

# DRAINAGE PLAN APPLICATION

Application is hereby made for review of the Stormwater Management Plan and related data as submitted herewith in accordance with the Schuylkill River Watershed Stormwater Management Ordinance, Union Township, Berks County, PA.

Date of Submission \_\_\_\_\_ Submission No. \_\_\_\_\_

1. Name of subdivision or development \_\_\_\_\_

2. Name of Applicant \_\_\_\_\_ Telephone No. \_\_\_\_\_

(if corporation, list the corporation's name and the names of two officers of the corporation)

\_\_\_\_\_ Officer 1  
\_\_\_\_\_ Officer 2

Address \_\_\_\_\_

Email Address \_\_\_\_\_

Applicant's interest in subdivision or development \_\_\_\_\_  
(if other than property owner give owners name and address)

3. Name of property owner \_\_\_\_\_ Telephone No. \_\_\_\_\_

Address \_\_\_\_\_

Email Address \_\_\_\_\_

4. Name of engineer or surveyor \_\_\_\_\_ Telephone No. \_\_\_\_\_

Address \_\_\_\_\_

5. Type of development proposed:

\_\_\_ Residential                      \_\_\_ Commercial                      \_\_\_ Industrial  
\_\_\_ Other \_\_\_\_\_

6. Area of proposed and existing impervious area on entire tract.

a. Existing (to remain) \_\_\_\_\_ S.F. \_\_\_\_\_ % of Property  
b. Proposed (net new) \_\_\_\_\_ S.F. \_\_\_\_\_ % of Property

7. Erosion and Sediment Pollution Control (E&S):

- a. Has the stormwater management and E&S plan, supporting documentation and narrative been submitted to the Berks County Conservation District? \_\_\_\_\_
- b. Total area of earth disturbance \_\_\_\_\_ S.F.

8. Wetlands

- a. Have the wetlands been delineated by someone trained in wetland delineation? \_\_\_\_\_
- b. Have the wetland lines been verified by a state or federal permitting authority? \_\_\_\_\_
- c. Have the wetland lines been surveyed? \_\_\_\_\_
- d. Total acreage of wetland within the property \_\_\_\_\_
- e. Total acreage of wetland disturbed \_\_\_\_\_
- f. Supporting documentation \_\_\_\_\_

9. Filing

- a. Has the required fee been submitted? \_\_\_\_\_  
Amount \_\_\_\_\_
- b. General comments about stormwater management at the development \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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(Information Below This Line To Be Completed By The Municipality)

Union Township official submission receipt:

Date complete application received \_\_\_\_\_ Plan Number \_\_\_\_\_

Fees \_\_\_\_\_ date fees paid \_\_\_\_\_ received by \_\_\_\_\_

Official submission receipt date \_\_\_\_\_

Received by \_\_\_\_\_

\_\_\_\_\_  
Union Township

**STORMWATER BEST MANAGEMENT PRACTICE (BMP)  
OPERATIONS AND MAINTENANCE REQUIREMENTS**

1. The BMPs shall be constructed by the Landowner in accordance with the plans and specifications identified in the Plan.
2. The Landowner shall operate and maintain the BMP(s) as shown on the Plan in good working order acceptable to the Municipality and in accordance with the specific maintenance requirements noted on the Plan.
3. The Landowner hereby grants permission to the Municipality, its authorized agents and employees, to enter upon the property, at reasonable times and upon presentation of proper identification, to inspect the BMP(s) whenever it deems necessary. Whenever possible, the Municipality shall notify the Landowner prior to entering the property.
4. In the event the Landowner fails to operate and maintain the BMP(s) as shown on the Plan in good working order acceptable to the Municipality, the Municipality or its representatives may enter upon the Property and take whatever action is deemed necessary to maintain said BMP(s). This provision shall not be construed to allow the Municipality to erect any permanent structure on the land of the Landowner. It is expressly understood and agreed that the Municipality is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the Municipality.
5. In the event the Municipality, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like, the Landowner shall reimburse the Municipality for all expenses (direct and indirect) incurred within 10 days of receipt of invoice from the Municipality.
6. The intent and purpose of this Agreement is to ensure the proper maintenance of the onsite BMP(s) by the Landowner; provided, however, that this Agreement shall not be deemed to release any additional liability of any party for damage alleged to result from or be caused by stormwater runoff.
7. The Landowner, its executors, administrators, assigns, and other successors in interests, shall release the Municipality's employees and designated representatives from all damages, accidents, casualties, occurrences or claims which might arise or be asserted against said employees and representatives from the construction, presence, existence, or maintenance of the BMP(s) by the Landowner or Municipality. In the event that a claim is asserted against the Municipality, its designated representatives or employees, the Municipality shall promptly notify the Landowner and the Landowner shall defend, at his own expense, any suit based on the claim. If any judgment or claims against the Municipality's employees or designated representatives shall be allowed, the Landowner shall pay all costs and expenses regarding said judgment or claim.

