

**EAST GOSHEN TOWNSHIP
PLANNING COMMISSION
Agenda
Wednesday, November 6, 2013
7:00 PM**

Workshop Session: 7:00 PM to 7:30PM (Conference Room – Open to the Public)

Formal Meeting: 7:30PM (Board Room if needed – Open to the Public)

- A. Call to Order / Pledge of Allegiance and Moment of Silence
- B. Chairman will ask if anyone is going to record the meeting
- C. **Review of Tracking Log / Determine need for Workshop Meeting**
- D. Public Comment on Non-Agenda Items
- E. Approval of Minutes
 - 1. **October 2, 2013**
- F. Acknowledge Receipt of New Applications
 - 1. **1637 Manley Rd. - Subdivision Plan**
 - 2. **1444 Linden Ln. - Variance Sketch Plan**
- G. Subdivision Plans
 - 1. **1551 Colonial Ln. - Subdivision and Land Development Plan**
 - 2. **1637 Manley Rd. - Subdivision Plan**
- H. Land Development Plans
- I. Conditional Uses and Variances
 - 1. **1444 Linden Ln. - Variance Sketch Plan**
- J. Ordinance Amendments
 - 1. **County Wide Act 167, Stormwater Management Ordinance**
- K. Comprehensive Plan Update
- L. Old Business
 - 1. Zoning Ordinance Review
 - a. Solar energy sample ordinances
 - b. **ZO Summary List for Articles II-IV**
- M. New Business
- N. Any Other Matter
- O. Liaison Reports
- P. **Dates of Importance**

Nov 05, 2013	Municipal Election (Board of Supervisors will not meet)	7AM-8PM
Nov 06, 2013	Planning Commission	7:00 PM
Nov 07, 2013	Park Commission	7:00 PM
Nov 07, 2013	Farmer's Market	3:30-6:30 PM
	Winter Market Begins	
	Public Works Garage	
Nov 11, 2013	Veterans' Day Office Closed	
Nov 11, 2013	Municipal Authority	7:00 PM
Nov 12, 2013	Board of Supervisors	7:00 PM
Nov 13, 2013	Conservancy Board	7:00 PM
Nov 14, 2013	Police Commission WEGO Police Dept	5:30 PM
Nov 14, 2013	Historical Commission	7:00 PM
Nov 14, 2013	Farmer's Market	3:30-6:30 PM
	Public Works Garage	
Nov 16, 2013	Neighbor to Neighbor Day	9:00 AM
	Park & Rec Commission	
Nov 18, 2013	Commerce Commission	7:00 PM
Nov 18, 2013	Deer Committee	7:00 PM
Nov 19, 2013	Board of Supervisors	7:00 PM

**EAST GOSHEN TOWNSHIP
PLANNING COMMISSION
Agenda
Wednesday, November 6, 2013
7:00 PM**

Nov 21, 2013	Farmers Market	3:30-6:30 PM
	Public Works Garage	
Nov 21, 2013	Openspace & Rec Task Force	7:00 PM
Nov 21, 2013	WC Area COG	7:00 PM
	Westtown Township Building	
Nov 25, 2013	Comp Plan Task Force	7:00 PM
Nov 26, 2013	Friends of East Goshen	7:00 PM
Nov 28, 2013	Thanksgiving	
	Office Closed	
Nov 29, 2013	Office Closed	

Winter (NEW) Newsletter – Mailed to residents on December 13, 2013.

Bold Items indicate new information to review.

Planning Commission Application Tracking Log

Application Name	Application (CU,LD,O, SD,V, SE, CA)	Type (Sk, P, F)	Date Filed	Start Date	Date to Yerkes/Consultant	Date to CCPC	Date to Abutting Prop. / ABC's	Extension	PC NLT Action Date	BOS NLT Action Date	Hearing Date	Drop Dead date
1444 Linden Ln.	V	SK	10/30/13	NA	NA	NA	NA		NA	NA	NA	NA
1637 Manley Rd.	SD	P	10/24/13	11/6/13	10/24/13	10/24/13	10/28/2013		1/8/14	2/4/14	NA	2/4/2014
1551 Colonial Ln. / Sunny Ridge Farms	SD	P	6/25/2013	7/3/2013	6/26/2013	6/26/2013	6/26/2013	1	11/6/2013	11/19/2013	NA	11/30/2013

Bold = New Application or PC action required

Draft
EAST GOSHEN TOWNSHIP
PLANNING COMMISSION MEETING
October 2, 2013

The East Goshen Township Planning Commission held a regularly scheduled meeting on Wednesday, October 2, 2013 at 7:00 p.m. at the East Goshen Township building. Members present were: Chairman Susan Carty, Vice Chairman Dan Daley, Jim McRee, and Nathan Cline. Also present were Mark Gordon, Township Zoning Officer; Ginnie Newlin, Conservancy Board; and Janet Emanuel, Township Supervisor.

COMMON ACRONYMS:

BOS – Board of Supervisors

SWM – Storm Water Management

BC – Brandywine Conservancy

CPTF – Comprehensive Plan Task Force

CVS – Community Visioning Session

A. WORKSHOP 7:00 PM – There was not a quorum at 7:00. Dan and Nate arrived later.

B. PUBLIC COMMENT ON NON-AGENDA ITEMS

Ginnie Newlin commented about the subject of more commercial in the township. She read that development doesn't always benefit a township because of the cost of services that have to be provided for more residents.

Jim commented that in Upper Merion the King of Prussia Mall is a large source of revenue.

C. APPROVAL OF MINUTES

1. Susan noted that the minutes for the September 4, 2013 meeting were approved as corrected.

D. SUBDIVISION AND LAND DEVELOPMENT PLAN

1. **1551 Colonial Lane** – The Yerkes letter mentioned the man-made slope. Mark explained that this was done to install a pool. The pool will be demolished and the trees around it removed. The applicant needs to have an answer to Yerkes by the 14th so Yerkes can respond by the November Planning Commission meeting.

Jim asked if the Township can require the Applicant to have a study done by an aquatic engineer. Mark replied that the Township cannot impose this on the Applicant. Mark added that storm water beds are in the rear of the property and level spreaders are almost on the property line. His suggestion is to move the water away and toward the corner. Dan suggested putting the level spreader at the bottom of the property instead of the top. He feels the DEP will be involved.

Public Comment:

Ron Woodworth, 1550 Colonial Dr. – Ron commented that the Applicant still has not introduced himself. Ron is trying to maintain the character of the neighborhood. Maybe the developer can be persuaded to develop along Cornwallis as well as Colonial. Ron would like to know how much experience the developer has. He gets the impression that they are relatively new. Ron would still like to have 3 houses instead of 4 on this site. He is concerned about driveways coming down the slope toward his property. Ron suggested turning the 4th house toward Cornwallis. He knows the wells for these houses will be deeper than his and he will probably have to drill a new well in the next 10 years.

Carmen Dannunzio, 1548 Colonial Lane - Carmen is concerned about the tree line that gave him privacy. He feels the developer should be responsible for providing the trees for this. He voiced concern about driveways, traffic, storm water, and utilities. Mark explained that the power from the utility pole will go underground to the new homes. It shouldn't change anything for the current homes.

1 Mark mentioned that from here the developer has to take his plan to the County Conservation
2 District for review and approval. He will have to provide a letter of credit to pay for community
3 improvements in case he doesn't finish the project.
4

5 **H. OPEN SPACE AND RECREATION PLAN** - Mark explained that the Plan will be rewritten. The
6 consultant, Ann Toole of Toole Recreation, believes this will prepare the Township for grant
7 opportunities next year. Grants will be needed for the Paoli Pike Pedestrian and Bike Trail from
8 East High School to East Goshen Park. The Commission will meet the 3rd Thursday each month
9 for 8 months. It will be comprised of 1 member and 1 alternate from each ABC plus Frank
10 Vattilano and the new Director of Recreation. The first meeting will be Thursday October 17.
11 Dan will represent the Planning Commission and Nate will be the alternate.
12

13 **I. STORM WATER MANAGEMENT PLAN** – Mark explained that the Act 167 Plan mandates that
14 every municipality in Pennsylvania must adopt a Storm Water Management Ordinance. Jan
15 Bower and her team have drawn up a sample document. The Township Solicitor is working on
16 this document with East Goshen and several other local townships. Mark asked the Commission
17 members to read the document and give him feedback before the November meeting. A
18 recommendation from the Planning Commission has to be presented to the BOS for their
19 Nov. 19th meeting. There is a simplified method the Township wants to adopt and DEP has
20 approved. There will be new administrative requirements for recording the storm water
21 management plan with the deed for the property.
22 Review: Jim – Appendix A, page 2 – Why does the plan need to be notarized? Mark answered
23 that it is a DEP requirement.
24 Page 4 – Infiltration Trench – Jim pointed out that there is a mix of “shall” and “should”. Dan
25 commented that this is only for small projects to give some flexibility. Janet feels it should be
26 “Shall” with a caveat.
27 Dan – the impervious definition on page 20 includes decks and pools. He and Nate recommend
28 removing decks and pools.
29 Dan mentioned the spreadsheet showing a summary/comparison of current and new requirements.
30 How will parent track procedures be handled. Mark explained that when someone has done a
31 project that is 1,999 sf. and comes back with an additional 500 sf. project, the project will be
32 based on the total 2499 sf.
33

34 **J. SOLAR ENERGY** – Dan reported on the research he has done so far. He will have a report for the
35 November meeting.
36

37 **ADJOURNMENT**

38 The next meeting will be held on Wednesday, November 6, 2013 at 7:00 pm. The meeting adjourned
39 at 8:45 pm.
40

41
42 Respectfully submitted,

43 _____
Ruth Kiefer, Recording Secretary



EAST GOSHEN TOWNSHIP
CHESTER COUNTY, PA

SUBDIVISION AND / OR LAND DEVELOPMENT APPLICATION

Date Filed: 10/24/13

Application for (Circle one):

Subdivision

Land Development

Subdivision & Land Development

- A. Application is hereby made by the undersigned for approval of a Subdivision and or Land Development Plan, more particularly described below.

1. Applicant's name: John SMIRGA
Address: 60 Park Place Medley, Pa 19063 Phone: 610-202-2537
Fax: _____ Email: NPT60@COMCAST.NET

2. Name and address of present owner (if other than 1. above)

Name: PATRICIA O'NEILL
Address: 1637 MANLEY Rd Phone: _____
Fax: _____ Email: _____

3. Location of plan: 1637 MANLEY Rd

4. Proposed name of plan: SUBDIVISION OF PATRICIA O'NEILL

5. County Tax Parcel No.: 53-06-D129.01 Zoning District: R-2

6. Area of proposed plan (ac.): 5.84 AC Number of lots: 2

7. Area of open space (ac.): 0

8. Type of structures to be constructed: None

9. What provisions are to be made for water supply and sanitary sewer? _____

Public Sewer ; on Site Well

10. Linear feet of road to be constructed: None

11. Name of Engineer: John SMIRGA, PE

Phone Number: SAME Fax: _____

Email address: _____

**EAST GOSHEN TOWNSHIP, CHESTER COUNTY PA
SUBDIVISION AND/OR LAND DEVELOPMENT APPLICATION**

12. Name of Land Planner: John Smirga, PE

Phone Number: SAME Fax: _____

Email address: _____

- B. ☒ We agree to reimburse the Township of East Goshen for such fees and expenses the Township may incur for the services of an Engineer(s) in investigations, tests, and review in relation to the Subdivision Plan.
- C. ☐ We agree to post financial security for the improvements depicted on the Subdivision and or land Development Plan pursuant to the Subdivision and Land Development Ordinance.
- D. ☐ We agree to reimburse the Township of East Goshen for all inspection fees at the actual cost to Township.

NOTICE

The Township requires an Occupancy Permit before any building can be occupied; no Occupancy Permit will be issued until final inspection and approved by the Zoning Officer and Building Inspector.

Owner Signature



Applicant Signature

Administrative Use

Fees received from applicant \$ _____ basic fee, plus \$ _____ per lot

For _____ lots = \$ _____.

Application and plan received by: _____ Date: _____
(Signature)

Application accepted as complete on: _____
(Date)

**EAST GOSHEN TOWNSHIP, CHESTER COUNTY PA
SUBDIVISION AND/OR LAND DEVELOPMENT APPLICATION**

SUBDIVISION AND/OR LAND DEVELOPMENT CHECKLIST

This checklist outlines the steps and items needed to insure completeness of the application and to insure the application follows the process and conforms to the timeframe outlined by the State of Pennsylvania and East Goshen Township. This checklist is broken into two parts, the Application Process and the Review Process. The application process must be completed in its entirety prior to the advancement into the Review Process.

*** Review the formal Planning Commission review procedure on page five.**

Application for (Circle all appropriate): Subdivision Land Development

Applicant Information:

Name of Applicant: John Smirga
Address: 60 Park Place Media, Pa 19063
Telephone Number: 610-202-1537 Fax: _____
Email Address: NPT60@COMCAST.NET
Property Address: 1637 Manley Rd

Property Information:

Owner's Name: PATRICIA O'NEILL
Address: 1637 Manley Rd
Tax Parcel Number: 53-06-0129.01 Zoning District: R2 Acreage: 5.84 Ac

Description of proposed subdivision and or land Development:

SUBDIVIDE one 53,046 SF Net Lot From
PARENT LOT LEAVING 4.622 Ac Net.
NO Development planned at this time

**EAST GOSHEN TOWNSHIP, CHESTER COUNTY PA
SUBDIVISION AND/OR LAND DEVELOPMENT APPLICATION**

Application Process Checklist (Administrative use only):

<u>Item</u>	<u>Date Complete</u>
1. Completed Township Application Form:	10/24
2. Township application and review fees paid:.....	10/24
3. County Act 247 Form complete:	10/24
4. Appropriate County Fees included:	10/24
5. 11 Copies of sealed Sub / LD plans:	10/24
6. 11 copies of other required plans:	
a. Landscape: (sealed).....	N/A
b. Conservancy: (sealed).....	
c. Stormwater Management: (sealed).....	
7. Three copies of the stormwater report and calculations:	N/A
8. Copies of supplementary studies, if required:	
a. Traffic Impact Study:.....	N/A
b. Water Study:	

Application accepted on 10/24/13 by _____

Official Signature _____ Title _____

Review Process Checklist (Administrative use only)

<u>Item</u>	<u>Date Complete</u>
1. Date of first formal Planning Commission Meeting following complete submission of application, (Day 1):.....	_____
Date Abutting property letter sent:	_____
2. Date presented to Planning Commission:	_____
3. Date submitted to CCPC:	_____
4. Date submitted to Township Engineer:	_____
5. Date by which the PC must act, (Day 70):	_____
6. Date by which Board of Supervisors must act, (Day 90):	_____
7. Date sent to CB:	_____
8. Date sent To MA:	_____
9. Date sent to HC:	_____
10. Date sent to PRB:	_____
11. Date sent to TAB:	_____

**EAST GOSHEN TOWNSHIP, CHESTER COUNTY PA
SUBDIVISION AND/OR LAND DEVELOPMENT APPLICATION**

**East Goshen Township Planning Commission
Procedure for processing Subdivision, Land Development, Conditional Use,
Variance, and Special Exception Applications**

August 19, 2002

1st Revision: September 22, 2003

2nd Revision: March 2, 2006

1. In order for any application to be considered by the Planning Commission it must be submitted to the Township with all required documentation as per the Township Code and with all applicable fees paid. The Township will use a checklist to verify all required documentation has been submitted. Until the application is complete the application will not be considered "filed" by the Township staff. The Planning Commission will acknowledge receipt of the application at their next regularly scheduled meeting.
2. All materials to be considered at the next regular meeting of the Planning Commission must be submitted with at least eleven (11) copies to the Township Staff by not later than close of business the previous Tuesday. Any materials submitted after that time will be held for the following meeting and not provided to the Commission at the upcoming meeting.
3. The application review cycle for Subdivision and Land Development Applications shall begin with the next regular meeting of the Commission after the complete application is filed. The application review cycle for Conditional Use, Variance, and Special Exception Applications shall begin the day a complete application is filed with the Township.
4. Applicants should not distribute material to the Commission during a meeting unless it is directly related to the initial presentation of the application. All materials for the Planning Commission, including any material to be used at a meeting, must be delivered to the Township Staff not later than close of business the previous Tuesday.
5. The burden of supplying necessary materials to the Planning Commission in a timely manner is on the applicant. Late delivery of material may require an extension on the part of the applicant or a recommendation for denial of the application by the Planning Commission.
6. Formal application presentations to the Planning Commission will only be made at the regular meeting after the complete application is submitted and accepted by the Township staff.
7. The application will remain on the Planning Commission's agenda until such time as the Commission has made its recommendation to the Board of Supervisors and or Zoning Hearing Board.
8. Applicants are encouraged to attend each Planning Commission meeting in order to answer questions or address issues concerning their application.
9. Applications will be voted on only during the regular Planning Commission meetings.
10. The Chairman, in his sole discretion, may waive or modify any of this procedure.

BOARD OF SUPERVISORS
EAST GOSHEN TOWNSHIP
CHESTER COUNTY
1580 PAOLI PIKE, WEST CHESTER, PA 19380-6199

October 28, 2013

Dear Property Owner:

The purpose of this letter is to inform you that the owner of 1637 Manley Rd., West Chester, PA 19380, has submitted a Subdivision application and plans for review and approval by the Township. The owner, Patricia O'Neill, proposes a 2 lot subdivision of her property. The existing parcel has an area of approximately 5.84 acres and has an existing single family home and accessory structures. The sketch plan proposes the subdivision of one new 1.21 acre lot to the east of the existing home for a new residential single family use.

Pursuant to Township policy, property owners and residents within 1000 feet of the subject property are notified of sketch plan submissions.

The meeting dates and times scheduled for the review and discussion of this application are outlined below and subject to change.

November 6, 2013 - Planning Commission meeting (workshop at 7:00 pm, formal meeting @ 7:30 pm) **(Presentation of Plan)**

November 13, 2013 - Conservancy Board meeting 7:00 pm.

December 4, 2013 - Planning Commission meeting (workshop at 7:00 pm, formal meeting @ 7:30 pm)

December 17, 2013 - Board of Supervisors meeting (workshop at 7:00 pm, formal meeting @ 7:30 pm) **(Presentation of Plan)**

All meetings are held at the Township Building and are open to the public. The plans are available for review at the Township building during normal business hours. Please give me a call at or email me at mgordon@eastgoshen.org if you have any questions or need additional information.

Sincerely,



Mark A. Gordon
Township Zoning Officer

Cc: All Township Authorities, Boards and Commissions

BOARD OF SUPERVISORS
EAST GOSHEN TOWNSHIP
CHESTER COUNTY
1580 PAOLI PIKE, WEST CHESTER, PA 19380-6199

FYI

October 31, 2013

Dear Property Owner:

The purpose of this letter is to inform you that John and Jill Podhiny, the owners of 1444 Linden Ln., West Chester, PA 19380, have submitted a sketch plan for review and comment by the Township Planning Commission. The Podhiny's are seeking input from the Planning Commission on a possible request for a zoning variance to construct a one car garage within the side yard setback of their property.

