

Appendix A-2.  
**STORMWATER MANAGEMENT  
SMALL PROJECT DESIGN/APPLICATION**

**Borough of Denver, Lancaster County, Pennsylvania**

This application pertains to projects that qualify as a Small Project (between 1,001 and 2,000 square feet of impervious area (cumulative)). If a formal Stormwater Management Plan is required in accordance with the Borough of Denver Stormwater Management Ordinance, **please consult a qualified person (ex. Engineer, Surveyor, Landscape Architect).**

**\*\*NOTE:** Application for a Small Project in no way exempts the applicant from the compliance the regulations of the Borough Zoning Ordinance.

Property Owner's Name \_\_\_\_\_

Address of Property \_\_\_\_\_

Parcel ID 140-\_\_\_\_\_

Phone Number: Home: \_\_\_\_\_ Cell: \_\_\_\_\_

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

1000 SF Exemption Used since February 9, 2004: \_\_\_\_\_ No \_\_\_\_\_ Yes: how much: \_\_\_\_\_

New Impervious Area Associated with this Project \_\_\_\_\_

Lot Size (Sq. Ft.) \_\_\_\_\_

Existing Impervious Coverage (Sq. Ft.) \_\_\_\_\_

Total New Impervious Area since Adoption of SWM Ordinance \_\_\_\_\_

**Acknowledgement** - I declare that I am the property owner, or representative of the owner, and that the information provided is accurate to the best of my knowledge. I understand that stormwater may not adversely affect adjacent properties or be directed onto another property without written permission. I also declare that the proposed construction is not within an existing easement or wetland area. I also understand that false information may result in a stop work order or revocation of permits. Borough representatives are also granted reasonable access to the property for review and/or inspection of this project if necessary.

Signature \_\_\_\_\_

Date \_\_\_\_\_

\*All property owners must sign.

**Small Project Plan** – Regulated activities on existing lots of record that, measured on a cumulative basis from April 28, 2014, create additional impervious areas of 1,001 sq. ft. to 2,000 sq. ft. or involves an Earth Disturbance Activity such as removal of ground cover, grading, filling or excavation of an area less than 5,000 sq. ft. and do not involve the alteration of SWM Facilities or watercourses.

- Small projects are not required to provide for Rate Control.
- Small projects are required to address at least the first one (1) inch of runoff from new impervious surfaces or an equivalent volume shall be permanently removed from the runoff flow – i.e. it shall not be released into the surface Waters of this Commonwealth. Removal options include reuse, evaporation, transpiration and infiltration.

**Disconnected Impervious Area (DIA)** – An impervious or impermeable surface that is disconnected from any stormwater drainage or conveyance system and is redirected or directed to a pervious area, which allows for infiltration, filtration, and increased time of concentration.

**Step 1:** Determine the amount of new impervious surface area created by the proposed project. This includes any new impervious surface area that prevents or decreases infiltration of stormwater into the ground. New stone and gravel areas are considered impervious. Impervious surface areas existing before November 11, 2013 are not included in this calculation. Use additional sheets if necessary.

*Calculate new impervious area by completing this table.*

Surface	Length (ft)	x	Width (ft)	=	Impervious Area (ft <sup>2</sup> )
Buildings		x		=	
Driveway		x		=	
Parking Areas		x		=	
Other		x		=	
Existing Impervious Area to be Removed (if applicable)					
Surface	Length (ft)	x	Width (ft)	=	Impervious Area (ft <sup>2</sup> )
		x		=	
<b>Total Proposed Impervious Surface Area (Sum of all new impervious areas – all existing impervious area to be removed)</b>					

- If the total new impervious surface area is between 0 and 1,000 SF and the Applicant has previously used any available exemptions or is deferring any available exemption use to a future project or the area is between 1,001 and 2,000 ft<sup>2</sup> and the Applicant has not previously used any available exemption as part of this permit application, the project is eligible to qualify as a Small Project. Continue to Step 2.

- If total new impervious surface area is **greater than 2,001 ft<sup>2</sup>**, then a Stormwater Management Plan shall be submitted in accordance with the Borough of Denver Stormwater Management Ordinance, Chapter 160, Stormwater Management.

**Step 2:** Determine Disconnected Impervious Area (DIA). All or parts of new impervious surfaces may qualify as Disconnected Impervious Area if runoff is directed to a pervious area that allows for infiltration, filtration, and increased time of concentration. The volume of stormwater that needs to be managed could be reduced through use of DIAs.

