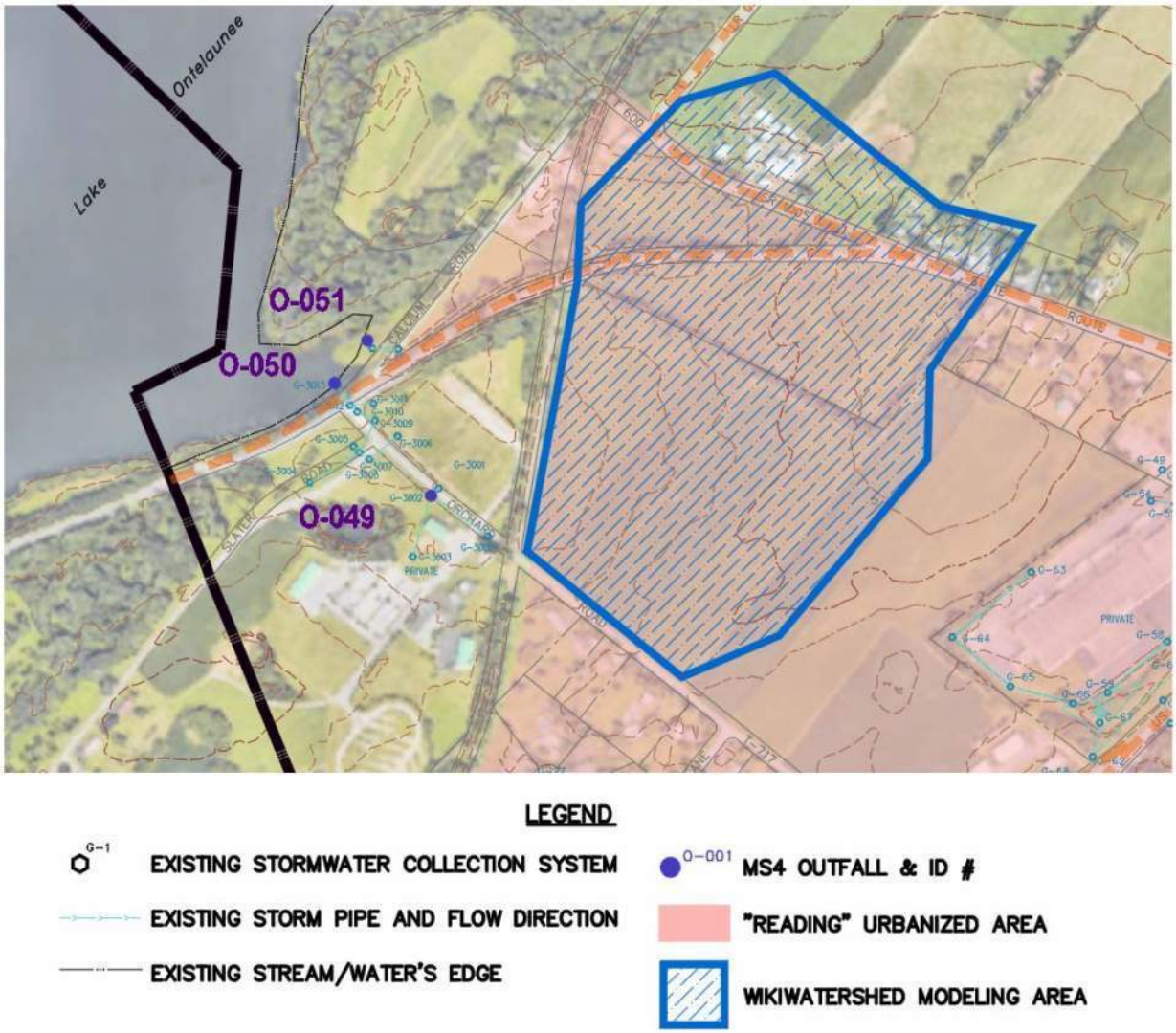
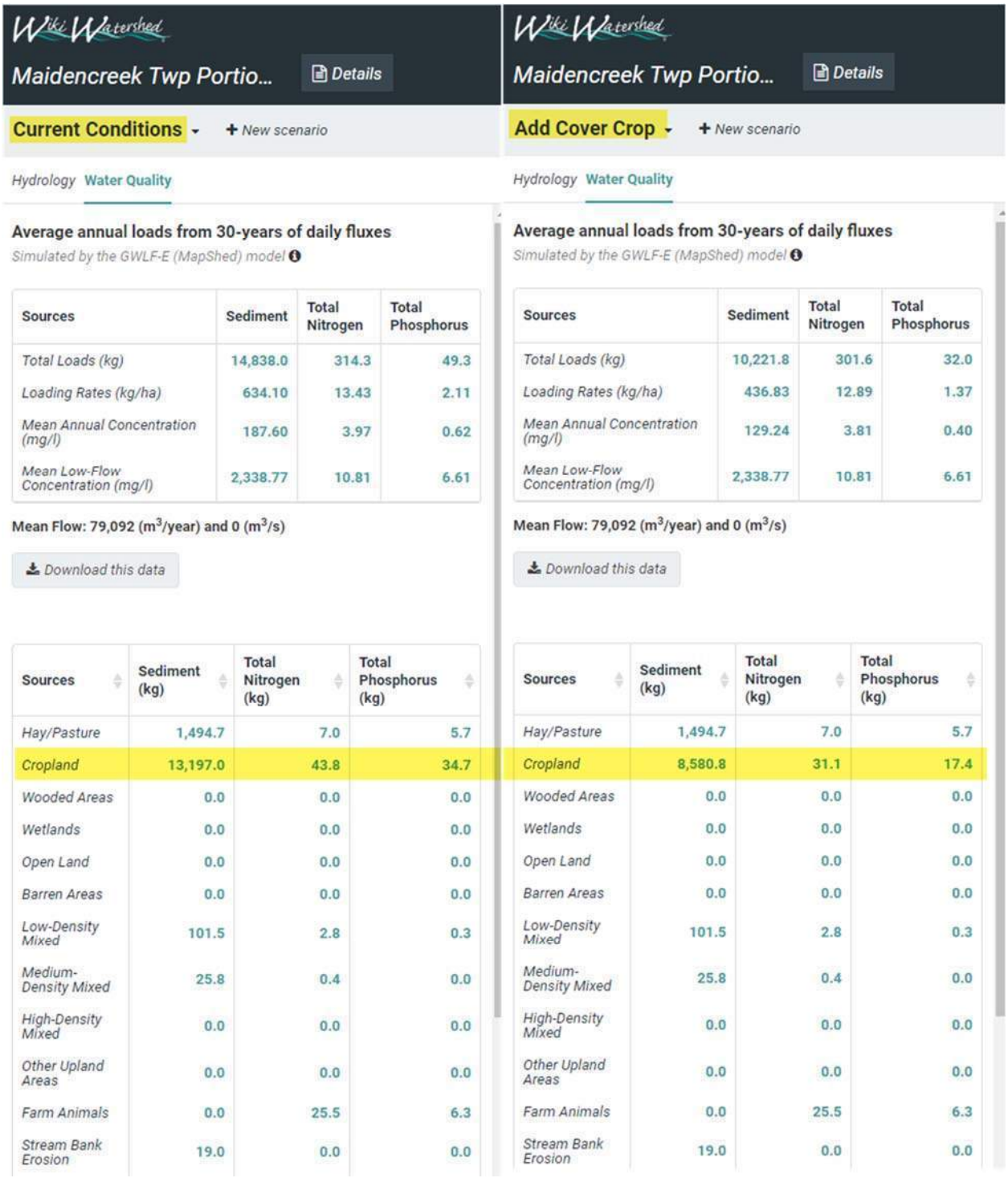