Pursuant to Township policy, property owners and residents within 1000 feet of the subject property are notified of sketch plan submissions.

The meeting dates and times scheduled for the review and discussion of this application are outlined below and subject to change.

November 6, 2013 - Planning Commission meeting (workshop at 7:00 pm, formal meeting @ 7:30 pm) **(Presentation of Sketch Plan)**

All meetings are held at the Township Building and are open to the public. The information is available for review at the Township building during normal business hours. Please give me a call at or email me at mgordon@eastgoshen.org if you have any questions or need additional information.

Sincerely,



Mark A. Gordon
Township Zoning Officer

Cc: All Township Authorities, Boards and Commissions

Mark Gordon

1114 LINDEN LN. SKETCH PLAN

From: John Podhiny [mailto:johnpodhiny@gmail.com]
Sent: Wednesday, October 30, 2013 11:18 PM
To: Mark Gordon
Subject: Preliminary info for possible detached garage
Attachments: Preliminary Info for Detached Garage.pdf

Hi Mark,

The narrative we discussed is at the bottom of this e-mail. Feel free to revise or shorten it as you see fit, or let me know and I can re-work it. The attached PDF file has 7 pages, including photos of similar garages, a dimensioned sketch, and photos of the area of interest. I think I've included everything we discussed, but if not just let me know. Thanks again for your help, Mark.

Best regards,

John

-- We would like to place a 12' x 20' single-car single-story garage at the end of our driveway facing the street, for storage of a third car. Our house has an attached 2-car garage which we use to store two of our cars.

-- The new garage would be finished in the same style as our house, with shingles, vinyl siding and shutters of the same type and color. We refinished the exterior of our house in February 2011 and have all the needed color and style information.

-- Garages similar to what we would like to build are shown on page 1 of the attachment.

-- Most likely, we would purchase a built-on-site garage from Stoltzfus Structures in Atglen, PA (www.mysheds.net). This would allow us to build the garage on a concrete slab for longevity.

-- We had our property boundaries surveyed by Robert Smith of RHS Surveyors. Using his boundary points, I made several approximate measurements which indicate a garage of this size could be placed at the end of our driveway such that it would be ~10' from the property line at its closest point (see sketch on page 2).

-- Placing the garage in the proposed location would require us to remove an older dogwood tree (which we've been planning to do anyway) and relocate a crepe myrtle bush, both of which are shown on page 3.

-- However, this location would allow us to keep two large pine trees, as it would not require any kind of driveway extension. Keeping the driveway as it is also minimizes the addition of impermeable surface area.

-- Pages 4 through 7 show other views of the general area of interest.

-- Directly behind our house are a deck and an in-ground swimming pool. Without significant modifications to one or both of these features, it seems that it would be difficult to place the garage behind the house but still close to the end of the existing driveway.



1441

1448

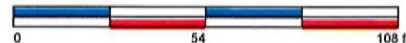
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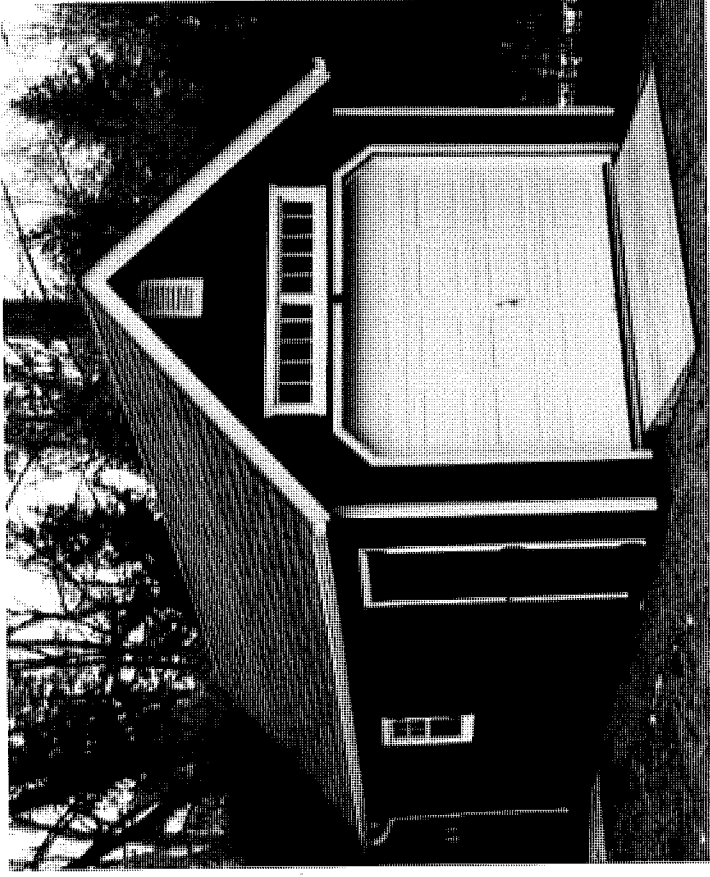
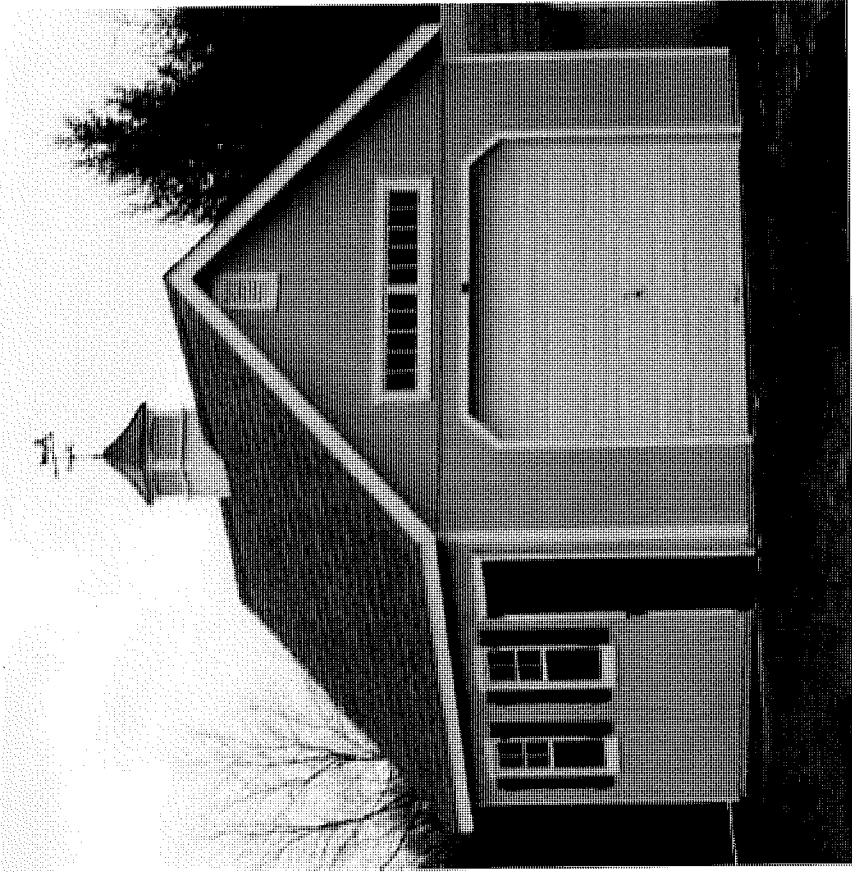
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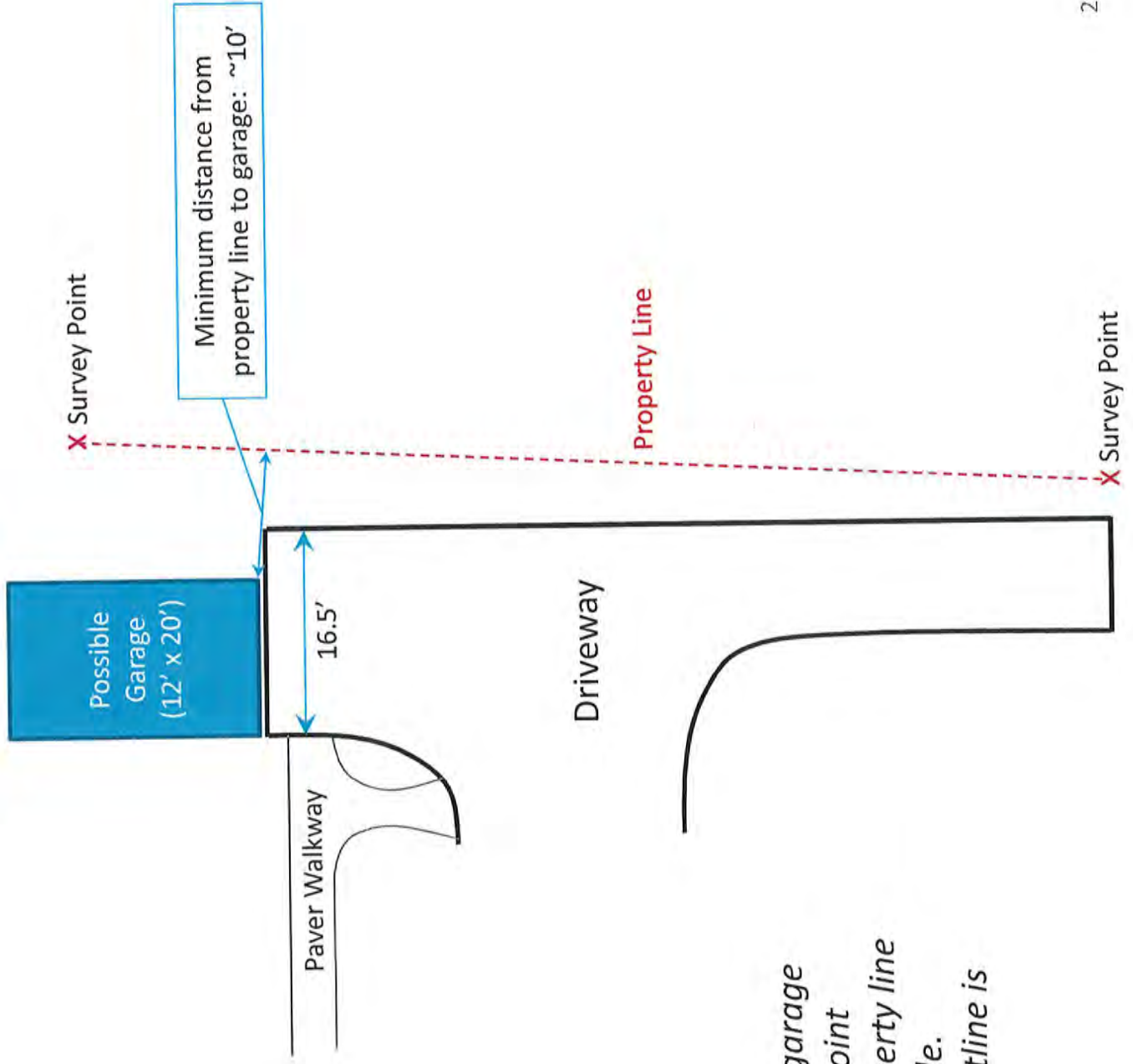
1440

1444 Linden Drive

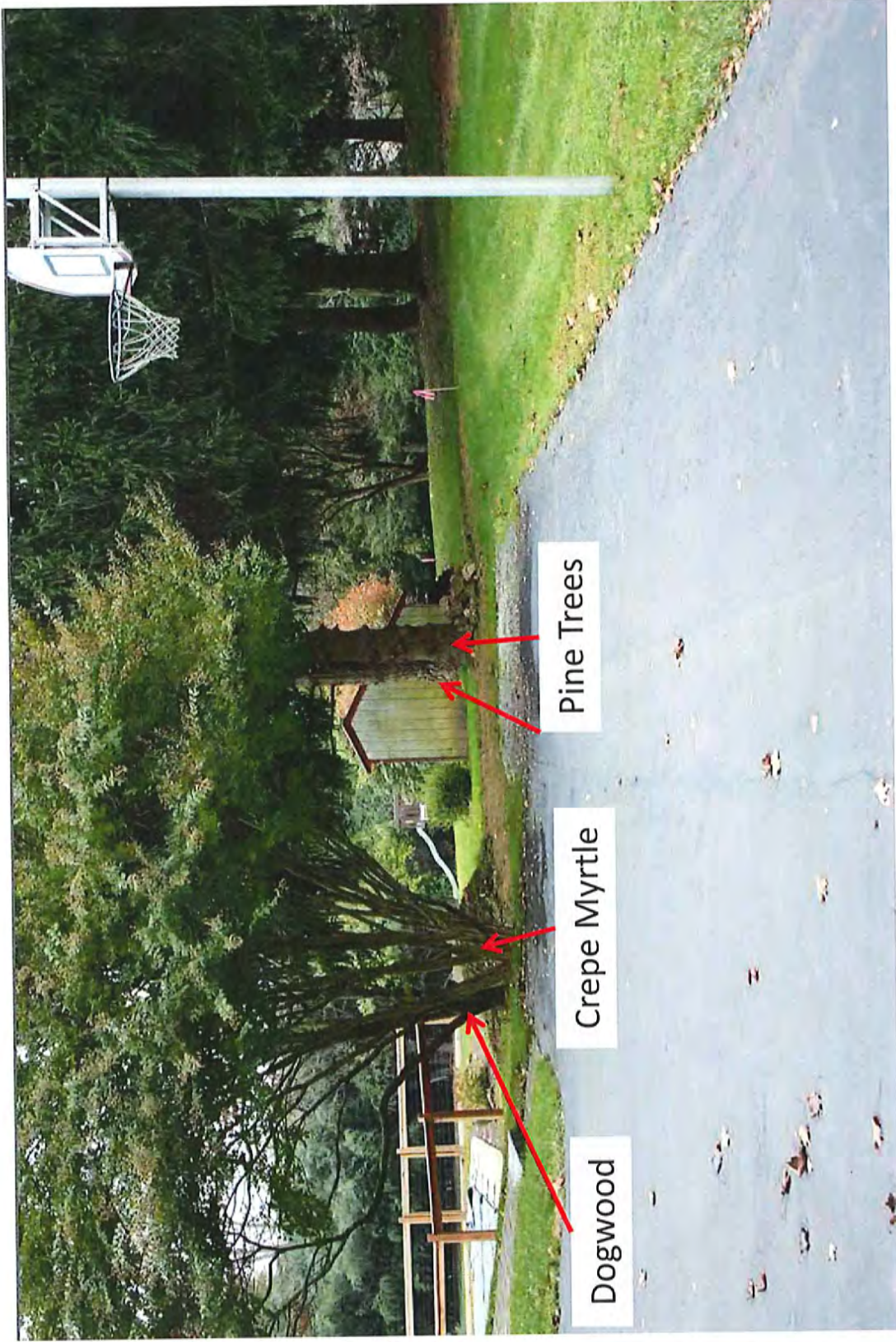




These garages are made by the builder we are considering for ours. Ours would have a color scheme similar to the one on the left, but would have vinyl siding and no cupola and would be slightly smaller. In terms of size, ours would be very close to the one on the right (which is 12' x 26').



Driveway outline, garage footprint, survey point locations and property line all sketched to scale. Paver walkway outline is approximate.











MULLIN ENGINEERING LLC.

Civil Engineering – Land Development
412 Monteray Lane West Chester PA 19380 (610) 420-5309

RECEIVED

OCT 17 2013

October 17, 2013

Re: Sunny Ridge Farms Subdivision - Colonial Lane Subdivision Plan Review

Mark Gordon, Township Zoning Officer
Township of East Goshen
1580 Paoli Pike
West Chester, Pa 19380

We have revised the plans in response to your review letter dated September 26, 2013 for Sunny Ridge Farms, LLC. The responses are in the same order as they were presented. The application has been changed from a Preliminary to a Preliminary/Final Plan set.

ZONING ORDINANCE

1. *Section 240-9.G- The minimum lot width at the building setback line is 150 feet. The lot 4 width at the building setback line measures 145 feet. Sketch 'C' in the zoning ordinance appendix illustrates how the lot width is determined. It appears that the front yard depth will need to be increased in order to provide the minimum required lot width at the building setback line.*

A dimension of 150 for the lot width of lot 1 has been added to Sheet 1, the Subdivision Plan.

2. *Section 240-24.F- Sewage facility planning modules will need to be submitted for review and approval by the Township and PADEP.*

An exemption request for planning has been submitted to the Pennsylvania Department of Environmental Protection. We have not received a response yet.

4. *Section 240-25.C.2.d- All natural vegetation shall be maintained on all slopes of 15 percent or greater unless a landscape plan prepared by a landscape architect provides for replacement of existing vegetation. Regarding the removal of trees adjacent to the pool, the demolition plan should note that the steep slopes adjacent to the pool are man-made.*

The four 12" hemlock trees along the lower bank of the pool have been identified to be removed. The area has also been identified as man-made steep slopes on the

Demolition Plan, Sheet 4.

SUBDIVISION AND LAND DEVELOPMENT ORDINANCE

7. *Section 205-30.8.7-The subdivision plan should note the parcel boundary error of closure. The parcel boundary shall be balanced and closed with an error of closure not to exceed one foot in 10,000 feet. Note 18 on sheet 1 should be amended to indicate the actual error of closure.*

Note number 18 on Sheet 1 has been amended to indicate an error of closure of 1 foot in 10,997,525 feet.

8. *Section 205-30.8.10-The existing conditions plan indicates the location of a sanitary sewer manhole located approximately 200 feet east of the Colonial Lane and Cornwallis Drive intersection. The manhole invert elevation should be noted on the plan. The design engineer should evaluate the option of extending the gravity sewer line from this manhole if basement sewer service is to be provided for lots 1 and 2.*

The manhole invert elevation of 426.02 has been added to the Existing Conditions Plan, Sheet 3.

10. *Sections 205-30.C.1.d, 205-44.E, and 205-51.A- As part of the proposed subdivision construction improvements, the Colonial Lane cartway width is to be increased from 14 feet to 20 feet, the cul-de-sac turnaround circle paving is to be increased from a 40 foot diameter to an approximately 74 foot diameter, and the cul-de-sac right-of-way diameter is to be increased from 100 feet to 110 feet. The road widening cross section detail on sheet 9 should be amended to indicate a 5 inch layer of BCBC base course overlain by a minimum 2 inch layer of binder course and a minimum 1.5 inch layer of wearing course.*

The Road Widening Detail has been revised to indicate 1.5 inches of wearing course over 2 inches of wearing course over 5 inches of BCBC.

11. *Section 205-35.F-The proposed extent of tree removal and replacement will need to be reviewed and approved by the Township's Conservancy Board.*

The Township's Conservancy Board reviewed the and verbally approved plan. The only changes to the plan since they reviewed it are the removal of the 4 hemlocks by the pool and the addition of four street trees along Cornwallis Drive. The removal of the hemlocks was discussed with the Conservancy Board and they had no objection to their removal.

