

EXHIBIT A

Prepared by:
Return to:

APPENDIX 20-C

**Honey Brook Township
Chester County, Pennsylvania
Individual On-Lot Stormwater Management Facilities
Maintenance Agreement**

THIS MAINTENANCE AGREEMENT ("Maintenance Agreement") is executed the ____ day of _____ 20__, by and between _____ ("Owner") and HONEY BROOK TOWNSHIP ("Township").

BACKGROUND

A. The Owner is the owner of a certain tract of ground located in Honey Brook Township, Chester County, Pennsylvania (the "Property") being further identified as Tax Parcel Number(s) _____ on which it intends to develop _____ (the "Development") in accordance with a plan known as _____ prepared for the Owner by _____, dated _____ and last revised _____ (the "Plan"). The Plan is incorporated by herein by reference.

B. The Plan depicts the construction of certain buildings and improvements, including the installation of certain storm water management facilities, including but not limited to components to control the quantity and quality of storm water discharge all as depicted on Sheet(s) _____ of the Plan. Specifically, the lot contains one or more storm water control facility(s) designed to regulate stormwater runoff generated by impervious surface present on the property. Stormwater facilities such as these must have routine inspection and maintenance during the life of the system and replacement of the system at the end of the lifespan of the system. The principal maintenance objective is to prevent clogging of the system, which may lead to advanced system failure. The Owner is required to and intends to install and maintain the storm water management facilities in accordance with the Plan and the conditions of approval required under Chapter 20, Permanent Stormwater Management Controls, of the Honey Brook Township Code of Ordinances.

C. Chapter 20, Part 6 requires the Owner to enter into a maintenance agreement which requires that the Owners of storm water management facilities be responsible for proper maintenance during and after development of all required storm water management facilities required by the Plan.

D. Owner desires to execute and record this Maintenance Agreement in order to satisfy its obligations under Chapter 20, Part 6 referred to above.

GRANTS AND TERMS

NOW, THEREFORE, the Owner, for itself, its successors-in-interest, successors-in-title, grantees and assigns, for good and valuable consideration, the receipt and sufficiency whereof being hereby acknowledged, and intending to be legally bound hereby, hereby covenants, declares, agrees, confirms and provides as follows:

- 1) Incorporation of Background. Background Paragraphs A through D herein above are incorporated as part of the terms of this Maintenance Agreement.

EXHIBIT A

a) Maintenance and Replacement. Owner shall continuously and perpetually maintain and/or replace the storm water management facilities in accordance with the conditions of approval, the Plan, and with manufacturers' specifications. Routine maintenance shall be performed after a major rainfall event of 4 inches of rainfall or more in a 24 hour period (as reported by the local weather reports for the southeastern Pennsylvania region) as follows:

(i) Inlet drains, gutters and downspouts shall be kept clear of accumulated debris such as leaves, grass clippings, sticks and trash. Roof runoff exiting the downspout emergency tee is a potential indicator that there is a clog in the system.

(ii) Inspect all outlet devices that are located within the facility to ensure they are free and clear of debris and are structurally intact. If debris exists, it must be cleared immediately. If the structural failures or leaks exist, the homeowner shall contact the Township immediately to report the problem, receive initial instructions on the type of personnel to contact to correct the problem and schedule an inspection for the necessary repair work.

(iii) An impoundment facility (earthen berm or retaining wall) must be inspected for structural integrity, leaks and proper stabilization (adequate vegetation in the case of an earthen berm). If there are structural failures or leaks exist, the homeowner shall contact the Township immediately to report the problem, receive initial instructions on the type of personnel to contact to correct the problem and schedule an inspection for the necessary repair work.

(iv) An impoundment area must inspected for debris, accumulated sediments and inadequate vegetation/erosion. All sediments and debris must be removed promptly and the impoundment area must be maintained in a stable condition (adequate vegetation).

(v) Inspect all inlets that are located within a seepage bed. These inlets serve as observation units. Look for standing water at the bottom of the inlets. Check the inlets daily until standing water is not observed. The standing water should drain down in less than three days. If drain down does not occur the bed may be clogged and require excavation and cleaning. The homeowner shall contact the Township immediately to report the problem, receive initial instructions on the type of personnel to contact to correct the problem and schedule an inspection for the necessary repair work.

b) At least once annually, Owner shall perform a complete inspection which shall be reported to the Township. Annual inspection shall be performed after a major rainfall event of 4 inches or more in a 24 hour period (as described above) and shall include at a minimum, monitoring of the impoundment area to confirm that the system is draining down in less than three days. The recorded time and corresponding total rainfall amount shall be documented using the attached report form.

c) Owner shall submit the attached annual report form to the Township containing a description of the inspections and maintenance activities performed during the previous calendar year. If the system malfunctioned during the previous year, the report shall include photographic evidence of the malfunction and subsequent repair. The report shall be submitted to the Township not later than February 1st of the following year.

d) All materials collected by the storm water management facilities, including but not limited to oil and sediment, shall be disposed of in accordance with PADEP, EPA and any other applicable regulations. The annual report shall include a list of all materials disposed and certification of regulatory compliance with disposal requirements.

e) Should a storm water management facility not function properly, the Township shall be notified in writing within 10 days of the discovery of the malfunction and the proposed maintenance, repairs or modifications necessary to resolve the malfunction. All maintenance, repairs or modifications shall be made in accordance with the specifications of the manufacturer or designer of the device. If a repair or modification is made not within manufacturer or designer's specifications, said repair or modification shall be approved in writing by the manufacturer or designer, and a copy of the approval shall be filed with the Township. The maintenance, repair, or modification maintenance must be completed within 30 days of discovery of the malfunction, or immediately upon discovery if the malfunction poses a threat to the public health or safety.