I certify that I understand and agree to the above Operation and Maintenance provisions.

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Landowner (print name)

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Landowner (signature)

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Date

**Stormwater Management Practices  
for Small Projects under the Chapter 165 of the Union  
Township Code, “Stormwater Management Ordinance”**

## **STORMWATER MANAGEMENT PROCEDURES FOR SMALL PROJECTS UNDER THE STORMWATER ORDINANCE**

### **What are the Act 167 Stormwater Management Requirements?**

Pennsylvania Act 167 was authorized on October 4, 1978 (32 P.S., P.L. 864) and gave Pennsylvania Municipalities the power to regulate activities that affect stormwater runoff, surface and groundwater quantity and quality.

### **Who is affected by these requirements?**

The Union Township Stormwater Management Ordinance affects all NEW development in Union Township. Individual home or out-building construction projects on larger single family lots are generally considered to be “Small Projects”, which must address Water Quality and Groundwater Recharge criteria specified in the Stormwater Management Ordinance (Ord. Sections 165-14. and 165-15.).

### **Do I require professional services to meet these requirements?**

This brochure has been developed to assist the individual homeowner in meeting the water quality and groundwater recharge goals of the Union Township Stormwater Management Ordinance. If the guidelines presented in this brochure are followed, the individual homeowner will not require professional services to comply with these water quality and groundwater recharge.

### **What do I need to Send to Union Township?**

A brief description of the proposed infiltration facilities, including types of material to be used, total impervious areas and volume calculations as shown above, and a simple sketch plan showing the following information shall be submitted to Union Township prior to construction:

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

### **Determination of Recharge Volume**

The amount of recharge volume to be provided can be determined by following the simple steps below. Impervious area calculations should include all areas on the individual lots that are covered by roof area or pavement which would prevent rain from naturally percolating into the ground, including sidewalks, driveways or parking areas.

Sidewalks, driveways or patios that are constructed with gravel or turf pavers and will not be blacktopped in the future, need not be included in this calculation.

Example Recharge Volume:

STEP 1 – Determine Total Impervious Surfaces:

House Roof (Front)	12 ft x 48 ft	=	576 sq. ft
House Roof (Rear)	12 ft x 48 ft	=	576 sq. ft.
Driveway	12 ft x 50 ft	=	600 sq. ft.
Parking Pad	12 ft x 12 ft	=	144 sq. ft.
Walkway	6 ft x 20 ft	=	120 sq. ft.
			-----
			2,016 sq. ft.

STEP 2 – Determine Require Infiltration Volume (Rv) Using the Following Equation

$$Rv = \frac{0.46 \text{ inches} \times (\text{total impervious area in square feet})}{12} = \text{_____ cubic feet of recharge}$$

$$Rv = \frac{0.46 \text{ in.} \times 2,016 \text{ sq. ft.}}{12} = 77.3 \text{ cu. ft.}$$

