

STORMWATER MANAGEMENT

STORMWATER MANAGEMENT SITE PLAN AND SITE REPORT

B. SWM SITE PLAN AND REPORT CONTENTS

The SWM Site Plan and SWM Site Report shall consist of all applicable calculations, maps, and plans. All SWM Site Plan materials shall be submitted to the Borough of Sugarcreek in a format that is clear, concise, legible, neat and well organized; otherwise, the SWM Site Plan shall be rejected. Appropriate sections from the Borough of Sugarcreek Subdivision and Land Development Ordinance, and other applicable local ordinances, shall be followed in preparing the SWM Site Plan.

1. SWM Site Plan shall include, but not be limited to:
 - (a) Plans shall be of one (1) size and in a size that meets the requirements for recording in the Office of the Recorder of Deeds of Venango County.
 - (1) Plans for tracts of less than 20 acres shall be drawn at a scale of one (1) inch equals no more than 50 feet;
 - (2) Plans for tracts of 20 acres or more shall be drawn at a scale of one (1) inch equals no more than 100 feet; and
 - (3) All lettering shall be drawn to a size to be legible if the plans are reduced to half size.
 - (b) The name of the development; name and location address of the property site; name, address, and telephone number of the Applicant and Owner of the property; and name, address, telephone number, email address, and seal and signature of the individual preparing the SWM Site Plan.
 - (c) The date of submission and dates of all revisions.
 - (d) A graphical and written scale on all drawings and maps.
 - (e) A north arrow on all drawings and maps.
 - (f) A location map at a minimum scale of one (1) inch equals 1,000 feet and illustrates the project relative to highways, municipalities or other identifiable landmarks.

- (g) Metes and bounds description of the entire tract perimeter.
- (h) Existing and final contours at intervals:
 - (1) Slopes less than 5%: no greater than one (1) foot;
 - (2) Slopes between 5 and 15%: no greater than two (2) feet;
 - (3) Steep slopes (greater than 15%), 5-foot contour intervals may be used.
- (i) Perimeters of existing waterbodies within the project area including stream banks, lakes, ponds, springs, field delineated wetlands or other bodies of water, sinkholes, flood hazard boundaries (FEMA delineated floodplains and floodways), areas of natural vegetation to be preserved, the total extent of the upstream area draining through the site, and overland drainage paths. Any areas necessary to determine downstream impacts, where required for proposed stormwater management facilities, must be shown.
- (j) The location of all existing and proposed utilities, on-lot wastewater facilities, water supply wells, sanitary sewers, and water lines on and within fifty (50) feet of property lines including inlets, manholes, valves, meters, poles, chambers, junction boxes, and other utility system components.
- (k) A key map showing all existing manmade features beyond the property boundary that may be affected by the project.
- (l) Soil names and boundaries with identification of the Hydraulic Soil Group classification including rock outcroppings.
- (m) Proposed impervious surfaces (structures, roads, paved areas, and buildings), including plans and profiles of roads and paved areas and floor elevations of buildings.
- (n) Existing and proposed land use(s).
- (o) Horizontal alignment, vertical profiles, and cross sections of all open channels, pipes, swales and other BMPs.
- (p) The location and clear identification of the nature of permanent stormwater BMPs.
- (q) The location of all erosion and sedimentation control facilities, shown on a separate E&S Plan.
- (r) A minimum twenty (20) foot wide access easement around all stormwater management facilities that would provide ingress to and egress from a

public right-of-way. In lieu of providing an easement to the public right-of-way, a note may be added to the plan granting the Borough of Sugarcreek or their designees access to all easements via the nearest public right-of-way.

- (s) Construction details for all drainage and stormwater BMPs.
- (t) Identification of short-term and long-term ownership, operations, and maintenance responsibilities.
- (u) Notes and Statements:
 - (1) A statement, signed by the landowner, acknowledging that the stormwater BMPs are fixtures that cannot be altered or removed without prior approval by the Borough of Sugarcreek.
 - (2) A statement referencing the Operation and Maintenance (O&M) Agreement and stating that the O&M Agreement is part of the SWM Site Plan.
 - (3) A note indicating that Record Drawings will be provided for all stormwater facilities prior to occupancy, or the release of the surety bond.
 - (4) The following signature block for the Qualified Professional preparing the Stormwater Management Plan:

"I, _____, hereby certify that the Stormwater Management Plan meets all design standards and criteria of the Stormwater Management Ordinance of the Borough of Sugarcreek.