EXHIBIT A

- f) The Township reserves the right to require additional devices if the facilities as designed do not function properly, to assure the appropriate quantity and quality of the stormwater leaving the storm water management facility meets the intent of the original design approved by the Township.
- 2) Prohibition of Alteration or Removal. The Owner shall not alter or remove any storm water management facilities depicted on the Plan unless prior written approval is obtained from the Township.
- 3) Township Inspection. The Owner hereby grants permission to the Township, its authorized agents and employees, to enter upon the property, at reasonable times and upon presentation of proper identification, to inspect the stormwater facilities whenever it deems necessary. Whenever possible, the Township shall notify the Owner prior to entering the property.
- 4) Failure to Maintain Facilities. In the event the Owner fails to operate and maintain the stormwater facilities as shown on the Plan in good working order acceptable to the Township, the Township or its representatives may enter upon the Property and take whatever action is deemed necessary to maintain said facilities. This provision shall not be construed to allow the Township to erect any permanent structure on the land of the Owner. 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.
- 5) Township Maintenance Reimbursement. 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 Owner shall reimburse the Township for all expenses (direct and indirect) incurred within 30 calendar days of receipt of invoice from the Township.
- 6) Liability. The intent and purpose of this Agreement is to ensure the proper maintenance of the onsite stormwater facilities by the Owner; provided, however, that this Agreement shall not be deemed to create or effect any additional liability of any party for damage alleged to result from or be caused by stormwater runoff.
- 7) Township Indemnification. The Owner, its executors, administrators, assigns, and other successors in interests, shall release the Township employees and designated representatives from all damages, accidents, casualties, occurrences or claims which might arise or be asserted against said employees and representatives from the construction, presence, existence, or maintenance of the stormwater facilities by the Owner or Township. In the event that a claim is asserted against the Township, its designated representatives or employees, the Township shall promptly notify the Owner and the Owner shall defend, at his own expense, any suit based on the claim. If any judgment or claims against the Township employees or designated representatives shall be allowed, the Owner shall pay all costs and expenses regarding said judgment or claim.
- 8) Default; Cure. In the event Owner fails to comply with the terms of this Maintenance Agreement, Township shall send written notice to Owner specifying the areas of noncompliance ("Deficiencies") and the steps that must be taken to comply. In the event Owner does not comply with the terms of the notice within 30 days of the date thereof, or diligently pursue compliance in circumstances where compliance is not possible within 30 days due to weather conditions or otherwise, Township shall have the right, but not the obligation, to enforce this Maintenance Agreement at law or in equity, and/or to enter upon the Property and correct the Deficiencies, and collect the cost thereof from Owner by municipal lien against the Property or otherwise.
- 9) Use and Occupancy Permit. The requirements of this Maintenance Agreement are part of the conditions for issuance of the Township Use and Occupancy Permit for the development depicted on the Plan and the Property and it is the Owner's responsibility to comply with the requirements of this Maintenance Agreement. Should the Owner fail to comply, the Township reserves the right to revoke the Use and Occupancy Permit after providing the Deficiency notice and cure period as set forth in Paragraph 4 herein above.
- 10) Covenants Running With The Land; Successors and Assigns Bound. This Maintenance Agreement and the provisions hereof, (1) shall run with the land, and be appurtenant to title to the Property and every portion thereof; and (2) shall be binding upon and inure to the benefit of the Owner,

EXHIBIT A

and each and all of its respective successors and assigns, and successors in title to the Property and every portion thereof. Any and all conveyances, leases or encumbrances of any part of the Property shall be subject to the provisions hereof.

11) Recording. This Agreement shall be recorded in the Office of the Recorder of Deeds of Chester County, Pennsylvania.

12) Notices. Any notice required to be given by the Township to Owner under the terms of this Maintenance Agreement shall be sufficiently given if sent by United States certified mail, return receipt requested, postage prepaid, addressed to the then owner of the Property and to the address as set forth in the records for the Property maintained by the Chester County Board of Assessment.

