Municipal Separate Storm Sewer System (MS4) Annual Report

July 1, 2022 through June 30, 2023



Franklin Township Chester County, PA

September 2023

Prepared by:



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, 2022 TO JUNE 30, 2023

	GENERAL INFORMATION							
Permittee Name: F	ranklin Tow	nship	N	IPDES Permit No.:	PATBD			
Mailing Address: 2	20 Municipal	Ln. P.O. Box 11	18 E	Effective Date:	Pending Permit Approval			
City, State, Zip:	Kemblesville,	PA 19347	E	xpiration Date:	Pendino	g Permit App	roval	
MS4 Contact Person:	leffrey Eastb	urn	R	Renewal Due Date:	Pending	g Permit App	roval	
Title:	Operations M	lanager	N	/lunicipality:	Franklin	Township		
Phone: 6	310.255.5212	2	C	County:	Chester	ſ		
Email:	JEastburn@f	ranklintownship	.us					
Co-Permittees (if applicable)):							
Appendix(ces) that permitte	e is subject t	o (select all that	apply):					
Appendix A	Append	dix B 🗌 Apper	ndix C 🛛 A	Appendix D 🗌 Appe	ndix E	Appendix I	=	
		WATER QU	ALITY INF	FORMATION				
Are there any discharges to	waters within	n the Chesapeak	e Bay Water	rshed? 🛛 Yes	☐ No			
Identify all surface waters the (see instructions).	nat receive st	ormwater discha	rges from th	ne permittee's MS4 an	d provide	the requeste	d information	
Receiving Water Na	me	Ch. 93 Class.	Impaired?	Cause(s)		TMDL?	WLA?	
Big Elk Creek		HQ-TSF	Yes	Agriculture - C Unknown, Silta Urban Runoff/S Sewers - Ca	ation; Storm	No	No	
				Unkown	use			
Christina River Bas	sin	WWF	Yes		mical (BOD): ssolved ion; panic sphrus; tal olids	Yes	Yes	
Christina River Bas East Branch White Clay		WWF CWF	Yes	Algae; Biocher Oxygen Demand Chlorophyll-A; Di Oxygen; Euthrophicat Nutrients; Org Enrichment; Pho Siltation; To Suspended S	mical (BOD): ssolved ion; ganic sphrus; tal olids dity wn -	Yes	Yes	

COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF POINT AND NON-POINT SOURCE MANAGEMENT

			Sewers - Cause Unkown, Siltation		
Indian Run	TSF	Yes	Source Unknown - Mercury	No	No
Middle Branch White Clay Creek	TSF	Yes	Source Unkown - Pathogens, Mercury	No	No
West Branch White Clay Creek	TSF	Yes	Source Unknown - Pathogens, Mercury; Agriculture - Nutrients, Siltation	No	No

	GENERAL MINIMUM CONTROL	MEASURE (MCM) INFO	RMATION	
Ha	ve you completed all MCM activities required by the permit	for this reporting period?	⊠ Yes □ No	
Lis	t the current entity responsible for implementing each MCM	of your SWMP, along with co	ntact name and phor	ne number.
	МСМ	Entity Responsible	Contact Name	Phone
#1	Public Education and Outreach on Storm Water Impacts	Franklin Township	Jeffrey Eastburn	6102555212
#2	Public Involvement/Participation	Franklin Township	Jeffrey Eastburn	6102555212
#3	Illicit Discharge Detection and Elimination (IDD&E)	Franklin Township	Jeffrey Eastburn	6102555212
#4	Construction Site Storm Water Runoff Control	Franklin Township	Jeffrey Eastburn	6102555212
	Post-Construction Storm Water Management in New Development and Redevelopment	Franklin Township / Chester County Conservation District	Jeffrey Eastburn / Conservation District	6102555212 / 6104924920
#6	Pollution Prevention / Good Housekeeping	Franklin Township	Jeffrey Eastburn	6102555212
	MCM #1 - PUBLIC EDUCATION AND O	UTREACH ON STORM \	WATER IMPACTS	
ви	IP #1: Develop, implement and maintain a written Public	Education and Outreach P	rogram.	
1.	For new permittees only, has the written PEOP been deve	eloped and implemented within	n the first year of perr	nit coverage?
	☐ Yes ☐ No			
2.	Date of latest annual review of PEOP: 02/2023	Were updates made?		
3.	What were the plans and goals for public education and or	utreach for the reporting perio	d?	
ma	OP goals for the 2022-2023 reporting period were to cor nagement, list educational resources, determine the Tard develop a Publication/Distribution Schedule.			
4.	Did the MS4 achieve its goal(s) for the PEOP during the re	eporting period?	s 🗌 No	
5.	Identify specific plans and goals for public education and o	outreach for the upcoming yea	ır:	
	e Township will develop educational material aimed at ill areness and reporting of non-allowable discharges.	icit discharge reporting within	n the Township to in	crease public
	e Township will track new information released by DEP rard and public informed on any anticipated changes.	egarding the PAG13 permit	renewal in order to k	keep the
ви	IP #2: Develop and maintain lists of target audience gro	oups present within the area	s served by your M	S4.
1.	For new permittees only, have the target audience lists coverage?	been developed and impleme	ented within the first	year of permit
	☐ Yes ☐ No			
2.	Date of latest annual review of target audience lists: 02/20)23 Were update	s made? 🛛 Yes	☐ No
ви	IP #3: Annually publish at least one educational item or	n your Stormwater Managen	nent Program.	
1.	For new permittees only, were stormwater educational and Internet within the first year of permit coverage?	d informational items produced	d and published in prir	nt and/or on the
	☐ Yes ☐ No			

2.	Date of latest annual review of educational materials	s: 02/2023	Were updates made?	⊠ Yes □ No
3.	Do you have a municipal website? Yes www.franklintownship.us/)	☐ No (UR	L:	

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

The Township's stormwater webpage includes information on the Christina Watershed Municipal Partners (CWMP), Township stormwater requirements and ordinance information, information on the White Clay Creek Catch the Rain Program, stormwater puzzles, and information on importance of keeping the Township's MS4 clean of debris

- 4. Describe any other method(s) used during the reporting period to provide information on stormwater to the public:
 The Township makes information and activities available at the Township office and on the Township's Facebook page which reaches 863 people.
- 5. Identify specific plans for the publication of stormwater materials for the upcoming year:

The Township will conduct or advertise through a partnership a 2023 Earth Day event or similar public participation event involving pollution prevention or a MS4-related concept. The Township will also develop new educational materials during the 2023-2024 reporting year.

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).

Brochures

Stormwater Puzzles

Facebook Postings

Public Meetings

MCM #1 Comments:

Attachment 1.1: Stormwater Management Program

Attachment 1.2: MS4 Goals and Accomplishments

Attachment 1.3: Educational Materials

MCM #2 - PUBLIC INVOLVEMENT/PARTICIPATION

BM	P #1: Develop	o, impler	ment an	d m	aıntaın	a v	vritten	Pub	lic I	nvolve	emen	t and	Participation	Prograi	m (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: 02/2023

Were updates made?

XIYES ∐ NO	X	Yes		No
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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 Township attended two implementation workshops in May 2022 hosted by Chester County to assist municipalities with updating their stormwater ordinances. This presentation also introduced the resources available to assist municipalities with updating their ordinances. The new stormwater ordinance was approved for advertisement in March and was advertised in print at the municipal office. The ordinance was adopted at the Township Board of Supervisors meeting on 04/09/2023.

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
Ord. No. 2023-01	03/15/2023	04/19/2023	04/19/2023

	IP #3: Regularly solicit public involvement and partic stribution and outreach methods.	pation from the target audience groups using available
1.	At least one public meeting or other MS4 event must be held and feedback from target audience groups. Was this meeting	during the 5-year permit coverage period to solicit participation og or event held during the reporting period?
		The Township provided public MS4 updates at monthly Board meetings where discussion regarding PRP/TMDL Plan progress and MCM information occurred.
2.	Report instances of cooperation and participation in MS4 act conservation organizations; and similar instances of participation	vities; presentations the permittee made to local watershed and ation or coordination with organizations in the community.
	The Township is a cost-share member of the Christina stormwater discussions and trainings throughout the year	Watershed Municipal Partnership, which hosts a variety of r.
3.	Report activities in which members of the public assisted of SWMP, including education activities or efforts such as clear	r participated in the meetings and in the implementation of the nups, monitoring, storm drain stenciling, or others.
		blic regarding illicit discahrge elimination and reporting and d a free tree giveaway, CWMP's World Water Day, Franklin he Rain Event on March 28, 2023.
MC	CM #2 Comments:	
	achment 2.1: Stormwater Management Ordinance 2023-0 achment 2.2: Public Event Information	1
	MCM #3 – ILLICIT DISCHARGE DETI	ECTION AND ELIMINATION (IDD&E)
		ECTION AND ELIMINATION (IDD&E) detection, elimination, and prevention of illicit discharges
	IP #1: Develop and implement a written program for the o the regulated small MS4.	detection, elimination, and prevention of illicit discharges
inte	IP #1: Develop and implement a written program for the o the regulated small MS4.	detection, elimination, and prevention of illicit discharges
inte	IP #1: Develop and implement a written program for the o the regulated small MS4. For new permittees only, was the written IDD&E program Yes No	detection, elimination, and prevention of illicit discharges
1. 2. BN and	IP #1: Develop and implement a written program for the o the regulated small MS4. For new permittees only, was the written IDD&E program Yes No Date of latest annual review of IDD&E program: 02/2023 IP #2: Develop and maintain map(s) that show permittee	detection, elimination, and prevention of illicit discharges developed within one year of permit coverage? Were updates made? Yes No and urbanized area boundaries, the location of all outfalls d names of all surface waters that receive discharges from
1. 2. BN and	IP #1: Develop and implement a written program for the o the regulated small MS4. For new permittees only, was the written IDD&E program Yes No Date of latest annual review of IDD&E program: 02/2023 IP #2: Develop and maintain map(s) that show permitteed, if applicable, observation points, and the locations and	detection, elimination, and prevention of illicit discharges developed within one year of permit coverage? Were updates made? Yes No and urbanized area boundaries, the location of all outfalls d names of all surface waters that receive discharges from mbered on the map(s).
1. 2. BN and the	IP #1: Develop and implement a written program for the o the regulated small MS4. For new permittees only, was the written IDD&E program Yes No Date of latest annual review of IDD&E program: 02/2023 IP #2: Develop and maintain map(s) that show permitteed, if applicable, observation points, and the locations and ose outfalls. Outfalls and observation points shall be nu	detection, elimination, and prevention of illicit discharges developed within one year of permit coverage? Were updates made? Yes No and urbanized area boundaries, the location of all outfalls d names of all surface waters that receive discharges from mbered on the map(s). of BMP #2? Yes No
1. 2. BN and the	IP #1: Develop and implement a written program for the o the regulated small MS4. For new permittees only, was the written IDD&E program Yes No Date of latest annual review of IDD&E program: 02/2023 IP #2: Develop and maintain map(s) that show permitteed, if applicable, observation points, and the locations are ose outfalls. Outfalls and observation points shall be nutled. Have you completed a map(s) that includes all components	detection, elimination, and prevention of illicit discharges developed within one year of permit coverage? Were updates made? Yes No and urbanized area boundaries, the location of all outfalls d names of all surface waters that receive discharges from mbered on the map(s). of BMP #2? Yes No the map(s) previously, attach the map(s) to this report.
1. 2. BN and the	IP #1: Develop and implement a written program for the o the regulated small MS4. For new permittees only, was the written IDD&E program Yes No Date of latest annual review of IDD&E program: 02/2023 IP #2: Develop and maintain map(s) that show permitteed, if applicable, observation points, and the locations and ose outfalls. Outfalls and observation points shall be nutled. Have you completed a map(s) that includes all components If Yes and you are a new permittee and have not submitted.	detection, elimination, and prevention of illicit discharges developed within one year of permit coverage? Were updates made? Yes No and urbanized area boundaries, the location of all outfalls d names of all surface waters that receive discharges from mbered on the map(s). of BMP #2? Yes No the map(s) previously, attach the map(s) to this report.
1. 2. BM and the	IP #1: Develop and implement a written program for the o the regulated small MS4. For new permittees only, was the written IDD&E program Yes No Date of latest annual review of IDD&E program: 02/2023 IP #2: Develop and maintain map(s) that show permitteed, if applicable, observation points, and the locations and ose outfalls. Outfalls and observation points shall be nutrated. Have you completed a map(s) that includes all components of the sand you are a new permittee and have not submitted. If No, date by which permittee expects map(s) to be completed to pate of last update or revision to map(s): 06/2023	detection, elimination, and prevention of illicit discharges developed within one year of permit coverage? Were updates made? Yes No and urbanized area boundaries, the location of all outfalls d names of all surface waters that receive discharges from mbered on the map(s). of BMP #2? Yes No the map(s) previously, attach the map(s) to this report.
1. 2. BM and tho	IP #1: Develop and implement a written program for the o the regulated small MS4. For new permittees only, was the written IDD&E program Yes No Date of latest annual review of IDD&E program: 02/2023 IP #2: Develop and maintain map(s) that show permitteed, if applicable, observation points, and the locations and ose outfalls. Outfalls and observation points shall be nutrative you completed a map(s) that includes all components If Yes and you are a new permittee and have not submitted If No, date by which permittee expects map(s) to be completed of last update or revision to map(s): 06/2023 Total No. of Outfalls in MS4: 93 Total	detection, elimination, and prevention of illicit discharges developed within one year of permit coverage? Were updates made? Yes No and urbanized area boundaries, the location of all outfalls d names of all surface waters that receive discharges from mbered on the map(s). of BMP #2? Yes No the map(s) previously, attach the map(s) to this report.

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

per jur and co	IP #3: In conjunction with the map(s) created under BMP #2 (either on the same map or on a different rmittee shall develop and maintain map(s) that show the entire storm sewer collection system within the isdiction that are owned or operated by the permittee (including roads, inlets, piping, swales, catch basing d any other components of the storm sewer collection system), including privately-owned componellection system where conveyances or BMPs on private property receive stormwater flows from upstreamed components.	permittee's s, channels, ents of the
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 rep	oort.
	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): 06/2023	
dis illic or nec	IP #4: Conduct dry weather screenings of MS4 outfalls to evaluate the presence of illicit discharges. It is charges are present, the permittee shall identify the source(s) and take appropriate actions to remove or cit discharges. The permittee shall also respond to reports received from the public or other agencies or confirmed illicit discharges associated with the storm sewer system, as well as take enforcement cessary. The permittee shall immediately report to DEP illicit discharges that would endanger users of the discharge, or would otherwise result in pollution or create a danger of pollution or would damage	correct any f suspected t action as lownstream
twi obs	r new permittees, all identified outfalls (and if applicable observation points) must be screened during dry weat ce within the 5-year period following permit coverage. For existing permittees, all identified outfalls (and servation points) must be screen during dry weather at least once within the 5-year period following permit cover eas where past problems have been reported or known sources of dry weather flows occur on a continual basis, a screened annually during each year of permit coverage.	if applicable rage and, for
1.	How many unique outfalls (and if applicable observation points) were screened during the reporting period?	47
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:	36 %
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 correct taken in the attachment.	tive action(s)
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.	
	IP #5: Enact a Stormwater Management Ordinance or SOP to implement and enforce a stormwater magram that includes prohibition of non-stormwater discharges to the regulated small MS4.	nanagement
1.	Do you have an ordinance (municipal) or SOP or other mechanism (non-municipal) that prohibits nor discharges? \boxtimes Yes \square No	n-stormwater
	If Yes, indicate the date of the ordinance or SOP: Ord. No. 2023-01 was adopted at a public meeting held on	04/19/2023.
2.	If Yes to #1, is the ordinance or SOP consistent with DEP's 2022 Model Stormwater Management Ordinance BCW0100j) with respect to authorized non-stormwater discharges? Yes No	e (3800-PM-
	If Yes to #2 and the ordinance or SOP has not been submitted to DEP previously, attach the ordinance or SOP	

3.	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).						
V:	•	Nature of Violation	7,	Enforcement Taken			
VI	olation Date	Nature of Violation	Responsible Party	Enforcement Taken			
4.	provisions of an ordinance or SOP? ☐ Yes ☒ No						
	11 103 10 11-4, 10	dentify the entity that received the waiver or	variance and the type of	non stomwater discharge approved.			
		e educational outreach to public employ nd elected officials (i.e., target audiences					
1.	•	related information distributed to public emp	, -	_			
١.	period? X		oloyees, businesses, and	The general public during the reporting			
		was distributed? The main page of the coorting by proiding information on what qu					
		hip. The Township developed an IDDE-spoorting and IDDE is discussed at annual e		onders regarding the important of illicit			
2.	Is there a well	l-publicized method for employees, business	ses and the public to repo	ort stormwater pollution incidents?			
	⊠ Yes □	No					
3.	Do you mainta	ain documentation of all responses, action to	aken, and the time require	ed to take action? Yes No			
МС	M #3 Comme	nts:					
Atta	achment 3.1: N	MS4 Map					
		Outfall Inspection Report					
Atta	achment 3.3: F	First Responder IDDE Education					
		MCM #4 – CONSTRUCTION SITE	STORMWATER RUN	NOFF CONTROL			
Are	you relying on	n PA's statewide program for stormwater ass	sociated with construction	activities to satisfy this MCM?			
	Yes 🗌 No						
(If \	Yes, respond to	o questions for BMP Nos. 1, 2 and 3 only in th	nis section. If No, respond	d to questions for all BMPs in this section)			
dis	turbance activ	mittee may not issue a building or other povities requiring an NPDES permit unless (i.e., not expired) under 25 Pa. Code Cha	the party proposing th				
		ing period, did you comply with 25 Pa. Co EP or a county conservation district (CCD) ha					
	⊠ Yes □	No Not Applicable (no building permit a	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					
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: Ord. No. 2023-01 was adopted at a public meeting held on 04/19/2023.					
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:					
A preconstruction meeting was held with applicant, property owner if different from applicant and contractor as part of the drainage & grading permit approval process to discuss project including E&S controls. Construction was not authorized to process until preconstruction meeting was conducted.					
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:					
Please contact the Chester County Conservation District for information regarding MCM 4 tracking.					

МС	M #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? \boxtimes Yes \square No					
	If Yes, indicate the date of the ordinance or SOP: Ord. No. 2023-01 was adopted at a public meeting held on 04/19/2023.					
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.					
dev dev	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? \boxtimes Yes \square No					
	If Yes, indicate the date of the ordinance or SOP: Ord. No. 2023-01 was adopted at a public meeting held on 04/19/2023.					
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.					
dev	IP #3: Ensure adequate O&M of all post-construction stormwater management BMPs that have been installed at velopment or redevelopment projects that disturb greater than or equal to one acre, including projects less than one re 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? X Yes X					
	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.					
	Franklin Township inspected PCSM facilities during the reporting period. In the event private BMPs require maintenance, the municipality will contact the responsible party requesting remediation. A reinspection will be performed to ensure proper maintenance has been conducted. Letters sent to property owners with BMPs in need of mainteannce are ailavle for review upon request.					
	you are relying on PA's statewide program for stormwater associated with construction activities, you may skip to MCM #6, nerwise complete all questions for BMPs #4 - #6 in this section.					
the	IP #4: Require the implementation of a combination of structural and/or non-structural BMPs that are appropriate to local community, that minimize water quality impacts, and that are designed to maintain pre-development runoff inditions.					
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?

3800-FM-BCW0491	9/2017
Annual MS4 Status	Report

PCSM BMP INVENTORY

Table 1. To complete the information needed for MCM #5, BMP #3, list all <u>existing structural BMPs</u> 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	Attachment 5.3			0 , "	0 , "			
2				0 , "	0 ' "			
3				0 , "	0 , "			
4				0 , "	o , "			
5				0 , "	0 ' "			
6				0 , "	0 , "			
7				0 , "	0 , "			
8				0 , "	0 , "			
9				0 , "	0 , "			
10				0 , "	0 , "			
11				0 , "	0 , "			
12				0 , "	0 , "			
13				0 , "	0 , "			
14				0 , "	0 , "			
15				0 , "	0 , "			
16				0 , "	0 , "			

ins ins be	MP #5: Ensure that controls are installed that shall prevent or minimize water quality impacts. The permittee shall spect all qualifying development or redevelopment projects during the construction phase to ensure proper stallation of the approved structural PCSM BMPs. A tracking system (e.g., database, spreadsheet, or written list) shall implemented to track the inspections conducted and to track the results of the inspections (e.g., BMPs were, or were t, 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?
2.	Has a tracking system been established and maintained to record results of inspections?
	⊠ Yes □ No
	IP #6: Develop a written procedure that describes how the permittee shall address all required components of this CM.
pla	ve you developed a written plan that addresses: 1) minimum requirements for use of structural and/or non-structural BMPs in ins for development and redevelopment; 2) criteria for selecting and standards for sizing stormwater BMPs; and 3) plementation of an inspection program to ensure that BMPs are properly installed? \boxtimes Yes \square No
MC	CM #5 Comments:
Att	achment 5.1: BMP Inspection Report achment 5.2: BMP Letters achment 5.3: PCSM BMP Inventory
	MCM #6 - POLLUTION PREVENTION / GOOD HOUSEKEEPING
ge	IP #1: Identify and document all operations that are owned or operated by the permittee and have the potential for nerating pollution in stormwater runoff to the MS4. This includes activities conducted by contractors for the rmittee.
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? \boxtimes Yes \square No
2.	When was the inventory last reviewed? 06/2023
3.	When was it last updated? 06/2023
dis	IP #2: Develop, implement and maintain a written O&M program for all operations that could contribute to the scharge of pollutants from the MS4, as identified under BMP #1. This program shall address stormwater collection or inveyance 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: 02/2023
pre	IP #3: Develop and implement an employee training program that addresses appropriate topics to further the goal of eventing or reducing the discharge of pollutants from operations to the regulated small MS4. All relevant employees d contractors shall receive training.
1.	Have you developed an employee training program? ☐ Yes ☐ No
2.	Date of last review or update to training program: 04/2023 Date of latest training: 06/2023

3.	Training topics covered:					
	MS4 SWMP, Good Housekeeping of Procedures.	f the Muni	cipal	Facilities, Illicit	t Discharge Co	ontrol, and Standard Operating
4.	Name(s) of training presenter(s):					
	Franklin Township/ARRO Consulting					
5.	Names of training attendees:					
	Melissa Ortega, Stacy Hollis, James D	'Orazio				
	Menosa Ortega, Otacy Froms, James D	Olazio				
MC	CM #6 Comments:					
Att	achment 6.1: Staff Training Documents					
				ROL MEASUR	,	
	licate the status of implementing PCMs in a not applicable.	Appendices	s A, E	3 and/or C by con	npleting the table	e below. Skip this section if PCMs
Ta	sk		Da	ate Completed	Attached	Anticipated Completion Date
Sto	Storm Sewershed Map(s)					
So	urce Inventory					
Inv	estigation of Suspected Sources					
Ord	dinance/SOP for Controlling Animal Waste	es				
PC	M Comments:					
Pe	nding permit approval.					
	POLLUTANT R	EDUCTIO	N P	LANS (PRPs)	AND TMDL P	LANS
1.	Complete this section if the development latest NOI or application or was required					
	Type of Plan	Submiss Date	ion	DEP Approval Date	Surface \	Naters Addressed by Plan
\boxtimes	Chesapeake Bay PRP (Appendix D)	TBD		TBD		Chesapeake Bay
	Impaired Waters PRP (Appendix E)					
\boxtimes	TMDL Plan (Appendix F)	07/202	0	TBD	C	hristina River Basin
	Combined Chesapeake Bay / Impaired Waters PRP				Che	esapeake Bay,
	Combined PRP / TMDL Plan					
	Joint Plan (if checked, list the name of the	ne MS4 gro	up or	names of all ent	ities participating	g in the joint plan below)
	Joint Plan Participants:					

2.	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)					
\boxtimes	Chesapeake Bay PRP (Appendix D) 13,320.14 30.45 197.87								
	Impaired Waters PRP (Appendix E)								
\boxtimes	TMDL Plan (Appendix F)	Long-Term: 3,829,120 Short-Term: 382,912	Long-Term: 49,085.20 Short-Term: 2,454.26	Long-Term: 21.30 Short-Term: 0.64					
	Combined Chesapeake Bay / Impaired Waters PRP								
	Combined PRP / TMDL Plan								
3. 4.	4. Have any modifications to the plan(s) occurred since DEP approval?								
	Franklin Township is participating in the PennDOT Big Elk Creek Streambank Restoration project by purchasing 13,321 lbs./yr. of credits in order to fulfill the PRP requirement. The Township is currently in the process of revising the TMDL plan for resubmittal and is in correspondence with DEP regarding the Township's progress.								
6.	Anticipated activities for next reporting pe	eriod.							
	Franklin Township anticipates submitting	ng the revised PRP and TN	MDL Plans in the 2023-20	24 reporting year.					
PR	P/TMDL Plan Comments:								
Atta	achment 7.1: TMDL Potential Project Do	ocuments							

NEW BMPs FOR PRP/TMDL PLAN IMPLEMENTATION

Table 2. List all <u>new structural BMPs</u> installed and <u>ongoing non-structural BMPs</u> implemented <u>during the reporting period</u> 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)
1	Big Elk Creek Streambank Restoration	N/A	ı	3,573	LF	39°47'27"	75°57'22"	2023			13,321
						0 , "	o , "				
						0 , "	o ' "				
						o , ,,	0 , "				
						0 , ,,	0 ' "				

BMP INVENTORY FOR PRP/TMDL PLAN IMPLEMENTATION

Table 3. List all <u>existing structural BMPs</u> that have been installed in <u>prior reporting periods</u> 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?
						o , "	o , "	2			
						0 , "	0 , "				
						0 , "	0 , "				
						0 , "	0 , "				
						0 , ,,	0 , ,,				

|--|

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).

Jeffrey Eastburn	of R. Gulle
Name of Responsible Official	Signatule
610.255.5212	08 NO 23
Telephone No.	Date

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Attachment 1.1

STORMWATER MANAGEMENT PROGRAM

Franklin Township



Stormwater Management Program (SWMP)

ARRO Consulting, Inc.

108 West Airport Road

Lititz, PA 17543



REVISED JULY 2023 ARRO NO. 00011162.01



MCM #1: PUBLIC EDUCATION AND OUTREACH ON STORMWATER IMPACTS

BMP #1: PUBLIC EDUCATION AND OUTREACH PROGRAM (PEOP):

The Township will engage in a PEOP with the TAGs through the activities listed under MCM #1; BMP #3 and MCM #1; BMP #4, which are outlined later in this document.

The PEOP was designed to achieve measurable improvements in the TAG's understanding of the causes and impacts of stormwater pollution and the steps they may take to prevent it. TAGs are identified under MCM #1; BMP #2 which is outlined later in this document.

The Township may partner with other MS4s, the county, schools, watershed associations and/or environmental organizations to improve the TAG's understanding of MS4 related topics.

Listed below are the Township's PEOP objectives and goals. PEOP objectives are intended to be the short-term means for achieving the long-term program goals. The Township's annual MS4 reports will evaluate the effectiveness of each PEOP objective and provide a method to measure improvements in the TAG's understanding. Annual MS4 reporting of the PEOP to include the following:

- Assess what actions the MS4 permit holder took during the reporting period to achieve measurable improvements in the TAGs understanding.
- Describe what the MS4 permit holder has learned as a result of implementing the PEOP objectives over the course of the reporting period.
- Based on what was learned during that reporting year, outline what actions the MS4 permit
 holder will undertake over the course of next annual reporting period to achieve measurable
 improvements in the TAGs understanding.

GENERAL PUBLIC

Each annual MS4 reporting year the Township will review and update the PEOP to maintain relevancy.

- **Objective** Define the methods to expose the general public to stormwater related information outside of a municipal setting.
 - Long Term Goal –Increase the public's (residential, commercial and industrial, institutional, and Township staff/elected officials to the Township) awareness and understanding of the Township's MS4 program, causes and impacts of stormwater pollution, and how to prevent pollutant discharges into the Township's regulated MS4.

BMP #2: TARGET AUDIENCE GROUPS:

In order to establish a more thorough understanding of the causes and impacts of stormwater pollution in Franklin Township (Township), ARRO consulting, Inc. (ARRO) completed a Target Audience Analysis to identify Target Audience Groups (TAGs) that will most likely contribute to local waterway impairments or produce Illicit Discharges. The Target Audience Analysis was conducted in Geographic Information Systems (GIS) with Franklin Township's Urbanized Area



2010 (UA), and watersheds, that were identified from the Pennsylvania Department of Environmental Protection (PADEP) Municipal Requirements table. The data was obtained from the United States Geological Survey (USGS) Stream Stats Application and Land Use information from 2020 Chester County parcel data. TAGs were identified by comparing watersheds, and the UA areas with Google Earth Aerial Imagery. By understanding the most likely sources for pollution, the Township has the ability to establish location specific Minimum Control Measures (MCMs) and associated Best Management Practices (BMPs) for their MS4 program.

Figure 1. Pennsylvania Department of Environmental Protection Municipal Requirements Table

MS4 Name	NPDES ID	Individual Permit Required?	Reason	Impaired Downstream Waters or Applicable TMDL Name	Requirements	Other Cause(s) of Impairment
Chester Co	unty					
				Beaver Creek		Cause Unknown (4a), Other Habitat Alterations, Water/Flow Variability (4c)
Franklin Township	PAG130053	No		East Branch Brandywine Creek		Cause Unknown (4a), Other Habitat Alterations, Water/Flow Variability (4c)
				West Branch Brandywine Creek	Appendix C- PCB (4a), Appendix E- Nutrients, Siltation (4a)	Water/Flow Variability (4c)
				Unnamed Tributaries to West Branch Brandywine Creek		Cause Unknown (4a)

Figure 1 shows the Appendix- E streams that were used to delineate watersheds.

The Township's TAGs have been defined as (1) Residents, (2) Commercial and Industrial Community, (3) Institutions, (4) Township Elected Officials/Township staff, and (5) Contractors and Developers. Each Target Audience will be reviewed and updated as necessary as part of each annual MS4 report.

TARGET AUDIENCE GROUP 1:

<u>Residents</u>: The Township is primarily built-out with limited options for new development or redevelopment; therefore, the primary sources of pollution to the regulated MS4 are likely caused from existing residential uses and activities. A majority of the Township's land use is residential, so the probability of illicit discharges from residential activities is high. Sources of pollution from residential uses include everyday activities such as car washing, law maintenance, power washing, storage of materials (trash, recyclables, etc.) and vehicle and equipment maintenance. In order to address pollutants generated from residential uses the Township must consider methods for source control to retain pollutants at the locations where those pollutants are generated. This presents the necessity for a rigorous public education and



outreach program that involves residents in the community in the MS4 improvement process. This can be done by educating the public how to use and practice proper homeowner best management practices. Furthermore, instructing the public to use residential BMPs, such as rain gardens and rain barrels will supplement the Township's effort in reducing the effect the community has upon the local waterways.

TARGET AUDIENCE GROUP 2:

<u>Commercial and Industrial Community</u>: Commercial and industrial areas/uses present the potential for pollution to the regulated MS4 through everyday business activities. In order to address pollution generated from commercial and industrial areas/uses, the Township must determine methods of communicating with the commercial and industrial community. This presents the necessity for a rigorous public education and outreach program that involves businesses in the community in the MS4 improvement process. This can be done by educating the public on the importance of stormwater and how to practice proper material handling practices that will supplement the Township's effort in reducing the effect that the community has upon the local waterways.

TARGET AUDIENCE GROUP 3:

<u>Institutions</u>: Institutional areas and activities present the potential for pollution to the regulated MS4 through everyday activities. In order to address pollution generated from institutional areas/uses, the Township must determine methods of communicating with the institutional community. This can be done by educating the public on the importance of stormwater and how to practice proper material handling practices that will supplement the Township's effort in reducing the effect that the community has upon the local waterways.

TARGET AUDIENCE GROUP 4:

Elected Officials and Township Staff. The Township Board of Supervisors (BOS) is an elected representative group of the Franklin Township community. The Township BOS guides the Township through the major decision-making processes such as budget approval and the passing of ordinances. Because of the unique position the BOS holds, having an educated group of elected officials on all the uses, activities, and changes to the MS4 program that may impact the regulated MS4 is important. The Township must consider methods for source control to retain pollutants at the locations where those pollutants are generated and reduce the Townships impact on waterways of the United States. This presents the necessity for a rigorous education and outreach program that involves elected officials in the decision-making process to improve the Township's MS4 program. This can be done by educating elected officials on necessary changes and processes that need to be implemented. The Township Staff is in charge of proper O&M of Township owned stormwater facilities and to ensure that compliance is achieved for their MS4 Permit.

TARGET AUDIENCE GROUP 5:

<u>Contractors and Developers</u>: Construction areas and activities present the potential for pollutants to enter the MS4. Sources of pollution from contractors include runoff from everyday construction activities, such as chemical use, land disturbance, equipment handling, and equipment storage, which can carry pollutants like sediment, phosphorus, nitrogen, concrete,



debris, and oil and grease into local waterways. In order to address pollutants generated from contractors the Township must consider methods for source control to retain pollutants at the location where they pollutants are generated. This presents the necessity for a rigorous public education and outreach program that involves contractors in the community in the MS4 improvement process. This can be done by educating the public how to use and practice low impact development practices and proper material handling procedures that will supplement the Township's effort in reducing the effect the community has upon the local waterways.

Each annual MS4 reporting year the Township will review and update the Target Audience list and methods for distributing educational materials to these groups.

BMP #3: PUBLISH STORMWATER EDUCATIONAL MATERIALS:

On an annual basis, the Township will produce stormwater education material and informational items about the Township's Stormwater Management Program that will be published in print and/or on the internet. Each annual MS4 reporting year the Township will review, update and maintain published stormwater education material and informational items about the Township's Stormwater Management Program, general stormwater information and the Townships stormwater management activities.

The Township utilizes many different forms of handouts, flyers, newsletters and brochures along with the Township website and other avenues to present general stormwater educational material and informational items about the Township's Stormwater Management Program, and information on the Townships stormwater management activities to the community and TAGs. The Township will continue the aforementioned and will attempt to partner with other MS4s, the county, schools, watershed associations and/or environmental organizations to meet this BMP.

The Township will utilize the above referenced methods for developing MS4 related material and updates for the public. As the knowledge of each TAG increases, the Township will evaluate other methods for producing stormwater education material and informational items about the Township's Stormwater Management Program, general stormwater information and information on the Townships stormwater management activities.

For educational materials, please reference previous year's annual reports or contact the Township.

BMP #4: DISTRIBUTE STORMWATER EDUCATIONAL MATERIALS:

The Township will utilize at least four methods of distribution of stormwater education material and informational items about the Township's Stormwater Management Program to the public and the TAGs.

The Township utilizes the displays, posters, signs, pamphlets, booklets, and/or brochures (Method 1) located in the Township Office and displayed at monthly Board of Supervisors meetings (Method 2). Information provided on the Township's website and Facebook page (Method 3) and made available through email upon request (Method 4) as the 4 methods of



distribution. The Township will continue the aforementioned and will attempt to locate additional distribution methods based on the TAGs.

The Township will utilize the above referenced methods for reporting MS4 related material and updates to the public. As the knowledge of each TAG increases, the Township will evaluate other distribution methods.

MCM #2: PUBLIC INVOLVEMENT / PARTICIPATION

BMP #1: PUBLIC INVOLVEMENT AND PARTICIPATION PROGRAM (PIPP):

The Township will engage in a PIPP with the TAGs listed under MCM #1, BMP #2 through activities listed under MCM #2 BMP #3 and MCM #2 #4, which are outlined later in this document. The PIPP is connected to the PEOP so updates to one program will be reflected in the other program.

The Township may partner with other MS4s, the county, schools, watershed associations and/or environmental organizations to improve the public and TAGs understanding of the causes and impacts of stormwater pollution and the steps they can take to prevent it.

Annual MS4 reporting of the PIPP to include the following:

- Opportunities for the public to participate in the decision-making processes associated with the development, implementation and updating of programs and activities associated with the Township's MS4 permit.
 - The Township conducts open public meetings, which have also been held online due to Coronavirus concerns and social distancing recommendations, twice a month on a regularly scheduled basis. These meetings are properly advertised in accordance with all applicable State and local public notice requirements. Each of the aforementioned public meetings will have a scheduled time on the agenda for public participation on any item, which may include items related to the Township's Stormwater Program. Any comments received at these meetings regarding the Township's Stormwater Management Program will be recorded in the meeting minutes. The Township Staff that is responsible for the Stormwater Management Program will make appropriate follow-up contact with public participants, to ensure that their comments or concerns are addressed.
 - In addition to the public meetings, public comment on the Stormwater Management Program can be received at the Township office during normal business hours by phone or by contact through the Township Website.
- Methods for routine communication for groups that operate within proximity to the MS4 or receiving waters.
 - Have discussions regarding MS4 related topics such as implementation of residential BMPs, pollution prevention, and information regarding the program in an advertised public meeting to communicate.
 - Follow up with the community when questions, concerns or complaints related to stormwater are raised.
 - Based on the findings of the PEOP objectives and goals, the Township shall assess other means for making MS4 reports available to the public.



- Means for making annual MS4 reports available to the public:
 - Continue to provide reports, available for public review, which are available to be reviewed upon request at the Township main office located at 20 Municipal Ln., Landenberg, PA 19350 between the hours of 8:00am-4:30pm.
 - Based on the findings of the PEOP objectives and goals, the Township shall assess other means for making MS4 reports available to the public.
- Participation by the public in programs and activities related to the MS4 permit are be achieved by:
 - o Providing an MS4 based discussion at an advertised public meeting.
 - Based on the findings of the PEOP plans and goals, the Township will assess other participation options for reaching each TAG.
 - Based on the findings of the PEOP objectives and goals outlined under MCM #1, BMP #1, the Township will assess other options for soliciting public involvement and participation.

BMP #2: PUBLIC NOTIFICATION AND INPUT:

The Township will advertise any proposed MS4 Stormwater Management Ordinance or Pollutant Reduction Plan (PRP) revision, provide opportunities for public comment, evaluate any public input and feedback, and document the comments received and the Township's response. The Township will update their ordinance to be consistent with PADEP's Model 2022 Stormwater Management Ordinance.

BMP #3: SOLICIT PUBLIC INVOLVEMENT AND PARTICIPATION:

The Township will conduct at least one public meeting per year to solicit public involvement and participation from the TAGs. This meeting may be part of one of the regularly scheduled meetings, conducted as a specific portion of the meeting or may be a separate meeting. The public should be given reasonable notice in advance of each meeting.

During the meetings, the Township will present a summary of progress, activities, and accomplishments regarding implementation of the Stormwater Management Plan, and provide opportunities for the public to provide feedback and input. The Township will report instances of cooperation and participation in activities; presentations made to local watershed organizations and conservation organizations; and similar instances of participation or coordination with organizations in the community.

The Township will document and report activities in which members of the public assisted or participated in meetings and in the implementation of the Township's Stormwater Management Plan, including education activities or organized implementation efforts such as cleanups, monitoring, storm drain stenciling, or others.

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

To report an illicit discharge at any time, please call the Township office at 610.255.5212 or the DEP emergency line at 800.541.2050.



During the Target Audience Analysis, watershed areas were analyzed to identify two priority categories. These categories are high and low. The level of priority area is designed as based on history of dry weather flows:

<u>High Priority</u>- have a history of previous dry weather flow, illicit discharge history, and/or complaints.

Low Priority- have no history of dry weather flow, no illicit discharge concerns, and/or no complaints.

Outfall ID	Land Use	Coord	linates	Priority Rank
OF001	Residential	39.78881	-75.8084	TBD
OF002	Residential	39.74750	-75.8462	TBD
OF003	Residential	39.74849	-75.8481	TBD
OF004	Residential	39.74973	-75.8398	TBD
OF005	Residential	39.75031	-75.8346	TBD
OF006	Residential	39.74973	-75.8311	Low
OF007	Residential	39.74913	-75.8324	Low
OF008	Residential	39.74591	-75.8318	TBD
OF009	Residential	39.74591	-75.8292	Low
OF010	Residential/Commercial	39.75431	-75.8277	Low
OF011	Residential	39.75784	-75.8463	Low
OF012	Residential/Commercial	39.76105	-75.8455	Low
OF013	Residential	39.76445	-75.8394	TBD
OF014	Residential	39.76740	-75.8479	High
OF015	Residential	39.76661	-75.8462	High
OF016	Residential	39.76491	-75.8433	Low
OF017	Residential	39.76908	-75.8413	TBD
OF018	Residential	39.75760	-75.8482	TBD
OF019	Residential	39.75706	-75.8509	TBD
OF020	Residential	39.77021	-75.8332	High
OF021	Residential	39.77639	-75.8396	Low
OF022	Residential	39.77905	-75.8411	Low
OF023	Residential	39.77626	-75.8334	Low
OF024	Residential	39.77751	-75.8318	TBD
OF025	Residential	39.78081	-75.8338	High
OF026	Residential	39.78115	-75.8348	High
OF027	Residential	39.78265	-75.8164	High
OF028	Residential	39.78047	-75.8057	TBD
OF029	Residential	39.76970	-75.8091	TBD
OF030	Residential	39.78101	-75.8234	TBD
OF031	Residential	39.77592	-75.8310	TBD
OF032	Residential	39.77320	-75.8320	High
OF033	Residential	39.77273	-75.8320	Low
OF034	Residential	39.77174	-75.8321	Low
OF035	Residential	39.76786	-75.8365	TBD
OF036	Residential	39.76483	-75.8395	Low
OF037	Residential	39.75371	-75.8329	TBD
OF038	Residential	39.74697	-75.8353	TBD



OF039	Residential	39.79103	-75.8013	TBD
OF040	Residential	39.79676	-75.7814	TBD
OF041	Residential	39.79625	-75.7813	TBD
OF042	Residential	39.79553	-75.7820	TBD
OF043	Residential	39.79224	-75.7840	TBD
OF044	Residential	39.78352	-75.7774	TBD
OF045	Residential	39.78192	-75.7884	TBD
OF046	Residential	39.78386	-75.7967	TBD
OF047	Residential	39.78886	-75.7853	TBD
OF048	Residential	39.78759	-75.8088	TBD
OF049	Residential	39.78524	-75.8029	TBD
OF050	Residential	39.78515	-75.8028	TBD
OF051	Residential	39.77627	-75.8025	TBD
OF052	Residential	39.77480	-75.7981	TBD
OF053	Residential	39.78633	-75.8165	TBD
OF054	Residential	39.78640	-75.8175	TBD
OF055	Residential	39.78399	-75.8178	TBD
OF056	Residential	39.77460	-75.8225	TBD
OF057	Residential	39.77690	-75.8224	TBD
OF058	Residential	39.77527	-75.8249	TBD
OF059	Residential	39.76941	-75.8323	TBD
OF060	Residential	39.76010	-75.8343	Low
OF061	Residential	39.74874	-75.8491	Low
OF062	Residential	39.75799	-75.8460	TBD
OF063	Residential	39.75680	-75.8398	TBD
OF064	Residential	39.76827	-75.8351	High
OF065	Residential	39.75292	-75.8348	TBD
OF066	Residential	39.75061	-75.8359	TBD
OF067	Residential	39.74587	-75.8287	Low
OF068	Residential	39.77814	-75.8004	TBD
OF069	Residential	39.74209	-75.8204	Low
OF070	Residential	39.78691	-75.8029	TBD
OF070	Residential	39.77633	-75.8442	Low
OF072	Residential	39.77033	-75.7890	TBD
OF072	Residential	39.79563	-75.7767	TBD
OF073	Residential	39.74578	-75.8501	TBD
OF074	Residential	39.74549	-75.8301	TBD
		39.74349	-75.8459	TBD
OF076 OF077	Residential Residential	39.78235	-75.8439 -75.8410	
OF077	Residential	39.78233	-75.8410	High Low
OF078		39.77831	-75.7835	TBD
OF079	Residential Residential	39.778339	-75.764	TBD
OF080 OF081	Residential	39.78339	-75.7764	TBD
OF081	Residential	39.79744	-75.8031	TBD
OF082	Residential	39.78181	-75.8031	TBD
OF083	Residential	39.76161	-75.8106	TBD
OF084	Residential	39.78663	-75.8100	TBD
OF085	Residential	39.78736	-75.8173 -75.8150	TBD
OF 000	residential	33.70730	-/3.0130	עטו



OF087	Residential	39.78739	-75.8148	TBD
OF088	Residential	39.78347	-75.8258	TBD
OF89	Residential	39.79523	-75.7871	High

WHAT IS DRY WEATHER SCREENING?

Dry weather screening is a field test method for inspecting stormwater drainage areas to help locate and identify illicit discharges to a municipal stormwater system. Field testing or screening is designed primarily for assessing flowing discharges from a stormwater conveyance system.

TRAINING AND QUALITY CONTROL FOR MS4 STAFF

Anyone performing dry weather screens must be properly trained in the (I) Site Procedures, (II) Monitoring Procedures and (III) Illicit Discharge Elimination Procedures outlined in this document. The aforementioned procedures should be reviewed, at a minimum, on an annual basis and updated as necessary. The person(s) preforming the dry weather screenings should provide an acknowledgement that they have read and are familiar with the procedures outlined in the document. A sample sign off sheet has been included at the end of this document.

SITE PROCEDURES

This section outlines field staff protocols, safety precautions and the recommended field equipment, sampling sequence and sampling collection methods.

The dry weather screening locations should be chosen in advance based on the MS4 map and the MS4 Outfall Sampling Protocol. The latest version of the PADEP Outfall Reconnaissance Inventory / Sample Collection Field Sheet, or similar PADEP required field collection data sheet, must be used to record the dry weather sampling events. The person(s) performing dry weather sampling should note the background data (date, location, weather, etc.) on the required PADEP field collection data sheets for each sampling location prior to entering the field.

The person(s) performing dry weather sampling must have and be familiar with the required dry weather screening equipment and be prepared to take photographs at each dry weather sampling location. Photographs represent proof of sampling activities and provide a visual record to document the conditions of the outfall and surrounding area.

Dry weather screening events should not occur within 48-hours of a rainfall event. Performing screenings 48-hours after rainfall reduces the likelihood that flow from an outfall is precipitation related.

Using a dry erase board mark the outfall number, inspection date and initials of the person performing the inspection. Position the dry erase board within close proximity to the outfall. Take a photograph of the dry ease board (making sure the outfall number, inspection date and initials of the person performing the inspection are visible) and the outfall.



- 4. Complete the PADEP Outfall Reconnaissance Inventory / Sample Collection Field Sheet, or similar PADEP required field collection data sheet, including the inspector's signature and initials.
- 5. Print the outfall inspection photograph, staple the photograph to the PADEP Outfall Reconnaissance Inventory / Sample Collection Field Sheet, or similar PADEP required field collection data sheet, and note on the field report that a photograph of the inspection has been attached to the field report.
- 6. PADEP Outfall Reconnaissance Inventory / Sample Collection Field Sheets, or similar PADEP required field collection data sheets should filed according to the annual MS4 reporting cycle.

DRY WEATHER SAMPLING SAFETY / GENERAL PRECAUTIONS

- 1. Review and familiarize yourself with this document.
- 2. Read all manufacture instructions to familiarize yourself with the test equipment before you begin. Note any manufacture precautions in the instructions.
- 3. Notify a designated person of your activities and dry weather screening route before you go into the field. The designated person should be contacted when dry weather screening activities cease. If the designated person is not notified within a specified amount of time, the designated person should notify the Township Manager and the authorities of your absence.
- 4. Wear reflective clothing or a vest and an identification badge.
- 5. If possible, place signage on your vehicle to identify you as professional or acting for the Township.
- 6. In the event of an accident or suspected poisoning, immediately call 911.
- 7. Avoid contact between fluids and skin, eyes, nose and mouth.
- 8. Wear safety goggles or glasses and rubber gloves when handling fluids.
- 9. Use the caps or stoppers to cover test tubes or samples bottles.
- 10. Wipe up any spills, liquid or powder, as soon as they occur.
- 11. Do not expose materials or equipment to direct sunlight for long periods of time and protect materials or equipment from extremely high or low temperatures.
- 12. Safely dispose of all waste materials appropriately.
- 13. Park your vehicle safely off roads and out of the way of traffic. The placement of orange safety cones is recommended around the vehicle.
- 14. Approach the screening location safely. Watch out for traffic on bridges and when crossing roads. Be on the lookout for snakes, fire ants, wasps, poison ivy, Africanized honeybees, wild animals or briars.
- 15. Avoid areas of high water.
- 16. Perform dry weather sampling another day or at another location if any dangerous condition is encountered.

SUGGESTED DRY WEATHER SAMPLING EQUIPMENT LIST

- 1. MS4 Map
- 2. Required PADEP Field Collection Data Sheets
- 3. Armored thermometer, centigrade
- 4. pH Meter
- 5. Octa-Slide Comparator



- 6. Conductivity Meter
- 7. Storm Drain Test Kit with tests for copper, chlorine, and detergent
- 8. Ammonia Nitrogen Test Kit
- 9. Gloves for handling chemicals
- 10. Safety goggles
- 11. Container for bringing back liquid reagent wastes from the field
- 12. Bottle of deionized or distilled water for rinsing equipment after sampling
- 13. Paper towels or rags
- 14. Tape measure or ruler
- 15. Camera
- 16. Dry Erase Board
- 17. Dry Erase Pen

SUGGESTED IN-FIELD DRY WEATHER SAMPLING SEQUENCE

- 1. pH meter calibration
- 2. Initial site observations: trash, sewage, surface scum, etc.
- 3. Air temperature
- 4. Physical observations: flow, color, odor, oil sheen
- 5. Water temperature
- 6. pH
- 7. Detergent
- 8. Ammonia-Nitrogen
- 9. Copper
- 10. Chlorine
- 11. Conductivity

It is important to know if dry-weather flow is typical at the dry weather sampling site. Spring flow or groundwater intrusion into an MS4 system is not uncommon in southeastern Pennsylvania. If a dry weather flow is encountered the flow should be photographed and described. If it is confirmed that a flow is from a groundwater source, the person performing the dry weather screenings should be notified so they can make a comparison during the next dry weather sampling event at that location. If the source is not groundwater or conditions at the location have changed, additional sampling may be warranted at the inspector's discretion.

Along with the information provided on the required PADEP field collection data sheets the following should also be noted to assist the person performing the next dry weather sampling event at that location:

- Record site access information, outlining how you accessed or approached the outfall and how you collected the sample.
- Note any environmental issues such as poison ivy or saturated soils.
- Detail any other issues which may affect future dry weather screening activities.

METHODS OF WATER (FLOW) SAMPLE COLLECTION OF A SUSPECTED ILLICIT DISCHARGE



There are three accepted methods for collecting water samples:

- <u>Discharge Grab</u> Rinse the test tubes or sampling containers twice with the water to be sampled. Collect the sample by putting the sampling container under the discharge of the outfall. Be sure to wear safety gloves and goggles.
- 2. <u>Surface Water Grab</u> Rinse the test tubes or sampling containers twice with the water to be sampled. If deep enough, collect the sample at a depth of approximately twelve inches under the surface of the flow. Lower your container vertically to a depth of approximately twelve inches and then turn the container upright. Rinses should be done at the same depth you are sampling at. Approach the sampling location from downstream of any flow, so as not to disturb sampling site. If there is a current, be sure you are standing downstream of the container. Be sure not to drag the container on the bottom or kick up sediment into the sample.
- 3. <u>Bucket Grab</u> Rinse the bucket twice with water to be sampled. Dispose of rinse water away from where actual sample will be taken. Gently lower bucket approximately twelve inches into the water or to one-third of total depth whichever is less and fill. Retrieve and take samples in the test tubes or sampling containers directly out of the bucket. Be sure and rinse those containers twice before collecting samples to be tested.

MONITORING PROCEDURES - TESTS AND OBSERVATIONS

This section outlines the suggested parameters to sample if a dry weather flow is encountered, illicit discharge protocol and the sample clean-up and storage of equipment.

PARAMETER 1: CONDUCTIVITY

Conductivity can be used for describing inorganic materials in water and fluctuating levels of conductivity can be an indicator of pollution from a number of activities such as wastewater discharges, oil production activities, irrigation, removal of vegetation shading a stream and causing increased evaporation, overuse of fertilizers, spreading of road salt during icy conditions, etc. Conductivity can be recorded using the Total Dissolved Solids (TDS) Tester.

PARAMETER 2: TEMPERATURE

Temperature dramatically affects the rates of chemical and biochemical reaction within the water. Many biological, physical, and chemical principles depend on the temperature. Some of the most common of these are the solubility of compounds in water, distribution and abundance of organisms living in the water, rates of chemical reactions, density inversions and mixing, and current movements. Unusual temperature variations in an MS4 could indicate thermal pollution by illegal discharges into the system. Water temperature can be collected using a thermometer.

PARAMETER 3: AMMONIA-NITROGEN

Nitrogen is a fundamental plant nutrient and required by all living plants and animals for building protein. Ammonia nitrogen is produced largely by deamination of organic nitrogen-containing compounds and by hydrolysis of urea. Sources of ammonia nitrogen in an MS4 could be illegal connections to the sanitary sewer system, poorly functioning septic systems, or wildlife (particularly large concentrations of ducks and geese). Ammonia-Nitrogen can be collected using a Testing Procedure and Ammonia-Nitrogen Test Kit.



PARAMETER 4: PH

pH is a measure of how acidic or basic (alkaline) a solution is. Pure water has a pH of 7.0. When the pH is less than 7.0, the water is said to be acidic. When the pH is greater than 7.0, the water is said to be basic or alkaline. Water's ability to resist changes in pH is critical to aquatic life. There are several activities in water that can severely affect the pH. Human activities such as accidental spills, agricultural runoff (pesticides, fertilizers, animal wastes), and sewer overflows may also change pH. pH can be defined using a pH Meter.

PARAMETER 5: CHLORINE

Chlorine is used in water treatment and wastewater treatment processes to disinfect water. It has the same effect on natural waters. Chlorine in natural waters is toxic to aquatic life, particularly micro-organisms and can create a "sterile" environment. Chlorine in storm drain discharge could indicate an illicit connection with the water supply system or someone's swimming pool. Chlorine levels can be defined using a Chlorine Test Kit.

PARAMETER 6: COPPER

Copper is a metallic element essential to human growth and is literally found all over the world. Generally, detection of copper during monitoring could indicate an illicit discharge into the storm drain system. Copper levels can be defined using a Copper Test Kit.

PARAMETER 7: DETERGENTS

Detergents can be toxic to many aquatic plants, bugs, and fish. In addition to their possible toxicity, detergents can also lower the level of oxygen that is available to aquatic life, such as fish. This is a result of biodegradation of the detergent. Detergent enters our surface water through a variety of channels. Illicit discharges into storm drains account for some of the detergent detected in storm drain outfalls. Car washing and outdoor cleaning of screens and grills also introduce detergent into our water bodies. Leaking sanitary sewers could also contribute detergents used in household cleaning. Detergent levels can be defined using a Detergent Test Kit.

PARAMETER 8: COLOR

Color is determined by visually comparing the sample to known color standards. The Borger Color System (BCS) can be utilized to assess color. BCS uses 147 color chips representing colors that actually occur in aquatic insects. Since protective coloration is part of some aquatic insects' natural defense mechanisms, this color chart will provide a range of natural colors found in creeks nationwide. Some aquatic insects also demonstrate bright colors in a range that would include those associated with illicit flows. The presence of dyes and process chemicals may be indicated when unusual colors are observed in storm drain systems.

PARAMETER 9: OIL SHEEN

Hydrocarbons such as oil, gasoline, and grease often wash into the storm drain system through stormwater runoff. Less often, leaking or abandoned underground petroleum storage tanks account for larger influxes of hydrocarbons. These substances are toxic to aquatic organisms. Oil sheen is determined through human observation. Observe outfall area for the presence of oil



sheen (hydrocarbon residue). These are identified by a rainbow-like sheen on the water's surface.

NOTE: There are some types of algae that will produce a surface sheen, especially in isolated, stagnated pockets or pools in soils next to the outfall pool. Disregard these small packets of stagnated water.

PARAMETER 10: ODOR

"Clean" natural drainage water (during most of the year) produces no distinctive odors other than a slight mustiness. Since most organic and many inorganic chemicals generate some odor, a simple sensory "smell" test can be a valid indicator of possible illicit flows in a waterway.

Water odor can be determined as follows:

- 1. Rinse sample container twice with water to be tested.
- 2. Fill the sample container at least halfway with sample water and hold the sample about six inches from your nose. Use your free hand to fan the scent to your nose.

0.	No odor detected
1.	Gasoline
2.	Dry cleaning fluid
3.	Unidentified solvent odor
4.	Musty or septic
5.	Sweet or fruity
6.	Putrid (decay or decomposition odor)
7.	Chlorine
8.	Other (describe)

Note 1: Never inhale the air directly off the top of the sample, as many potential contaminants are injurious to delicate nasal membranes and lung tissues.

Note 2: When stream-side sediments are disturbed, odors associated with anaerobic decomposition are often released. Therefore, disturb streamside sediments as little as possible

PARAMETER 11: TRASH, SEWAGE AND SURFACE SCUM

Sewage, surface scum, and trash are undesirable, and the observer should try to identify these features at the outfall as best as possible. Color of scum and/or floating solids should also be noted.

Often water in the outfall pool area will reveal signs of storm drain contamination by sewage collection systems or toxic conditions. Look for these indicators and record the appropriate code.

0	None observed
1	Fish kills
2	Fecal matter



3	Toilet paper (typically resembles flocculent material)
4	Food products (such as corn)
5	Condoms or plastic tampon applicators
6	Tubifex worms (blood worms)
7	Mosquito larvae concentrations ("wigglers")
8	"Sewage fungus," actually observable, threadlike colonies of grayish white bacteria
9	Absence of aquatic life (sterile)
10	Other - describe on sheet

CLEAN-UP AND STORAGE OF EQUIPMENT

- Glassware Cleaning Procedure It is important to wash test tubes and/or sample containers with Deionized Water, 3 times in succession, after each test procedure is completed. At the end of each day, all sampling and test glassware should be washed with detergent and rinsed 3 times in succession.
- Waste Disposal Procedure Collect all waste from tests in one lidded container to be taken
 with you from the test site. All waste from tests may be disposed of by flushing with lots of
 water down a toilet or drain which is connected to a central treatment facility. Waste should
 never be discarded on the ground or back into water being sampled.
- Storm Drain and Ammonia-Nitrate Kits Storage Store testing kits in a clean, dry space
 away from pets and children. Do not subject them to extreme cold, heat, or humidity. Don't
 leave them lying in the sun. It is best to store them in a closet in your home, classroom, or
 workplace. Do not store them outside. Follow manufacture instructions.
- pH Meter The pH meter is your most sensitive piece of equipment. It is very sensitive to excessive heat (like a closed car), excessive shaking, and excessive moisture (drizzle, being laid on a wet surface, dropping it in a lake, wearing it in the shower, immersing the meter above the immersion line). The pH pens are not waterproof or even water resistant. Be very careful to protect against moisture, especially during rainy conditions. Pens will not work properly if moisture gets into electronics. If pen gets damp, pull out batteries and allow electronics to dry. After electronics have dried, replace batteries. Rinse the probe section of the pH pen in tap water. Put the pH Pen away wrapped in a towel or a protective covering. Follow manufacture instructions.

METHODS FOR REMOVING OR CORRECTING AN ILLICIT DISCHARGE

Please note illicit discharge sources vary greatly therefore a step-by-step procedure for locating and removing the source for an illicit discharge cannot be provided. This section is intended as an outline to help the inspector assess the nature of the illicit discharge and begin the process of eliminating the discharge.

If an illicit discharge is found the inspector should perform the procedures outlined in this document to determine the source. If the illicit discharge source can be determined the inspector should immediately notify the property owner(s)/persons responsible for the illicit discharge source and make them aware they are in violation of the Township's MS4 Permit. The specifics for notifying, resolving and implementing an enforcement action based on an illicit discharge are governed under the municipal code(s).



If the illicit discharge source cannot be determined the inspector should utilize the MS4 Map to trace and isolate the area where the illicit discharge source may have originated. For example, if an illicit discharge is noted from MS4 Outfall X the inspector can evaluate each upslope stormwater management feature until the source is found (e.g., illegal dumping into a stormwater inlet) or until the discharge can be isolated (e.g., stormwater inlet 4 shows signs of the discharge while the adjoining upslope inlet shows no signs of the discharge).

BMP #1: ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM:

- 1. The Township will consider screening outfalls in priority areas during varying seasonal and meteorological conditions. The operation of the stormwater system is monitored by staff.
- 2. Procedures for identifying the source of an illicit discharge when a contaminated flow is detected at a regulated small MS4 Outfall will be determined on a case-by-case basis and will generally follow published procedures.
- 3. Procedures for eliminating an illicit discharge will be determined on a case-by-case basis and will generally follow published procedures.

The existing IDD&E program shall continue to be implemented and evaluated annually. Records shall be kept of all MS4 Outfall inspections, flows observed, results of field screening and testing, and other follow-up investigation and corrective action work performed under this program and kept in annual files. IDD&E information must be reviewed, updated when necessary, and provided to Township employees, businesses and the general public during each reporting cycle. IDD&E information will be reviewed and updated based on findings of the PEOP plans and goals in order to provide relevant information to each TAG.