- (5) The following signature block for the Municipal Engineer reviewing the Stormwater Management Plan:

"I, _____, have reviewed this Stormwater Management Plan in accordance with the Design Standards and Criteria of the Stormwater Management Ordinance of the Borough of Sugarcreek."

2. SWM Site Report shall include (but not be limited to):

- (a) General data including:
 - (1) Project name
 - (2) Project location - address of the property site
 - (3) Name, address, and telephone number of the Applicant and Owner of the property;
 - (4) Name, address, telephone number, email address, and seal and signature of the individual preparing the SWM Site Report;

(5) Date of submission and revisions.

(b) Project description narrative that clearly discusses the project and provides the following information:

(1) Narrative

- Statement of the regulated activity describing what is being proposed. Overall stormwater management concept with description of permanent stormwater management techniques, including construction specifications and materials to be used for stormwater management facilities.
- Expected project schedule
- Location map showing the project site and its location relative to release rate districts.
- Detailed description of the existing site conditions including a site evaluation completed for projects proposed in areas of carbonate geology or karst topography, and other environmentally sensitive areas such as brownfields.
- Total site area – pre and post, which must be equal or have an explanation as to why it is not
- Total site impervious area
- Total off-site areas
- Number and description of stormwater management facilities
- Type of development
- Pre-development land use
- Whether site is a water quality sensitive (WQS) development
- Whether site is in a defined sensitive area
- Types of water quality and recharge systems used, if applicable
- Complete hydrologic, hydraulic, and structural computations for all stormwater management facilities.
- A written maintenance plan for all stormwater features including detention facilities and other stormwater management elements.
- Identification of ownership and maintenance responsibility for all permanent stormwater management facilities.
- Other pertinent information, as required

(2) Summary Tables

- Pre-development Hydrologic Soil Group (HSG) assumptions, curve numbers (CN), Computation of average slope, hydraulic length, computed time of concentration
- Existing conditions runoff volume and peak rate of runoff
- Post-development runoff volume and peak rate of runoff
- Undetained areas, areas to ponds
- Land use for each subarea
- Hydrologic soil group (HSG) assumptions, curve numbers (CN)
- Time of concentration computed for each subarea

- Post-development peak rate of runoff routed into and out of ponds
 - Pond maximum return period design data including: maximum water surface elevation, berm elevation, and emergency spillway elevation
 - Water quality depth and volume requirements
- (3) Calculations
- Complete hydrologic, hydraulic and structural computations, calculations, assumptions, and criteria for the design of all stormwater BMPs.
 - Details of the berm embankment and outlet structure indicating the embankment top elevation, embankment side slopes, top width of embankment, emergency spillway elevation, perforated riser dimensions, pipe barrel dimensions and dimensions and spacing of antiseep collars.
 - Design computations for the control structures (pipe barrel and riser, etc).
 - A plot or table of the stage-storage (volume vs. elevation) and all supporting computations.
 - Routing computations.
- (4) Drawings
- Drainage area maps for all watersheds and inlets depicting the time of concentration path for both existing conditions and post-developed condition.
 - All stormwater management facilities must be located on a plan and described in detail including easements and buffer boundaries.
- (c) Reports that do not clearly indicate the above information may be rejected for review by the Municipal Engineer and will be returned to the Applicant.
- (d) Description of, justification, and actual field results for infiltration testing with respect to the type of test and test location for the design of infiltration BMPs.
- (e) The effect of the project (in terms of runoff volumes, water quality, and peak flows) on surrounding properties and aquatic features and on any existing municipal stormwater collection system that may receive runoff from the project site.
- (f) Description of the proposed changes to the land surface and vegetative cover including the type and amount of impervious area to be added.
- (g) Identification of short-term and long-term ownership, operation, and maintenance responsibilities as well as schedules and costs for inspection and maintenance activities for each permanent stormwater or drainage BMP, including provisions for permanent access or maintenance easements.

3. Supplemental information to be provided prior to recording of the SWM Site Plan, as applicable:
 - (a) Signed and executed Operations and Maintenance Agreement.
 - (b) Signed and executed easements, as required for all on-site and off-site work.
 - (c) An Erosion and Sedimentation Control Plan and approval letter from the Venango Conservation District.
 - (d) A NPDES Permit.
 - (e) Permits from Pennsylvania DEP and U.S. Army Corps of Engineers.
 - (f) Geologic assessment.
 - (g) Geotechnical or soils investigation report, including boring logs, compaction requirements, and recommendations for construction of detention basins.
 - (h) A Highway Occupancy Permit from PENNDOT when utilization of a PENNDOT storm drainage system is proposed or when proposed facilities would encroach onto a PENNDOT right-of-way.