13) Miscellaneous Provisions.

a) Severability. If any provision of this Maintenance Agreement shall to any extent be invalid or unenforceable, the remainder of this Maintenance Agreement (or the application of such provision to persons or circumstances other than those in respect of which it is invalid or unenforceable) shall not be affected thereby, and each provision of this Maintenance Agreement, unless specifically conditioned upon such invalid or unenforceable provision, shall be valid and enforceable to the fullest extent permitted by law.

b) Amendment. This Maintenance Agreement may not be amended except by written instrument signed and acknowledged by the Owner, its successors and assigns, and Township and recorded in the Office of the Recorder of Deeds of Chester County, Pennsylvania.

c) Governing Laws. This Maintenance Agreement shall be construed and governed by the laws of the Commonwealth of Pennsylvania.

d) Integration. This Maintenance Agreement sets forth the entire agreement between the Owner and Township with respect to the subject matter hereof.

IN WITNESS WHEREOF, being duly authorized and empowered to do so, the Owner and Township have duly executed and delivered this Agreement as of the date and year first above written.

OWNER(S):

OWNER(S):

Developer / Applicant

Developer/Applicant

Honey Brook Township executes this Maintenance Agreement to acknowledge its rights and obligations set forth above

By: _____
Township Manager

EXHIBIT A

(Owner ACKNOWLEDGMENT)

COMMONWEALTH OF PENNSYLVANIA :
: SS
COUNTY OF CHESTER :

On this, the ____ day of _____, 20__, before, the undersigned notary public, personally appeared _____ and _____ who acknowledged themselves to be the owner(s), respectively, of _____ and as such they did sign the foregoing instrument for the purposes therein contained.

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

Notary Public

(Notarial Seal)

My Commission Expires:

EXHIBIT B

APPENDIX 20-F

Act 167 Release Rates for Conestoga Creek Watershed

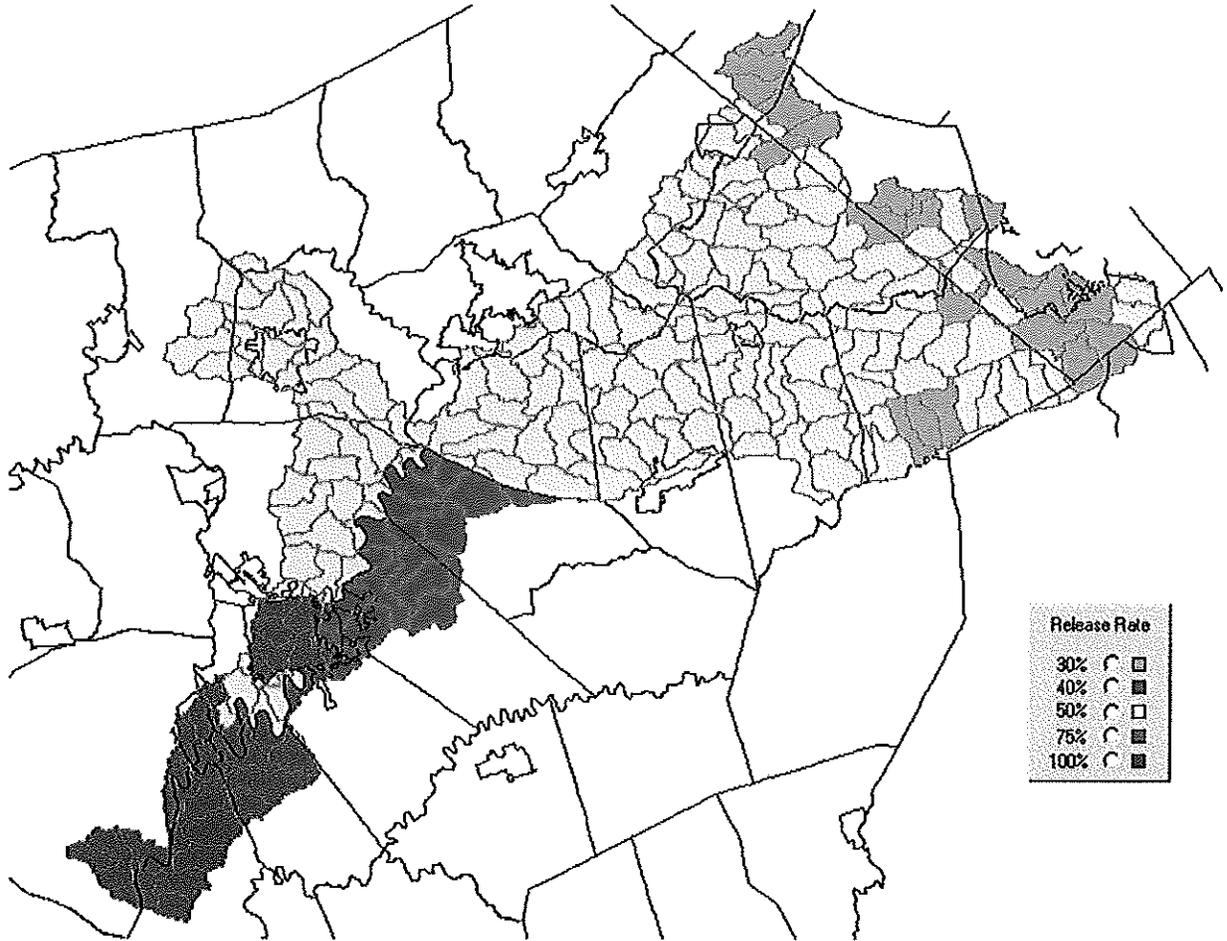




EXHIBIT C

APPENDIX 20-G

STORMWATER MANAGEMENT AGREEMENT AND DECLARATION OF EASEMENT

THIS AGREEMENT AND DECLARATION OF EASEMENT made as of this _____ day of _____, 20__, by and between the **Township of Honey Brook**, Chester County, Pennsylvania, a Township duly organized under the laws of the Commonwealth of Pennsylvania, with its municipal offices located at 500 Suplee Road, Honey Brook, Pennsylvania (hereinafter referred to as the Township) and _____ [owner], with offices located at (hereinafter whether singular or plural referred to as the "Grantor").