Figure A.1. WikiWatershed Modeling Area within Maidencreek Township's MS4 to Lake Ontelaunee

Figure A.2. WikiWatershed Model Area



Figure A.3. WikiWatershed Model Scenario Screenshots



WikiWatershed

Maidencreek Twp Portio... Details

Current Conditions + New scenario

Hydrology Water Quality

Average annual loads from 30-years of daily fluxes

Simulated by the GWLF-E (MapShed) model

Sources	Sediment	Total Nitrogen	Total Phosphorus
Total Loads (kg)	14,838.0	314.3	49.3
Loading Rates (kg/ha)	634.10	13.43	2.11
Mean Annual Concentration (mg/l)	187.60	3.97	0.62
Mean Low-Flow Concentration (mg/l)	2,338.77	10.81	6.61

Mean Flow: 79,092 (m^3/year) and 0 (m^3/s)

Download this data

Sources	Sediment (kg)	Total Nitrogen (kg)	Total Phosphorus (kg)
Hay/Pasture	1,494.7	7.0	5.7
Cropland	13,197.0	43.8	34.7
Wooded Areas	0.0	0.0	0.0
Wetlands	0.0	0.0	0.0
Open Land	0.0	0.0	0.0
Barren Areas	0.0	0.0	0.0
Low-Density Mixed	101.5	2.8	0.3
Medium-Density Mixed	25.8	0.4	0.0
High-Density Mixed	0.0	0.0	0.0
Other Upland Areas	0.0	0.0	0.0
Farm Animals	0.0	25.5	6.3
Stream Bank Erosion	19.0	0.0	0.0

