

APPENDIX A

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

**In
West Sadsbury Township,
Chester County, Pennsylvania**

TABLE OF CONTENTS

I.	Introduction	3
II.	Importance of Stormwater Management	3
III.	Standard Terms Used in the Manual	3
IV.	Determining What Type of Stormwater Management Submission is Needed	4
V.	Using the Stormwater Management Worksheets	6
VI.	Minor Stormwater Site Plan Requirements	7
VII.	Selecting Stormwater BMPs	9
VIII.	Stormwater Management Worksheets	9
IX.	Stormwater Management/ BMP Facilities & Maintenance Agreement	9

I. Introduction:

This design manual has been created as a tool to help property owners manage stormwater on their property and streamline the process of designing on-site stormwater management facilities for Regulated Activities that are new, relatively minor residential and accessory structure projects (less than 2,000 square feet). Through the use of this manual, residents have the ability to determine the appropriate facilities for their property, project and budget. This design method is not intended to be used with large-scale subdivision / land development projects or activities that include infrastructure such as roadways.

The Stormwater Best Management Practices (Stormwater BMPs) listed in this manual should be used as a guide and are not a comprehensive list of options. Residents should contact West Sadsbury Township to discuss alternative solutions for site specific applications.

II. Importance of Stormwater Management:

Stormwater is the runoff produced by precipitation, snow melt, or ice melt. When land is developed or changed, the flow patterns of water, volume of water and quality of water are also changed. Land development activities can affect characteristics of stormwater runoff, including the rate of runoff, volume of runoff, and quality of runoff. When runoff is not managed, the increased volume may aggravate flooding.

The objective of stormwater management is to prevent or mitigate the adverse impacts of the increase in rate and volume of stormwater runoff, while also protecting health, safety, and property. Stormwater BMPs aim to maintain water quality, encourage infiltration in appropriate areas, promote groundwater recharge, maintain the natural drainage characteristics of the site to the maximum extent practicable, and protect stream banks and beds.

III. Standard Terms Used in the Manual:

BMP (Best Management Practice) – Activities, facilities, designs, measures, or procedures used to manage stormwater impacts from Regulated Activities, to provide water quality treatment, infiltration, volume reduction, and/or peak rate control, to promote groundwater recharge, and to otherwise meet the purposes of this Ordinance. Stormwater BMPs are commonly grouped into one (1) of two (2) broad categories or measures: “structural” or “nonstructural.” In this Ordinance, nonstructural BMPs or measures refer to operational and/or behavior-related practices that attempt to minimize the contact of pollutants with stormwater runoff whereas structural BMPs or measures are those that consist of a physical device or practice that is installed to capture and treat stormwater runoff. Structural BMPs include, but are not limited to, a wide variety of practices and devices from large-scale retention ponds and constructed wetlands to small-scale underground treatment systems, infiltration facilities, filter strips, low impact design, bioretention, wet ponds, permeable paving, grassed swales, riparian or forested buffers, sand filters, detention basins, and manufactured devices. Structural stormwater BMPs are permanent appurtenances to the Site.

Disturbed Area – Land area disturbed by or where an Earth Disturbance Activity is occurring or has occurred.

Earth Disturbance (or Earth Disturbance Activity) – A construction or other human activity which disturbs the surface of the land, including, but not limited to, clearing and grubbing; grading; excavations; embankments; road maintenance; land development; building construction; and the moving, depositing, stockpiling, or storing of soil, rock, or earth materials.

Flow Path – The path that stormwater follows from the discharge point to the nearest property line or channelized flow (i.e. stream, drainage ditch, etc.). The length of the path is measured along the ground slope.

Impervious Surface (or Impervious Area) - A surface that has been compacted or covered with a layer of material so that it prevents or is resistant to infiltration of water, including but not limited to: structures such as roofs, buildings, storage sheds; other solid, paved or concrete areas such as streets, driveways, sidewalks, parking lots, patios, swimming pools, tennis or other paved courts; or athletic playfields comprised of synthetic turf materials. For the purposes of determining compliance with this Ordinance, compacted soils or stone surfaces used for vehicle parking and movement shall be considered impervious. Surfaces that were designed to allow infiltration (i.e. areas of porous pavement) will be considered on a case-by-case basis by the Municipal Engineer, based on appropriate documentation and condition of the material, etc.