BACKGROUND.

Grantor is the legal and/or beneficial owner of premises located at _____, in the Township of Honey Brook, Chester County, Pennsylvania, as more specifically described in a deed recorded in Record Book _____, Volume _____, Page _____, in the Office of the Recorder of Deeds in and for Chester County, Pennsylvania, and as shown on the plan for _____, prepared by _____, Drawing or Project No _____, dated _____, 20__, last revised _____, 20__, (hereinafter referred to as the "Premises").

Prior to the commencement of any development, Grantor is required under the Honey Brook Township Stormwater Management Ordinance (the "Ordinance"), as codified in Chapter 20, Part 3 of the Honey Brook Township Code of Ordinances, to submit a Stormwater Management Site Plan to the Township for approval §§601 through 603 of the Ordinance require that the Grantor make provision for the ownership of, and the method of administering and maintaining, all permanent stormwater management facilities. Drainage courses, swales, stormwater inlets, pipes, conduits, detention basins and other stormwater management facilities, including Best Management Practices (BMPs) shall be included under the term "stormwater management facilities." The purpose of this Agreement and Declaration of Easement is to describe the ownership and maintenance responsibilities for the stormwater management facilities which will be installed on the Premises and to impose the ownership and maintenance responsibilities upon Grantor, its successors and assigns, and upon successor owners of the Premises.

NOW, THEREFORE, intending to be legally bound hereby and in consideration of receiving approval of its Stormwater Management Site Plan (hereinafter referred to as the "Plan") from the Board of Supervisors of Honey Brook Township, and in consideration of receiving permits from the Township to develop the Premises, Grantor, for Grantor and the assigns and successors of Grantor, covenants and declares as follows:

1. The stormwater facilities will be owned by Grantor, its successors and assigns.
2. All drainage courses, swales, stormwater inlets, pipes, conduits, detention basins and other stormwater management facilities, shall be installed, constructed and maintained by Grantor, its successors and assigns, in a first-class condition in conformance with the Plan, as approved by the Board

EXHIBIT C

of Supervisors of Honey Brook Township, and in a manner sufficient to meet or exceed the design standards and specifications set forth on the Plan and the minimum design and maintenance standards and requirements set forth in §§303 and 304 of the Ordinance. These responsibilities shall include, but not be limited to, the following:

- (a) Liming and fertilizing vegetated channels and other areas according to the specifications in the "Erosion and Sedimentation Control Handbook of Chester County."
- (b) Reestablishment of vegetation by seeding and mulching or sodding of scoured areas or areas where vegetation has not been successfully established.
- (c) Mowing as necessary to maintain adequate strands of grass and to control weeds. Chemical weed control may be used if federal, state and local laws and regulations are met. Selection of seed mixtures shall be subject to approval by the Township.
- (d) Removal of silt from all permanent structures which trap silt or sediment in order to keep the material from building up in grass waterways, pipes, detention or retention basins, infiltration structures, or BMPs, and thus reducing their capacity to convey or store water.
- (e) Regular inspection of the areas in question to assure proper implementation of BMPS, maintenance and care.
- (f) All pipes, swales and detention facilities shall be kept free of any debris or other obstruction.

Grantor, its successors and assigns, shall be responsible for performing the foregoing maintenance and for implementing BMPs and maintaining BMP facilities as required by the Ordinance.

3. Grantor, for itself, its successors and assigns, agrees that the failure to maintain all drainage courses, swales, stormwater inlets, pipes, conduits, detention basins, BMPs, and other stormwater management facilities in a first-class condition in conformance with this Agreement and the Plan shall constitute a nuisance and shall be abatable by the Township as such.

4. Grantor, for itself, its successors and assigns, authorizes the Township, at any time and from time to time, by its authorized representatives, to enter upon the Premises to inspect the stormwater management facilities.

5. The Township may require that Grantor, its successors or assigns, or any future owner or occupier of the Premises, or any part thereof, take such corrective measures as the Township may deem reasonably necessary to bring the Premises into compliance with this Agreement and with the Plan, as approved by the Board of Supervisors of Honey Brook Township.

6. Upon the failure of the owner or occupier of the Premises to comply with the terms of this Stormwater Management Agreement or to take corrective measures following thirty (30) days' notice from the Township, the Township, through its authorized representatives, may take such corrective measures as it deems reasonably necessary to bring the Premises into compliance with this Agreement and with the Plan, including, but not limited to, the removal of any blockage or obstruction from drainage pipes, swales and detention basins, and may charge the cost thereof to Grantor, its successors or assigns, or any owner of the Premises and, in default of such payment, may cause a municipal lien to be imposed upon the Premises or any part thereof.