12. *Section 205-35.G - No natural grade alterations shall be done within a distance of five feet from an adjoining tract. The design engineer should further evaluate the discharge point locations for the lot 1 and lot 2 drywells so that discharge is not*

directed toward the existing dwelling on adjoining parcel 53-4-40.1.

A proposed storm sewer has been added to tie in the drywell discharges from lots 1, 2, and 3.

13. *Section 205-39-Traffic impact fee requirements will need to be addressed as part of the final plan approval.*

We have no objection to the traffic impact fee.

18. *Sections 205-62.A and .8 -Street trees shall be installed on 40 foot centers (80 foot separation distance along the same side of the street) and shall consist of the species identified by this section. The plans need to identify proposed street tree locations along Cornwallis Drive.*

Four street trees have been added along Cornwallis Drive.

STORMWATER MANAGEMENT ORDINANCE 129-M-03

22. *Section 304.8.18-The plan(s) to be recorded will need to include a list and schedule of maintenance tasks to be performed for the proposed drainage and stormwater management facilities.*

The maintenance tasks are listed on Sheet 11.

23. *Sections 402.8 and 404.A.1 -The stormwater management design will need to address how increased runoff directed toward the Colonial Lane intersection with Cornwallis Drive is to be controlled.*

An inlet was added by the intersection which will direct water away from the intersection of Colonial Lane and Cornwallis Drive resulting in a decrease in flow to that area.

GENERAL COMMENTS

26. *The proposed yard drain top of grate elevations and the grading adjacent to the yard drains need to be adjusted to ensure capture of the intended runoff.*

All of the inlets are sumped a minimum of 6 inches from proposed grade.

28. *The outlet structure details on sheet 8 need to address how the control structures are to be installed within the yard drains. The two foot wide by two foot long yard drain dimensions are insufficient to include the outlet structure in the middle of the yard drain box.*

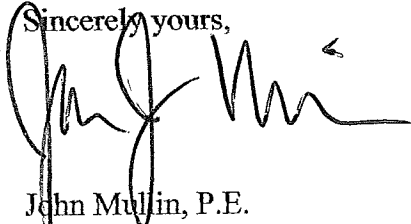
The outlet structure yard drains have been revised to type "M" inlets which are roughly two feet by four feet.

31. *Since the proposed limit of disturbance exceeds one acre, the erosion and sediment control plan will need to be submitted to the Chester County Conservation District for review and approval. A letter of adequacy from the Chester County Conservation District and an NPDES Permit are required for final plan approval.*

We had a pre-application meeting with Joe Sofranko of the Chester County Conservation District on October 1, 2013. The application package should be ready to submit in about a week.

Please don't hesitate to contact the undersigned if you have any questions or comments.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'John Mullin', with a small arrow pointing to the right.

John Mullin, P.E.
Mullin Engineering LLC



Yerkes Associates, Inc.

Consulting Engineers / Landscape Architects / Surveyors

October 31, 2013

East Goshen Township
1580 Paoli Pike
West Chester, Pennsylvania 19380

Attn: Mark Gordon, Township Zoning Officer

Re: Sunny Ridge Farms Subdivision – Colonial Lane
Subdivision Plan Review

Dear Mark:

The following plans, report, and letter prepared by Mullin Engineering have been submitted to this office for review:

- Title Plan – sheet 1 of 11
- Subdivision and Layout Plan – sheet 2 of 11
- Existing Conditions Plan – sheet 3 of 11
- Demolition Plan – sheet 4 of 11
- Grading and Utilities Plan – sheet 5 of 11
- Post Construction Stormwater Management Plan – sheet 6 of 11
- Landscape Plan – sheet 7 of 11
- Erosion and Sediment Control Plan – sheet 8 of 11
- Erosion and Sediment Control Details – sheet 9 of 11
- Construction Details – sheets 10 and 11 of 11
- Drainage Area Plans, sheets 1 thru 4 of 4, dated June 12, 2013
- Stormwater Management Report, last revised October 17, 2013
- October 17, 2013 Plan Submission Letter

Unless noted otherwise, all plans have a latest revision date of October 17, 2013. The plans depict the subdivision of tax map parcel 53-04-041 into four lots for the construction of a single-family dwelling on each lot. The parcel consists of 5.50 acres located on the northwest corner of the Colonial Lane intersection with Cornwallis Drive. The parcel contains an existing dwelling, in-ground pool, barn, and accessory building noted as an 'office'. The driveway and all existing structures are to be removed. The west side of the parcel contains steep slopes with grades between 15 to 25 percent. Overland runoff from the parcel drains to the north, the west, and toward the Colonial Lane intersection with Cornwallis Drive. Stormwater management is to be addressed by individual on-lot drywell systems. The proposed lots range in area from 1.001 acres to 1.950 acres. Note 15 on sheet 1 indicates that each lot is to be served by on-lot water supply and public sewer. The parcel is situated within the R-2 Low Density Residential District.

Professional services since 1874

1444 Phoenixville Pike, P. O. Box 1568, West Chester, PA 19380-0078 / Tel: 610-644-4254 / Fax: 610-640-0771

The plans indicate that the application submission status has changed from preliminary to preliminary / final. The plan revisions include the addition of street trees along Cornwallis Drive and the addition of a drainage easement for a storm pipe to direct runoff across the north side of lots 1, 2, 3, and 4. Additionally, general note 20 requiring the submission of a grading permit for each lot has been added to sheet 1.

All comments from my previous review letter of September 26, 2013 have been satisfactorily addressed except for the following that are numbered as they appeared previously:

Zoning Ordinance

1. Section 240-9.G – The minimum lot width at the building setback line is 150 feet. The lot 4 width shown at the building setback line measures 145 feet. The lot 4 proposed house location needs to be adjusted so that a minimum lot width of 150 feet is provided at the building setback line.
2. Section 240-24.F – The sewage facility planning module exemption request will need to be approved by the Township and PADEP.

Subdivision and Land Development Ordinance

12. Section 205-35.G – No natural grade alterations shall be done within a distance of five feet from an adjoining tract. The stormwater management design has been revised to include a storm sewer pipe to collect discharge from the lots 1, 2, and 3 drywells and convey the discharge to the northwest corner of lot 4. It is my understanding that the design engineer is further evaluating the design in order to utilize the storm sewer pipe for recharge and to reduce the length of the level spreader across lot 4.
- 12A. (new comment) Section 205-37.C.9 – Where stormwater will be gathered within a subdivision and drained in volume over lands within the boundaries of the subdivision, the subdivider shall reserve easements over the lands affected. Ownership, rights of passage, and maintenance responsibilities for the drainage easement across lots 1, 2, 3, and 4 need to be noted on the plan(s) to be recorded and be incorporated into the deeds for each lot.
13. Section 205-39 – Traffic impact fee requirements will need to be addressed as part of the final plan approval.
18. Sections 205-62.A and .B – Street trees shall be installed on 40 foot centers (80 foot separation distance along the same side of the street) and shall consist of the species identified by this section. The proposed street tree locations for Cornwallis Drive are shown on the landscaping plan. The street tree list, however, needs to be amended for consistency with the species shown in section 205-62.B.

Stormwater Management Ordinance 129-M-03

22. Section 304.B.18 – The plan(s) to be recorded will need to include a list and schedule of maintenance tasks to be performed for the proposed drainage, storm sewer, and stormwater management facilities.

General Comments

23. (new comment) The proposed topsoil stockpile locations need to be adjusted to avoid damage / disturbance to trees to be preserved.
24. (new comment) The erosion and sediment control plan needs to indicate the placement of a sediment barrier for any runoff directed toward the Cornwallis Drive and Colonial Lane intersection and downslope from the storm sewer level spreader on lot 4. The size or diameter of all compost filter socks need to be noted.
30. (new comment) The Pennsylvania Natural Diversity Inventory (PNDI) search results on page 126 of the stormwater management report indicate a potential impact to threatened plant species. The response notes that further review from the Pennsylvania Department of Conservation and Natural resources is necessary to resolve the potential impacts.
31. Since the proposed limit of disturbance exceeds one acre, the erosion and sediment control plan will need to be submitted to the Chester County Conservation District for review and approval. A letter of adequacy from the Chester County Conservation District and an NPDES Permit are required for final plan approval.

The plan submission should be revised to address the above comments. Please contact me if you have any questions concerning this review letter.

Sincerely,
YERKES ASSOCIATES, INC.


Michael Conrad, P.E.

Cc: Mullin Engineering

Memorandum

East Goshen Township
1580 Paoli Pike
West Chester, PA 19380

Voice: 610-692-7171
Fax: 610-692-8950
E-mail: mgordon@eastgoshe.org

Date: 11/1/2013
To: Board of Supervisors
From: Mark Gordon, Township Zoning Officer *mlb*
Re: Zoning Ordinance Review Recommendations

Commissioners,

Here are the items identified in Articles I-IV in the Review of the Zoning Ordinance that either pose some inconsistencies or require some clarifications in the code:

Article II

1. PRD / PUD

A planned residential development (PRD) is spelled out in the specific intent 240-8.A.(1). The R-1 is the Hershey's Mill community and was developed as a PRD. A PUD is not defined in the ZO.

Definition of PUD: (Wikipedia):

A **planned unit development (PUD)** is a type of building development and also a regulatory process. As a building development, it is a designed grouping of both varied and compatible land uses, such as housing, recreation, commercial centers, and industrial parks, all within one contained development or subdivision.

The PA MCP does not call out PUD's therefore our Zoning Doesn't need to address them. Our Zoning Ordinance essentially provides the regulatory tool to develop all of the aspects covered in a PUD.

Recommendation: this section is fine and doesn't need to be amended.

2. Animal Husbandry:

- a. Is listed as accessory use however referred to as requiring conditional use approval in the R-2 [240-9.B.(2)]. As I read the ordinance closely I believe that there are substantial inconsistencies and find the code nearly impossible to interpret.

Recommendation: All aspects so of this ordinance be amended to be more readable and enforceable. The PC should develop a clear and

simple objective to communicate to the Board that would encompass the use across the Zoning Ordinance. Once a clear objective is established the solicitor could draft an amendment for review.

- b. There are two definitions of Animal Husbandry in 240-6 that need consistency. This needs to be included in the review of Animal Husbandry.
- c. Look at the applicability of this use in the R-2 and R-4
The use could be permitted for all Residential districts as long as a clear definition and standard is outlined for setbacks, etc.

3. Temporary Structure:

a. Definition

Webster's online: *lasting for a limited time*

Recommendation: We could add a definition for temporary structure which includes a finite period of time. We could specify that a permit is required for the temporary structure and a permit shall only be valid for a defined period of time.

"Temporary Use" is also outlined in the ordinance and it is also not defined. **Recommendation:** Define Temporary Use and develop a standard that specifies that a permit is required for the temporary use and a permit shall only be valid for a defined period of time.

4. R-2, R-3, and R-4: Publically and Privately owned recreation

I don't see any issue with how these uses are currently identified in the residential districts.

5. R-2, R-3, R-4 and R-5: Solar

This use is a permitted accessory use in all residential districts and a standard is outlined in §240-32.O Accessory Uses / Solar energy system. Today, solar panels can be installed on the ground. This could create an objectionable view for neighbors. All the residential applications I have seen are roof mounted, however someone could install them in their yard and currently there is no requirement to screen them from ground view or enclose the area from curious children.

6. R-2, R-3, R-4 and R-5: Wind

This use is permitted in all residential districts except the R-2 and R-5 a standard is outlined in §240-32.T Accessory Uses / Windmill.

Recommendation: Amend the R-2 to permit this use, I believe it was an oversight since it's allowed in Milltown with ~10K s.f. lots (R-3) and not in the R-2 with 25K s.f. lots. The terminology could be looked at too, for consistency: i.e. Windmill and Wind-generated Energy systems but this isn't a huge concern, the meanings are synonymous.

7. Single Family Cluster should be highlighted in the NOTES of 240-9.G directing readers to 240-28 for specific area and bulk regulations.

This is an easy fix.

8. Single Family Openspace should be highlighted in the NOTES of 240-9.G refereeing readers to 240-36 for specific area and bulk regulations.

This is an easy fix.

Article III

1. C-1
 - a. 240-14.B.(6): C-1 Post Office Sale of goods on site?
 - b. 240-14.B.(13): Outdoor retail sales of Christmas trees
 - c. 240-14.C.(2): Outdoor retail sales of Christmas trees
 - d. 240-14.E.(2): Outdoor Storage (Define!)
 - e. 240-14.E.(6): Temporary Use (Define!)
2. C-2
 - a. Should we add "Standard restaurant with take-out service" to the uses by right?

Article IV

240-19.C.(23) Research – This is allowed in I2 but not BP.

240-19.E.(1) – Solar or Wind-generated energy systems. Move this to Conditional Use. Should we set design standards? Dan mentioned that another municipality is fighting a large solar field. Solar can be used as an accessory for a business but not as the business. If an accessory, allow only on the roof. If more than that, it has to go to conditional use in I1, I2 and BP.

240-19.G.(Max Building Height)– Since the height for apartments has been raised should this be raised. Dan pointed out that West Goshen allows up to 40 feet high.

240-20 Review of I-2 district. Dan feels there is a lot of redundancy in I-1 & I-2. Jim suggested that, if is allowed in I-1, it is included in I-2.

240-20.D(1) and (10) are these the same? Remove (10).

240-20.D.(6) and (24) on page 9 are the same. Remove (24) on page 9.

240-20.F.(2) Typo: change 1-2 to I-2.

240-20.F.(2) (b)– Just say Permitted Uses because the uses are shown in (a). (c) and (d) have references to Article V. This may need some additional thought because permitted uses include conditional uses.

240-20.F.(3) (a) 330/150 feet from what?? Minimum perimeter building setback (d) Maximum Building Height – Can the editor's notes be incorporated into the zones for clarification. The notes are attached to the definitions.

240-20.F.(3)(g) Two buildings on one lot – Do we want to keep this? Yes, I believe this adds some flexibility to property owners.

240-20.F.(4) National Register of Historic Places – Does the Historical Commission want to make any comments on this section? This section was written to preserve the Chamber building and allow it to be subdivided and conveyed separately.

240-20.G.(3) – rooftop structures – Should solar panels be included? Solar panels on a roof which project higher than the roof top are interpreted as roof top structures and therefore required to be screened.

240-21.B.(1) (2) & (3), consolidate (1) & (2) into (3). These are separate because the code outlines separate standards in 240-34.

240-21.B.(4) Make this a conditional use. What impacts does this use have that could require the Board to impose conditions?

Article V:

I'm consolidating notes on Articles V-IX; I'll have a summary for you in Dec.

SUBDIVISION / LAND DEVELOPMENT / VARIANCE PLANS
ARE AVAILABLE TO VIEW AT THE TOWNSHIP BUILDING

Memorandum

East Goshen Township
1580 Paoli Pike
West Chester, PA 19380

Voice: 610-692-7171
Fax: 610-692-8950
E-mail: mgordon@eastgoshen.org

Date: 10/30/2013
To: Planning Commission
From: Mark Gordon, Township Zoning Officer *mb*
Re: Act 167 / New Township Stormwater Management Ordinance

Dear Commissioners,

Please take some time to review the proposed stormwater management ordinance. As you know over the last 2 years or so the Chester County Water Resources Authority has developed a County wide stormwater management ordinance model for all municipalities to adopt. The ordinance before you now is the Ordinance that the Township Staff and Solicitor has drafted for consideration.

Draft Motion:

Mr. Chairman, I move that the Planning Commission recommend that the Board of supervisors adopt the enclosed storm water management ordinance repealing the existing ordinance, 129-M-03.

MINOR CHANGES ENCLOSED

Minor CHANGES

①

- 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. For projects in the Chester Creek watershed, all undeveloped land shall be considered to be "meadow" good condition, Type B soils (CN=58, C=0.12), unless the natural ground cover generates a lower CN or C value (i.e. forest). If a proposed development meets the definition of Redevelopment as defined in Article II of this Ordinance, the applicant may adjust the predevelopment CN or C value based on the curves provided in Appendix X. Runoff characteristics for off site areas draining through the project site shall be based on actual existing conditions, and shall be assumed to not have any controls implemented on future development (i.e. no release rate restrictions.)

H

page →

2

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 804. Alteration of BMPs - APPLICABLE TO ALL PROPERTIES IN
EAST COUNTY

- A. No person shall modify, remove, fill, landscape, alter, or impair the effectiveness of any stormwater BMPs, Conveyances, 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.

ORDINANCE APPENDIX A

SIMPLIFIED APPROACH TO
STORMWATER MANAGEMENT
FOR SMALL PROJECTS

Appendix A.1 - Applicability, Submittal and Approval Requirements

Appendix A.2 - Operation, Maintenance and Inspection Plan
and Agreement

Figure A.3 - Infiltration Trench Detail

Figure A.4 - ~~Infiltration Bed Detail~~

SHIELD STONE
BASE DETAIL

Figure A.5

Deck Stone Base Detail

- The infiltration trench shall be at least 5 feet from any property line, 50 feet from individual water supply wells, and 50 feet from any septic system component. It should not be located near stormwater Hotspots.
- The infiltration trench shall be located a minimum of 10 feet from any sub-surface structures such as building foundations and basements.
- Infiltration areas shall be protected from compaction by heavy equipment during and after construction.
- Infiltration trenches shall be placed in service after all earth disturbance associated with a given project is stabilized to avoid clogging.
- The ratio of the drainage area which stormwater runoff is collected from to the area of the footprint (bottom area) of the infiltration portion of the facility shall be as small as possible with a ratio of less than 5:1 preferred.

Simplified Approach Stormwater Management Infiltration Bed

An infiltration bed is a rock-filled area that receives stormwater runoff. Runoff is stored in the void space between the stones and in the pipe, and infiltrates through the bottom of the trench into the underlying soil matrix. They are typically used under sheds and decks. Figure A.4 and Figure A.5 shows the typical infiltration ~~trench~~ configuration. Infiltration Beds shall incorporate or make provisions for the following elements:

- These facilities shall be located at least five (5) feet from any property line and are not recommended if their installation would create a risk of flooding other structures constructed at or below grade.
- The typical infiltration bed shall extend a least one (1) foot past the roof line of the shed or shall extend to the outer edge of the deck in order to capture the stormwater.
- The stone shall be placed on nonwoven geotextile (top and sides only)
- There shall be a positive overflow that allows stormwater that cannot be stored or infiltrated to be discharged into a nearby vegetated area.
- Roof downspouts shall not be connected to infiltration bed.
- Infiltration testing may be required by the Township to ensure soil is capable of infiltrating stormwater.
- It is recommended that there be a 2 foot clearance above the regularly occurring seasonal high water table, and have a minimum depth to bedrock of 2 feet.