Partial Rooftop Disconnection	
Length of Pervious Flow Path (ft.)	DIA Credit Factor
75 or more	0
60 – 74	0.2
45 – 59	0.4
30 – 44	0.6
15 – 29	0.8
0 - 14	1.0
Pervious flow path must be at least 15 feet from any impervious surface	

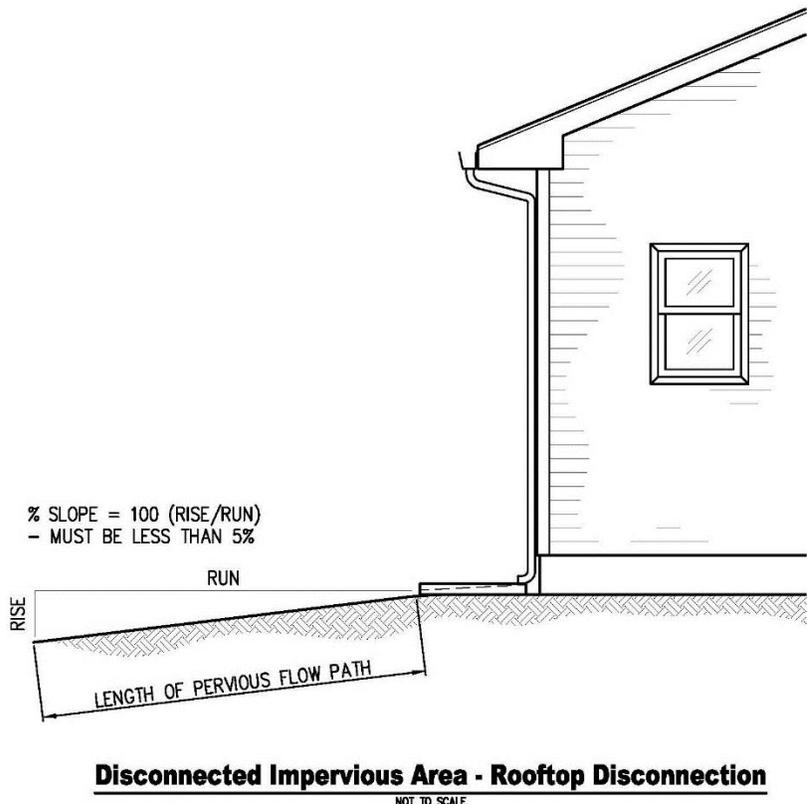
### Rooftop Disconnection Criteria

- Overland flow path from the discharge area or impervious area has a positive slope of 5% or less.
- Runoff is not directed towards dwellings or other occupied structures.
- Soils are not classified as hydrologic soil group “D”
- The receiving pervious area shall not include another person’s property unless written permission has been obtained and a copy is provided to the Borough from the affected property owner.

### Paved Disconnection

**Criteria:** Other impervious surfaces (driveways, walkways, swimming pools, porches, decks with porous ground surface, etc. to be confirmed by Borough Engineer or Zoning officer) and gravel can be considered disconnected if it meets the criteria above, and:

- Runoff does not flow over impervious area for more than 75 feet.
- The length of overland flow is greater than or equal to the contributing flow path.
- The slope of the contributing impervious areas is 5% or less.



- If discharge is concentrated at one or more discrete points, no more than 1,000 ft<sup>2</sup> may discharge to any one point. Non-concentrated discharges along the entire edge of paved surface must include provisions for the establishment of vegetation along the paved edge and temporary stabilization of the area until the vegetation is established.
- If these criteria can be met, the DIA credit = 0.

Using the calculations from Step 1, complete the table below. This will determine the impervious area that may be excluded from the area that needs to be managed through stormwater BMPs. If the total impervious area to be managed = 0, the area can be considered entirely disconnected.

Surface	Proposed Impervious Area	x	DIA Credit	=	Impervious Area (ft <sup>2</sup> ) to be Managed
Buildings (area to each downspout)		x		=	
Driveway		x		=	
Parking Areas		x		=	
Patios/ walkways		x		=	
Other		x		=	
<b>Total Proposed Impervious Surface Area to be managed (Sum of all impervious areas)</b>					

- If the total new impervious surface area can be entirely disconnected, sign Acknowledgement and file worksheets with the Borough.
- If the total new impervious surface area cannot be entirely disconnected, continue to Step 3.

**Step 3:** Calculate the volume of stormwater runoff created by new impervious surfaces. Use the following chart to determine this volume.