7. If ownership or maintenance responsibility of the stormwater management facilities is assigned to a homeowners' association, condominium unit owners' association, or similar entity, the Township shall be notified. In the event such an association or entity has already been formed, the association or entity shall consent to and join in this Agreement. If such association or entity fails to properly maintain the stormwater management facilities, the Township shall have the same rights granted to municipalities with reference to maintenance of common open space under §705 of the Pennsylvania Municipalities Planning

EXHIBIT C

Code, Act of July 31, 1968, P.L. 805, No. 247, or any future amendment thereof, to maintain the stormwater management facilities. Any association or entity hereinafter formed shall enter into an agreement with the Township recognizing its duties and the Township's rights under this Agreement.

8. Grantor hereby imposes upon the Premises for the benefit of all present and future owners of the premises or any part of the Premises, the Township and all other property owners affected by the stormwater management facilities, the perpetual non-exclusive right, privilege and easement for the draining of stormwater in and through the drainage courses, swales, stormwater inlets, pipes, conduits, detention basins, BMPs, and other stormwater management facilities depicted on the plan or plans submitted to the Township or hereafter made of record and now or hereafter installed on or constructed upon the Premises and, in addition, easements of access to the stormwater management facilities.

9. Grantor shall include a specific reference to this Stormwater Management Agreement and Declaration of Easement and the requirement to implement BMPs and maintain BMP facilities in accordance with the minimum design standards and requirements for BMPs set forth in the Ordinance in any deed of conveyance for the Premises or any part thereof.

10. Grantor agrees to indemnify the Township and all of its elected and appointed officials, agents and employees (hereinafter collectively referred to as the "Indemnities") against and hold Indemnities harmless from any and all liability, loss or damage, including attorneys' fees and costs of investigation and defense, as a result of claims, demands, costs or judgments against Indemnities which arise as a result of the design, installation, construction or maintenance of the stormwater management facilities.

11. The Township may, in addition to the remedies prescribed herein, proceed with any action at law or in equity to bring about compliance with the Honey Brook Township Stormwater Management Ordinance and this Agreement.

12. Grantor's personal liability under this Agreement shall cease at such time as (a) all stormwater management facilities have been constructed in accordance with the specifications of the Honey Brook Township Subdivision and Land Development Ordinance and the approved plans; (b) the stormwater management facilities have been inspected and approved by the Township Engineer; (c) all financial security, including any maintenance security, posted by Grantor has been released by the Township; and (d) Grantor has transferred all lots to be created from the Premises to third parties. Notwithstanding the foregoing, Grantor's personal liability shall continue for any violations of this Agreement and Declaration of Easement which occurred during the time that Grantor owned the Premises or any lot created from the Premises or in the event the stormwater management facilities were not completed, inspected or approved as set forth in (a) through (c) herein.

13. Grantor shall, upon completion of installation of the stormwater management facilities, deposit financial security with the Township to secure the structural integrity of the stormwater management facilities as well as the functioning of the stormwater management facilities in accordance with the design and specifications of the approved plans and any modifications required by the Township. The financial security shall be in the amount of fifteen (15 percent) percent of the actual cost of installation of the stormwater management facilities and shall have a term of not less than eighteen (18) months.

14. It is the intent of the parties to this Agreement that personal liability and maintenance obligations shall pass to subsequent title owners upon change in ownership of the Premises or any lot created from the Premises, and such subsequent owners shall assume all personal liability and maintenance obligations for the time period during which they hold title. Personal liability shall remain for any violations of this Agreement and Declaration of Easement which occurred during the period in which an owner held title.

EXHIBIT C

15. This Agreement and Declaration of Easement shall be binding upon Grantor, the successors and assigns of Grantor, and all present and future owners of the Premises, or any part thereof, and is intended to be recorded in order to give notice to future owners of the Premises, or any part thereof, of their duties and responsibilities with respect to the stormwater management facilities.

16. This Agreement and Declaration of Easement may be amended only by written instrument signed on behalf of all owners of the Premises and the Township.

17. When the sense so requires, words of any gender used in this Stormwater Management Agreement and Declaration of Easement shall be held to include any other gender, and words in the singular number shall be held to include the plural, and vice versa.

IN WITNESS WHEREOF, the undersigned have caused this Agreement and Declaration to be executed on the day and year first above written.

Honey Brook Township

By: _____
Township Manager

Attest: _____

[Township SEAL]

EXHIBIT C

(Individual or Husband and Wife Developer)

Witness:

_____(SEAL)
(Signature of Individual)

_____(SEAL)
(Signature of Spouse if Husband and
Wife are Co-Developers)

(if individual or spouses operate a
business Trading and doing business as:

(Partnership Developer*)

(Name of Partnership)

Witness:

By: _____
Partner

By: _____
Partner

By: _____
Partner

*All Partners must execute this Agreement. Additional signature lines should be attached if necessary.