BMP #2: OUTFALL MAP(S):

A copy of the current MS4 conveyance map has been included with this document. The following features are required to be located on the MS4 Conveyance Map as per MS4 Permit requirements:

- Outfalls
- Names and locations of all surface waters of the Commonwealth

BMP #3: STORM SEWER MAP(S):

A copy of the current MS4 map has been included with this document. The following additional features are required to be located on the MS4 Conveyance Map as per MS4 Permit requirements:

- Entire storm sewer collection system
- Roads
- Inlets
- Piping
- Swales
- Catch Basins
- Channel Basins



Any other features of the MS4 permittee's storm sewer system including the municipal boundaries and/or watershed boundaries will be included with this map.

BMP #4: OUTFALL FIELD SCREENING AND ILLICIT DISCHARGE DETECTION & ELIMINATION:

Township employees should review and be familiar with the following publication: <u>Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments</u> (CWP, October 2004) available through the EPA at https://www3.epa.gov/npdes/pubs/idde_manualwithappendices.pdf.

All of the identified regulated small MS4 Outfalls will be screened during dry weather at least once during each permit coverage term. At least twenty percent of outfalls are screened annually, with any outfalls indicating a dry weather flow from the previous year being screened annually until no dry weather flow is present. Problem areas associated with prior illicit discharges, illegal dumping, or known sources of dry weather flows that occur on a continual basis will be screened annually.

For each MS4 Outfall, if the screening reveals dry weather flow, the discharge from the outfall and the area around the outfall shall screened in accordance with DEP approved document MS4 Outfall Field Screening Report

http://www.depgreenport.state.pa.us/elibrary/GetFolder? FolderID=2740.

If an outfall does not have any dry weather flows, then sampling and testing are not needed

The following three methods can be used to measure the flow rate at a flowing outfall.

• <u>Method 1:</u> Utilizing a graduated bucket or jug marked at 1 Liter and a stopwatch record the amount of time required to fill the jug to 1 Liter. Ensure you are capturing the entire flow. When the flow is only a trickle, use a smaller volume container and follow the same method. The following equation is used to calculate flow:

Discharge = Volume filled (cu. ft.) x Time (sec).

For pipes that are discharging larger volumes where it is not be possible to capture the volume in a graduated container, see Method 2.

• **Method 2:** This method should only be used with a free-flowing outfall (i.e., water drops out of the pipe and falls to the stream channel) and when the depth of flow is relatively uniform. Utilizing a tape measure, record the flow depth in the pipe at the deepest point and the total flow width. Then use the following equation:

Discharge = $3.1 \times \text{wetted width (ft)} \times \text{flow depth (ft)}$ 1.5

• <u>Method 3:</u> Using a tape measure record the width of the flow. Next, measure and record the depth of the flow. Using a measuring tape, leaf or ping pong ball, and stopwatch, record the length of time it takes to travel a known distance and repeat. Repeat velocity measurement 3-5 times and average the results. Then use the following equations to calculate the flow rate and record the results on the ORI form:



Area = Wetted width (ft) x flow depth (ft)
Velocity = Length of ping pong ball run (ft) / Time (sec)
Discharge = Area x Velocity

The Township will prioritize outfall inspections according to the perceived chance of illicit discharge within the outfall's contributing drainage area. Observations of each outfall shall be recorded each time an outfall is screened, regardless of the presence of dry weather flow. Proper quality assurance and quality control procedures shall be followed when collecting, transporting or analyzing water samples. All outfall inspection information shall be recorded on the Outfall Reconnaissance Inventory/Sample Collection field sheet. Adequate written documentation shall be maintained to justify a determination that a flow is not illicit. If a flow is illicit, the actions taken to identify and eliminate the illicit flow also shall be documented. The results of outfall inspections and actions taken to remove or correct illicit discharges shall be summarized in periodic reports.

The Township acknowledges it is possible for illicit discharges/connections to occur at various times of the year and during or just after rain events and will consider conducting dry weather screenings during varying seasonal and meteorological conditions. Seasonal dry weather screenings conducted during periods of both low and high groundwater conditions can be beneficial in identifying illicit discharges that can occur during these times.

NON-ROUTINE INSPECTIONS

If an employee observes evidence of an illicit discharge during the normal course of duties or an informal or non-routine inspection, he/she should collect as much information about the potential illicit discharge as possible then contact his/her supervisor or municipal office so that appropriate action can be taken.

It is important to collect as much information as possible at the time of initial observation because of the likelihood that a discharge may be transitory or intermittent. Initial identification of the likely or potential sources of the discharge is also very important. The employee should make a reasonable attempt to collect information.

- The person observing the discharge can provide the information verbally to the supervisor or engineer who can then complete the Illicit Discharge Tracking Sheet;
- The person observing the discharge can log as much information as they can recall onto the form upon returning to the office; or
- A person dedicated to inspecting and tracing illicit discharges can be sent to the location as soon as possible where the potential illicit discharge was observed to collect the necessary information directly on the form.

BMP #5: NON-STORMWATER DISCHARGE PROHIBITION:

The Township enacted a Stormwater Management Ordinance to implement and enforce a stormwater management program that includes prohibition on non-stormwater discharges to the MS4. The Township will continue to enforce the Stormwater Management Ordinance and appropriate countermeasures will be taken if a violation occurs. The Township is in the



process of adding a "Report an Illicit Discharge" section to their Stormwater Management page on their website.

BMP #6: ILLICIT DISCHARGE EDUCATION:

The Township regularly solicits illicit discharge reporting by the public during public meetings. The Township will distribute educational information in the form of brochures and other forms of handouts to educate and guide TAGs about the Townships IDD&E program.

Information being distributed will include:

- Program Goals
- Illicit Discharge protocols and reporting information
- Local options for the recycling and disposal of household hazardous waste
- Explanation of an illicit discharge

MCM #4: CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

The Township will rely on DEP's statewide Qualifying Local Program (QLP) for issuing NPDES Permits for Stormwater Discharges Associated with Construction Activities to satisfy all requirements under this MCM #4. While this permit allows the Township to rely on the Conservation District to complete MCM 4 activities, the Township is responsible to ensure the District completes the required activities.

Under 25 Pa. Code, Chapter 102 of Department regulations issued under the authority of the Pennsylvania Clean Streams Law, the permittee (a Township or a county) may not issue a building or other permit or final approval to those proposing or conducting earth disturbance activities requiring a DEP permit until the DEP has issued an individual NPDES Permit, or DEP or a delegated county conservation district (CCD) has approved coverage under the general NPDES Permit for Stormwater Discharges Associated With Construction Activities.

As recommended, the Township will work with the County to authorize an agreement between the Township and the County Conservation District (CCD) that defines roles for each entity. A written copy will be kept in the Township files, consistent with the Retention of Records requirements in this Permit.

The CCD monitors earthmoving activities for compliance with E&S requirements and provides inspection reports and violation notices to the Township. The Township will retain a copy of all correspondence from CCD in an MS4 file (as well as the development permit file).

The Township will provide stormwater and E&S educational information to builders & developers with building and zoning permits.

During the normal course of duties, the Township staff will endeavor to verify/ensure proper waste control by contractors and builders.

The Township will investigate any public complaints regarding stormwater issues on a case-by-case basis. When the Township receives an inquiry, a Township representative will make a thorough investigation of the issue of concern. The results of the investigation



are then given to the responsible party to correct, if necessary. A copy of the Township's response is provided to the person who made the inquiry. All inquiries will be handled on a case-by-case basis.

For a copy of the most recent Stormwater Management Ordinance, please contact the Township.

MCM #5: POST-CONSTRUCTION STORMWATER MANAGEMENT (PCSM) IN NEW AND RE-DEVELOPMENT

BMP #1, BMP #2, & BMP #3: THE TOWNSHIP SHALL RELY ON DEP'S STATEWIDE QLP FOR ISSUING NPDES PERMITS FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES TO SATISFY ALL REQUIREMENTS UNDER BMPS #1 THROUGH #3 OF THIS MCM #5.

BMP #4: PCSM ORDINANCE:

The Township has enacted and will continue to implement and enforce its Stormwater Management Ordinance to address post-construction stormwater runoff from new development and redevelopment projects and provide sanctions and penalties associated with non-compliance, to the extent allowable under State or local law.

BMP #5: LOW IMPACT DEVELOPMENT (LID) IN NEW AND REDEVELOPMENT:

The Township's Stormwater Management Ordinance allows for development and redevelopment to manage rainfall at the source using distributed small-scale controls. We believe the ordinances allow landowners to mimic a site's predevelopment hydrology by using BMPs that infiltrate, filter, store, evaporate, and detain runoff close to the source. This is recognized as difficult for most areas in this urbanized Township where a significant amount of land has been developed before stormwater controls were implemented.

For certain sites, the Township encourages the use of the U.S. EPA website which provides publications on LID, including <u>Reducing Stormwater Costs through Low Impact Development (LID) Strategies and Practices</u> Publication Number EPA 841-F-07-006, December 2007 at https://www.epa.gov/sites/default/files/2015-10/documents/2008_01_02_nps_lid_costs07 uments_reducingstormwatercosts-2.pdf.

The Pennsylvania <u>Standards for Residential Site Development</u>, Pennsylvania Housing Research/Resource Center, The Pennsylvania State University, April 2007 at https://www.dot.state.pa.us/Public/Bureaus/PlanningResearch/MRO/PA_Standards_for_Residential_Site_Design_(2007).pdf. Information on LID can be found on the Township's website and is also handed out to the public as part of an educational packet when applying for any permits.

BMP #6: OPERATION & MAINTENANCE OF POST-CONSTRUCTION STORMWATER MANAGEMENT (PCSM) BMPS:



The Township maintains an inventory of PCSM BMPs as development projects are reviewed, approved, and constructed. This inventory includes all PCSM BMPs installed since March 10, 2003 that discharge directly or indirectly to the Township's regulated MS4.

The Township will endeavor to maintain and update an inventory of PCSM BMPs as development projects are reviewed, approved, and constructed. This inventory shall include all PCSM BMPs installed since March 10, 2003 that discharge directly or indirectly to your regulated small MS4s.

As data is available, the inventory will be developed to include:

- 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., street address);
- Information (e.g., name, address, phone number(s)) for BMP owner and entity responsible for BMP Operation and Maintenance (O&M), if different from BMP owner;
- 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 for each BMP;
- An assessment by the permittee if proper operation and maintenance occurred during the year and if not, what actions the permittee has taken, or shall take, to address compliance with O&M requirements;
- Include a separate inventory of projects that incorporated LID practices and for each project list and track the BMPs that were used.

INSPECTION

The Township will use BMP inspection forms to inspect BMPs. The Township is to follow up on any deficiencies reported during inspection. The responsible personnel will provide letters and notifications regarding deficiencies and violations of ordinances to the property owners. The Township is to record the number of enforcement actions taken during this reporting period.

Please reference the corresponding annual report for previous PCSM BMP information and inspection records.

MCM #6: POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS

BMP #1: TOWNSHIP-OWNED FACILITIES:

MUNICIPAL FACILITY LIST:

Municipal Buildings:

MUNICIPAL OFFICE: 20 Municipal Ln.

Municipal Parks and Recreation:

GOODWIN PRESERVE: 1020 Wickerton Rd. BANFFSHIRE PRESERVE: 315 Chesterville Rd.



FRANKLIN PRESERVE: 65 Parsons Rd. ELWOOD L. CROSSAN PARK: 65 Parsons Rd.

Municipal Operations: General public works duties that involve construction and maintenance. Construction and maintenance activities that may contribute to stormwater runoff that has the potential to discharge to the MS4 are evaluated on a case-by-case basis.

Facilities: The Municipal building and associated areas; public works facility and associated areas; park and open space, streets, roads, alleys, other large, paved surfaces and stormwater conveyances (open and closed pipe); and stormwater storage or treatment units (e.g., basins, infiltration/filtering structures, etc.).

Activities: Snow removal/deicing; inlet/outfall cleaning; lawn/grounds care; general storm sewer system inspections and maintenance/repairs; park and open space maintenance; municipal building maintenance; new construction and land disturbances; right-of-way maintenance; vehicle operation, fueling, washing and maintenance; and material transfer operations, including leaf/yard debris pickup and disposal procedures.

BMP #2: OPERATION AND MAINTENANCE PROGRAM:

The Township has established an O&M Program that will be updated as needed to maintain its relevancy.

BMP #3: EMPLOYEE TRAINING PROGRAM:

EMPLOYEES TO BE TRAINED:

Any employee of the Township and any contractor in or involved with the Township may receive training. This could include public works staff, building *I* zoning *I* code enforcement staff, engineering staff (on-site and contracted), administrative staff, elected officials, police and fire responders, volunteers, and contracted personnel. As a minimum, the Township will endeavor to train Public Works management personnel.

TRAINING METHODS AND MATERIALS:

The Township may use guidance and training materials that are developed in house or available from federal, state or local agencies, or other organizations including local organizations and other MS4s.

TOPICS:

Training topics typically will include operation, inspection, maintenance, and repair activities associated with any of the municipal operations *I* facilities identified under legal control of the Township. Training is intended to cover all relevant parts of the permittee's overall stormwater management program that could affect municipal operations, such as illicit discharge detection and elimination, construction sites, and ordinance requirements.

- Topic 1: Minimum Control Measures
- Topic 2: Dry Weather Screening Protocol
- Topic 3: Standard Operating Procedures for Municipal Maintenance and Other Activities
- Topic 4: Conducting Illicit Discharge Detection and Elimination Investigations: IDDE 201



TIMEFRAME:

Employee training will occur at least annually (i.e., during each permit coverage year) and will be documented in writing and reported in periodic reports. Documentation will include the date(s) of the training, the names of attendees, the topics covered, and the training presenter(s).

ADDITIONAL GUIDANCE:

According to PADEP, the training requirements of this BMP can be in various ways. Training can be:

- Joint training events with other nearby operators of regulated small MS4s
- Formal or informal;
- Conducted on-site or off-site;
- Conducted on-the-job or during dedicated training periods;
- Conducted one-on-one or in a group setting (including with staff from other MS4s);
- Conducted by municipal staff or consultants or volunteers;
- Conducted via oral presentations/instructions and/or via written materials (e.g., SOP's, guidance manuals, tests).

Example Record Sheet:

Date of Training / Presenter	Training Topics Covered	Names of Attendees

FRANKLIN TOWNSHIP, GOOD HOUSEKEEPING PLAN ACTIVITY LOG

The Township is required to maintain a good housekeeping plan specific to pollution prevention regarding the Township's municipal separate storm sewer system (MS4) "Stormwater" General Permit issued by PADEP. Please utilize this form to document stormwater related activities including the following activities as applicable.

- BMP Maintenance
 - Mowing, Inlet/Outlet Cleaning, Clearing Trash/Debris, Infrastructure Repair/Replacement, Route and Post-Rain/Snow Screenings.
- ► Inlet Cleaning (Number of inlets cleaned, quantity of debris collected)
- Street Sweeping (Miles swept, quantity of debris collected)
- ► Inlet Vacuuming/Cleaning (Number of drains cleaned, quantity of debris collected)
- Documented Spills
- Pesticide Application



- ► Fertilizer Application
- ► Snow/Ice Removal Applications
- ▶ Public Complaints specific to Stormwater
- ► Annual/Routine Training Sessions
- ▶ Tree Planting
- ► Other Routine or Non-Regular Maintenance

ACTIVITY LOG
Date:
Name:
Department:
Facility/Location:



Activity/Activities	s Conducted:		
General Comme	ents:		



WE WANT TO HEAR FROM YOU

Please return this completed document via hard copy or e-mail to the municipal office, OR send directly to Andrew.tuleya@arroconsulting.com

THANK YOU FOR PARTICIPATING IN THE TOWNSHIP'S STORMWATER PROGRAM!

If you have any stormwater related questions, please contact:

Andrew Tuleya – ARRO Consulting MS4 Coordinator

717-793-1121

Andrew.tuleya@arroconsulting.com

Attachment 1.2

MS4 GOALS AND ACCOMPLISHMENTS

MS4 Goals & Accomplishments

2018-2023 Reporting Period



Franklin Township, Chester County, Pennsylvania

ARRO Project No.: 00011162.01

PREPARED BY:



2022-2023

MCM 1

Goal 1

The Township will attempt to conduct a survey to measure public understanding of stormwater management, list educational resources, determine the Target Audience, create a mailing list from the Target Audience, and develop a Publication/Distribution Schedule.

Accomplishments

The Township decided to focus on more cost-effective methods of getting information to residents. The Township regularly posts stormwater related information on the Township Facebook page and has reviewed the Target Audience Groups as part of the annual PIPP/PEOP review.

MCM 2

Goal 1

The Township will maintain links to publications hosted by other agencies and downloadable information sheets by the Township on the municipal website.

Accomplishments

The Township provides stormwater information through the municipal Facebook page and website. The website contains links to the Christina Watershed Municipal Partnership website, Penn State Extension, Brandywine Red Clay Alliance, and Township codes.

2023-2024

MCM 1

Goal 1

The Township will develop educational material aimed at illicit discharge reporting within the Township to increase public awareness and reporting of non-allowable discharges.

Accomplishments N/A

Goal 2

The Township will track new information released by DEP regarding the Township's permit status in order to keep the Board and public information on any anticipated changes in the upcoming permit cycle.

Accomplishments

N/A

MCM 2

Goal 1

The Township will post upcoming stormwater related events and relevant information onto the Township's Facebook page which reaches 919 people.

Accomplishments N/A

Goal 2

The Township will conduct or advertise through a partnership a 2023 Earth Day event or similar public participation event involving pollution prevention or a MS4-related concept.

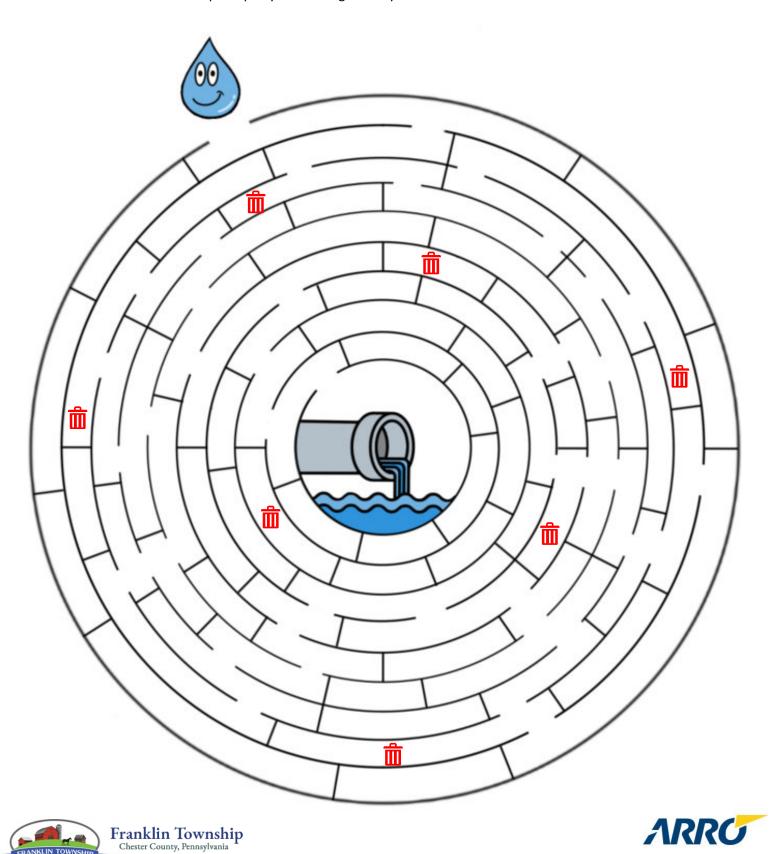
Accomplishments N/A

Attachment 1.3

EDUCATIONAL MATERIALS

STORMWATER MAZE

Directions: Help the rain get down the drain! Guide the raindrop through the maze until it reaches the river. Make sure not to pick up any trash along the way!



STORMWATER WORD SEARCH

Р	S	Ε	R	0	S	ı	0	N	F	E	U	S	N	С	ı	S	Н	K	G	S	Н	R	С	D	S	М	S
Ε	В	٧	L	S	W	J	Χ	Т	Н	G	٧	E	Т	S	В	Т	_	Α	E	Т	٧	Т	0	L	Р	F	R
Н	K	U	Н	Т	R	K	J	0	С	Α	Q	Р	J	R	С	Υ	U	N	J	0	K	L	Z	R	٧	Q	0
М	D	Q	W	R	В	Ε	R	Ε	Α	G	R	1	٧	Ε	R	Р	D	D	Н	R	F	R	-	Т	Ε	Ε	Α
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В	М	Ε	W	С	Н	Ε	S	K	U	Υ	Р	S	Т	R	K	Ε	W	Q	L	Α	J	Н	Χ	N	С	G	G
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В	0	K	Р	K	С	٧	R	S	W	Z	Υ	М	С	W	G	Q	N	W	0	E	S	Α	С	R	T	٧	Т
S	L	Р	J	U	-	Υ	Χ	Q	Н	٧	R	G	S	Α	Ε	М	Т	Ν	В	R	٧	М	Υ	N	Υ	S	Χ
G	L	Α	Т	L	Ε	W	J	S	J	E	E	0	Н	Т	0	S	S	Р	Α	F	D	S	E	Τ	Z	С	Ι
0	U	R	U	S	D	Р	М	G	S	Ε	D	I	М	E	N	Т	W	С	G	F	В	I	L	E	G	J	Q
F	Т	S	G	Α	R	W	Α	S	J	L	E	G	G	R	Χ	Ε	R	Н	I	F	R	J	М	D	0	R	F
E	Α	М	0	F	G	R	W	В	Р	G	W	G	N	Q	J	1	Ε	Ν	Η	Т	K	S	K	U	W	U	0
Α	N	С	F	G	E	Α	J	Н	K	U	Т	В	D	U	F	0	F	D	U	D	I	G	Α	Р	J	N	L
G	Т	D	Ι	Υ	Т	F	1	N	F	I	L	Т	R	Α	Т	1	0	N	Т	U	R	Н	S	Α	Z	0	U
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R	Ε	L	Ε	0	U	Р	I	L	С	R	J	N	В	Υ	Ε	В	0	D	Α	Р	R	Ι	R	Α	0	T	D
J	K	М	0	0	Н	В	Α	W	Т	U	Z	0	I	W	K	I	Α	L	Υ	S	С	М	L	М	F	J	W
0	N	Р	Α	D	E	Р	L	G	W	Н	K	Ε	N	F	S	М	N	Т	S	T	Н	G	0	D	R	Α	0
С	Χ	N	В	Т	М	G	Ε	Z	D	Υ	S	Р	R	Ε	С		Р	I	Т	Α	Т	Ι	0	N	0	L	В

- CREEK
- EROSION
- FLOOD
- INFILTRATION
- NUTRIENTS
- PADEP
- POLLUTANT
- PRECIPITATION

- RIVER
- RUNOFF
- SEDIMENT
- STORMWATER
- TRASH
- VELOCITY
- WATERSHED
- WATER QUALITY

Precipitation, or stormwater, such as snow and rain seep into the ground or gather on surfaces forming runoff. The runoff then makes its way to our streams and creeks picking up whatever is in its path. If trash is left lying around, the rain will pick it up and carry it into our streams. To keep our water clean, please pick up after yourself!





Attachment 2.1

STORMWATER MANAGEMENT ORDINANCE 2023-01

Franklin Township Chester County

STORMWATER MANAGEMENT ORDINANCE

ORDINANCE NO. 2023 -

FRANKLIN TOWNSHIP, CHESTER COUNTY, PENNSYLVANIA

AN ORDINANCE OF FRANKLIN TOWNSHIP, CHESTER COUNTY, PENNSYLVANIA, AMENDING CHAPTER 19 OF THE CODE OF FRANKLIN TOWNSHIP PERTAINING TO STORMWATER MANAGEMENT.

BE IT ENACTED AND ORDAINED by the Board of Supervisors of Franklin Township, the Code of Ordinances of Franklin Township is hereby amended as follows:

<u>Section 1.</u> Chapter 19 of the Code of Ordinances of the Township of Franklin, Stormwater Management, is hereby amended in its entirely to read as follows:

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ARTICLE I – GENERAL PROVISIONS

Section 19-101. Short Title

This Ordinance shall be known as the Franklin Township Stormwater Management Ordinance."

Section 19-102. Statement of Findings

The Governing Body of the Municipality finds that:

- A. Inadequate management of accelerated stormwater runoff resulting from land disturbance and development throughout a watershed increases flooding, flows and velocities, contributes to erosion and sedimentation, overtaxes the capacity of streams and storm sewers, greatly increases the cost of public facilities to convey and manage stormwater, undermines floodplain management and flood reduction efforts in upstream and downstream communities, reduces infiltration and groundwater recharge, increases nonpoint source pollution to waterways, and threatens public health and safety.
- B. Inadequate planning and management of stormwater runoff resulting from land disturbance and development throughout a watershed can 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, including minimization of impacts of New Development, Redevelopment, and other Earth Disturbance Activities causing accelerated runoff and erosion and loss of natural infiltration, is fundamental to the public health, safety, and general welfare of the people of the Municipality and all of the people of the Commonwealth, their resources, and the environment.
- D. Stormwater is an important water resource that provides infiltration and groundwater recharge for water supplies and baseflow of streams, which also protects and maintains surface water quality.
- E. Impacts from stormwater runoff can be minimized by reducing the volume of stormwater generated and by using project designs that maintain the natural hydrologic regime and sustain high water quality, infiltration, stream baseflow, and aquatic ecosystems. Cost-effective and environmentally sensitive stormwater management can be achieved through the use of nonstructural Site design techniques that minimize Impervious Surfaces, reduce disturbance of land and natural resources, avoid sensitive areas (i.e., riparian buffers, floodplains, steep slopes, wetlands, etc.), and consider topography and soils to maintain the natural hydrologic regime.
- F. Public education on the control of pollution from stormwater is an essential component in successfully addressing stormwater.

- G. Federal and State regulations require the Municipality to implement a program of stormwater controls. The Municipality is required to obtain a permit and comply with its provisions for stormwater discharges from its Separate Storm Sewer System under the National Pollutant Discharge Elimination System (NPDES).
- H. Non-stormwater discharges to municipal or other storm sewer systems can contribute to pollution of the Waters of the Commonwealth.
- I. The use of green infrastructure, low impact development (LID), and Conservation Design (CD) 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) evapotranspire, and/or 3) harvest and use precipitation near where it falls to earth. Green infrastructure practices, LID, and CD contribute to the restoration or maintenance of pre-development hydrology.

Section 19-103. Purpose

The purpose of this Ordinance is to protect public health, safety and general welfare, property, and water quality by implementing drainage and stormwater management practices, criteria, and provisions included herein for land development, construction, and Earth Disturbance Activities, to achieve the following throughout the Municipality:

- A. Reduce the frequency and magnitude of flooding and stormwater impacts affecting people, property, infrastructure, and public services.
- B. Sustain or improve the natural hydrologic characteristics and water quality of groundwater and surface waters.
- C. Protect natural resources, including riparian and aquatic living resources and habitats.
- D. Maintain the natural hydrologic regime of Land Development Sites and their receiving watersheds.
- E. Minimize land disturbance and protect and incorporate natural hydrologic features, drainage patterns, infiltration, and flow conditions within land development Site designs.
- F. Reduce and minimize the volume of stormwater generated and manage and release stormwater as close to the source of runoff as possible.
- G. Provide infiltration and maintain natural groundwater recharge to protect groundwater supplies and stream baseflows, prevent degradation of surface water and groundwater quality, and to otherwise protect water resources.
- H. Reduce stormwater pollutant loads to protect and improve the chemical, physical, and biological quality of ground and surface waters.
- I. Reduce scour, erosion, and sedimentation of stream channels.

- J. Reduce flooding impacts and preserve and restore the natural flood-carrying capacity of streams and their floodplains.
- K. Protect adjacent and downgradient lands from adverse impacts of direct stormwater discharges.
- L. Minimize Impervious Surfaces and connected Impervious Surfaces to promote infiltration and reduce the volume and impacts of stormwater runoff.
- M. Provide proper long-term operation and maintenance of all permanent stormwater management facilities, BMPs and Conveyances that are implemented within the Municipality.
- N. Reduce the impacts of runoff from existing developed land undergoing Redevelopment while encouraging New Development and Redevelopment in urban areas and areas designated for growth.
- O. Implement an illicit discharge detection and elimination program that addresses non-stormwater discharges.
- P. Provide stormwater management performance standards and design criteria on a watershed basis.
- Q. Provide standards to meet certain NPDES stormwater permit requirements.
- R. Meet legal water quality requirements under State law, including regulations at 25 PA Code Chapter 93, to protect, maintain, reclaim, and restore the existing and designated uses of the Waters of the Commonwealth.
- S. Implement the requirements of Total Maximum Daily Load (TMDLs) where applicable to waters within or impacted by the Municipality.
- T. Provide review procedures and performance standards for stormwater planning and management.
- U. Fulfill the purpose and requirements of PA Act 167 (PA Act 167, Section 3):
 - "(1) Encourage planning and management of storm water runoff in each watershed which is consistent with sound water and land use practices.
 - (2) Authorize a comprehensive program of stormwater management designated to preserve and restore the flood carrying capacity of Commonwealth streams; to preserve to the maximum extent practicable natural storm water runoff regimes and natural course, current and cross-section of water of the Commonwealth; and to protect and conserve ground waters and ground-water recharge areas.
 - (3) Encourage local administration and management of storm water consistent with the Commonwealth's duty as trustee of natural resources and the people's constitutional right to the preservation of natural, economic, scenic, aesthetic, recreational and historic values of the environment."

Section 19-104. Statutory Authority

The Municipality is empowered or required to regulate land use activities that affect runoff and surface and groundwater quality and quantity by the authority of:

- A. 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" (hereinafter referred to as "the Act");
- B. Second Class Township Code, 53 P.S. Sections 65101, et seq.; and
- C. Act of July 31, 1968, P.L. 805, No. 247, 53 P.S. Section 10101, et seq., as amended, the Pennsylvania Municipalities Planning Code, Act 247 hereinafter referred to as the "MPC").

Section 19-105. Applicability

- A. The following activities are regulated by this Ordinance:
 - 1. All Regulated Activities as defined in this Ordinance including, but not limited to, New Development, Redevelopment, and Earth Disturbance Activities that are located within the Municipality shall be subject to regulation by this Ordinance.
 - 2. When a building and/or grading permit is required for any Regulated Activity on an existing parcel or approved lot created by a subdivision and/or improved as a land development project, issuance of the permit shall be conditioned upon adherence to the terms of this Ordinance.
 - 3. This Ordinance contains the stormwater management performance standards and design criteria that are necessary from a watershed-based perspective. The Municipality's stormwater management Conveyance and system design criteria (e.g., inlet spacing, inlet type, collection system design and details, outlet structure design, etc.) shall continue to be regulated by the applicable municipal ordinance(s) and applicable State regulations or as included in Sections 19-311, 19-312, 19-313, 19-314, 19-315, 19-316 and 19-317 of this Ordinance.

B. Duty of Persons Engaged in a Regulated Activity

Notwithstanding any provision(s) of this Ordinance, including exemptions, any Landowner or any person engaged in a Regulated Activity, including but not limited to the alteration or development of land, which may affect stormwater runoff characteristics, shall implement such measures as are reasonably necessary to prevent injury to health, safety, or other property. Such measures also shall include actions as are required to manage the rate, volume, direction, and quality of resulting stormwater runoff in a manner which otherwise adequately protects health, property, and water quality of Waters of the Commonwealth.

C. Phased and Incremental Project Requirements

1. Any Regulated Activity (including but not limited to New Development, Redevelopment, or Earth Disturbance) that is to take place incrementally or in phases, or occurs in sequential projects on the same parcel or property, shall be subject to regulation by this Ordinance if

the Regulated Impervious Surface or Earth Disturbance exceeds the corresponding threshold for exemption (as presented in Table 106.1 "Thresholds for Regulated Activities that are Exempt from the Provisions of this Ordinance as Listed Below").

2. The date of adoption of this Ordinance shall be the starting point from which to consider tracts as parent tracts relative to future subdivisions, and from which Impervious Surface and Earth Disturbance computations shall be cumulatively considered, unless such requirements have previously been adopted, then the earliest date of the applicable municipal ordinance adoption (December 18, 2013, effective January 2, 2014) shall remain as the starting point.

For example:

If, after adoption of this Ordinance, an Applicant proposes construction of a six hundred (600) square foot garage, that project would be exempt from the requirements of this Ordinance as noted in Table 106.1. If, at a later date, an Applicant proposes to construct a nine hundred (900) square foot room addition on the same property, the Applicant would then be required to implement the stormwater management and plan submission requirements of this Ordinance for the cumulative total of one thousand five hundred (1,500) square feet of additional Impervious Surface added to the property since adoption of this Ordinance.

Section 19-106. Exemptions and Modified Requirements

A. Requirements for Exempt Activities

- 1. An exemption from any requirement of this Ordinance shall not relieve the Applicant from implementing all other applicable requirements of this Ordinance or from implementing such measures as are necessary to protect public health, safety, and welfare, property, and water quality.
- 2. An exemption shall not relieve the Applicant from complying with the requirements for State-designated special protection waters designated by PADEP as high quality (HQ) or exceptional value (EV) waters, or any other current or future State or municipal water quality protection requirements.
- 3. An exemption under this Ordinance shall not relieve the Applicant from complying with all other applicable municipal ordinances or regulations.

B. General Exemptions

Regulated Activities that:

- 1. Involve less than one thousand (1,000) square feet of Regulated Impervious Surfaces AND less than five thousand (5,000) square feet of Earth Disturbance; or
- 2. Are listed in Subsection 19-106.C,

are exempt from those (and only those) requirements of this Ordinance that are included in the sections and articles listed in Table 106.1. Exemptions are for the items noted in Table 106.1

only and shall not relieve the Landowner from other applicable requirements of this Ordinance. Exemption shall not relieve the Applicant from implementing such measures as are necessary to protect health, safety, and welfare, property, and water quality.

TABLE 106.1
Thresholds for Regulated Activities that are Exempt from the Provisions of this Ordinance as Listed Below (see Notes below)

Ordinance Article/Section	Activities Listed in Subsection 19-106.C.	< 1,000 sq. ft. of Regulated Impervious Surfaces AND < 5,000 sq. ft. of Proposed Earth Disturbance	Regulated Impervious Surface between 1,000 sq. ft. and 2,000 sq. ft. AND Proposed Earth Disturbance between 5,000 sq. ft. and 10,000 sq/ ft. see also Table 106.2	≥ 2,000 sq. ft. of Regulated Impervious Surfaces OR ≥ 10,000 sq. ft. of Proposed Earth Disturbance
Article I – General Provisions	Not Exempt	Not Exempt	Not Exempt	Not Exempt
Article II - Definitions	Not Exempt	Not Exempt	Not Exempt	Not Exempt
Sections 19-302, 19-303, 19-311, 19-312, 19-313, 19-314, 19-315, and 19-316 (see Notes)	Not Exempt	Not Exempt	Exempt with Modified Requirements	Not Exempt
Sections 19-301, 19- 304, 19-305, 19-306, 19-307, 19-308, 19- 309, and 19-310 (see Notes)	Exempt	Exempt	Exempt with Modified Requirements	Not Exempt
Article IV – SWM Site Plan Requirements	Exempt	Exempt	Exempt with Modified Requirements	Not Exempt
Article V – Performance & Inspection of Regulated Activities & Final Asbuilt Plans	Exempt	Exempt	Exempt with Modified Requirements	Not Exempt
Article VI – Fees and Expenses	Exempt	Exempt	Exempt with Modified Requirements	Not Exempt
Article VII – Operation and Maintenance Responsibilities and Easements	Exempt	Exempt	Exempt with Modified Requirements	Not Exempt
Article VIII – Prohibitions	Not Exempt	Not Exempt	Not Exempt	Not Exempt
Article IX – Enforcement and Penalties	Not Exempt	Not Exempt	Not Exempt	Not Exempt
Other Erosion, Sediment and Pollution Control Requirements	Must comply wi	th Title 25, Chapter 102 of the PA including the 0	A Code and other applicable and Clean Streams Law.	State and municipal codes,

Table 106.1 Notes:

- Specific activities listed in Subsection 19-106.C are exempt from the indicated requirements, regardless of size.
- Section 19-301. General Requirements
- Section 19-302. Permit Requirements by Other Governmental Entities
- Section 19-303. Erosion and Sediment Control
- Section 19-304. Site Design Process
- Section 19-305. Water Quality and Runoff Volume Requirements
- Section 19-306. Infiltration Requirements
- Section 19-307. Stream Channel Protection Requirements
- Section 19-308. Stormwater Pak Rate Control Requirements
- Section 19-309. Calculation Methodology
- Section 19-310. Other Requirements
- Section 19-311. Other Conveyance and System Design Standards
- Section 19-312. Additional Standards for Detention Basins, Retention Basins, Wet Basins and Underground Basins
- Section 19-313. Standards for Stormwater Collection & Conveyance Systems
- Section 19-314. Standards for Grading
- Section 19-315. Standards for Phasing
- Section 19-316. Standards for Driveways
- A proposed Regulated Activity must be less than BOTH the Regulated Impervious Surfaces and proposed Earth Disturbance thresholds to be eligible for exemption from the requirements listed in this table.
- "Regulated Impervious Surface" as defined in this Ordinance.
- "Exempt" Regulated Activities are exempt from the requirements of listed section(s) only; all other provisions of this Ordinance apply. These exemptions have no bearing on other municipal regulations or ordinances.

C. Exemptions for Specific Activities

The following specific Regulated Activities are exempt from the requirements of Sections 19-301, 19-304, 19-305, 19-306, 19-307, 19-308, 19-309, and 19-310, and Article IV, Article V, Article VI, and Article VII) of this Ordinance (as shown in Table 106.1), unless otherwise noted below. All other conveyance and system design standards established by the Municipality in other codes or ordinances shall be required, and all other provisions of this Ordinance shall apply.

- 1. Emergency Exemption Emergency maintenance work performed for the protection of public health, safety, and welfare. This exemption is limited to repair of the existing Stormwater Management Facility; upgrades, additions or other improvements are not exempt. A written description of the scope and extent of any emergency work performed shall be submitted to the Municipality within two (2) calendar days of the commencement of the activity. A detailed plan shall be submitted no later than thirty (30) days following commencement of the activity. If the Municipality finds that the work is not an emergency, then the work shall cease immediately, and the requirements of this Ordinance shall be addressed as applicable.
- 2. Maintenance Any maintenance to an existing Stormwater Management Facility, BMP or Conveyance made in accordance with plans and specifications approved by the Municipal Engineer or Municipality.
- 3. Existing Landscaping Use of land for maintenance, replacement, or enhancement of existing landscaping.
- 4. Gardening Use of land for gardening for home consumption.
- 5. Agricultural Related Activities
 - a. Agricultural Activities (as defined in Article II).
 - b. Conservation Practices (as defined in Article II) that do not involve construction of any new or expanded Impervious Surfaces.
 - c. High Tunnel if:
 - i. The High Tunnel or its flooring does not result in an impervious surface exceeding 25% of all structures located on the Landowner's total contiguous land area; and
 - ii. The High Tunnel meets one of the following:
 - 1. The High Tunnel is located at least 100 feet from any perennial stream or watercourse, public road, or neighboring property line.
 - 2. The High Tunnel is located at least 35 feet from any perennial stream or watercourse, public road or neighboring property line and located on land with a slope not greater than 7%.
 - 3. The High Tunnel is supported with a buffer or diversion system that does not directly drain into a stream or other watercourse by managing stormwater runoff in a manner consistent with the requirements of Pennsylvania Act 167.

- 6. Forest Management Forest management operations, which are consistent with a sound forest management plan as filed with the Municipality and which comply with the Pennsylvania Department of Environmental Protection's management practices contained in its publication "Soil Erosion and Sedimentation Control Guidelines for Forestry" (as amended or replaced by subsequent guidance). Such operations are required to have an Erosion and Sedimentation Control Plan, which meets the requirements of 25 PA Code Chapter 102 and meets the erosion and sediment control standards of Section 19-303 of this Ordinance.
- 7. Maintenance of Existing Gravel and Paved Surfaces Replacement of existing gravel and paved surfaces shall meet the erosion and sediment control requirements of 25 PA Code Chapter 102 and Section 19-303 of this Ordinance and is exempt from all other requirements of this Ordinance listed in Subsection 106.C above. Resurfacing of existing gravel and paved surfaces is exempt from the requirements of this Ordinance listed above. Paving of existing gravel surfaces is exempt from the requirements of this Ordinance listed above. Construction of new or additional Impervious Surfaces shall comply with all requirements of this Ordinance as indicated in Table 106.1.
- 8. Municipal Roadway Shoulder Improvements Shoulder improvements conducted within the existing roadway cross-section of municipal owned roadways, unless an-NPDES permit is required, in which case the proposed work must comply with all requirements of this Ordinance.
- 9. In-Place Replacement of Residential Dwelling Unit The replacement in the exact footprint of an existing one- or two-family dwelling unit.
- 10. In-Place Replacement, Repair, or Maintenance of Residential Impervious Surfaces The replacement of existing residential patios, decks, driveways, pools, garages, and/or sidewalks that are accessory to an existing one- or two-family dwelling unit in the exact footprint of the existing Impervious Surface.

D. Modified Requirements for Small Projects

Regulated Activities that involve less than 2,000 square feet of Regulated Impervious Surfaces and between 5,000 square feet and 10,000 square feet of proposed Earth Disturbance may apply the modified requirements presented in the "Simplified Approach to Stormwater Management for Small Projects" (Simplified Approach) (Appendix A) to comply with the requirements of Sections 19-301, 19-304, 19-305, 19-306, 19-307, 19-308, 19-309, and 19-310, and Article IV, Article V, Article VI and Article VII of this Ordinance (as shown in Table 106.2). The Applicant shall first contact the Municipal Engineer: to confirm that the proposed project is eligible for use of the Simplified Approach and is not otherwise exempt from these Ordinance provisions; to determine what components of the proposed project are to be considered as Impervious Surfaces; and to determine if other known Site or local conditions exist that may preclude the use of any techniques included in the Simplified Approach. Appendix A includes instructions and procedures for preparation, submittal, review, and approval of documents required when using the Simplified Approach and shall be adhered to by the Applicant. Infiltration testing for projects using the Simplified Approach is recommended but is not required by this Ordinance. All other provisions of this Ordinance shall apply.

TABLE 106.2
Thresholds for Regulated Activities that are Eligible for "Modified" Requirements for the Provisions of this Ordinance that are Listed Below

Ordinance Article/Section	Activities Listed in Subsection 19-106.D and 19-106.E	
Article I - General Provisions	All Provisions Apply	
Article II - Definitions	All Provisions Apply	
Sections 19-301, 19-302, 19-303, and 19-311	All Provisions Apply	
Sections 19-301, 19-304, 19-305, 19-306, 19-307, 19-308, 19-309, and 19-310	Exempt if Modified Requirements of Subsection(s) 19-106.D and/or 19-106.E are Applied	
Article IV – SWM Site Plan Requirements	Exempt if Modified Requirements of Subsection(s) 19-106.D and/or 19-106.E are Applied	
Article V – Performance & Inspection of Regulated Activities & Final As-built Plans	Exempt if Modified Requirements of Subsection(s) 19-106.D and/or 19-106.E are Applied	
Article VI – Fees and Expenses	Exempt if Modified Requirements of Subsection(s) 19-106.D and/or 19-106.E are Applied	
Article VII – Operation and Maintenance Responsibilities and Easements	Exempt if Modified Requirements of Subsection(s) 19-106.D and/or 19-106.E are Applied	
Article VIII – Prohibitions	All Provisions Apply	
Article IX – Enforcement and Penalties	All Provisions Apply	
Other Erosion, Sediment and Pollution Control Requirements	Must comply with Title 25, Chapter 102 of the PA Code and other applicable State and municipal codes, including the Clean Streams Law.	

Table 106.2 Notes:

• "Modified Requirements" – Regulated Activities listed within the Subsections of this Ordinance noted in Table 106.2 are eligible for exemption only from the indicated sections and subsections of this Ordinance and only if the modified requirements of Subsections 19-106.D and/or 19-106.E are met to the satisfaction of the Municipality; all other provisions of this Ordinance apply.

E. Modified Requirements for Agricultural Structures

It is the declared policy of the Commonwealth to conserve and protect and to encourage the development and improvement of its agricultural lands for the production of food and other agricultural products. Municipalities must encourage the continuity, development, and viability of agricultural operations within its jurisdiction. Except as necessary to protect the public health, safety and welfare, Regulated Activities involving proposed new

or expanded Impervious Surfaces associated with Agricultural Activities are exempt from the requirements of Sections 19-301, 19-304, 19-305, 19-306, 19-307, 19-308, 19-309, and 19-310, and Article IV, Article V, Article VI and Article VII of this Ordinance (and listed in Table 106.2) only when it has been demonstrated to the satisfaction of the Municipality that the proposed project will comply with all of the requirements listed below. All other provisions of this Ordinance shall apply. To be eligible for exemption from the Ordinance provisions stated above, the proposed Regulated Activity shall:

- 1. Be directly associated with an Agricultural Activity (as defined in Article II);
- 2. Include less than fifteen thousand (15,000) square feet of proposed new or expanded Impervious Surface and adjoining vehicle parking and movement area;
- 3. Be installed on a farm or mushroom operation that has a current Mushroom Farm Environmental Management Plan (MFEMP) reviewed and deemed adequate by the Conservation District, or an Agricultural Erosion and Sediment Control Plan or Conservation Plan (as defined in Article II) that complies with the requirements of 25 PA Code 102;
- 4. Divert runoff from the proposed new or expanded Impervious Surfaces (including vehicle parking and movement area) entirely away from animal management, waste management and crop farming areas and any other source of pollutants;
- 5. Include BMP(s) that will permanently retain at least one (1) inch of rainfall runoff from the total area of proposed new or expanded Impervious Surfaces and vehicle parking and movement areas;
- 6. Be designed so that any point of discharge of runoff from the proposed new or expanded Impervious Surface (excluding vehicle movement area):
 - a. Is not directly connected to, and is not directly connected to any constructed Conveyance that is connected to, a municipal Separate Storm Sewer System or public roadway;
 - b. Is located at least one hundred fifty (150) feet from any municipal Separate Storm Sewer System or public roadway, or any constructed Conveyance connected to any municipal Separate Storm Sewer System or public roadway.

7. Either:

- a. Have all proposed new or expanded Impervious Surfaces and proposed vehicle parking and movement areas and BMP(s) included within the current MFEMP or current Agricultural Erosion and Sediment Control Plan or a Conservation Plan for the farm or mushroom operation;
- b. Be constructed per design plans prepared and sealed by a Licensed Professional in conformance with the PADEP "Best Practices for Environmental Protection in the Mushroom Farm Community" (2003 or as amended), or per design plans prepared and sealed by a Licensed Professional (or Conservation District staff person designated by NRCS) that comply with USDA NRCS standards and specifications, and for which completion of construction will be certified by the Licensed (or NRCS-designated design) Professional responsible for the design; and
- 8. Not be eligible for exemption if an NPDES permit is required."

Section 19-107. Repealer

Any ordinance or ordinance provision of the Municipality inconsistent with any of the provisions of this Ordinance are hereby repealed to the extent of the inconsistency only.

Section 19-108. Severability

If any sentence, clause, section, or part of this Ordinance is for any reason found to be unconstitutional, illegal, or invalid, such unconstitutionality, illegality or invalidity shall not affect or impair any of the remaining provisions, sentences, clauses, sections, or parts of this Ordinance. It is hereby declared the intent of the Governing Body of the Municipality that this Ordinance would have been adopted had such unconstitutional, illegal, or invalid provision, sentence, clause, section, or part thereof not been included herein.

Section 19-109. Compatibility with Other Ordinances or Legal Requirements

- A. Approvals issued and actions taken pursuant to this Ordinance do not relieve the Applicant of the responsibility to secure and comply with other required permits or approvals for activities regulated by any other applicable code, rule, act, law, regulation, or ordinance.
- B. To the extent that this Ordinance imposes more rigorous or stringent requirements for stormwater management than any other code, rule, act, law, regulation or ordinance, the specific requirements contained in this Ordinance shall take precedence.
- C. Nothing in this Ordinance shall be construed to affect any of the Municipality's requirements regarding stormwater matters that do not conflict with the provisions of this Ordinance, such as local stormwater management design criteria (e.g., inlet spacing, inlet type, collection system design and details, outlet structure design, etc.). The requirements of this Ordinance shall supersede any conflicting requirements in other municipal ordinances or regulations.

Section 19-110. Financial Security

For all activities requiring submittal of a Stormwater Management (SWM) Site Plan that involve subdivision or land development, the Applicant shall post financial security to the Municipality for the timely installation and proper construction of all stormwater management facilities as required by the approved SWM Site Plan and this Ordinance, and such financial security shall:

A. Be equal to or greater than the full construction cost of the required facilities except to the extent that financial security for the cost of any of such improvements is required to be and is posted with the Pennsylvania Department of Transportation in connection with a highway occupancy permit application;

AND

B. Be determined, collected, applied, and enforced in accordance with Sections 509-511 of the MPC and the provisions of the Municipality's Subdivision and Land Development Ordinance (SALDO).

Section 19-111. Waivers

A. General

The requirements of this Ordinance are essential and shall be strictly adhered to. For any Regulated Activity where, after a close evaluation of alternative Site designs, it proves to be impracticable to meet any one or more of the mandatory minimum standards of this Ordinance

on the Site, the Municipality may approve measures other than those in this Ordinance, subject to Subsections 19-111.B and 19-111.C.

B. The Governing Body shall have the authority to waive or modify the requirements of one or more provisions of this Ordinance if the literal enforcement will exact undue hardship because of peculiar conditions pertaining to the land in question, provided that such modification will not be contrary to the public interest and that the purpose and intent of the Ordinance is observed. Cost or financial burden shall not be considered a hardship. Modification may also be considered if an alternative standard or approach can be demonstrated to provide equal or better achievement of the results intended by the Ordinance. A request for modification shall be in writing and accompany the SWM Site Plan submission. The request shall state in full the grounds and facts on which the request is based, the provision or provisions of the Ordinance involved and the minimum modification necessary.

C. PADEP Approval Required

No waiver or modification of any regulated stormwater activity involving Earth Disturbance greater than or equal to one (1) acre may be granted by the Municipality unless that action is approved in advance by PADEP or the Chester County Conservation District.

Section 19-112. Erroneous Permit

Any permit or authorization issued or approved based on false, misleading, or erroneous information provided by an Applicant is void without the necessity of any proceedings for revocation. Any work undertaken or use established pursuant to such permit or other authorization is unlawful. No action may be taken by a board, agency, or employee of the Municipality purporting to validate such a violation.

ARTICLE II – DEFINITIONS

Section 19-201. Interpretation

For the purposes of this Ordinance, 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, partnership, public or private association or corporation, firm, trust, estate, municipality, governmental unit, public utility, or any other legal entity whatsoever which is recognized by law as the subject of rights and duties. Whenever used in any section prescribing or imposing a penalty, the term "person" shall include the members of a partnership, the officers, members, servants and agents of an association, officers, agents and servants of a corporation, and the officers of a municipality.
- 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."
- F. The definitions in this Ordinance are for the purposes of enforcing the provisions of this Ordinance and have no bearing on other municipal regulations or ordinances.

Section 19-202. Definitions

Agricultural Activity – Activities associated with agriculture such as agricultural cultivation, agricultural operation, and animal heavy use areas. This includes the work of producing crops including tillage, plowing, disking, harrowing, planting, or harvesting crops; or pasturing and raising of livestock; and installation of conservation measures. Construction of new buildings or impervious area is not considered an Agricultural Activity.

Applicant – A Landowner, developer, or other person who has filed an application to the Municipality for approval to engage in any Regulated Activity as defined in this Ordinance.

As-Built Plans (Drawings) – Engineering or Site plans or drawings that document the actual locations, dimensions, and elevations of the improvements, and building components, and changes made to the original design plans. The final version of these documents, or a copy of same, are signed and sealed by a qualified Licensed Professional and submitted to the Municipality at the completion of the project, as per the requirements of Section 19-502 of this Ordinance as "final As-Built Plans".

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

Baseflow – 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.

BMP (Best Management Practice) – Activities, facilities, designs, measures, or procedures used to manage stormwater impacts from Regulated Activities, to provide water quality treatment, infiltration, volume reduction, and/or peak rate control, to promote groundwater recharge, and to otherwise meet the purposes of this Ordinance. Stormwater BMPs are commonly grouped into one (1) of two (2) broad categories or measures: "structural" or "nonstructural." In this Ordinance, nonstructural BMPs or measures include certain low impact development and conservation design practices used to minimize the contact of pollutants with stormwater runoff. These practices aim to limit the total volume of stormwater runoff and manage stormwater at its source by techniques such as protecting natural systems and incorporating existing landscape features. Nonstructural BMPs include, but are not limited to, the protection of sensitive and special value features such as wetlands and riparian areas, the preservation of open space while clustering and concentrating development, the reduction of impervious cover, and the disconnection of rooftops from storm sewers. Structural BMPs are those that consist of a physical system that is designed and engineered 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, bioretention, wet ponds, permeable paving, grassed swales, riparian buffer, sand filters, detention basins, and manufactured devices. Structural and nonstructural stormwater BMPs are permanent appurtenances to the Site. [See also Stormwater Management Facility and Stormwater Control Measure (SCM)].

Buffer – See Riparian Buffer.

Carbonate Geology (or carbonate rock formations) – See Karst.

CFS – Cubic Feet per Second.

Channel – A natural or artificial open drainage feature that conveys, continuously or periodically, flowing water and through which stormwater flows. Channels include, but shall not be limited to, natural and man-made drainageways, swales, streams, ditches, canals, and pipes flowing partly full.

Clean Streams Law – Act 394 of 1937, P.L. 495, 35 P.S. Section 691.1, et. seq., as amended.

CN – Curve number.

Commonwealth – Commonwealth of Pennsylvania.

Conservation District – The Chester County Conservation District.

Conservation Design - A series of holistic land development design goals that maximize protection of key land and environmental resources, preserve significant concentrations of open space and greenways, evaluate, and maintain site hydrology, and ensure flexibility in development design to meet community needs for complimentary and aesthetically pleasing development. Conservation design encompasses the following objectives: conservation/enhancement of natural

resources, wildlife habitat, biodiversity corridors, and greenways (interconnected open space); minimization of environmental impact resulting from a change in land use (minimum disturbance, minimum maintenance); maintenance of a balanced water budget by making use of site characteristics and infiltration; incorporation of unique natural, scenic and historic site features into the configuration of the development; preservation of the integral characteristics of the site as viewed from adjoining roads; and reduction in maintenance required for stormwater management practices. Such objectives can be met on a site through an integrated development process that respects natural site conditions and attempts, to the maximum extent possible, to replicate or improve the natural hydrology of a site.

Conservation Plan – A plan written by a planner certified by NRCS that identifies Conservation Practices and includes site specific BMPs for agricultural plowing or tilling activities and animal heavy use areas.

Conservation Practices – Practices installed on agricultural lands to improve farmland, soil and/or water quality which have been identified in a current Conservation Plan.

Conveyance – A natural or manmade, existing, or proposed Stormwater Management Facility, feature or channel used for the transportation or transmission of stormwater from one place to another. For the purposes of this Ordinance, Conveyance shall include pipes, drainage ditches, channels, and swales (vegetated and other), gutters, stream channels, and like facilities or features.

Design Storm – The magnitude and temporal distribution of precipitation from a storm event measured in probability of occurrence (e.g., a five (5)-year storm) and duration (e.g., twenty-four (24) hours), used in the design and evaluation of stormwater management systems. Also see Return Period.

Detention (or **To Detain**) – Capture and temporary storage of runoff in a Stormwater Management Facility for release at a controlled rate.

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.

Detention Volume - The volume of runoff that is captured and released into the Waters of the Commonwealth at a controlled rate.

Developer – A person, company, or organization who seeks to undertake any Regulated Activities at a Site in the Municipality.

Diameter at Breast Height (DBH) – The outside bark diameter of a tree at breast height which is defined as four and one half (4.5) feet (one and thirty-seven one-hundredths of a meter (1.37 m)) above the forest floor on the uphill side of the tree.

Disturbed Area – Land area disturbed by or where an Earth Disturbance Activity is occurring or has occurred.

Drainage Area - That land area contributing runoff to a single point (including but not limited to the point/line of interest used for hydrologic and hydraulic calculations) and that is enclosed by a natural or man-made ridge line.

Earth Disturbance (or Earth Disturbance Activity) – A construction or other human activity which disturbs the surface of the land, including, but not limited to, clearing and grubbing; grading; excavations; embankments; road maintenance; land development; building construction; and the moving, depositing, stockpiling, or storing of soil, rock, or earth materials.

Easement – A right of use granted by a Landowner to allow a grantee the use of the designated portion of land for a specified purpose, such as for stormwater management or other drainage purposes.

Erosion – The process by which the surface of the land, including water/stream channels, is worn away by water, wind, or chemical action.

Erosion and Sediment (E&S) Control Plan – A plan required by the Conservation District or the Municipality to minimize accelerated erosion and sedimentation, and that must be prepared and approved per the applicable requirements.

Evapotranspiration (ET) – The combined processes of evaporation from the water or soil surface and transpiration of water by plants.

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 FEMA maps and studies as being a Special Flood Hazard Area.

Floodway - The channel of the watercourse and those portions of the adjoining floodplains that are reasonably required to carry and discharge the one hundred (100)-year flood (also called the base flood or one percent (1%) annual chance 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 floodway, it is assumed, absent evidence to the contrary, that the floodway extends from the centerline of the stream and to fifty (50) feet beyond the top of the bank of the stream on both sides.

Forest Management/Timber Operations – Planning and activities necessary for the management of forest lands. These include timber inventory, preparation of forest management plans, silvicultural treatment, cutting budgets, logging road design and construction, timber harvesting, Site preparation, and reforestation.

Freeboard – A vertical distance between the design high-water elevation and the elevation of 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.

Geotextile – A fabric manufactured from synthetic fiber that is used to achieve specific objectives, including infiltration, separation between different types of media (i.e., between soil and stone), or filtration.

Governing Body - the Board of Supervisors of Franklin Township.

Grade/Grading – 1. (noun) A slope, usually of a road, channel, or natural ground, specified in percent and shown on plans as specified herein. 2. (verb) To finish the surface of a roadbed, the top of an embankment, or the bottom of an excavation.

Green Infrastructure – Systems and practices that use or mimic natural processes to infiltrate, evapotranspire, or reuse stormwater on the site where it is generated.

Groundwater – Water that occurs in the subsurface and fills or saturates the porous openings, fractures and fissures of under-ground soils and rock units.

Groundwater Recharge – The replenishment of existing natural groundwater supplies from infiltration of rain or overland flow.

HEC-1 – The U.S. Army Corps of Engineers, Hydrologic Engineering Center (HEC) hydrologic runoff model.

HEC-HMS – The U.S. Army Corps of Engineers, Hydrologic Engineering Center (HEC) - Hydrologic Modeling System (HMS).

High Tunnel - A structure which meets the following:

- A. is used for the production, processing, keeping, storing, sale or shelter of an agricultural commodity as defined in section 2 of the Act of December 19, 1974 (P.L. 973, No. 319), known as the "Pennsylvania Farmland and Forest Land Assessment Act of 1974," or for the storage of agricultural equipment or supplies; and
- B. is constructed with all the following:
 - 1. has a metal, wood, or plastic frame;
 - 2. when covered, has a plastic, woven textile, or other flexible covering; and
 - 3. has a floor made of soil, crushed stone, matting, pavers, or a floating concrete slab.

Hotspots – Areas where prior or existing land use or activities can potentially generate highly contaminated runoff with concentrations of pollutants in excess of those typically found in stormwater.

Hydrologic Regime – The hydrologic system, cycle or balance that sustains the quality and quantity of stormwater, stream baseflow, storage, and groundwater supplies under natural conditions.

Hydrologic Soil Group (HSG) – A classification of soils by the Natural Resources Conservation Service (NRCS), into four (4) 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 has been compacted or covered with a layer of material so that it prevents or is resistant to infiltration of water, including but not limited to: structures such as roofs, buildings, storage sheds; other solid, paved, or concrete areas such as streets, driveways, sidewalks, parking lots, patios, tennis or other paved courts; or athletic playfields comprised of synthetic turf materials. For the purposes of determining compliance with this Ordinance, compacted soils or stone surfaces used for vehicle parking and movement shall be considered impervious. Uncompacted gravel areas with no vehicular traffic, such as gardens, walkways, or

patios areas, shall be considered pervious per review by the Municipal Engineer. Surfaces that were designed to allow infiltration (i.e., pavers and areas of porous pavement) are not to be considered impervious surface if designed to function as a BMP per review by the Municipal Engineer. Additionally, for the purposes of determining compliance with this Ordinance, the total horizontal projection area of all ground-mounted and free-standing solar collectors, including solar photovoltaic cells, panels, and arrays, shall be considered pervious so long as the designs note that natural vegetative cover will be preserved and/or restored underneath the solar photovoltaic cells, panels, and arrays, and the area disturbed is planned as a vegetated pervious surface.

Infiltration – Movement of surface water into the soil, where it is absorbed by plant roots, evaporated into the atmosphere, or percolated downward to recharge groundwater.