Impervious Area (ft <sup>2</sup> ) to be Managed (Sum of Step 2)	X	1.0 in/12 in = 0.083	=	Amount of Stormwater to be Managed (ft <sup>3</sup> )
	X	0.083	=	

**Step 4:** Determine the techniques to be used to manage the stormwater volume calculated in Step 3. Use the following information to determine the BMPs to be used to manage the proposed stormwater volume.

Where permitted by Borough of Denver, planting of new trees may be used to manage a portion of the proposed stormwater volume. First, calculate the cubic feet of stormwater that can be managed by planting new trees. If the criteria below can be met, planting of new trees can be used to manage a portion of the proposed stormwater volume:

**Deciduous Trees = 6 ft<sup>3</sup> per tree      Evergreen Trees = 10 ft<sup>3</sup> per tree**

**Criteria:**

- Trees must be PA native species (See PA Stormwater BMP Manual for a list)
- Trees shall be a minimum 1” caliper tree (min)
- Trees shall be adequately protected during construction
- **No more than 25% of the required capture volume can be mitigated through the use of trees**
- Dead trees shall be replaced by the property owner within 12 months
- Please consider the specifications for each tree species when determining location and spacing

Amount of Stormwater to be Managed (ft <sup>3</sup> ) (Sum of Step 3)	-	Tree Planting Credit (ft <sup>3</sup> )	=	Amount of Stormwater to be Managed (ft <sup>3</sup> )
	-		=	

Second, subtract the stormwater volume that can be managed by tree planting from the overall stormwater volume calculated in Step 3. The remaining cubic feet of stormwater must be managed through the installation of properly sized Stormwater BMPs. Select BMPs and size according to the volume of stormwater that needs to be managed.

Alternatively, stormwater BMPs may be sized using the following Simple BMP Sizing table. (Source: Lycoming County Planning Department)

BMP Type		Simple BMP Sizing - Amount New Impervious Area to be Managed (ft <sup>2</sup> )											
		250	500	750	1000	1500	2000	2500	3000	3500	4000	4500	5000
Bioretention	Ex. Rain garden, Vegetated swale	21	42	62	83	125	166	208	249	291	332	374	415
		ft <sup>3</sup> or	ft <sup>3</sup> or	ft <sup>3</sup> or	ft <sup>3</sup> or	ft <sup>3</sup> or	ft <sup>3</sup> or	ft <sup>3</sup> or	ft <sup>3</sup> or	ft <sup>3</sup> or	ft <sup>3</sup> or	ft <sup>3</sup> or	ft <sup>3</sup> or
Infiltration	Ex. Dry (40% well, Infiltration trench)	53	105	155	208	313	415	520	623	728	830	935	1,038
		ft <sup>3</sup>	ft <sup>3</sup>	ft <sup>3</sup>	ft <sup>3</sup>	ft <sup>3</sup>	ft <sup>3</sup>	ft <sup>3</sup>	ft <sup>3</sup>	ft <sup>3</sup>	ft <sup>3</sup>	ft <sup>3</sup>	ft <sup>3</sup>

The Simple BMP Sizing table is used as follows. After subtracting the stormwater volume that can be managed through the planting of new trees (if desired), match the remaining stormwater volume to the “Amount of New Impervious Area to be Managed” in white boxes in the table (rounding **up** to the next value if the number is between two values). Then look in the light grey box to determine the required size of the type of Stormwater BMP (bioretention or infiltration) being considered. For example, 1,000 square foot of new impervious surface area could be accommodated by an 83 cubic foot bioretention system.

### **Infiltration Trench/Bed Criteria**

- Stone bed shall not be located within 10 feet of any On-lot Sewage Disposal Systems.
- Stone used in the infiltration trenches shall be “clean” stone, i.e. #67, #57, #5 or clean 2B stone for the smaller facilities, and #1 or #3 ballast or R-3 for larger deeper facilities. Copies of the receipt(s) shall be provided to the Borough for their records. **NO MODIFIED STONE MIXES SHALL BE UTILITZED FOR INFILTRATION.**
- The standard void ratio for stone is 0.40 (40% storage for each CF) if calculating by hand or follow the BMP sizing table above.
- It is recommended that the property owner verify that the ground will infiltrate water, this can be accomplished by excavating the trench or pit and placing a large amount of water into the pit to see how long it take to infiltrate.

Once the sizing of necessary stormwater BMPs has been determined, prepare the required information and submit to the Borough for review and approval. Bring the worksheets, BMP information (size, location, etc.), Owner Acknowledgement, and BMP Facilities and Maintenance Agreement (if applicable) to the Borough.