5

Appendix A.2 Simplified Approach Operation, Maintenance, and Inspection Plan and Agreement

Bm P

It is the Landowner's responsibility to properly maintain the Infiltration ~~trench~~ and associated Conveyances. It is also the Landowner's responsibility to inform any future buyers of the function, operation, and maintenance needed for the Infiltration Trench and associated Conveyances prior to the purchase of the property.

Bm P

The following maintenance agreement outlines the inspection and maintenance required for the Infiltration ~~Trench~~ and associated Conveyances and the responsibilities of the Landowner, and the rights of the Township in regards to inspection and enforcement of the maintenance requirements.

The Operation, Maintenance and Inspection Plan and Agreement must be signed, notarized and submitted to the Township with the Stormwater Permit Application.

Upon approval of the Stormwater Management Permit the Operation, Maintenance and Inspection Plan and Agreement, will be recorded at the Chester County Office of the Recorder of Deeds, by the Township. A copy of the recorded agreement will be provided to the Landowner.

EAST GOSHEN TOWNSHIP
CHESTER COUNTY, PENNSYLVANIA

ORDINANCE NO. - 2013

AN ORDINANCE OF EAST GOSHEN TOWNSHIP, CHESTER COUNTY, PENNSYLVANIA, REPEALING THE STORMWATER MANAGEMENT ORDINANCE OF EAST GOSHEN TOWNSHIP, WHICH WAS ADOPTED AS ORDINANCE NO. 129-M-03 ON OCTOBER 21, 2003, AND ADOPTING IN ITS PLACE THE CHESTER COUNTY MODEL ACT 167 STORMWATER MANAGEMENT ORDINANCE AS AMENDED FOR EAST GOSHEN TOWNSHIP.

BE IT ENACTED AND ORDAINED by the Board of Supervisors of East Goshen Township, as follows:

SECTION 1. The East Goshen Township Stormwater Management Ordinance, a copy of which is attached hereto as Exhibit "A", is hereby enacted.

SECTION 2. Severability. The provisions of this Ordinance are severable, and if any article, section, subsection, clause, sentence or part thereof shall be held or declared illegal, invalid or unconstitutional by any court of competent jurisdiction, the decision shall not affect or impair any of the remaining articles, sections, subsections, clauses, sentences or parts thereof of this Ordinance. It is hereby declared to be the intent of the Board of Commissioners that this Ordinance would have been adopted if such illegal, invalid or unconstitutional article, section, subsection, clause, sentence or part thereof had not been included herein.

SECTION 3. Repealer. All ordinances or parts of ordinances inconsistent herewith are hereby repealed to the extent of any such inconsistency.

SECTION 4. Effective Date. This Ordinance shall become effective on January 1, 2014.

ENACTED AND ORDAINED this _____ day of _____, 2013.

ATTEST:

**EAST GOSHEN TOWNSHIP
BOARD OF SUPERVISORS**

Louis F. Smith, Secretary

Senya D. Isayeff, Chairman

Carmen Battavio, Vice-Chairman

E. Martin Shane, Member

Charles W. Proctor, III, Esquire, Member

Janet L. Emanuel, Member

EXHIBIT A

**EAST GOSHEN TOWNSHIP
STORMWATER MANAGEMENT
ORDINANCE**

ORDINANCE NO _____

**EAST GOSHEN TOWNSHIP
CHESTER COUNTY,
PENNSYLVANIA**

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ARTICLE I – GENERAL PROVISIONS

Section 101. Short Title

This Ordinance shall be known as the “East Goshen Township Stormwater Management Ordinance.”

Section 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.

Section 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 performance standards and design criteria based on watershed-based stormwater management planning.
- 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 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.;
- 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 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 Chapter 205 of the Code of East Goshen Township, titled "Subdivision and Land Development."

4. The provisions of Article VIII of this Ordinance, titled, "Prohibitions" are applicable to all properties located in East Goshen Township.

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 cumulative Proposed 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. October 23, 2003 (the date of adoption of the previous "East Goshen Stormwater Management Ordinance", Ordinance 129-M-03) 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.

For example:

If, after October 23, 2003, an Applicant proposes construction of a six hundred (600) square foot garage, that project would be exempted 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 October 23, 2003.

Section 106. Exemptions and Small Project 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 five hundred (500) square feet of Proposed Impervious Surfaces AND less than five thousand (5,000) square feet of Earth Disturbance, except that for Regulated Activities that propose to add between ten (10) square feet and up to five hundred (500) square feet of Proposed Impervious Surface, the applicant shall infiltrate the first one (1) inch of runoff from Proposed Impervious Surface.

2. Are listed in Subsection 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 106.C.	< 500 sq. ft. of Proposed Impervious Surfaces AND < 5,000 sq. ft. of Proposed Earth Disturbance	≥ 500 sq. ft. of Proposed Impervious Surfaces OR ≥ 5,000 sq. ft. of Proposed Earth Disturbance
Article I	Not Exempt	Not Exempt	Not Exempt
Article II	Not Exempt	Not Exempt	Not Exempt
Sections 302, and 303, 311	Not Exempt	Not Exempt	Not Exempt
Sections 301, 304, 305, 306, 307, 308, 309, and 310	Exempt	Exempt	Not Exempt
Article IV	Exempt	Exempt	Not Exempt
Article V	Exempt	Exempt	Not Exempt
Article VI	Exempt	Exempt	Not Exempt
Article VII	Exempt	Exempt	Not Exempt
Article VIII	Not Exempt	Not Exempt	Not Exempt
Article IX	Not Exempt	Not Exempt	Not Exempt
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 106.1 Notes:

- Specific activities listed in Subsection 106.C are exempt from the indicated requirements, regardless of size.
- A proposed Regulated Activity must be less than BOTH the Proposed Impervious Surfaces and proposed Earth Disturbance thresholds to be eligible for exemption from the requirements listed in this table.
- “Proposed 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.

C. Exemptions for Specific Activities

The following specific Regulated Activities are exempt from the requirements of Sections 301, 304, 305, 306, 307, 308, 309, and 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 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 system, 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.
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 303 of this Ordinance.

7. Maintenance of Existing Paved Surfaces - Replacement of existing paved surfaces shall meet the erosion and sediment control requirements of 25 PA Code Chapter 102 and Section 303 of this Ordinance, and is exempt from all other requirements of this Ordinance listed in Subsection 106.C above. Resurfacing of existing paved 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. Small Project Requirements

Regulated Activities that involve 500 square feet of Proposed Impervious Surfaces or less and 2,000 square feet of proposed Earth Disturbance or less 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 304, 305, 306, 307, 308, 309, and 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 Municipality 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. All other provisions of this Ordinance shall apply.

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

Ordinance Article/Section	Activities Listed in Subsection 106. D
Article I	All Provisions Apply
Article II	All Provisions Apply
Sections 302, and 303, 311	All Provisions Apply
Sections 301, 304, 305, 306, 307, 308, 309, and 310	Exempt if Small Project Requirements of Subsection 106.D are Applied
Article IV	Exempt if Modified Requirements of Subsection 106.D are Applied
Article V	Exempt if Modified Requirements of Subsection 106.D are Applied
Article VI	Exempt if Modified Requirements of Subsection 106.D are Applied
Article VII	Exempt if Modified Requirements of Subsection) 106.D are Applied
Article VIII	All Provisions Apply
Article IX	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:

- “Small Project 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 Subsection 106.D are met to the satisfaction of the Municipality; all other provisions of this Ordinance apply.

Section 107. Repealer

The East Goshen Township Stormwater Management Ordinance which was adopted by the Board of Supervisors on October 23, 2003 as Ordinance No. 129-M-03 is repealed and replaced with this Ordinance. Any other 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 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 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.).
- D. The requirements of this Ordinance shall supersede any conflicting requirements in other municipal ordinances or regulations.

Section 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 with 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 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 111.B and 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 - For any proposed Regulated Activity involving Earth Disturbance equal to or greater than one (1) acre, the Municipality may approve measures for minimum volume and infiltration control other than those required in this Ordinance only after consultation with and evaluation by PADEP that the alternate Site design meets State water quality requirements and does not conflict with State law, including, but not limited to, the PA Clean Streams Law, 35 P.S. Section 691.1, et seq.

Section 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.

ARTICLE II – DEFINITIONS

Section 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 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 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 refer to operational and/or behavior-related practices that attempt to minimize the contact of pollutants with stormwater runoff whereas structural BMPs or measures are those that consist of a physical device or practice that is installed to capture and treat stormwater runoff. Structural BMPs include, but are not limited to, a wide variety of practices and devices from large-scale retention ponds and constructed wetlands to small-scale underground treatment systems, infiltration facilities, filter strips, low impact design, bioretention, wet ponds, permeable paving, grassed swales, riparian or forested buffers, sand filters, detention basins, and manufactured devices. Structural stormwater BMPs are permanent appurtenances to the Site.

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.

CN – Curve number.

Commonwealth – Commonwealth of Pennsylvania.

Conservation District – The Chester County Conservation District.

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 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 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 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.

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. 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 one hundred (100)-year 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 East Goshen 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.

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).

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, decks, 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. Surfaces that were designed to allow infiltration (i.e. areas of porous pavement) will be considered on a case-by-case basis by the Municipal Engineer, based on appropriate documentation and condition of the material, etc.

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 and 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.

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 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 – East Goshen Township, Chester County, Pennsylvania.

NOAA - National Oceanic and Atmospheric Administration.

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.

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.

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 (PADEP 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.

Planning Commission – The Planning Commission of East Goshen 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 – Land 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, Chapter 102, or the Clean Streams Law.

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

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. 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 Stormwater 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 East Goshen 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.

Township – East Goshen Township, Chester County, Pennsylvania.

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. 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 301. General Requirements

- A. Applicants proposing Regulated Activities in the Municipality which are not exempt under Section 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.
- D. Neither submission of an 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. Persons proposing to construct Regulated Activities with one (1) acre or more of proposed Earth Disturbance that do not discharge directly to waters of the Commonwealth shall provide the Municipality with a copy of the easement

authorizing such discharge or confirmation from PADEP that an easement is not required.

- 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 305, 306, 307, and 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, 5-year, and 10-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 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 Section 240-26 of the Code of East Goshen Township, 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. If a perennial or intermittent stream passes through the site, the applicant shall create a riparian buffer extending a minimum of fifty (50) feet to either side of the top of the bank of the channel. The buffer area shall be maintained with appropriate native vegetation (see list of technical references in Appendix F). If the applicable rear or side yard setback is less than fifty (50) feet, the buffer width may be reduced to twenty-five (25) percent of the setback to a minimum of ten (10) feet. If an existing buffer is legally prescribed (e.g., deed covenant, easement, etc.) and it exceeds the requirement of this Ordinance, the existing buffer shall be maintained.

Section 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 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, if applicable;
 - b. A PADEP NPDES Construction Activities Permit as required under Title 25 Pennsylvania Code Chapter 92, if applicable;
 - c. Evidence of any other permit(s) or approvals required for the Regulated Activities; and
 - 2. An Erosion and Sediment Control Plan has been approved by the Municipality, if required.
- 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 306.M.

Section 304. Site Design Process

For Regulated Activities with ten thousand (10,000) or more square feet of proposed Earth Disturbance OR two thousand (2,000) or more square feet of Proposed Impervious Surfaces, 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. For Regulated Activities with ten thousand (10,000) or more square feet of proposed Earth Disturbance OR two thousand (2,000) or more square feet of Proposed Impervious Surfaces the Applicant shall demonstrate in its SWM Site Plan (as required in Subsection 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 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 Section 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 natural hydrology site design and sources of information for “Conservation Design”, “Low Impact Design”, and “Sustainable Design”.
- 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 305, 306, 307 and 308.

Section 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 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 309.D of this Ordinance.
- C. The design of the 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 306. The infiltration volume required under Section 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 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.

Section 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. Wherever possible, infiltration should be designed to accommodate the entire water quality and runoff volume required in Section 305.
- B. For Regulated Activities involving New Development, the volume of a minimum of one (1)-inch of runoff from all Proposed Impervious Surfaces shall be infiltrated.
- C. For Regulated Activities involving Redevelopment, whichever is less of the following volume options shall be infiltrated:
 - 1. The volume of a minimum of one (1)-inch of runoff from all Proposed Impervious Surfaces;
 - OR

2. The total water quality and runoff volume required in Section 305 of this Ordinance.
- D. If the requirements of Subsections 306.B or 306.C 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; however in all cases at least the first one-half (0.5) inch of runoff volume shall be infiltrated.
 - E. Only if a minimum of at least one-half (0.5) inch infiltration requirement cannot be physically accomplished on the Site, shall a waiver from Section 306 be considered by the Municipality.
 - F. 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.
 - G. When a project contains or is divided by multiple watersheds, the infiltration volume shall be separately addressed for each watershed.
 - H. 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.
 - I. 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.
- J. 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 306.N).
 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.
- K. All infiltration practices shall:
1. Be selected and designed to meet the criteria of Subsection 304.C that are applicable to infiltration;
 2. Be set back at least ten (10) feet from all buildings and features with sub-grade elements (e.g., basements, foundation walls, etc.) and five (5) feet from any property line or right-of-way line, 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 ten (10) 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.
- L. 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.
- M. 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.
- N. 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.
- O. 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.
- P. All infiltration practices shall have appropriate positive overflow controls.
- Q. No sand, salt or other particulate matter may be applied to a porous surface material for winter ice conditions.
- R. 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 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 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 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 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 that are NOT located in the Chester Creek watershed.

- A. Post-construction peak flow rates from any Regulated Activity not located in the Chester Creek watershed 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 for Properties Not in the Chester Creek Watershed

**(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)**

POST-CONSTRUCTION DESIGN STORM FREQUENCY (24-Hour Duration)	PREDEVELOPMENT DESIGN STORM	
	New Development Regulated Activities	Redevelopment 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 309.D of this Ordinance.
- C. For Regulated Activities involving only Redevelopment, no peak flow rate controls are required when and only if the total Proposed 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 309.D.
- 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.
- H. Chester Creek Watershed - New Development – The Chester Creek watershed is divided into districts that represent three (3) levels of stormwater management. The boundaries of the stormwater management districts are shown on an official release rate map, included as part of the Chester Creek Stormwater Management Plan (See Plate 8, Release Rate Map). A copy of the release rate map at a reduced scale is included in Appendix G. This map is for reference only. The exact location of the stormwater management district boundaries as they apply to a given development site must be determined by mapping the boundaries using the two (2) foot topographic contours (or the most accurate data required) provide as part of the of the drainage plan.

Regulated Activities for new development located within the Chester Creek watershed shall achieve the applicable peak flow release rate control requirements presented in the approved PA Act 167 Plan for that watershed as presented in Table 308.2 below, and as presented in the Chester Creek Watershed Release Rate Map.

In the Chester Creek Watershed for the 2-, 5-, 10-, 25-, 50-, and 100-year design storm, standards for New Development are shown in Table 308.2. Development sites located in each of the districts must control post-development peak runoff rates to the specified percentage of the pre-development runoff rates for the design storms as shown in Table 308.2.

TABLE 308.2

**New Development Peak Rate Control Standards
for Properties in Chester Creek Watershed**

CONTROL CRITERIA FOR STORMWATER MANAGEMENT DISTRICTS	
DISTRICT	CONTROL CTITERIA
100%	Post-development peak discharge for all design storm must be no greater than pre-development peak discharges
75%	Post-development peak discharge for all design storm must be no greater than seventy-five (75) percent of the pre-development peak discharges
50%	Post-development peak discharge for all design storm must be no greater than fifty (50) percent of the pre-development peak discharges

- I. Chester Creek Watershed - Redevelopment - Regulated Activities for Redevelopment projects located within the Chester Creek watershed shall meet peak discharge requirements based on the adjusted runoff control number (RCN) or "C" values illustrated in Appendix H.

TABLE 308.3

**Redevelopment Peak Rate Control Standards
for Properties in Chester Creek Watershed**

RATIONAL FORMULA RUNOFF COEFFICIENTS	
TYPE OF DRAINAGE AREA	RUNOFF COEFFICIENT
Lawns:	
Sandy soil, flat <2%	0.05-0.10
Sandy soil, average 2-7%	0.10-0.15
Sandy soil, steep >7%	0.15-0.20
Heavy soil, flat <2%	0.13-0.17
Heavy soil, average 2-7%	0.18-0.22
Heavy soil, steep >7%	0.25-0.35
Business:	
Downtown areas	0.70-0.95
Neighborhood area	0.50-0.70
Residential:	
Single-family areas	0.30-0.50

Multi Units, detached	0.40-0.60
Multi units, attached	0.60-0.75
Suburban	0.25-0.70
Apartment dwelling areas	0.50-0.70
Industrial:	
Light areas	0.50-0.80
Heavy areas	0.60-0.90
Parks, cemeteries	0.10-0.25
Playgrounds	0.10-0.35
Railroad yard areas	0.20-0.40
Unimproved areas	0.10-0.30
Streets:	
Asphalt	0.70-0.95
Concrete	0.80-0.95
Brick	0.70-0.85
Drives and walks	0.75-0.85
Roofs	0.75-0.95

SOURCE: Ven Te Chow, 1964, *Handbook of Applied Hydrology*, McGraw-Hill Book Co.

Section 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	USDA NRCS	Applicable for land development plans where limitations described in

package based on TR-55)		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 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. Outside of the Chester Creek watershed, 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. For projects in the Chester Creek watershed, all undeveloped land shall be considered to be “meadow” good condition, Type B soils (CN=58, C=0.12), unless the natural ground cover generates a lower CN or C value (i.e. forest). If a proposed development meets the definition of Redevelopment as defined in Article II of this Ordinance, the applicant may adjust the predevelopment CN or C value based on the curves provided in Appendix 3. Runoff characteristics for off site areas draining through the project site shall be based on actual existing conditions, and shall be assumed to not have any controls implemented on future development (i.e. no release rate restrictions.)

- F. 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.
- G. 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.
- H. Weighted averaging of runoff coefficients shall not be used for manual computations or input data for water quality and runoff volume calculations.
- I. 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.
- J. 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 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) 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 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 311. Other Conveyance and System Design Standards

Conveyance and system design standards shall be in accordance the Chapter 205 of the Code of East Goshen Township titled, Subdivision and Land Development.

ARTICLE IV – STORMWATER MANAGEMENT (SWM) SITE PLAN REQUIREMENTS

Section 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.

Section 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 SWM Site Plan requirements for Regulated Activities with less than ten thousand (10,000) square feet of proposed Earth Disturbance AND less than two thousand (2,000) square feet of Proposed Impervious Surfaces shall include, at a minimum, all items required for the Simplified Approach Stormwater Management Plan (Appendix A).