Infiltration Facility – A stormwater BMP designed to collect and discharge runoff into the subsurface in a manner that allows infiltration into underlying soils and groundwater (e.g., French drains, seepage pits, or seepage trenches, etc.).

Intermittent Stream – A defined channel in which surface water is absent during a portion of the year, in response to seasonal variations in precipitation or groundwater discharge.

Invert – The lowest surface, the floor or bottom of a culvert, pipe, drain, sewer, channel, basin, BMP, or orifice.

Karst – A type of topography that is formed over limestone or other carbonate rock formations by dissolving or solution of the rock by water, and that is characterized by closed depressions, sinkholes, caves, a subsurface network of solution conduits and fissures through which groundwater moves, and no perennial surface drainage features.

Land Development – Any of the following activities:

- A. The improvement of one (1) lot or two (2) or more contiguous lots, tracts, or parcels of land for any purpose involving:
 - 1. A group of two (2) 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 (2) 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 Pennsylvania Municipalities Planning Code (as amended).

Landowner – The legal or beneficial owner or owners of land including the holder of an option or contract to purchase (whether or not such option or contract is subject to any condition), a lessee if they are authorized under the lease to exercise the rights of the Landowner, or other person having a proprietary interest in the land.

Licensed Professional – A Pennsylvania Registered Professional Engineer, Registered Landscape Architect, Registered Professional Land Surveyor, or Registered Professional Geologist, or any person licensed by the Pennsylvania Department of State or qualified by law to perform the work required by the Ordinance within the Commonwealth of Pennsylvania.

Limiting Zone – A soil horizon or condition in the soil profile or underlying strata that 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 other subsurface or soil conditions.
- 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 that is so slowly permeable that it effectively limits downward passage of water.

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, provide evapotranspiration 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.

MPC - Act of July 31, 1968, P.L. 805, No. 247, 53 P.S. Section 10101, et seq., as amended, the Pennsylvania Municipalities Planning Code, Act 247.

MFEMP – Mushroom Farm Environmental Management Plan.

MS4 - Municipal Separate Storm Sewer System.

Maintenance - The action taken to restore or preserve the as-built functional design of any Stormwater Management Facility or system.

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 – Franklin Township, Chester County, Pennsylvania.

New Development – Any Regulated Activity involving placement or construction of new Impervious Surface or grading over existing pervious land areas not classified as Redevelopment as defined in this Ordinance.

NOAA - National Oceanic and Atmospheric Administration.

Nonpoint Source Pollution – Pollution that enters a water body from diffuse origins in the watershed and does not result from discernible, confined, or discrete Conveyances.

Nonstormwater 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) – See Best Management Practice (BMP).

NPDES – National Pollutant Discharge Elimination System, the Federal government's system for issuance of permits under the Clean Water Act, which is delegated to PADEP in Pennsylvania.

NRCS – Natural Resource Conservation Service (previously Soil Conservation Service, SCS), an agency of the U.S. Department of Agriculture.

O&M Agreement – O&M means Operation & Maintenance. See Article VII of this Ordinance.

O&M Plan – O&M means Operation & Maintenance. See Article VII of this Ordinance.

PADEP – Pennsylvania Department of Environmental Protection.

Parent Tract – The parcel of land from which a land development or subdivision originates, determined from the date of municipal adoption of this Ordinance.

Peak Discharge – The maximum rate of stormwater runoff from a specific storm event.

PennDOT – Pennsylvania Department of Transportation.

Pennsylvania Stormwater Best Management Practices Manual (PA BMP Manual) - Document Number 363-0300-002 (December 2006, and as subsequently amended).

Pervious Surface (or Pervious Area) – Any area not defined as Impervious Surface.

Pet – A domesticated animal (other than a disability assistance animal) kept for amusement or companionship.

Planning Commission – The Planning Commission of Franklin Township.

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 Pennsylvania Code § 92.1.

Post-construction – Period after construction during which Disturbed Areas are stabilized, stormwater controls are in place and functioning, and all proposed improvements approved by the Municipality are completed.

Predevelopment – Ground cover conditions assumed to exist within the proposed Disturbed Area prior to commencement of the Regulated Activity for the purpose of calculating the Predevelopment water quality volume, infiltration volume, and peak flow rates as required in this Ordinance.

Pretreatment – Techniques employed in stormwater BMPs to provide storage or filtering, or other methods to trap or remove coarse materials and other pollutants before they enter the stormwater system but may not necessarily be designed to meet the entire water quality volume requirements of this Ordinance.

Proposed Impervious Surface - All new, additional and replacement Impervious Surfaces.

Rainfall Intensity - The depth of accumulated rainfall per unit of time.

Recharge – The replenishment of groundwater through the infiltration of rainfall, other surface waters, or land application of water or treated wastewater.

Redevelopment - Any Regulated Activity that involves demolition, removal, reconstruction, or replacement of existing Impervious Surface(s).

Regulated Activity - Any Earth Disturbance Activity(ies) or any activity that involves the alteration or development of land in a manner that may affect stormwater runoff.

Regulated Earth Disturbance Activity – Any activity involving Earth Disturbance subject to regulation under 25 Pennsylvania Code Chapter 92.a, Chapter 102, or the Clean Streams Law.

Regulated Impervious Surface - Proposed impervious surface as part of a current proposed activity and all existing impervious surfaces installed after January 3, 2014 as part of previous activity.

Retention or **To Retain** – The prevention of direct discharge of stormwater runoff into surface waters or water bodies during or after a storm event by permanent containment in a pond or depression; examples include systems which discharge by percolation to groundwater, exfiltration, and/or evaporation processes and which generally have residence times of less than three (3) days.

Retention Basin – An impoundment that is designed to temporarily detain a certain amount of stormwater from a catchment area and which may be designed to permanently retain stormwater runoff from the catchment area; retention basins always contain water.

Retention Volume/Removed Runoff – The volume of runoff that is captured and not released directly into the surface Waters of the 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 occur one (1) time. For example, the twenty-five (25)-year return period rainfall would be expected to occur on average once every twenty-five (25) years; or stated in another way, the probability of a twenty-five (25)-year storm occurring in any one (1) year is four-one hundredths (0.04) (i.e., a four (4)% chance).

Riparian – Pertaining to anything connected with or immediately adjacent to the banks of a stream or other body of water.

Riparian Buffer – An area of land adjacent to a body of water and managed to maintain vegetation to protect the integrity of stream channels and shorelines, to reduce the impact of upland sources of pollution by trapping, filtering, and converting sediments, nutrients, and other chemicals, and to supply food, cover, and thermal protection to fish and other aquatic species and wildlife.

Runoff – Any part of precipitation that flows over the land surface.

SALDO – See Subdivision and Land Development Ordinance.

SCS – Soil Conservation Service, now known as the Natural Resources Conservation Service.

Sediment – Soil or other materials transported by, suspended in, or deposited by surface water as a product of erosion.

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.

Sheet Flow – A flow process associated with broad, shallow water movement on sloping ground surfaces that is not channelized or concentrated.

Site – Total area of land in the Municipality where any proposed Regulated Activity, as defined in this Ordinance, is planned, conducted, or maintained or that is otherwise impacted by the Regulated Activity.

Soil Cover Complex Method – A method of runoff computation developed by NRCS that is based on relating soil type and land use/cover to a runoff parameter called curve number (CN).

State Water Quality Requirements – The regulatory requirements to protect, maintain, reclaim, and restore water quality under Pennsylvania Code Title 25 and the Clean Streams Law.

Storm Frequency – (see Return Period).

Stormwater Management Act – Act of October 4, 1978, P.L. 864, No. 167, 32 Pa.C.S. Section 680.1, et. seq., as amended.

Stormwater – Drainage runoff from the surface of the land resulting from precipitation or snow or ice melt.

Stormwater Control Measure - Physical features used to effectively control, minimize, and treat stormwater runoff. [See Best Management Practice (BMP)].

Stormwater Management Facility – Any feature, natural or man-made, that, due to its condition, design, or construction, conveys, stores, or otherwise affects stormwater runoff quality, rate, or quantity, including Best Management Practices and Stormwater Control Measures. Typical stormwater management facilities include, but are not limited to, detention and retention basins, open channels, storm sewers, pipes, and Infiltration Facilities.

Stormwater Management (SWM) Site Plan – The plan prepared by the Applicant or its representative, in accordance with the requirements of Article IV of this Ordinance, indicating how stormwater runoff will be managed at a particular Site in accordance with this Ordinance, and including all necessary design drawings, calculations, supporting text, and documentation to demonstrate that Ordinance requirements have been met, herein referred to as "SWM Site Plan." All references in this Ordinance to "final" or "approved" SWM Site Plans shall incorporate the approved SWM Site Plan and all subsequent approved revisions thereto.

Stream – A natural watercourse.

Structural Best Management Practices - See BMP (Best Management Practices).

Subdivision - The division or re-division of a lot, tract, or parcel of land as defined in The Pennsylvania Municipalities Planning Code, Act of July 31, 1968, P.L. 805, No. 247 (as amended).

Subdivision and Land Development Ordinance – Subdivision and Land Development ordinance of Franklin Township, Chester County, PA, as amended.

Swale – An artificial or natural waterway or low-lying stretch of land that gathers and conveys stormwater or runoff, and is generally vegetated for soil stabilization, stormwater pollutant removal, and infiltration.

SWM Site Plan – See Stormwater Management Site Plan.

Timber Operations – See Forest Management.

Top-of-bank – Highest point of elevation of the bank of a stream or channel cross-section at which a rising water level just begins to flow out of the channel and into the floodplain.

USDA – United States Department of Agriculture.

Watercourse – A channel or Conveyance of surface water having a defined bed and banks, whether natural or artificial, with perennial or intermittent flow.

Water Table – The upper most level of saturation of pore space or fractures by groundwater. Seasonal high-water table refers to a water table that rises and falls with the seasons due either to natural or man-made causes.

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 the Commonwealth.

Watershed – Region or area drained by a river, watercourse, or other body of water, whether natural or artificial.

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. Wetlands generally include swamps, marshes, bogs, fens, and similar areas.

Woods - Any land area of at least one-quarter (0.25) acre with a natural or naturalized ground cover (excluding manicured turf grass) and that has an average density of two (2) or more viable trees per one thousand five hundred (1,500) square feet with a DBH of six (6) inches or greater and where such trees existed at any time within three (3) years of the time of land development application submission of the proposed project. The land area to be considered Woods shall be measured from the outer drip lines of the outer trees.

ARTICLE III – STORMWATER MANAGEMENT STANDARDS

Section 19-301. General Requirements

- A. Applicants proposing Regulated Activities in the Municipality which are not exempt under Section 19-106 shall submit a Stormwater Management Site Plan (SWM Site Plan) to the Municipality for review and approval in accordance with Articles III and IV. SWM Site Plans approved by the Municipality shall be on Site throughout the duration of the Regulated Activity.
- B. The stormwater management and runoff control criteria and standards in this Ordinance shall apply to the total proposed Regulated Activity, even if it is to take place in stages. The measurement of Impervious Surfaces shall include all of the Impervious Surfaces in the total proposed Regulated Activity even if the development is to take place in stages.
- C. No Regulated Activity within the Municipality shall commence until:
 - 1. The Municipality issues approval of a SWM Site Plan, which demonstrates compliance with the requirements of this Ordinance; and
 - 2. The Applicant has received a letter of adequacy or approval for the Erosion and Sediment Control Plan review by the Municipality and the Conservation District (if required), and has received all other local, State and Federal permit approvals required for the project involving the Regulated Activity. Any project with greater than 5,000 sf of Earth Disturbance requires review and approval of and Erosion and Sediment Control Plan from the Conservation District.
- D. Neither submission of a SWM Site Plan under the provisions herein nor compliance with the provisions of this Ordinance shall relieve any person from responsibility for damage to any person or property otherwise imposed by law.
- E. The Applicant shall design the Site to minimize disturbances to land, Site hydrology, and natural resources, and to maintain the natural hydrologic regime, drainage patterns and flow conditions. The Applicant shall apply the procedures set forth in Section 304 for the overall Site design and for selection, location, and design of features and BMPs to be used to comply with the requirements of this Ordinance.
- F. To the maximum extent practicable, Post-construction stormwater shall be discharged within the drainage area of the same stream or water body receiving the runoff prior to construction of the proposed Regulated Activity.
- G. For Regulated Activities with one (1) acre or more of proposed Earth Disturbance, existing drainage peak rate discharges up to and including the one hundred (100)-year storm and the volume of runoff up to and including the two (2)-year storm onto or through adjacent property(ies) or downgradient property(ies), including diffuse drainage discharge, shall not be altered in any manner by Regulated Activities under this Ordinance without written permission from, and, where applicable as determined by the Municipality, an easement and agreement with the affected Landowner(s) for conveyance of discharges onto or through their

property(ies). Altered stormwater discharges shall be subject to any applicable discharge criteria specified in this Ordinance.

- H. Areas located outside of the Site (i.e., areas outside of the Regulated Activity) that drain through a proposed Site are not subject to water quality and volume control, infiltration, stream channel protection, or peak flow rate control requirements (as presented in Sections 19-305, 19-306, 19-307, and 19-308). Drainage facilities located on the Site shall be designed to safely convey flows from outside of the Site through the Site.
- I. If Site conditions preclude capture of runoff from limited portions of the Disturbed Area for achieving water quality volume control standards, stream channel protection standards, and the 2-year, storm event peak runoff rate reduction standards for New Development required by this Ordinance, the Applicant shall propose alternate methods to mitigate the bypass of the BMPs, subject to the approval of the Municipal Engineer. In no case shall resulting peak rate be greater than the Pre-development peak rate for the equivalent design storm.
- J. For all Regulated Activities, erosion and sediment control BMPs shall be designed, implemented, operated, and maintained during the Regulated Activities (i.e., during construction) as required to meet the purposes and requirements of this Ordinance, to meet the erosion and sediment control requirements of the Municipality, if applicable, and to meet all requirements under Title 25 of the PA Code and the Clean Streams Law.
- K. For all Regulated Activities, permanent BMPs and Conveyances shall be designed, implemented, operated, and maintained to meet the purposes and requirements of this Ordinance and to meet all requirements under Title 25 of the Pennsylvania Code, the Clean Streams Law, and the Storm Water Management Act.
- L. The design of all BMPs and Conveyances shall incorporate sound engineering principles and practices in a manner that does not aggravate existing stormwater problems as identified by the Municipality. The Municipality reserves the right to disapprove any design that would result in construction in an area affected by existing stormwater problem(s) or continuation of an existing stormwater problem(s).
- M. Existing wetlands, either on the Site or on an adjacent property, shall not be used to meet the minimum design requirements for stormwater management or stormwater runoff quality treatment. Stormwater discharges to existing wetlands shall not degrade the quality or hydrologic integrity of the wetland.

N. Hotspots Runoff Controls –

Specific structural or pollution prevention practices may be required, as determined to be necessary by the Municipal Engineer, to pretreat runoff from Hotspots prior to infiltration. Following is a list of examples of Hotspots:

- 1. Vehicle salvage yards and recycling facilities;
- 2. Vehicle fueling stations;
- 3. Vehicle service and maintenance facilities;

- 4. Vehicle and equipment cleaning facilities;
- 5. Fleet storage areas (bus, truck, etc.);
- 6. Industrial sites based on Standard Industrial Classification Codes;
- 7. Marinas (service and maintenance areas);
- 8. Outdoor liquid container storage;
- 9. Outdoor loading/unloading facilities;
- 10. Public works storage areas;
- 11. Facilities that generate or store hazardous materials;
- 12. Commercial container nursery;
- 13. Contaminated sites/brownfields;
- 14. Other land uses and activities as designated by the Municipality.

O. Contaminated and Brownfield Sites -

Where BMPs may contribute to the migration of contaminants in groundwater, the water quality and runoff volume, stream channel protection, and peak rate control standards shall be met; however, at the Municipal Engineer's discretion, the minimum infiltration requirement may be reduced or eliminated commensurate with the contaminated area and the required water quality and runoff control measures may be increased to mitigate the reduced infiltration requirement for the contaminated area.

P. Additional Water Quality Requirements -

The Municipality may require additional stormwater control measures for stormwater discharges to special management areas including, but not limited to:

- 1. Water bodies listed as "impaired" by PADEP.
- 2. Any water body or watershed with an approved Total Maximum Daily Load (TMDL).
- 3. Areas of known existing flooding problems.
- 4. Critical areas with sensitive resources (e.g., State designated special protection waters, cold water fisheries, carbonate geology or other groundwater recharge areas that may be highly vulnerable to contamination, drainage areas to water supply reservoirs, etc.).
- Q. Applicants shall utilize the *Pennsylvania Stormwater Best Management Practices Manual* (PA BMP Manual), as amended, or other sources acceptable to the Municipal Engineer, for testing and design standards for BMPs, and where there is a conflict with the provisions of this Ordinance, the most restrictive applies.

- R. For areas underlain by karst or carbonate geology that may be susceptible to the formation of sinkholes and other karst features, the location, type, and design of infiltration BMPs shall be based on a Site evaluation conducted by a qualified Licensed Professional and based on the PA BMP Manual (as amended) or other design guidance acceptable to the Municipal Engineer.
- S. All Regulated Activities located within a Special Flood Hazard Area designated by the Federal Emergency Management Agency (FEMA) shall comply with Chapter 27, Part 13 of the Franklin Township Code of Ordinances as amended and shall be designed to maintain the flood carrying capacity of the floodway such that the base flood elevations are not increased, either upstream or downstream. The natural conveyance characteristics of the Site and the receiving floodplain shall be incorporated into the stormwater management practices proposed for the Site.
- T. Disturbance of existing ground cover during construction of the proposed Regulated Activity is prohibited within fifty (50) feet of top-of-bank of all perennial and intermittent waterways, water bodies (lakes, ponds, etc.) and wetlands, except for activities otherwise approved by State or local agencies (e.g., stream restoration projects, road crossings, subsurface utility projects, etc.). At the Municipal Engineer's discretion, and with Conservation District and PADEP approval where necessary, the non-disturbance buffer may be reduced because of setback or other Site constraints, but never be less than ten (10) feet.

Section 19-302. Permit Requirements by Other Governmental Entities

The following permit or other regulatory requirements may apply to certain Regulated Activities and shall be met prior to (or as a condition of) final approval by the Municipality of the SWM Site Plan and prior to commencement of any Regulated Activities, as applicable:

- A. All Regulated Activities subject to permit or regulatory requirements by PADEP under regulations at Title 25 Pennsylvania Code Chapter 102, or erosion and sediment control requirements of the Municipality.
- B. Work within natural drainage ways subject to permit by PADEP under Title 25 Pennsylvania Code Chapter 105.
- C. Any BMP or Conveyance that would be located in or adjacent to surface Waters of the Commonwealth, including wetlands, subject to permit by PADEP under Title 25 Pennsylvania Code Chapter 105.
- D. Any BMP or Conveyance that would be located on or discharge to a State highway right-of-way or require access to or from a State highway and be subject to approval by PennDOT.
- E. Culverts, bridges, storm sewers, or any other facilities which must pass or convey flows from the tributary area and any facility which may constitute a dam subject to permit by PADEP under Title 25 Pennsylvania Code Chapter 105.

Section 19-303. Erosion and Sediment Control

A. No Regulated Activity within the Municipality shall commence until:

- 1. The Municipality receives documentation that the Applicant has received:
 - a. A "letter of adequacy" from the Conservation District or other approval from PADEP in compliance with Title 25 Chapter 102 of the Pennsylvania Code of an Erosion and Sediment Control Plan for construction activities for projects where the area of disturbance is greater than five thousand (5,000) square feet and less than one (1) acre, where pond dredging is involved, or when the disturbance is associated with activities described under Title 25 Chapter 105 of the Pennsylvania Code permits;
 - b. A PADEP NPDES Permit for Stormwater Discharges Associated with Construction Activities for projects where the area of disturbance exceeds one (1) acre, as required under Title 25 Pennsylvania Code Chapter 92.a, if applicable;
 - c. Evidence of any other permit(s) or approvals required for the Regulated Activities; and
- B. A copy of the Erosion and Sediment Control Plan and any required permit(s), as required by PADEP regulations, shall be available on the Site at all times.
- C. Additional erosion and sediment control measures shall be applied where infiltration BMPs are proposed, at a minimum including those required in Subsection 19-306.L.

Section 304. Site Design Process

The Applicant shall design the Site to minimize the disturbances to land, Site hydrology, and natural resources, and to maintain the natural hydrologic regime, drainage patterns and flow conditions. The Applicant shall demonstrate in its SWM Site Plan (as required in Subsection 19-402.C) that the design sequence, objectives, and techniques described below were applied to the maximum extent practicable in the Site design of the Regulated Activity while complying with all other requirements of this Ordinance. The Site design shall:

- A. First, identify and delineate all existing natural resources and natural and man-made hydrologic features listed in Subsection 19-402.B.8 that are located within the Site, or receive discharge from, or may be impacted by the proposed Regulated Activity.
- B. Second, provide a prioritized listing of these resources and features to identify:
 - 1. Those to be incorporated into the Site design in a manner that provides protection from any disturbance or impact from the proposed Regulated Activity;
 - 2. Those to be protected from further disturbance or impact but for which the proposed Regulated Activity will provide improvement to existing conditions;
 - 3. Those that can be incorporated into and utilized as components of the overall Site design in a manner that protects or improves their existing conditions while utilizing their hydrologic function within the limits of their available capacity (e.g., for infiltration, evapotranspiration, or reducing pollutant loads, runoff volume or peak discharge rates, etc.) to reduce the need for or size of constructed BMPs; and
 - 4. Those that may be considered for alteration, disturbance, or removal.

- C. Third, develop the Site design to achieve the following:
 - 1. Recognize and incorporate the priorities identified in Subsection 19-304.B as the basis for the proposed Site layout, grading, construction, and permanent ground cover design;
 - 2. Minimize Earth Disturbance (both surface and subsurface);
 - 3. Maximize protection of or improvement to natural resources and special management areas:
 - 4. Minimize the disturbance of natural Site hydrology, in particular natural drainage features and patterns, discharge points and flow characteristics, natural infiltration patterns and characteristics, and natural channel and floodplain conveyance capacity;
 - 5. Incorporate natural hydrologic features and functions identified in Subsection 304.B into the Site design to protect and utilize those features and their hydrologic functions to reduce the need for or size of constructed BMPs;
 - 6. Maximize infiltration and the use of natural Site infiltration features, patterns and conditions, and evapotranspiration features;
 - 7. Apply selective grading design methods to provide final grading patterns or preserve existing topography in order to evenly distribute runoff and minimize concentrated flows;
 - 8. Minimize the cumulative area to be covered by Impervious Surfaces and:
 - a. Minimize the size of individual Impervious Surfaces,
 - b. Separate large Impervious Surfaces into smaller components,
 - c. Disconnect runoff from one Impervious Surface to another, and
 - d. Utilize porous materials in place of impervious wherever practicable;
 - 9. Minimize the volume and peak discharge rates of stormwater generated;
 - 10. Avoid or minimize stormwater runoff pollutant loads and receiving stream channel erosion;
 - 11. Locate infiltration and other BMPs:
 - a. At or as near to the source of generation as possible, and
 - b. At depths that are as shallow as possible;
 - 12. Prioritize the selection and design of BMPs as follows:
 - a. Nonstructural and vegetation BMPs, then
 - b. Structural (surface and subsurface) BMPs:

- 13. For flow volumes requiring conveyance from the source of generation to a BMP for management, give preference to open channel conveyance techniques that provide infiltration and water quality benefits, and landscaped-based management in common open space areas, where practicable; and
- 14. Consider additional guidance for incorporating natural hydrology into the Site and BMP designs, methods and techniques that support the objectives of Subsections 304.B and 304.C. Appendix B presents additional discussion of "Conservation Design" and "Low Impact Development".
- D. The procedures set forth above shall be utilized to the maximum extent practicable for the overall Site design and selection, location, and design of features and BMPs to be used to comply with the requirements of Sections 19-305, 19-306, 19-307 and 19-308.

Section 19-305. Water Quality and Runoff Volume Requirements

To control Post-construction stormwater impacts from Regulated Activities and meet State water quality requirements, BMPs shall be provided in the Site design that replicate Predevelopment stormwater infiltration and runoff conditions, such that Post-construction stormwater discharges do not degrade the physical, chemical, or biological characteristics of the receiving waters. The green infrastructure and Low Impact Development (LID) practices provided in the PA BMP Manual, as well as the guidance on green infrastructure, LID and Conservation Design (CD) provided in Appendix B, shall be utilized for all regulated activities wherever possible. The Applicant shall comply with the following water quality and runoff volume requirements for all Regulated Activities, including all New Development and Redevelopment activities:

- A. The Post-construction total runoff volume shall not exceed the Predevelopment total runoff volume for all storms equal to or less than the two (2)-year, twenty-four (24)-hour duration precipitation (design storm). The water quality and runoff volume to be managed shall consist of any runoff volume generated by the proposed Regulated Activity over and above the Predevelopment total runoff volume and shall be captured and permanently retained or infiltrated on the Site. Permanent retention options may include, but are not limited to, reuse, evaporation, transpiration, and infiltration.
- B. For modeling purposes, the Predevelopment ground cover conditions shall be determined using the corresponding ground cover assumptions presented in Subsection 19-309.D of this Ordinance.
- C. The design of the Stormwater Management Facility outlet shall provide for protection from clogging and unwanted sedimentation.
- D. BMPs that moderate the temperature of stormwater shall be used to protect the temperature of receiving waters.
- E. Water quality improvement shall be achieved in conjunction with achieving the infiltration requirements of Section 19-306. The infiltration volume required under Section 19-306 may be included as a component of the water quality volume. If the calculated water quality and runoff volume is greater than the volume infiltrated, then the difference between the two (2) volumes shall be managed for water quality and runoff volume control through other techniques or practices but shall not be discharged from the Site.

- F. Runoff from the Disturbed Area shall be treated for water quality prior to entering existing waterways or water bodies. If a stormwater management practice does not provide water quality treatment, then water quality BMPs shall be utilized to provide pre-treatment prior to the runoff entering the stormwater management practice.
- G. The Municipality may require additional water quality and runoff control measures for stormwater discharging to special management areas such as those listed in Subsection 19-301.P.
- H. When the Regulated Activity contains or is divided by multiple drainage areas, the water quality and runoff volume shall be separately addressed for each drainage area.
- I. Weighted averaging of runoff coefficients shall not be used for manual computations or input data for water quality and runoff volume calculations.
- J. Areas located outside of the Site (i.e., areas outside of the Regulated Activity) may be excluded from the calculation of the water quality and runoff volume requirements.
- K. Water quality and volume control practices shall be selected and designed to meet the criteria of Subsection 304.C that apply to water quality and volume control.
- L. Evapotranspiration may be quantified and credited towards meeting volume requirements according to the PADEP Post Construction Stormwater Management (PCSM) Spreadsheet and Instructions (December 2020) or the most recent guidance from PADEP.

Section 19-306. Infiltration Requirements

Providing for infiltration consistent with the natural hydrologic regime is required to compensate for the reduction in the recharge that occurs when the ground surface is disturbed, or Impervious Surface is created or expanded. The Applicant shall achieve the following infiltration requirements:

- A. For Regulated Activities involving both New Development and Redevelopment, infiltration should be designed to accommodate the entire water quality and runoff volume required in Section 305. Infiltration BMPs should be consistent with the design and infiltration period guidelines included in the PA BMP Manual or other PA DEP design guidance. If the runoff volume required by Section 19-305 cannot be infiltrated, then alternative methods consistent with the PA BMP Manual (as amended) or other PA DEP guidance, such as the Managed Release Concept, may be used to manage this volume with approval from the Municipal Engineer.
- B. For Regulated Activities involving both New Development and Redevelopment, the volume of a minimum of one (1)-inch of runoff from all Regulated Impervious Surfaces shall be infiltrated.
- C. If the requirements of Subsection 19-306.A or Subsection 19-306.B cannot be physically accomplished, then the Applicant shall be responsible for demonstrating with data or calculations to the satisfaction of the Municipal Engineer why this infiltration volume cannot

- be physically accomplished on the Site (e.g., shallow depth to bedrock or limiting zone, open voids, steep slopes, etc.) and what alternative volume can be infiltrated.
- D. Only if a minimum infiltration of the first one-half (0.5) inch of runoff volume cannot be physically accomplished on the Site, shall a waiver from Section 19-306 be considered by the Municipality, in accordance with Section 19-111.
- E. If Site conditions preclude capture of runoff from portions of the Impervious Surfaces, the infiltration volume for the remaining area shall be increased an equivalent amount to offset the loss.
- F. When a project contains or is divided by multiple watersheds, the infiltration volume shall be separately addressed for each watershed.
- G. Existing Impervious Surfaces located in areas outside of the Site (i.e., outside of the Regulated Activity) may be excluded from the calculation of the required infiltration volume.
- H. A detailed soils evaluation of the Site shall be conducted by a qualified professional and at a minimum shall address soil permeability, depth to bedrock, and subgrade stability. The general process for designing the infiltration BMP shall be conducted by a qualified Licensed Professional and shall be consistent with the PA BMP Manual (as amended) (or other guidance acceptable to the Municipal Engineer) and in general shall:
 - 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 sub-grade stability; infiltration may not be ruled out without conducting these tests.
 - 2. Provide field tests such as double ring infiltrometer or other hydraulic conductivity tests (at the elevation of the proposed infiltration surface) to determine the appropriate hydraulic conductivity rate. Standard septic/sewage percolation tests are not acceptable for design purposes.
 - 3. Design the Infiltration Facility for the required retention (infiltration) volume based on field-determined infiltration capacity (and apply safety factor as per applicable design guidelines) at the elevation of the proposed infiltration surface.
 - 4. On-lot infiltration features are encouraged; however, it shall be demonstrated to the Municipal Engineer that the soils are conducive to infiltration on the identified lots.
- I. Infiltration BMPs shall be selected based on suitability of soils and Site conditions and shall be constructed on soils that have the following characteristics:
 - 1. A minimum depth of twenty-four (24) inches between the bottom of the BMP and the top of the Limiting Zone. Additional depth may be required in areas underlain by karst or carbonate geology (see Subsection 19-306.M).
 - 2. An infiltration rate sufficient to accept the additional stormwater volume and drain completely as determined by field tests conducted by the Applicant.

3. The Infiltration Facility shall completely drain the retention (infiltration) volume within three (3) days (seventy-two (72) hours) from the end of the design storm.

J. All infiltration practices shall:

- 1. Be selected and designed to meet the criteria of Subsection 19-304.C that are applicable to infiltration;
- 2. Be set back at least twenty-five (25) feet from all buildings and features with sub-grade elements (e.g., basements, foundation walls, etc.), unless otherwise approved by the Municipal Engineer;
- 3. For any infiltration practice that collects runoff from shared or multiple features and that is located within fifty (50) feet of a building or feature with sub-grade elements (e.g., basements, foundation walls, etc.), the bottom elevation shall be set below the elevation of the sub-grade element.
- K. Infiltration Facilities shall, to the maximum extent practicable, be located to avoid introducing contaminants to groundwater:
 - 1. When a Hotspot is located in the area draining to a proposed Infiltration Facility, an evaluation of the potential of groundwater contamination from the proposed Infiltration Facility shall be performed, including a hydrogeologic investigation (if necessary) by a qualified Licensed Professional to determine what, if any, pre-treatment, or additional design considerations are needed to protect groundwater quality.
 - 2. When located within a "well head protection area" of a public water supply well, infiltration practices shall be in conformance with the applicable approved source water protection assessment or source water protection plan.
 - 3. The Applicant shall provide appropriate safeguards against groundwater contamination for land uses that may cause groundwater contamination should there be a mishap or spill.
- L. During Site construction, all infiltration practice components shall be protected from compaction due to heavy equipment operation or storage of fill or construction material. Infiltration areas shall also be protected from sedimentation. Areas that are accidentally compacted or graded shall be remediated to restore soil composition and porosity. Adequate documentation to this effect shall be submitted to the Municipal Engineer for review. All areas designated for infiltration shall not receive runoff until the contributory drainage area has achieved final stabilization.
- M. Where sediment transport in the stormwater runoff is anticipated to reach the infiltration system, appropriate permanent measures to prevent or collect sediment shall be installed prior to discharge to the infiltration system.
- N. Where roof drains are designed to discharge to infiltration practices, they shall have appropriate measures to prevent clogging by unwanted debris (for example, silt, leaves and vegetation). Such measures shall include but are not limited to leaf traps, gutter guards, and cleanouts.

- O. All infiltration practices shall have appropriate positive overflow controls.
- P. No sand, salt or other particulate matter may be applied to a porous surface material for winter ice conditions.
- Q. The following procedures and materials shall be required during the construction of all subsurface facilities:
 - 1. Excavation for the Infiltration Facility shall be performed with equipment that will not compact the bottom of the seepage bed/trench or like facility.
 - 2. The bottom of the bed and/or trench shall be scarified prior to the placement of aggregate.
 - 3. Only clean aggregate with documented porosity, free of fines, shall be allowed.
 - 4. The tops, bottoms and sides of all seepage beds, trenches, or like facilities shall be covered with drainage fabric. Fabric shall be non-woven fabric acceptable to the Municipal Engineer.
 - 5. Stormwater shall be distributed throughout the entire seepage bed/trench or like facility and provisions for the collection of debris shall be provided in all facilities.

Section 19-307. Stream Channel Protection Requirements

For Regulated Activities involving New Development with one (1) or more acres of Earth Disturbance, the Applicant shall comply with the following stream channel protection requirements to minimize stream channel erosion and associated water quality impacts to the receiving waters:

- A. The peak flow rate of the Post-construction two (2)-year, twenty-four (24)-hour design storm shall be reduced to the Predevelopment peak flow rate of the one (1)-year, twenty-four (24)-hour duration precipitation, using the SCS Type II distribution.
- B. To the maximum extent practicable, and unless otherwise approved by the Municipal Engineer, the Post-construction one (1)-year, twenty-four (24)-hour storm flow shall be detained for a minimum of twenty-four (24) hours and a maximum not to exceed seventy-two (72) hours from a point in time when the maximum volume of water from the one (1)-year, twenty-four (24)-hour storm is stored in a proposed BMP (i.e., when 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 orifice is at the invert of the proposed BMP).
- C. For modeling purposes, the Predevelopment ground cover conditions shall be determined using the corresponding ground cover assumptions presented in Subsection 19-309.D of this Ordinance.
- D. The minimum orifice size in the outlet structure to the BMP shall be three (3) inches in diameter unless otherwise approved by the Municipal Engineer, and a trash rack shall be installed to prevent clogging. For Sites with small drainage areas contributing to the BMP that do not provide enough runoff volume to allow a twenty-four (24) hour attenuation with the three (3)-inch orifice, the calculations shall be submitted showing this condition.

- E. When the calculated orifice size is below three (3) inches, gravel filters (or other methods) are recommended to discharge low-flow rates subject to the Municipal Engineer's satisfaction. When filters are utilized, maintenance provisions shall be provided to ensure filters meet the design function.
- F. All proposed Stormwater Management Facilities shall make use of measures to extend the flow path and increase the travel time of flows in the facility.
- G. When a Regulated Activity contains or is divided by multiple drainage areas, the peak flow rate control shall be separately addressed for each drainage area.

Section 19-308. Stormwater Peak Rate Control Requirements

The Applicant shall comply with the following peak flow rate control requirements for all Regulated Activities including those that involve New Development and Redevelopment.

A. Post-construction peak flow rates from any Regulated Activity shall not exceed the Predevelopment peak flow rates as shown for each of the design storms specified in Table 308.1.

Table 308.1 Peak Rate Control Standards

(Peak Flow Rate of the Post-construction Design Storm Shall be Reduced to the Peak Flow Rate of the Corresponding Predevelopment Design Storm Shown in the Table)

	PREDEVELOPMENT DESIGN STORM	
POST-CONSTRUCTION DESIGN STORM	New Development	Redevelopment
FREQUENCY (24-Hour Duration)	Regulated Activities	Regulated Activities
2-Year	1-Year	2-Year
5-Year	5-Year	5-Year
10-Year	10-Year	10-Year
25-Year	25-Year	25-Year
50-Year	50-Year	50-Year
100-Year	100-Year	100-Year

- B. For modeling purposes, the Predevelopment ground cover conditions shall be determined using the corresponding ground cover assumptions presented in Subsection 19-309.D of this Ordinance.
- C. For Regulated Activities involving only Redevelopment, no peak flow rate controls are required when and <u>only if</u> the total Regulated Impervious Surface area is at least twenty percent (20%) less than the total existing Impervious Surface area to be disturbed by the Regulated Activity. In all cases where this requirement is not met, the Redevelopment Regulated Activity shall achieve the peak flow rate controls presented in Table 308.1, using the Redevelopment

Ground Cover Assumptions presented in Subsection 19-309.D. This design criterion for Redevelopment is only permitted with approval of Municipal Engineer. It shall result in no impact on downstream properties.

- D. Only the area of the proposed Regulated Activity shall be subject to the peak flow rate control standards of this Ordinance. Undisturbed areas for which the discharge point has not changed are not subject to the peak flow rate control standards.
- E. Areas located outside of the Site (i.e., areas outside of the Regulated Activity) that drain through a proposed Site are not subject to peak flow rate control requirements. Drainage facilities located on the Site shall be designed to safely convey flows from outside of the Site through the Site.
- F. When a Regulated Activity contains or is divided by multiple drainage areas, the peak flow rate controls shall be separately addressed for each drainage area.
- G. The effect of structural and non-structural stormwater management practices implemented as part of the overall Site design may be taken into consideration when calculating total storage volume and peak flow rates.

Section 19-309. Calculation Methodology

A. Stormwater runoff from all Regulated Activity Sites with a drainage area of greater than five (5) acres shall be calculated using a generally accepted calculation technique(s) that is based on the NRCS Soil Cover Complex Method. Table 309.1 summarizes acceptable computation methods. The method selected for use shall be based on the individual limitations and suitability of each method for a particular Site. The use of the Rational Method to estimate peak discharges for drainage areas greater than five (5) acres shall be permitted only upon approval by the Municipal Engineer.

TABLE 309.1

ACCEPTABLE COMPUTATION METHODOLOGIES FOR SWM SITE PLAN

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 where limitations described in TR-55 are met.
HEC-1/ HEC-HMS	US Army Corps of Engineers	Applicable where use of a full hydrologic computer model is desirable or necessary.
Rational Method (or commercial computer package based on Rational Method)	Emil Kuichling (1889)	For Sites up to five (5) acres, or as approved by the Municipality.
Other Methods	Varies	Other computation methodologies approved by the Municipality.

- B. All calculations using the Soil Cover Complex Method shall use the appropriate design rainfall depths for the various return period storms consistent with this Ordinance. Rainfall depths used shall 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 Atlas 14) values consistent with a partial duration series. When stormwater calculations are performed for routing procedures or infiltration, water quality and runoff volume functions, the duration of rainfall shall be twenty-four (24) hours.
- C. All calculations using the Rational Method shall use rainfall intensities consistent with appropriate times-of-concentration (duration) and storm events with rainfall intensities obtained from NOAA Atlas 14 partial duration series estimates, or the latest version of the PennDOT Drainage Manual (PDM Publication 584). Times-of-concentration shall be calculated based on the methodology recommended in the respective model used. Times of concentration for channel and pipe flow shall be computed using Manning's equation.
- D. The Applicant shall utilize the following ground cover assumptions for all Predevelopment water quality and runoff volume, infiltration volume and peak flow rate calculations:

- 1. For Regulated Activities involving New Development, the following ground cover assumptions shall be used:
 - a. For areas that are Woods (as defined in Article II of this Ordinance), Predevelopment calculations shall assume ground cover of "Woods in good condition".
 - b. For all other areas (including all Impervious Surfaces), Predevelopment calculations shall assume ground cover of "meadow".
- 2. For Regulated Activities involving Redevelopment, the following ground cover assumptions shall be used:
 - a. For areas that are Woods (as defined in Article II of this Ordinance), Predevelopment calculations shall assume ground cover of "Woods in good condition".
 - b. For areas that are not Woods or not Impervious Surfaces, Predevelopment calculations shall assume ground cover of "meadow".
 - c. For areas that are Impervious Surfaces, Predevelopment calculations shall assume at least twenty percent (20%) of the existing Impervious Surface area to be disturbed as "meadow" ground cover.
- 3. The Applicant shall determine which stormwater standards apply to the proposed Regulated Activity as follows:
 - a. Stormwater standards for New Development shall apply to all proposed Regulated Activities that involve only New Development activities as defined in this Ordinance.
 - b. Stormwater standards for Redevelopment shall apply to all proposed Regulated Activities that involve only Redevelopment activities as defined in this Ordinance.
 - c. At the discretion of the Municipal Engineer, Regulated Activities that involve a combination of both New Development and Redevelopment activities, as defined in this Ordinance, may either:
 - i. Apply the stormwater standards (Redevelopment or New Development) that are associated with the activity that involves the greatest amount of land area; or
 - ii. Apply the Redevelopment and New Development stormwater standards to the corresponding Redevelopment and New Development portions of the proposed Regulated Activity.
- E. Runoff curve numbers (CN) for both Predevelopment and proposed (Post-construction) conditions to be used in the Soil Cover Complex Method shall be obtained from Table C-1 in Appendix C of this Ordinance.
- F. Runoff coefficients (C) for both Predevelopment and proposed (Post-construction) conditions for use in the Rational Method shall be obtained from Table C-2 in Appendix C of this Ordinance.

- G. Weighted averaging of runoff coefficients shall not be used for manual computations or input data for water quality and runoff volume calculations.
- H. Hydraulic computations to determine the capacity of pipes, culverts, and storm sewers shall be consistent with methods and computations contained in the Federal Highway Administration Hydraulic Design Series Number 5 (Publication No. FHWA-NHI-01-020 HDS No. 5, as amended). Hydraulic computations to determine the capacity of open channels shall be consistent with methods and computations contained in the Federal Highway Administration Hydraulic Engineering Circular Number 15 (Publication No. FHWA-NHI-05-114 HEC 15, as amended). Values for Manning's roughness coefficient (n) shall be consistent with Table C-3 in Appendix C of the Ordinance.
- I. Runoff calculations shall include the following assumptions:
 - 1. Average antecedent moisture conditions (for the Soil Cover Complex Method only for example, TR-55, TR-20).
 - 2. A type II distribution storm (for the Soil Cover Complex Method only for example, TR-55, TR-20).

Section 19-310. Other Requirements

- A. Any BMP intended to hold standing water for four (4) days or longer shall be designed to incorporate biologic controls consistent with the West Nile Guidance found in Appendix D, PADEP document 363-0300-001 "Design Criteria Wetlands Replacement/Monitoring" (as amended), (or contact the Pennsylvania State Cooperative Wetland Center or the Penn State Cooperative Extension Office for design information.)
- B. Any stormwater basin required or regulated by this Ordinance designed to store runoff and requiring a berm or earthen embankment shall be designed to provide an emergency spillway to safely convey flow up to and including the one hundred (100)-year proposed conditions. The height of embankment shall provide a minimum one (1.0) foot of Freeboard above the maximum pool elevation computed when the facility functions for the one hundred (100)-year proposed conditions inflow. Should any BMP require a dam safety permit under PA Chapter 105 regulations, the facility shall be designed in accordance with and meet the regulations of PA Chapter 105 concerning dam safety. PA Chapter 105 may require the safe conveyance of storms larger than one hundred (100)-year event.
- C. Any drainage Conveyance facility and/or channel not governed by PA Chapter 105 regulations shall be designed to convey, without damage to the drainage facility or roadway, runoff from the twenty-five (25)-year storm event. Larger storm events (fifty (50)-year and one hundred (100)-year storms) shall also be safely conveyed in the direction of natural flow without creating additional damage to any drainage facilities, nearby structures, or roadways.
- D. Conveyance facilities to or exiting from stormwater management facilities (i.e., detention basins) shall be designed to convey the design flow to or from the facility.

- E. Roadway crossings or structures located within designated floodplain areas shall be able to convey runoff from a 100-year design storm consistent with Federal Emergency Management Agency National Flood Insurance Program Floodplain Management Requirements.
- F. Any Stormwater Management Facility located within a PennDOT right-of-way shall comply with PennDOT minimum design standards and permit submission and approval requirements.
- G. Adequate erosion protection and energy dissipation shall be provided along all open channels and at all points of discharge. Design methods shall be consistent with the Federal Highway Administration Hydraulic Engineering Circular Number 11 (Publication No. FHWA-IP-89-016, as amended) and the PADEP Erosion and Sediment Pollution Control Program Manual (Publication No. 363-2134-008, as amended), or other design guidance acceptable to the Municipal Engineer.

Section 19-311. Additional General Requirements for Other Conveyance and System Design Standards

The following provisions shall be followed and incorporated into the stormwater management design and construction process:

- A. Stormwater management facilities, including but not limited to recharge facilities, detention facilities, storm sewers, culverts, bridges and related drainage installations shall be designed and constructed to meet the following purposes:
 - 1. To permit unimpeded flow of natural watercourses;
 - 2. To insure adequate drainage of all low points.
 - 3. To intercept stormwater runoff along streets at intervals reasonably related to the extent and grade of the area drained to prevent flow of stormwater across intersections;
 - 4. To insure adequate and unimpeded flow of stormwater over or under driveways;
 - 5. To prevent excessive flow on or across streets, sidewalks, drives, parking areas, and any other paved surface or access way; and
 - 6. To lead stormwater away from springs.
- B. All natural streams, channels, swales, drainage systems, and/or areas of concentration of surface water shall be maintained in their existing condition except as necessary for those uses that may be permitted by the Township Zoning Ordinance and as approved by the Township.
- C. Man-made structures shall be kept to a minimum.
- D. Bridges, culverts, or riprap to be placed in or over a stream shall be chosen and constructed to maintain the natural characteristics of the stream and shall meet the approval of the Township and must obtain necessary approvals from Pa DEP.

- E. The Township may require that a landowner or developer provide reasonable corrective measures to alleviate any existing off-site drainage problem that may be affected by the proposed land development or any other regulated activity.
- F. No person shall deposit or place any debris or any other material whatsoever, or cause such to be thrown or placed, in any channel or stormwater facility in such a manner as to obstruct free flow
- G. No stormwater facility shall create health, safety or sanitation problems.
- H. No stormwater facility shall impact the ability of on-lot sewage disposal systems to treat waste or adequately infiltrate treated wastewater effluent.
- I. Various BMPs, both structural and non-structural, other than those listed in the following sections can be utilized in the stormwater design. Any BMP not addressed in this Ordinance shall be designed in accordance with the design parameters found in the Pa DEP BMP Manual, latest edition. Any design parameters found in the Pa BMP Manual for the below BMPs shall apply unless otherwise specified herein.
- J. Reference to publications and source documents shall be deemed to include any amendments and revisions thereof.
- K. Individual on-lot BMPs (serving only one residential lot) shall meet the design criteria of Appendix A Simplified Approach for Stormwater Management for Small Projects and shall not be subject to Sections 19-312 and 19-313 unless deemed necessary by the Township Engineer based on design parameters, so long as the Regulated Impervious Area and Disturbed Area meet the threshold criteria

Section 19-312. Additional Standards for Detention Basins, Retention Basins, Wet Basins and Underground Basins

- A. General requirements for all types of basins.
 - 1. Basins shall meet the following minimum setbacks measured from the top and/or toe of slope (whichever is closer):
 - a. fifty (50) feet from a special geologic feature as defined herein,
 - b. fifty (50) feet from any property line,
 - c. fifty (50) feet from any right-of-way,
 - d. fifty (50) feet from any structure,
 - e. fifty (50) feet from a wetland, and
 - f. fifty (50) feet from the top of bank of existing streams.
 - 2. The use of multiple basin facilities that are smaller and less intrusive on the site is encouraged.

- 3. Privately owned basin facilities and BMPs shall be located entirely on one parcel unless otherwise permitted by the township.
- 4. Maintenance of a basin facility shall be the responsibility of only one lot owner or if the facility is located in a common area, the responsibility of the applicable homeowner's association. See Article VII
- 5. When PA DEP requires basin facilities to have a State permit, the Developer shall submit all information to PA DEP and obtain all necessary approvals and permits.
- 6. Easements shall be provided for all basins and shall meet the applicable requirements in Section 19-704.
- B. Design requirements for all types of basins.
 - 1. For basins that combine rate and volume controls, the infiltration "discharge" should not be taken into consideration when routing the peak discharge amounts, nor shall the infiltration volume be used in the routing.
 - 2. It shall be the developer's responsibility to verify if the site is underlain by karst. Whenever basins will be located in an area underlain by karst:
 - a. A geological evaluation of the proposed location shall be conducted to determine susceptibility to sinkhole formations.
 - b. The design of all facilities over limestone formations shall include measures to prevent groundwater contamination and, where necessary, sinkhole formation.
 - c. The installation of an impermeable liner may be required.
 - d. A detailed hydrogeologic investigation may be required.
 - e. Uses where a mishap or spill may cause groundwater contamination, will require the developer to provide safeguards against contamination.
 - 3. Inlet and outlet structures shall be located at maximum distances from one another. For above ground basins, a rock filter berm, rock-filled gabions, or other baffle may be required between inlet and outlet areas when the distance is deemed insufficient for water quality purposes.
 - 4. A reinforced concrete outlet structure/box shall be used to regulate water flow through all basins and shall incorporate the following components and criteria:
 - a. A multiple stage outlet release design is encouraged;
 - b. The minimum circular orifice diameter for controlling discharge rates from basin facilities shall be three (3) inches. Designs where a lesser size orifice would be required to fully meet release rates, a 3-inch orifice shall be acceptable provided that as much of the site runoff as practical is directed to the basin facilities.

- c. The elevation of the top of the outlet structure shall be such that no flow enters the structure for the 25 year frequency storm event.
- d. The base of the outlet structure shall extend a minimum of one (1) foot below the bottom of the basin for above-ground basins.
- e. Outlet structure connections shall be water tight.
- f. The outlet structure shall be cast as one-piece.
- g. A concrete wash (flow channel) across the bottom of the structure shall be provided.
- h. Basins with a water depth less than or equal to 1.5 feet may be exempted from the outlet structure requirements as determined by the Township.
- 5. A trash rack shall be provided for all above-ground orifices.
- 6. The outlet pipe shall have reinforced concrete pipe with rubber gaskets/o-ring joints.
- 7. Basins shall be designed to accommodate the 100-year post-development storm such that the maximum water surface elevation is a minimum of six (6) inches below a) the emergency spillway elevation for above-ground basins; or b) the top of facility for underground basins.
- 8. When the outfall point of a proposed basin facility is located at a point subject to tailwater conditions, a tailwater elevation at the outfall point will need to be assumed when performing the basin facility routing calculations. The tailwater elevation assumed shall be based on the same frequency of the storm being routed.
- 9. Any pipe or other component that discharges into an above-ground basin shall discharge at the bottom of the basin and shall be provided with an appropriate energy dissipater.
- 10. Any pipe or other component that discharges out of a basin shall be provided with an appropriate energy dissipater.
- 11. Where appropriate, adequate drainage channels shall be provided and maintained for discharge(s) from the basin. If the basin will not discharge to a suitable natural drainage channel, the Developer may be required to provide facilities to safely and efficiently convey the discharge to a suitable drainage channel. Securing necessary drainage easements for this purpose shall be the sole responsibility of the Developer.
- C. Basins that are designed with berms/earthen embankments shall incorporate the following minimum standards:
 - 1. The height of the berm shall not exceed 15 feet, unless all appropriate permits are issued by the PA DEP.
 - 2. The minimum top width of berms shall be 10 feet.

3. Side slopes of basins shall:

- a. whenever possible, the side slopes and basin shape shall be as shallow as possible and blend/conform to the natural topography.
- b. not be steeper than three units horizontally to one unit vertically (4:1).
- c. depending upon the location and the intended use of the detention facilities during non-rain event times, a flatter side slope, for one or both slopes, may be required.
- d. when a basin is to be maintained by a residential lot owner, the side slope shall be four units horizontally to one unit vertically (4:1).

4. A key trench shall be provided:

- a. extending at least 2 feet deep in undisturbed soil, or to stable subgrade whichever is deeper,
- b. constructed of compacted relatively impervious material (Unified Soil Classification CL or ML),
- c. having a minimum bottom width of 4 feet, and
- d. having maximum side slopes of one horizontal to one vertical.
- 5. A compacted impervious core shall be provided:
 - a. having at least 8 feet wide at the top,
 - b. having a maximum side slope of one horizontal to one vertical,
 - c. extending for the full length of the embankment, and
 - d. having the top elevation shall be set at the 50 year design water surface elevation.
- 6. All pipes and culverts through berms shall have properly spaced anti-seep collars incorporating the following requirements:
 - a. Anti-seep collar connections shall be water tight.
 - b. The number, spacing and size of anti-seep collars shall be designed using a method acceptable to the Township Engineer.
 - c. Anti-seep collars shall be constructed of concrete, a minimum of one (1) foot thick.
- 7. Basin bottom grades shall be a minimum of 2% unless designed in combination with an infiltration facility or other BMP where bottom grade is not indicated or with the approval of the Township Engineer.
- 8. All basin embankments shall:

- a. be constructed of suitable material,
- b. be placed in (8) inch lifts, maximum,
- c. compacted to a minimum of ninety-five (95) percent of maximum dry density as established by ASTM D-1557, and
- d. have compaction operations be observed by the site inspector.
- e. when required by the Township Engineer, the developer shall obtain, at the cost of the developer, the services of a qualified laboratory technician to conduct compaction testing. Copies of all tests shall be accepted by the Township Engineer.
- 9. An emergency spillway shall be provided incorporating the following requirements:
 - a. The emergency spillway shall be placed in undisturbed earth whenever possible.
 - b. Emergency spillways shall be designed to safely convey the 100-year post-development basin inflow with a minimum of 6" of freeboard above the water surface elevation to the top of berm, assuming blocked outlet structure conditions. The total minimum depth of emergency spillways shall be one (1) foot.
 - c. Emergency spillways shall be constructed such that the basin berm is protected against erosion. When necessary, erosion protection shall extend along the upstream and downstream berm slopes.
 - d. Basins with a water depth less than or equal to 1.5 feet are exempt from emergency spillway and freeboard requirements unless otherwise deemed necessary by the Township Engineer.
- 10. When deemed necessary by the Township, stormwater basin facilities shall be enclosed with a fence of a type acceptable to the Township.
- D. Under-ground basins shall incorporate the following minimum standards:
 - 1. Flow through the outlet structure shall be attenuated with a concrete weir wall with appropriately sized orifices. Other designs will be considered with approval of the Township.
 - 2. Underground facilities that propose pipe storage as a means of detention shall be constructed of reinforced concrete pipe (RCP) or smooth-lined corrugated plastic pipe (SLCPP). No metal pipe shall be allowed.
- E. Wet basins shall incorporate the following minimum standards:
 - 1. Water surface area shall not exceed 1/10 of the tributary drainage area.
 - 2. Bank protection shall be provided to prevent erosion.

- 3. Minimum normal water depth shall be 4 feet. If fish are to be used to keep the pond clean, a minimum of 1/4 of the pond area shall be a minimum of 10 feet deep.
- 4. Facilities shall be provided to allow the pond level to be lowered by gravity flow for cleaning purposes, and bank and other maintenance.
- 5. Aeration facilities shall be required as necessary to prevent pond stagnation. Manufacturer's information to substantiate the effectiveness of such aeration facilities shall be submitted with the site plans. Agreements for the perpetual operation and maintenance of aeration facilities shall be prepared and provided for review. See Article VII.
- 6. In the event that the water surface of the pond is to be raised for the purposes of storing water for irrigation or in anticipation of the evapotranspiration demands of dry weather, the volume remaining for storage of excess stormwater runoff shall be sufficient to contain the 50 year design storm runoff.
- 7. All wet basin designs shall incorporate biological minimization controls consistent with the West Nile Guidance found in Appendix G.
- F. The following items shall be submitted for basin review:
 - 1. Design computations for the sizing of the outlet structure,
 - 2. Stage-storage curve,
 - 3. Routed hydrographs for each storm,
 - 4. Storage requirement calculations,
 - 5. Plan(s) showing the berm/embankment and outlet structure in plan and cross-section views as well as details, including but no limited to:
 - a. inlet pipe and energy dissipater,
 - b. top of berm elevations,
 - c. width of the top of the berm,
 - d. outlet pipe and energy dissipater,
 - e. side slopes,
 - f. emergency spillway elevation,
 - g. elevations of all features of the outlet structure,
 - h. clay core,
 - i. key trench,
 - j. dimensions and spacing of anti-seep collars,
 - k. trash rack, and
 - 1. anti-vortex device (if included in the design).

Section 19-313. Standards for Stormwater Collection and Conveyance Systems

A. General

1. Storm sewers and associated structures shall be required to be constructed to:

- a. intercept runoff at such intervals as necessary along streets to provide safe vehicular movement,
- b. eliminate standing water at the bottom of all grades regardless of location,
- c. eliminate the use of cross gutters at street intersections and elsewhere including in parking lots, and
- d. discharge collected water (from any and all locations including but not limited to streets, parking lots and lawn area) to an infiltration facility, detention basin or other acceptable BMP, that discharges to the nearest practical natural channel.
- 2. Manholes, inlets, headwalls and other storm water structures must conform to the standards established by PennDOT and be per details shown in Penn DOT Standards for Roadway Construction or as approved by the Township Engineer. Such structures must be supplied by a PennDOT Bulletin 15 approved supplier. These requirements shall be noted on the plan.
- 3. All materials, workmanship, and installation shall conform to Penn DOT specifications contained in Chapter 408, current edition.
- 4. Whenever practical, storm sewers and associated structures that drain the street system shall be located within the right-of-way of the street.
- 5. Easements shall be provided for all conveyance and collection systems that are not located within street rights-of-way and shall be a minimum of 20 feet in width. Easements shall meet the applicable requirements in Section 19-704.
- 6. No stormwater conveyance facility shall be constructed within fifty (50) feet of a special geologic feature, unless it is constructed of reinforced concrete pipe utilizing rubber gasket/o-ring joints such pipe shall be a minimum of twenty-five (25) feet from a special geologic feature.
- 7. Collection and conveyance systems shall be installed to prevent concentrated flow from crossing or following sidewalks. Pipe and inlet size and materials used for this purpose shall be acceptable to the Township Engineer.
- 8. Collection and conveyance systems shall be provided where runoff is concentrated in rear, side or front yards as necessary to prevent erosion.
- 9. Collection and conveyance systems shall be provided in order to adequately drain parking lots.

B. Sizing Criteria

1. Collection and conveyance systems in public streets shall be adequate for the anticipated runoff when the area draining to the system is fully developed as permitted by zoning.

- 2. Collection and conveyance systems regardless of location shall be designed to carry the 25-year peak flow rate determined using the Rational formula and good engineering practice.
- 3. The system shall be evaluated for both gravity (Manning's equation) and pressure (inlet/outlet control, hydraulic grade line) as appropriate.
- 4. Provisions must be made to transport the runoff from a 100 year frequency storm to an appropriate stormwater management facility in a manner that does not damage property or flood streets.

C. Stormwater Pipes

- 1. The minimum inside diameter of all pipe to be installed shall be not less than 15 inches. When cover is 25 feet or greater, the minimum inside diameter shall be 24 inches.
- 2. All pipes shall be reinforced concrete Class III or better meeting Penn DOT's 100-year life criteria.
- 3. Joints shall be provided with rubber gaskets/o-rings.
- 4. The minimum pipe slope shall be ½ percent.
- 5. The minimum cover of storm water pipe shall be 24 inches. This minimum cover shall be provided and maintained during construction in order to protect pipe from damage.
- 6. Where cover is restricted, equivalent elliptical concrete pipe or concrete arch pipe maybe used in lieu of circular pipe.
- 7. When located within a street cartway, pipe shall be bedded on 6 inches of Penn DOT 2A stone and backfilled with 2A stone placed and compacted in 6 inch lifts.
- 8. All pipe shall be laid in a straight line. A manhole or inlet shall be provided at all horizontal deflections.
- 9. Storm pipe shall not be permitted under buildings or structures.
- 10. Underdrains and/or pavement base drains shall be:
 - a. required at all locations where subsurface water that could negatively impact the subgrade of a street is expected, and
 - b. provided in areas deemed necessary by the Township Engineer as may be encountered during construction. A note to this effect shall be placed on the plan.
- 11. A water quality/pretreatment structure (or structures as necessary based on design flow) shall be:
 - a. provided at or near the terminus of all conveyance systems,

- b. capable of capturing floatables, sediment, gravel, leaves and liquid contaminates (oil, antifreeze, etc.) prior to leaving the right-of-way and/or entering a channel or stormwater BMP whether an infiltration BMP or detention basin etc., and
- c. located such that they are easily accessible from the street, along a vehicular path to facilitate maintenance.
- 12. Prior to dedication of public streets and release of the maintenance bond:
 - a. A video inspection of all collection and conveyance systems located within the street right-of-way shall be required using methods acceptable to the Township Engineer.
 - b. A record of the video inspection shall be provided in an electronic format acceptable to the Township Engineer.
 - c. Depending on the results of the video inspection, all pipes and inlets shall be cleaned and/or restored to design specifications.