If an area greater than 5,000 square feet of earth is disturbed, the project qualifies as a minor stormwater management plan and shall be prepared as outlined in the Borough’s Code of Ordinances.

## OWNER ACKNOWLEDGMENT

- Development activities shall begin only after Borough of Denver approves the Small Project.
- The installed Stormwater BMPs will not adversely affect any property, septic systems, or drinking water wells on this or any other property.
- The landowner shall keep on file with the Borough the name, address and telephone number of the person or company responsible for maintenance activities; in the event of a change, new information shall be submitted to the Borough within 10 days of the change.
- If, after approval of the Small Project by the Borough, the applicant wishes to pursue alternative stormwater management measures in support of the project, the applicant will submit revised Small Project information and worksheets to Borough of Denver for approval. If a site requires a more complex system or if problems arise, the applicant may need the assistance of a licensed professional engineer, landscape architect or surveyor.
- The applicant acknowledges that the proposed Disconnected Impervious Area and/or Stormwater BMPs will be a permanent fixture of the property that cannot be altered or removed without approval by Borough of Denver.

I (we) \_\_\_\_\_, hereby acknowledge the above statements and agree to assume full responsibility for the implementation, construction, operation, and maintenance of the proposed stormwater management facilities. Furthermore, I (we) also acknowledge that the steps, assumptions, and guidelines provided in this submission, including but not limited to Borough of Denver Stormwater Worksheet, and the Stormwater Management / BMP Facilities and Maintenance Agreement (if applicable) will be adhered to.

### Applicant Acknowledgement of Submission

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

\*All property owners must sign.

### Borough of Denver Acknowledgement of Receipt

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Prepared By: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Return To: Same  
Parcel ID # \_\_\_\_\_

**SMALL PROJECT STORMWATER MANAGEMENT AGREEMENT  
AND DECLARATION OF EASEMENT**

**THIS AGREEMENT AND DECLARATION OF EASEMENT** made this \_\_\_\_\_  
day of \_\_\_\_\_, 20\_\_\_, by and between \_\_\_\_\_  
\_\_\_\_\_ with a  
mailing address of \_\_\_\_\_

\_\_\_\_\_ (hereinafter, whether singular  
or plural, referred to as the "Grantor"), and **DENVER BOROUGH**, Lancaster County,  
Pennsylvania, a municipal corporation duly organized under the laws of the Commonwealth of  
Pennsylvania, with its municipal office located at 501 Main Street, Denver, Pennsylvania (hereinafter  
referred to as the "Borough").

**BACKGROUND**

Grantor is the owner of premises located at \_\_\_\_\_

\_\_\_\_\_,  
in the Borough of Denver, Lancaster County, Pennsylvania, as more specifically described in a deed  
recorded in Deed or Record Book \_\_\_\_\_, Volume \_\_\_\_\_, Page \_\_\_\_\_, or at Document No.  
\_\_\_\_\_ in the Office of the Recorder of Deeds in and for Lancaster County,  
Pennsylvania (hereinafter referred to as the "Premises"). Grantor is proceeding to build on and  
develop the Premises in such manner as requires the submission of a Small Project Stormwater Site  
Plan pursuant to the Denver Borough Stormwater Management Ordinance (hereinafter "SWM  
Ordinance").

Grantor's Small Project Stormwater Site Plan, which is expressly made a part hereof, as  
approved or to be approved by the Borough, provides for detention of stormwater within the confines  
of the Premises through the use of Stormwater Best Management Practices ("Stormwater BMPs").

In the interest of protecting the health, safety, and welfare of the residents of the Borough,  
the Borough requires that on-site Stormwater BMPs as shown on the Small Project Stormwater Site  
Plan be constructed and adequately maintained by Grantor, his heirs, personal representatives,  
successors and assigns. Any additional requirements imposed by the Borough are considered part of  
the Small Project Stormwater Site Plan.

The purpose of this Agreement and Declaration of Easement is to describe the ownership and  
maintenance responsibilities for the on-site Stormwater BMPs, which will be located on the Premises  
and to impose the ownership and maintenance responsibilities upon Grantor, his heirs, personal  
representatives and assigns and upon successor owners of the Premises, and set forth the rights of the  
Borough.

**NOW, THEREFORE**, intending to be legally bound hereby and in consideration of

receiving approval of its Small Project Stormwater Site Plan from the Board of Supervisors, and in consideration of receiving permits from the Borough to develop the Premises, Grantor, for Grantor and the heirs, personal representatives, successors and assigns of Grantor, covenant and declare as follows:

1. In accordance with the specifications identified within the Small Project Stormwater Site Plan, Grantor shall construct the on-site Stormwater BMPs, which will be owned by Grantor, his heirs, personal representatives, successors and assigns.