WikiWatershed

Maidencreek Twp Portio... Details

Add Cover Crop + New scenario

Hydrology Water Quality

Average annual loads from 30-years of daily fluxes

Simulated by the GWLF-E (MapShed) model

Sources	Sediment	Total Nitrogen	Total Phosphorus
Total Loads (kg)	10,221.8	301.6	32.0
Loading Rates (kg/ha)	436.83	12.89	1.37
Mean Annual Concentration (mg/l)	129.24	3.81	0.40
Mean Low-Flow Concentration (mg/l)	2,338.77	10.81	6.61

Mean Flow: 79,092 (m^3/year) and 0 (m^3/s)

Download this data

Sources	Sediment (kg)	Total Nitrogen (kg)	Total Phosphorus (kg)
Hay/Pasture	1,494.7	7.0	5.7
Cropland	8,580.8	31.1	17.4
Wooded Areas	0.0	0.0	0.0
Wetlands	0.0	0.0	0.0
Open Land	0.0	0.0	0.0
Barren Areas	0.0	0.0	0.0
Low-Density Mixed	101.5	2.8	0.3
Medium-Density Mixed	25.8	0.4	0.0
High-Density Mixed	0.0	0.0	0.0
Other Upland Areas	0.0	0.0	0.0
Farm Animals	0.0	25.5	6.3
Stream Bank Erosion	19.0	0.0	0.0

Wiki Watershed

Maidencreek Twp Portio... Details

Add Conservation Tillage + New scenario

Hydrology Water Quality

Average annual loads from 30-years of daily fluxes

Simulated by the GWLF-E (MapShed) model

Sources	Sediment	Total Nitrogen	Total Phosphorus
Total Loads (kg)	10,881.3	310.8	41.7
Loading Rates (kg/ha)	465.01	13.28	1.78
Mean Annual Concentration (mg/l)	137.58	3.93	0.53
Mean Low-Flow Concentration (mg/l)	2,338.77	10.81	6.61

Mean Flow: 79,092 (m^3/year) and 0 (m^3/s)

Download this data

Sources	Sediment (kg)	Total Nitrogen (kg)	Total Phosphorus (kg)
Hay/Pasture	1,494.7	7.0	5.7
Cropland	9,240.3	40.3	27.1
Wooded Areas	0.0	0.0	0.0
Wetlands	0.0	0.0	0.0
Open Land	0.0	0.0	0.0
Barren Areas	0.0	0.0	0.0
Low-Density Mixed	101.5	2.8	0.3
Medium-Density Mixed	25.8	0.4	0.0
High-Density Mixed	0.0	0.0	0.0
Other Upland Areas	0.0	0.0	0.0
Farm Animals	0.0	25.5	6.3
Stream Bank Erosion	19.0	0.0	0.0

Wiki Watershed

Maidencreek Twp Portio... Details

Add Nutrient Mgmt + New scenario

Hydrology Water Quality

Average annual loads from 30-years of daily fluxes

Simulated by the GWLF-E (MapShed) model

Sources	Sediment	Total Nitrogen	Total Phosphorus
Total Loads (kg)	14,838.0	301.6	33.9
Loading Rates (kg/ha)	634.10	12.89	1.45
Mean Annual Concentration (mg/l)	187.60	3.81	0.43
Mean Low-Flow Concentration (mg/l)	2,338.77	10.81	6.61

Mean Flow: 79,092 (m^3/year) and 0 (m^3/s)

Download this data

Sources	Sediment (kg)	Total Nitrogen (kg)	Total Phosphorus (kg)
Hay/Pasture	1,494.7	7.0	5.7
Cropland	13,197.0	31.1	19.4
Wooded Areas	0.0	0.0	0.0
Wetlands	0.0	0.0	0.0
Open Land	0.0	0.0	0.0
Barren Areas	0.0	0.0	0.0
Low-Density Mixed	101.5	2.8	0.3
Medium-Density Mixed	25.8	0.4	0.0
High-Density Mixed	0.0	0.0	0.0
Other Upland Areas	0.0	0.0	0.0
Farm Animals	0.0	25.5	6.3
Stream Bank Erosion	19.0	0.0	0.0

Wiki Watershed

Maidencreek Twp Portio... Details

Add Cover Crop; Nutrient Mgt.; Conserv. Tillage +

Hydrology **Water Quality**

Average annual loads from 30-years of daily fluxes

Simulated by the GWLF-E (MapShed) model

Sources	Sediment	Total Nitrogen	Total Phosphorus
Total Loads (kg)	6,265.0	290.1	19.9
Loading Rates (kg/ha)	267.74	12.40	0.85
Mean Annual Concentration (mg/l)	79.21	3.67	0.25
Mean Low-Flow Concentration (mg/l)	2,338.77	10.81	6.61

Mean Flow: 79,092 (m^3/year) and 0 (m^3/s)