D Inlets

- 1. Inlets shall be spaced to limit the gutter spread to no more than one-half of the width of the travel lane during the design storm (25-year).
- 2. The capacity of all C, M, or S type inlets shall be determined using the Commonwealth of Pennsylvania, Department of Transportation, *Design Manual*, Part 2, "Highway Design".
- 3. The maximum allowable headwater depth shall be 1 foot below the top of the inlet grate.
- 4. If double inlets are proposed, they shall be separated by a minimum of 20 feet.
- 5. Inlet capacity calculations shall be provided in the stormwater management report including the design 25-year peak flow rate to each inlet.
- 6. In non-sump areas, inlets shall be placed such that flow to any single inlet shall not exceed 4 cubic feet per second (cfs) for standard (2x4) inlets and 5 cfs for Type 1 standard (2x6) inlets whether located in streets, parking lots or lawn areas.
- 7. In sump areas, other than within a street, the maximum depth of water above the inlet top elevation shall be six (6) inches.
- 8. Regardless of capacity calculations, inlets shall be located to intercept runoff prior to handicapped ramps, prior to every street or driveway (not including those serving single family dwellings) intersection radius, and at sag points of vertical curves and any other low points whether in streets or in parking lots.
- 9. Inlets shall be placed prior to the radius of an intersection not on the curved portion unless unavoidable in order to be located at a low point.
- 10. No inlet smaller than standard Penn DOT inlet types C, M and S shall be used within

streets.

- 11. Inlets with a depth greater than 4 feet must be provided with anti-slip ladder rungs.
- 12. A minimum drop of 0.20 feet shall be provided across inlets between the invert elevations of the incoming and outgoing pipes of the same diameter. For pipes of different diameters, the elevation of the crowns of the pipes shall be equal.
- 13. Inlets shall contain the statement "No Dumping Drains to Creek" either cast or inserted into the tops to discourage the placement of anything other than stormwater into the inlet.
- 14. Inlets in paved areas shall be equipped with bicycle safe grates. All inlets shall be designed and located to prevent hazards to vehicles, bicycles and pedestrians.
- 15. Inlet grates shall be depressed 1 inch in paved areas with inlet tops flush with the curb. Inlets in landscaped areas shall be sumped a minimum of 12 inches.
- 16. To promote smooth flow and self-cleaning, the bottoms of inlets shall be provided with concrete washes (flow channels).
- 17. All pipe entering an inlet shall be cut flush with the inside of the inlet box.
- 18. Weep holes shall be provided in inlets per Penn DOT RC Standards.
- 19. Only a single pre-cast concrete grade adjustment ring, a maximum of 6 inches in height, shall be allowed.
- 20. The annular space where pipes enter inlet boxes shall be sealed with non-shrinking grout.
- 21. All backfill around inlets shall be compacted Penn DOT 2A stone.

E. Manholes

- 1. Manholes shall not be spaced more than 400 feet apart for pipes of less than or equal to 24 inch diameter and 500 feet apart for pipes of greater than 24 inch diameter.
- 2. A manhole shall be placed on a continuous storm sewer at all changes in alignment, grade or pipe size, and at all points of convergence of 2 or more influent storm sewer lines.
- 3. Inlets may be substituted for manholes where they serve a useful purpose.
- 4. Manhole covers shall have the word "STORM" cast on the top of the cover.
- 5. A minimum drop of 0.2 feet shall be provided across manholes between the invert elevations of the incoming and outgoing pipes of the same diameter. For pipes of different diameters, the elevation of the crowns of the pipes shall be equal.
- 6. The maximum allowable headwater depth shall be 1 foot below the top of the inlet grate or manhole cover.

- 7. To promote smooth flow and self-cleaning, the bottoms of manholes shall be provided with concrete washes (flow channels).
- 8. All pipe entering a manhole shall be cut flush with the inside of the manhole.
- 9. The annular space where pipes enter manholes shall be sealed with non-shrinking grout.
- 10. Manholes with a depth greater than 4 feet must be provided with anti-slip ladder rungs.
- F. End treatments (headwalls, endwalls, flared endsections, & similar structures)
 - 1. At-grade pipe outlets shall be provided with one of these structures.
 - 2. All end treatments shall be concrete regardless of pipe material.
 - 3. Safety grates may be required at the Township's discretion.
 - 4. Acceptable energy dissipation devices shall be installed per Pa DEP's Erosion and Sedimentation Pollution Control Program Manual at every end treatment.
 - 5. End treatments shall not be located closer than 10 feet from the edge of a sidewalk, curb or cartway edge.

G. Man-made Open Channels/Swales

- 1. Properly designed, graded, and lined channels may be permitted in lieu of storm sewers where it can be demonstrated that the channel will be stable under permanent conditions.
- 2. Channel shall not be less than 2% in grade nor more than 10%.
- 3. Underdrains may be required as determined by the Township Engineer.
- 4. Channels shall be located on lot lines as necessary to minimize stormwater from draining across lot lines.
- 5. Channel lining must meet the design standards of Pa DEP's Erosion and Sedimentation Pollution Control Program Manual.
- 6. Channels shall have a maximum side slope grade of 3 horizontal to 1 vertical (3:1).
- 7. Channels shall be provided with a minimum 6-inch freeboard, measured from the top of the design storm (25-year) flow to the top of bank of the channel.
- 8. Channels leading away from emergency spillways, and other channels in areas where damage to property would result, shall be designed to convey the runoff from a 100-year storm.

Section 19-314. Standards for Grading

A. Cul-de-sac turnarounds shall be graded to direct all stormwater to the curb in order to minimize

icing from sheet flows in freezing temperatures.

- B. All grading (cut and fill) shall be set back from property lines a sufficient distance to prevent any adverse effects on adjacent properties but in no case less than 10 feet.
- C. Where a grading cut slope creates an abrupt drop-off from the abutting property line in contrast to a previously existing gradual change, a fence or other suitable barrier shall be installed.
- D. Grading shall not be done in such a way so as to divert water onto the property of another landowner.
- E. Sites shall be graded to secure proper drainage away from buildings (minimum 2%) and to allow for the proper collection and conveyance of stormwater.
- F. Grading operations shall be kept to a minimum to ensure conformity with the natural topography, to minimize erosion hazard, and to adequately handle the surface runoff.
- G. Except as specified elsewhere in this Article, cut and fill slopes shall not be steeper than 4:1.
- H. During grading operations, necessary measures for dust control shall be exercised.

Section 19-315. Standards for Phasing

- A. When subdivision, land developments or other earth disturbances are submitted to the Township for approval in phases, plans and calculations shall be submitted for the design of the entire tract not for a single phase.
- B. If construction is contemplated for less than the entire project, the proposed design of the stormwater from the constructed phase(s) shall be provided. The design shall prevent damage to adjacent properties and future phases. Any temporary construction required for the phased design shall be included with the submittal.
- C. In the event that temporary measures cannot insure protection to adjacent properties or future phases, the permanent BMPs and permanent collection and conveyance system, as necessary, shall be included as part of the construction for the currently proposed phase.

Section 19-316. Standards for Driveways

- A. Construction of a driveway on a lot shall not cause surface runoff on the lot to be directed or concentrated onto an adjoining lot or cause an increase in runoff to an adjoining lot. Stormwater runoff shall be addressed in accordance with the standards herein.
- B. The intersection of all driveways with the street shall be constructed so that no surface water from the driveway is directed into the street. This may be accomplished by use of a drainage swale or a pipe culvert as follows:
 - 1. The drainage swale side slope across the driveway shall slope down from the improved edge of the street for a maximum depth of four inches (4") over a minimum distance of six feet (6'), resulting in a grade of approximately five and one-half percent (5½ %).

Modifications to this requirement may be permitted as field conditions indicate at the sole discretion of the Township designated official issuing the driveway permit.

2. If a pipe is used, it shall be:

- a. sized according to storm water runoff calculations based upon a twenty-five (25) year storm frequency, but in no case shall it be less than a minimum diameter of fifteen inches (15");
- b. an approved pipe per PennDOT specifications in Publication 408 as amended, unless approved otherwise by the Township designated official issuing the driveway permit;
- c. placed with its edge at least ten feet (10') from the improved edge of the street (a ten foot (10') clearance). A greater distance from the improved edge of street may be required for larger pipes in order to allow for acceptable grade (maximum 3:1) from the improved edge of the street to the bottom of the pipe allowing for a shoulder and rounding of the cross-slope, four feet (4') minimum. Modifications to this requirement may be permitted as field conditions indicate at the sole discretion of the Township designated official issuing the driveway permit;
- d. extended a minimum of two feet (2') in length from each edge of the driveway; and
- e. provided with the appropriate concrete end treatments such as flared end sections or endwalls. Downstream end treatments may be waived at the sole discretion of the Township designated official issuing the driveway permit.

Section 19-317. Riparian Buffers

Refer to Riparian Buffer definition in Subdivision and Land Development Ordinance Chapter 22, Section 22-202 of Code of Ordinances. Refer to Protection Standards for Watercourses/Riparian Buffers in Zoning Ordinance Chapter 27, Section 27-2503.5 of the Code of Ordinances.

ARTICLE IV – STORMWATER MANAGEMENT (SWM) SITE PLAN REQUIREMENTS

Section 19-401. General Requirements

For any Regulated Activity, unless exempt per the provisions of Section 106:

- A. Preparation and implementation of an approved SWM Site Plan is required.
- B. No Regulated Activity shall commence until the Municipality issues written approval of a SWM Site Plan, which demonstrates compliance with the requirements of this Ordinance and, if required, a letter of adequacy has been issued by the Conservation District for an Erosion and Sediment Control Plan.
- C. The preliminary or final approval of subdivision and/or land development plans, and the issuance of any building or occupancy permit shall not proceed until the Applicant has received written approval of a SWM Site Plan from the Municipality.
- D. The SWM Site Plan approved by the Municipality shall be on Site throughout the duration of the Regulated Activity.
- E. Individual on-lot BMPs (serving only one residential lot) which meet the design criteria to utilize the Simplified Approach for Stormwater Management for Small Projects with less than ten thousand (10,000) square feet of proposed Earth Disturbance AND less than two thousand (2,000) square feet of Regulated Impervious Surfaces shall meet the reduced plan requirements of subsection 19-402.C.

Section 19-402. SWM Site Plan Contents

The SWM Site Plan shall consist of a general description of the project including items described in Section 304, 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 SWM Site Plan materials shall be submitted to the Municipality in a format that is clear, concise, legible, neat, and well organized; otherwise, the SWM Site Plan shall not be accepted for review and shall be returned to the Applicant.

The following items shall be included in the SWM Site Plan:

A. General

- 1. A general description of the proposed project;
- 2. A listing of all regulatory approvals required for the proposed project and the status of the review and approval process for each. Final approval or adequacy letters must be submitted to the Municipality prior to (or as a condition of) the Municipality's issuing final approval of the SWM Site Plan. Proof of application or documentation of required permit(s) or approvals for the programs listed below shall be part of the SWM Site Plan, if applicable:

- a. NPDES Permit for Stormwater Discharges associated with Construction Activities;
- b. PADEP permits as needed:
 - i. PADEP Joint Permit Application,
 - ii. Chapter 105 (Dam Safety and Waterway Management),
 - iii. Chapter 106 (Floodplain Management);
- c. PennDOT Highway Occupancy Permit;
- d. Erosion and Sediment Control Plan letter of adequacy; and
- e. Any other permit under applicable State or Federal regulations.
- 3. A statement, signed by the Applicant, acknowledging that any revision to the approved SWM Site Plan shall be submitted to and approved by the Municipality, and that a revised Erosion and Sediment Control Plan shall be submitted to, and approved by, the Conservation District or Municipality (as applicable) for a determination of adequacy prior to construction of the revised features.
- 4. The following signature block signed and sealed by the qualified Licensed Professional responsible for the preparation of the SWM Site Plan:

"I (name), on this date (date of signature), hereby certify to the best of my knowledge that the SWM Site Plan meets all design standards and criteria of the *Franklin Township Stormwater Ordinance* No. ______, "[Note: include signature, name, discipline of professional license, and license stamp or seal here]

5. The following signature block for the Municipality:

"On behalf of *Franklin Township*, the Township Engineer on this date [Signature date], has reviewed and hereby certifies to the best of my knowledge that the SWM Site Plan meets all design standards and criteria of the Municipal Ordinance No. [number assigned to ordinance]."

B. Maps or Plan Sheets

Map(s) or plan sheets of the Site shall be submitted on minimum twenty-four (24)-inch by thirty-six (36)-inch sheets and shall be prepared in a form that meets the requirements for recording at the Chester County Office of the Recorder of Deeds and the requirements of the Operation and Maintenance (O&M) Plan and O&M Agreement (Article VII). If the SALDO has additional or more stringent criteria than this Ordinance, then the SALDO criteria shall also apply. Unless otherwise approved by the Municipal Engineer, the contents of the maps or plan sheets shall include, but not be limited to:

1. A location map, with a scale of one (1) inch equals two thousand (2,000) feet or greater, showing the Site location relative to highways, municipal boundaries, or other identifiable landmarks.

- 2. The name of the project, tax parcel number(s), and the names, addresses and phone numbers of the owner of the property, the Applicant, and firm preparing the plan.
- 3. Signature and seal of the qualified Licensed Professional(s) responsible for preparation of the maps and plan sheets.
- 4. The date of SWM Site Plan submission and revision dates, as applicable.
- 5. A graphic and written scale of one (1) inch equals no more than fifty (50) feet.
- 6. A north arrow.
- 7. Legal property boundaries, including:
 - a. The total project property boundary and size with distances marked to the nearest foot and bearings to the nearest degree.
 - b. Boundaries, size, and description of purpose of all existing easements and deedrestricted areas of the project property, with distances marked to the nearest foot and bearings to the nearest degree.
- 8. Existing natural resources and natural or man-made hydrologic features that are located within the Site or receiving discharge from, or that may otherwise be impacted by, the proposed Regulated Activity, including but not limited to:
 - a. All existing natural resources, hydrologic features and drainage patterns including natural waterways, water bodies, wetlands, streams (intermittent and perennial), ponds, lakes, vernal pools, etc., natural infiltration areas and patterns, areas of significant natural evapotranspiration, and other water features and aquatic resources.
 - b. Any existing man-made drainage features, BMPs, Conveyances, facilities, open channels, swales, drainage patterns, or other flood, stormwater, or drainage control features.
 - c. For the Site, discharge points and locations of concentrated flows and their drainage areas.
 - d. For named waters, show names and their watershed boundaries within the Site.
 - e. Special management areas (as per Subsection 19-301.P).
 - f. For the water bodies, streams and wetlands identified in Subsection 19-402.B.8.a, label or otherwise show the following attributes, if applicable:
 - i. The Designated Use as determined by PADEP (25 PA Code Chapter 93);
 - ii. Impairments listed on the PADEP "Integrated List" (as updated) and the listed source and cause of impairment;

- iii. Name, date, and target pollutant(s) for any approved Total Maximum Daily Load (TMDL); and
- iv. Drainages to water supply reservoirs.
- g. Areas that are part of the Pennsylvania Natural Diversity Inventory (PNDI) and a list of potential impacts and clearances received (for Regulated Activities involving one (1) acre or more proposed Earth Disturbance).
- h. Woods, vegetated riparian buffers and other areas of natural vegetation.
- i. Topography using contours (with elevations based on established benchmarks) at intervals of two (2) feet. In areas of slopes greater than fifteen percent (15%), five (5)-foot contour intervals may be used. The datum used and the location, elevation and datum of any benchmarks used shall be shown.
- j. Areas classified by the Municipality as steep slopes.
- k. Soil names and boundaries, general type of soils with Hydrologic Soil Group noted, and in particular note areas most conducive to infiltration BMPs, such as groups A and B, etc., estimated permeabilities in inches per hour, and location and other results of all soil tests and borings.
- 1. If present, areas with underlying carbonate geologic units, existing sinkholes, subsidence or other karst features, and any associated groundwater recharge areas with increased vulnerability to contamination.
- m. Any contaminated surface or subsurface areas of the Site.
- n. Water supply wells
 - i. Location of existing well(s) on the project property and delineation of the(ir) recharge area(s) (if known), or a fifty (50) foot diameter assumed recharge area;
 - ii. Location of existing well(s) within fifty (50) feet beyond the boundary of the project property boundary (if public water supply is proposed for the Regulated Activity); and
- o. Current FEMA one hundred (100)-year floodplain boundaries, elevations, and Floodway boundaries for any Special Flood Hazard Areas on or within one hundred (100) feet of the property.
- p. Boundaries of riparian buffer(s) as required by Section 2503.5 of the Franklin Township Zoning Ordinance as may be amended from time to time.
- 9. Location of the proposed Regulated Activity, limits of Earth Disturbance (Disturbed Area), and BMPs and Conveyances relative to the location of existing natural resources and hydrologic features and special management areas resulting from the Site design process of Section 19-304.

- 10. Description of existing and proposed ground cover and land use including the type and total area
- 11. Existing and proposed man-made features including roads, paved areas, buildings, and other Impervious and Pervious Surfaces on the project property (or an appropriate portion of the property as determined in consultation with the Municipal Engineer) and within the proposed Disturbed Area, and including the type and total area of the following:
 - a. Existing Impervious Surfaces [must differentiate Existing Impervious Surfaces installed after January 3, 2014;
 - b. Existing Impervious Surfaces proposed to be replaced;
 - c. Existing Impervious Surfaces to be permanently removed and replaced with pervious ground cover;
 - d. New or additional Impervious Surfaces; and
 - e. Percent of the Site covered by Impervious Surfaces for both the existing and proposed Post-construction conditions.
- 12. The total extent of the upstream area draining through the Site.
- 13. All BMPs, Conveyances and other stormwater management facilities shall be located on the plan sheets, including design drawings, profile drawings, construction details, materials to be used, description of function, etc.
- 14. Complete delineation of the flow paths used for calculating the time of concentration for the Predevelopment and Post-construction conditions shall be included.
- 15. The locations of all existing and proposed utilities, sanitary sewers, on-lot wastewater facilities (including subsurface tanks and leach fields), and water supply lines within the Site and within fifty (50) feet beyond the proposed limits of Earth Disturbance.
- 16. A grading plan, including all areas of proposed Earth Disturbance and the proposed Regulated Activity and delineating the boundary or limits of Earth Disturbance of the Site. The total Disturbed Area of the Site shall be noted in square feet and acres.
- 17. Proposed final grade elevations and contours at intervals of two (2) feet. In areas of steep slopes greater than fifteen percent, five (5)-foot contour intervals may be used.
- 18. For each proposed BMP and Conveyance included in the SWM Site Plan (including any to be located on any property other than the property being developed by the Applicant), the following shall be included on the SWM Site Plan map or plan sheets:
 - a. Identification of the person responsible for ongoing inspections, operation, repair, and maintenance of the BMP or Conveyance after completion of construction.
 - b. Delineation of the land area, structures, Impervious Surfaces, and Conveyances draining to and from the BMP or Conveyance.

- c. Easements, as per the requirements of Article VII, that shall include:
 - i. Boundaries labeled with distances shown in feet and bearings to the nearest degree;
 - ii. Notes or other documentation, as needed, to grant the Municipality the right of access to all BMPs and Conveyances for the purposes of inspection and enforcement of the requirements of this Ordinance, and any applicable O&M Plans and O&M Agreements;
 - iii. Notes or other documentation, as needed, to grant the Municipality the right of access to all roadways necessary to access all BMPs and Conveyances, where roadways are not to be dedicated to the Municipality;
 - iv. Notes or other documentation as needed to grant the owner of any BMP or Conveyance the right of access for the purpose of inspection, operation, maintenance, and repair of the BMP or Conveyance that is to be owned, operated, and maintained by a person other than the Municipality, and other than the owner of the property on which the BMP or Conveyance is located;
 - v. A minimum 5-foot wide perimeter (or other width as determined in consultation with the Municipal Engineer) around all BMPs and Conveyances;
 - vi. Sufficient vehicular ingress to and egress from a public right-of-way or roadway, as determined in consultation with the Municipal Engineer; and
 - vii. Accompanying notes or other documentation as needed, and in accordance with Article VII describing the type, purpose, and total area of easements, who the easement is granted to, and the rights, duties, and obligations of the parties with respect to every BMP or Conveyance.
- d. Boundaries of land areas (if any) for which deed restrictions are required for the purpose of protecting and prohibiting disturbance to a BMP or Conveyance, indicating the area to which the restriction applies with distances shown in feet and bearings to the nearest degree, and a written description of the type, purpose, and nature of the restriction.
- e. Other items that may be needed to comply with all other requirements of Article VII.
- C. Maps or Plan Sheets (Reduced Site Plan Requirements for Small Projects)
 - 1. Property(ies) identification (owner name and address; and property address and/or lot and/or tax parcel number, etc.), property boundaries and tax parcel number of the land parcel on which the BMP or Conveyance is located.
 - 2. Clear identification of the location, dimensions, and function of each BMP or Conveyance covered by the O&M Plan.
 - 3. The location of each BMP and Conveyance relative to roadways, property boundaries, or other identifiable landmarks and existing natural drainage features such as streams, lakes,

- ponds, or other bodies of water within the immediate vicinity of, or receiving discharge from, the BMP or Conveyance.
- 4. Delineation of the land area, structures, Impervious Surfaces and Conveyances draining to and from the BMP.
- 5. Representative elevations and/or topographic contours at intervals of two (2) feet, or other as acceptable to the Municipal Engineer.
- 6. Other features including FEMA floodplain and floodway boundaries, sinkholes, etc. located within the immediate proximity of each BMP and Conveyance.
- 7. Locations of areas of vegetation to be managed or preserved that function as a BMP or Conveyance.
- 8. The locations of all surface and subsurface utilities, on-lot wastewater facilities, sanitary sewers, and water lines within twenty (20) feet of each BMP or Conveyance.
- 9. The following as it pertains to any easements, covenants and deed restrictions established for each applicable BMP or Conveyance:
 - a. Boundaries delineated with bearings and distances shown that encompass the BMP or Conveyance and that includes a five (5) -foot perimeter area surrounding these features and sufficient vehicular ingress to and egress from a public right-of-way and roadway;
 - b. Labels specifying the type and purpose of the easement, covenant, or deed restriction and who it benefits; and
 - c. Labels with reference to any corresponding easement agreement, covenant, deed restriction or other document to be recorded.
- 10. The plan sheet or map shall be prepared at sufficient scale for municipal review, and ultimately for the use by the person responsible for operation and maintenance, and shall also be prepared at a legible scale that meets the requirements for recordation along with (and as an attachment to) the O&M Agreement and O&M Plan at the Chester County Office of the Recorder of Deeds.
- D. A written description of the following information shall be included in the SWM Site Plan:
 - 1. Existing features, conditions, natural resources, hydrologic features, and special management areas (as listed in Subsection 19-402.B.8);
 - 2. How the Site design achieves the requirements of Section 19-304, and if applicable, where they could not be achieved and why;
 - 3. The overall stormwater management design concept for the project and how the Site design achieves the requirements of Sections 19-301 through 19-311 of Article III;
 - 4. Proposed features and conditions, proposed erosion, and sediment control features, proposed BMPs, Conveyances, and any other stormwater facilities;

- 5. A description of the effect of the project (in terms of flow alteration and runoff volumes, water quality and peak flows, etc.) on existing natural resources, hydrologic features and special management areas, adjacent and downgradient properties, and any existing municipal or other stormwater Conveyance system(s), that may be affected by or receive runoff from the Regulated Activity (whether located within or outside of the area of the Regulated Activity), and specifics of how erosion, water quality and flow impacts will be avoided or otherwise mitigated;
- 6. Proposed nonpoint source pollution controls and justification and confirmation that the proposed project will not result in any increased pollutant loadings to any existing stream or stream impairment identified by PADEP, or to any receiving water body;
- 7. Expected project time schedule; and
- 8. Description of construction stages or project phases, if so proposed.
- E. A detailed Site evaluation conducted by a qualified Licensed Professional for projects proposed in areas of carbonate geology or karst topography, and other environmentally sensitive areas, such as contaminated sites and brownfields, as described in Subsections 19-301.O and 19-301.R of this Ordinance.
- F. Stormwater runoff design computations and documentation, such as hydrologic, hydraulic, and structural computations, assumptions, BMP loading ratios, etc., consistent with the guidelines and criteria presented in the PA BMP Manual (as amended) or other guidance acceptable to the Municipal Engineer, and used in the design of the BMPs, Conveyances and other features proposed to be utilized for stormwater management, or as otherwise necessary to demonstrate that the requirements of this Ordinance have been met, specifically including the requirements in Sections 19-301 and 19-304 through 19-309.
- G. Inspections, Operation and Maintenance Requirements

The following documents shall be prepared and submitted to the Municipality for review and approval as part of the SWM Site Plan, in accordance with the requirements of Article VII, for each BMP and Conveyance included in the SWM Site Plan (including any to be located on any property other than the property being developed by the Applicant):

- 1. An O&M Plan;
- 2. An O&M Agreement;
- 3. Any easement agreements that are needed to ensure access, inspection, maintenance, operation, repair and permanent protection of any permanent BMP(s) and Conveyances associated with the Regulated Activity;
- 4. Any written deed, deed amendment or equivalent document (if needed) to be recorded against a subject property, as shown on the SWM Site Plan maps or plan sheets, or recorded plan sheets for the purpose of protecting and prohibiting disturbance to a BMP or Conveyance; and

- 5. Written approval, easement agreements, or other documentation for discharges to adjacent or downgradient properties when required to comply with Subsection 19-301.G and Article VII of this Ordinance.
- H. An Erosion and Sediment Control Plan, where applicable, as prepared for and submitted to the Conservation District and/or Municipality. A letter of adequacy from the Conservation District, if applicable, must be submitted to the Municipality prior to (or as a condition of) the Municipality's final approval of the SWM Site Plan.
- I. A Highway Occupancy Permit from the Pennsylvania Department of Transportation (PennDOT) District Office must be submitted to the Municipality prior to (or as a condition of) the Municipality's final approval of the SWM Site Plan when utilization of a PennDOT storm drainage system is proposed.

Section 19-403. SWM Site Plan Submission

A complete SWM Site Plan that complies with all applicable provisions of Section 402 shall be submitted to the Municipality for review and approval, as follows:

- A. The SWM Site Plan shall be coordinated with the applicable State and Federal permit process and the Municipal SALDO review process. All permit approvals or letters of adequacy not yet received by the Applicant at the time of submittal of the SWM Site Plan to the Municipality must be submitted to the Municipality prior to (or as a condition of) the Municipality's final approval of the SWM Site Plan.
- B. For projects that require SALDO approval, the SWM Site Plan shall be submitted by the Applicant as part of the preliminary plan submission where applicable for the Regulated Activity.
- C. For Regulated Activities that do not require SALDO approval, the SWM Site Plan shall be submitted by the Applicant for review in accordance with instructions from the Municipality.
- D. The number of copies of the SWM Site Plan to be submitted by the Applicant for review shall be in accordance with instructions from the Municipality.
- E. The corresponding review fee shall be submitted to the Municipality simultaneously with the SWM Site Plan, per the Municipality's fee schedule.
- F. Any submissions to the Municipality that are found to be incomplete shall not be accepted for review and shall be returned to the Applicant within fourteen (14) calendar days, with a notification in writing of the specific manner in which the submission is incomplete.
- G. Financial security, per the requirements of Section 19-110, shall be submitted to the Municipality prior to approval of the SWM Site Plan.

Section 19-404. SWM Site Plan Review

A. The SWM Site Plan shall be submitted to the Municipality for review by the Municipal Engineer for consistency with this Ordinance and the respective PA Act 167 Stormwater Management Plan(s). The Municipal Engineer will review the SWM Site Plan for any

- subdivision or land development for compliance with this Ordinance and the Municipal SALDO provisions not otherwise superseded by this Ordinance.
- B. If applicable, the Applicant shall have received a "letter of adequacy" from the Conservation District or other PADEP approval for the proposed Regulated Activity prior to (or as a condition of) final approval by the Municipality.
- C. The Municipal Engineer will notify the Applicant and the Municipality in writing, within thirty (30) calendar days, whether the SWM Site Plan is consistent with the requirements of this Ordinance. If the SWM Site Plan involves a subdivision and land development Plan, the notification shall occur within the time period allowed by the MPC (as amended). If a longer notification period is provided by other statute, regulation, or ordinance, the Applicant will be so notified by the Municipality.
 - 1. If the Municipal Engineer determines that the SWM Site Plan is consistent with this Ordinance, the Municipal Engineer shall forward a letter of consistency to the Municipality, who shall then forward a copy to the Applicant.
 - 2. The Municipality may approve the SWM Site Plan with conditions reasonably defined to make the SWM Site Plan compliant with the terms of this Ordinance, and, if so, shall provide the conditions for approval in writing.
 - 3. If the Municipal Engineer determines that the SWM Site Plan is inconsistent or noncompliant with this Ordinance, the Municipal Engineer will forward a letter to the Municipality, with a copy to the Applicant citing the reason(s) and specific Ordinance sections for the inconsistency or noncompliance. Inconsistency or noncompliance may be due to inadequate information to make a reasonable judgment as to compliance with this Ordinance. Any SWM Site Plans that are inconsistent or noncompliant may be revised by the Applicant and resubmitted in accordance with Section 406 when consistent with this Ordinance. Resubmission will commence a new municipal review and notification time period.
- D. The Municipality will not grant final approval to any proposed subdivision, land development, or Regulated Activity specified in this Ordinance if the SWM Site Plan has been found to be inconsistent with this Ordinance.
- E. All required permits from PADEP shall be obtained and submitted to the Municipality prior to (or as a condition of) final approval of any proposed subdivision, land development, or other Regulated Activity by the Municipality.
- F. No building permits for any Regulated Activity will be approved by the Municipality if the SWM Site Plan has been found to be inconsistent with this Ordinance, as determined by the Municipal Engineer. All required permits from PADEP shall be obtained prior to issuance of a building permit.
- G. The Municipality's approval of a SWM Site Plan shall be valid for a period not to exceed two (2) years commencing on the date that the Municipality approved the SWM Site Plan. If stormwater management facilities included in the approved SWM Site Plan have not been constructed, or if constructed, As-Built Plans of these facilities have not been approved within this two (2) year time period, then the Applicant may seek reinstatement of approval of the

expired SWM Site Plan. If the Municipality determines that the expired SWM Site Plan is consistent and compliant with current regulations and requirements, then the expired SWM Site Plan will be reinstated; otherwise, it will be rejected. The Applicant will be prohibited from conducting any Regulated Activity until a reinstated or newly approved SWM Site Plan is obtained in accordance with Section 19-406 of this Ordinance.

- H. All or portions of the final approved SWM Site Plan shall be recorded (as "recorded plans") per the instructions of the Municipality.
- I. Upon completion of construction, the Applicant shall be responsible for completing final As-Built Plans of all BMPs, Conveyances, or other stormwater management facilities included in the approved SWM Site Plan as per the requirements of Section 19-502 of this Ordinance.

Section 19-405. Revision of SWM Site Plans

- A. A submitted SWM Site Plan under review by the Municipality shall be revised and resubmitted for any of the following reasons:
 - 1. A change in stormwater management BMPs, Conveyances, facilities, or techniques;
 - 2. Relocation or redesign of stormwater management BMPs, Conveyances, or facilities; or
 - 3. Soil or other Site conditions are not as stated on the SWM Site Plan as determined by the Municipal Engineer, and the new conditions necessitate design changes.

The revised SWM Site Plan shall be resubmitted in accordance with Section 19-403 and subject to review as specified in Section 404 of this Ordinance.

B. A revision to an approved SWM Site Plan shall be submitted to the Municipality, accompanied by the applicable municipal review fee.

Section 19-406. Resubmission of Inconsistent or Noncompliant SWM Site Plans

Any SWM Site Plan deemed inconsistent or noncompliant may be revised and resubmitted with the revisions addressing the Municipal Engineer's concerns documented in writing. The submission shall be addressed to the Municipality in accordance with Section 19-403 of this Ordinance, distributed accordingly, and be subject to review as specified in Section 19-404 of this Ordinance. The applicable municipal review fee shall accompany a resubmission of a SWM Site Plan previously determined to be inconsistent or noncompliant.

ARTICLE V – PERFORMANCE AND INSPECTION OF REGULATED ACTIVITIES, AND FINAL AS-BUILT PLANS

Section 19-501. Performance and Inspection of Regulated Activities

- A. All Regulated Activities shall be conducted, operated, and maintained in accordance with the requirements set forth in Articles III, VII, and VIII of this Ordinance. When a SWM Site Plan is required by this Ordinance, all Regulated Activities shall be performed in accordance with the requirements of the final approved SWM Site Plan.
- B. The Municipal Engineer or other municipal designee shall be provided access to the Site to inspect all phases of the erosion and sediment control measures and installation of the permanent BMPs and Conveyances at such times as deemed appropriate by the Municipal Engineer or other municipal designee.
- C. Periodic inspections may be made by the Municipal Engineer or other designee during construction. A set of design plans approved by the Municipality shall be on file and available for viewing at the Site throughout the duration of the construction activity.
- D. Inspections, including but not limited to a final inspection, of all constructed BMPs, Conveyances, or other stormwater facilities, and related improvements may be conducted by the Municipal Engineer or other designee to confirm compliance with this Ordinance and with the final approved SWM Site Plan prior to the issuance of any occupancy permit, use permit, or other form of final approval of the project by the Municipality.
- E. If an NPDES Permit for Stormwater Discharges Associated with Construction Activities was required for the Regulated Activity, a Notice of Termination (NOT) approval must be obtained upon completion of construction prior to final approval of the project by the Municipality.
- F. Upon completion of construction, every permanent stormwater BMP, Conveyance, or other Stormwater Management Facility constructed or used as part of the Regulated Activity shall be operated, maintained, and inspected by the Landowner, or other designated person, in accordance with the O&M Plan and O&M Agreement approved by the Municipality.
- G. The Municipality or its designee may periodically inspect any permanent stormwater BMP, Conveyance or Stormwater Management Facility for compliance with this Ordinance, an approved O&M Plan, or an approved O&M Agreement, per the provisions of Article IX. The Municipality may inspect at any time it has reason to believe a violation exists. The Municipality may pursue enforcement for violations consistent with the provisions of Article IX.

Section 19-502. Final As-Built Plans

A. For Regulated Activities involving one (1) acre or more of Earth Disturbance, the Applicant shall provide to the Municipality final As-Built Plans (signed and sealed by a qualified Licensed Professional) of all BMPs, Conveyances, other stormwater facilities, and related improvements shown in the final approved SWM Site Plan.

- B. The final As-Built Plans shall include the following for all BMPs, Conveyances, other stormwater facilities and related improvements:
 - 1. The location, elevations, dimensions, and as-built conditions of all BMPs, Conveyances, other stormwater facilities, and related improvements including topographic contours and all typical details for storm drainage and conveyance systems, stormwater management facilities and Impervious Surfaces (existing, proposed, or constructed) included in the approved SWM Site Plan. The latitude and longitude coordinates for all permanent SWM BMPs must also be submitted at the central location of the BMPs; and
 - 2. Explanation of any discrepancies or variations from the final approved SWM Site Plan, other related approved construction plans, calculations, and specifications (and approved revisions thereto).
- C. The final As-Built Plans shall include a certification of completion signed and sealed by a qualified Licensed Professional verifying that all permanent BMPs and Conveyances have been constructed according to the final approved SWM Site Plan and related approved construction plans, calculations, and specifications.
- D. After receipt of the As-Built Plans by the Municipality, the Municipality or its designee may review the As-Built Plans for consistency with this Ordinance, the final approved SWM Site Plan, other related approved construction plans, and subsequent approved revisions thereto, as well as actual conditions at the Site, and the Municipality may conduct a final inspection, as per Subsection 19-501.D.
- E. The As-Built Plans must be received, reviewed, and determined to be acceptable by the Municipality prior to:
 - 1. Close out of the drainage permit or other close out of the project by the Municipality;
 - 2. Release of the financial security or other performance guarantee; and
 - 3. Dedication of the stormwater facilities to the Municipality, or conveyance to a homeowners association, or other person responsible for operation, maintenance, and repair.
- F. Final occupancy permit(s) or Use Permit or other final approval to use or operate the constructed improvement may not be issued by the Municipality until the final As-Built Plans have been accepted.
- G. Upon final acceptance of the final As-Built Plans by the Municipality, the Applicant shall review and, if required by the Municipality, revise and re-record the O&M Plan and the O&M Agreement to reflect the final as-built conditions and information for each permanent BMP or Conveyance, in accordance with the requirements of Article VII.
- H. All or portions of the final As-Built Plans shall be recorded if required by the Municipality.

ARTICLE VI – FEES AND EXPENSES

Section 19-601. Municipality SWM Site Plan Review and Inspection Fees

Fees have been established by the Municipality as adopted by Resolution No. 2021-04, as may be amended from time to time, or as otherwise allowed by law to defray plan review and construction inspection costs incurred by the Municipality. All fees listed in Subsection 19-602. A shall be paid by the Applicant at the time of SWM Site Plan submission.

Fees shall be based on the Municipality's costs for reviewing SWM Site Plans, O&M Plans and Agreements and As-Built Plans, and conducting inspections pursuant to Section 19-501. The Municipality shall periodically update the review and inspection fee schedule to ensure that review costs are adequately reimbursed.

Section 19-602. Expenses Covered by Fees

- A. The fees required of the Applicant by this Ordinance shall at a minimum cover:
 - 1. Administrative costs;
 - 2. The review of the SWM Site Plan by the Municipality, the Municipal Engineer and other municipal consultants;
 - 3. Coordination and meetings with the Applicant;
 - 4. The inspection of erosion and sediment control measures, BMPs, Conveyances and other related improvements during construction;
 - 5. Review of project communications, reports, and additional supporting information;
 - 6. Other Site inspections;
 - 7. The final inspection upon completion of the BMPs, Conveyances, and other stormwater management facilities and related improvements presented in the SWM Site Plan; and
 - 8. Review of final As-Built Plan submission and revised calculations, and inspections as needed.
- B. The Applicant shall also reimburse all expenses incurred by the Municipality for any additional work or municipal consultant fees required to enforce any permit provisions regulated by this Ordinance, correct violations, and ensure proper completion of remedial actions.

ARTICLE VII – OPERATION AND MAINTENANCE (O&M) RESPONSIBILITIES AND EASEMENTS

Section 19-701. General Requirements for Protection, Operation and Maintenance of Stormwater BMPs and Conveyances

The following shall apply to all Regulated Activities in accordance with the requirements of the subsequent sections of this Article VII.

- A. Continuing operations and maintenance responsibilities of all permanent BMPs, Conveyances, or other stormwater management facilities shall be reviewed and approved by the Municipality along with the SWM Site Plan. The Municipality may require an offer of a dedication of such facilities as part of the requirements for approval of the SWM Site Plan. Such a requirement is not an indication that the Municipality will accept the facilities. The Municipality reserves the right to accept or reject the operations and maintenance responsibility for any portion of or all of the BMPs, Conveyances or other stormwater controls and facilities.
- B. An Operation and Maintenance (O&M) Plan shall be submitted to the Municipality for review and approval for all existing and proposed permanent BMPs and man-made Conveyances or other stormwater facilities identified in the SWM Site Plan. Multiple BMPs or Conveyances may be addressed by a combined O&M Plan where all such facilities are similar in O&M requirements and ownership.
- C. The O&M Plan(s) and O&M Agreement(s) shall name the person identified in the SWM Site Plan who shall be the owner of and be responsible for ongoing inspections, operation, repair, and maintenance of each BMP or Conveyance following completion of construction.
- D. For any BMP or man-made Conveyance (including any to be located on any property other than the property being developed by the Applicant) to be owned by a person other than the Municipality:
 - 1. An O&M Agreement shall be submitted to the Municipality for review and approval; and
 - 2. The O&M Plan shall be attached to, incorporated within, and recorded as a public record along with a fully executed O&M Agreement, all of which shall be recorded as a restrictive covenant that runs with the land and shall be binding upon the Landowner and any heirs, administrators, successors in interest or assigns of the Landowner.
- E. The following shall be provided for all BMPs and Conveyances (including any to be located on any property other than the property being developed by the Applicant) by an O&M or other agreement or by otherwise establishing covenants, easements, deed restrictions, or by dedication to the Municipality:
 - 1. Permanent protection of the BMP or Conveyance from disturbance or alteration;
 - 2. Right of entry and access for the Municipality for inspection and enforcement of this Ordinance (including Subsection 19-903.G) and any applicable O&M Plan or O&M Agreement; and

- 3. Right of entry and access for the person owning the BMP or Conveyance and responsible for fulfilling the O&M requirements when that person is not the Municipality and is different from the owner of the property on which the BMP or Conveyance is located (such as may be applicable for Subsection 19-301.G of this Ordinance).
- F. All O&M and other agreements, covenants, easements, and deed restrictions shall:
 - 1. Be submitted to the Municipality for review and approval;
 - 2. Be recorded as a public record, upon approval, against each parcel(s) which is part of the SWM Site Plan or otherwise contains any BMP or Conveyance comprising part of the Regulated Activity which is the subject of an O&M Agreement; and
 - 3. Run with the land and be binding upon the Landowner, its heirs, administrators, successors in interest, and assigns.
- G. The materials, documents and content required by this Article VII may be prepared in conjunction with and incorporated with similar materials, documents and content required for other permit or approval applications, such as those required by PADEP for the Post Construction Stormwater Management Plan.

Section 19-702. Operation and Maintenance Plans

The following items shall be included in the O&M Plan, unless otherwise approved by the Municipal Engineer:

- A. A plan sheet(s) or map(s) showing each BMP and man-made Conveyance and which shall include, but not be limited to:
 - 1. Property(ies) identification (owner name and address; and property address and/or lot and/or tax parcel number, etc.), property boundaries and tax parcel number of the land parcel on which the BMP or Conveyance is located.
 - 2. Name, address, phone number, date prepared, signature and seal of the Licensed Professional responsible for preparation of the plan sheet or map.
 - 3. Clear identification of the location, dimensions, and function of each BMP or Conveyance covered by the O&M Plan.
 - 4. The location of each BMP and Conveyance relative to roadways, property boundaries, or other identifiable landmarks and existing natural drainage features such as streams, lakes, ponds, or other bodies of water within the immediate vicinity of, or receiving discharge from, the BMP or Conveyance.
 - 5. Delineation of the land area, structures, Impervious Surfaces and Conveyances draining to and from the BMP.
 - 6. Representative elevations and/or topographic contours at intervals of two (2) feet, or other as acceptable to the Municipal Engineer.

- 7. Other features including FEMA floodplain and floodway boundaries, sinkholes, etc. located within the immediate proximity of each BMP and Conveyance.
- 8. Locations of areas of vegetation to be managed or preserved that function as a BMP or Conveyance.
- 9. The locations of all surface and subsurface utilities, on-lot wastewater facilities, sanitary sewers, and water lines within twenty (20) feet of each BMP or Conveyance.
- 10. The following as it pertains to any easements, covenants and deed restrictions established for each applicable BMP or Conveyance:
 - a. Boundaries delineated with bearings and distances shown that encompass the BMP or Conveyance and that includes a five (5)-foot perimeter area surrounding these features and sufficient vehicular ingress to and egress from a public right-of-way and roadway;
 - b. Labels specifying the type and purpose of the easement, covenant, or deed restriction and who it benefits; and
 - c. Labels with reference to any corresponding easement agreement, covenant, deed restriction or other document to be recorded.
- 11. The plan sheet or map shall be prepared at sufficient scale for municipal review, and ultimately for the use by the person responsible for operation and maintenance, and shall also be prepared at a legible scale that meets the requirements for recordation along with (and as an attachment to) the O&M Agreement and O&M Plan at the Chester County Office of the Recorder of Deeds
- B. The following information shall be included in the O&M Plan and written in a manner consistent with the knowledge and understanding of the person who will be responsible for the maintenance activities:
 - 1. The name and address of the following:
 - a. Property(ies) on which each BMP or Conveyance is located;
 - b. Owner of the property;
 - c. Owner of each stormwater BMP or Conveyance who is responsible for implementation of the O&M Plan:
 - d. Person responsible for maintaining adequate liability insurance and payment of taxes; and
 - e. Person preparing the O&M Plan.
 - 2. A description of each BMP and Conveyance and how the BMPs and Conveyances are intended to function.

- 3. A description of actions necessary to operate, inspect, and maintain each BMP or Conveyance, including but not limited to:
 - a. Lawn care, vegetation maintenance, landscaping, and planting;
 - b. Clean out of accumulated debris and sediment (including from grates, trash racks, inlets, etc.); and
 - c. Other anticipated periodic maintenance and repair.
- 4. The following statement shall be included:

"The Landowner acknowledges that, per the provisions of the Municipality's Stormwater Management Ordinance, it is unlawful to modify, remove, fill, landscape, alter or impair the effectiveness of, or place any structure, other vegetation, yard waste, brush cuttings, or other waste or debris into any permanent stormwater management BMP or Conveyance described in this O&M Plan or to allow the BMP or Conveyance to exist in a condition which does not conform to this O&M Plan, without written approval from the Municipality."

- 5. Inspection and maintenance schedules.
- 6. Explanation of the purpose and limitations of any easements, covenants, or deed restrictions associated with any BMP or Conveyance that are to be recorded against the property.
- C. A statement that no BMP or man-made Conveyance may be used by the owner or others for any purpose other than its intended stormwater control function, or, if approved by the Municipal Engineer, a statement of specific allowable uses of the BMP (i.e., recreational benefits that maybe associated with certain BMPs owned by a homeowners association, or allowable uses by an individual residential Landowner).
- D. A statement that establishes a reasonable time frame for remedy of deficiencies found by the owner during their inspections.
- E. Language needed to fulfill the requirements of Subsections 19-705.B, 19-705.C, and 19-705.D of this Ordinance.

Section 19-703. Operation and Maintenance Agreements

- A. An O&M Agreement shall be required for any BMP or man-made Conveyance to be owned by a person other than the Municipality, and the Agreement shall:
 - 1. Be between the owner of the BMP or Conveyance and the Municipality, and shall be substantially the same as the O&M Agreement in Appendix E;
 - 2. Incorporate the approved O&M Plan(s) for all BMPs or Conveyances to be covered by the O&M Agreement;

- 3. Set forth the rights, duties, and obligations of the owner of the BMP or Conveyance and the Municipality, and be consistent with the approved O&M Plan(s);
- 4. Be recorded as a deed restriction or restrictive covenant that runs with the land and shall be binding upon the Landowner, its heirs, administrators, successors in interest, and assigns;
- 5. Be submitted to the Municipality for review prior to approval of the SWM Site Plan;
- 6. Upon approval by the Municipality, be signed by the designated owner of the BMP or Conveyance and submitted for signature by the Municipality; and
- 7. When fully executed, be recorded by the Landowner at the Chester County Office of the Recorder of Deeds following municipal approval of the O&M Plan and prior to the start of construction
- B. Other items or conditions may be required by the Municipality to be included in the O&M Agreement where determined necessary by the Municipality to guarantee the satisfactory operation and maintenance of all permanent BMPs and Conveyances.
- C. After approval of the final As-Built Plans per the requirements of Article V, the Applicant shall review and, if necessary and if required by the Municipality, revise and re-record the O&M Plan and O&M Agreement to reflect the final as-built conditions of each BMP and Conveyance if different from the information included in the original recorded documents.

Section 19-704. Easements and Deed Restrictions

- A. Easements shall be established in connection with any Regulated Activity for all permanent BMPs and Conveyances that will not be dedicated to or otherwise owned by the Municipality, (including any to be located on any property other than the property being developed by the Applicant), and shall:
 - 1. Include all land area occupied by each BMP or Conveyance;
 - 2. Include a five (5) -foot wide perimeter (or other width as determined in consultation with the Municipal Engineer) surrounding the feature(s);
 - 3. Provide sufficient vehicular ingress and egress from a public right-of-way and roadway;
 - 4. Permanently protect every BMP and Conveyance from disturbance or alteration where not otherwise protected by a recorded O&M Agreement, covenant, deed restriction or other means;
 - 5. Grant the Municipality the right, but not the duty, to access every BMP and Conveyance from a public right-of-way or public roadway to conduct periodic inspections and to undertake other actions that may be necessary to enforce the requirements of this Ordinance, or of any applicable O&M Plan or O&M Agreement; where roadways will not be dedicated to the Municipality, the Municipality shall be granted access to the private roadways as necessary to access every BMP and Conveyance;

- 6. Grant the owner of each BMP and Conveyance the right to access, inspect, operate, maintain, and repair the BMP or Conveyance when the feature is to be owned, operated, and maintained by a person other than the Municipality and other than the owner of the parcel on which it is located;
- 7. Be shown, with bearings and distances noted, on the SWM Site Plan map/plan sheets, O&M Plan map/plan sheets, final As-Built Plans, and be signed and sealed by a qualified Licensed Professional;
- 8. Include language legally sufficient to ensure that the easement shall run with the land and bind the Landowner granting the easement, its heirs, administrators, successors in interest and assigns, into perpetuity; and
- 9. Be recorded at the Chester County Office of the Recorder of Deeds following municipal approval and prior to the start of construction.
- B. For any BMP or Conveyance to be owned by a person other than the Municipality or the Landowner owning the parcel upon which a BMP or Conveyance is located, an easement agreement shall be prepared and executed between the Landowner and the owner of the BMP or Conveyance which shall:
 - 1. Describe the ownership interests of all parties to the easement agreement, including the ownership of the BMP or Conveyance;
 - 2. Include a written legal (metes and bounds) description of the easement area, with reference to a recorded plan sheet showing the legal boundaries of the easement area (or an accompanying plan sheet/map), signed, and sealed by a qualified Licensed Professional;
 - 3. Grant an easement from the Landowner to the owner of each BMP and Conveyance, establishing the right and obligation to occupy, access, inspect, operate, maintain, and repair the BMP or Conveyance;
 - 4. Include a description of the purpose of the easement and the responsibilities of the parties involved;
 - 5. Incorporate by reference or be recorded with, the corresponding O&M Plan and O&M Agreement;
 - 6. Restrict the Landowner's use of the easement area of the parcel on which the BMP or Conveyance is located, consistent with the rights granted to the owner of the BMP or Conveyance;
 - 7. Be submitted to the Municipality for review and approval prior to approval of the SWM Site Plan;
 - 8. Upon approval by the Municipality, be signed by the owner of the BMP(s) or Conveyance(s) and the Landowner and submitted for signature by the Municipality;
 - 9. Include language legally sufficient to ensure that the easement will run with the land affected by the easement and that the easement agreement is binding upon the parties to

the easement agreement, their heirs, administrators, successors in interest and assigns, into perpetuity;

- 10. Contain additional provisions or information as required by the Municipality; and
- 11. When fully executed, be recorded by the Landowner at the Chester County Office of the Recorder of Deeds against all parcels affected by the terms of the easement agreement, within sixty 60) days of the Municipality's approval of the corresponding O&M Plan.
- C. For any BMP or Conveyance which is designed to receive runoff from another parcel or parcels and which is owned by the Landowner of the parcel upon which the BMP or Conveyance is located, in addition to any easement or easement agreement required pursuant to Subsection 19-704 A. or B., an easement agreement shall be prepared and executed between the Landowner of the parcel or parcels draining to the BMP or Conveyance and the owner of the BMP or Conveyance. This easement agreement shall:
 - 1. Describe the ownership interests of all parties to the easement agreement, including the ownership of all affected parcels and of the BMP or Conveyance;
 - 2. Provide for the grant of a drainage easement from the owner of the BMP or Conveyance to the Landowner of the parcel(s) draining to the BMP, which shall extend from the shared parcel boundary(ies) to the receiving BMP and shall include the connecting flow path(s) or Conveyance;
 - 3. Include a written legal (metes and bounds) description of the easement area, with reference to a recorded plan sheet showing the legal boundaries of the easement area (or an accompanying plan sheet/map), signed, and sealed by a Licensed Professional.
 - 4. Incorporate by reference or be recorded with the corresponding O&M Plan and O&M Agreement;
 - 5. State that the purpose of the easement agreement is to ensure the continuous right of the discharging parcel to discharge onto the parcel containing the BMP and into the BMP or Conveyance;
 - 6. Restrict the BMP or Conveyance owner's use of the easement area of the parcel upon which the BMP or Conveyance is located, consistent with the purpose of the easement granted;
 - 7. Establish the duty and responsibility of the Landowner of the parcel or parcels draining to the BMP or Conveyance to maintain the existing drainages on the discharging parcel or parcels as designed and constructed to discharge to the receiving BMP;
 - 8. Include language legally sufficient to ensure that the easement will run with the land and will bind all parties to the easement agreement, their heirs, administrators, successors in interest and assigns, into perpetuity;
 - 9. Be submitted to the Municipality for review and approval prior to approval of the SWM Site Plan;

- 10. Contain all additional provisions or information as the Municipality may require upon review; and
- 11. Be executed by the parties to the easement agreement and recorded at the Chester County Recorder of Deeds Office against the draining parcel(s) and the parcel upon which the BMP or Conveyance is located within sixty (60) days of the Municipality's approval of the corresponding O&M Plan.
- D. For any area(s) shown on the SWM Site Plan maps/plan sheets or As-Built Plan sheets as requiring, or area(s) that is otherwise determined to require, deed restriction(s) for the purpose of protecting and prohibiting disturbance to a BMP or Conveyance, such deed restrictions will be incorporated into a written deed, restrictive covenant, or equivalent document. The deed or other document shall:
 - 1. Include a clear and understandable description of the purpose, terms and conditions of the restricted use;
 - 2. Include the written legal description (metes and bounds description) of the area to which the restrictions apply that is consistent with the boundary shown on the O&M plan sheets and SWM Site Plan maps/plan sheets;
 - 3. Make reference to any corresponding O&M Plan(s) and O&M Agreement(s);
 - 4. Include language legally sufficient to ensure that the terms of the restriction run with the land and shall be binding upon the Landowner, its heirs, administrators, successors in interest, and assigns;
 - 5. Be submitted to the Municipality for review and approval prior to approval of the SWM Site Plan;
 - 6. Upon approval by the Municipality, be signed by the Landowner and owner of the BMP or Conveyance and submitted to the Municipality; and
 - 7. Be fully executed and recorded at the Chester County Office of the Recorder of Deeds within sixty (60) days of the Municipality's approval of the O&M Plan.

Section 19-705. Other Post-construction Responsibilities

- A. The provisions of Section 19-804 of this Ordinance shall apply to any permanent BMP or Conveyance that is constructed as part of an approved SWM Site Plan or covered by an approved O&M Plan.
- B. The person responsible for the operation and maintenance of a BMP or Conveyance shall make records of the installation and of all maintenance and repairs, and shall retain the records for at least ten (10) years. These records shall be submitted to the Municipality.
- C. Upon final inspection, the Municipality shall inform the person responsible for the operation and maintenance whether the submission of periodic (annual or other frequency) inspection and maintenance reports will be required.

D. The owner of each BMP and Conveyance shall keep on file with the Municipality the name, address, and telephone number of the person responsible for maintenance activities and implementation of the O&M Plan. In the event of a change, new information shall be submitted by the BMP or Conveyance owner to the Municipality within sixty (60) working days of the change.

Section 19-706. Municipal Stormwater Control and BMP Operation and Maintenance Fund and Inspection and BMP Operations and Maintenance Requirements

- A. The municipality shall inspect SWM BMPs, facilities and/or structures installed under this Ordinance according to the following frequencies, at a minimum, to ensure the BMPs, facilities and /or structures continue to function as intended. 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 cover the costs of periodic inspections and maintenance expenses. This is to be paid in a manner specified by the Municipality. The amount of the deposit shall be determined as follows:
 - 1. If the BMP or Conveyance is to be privately owned and maintained, the deposit shall cover the cost of periodic inspections performed by the Municipality, as estimated by the Municipal Engineer, for a period of ten (10) years, at the following minimum frequencies:
 - 1) Annually for the first 5 years.
 - 2) Once every 3 years thereafter.
 - 2. If the BMP or Conveyance is to be owned and maintained by the Municipality, the deposit shall cover the estimated costs for maintenance and inspections for ten (10) years. The Municipality will establish the estimated costs utilizing information submitted by the Applicant. Inspections shall be conducted at the minimum frequencies listed in above referenced section.
 - 3. The above referenced inspections shall be conducted during or immediately following precipitation events or in dry weather conditions if the BMP design parameters include dewatering within a specified period of time. A written inspection report shall be created to document each inspection. The inspection report shall contain the date and time of the inspection, the individual(s) who completed the inspection, the location of the BMP, Stormwater Management Facility or structure inspected, observations on performance, and recommendations for improving performance, if applicable.
 - 4. The amount of the deposit to the fund shall be converted to present worth of the annual series values. The Municipality shall determine the present worth equivalents, which shall be subject to the approval of the Governing Body.
- B. If a BMP or Conveyance is proposed that also serves as a recreational facility (e.g., ball field or lake), the Municipality may reduce or waive the amount of the maintenance fund deposit based upon the value of the land for public recreational purpose.
- C. If at some future time, a BMP or Conveyance (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 or demolishing the facility and connecting to the storm sewer system or other facility. Any amount of the deposit

- remaining after the costs of abandonment or demolition will be used for inspection, maintenance, and operation of the receiving stormwater management system.
- D. If a BMP or Conveyance is accepted by the Municipality for dedication, the Municipality may require persons installing the BMP or Conveyance to pay a specified amount to the Municipal Stormwater Control and BMP Operation and Maintenance Fund to help cover the costs of operations and maintenance activities. The amount may be determined as follows:
 - a. The amount shall cover the estimated costs for operations and maintenance for ten (10) years, as determined by the Municipality, and
 - b. The amount shall then be converted to present worth of the annual series values.
- E. The Municipality may require Applicants to pay a fee to the Municipal Stormwater Control and BMP Operation and Maintenance Fund to cover:
 - a. Inspections
 - b. Long-term maintenance of BMP(s) or Conveyance(s), and
 - c. Stormwater-related problems which may arise from the land development and Earth Disturbance.

ARTICLE VIII – PROHIBITIONS

Section 19-801. Prohibited Discharges

- A. Any drain or Conveyance, whether on the surface or subsurface, that allows any non-stormwater discharge including sewage, process wastewater, and wash water to enter the Municipality's separate storm sewer system, Riparian Buffers, wetlands, or other Waters of the Commonwealth is prohibited.
- B. No person shall allow, or cause to allow, discharges into the Municipality's separate storm sewer system or the Waters of the Commonwealth that are not composed entirely of stormwater, except:
 - 1. As provided in Subsection 19-801.C below; and
 - 2. Discharges allowed under a State or Federal permit.
- C. The following discharges are authorized unless they are determined by the Municipality to be significant contributors to pollution to the Municipality's separate storm sewer system or to the Waters of the Commonwealth:
 - 1. Discharges from firefighting activities;
 - 2. Potable water sources including water line and fire hydrant flushings, if such discharges do not contain detectable concentrations of Total Residual Chlorine (TRC);

- 3. Non-contaminated irrigation drainage water;
- 4. Non-contaminated HVAC condensation and water from geothermal systems;
- 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. Diverted stream flows;
- 9. Flows from riparian habitats and wetlands;
- 10. Uncontaminated water from foundations or from footing drains;
- 11. Lawn watering;
- 12. Uncontaminated groundwater;
- 13. Residential (i.e., not commercial) vehicle wash water where cleaning agents are not utilized;
- 14. Routine external building washdown (which does not use detergents or other compounds); and
- 15. Non-contaminated hydrostatic test water discharges, if such discharges do not contain detectable concentrations of TRC.
- D. In the event that the Municipality determines that any of the discharges identified in Section 19-801.C significantly contribute pollutants to the Municipality's separate storm sewer system or to the Waters of the Commonwealth, or is notified of such significant contribution of pollution by PADEP, the Municipality will notify the responsible person to cease the discharge.
- E. Upon notice provided by the Municipality under Section 19-801.D, the discharger shall, within a reasonable time period, as determined by the Municipality consistent with the degree of pollution caused by the discharge, cease the discharge.
- F. Nothing in this section shall affect a discharger's responsibilities under State law.

Section 19-802. Prohibited Connections

The following connections are prohibited, except as provided in Section 19-801.C above:

A. Any drain or Conveyance, whether on the surface or subsurface, that allows any non-stormwater discharge, including sewage, process wastewater, and wash water to enter a separate storm sewer system, and any connections to the separate storm sewer system from indoor drains and sinks. Any drain or Conveyance that delivers non-stormwater discharges directly into wetlands, Riparian Buffers, or other Waters of the Commonwealth is prohibited.

B. Any drain or Conveyance connected from a commercial or industrial land use to a separate storm sewer system, which has not been documented in plans, maps, or equivalent records and approved by the Municipality.

Section 19-803. Pet Waste

- A. All pet owners and keepers are required to immediately and properly dispose of their pet's solid waste deposited on any property, public or private, not owned or possessed by that person.
- B. Any owner or keeper who requires the use of a disability assistance animal shall be exempt from this requirement while such animal is being used for that purpose.
- C. Any person(s) found to be in violation of these provisions of this ordinance shall be subject to enforcement and penalties as specified under Article IX of this Ordinance.

Section 19-804. Roof Drains and Sump Pumps

- A. Roof drains and sump pump discharges shall not be connected to sanitary sewers.
- B. Roof drain, sump pump, foundation, and footing drain discharges:
 - 1. To the maximum extent practicable, shall discharge to infiltration or vegetative BMPs, or to vegetated or other areas with adequate capacity;
 - 2. May be connected to streets, storm sewers, or roadside ditches only if determined necessary or acceptable by the Municipal Engineer; and
 - 3. Shall be considered in stormwater management calculations to demonstrate that Conveyance and receiving facilities have adequate capacity.