(Corporation Developer)

(Name of Corporation)

ATTEST:

By: _____
(Assistant) Secretary

By: _____
(Vice) President

[CORPORATE SEAL]

EXHIBIT C

JOINDER BY MORTGAGEE

_____ (“Mortgagee”) as holder of a certain mortgage on the within-described Premises, which mortgage, in the amount \$ _____, is dated _____, and is recorded or is about to be recorded in the Recorder of Deeds Office in and for Chester County, Pennsylvania, as well as any other mortgages which Mortgagee may now or hereafter hold on the Premises (all such mortgages hereinafter collectively referred to as the “Mortgages”), joins in, consents to, and expressly approves the grant of easements and other rights and privileges described in the attached Stormwater Management Agreement and Declaration of Easement (the “Agreement”).

The Mortgagee, for itself, its successors and assigns (which shall include any assignee of the Mortgages and any purchaser of the Premises at a sale in foreclosure of the Mortgages or otherwise), hereby covenants and agrees that the rights and privileges herein granted with respect to the Premises shall not be terminated or disturbed by reason of any foreclosure or other action which may be instituted by the Mortgagee, its successors and assigns, as a result of any default under the Mortgages or the debt of instruments that such Mortgages secure. Mortgagee by consenting to the Agreement shall not by virtue of its interest as Mortgagee be deemed to have undertaken any of the obligations of the Grantor under the Agreement, including but not limited to construction, maintenance, inspection or indemnification.

IN WITNESS WHEREOF, Mortgagee hereby joins in the execution of the Agreement as of this _____ day of _____, 20__.

By: _____
(Name of Mortgagee)

ATTEST: _____

[SEAL]

EXHIBIT C

**Representation and Warranty Concerning Mortgages
Affecting Proposed Development**

I (We) _____, the undersigned, intending to be legally bound, represent and warrant to [Municipality] that there are not presently nor will there be prior to the recording of the Stormwater Management Agreement and Declaration of Easement Agreement any mortgages affecting the property which is being developed in accordance with (check one):

the subdivision and/or land development plan titled _____, prepared by _____, drawing or project number _____, dated _____, last revised _____.

the

The undersigned understand(s) and agree(s) that [Municipality] will rely upon this statement when releasing the aforementioned subdivision and/or land development plan for recording.

Date

Signature

Signature

Signature

Signature

EXHIBIT D

APPENDIX 20-H

HONEY BROOK TOWNSHIP REDUCED STORMWATER MANAGEMENT PLANNING WORKSHEET – CATEGORY II ACTIVITY

Why am I required to do this?

Honey Brook Township has adopted an ordinance to regulate certain activities that affect stormwater runoff and surface and groundwater quantity and quality. This Ordinance was created to comply with certain requirements specified by the Pennsylvania Department of Environmental Protection. Because your project disturbs less than 5000 square feet of land, but the net impervious surfaces being added to your property exceed the sliding scale requirement for a residential use, the Township is providing you with this simplified worksheet to satisfy the purpose and intent of the Ordinance.

Who is affected by these requirements?

The Chapter 20 stormwater management requirements affect all NEW development in Honey Brook Township. This worksheet has been created for those projects proposing net impervious coverage amounts which exceed the values noted under §20-203, Residential Exemption, however propose disturbances less than five thousand (5,000) square feet of earth disturbance on the property. Although applicants are not required to submit formal drainage plans to the Township under this scenario; they are still required to address water quality and groundwater recharge criteria specified in the Ordinance. This worksheet assists the resident in accomplishing both under a simplified approach.

Do I require professional services to complete this worksheet?

This worksheet has been developed to assist the individual resident in meeting the water quality and groundwater recharge goals of this Ordinance. If the guidelines presented in this worksheet are followed, the individual resident will not require professional services to comply with these water quality and groundwater recharge goals. However, you may require a professional contractor or excavator to install the final design on your property.

What do I need to send to the Municipality?

Even though a formal drainage plan is not required for individual lot owners meeting the reduced planning criteria, a brief description of the proposed infiltration facilities, including types of material to be used, total impervious areas and volume calculations as shown below, and a simple sketch plan showing the information below shall be submitted to the Township Engineer prior to construction. Upon approval of this information, you may proceed with installing your stormwater management control. Please note that all systems must be inspected and approved by the Township Engineer.

- Location of proposed structures, driveways, or other paved areas with approximate size in square feet.
- Location of any existing or proposed on-site septic system and/or potable water wells showing rough proximity to infiltration facilities.

EXHIBIT D

Determination of Recharge Volume

The area of the required recharge bed that should be provided to meet the intent of the Ordinance can be determined using the following procedure.

STEP 1 – Determine Total Impervious Surfaces (driveway+house footprint+patios/etc.).

Enter total value in square feet: _____

STEP 2 – Multiply the value in Step 1 by 0.1 (1.2 inches rainfall/12 inches/foot).

Enter this value (in cubic feet) here: _____

STEP 3 – Divide the value in Step 2 by 0.40 (void ratio for aggregate).