C. SWM SITE PLAN AND REPORT SUBMISSION

1. The Applicant shall submit the SWM Site Plan and Report for the Regulated Activity.
2. Five (5) copies of the SWM Site Plan and Report shall be submitted and be distributed as follows:
 - (a) Two (2) copies to the Borough of Sugarcreek accompanied by the requisite executed Review Fee Reimbursement Agreement, as specified in this Ordinance
 - (b) One (1) copy to the Municipal Engineer
 - (c) One (1) copy to the Venango County Planning Commission
 - (d) One (1) copy to the Venango Conservation District
3. Additional copies shall be submitted as requested by the Borough of Sugarcreek or Pennsylvania DEP.

D. SWM SITE PLAN AND REPORT REVIEW

1. The Borough of Sugarcreek shall require receipt of a complete SWM Site Plan and Report as specified in this Ordinance. The Borough of Sugarcreek shall review the SWM Site Plan and Report for consistency with the purposes, requirements, and intent of this Ordinance.
2. The Borough of Sugarcreek shall not approve any SWM Site Plan and Report that is deficient in meeting the requirements of this Ordinance. At its sole discretion and in accordance with this Article, when a SWM Site Plan and Report is found to be deficient, the Borough of Sugarcreek may disapprove the submission and require a resubmission.

3. The Borough of Sugarcreek shall notify the Applicant in writing within forty-five (45) calendar days whether the SWM Site Plan and Report is approved or disapproved if the SWM Site Plan and Report is not part of a Subdivision or Land Development Plan. If the SWM Site Plan and Report involves a Subdivision or Land Development Plan, the timing shall following the subdivision and land development process according to the Municipalities Planning Code and the Borough of Sugarcreek Subdivision and Land Development Ordinance.
4. The Borough of Sugarcreek shall not issue a building permit for any Regulated Activity if the SWM Site Plan and Report has been found to be inconsistent with this Ordinance, as determined by the Borough of Sugarcreek. All required permits from Pennsylvania DEP must be obtained prior to issuance of a building permit.

E. MODIFICATION OF PLANS

A modification to a submitted SWM Site Plan and Report for a development site that involves a change in stormwater management facilities or techniques, or that involves the relocation or re-design of stormwater management facilities, or that is necessary because soil or other conditions are not as stated on the SWM Site Plan as determined by the Borough of Sugarcreek, shall require a resubmission of the modified SWM Site Plan in accordance with this Ordinance.

F. RESUBMISSION OF DISAPPROVED SWM SITE PLAN AND REPORT

A disapproved SWM Site Plan and Report may be resubmitted with the revisions addressing the Borough of Sugarcreek's concerns documented in writing, to the Borough of Sugarcreek in accordance with this Ordinance. The applicable fee must accompany a resubmission of a disapproved SWM Site Plan and Report.

G. AUTHORIZATION TO CONSTRUCT AND TERM OF VALIDITY

The Borough of Sugarcreek's approval of a SWM Site Plan and Report authorizes the Regulated Activities contained in the SWM Site Plan for a maximum term of validity of five (5) years following the date of approval. The Borough of Sugarcreek may specify a term of validity shorter than five (5) years in the approval for any specific SWM Site Plan. Terms of validity shall commence on the date the Borough of Sugarcreek signs the approval for a SWM Site Plan. If stormwater management facilities included in the approved SWM Site Plan have not been constructed, or if a Record Drawing of these facilities has not been approved, within this time, then the Borough of Sugarcreek may consider the SWM Site Plan disapproved and may revoke any and all permits or approvals.

H. RECORD DRAWINGS, COMPLETION CERTIFICATE AND FINAL INSPECTION

1. The Applicant shall be responsible for providing Record Drawings of all stormwater BMPs included in the approved SWM Site Plan. The Record Drawing and an explanation of any discrepancies with the approved SWM Site

Plan shall be submitted to the Borough of Sugarcreek as a prerequisite for the release of the guarantee or issuance of an occupancy permit.

2. The Record Drawing shall include a certification of completion signed by a Qualified Professional verifying that all permanent stormwater BMPs have been constructed according to the approved SWM Site Plan and Report.
 - (a) Drawings shall show all approved revisions and elevations and inverts to all manholes, inlets, pipes, and stormwater control facilities.
3. After receipt of the Record Drawing, the Borough of Sugarcreek may conduct a final inspection prior to certification of completion by the Borough of Sugarcreek.