Section 19-805. Alteration of BMPs

- A. No person shall modify, remove, fill, landscape, alter, or impair the effectiveness of any stormwater BMPs, Conveyances, Stormwater Management Facilities, areas or structures unless the activity is part of an approved maintenance program, without the written approval of the Municipality.
- B. No person shall place any structure, fill, landscaping, additional vegetation, yard waste, brush cuttings, or other waste or debris into a BMP or Conveyance, or within a stormwater easement, that would limit or alter the functioning of the stormwater BMP or Conveyance, without the written approval of the Municipality.

ARTICLE IX – ENFORCEMENT AND PENALTIES

Section 19-901. Public Nuisance

- A. Any Regulated Activity conducted in the violation of any provision of this Ordinance is hereby deemed a public nuisance.
- B. Each day that a violation continues shall constitute a separate violation.
- C. A separate violation will be found to exist for each section of this Ordinance found to have been violated.
- D. To the extent that the Municipality does not enforce any provision of this Ordinance, such action or inaction shall not constitute a waiver by the Municipality of its rights of future enforcement hereunder.

Section 19-902. Right of Entry

- A. Upon presentation of proper credentials, duly authorized officers or agents of the Municipality may enter at reasonable times upon any property within the Municipality to inspect the implementation, condition, or operation and maintenance of all erosion and sediment controls and permanent stormwater BMPs, Conveyances, or other Stormwater Management Facilities both during and after completion of a Regulated Activity, or for compliance with any requirement of this Ordinance.
- B. Persons working on behalf of the Municipality shall have the right to temporarily locate on or in any BMP, Conveyance, or other Stormwater Management Facility in the Municipality such devices as are necessary to conduct monitoring and/or sampling of the discharges from such BMP or Conveyance, or other stormwater facilities.
- C. Failure of the Landowner or representative to grant access to the Municipality within twenty-four (24) hours of notification, verbal or written, is a violation of this Ordinance.

Section 19-903. Enforcement

- A. The Municipal Engineer or other designee is hereby authorized and directed to enforce all the provisions of this Ordinance. The Municipal Governing Body may delegate enforcement duties, including the initial determination of Ordinance violation and service of notice, if notice is given, to such other officers or agents as the Municipality shall deem qualified for that purpose.
- B. It shall be the responsibility of the Landowner of the real property on which any Regulated Activity is proposed to occur, is occurring, or has occurred to comply with the applicable terms and conditions of this Ordinance.
- C. All municipal inspections for compliance with the approved SWM Site Plan shall be the responsibility of the Municipality or its designee.

- D. During any stage of the work of any Regulated Activity, if the Municipal Engineer or other designee determines that the erosion and sediment control measures, permanent BMPs, Conveyances or other stormwater facilities are not being installed or maintained in accordance with the approved SWM Site Plan, the Municipality may suspend or revoke any existing permits or other approvals until the deficiencies are corrected or until a revised SWM Site Plan is submitted and approved, if and as determined to be necessary by the Municipal Engineer or other designee.
- E. In the event that the Municipal Engineer or other designee finds that a person has violated a provision of this Ordinance, or fails to conform to the requirements of any permit or approval issued by the Municipality, or any O&M Plan or O&M Agreement approved by the Municipality, the Municipality may order compliance by written notice of the violation to the Landowner.
- F. Such notice may, without limitation, require the following remedies:
 - 1. Performance of monitoring, analyses, and reporting;
 - 2. Elimination of prohibited connections or discharges;
 - 3. Cessation of any violating discharges, practices, or operations;
 - 4. 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 and/or forfeiture of financial security;
 - 6. Implementation of stormwater controls, BMPs, and Conveyances; and
 - 7. Operation, maintenance or repair of BMPs, Conveyances or other stormwater facilities.
- G. Such notice shall set forth the nature of the violation(s), citing the specific sections of this Ordinance which have not been met, and establish a time limit for commencement of correction and completion of correction of the violations(s). The notice shall provide for a right of the Landowner's appeal to the Municipal Governing Body in accordance with Section 19-906 of this Ordinance. Said notice shall further advise that, if applicable, should the violator fail to take the required action within the established deadline, possible sanctions, clearly described, may be imposed, or the work may be done by the Municipality or designee, and the expense thereof shall be charged to the violator.
- H. Failure to comply within the time specified in such notice shall also subject such person to the penalty provisions of this Ordinance. 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.

Section 19-904. Suspension and Revocation of Permits and Approvals

A. Any building, land development, or other permit or approval issued by the Municipality may be suspended or revoked by the Municipality for:

- 1. Noncompliance with or failure to implement any provision of the permit or approved SWM Site Plan or O&M Agreement;
- 2. A violation of any provision of this Ordinance or any other law or regulation applicable to the Regulated Activity;
- 3. The creation of any condition or the commission of any act during the Regulated Activity that constitutes or creates a hazard or nuisance, or endangers the life, health, safety, or property of others; or
- 4. Failure to correct a violation within the allowed time period allowed per notice given by the Municipality.
- B. Prior to revocation or suspension of a permit, unless there is immediate danger or threat of such danger to life, public health or property, at the request of the Applicant, the Municipality's Governing Body shall schedule a hearing on the violation and proposed revocation or suspension, pursuant to public notice. The expense of a hearing shall be the Applicant's responsibility.
- C. A suspended permit or approval may be reinstated by the Municipality when:
 - 1. The Municipal Engineer or other designee has inspected and approved the corrections to the BMPs, Conveyances or other Stormwater Management Facilities, or the elimination of the hazard or nuisance; and
 - 2. The Municipality is satisfied that the violation has been corrected.
- D. A permit or approval that has been revoked by the Municipality cannot be reinstated. The Applicant may apply for a new permit or approval in accordance with this Ordinance.

Section 19-905. Penalties

- A. Any person violating or permitting the violation of the provisions of this Ordinance shall be subject to a fine of not more than One Thousand Dollars (\$1,000) for each violation, recoverable with costs. The establishment of a violation for purposes of setting fines or penalties for such violation shall be in accordance with a citation to a magisterial district judge with jurisdiction and venue over the location of the violation and such an action will be subject to the procedures provided for the enforcement of summary offenses under the Pennsylvania Rules of Criminal Procedure. A separate offense shall arise for each day or portion thereof a violation is found to exist and may be determined for each section of this Ordinance which is found to have been violated.
- B. In addition, the Municipality may, through its solicitor, institute injunctive, mandamus, or any other appropriate action or proceeding at law or in equity for the enforcement of this Ordinance. Any court of competent jurisdiction shall have the right to issue restraining orders, temporary or permanent injunctions, mandamus, or other legal or equitable forms of remedy or relief. Such relief may include costs, fees, and charges, including the Municipality's attorney's fees (charged at the hourly rate approved by the Governing Body of the Municipality) and costs, as may be permitted by law.

C. Notwithstanding any other provision of this Ordinance, the Municipality shall have the right at any or all times deemed necessary by the Municipal Engineer or designee to enter upon any property within the Municipality to inspect and, upon determination of a violation of this Ordinance, to correct the violation, with all expenses associated with correcting the violation to be charged to the property owner responsible for the violation.

Section 19-906. Appeals

- A. Any person aggrieved by any action of the Municipal Engineer or other designee relative to the provisions of this Ordinance may appeal to the Municipality's Governing Body within thirty (30) days of that action.
- B. Any person aggrieved by any decision of the Municipality's Governing Body relative to the provisions of this Ordinance may appeal to the County Court of Common Pleas in the County where the activity has taken place within thirty (30) days of the Municipality's decision.

Section 2. This Ordinance shall take effect five days from the date of enactment.

ENACTED and **ORDAINED** by the Board of Supervisors of Franklin Township, Chester County, Pennsylvania, this 19th day of April, 2023.

David Gerstenhaber, Chair

FRANKLIN TOWNSHIP

David Gerstennaber, Chan
Donna Dea, Vice Chair
Dawn Dowling, Member
James Johnston, Member
Steffen J. Torres, Member

ORDINANCE APPENDIX A

SIMPLIFIED APPROACH TO STORMWATER MANAGEMENT FOR SMALL PROJECTS

Appendix A

Simplified Approach to Stormwater Management for Small Projects

Appendix A.1 – Applicability, Submittal and Approval Requirements

Appendix A.2 -

"Simplified Approach to Stormwater Management for Small Projects – Handout For Applicants" (Revised October 19, 2022)

Appendix A.1 Applicability, Submittal and Approval Requirements

Franklin Township Chester County, Pennsylvania

Applicability:

- Small projects with greater than 1,000 square feet and less than 2,000 square feet of Regulated Impervious Surfaces (as defined in the Municipality's Stormwater Management Ordinance) and between 5,000 and 10,000 square feet of proposed Earth Disturbance (as defined in the Municipality's Ordinance) may apply the "Simplified Approach to Stormwater Management for Small Projects" (Simplified Approach). Agricultural structures and adjoining parking and movement area less than 15,000 square feet may use the Simplified Approach.
- Only projects that meet the above size thresholds as specified in the Municipality's Stormwater Management Ordinance may use this Simplified Approach and are then not required to submit a fully engineered Stormwater Management Site Plan to the Municipality. However, these projects are still required to address water quality and infiltration requirements as outlined in the Simplified Approach "Handbook". This Handbook is intended to aid applicants in addressing these requirements through the installation of a properly sized underground infiltration trench.
- Any project with more than 2,000 square feet of Regulated Impervious Surface or more than 10,000 square feet of proposed Earth Disturbance can NOT apply this Simplified Approach.
- The Applicant should first review the planned project with the Municipal Engineer prior to initiating the Simplified Approach to confirm the following:
 - That the proposed project is not otherwise exempt from the stormwater management control and the engineered Stormwater Management Site Plan requirements of the Municipality's Stormwater Management Ordinance;
 - That the proposed project is eligible to use this Simplified Approach;
 - Which components of the proposed project must be included in the calculation of "impervious surfaces (areas)"; and
 - Whether any local conditions are known to the Municipal Engineer that would preclude the use of any of the techniques included in this Simplified Approach.

Submittal and Approval Requirements:

Use of the Simplified Approach requires:

- The applicant to submit the following to the Municipality for review and approval prior to beginning construction per the Simplified Approach Handbook:
 - Simplified Approach Stormwater Management Application
 - o Fee
 - Simplified Approach Worksheets
 - Simplified Approach Stormwater Management Site Plan (i.e., sketch plan)
 - A completed, signed, and notarized "Simplified Operation, Maintenance and Inspection Plan and Agreement".

- The applicant is to record the "Simplified Approach Stormwater Best Management Practices Operation, Maintenance and Inspection Plan and Agreement" at the Chester County Office of the Recorder of Deeds after signature by the Municipality.
- A final inspection conducted by the Municipality after completion of construction.

Appendix A.2 **SIMPLIFIED APPROACH**

to Stormwater Management for Small Projects

HANDOUT FOR APPLICANTS

August 2014 Revised October 2022

FRANKLIN TOWNSHIP CHESTER COUNTY

Prepared by:



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I. GENERAL OVERVIEW

The Pennsylvania Stormwater Management Planning Act (Act 167) of 1978 mandates that counties prepare stormwater management plans and minimum stormwater standards in order to reduce flooding and stormwater impacts of future development and redevelopment. Franklin Township recently adopted Ordinance 2023— that governs all aspects related to stormwater management within the Township and was codified under Chapter 19 of the Franklin Township Code of Ordinances (Stormwater Ordinance).

The Chester County County-wide Act 167 Plan represents the collective outcome of five years of collaborative work involving Chester County Water Resources Authority, the Pennsylvania Department of Environmental Protection (PADEP) and many Chester County municipalities and their managers, staff and engineers, as well as individuals and stakeholder organizations who have provided numerous comments and input through five review cycles. All inputs, comments and concerns were closely evaluated and incorporated as appropriate to reflect the broad range of community and individual interests, circumstances, values, and priorities that exist within the municipalities across Chester County.

Inadequate management of stormwater runoff resulting from land disturbance and development throughout a watershed can create the following:

- increased flooding
- increased flows and velocities in streams that contribute to erosion and sedimentation
- overtaxed capacity of streams and storm sewers
- increased cost of public facilities to convey and manage stormwater
- reduced infiltration and groundwater recharge
- increased pollution to waterways
- destroyed aquatic habitat
- increased pollutant concentrations such as sediment, nutrients, heavy metals and pathogens

A Simplified Approach has been prepared to aid homeowners with the design and construction of the required stormwater management improvements associated with the proposed improvement to the property.

The Simplified Approach discussed in this Handout applies to activities between 1,000 and 2,000 square feet of regulated impervious surface and between 5,000 and 10,000 square feet earth disturbance. Agricultural structures and adjoining parking and movement area less than 15,000 square feet may use the Simplified Approach. These limits are as specified in the Stormwater Ordinance to which you should refer if you are interested in more detail.

A stormwater Best Management Practice (BMP) is a facility constructed to manage stormwater impacts by providing water quality treatment, groundwater recharge through infiltration, volume reduction and peak rate control. BMPs include but are not limited to those listed and shown in the Simplified Approach, BMP Size Determination Worksheets (Worksheets) provided in Section V of this Handout. See the Stormwater Ordinance definition of BMP included below for more detail.

There are various methods that can be employed to address the increase in stormwater runoff created by an increase in impervious area. While not considered as formal elements, rain barrels

can be provided for educational and small re-use applications. Porous paving on driveways and special precast pavers can also be utilized in certain applications, such as a patio, as an alternative to concrete, to reduce the amount of impervious cover being created.

The goal of the Simplified Approach is to allow the applicant to complete the Worksheets showing compliance with the infiltration goals of the Stormwater Ordinance. As needed or if desired by you, your contractor may complete the Worksheets for you. While the Simplified Approach is offered to applicants with projects that qualify for it, it is not required to be used, so you can always voluntarily elect to hire a design professional that can prepare a detailed design that meets the Township Ordinance requirements for your specific application if you so choose.

Additional information related to stormwater and BMPs can be found online at:

PA DEP's website: www.depweb.state.pa.us
Home > Water > Bureau of Point and Non-Point Source Management > Stormwater Management

Chester County's website <u>www.chesco.org</u>

<u>Home</u> > <u>Departments</u> > <u>Departments</u> R - Z > <u>Water Resources Authority</u> > Stormwater Management

Pennsylvania's e-library: http://www.elibrary.dep.state.pa.us search 363-0300-002 for the Pennsylvania Stormwater Best Management Practices Manual

II. DEFINITIONS

Following is a list of frequently used definitions related to stormwater management. Additional definitions can be found in the Stormwater Ordinance.

Agricultural Activity – Activities associated with agriculture such as agricultural cultivation, agricultural operation, and animal heavy use areas. This includes the work of producing crops including tillage, plowing, disking, harrowing, planting or harvesting crops; or pasturing and raising of livestock; and installation of conservation measures. Construction of new buildings or impervious area is not considered an Agricultural Activity.

Applicant – A landowner, developer, or other person who has filed an application to the Municipality for approval to engage in any Regulated Activity as defined in the Stormwater Ordinance.

BMP (Best Management Practice) – Activities, facilities, designs, measures, or procedures used to manage stormwater impacts from Regulated Activities, to provide water quality treatment, infiltration, volume reduction, and/or peak rate control, to promote groundwater recharge, and to otherwise meet the purposes of the Stormwater Ordinance. Stormwater BMPs are commonly grouped into one (1) of two (2) broad categories or measures: "structural" or "nonstructural." In this Ordinance, nonstructural BMPs or measures include certain low impact development and conservation design practices used to minimize the contact of pollutants with stormwater runoff. These practices aim to limit the total volume of stormwater runoff and manage stormwater at its source by techniques such as protecting natural systems and incorporating existing landscape features. Nonstructural BMPs include, but are not limited to, the protection of sensitive and special value features such as wetlands and riparian areas, the preservation of open space while clustering and concentrating development, the reduction of impervious cover, and the disconnection of rooftops from storm sewers. Structural BMPs are those that consist of a physical system that is designed and engineered 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, bioretention, wet ponds, permeable paving, grassed swales, riparian buffer, sand filters, detention basins, and manufactured devices. Structural and nonstructural stormwater BMPs are permanent appurtenances to the Site.

Earth Disturbance (or Earth Disturbance Activity) – A construction or other human activity which disturbs the surface of the land, including, but not limited to, clearing and grubbing; grading; excavations; embankments; road maintenance; land development; building construction; and the moving, depositing, stockpiling, or storing of soil, rock, or earth materials.

Erosion – The process by which the surface of the land, including water/stream channels, is worn away by water, wind, or chemical action.

Erosion and Sediment (E&S) Control Plan – A plan required by the Conservation District or the Municipality to minimize accelerated erosion and sedimentation, and that must be prepared and approved per the applicable requirements.

Geotextile – A fabric manufactured from synthetic fiber that is used to achieve specific objectives, including infiltration, separation between different types of media (i.e., between soil and stone), or filtration.

Grade/Grading - 1. (Noun) A slope, usually of a road, channel, or natural ground, specified in percent and shown on plans as specified herein. 2. (Verb) To finish the surface of a roadbed, the top of an embankment, or the bottom of an excavation.

Groundwater – Water that occurs in the subsurface and fills or saturates the porous openings, fractures and fissures of under-ground soils and rock units.

Groundwater Recharge – The replenishment of existing natural groundwater supplies from infiltration of rain or overland flow.

Impervious Surface - A surface that has been compacted or covered with a layer of material so that it prevents or is resistant to infiltration of water, including but not limited to: structures such as roofs, buildings, storage sheds; other solid, paved, or concrete areas such as streets, driveways, sidewalks, parking lots, patios, tennis or other paved courts; or athletic playfields comprised of synthetic turf materials. For the purposes of determining compliance with this Ordinance, compacted soils or stone surfaces used for vehicle parking and movement shall be considered impervious. Uncompacted gravel areas with no vehicular traffic, such as gardens, walkways, or patios areas, shall be considered pervious per review by the Municipal Engineer. Surfaces that were designed to allow infiltration (i.e., pavers and areas of porous pavement) are not to be considered impervious surface if designed to function as a BMP per review by the Municipal Engineer. Additionally, for the purposes of determining compliance with this Ordinance, the total horizontal projection area of all ground-mounted and free-standing solar collectors, including solar photovoltaic cells, panels, and arrays, shall be considered pervious so long as the designs note that natural vegetative cover will be preserved and/or restored underneath the solar photovoltaic cells, panels, and arrays, and the area disturbed is planned as a vegetated pervious surface.

Infiltration – Movement of surface water into the soil, where it is absorbed by plant roots, evaporated into the atmosphere, or percolated downward to recharge groundwater.

Infiltration Facility – A stormwater BMP designed to collect and discharge runoff in a manner that allows infiltration into underlying soils and groundwater (e.g., French drains, seepage pits, or seepage trenches, etc.).

Municipality – Franklin Township, Chester County, Pennsylvania.

PADEP – Pennsylvania Department of Environmental Protection.

Predevelopment – Ground cover conditions assumed to exist within the proposed disturbed area prior to commencement of the Regulated Activity for the purpose of calculating the Predevelopment water quality, volume, infiltration volume, and peak flow rates as required in the Stormwater Ordinance.

Proposed Impervious Surface - All new, additional and replacement Impervious Surfaces.

Regulated Activity - Any Earth Disturbance Activity(ies) or any activity that involves the alteration or development of land in a manner that may affect stormwater runoff.

Regulated Earth Disturbance Activity – Any activity involving Earth Disturbance subject to regulation under 25 Pennsylvania Code Chapter 92.a, Chapter 102, or the Clean Streams Law.

Runoff – Any part of precipitation that flows over the land surface.

Sediment – Soil or other materials transported by, suspended in or deposited by surface water as a product of erosion.

Site – Total area of land in the Municipality where any proposed Regulated Activity is planned, conducted, or maintained or that is otherwise impacted by the Regulated Activity.

Stormwater – Drainage runoff from the surface of the land resulting from precipitation or snow or ice melt.

Stormwater Ordinance – Franklin Township Ordinance 2023- codified under Chapter 19 of the Franklin Township Code of Ordinances.

Swale – An artificial or natural waterway or low-lying stretch of land that gathers and conveys stormwater or runoff, and is generally vegetated for soil stabilization, stormwater pollutant removal, and infiltration.

Township – Franklin Township, Chester County, Pennsylvania.

Watershed – Region or area drained by a river, watercourse, or other body of water, whether natural or artificial.

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. Wetlands generally include swamps, marshes, bogs, fens, and similar areas.

III. BMP INFORMATION

Stormwater management for small projects must consist of infiltration or on-site reuse of the first (1) inch of rainfall from proposed impervious surfaces. Infiltration can be provided by various types of facilities. While not considered as part of the design, certain features can be added 'in line' to the system, for re-use applications. These would include features such as a cistern, rain pillow, and rain barrels. The following are the options that can be selected when utilizing the Simplified Approach:

A. BMP TYPES

Underground Options:

Infiltration Bed
Infiltration Trench
Infiltration Trench with Pipe
Tank with Holes

Aboveground Options:

Infiltration Basin Rain Garden

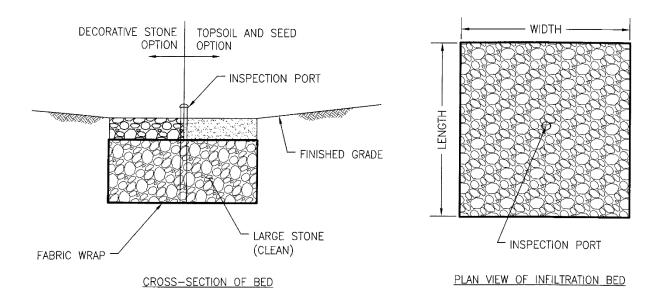
The following pages provide a description of each of the above facilities along with an illustration of each.

For Construction Details for each BMP see Attachment A to this Handout.

B. BMP DESCRIPTIONS AND ILLUSTRATIONS

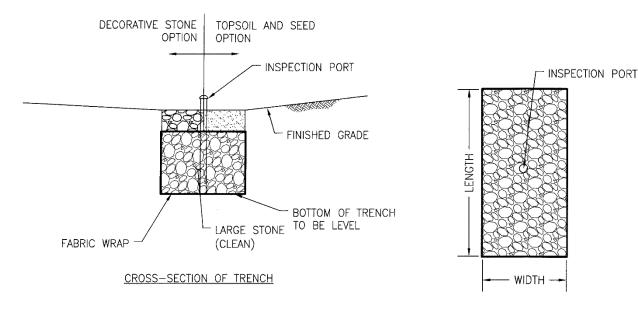
Infiltration Bed

An infiltration bed is typically used to capture surface and/or roof water.. Roof drains from the proposed structure are piped into an underground bed of gravel to allow the stormwater to infiltrate into the ground. An overflow pipe is provided to release excess storm volumes. A cleanout is provided to facilitate maintenance and to facilitate inspection.. The soil over the bed should be planted with vegetation that will not interfere with the operation of the bed. In some cases, decorative stone can cover the infiltration bed.

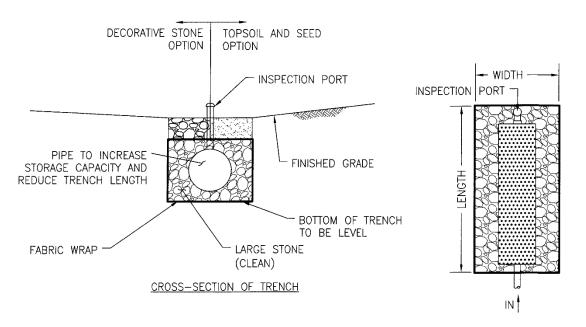


Infiltration Trench [with or without a pipe]

Infiltration trenches are utilized along the perimeter of impervious surfaces to collect, store and infiltrate stormwater runoff from a dwelling, driveway, or other improvement. River rock or equivalent may be placed on the bed to allow the stormwater runoff to enter the trench. Alternatively the bed may utilize a perforated pipe with inlets to facilitate the stormwater entering the trench. When on a slope, the trench is constructed as a terraced system. Pipe can be utilized within the trench to increase the available storage volume. In areas where infiltration is intended, it is important to avoid compaction of the trench and surrounding area (e.g., avoid use of heavy equipment) in order to allow the water to permeate better. To promote infiltration, once the trench has been excavated, the entire bottom area should be scarified to loosen the soils at the bottom of the trench.



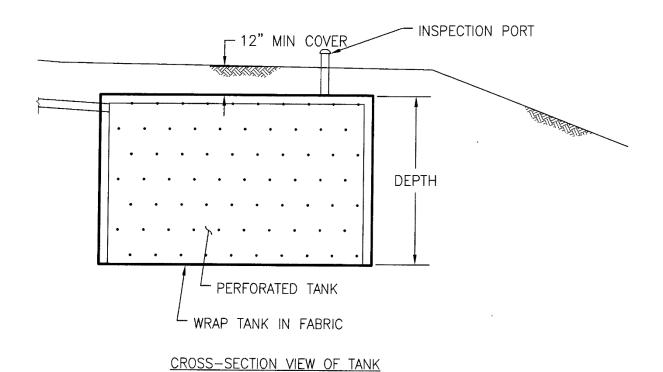
PLAN VIEW OF INFILTRATION TRENCH



PLAN VIEW OF INFILTRATION TRENCH WITH PIPE

Tank [with holes]

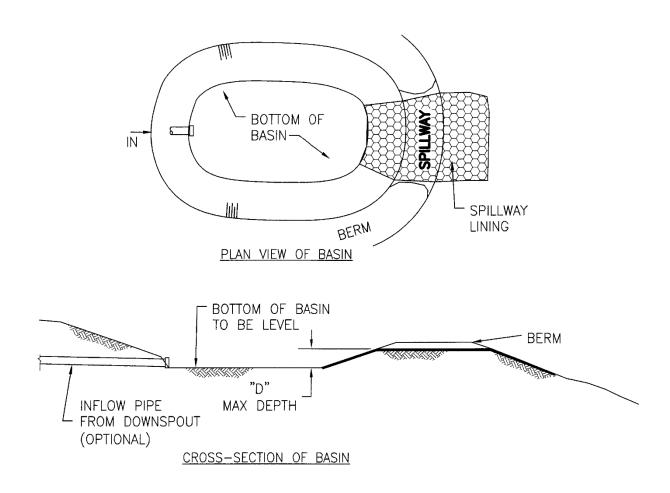
Tanks can be made from a variety of materials, such as steel, concrete, HPDE, etc. Holes are provided in the tank to allow the stored water to slowly drain into the surrounding ground area. Most tanks are pre-manufactured for this type of application, though use of existing materials can be approved on a case-by-case basis.



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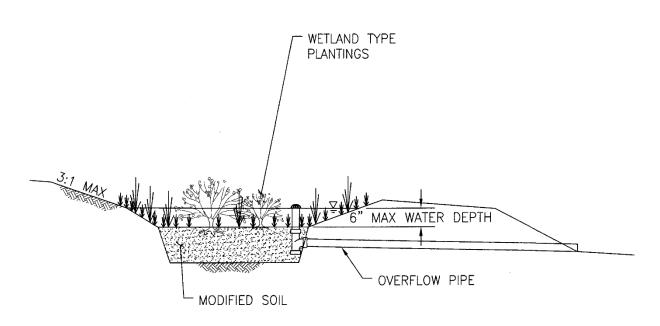
Infiltration Basin

An infiltration basin provides an aboveground area for water to be stored and infiltrate into the ground. Roof drains and overland stormwater runoff are directed into the aboveground basin area. A spillway is provided to release the larger storm volumes. The spillway should be located such that any down slope problems are avoided when water is flowing over it. The basin needs to be planted with vegetation that is tolerant of the wet conditions that will occur.



Rain Garden

Rain gardens are similar to the infiltration basin, but provide less storage volume and rely more on the plantings to provide water quality and to remove the water through evapotranspiration. Plant material utilized in the rain garden should be selected by a landscaping professional and be suitable for the proposed conditions. The bottom of the garden is a modified soil intended to hold water and allow it to infiltrate. An overflow pipe is provided to take larger volumes of stormwater runoff away. At least twice a year the Landowner is to inspect the rain garden for sediment buildup, ground cover and vegetative conditions and make any repairs as needed. Pruning and weeding may be required especially while vegetation is being established. Plant residue/debris, if any, needs to be removed every year. Perennial plantings may be cut down and removed at the end of the growing season. The mulch needs to be re-spread should erosion be evident and replenished as needed. Once every 2 to 3 years the entire area may require mulch replacement. During extended drought, watering may be necessary. The owner of the facility should be aware of the long-term maintenance needs of the plant materials utilized.



CROSS-SECTION OF GARDEN

C. SELECTION CONSIDERATIONS

Underground Options:

Pros: Cons:

Infiltration Bed: No Visual Impact Requires Roof Gutter Screens

> Direct Connection of Roof Drains Repairs Difficult Larger Volumes Possible Area Above Restricted

<u>Infiltration Trench:</u> No Visual Impact Requires Roof Gutter Screens

> Flexible Location Repairs Difficult Can Collect Sheet Flow Area Above Restricted

Infiltration Trench,

with Pipe: No Visual Impact Requires Roof Gutter Screens

> Flexible Location Repairs Difficult Can Collect Sheet Flow Area Above Restricted

Smaller Footprint-Larger Volume More Expensive

Tank with Holes: No Visual Impact

Direct Connection of Roof Drains

Large Volumes Possible Smaller Footprint

Easy Access for Inspection

Requires Roof Gutter Screens

More Expensive

Aboveground Options:

Pros: Cons:

Infiltration Basin: Easy Maintenance Standing Water

> Large Volumes Easily Possible Visually Unattractive

Rain Garden: Visually Part of Landscape Some Standing Water

More Intense Maintenance

D. LOCATION CONSIDERATIONS

BMP's should be located:

- over the most suitable soil on the site
- avoiding areas of wet or poorly drained soils (high water table)
- avoiding areas underlain by shallow bedrock
- outside wetlands, floodplains and environmentally sensitive areas (requires other permits)

BMP's should be located with the following minimum setbacks:

- ten (10) feet down gradient from a building basement
- one hundred (100) feet up gradient from a building basement
- ten (10) feet from property lines
- one hundred (100) feet from wells
- ten (10) feet from septic system drain fields (or per PADEP)

E. INSTALLATION GUIDELINES

- 1. BMPs shall be protected during construction to prevent sediment-laden (muddy) water from entering the facility.
- 2. Excavation for the BMP's shall be conducted in a manner that will not compact the bottom of the facility.
- 3. For subsurface facilities, the bottom of the facility shall be scarified immediately prior to the placement of geotextile.
- 4. Geotextile shall be placed in accordance with the manufacturer's specifications. Seams shall be overlapped a minimum of 16 inches.
- 5. The area of the BMP shall be fenced off during site construction. Construction equipment shall be prohibited from entering the area to avoid soil compaction.

IV. <u>INSTRUCTIONS FOR COMPLETING BMP SIZE</u> DETERMINATION WORKSHEETS

Step One

The first step in sizing any BMP is to determine the total amount of impervious surface added by your project. Impervious surface includes all proposed areas of buildings, paving, concrete and compacted gravel. See the definition of impervious surface in Section II above for more information. This value should be filled in the space provided in the table under Section V. SIZE DETERMINATION WORKSHEETS, STEP ONE.

Step Two

The second step in sizing is to choose a BMP to install. Using the information provided for each BMP in Section III and based on the amount of space available and its configuration, choose amongst the BMPs presented. Multiple BMPs may be chosen, and are encouraged, depending on the types of impervious surface proposed and how the surfaces will drain. Alternative BMPs will be considered for approval by the Township Engineer on a case-by-case basis. Indicate your choice(s) in the table provided under Section V. SIZE DETERMINATION WORKSHEETS, STEP TWO.

Step Three

The third step in sizing your chosen BMP is to read the table provided under Section V. SIZE DETERMINATION WORKSHEETS, STEP THREE. Enter the first column and find the amount of impervious that you determined under Step One, or if multiple BMPs are proposed the amount of impervious surface draining to that BMP. Move to the right until you are under the column containing the BMP that you have chosen. For most of the BMPs, the values in this space will be the length and width of your BMP. The depth and other design criteria is indicated at the top of the column. If you have chosen a "Tank with holes", the number in the space will be the amount of tanks required. The size of the tank is indicated at the top of the column.

Step Four

The fourth step in completing the worksheets is to prepare a site sketch plan of the existing and proposed features in the project area. The blank graph paper provided under Section V. SIZE DETERMINATION WORKSHEETS, STEP FOUR may be used. A smaller size sheet should not be used, larger is allowed.

V. <u>SIZE DETERMINATION WORKSHEETS</u>

STEP ONE: DETERMINE PROPOSED IMPERVI	OUS SURFACE
PROPOSED TOTAL AREA OF IMPERVIOUS SURFACE	
Includes all proposed areas of buildings, paving, concrete and	
compacted gravel that are part of the proposed work. See definition	
of "Impervious Surface".	sq. ft.

STEP TWO: SELECT BMP(s) TO BE UTIL	IZED
BMP TYPE*	(How Many)
1. Infiltration Bed	
2. Infiltration Trench	
3. Infiltration Trench with Pipe	
4. Tank with Holes	
5. Infiltration Basin	
6. Rain Garden	
TOTAL	

^{*} You are not limited to one BMP. Use of multiple BMPs is encouraged and in some cases will be needed to accommodate site topography. Multiple BMPs are also beneficial in the event one would fail or require maintenance, that the secondary BMP is in place and functional.

STEP THREE: SIZE BMP(s)

STORMWATER BMP CALCULATION FOR SIMPLIFIED APPROACH IN FRANKLIN TOWNSHIP, CHESTER COUNTY

		Undergrou	Aboveground Options				
	Infiltration Bed	Infiltration Trench	Infiltration Trench w/ Pipe	Tank with Holes	Infiltration Basin	Rain Garden	
	for 2 feet deep**	for 2 feet deep**	for 2 feet deep**	manufacturer	for 5:1 side slope	max 0.5 feet deep**	
	square	2 feet wide	and 12 inch pipe	dependent	rectangular max 0.5 feet deep**	square	
amount of impervious*	length x width	length x width	length x width	required min.	length x width	length x width	
(sq. ft.)	(ft) x (ft)	(ft) x (ft)	(ft) x (ft)	(gallons)	(ft) x (ft)	(ft) x (ft)	
500	8 x 8	26 x 2	20 x 2	311	11 x 5	7 x 7 (49 sf ⁺)	
600	8 x 8	32 x 2	24 x 2	373	12 x 5	7 x 7 (49 sf)	
700	9 x 9	37 x 2	28 x 2	435	12 x 6	8 x 8 (64 sf)	
800	10 x 10	42 x 2	32 x 2	497	14 x 6	8 x 8 (64 sf)	
900	10 x 10	47 x 2	36 x 2	559	14 x 7	9 x 9 (81 sf)	
1000	11 x 11	52 x 2	40 x 2	621	16 x 7	9 x 9 (81 sf)	
1100	11 x 11	57 x 2	44 x 2	683	16 x 8	10 x 10 (100 sf)	
1200	12 x 12	63 x 2	48 x 2	745	18 x 8	10 x 10 (100 sf)	
1300	12 x 12	68 x 2	53 x 2	808	19 x 8	10 x 10 (100 sf)	
1400	13 x 13	73 x 2	57 x 2	870	19 x 9	11 x 11 (121 sf)	
1500	13 x 13	78 x 2	61 x 2	932	20 x 9	11 x 11 (121 sf)	
1600	13 x 13	83 x 2	65 x 2	994	20 x 10	11 x 11 (121 sf)	
1700	14 x 14	89 x 2	69 x 2	1056	21 x 10	12 x 12 (144 sf)	
1800	14 x 14	94 x 2	73 x 2	1118	22 x 10	12 x 12 (144 sf)	
1900	15 x 15	99 x 2	77 x 2	1180	22 x 11	12 x 12 (144 sf)	
2000	15 x 15	104 x 2	80 x 2	1242	23 x 11	13 x 13 (169 sf)	

+ sf = square feet

For proposed impervious area between the amounts shown, interpolation is allowed. Alternative BMP dimensions/configurations may be approved on a case by case basis.

STEP FOUR: PREPARE A SITE SKETCH PLAN

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Is v	your drawing to	scale Y / N?	If yes, what is the scale?	

Any questions please contact:

Franklin Township – 610-255-5212

VI. <u>SUBMISSION/APPLICATION REQUIREMENTS</u>

The items to be submitted to the Township are:

- Stormwater Permit Application (See <u>Attachment B</u> to this Handout)
- Fee
- Worksheets (all pages from Section V above)
- Construction Detail(s) for proposed BMP(s) (See <u>Attachment A</u> to this Handout)
- Site Sketch Plan
- Operation, Maintenance and Inspection Plan and Agreement for Simplified Approach (See Attachment C to this Handout)

Basic information is needed regarding the proposed activity and the BMP(s) chosen to manage the stormwater runoff, including but not limited to the types of materials used, total impervious areas and size chosen. Completion of the Worksheets will provide the needed information. In addition, a simple Site Sketch Plan (see example) showing the location of the following features (existing and proposed) shall be submitted:

- structures, driveways and other paved surfaces (all impervious areas) with approximate dimensions in feet,
- BMPs,
- erosion control measures, and
- on-site septic system and wells (potable) showing rough proximity to infiltration facilities.

Completing the Worksheets and submitting them with the Stormwater Permit Application should provide sufficient information for review for compliance with the requirements.

VII. <u>EXAMPLE</u>

STEP ONE: DETERMINE PROPOSED IMPE	RVIOUS SURFACE
PROPOSED TOTAL AREA of IMPERVIOUS SURFACE	new gravel $30 \times 30 = 900$
Includes all proposed areas of buildings, paving, concrete and	new pole barn 24 x 36 =864
compacted gravel that are part of the proposed work. See	
definition of impervious surface.	TOTAL 1764 sq. ft.*

STEP TWO: SELECT BMP(s) TO BE UTIL	IZED
BMP NAME	(How Many)
1. Infiltration Bed	1
2. Infiltration Trench	1
3. Infiltration Trench with Pipe	
4. Tank with Holes	
5. Infiltration Basin	
6. Rain Garden	
TOTAL	2

In the above case, two separate BMP features are being utilized.

STEP THREE: SIZE BMP(s)

STORMWATER BMP CALCULATION FOR SIMPLIFIED APPROACH IN FRANKLIN TOWNSHIP, CHESTER COUNTY

		Undergrou	Aboveground Options					
	Infiltration Bed	Infiltration	Infiltration Trench	Tank with	Infiltration Basin	Rain Garden		
	inilitration Bed	Trench	w/ Pipe	Holes	Inflitration Basin	Rain Garden		
	for 2 feet deep**	for 2 feet deep**	for 2 feet deep**	manufacturer	for 5:1 side slope	max 0.5 feet deep**		
	square	2 feet wide	and 12 inch pipe	dependent	rectangular	square		
					max 0.5 feet deep**			
amount of impervious*	length x width	length x width	length x width	required min.	length x width	length x width		
(sq. ft.)	(ft) x (ft)	(ft) x (ft)	(ft) x (ft)	(gallons)	(ft) x (ft)	(ft) x (ft)		
500	8 x 8	26 x 2	20 x 2	311	11 x 5	7 x 7 (49 sf ⁺)		
600	8 x 8	32 x 2	24 x 2	373	12 x 5	7 x 7 (49 sf)		
700	9 x 9	37 x 2	28 x 2	435	12 x 6	8 x 8 (64 sf)		
800	10 x 10	42 x 2	32 x 2	497	14 x 6	8 x 8 (64 sf)		
900	10 x 10	47 x 2	36 x 2	559	14 x 7	9 x 9 (81 sf)		
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1100	11 x 11	57 x 2	44 x 2	683	16 x 8	10 x 10 (100 sf)		
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1300	12 x 12	68 x 2	53 x 2	808	19 x 8	10 x 10 (100 sf)		
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1700	14 x 14	89 x 2	69 x 2	1056	21 x 10	12 x 12 (144 sf)		
1800	14 x 14	94 x 2	73 x 2	1118	22 x 10	12 x 12 (144 sf)		
1900	15 x 15	99 x 2	77 x 2	1180	22 x 11	12 x 12 (144 sf)		
2000	15 x 15	104 x 2	80 x 2	1242	23 x 11	13 x 13 (169 sf)		

For proposed impervious area between the amounts shown, interpolation is allowed. Alternative BMP dimensions/configurations may be approved on a case by case basis.

STEP FOUR: SITE SKETCH PLAN

Plan shall contain the following items:

- Lot configuration and total acreage.
- Existing features: buildings, driveways, parking areas, woodland, streams, etc.
- Proposed impervious surfaces: driveways, parking areas including dimensions.
- Names of owners immediately adjacent to the project site location.
- Locations of existing streets or easements, railroads, drainage facilities.
- Proposed erosion and sedimentation control facilities.
- Location of watercourses, wetlands, and riparian stream buffer located within the property or one hundred (100) feet from the project site location.
- Distances between the proposed activity and existing features, property lines, on-lot sewage facilities, wells and watercourses.

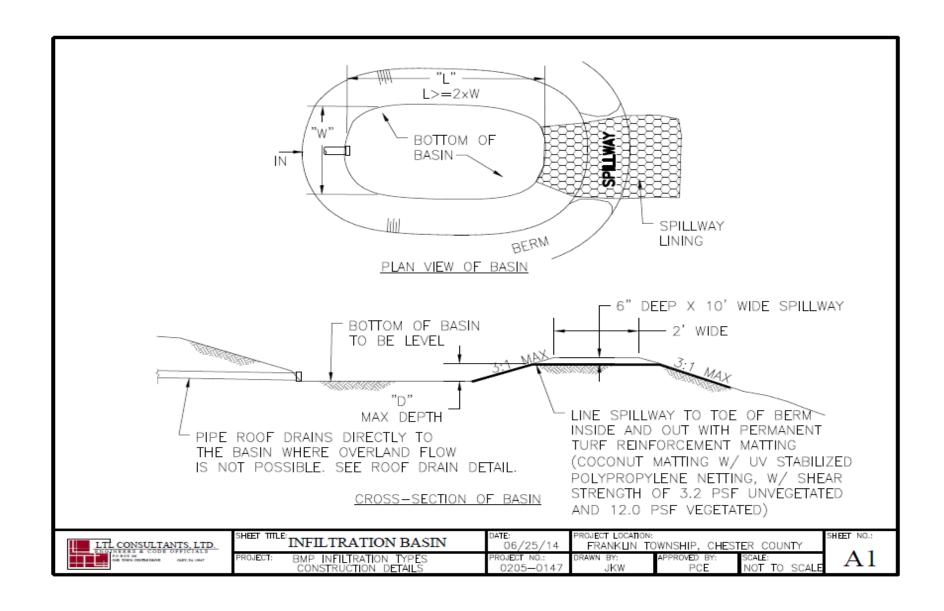
Well

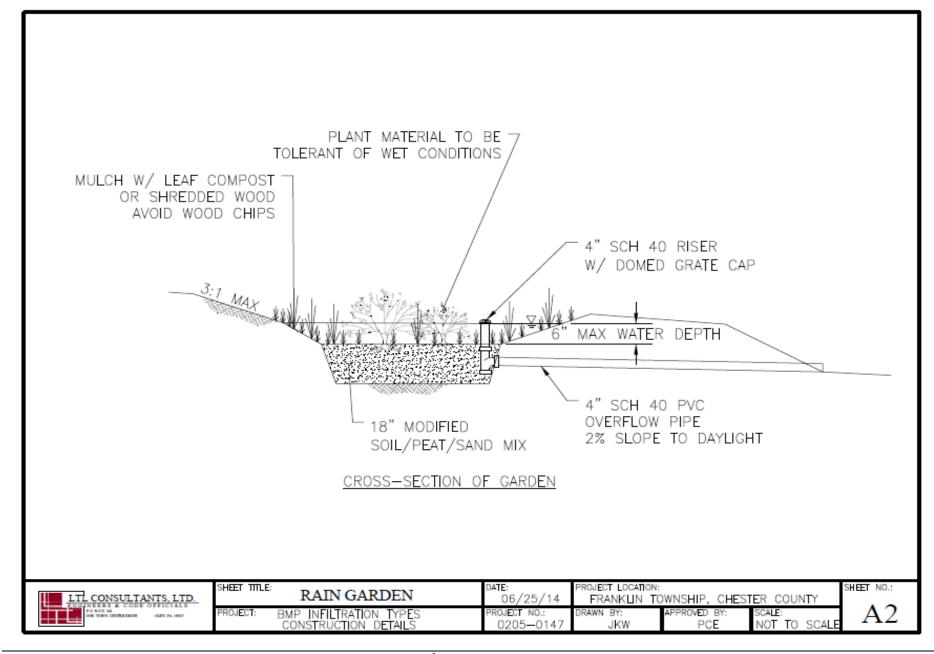
Plan prepared by Joe Momeowner

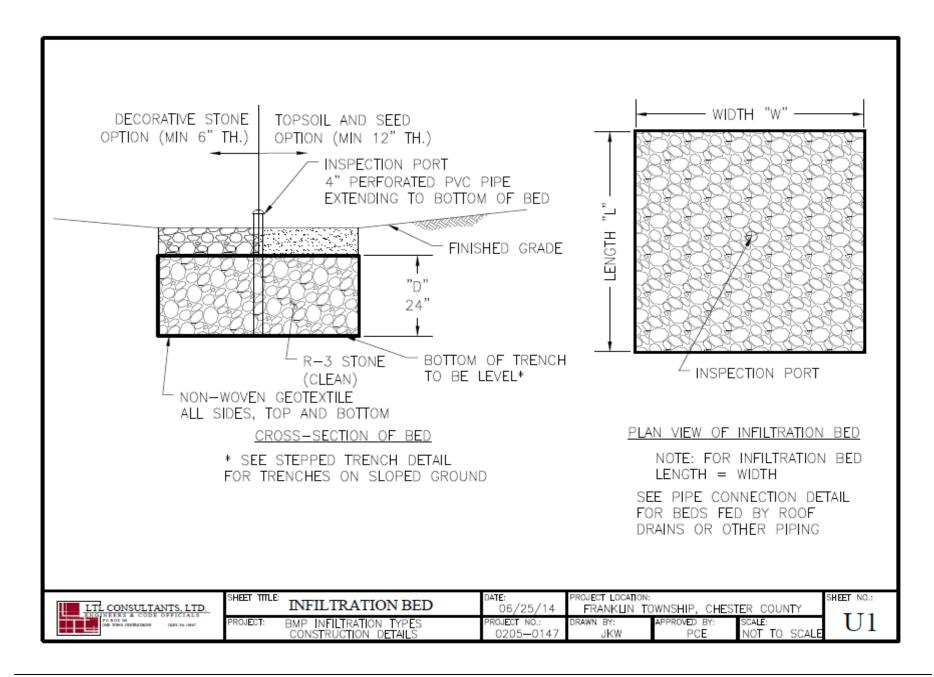
Date Month XX, 20XX

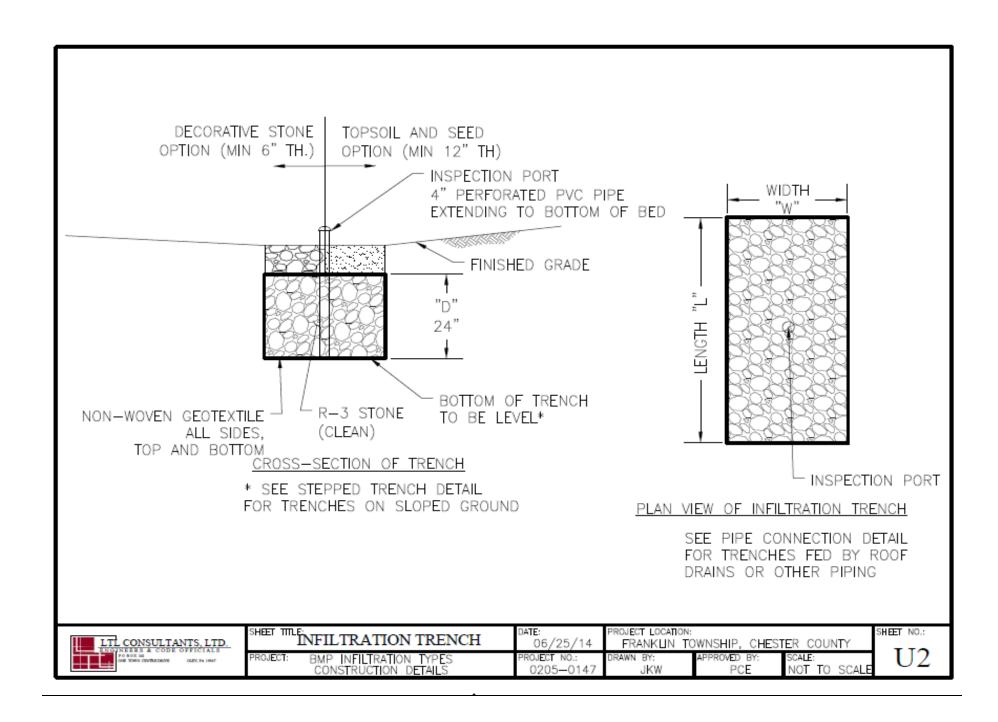
Attachment A

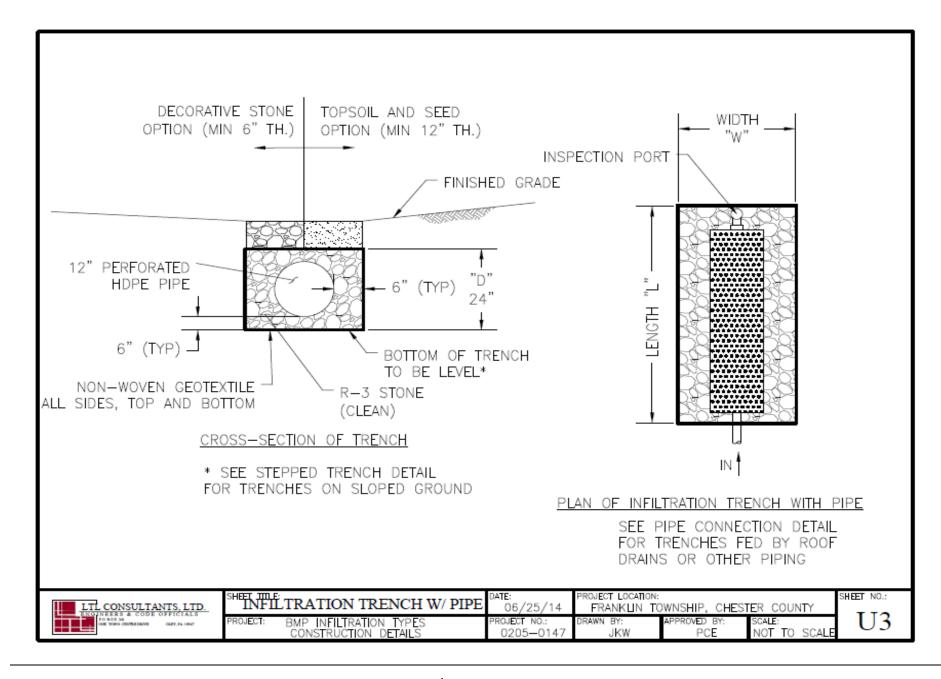
Construction Details for BMPs

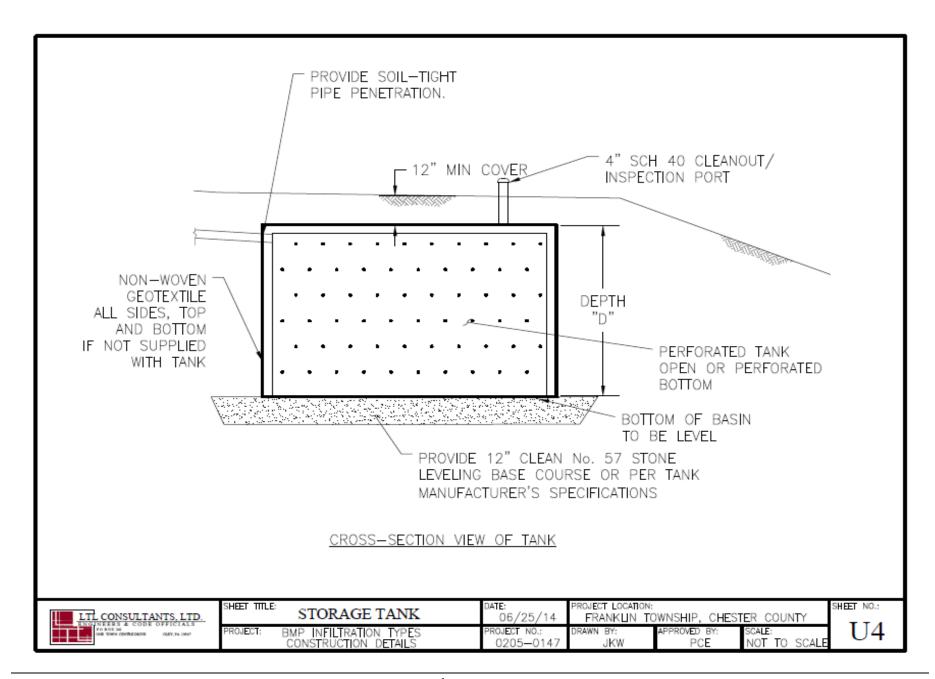


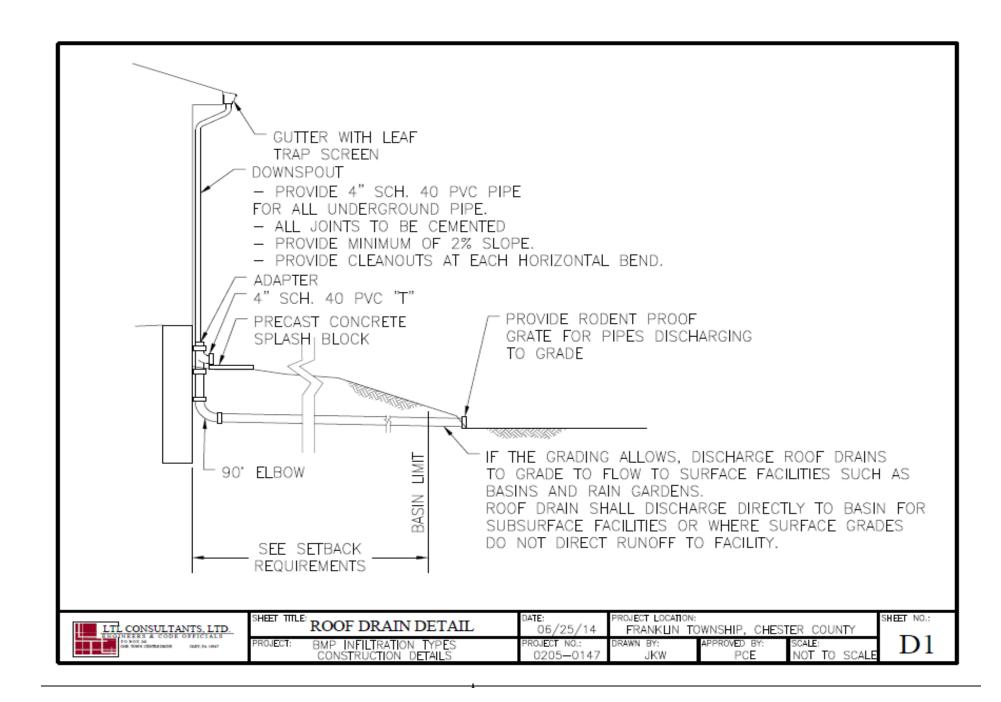


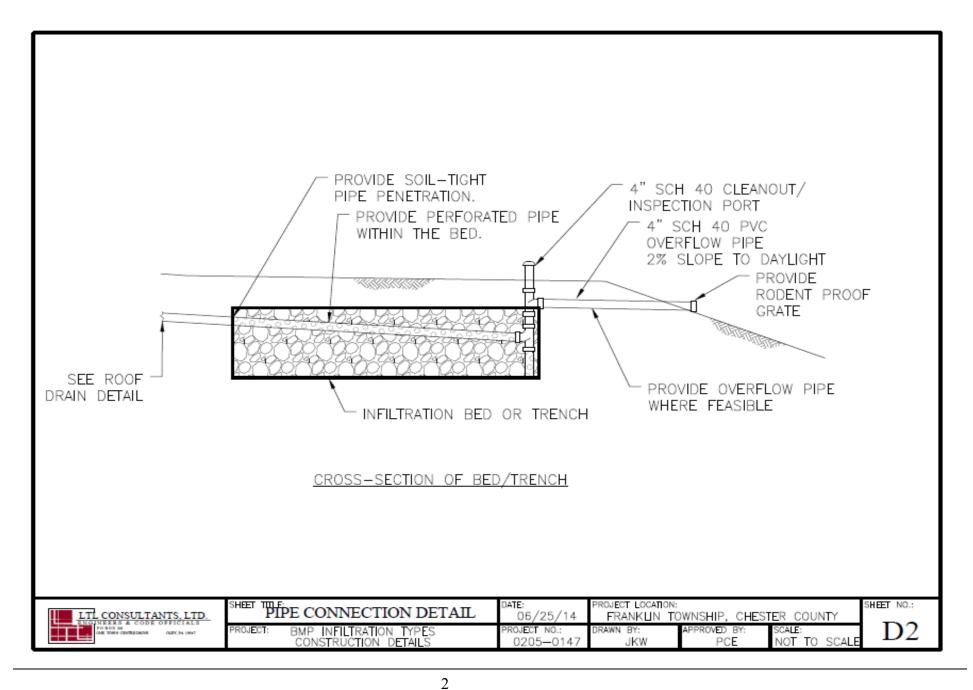


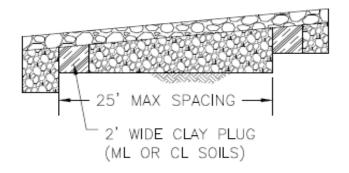












LONGITUDINAL SECTION OF TRENCH

TO BE USED FOR TRENCHES WHERE THE FINISHED LONGITUDINAL GRADE OVER THE TRENCH IS GREATER THAN 4%

LT	CONSULTA INTERS & CODE PO BOX 30 ONE TOWN CENTRADADE	NTS, LTD.
	ONE TOWN CONTRACTORNS	OGEY, Pa. 18647

Г	SHEET TILE	TEPPED TRENCH DETAIL	DATE: 06/25/14	PROJECT LOCATION FRANKLIN 1		TER COUNTY	SHEET NO.:
	PROJECT:	BMP INFILTRATION TYPES CONSTRUCTION DETAILS	PROJECT NO.: 0205-0147	DRAWN BY: JKW	APPROVED BY: PCE	SCALE: NOT TO SCALE	D3

Attachment B

Franklin Township Stormwater Permit Application

STORMWATER PERMIT APPLICATION

FRANKLIN TOWNSHIP, Chester County, Pennsylvania

		For Township Use:	
		Date of Receipt:	
		Fee Received:	
Name of Property Owner (s):			
Street Address:			
City:	Zip:	Phone:	
E-mail address (optional):			
Name of Contractor:			
Street Address:			
City:	Zip:	Phone:	
E-mail address (optional):			
Name of Architect/Engineer/Surveyor :			
Company;			
Street Address:			
City:	Zip:	Phone:	
E-mail address (optional):			
Project Location and Address (may state s	ame as owner):		
Proposed Earth Disturbance (in acres or so	quare feet):		
Proposed Regulated Impervious Surface (impervious includes paving, buildings, compared to the	ompacted gravel ar		
Subdivision or land development plan if a	pplicable:	ulan data (lant navisa d).	
plan name: Brief Description of Proposed Work:		plan date (last revised):	
and contained within the submittal pro	vided is true, com	neir knowledge and belief, all information listed about rect and complete. I hereby agree to accept and about approval pertaining to this permit (if any) and Frank	de
Signature of Applicant:		Date:	

REQUIRED SUBMITTAL INFORMATION:

- 1. this completed application, signed by the applicant
- 2. fees shall be paid, per Updated Fee Resolution Stormwater Management Submissions
- 3. three (3) copies, Simplified Approach Worksheets & Site Sketch Plan OR Stormwater Mgmt. Plan
- 4. two (2) signed, notarized copies of the Operation, Maintenance and Inspection Plan & Agreement

P:\franklin\Stormwater Ordinance\simplified approach\Stormwater Permit Application 081314 rev 101922.doc

Attachment C

Form of

Operation, Maintenance and Inspection Plan and Agreement for Simplified Approach

FRANKLIN TOWNSHIP

SIMPLIFIED APPROACH STORMWATER BEST MANAGEMENT PRACTICES

OPERATION, MAINTENANCE, AND INSPECTION PLAN AND AGREEMENT

THIS AGREEMENT, made and entered into this	day of	, 20, by and
between		
Township, 20 Municipal Lane, PO Box 118, Kemblesv		
(hereinafter "Municipality").		
WITN	ESSETH	
WHEREAS, the Landowner is the owner of c	ertain real property by virtue	e of a deed of conveyance
recorded in the land records of Chester County, Pennsy	ylvania, at Deed Book	and Page,
(hereinafter "Property"); and		
WHEREAS, the Landowner recognizes that t	he stormwater management	best management practices
or BMPs (hereinafter referred to as "BMP" or "BMP(s)") located on the Property a	t
	(address of Property whe	ere BMP is located) must be
inspected and maintained; and		
WHEREAS, the Municipality and the Landov	wner, for itself and for its ad	lministrators, executors,
successors, heirs, and assigns, agree that the health, sat	fety, and welfare of the resid	ents of the Municipality and
the protection and maintenance of water quality require	e that on-site BMP(s) be con	structed and maintained on
the Property; and		
WHEREAS, for the purposes of this Agreeme	ent, the following definitions	s shall apply:
BMP – "Best Management Practice;" activitie	s, facilities, designs, measur	es or procedures used to
manage stormwater impacts from land development, to	protect and maintain water	quality and ground water
recharge and to otherwise meet the purposes of the Mu	ınicipality's Stormwater Mar	nagement Ordinance,
including, but not limited to infiltration trenches, dry w	vells, bioretention, rain garde	ens, permeable paving, rain
barrels and cisterns, etc. The BMP(s) are permanent ap	opurtenances to the Property;	and

Conveyance – As specifically identified in the Simplified Approach Site Sketch Plan (herein after "Plan"), a man-made, existing or proposed facility, structure or channel used for the transportation or transmission of stormwater from one place to another, including pipes, drainage ditches, channels and swales (vegetated and other), gutters, and like facilities or features. The conveyances identified in the Plan are permanent appurtenances to the Property; and

WHEREAS, the Municipality requires that the BMP(s) and conveyances as shown on a Plan and in accordance with the sizing calculations found on the Simplified Approach Worksheets (herein after "Worksheets") be constructed by the Landowner; the BMP(s) shall further be maintained by the Landowner, its administrators, executors, successors, heirs, and assigns in accordance with the associated operation and maintenance requirements included herein. The Plan and Worksheets are attached hereto and incorporated herein together as Exhibit "A" hereto; and

WHEREAS, the Municipality requires that stormwater management BMP(s) be constructed and adequately inspected, operated and maintained by the Landowner, its administrators, executors, successors, heirs, and assigns, in accordance with the following maintenance requirements:

1. Infiltration Trenches

- a. At least twice a year and after significant rainfall events the Landowner is to inspect the infiltration trench and remove any accumulated debris, sediment and invasive vegetation.
- b. Vegetation along the surface of an infiltration trench is to be maintained in good condition, and any bare spots are to be revegetated as soon as possible.
- c. Vehicles are not to be parked or driven on an infiltration trench, and care is to be taken to avoid excessive compaction by mowers.
- d. Any debris, such as leaves blocking flow from reaching an infiltration trench, is to be routinely removed.