Enter this value (in cubic feet) here: _____

STEP 4 - The value in Step 3 is the minimum volume required for the infiltration facility. Divide the value in Step 3 by 2 feet (this is the depth of the infiltration facility).

Enter this value (in square feet) here: _____

STEP 5 – Determine the area of the infiltration facility (length x width) based on trial and error to meet the minimum value in Step 4. This value will yield the dimensions of the footprint of the infiltration facility.

Example Sizing:

STEP 1: Suppose proposed impervious surface = 1000 square feet; determine Total Impervious Surfaces (driveway+house footprint+patios/etc.).

Enter total value in square feet: **1000 feet**

STEP 2 – Multiply the value in Step 1 by 0.1 (1.2 inches rainfall/12 inches/foot).

Enter this value (in cubic feet) here: **1000 * 0.1 = 100 cubic feet**

STEP 3 – Divide the value in Step 2 by 0.40 (void ratio for aggregate).

Enter this value (in cubic feet) here: **100 / 0.40 = 250 cubic feet**

STEP 4 - The value in Step 3 is the minimum volume required for the infiltration facility. Divide the value in Step 3 by 2 feet (this is the depth of the infiltration facility).

Enter this value (in square feet) here: **250 / 2 = 125 square feet**

STEP 5 – Determine the area of the infiltration facility (length x width) based on trial and error to meet the minimum value in Step 4. This value will yield the dimensions of the footprint of the infiltration facility.

The width of the trench should be greater than 2 times its depth (2 x D); therefore, in this example a trench width of 4 feet is selected;

Determine trench length: $L = 125 \text{ sq. ft.} / 4 \text{ ft.} = 31.25 \text{ ft.}$

EXHIBIT D

Final trench dimensions: 2 ft. (D) x 4 ft. (W) x 32 ft. (L)

Sizing of Select Infiltration Method

The following pages show several methods of infiltrating stormwater runoff from residential areas. Their appropriateness depends on the amount of infiltration volume required and the amount of land available. More than one method can be implemented on a site, depending on site constraints. Dry wells should be used only for receiving runoff from roof drains. Infiltration trenches are appropriate for receiving runoff from roof drains, driveways, sidewalk, or parking areas. Other methods may be appropriate, but these should be discussed with the Township Engineer prior to installation.

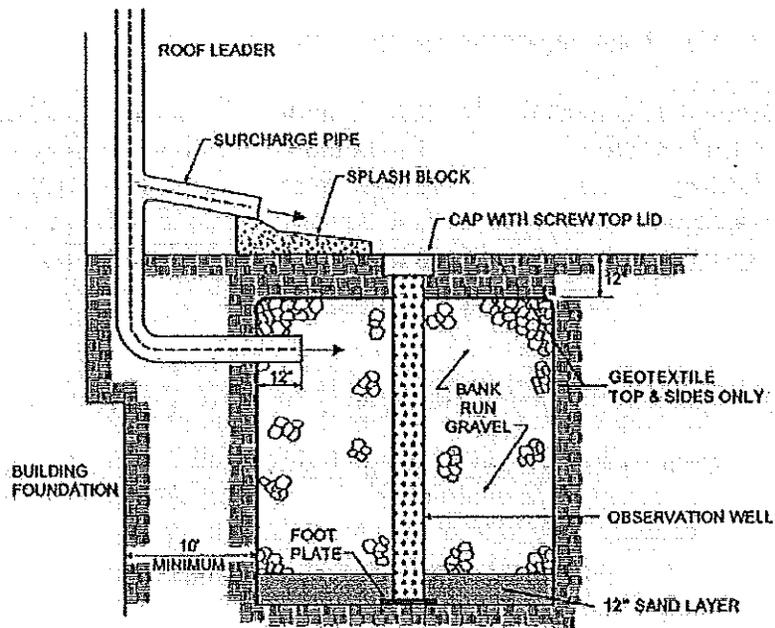
Dry Wells

Dry wells are effective methods of infiltrating runoff from roof leaders. These facilities should be located a minimum of ten (10) feet from the building foundation to avoid seepage problems. A dry well can be either a structural prefabricated chamber or an excavated pit filled with aggregate. Construction of a dry well should be performed after all other areas of the site are stabilized to avoid clogging. During construction, compaction of the subgrade soil should be avoided, and construction should be performed with only light machinery. Depth of dry wells in excess of three and one half (3½) feet should be avoided. Gravel fill should be an average one and one half to three (1.5 – 3.0) inches in diameter. Dry wells should be inspected at least four (4) times annually as well as after large storm events.