For all other SWM Site Plans, the following items shall be included:

- 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 from 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 East Goshen Township Stormwater Management Ordinance (Ordinance No. _____)." *[Note: include signature, name, discipline of professional license, and license stamp or seal here]*

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 deed-restricted 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 301.P).
- f. For the water bodies, streams and wetlands identified in Subsection 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 bench marks) at intervals of two (2) feet. In areas of slopes greater than fifteen (15) percent five (5)-foot contour intervals may be used. The datum used and the location, elevation and datum of any bench marks 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.
- l. 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 301.U.
 - q. Boundaries of a fifty (50) foot construction non disturbance buffer to protect streams (intermittent and perennial) wetlands and other water bodies during construction of the Proposed Regulated Activity.
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 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;
 - 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 (15) 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 twenty (20) foot 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. 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 402.B.8);
 - 2. How the Site design achieves the requirements of Section 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 301 through 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.
- D. 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 301.O and 301.R of this Ordinance.
- E. 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 301 and 304 through 309.
- F. 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 301.G and Article VII of this Ordinance.
- G. 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.
- H. 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 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 thirty (30) days with a notification in writing of the specific manner in which the submission is incomplete.
- G. Financial security, per the requirements of Section 110, shall be submitted to the Municipality prior to approval of the SWM Site Plan or as part of the financial security which is posted pursuant to the SALDO.

Section 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 five (5) 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 five (5) 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 406 of this Ordinance.
- H. All or portions of the final approved SWM Site Plan shall be recorded (as "record 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 502 of this Ordinance.

Section 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 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 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 403 of this Ordinance, distributed accordingly, and be subject to review as specified in Section 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 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. Upon completion of construction, every permanent stormwater BMP, Conveyance or other stormwater 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.
- F. The Municipality or its designee may periodically inspect any permanent stormwater BMP, Conveyance or 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 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; 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. All areas of the Regulated Activity draining to BMPs must be stabilized prior to submittal of the As-Built Plans.
- E. 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 501.D.
- F. The As-Built Plans must be received, reviewed and determined to be acceptable by the Municipality prior to release of the financial security or other performance guarantee.
- G. 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.
- H. 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.

- I. All or portions of the final As-Built Plans shall be recorded if required by the Municipality.

ARTICLE VI – FEES AND EXPENSES

Section 601. Municipality SWM Site Plan Review and Inspection Fees

The Board of Supervisors by Resolution shall establish a schedule of fees for all applications submitted and inspections performed under this Ordinance. The applicant shall also be responsible for reimbursing the Municipality for all of the Municipality's costs incurred in reviewing the application and accompanying plans and documents, including the Township Engineer and Solicitor fees. The cost of inspections will be billed to the applicant as inspections are completed at a rate as set forth from time to time by Resolution of the Board of Supervisors.

Section 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 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 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 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 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 waste water 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 twenty (20) 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 East Goshen Township 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 Township.”
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 705.B, 705.C, and 705.D of this Ordinance.

Section 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 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 twenty (20) 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 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 704 A, 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 five (5) days of the Municipality's approval of the corresponding O&M Plan.
- C. 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 five (5) days of the Municipality's approval of the O&M Plan.

Section 705. Other Post-construction Responsibilities

- A. The provisions of Section 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 two (2) years. A copy of such 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 ten (10) days of the change.

ARTICLE VIII – PROHIBITIONS

Section 801. Prohibited Discharges – Applicable to all properties in East Goshen Township

- 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 or the 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 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 fire fighting activities;
 - 2. Potable water sources including water line and fire hydrant flushings;
 - 3. Irrigation drainage;
 - 4. Air conditioning condensate;
 - 5. Springs;
 - 6. Water from crawl space pumps;
 - 7. Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spill material has been removed) and where detergents are not used;
 - 8. Diverted stream flows;
 - 9. Flows from riparian habitats and wetlands;
 - 10. Uncontaminated water from foundations or from footing drains;

11. Lawn watering;

12. Dechlorinated swimming pool discharges;

13. Uncontaminated groundwater;

14. Water from individual residential car washing; and

15. Routine external building washdown (which does not use detergents or other compounds).

D. In the event that the Municipality determines that any of the discharges identified in Section 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 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 802. Prohibited Connections - Applicable to all properties in East Goshen Township

The following connections are prohibited, except as provided in Section 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.

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 803. Roof Drains and Sump Pumps - Applicable to all properties in East Goshen Township

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 804. Alteration of BMPs

- A. No person shall modify, remove, fill, landscape, alter, or impair the effectiveness of any stormwater BMPs, Conveyances, 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 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 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 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 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 903. Enforcement

- A. The Township Manager or other designee is hereby authorized and directed to enforce all of the provisions of this Ordinance. The Township Manager 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 Township Manager 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 Township Manager 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 to 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 Stormwater Management Appeals Board in accordance with Section 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 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 Stormwater Management Appeals Board 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 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 905. Penalties

- A. Any person who violates or permits the violation of any provision of this Ordinance shall, upon conviction thereof in a summary proceeding brought before a District Justice under the Pennsylvania Rules of Criminal Procedure, be guilty of a summary offense, punishable by a fine of not less than \$100.00 and not more than \$1,000.00, plus costs and attorney's fees, and, upon default of the payment of the fine and costs, imprisonment not to exceed 30 days. Each day or portion thereof that a violation continues shall be deemed a separate offense.
- B. In addition, the Municipality may, 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 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 Stormwater Management Appeals Board within thirty (30) days of that action.
- B. The Stormwater Management Appeals Board shall consist of three (3) residents of the Township appointed by the Board of Supervisors. The Stormwater Management Appeals Board shall follow the policies, practices and procedures utilized by the East Goshen Township Zoning Hearing Board as set forth in the East Goshen Township Zoning Ordinance.
- C. Any person aggrieved by any decision of the Stormwater Management Appeals Board relative to the provisions of this Ordinance may appeal to the Chester County Court of Common Pleas within thirty (30) days of the Municipality's decision.

Section 907. Effective Date

This Ordinance shall take effect on January 1, 2014.

ORDINANCE APPENDIX A

**SIMPLIFIED APPROACH TO
STORMWATER MANAGEMENT
FOR SMALL PROJECTS**

- | | | |
|--------------|---|---|
| Appendix A.1 | - | Applicability, Submittal and Approval Requirements |
| Appendix A.2 | - | Operation, Maintenance and Inspection Plan
and Agreement |
| Figure A.3 | - | Infiltration Trench Detail |
| Figure A.4 | - | Infiltration Bed Detail |

Appendix A.1

Simplified Approach Applicability, Submittal and Approval Requirements

Simplified Approach Applicability:

- Only projects with Regulated Activities that involve 500 or more square feet, but less than 2,000 square feet of Proposed Impervious Surfaces and/or less than 2,000 square feet of proposed Earth Disturbance may utilize the methodology presented in the “Simplified Approach to Stormwater Management for Small Projects” (Simplified Approach).
- The Applicant shall first review the planned project with the Township 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 Township’s Stormwater Management Ordinance;
 - That the proposed project is eligible to use this Simplified Approach;
 - To determine which components of the proposed project must be included in the calculation of “impervious surfaces (areas)”;
 - Whether any local conditions are known to the Township that would preclude the use of any of the techniques included in this Simplified Approach.

Simplified Approach Submittal and Approval Requirements:

Use of the Simplified Approach requires:

- The applicant to submit the following to the Township for review and approval prior to beginning construction:
 - A Simplified Stormwater Management Site Plan (i.e. sketch plan) that contains the information listed in Section 702.A of the East Goshen Township Stormwater Management Ordinance and accompanying Application; and
 - A completed, signed and notarized “Simplified Operation, Maintenance and Inspection Plan and Agreement”.
- The first 1-inch of rainfall runoff from Proposed Impervious Surfaces (as defined by the East Goshen Township Stormwater Management Ordinance) must be

captured on the applicant's property by an Infiltration Trench (Figure A.3) or Infiltration Bed Figure A.4 or Figure A.5) collectively an "Infiltration BMP".

- The "Simplified Approach – Stormwater Best Management Practices Operation, Maintenance and Inspection Plan and Agreement" will be recorded at the Chester County Office of the Recorder of Deeds after approval by the Municipality.
- A final inspection conducted by the Township after completion of construction.

Simplified Approach Stormwater Management Site Plan

The Simplified Stormwater Management Site Plan 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 as an attachment to the Simplified Approach – Stormwater Best Management Practices Operation, Maintenance and Inspection Plan and Agreement at the Chester County Office of the Recorder of Deeds.

The following items shall be included in the Simplified Stormwater Management Site Plan.

- Owner name and address; and property address and tax parcel number of the parcel on which the Infiltration Facility located.
- Name, address and phone number of person responsible for preparation of the site plan.
- Location and dimensions of the Infiltration BMP relative to roadways, property boundaries, or other identifiable landmarks and existing natural drainage features such as streams, lakes, ponds, or other bodies of water.
- Delineation of the land area, structures, Impervious Surfaces and Conveyances draining to and from the Infiltration BMP
- Representative elevations and/or topographic contours at intervals of two (2) feet, or other as acceptable to the Township Engineer.
- Other features including FEMA floodplain and floodway boundaries, sinkholes, etc. located within the immediate proximity of the Infiltration BMP.
- Locations of areas of vegetation to be managed or preserved that function as part of the Infiltration BMP.
- The property boundaries and locations of all surface and subsurface utilities, on-lot waste water facilities, sanitary sewers, and water lines.

- The following as it pertains to any easements, covenants and deed restrictions established for the Infiltration BMP:
 - a. Boundaries delineated with bearings and distances shown that encompass the Infiltration BMP or Conveyance and that includes a twenty (20) foot perimeter area surrounding these features and sufficient vehicular ingress to and egress from a public right-of-way and roadway or a blanket easement that encompasses the entire property;
 - 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.

Simplified Approach Stormwater Management Infiltration Trench

An infiltration trench is a long, narrow, rock-filled trench, with a perforated pipe placed within the rock to distribute water evenly along the trench that receives stormwater runoff. Runoff is stored in the void space between the stones and in the pipe, and infiltrates through the bottom of the trench into the underlying soil matrix. Figure A.3 shows the typical infiltration trench configuration. Infiltration trenches shall incorporate or make provisions for the following elements:

- These facilities shall be located a minimum of ten (10) feet from the building foundation to avoid foundation seepage problems, and at least five (5) feet from any property line and are not recommended if their installation would create a risk of flooding other structures constructed at or below grade.
- Perforated pipe placed within the rock is to be set level.
- The typical trench is 2 feet wide and 3 feet deep (2 feet of stone with 1 foot of cover).
- Trench shall be wrapped in nonwoven geotextile (top, sides, and bottom).
- There shall be a positive overflow that allows stormwater that cannot be stored or infiltrated to be discharged into a nearby vegetated area.
- Roof downspouts may be connected to infiltration trenches, but shall contain a cleanout to collect sediment and debris before entering the infiltration area.
- Infiltration testing may be required by the Township to ensure soil is capable of infiltrating stormwater.
- It is recommended that there be a 2 foot clearance above the regularly occurring seasonal high water table, and have a minimum depth to bedrock of 2 feet.

- The infiltration trench shall be at least 5 feet from any property line, 50 feet from individual water supply wells, and 50 feet from any septic system component. It should not be located near stormwater Hotspots.
- The infiltration trench shall be located a minimum of 10 feet from any sub-surface structures such as building foundations and basements.
- Infiltration areas shall be protected from compaction by heavy equipment during and after construction.
- Infiltration trenches shall be placed in service after all earth disturbance associated with a given project is stabilized to avoid clogging.
- The ratio of the drainage area which stormwater runoff is collected from to the area of the footprint (bottom area) of the infiltration portion of the facility shall be as small as possible with a ratio of less than 5:1 preferred.

Simplified Approach Stormwater Management Infiltration Bed

An infiltration bed is a rock-filled area that receives stormwater runoff. Runoff is stored in the void space between the stones and in the pipe, and infiltrates through the bottom of the trench into the underlying soil matrix. They are typically used under sheds and decks. Figure A.4 and Figure A.5 shows the typical infiltration trench configuration. Infiltration Beds shall incorporate or make provisions for the following elements:

- These facilities shall be located at least five (5) feet from any property line and are not recommended if their installation would create a risk of flooding other structures constructed at or below grade.
- The typical infiltration bed shall extend a least one (1) foot past the roof line of the shed or shall extend to the outer edge of the deck in order to capture the stormwater.
- The stone shall be placed on nonwoven geotextile (top and sides only)
- There shall be a positive overflow that allows stormwater that cannot be stored or infiltrated to be discharged into a nearby vegetated area.
- Roof downspouts shall not be connected to infiltration bed.
- Infiltration testing may be required by the Township to ensure soil is capable of infiltrating stormwater.
- It is recommended that there be a 2 foot clearance above the regularly occurring seasonal high water table, and have a minimum depth to bedrock of 2 feet.

- The infiltration bed shall be at least 5 feet from any property line. It should not be located near stormwater Hotspots.
- Infiltration bed areas shall be protected from compaction by heavy equipment during and after construction.
- Infiltration beds shall be placed in service after all earth disturbance associated with a given project is stabilized to avoid clogging.
- The ratio of the drainage area which stormwater runoff is collected from to the area of the footprint (bottom area) of the infiltration bed should be at least 1:1 preferred.

Appendix A.2

Simplified Approach Operation, Maintenance, and Inspection Plan and Agreement

It is the Landowner's responsibility to properly maintain the Infiltration trench and associated Conveyances. It is also the Landowner's responsibility to inform any future buyers of the function, operation, and maintenance needed for the Infiltration Trench and associated Conveyances prior to the purchase of the property.

The following maintenance agreement outlines the inspection and maintenance required for the Infiltration Trench and associated Conveyances and the responsibilities of the Landowner, and the rights of the Township in regards to inspection and enforcement of the maintenance requirements.

The Operation, Maintenance and Inspection Plan and Agreement must be signed, notarized and submitted to the Township with the Stormwater Permit Application.

Upon approval of the Stormwater Management Permit the Operation, Maintenance and Inspection Plan and Agreement, will be recorded at the Chester County Office of the Recorder of Deeds, by the Township. A copy of the recorded agreement will be provided to the Landowner.

Appendix A.2

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Prepared by/Return to:

Kristin S. Camp, Esquire
118 W. Market Street, Suite 300
West Chester, PA 19382

UPI No. - _____

**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 _____,
_____, (hereinafter the "Landowner"), and East Goshen
Township, Chester County, Pennsylvania, (hereinafter "Township").

WITNESSETH:

WHEREAS, the Landowner is the owner of certain real property by virtue of a deed of conveyance recorded in the Office of the Recorder of Deeds of the County of Chester, Pennsylvania, at Deed Book _____ and Page _____ having a UPI number of _____ (hereinafter "Property"); and

WHEREAS, the Landowner recognizes that the Stormwater Management Facility located on the Property at: _____

(address of Property where the Stormwater Management Facility is located) must be inspected and maintained; and

WHEREAS, the Township and the Landowner, for themselves and their administrators, executors, successors, heirs, and assigns, agree that the health, safety, and welfare of the residents of the Township and the protection and maintenance of water quality require that a Stormwater Management Facility be constructed and maintained on the Property; and

WHEREAS, for the purposes of this Agreement, the following definitions shall apply:

Infiltration BMP – A structure as specifically identified in the Stormwater Management Site Plan (herein after "Plan"), used to manage stormwater impacts from development, to protect and maintain water quality and ground water recharge and to otherwise meet the purposes of the Township's Stormwater Management Ordinance, including, but not limited to an Infiltration Trench(s) or Infiltration Bed. The Infiltration BMP(s) are permanent appurtenances to the Property, and

Conveyance – As specifically identified in the Stormwater Management Site 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

Storm Water Management Facility – A system comprised of the Infiltration BMP(s) and associated Conveyance(s); and

WHEREAS, the Township requires that the Storm Water Management Facility as shown on the Plan be constructed by the Landowner; the Storm Water Management Facility shall further be maintained by the Landowner, their administrators, executors, successors, heirs, and assigns in accordance with the associated operation and maintenance requirements included herein. The Plan is attached hereto and incorporated herein together as Exhibit “A” hereto; and

WHEREAS, the Municipality requires that the Storm Water Management Facility be constructed and adequately inspected, operated and maintained by the Landowner, their administrators, executors, successors, heirs, and assigns, in accordance with the maintenance requirements set forth herein;

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 Storm Water Management Facility in accordance with the specifications identified in the Plan.
3. The Landowner shall inspect, operate and maintain the Storm Water Management Facility as shown on the Plan in good working order acceptable to the Township and in accordance with the specific inspection and maintenance requirements outlined herein. At least twice a year and after significant rainfall events the Landowner shall inspect the Infiltration BM(s) and Conveyance(s) and remove any accumulated debris, sediment and invasive vegetation. Vegetation along the surface of an Infiltration Trench(s) or Conveyance(s) shall be maintained in good condition, and any bare spots are to be revegetated as soon as possible. Vehicles shall not be parked or driven on an Infiltration Trench(s) or Conveyance(s) (unless the conveyance(s) is designed for this activity and care is to be taken to avoid excessive compaction by mowers. Any debris, such as leaves blocking flow in a Conveyance or blocking flow from reaching an Infiltration Trench, shall be routinely removed. The Landowner shall provide the Township with conformation of the semi-annual inspections on the form provided by the Township.

4. The Landowner hereby grants permission to the Township, 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 Storm Water Management Facility whenever it deems necessary for compliance with this Agreement and the Township's Stormwater Management Ordinance (as amended). Whenever possible, the Township shall notify the Landowner prior to entering the Property.

5. The Landowner acknowledges that, per the Township's Stormwater Ordinance, it is unlawful, without written approval of the Township, to:

- a. Modify, remove, fill, landscape, alter or impair the effectiveness of any Storm Water Management Facility that is constructed as part of the Plan;
- b. Place any structure, fill, landscaping, additional vegetation, yard waste, brush cuttings, or other waste or debris into a Storm Water Management Facility that would limit or alter the functioning of the Storm Water Management Facility;
- c. Allow the Storm Water Management Facility 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, swimming pool additives, household chemicals and automotive fluids to directly or indirectly enter any Storm Water Management Facility.

6. In the event the Landowner fails to operate and maintain the Storm Water Management Facility as shown on the Plan in good working order acceptable to the Township, the Landowner shall be in violation of this Agreement and the Township's Stormwater Ordinance, and the Landowner agrees that the Township 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 Storm Water Management Facility. It is expressly understood and agreed that the Township is under no obligation to maintain or repair said Storm Water Management Facility, and in no event shall this Agreement be construed to impose any such obligation on the Township.

7. In the event the Township, 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 Township for all expenses (direct and indirect) incurred within thirty (30) days of delivery of an invoice from the Township. Failure of the Landowner to make prompt payment to the Township may result in a civil action or 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 Storm Water Management Facility by the Landowner; provided, however, that this Agreement shall not be deemed to create or affect any additional liability of any party for damage alleged to result from or be caused by stormwater runoff.

9. The Landowner, their executors, administrators, assigns, heirs, and other successors in interests, hereby release and shall release the Township, its employees, agents and designated representatives from all damages, accidents, casualties, occurrences or claims which might arise or be asserted against the Township and/or its said employees, agents or representatives, arising out of the construction, presence, existence, or maintenance of the Storm Water Management Facility either by the Landowner or Township. In the event that a claim is asserted or threatened against the Township, its employees, agents or designated representatives, the Township 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 Township or, at the request of the Township, pay the cost, including attorneys' fees, of defense of the same undertaken on behalf of the Township. If any judgment or claims against the Township, 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 Township, including attorney's fees, regarding said damages, judgment or claims.