2. Rain Garden

- a. Any debris, such as leaves blocking flow from reaching or infiltrating through a rain garden, is to be routinely removed.
- b. Pruning and weeding are required as needed including removal of invasive species, especially while vegetation is being established for a rain garden.
- c. Mulch cover is to be maintained in a rain garden, re-spread and replaced as needed to prevent erosion, reduce weed growth and assist with plant survival, without restricting the infiltration of stormwater. Once every 2 to 3 years the entire area may require mulch replacement.

- d. At least twice a year the Landowner is to inspect the rain garden for sediment buildup, ground cover and vegetative conditions and make any repairs as needed.
- e. Watering of the rain garden is required as needed, including during periods of extended dry weather and drought.
- f. Trees and shrubs in a rain garden are to be inspected at least twice per year by the Landowner to evaluate their health.
- g. Any deficiency in the features of the rain garden shall be restored to the original design specifications.

3. Dry Wells

- a. Dry wells are to be inspected by the landowner at least four (4) times a year and after significant rainfalls, and debris, trash, sediment, and any other waste material need to be removed and disposed of at suitable disposal or recycling sites and in compliance with local, state, and federal waste regulations.
- b. For dry wells, gutters are to be regularly cleaned out and ensure that proper connections are maintained to facilitate the effectiveness of the dry well.
- c. The filter screen for downspouts or roof gutters which intercepts roof runoff and conveys it to the dry well must be cleaned and replaced as necessary.
- d. Dry wells that are damaged are to be fixed or replaced within two (2) weeks of being damaged.
- e. If an intermediate sump box exists in conjunction with a dry well, it must be cleaned out at least once per year.

4. Rain Barrels and Cisterns

- a. Rain Barrels and Cisterns are to be cleared of debris routinely at least every three (3) months and after significant storms to allow stormwater from gutters to enter them.
- b. Gutters that directly convey rain water to dry wells, rain barrels, and cisterns are to be routinely cleared of trash and debris at least every three (3) months and after significant rainfall events.
- c. Rain Barrels and cisterns should be routinely emptied to allow for storage of additional rain water.
- d. Overflow outlets from rain barrels and cisterns must be kept free and clear of debris.
- e. Rain Barrels and cisterns that are damaged are to be fixed or replaced within two (2) weeks of being damaged.

NOW, THEREFORE, in consideration of the foregoing promises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto, intending to be legally bound hereby, agree as follows:

- 1. The foregoing recitals to this Agreement are incorporated as terms of this Agreement and obligations of the Landowner as if fully set forth in the body of this Agreement.
- 2. The Landowner shall construct the BMP(s) in accordance with the specifications identified in the Plan and Worksheets.
- 3. The Landowner shall inspect, 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 inspection and maintenance requirements outlined in this Agreement.
- 4. The Landowner hereby grants permission to the Municipality, its authorized agents and employees, to enter upon the Property from the public right-of-way or roadway, at reasonable times and upon presentation of proper identification, to inspect the BMP(s) whenever it deems necessary for compliance with this Agreement and the Municipality's Stormwater Ordinance. Whenever possible, the Municipality shall notify the Landowner prior to entering the Property.
- 5. The Landowner acknowledges that, per the Municipality's Stormwater Ordinance, it is unlawful, without written approval of the Municipality, to:
 - a. Modify, remove, fill, landscape, alter or impair the effectiveness of any BMP or conveyance that is constructed as part of the Plan;
 - Place any structure, fill, landscaping, additional vegetation, yard waste, brush cuttings, or other waste
 or debris into a BMP or conveyance that would limit or alter the functioning of the BMP or
 conveyance;
 - Allow the BMP or conveyance to exist in a condition which does not conform to the Plan or this Agreement; and
 - d. Dispose of, discharge, place or otherwise allow pollutants including, but not limited to, deicers, pool additives, household chemicals and automotive fluids to directly or indirectly enter any BMP or conveyance.
- 6. 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 Landowner shall be in violation of this Agreement and the Landowner agrees that the Municipality or its representatives may, in addition to and not in derogation or diminution of any remedies available to it under the Stormwater Ordinance or other statutes, codes, rules or regulations, or this Agreement, enter upon the Property and take whatever action is deemed necessary to maintain said BMP(s). 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.

- 7. 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 15 days of delivery of an invoice from the Municipality. Failure of the Landowner to make prompt payment to the Municipality may result in enforcement proceedings, which may include the filing of a lien against the Property, which filing is expressly authorized by the Landowner.
- 8. 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.
- 9. The Landowner, its executors, administrators, assigns, heirs, and other successors in interests, hereby release and shall release the Municipality, its employees, agents and designated representatives from all damages, accidents, casualties, occurrences or claims which might arise or be asserted against the Municipality and/or its said employees, agents or representatives, arising out of the construction, presence, existence, or maintenance of the BMP(s) either by the Landowner or Municipality. In the event that a claim is asserted or threatened against the Municipality, its employees, agents or designated representatives, the Municipality shall notify the Landowner and the Landowner shall defend, at his own expense, any claim, suit, action or proceeding, or threatened claim, suit, action or proceeding against the Municipality or, at the request of the Municipality, pay the cost, including attorneys' fees, of defense of the same undertaken on behalf of the Municipality. If any judgment or claims against the Municipality, its employees, agents or designated representatives shall be allowed, the Landowner shall pay all damages, judgments or claims and any costs and expenses incurred by the Municipality, including attorneys fees, regarding said damages, judgment or claims.
- 10. The Municipality may enforce this Agreement in accordance with its Stormwater Ordinance, at law or in equity, against the Landowner for breach of this Agreement. Remedies may include fines, penalties, damages or such equitable relief as the parties may agree upon or as may be determined by a Court of competent jurisdiction. Recovery by the Municipality shall include its reasonable attorneys fees and costs incurred in seeking relief under this Agreement.
- 11. Failure or delay in enforcing any provision of this Agreement shall not constitute a waiver by the Municipality of its rights of enforcement hereunder.
- 12. The Landowner shall inform future buyers of the Property about the function of, operation, inspection and maintenance requirements of the BMP(s) prior to the purchase of the Property by said future buyer, and upon purchase of the Property the future buyer assumes all responsibilities as Landowner and must comply with all components of this Agreement.

13. This Agreement shall inure to the benefit of and be binding upon, the Municipality and the Landowner, as well as their heirs, administrators, executors, assigns and successors in interest.				
	of the Recorder of Deeds of the County of Chester, Pennsylvania, ne Property and/or equitable servitude, in perpetuity.			
ATTEST:	For the Municipality:			
	, a Notary Public in and for the County and State aforesaid,			
	_ day of, 20, do hereby certify that			
	whose name(s) is/are signed to the foregoing Agreement			
	, 20, has acknowledged the same			
before me in my said County and State.				
GIVEN UNDER MY HAND THIS	day of			
NOTARY PUBLIC	(SEAL)			

ATTEST:	For the Landowner:			
I,	, a Notary Publ	ic in and	for the Cour	aty and State aforesaid,
whose commission expires on the	day of		, 20	_, do hereby certify tha
	whose name(s)	is/are si	gned to the fo	oregoing Agreement
bearing date of the day of _		, 20	, has ackno	owledged the same
before me in my said County and State.				
GIVEN UNDER MY HAND THIS	day of		, 2	
NOTARY PUBLIC	(SEAL)			

(approved Plan and Worksheets)

ORDINANCE APPENDIX B

CONSERVATION DESIGN AND LOW IMPACT DEVELOPMENT SITE DESIGN

CONSERVATION DESIGN & LOW IMPACT DEVELOPMENT SITE DESIGN

INTRODUCTION

Traditional approaches to land development often radically alter natural hydrologic conditions by constructing collection and conveyance systems that are designed to remove runoff from a site as quickly as possible and capture it in a detention basin. This approach has often led to the degradation of water quality, reduced groundwater recharge, and increased volumes of stormwater runoff, as well as the imposition of expenditures to detain and manage concentrated runoff downstream. Fortunately, the study of hydrology (the way rainfall interacts with slopes, soils, and vegetation) offers a number of alternative approaches that respect the natural environment and ultimately save money. The accompanying ordinance encourages the use of Conservation Design (CD), Low Impact Development (LID), and green infrastructure to preserve, restore and maintain predevelopment hydrology on sites with planned land disturbance and development activity. The site design practices and recommendations included in this appendix provide a framework to assist developers, municipal planning commission members, and others involved in local land use planning with designing and implementing development that minimizes the impacts of stormwater runoff to local streams.

Conventionally designed development often divides a parcel into buildable lots, streets, and parking areas, while only keeping traditionally undevelopable areas (wetlands, floodplains, steep slopes) as open space. Existing site hydrology and natural features are often an afterthought in locating and designing stormwater systems. In contrast, Conservation Design and Low Impact Development practices strive to minimize landscape and natural feature disturbance to maintain a site's natural drainage patterns and flow conditions.

CD is a holistic site design process that aims to protect and maintain a site's unique natural, historic, and cultural features. CD emphasizes the protection of key land and environmental resources to maintain site hydrology; preserves and/or enhances significant concentrations of natural resources, open space, wildlife habitat, biodiversity corridors, and greenways (interconnected open space); incorporates unique natural, scenic, and historic site features into the configuration of the development; preserves the integral characteristics of the site as viewed from adjacent roads; and ensures flexibility in development design to meet community needs for complementary and aesthetically pleasing development.

LID consists of site design approaches and small-scale stormwater management practices that promote the use of natural systems for infiltration, evapotranspiration (returning moisture to the atmosphere through vegetation), and the harvest and reuse of rainwater. LID addresses the root cause of water quality impairment by managing stormwater as close to the point of generation as possible.

Together, CD and LID offer unique opportunities to balance the "carrying capacity" of the land, the human demands on the land (including land economics), and the design

constraints and opportunities of a site, which together allow for a dynamic interaction between people and the natural world. The goal is to produce a design that balances the demands of human use (scale, pattern, autonomy, privacy, views, etc.) with the requirements for a sustainable landscape (reduction in land fragmentation and use conflicts, preservation of watershed hydrology, protection of wildlife corridors and species diversity, conservation of natural resources, etc.). CD and LID are integrated development processes that respect natural site conditions and attempt to replicate and/or improve the natural hydrology of a site. The abundance of Chester County's streams and headwater areas, agricultural land (consisting of prime agricultural soils), unique aquatic and terrestrial habitat, and scenic and historic resources, argue for design approaches responsive to conservation principles.

This appendix provides information on the principles, processes, and common practices of CD and LID to assist designers and planners to achieve site designs that best maintain preconstruction stormwater runoff conditions, protect site amenities, and preserve natural resources. Components of this appendix include:

- Implementation Challenges
- Design Principles and Techniques;
- Design Process;
- Design Practices;
- Benefits of Conservation Design;
- Conclusion; and
- References.

IMPLEMENTATION CHALLENGES

Various techniques exist to accomplish the purposes of CD and LID (see the list of Design Practices starting on Page 12). However, many municipal codes currently prevent creative site design and engineering by requiring mechanical "by the numbers" development of sites. Restrictive zoning, subjective economic concerns, jurisdictional preferences, and personal tastes determine how a site is developed and how stormwater will be managed. These can pose significant impediments to the use of CD and LID. Such issues, left unaddressed, will "fail to comprehensively maintain predevelopment ecological functions at sites and fail to prevent development impacts to overall watershed ecological health" (Low Impact Development, Prince George's County, Maryland). Several examples of practices that may be limited by municipal zoning or subdivision and land development ordinances (SALDO) are presented in the Design Practices section to assist municipalities, developers, and landowners to understand how to improve the development design process to allow or require CD and LID practices.

Dialogue between developers, municipalities, and planners should be encouraged early in the design process to evaluate all potential site design options. Discussions on proposed site layouts often do not occur until after the submission of preliminary/final developments plans. At this point, substantial time and expense have already gone into the development of these plans, resulting in the reduced preference to make substantial changes or re-

designs. Thus, discussions of potential site considerations between landowners, developers, municipalities, and planners early in the design process is critical to ensuring CD and LID practices are incorporated. While the Municipalities Planning Code prevents municipalities from mandating the submission of sketch plans unless they waive preliminary or final plan requirements, voluntary submission of these plans should be encouraged. Other options also exist; for example, municipalities could mandate the sketch plan but permit a one-step preliminary/final plan submission. Moreover, this site design process emphasizes the importance of dialogue. Remaining open minded to alternative site designs, including flexibility of area and bulk standards, building types, lot sizes, and even construction standards, among others, may achieve multiple benefits, not the least of which is the protection of site hydrology and improved management of stormwater.

One of the greatest challenges to reducing the impact of development is to control the volume of stormwater runoff generated from a site. Typically, a development's increase in impervious surface contributes to reduced infiltration, evapotranspiration, and attenuation of stormwater runoff. This can result in reduced groundwater levels and lower stream baseflow during periods of dry weather and higher stream flows during and after precipitation events (which can result in increased occurrences of flooding and the erosion and destabilization of downstream streambanks). CD and LID techniques strive to prevent these problems by encouraging land development site designs that minimize post-development runoff rates and volumes and minimize needs for artificial conveyance and storage facilities. This process attempts to incorporate the desired land development into the natural hydrologic landscape in a manner that maintains and utilizes existing site hydrology features and functions to minimize generation of new stormwater runoff, thus avoiding the cumulative environmental impacts often associated with land development and reducing the need for and size of constructed stormwater facilities.

Site design practices include preserving natural drainage features, minimizing impervious surface area, reducing the hydraulic connectivity of impervious surfaces, and protecting natural depression storage. Applying this site design process helps maintain site hydrology and manage stormwater by:

- minimizing the generation of stormwater runoff (achieved by designing to the land, considering site drainage patterns and infiltration characteristics, reducing grading and compaction, and considering scale and placement of buildings); managing stormwater as close to the point of generation as possible (by disconnecting impervious surfaces, rather than collecting storm flows from all such surfaces, and distributing such flows to landscaped-based BMPs);
- providing open and vegetated channel conveyance (as needed to treat water quality, reduce velocity and infiltrate); and
- managing remaining conveyed stormwater in common open space (as needed to disperse low velocity storm flows, treat water quality, infiltrate, and release).

A well-designed site will contain a mix of all these features.

In some communities, the use of CD and LID will require a paradigm shift in how we think

about and regulate development; community education, be that of residents, developers, engineers, or community officials, will be important if we are to achieve the multiple benefits offered through the use of these alternative design principles and practices.

DESIGN PRINCIPLES AND TECHNIQUES

CD and LID place significant emphasis on maintaining, mimicking, or improving the natural hydrology of land undergoing development. A site's natural hydrology refers to the drainage patterns and infiltration characteristics existing on a site. With CD and LID, effort is placed on development design that minimizes the generation of stormwater runoff. This can be achieved by designing to the land, i.e., giving consideration to site drainage patterns and site infiltration characteristics, reducing grading and compaction, and carefully considering the placement and scale of streets and buildings. Consideration of the natural drainage patterns of a site and the capacity of the site to infiltrate water are central to the concept of managing stormwater on-site.

Where stormwater is generated, the next step involves managing such storm flows as close to the source of generation as possible. This is achieved by disconnecting impervious surfaces and distributing storm flows to green infrastructure. Disconnection allows for management near the source of generation rather than the traditional approach of conveying all storm flows to a central "catch and release" facility (expensive to build and expensive to maintain). Where distributed management practices common to LID are insufficient to accommodate storm flows, CD encourages the use of open channel conveyance systems, such as vegetated channels, bioswales, and wet swales, that further manage storm flows in common open space. This multi-management approach (or four-step management process) – minimizing the generation of stormwater, landscape-based management near the point of generation, open channel conveyance, and management in common open space – is a clear advantage of CD (see Figure 1).

It should also be noted that CD is quite effective on sites with limited infiltration capability, principally, because the four-step management process builds redundancies into runoff management, seeking to achieve disconnection, using LID, providing open channel conveyance, and making use of common open space where other tools and techniques are insufficient on their own.

Figure 1

Conservation Design Principles

Maintaining Site Hydrology and Managing Stormwater

Step 1 – Minimize Generation of Stormwater Runoff through Development Design: Achieved by Designing to the Land & Optimizing the Cumulative Benefits of the Site's Natural Hydrologic Features

- Consider Natural Drainage Patterns and Infiltration Characteristics
- Reduce Grading and Compaction by Utilizing Natural Topography
- Consider Placement and Scale of Streets and Buildings
- Minimize Land Disturbance both Surface and Subsurface
- Minimize Cumulative Area to be Covered by Impervious and Compacted Surfaces

Step 2 – Manage Stormwater as Close to the Point of Generation as Possible using Distributed LID Practices

- Take Advantage of the Natural Hydrologic Landscape to Achieve Runoff Controls
- Disconnect Impervious Surfaces
- Distribute Storm Flows to Green Infrastructure

Step 3 – Utilize Open Channel Conveyance (as needed)

Step 4 – Management in Common Open Space (or as conveyed to other green infrastructure practices)

- Integrate Management Facilities into the Natural Environment
- Incorporate Natural Site Features into the Design
- Create Site Amenities that can be Enjoyed by Residents and Provide Community Aesthetic

No single approach is appropriate for all sites; rather, CD is a process by which to assess the appropriateness of different techniques (LID or otherwise) for different sites. The key to making CD and LID work is a willingness on the part of all involved to be flexible in how a particular site is developed. With this in mind, CD makes it possible to achieve multiple objectives, both in terms of site design (controlling peak flows, reducing total volume, and enhancing water quality), as well as those related to community (protecting natural resources, preserving habitat, interconnecting open space, providing greenways, and achieving better designed communities). (See Figure 2)

Figure 2 Common Objectives Of Conservation Design

Conservation Design practices are intended to protect environmental resources, preserve open space, and manage stormwater by respecting natural drainage patterns and infiltration characteristics.

Common Objectives

Site Design Objectives	Community Objectives
Maintain Natural Drainage Patterns	Community Commons/Greens
Preserve Water Budget and Natural Infiltration	Lots that Front or Back to Open Space
Minimize Grading – Design to the Site (Minimum Disturbance, Minimum Maintenance)	"Neighborhoods" within Neighborhoods
Reduce Need for Traditional Structural Stormwater Management Facilities (incorporate the use of Green Infrastructure)	Options for a Variety of Housing Types/Lot Sizes
Reduce Impervious Cover	Incorporate Unique Site Features into the Design (Natural/Scenic/Historic)
Preserve Natural Features & Habitat (Contiguous Open Space) Roads	Preserve Characteristics of Site as Viewed from Adjoining

Provide Open Space Linkages with Adjacent Parcels

Provide Trail Systems and/or Alternative Transportation Options

CD and LID involve identifying and prioritizing natural resources and natural and constructed hydrologic features and incorporating such features into the overall site design to take advantage of their efficiencies in hydrologic performance, their cost efficiencies of reducing the need for or size of constructed stormwater facilities, and their aesthetic amenities. Techniques to apply Figure 1 design principles are presented in Table 1.

Table 1 – Site Design Process Principles and Techniques

Conservation Design Principles	Select Design Techniques
Timespies	
Development Design that Minimizes the Generation of Stormwater Runoff: Achieved by Designing to the Land & Optimizing the Cumulative Benefits of the Site's Natural Hydrologic Features	 Maintain the natural soil structure and vegetative cover that are often critical components of maintaining the hydrologic functions of natural infiltration, bioretention, flow attenuation, evapotranspiration, and pollutant removal. Strive to achieve multiple stormwater objectives (i.e., maintain hydrologic regime including both peak rate and total volume control, water quality control, and temperature control. Protect, or improve, natural resources to reduce the needs for environmental mitigation, future environmental restoration, and cumulative flow and water quality impacts of unnecessary disturbances within the watershed system. Minimize the disturbance of natural surface and groundwater drainage features and patterns, discharge points and flow characteristics, natural stream channel stability, and floodplain conveyance, etc. Minimize the size of individual impervious surfaces. Separate large impervious surfaces into smaller components. Avoid unnecessary impervious surfaces into smaller components. Prioritize on-site hydrologic features (i.e., for protection, improvement, utilization, or alteration) and natural site drainage patterns and infiltration characteristics and consider them for the cornerstones of the conceptual site design. Prevent rather than minimize. Reduce grading and compaction by applying selective grading design methods to provide final grading patterns that preserve existing topography where it most benefits natural hydrologic functions and where needed; this results in graded areas that evenly distribute runoff and minimize concentrated runoff flows. Consider the scale and placement of buildings and other infrastructure to minimize impact to natural hydrologic features. Incorporate unique natural, scenic, and historic site features into the configuration of the development, and ensure flexibility in development design to meet community needs for complementary and aesthetically pleasing development.<!--</th-->

Conservation Design Principles	Select Design Techniques
Managing Stormwater as Close to the Point of Generation as Possible using Distributed LID Practices	 Incorporate natural hydrologic features that have been selected for their available capacity and function into the overall system of site runoff controls (protect their hydrologic and natural ecosystem functions without directing additional stormwater to them). Disconnect runoff from one impervious surface to another. Incorporate LID (or similar) green infrastructure and distribute storm flows to: Reduce runoff; Manage stormwater at or as close to the point of generation as possible; Disconnect discharges from streets and municipal storm sewer systems; and Select and design BMPs to give first priority to nonstructural and vegetated (landscape-based) BMPs, second priority to surface structural BMPs, third priority to subsurface structural BMPs, and design subsurface BMPs as shallow as possible.
Open Channel Conveyance (as needed)	 Convey concentrated flows by means of innovative pervious vegetated channels rather than piped systems Provide open channel conveyance, as needed, to: Treat water quality; Reduce runoff velocity; and Promote infiltration and evapotranspiration of runoff.
Management in Common Open Space (or as conveyed to other green infrastructure practices)	 Rely on natural processes within the soil mantle and the plant community to the maximum extent practicable. Manage remaining conveyed stormwater from small storms in common open space areas to achieve multiple objectives: Disperse storm flows and reduce velocity; Treat water quality; and Promote infiltration and evapotranspiration of runoff. Provide for appropriate conveyance to retention or detention storage facilities as needed for flows from large storm events (as needed). Maintain open space functions consistent with common area uses (passive recreation, on-site sewage management, scenic vistas, etc). Management practices should be integrated into the natural environment and be site amenities.

The concepts presented in Figures 1 and 2, and further described in Table 1, are graphically presented below in Figures 3.1, 3.2. 3.3, 3.4, 3.5, and 3.6.

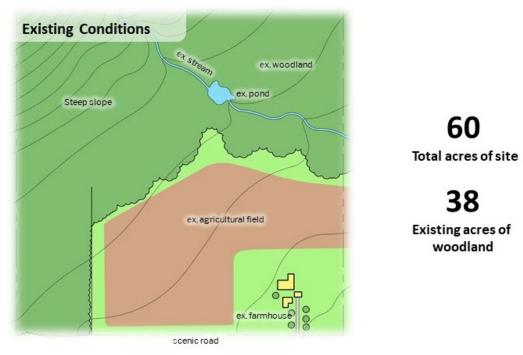


Figure 3.1: Existing conditions on a 60-acre, majority wooded parcel

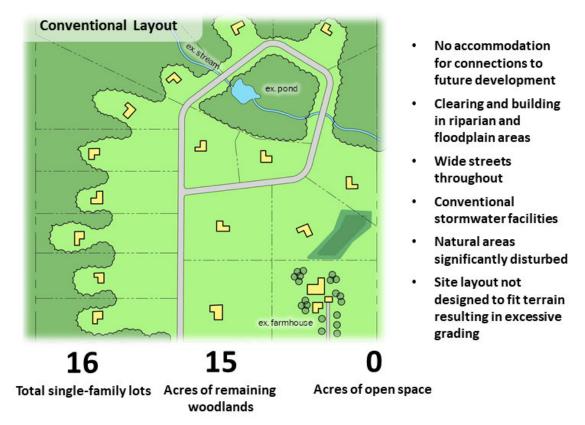
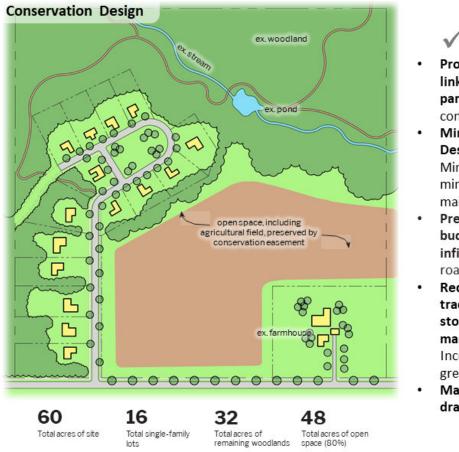
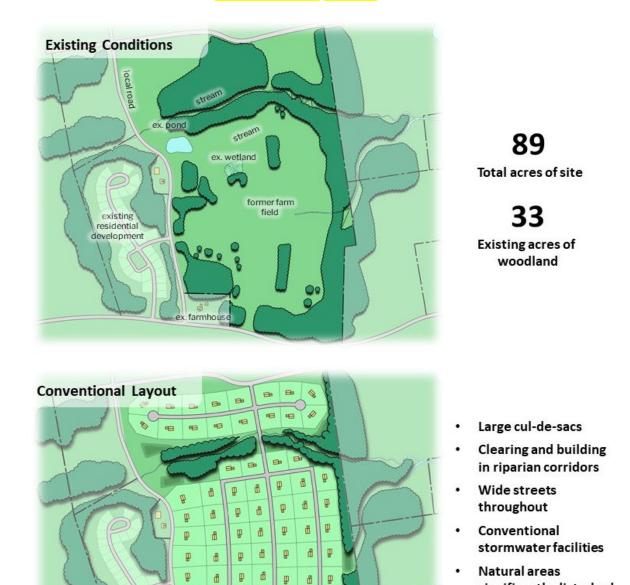


Figure 3.2: Example of how the above parcel may be developed using conventional layout methods



- RECOMMENDED
- Provides open space linkages with adjacent parcels. Maintain contiguous open space
- Minimizes grading:
 Design to the site
 Minimum disturbance,
 minimum
 maintenance
- Preserves water budget and natural infiltration Narrow roads, smaller lots
- Reduces need for traditional structural stormwater management facilities Incorporate the use of green infrastructure
- Maintains natural drainage patterns
- · Houses line new road, with all lots adjacent to protected open space
- Trail system
- New road leaves existing stone wall and can connect to future development on adjacent property
- Spatial characteristics of existing farmstead maintained
- Reduced lot size (0.75 acres)

Figure 3.3: Example of a single-family development on the same parcel using the principles of Conservation Design and Low Impact Development



73 8 27
Total single-family lots Acres of remaining Acres of open space (30%)

woodlands

Figure 3.4: Example of how a larger parcel with a mix of open meadows, woodlands, scattered fence rows, and stream corridors may be developed using conventional layout methods. Lot sizes are approximately 3/4 of an acre.

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a | p

significantly disturbed

designed to fit terrain

resulting in excessive

Site layout not

grading



85

Total Single Family Homes

33

Acres of remaining woodlands

67

Acres of open space (75%)



- Provides open space linkages with adjacent parcels
- Designed to the site to minimize grading
- Narrower roads and smaller lots to reduce impervious cover
- Maintains natural drainage patterns
- Preserves natural features and habitat
- Community commons and green space
- Trail systems
- Characteristic of site preserved as viewed from adjoining roads

Figure 3.5: Example of single-family development on the same parcel using the principles of Conservation Design and Low Impact Development. Lot sizes are approximately ¼ of an acre.



96

Total lots, 110 units

33

Acres of remaining woodlands

67

Acres of open space (75%)



Note: While the Conservation Design graphics shown above optimize unit types and lot sizes (and thus allow greater density), it is recognized that this type of mixed use may not be appropriate in some zoning districts. However, Conservation Design works equally well where housing diversity is not appropriate.

- Provides open space linkages with adjacent parcels
- Designed to the site to minimize grading
- Narrower roads and smaller lots to reduce impervious cover
- Maintains natural drainage patterns
- Preserves natural features and habitat
- Community commons and green space
- Trail systems
- Characteristic of site preserved as viewed from adjoining roads

Figure 3.6: Example of higher density mixed use site design on the same parcel using the principles of Conservation Design and Low Impact Development.

DESIGN PROCESS

The first step in applying CD is to identify, delineate and assess the functions of all existing natural resources and natural and constructed hydrologic features that: are located within the project site; will receive discharge from the project site; or may be impacted by runoff or disturbance from the proposed land development project. These include:

- Streams, waterways, springs, wetlands, vernal pools, and water bodies;
- Drainage patterns, conveyances, and discharge points;
- Natural infiltration areas and patterns;
- Areas of natural vegetation or woodlands that provide significant evapotranspiration, pollutant removal, bank stabilization, flow attenuation, or riparian buffer functions;
- Floodplains; and
- Other features that contribute to the overall hydrologic function and value of the site and its receiving streams.

Once this inventory and assessment are completed, these identified resources and features are then prioritized for their ability to provide hydrologic function and performance for managing runoff from the proposed site improvements. Specifically, they should be prioritized as follows:

- Those to be incorporated into the site design in a manner that provides for their protection from any disturbance or impact from the proposed land development;
- Those to be protected from further disturbance or impact and for which the proposed land development will provide improvement to existing conditions;
- Those that can be incorporated into and utilized as components of the overall site design in a manner that protects or improves their existing conditions while utilizing their hydrologic function (i.e., for infiltration, evapotranspiration, or reducing pollutant loads, runoff volume or peak discharge rates, etc.) to reduce the need for or size of constructed BMPs; and
- Those that may be considered for alteration, disturbance, or removal.

These prioritizations are then applied as the basis on which to begin the site design lay-out, grading, construction, and permanent ground cover designs to achieve the CD Principles outlined above.

Evaluating a Site Using Conservation Design Principles

The following is a suggested series of steps that landowners, developers, and municipalities can take to achieve CD goals and work together in a more effective manner. While this approach places significant emphasis on the initial phases of project design, it will strengthen support for the plan and substantially reduce the time needed for preliminary and final plan review and approval.

As stated above, the sketch plan process encouraged herein cannot be mandated by municipalities in Pennsylvania under Act 247 (Municipalities Planning Code) unless requirements for either the preliminary plan or final plan are waived. Some municipalities are doing just this by requiring sketch plans and preliminary/final plan submissions while others "strongly encourage" sketch plans in their subdivision/land development ordinances. The Chester County Planning Commission (CCPC) reviews sketch plans at no charge and highly recommends their use. Additional information on sketch plans can be found in the Chester County Planning Commission's "Sketch Plan" eTool. Whichever approach is taken, sketch plans can be of tremendous value to the community and developer alike; in particular, sketch plans offer developers the opportunity to get municipal feedback on design prior to investing large sums in engineering design.

1. Determine Development Goals

- Define what is driving the decision to develop the property.
- Consider the site context regional, local and site characteristics of land ownership, visual patterns, cultural patterns, roadways, vegetation, wildlife habitat, topography, etc. Consider possibilities for linking other landscapes, stream corridors, critical farmland and distinctive woodland patterns; identify or establish wildlife or recreational trail corridors, etc. Consider the natural hydrology of the site – how water flows over the land (the natural drainage patterns), where vegetation intercepts water, etc.

Note: Further consideration of these issues is suggested after a resource inventory and site analysis are performed.

- Clearly define the goals to work towards these are the design goals for the project. Goals could be economic and/or personal/family related, as well as visual, ecological, agricultural, historical, and educational.
- Consider the project's time schedule and that of the municipal review process.

2. Conduct an Inventory of Existing Resources - Examine the Natural/Scenic/Historic Resources and Land Use Patterns

- Determine the site context (defined above)
- Evaluate current and past land use (agriculture, wooded lot, vacant, brownfield, etc.)
- Assess wind patterns and micro-climate
- Delineate steep slopes and general topography

- Identify existing vegetative cover conditions according to general cover type, and label specimen trees and the canopy line of existing woodlands.
- Map hydrologic features and drainage patterns (wetlands, floodplains, streams, drainage swales, etc.)
- Identify scenic viewsheds (interior and exterior)
- Consider potential historic and cultural resources
- Assess soil patterns (hydric soils, prime agricultural soils, infiltration-capable soils, etc.) and vegetation patterns (landscape texture and patterns)
- Consider local zoning regulations
- Review the site for obvious land fragmentation (agricultural, natural habitat, human use, viewsheds)
- Determine the presence of endangered/threatened species and unusual habitats, critical natural areas, etc.

Other design considerations include solar exposure (seasonal changes), light patterns (shadows), sense of space (enclosed, open, mysterious) and sense of scale.

3. Undertake a Site Analysis

- Compare/overlay/combine the natural/scenic/historic resource and land use pattern information to create a general understanding of the site's opportunities and constraints, particularly as they relate to the design goals. Some initial constraints could present opportunities. Particular emphasis should be placed on site contours and existing site hydrology, e.g., drainage patterns, infiltration capability of soils, etc.
- Prepare a site analysis map that outlines the most important opportunities and constraints. The site analysis should identify both the traditionally unbuildable areas (wet, flood-prone, or steep) and the most outstanding aspects of the remaining land (such as scenic vistas, natural meadows, hedgerows, mature woodlands, historic buildings or other structures, stone walls, etc.). It is important to note that CD places significant emphasis on soils (particularly the manner in which water moves across and through them). Disturbance of soils, disturbance of vegetation, and compaction all affect the ability of a site to manage stormwater. For example, while it is imperative that good draining soils be preserved to the maximum extent possible, areas of poor permeability that contain robust vegetation may function quite satisfactorily (a well-developed root zone in conjunction with established vegetation can significantly improve poor soil

infiltration and permeability). Conversely, even good soils, if substantially disturbed and compacted, can become far less permeable.

Note: Although reliance on published soils data is acceptable for site analyses and conceptual planning purposes, detailed planning must include soil field sampling.

4. Create Conceptual Designs or Sketch Plans

- Use the site analysis to create conceptual designs. Consider the principles and objectives of Conservation Design as the basis for initially conceptualizing layouts (Note: some municipalities will have a similar design process codified in their subdivision and land development ordinance referred to as the 4-step design process). List opportunities and constraints of each design element. This component involves four steps:
 - i) Delineate conservation areas (based on the findings of the site analysis) and potential development areas. Designing to the site, rather than grading to achieve a standardized product, is preferable because it accomplishes the goals of minimum disturbance/minimum maintenance (i.e., respecting the site's natural hydrology, minimizing grading and earth disturbance, etc.); such an approach can also substantially reduce construction costs. Additional emphasis should be given to the site's existing hydrology, such as drainage patterns, the location of natural swales and conveyances, and the infiltration capability of soils.

This step requires careful integration of stormwater management and CD concepts into the design of the site. Engineering stormwater solutions after a design has been selected fails to consider a key component of CD, i.e., design as an integral best management practice. For example, it is better to prevent runoff than to attempt to mitigate it once it is created. Approaches to the site design that can reduce the generation of stormwater from the outset are the most effective approach to stormwater management.

- the property (as they relate to Step 1 and the design goals). Again, Conservation Design principles should be carefully considered here. Will compact development allow for a reduction in road length? Is it possible to interconnect open space, thus permitting stormwater management close to the source of generation and creating biodiversity corridors, etc. (multiple objectives)? Can structures be located so that a majority back or front to open space?
- iii) Connect buildings or house sites with streets (logical alignment) and trails (where appropriate). Consider ways to reduce impervious cover (one-way streets where appropriate, planted islands in cul-de-sacs, etc.).

- iv) Draw in lot lines for the house sites or buildings, where needed.
- Meet with municipal officials and review plans -- what is liked, not liked, and why.
- Identify a direction for engineering and final design.

5. Formulate A Final Design (or Sketch Plan) as the Basis for an Engineered Site Plan

- Synthesize discussion of conceptual designs (sketch plans) and finalize design.
- Develop legal instruments necessary to realize plan objectives, e.g., conservation easements, deed restrictions, homeowners association, estate planning, etc. (Note: these concepts are considered throughout the design process).

6. Obtain Approvals (Follow-up)

- Obtain municipal and County buy-in of master sketch plan, and
- Proceed to Final Engineered Plan approvals.

DESIGN PRACTICES

Numerous practices and strategies can be considered where their aim is to sustain and utilize the benefits of existing site hydrology and minimize the generation of new stormwater runoff. Careful consideration of site topography and implementation of a combination of the design practices described herein may reduce the cost associated with implementing stormwater control measures. Following are brief descriptions of various practices that can be used to achieve the principles of CD and LID.

Site Layout Practices

The following site layout practices are but a few of the methods by which CD and LID can be implemented. Although municipal codes can reflect such practices, they are less functions of regimented codes and procedures than about understanding and recognizing the benefits and values that existing resources can contribute to the desired outcomes of the land development project. In many circumstances, communication among design engineers, land planning and environmental professionals, knowledgeable developers, community representatives, and regulatory authorities can promote a beneficial collective understanding about the most effective path forward to achieve optimum planning outcomes.

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. Unfortunately, some common land

development practices encourage 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 an 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. Designing developments to fit site topography retains much of the natural drainage function. In addition, designing with the land minimizes the amount of site grading, reduces the amount of compaction that can alter site infiltration characteristics, and can result in cost savings to the developer.

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 fields during the wet season or after large storm events. Some development practices eliminate these depressions by filling or draining, thereby eliminating 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 to assist in reducing runoff volumes and reducing runoff rates. Designing around the depression or incorporating its storage as additional capacity in required detention facilities, treats this area as a site amenity rather than a detriment.

Avoiding Introduction of Impervious Areas. Reduction of impervious cover is one of the greatest benefits of CD. The combined benefits of setting aside more than half of the buildable land as open space, coupled with the resulting shorter road lengths, result in less impervious cover and less compacted soil. Building footprints, sidewalks, driveways, and other features producing impervious surfaces should be evaluated to minimize impacts on runoff. Designing a site to reduce the overall length and area of roads not only reduces total impervious cover, but also lowers municipal road maintenance and snow removal costs. In many instances, municipalities have the ability to reduce impervious cover by providing incentives or opportunities in their zoning and subdivision/ land development ordinances to reduce road width, reduce or modify cul-de-sac dimensions, reduce or modify curbing requirements, and reduce or modify sidewalk requirements. For example, curbing contributes to impervious cover and channels storm flows to inlets, thus further concentrating runoff. An alternative is to consider bioswales and/or infiltration trenches that can treat and attenuate flows coming off roadways. Where curbs are desirable, simply providing curb breaks or openings of 6-12 inches every 2-4 feet can disconnect flows and reduce concentration of runoff. Cul-desacs can be replaced with "hammerheads" or be designed with planted islands to reduce impervious cover (both of which can be designed to allow sufficient turning radius for emergency vehicles). In fact, planted islands in cul-de-sacs can be designed to intercept road runoff and contribute to infiltration.

Disconnecting 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 roof runoff over lawns and reducing the use of storm sewers. Site grading should promote increasing travel time of stormwater runoff from these sources and should help reduce concentration of runoff to a single point within the project site. Along roadways, where feasible, low

velocity runoff (i.e., 1-to-2-year storms) can be infiltrated in grass swales.

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 "driveway-to-street-to-storm sewers" or parking lots. The practice also discourages sloping driveways and parking lots to the street. Crowning the driveway, to run off to the lawn, uses the lawn as a filter strip.

Reducing Street Widths. Street widths can be reduced by either eliminating on-street parking (where conditions warrant) and/or by designing roads to meet actual demand. Designers should consult with municipal officials and staff to select the narrowest practical street width for the design conditions (speed, curvature, housing density, need for on-street parking, etc.). For example, permitting one-way streets for small loop roads can reduce overall road width. Reduced street widths also can lower maintenance needs and costs. Municipalities should review their ordinances to ensure that their street requirements are not over or under designed. Although there are some situations, such as with higher density development, where on-street parking may be needed, the amount of on-street parking, and hence overall street width, should be gaged to need. For further information, see the Multimodal Circulation Handbook prepared by the CCPC (or consult other smart street publications). Narrower neighborhood streets should be considered and encouraged under select conditions.

Reducing or Modifying Sidewalk Requirements. 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 as an alternative to reduced sidewalks, where appropriate. Where used, consideration should be given to constructing trails with pervious materials.

Reducing or Modifying Parking Requirements. Parking standards, particularly for nonresidential development, can be excessive. Reducing spaces to match actual demand makes sense and can significantly reduce impervious cover. In addition to or in lieu of reductions, alternatives such as shared or reserve parking should be considered. Where appropriate, stall size should also be considered and modified as needed.

Reducing Building Setbacks. Reducing building setbacks (from streets) reduces the size of impervious areas of driveways and entry walks and is most readily accomplished along low-traffic streets where traffic noise is not a problem.

Minimum Disturbance/ Minimum Maintenance. Reducing site disturbance and grading can go a long way towards reducing runoff. Sensitive site design conducive to the natural features of the site, including natural site contours, can reduce the amount of land disturbed during actual development. Often referred to as "fingerprinting," this approach identifies the limits of disturbance, which are flagged in the field. As is often the case, development sites need some grading in order to achieve development objectives. In these cases, there are often opportunities to make grading part of the solution, rather than part of the problem. Careful grading can capitalize on natural site functions to achieve stormwater management

objectives. For example, grading that does occur can be incorporated into terracing or berming near existing vegetation to aid in infiltration, stormwater management and pollutant filtering.

Constructing Compact Developments using Conservation Design Principles: Lower impact, compact CD can reduce the amount of impervious area for a given number of lots. Reductions in overall infrastructure, including reduced street length, width, curbing, and parking, among others, can contribute to a reduction in development and long-term maintenance costs. Reduced site disturbance and preservation of open space help buffer sensitive natural areas and retain more of a site's natural hydrology. Development can be designed so that areas of high infiltration soils are reserved as stormwater infiltration areas. Construction activity can be focused onto less sensitive areas without affecting the gross density of development. One impediment to the use of smaller lots is where lot area impervious cover standards (as opposed to total impervious cover standards) make it difficult to locate houses, driveways, pools, septic, etc., on small lots. Where this issue arises, municipalities may want to consider reductions in, or waivers to, lot area impervious cover standards where it can be shown that total impervious cover standards can be met and a stormwater management report indicates that the coverage proposed can be managed appropriately on the site.

LID Practices and Stormwater Control Measures

Stormwater Control Measures (SCMs) are intended to supplement natural hydrology site design techniques where needed. Structural in nature, such practices include bioretention facilities, rain gardens, swales, and other engineered stormwater BMPs. Listed here are techniques intended to help manage stormwater predominantly at or near the source, rather than traditional techniques that largely release runoff over an extended period of time to adjacent properties and streams. This list, in no way exhaustive, gives examples of a few of the most common practices. It should be noted that LID aims to mimic the predevelopment site hydrology by using site design techniques that store, infiltrate, evaporate, and detain runoff. Use of these techniques helps to reduce off-site runoff and ensure adequate groundwater recharge. Since every aspect of site development affects the hydrologic response of a site, LID control techniques focus mainly on site hydrology. LID strives to conserve existing site resources, minimize site impacts, maintain (and even extend) the time of concentration of runoff, utilize distributed management practices, and prevent pollution.

Bioretention. This type of BMP combines open space with stormwater treatment. Soil and plants, rather than sand filters, treat and store runoff. Infiltration and evapotranspiration are achieved, often coupled with an underdrain to collect water not infiltrated or used in the root zone.

Rain Gardens. Typically, rain gardens are shallow depression areas containing a mix of water tolerant native plant species. The intent is to capture runoff for storage and use in the root zone of plants. Intended largely as a way of managing stormwater through evapotranspiration (ET), rain gardens often function as infiltration facilities as well.

Vegetated Open Channel Conveyances. By reducing the use of storm sewers to drain streets, parking lots, and back yards, the potential for accelerating runoff from development can be greatly reduced. This practice requires greater use of natural or vegetated drainage 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, who may expect runoff to disappear shortly after a rainfall event.

Permeable Paving Materials. These materials include permeable interlocking concrete paving blocks or porous bituminous concrete, among others. 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. Surfaces for which seal coats may be applied should refrain from using permeable paving materials. Note: ongoing maintenance is required for some surfaces to minimize potential for clogging.

Residents and municipal officials of communities that utilize LID and other green technology practices often need to be informed of the benefits of such facilities. LID practices can offer enhanced stormwater control in a more naturalized setting, reduce maintenance needs and costs, provide more attractive management options, and provide opportunities for wildlife habitat. Descriptions of the benefits of such practices should be included in homeowners association documents (and conveyed to homeowners in other ways) and signage should be used to convey helpful information about the function and value of such practices.

BENEFITS OF CONSERVATION DESIGN

Studies over the past 25 years have shown that development planned according to CD principles yields significant benefits to homeowners, developers, municipalities, and local communities. Homeowners see tremendous value in the preservation of open space and the protection of natural features, even if it does not exist on their lots (National Association of Home Builders, 1991; DVRPC, 2011). Developers experience reduced construction costs and enjoy the improved marketability. Municipalities see a reduced demand for new municipal parks and receive additional revenue from improved property values. Areas preserved as open space allow for passive and active recreational opportunities and help to preserve the unique character of the site. Common open spaces also help to foster social cohesion by providing residents with opportunities to get outside and interact with neighbors without having to drive. Ultimately, communities designed using CD planning principles are more desirable places to live, work, and play.

Given the improved sense of place and community, dollar appreciation of conservation subdivisions outpaces conventional development by upwards of 12% (The Conservation Fund, 2001). In Indiana, the use of conservation subdivision design added \$20,000 in worth to each lot without decreasing the total number of lots (ConservationTools.org). Even more compact development (quarter-acre lots) sells for more than half-acre and larger lots where open space exists. Over a 20-year period, the conservation development homes built on quarter-acre lots sold for an average \$17,000 more than their counterparts built on half-

<u>acre lots</u> (Northeastern Illinois Planning Commission, 2003). Analyses completed as a part of Chester County's *Return on Environment* report note that in Chester County, average property values have increased by more than \$11,000 per lot for those homes located near open space (*Return on Environment*, Chester County, 2019). Furthermore, this same report identifies the reduced need for stormwater infrastructure as a major cost savings for conservation design subdivisions.

Developers see value through reduced development costs and increased unit values. In Texas, respect for the natural terrain and existing resources allowed the developer of an 80-lot development to reduce grading costs by 83% (\$250,000) compared to a conventionally engineered plan (Growing Greening, ConservationTools.org). CD subdivisions typically cost upwards of \$7,400 less per lot to build (Environmental Law and Policy Center, 2011). Examples of cost savings to developers include:

- Reduced Site preparation costs
 - Elimination of mass re-grading
 - o Decrease in erosion and sediment control measures
- Reduced Infrastructure costs
 - Reduced need for storm water basins
 - o Reduced roadway lengths
 - o Reduced drainage pipe installations
- Increased value of units
 - Located adjacent to open space
 - o Positioned to coexist with natural resource areas

Conventional development places tremendous burdens on infrastructure and typically does not pay for itself in services provided. CD and compact development reduce the costs of infrastructure and construction, preserve open space, increase the inherent value of units over conventional development, pose greater opportunities for cost efficient housing, and offer greater protection to the environment and our waterways. And while costs to develop go down, value to homeowners and municipalities goes up.

It should also be noted that there is a distinct climate benefit to be gained from the principles of conservation design, among them: providing open land for stormwater infiltration, landscape restoration, wildlife habitat, heat mitigation, and storm resilience, among others. The tools and techniques described herein offer important techniques by which to implement climate action plans published at the local, county and state levels (see also Chester County's Climate Action Plan and the Pennsylvania Department of Conservation and Natural Resources Climate Change Adaptation and Mitigation Plan).

CONCLUSION

The use of Conservation Design (CD), Low Impact Development (LID), and green

infrastructure offers municipalities and developers opportunities to protect and enhance the hydrology of development sites, as well as address other environmental and social issues related to development. In conclusion, development designed using these principles results in a more desirable place to live.

As noted above, land development sites can be evaluated through a consensus-driven stakeholder process that seeks to determine development goals, conduct a resource inventory, undertake a site analysis, create conceptual designs (sketch plans), formulate final designs, and obtain government buy-in and approval. Flexibility by all parties allows each site to be evaluated for its unique resources and potential. Solutions emerge from early and on-going engagement among all stakeholders in a project.

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ORDINANCE APPENDIX C

RUNOFF COEFFICIENTS AND CURVE NUMBERS

TABLE C-1. RUNOFF CURVE NUMBERS

Source: Table 2-2a, Table 2-2b, and Table 2-2c from U. S. Department of Agriculture, Natural Resources Conservation Service, June 1986, *Urban Hydrology for Small Watersheds, Technical Release No. 55 (TR-55)*, Second Edition.

TABLE C-2. RATIONAL RUNOFF COEFFICIENTS

Source: Table F.2 from Delaware County Planning Department, December 2011, <u>Crum Creek Watershed Act 167 Stormwater Management Plan</u>.

TABLE C-3. MANNING'S 'n' VALUES

Source: Table 3-1 from United States Army Corps of Engineers, January 2010, <u>HEC-RAS River Analysis System, Hydraulic Reference Manual</u>, Version 4.1.

TABLE C-1. RUNOFF CURVE NUMBERS

(3 pages)

Source: Table 2-2a, Table 2-2b, and Table 2-2c from U. S. Department of Agriculture, Natural Resources Conservation Service, June 1986, *Urban Hydrology for Small Watersheds, Technical Release No. 55 (TR-55)*, Second Edition.

Chapter 2	Estimating Runoff	Technical Release 55
		Urban Hydrology for Small Watersheds

Cover description			Curve nu hydrologic-	umbers for soil group	
•	Average percent			0 1	
Cover type and hydrologic condition	impervious area ⅔	A	В	\mathbf{C}	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, et	c.)¾:				
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
mpervious areas:					
Paved parking lots, roofs, driveways, etc.					
(excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding					
right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Vestern desert urban areas:	••••••	12	02	0.	O
Natural desert landscaping (pervious areas only) 4/		63	77	85	88
Artificial desert landscaping (impervious weed barr		05		00	
desert shrub with 1- to 2-inch sand or gravel mu					
and basin borders)		96	96	96	96
Jrban districts:		80	90	80	00
Commercial and business	85	89	92	94	95
Industrial		81	88	91	93
Residential districts by average lot size:		01	00	91	96
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre		61	75	83	87
1/3 acre		57	72	81	86
1/2 acre		54	70	80	85
1 acre	- -	51	68	79	84
2 acres		46	65	77	82
2 acres	12	40	00	"	02
Developing urban areas					
Newly graded areas					
(pervious areas only, no vegetation) 5/		77	86	91	94
dle lands (CN's are determined using cover types					
•					
similar to those in table 2-2c).					

 $^{^{\}rm 1}$ Average runoff condition, and I_a = 0.2S.

² The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

³ CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

⁴ Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

⁵ Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Chapter 2 Estimating Runoff Technical Release 55
Urban Hydrology for Small Watersheds

 $\textbf{Table 2-2b} \qquad \text{Runoff curve numbers for cultivated agricultural lands} \ \underline{\lor} \\$

	Cover description			Curve num hydrologic s		
	•	Hydrologic			•	
Cover type	Treatment 2'	condition 3/	A	В	C	D
Fallow	Bare soil	_	77	86	91	94
	Crop residue cover (CR)	Poor	76	85	90	93
		Good	74	83	88	90
Row crops	Straight row (SR)	Poor	72	81	88	91
-		Good	67	78	85	89
	SR + CR	Poor	71	80	87	90
		Good	64	75	82	85
	Contoured (C)	Poor	70	79	84	88
		Good	65	75	82	86
	C + CR	Poor	69	78	83	87
		Good	64	74	81	85
	Contoured & terraced (C&T)	Poor	66	74	80	82
		Good	62	71	78	81
	C&T+ CR	Poor	65	73	79	81
		Good	61	70	77	80
Small grain	SR	Poor	65	76	84	88
		Good	63	75	83	87
	SR + CR	Poor	64	75	83	86
		Good	60	72	80	84
	\mathbf{C}	Poor	63	74	82	85
		Good	61	73	81	84
	C + CR	Poor	62	73	81	84
		Good	60	72	80	83
	C&T	Poor	61	72	79	82
		Good	59	70	78	81
	C&T+ CR	Poor	60	71	78	81
		Good	58	69	77	80
Close-seeded	SR	Poor	66	77	85	89
or broadcast		Good	58	72	81	85
legumes or	\mathbf{C}	Poor	64	75	83	85
rotation		Good	55	69	78	83
meadow	C&T	Poor	63	73	80	83
		Good	51	67	76	80

 $^{^{\}rm 1}$ Average runoff condition, and $I_a{=}0.2S$

Poor: Factors impair infiltration and tend to increase runoff.

 $Good: Factors\ encourage\ average\ and\ better\ than\ average\ infiltration\ and\ tend\ to\ decrease\ runoff.$

 $^{^{2}}$ Crop residue cover applies only if residue is on at least 5% of the surface throughout the year.

³ Hydraulic condition is based on combination factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes, (d) percent of residue cover on the land surface (good ≥ 20%), and (e) degree of surface roughness.

Chapter 2 Estimating Runoff Technical Release 55
Urban Hydrology for Small Watersheds

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	В	С	D
Pasture, grassland, or range—continuous	Poor	68	79	86	89
forage for grazing. 2/	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	_	30	58	71	78
Brush—brush-weed-grass mixture with brush	Poor	48	67	77	83
the major element. ¥	Fair	35	56	70	77
	Good	30 4/	48	65	73
Woods—grass combination (orchard	Poor	57	73	82	86
or tree farm). 5/	Fair	43	65	76	82
	Good	32	58	72	79
Woods. 6/	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 4/	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	_	59	74	82	86

 $^{^{\}rm 1}$ $\,$ Average runoff condition, and I_a = 0.2S.

Poor: <50%) ground cover or heavily grazed with no mulch.</p>

Fair: 50 to 75% ground cover and not heavily grazed.

Good: > 75% ground cover and lightly or only occasionally grazed.

³ *Poor*: <50% ground cover.

Fair: 50 to 75% ground cover.

Good: >75% ground cover.

⁴ Actual curve number is less than 30; use CN = 30 for runoff computations.

⁵ CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

⁶ Poor: Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.

Fair: Woods are grazed but not burned, and some forest litter covers the soil.

Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

TABLE C-2. RATIONAL RUNOFF COEFFICIENTS (1 page)

Source: Table F.2 from Delaware County Planning Department, December 2011, <u>Crum Creek Watershed Act 167 Stormwater Management Plan</u>.

TABLE F-2
RATIONAL RUNOFF COEFFICIENTS

	HYDRO	OLOGIC	SOIL G	ROUP
LAND USE DESCRIPTION		В	C	D
Cultivated land: without conservation treatment	.49	.67	.81	.88
: with conservation treatment	.27	.43	.61	.67
Pasture or range land: poor condition	.38	.63	.78	.84
: good condition	*	.25	.51	.65
Meadow: good condition	*	*	.44	.61
Woods: thin stand, poor cover, no mulch	*	.34	.59	.70
: good cover	*	*	.45	.59
Open spaces, lawns, parks, golf courses, cemeteries				
Good condition: grass cover on 75% or more of	*	.25	.51	.65
the area				
Fair condition: grass cover on 50% to 75% of		.45	.63	.74
the area				
Commercial and business areas (85% impervious)	.84	.90	.93	.96
Industrial districts (72% impervious)	.67	.81	.88	.92
Residential:				
Average lot size Average % impervious				
1/8 acre or less 65	.59	.76	.86	.90
1/4 acre 38	.25	.49	.67	.78
1/3 acre 30	*	.49	.67	.78
1/2 acre 25	*	.45	.65	.76
1 acre 20	*	.41	.63	.74
Paved parking lots, roofs, driveways, etc.		.99	.99	.99
Streets and roads:				
Paved with curbs and storm sewers		.99	.99	.99
Gravel	.57	.76	.84	.88
Dirt	.49	.69	.80	.84

Notes: Values are based on SCS definitions and are average values.

Values indicated by ---* should be determined by the design engineer based on site characteristics.

Source: New Jersey Department of Environmental Protection, Technical Manual for Stream Encroachment, August 1984

TABLE C-3. MANNING'S 'n' VALUES

(3 pages)

Source: Table 3-1 from United States Army Corps of Engineers, January 2010, <u>HEC-RAS River Analysis System, Hydraulic Reference Manual</u>, Version 4.1.