STEP 3 – Sizing of Select Infiltration Method

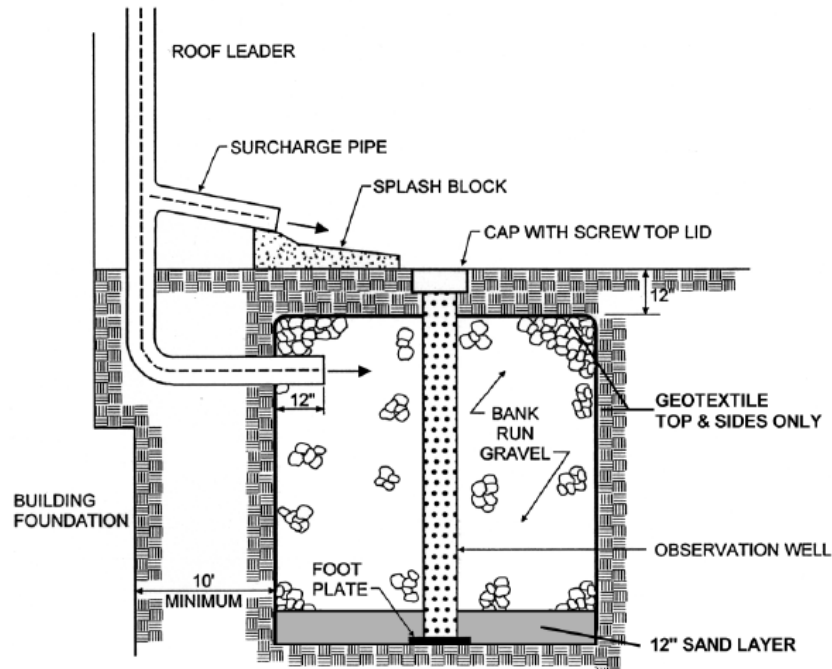
The following pages show several methods of infiltrating stormwater runoff from residential areas. Their appropriateness depends on the amount of infiltration volume required and the amount of land available. More than one method can be implemented on a site, depending on site constraints. Dry wells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

**Dry Wells**

Dry wells are effective methods of infiltrating runoff from roof leaders. These facilities should be located a minimum of 10 feet from the building foundation to avoid seepage problems. A dry well can be either a structural prefabricated chamber or an excavated pit filled with aggregate. Construction of a dry well should be performed after all other areas of the site are stabilized, to avoid clogging. During construction, compaction of the subgrade soil should be avoided and construction should be performed with only light machinery. Depth of dry wells in excess of 3 ½ feet should be avoided. Gravel fill should be an average 1.5 – 3.0 inches in diameter. Dry wells should be inspected at least four times annually as well as after large storm events.

**FIGURE G-1**

**TYPICAL DRY WELL CONFIGURATION**



Source: Maryland Stormwater Design Manual, 2000

Example Sizing:

STEP 1 – Determine Total Impervious Surfaces

House Roof Area: 12 ft x 48 ft = 576 sq. feet

STEP 2 – Determine Require Infiltration Volume using Equation

$$\frac{0.46 \text{ in.} \times 576 \text{ sq. ft.}}{12} = 22.1 \text{ cu. ft.}$$

$$\frac{22.1 \text{ cu. ft.}}{0.4} = 55.3 \text{ cu. ft. (* assume 40% void ratio in gravel bed)}$$