10. The Township 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 Township shall include its reasonable attorney's 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 Township 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 Storm Water Management Facility 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 terms and conditions of this Agreement.

13. This Agreement shall inure to the benefit of and be binding upon, the Township and the Landowner, as well as their respective heirs, administrators, executors, assigns and successors in interest.

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

IN WITNESS WHEREOF, the parties have executed this Agreement the date first written above.

LANDOWNER

Witness

BY: _____
Name:

TOWNSHIP

Attest:

EAST GOSHEN TOWNSHIP

Louis F. Smith, Secretary

BY: _____
Chairman
Board of Supervisors

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF CHESTER

:

On this, the _____ day of _____, 2013, before me, the undersigned officer, personally appeared _____, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he/she executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Notary Public

My Commission Expires:

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF CHESTER :

On this _____ day of _____, 20____, before me, a notary public in and for the Commonwealth of Pennsylvania, the undersigned officer, personally appeared _____, who acknowledged himself to be the Chairman of the Board of Supervisors of East Goshen Township, and that he/she, as such official, being duly authorized to do so, executed the foregoing instrument for the purposes therein contained.

WITNESS my hand and official seal the day and year aforesaid.

Notary Public

My Commission Expires:

GENERAL NOTES

- ALL LOTS SHALL BE PROVIDED WITH DOWNSPOUT SEEPAGE BEDS SIZED TO ACCOMMODATE THE INCREASE IN 2 YEAR - RAINFALL FROM THESE AREAS OF THE HOUSES. VOLUME OF STONE PROVIDED IN BED SHALL ACCOMMODATE ROOF AREA DRAINING TO THE DOWNSPOUT. MULTIPLE BEDS SHALL BE USED IF NECESSARY. STONE BEDS SHALL BE INSTALLED AT 4' ON CENTER OR AS SHOWN. STONE BEDS SHALL BE INSTALLED WITH 4" PERFORATED PVC PIPE. LEAF PROTECTION SHALL BE INSTALLED OVER EACH DOWNSPOUT. EMBLEM #771 ALLOWED IN THE TOWNSHIP. ON OTHER APPROVED.
- THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF STORMWATER FACILITIES IN ACCORDANCE WITH THE EAST GOSHEN TOWNSHIP STORMWATER REQUIREMENTS PER ARTICLE VII OF THE ACT 161 ORDINANCE NO. 122-04-03 AND SECTION 202-37.1 OF THE SUBDIVISION AND LAND DEVELOPMENT ORDINANCE. WITH REVISIONS THEREIN.
- UNLESS NOTED DIFFERENTLY ON THIS DETAIL, THE SEEPAGE BED SHALL BE INSTALLED IN ACCORDANCE WITH EAST GOSHEN TOWNSHIP REQUIREMENTS FOR STORMWATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL. SEE SECTION 202-37.1 AND 202-37.2 OF THE SUBDIVISION AND LAND DEVELOPMENT ORDINANCE. REVISIONS 202-37.1 AND 202-37.2 CHAPTER 132 WITH REVISIONS THEREIN.

NOTE THE FOLLOWING SPECIAL CONDITIONS FOR THE DOWNSPOUT SEEPAGE BEDS DURING CONSTRUCTION:

- INSTALLATION OF DOWNSPOUT SEEPAGE BEDS TO BE CHECKED BY THE TOWNSHIP SITE INSPECTOR OR ENGINEER. INSPECTION MUST BE NOTIFIED 36 HOURS IN ADVANCE OF INSTALLATION.
- PRIOR TO THE PLACEMENT OF STONE IN THE SEEPAGE BED, THE CONTRACTOR OR PROPERTY OWNER SHALL MAKE A TEST PIT 2 FEET BELOW THE BED BOTTOM TO ENSURE THAT BEDROCK AND/OR GROUNDWATER ARE NOT PRESENT IN THE BED. IF ANY IMPACTS ARE OBSERVED, THE CONTRACTOR SHALL STOP WORK IMMEDIATELY AND THE BED SHALL BE RELOCATED AND RECONSTRUCTED BEFORE CONSTRUCTION MAY CONTINUE.
- EXCAVATION FOR THE DOWNSPOUT SEEPAGE BEDS SHALL BE PERFORMED WITH EQUIPMENT WHICH WILL NOT COMPACT THE BOTTOM OF THE BED AREA.
- DOWNSPOUT SEEPAGE BEDS SHOULD BE KEPT CLEAN OF SOIL / SEDIMENT DURING THE INSTALLATION PROCESS. AFTER THE SEEPAGE BED IS INSTALLED, THE CONTRACTOR SHALL REMOVE ALL EXCESSIVE MATERIALS, WEEDS, ETC., CLEANING THE ENTIRE BED AREA. THE CONTRACTOR SHALL ALSO REMOVE ALL EXCESSIVE FABRIC AND STONE FROM THE BED AREA.
- AFTER DOWNSPOUT SEEPAGE BEDS IS COMPLETELY INSTALLED, ALL HEAVY CONSTRUCTION EQUIPMENT SHALL BE RESTRICTED FROM THE DOWNSPOUT SEEPAGE BEDS TO ELIMINATE IMPACTS WHICH MAY COMPROMISE IT. IN THE EVENT ANY IMPACTS COMPROMISE THE FUNCTIONALITY OF THE DOWNSPOUT SEEPAGE BEDS, IT MUST BE IMMEDIATELY REPAIRED OR REPLACED TO DESIGN SPECIFICATIONS.

CALCULATION OF LENGTH OF BED "L"

L = 3 FT. IN LENGTH PER 50 S.F. OF INCREASED IMPERVIOUS COVERAGE
 (FOR UP TO 2000 S.F. OF INCREASED IMPERVIOUS COVERAGE)

OR

L = (3 FT. DIVIDED BY 50 S.F.) TIMES _____ S.F. OF IMPERVIOUS COVERAGE (MAXIMUM 2,000 S.F.)

EXAMPLES*

IMPERVIOUS COVERAGE INCREASE	LENGTH OF BED
50 S.F.	3 FT.
100 S.F.	6 FT.
1,000 S.F.	60 FT.
1,500 S.F.	90 FT.
2,000 S.F.	120 FT.

*FINAL BED DIMENSIONS MAY VARY ACCORDING TO SITE CONDITIONS. FINAL BED DIMENSIONS MUST BE THE EQUIVALENT VOLUME OF STONE OF INITIAL CALCULATION. ANY VARIATIONS IN BED DIMENSIONS OR DESIGN THAN SHOWN MUST BE APPROVED BY THE TOWNSHIP.

STONE VOLUME = LENGTH TIMES WIDTH TIMES DEPTH TIMES 0.40 (40%)

INFILTRATION TRENCH DETAIL

PREPARED FOR
East Goshen Township
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PLAN VIEW

CROSS SECTION

SUBGRADE TO BE SCARIFIED AND REMAIN UNCOMPACTED DURING CONSTRUCTION PRIOR TO PLACEMENT OF STONE. SEE SPECIAL CONDITIONS NOTES ABOVE.

REVISIONS

NO.	DATE	DESCRIPTION
06-10-09	PER TOWNSHIP	
10-21-13	PER TOWNSHIP	

MATERIALS LIST

- DOWNSPOUT: OPTIONAL INTERCEPTOR AND SEDIMENT TRAP WITH POLYDAK ADAPTER APPROPRIATE EQUAL
- 4" RIGID PIPE NON-PERFORATED
- OVERFLOW TEE (OR WYE) OR TRAY
- SPLASH GUARD
- FOUNDER WALL
- 90° ELBOW
- 4" RIGID PIPE NON-PERFORATED 24" DRAIN BASIN
- 1'-11" 3/4" STONE AGGREGATE (ASTM #7) TO BE UNIFORM GRADED, CLEAN & WASHED
- PLACE GEOTEXTILE FABRIC AROUND ALL SPECIFICATIONS
- 1'-11" 3/4" STONE AGGREGATE (ASTM #7) TO BE UNIFORM GRADED, CLEAN & WASHED
- INSTALL STONE PER MANUFACTURERS SPECIFICATIONS
- 4" RIGID PIPE NON-PERFORATED 24" DRAIN BASIN
- LEVEL 4" PERFORATED PVC PIPE SLOPE = 0% (LEVEL)
- 3/4" STONE AGGREGATE (ASTM #7) TO BE UNIFORM GRADED, CLEAN & WASHED
- PERVIOUS SOIL PROVIDE 2% MIN. SLOPE
- FINAL PROPOSED GRADE
- WIDTH OF SEEPAGE BED 2 FT. MIN.
- PERFORATED PIPE, MANHOLE, AGRICULTURAL OR ADS EQUIVALENT CORRUGATED PLASTIC PIPE.
- LAYER OF NON-WOVEN FILTER FABRIC (ONLY TOP AND SIDES, NOT ON THE BOTTOM) (MIRAFI #3401 OR EQUAL) PROVIDE 12" OVERLAP ALL EDGES AND INSTALL PER MANUFACTURER'S SPECIFICATIONS
- PIPE INVERT TO BED BOTTOM
- MIN. SLOPE
- 12" MIN. SLOPE
- OPEN BOTTOM
- ADAPTER
- 4" RIGID PIPE NON-PERFORATED
- OVERFLOW TEE (OR WYE) OR TRAY
- SPLASH GUARD
- FOUNDER WALL
- 90° ELBOW
- 4" RIGID PIPE NON-PERFORATED 24" DRAIN BASIN
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- WIDTH OF SEEPAGE BED 2 FT. MIN.
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- PIPE INVERT TO BED BOTTOM
- MIN. SLOPE
- 12" MIN. SLOPE
- OPEN BOTTOM
- ADAPTER
- 4" RIGID PIPE NON-PERFORATED
- OVERFLOW TEE (OR WYE) OR TRAY
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- LEVEL 4" PERFORATED PVC PIPE SLOPE = 0% (LEVEL)
- 3/4" STONE AGGREGATE (ASTM #7) TO BE UNIFORM GRADED, CLEAN & WASHED
- PERVIOUS SOIL PROVIDE 2% MIN. SLOPE
- FINAL PROPOSED GRADE
- WIDTH OF SEEPAGE BED 2 FT. MIN.
- PERFORATED PIPE, MANHOLE, AGRICULTURAL OR ADS EQUIVALENT CORRUGATED PLASTIC PIPE.
- LAYER OF NON-WOVEN FILTER FABRIC (ONLY TOP AND SIDES, NOT ON THE BOTTOM) (MIRAFI #3401 OR EQUAL) PROVIDE 12" OVERLAP ALL EDGES AND INSTALL PER MANUFACTURER'S SPECIFICATIONS
- PIPE INVERT TO BED BOTTOM
- MIN. SLOPE
- 12" MIN. SLOPE
- OPEN BOTTOM
- ADAPTER
- 4" RIGID PIPE NON-PERFORATED
- OVERFLOW TEE (OR WYE) OR TRAY
- SPLASH GUARD
- FOUNDER WALL
- 90° ELBOW
- 4" RIGID PIPE NON-PERFORATED 24" DRAIN BASIN
- 1'-11" 3/4" STONE AGGREGATE (ASTM #7) TO BE UNIFORM GRADED, CLEAN & WASHED
- PLACE GEOTEXTILE FABRIC AROUND ALL SPECIFICATIONS
- 1'-11" 3/4" STONE AGGREGATE (ASTM #7) TO BE UNIFORM GRADED, CLEAN & WASHED
- INSTALL STONE PER MANUFACTURERS SPECIFICATIONS
- 4" RIGID PIPE NON-PERFORATED 24" DRAIN BASIN
- LEVEL 4" PERFORATED PVC PIPE SLOPE = 0% (LEVEL)
- 3/4" STONE AGGREGATE (ASTM #7) TO BE UNIFORM GRADED, CLEAN & WASHED
- PERVIOUS SOIL PROVIDE 2% MIN. SLOPE
- FINAL PROPOSED GRADE
- WIDTH OF SEEPAGE BED 2 FT. MIN.
- PERFORATED PIPE, MANHOLE, AGRICULTURAL OR ADS EQUIVALENT CORRUGATED PLASTIC PIPE.
- LAYER OF NON-WOVEN FILTER FABRIC (ONLY TOP AND SIDES, NOT ON THE BOTTOM) (MIRAFI #3401 OR EQUAL) PROVIDE 12" OVERLAP ALL EDGES AND INSTALL PER MANUFACTURER'S SPECIFICATIONS
- PIPE INVERT TO BED BOTTOM
- MIN. SLOPE
- 12" MIN. SLOPE
- OPEN BOTTOM
- ADAPTER
- 4" RIGID PIPE NON-PERFORATED
- OVERFLOW TEE (OR WYE) OR TRAY
- SPLASH GUARD
- FOUNDER WALL
- 90° ELBOW
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- 1'-11" 3/4" STONE AGGREGATE (ASTM #7) TO BE UNIFORM GRADED, CLEAN & WASHED
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- INSTALL STONE PER MANUFACTURERS SPECIFICATIONS
- 4" RIGID PIPE NON-PERFORATED 24" DRAIN BASIN
- LEVEL 4" PERFORATED PVC PIPE SLOPE = 0% (LEVEL)
- 3/4" STONE AGGREGATE (ASTM #7) TO BE UNIFORM GRADED, CLEAN & WASHED
- PERVIOUS SOIL PROVIDE 2% MIN. SLOPE
- FINAL PRO

PREPARED FOR

East Goshen Township • Chester County

Yerkes

VERKES ASSOCIATES, INC.

PROJECT -	W-13-0310-01
DATE -	10-17-2007
SCALE -	NOT TO SCALE
DRAWN -	CEJ3
CHECKED -	X
CAD FILE -	W-05-3794-01 ESTGtable.pro
TAX PARCEL -	N/A
NOTEBOOK -	N/A
PLAN NO. -	N/A
SHEET NO. -	1

INfiltration TRENCH DETAIL

PREPARED FOR
East Goshen Township

East Goshen Township * Chester County * Pennsylvania

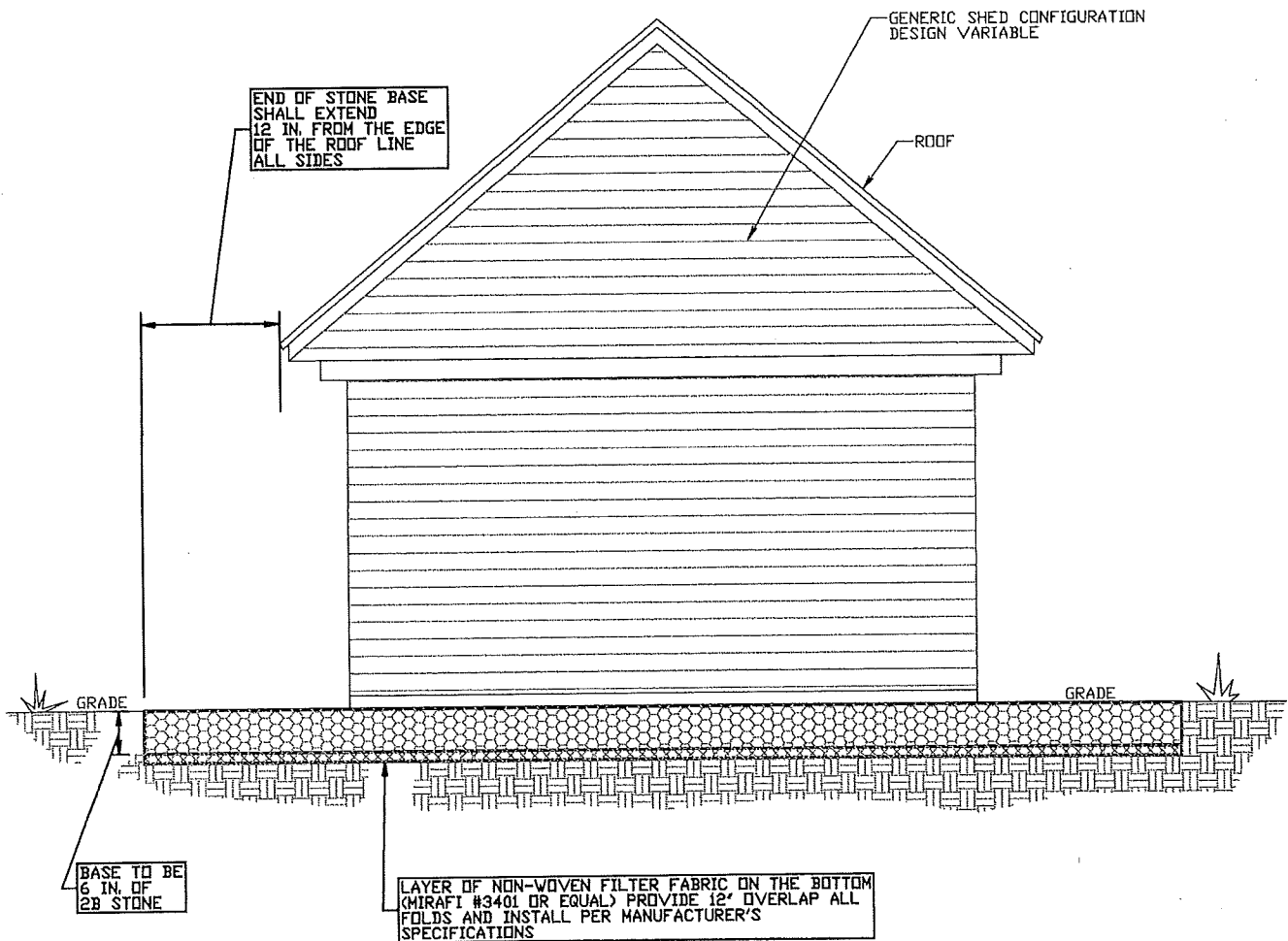
Yerkes
YERKES ASSOCIATES, INC.

[illegible]

CROSS SECTION

REVISIONS
06-10-09 PER TOWNSHIP
10-21-13 PER TOWNSHIP

FIGURE A.4



GENERAL NOTES

1. THIS DETAIL IS FOR THE INSTALLATION OF A STONE BASE BELOW THE AREA OF THE DECK AS SHOWN.
2. THE SHED DEPICTED IS A GENERIC REPRESENTATION AND IS NOT INTENDED TO BE AN APPROVED DESIGN BY EAST GOSHEN TOWNSHIP OR THIS OFFICE. THE SHED SHALL BE DESIGNED BY A PROFESSIONAL IN ACCORDANCE WITH ALL LOCAL, STATE AND/OR FEDERAL BUILDING CODE REQUIREMENTS.
3. ALL SHEDS SHALL BE APPROVED BY THE EAST GOSHEN TOWNSHIP BUILDING INSPECTOR.