Chapter 3- Basic Data Requirements

Table 3-1 Manning's 'n' Values

1. Main a. (b. 5 c. (d. 5 e. 5 sec f. 5	Clean, straight, full, no rifts or deep pools Same as above, but more stones and weeds Clean, winding, some pools and shoals Same as above, but some weeds and stones Same as above, lower stages, more ineffective slopes and tions Same as "d" but more stones Sluggish reaches, weedy. deep pools	0.025 0.030 0.033 0.035 0.040	0.030 0.035 0.040 0.045 0.048	0.033 0.040 0.045 0.050
a. 0 b. 3 c. 0 d. 3 e. 3 sec f. S	Clean, straight, full, no rifts or deep pools Same as above, but more stones and weeds Clean, winding, some pools and shoals Same as above, but some weeds and stones Same as above, lower stages, more ineffective slopes and tions same as "d" but more stones	0.030 0.033 0.035	0.035 0.040 0.045	0.040 0.045 0.050
b. 5 c. 0 d. 5 e. 5 sec f. 8	Same as above, but more stones and weeds Clean, winding, some pools and shoals Same as above, but some weeds and stones Same as above, lower stages, more ineffective slopes and tions same as "d" but more stones	0.030 0.033 0.035	0.035 0.040 0.045	0.040 0.045 0.050
c. 0 d. 5 e. 5 sec f. S	Clean, winding, some pools and shoals Same as above, but some weeds and stones Same as above, lower stages, more ineffective slopes and tions same as "d" but more stones	0.030 0.033 0.035	0.035 0.040 0.045	0.040 0.045 0.050
d. S e. S sec f. S	Same as above, but some weeds and stones Same as above, lower stages, more ineffective slopes and tions same as "d" but more stones	0.033 0.035	0.040 0.045	0.045 0.050
e. S sec f. S	Same as above, lower stages, more ineffective slopes and tions ame as "d" but more stones	0.035	0.045	0.050
sec f. S	tions ame as "d" but more stones			
f. S	ame as "d" but more stones	0.040	0.048	
			0.010	0.055
σ. 9	Sluggish reaches, weedy. deep pools	0.045	0.040	
P. ,		0.045	0.050	0.060
h. '	Very weedy reaches, deep pools, or floodways with heavy stands	0.050	0.070	0.080
of	imber and brush	0.070	0.100	0.150
. Floo	l Plains			
a.	Pasture no brush			
	 Short grass 	0.025	0.030	0.035
	2. High grass	0.030	0.035	0.050
b.	Cultivated areas		•	
	1. No crop	0.020	0.030	0.040
	2. Mature row crops	0.025	0.035	0.045
	 Mature field crops 	0.030	0.040	0.050
c.	Brush			
	 Scattered brush, heavy weeds 	0.035	0.050	0.070
	Light brush and trees, in winter	0.035	0.050	0.060
	 Light brush and trees, in summer 	0.040	0.060	0.080
	 Medium to dense brush, in winter 	0.045	0.070	0.110
	Medium to dense brush, in summer	0.070	0.100	0.160
d.	Trees	0.000		
	 Cleared land with tree stumps, no sprouts 	0.030	0.040	0.050
	Same as above, but heavy sprouts	0.050	0.060	0.080
	 Heavy stand of timber, few down trees, little 	0.080	0.100	0.120
	undergrowth, flow below branches	0.100	0.100	
	 Same as above, but with flow into branches 	0.100	0.120	0.160
	 Dense willows, summer, straight 	0.110		
		0.110	0.150	0.200
. Mour	itain Streams, no vegetation in channel, banks usually steep,			
	rees and brush on banks submerged			
a.	Bottom: gravels, cobbles, and few boulders	0.020	0.040	
b.	Bottom: cobbles with large boulders	0.030 0.040	0.040 0.050	0.050 0.070

Chapter 3- Basic Data Requirements

Table 3-1 (Continued) Manning's 'n' Values

Type of Channel and Description	Minimum	Normal	Maximum
B. Lined or Built-Up Channels			
1. Concrete			
a. Trowel finish	0.011	0.013	0.015
b. Float Finish	0.013	0.015	0.016
c. Finished, with gravel bottom	0.015	0.017	0.020
d. Unfinished	0.014	0.017	0.020
e. Gunite, good section	0.016	0.019	0.023
f. Gunite, wavy section	0.018	0.022	0.025
 g. On good excavated rock 	0.017	0.020	0.025
h. On irregular excavated rock	0.022	0.027	
. Concrete bottom float finished with sides of:			
a. Dressed stone in mortar	0.015	0.017	0.020
b. Random stone in mortar	0.017	0.020	0.024
c. Cement rubble masonry, plastered	0.016	0.020	0.024
d. Cement rubble masonry	0.020	0.025	0.024
e. Dry rubble on riprap	0.020	0.030	0.035
Gravel bottom with sides of:			
a. Formed concrete	0.017	0.020	0.025
b. Random stone in mortar	0.020	0.023	0.026
c. Dry rubble or riprap	0.023	0.033	0.036
. Brick			
a. Glazed	0.011	0.013	0.015
b. In cement mortar	0.012	0.015	0.013
. Metal			
a. Smooth steel surfaces	0.011	0.012	0.014
b. Corrugated metal	0.021	0.012	0.014
place and product Control of approximation	0.021	0.023	0.030
Asphalt			
a. Smooth	0.013	0.013	
b. Rough	0.016	0.016	
Vegetal lining	0.030		0.500

Chapter 3- Basic Data Requirements

Table 3-1 (Continued) Manning's 'n' Values

Type of Channel and Description	Minimum	Normal	Maximum
C. Excavated or Dredged Channels			
1. Earth, straight and uniform			
a. Clean, recently completed	0.016	0.018	0.020
b. Clean, after weathering	0.018	0.022	0.025
c. Gravel, uniform section, clean	0.022	0.025	0.030
d. With short grass, few weeds	0.022	0.027	0.033
2. Earth, winding and sluggish			
a. No vegetation	0.023	0.025	0.030
b. Grass, some weeds	0.025	0.030	0.033
c. Dense weeds or aquatic plants in deep channels	0.030	0.035	0.040
d. Earth bottom and rubble side	0.028	0.030	0.035
e. Stony bottom and weedy banks	0.025	0.035	0.040
f. Cobble bottom and clean sides	0.030	0.040	0.050
3. Dragline-excavated or dredged			
a. No vegetation	0.025	0.028	0.033
b. Light brush on banks	0.035	0.050	0.060
4. Rock cuts			
a. Smooth and uniform	0.025	0.035	0.040
b. Jagged and irregular	0.035	0.040	0.050
5. Channels not maintained, weeds and brush			
a. Clean bottom, brush on sides	0.040	0.050	0.080
b. Same as above, highest stage of flow	0.045	0.070	0.110
c. Dense weeds, high as flow depth	0.050	0.080	0.120
d. Dense brush, high stage	0.080	0.100	0.140

Other sources that include pictures of selected streams as a guide to n value determination are available (Fasken, 1963; Barnes, 1967; and Hicks and Mason, 1991). In general, these references provide color photos with tables of calibrated n values for a range of flows.

Although there are many factors that affect the selection of the n value for the channel, some of the most important factors are the type and size of materials that compose the bed and banks of a channel, and the shape of the channel. Cowan (1956) developed a procedure for estimating the effects of these factors to determine the value of Manning's n of a channel. In Cowan's procedure, the value of n is computed by the following equation:

ORDINANCE APPENDIX D WEST NILE VIRUS DESIGN GUIDANCE

WEST NILE VIRUS GUIDANCE

(This source is from the Monroe County, PA Conservation District that 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 nonpoint 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 (PADEP) will make nonpoint 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 Pollutant Discharge Elimination System (NPDES) permitting program, applicants will be required to employ Best Management Practices (BMPs) to address nonpoint 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 surfaces 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 nonpoint 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, infiltration, 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 outweigh their potential to become breeding grounds for mosquitoes.

ORDINANCE APPENDIX E

STORMWATER BEST MANAGEMENT PRACTICES AND CONVEYANCES OPERATION AND MAINTENANCE AGREEMENT

SAMPLE AGREEMENT

REVISED
Chester County Water Resources Authority
June 2, 2022

Prepared By:	LEAVE BLANK For Recorder's Use
Insert Preparer's Name	Only
Insert Preparer's Address Line 1	
Insert Preparer's Address Line 2	
Insert Preparer's Phone Number	
Return To:	
Insert Municipality's Name	
Insert Municipality's Address Line 1	
Insert Municipality's Address Line 2	
Insert Municipality's Phone Number	
UPI#: Insert UPI(s) of properties with	
BMPs and/or Conveyances for the O&M	
Agreement	
Property Street Address: <i>Insert the street</i>	
address of the property	

STORMWATER BEST MANAGEMENT PRACTICES (BMPs) AND CONVEYANCES OPERATION AND MAINTENANCE AGREEMENT

THIS AGREEMENT, made and entered into this	
WITNESSETH	
WHEREAS, the Landowner is the owner of certain Conveyance recorded in the land records of Chester and Page, (hereinafter "Propert	County, Pennsylvania, at Deed Book y"); and
WHEREAS, the Landowner is proceeding to build an	1 1 2
WHEREAS, the Stormwater Best Management	
Conveyances Operations and Maintenance Plan O	
Management Site Plan	(title of approved
plans) approved by the Municipality	_(date) (hereinafter referred to as the
"Plan") for the Property, which is attached hereto as provides for management of stormwater within the corof BMP(s) and Conveyances; and	

WHEREAS, the Municipality and the Landowner, for itself and its administrators, executors, successors, heirs, 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 stormwater BMP(s) and Conveyances 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 as specifically identified in the Plan, used to manage stormwater impacts from Regulated Activities to provide water quality treatment, infiltration, volume reduction, and/or peak rate control, to promote groundwater recharge, and to otherwise meet the purposes of the Municipality's Stormwater Management Ordinance. Stormwater BMPs are commonly grouped into one (1) of two (2) broad categories or measures: "structural" or "nonstructural." Nonstructural BMPs or measures refer to low impact development and conservation design practices used to minimize the contact of pollutants with stormwater runoff. These practices aim to limit the total volume of stormwater runoff and manage stormwater at its source by techniques such as protecting natural systems and incorporating existing landscape features. Nonstructural BMPs include, but are not limited to, the protection of sensitive and special value features such as wetlands and riparian areas, the preservation of open space while clustering and concentrating development, the reduction of impervious cover, and the disconnection of downspouts from storm sewers. Structural BMPs are those that consist of a constructed system that is designed and engineered to capture and treat stormwater runoff. Structural BMPs are those that consist of a physical system that is designed and engineered to capture and treat stormwater runoff. Structural BMPs include, but are not limited to, a wide variety of practices and devices from largescale retention ponds and constructed wetlands to small-scale underground treatment systems, infiltration facilities, filter strips, bioretention, wet ponds, permeable paving, grassed swales, riparian buffers, sand filters, detention basins, and other manufactured devices designed to mitigate stormwater impacts. The BMPs identified in the Plan are permanent appurtenances to the Property; and

Conveyance – As specifically identified in the Plan, a manmade, existing, or proposed facility, feature or channel used for the transportation or transmission of stormwater from one place to another, including pipes, drainage ditches, channels and swales (vegetated and other), gutters, stream channels, and like facilities or features. The Conveyances identified in the Plan are permanent appurtenances to the Property; and

WHEREAS, the Municipality requires, through the implementation of the Plan, that stormwater management BMPs and conveyances, as required by the Plan and the Municipality's Stormwater Management Ordinance, be constructed and adequately inspected, operated and maintained by the Landowner or their designee.

NOW, THEREFORE, in consideration of the foregoing promises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto, intending to be legally bound hereby, agree as follows:

- 1. The foregoing recitals to this Agreement are incorporated as terms of this Agreement as if fully set forth in the body of this Agreement.
- 2. The Landowner shall construct the BMP(s) and Conveyance(s) in accordance with the <u>final stormwater management site plans and specifications OR Simplified Approach</u> Stormwater Management Site Plan as approved by the Municipality in the Plan.
- 3. Upon completion of construction, the Landowner shall be responsible for completing final As-Built Plans of all BMPs, Conveyances, or other stormwater management facilities included in the approved stormwater management site plan as per the requirements of Section 502 of the Stormwater Management Ordinance.
- 4. The Landowner shall inspect, operate, and maintain the BMP(s) and Conveyance(s) as shown on the Plan in good working order acceptable to the Municipality and in accordance with the specific inspection and maintenance requirements in the approved Plan and the current version of the Pennsylvania Stormwater BMP Manual, as amended.
- 5. The Landowner hereby grants permission to the Municipality, its authorized agents and employees, to enter upon the Property from a public right-of-way or roadway, at reasonable times and upon presentation of proper identification, to inspect the BMP(s) and Conveyance(s) whenever it deems necessary for compliance with this Agreement, the Plan and the Municipality's Stormwater Management Ordinance. Whenever possible, the Municipality shall notify the Landowner prior to entering the Property.
- 6. The Municipality shall inspect the BMP(s) and Conveyance(s) to determine if they continue to function as intended.
- 7. The BMP(s) and Conveyance(s) shall be inspected according to the following frequencies, at a minimum:
 - a. Annually for the first 5 years.
 - b. Once every 3 years thereafter.
 - c. During or immediately after the cessation of a 25-year or greater storm, as determined by the Municipal Engineer.

Written inspection reports shall be created to document each inspection. The inspection report shall contain the date and time of the inspection, the individual(s) who completed the inspection, the location of the BMP, facility or structure inspected, observations on performance, and recommendations for improving performance, if applicable. Inspection reports shall be submitted to the Municipality within 30 days following completion of the inspection.

Landowners must notify the Municipality of BMP(s) and Conveyance(s) that are no longer functioning as designed and must coordinate with the Municipality to determine a schedule to repair or retrofit these systems to restore designed functionality.

- 8. The Landowner acknowledges that, per the Municipality's Stormwater Ordinance, it is unlawful, without written approval of the Municipality, to:
 - a. Modify, remove, fill, landscape, alter or impair the effectiveness of any BMP or Conveyance that is constructed as part of the approved Plan.
 - b. Place any structure, fill, landscaping, additional vegetation, yard waste, brush cuttings, or other waste or debris into a BMP or Conveyance that would limit or alter the functioning of the BMP or Conveyance.
 - c. Allow the BMP or Conveyance to exist in a condition which does not conform to the approved Plan or this Agreement; and
 - d. Dispose of, discharge, place or otherwise allow pollutants including, but not limited to, deicers, pool additives, household chemicals, and automotive fluids to enter any BMP or Conveyance directly or indirectly.
- 9. In the event that the Landowner fails to operate and maintain the BMP(s) and Conveyance(s) as shown on the Plan in good working order acceptable to the Municipality, the Landowner shall be in violation of this Agreement, and the Landowner agrees that the Municipality or its representatives may, in addition to and not in derogation or diminution of any remedies available to it under the Stormwater Ordinance or other statutes, codes, rules or regulations, or this Agreement, enter upon the Property and take whatever action is deemed necessary to maintain said BMP(s) and Conveyance(s). 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.
- 10. If the Municipality, pursuant to this Agreement, performs work of any nature or expends any funds in performance of said work for inspection, labor, use of equipment, supplies, materials, and the like, the Landowner shall reimburse the Municipality for all expenses (direct and indirect) incurred within 30 days of delivery of an invoice from the Municipality. Failure of the Landowner to make prompt payment to the Municipality may result in enforcement proceedings, which may include the filing of a lien against the Property, which filing is expressly authorized by the Landowner.
- 11. The intent and purpose of this Agreement is to ensure the proper maintenance of the on-site BMP(s) and Conveyance(s) by the Landowner; provided, however, that this Agreement shall not be deemed to create or affect any additional liability on any party for damage alleged to result from or be caused by stormwater runoff.
- 12. The Landowner, for itself and its executors, administrators, assigns, heirs, and other successors in interest, hereby releases and shall release the Municipality's employees, its agents and designated representatives from all damages, accidents, casualties, occurrences, or claims which might arise or be asserted against said employees, agents or representatives arising out of the construction, presence, existence, or maintenance of the BMP(s) and Conveyance(s) either by the Landowner or Municipality. In the event that a claim is asserted or threatened against the Municipality, its employees, agents or designated representatives, the Municipality shall notify the Landowner, and the Landowner shall

defend, at his own expense, any claim, suit, action or proceeding, or any threatened claim, suit, action or proceeding against the Municipality, or, at the request of the Municipality, pay the cost, including attorneys' fees, of defense of the same undertaken on behalf of the Municipality. If any judgment or claims against the Municipality's employees, agents or designated representatives shall be allowed, the Landowner shall pay all damages, judgments or claims and any costs and expenses incurred by the Municipality, including attorneys' fees, regarding said damages, judgments or claims.

- 13. The Municipality may enforce this Agreement in accordance with its Stormwater Ordinance, at law or in equity, against the Landowner for breach of this Agreement. Remedies may include fines, penalties, damages or such equitable relief as the parties may agree upon or as may be determined by a Court of competent jurisdiction. Recovery by the Municipality shall include its reasonable attorneys' fees and costs incurred in seeking relief under this Agreement.
- 14. Failure or delay in enforcing any provision of this Agreement shall not constitute a waiver by the Municipality of its rights of enforcement hereunder.
- 15. The Landowner shall inform future buyers of the Property about the function of, operation, inspection and maintenance requirements of the BMP(s) prior to the purchase of the Property by said future buyer, and upon purchase of the Property the future buyer assumes all responsibilities as Landowner and must comply with all components of this Agreement.
- 16. This Agreement shall inure to the benefit of and be binding upon the Municipality and the Landowner, as well as their heirs, administrators, executors, assigns and successors in interest.

This Agreement shall be recorded at the Office of the Recorder of Deeds of Chester County, Pennsylvania, and shall constitute a covenant running with the Property, in perpetuity.

WITNESS the following signatures and seals:

ATTEST:	
(SEAL)	For the Municipality:
(GEAL)	
(SEAL)	For the Landowner:
ATTEST:	
	(City, Borough, Township)
By Individual:	

State of	
County of	
On this day of officer, personally appeared to be person whose name(s) is/are subscithat executed the same	, 20 Before me, the undersigned, known to me (or satisfactorily proven) ribed to the within instrument and acknowledged for the purpose therein contains.
IN WITNESS WHEREOF, I her	eunto set my hand and official seal.
	Notary Public
My commission expires:	
By the Company:	
State of	
County of	
officer, personally appeared, a	, 20, before me, the undersigned, who acknowledged himself/herself to a, and that he/she being authorized ent for the purpose therein contained by signing uself as
	eunto set my hand and official seal.
	Notary Public
My commission expires:	1.000.7 1 00.00

Attachment 2.2

PUBLIC EVENT INFORMATION



SAT, APR 22 - APR 23

Free Tree Giveaway & Festivities!

Landenberg, PA

11 people interested





Please visit the Franklin Township website for additional information by clicking on the link below. https://www.franklintownship.us/.../franklin-township....



Franklin Township, Kemblesville PA

Crossan Park - Informational Signage

Check out our new signs.

☆ Interested



OO You and 12 others

2 shares

MS4 Community Education Materials - Why is this important?

World Water Day at Stroud Water Research on March 22, 2023, starting at 4:30 PM to 7:30 PM. Please click here for more information and to register. We hope that you will participate!

Join Stroud Water Research Center to celebrate World Water Day! Families and community members can engage in many activities including the discovery of live stream bug (aquatic macroinvertebrates) at our Watershed Education Mobile Lab, stream ecology videos under our pavilion, a special bilingual (Spanish and English) reading of the Creek Critters children's picture book in our streamside forest, and an electrofishing demonstration to learn how real scientists sample eels, trout, and other underwater neighbors in White Clay Creek.

We're excited to announce that On The Roll food truck will be on site for all of your delicious dinner options!

Guide to Green Stormwater Infrastructure by the Brandywine Conservancy and the Brandywine Red Clay Alliance

One of the most effective ways to improve water quality in our streams, reduce the impacts of flooding and reduce erosion is to address stormwater runoff from new and existing development, roads, parking lots, commercial and residential lots. In the past, the building of stormwater infrastructure required catchments, pipes, and other "hard" infrastructure to move stormwater runoff as quickly as possible to the closest waterway. This resulted in a rush

of stormwater into our streams during each rain event causing erosi flushing of pollutants from the land and impervious surfaces directly



What is MS4? Are you up for the challenge?

Please visit the Franklin Township Website for some educational puzzles for your young ones and or if you are young at heart. If you do not have a printer at home, we would be happy to print these off for you if you visit our office. Please click the link below -

https://www.franklintownship.us/.../ms4-community...



Catch the Rain Event - March 28, 2023

Rain Gardens, Rain Barrels and Native Plant Gardens - "Oh My!"

As a Pennsylvania or Delaware homeowner, you're invited to learn how to beautify your yard while improving water quality. Learn how these projects help reduce flooding, recharge our wells, filter pollutants from oily roads, reduce summer heat, and keep our... See more

Is your yard beautiful and sustainable?

Rain gardens, rain barrels, native plant gardens and shade trees are \$\$\$ attractive projects that help the White Clay Creek. Available

Come to a -Catch The Rain

workshop to learn more





As a Pennsylvania or Delaware homeowner, you're invited to learn how to beautify your yard while improving water quality. Learn how these projects help reduce flooding, recharge our wells, filter pollutants from oily roads, reduce summer heat, and keep our water clean. Your home's value will increase as plantings mature. Be a pace-setter in your neighborhood, attract birds and butterflies, enjoy year-round native

and be a part of the solution.

SAVE THE DATE! March 28 at 7 p.m. Free Virtual Event



Please scan QR code t https://whiteclay.org/i Franklin Township, Kemblesville PA

Interested in MS4, the Environment and how you can help regarding storm water and protecting mother nature? Please be sure to check out the Franklin Township website for more information.

... X



Attachment 3.1

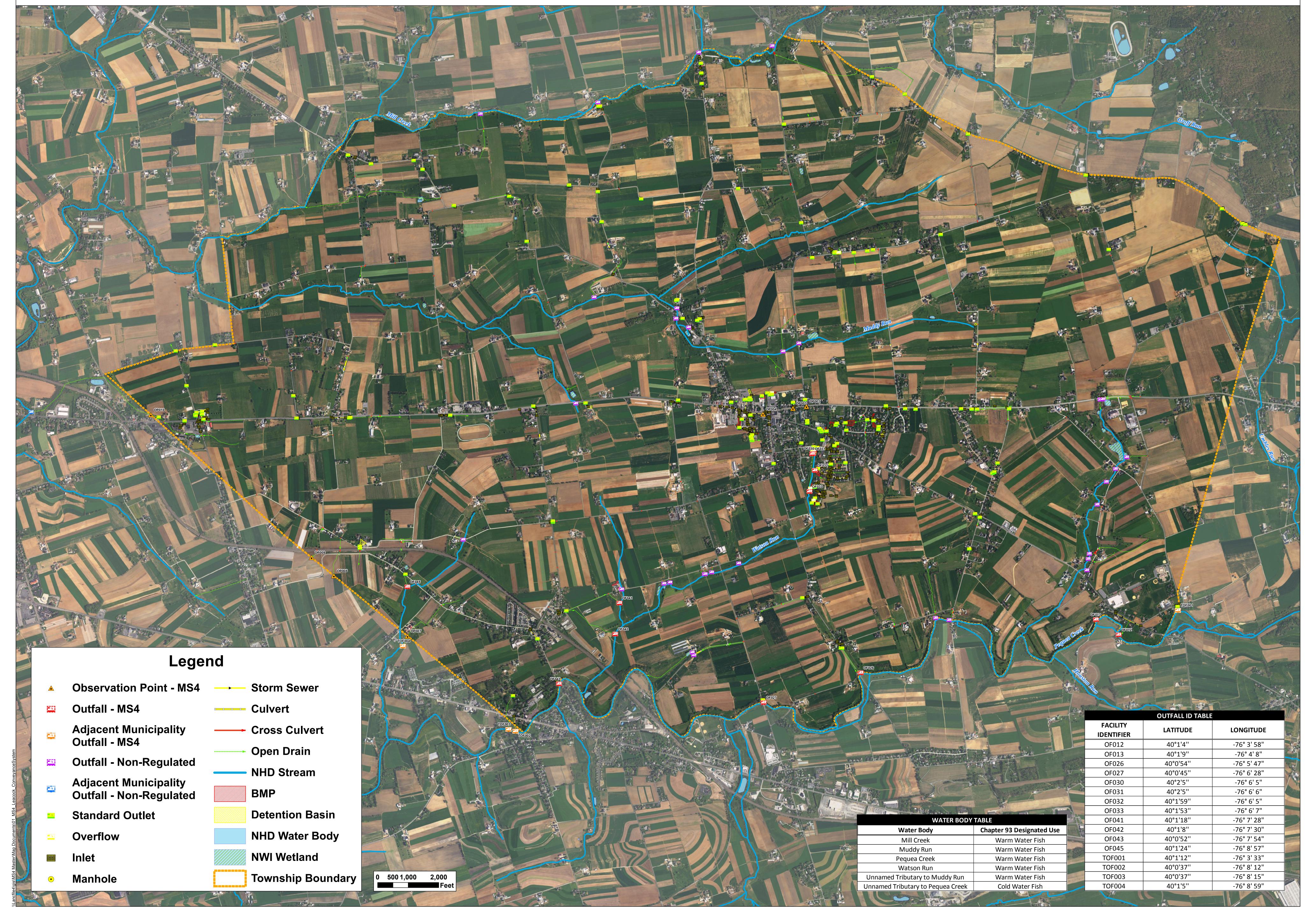
MS4 MAP



Leacock Township

MS4 Conveyance System





Attachment 3.2

OUTFALL INSPECTION REPORT

OUTFALL INSPECTION TOTAL REPORT



Municipality Name: Franklin Township

Period: 07/01/2022 - 06/30/2023

Number Of Outfall Inspections Performed: 47

Outfall Inspections Complete: 20

Outfall Inspections Incomplete: 27

Outfall Inspections Complete After Remediation: 0

Dry Weather Flows: 17

Illicit Discharges: 0

RESPONSIBLE OFFICIAL CERTIFICATION	
I certify under penalty of law that this document and all attachments were 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 knowledge of violations. See 18 Pa. C.S. § 4904 (relating to unsworn falsification).	
Jeffrey Eastburn	of Gentler
Responsible Official Name	Signature
610.255.5212	09/28/23
Telephone No.	Date



ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin_Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-15

Outfall ID: 069

Land Use(s) in Drainage Area: Suburban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Craig Ness

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: RCP
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): Pipe Submerged: Not Submerged

Comments:





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin_Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-15

Outfall ID: 065

Land Use(s) in Drainage Area: Suburban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Craig Ness

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Open Channel
Open Channel Material: Earthen
Open Channel Shape: Trapezoid
Open Channel Depth (in): 45
Open Channel Top Width (in): 28
Open Channel Bottom Width (in): 10

Comments: Photo(s) Taken:





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin_Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-15

Outfall ID: 082

Land Use(s) in Drainage Area: Suburban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Craig Ness

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: Steel Pipe Shape: Circular Number of Pipes: Single

Pipe Diameter/Dimensions (in): 36 Pipe Submerged: Not Submerged

Comments: Small amount of debris near pipe





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin_Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-15

Outfall ID: 068

Land Use(s) in Drainage Area: Suburban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Craig Ness

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: Steel
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): 15 Pipe Submerged: Not Submerged

Comments: Pipe damage erosion on swale





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin_Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-15

Outfall ID: 062

Land Use(s) in Drainage Area: Suburban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Craig Ness

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Open Channel
Open Channel Material: Earthen
Open Channel Shape: Trapezoid
Open Channel Depth (in): 18
Open Channel Top Width (in): 35
Open Channel Bottom Width (in): 10

Dry weather flow present at outfall during inspection? Yes

Description of flow rate: Trickle

Does the dry weather flow contain color? No Does the dry weather flow contain an odor? No

Is there an observed change in the receiving waters as a result of the discharge? No

Does the dry weather flow contain floating solids, scum, sheen, or substances that result in deposits? No Were sample(s) collected of the dry weather flow? No

Illicit Discharges: Is the dry weather flow an illicit discharge? No

Comments: Erosion on swale bank





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin_Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-15

Outfall ID: 078

Land Use(s) in Drainage Area: Suburban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Craig Ness

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: Steel
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): 24 Pipe Submerged: With Sediment

Comments: Debris blocking water flow





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin_Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-15

Outfall ID: 064

Land Use(s) in Drainage Area: Suburban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Craig Ness

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Open Channel
Open Channel Material: Earthen
Open Channel Shape: Trapezoid
Open Channel Depth (in): 15
Open Channel Top Width (in): 34
Open Channel Bottom Width (in): 10

Dry weather flow present at outfall during inspection? Yes

Description of flow rate: Moderate

Does the dry weather flow contain color? No Does the dry weather flow contain an odor? No

Is there an observed change in the receiving waters as a result of the discharge? No

Does the dry weather flow contain floating solids, scum, sheen, or substances that result in deposits? No Were sample(s) collected of the dry weather flow? No

Illicit Discharges: Is the dry weather flow an illicit discharge? No

Comments:





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin_Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-15

Outfall ID: 071

Land Use(s) in Drainage Area: Suburban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Craig Ness

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: RCP
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): 24 Pipe Submerged: Not Submerged

Dry weather flow present at outfall during inspection? Yes

Description of flow rate: Significant

Does the dry weather flow contain color? No Does the dry weather flow contain an odor? No

Is there an observed change in the receiving waters as a result of the discharge? No

Does the dry weather flow contain floating solids, scum, sheen, or substances that result in deposits? No Were sample(s) collected of the dry weather flow? No

Illicit Discharges: Is the dry weather flow an illicit discharge? No

Comments:





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin_Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-15

Outfall ID: 077

Land Use(s) in Drainage Area: Suburban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Craig Ness

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: Steel Pipe Shape: Circular Number of Pipes: Single

Pipe Diameter/Dimensions (in): 15 Pipe Submerged: Not Submerged

Comments: Debris blocking water flow





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin_Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-15

Outfall ID: 074

Land Use(s) in Drainage Area: Suburban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Craig Ness

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Open Channel
Open Channel Material: Earthen
Open Channel Shape: Trapezoid
Open Channel Depth (in): 19
Open Channel Top Width (in): 86
Open Channel Bottom Width (in): 10

Comments:





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-10

Outfall ID: OP003

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: RCP
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): 22 Pipe Submerged: Not Submerged

Dry weather flow present at outfall during inspection? Yes

Description of flow rate: Trickle

Does the dry weather flow contain color? No Does the dry weather flow contain an odor? No

Is there an observed change in the receiving waters as a result of the discharge? No

Does the dry weather flow contain floating solids, scum, sheen, or substances that result in deposits? No Were sample(s) collected of the dry weather flow? No

Illicit Discharges: Is the dry weather flow an illicit discharge? No

Comments:





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-10

Outfall ID: 061

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: RCP
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): N/A Pipe Submerged: Not Submerged

Dry weather flow present at outfall during inspection? Yes

Description of flow rate: Trickle

Does the dry weather flow contain color? No Does the dry weather flow contain an odor? No

Is there an observed change in the receiving waters as a result of the discharge? No

Does the dry weather flow contain floating solids, scum, sheen, or substances that result in deposits? No Were sample(s) collected of the dry weather flow? No

Illicit Discharges: Is the dry weather flow an illicit discharge? No

Comments: Dead vegetative build up at outfall structure. Could not access structure for measurements.





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-10

Outfall ID: OP005

Land Use(s) in Drainage Area: Suburban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: Steel
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): N/A Pipe Submerged: Not Submerged

Comments: Photo(s) Taken:





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-10

Outfall ID: OP002

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: RCP
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): N/A Pipe Submerged: Not Submerged

Comments: Dead vegetation blocking outfall structure. Could not access for measurement.

Photo(s) Taken:





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-10

Outfall ID: OP007

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: Steel
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): 14 Pipe Submerged: Not Submerged

Comments: Pipe is damaged.





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-10

Outfall ID: 138

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Open Channel
Open Channel Material: Earthen
Open Channel Shape: Trapezoid
Open Channel Depth (in): 110
Open Channel Top Width (in): 150
Open Channel Bottom Width (in): 63

Comments: Erosion occurring at outfall location.





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-10

Outfall ID: 142

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: Steel
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): 21 Pipe Submerged: Not Submerged

Comments: Debris build up blocking water flow path.





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-10

Outfall ID: TBD

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Open Channel
Open Channel Material: Earthen
Open Channel Shape: Trapezoid
Open Channel Depth (in): 17
Open Channel Top Width (in): 44
Open Channel Bottom Width (in): 29

Dry weather flow present at outfall during inspection? Yes

Description of flow rate: Trickle

Does the dry weather flow contain color? No Does the dry weather flow contain an odor? No

Is there an observed change in the receiving waters as a result of the discharge? No

Does the dry weather flow contain floating solids, scum, sheen, or substances that result in deposits? No Were sample(s) collected of the dry weather flow? No

Illicit Discharges: Is the dry weather flow an illicit discharge? No

Comments:





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-10

Outfall ID: 059

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: RCP
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): 24 Pipe Submerged: Not Submerged

Comments: Rock blocking water flow path, riprap starting to sink









ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin_Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-10

Outfall ID: 158

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: RCP
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): N/A Pipe Submerged: Not Submerged

Comments: Dead vegetative build up





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-10

Outfall ID: OP008

Land Use(s) in Drainage Area: Open Space

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: Steel
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): 20 Pipe Submerged: Not Submerged

Comments:
Photo(s) Taken:





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-10

Outfall ID: OP009

Land Use(s) in Drainage Area: Open Space, Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: CMP Pipe Shape: Circular Number of Pipes: Single

Pipe Diameter/Dimensions (in): 22 Pipe Submerged: Not Submerged

Comments:





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-10

Outfall ID: OP006

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: Steel Pipe Shape: Box

Number of Pipes: Single

Pipe Diameter/Dimensions (in): N/A Pipe Submerged: Not Submerged

Dry weather flow present at outfall during inspection? No

Responsible Official Name:

Comments:





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-10

Outfall ID: OP004

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

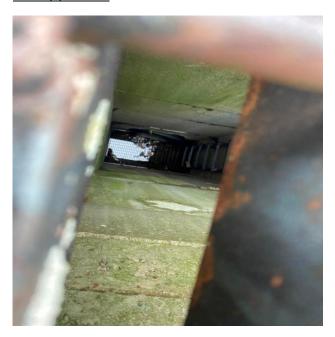
Outfall Description

Outfall Type: Closed Pipe

Pipe Material: CMP Pipe Shape: Circular Number of Pipes: Single

Pipe Diameter/Dimensions (in): N/A Pipe Submerged: Not Submerged

Comments: Taken from observation point





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 100

Land Use(s) in Drainage Area: Open Space, Suburban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Open Channel
Open Channel Material: Earthen
Open Channel Shape: Trapezoid
Open Channel Depth (in): 6
Open Channel Top Width (in): 20
Open Channel Bottom Width (in): 18

Comments: Dead vegetation and silt fence built up around outfall structure upstream.





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 042

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Open Channel
Open Channel Material: Earthen
Open Channel Shape: Parabolic
Open Channel Depth (in): 3
Open Channel Top Width (in): 29
Open Channel Bottom Width (in): 29

Dry weather flow present at outfall during inspection? Yes

Description of flow rate: Trickle

Does the dry weather flow contain color? No Does the dry weather flow contain an odor? No

Is there an observed change in the receiving waters as a result of the discharge? No

Does the dry weather flow contain floating solids, scum, sheen, or substances that result in deposits? No Were sample(s) collected of the dry weather flow? No

Illicit Discharges: Is the dry weather flow an illicit discharge? No

Comments: Outfall pipe is located under tree.





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 053

Land Use(s) in Drainage Area: Open Space, Suburban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Open Channel
Open Channel Material: Earthen
Open Channel Shape: Trapezoid
Open Channel Depth (in): 3
Open Channel Top Width (in): 10
Open Channel Bottom Width (in): 8

Dry weather flow present at outfall during inspection? Yes

Description of flow rate: Moderate

Does the dry weather flow contain color? No Does the dry weather flow contain an odor? No

Is there an observed change in the receiving waters as a result of the discharge? No

Does the dry weather flow contain floating solids, scum, sheen, or substances that result in deposits? No Were sample(s) collected of the dry weather flow? No

Illicit Discharges: Is the dry weather flow an illicit discharge? No

Comments: Flow originates from pond across street.





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 028

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: Steel
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): 35 Pipe Submerged: With Sediment

Dry weather flow present at outfall during inspection? Yes

Description of flow rate: Trickle

Does the dry weather flow contain color? No Does the dry weather flow contain an odor? No

Is there an observed change in the receiving waters as a result of the discharge? No

Does the dry weather flow contain floating solids, scum, sheen, or substances that result in deposits? No Were sample(s) collected of the dry weather flow? No

Illicit Discharges: Is the dry weather flow an illicit discharge? No **Comments:** Sediment build up/erosion occurring in outlet structure.





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 055

Land Use(s) in Drainage Area: Open Space, Suburban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: RCP Pipe Shape: Circular Number of Pipes: Single

Pipe Diameter/Dimensions (in): 14 Pipe Submerged: With Sediment

Comments: Sediment/dead vegetative build up at outfall structure Photo(s) Taken:





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 029

Land Use(s) in Drainage Area: Open Space, Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Open Channel
Open Channel Material: Earthen
Open Channel Shape: Trapezoid
Open Channel Depth (in): 16
Open Channel Top Width (in): 42
Open Channel Bottom Width (in): 37

Comments: Confirm vegetation with as-built plans.

<u>Photo(s) Taken:</u>





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 147

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: Steel
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): N/A Pipe Submerged: Not Submerged

Dry weather flow present at outfall during inspection? Yes

Description of flow rate: Trickle

Does the dry weather flow contain color? No Does the dry weather flow contain an odor? No

Is there an observed change in the receiving waters as a result of the discharge? No

Does the dry weather flow contain floating solids, scum, sheen, or substances that result in deposits? No Were sample(s) collected of the dry weather flow? No

Illicit Discharges: Is the dry weather flow an illicit discharge? No

Comments:





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 140

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Open Channel
Open Channel Material: Earthen
Open Channel Shape: Trapezoid
Open Channel Depth (in): 4

Open Channel Top Width (in): 200 Open Channel Bottom Width (in): 68

Dry weather flow present at outfall during inspection? Yes

Description of flow rate: Moderate

Does the dry weather flow contain color? No Does the dry weather flow contain an odor? No

Is there an observed change in the receiving waters as a result of the discharge? No

Does the dry weather flow contain floating solids, scum, sheen, or substances that result in deposits? No Were sample(s) collected of the dry weather flow? No

Illicit Discharges: Is the dry weather flow an illicit discharge? No

Comments: Confirm flow is not creek





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 050

Land Use(s) in Drainage Area: Open Space, Suburban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: Steel Pipe Shape: Box

Number of Pipes: Single

Pipe Diameter/Dimensions (in): N/A Pipe Submerged: Not Submerged

Comments: Inspection taken from observation points





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 046

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: RCP
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): N/A Pipe Submerged: Not Submerged

Dry weather flow present at outfall during inspection? No

Illicit Discharges: Is the dry weather flow an illicit discharge? No Describe corrective actions taken by the permittee in response to the finding of an illicit discharge: Could not measure outfall due to overgrown vegetation and fence.

Comments: Could not measure outfall due to overgrown vegetation and fence.





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 159

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Open Channel
Open Channel Material: Earthen
Open Channel Shape: Trapezoid
Open Channel Depth (in): 44
Open Channel Top Width (in): 207
Open Channel Bottom Width (in): 150

Dry weather flow present at outfall during inspection? No

Comments:





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 048

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: RCP
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): 0 Pipe Submerged: Not Submerged

Dry weather flow present at outfall during inspection? No

Comments: Debris/dead vegetative build up around outfall structure. Could not access outfall for measurements.







ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 146

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: RCP
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): 47 Pipe Submerged: Not Submerged

Dry weather flow present at outfall during inspection? Yes

Description of flow rate: Moderate

Does the dry weather flow contain color? No Does the dry weather flow contain an odor? No

Is there an observed change in the receiving waters as a result of the discharge? No

Does the dry weather flow contain floating solids, scum, sheen, or substances that result in deposits? Yes

Description of deposits: Foam/bubbles

Were sample(s) collected of the dry weather flow? No

Illicit Discharges: Is the dry weather flow an illicit discharge? No

Comments: Foam/bubbles result from increased dead vegetation around pond. Confirm if facility is outfall or not; confirm nearby streams





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 083

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: Steel
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): 14 Pipe Submerged: Not Submerged

Dry weather flow present at outfall during inspection? No

Comments: Sediment/dead vegetative build up along water conveyance path

Photo(s) Taken:





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 154

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: Steel
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): N/A Pipe Submerged: Not Submerged

Dry weather flow present at outfall during inspection? Yes

Description of flow rate: Moderate

Does the dry weather flow contain color? No Does the dry weather flow contain an odor? No

Is there an observed change in the receiving waters as a result of the discharge? No

Does the dry weather flow contain floating solids, scum, sheen, or substances that result in deposits? No Were sample(s) collected of the dry weather flow? No

Illicit Discharges: Is the dry weather flow an illicit discharge? No

Comments: Dead vegetative build up blocking access to outfall structure. Flow from creek below.





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 041

Land Use(s) in Drainage Area: Open Space, Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Open Channel
Open Channel Material: Earthen
Open Channel Shape: Trapezoid
Open Channel Depth (in): 10
Open Channel Top Width (in): 28
Open Channel Bottom Width (in): 23

Dry weather flow present at outfall during inspection? Yes

Description of flow rate: Trickle

Does the dry weather flow contain color? No Does the dry weather flow contain an odor? No

Is there an observed change in the receiving waters as a result of the discharge? No

Does the dry weather flow contain floating solids, scum, sheen, or substances that result in deposits? No Were sample(s) collected of the dry weather flow? No

Illicit Discharges: Is the dry weather flow an illicit discharge? No

Comments: Filter fabric still on upstream inlet with debris build up from construction. Dead vegetation blocking outfall structure and built up along swale banks.





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 049

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Open Channel
Open Channel Material: Earthen
Open Channel Shape: Trapezoid
Open Channel Depth (in): 45
Open Channel Top Width (in): 62
Open Channel Bottom Width (in): 53

Dry weather flow present at outfall during inspection? No

Comments: Dead vegetative build up along conveyance. Active reconstruction of stormwater conveyance.





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 047

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: Steel Pipe Shape: Box

Number of Pipes: Single

Pipe Diameter/Dimensions (in): 53x38

Pipe Submerged: In Water

Dry weather flow present at outfall during inspection? Yes

Description of flow rate: Trickle

Does the dry weather flow contain color? No Does the dry weather flow contain an odor? No

Is there an observed change in the receiving waters as a result of the discharge? No

Does the dry weather flow contain floating solids, scum, sheen, or substances that result in deposits? No Were sample(s) collected of the dry weather flow? No

Illicit Discharges: Is the dry weather flow an illicit discharge? No

Comments: Standing water present in structure. Erosion of riprap occurring. Photo(s) Taken:





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 044

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Open Channel
Open Channel Material: Earthen
Open Channel Shape: Parabolic
Open Channel Depth (in): 17
Open Channel Top Width (in): 32
Open Channel Bottom Width (in): 32

Dry weather flow present at outfall during inspection? Yes

Description of flow rate: Trickle

Does the dry weather flow contain color? No Does the dry weather flow contain an odor? No

Is there an observed change in the receiving waters as a result of the discharge? No

Does the dry weather flow contain floating solids, scum, sheen, or substances that result in deposits? No Were sample(s) collected of the dry weather flow? No

Illicit Discharges: Is the dry weather flow an illicit discharge? No

Comments: Dead vegetative build up near culvert





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 054

Land Use(s) in Drainage Area: Open Space, Suburban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: RCP
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): 14 Pipe Submerged: With Sediment

Dry weather flow present at outfall during inspection? No

Comments: Sediment/trash/dead vegetative build up at outfall structure Photo(s) Taken:





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 143

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Open Channel
Open Channel Material: Earthen
Open Channel Shape: Trapezoid
Open Channel Depth (in): 2
Open Channel Top Width (in): 12
Open Channel Bottom Width (in): 3

Dry weather flow present at outfall during inspection? No

Comments:





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 109

Land Use(s) in Drainage Area: Open Space

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Open Channel
Open Channel Material: Earthen
Open Channel Shape: Trapezoid
Open Channel Depth (in): 3
Open Channel Top Width (in): 23
Open Channel Bottom Width (in): 10

Dry weather flow present at outfall during inspection? Yes

Description of flow rate: Moderate

Does the dry weather flow contain color? No Does the dry weather flow contain an odor? No

Is there an observed change in the receiving waters as a result of the discharge? No

Does the dry weather flow contain floating solids, scum, sheen, or substances that result in deposits? No Were sample(s) collected of the dry weather flow? No

Illicit Discharges: Is the dry weather flow an illicit discharge? No

Comments: Confirm outfall status





ARRO Consulting

108 W Airport Rd,

Lititz, PA 17543

Permittee Name: Franklin Township

NPDES Permit Number: TBD

Date of Inspection: 2023-03-09

Outfall ID: 043

Land Use(s) in Drainage Area: Urban Residential

Dry Weather Inspection? Yes

Date of Previous Precipitation: 2023-03-03

Amount of Previous Precipitation (in): 1.2

Inspector Name(s): Amanda Fetterman

Were Photographs Taken? Yes

Outfall Description

Outfall Type: Closed Pipe

Pipe Material: Steel
Pipe Shape: Circular
Number of Pipes: Single

Pipe Diameter/Dimensions (in): 14 Pipe Submerged: Not Submerged

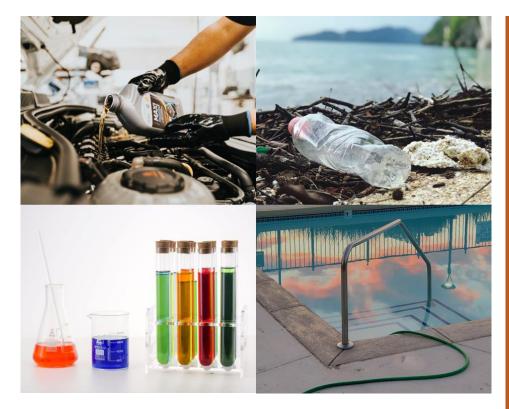
Dry weather flow present at outfall during inspection? No

Comments: Erosion occurring forming sinkhole



Attachment 3.3

FIRST RESPONDER IDDE EDUCATION



STORMWATER IS EVERYBODY'S BUSINESS

What is an MS4?

The Township of Franklin manages a municipal separate storm sewer system (MS4) which is made up of a network of pipes, drains, channels, and basins that carry untreated stormwater runoff throughout the Township directly to local waterbodies. Under the Township's MS4 permit, which provides authorization for the Township to discharge into these waterbodies, the Township must monitor what gets released into and from the MS4.

What is an Illicit Discharge?

An illicit discharge is any discharge into the Township's MS4 that is not composed entirely of stormwater; this can include chemicals, trash, and organic debris.



What can you do to help?

As you are performing your daily job responsibilities around the Township, please keep a look out for any illicit discharges you may come across. Examples of common illicit discharges observed entering the MS4 can be found below.

If you see something, say something!



CHEMICALS



POOL WATER



YARD WASTE



TRASH



CAR FLUIDS & WASH WATER

If you come across an illicit discharge, please contact Franklin Township as soon as possible and provide the following information if available:

- Location of concern
- Quantity, origin, color, or odor if present
- Individuals involved in discharge

610.255.5212

Attachment 5.1

BMP INSPECTION REPORT

BMP INSPECTION TOTAL REPORT



Municipality Name: Franklin Township Inspection Period: 07/01/2022 - 06/30/2023 Report Produced: 07/10/2023

Number Of BMP Inspections Performed: 32

BMPs Not Requiring Maintenance: 4
BMPs Requiring Maintenance: 26
BMPs Requiring Verification: 10
BMPs With Completed Maintenance: 0



BMP INSPECTION SUMMARY

Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-22

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP028

BMP Type: Dry Extended Detention Basin

BMP Address: 32 FAIRVIEW LN, LANDENBERG, PA 19350

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): Trash Rack

Erosion At Outlet: Mild Outlet Clogging: Mild Structural Problems: None Signs of Leakage: None

Outfall Discharges to: Storm Sewer

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Basin:

Pretreatment Type: Riprap Channel

Sediment Buildup: Moderate Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 0 % Shrubs: 0 % Herbaceous: 0 % Turf: 100

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? Yes

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 80% BMPs appear to be functioning well, with only minor/few performance problems

Field Observations: Piles of debris built up throughout basin; sediment buildup on riprap channel at inlet

BMP Inspection Status: Incomplete – Maintenance Needed





BMP INSPECTION SUMMARY

Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-22

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP029

BMP Type: Dry Extended Detention Basin

BMP Address: 3249 APPLETON RD, LANDENBERG, PA 19350

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Sheet Flow Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): N/A

Erosion At Outlet: None Outlet Clogging: None Structural Problems: None Signs of Leakage: None

Outfall Discharges to: Storm Sewer

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Basin:

Pretreatment Type: Vegetated Filter strip

Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 0 % Shrubs: 0 % Herbaceous: 0 % Turf: 100

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? Yes

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 1

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 90% After inspection, appears to have excellent function and no general problems with performance

Field Observations: Standing water/erosion occurring near outlet structure

BMP Inspection Status: Incomplete – Maintenance Needed







Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-22

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP030

BMP Type: Dry Extended Detention Basin

BMP Address: 100 SYACMORE KNOLL LN, LINCOLN UNIVERSITY, PA 19352

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? Yes

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): Trash Rack

Erosion At Outlet: None Outlet Clogging: None Structural Problems: None Signs of Leakage: None

Outfall Discharges to: Surface Water

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Pretreatment Type: N/A Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Grasses/Perennials

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 10 % Shrubs: 10 % Herbaceous: 70

% Turf: 0

Plant Cover: Periphery Mowed

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? No

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 70% BMPs appear to be functioning well, with only minor/few performance problems

Field Observations: Dead vegetative buildup throughout basin; lack of vegetation at outlet structure; verify vegetative plantings with design plans

BMP Inspection Status: Incomplete – Maintenance and Verification Needed









Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-22

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP031

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 72-4-85

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): N/A

Erosion At Outlet: None Outlet Clogging: Mild Structural Problems: None Signs of Leakage: None

Outfall Discharges to: Storm Sewer

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Pretreatment Type: Vegetated Channel

Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Grasses/Perennials

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Wetland Species

% Trees: 0 % Shrubs: 0 % Herbaceous: 80

% Turf: 20

Plant Cover: No Mowing

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? Yes

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 80% BMPs appear to be functioning well, with only minor/few performance problems

Field Observations: Verify wetland species present with design plans; dead vegetative buildup around basin banks and outlet structure

BMP Inspection Status: Incomplete – Maintenance and Verification Needed







Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-22

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP005

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 72-5-34

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): N/A

Erosion At Outlet: None Outlet Clogging: None Structural Problems: None Signs of Leakage: None

Outfall Discharges to: Storm Sewer

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Pretreatment Type: Riprap Channel

Sediment Buildup: Moderate Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Grasses/Perennials

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 10 % Shrubs: 0 % Herbaceous: 0 % Turf: 90

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? No

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 80% BMPs appear to be functioning well, with only minor/few performance problems

Field Observations: Debris buildup on riprap at inflow area; verify woody plantings with design plans

BMP Inspection Status: Incomplete – Maintenance and Verification Needed











Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-22

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP034

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 72-1-7.3

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: Moderate Inlet Clogging: None Structural Problems: None

Structural Frobicins, None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? Yes

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): N/A

Erosion At Outlet: None Outlet Clogging: Moderate Structural Problems: None Signs of Leakage: None

Outfall Discharges to: Surface Water

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Pretreatment Type: Riprap Channel

Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Trees, Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 10 % Shrubs: 10 % Herbaceous: 20

% Turf: 60

Plant Cover: Large Areas of Bare Soil

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? No

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 4

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 60% BMPs appear to be functioning adequately, with only moderate problems with performance noted

Field Observations: Verify vegetative plantings and species with design plans; verify standing water and basin slopes with design plans; reduced riprap at inflow structure; debris buildup at outlet structure

BMP Inspection Status: Incomplete – Maintenance and Verification Needed









Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-22

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP027

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 7-2-161

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): Trash Rack

Erosion At Outlet: None Outlet Clogging: None Structural Problems: None Signs of Leakage: None

Outfall Discharges to: Surface Water

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Pretreatment Type: Riprap Channel

Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 0 % Shrubs: 0 % Herbaceous: 0

% Turf: 75

Plant Cover: Large Areas of Bare Soil

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? Yes

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: Minor (25% affected)

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 80% BMPs appear to be functioning well, with only minor/few performance problems

Field Observations: Areas of exposed soil throughout basin.

BMP Inspection Status: Incomplete – Maintenance Needed









Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-22

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP026

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 7-2-161

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): Trash Rack

Erosion At Outlet: None Outlet Clogging: None Structural Problems: None Signs of Leakage: None

Outfall Discharges to: Surface Water

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Pretreatment Type: Riprap Channel

Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Grasses/Perennials

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 0 % Shrubs: 0 % Herbaceous: 0 % Turf: 75

Plant Cover: Large Areas of Bare Soil

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? Yes

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: Minor (25% affected)

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 80% BMPs appear to be functioning well, with only minor/few performance problems

Field Observations: Areas of exposed soil throughout basin.

BMP Inspection Status: Incomplete – Maintenance Needed











Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-22

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP022

BMP Type: Dry Extended Detention Basin

BMP Address: 14 OAK TREE DR, LANDENBERG, PA 19350

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): Trash Rack

Erosion At Outlet: None Outlet Clogging: None Structural Problems: None Signs of Leakage: None

Outfall Discharges to: Surface Water

Erosion: None Outfall Trash: None Sedimentation: None

Other: None

Pretreatment Type: Riprap Channel

Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Shrubs ,Managed Turf Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 10 % Shrubs: 20 % Herbaceous: 0

% Turf: 70

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? No

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 100% After inspection, appears to have excellent function and no general problems with performance

Field Observations: Verify vegetation with design plans.

BMP Inspection Status: Incomplete – Verification Needed





Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-22

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP032

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 72-4-86

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: Moderate

Inlet Clogging: Moderate Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): Trash Rack

Erosion At Outlet: None Outlet Clogging: Moderate Structural Problems: None Signs of Leakage: None

Outfall Discharges to: Surface Water

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Pretreatment Type: N/A Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Grasses/Perennials

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Wetland Species

% Trees: 10 % Shrubs: 0 % Herbaceous: 80

% Turf: 10

Plant Cover: No Mowing

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? No

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: Minor (25% affected)

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 3

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 60% BMPs appear to be functioning adequately, with only moderate problems with performance noted

Field Observations: Verify wetland and woody species present with design plans; standing water present at inflow structure; debris buildup at outlet structure

BMP Inspection Status: Incomplete – Maintenance and Verification Needed











Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-22

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP020

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 72-5-34

Inspection Results

BMP Overview: BMP could not be located, BMP appears to have been modified resulting in reduced

effectiveness

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: Severe Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): N/A

Erosion At Outlet: None Outlet Clogging: Severe Structural Problems: None Signs of Leakage: None

Outfall Discharges to: Surface Water

Erosion: None Outfall Trash: None Sedimentation: None

Other: None

Basin:

Pretreatment Type: N/A Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None Vegetation Type: Trees, Shrubs ,Grasses/Perennials Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 30 % Shrubs: 20 % Herbaceous: 50

% Turf: 0

Plant Cover: No Mowing

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? No

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None

Sediment: Moderate

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 40% BMPs appear to be under functioning for site conditions and/or major problems with performance are noted

Field Observations: Overgrown vegetation throughout basin - could not locate inlet or outlet structures; verify vegetation and BMP type with design plans

BMP Inspection Status: Incomplete – Maintenance and Verification Needed





Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-22

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP007

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 72-3-24.34

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): Trash Rack

Erosion At Outlet: None Outlet Clogging: None Structural Problems: None Signs of Leakage: None Outfall Discharges to: BMP

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Pretreatment Type: Riprap Channel

Sediment Buildup: Mild Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Grasses/Perennials

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 0 % Shrubs: 0 % Herbaceous: 0 % Turf: 100

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? Yes

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 90% After inspection, appears to have excellent function and no general problems with performance

Field Observations: Sediment buildup along riprap channel in basin.

BMP Inspection Status: Incomplete – Maintenance Needed











Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-22

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP021

BMP Type: Dry Extended Detention Basin

BMP Address: 53 PENNBROOK DR, LINCOLN UNIVERSITY, PA 19352

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Open Channel, Sheet Flow

Inlet Erosion: None
Inlet Clogging: None
Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): N/A

Erosion At Outlet: None Outlet Clogging: None Structural Problems: None Signs of Leakage: None

Outfall Discharges to: Surface Water

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Pretreatment Type: Vegetated Channel

Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 0 % Shrubs: 10 % Herbaceous: 0 % Turf: 90

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? Yes

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 100% After inspection, appears to have excellent function and no general problems with performance

Field Observations: Verify vegetative plantings with design plans.