Karst – A type of topography that is formed over limestone or other carbonate rock formations by dissolving or solution of the rock by water, and that is characterized by closed depressions, sinkholes, caves, a subsurface network of solution conduits and fissures through which groundwater moves, and no perennial surface drainage features.

Minor Stormwater Site Plan – A site plan prepared and submitted for Regulated Activities which meet the Small Project and Minor Stormwater Site Plan criteria. The plan depicts existing conditions on the property, proposed impervious areas, and, if required, the location of proposed Stormwater BMPs.

Regulated Activities – Any Earth Disturbance Activity(ies) or any activity that involves the alteration or development of land in a manner that may affect stormwater runoff.

Runoff – Any part of precipitation that flows over the land surface.

Small Project - Regulated Activities that involve less than two thousand (2,000) square feet of Proposed Impervious Surfaces and less than ten thousand (10,000) square feet of proposed Earth Disturbance are eligible to apply the modified requirements presented in this manual, *Simplified Approach to Stormwater Management for Small Projects*, provided that there are not known Site or local conditions that may preclude the use of any techniques included in the Simplified Approach.

IV. Determining What Type of Stormwater Management Submission is Needed:

The following chart provides a guide to determine what type of stormwater submission is needed. Some projects will be eligible for an exemption from preparing a stormwater management plan, but documentation of the project must still be filed with West Sadsbury Township. Completion of the **West Sadsbury Township Stormwater Management Worksheets** will determine what type of documentation is required for each project.

This manual is designed to assist those with Regulated Activities that qualify for the use of a Minor Stormwater Site Plan. If a SWM Site Plan is required in accordance with the West Sadsbury Township Stormwater Management Ordinance, **please consult a qualified professional (ex. Engineer, Surveyor).**

Stormwater Management Ordinance Status	Proposed New Impervious Area	Proposed Earth Disturbance Area	Next Steps
Eligible for Exemption	Less than 1,000 ft ²	Less than 5,000 ft ²	File Stormwater Management Worksheet
Small Project	1,000 ft ² to ≤ 2,000 ft ²	5,000 ft ² to ≤ 10,000 ft ²	Prepare a Minor Stormwater Site Plan
Non-Exempt	Greater than 2,000 ft ²	Greater than 10,000 ft ²	Prepare a SWM Site Plan per Article IV

*Note: Regulated Activities must meet BOTH Proposed New Impervious Area and Proposed Earth Disturbance requirements to be eligible for an Exemption or a Small Project.

The Applicant should first review the planned project with West Sadsbury Township to confirm the following:

- That the proposed project is not otherwise exempt from the stormwater management control and the engineered Stormwater Management Site Plan requirements of the Municipality’s Stormwater Management Ordinance;
- That the proposed project is eligible to follow the Small Project-Minor Stormwater Site Plan requirements;
- To determine which components of the proposed project must be included in the calculation of “impervious surfaces (areas)”;
- Whether any local conditions are known to the Municipality that would preclude the use of any of the techniques included in this Simplified Approach.

The following shall be submitted to West Sadsbury Township depending on the proposed project:

- Eligible for Exemption
 - Stormwater Management Worksheet

- Small Project
 - Stormwater Management Worksheet
 - Owner Acknowledgement (signed)
 - Minor Stormwater Site Plan
 - Signed and notarized Stormwater Best Management Practices Operation, Maintenance and Inspection Plan and Agreement. Following approval and signature by the Municipality, the Landowner must have the Agreement recorded at the Chester County Office of the Recorder of Deeds, so that the Agreement will be applicable to future landowners.
- Non-Exempt
 - SWM Site plan and associated calculations prepared by a Professional Engineer, Landscape Architect or Surveyor

V. Using the Stormwater Management Worksheets:

Determining the new impervious area of a proposed project is the first step in using this Simplified Approach. Completing the West Sadsbury Township Stormwater Management Worksheets will assist the property owner, or applicant, and West Sadsbury Township in determining the impervious area of a proposed project and providing guidance through ensuing steps.