**SHED
STONE BASE DETAIL
PREPARED FOR
East Goshen Township**

East Goshen Township Township * Chester County * Pennsylvania

Yerkes

YERKES ASSOCIATES, INC.

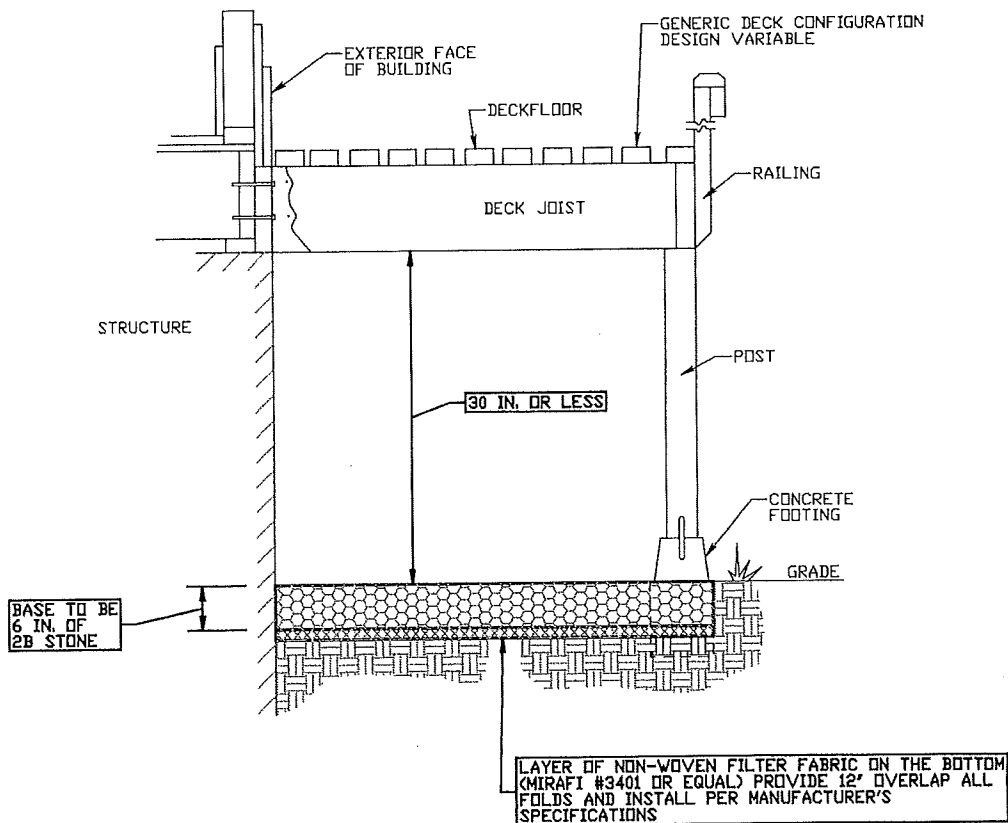
CONSULTING ENGINEERS

SITE PLANNERS

SURVEYORS

PROJECT -	W-13-0310-01
DATE -	OCTOBER 21, 2013
SCALE -	NOT TO SCALE
DRAWN -	CEJ3
CHECKED -	MC
CAD FILE	W-13-0310-01EGTdetails.pro
TAX PARCEL -	N/A
NOTEBOOK -	N/A
PLAN NO. -	N/A
SHEET NO. -	1

FIGURE A.5



GENERAL NOTES

1. THIS DETAIL IS FOR THE INSTALLATION OF A STONE BASE BELOW THE AREA OF THE DECK AS SHOWN.
2. THE DECK DEPICTED IS A GENERIC REPRESENTATION AND IS NOT INTENDED TO BE AN APPROVED DESIGN BY EAST GOSHEN TOWNSHIP OR THIS OFFICE. THE DECK SHALL BE DESIGNED BY A PROFESSIONAL IN ACCORDANCE WITH ALL LOCAL, STATE AND/OR FEDERAL BUILDING CODE REQUIREMENTS.
3. ALL DECKS SHALL BE APPROVED BY THE EAST GOSHEN TOWNSHIP BUILDING INSPECTOR.

**DECK
STONE BASE DETAIL**
PREPARED FOR
East Goshen Township

East Goshen Township Township * Chester County * Pennsylvania

Yerkes

YERKES ASSOCIATES, INC.

CONSULTING ENGINEERS

SITE PLANNERS

SURVEYORS

PROJECT - W-13-0310-01

DATE - OCTOBER 21, 2013

SCALE - NOT TO SCALE

DRAWN - CEJ3

CHECKED - MC

CAD FILE W-13-0310-01EGTdetails.pro

TAX PARCEL - N/A

NOTEBOOK - N/A

PLAN NO. - N/A

SHEET NO. - 1

ORDINANCE APPENDIX B

SITE DESIGN PROCESS

NATURAL HYDROLOGY SITE DESIGN PROCESS

INTRODUCTION

Section 304 identifies a natural hydrology site design process that strives to minimize disturbances to land, site hydrology, and natural resources, and maintain the natural hydrologic regime, drainage patterns and flow conditions of a site to the maximum extent practicable. This appendix is intended to build on that process by providing additional information for achieving site designs that best maintain pre-construction stormwater runoff conditions, protect site amenities, and preserve natural resources. This appendix describes the following components of the natural hydrology site design process:

- Design Principles and Techniques;
- Design Process;
- Design Practices; and
- References.

Some common drainage design approaches for land development 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 runoff, as well as the expenditure of additional resources for detaining and managing increased volumes of concentrated runoff at some downstream location.

The natural hydrology site design process encourages land development site designs that minimize post-development runoff rates and volumes, and that minimize needs for artificial conveyance and storage facilities. This process strives 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. This avoids cumulative environmental impacts often associated with land development, and reducing the need for and size of constructed stormwater facilities. This approach minimizes the disturbance of land area, natural features and site hydrology; preserves significant concentrations of open space, woodlands, and corridors of environmentally sensitive features; and incorporates landscape-based BMPs and low impact development techniques to minimize the utilization of more intrusive structural stormwater facilities.

With this design process, the primary goals of a land development project can be achieved while minimizing the negative environmental impacts and avoiding management costs associated with unnecessary stormwater runoff. The fundamental principle of this design process is that site hydrology features are considered “up front” in the land development design process and are prioritized as integral aspects to be maintained and utilized within the site design, rather than being first sacrificed for space needed for traditional site layout or for construction of more intrusive stormwater facilities.

Natural hydrology site design is not a new approach but rather a holistic process that combines certain principles of Low Impact Development, Conservation Design, and Sustainable Design, and focuses on reducing unnecessary alterations to the natural patterns and functions of existing on-site hydrologic features. These natural hydrologic features tend to perform their “hydrologic function” (i.e., infiltration, evapotranspiration, flow attenuation, pollutant removal, etc.) very efficiently and sometimes have the hydrologic capacity to perform that function on increased runoff loadings from the built environment. However, care must be taken to adequately characterize the capacity of their hydrologic function and avoid overwhelming the feature with excessive runoff loadings, thus causing unintended impairments that are completely counter-productive to the purpose of natural hydrology site design.

Preserving natural hydrologic conditions requires careful site design considerations. Natural hydrology site design should serve as the foundation of the overall site design approach, and when applied in conjunction with the design professional’s overall land development goals and desired outcomes, can help shape the overall vision and conceptual layout of the land development project.

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 and distributing storm 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 those features.

DESIGN PRINCIPLES AND TECHNIQUES

Natural hydrology site design involves identifying and prioritizing natural resources and natural and man-made hydrologic features, and incorporating such features into the overall site design to take advantage of their efficiencies of hydrologic performance, their cost efficiencies of reducing the need for or size of constructed stormwater facilities, and their aesthetic amenities. The five Design Principles to be achieved by this approach are as follows:

- Minimize land disturbance – both surface and subsurface.
- Minimize the cumulative area to be covered by impervious and compacted surfaces.
- Designing to the land, so that the layout of constructed and landscape features utilizes the natural topography and minimizes grading.
- Design the constructed stormwater management system to take advantage of the natural hydrologic landscape to achieve the required stormwater runoff control standards.
- Refine the site design and layout to optimize the cumulative benefits of the natural

hydrologic features, the constructed stormwater management system, and the land development components to achieve the minimum post-construction runoff volume, peak discharge rates and pollutant loads from the proposed land development site.

Techniques to be applied to achieve the design principles are presented in Table B.1.

DESIGN PROCESS

The first step in applying natural hydrology site design is to identify, delineate and assess the functions of all existing natural resources and natural and man-made 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. This includes:

- Streams, waterways, springs, wetlands, vernal pools, and water bodies;
- Drainage patterns, conveyances and discharge points;
- Natural infiltration areas and patterns;
- Areas of natural vegetation 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 (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
- 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 five (5) Design Principles outlined above. The following section describes just a few of the many design practices, methods and techniques that are available to achieve the landowner's desired land development goals and the desired environmental efficiencies intended by natural hydrology site design.

Table B.1 – Site Design Process Principles and Techniques

Design Principles	Design Techniques
Minimize land disturbance – both surface and subsurface.	<ul style="list-style-type: none"> • 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. • 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 infiltration and evapotranspiration patterns and characteristics, natural stream channel stability, and floodplain conveyance, etc.
Minimize the cumulative area to be covered by impervious and compacted surfaces.	<ul style="list-style-type: none"> • Minimize the size of individual impervious surfaces. • Separate large impervious surfaces into smaller components. • Disconnect runoff from one impervious surface to another. • Avoid unnecessary impervious surfaces. • Utilize porous materials where suited in lieu of impervious materials.
Designing to the land, so that the layout of constructed and landscape features utilizes the natural topography and minimizes grading.	<ul style="list-style-type: none"> • 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. • 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 complimentary and aesthetically pleasing development, such as can be achieved through Conservation Design and Sustainable Design approaches.

Design Principles	Design Techniques
<p>Design the constructed stormwater management system to take advantage of the natural hydrologic landscape to achieve the required stormwater runoff control standards.</p>	<ul style="list-style-type: none"> • Incorporate natural hydrologic features that have been selected for their available capacity and function into the overall system of site runoff controls. • Incorporate Low Impact Development (or similar) BMPs and distribute storm flows to: <ul style="list-style-type: none"> ○ 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 vegetation (landscape-based) BMPs, second priority to surface structural BMPs, third priority to subsurface structural BMPs, and design subsurface BMPs as shallow as possible. • Provide open channel conveyance, as needed, to: <ul style="list-style-type: none"> ○ Treat water quality; ○ Reduce runoff velocity; and ○ Promote infiltration and evapotranspiration of runoff. • Manage remaining conveyed stormwater from small storms in common open space areas to achieve multiple objectives: <ul style="list-style-type: none"> ○ Disperse storm flows and reduce velocity; ○ Treat water quality; and ○ Promote infiltrate and evapotranspiration of runoff. • Provide for appropriate conveyance to retention or detention storage facilities as needed for flows from large storm events. • Maintain open space functions consistent with common area uses (passive recreation, on-site sewage management, scenic vistas, etc).
<p>Refine the site design and layout to optimize the cumulative benefits of the natural hydrologic features, the constructed stormwater management system, and the land development components to achieve the minimum post-construction runoff volume, peak discharge rates and pollutant loads from the proposed land development site.</p>	<p>Apply site design techniques and practices as appropriate based on:</p> <ul style="list-style-type: none"> • Conservation Design principles and practices. • Sustainable Design principles and practices. • Low Impact Development Design principles and practices.

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. Following are brief descriptions of various practices that can be used to achieve the principles of the natural hydrology site design process.

Site Layout Practices

The following site layout practices are but a few of the methods by which the natural hydrology site design process described above can be implemented. Such practices 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 some circumstances, communication among design engineers, land planning and environmental professionals, knowledgeable developers, community representatives, and regulatory authorities is also beneficial to combine their collective understanding and perspectives to create effective planning efforts.

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 runoff 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. Careful site planning should consider reducing impervious coverage to the maximum extent possible. Building footprints, sidewalks, driveways, and other features producing impervious surfaces should be evaluated to minimize impacts on runoff. 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.

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.

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 and/or by reducing roadway widths. Designers should select the narrowest practical street width for the design conditions (speed, curvature, etc.). Narrower neighborhood streets should be considered and encouraged under select conditions. Reduced street widths also can lower maintenance needs and costs.

Limiting Sidewalks to One Side of the Street. A sidewalk on one side of the street may suffice in low-traffic neighborhoods. The lost sidewalk could be replaced with bicycle/recreational trails that follow back-of-lot lines as an alternative to reduced sidewalks, where appropriate.

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.

Constructing Compact Developments or Conservation Design: Low impact cluster or compact development can reduce the amount of impervious area for a given number of lots. Savings result from reduced street length, which also contributes 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.

Stormwater Best Management Practices

Stormwater best management practices (BMPs) 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.

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.

Reducing the Need for Storm Sewers. Increasing the use of natural or vegetated drainage swales can reduce the need for extending storm sewers for draining streets, parking lots, and back yards, the potential for accelerating runoff from the development can be greatly reduced. The practice requires greater use of swales and may not be practical for some development sites, especially if there are concerns for areas that do not drain in a “reasonable” time. The practice requires educating local citizens, who may expect runoff to disappear shortly after a rainfall event.

Using 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.

SOURCES

Conservation Design for Stormwater Management, Delaware Department of Natural Resources and Environmental Control and the Brandywine Conservancy, September 1997.

Conservation Design: Techniques for Preserving Natural Hydrologic Functions, White Paper prepared for New Castle County, Delaware Drainage Code, John M. Gaadt, AICP, September 2007.

Growing Greener, Conservation by Design, a program of the Natural Lands Trust, www.natlands.org/.

Guidance on MS4 Ordinance Provisions, Document Number 392-0300-003, by the Pennsylvania Department of Environmental Protection.

Low Impact Development Center, <http://www.lowimpactdevelopment.org/>.

PA Department of Environmental Protection, Best Management Practices Manual, 2006.

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, Crum Creek Watershed Act 167 Stormwater Management Plan.

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

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

Table 2-2a Runoff curve numbers for urban areas ^{1/}

Cover description		Curve numbers for hydrologic soil group			
Cover type and hydrologic condition	Average percent impervious area ^{2/}	A	B	C	D
<i>Fully developed urban areas (vegetation established)</i>					
Open space (lawns, parks, golf courses, cemeteries, etc.) ^{3/} :					
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
Impervious 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
Western desert urban areas:					
Natural desert landscaping (pervious areas only) ^{4/}		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
<i>Developing urban areas</i>					
Newly graded areas (pervious areas only, no vegetation) ^{5/}		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

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.

Table 2-2b Runoff curve numbers for cultivated agricultural lands ^{1/}

Cover description			Curve numbers for hydrologic soil group			
Cover type	Treatment ^{2/}	Hydrologic condition ^{3/}	A	B	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
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
	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
Close-seeded or broadcast legumes or rotation meadow	C&T+ CR	Poor	60	71	78	81
		Good	58	69	77	80
	SR	Poor	66	77	85	89
		Good	58	72	81	85
	C	Poor	64	75	83	85
		Good	55	69	78	83
	C&T	Poor	63	73	80	83
		Good	51	67	76	80

¹ Average runoff condition, and $I_a=0.2S$ 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 $\geq 20\%$), and (e) degree of surface roughness.

Poor: Factors impair infiltration and tend to increase runoff.

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

Table 2-2c Runoff curve numbers for other agricultural lands ^{1/}

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. ^{2/}	Poor	68	79	86	89
	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 the major element. ^{3/}	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 ^{4/}	48	65	73
Woods—grass combination (orchard or tree farm). ^{5/}	Poor	57	73	82	86
	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

^{1/} Average runoff condition, and $I_a = 0.2S$.^{2/} *Poor*: <50% ground cover or heavily grazed with no mulch.*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,
Crum Creek Watershed Act 167 Stormwater Management Plan.

TABLE F-2
RATIONAL RUNOFF COEFFICIENTS

LAND USE DESCRIPTION	HYDROLOGIC SOIL GROUP			
	A	B	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 the area	---*	.25	.51	.65
Fair condition: grass cover on 50% to 75% of the area	---*	.45	.63	.74
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	.99
Streets and roads:				
Paved with curbs and storm sewers	.99	.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,
HEC-RAS River Analysis System, Hydraulic Reference Manual, Version 4.1.

Table 3-1 Manning's 'n' Values

Type of Channel and Description	Minimum	Normal	Maximum
<i>A. Natural Streams</i>			
1. Main Channels			
a. Clean, straight, full, no rifts or deep pools	0.025	0.030	0.033
b. Same as above, but more stones and weeds	0.030	0.035	0.040
c. Clean, winding, some pools and shoals	0.033	0.040	0.045
d. Same as above, but some weeds and stones	0.035	0.045	0.050
e. Same as above, lower stages, more ineffective slopes and sections	0.040	0.048	0.055
f. Same as "d" but more stones	0.045	0.050	0.060
g. Sluggish reaches, weedy, deep pools	0.050	0.070	0.080
h. Very weedy reaches, deep pools, or floodways with heavy stands of timber and brush	0.070	0.100	0.150
2. Flood Plains			
a. Pasture no brush	0.025	0.030	0.035
1. Short grass	0.030	0.035	0.050
2. High grass			
b. Cultivated areas	0.020	0.030	0.040
1. No crop	0.025	0.035	0.045
2. Mature row crops	0.030	0.040	0.050
3. Mature field crops			
c. Brush	0.035	0.050	0.070
1. Scattered brush, heavy weeds	0.035	0.050	0.060
2. Light brush and trees, in winter	0.040	0.060	0.080
3. Light brush and trees, in summer	0.045	0.070	0.110
4. Medium to dense brush, in winter	0.070	0.100	0.160
5. Medium to dense brush, in summer			
d. Trees	0.030	0.040	0.050
1. Cleared land with tree stumps, no sprouts	0.050	0.060	0.080
2. Same as above, but heavy sprouts	0.080	0.100	0.120
3. Heavy stand of timber, few down trees, little undergrowth, flow below branches	0.100	0.120	0.160
4. Same as above, but with flow into branches			
5. Dense willows, summer, straight	0.110	0.150	0.200
3. Mountain Streams, no vegetation in channel, banks usually steep, with trees and brush on banks submerged			
a. Bottom: gravels, cobbles, and few boulders	0.030	0.040	0.050
b. Bottom: cobbles with large boulders	0.040	0.050	0.070

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	
h. On irregular excavated rock	0.022	0.027	
2. 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	0.030
e. Dry rubble on riprap	0.020	0.030	0.035
3. 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
4. Brick			
a. Glazed	0.011	0.013	0.015
b. In cement mortar	0.012	0.015	0.018
5. Metal			
a. Smooth steel surfaces	0.011	0.012	0.014
b. Corrugated metal	0.021	0.025	0.030
6. Asphalt			
a. Smooth	0.013	0.013	
b. Rough	0.016	0.016	
7. Vegetal lining	0.030		0.500

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

Type of Channel and Description	Minimum	Normal	Maximum
<i>C. Excavated or Dredged Channels</i>			
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**

Prepared by/Return to:

Kristin S. Camp, Esquire
118 W. Market Street, Suite 300
West Chester, PA 19382

UPI No. - _____

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

THIS AGREEMENT, made and entered into this _____ day of _____,
20____, by and between _____,
(hereinafter the "Landowner"), and East Goshen Township, Chester County, Pennsylvania,
(hereinafter "Township");

WITNESSETH:

WHEREAS, the Landowner is the owner of certain real property by virtue of a deed of conveyance recorded at the Office of the Recorder of Deeds of Chester County, Pennsylvania, at Deed Book _____ and Page _____, having a UPI No. of _____ (hereinafter "Property"); and

WHEREAS, the Landowner is proceeding to build and develop the Property; and

WHEREAS, the stormwater Best Management Practices (herein after BMP(s)) And Conveyances Operations and Maintenance Plan approved by the Township (hereinafter referred to as the "O&M Plan") for the Property, which is attached hereto as Exhibit A and made part hereof, provides for management of stormwater within the confines of the Property through the use of BMP(s) and conveyances; and

WHEREAS, the Township 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 Township 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" –Those activities, facilities, designs, measures, or procedures as specifically identified in the O&M Plan, used to manage stormwater impacts from land development, to meet state water quality requirements, to promote groundwater recharge, and to otherwise meet the purposes of the Township's Stormwater Management Ordinance. BMPs may include, but are not limited to, a wide variety of practices and devices, from large-scale retention ponds and constructed wetlands to small-scale underground treatment systems, infiltration facilities, filter strips, low impact design, bioretention, wet ponds, permeable paving, grassed swales, riparian or forested buffers, sand filters, detention basins, manufactured devices, and operational

and/or behavior-related practices that attempt to minimize the contact of pollutants with stormwater runoff. The BMPs identified in the O&M Plan are permanent appurtenances to the Property; and

Conveyance – As specifically identified in the O&M 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, stream channels, and like facilities or features. The conveyances identified in the O&M Plan are permanent appurtenances to the Property; and

WHEREAS, the Township requires, through the implementation of the O&M Plan, that stormwater management BMPs and conveyances, as required by said O&M Plan and the Township's Stormwater Management Ordinance, be constructed and adequately inspected, operated and maintained by the Landowner, its administrators, executors, successors in interest, heirs, and assigns.