STEP 3 – Sizing of Select Infiltration Method

Volume of facility = Depth x Width x Length

Set D = 3.5 ft; Set W = L for a square chamber

$$55.3 \text{ cu. ft.} = 3.5 \times L \times L \quad ; L = 4.0 \text{ ft}$$

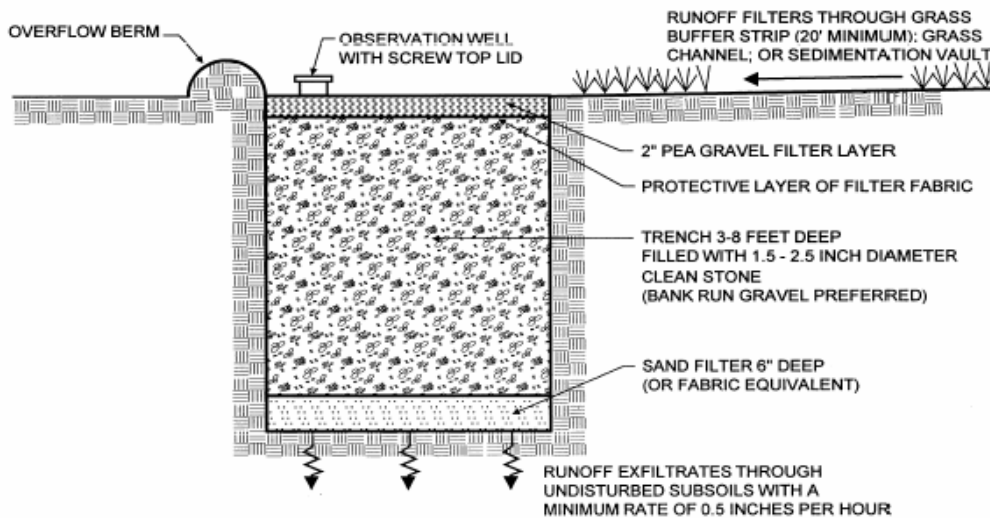
Final Facility Dimensions: 3.5 ft (D) x 4.0 ft (W) x 4.0 ft (L)

## Infiltration Trenches

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

**FIGURE G-2**

### TYPICAL INFILTRATION TRENCH CONFIGURATION



Source: Maryland Stormwater Design Manual, 2000

### Example Sizing:

#### STEP 1 – Determine Total Impervious Surfaces

Driveway	12 ft x 50 ft	=	600 sq. ft.
Parking Pad	12 ft x 12 ft	=	144 sq. ft.
Walkway	6 ft x 20 ft	=	120 sq. ft.
			-----
			864 sq. ft.



STEP 2 – Determine Required Infiltration Volume using Equation

$$\frac{0.46 \text{ in.} \times 864 \text{ sq. ft.}}{12} = 33.1 \text{ cu. ft.}$$

$$\frac{33.1 \text{ cu. ft.}}{0.4} = 82.8 \text{ cu. ft. (* assume 40% void ratio in gravel bed)}$$