2. Grantor, his heirs, personal representatives, successors and assigns, shall adequately maintain the Stormwater BMPs, including all pipes and channels built to convey stormwater, as well as all structures, improvements, and vegetation provided to control the quantity and quality of the stormwater. Adequate maintenance is herein defined as good working condition so that these facilities are performing their design functions.

3. Grantor, his heirs, personal representatives, successors and assigns, shall inspect the Stormwater BMPs after all rainfall events exceeding 4-inch of precipitation in a 24-hour period.

4. Grantor agrees that this Agreement creates upon the Premises, for the benefit of all present and future owners of the Premises or part of the Premises, the Borough, and all other property owners affected by the stormwater facilities, the perpetual right, privilege and easement for the draining of stormwater in and through the Stormwater BMPs, and other stormwater facilities depicted on the Small Project Stormwater Site Plan submitted to the Borough by Grantor.

5. Grantor, his heirs, personal representatives, successors and assigns, hereby grants permission to the Borough, by its authorized agents and employees, to enter upon the Premises without prior notification at reasonable times and upon presentation of proper identification to inspect the Stormwater BMPs whenever the Borough deems necessary.

6. In the event the Grantor, or his heirs, personal representatives, successors and assigns, fails to maintain the Stormwater BMPs as shown on the Small Project Stormwater Site Plan and in good working condition, the Borough may enter upon the Premises and take whatever action it deems necessary to maintain said Stormwater BMPs and to charge the costs of such repairs to the Grantor, his heirs, personal representatives, successors and assigns. This provision shall not be construed to allow the Borough to erect any structure of permanent nature on the Premises unless such structure(s) were part of the approved Small Project Stormwater Site Plan. It is expressly understood and agreed that the Borough is under no obligation to routinely maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the Borough.

7. In the event that the Borough, 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 Grantor shall reimburse the Borough within thirty (30) days of receipt of invoice for all expenses incurred. The Borough has the right to file a municipal lien for unpaid costs and expenses that have not been reimbursed thirty (30) days after receipt of invoice. Any municipal lien filed pursuant to this Agreement shall be in the amount of all costs incurred by the Borough, plus a penalty of ten percent (10%) of such costs, plus the Borough's reasonable attorneys' fees.

8. The intent and purpose of this Agreement is to ensure the proper maintenance of the

Stormwater BMPs by the Grantor. This Agreement shall not be deemed to create any additional liability upon any party for damage(s) alleged to result from or be caused by nonpoint source pollution runoff. Furthermore, this Agreement imposes no liability of any kind whatsoever on the Borough, or its elected and appointed officials, agents and employees.

9. Grantor agrees to indemnify the Borough and all of its elected and appointed officials, agents and employees (hereafter collectively referred to as the "Indemnitees") against and hold Indemnitees 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 Indemnitees which arise as a result of the design, installation, construction or maintenance of the Stormwater BMPs or any omissions relating thereto. In the event that a claim arising from Grantor's actions or omissions relating to the installation, construction or maintenance of Stormwater BMPs on the Premises is asserted against Indemnitees, the Borough shall promptly notify Grantor, and Grantor shall defend, at his own expense, any suit based on the claim. If any judgment against Indemnitees shall be entered as a result of such claim, the Grantor agrees to indemnify Indemnitees and pay all costs and expenses stemming from said judgment.

10. This Agreement is not intended to, nor shall operate to limit the Borough's rights and remedies under the SWM Ordinance. The Borough may, in addition to the remedies prescribed herein, proceed with any action at law or in equity to bring about compliance with the Borough SWM Ordinance and this Agreement.

11. This Agreement shall be binding on Grantor, his heirs, personal representatives, administrators, executors, assigns, and any other successors in interests, in perpetuity.

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

DENVER BOROUGH  
Lancaster County, Pennsylvania

Attest: \_\_\_\_\_  
(Assistant) Secretary

By: \_\_\_\_\_  
(Vice) Chairman  
Board of Supervisors

[BOROUGH SEAL]

Witness:  
\_\_\_\_\_

GRANTOR:  
\_\_\_\_\_ (SEAL)

Print Name: \_\_\_\_\_

\_\_\_\_\_ (SEAL)

Print Name: \_\_\_\_\_

*All property owners must sign the Stormwater Management Agreement in the presence of a notary public who must complete the acknowledgment on the following page. If the property is jointly owned by husband and wife, both must sign.*