BMP Inspection Status: Incomplete – Verification Needed







Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-22

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP008

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 72-3-24.34

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? Yes

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): Trash Rack

Erosion At Outlet: None
Outlet Clogging: None
Structural Problems: None
Signs of Leakage: None
Outfall Discharges to: Other

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Pretreatment Type: Riprap Channel

Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 0 % Shrubs: 0 % Herbaceous: 0 % Turf: 100

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? Yes

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

 $\textbf{Visual Inspection Results: } 100\% \ \text{After inspection, appears to have excellent function and no general}$

problems with performance

Field Observations: None

BMP Inspection Status: Complete





Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-22

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP025

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 72-1-7.3

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: Moderate Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): Trash Rack

Erosion At Outlet: None Outlet Clogging: None Structural Problems: None Signs of Leakage: None

Outfall Discharges to: Surface Water

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Pretreatment Type: Riprap Channel Sediment Buildup: Moderate Pretreatment Bypass: Moderate

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 10 % Shrubs: 0 % Herbaceous: 0 % Turf: 90

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? No

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 80% BMPs appear to be functioning well, with only minor/few performance problems

Field Observations: Sediment buildup and erosion occurring at riprap inflow channel; dead vegetative buildup throughout basin









Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-22

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP004

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 72-5-34

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None

Inlet Clogging: Moderate Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? Yes

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): N/A

Erosion At Outlet: Mild Outlet Clogging: None Structural Problems: None Signs of Leakage: None

Outfall Discharges to: Storm Sewer

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Pretreatment Type: Riprap Channel

Sediment Buildup: Severe Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 0 % Shrubs: 0 % Herbaceous: 0 % Turf: 90

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? Yes

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None

Sediment: Moderate

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 70% BMPs appear to be functioning well, with only minor/few performance problems

Field Observations: Sediment buildup at riprap channel and inflow structure; areas of exposed soil/dead vegetation throughout basin











Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-22

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP024

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 72-1-7.3

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None

Inlet Clogging: Moderate Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? Yes

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): Trash Rack

Erosion At Outlet: None
Outlet Clogging: Mild
Structural Problems: None
Signs of Leakage: None
Outfall Discharges to: Other

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Pretreatment Type: N/A Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Shrubs

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Wetland Species

% Trees: 10 % Shrubs: 10 % Herbaceous: 50

% Turf: 30

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? No

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 2

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 50% BMPs appear to be functioning adequately, with only moderate problems with performance noted

Field Observations: Verify vegetative species and standing water with design plans; dead vegetation throughout basin

BMP Inspection Status: Incomplete – Maintenance and Verification Needed





Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-22

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP006

BMP Type: Dry Extended Detention Basin

BMP Address: 306 HYATT LN, LANDENBERG, PA 19350

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? No

Energy dissipaters present at end of primary outlet? No Outlet Structures (Check all that apply): Emergency Spillway

Outlet Features (Check all that apply): Riprap Apron

Erosion At Outlet: None Outlet Clogging: None Structural Problems: None Signs of Leakage: None

Outfall Discharges to: Surface Water

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Pretreatment Type: Riprap Channel

Sediment Buildup: Mild Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 0 % Shrubs: 0 % Herbaceous: 0 % Turf: 100

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? Yes

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: Minor

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 90% After inspection, appears to have excellent function and no general problems with performance

Field Observations: Sediment buildup on riprap at inflow structure







Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-22

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP033

BMP Type: Wet Pond/Retention Basin

BMP Address: UPI 72-4-86

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: Severe Structural Problems: None

Comments: Could not locate due to overgrown/dead vegetative buildup

Outlet:

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): N/A

Erosion At Outlet: None Outlet Clogging: Severe Structural Problems: None Signs of Leakage: None

Is Outlet located in "Open Water" area of Constructed Wetland? Yes

Outfall Discharges to: Surface Water

Erosion: None Outfall Trash: None Sedimentation: None

Other: None

Basin:

Pretreatment Type: N/A

Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Grasses/Perennials

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Wetland Species

% Trees: 0 % Shrubs: 0 % Herbaceous: 80

% Turf: 20

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? Yes

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 8

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 70% BMPs appear to be functioning well, with only minor/few performance problems

Field Observations: Debris buildup at inlet and outlet structures





Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-22

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP023

BMP Type: Dry Extended Detention Basin

BMP Address: 23 BEECHWOOD DR, LANDENBERG, PA 19350

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): Trash Rack

Erosion At Outlet: None Outlet Clogging: Mild Structural Problems: None Signs of Leakage: None Outfall Discharges to: Other

Erosion: None Outfall Trash: None Sedimentation: None

Other: None

Pretreatment Type: N/A Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 0 % Shrubs: 20 % Herbaceous: 0 % Turf: 50

Plant Cover: Large Areas of Bare Soil

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? No

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: Moderate (<15% affected)
Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 60% BMPs appear to be functioning adequately, with only moderate problems with performance noted

Field Observations: Areas of exposed soil throughout basin; dead vegetative buildup throughout basin; verify vegetation with design plans

BMP Inspection Status: Incomplete – Maintenance and Verification Needed





Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-11

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP003

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 72-3-146

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser, Emergency Spillway Outlet Features (Check all that apply): Trash Rack, Riprap Apron

Erosion At Outlet: None Outlet Clogging: None Structural Problems: None Signs of Leakage: None

Outfall Discharges to: Storm Sewer

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Pretreatment Type: Riprap Channel

Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None Vegetation Type: Grasses/Perennials, Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Wetland Species

% Trees: 5 % Shrubs: 0 % Herbaceous: 25

% Turf: 70

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? No

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 80% After inspection, appears to have excellent function and no general problems with performance

Field Observations: None

BMP Inspection Status: Complete





Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-11

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP019

BMP Type: Dry Extended Detention Basin

BMP Address: 302 HYATT LN, LANDENBERG, PA 19350

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): N/A

Erosion At Outlet: None
Outlet Clogging: None
Structural Problems: None
Signs of Leakage: None
Outfall Discharges to: Other

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Pretreatment Type: Riprap Channel

Sediment Buildup: Moderate Pretreatment Bypass: Mild

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 0 % Shrubs: 0 % Herbaceous: 0 % Turf: 100

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? Yes

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 90% After inspection, appears to have excellent function and no general problems with performance

Field Observations: Sediment buildup on riprap at inflow structure; erosion occurring along side of riprap channel next to inflow









Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-11

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP013

BMP Type: Dry Extended Detention Basin

BMP Address: 100 LAVENDER HILL LN, LANDENBERG, PA 19350

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): N/A

Erosion At Outlet: None
Outlet Clogging: None
Structural Problems: None
Signs of Leakage: None
Outfall Discharges to: Other

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Pretreatment Type: N/A Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None Vegetation Type: Trees, Shrubs ,Managed Turf Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 5 % Shrubs: 5 % Herbaceous: 0 % Turf: 90

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? No

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: Minor (25% affected)

Bank Structure: No Visual Structural Damage

Trash: None Sediment: Minor

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 80% BMPs appear to be functioning well, with only minor/few performance problems

Field Observations: Erosion/dead vegetative buildup within basin and at inflow structure











Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-11

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP014

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 72-3-98

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? No

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Emergency Spillway, Channel

Outlet Features (Check all that apply): N/A

Erosion At Outlet: None Outlet Clogging: None Structural Problems: None Signs of Leakage: None Outfall Discharges to: BMP

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Pretreatment Type: Riprap Channel

Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 0 % Shrubs: 0 % Herbaceous: 0 % Turf: 100

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? Yes

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 90% After inspection, appears to have excellent function and no general problems with performance

Field Observations: Dead vegetation throughout basin







Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-11

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP018

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 72-3-100

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? No

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Inlet Outlet Features (Check all that apply): N/A

Erosion At Outlet: None Outlet Clogging: Moderate Structural Problems: None Signs of Leakage: None Outfall Discharges to: BMP

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Pretreatment Type: Riprap Channel

Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 0 % Shrubs: 0 % Herbaceous: 0 % Turf: 100

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? Yes

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 90% After inspection, appears to have excellent function and no general problems with performance

Field Observations: Sediment buildup clogging outlet structure











Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-11

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP017

BMP Type: Dry Extended Detention Basin

BMP Address: 4 GATEHOUSE LN, LANDENBERG, PA 19350

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): N/A

Erosion At Outlet: None Outlet Clogging: None Structural Problems: None Signs of Leakage: None

Outfall Discharges to: Surface Water

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Pretreatment Type: Riprap Channel

Sediment Buildup: Moderate Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 0 % Shrubs: 0 % Herbaceous: 0 % Turf: 100

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? Yes

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 90% After inspection, appears to have excellent function and no general problems with performance

Field Observations: Dead vegetative buildup along basin bank near outlet structure; sediment buildup on riprap at inflow location











BMP INSPECTION SUMMARY

Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-11

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP015

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 72-3-98

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Sheet Flow Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): N/A

Erosion At Outlet: None
Outlet Clogging: None
Structural Problems: None
Signs of Leakage: None
Outfall Discharges to: Other

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Basin:

Pretreatment Type: N/A Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 0 % Shrubs: 0 % Herbaceous: 0 % Turf: 100

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? Yes

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 90% After inspection, appears to have excellent function and no general problems with performance

Field Observations: Dead vegetation throughout basin

BMP Inspection Status: Incomplete – Maintenance Needed







BMP INSPECTION SUMMARY

Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-11

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP002

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 72-3-145

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Open Channel, Closed Pipe

Inlet Erosion: None
Inlet Clogging: None
Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): Trash Rack

Erosion At Outlet: None
Outlet Clogging: None
Structural Problems: None
Signs of Leakage: None
Outfall Discharges to: Other

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Basin:

Pretreatment Type: Riprap Channel

Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 0 % Shrubs: 0 % Herbaceous: 0 % Turf: 100

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? Yes

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 100% After inspection, appears to have excellent function and no general

problems with performance

Field Observations: None

BMP Inspection Status: Complete











BMP INSPECTION SUMMARY

Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-05-11

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP001

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 72-3-147

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? Yes

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): N/A

Erosion At Outlet: None
Outlet Clogging: None
Structural Problems: None
Signs of Leakage: None
Outfall Discharges to: Other

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Basin:

Pretreatment Type: Riprap Channel

Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 0 % Shrubs: 0 % Herbaceous: 0 % Turf: 100

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? Yes

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

 $\textbf{Visual Inspection Results: } 100\% \ \text{After inspection, appears to have excellent function and no general}$

problems with performance

Field Observations: None

BMP Inspection Status: Complete











BMP INSPECTION SUMMARY

Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-03-11

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP010-012

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 72-3-98

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: Mild Inlet Clogging: None Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No

Outlet Structures (Check all that apply): Riser Outlet Features (Check all that apply): N/A

Erosion At Outlet: None Outlet Clogging: None Structural Problems: None Signs of Leakage: None

Outfall Discharges to: Storm Sewer

Erosion: None Outfall Trash: None Sedimentation: None

Other: None

Basin:

Pretreatment Type: N/A Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 0 % Shrubs: 0 % Herbaceous: 0 % Turf: 100

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? Yes

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 90% After inspection, appears to have excellent function and no general problems with performance

Field Observations: Erosion occurring at inflow structure

BMP Inspection Status: Incomplete – Maintenance Needed





BMP INSPECTION SUMMARY

Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-03-11

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP016

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 72-3-98

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: Severe Inlet Clogging: Mild

Structural Problems: None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? No Outlet Structures (Check all that apply): Riser, Inlet

Outlet Features (Check all that apply): N/A

Erosion At Outlet: None Outlet Clogging: None Structural Problems: None Signs of Leakage: None

Outfall Discharges to: Surface Water

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Basin:

Pretreatment Type: N/A Sediment Buildup: None Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 0 % Shrubs: 10 % Herbaceous: 0 % Turf: 90

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? No

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 70% BMPs appear to be functioning well, with only minor/few performance problems

Field Observations: Dead vegetation along basin bank near outlet structure; erosion occurring along inflow pipe; sediment buildup at inflow structure

BMP Inspection Status: Incomplete – Maintenance Needed





BMP INSPECTION SUMMARY

Municipality Name: Franklin Township

Inspection Type: Annual

Inspector Name: Amanda Fetterman

Inspection Date: 2023-03-11

BMP Information

Permit Number (If Applicable): N/A

BMP ID: BMP009

BMP Type: Dry Extended Detention Basin

BMP Address: UPI 72-3-24.34

Inspection Results

BMP Overview: BMP appears to be visually OK

Inlet:

Inflow Type: Closed Pipe Inlet Erosion: None Inlet Clogging: None Structural Problems: None

Stractarar robiems. None

Inflow Is Not Submerged At Normal Pool Depth? No

Outlet:

Multistage outlet structure present (low flow outlet, primary outlet, and emergency overflow)? Yes

Energy dissipaters present at end of primary outlet? Yes

Outlet Structures (Check all that apply): Riser

Outlet Features (Check all that apply): Riprap Apron

Erosion At Outlet: None Outlet Clogging: None Structural Problems: None Signs of Leakage: None

Outfall Discharges to: Surface Water

Erosion: None
Outfall Trash: None
Sedimentation: None

Other: None

Basin:

Pretreatment Type: Riprap Channel

Sediment Buildup: Mild Pretreatment Bypass: None

Sediment Flow From Pretreatment To BMP: None

Vegetation Type: Managed Turf

Vegetation Type Matches Plan: Matches Plan Vegetation Type Species: Native Species

% Trees: 0 % Shrubs: 0 % Herbaceous: 0 % Turf: 100

Plant Cover: Mowed Turf

Woody Vegetation is not planted or established on embankments or within 25 feet of the emergency

overflow spillway? Yes

Basin is at least 10 ft. wide? Yes

Basin has min 2:1 L:W ratio or has baffles to lengthen flow path? Yes

Embankments are less than 15 ft high with slopes no steeper than 3:1? Yes

Bank Erosion: None

Bank Structure: No Visual Structural Damage

Trash: None Sediment: No

Depth of Standing Water (in): 0

Algae Present? No

Turbid? No

Evidence of Pollution? No Evidence of Mosquitoes? No

Results Summary

Visual Inspection Results: 90% After inspection, appears to have excellent function and no general problems with performance

Field Observations: Sediment buildup at riprap located at inflow structure

BMP Inspection Status: Incomplete – Maintenance Needed



Attachment 5.2

BMP LETTERS



March 8, 2023

Re: Franklin Township Stormwater Management (SWM) Facility Mapping/Inspections

Dear Property Owner,

You are receiving this notice because there is a SWM facility located on or adjacent to your property located at __ADDRESS__. These facilities include, but are not limited to:

- Bioretention/Rain Garden
- Wet Pond/Retention Basin
- Infiltration Bed/Basin
- Dry Extended Detention Basin
- Vegetated Swale/Dry Swale
- Constructed Wetland
- Ecosystem Restoration
- Inflow/Outflow Drains

Township staff will be conducting inspections on SWM facilities throughout the Township from March 13 to June 30, 2023. These efforts are to ensure compliance with the Township's Municipal Separate Storm Sewer System (MS4) Permit through the PA Department of Environmental Protection (DEP).

During this time, you may notice someone on or adjacent to your property for a short period of time. These inspections usually take between ten to fifteen minutes and include a Township employee or representative walking around defined stormwater utilities to document any required maintenance at each location. The following points below list some of the common issues the Township will be assessing during this time (this is not an exhaustive list of all possible structural deficiencies):

- · Clogged inlets or outlets
- Trash or debris accumulation
- Sediment buildup
- Lack of vegetation establishment
- Invasive or overgrown vegetation
- Erosion to the facility basin or walls
- Failing structural conveyances

Staff is also required to submit an inspection form to DEP noting the status of each SWM facility. A copy of the inspection forms used (3800-FM-BCW0531a and 3800-FM-BCW0521) can be found through the DEP website: http://www.depgreenport.state.pa.us/elibrary/GetFolder?FolderID=2696. If a SWM facility on your property has any of the above noted deficiencies or any other conflicts outlined in the Township's stormwater management ordinance you may receive further notice from Franklin Township.

If you have any questions, you may contact the Township's Stormwater Coordinator, Andrew Tuleya. You may also read the Township's Stormwater Management Ordinance on the Township website.

Thank you for your help,

Andrew Tuleya
ARRO Consulting, Inc.
Stormwater Coordinator for Franklin Township
717-205-4551



July 19, 2023

{ResponsibleParty} {Address}

RE: Stormwater Management (SWM) Facility Evaluation Summary

Dear Property Owner,

Franklin Township is required to evaluate all stormwater management (SWM) facilities as part of its Municipal Separate Storm Sewer System (MS4) permit issued by the Pennsylvania Department of the Environment. Franklin Township's stormwater management ordinance (Chapter 135 Stormwater Management Ordinance No. 2022-06) outlines the requirements of responsible parties specific to stormwater management facilities.

In the spring of 2023, the Township conducted visual evaluations of all stormwater management facilities within the Township. This evaluation was complete by the Township's stormwater engineer, ARRO Consulting. Upon evaluation of a SWM facility located upon a property {BMPAddress} for which you are listed as the owner and/or responsible party, the Township's engineer noted structural deficiencies and/or required maintenance items related to the stormwater management facility.

Please reference the attached information which contains the inspection results summary along with photographs taken during the evaluation. The Township will be conducting a re-evaluation of this facility **after 60 days**. Please ensure if you are responsible for a stormwater management facility, the facility is up to the standard outlined in the property's approved design plans and/or operation and maintenance agreement.

Please note all property addresses and owner information is derived using open-source information and may not accurately reflect current conditions. If you have any questions regarding the evaluation, how to resolve the noted issues at your facility, or if you believe you have received this correspondence in error, please contact the Township at 610.255.5212. A full inspection report is available upon request.

Thank you for your help,

Andrew Tuleya
ARRO Consulting, Inc.
Stormwater Coordinator for Franklin Township



Stormwater Inspection Result Summary

Inspection Results from BMP Inspection
Inspector Observations from BMP Inspection
Inspection Photos

Attachment 5.3

PCSM BMP INVENTORY

BMP No.	BMP Name	DA (ac)	Entity Responsible for O&M	Latitude	Longitude	Date Installed	O&M Requirements	NPDES Permit No.
BMP001	Wyndemere Detention Basin 1		НОА	39.793696	-75.788090	2008	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP002	Wyndemere Detention Basin 2		НОА	39.790534	-75.789045	2008	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP003	Wyndemere Detention Basin 3		НОА	39.793153	-75.790383	2008	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP004	White Briar Detention Basin 1		НОА	39.754253	-75.829464	2002	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP005	White Briar Detention Basin 2		НОА	39.755119	-75.830033	2002	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP006	306 Hyatt Ln Detention Basin		Private	39.787146	-75.782110	2006	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP007	White Clay Knoll Detention Basin 1		НОА	39.785431	-75.784093	2006	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP008	White Clay Knoll Detention Basin 2		НОА	39.785536	-75.783250	2006	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP009	White Clay Knoll Detention Basin 3		НОА	39.786022	-75.779680	2006	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP010	Landenberg Highlands Detention Basin 1		НОА	39.789660	-75.780027	1999	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP011	Landenberg Highlands Detention Basin 2		НОА	39.789765	-75.77968	1999	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP012	Landenberg Highlands Detention Basin 3		НОА	39.789918	-75.779358	1999	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP013	100 Lavender Hill Ln Detention Basin		Private	39.790098	-75.778441	2006	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP014	Landenberg Highlands Detention Basin 1		НОА	39.792199	-75.779871	1999	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP015	Landenberg Highlands Detention Basin 2		НОА	39.792559	-75.779941	1999	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP016	Landenberg Highlands Detention Basin 3		HOA	39.792013	-75.783659	1999	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP017	Landenberg Highlands Detention Basin 4		НОА	39.788813	-75.784886	1999	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP018	Landenberg Highlands Detention Basin 5		НОА	39.788946	-75.782172	1999	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP019	302 Hyatt Ln Detention Basin		Private	39.788241	-75.782878	2006	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP020	White Briar Detention Basin		НОА	39.753626	-75.832425	2002	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP021	53 Pennbrook Dr Detention Basin		Private	39.766126	-75.842603	1999	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP022	14 Oak Tree Dr Detention Basin		Private	39.770683	-75.833819	2006	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP023	23 Beechwood Dr Detention Basin		Private	39.773125	-75.834792	2006	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP024	Franklin Chase Detention Basin 1		HOA	39.777745	-75.845530	2005	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP025	Franklin Chase Detention Basin 2		НОА	39.779095	-75.840626	2005	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP026	UPI 72-7-161 Detention Basin 1		Private	39.789533	-75.828843	2010	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP027	UPI 72-7-161 Detention Basin 2		Private	39.789803	-75.830430	2010	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP028	32 Fairview Ln Detention Basin		Private	39.731693	-75.834085	1999	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP029	3249 Appleton Rd Detention Basin		Private	39.744550	-75.828714	2014	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP030	100 Sycamore Knoll Ln Detention Basin		Private	39.748478	-75.854811	2007	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP031	Colonial Meadows Detention Basin 1		HOA	39.760472	-75.851694	2005	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP032	Colonial Meadows Detention Basin 2		HOA	39.756868	-75.852842	2005	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP033	Colonial Meadows Detention Basin 3		HOA	39.758666	-75.848744	2005	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP034	Franklin Chase Detention Basin 3		HOA	39.776508	-75.844196	2005	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP035	UPI 72-2-164 Detention Basin		Private	39.786913	-75.829667	2010	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP037	Stonegate Detention Basin 1		НОА	39.778970	-75.785757	1993	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP038	Stonegate Detention Basin 2		НОА	39.783769	-75.793614	1993	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	
BMP039	Stonegate Detention Basin 3		HOA	39.780954	-75.793185	1993	Outlined in O&M agreement, design plans, and/or the PA DEP BMP Manual	

Attachment 6.1

STAFF TRAINING DOCUMENTS

2022-2023 MS4 TRAINING SIGN IN SHEET

Training Date:

Instructor Name and Title:

	Attendees (First and Last Name)	
1.	Stacy Hollis Grang Hollis USUS	3
2.	Melissa Origa Melissa Origa 6/2	17/23
3.	James DDorazio James & Sa	engli 6-27-2
4.		,
5.		
6.		
7.		
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	· · · · · · · · · · · · · · · · · · ·	
17.		

2022-2023 MS4 TRAINING SIGN IN SHEET

Training Date:

Instructor Name and Title:

		Atten	idees (First and Last Name)		
1.	Jeffry	P. EASTBAN	P. Ceulten	6/26/2023	3715 Nm
2.	J		J b		
3.					
7.					
8.					
12.					
16.	3				

2022-2023 MS4 TRAINING SIGN IN SHEET

Training Date:

Instructor Name and Title:

1.	Daniel	Lyster	dees (First and Last	Name)	0/23	8.30 an
2.						
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Franklin Township Stormwater (MS4) 2022-2023 Staff Training





Presentation Outline

- Training Purpose
- Franklin Township's Stormwater Permit and Program
- Minimum Control Measures (MCMs) and Training Requirements
 - Education/Involvement
 - Illicit Discharge Detection and Elimination
 - Construction/Post-Construction Stormwater Management
 - Good Housekeeping Procedures
 - Questions/Comments









The Purpose Of Stormwater/MS4 Training

- Fulfill the requirements of Franklin Township's small municipal separate storm sewer systems (MS4s) permit.
- Educate staff on specifications of permit requirements related to employee activities.
- Enable staff to carry out daily functions while simultaneously protecting our waterways.
- Prepare staff to effectively and efficiently respond to incidents that could potentially harm our environment, including but not limited to waterways.
- Provide staff a forum to contribute thoughts and/or questions related to stormwater management.

Franklin's Stormwater (MS4) Program

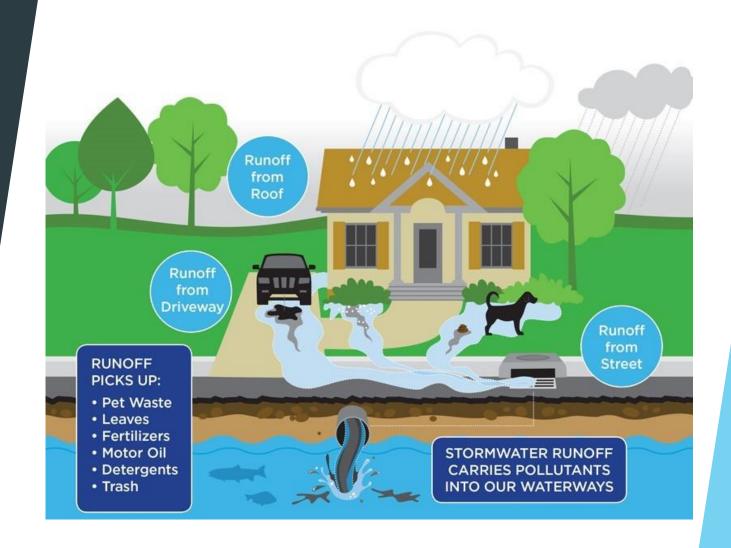
- ► The EPA designated the Pennsylvania Department of Environmental Protection (PADEP) to implement and monitor the state's National Pollutant Discharge Elimination System (NPDES). The Township is covered under a Pennsylvania PAG13 individual permit for small municipal separate storm sewer systems (MS4s).
 - ► For More Info https://www.epa.gov/npdes/npdes-permit-basics
- Franklin Township is designated as a small MS4 by PADEP under the Clean Water Act (CWA) and associated regulations.
 - ▶ Link to PA DEP's NPDES General Permit

What is Stormwater?

- Stormwater is rainwater or snow melt that runs off streets, lawns and other sites. When stormwater infiltrates into the soil, it is filtered and ultimately replenishes aquifers or flows into streams and rivers.
- In developed areas, impervious surfaces such as pavement and roofs prevent precipitation from naturally absorbing into the ground. Instead, water runs rapidly into storm drains, sewer systems and drainage ditches and can cause:
 - Downstream flooding
 - Stream bank erosion
 - Increased turbidity (muddiness created by stirred up sediment) from erosion
 - Habitat destruction
 - Combined storm and sanitary sewer system overflows
 - Infrastructure damage
 - Contaminated streams, rivers and coastal water

Typical Stormwater Pollutants

- Petroleum
 - ► Oil, grease, leaking vehicles
- Cooking greases/oils (homes, restaurants)
- Sediment (soil)
- Trash/garbage
- Engine coolants/antifreeze (glycols)
- Heavy metals from vehicle break parts and tires
- Fertilizers and pesticides (residential, industrial, agriculture uses)
- Fecal Bacteria
 - Pet waste, human waste from sewer breaks
- Detergents from outdoor car washing, mop wash water dumped outdoors, etc.
- Liquids from uncovered dumpsters
 - Printing inks, food, etc.



Stormwater Exceptions

- Except where specifically prohibited under the "Discharges Not Authorized by this General Permit" section, the Township's General Permit authorizes the discharge of stormwater to surface waters from regulated small MS4s. In addition, the following non-stormwater discharges are authorized by this General Permit as long as the discharge does not cause or contribute to pollution as defined in Pennsylvania's Clean Streams Law:
 - Discharges or flows from firefighting activities.
 - Discharges from potable water sources including water line flushing and fire hydrant flushing, if such discharges do not contain detectable concentrations of Total Residual Chlorine (TRC).
 - Non-contaminated irrigation water, water from lawn maintenance, landscape drainage and flows from riparian habitats and wetlands.
 - Diverted stream flows and springs.
 - Non-contaminated pumped ground water and water from foundation and footing drains and crawl space pumps.
 - Non-contaminated HVAC condensation and water from geothermal systems.
 - Residential (i.e., not commercial) vehicle wash water where cleaning agents are not utilized.
 - Non-contaminated hydrostatic test water discharges, if such discharges do not contain detectable concentrations of TRC.

Minimum Control Measures (MCMs) And Annual Requirements

MCM 1 & 2: Public Education and Outreach

- The Township posts stormwater related materials on the municipal website.
- The Township has created pamphlets specific to the municipal stormwater program and posted them on the stormwater webpage. Printed copies are also available through the Township office.
- The Township must involve the public in events that promote active participation and further the education of Franklin's Stormwater program.
 - Public Surveys
 - Storm Drain Stenciling
 - ► Rain Barrel Workshops
 - Social Media Driven Events
 - Stream Cleanups
 - ▶ Tree Plantings
 - Earth Day Events

Why should we care about stormwater?

Keeping our streams clean is very important. Everything that lives in and around our streams, like fish and other wildlife, needs clean water to live healthy lives.



Many of our rivers, streams, and lakes have trash or other man-made pollutants that hurt the health of the waterway and the creatures that need it to live.

Anything that is left outside can make its way into our streams. This means that, while leaving a small piece of trash might look like it is not a big deal, trash and other harmful debris left outside add up to equal sick fish and animals.



What can I do to help?

Taking care of waterways is everyone's job!

Clean up after your dog!

Make sure you pick up dog waste.



Pick up your trash!

Rain has to travel to get to our streams. As it travels, it can pick up whatever is in its path. If trash is left lying around, the rain will pick it up and carry it into our streams. To keep our water clean, please pick up after vourself!

-Don't put anything down storm drains.

-Stay out of stormwater ponds, culverts, etc. Only authorized personnel may enter.



Keep our streams healthy!

The rain that falls onto your house often finds its way into creeks and streams. It's very important that the water stays as clean as possible before it flows into larger waterways.

You can help keep our water clean by making your home and neighborhood as friendly to water as possible!

Storm drains and other pipes were built to carry water away from homes and deliver it to the streams and creeks. You probably have seen these drains around; they look like metal boxes with bars on the side of the road, just like the picture below!

Because rain travels and collects whatever is in its path, it is very important that the inlets stay clean. Trash and debris, as well as organic material such as gravel, leaves, and sticks should not go into our storm drains!



MCM 3: Illicit Discharge Detection and Elimination

- The Township's stormwater ordinance prohibits illicit discharges into the Township's stormwater system.
- Dry Weather Screening Procedures
 - Dry weather screening is a field test method for inspecting stormwater drainage areas to help locate and identify illicit discharges to a municipal stormwater system. Field testing or screening is designed primarily for assessing flowing discharges from a stormwater conveyance system.
- The Township has developed a Standard Operating Procedure (SOP) for Dry Weather Screenings
 - Anyone performing dry weather screens must be properly trained in the (I) Site Procedures, (II) Monitoring Procedures and (III) Illicit Discharge Elimination Procedures outlined in Franklin Township's Dry Weather Screening Protocols.
 - The Township MUST maintain complete records of IDDE program investigations and make available to PA DEP during field reviews of the permittee's MS4 program.

Dry Weather Screening Protocols

- 20% of Township outfalls must be screened annually, for a total of 100% inspected at the end of the 5-year term
 - ► Each outfall with observed dry weather flow (discharge occurring more than 48 hours after a rainfall event) must be inspected every year, even if the flow was runoff or groundwater
- Inspect, document, and photograph outfall conditions using PA DEP's MS4 Outfall Field Screening Report
- Additional maintenance should be addressed by the Township or the property owner (if private property). Reference the photo to the right.



Outfall Inspections

Illicit Discharge Criteria

- Is a dry weather flow present?
 - If yes, evaluate if the flow has an odor or color that does not indicate that it is excess stormwater runoff
- Is an illicit discharge present?
 - If yes, the Township's MS4 consultant should be contacted.
 - *** Inspection should be documented using the PA DEP's Outfall Screening Form

Other Maintenance to Evaluate

- Backfilling/standing water
- Evidence of erosion
- Sediment/debris accumulation
- Inlets should be clear of debris
- Broken/degraded culvert structure or collar

***Required maintenance should be documented, and the responsible part should be notified via a mailed letter.









If an Illicit Discharge is Found ...

- Complete the screening form for the outfall and be sure to photograph and accurately describe the nature of the flow.
- A sample of the flow should be collected and tested for the following parameters:
 - Conductivity
 - Temperature
 - Ammonia-Nitrogen
 - ▶ pH
 - Chlorine
 - Copper

- Detergents
- Color
- Oil Sheen
- Odor
- Trash, Sewage, and Surface Scum
- All attempts should be made to identify the source of the illicit discharge by inspecting upstream stormwater infrastructure. Referencing the MS4 map can aid in narrowing down the search area.

Post-Construction Stormwater Management

- ► The Township has an ordinance that requires the implementation and maintenance of postconstruction stormwater management for new development and redevelopment projects, including sanctions for non-compliance.
 - https://ecode360.com/FR3696
- The Township is required to conduct regular maintenance activities associated with publicly owned Stormwater Facilities, also known as "BMPs". This may include the following:
 - Mowing
 - ▶ Plant Composition and Health
 - ▶ Trash and Debris Accumulation
 - Sedimentation and Erosion
 - Dewatering
 - Overall Functionality based on Design and Intent



Stormwater Management Facility - N Baily Rd

Privately-Owned Stormwater BMPs

- Privately-owned BMPs must be maintained by the responsible property owner.
- The Township conducts annual BMP inspections. The Township will contact property owners in the event that a BMP does not pass the Township's annual inspection. The inspections are based off PA DEP's Stormwater Design Manual's design and maintenance criteria.
- ▶ If you have questions regarding the maintenance of a BMP on your property, please contact the Township office.



Stormwater Management Facility - Pippen Dr

MCM 6 – Pollution Prevention Plan and Good Housekeeping Procedures

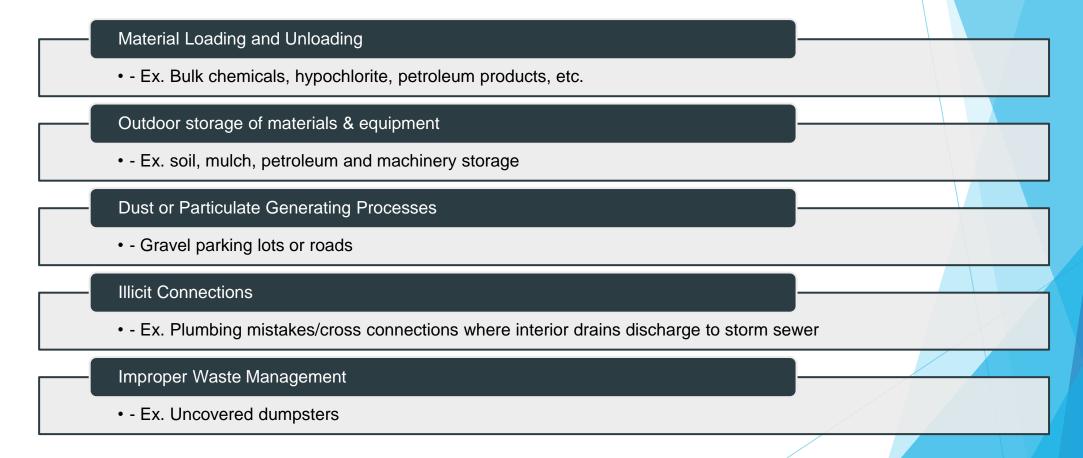
- The Township is required to develop and implement an operation and maintenance program that includes a training component to prevent and reduce pollutant runoff from municipal operations.
- Provide annual training aimed to eliminate the discharge of pollutants during municipal operations.
 - Spill Prevention and Response
 - Waste Disposal
 - Routine Visual Inspections to Detect and Correct Potential Discharges At Properties Owned or Operated By The Permittee
- Develop, implement, and maintain a good housekeeping plan for Township-owned or operated properties where the following occurs.
 - Vehicle or Heavy Equipment Maintenance
 - Handling of:
 - Deicers, fertilizers, pesticides, road maintenance materials, or hazardous materials.

Municipal Pollution Prevention

- The Township must demonstrate that it is controlling all stormwater runoff from municipal properties.
- DEP conducts municipal audits for MS4 permit holders once a permit cycle.
- The PADEP 2022 MS4 Audit Form (3800-FM-BCW0489) can be found on the PADEP website.



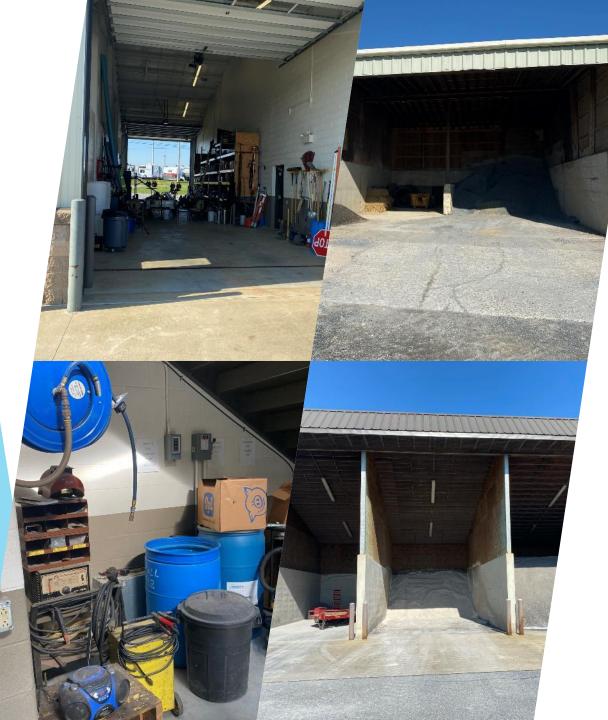
Potential Sources of Pollution at Your Facility





Poor Facility Conditions

- Uncovered/uncontrolled material piles
- Trash scatter
- Tires (environmental hazard)
- Site is uphill from a creek which increases risk for pollutant release into the MS4/surface waters
- Minimal effort demonstrated
- Draws attention of regulators



Good Facility Conditions

- Labeled containers
- Materials stored in an overhead area with a door
- Materials pushed back behind drip line to prevent access to precipitation
- Equipment is indoors and organized
- Vehicle washing is conducted indoors with a floor drain to the sanitary sewer system

Activities to Document for Annual MS4 Report

- BMP Maintenance
 - Mowing
 - Inlet/Outlet Cleaning
 - Clearing Trash/Debris/Vegetation
 - Infrastructure Repair/Replacement
 - Revegetation
- Inlet Cleaning
 - Number of Inlets Cleaned
 - Amount of Debris Collected
- Street Sweeping
 - Miles Swept
 - Amount of Debris Collected
- Storm Drain Vacuuming/Cleaning
- Documented Spills

- Pesticide Application
- Fertilizer Application
- Snow/Ice Removal Applications
- Public Complaints specific to Stormwater

GENERAL SOP: LIQUID spills

- In the event of an accident involving contaminants, make all attempts to prevent the spilled material from entering the storm sewer system or nearby waterways. This could include diking, damming, absorbing, or removing the material from the affected area. Appropriate spill containment and recovery equipment should be equipped on all vehicles that have the potential for a significant fluid spill. A spill containment kit should include liquid absorbent materials such as absorbent pads, and/or sand.
- In the event of a spill:
 - Absorbent materials should be sprinkled around and over the spill and then immediately swept up and placed in a trash bag and disposed of in the Township's municipal trash.
 - Dispose of all recovered material properly and in accordance with all applicable state and federal waste disposal regulations.
 - For any spill from vehicles or equipment that requires more than one (1) bag of liquid absorbent material to absorb, or that threatens to enter the storm sewer system, the police department and fire department should be immediately contacted to provide assistance.
 - If a major spill occurs and enters a floor drain, notify the Township's wastewater treatment facility.
 - The police and fire departments will notify other entities as necessary if the spill has entered the storm sewer system such as the EPA, or PA DEP and downstream water users/intakes.





GENERAL SOP: SOLID spills

- Spills should be immediately addressed as this will mitigate the potential for runoff to enter the Township's MS4. Hazardous material cleanup debris should be disposed in proper containers. Do not allow debris to enter drains that are connected to Township's stormwater system.
- In the event of a spill:
 - Substances should be swept up immediately and should be disposed of in a Township owned trash bag.
 - Dispose of all recovered material properly and in accordance with all applicable state and federal waste disposal regulations.
 - For a major spill, where materials threaten to enter the storm sewer system, the Township Police Department and Fire Department should be immediately contacted to provide assistance.
 - The Police and Fire Departments will notify other entities as necessary if the spill has entered the storm sewer system such as the EPA, or PA DEP and downstream water users/intakes.



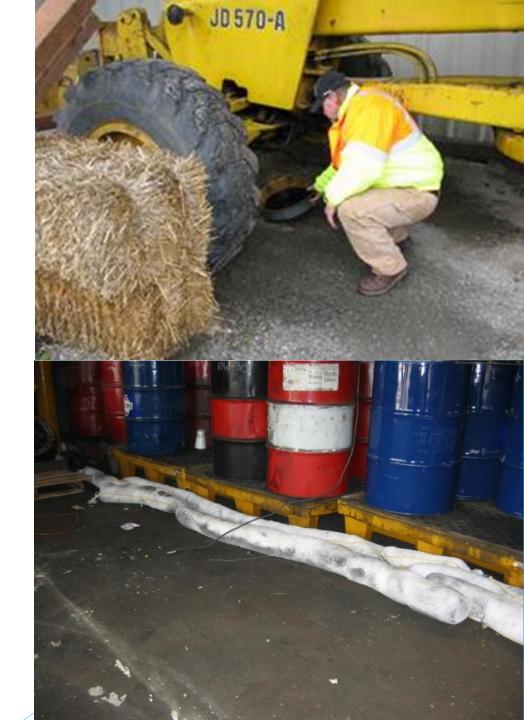
Spill Response and Notification

- All spills, indoor or outdoor, must be reported even if they are not yours.
- Minor spills are considered to be those of less than 5gallons which pose no significant harm to human health or the environment and have not entered the storm sewer system, stormwater pond, water body or the groundwater table.
- You are responsible for cleaning up these spills.
- Contact a supervisor and/or Township Administrator for assistance with spill documentation and notification procedures if you cause or find a minor spill.



Minor Spill Response Procedures

- Stop the source of the spill!
 - Roll drums upright (hole pointing up)
 - Turn off process
 - Shut pipe valves
- Contain spills using booms, pads, absorbent material in the onsite spill kits.
- Divert runoff from spills away from storm drain inlets using booms, pads or absorbent materials.
- Patch leaks temporary patch until a permanent solution is applied
- Collect contaminated materials in a trash bag and discard appropriately.
- Do not leave absorbent powders on ground. They must be swept up.



Major Spills

- A major spill is considered an emergency.
- It is a spill that cannot be safely contained by staff <u>or</u> cleaned up <u>and/or</u> has made its way into the storm sewer system, stormwater pond, waterbody or groundwater table <u>or</u> is a threat to human health.
- If you cause or find a major spill and cannot contact Township administration, dial 911 for the Fire Department's HAZMAT Unit immediately.
- You <u>must remain on-site</u> until assistance arrives.
- Your supervisor will assist you with proper documentation and spill notification procedures.



THANK YOU FOR YOUR TIME!

Questions? Comments?

 Please sign the sign in sheet if you have not already done so.

If you have any questions, please contact me via e-mail <u>Andrew.Tuleya@arroconsulting.com</u>

Attachment 7.1

TMDL POTENTIAL PROJECT DOCUMENTS



MEMORANDUM

TO: Franklin Township, Chester County, PA

FROM: ARRO MS4 Group

RE: Franklin Township TMDL Plan

PROJECT NO.: 00011162.01

DATE: August 9, 2023

This memo analyzes stream locations within the Township for potential TMDL Plan stream restoration projects. The Township and ARRO are requesting DEP provide input on these project locations prior to design and construction.



1. Township TMDL Reduction Requirement

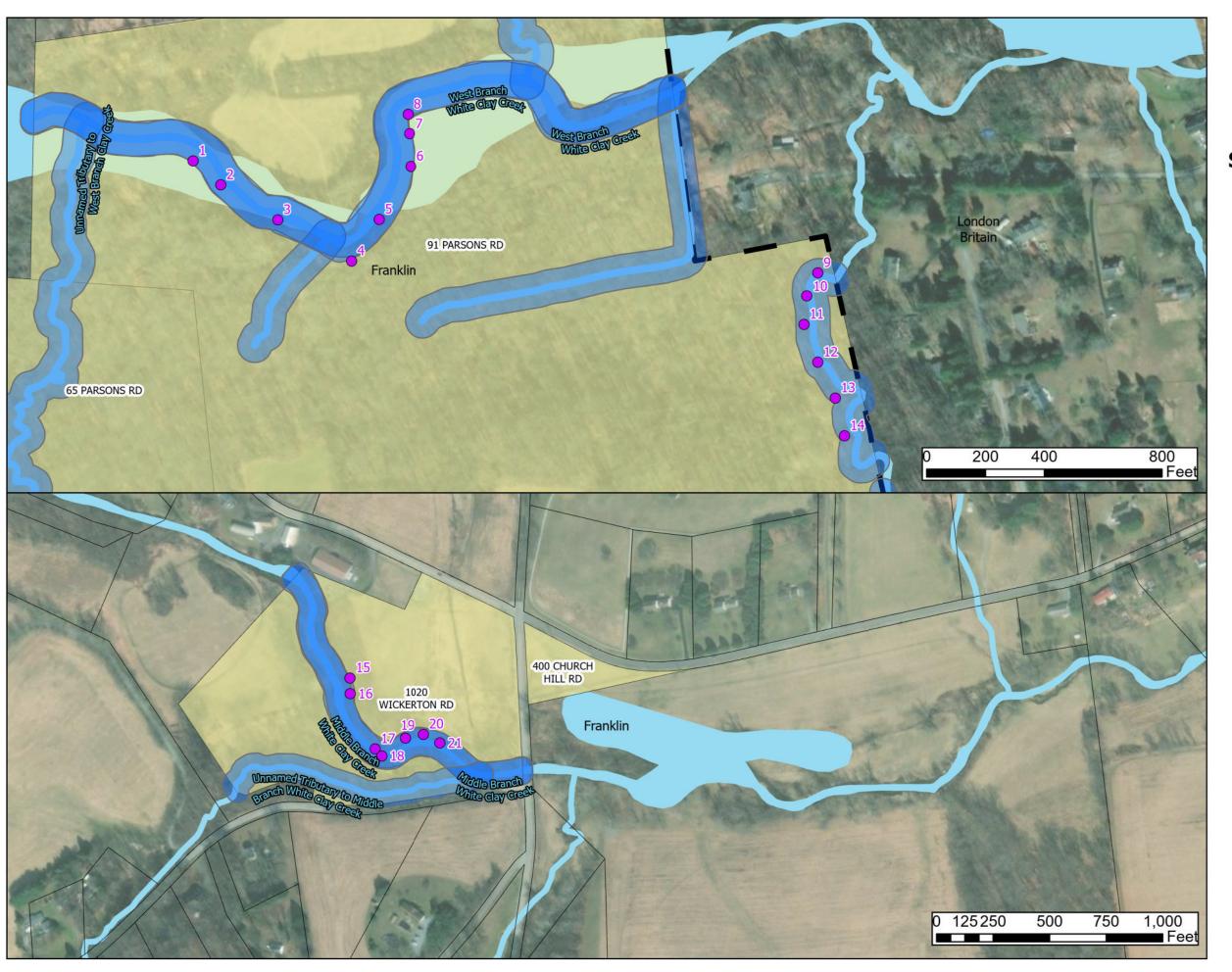
a. The Township's long-term TMDL reduction goal for the Christina River Basin is 3,829,120 lbs./yr. making the Township's short-term goal 382,912 lbs./yr. These reductions were calculated using the EPA TMDL MS4 Baseline Pollutant Loading, MS4 Allocations, and Reductions Table for the Brandywine-Christina Watershed (HUC #02040205).

2. Proposed TMDL Stream Restoration Project

- a. Site 1 91 PARSONS RD
 - i. ARRO evaluated two sections of White Clay Creek within Franklin Preserve Park on Township land for potential restoration on 07/07/23.
 - There is about 1,200 LF of stream reach on the eastern parcel (UPI 72-5-19.1) which would get the Township a maximum of roughly 138,000 lbs./yr. of credit using the MapShed calculation method. A visual map of the proposed restoration project including photos of existing conditions and the buffer area can be found in Attachment 1.
 - There is about 1,850 LF of stream reach on the northern parcel (UPI 72-5-19.1) which would get the Township a maximum of roughly 212,750 lbs./yr. of credit using the MapShed calculation method. A visual map of the proposed restoration project including photos of existing conditions and the buffer area can be found in Attachment 2.

b. Site 2 – 1020 WICKERTON RD

- i. ARRO evaluated a section of Middle Branch White Clay Creek within Goodwin Preserve on Township land for potential restoration on 07/07/23. A visual map of the proposed restoration project including photos of existing conditions and the buffer area can be found in Attachment 3.
 - 1. There is about 1,170 LF of stream reach on the parcel (UPI 72-2-5.1B) which would get the Township a maximum of roughly **134,550 lbs./yr.** of credit using the MapShed calculation method.





Stream Site Photographs Franklin Township Chester County, PA

Legend

Stream PhotosMunicipal BoundarySurface Waters35 Foot Buffer

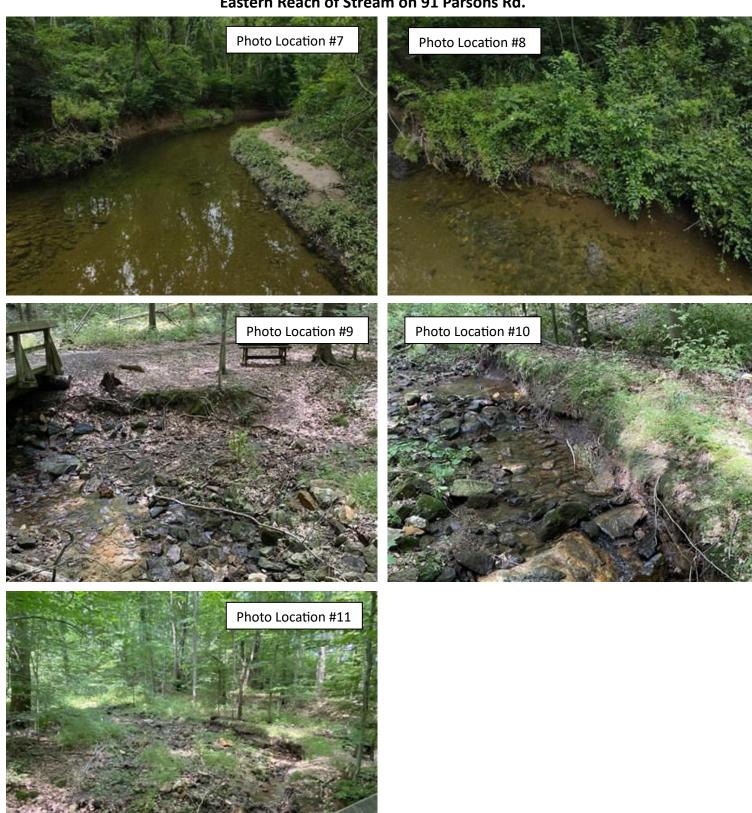
Parcels

Franklin Twp Parcels

Northern Reach of Stream on 91 Parsons Rd.



Eastern Reach of Stream on 91 Parsons Rd.









Stream Reach on 1020 Wickerton Rd.





	Franklin Township Properties (Stream Restoration)													
ID	Address	Stream (LF)	Potential Credits (115 lb./lf)	Potential Construction Cost (\$200/If)	Cost/lb. of Credit.		Notes	Priority						
26	1020 WICKERTON RD	1,170.00	134,550.00	\$234,000.00	\$1.74									
27	315 CHESTERVILLE RD	804.00					Not an ideal site based off field evaluation							
28	290 CHESTERVILLE RD	2,506.00					Not an ideal site based off field evaluation							
29	91 PARSONS RD	4,387.00	504,505.00	\$877,400.00	\$1.74		Northern stream segment in UA, Eastern Segment not in UA.							
	TOTALS	8,867.00	639,055.00	\$1,111,400.00	\$1.74									

*Please note the credit allotments as well as the potential construction costs are estimated. A topographic survey and preliminary site design is recommended in order to confirm this estimate. Project survey, design, and bidding costs may range from \$50,000.00-\$100,000.00/project. Estimate does not include permitting costs.

Private Properties (Stream Restoration)

Address	Stream (LF)	Potential Credits (44 lb./lf)	Potential Construction Cost (\$200/If)	Cost/lb. of Credit.	Property Owner	Notes	Priority
1000 WICKERTON RD	1,045	120,175.00	\$209,000.00	\$1.74	STROHMAIER KURT R & JUDY L		
615 OLD SCHOOL HOUSE RD	1,290	148,350.00	\$258,000.00	\$1.74	MORRISON CHRISTOPHER A		
385 STRICKERSVILLE RD	3,644				COMMONWEALTH OF PA	Not in urbanized area	
3249 APPLETON RD	2,004				TWO BOYS LP	Not in urbanized area	
100 AUGUSTIN LA	7,080	814,200.00	\$1,416,000.00	\$1.74	COMMONWEALTH OF PA		
10 WAYS RN	1,020				BENNETT JEFFREY D &	Not in urbanized area	
White Clay Preserve	2,634				COMMONWEALTH OF PA	Not in urbanized area	
624 CHESTERVILLE RD	373				NOWLAND GIFFORD MARSHALL	Not in TMDL planning area	
157 PEACEDALE RD	6,434				NATURAL LANDS TRUST INCORPORATED	Not in urbanized area	
1014 WICKERTON RD APT 1	500	57,500.00	\$100,000.00	\$1.74	GOODWIN THANH THI		
1067 WICKERTON RD	2,224	255,760.00	\$444,800.00	\$1.74	1067 WICKERTON ROAD LP		
146 PEACEDALE RD	1,567				TRANCHITELLA LOUIS J	Not in TMDL planning area	
512 CHESTERVILLE RD	1,404	161,460.00	\$280,800.00	\$1.74	DEWALD LISA M		
13 CHISEL CREEK DR	3,097				SABASTRO REAL ESTATE INVESTMENTS LLC	Not in urbanized area	
494 CHESTERVILLE RD	5,072	583,280.00	\$1,014,400.00	\$1.74	CIARMELLA JOSEPH TRUST		
663 OLD SCHOOL HOUSE RD	995	114,425.00	\$199,000.00	\$1.74	ODACHOWSKI MATT		
497 CHESTERVILLE RD	1,431	164,565.00	\$286,200.00	\$1.74	MORAN R MARK		
118 HESS MILL RD	1,114	128,110.00	\$222,800.00	\$1.74	DANNENHAUER WILLIAM A III &		
707 CHESTERVILLE RD	1,998				OLM LLC	Not in urbanized area	
140 PHEASANT HILL LA	648	74,520.00	\$129,600.00	\$1.74	KINNEY JUDITH M		
644 OLD SCHOOL HOUSE RD	655	75,325.00	\$131,000.00	\$1.74	GIFT DANIEL E &		
450 CHURCH HILL RD	1,081	124,315.00	\$216,200.00	•			
434 CHURCH HILL RD	1,026	117,990.00	\$205,200.00	\$1.74	PIERSON WILLIAM D &		
117 CHAMBERS RD	883	101,545.00	\$176,600.00	\$1.74	PAPAMARCOS ANDREW A		
4 Mount Olivet RD	8,430				COMMONWEALTH OF PA	Not in urbanized area	
TOTALS	Sum	3,041,520.00	5,289,600.00	\$1.74			
	1000 WICKERTON RD 615 OLD SCHOOL HOUSE RD 385 STRICKERSVILLE RD 3249 APPLETON RD 100 AUGUSTIN LA 10 WAYS RN White Clay Preserve 624 CHESTERVILLE RD 157 PEACEDALE RD 1014 WICKERTON RD APT 1 1067 WICKERTON RD 146 PEACEDALE RD 512 CHESTERVILLE RD 13 CHISEL CREEK DR 494 CHESTERVILLE RD 663 OLD SCHOOL HOUSE RD 497 CHESTERVILLE RD 118 HESS MILL RD 707 CHESTERVILLE RD 140 PHEASANT HILL LA 644 OLD SCHOOL HOUSE RD 450 CHURCH HILL RD 117 CHAMBERS RD 4 Mount Olivet RD	1000 WICKERTON RD 1,045 615 OLD SCHOOL HOUSE RD 1,290 385 STRICKERSVILLE RD 3,644 3249 APPLETON RD 2,004 100 AUGUSTIN LA 7,080 10 WAYS RN 1,020 White Clay Preserve 2,634 624 CHESTERVILLE RD 373 157 PEACEDALE RD 6,434 1014 WICKERTON RD APT 1 500 1067 WICKERTON RD 2,224 146 PEACEDALE RD 1,567 512 CHESTERVILLE RD 1,404 13 CHISEL CREEK DR 3,097 494 CHESTERVILLE RD 5,072 663 OLD SCHOOL HOUSE RD 995 497 CHESTERVILLE RD 1,431 118 HESS MILL RD 1,114 707 CHESTERVILLE RD 1,998 140 PHEASANT HILL LA 648 644 OLD SCHOOL HOUSE RD 434 CHURCH HILL RD 1,081 434 CHURCH HILL RD 1,081 434 CHURCH HILL RD 1,026 117 CHAMBERS RD 883 4 Mount Olivet RD 8,430	1000 WICKERTON RD 1,045 120,175.00 615 OLD SCHOOL HOUSE RD 1,290 148,350.00 385 STRICKERSVILLE RD 3,644 3249 APPLETON RD 2,004 100 AUGUSTIN LA 7,080 814,200.00 10 WAYS RN 1,020 White Clay Preserve 2,634 624 CHESTERVILLE RD 373 157 PEACEDALE RD 6,434 1014 WICKERTON RD APT 1 500 57,500.00 1067 WICKERTON RD 2,224 255,760.00 146 PEACEDALE RD 1,567 1,567 512 CHESTERVILLE RD 1,404 161,460.00 13 CHISEL CREEK DR 3,097 494 CHESTERVILLE RD 5,072 583,280.00 663 OLD SCHOOL HOUSE RD 995 114,425.00 497 CHESTERVILLE RD 1,431 164,565.00 118 HESS MILL RD 1,114 128,110.00 707 CHESTERVILLE RD 1,998 140 PHEASANT HILL LA 648 74,520.00 644 OLD SCHOOL HOUSE RD 655 75,325.00 450 CHURCH HILL RD 1,081 124,315.00 117,990.00	1000 WICKERTON RD	1000 WICKERTON RD	1000 WICKERTON RD	100 MICKERTON RD

*Please note the credit allotments as well as the potential construction costs are estimated. A topographic survey and preliminary site design is recommended in order to confirm this estimate. Project survey, design, and bidding costs may range from \$50,000.00-\$100,000.00/project. Estimate does not include easement acquisition, permitting, as well as other contingent land acquisition costs.



FRANKLIN TOWNSHIP BOARD OF SUPERVISORS WORKSHOP MEETING MINUTES

April 3, 2023 @ 7:00 p.m.

Call to Order:

Township Vice Chair Dea called the meeting to order at 7:02 p.m. In attendance were Supervisors Johnston, Dowling, and Torres. Also, in attendance on behalf of Franklin Township (FT) were Township Operations Manager Jeffrey Eastburn, Township Solicitor Guy Donatelli and Township Secretary Stacy Hollis. There was 1 member of the public in attendance.

<u>Pledge of Allegiance</u>: The meeting began with the Pledge of Allegiance.

<u>Public Comment</u>: There were no public comments.

Approval of Minutes

<u>Motion</u>: Vice Chair Dea moved, seconded by Supervisor Johnston, to accept the minutes for the Board of Supervisors (BOS) Meeting from December 21, 2022, v1. Motion passed 4-0.

<u>Motion</u>: Vice Chair Dea moved, seconded by Supervisor Dowling, to accept the minutes for the BOS Workshop Meeting from March 6, 2023, v1. Motion passed 4-0.

<u>Motion</u>: Vice Chair Dea moved, seconded by Supervisor Torres, to accept the minutes for the BOS Meeting from March 15, 2023, v1. Motion passed 4-0.

Reports

MS4 Discussion – ARRO Consultants:

Township Solicitor Guy Donatelli provided an update on the PennDOT MS4 initiative that FT is considering joining. PennDOT has submitted their permit application to DEP and is awaiting their review and approval. If the permit is not approved, any money contributed to the plan by FT is 100% refundable. The cost to FT is estimated to be around \$26,000. (Reducing 13,321 lbs. of sediment at \$1.95 per pound). Refund credits can also be banked if the plan is not approved. A resolution to join the PennDOT initiative will be considered at the April 19, 2023 BOS Meeting.

Vice Chair Dea requested Township Solicitor Guy Donatelli revise the Township's Contribution Agreement with PennDOT to state that FT is not responsible for the long-term operation and maintenance of any MS4 improvements included in the PennDOT plan since the project is not located within FT's boundaries. Supervisor Johnston asked about the refund process and what happens if the credits are not used. Amanda Fetterman from AARO explained that once the FT permit is approved by DEP and FT knows the number of credits required for the permit, the Township can modify its agreement with PennDOT accordingly.

The Board was reminded that there are 2 parts to the FT MS4 permit: 1) Pollution Reduction Plan for the Chesapeake Bay – Big Elk Creek watershed and the 2) the Total Maximum Daily Load Reduction Plan (TMDL) for the Christina River – White Clay Creek watershed. The PennDOT plan will help address the first part of the plan. The second part of the plan involves the stormwater best management practices (BMP) in FT.

- f. <u>MS4-ARRO Consultants Update</u>: Andrew Tuleya updated the Board on the tasks completed in March to support MS4. ARRO completed FT's annual outfall inspections report for 2022-2023.
 - 47 outfalls were inspected while 18 outfalls were reclassified as outlets (65 items inspected)
 - 27 outfalls require maintenance
 - 20 outfalls do not require any maintenance

17 Dry Weather Flows were documented and must be inspected yearly until they pass a 48 hr test. Stormwater basins were identified. Thirty-four Best Management Practices (BMPs) meet the current design manual criteria and contribute to FT's TMDL reduction requirements. 23 BMPs require maintenance. ARRO has updated FT MS4 map with the new BMP data and delineations.

Township Operations Manager, Jeff Eastburn, has posted all ARRO education and public involvement information on FT's website and its Facebook page.

FT has two permits to submit to DEP for approval: the Pollution Reduction Plan (PRP) and the Total Maximum Daily Load Plan (TMDL). The requirements for the PRP Plan will be covered by the partnership with PennDOT. The majority of the potential projects for the TMDL plan are on private properties which will require a public/private partnership agreement. AARO has identified an estimate of 382,912 lbs./yr. of sediment removal as the long-term goal for the TMDL plan. FT could conduct their own Map Shed analysis and propose results to DEP for approval. FT Board and ARRO are scheduled to meet with Beth Mahoney of DEP on May 2, 2023 to discuss FT's MS4 permit and agree the methodology.

Vice Chair Dea requested that ARRO plan to educate the Board on the potential projects that could help FT meet their MS4 commitment. The objective would be for the Board to gain a thorough understanding of the scope and cost of each project as well as the probability of success.

Business

- a. Solicitor's Report:
 - MS4 & PennDOT

<u>Motion</u>: Vice Chair Dea moved, seconded by Chairman Gerstenhaber, to approve **Resolution 2023-05**, authorizing the execution of and entry into the Contribution Agreement with PennDOT to reduce sediment pollution in the Chesapeake Bay, as presented by the Township Solicitor. Motion passed 3-0.

- Act 167
 - <u>Motion</u>: Vice Chair Dea moved, seconded by Supervisor Dowling, to approve the **Act 167 Ordinance**, **2023-01**, as presented by the Township Solicitor. Motion passed 3-0.
- Mt. Olivet Road

<u>Motion</u>: Chairman Gerstenhaber moved, seconded by Vice Chair Dea, to approve **Resolution 2023-06**, authorizing the execution of and entry into the Bridge Acquisition Agreement with Chester County as presented by the Township Solicitor. Motion passed 3-0.

• Lexington Point

will take a vote on the first candidate and if that does not carry, they will move the vote to the second candidate.

<u>Motion</u>: Chairman Gerstenhaber moved, seconded by Supervisor Johnston, for the Board to appoint Bob Macknis to a 1-year term in the PRO expiring May 31, 2024. Motion passed 3-0.

- Member Greg Sachs reported that educational signs will be installed in the meadow by the Healing Garden at Crossan Park. The mini libraries are completed and will be installed at the park next week. FT's partnership with the Avon Grove Library to host story times at Crossan Park will begin in June at 10:00 am, dates and details are posted on our website. A damaged Bluebird box has been replaced. Clark Brothers Nursery pricing for memorial trees has increased as well as another vendor's personalized plaques. Interested residents should contact the Township office for information. Red Tail Restoration & Land Management, LLC has sprayed the Goodwin Preserve to prevent the spread of the invasive Canadian Thistle. Significant improvements have been made but the Township should continue a Fall/Spring spraying schedule.
- f. Planning Commission Report: No report
- g. <u>Historical Commission (HC)/Historical Architectural Review Board (HARB)</u>: Member Paul Lagassé summarized the Franklin Township Historical Commission and Historical Architectural Review Board Combined Annual Report for 2022. The HC has conducted several interviews with individuals regarding the Township's history and are requesting a "talk-to-text" program to help with transcribing. "The Forgotten Founding Fathers" event held at New London Academy on May 11, 2023 had a great turnout with 35 in attendance. More historical talks are in the works with member Kohut speaking on The Grange at the Oxford Area Historical Association this evening. Historical District Ordinance revisions from the Township Solicitor will require additional input from the Township Zoning Officer.
- h. <u>Mason-Dixon Update</u>: Member Paul Laggassé discussed the Mason-Dixon Arc Corner connectivity project between Big Elk Creek and White Clay Creek. This Mason-Dixon tourism trail could be included in the 2026 Semiquincentennial America 250, a celebration of America's 250th birthday.
- i. Franklin Sportsman's Association: No report
- j. MS4-ARRO Consultants Update: Andrew Tuleya updated the Board on the tasks completed in April to support the MS4 plan. The Township Board had a productive call with DEP on May 2, 2023 to discuss how FT can meet its MS4 commitment. Action items are for ARRO to complete their data collection and draft a Total Maximum Daily Load (TMDL) program to help FT reach its TMDL reduction goal. The DEP is open to discussing any questions FT has prior to submitting the TMDL plan. The Board will need to review Best Management Practice (BMP) projects concerning those areas that are located on private properties. Supervisor Torres wanted clarification on TMDL costs regarding the lbs. per year reduction and how credits are accumulated. Chairman Gerstenhaber explained how FT has a "sediment debt" that will get paid each year to reduce our TMDL by 10% a year for 5 years. ARRO explained how this could change and a new list of plans must be compiled every 5 years. Supervisor Johnston pointed out projects and partnerships will help the overall percentage of TMDL reduction. ARRO discussed how this could fluctuate due to new permit requirements which could change for the better or worse over the 5-year time period.

- i. <u>Historical Commission (HC)/Historical Architectural Review Board (HARB)</u>: Member Paul Lagassè reported that the Big Elk Creek State Park foundational planning has begun. Information is being collected on the three Mason Dixon mile markers at the park and further exploration will pick up in the Fall when there is more visibility.
- j. MS4 (Stormwater Management)-ARRO Consultants Update: Andrew Tuleya updated the Board that the revised Best Management Practice (BMP) letters to residents will be mailed out this week. A change was made extending the time for residents to comply, from 30 days to 60 days. ARRO has updated the list of previously proposed BMP retrofit projects to fulfill FT's Total Maximum Daily Load (TMDL) requirement of 382,912 pounds of sediment for the upcoming 5-year period. ARRO does not recommend pursuing these projects because of the cost and their location on private land. ARRO also provide a list of potential projects for the Board's consideration. Based on the current estimate of costs, FT could be required to spend \$1.8 million over a 5-year period to meet this obligation. Vice Chair Dea questioned the township's financial ability to pay for the BMP projects. She also reminded the Board that if we choose to pursue stream restoration projects, that FT would be responsible for maintaining these projects which could also be costly. The Board discussed exploring how surrounding townships are handling the challenge of affording their MS4 programs. Mr. Tuleya stressed that compliance is always best. Plans for next actions, including which projects to pursue, will be discussed at the BOS Workshop meeting in August.

Business

a. <u>Solicitor's Report</u>: No additional comments were made on referendum discussion.

<u>Public Comment</u>: Chairman Gerstenhaber opened the floor for public comments. Resident Mr. Auerbach commented on the Board's use of referenda and the use of No Thruway signs in the township. He did not support the No Thruway proposal because people will ignore the sign. He recommended that the FT Road Engineer evaluate the safety of using millings to connect trails at Crossan Park and that the FT MS4 program might need a political solution to accomplish affordability.

<u>Adjourn</u>: Chairman Gerstenhaber moved, seconded by Supervisor Torres, to adjourn the meeting at 9:28 p.m. Motion passed 4-0.

Executive Session: Chairman Gerstenhaber called for Executive Session with the Board to discuss Civil Action No. 23-2226, Joan McVaugh vs. Franklin Township.

Respectfully submitted,

Stacy Hollis Township Secretary