EXHIBIT D

FIGURE B-1

TYPICAL DRY WELL CONFIGURATION



Source: Maryland Stormwater Design Manual

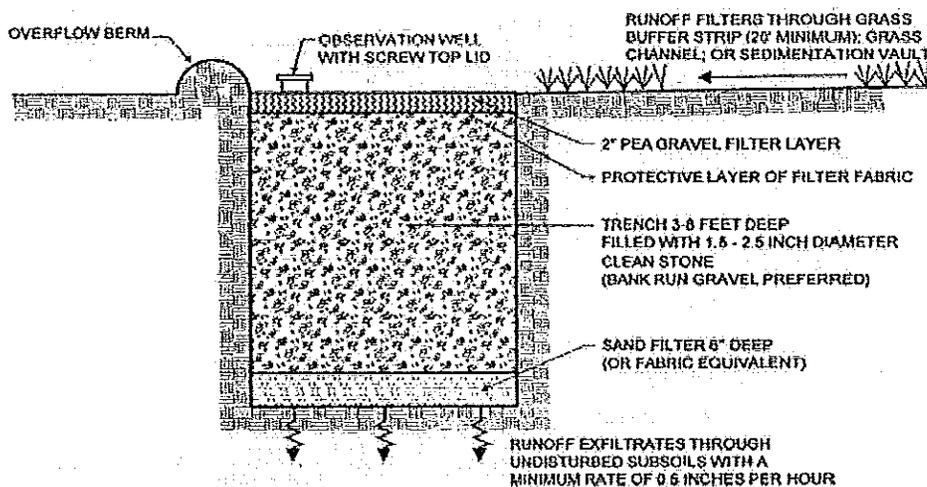
EXHIBIT D

Infiltration Trenches

An infiltration trench is a long, narrow, rock-filled trench with no outlet that receives stormwater runoff. Runoff is stored in the void space between the stones and infiltrates through the bottom and into the soil matrix. Infiltration trenches perform well for removal of fine sediment and associated pollutants. Pretreatment using buffer strips, swales, or detention basins is important for limiting amounts of coarse sediment entering the trench which can clog and render the trench ineffective.

FIGURE B-2

TYPICAL INFILTRATION TRENCH CONFIGURATION

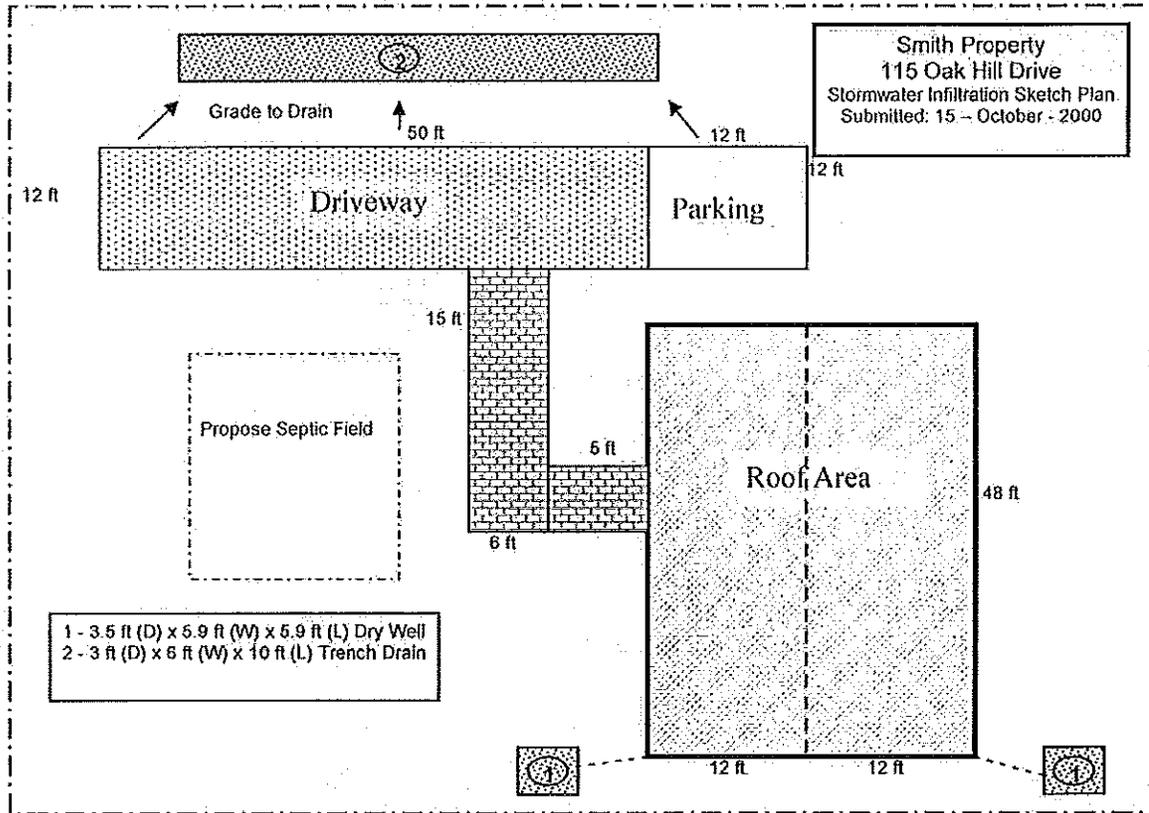


Source: Maryland Stormwater Design Manual

EXHIBIT D

FIGURE B-3

SAMPLE SITE SKETCH PLAN



Source: Maryland Stormwater Design Manual