Download this data

Sources	Sediment (kg)	Total Nitrogen (kg)	Total Phosphorus (kg)
Hay/Pasture	1,494.7	7.0	5.7
Cropland	4,624.0	19.6	5.5
Wooded Areas	0.0	0.0	0.0
Wetlands	0.0	0.0	0.0
Open Land	0.0	0.0	0.0
Barren Areas	0.0	0.0	0.0
Low-Density Mixed	101.5	2.8	0.3
Medium-Density Mixed	25.8	0.4	0.0
High-Density Mixed	0.0	0.0	0.0
Other Upland Areas	0.0	0.0	0.0
Farm Animals	0.0	25.5	6.3
Stream Bank	19.0	0.0	0.0

Wiki Watershed

Maidencreek Twp Portio... Details

Add Cover Crop & Nutrient Mgmt. + *New scenario*

Hydrology **Water Quality**

Average annual loads from 30-years of daily fluxes

Simulated by the GWLF-E (MapShed) model

Sources	Sediment	Total Nitrogen	Total Phosphorus
Total Loads (kg)	10,221.8	292.6	24.2
Loading Rates (kg/ha)	436.83	12.50	1.03
Mean Annual Concentration (mg/l)	129.24	3.70	0.31
Mean Low-Flow Concentration (mg/l)	2,338.77	10.81	6.61

Mean Flow: 79,092 (m^3/year) and 0 (m^3/s)

Download this data

Sources	Sediment (kg)	Total Nitrogen (kg)	Total Phosphorus (kg)
Hay/Pasture	1,494.7	7.0	5.7
Cropland	8,580.8	22.1	9.7
Wooded Areas	0.0	0.0	0.0
Wetlands	0.0	0.0	0.0
Open Land	0.0	0.0	0.0
Barren Areas	0.0	0.0	0.0
Low-Density Mixed	101.5	2.8	0.3
Medium-Density Mixed	25.8	0.4	0.0
High-Density Mixed	0.0	0.0	0.0
Other Upland Areas	0.0	0.0	0.0
Farm Animals	0.0	25.5	6.3
Stream Bank Erosion	19.0	0.0	0.0

Wiki Watershed

Maidencreek Twp Portio... Details

Add Cover Crop & Conserv Tillage + New scenario

Hydrology Water Quality

Average annual loads from 30-years of daily fluxes

Simulated by the GWLF-E (MapShed) model

Sources	Sediment	Total Nitrogen	Total Phosphorus
Total Loads (kg)	6,265.0	298.1	24.4
Loading Rates (kg/ha)	267.74	12.74	1.04
Mean Annual Concentration (mg/l)	79.21	3.77	0.31
Mean Low-Flow Concentration (mg/l)	2,338.77	10.81	6.61

Mean Flow: 79,092 (m^3/year) and 0 (m^3/s)

Download this data

Sources	Sediment (kg)	Total Nitrogen (kg)	Total Phosphorus (kg)
Hay/Pasture	1,494.7	7.0	5.7
Cropland	4,624.0	27.6	9.7
Wooded Areas	0.0	0.0	0.0
Wetlands	0.0	0.0	0.0
Open Land	0.0	0.0	0.0
Barren Areas	0.0	0.0	0.0
Low-Density Mixed	101.5	2.8	0.3
Medium-Density Mixed	25.8	0.4	0.0
High-Density Mixed	0.0	0.0	0.0
Other Upland Areas	0.0	0.0	0.0
Farm Animals	0.0	25.5	6.3
Stream Bank Erosion	19.0	0.0	0.0

Wiki Watershed

Maidencreek Twp Portio... Details

Add Conservation Tillage & Nutrient Mgmt. + New s

Hydrology Water Quality

Average annual loads from 30-years of daily fluxes

Simulated by the GWLF-E (MapShed) model

Sources	Sediment	Total Nitrogen	Total Phosphorus
Total Loads (kg)	10,881.3	299.1	29.6
Loading Rates (kg/ha)	465.01	12.78	1.27
Mean Annual Concentration (mg/l)	137.58	3.78	0.37
Mean Low-Flow Concentration (mg/l)	2,338.77	10.81	6.61

Mean Flow: 79,092 (m^3/year) and 0 (m^3/s)

Download this data

Sources	Sediment (kg)	Total Nitrogen (kg)	Total Phosphorus (kg)
Hay/Pasture	1,494.7	7.0	5.7
Cropland	9,240.3	28.6	15.2
Wooded Areas	0.0	0.0	0.0
Wetlands	0.0	0.0	0.0
Open Land	0.0	0.0	0.0
Barren Areas	0.0	0.0	0.0
Low-Density Mixed	101.5	2.8	0.3
Medium-Density Mixed	25.8	0.4	0.0
High-Density Mixed	0.0	0.0	0.0
Other Upland Areas	0.0	0.0	0.0
Farm Animals	0.0	25.5	6.3
Stream Bank Erosion	19.0	0.0	0.0

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