Small Project Application for Stormwater Management

If the Total Impervious Surface Area is LESS THAN 1,000 ft ² , complete Section 1 & 2 and sign below.
If the Total Impervious Surface Area is BETWEEN 1,000 ft ² and 2,499 ft ² , complete Section 1 & 2 and sign below.
If the Total Impervious Surface Area is BETWEEN 2,500 ft ² and 5,000 ft ² , complete Sections 1,2 & 3 and sign the application.
If the Total Impervious Surface Area EXCEEDS 5,000 ft ² , please contact your stormwater reviewing agency.

Section 1

Project Name: _____ Parcel ID# _____

Name of Applicant: _____ Phone Number: _____

Address: _____

Impervious surfaces are any surface that prevents the infiltration of water into the ground. This includes house roofs, driveways, sidewalks, patios, garage roofs, storage sheds, and similar surfaces. Per _____ municipal's stormwater management regulations; stormwater management facilities are required whenever more than 2,500 square feet of new impervious surface is proposed. Existing impervious area and redevelopment are not considered "new" impervious surfaces for this calculation.

Section 2

Complete this Table to Calculate Total Impervious Surface Area					
Surface Type	Length (ft.)	X	Width (ft.)	=	Proposed Impervious Area (ft ²)
Buildings (area to each downspout)		x		=	
		x		=	
		x		=	
		x		=	
Driveway		x		=	
		x		=	
		x		=	
Parking Areas		x		=	
		x		=	
Patios/Walks		x		=	
		x		=	
		x		=	
Other		x		=	
		x		=	
		x		=	
Total Impervious Surface Area (sum of all areas)					

Based upon the information you have provided, a Stormwater Management Plan IS NOT required for this development activity. By executing below, the Owner acknowledges the following:

- I hereby declare that I am the Property Owner, or Owner's Representative
- The information provided on this application is accurate to the best of my knowledge. I understand that submission of inaccurate information may result in a stop work order and/or revocation of permit(s).
- Municipal representatives are hereby granted access to the above described property as may be required for review and inspection of this project

Signature: _____ Date: _____

Section 3

Credits

Credit 1: DISCONNECTION OF IMPERVIOUS AREA

When runoff from impervious area is directed to a pervious area that allows for infiltration, filtration, and increased time of concentration, all or parts of the impervious area may qualify as Disconnected Impervious Area (DIA). DIA can reduce the volume of stormwater that needs to be managed. If the criteria listed below can be met, use this worksheet to calculate the DIA Credit and determine the portion of the impervious area that can be excluded from the calculation of impervious area to be managed for stormwater control.

Criteria

An impervious area is considered to be completely, or partially, disconnected if it meets the following:

- Flow path at the discharge area has a positive slope of $\leq 5\%$
- Soil at discharge is not classified as hydrologic soil group "D"
- Rooftop area draining to a single downspout is $\leq 500 \text{ ft}^2$
- Paved area draining to a discharge is $\leq 1,000 \text{ ft}^2$
- Flow path of paved impervious area is not more than 75'
- A gravel strip or other spreading device is used at paved discharges

Length of Pervious Flow Path from discharge point * (ft.)	DIA Credit Factor
0 – 14	1.0
15 – 29	0.8
30 – 44	0.6
45 – 59	0.4
60 – 74	0.2
75 or more	0

*Flow path is the length from the discharge to the nearest property line or channelized flow (measured along the ground slope). Pervious flow path must be at least 15 feet from any impervious surfaces.

Calculate DIA Credit & Required Capture Volume									
Surface Type	Proposed Impervious Area (from previous sheet)	X	DIA Credit Factor	=	Impervious Area to be Managed	÷	6	=	Required Capture Volume (ft ³)
Building (area per downspout)		x		=		÷	6	=	
		x		=		÷	6	=	
		x		=		÷	6	=	
		x		=		÷	6	=	
Driveway		x		=		÷	6	=	
		x		=		÷	6	=	
		x		=		÷	6	=	
Parking Areas		x		=		÷	6	=	
		x		=		÷	6	=	
Patios/Walks		x		=		÷	6	=	
		x		=		÷	6	=	
		x		=		÷	6	=	
		x		=		÷	6	=	
Other		x		=		÷	6	=	
		x		=		÷	6	=	
		x		=		÷	6	=	
Total Required Capture Volume									

Credit 2: TREE PLANTING

Trees provide many stormwater benefits such as intercepting rainfall, increasing evapotranspiration and increasing time of concentration. The total volume of stormwater to be managed can be further reduced by planting new trees. Provided the criteria below are met, the Total Required Capture Volume can be reduced per the following table:

Deciduous Trees	Evergreen Trees
6 ft ³ per tree planted	10 ft ³ per tree planted

Criteria

To receive credit for planting trees, the following must be met:

- Trees must be native species (see list below), Non-native species are not eligible
- Trees shall be a minimum 1" caliper tree and 3 feet tall shrub (min).
- Trees shall be adequately protected during construction.
- Trees shall be maintained until redevelopment occurs.
- No more than 25% of the required capture volume can be mitigated through the use of trees.
- Dead trees shall be replaced within 12 months.