Stormwater Management Worksheets can be obtained from the West Sadsbury Township Municipal Office.

Step 1: Step 1 of the West Sadsbury Township Stormwater Management Worksheet provides a table and directions on how to calculate the new impervious area proposed to be created. If the total new impervious area is less than 1,000 square feet, the project may be exempt from the volume, rate, and SWM Site Plan requirements of the West Sadsbury Township Stormwater Management Ordinance. After completing Step 1 of the worksheet, the applicant will sign the Acknowledgement at the top of the sheet and file it with West Sadsbury Township.

West Sadsbury Township will use this as a record of exempt projects and keep a running total of proposed impervious area since the adoption of the West Sadsbury Township Stormwater Management Ordinance. After exceeding 1,000 square feet of impervious area since the adoption of the West Sadsbury Township Stormwater Management Ordinance, a property owner will need to prepare a Minor Stormwater Site Plan or a Stormwater Management Site Plan in accordance with Article IV.

However, applicants shall note that Regulated Activities that meet the exemption criteria may be required to manage stormwater runoff and provide plans and/or calculations as required in this ordinance should West Sadsbury Township determine that there is a potential for stormwater runoff associated with the proposed Regulated Activity to adversely affect adjacent or downstream public or private properties.

If the total new impervious area is 1,000 square feet or greater and less than 2,000 square feet, the applicant will go on to Step 2. If the Regulated Activity involves only Earth Disturbance between 5,000 square feet to less than 10,000 square feet, the applicant shall contact West Sadsbury Township for additional guidance.

Step 2: Step 2 of the West Sadsbury Township Stormwater Management Worksheet provides guidance to calculate the total volume of stormwater runoff from new impervious surfaces that must be controlled using stormwater BMPs. Upon completion of these calculations, continue to Step 3.

Step 3: Step 3 of the West Sadsbury Township Stormwater Management Worksheet provides guidance regarding the preparation of a Minor Stormwater Site Plan, as outlined in this design manual, for approval by West Sadsbury Township. This includes determining the types, sizes, and location of proposed Stormwater BMPs to be employed for a given project. The worksheets, Minor Stormwater Site Plan, and Owner Acknowledgement will be submitted to West Sadsbury Township for approval. West Sadsbury Township will use this submission as a record to keep a running total of proposed impervious area since the adoption of the West Sadsbury Township Stormwater Management Ordinance, and to monitor the installation of the required Stormwater BMPs necessary to support the project.

VI. Minor Stormwater Site Plan Requirements

A Minor Stormwater Site Plan depicts the existing conditions of a property and the location of proposed impervious surfaces. Depicting the relationship between the Regulated Activities and distances to things like property lines, streams, and vegetated areas will help determine if the stormwater runoff created by the proposed project can be managed naturally within the property or if additional Stormwater BMPs are needed to accommodate the stormwater runoff.

If a project requires the submission of a Minor Stormwater Site Plan or a plan in support of an Exemption, the applicant shall prepare and submit to West Sadsbury Township a Minor Stormwater Site Plan and the West Sadsbury Township Stormwater Management Worksheet. The Chester County GIS Office can provide assistance to applicants to obtain property maps of existing features. A Minor Stormwater Site Plan depicting the key features of the site must be drawn to scale and show the following:

- Property owner name, address, email and phone number
- Property address (if different from owner address)
- Tax Parcel ID number
- Name, address, phone number & email address of plan preparer
- Property boundary.
- Site conditions (grassed areas, agricultural fields, direction of slope and stormwater flow on the property).
- Location of all existing and proposed structures (house, driveway shed, addition, etc.) and any existing and proposed downspouts. Include the dimensions of proposed structures.