STEP 3 – Sizing of Select Infiltration Method

Volume of facility = Depth x Width x Length

Set D = 3.0 ft; Determine Required Surface Area of Trench

$$82.8 \text{ cu. ft.} / 3.0 \text{ ft.} = 27.6 \text{ sq. ft.}$$

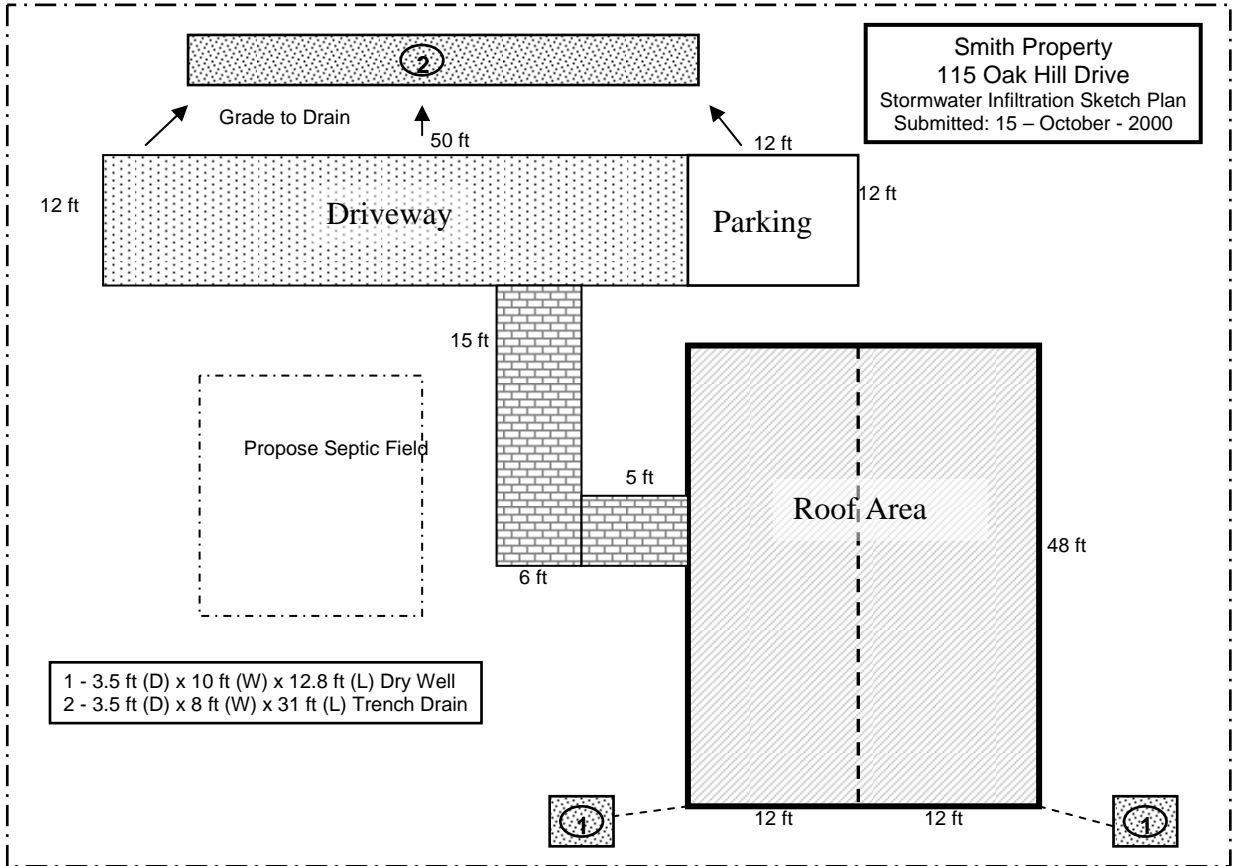
The width of the trench should be greater than 2 times its depth (2 x D); therefore in this example a trench width of 6 feet is selected;

Determine trench length:  $L = 27.6 \text{ sq. ft.} / 6 \text{ ft} = 4.6 \text{ ft.}$

Final Trench Dimensions: 3.0 ft. (D) x 6 ft. (W) x 4.6 ft. (L)

**FIGURE G-3**

**SAMPLE SITE SKETCH PLAN**



**UNION TOWNSHIP  
BERKS COUNTY, PENNSYLVANIA**

**STORMWATER PLAN REVIEW FEE SCHEDULE**

**1 PERMIT APPLICATION/ISSUANCE**

- |                                           |          |
|-------------------------------------------|----------|
| • Residential                             | \$125.00 |
| • Non-Residential, Commercial, Industrial | \$150.00 |
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**2 PLAN REVIEW AND INSPECTIONS**

- |                                                                     |          |
|---------------------------------------------------------------------|----------|
| • Residential                                                       |          |
| • Plan Review                                                       | \$125.00 |
| • Inspection (includes one (1) inspection - after BMP installation) | \$125.00 |
- 
- |                                                                     |          |
|---------------------------------------------------------------------|----------|
| • Non-Residential, Commercial, Industrial                           |          |
| • Plan Review                                                       | \$200.00 |
| • Inspection (includes one (1) inspection - after BMP installation) | \$150.00 |
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**3 ADDITIONAL PERMIT FEES (AS APPLICABLE)**

- |                                    |               |
|------------------------------------|---------------|
| • Failed or Additional Inspections | \$125.00 Each |
| • Site Meeting or Site Visit       | \$125.00 Each |
| • Hourly Rate for Specified Work   | \$75.00 /hr   |

**Note:**

*This fee schedule shall apply to all Stormwater Plan review applications under the "Tributaries to the Schuylkill River Stormwater Management Ordinance", for the Township of Union, Berks County, UNLESS the Stormwater Plan is part of a Subdivision and/or Land Development Plan application, in which case the appropriate Municipal review fees under the Subdivision and Land Development Ordinance will supercede this fee schedule.*