Native Species Trees (Common Name)

• Blackgum	• Oak, (white, swamp white, scarlet, pin, red, black)
• Cucumber magnolia	• Dogwood (silky or red osier)
• Hophornbeam	• Tuliptree
• Maple, (sugar, red or silver)	• Willow, black
• Pine, (pitch or eastern white)	• Chokeberry (red or black)
• Ironwood	• Basswood, American
• Hickory, sweet pignut or shag-bark	• Serviceberry, (downy or shadbush)
• Sycamore, American	• Elderberry
• Cotton-wood, eastern	• Witch hazel
• Aspen, big-tooth or quaking	• Mountain laurel
• Cherry, black	

Calculate the Capture Volume to be Managed by Structural BMPs

	Required Capture Volume (ft³)
-	
	- Tree Planting Credit (ft³)
	= Capture Volume to be Managed by Structural BMPs (ft³)

Sizing of BMP

	How much of the Volume will you manage with a Rain Garden?
+	
	How much of the Volume will you manage with a Dry Well or Infiltration Trench?
	Capture Volume to be managed (ft³)

Enter these volumes into the *Small Project SWM Plan Worksheet* on the following page.

Small Project SWM Plan Worksheet

Based upon the information you have provided a **Stormwater Plan IS Required** for this development activity. The Stormwater Management Ordinance developed through Venango County's Act 167 County-Wide Stormwater Management Plan (Plan) regulates compliance requirements for Stormwater management in this jurisdiction. A complete copy of the Plan can be obtained from the County Planning office.

Development activities shall begin only after _____ (municipality) approves a stormwater management plan. The Plan will assist you in preparing the necessary information and plans for _____ (municipality) to review and approve. **This document will constitute an approved plan if all of the relevant details are to be installed in their entirety AND no part of the stormwater system adversely affects any other property, nor adversely affects any septic systems or drinking water wells on this, or any other, parcel.** If an alternative system is to be used a plan will need to be submitted to _____ (municipality) for approval. A design by a qualified professional may be required for more complex sites.

PLEASE INITIAL EACH APPLICABLE BOX BELOW TO INDICATE THE STORMWATER MANAGEMENT PLAN FOR THIS SITE

	Minimum Control #1 Erosion & Sediment Pollution Control Minimum Control #2: Source Control of Pollution Minimum Control #3: Preservation of Natural Drainage Systems and Outfalls
--	---

	The relevant details from Venango County's Act 167 County-Wide Stormwater Management Plan will be installed in their entirety AND the system will be located as not to adversely affect other property, nor any septic systems or drinking water wells on this, or any other, parcel.
--	---

To meet this requirement, the following will be installed and maintained:

Capture Volume to be managed (ft ³)			Conversion	Surface Area of BMPs (ft ²)
	By Rain Garden 6" ponding; 2' soil depth	x	1.20	
	Dry Well or Infiltration Trench 2½' aggregate depth	x	1.25	
	Total		Total	

	In lieu of meeting the above, an alternative and/or professional design is attached for approval AND the system will be located as not to adversely affect other property, any septic systems or drinking water wells on this, or any other, parcel.
--	--

	Site Sketch Plan showing (May Use Attached Sheet): <ul style="list-style-type: none"> ▪ Property lines with dimensions ▪ Proposed buildings with dimensions ▪ Proposed impervious surfaces with dimensions ▪ Proposed septic system, if applicable ▪ Proposed well site, if applicable ▪ Proposed stormwater management system(s)
--	--

	Operation and Maintenance Agreement
--	--

Condition on Approval – The Stormwater Management Plan must be fully implemented prior to a request for final inspection of proposed structures or issuance of a zoning permit.

Acknowledgement – By executing below, the Owner acknowledges the following:

- I hereby declare that I am the Property Owner, or Owner's Representative
- The information provided on this application is accurate to the best of my knowledge. I understand that submission of inaccurate information may result in a stop work order and/or revocation of permit(s).
- Municipal representatives are hereby granted access to the above described property as may be required for review and inspection of this project

Applicant Signature: _____ Date: _____

County SWM Administrator: _____ Date: _____

Municipal Approval: _____ Date: _____