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 final design plans and specifications as approved by the Township which are identified as follows:

Titled _____,

Dated _____ Last revised _____.

3. The Landowner shall inspect, operate and maintain the BMP(s) and Conveyance(s) as shown on the O&M Plan in good working order acceptable to the Township and in accordance with the specific inspection and maintenance requirements in the approved O&M Plan. The notes from the O & M Plan which establish the specific instruction and maintenance requirements are attached hereto as Exhibit B and made a part hereof.

4. The Landowner hereby grants permission to the Township, 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 O&M Plan and the Township's Stormwater Management Ordinance. Whenever possible, the Township shall notify the Landowner prior to entering the Property.

5. The Township intends to inspect the BMP(s) and Conveyance(s) a minimum of once every two (2) years to determine if they continue to function as required and designed. The Landowner shall reimburse the Township for the cost of the inspection which cost shall be established by resolution of the Board of Supervisors.

6. The Landowner acknowledges that, per the Township's Stormwater Ordinance, it is unlawful, without written approval of the Township, to:

- a. Modify, remove, fill, landscape, alter or impair the effectiveness of any BMP or Conveyance that is constructed as part of the approved O&M 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 O&M Plan or this Agreement; and
- d. Dispose of, discharge, place or otherwise allow pollutants including, but not limited to, deicers, swimming pool additives, household chemicals, and automotive fluids to directly or indirectly enter any BMP or Conveyance.

7. In the event that the Landowner fails to operate and maintain the BMP(s) and conveyance(s) as shown on the O&M Plan in good working order acceptable to the Township, the Landowner shall be in violation of this Agreement and the Stormwater Ordinance, and the Landowner agrees that the Township 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 Township 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 Township.

8. In the event that the Township, 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 Township for all expenses (direct and indirect) incurred within thirty (30) days of delivery of an invoice from the Township. Failure of the Landowner to make prompt payment to the Township may result in enforcement proceedings, which may include the filing of a lien against the Property, which filing is expressly authorized by the Landowner.

9. 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.

10. The Landowner, for itself and its executors, administrators, assigns, heirs, and other successors in interest, hereby releases and shall release the Township'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 Township. In the event that a claim is asserted or threatened against the Township, its employees, agents or designated representatives, the Township 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 Township, or, at the request of the Township, pay the cost, including attorneys' fees, of defense of the same undertaken on behalf of the Township. If any judgment or claims against the Township'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 Township, including attorneys, regarding said damages, judgments or claims.

11. The Township 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 Township shall include its reasonable attorney's fees and costs incurred in seeking relief under this Agreement.

12. Failure or delay in enforcing any provision of this Agreement shall not constitute a waiver by the Township of its rights of enforcement hereunder.

13. 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.

14. This Agreement shall inure to the benefit of and be binding upon, the Township and the Landowner, as well as their heirs, administrators, executors, assigns and successors in interest.

15. 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.

IN WITNESS WHEREOF, the parties hereunto have executed this Agreement as of the day and year first above written.

LANDOWNER

Witness

BY: _____
Name:

TOWNSHIP

Attest:

EAST GOSHEN TOWNSHIP

Louis F. Smith, Secretary

BY: _____
Chairman
Board of Supervisors

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF CHESTER

:

On this, the _____ day of _____, 2013, before me, the undersigned officer, personally appeared _____, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he/she executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Notary Public

My Commission Expires:

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF CHESTER

:

On this _____ day of _____, 20____, before me, a notary public in and for the Commonwealth of Pennsylvania, the undersigned officer, personally appeared _____, who acknowledged himself to be the Chairman of the Board of Supervisors of East Goshen Township, and that he/she, as such official, being duly authorized to do so, executed the foregoing instrument for the purposes therein contained.

WITNESS my hand and official seal the day and year aforesaid.

Notary Public

My Commission Expires:

ORDINANCE APPENDIX F

APPENDIX F - RIPARIAN BUFFER TECHNICAL REFERENCE GUIDE

The following references will provide helpful guidance in establishing and restoring riparian buffers. These references have been selected based on their applicability to watersheds in the southeastern Pennsylvania area, including specific information related to appropriate riparian vegetation within the Piedmont Province, which is the primary physiographic province for the Chester Creek watershed. These references also include guides for establishing a riparian buffer program and include additional sources of information related to riparian corridor restoration. There are numerous publications related to riparian corridor and riparian buffer measures available through local, county, state, and federal agencies such as DEP, EPA, and USDA. In addition, the County Conservation Districts are a valuable source of local data and should also be consulted for further information.

Alliance for the Chesapeake Bay, Pennsylvania Department of Environmental Protection, September 2000. *Forest Buffer Toolkit*, Stream ReLeaf Program.

Penn State College of Agricultural Sciences, 1996. *Establishing Vegetative Buffer Strips Along Streams to Improve Water Quality*. Publication # AGRS-67.

Fike, Jean, June 1999. *Terrestrial & Palustrine Plant Communities of Pennsylvania*, Pennsylvania Natural Diversity Inventory, The Nature Conservancy, Western Pennsylvania Conservancy, and Pennsylvania Department of Conservation and Natural Resources.

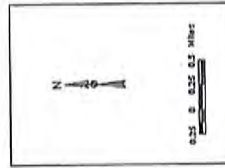
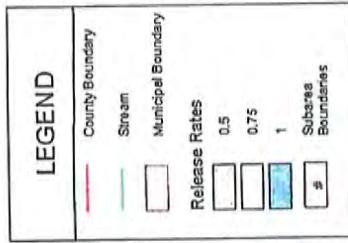
Pennsylvania Association of Conservation Districts, Inc., Keystone Chapter, Soil and Water Conservation Society, Pennsylvania Department of Environmental Protection, Natural Resources Conservation Service, 1998. *Pennsylvania Handbook of Best Management Practices for Developing Areas*. Prepared by CH2MHill.

Palone, R. S. and A. H. Todd (eds), 1997. *Chesapeake Bay Riparian Handbook: A Guide for Establishing and Maintaining Riparian Forest Buffers*. Chesapeake Bay Program and Northeastern Area State and Private Forestry. Natural Resources Conservation Service Cooperative State Research Education and Extension Services.

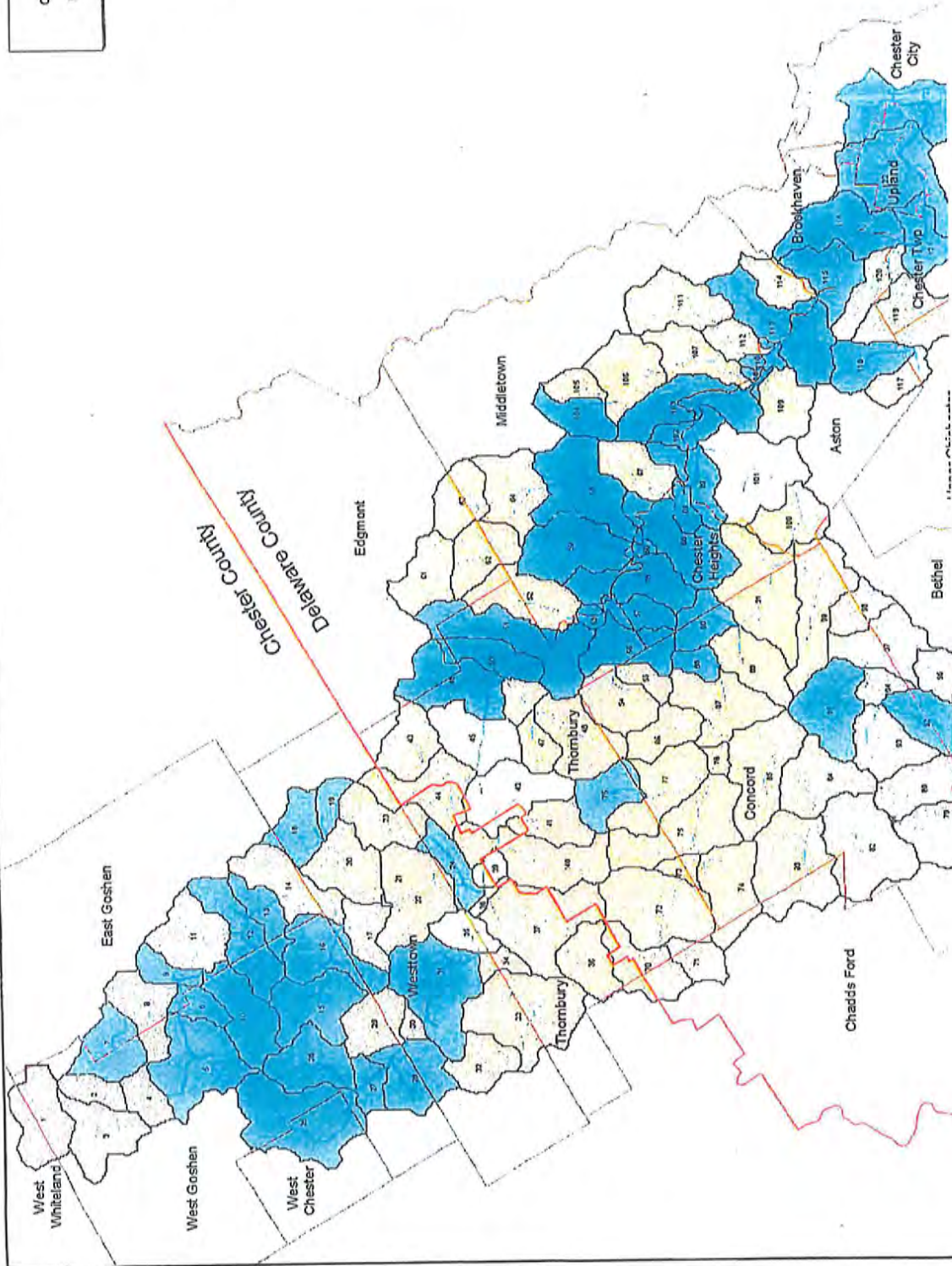
The Federal Interagency Stream Restoration Working Group (FISRWG, 10/1998). *Stream Corridor Restoration Principles, Processes, and Practices*. GPO Item No. 0120-A; SuDocs No. A57.6/2:EN3/PT.653. ISBN-0-934213-59-3. Published October 1998, Revised August 2000.

ORDINANCE APPENDIX G

CHESTER CREEK WATERSHED
ACT 167 STUDY
PLATE B: RELEASE RATE MAP
June, 2002



Note:
Map is for reference use only. The exact location of the stormwater management district boundaries as they apply to a given development site must be determined by mapping the boundaries using the two-foot topographic contours (or the most accurate data) required, provided as part of the drainage plan.

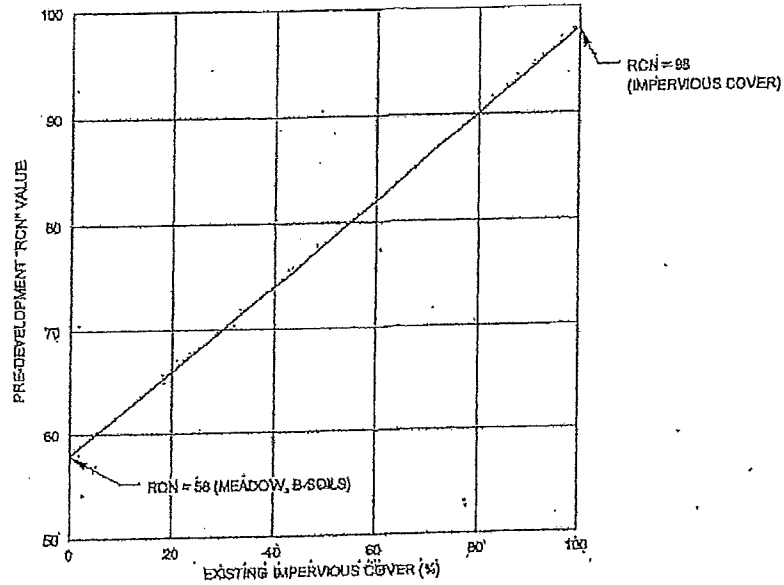


ORDINANCE APPENDIX H

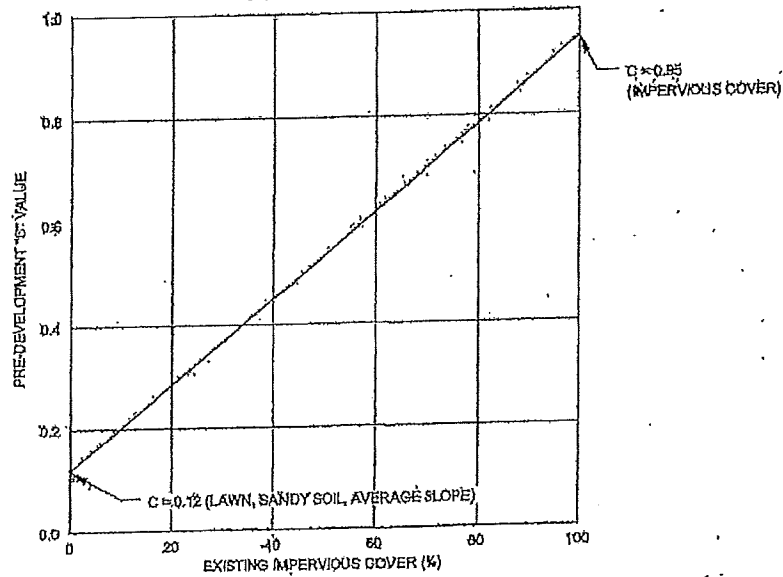
FIGURE B-3

REDEVELOPMENT PROJECTS
RUNOFF CRITERIA ADJUSTMENT FOR PRE-DEVELOPMENT CONDITIONS

NRCS METHODOLOGY
RCN ADJUSTMENT



RATIONAL FORMULA
C ADJUSTMENT



Buckley, Brion, McGuire,
Morris & Sommer LLP

ATTORNEYS AT LAW

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(610) 436-4400 Ext.105
(610) 436-8305 FAX
kcamp@buckleyllp.com

October 18, 2013

Daily Local News
250 North Bradford Avenue
West Chester, Pennsylvania 19382

Re: Act 167 Stormwater Management Ordinance

Dear Sir/Madam:

Enclosed for filing in the offices of the Daily Local News is a true and correct copy of the above-captioned Ordinance amendment which must be filed with your offices and be made available for public inspection prior to its adoption by the East Goshen Township Board of Supervisors on Tuesday, November 19, 2013, at 7:00 p.m., prevailing time. Please execute the enclosed copy of this letter and return it to me in the enclosed self-addressed stamped envelope.

Should you have any questions, please do not hesitate to contact me. Thank you.

Very truly yours,



Kristin S. Camp

KSC/akf

Enclosure - NOT FOR ADVERTISEMENT

cc: Louis F. Smith, Jr., Township Manager (w/encl.)

Received by Daily Local News on _____, 2013.

(signature)

Please Print Name _____

Buckley, Brion, McGuire,
Morris & Sommer LLP

ATTORNEYS AT LAW

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www.buckleyllp.com

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(610) 436-8305 FAX
kcamp@buckleyllp.com

October 18, 2013

Chester County Law Library
201 W. Market Street
Suite 2400
West Chester, Pennsylvania 19380

Re: Act 167 Stormwater Management Ordinance

Dear Sir/Madam:

Enclosed for filing in the Chester County Law Library is a true and correct copy of the above-captioned Ordinance amendment which must be filed with your offices and be made available for public inspection prior to its adoption by the East Goshen Township Board of Supervisors on Tuesday, November 19, 2013, at 7:00 p.m., prevailing time. Please execute the enclosed copy of this letter and return it to me in the enclosed self-addressed stamped envelope.

Should you have any questions, please do not hesitate to contact me. Thank you.

Very truly yours,



Kristin S. Camp

KSC/akf
Enclosure

cc: Louis F. Smith, Jr., Township Manager (w/encl.)

Received by Chester County Law Library on _____, 2013.

(signature)

Please Print Name _____

CERTIFICATION

Kristin S. Camp, Esquire, hereby certifies and attests that the attached is a true and correct copy of the complete verbatim text of an Ordinance repealing the Stormwater Management Ordinance of East Goshen Township and adopting in its place the Chester County Model Act 167 Stormwater Management Ordinance, which is proposed for enactment and adoption by the East Goshen Township Board of Supervisors at a public hearing which will be held on Tuesday, November 19, 2013, at 7:00 p.m., prevailing time, at the East Goshen Township Municipal Building, 1580 Paoli Pike, West Chester, Pennsylvania 19380.

DATE: October 23, 2013

Kristin S. Camp
KRISTIN S. CAMP, ESQUIRE
Solicitor for East Goshen Township