- Distance from proposed downspouts to property line.
- All existing and proposed driveways and other impervious areas (stone and gravel driveways are considered impervious).
- Natural features such as streams, wetlands, floodplains, tree lines and other vegetation on the property and within 50 feet of the property line.
- Distance from proposed structures or downspouts along the stormwater flow path to any stream or wooded area.
- Any other pertinent information that may be significant to the project site (existing drainage ways, steep slopes, exposed bedrock, upslope drainage areas, etc.).
- Wells and on-site sanitary sewer systems (septic tank, drainfield, etc.).
- Surface and subsurface utilities.
- Existing and proposed easements (gas, electric, stormwater, water, sewer, etc.).

If Stormwater BMPs are required, the following information must also be shown on the plan:

- Location and size of proposed Stormwater BMPs.
- Details of BMPs as necessary for construction.

Other Considerations for Minor Stormwater Management Plans:

- For Minor Stormwater Management Plans, soil testing is highly recommended to select and apply the appropriate Stormwater BMPs. The use of soil maps, infiltration tests, and/ or perc tests may provide the applicant basic information about soil characteristics.
- Proposed stormwater management facilities must be designed to handle flows from the contributing area.
- The site shall not have any pre-existing stormwater drainage-related problems (as verified by West Sadsbury Township), at the discretion of West Sadsbury Township.
- Water quality shall be protected per Chapter 93 of PA Code.
- West Sadsbury Township may inspect all Stormwater BMPs during and after construction / installation.
- Infiltration BMPs should not be constructed nor receive runoff until the entire contributory drainage area has achieved final stabilization.
- Ensure that infiltration in geologically susceptible areas such as, but not limited to, carbonate geology / karst topography do not cause adverse effects. The Minor Stormwater Site Plan should incorporate steps to ensure that salt or chloride will not contaminate the groundwater.
- Selected Stormwater BMPs shall be designed, constructed, and maintained in accordance with the manufacturer's recommendation, the *PA Stormwater Management BMP Manual*, or other written guidance acceptable to West Sadsbury Township.
- Proposed sump pumps shall discharge to infiltration or vegetative Stormwater BMPs to the maximum extent practicable and not adversely impact adjacent and downstream properties.

VII. Selecting Stormwater BMPs

If the submission of a Minor Stormwater Management Plan including the use of Stormwater BMPs is required, the applicant should review the compiled information in the *PA Stormwater Management BMP Manual*. This document identifies Stormwater BMPs that have been deemed to be of a nature and cost that will accomplish the goals of the Chester County Stormwater Management Plan, while not unduly burdening the residents. It will then be the Owner's responsibility to select a facility, determine the appropriate size and agree to construct and maintain that facility or facilities. The property owner is encouraged to utilize both multiple and hybrid versions of the facilities, as outlined in the documents mentioned above.

The applicant may choose to install a Stormwater BMP facility as shown in the Stormwater Management Worksheets. The Stormwater BMP facility shall be constructed in accordance with the associated construction details, requirements and notes.

VIII. Stormwater Management Worksheets

Stormwater Management Worksheets can be obtained from the West Sadsbury Township Municipal Office.

IX. Stormwater Management/BMP Facilities and Maintenance Agreement

It is the Landowner's responsibility to properly maintain BMPs. It is also the Landowner's responsibility to inform any future buyers of the function, operation, and maintenance needed for any BMPs on the property prior to the purchase of the property. The maintenance agreement outlines the inspection and maintenance required for each type of BMP, the responsibilities of the Landowner, and the rights of the Municipality in regards to inspection and enforcement of the maintenance requirements.

The Operation, Maintenance and Inspection Plan and Agreement must be signed, notarized and submitted to the Municipality. Following approval and signature by the Municipality, the Landowner must have the Agreement recorded at the Chester County Office of the Recorder of Deeds so that the Agreement will be applicable to future landowners.

The Operation, Maintenance and Inspection Plan and Agreement can be obtained from the West Sadsbury Township Municipal Office.