

APPENDIX A

**OPERATION AND MAINTENANCE (O&M) AGREEMENT FOR
STORMWATER MANAGEMENT PRACTICES**

OPERATION AND MAINTENANCE (O&M) AGREEMENT

STORMWATER MANAGEMENT PRACTICES

THIS AGREEMENT, made and entered into this ____ day of _____, 20____, by and between _____, (hereinafter the "Landowner"), and Hamiltonban Township, Adams County, Pennsylvania, (hereinafter "Hamiltonban Township");

WITNESSETH

WHEREAS, the Landowner is the legal or equitable owner of certain real property as recorded by deed in the land records of Adams County, Pennsylvania, Deed Book _____ at page _____, (hereinafter "Property").

WHEREAS, the Landowner is proceeding to build and develop the Property; and

WHEREAS, the Operation and Maintenance Plan (O&M Plan) approved by Hamiltonban Township for the property identified herein, which is attached hereto as Appendix A and made part hereof, as approved by Hamiltonban Township, provides for management of stormwater within the confines of the Property through the use of Stormwater Management Best Management Practices (Stormwater BMPs); and

WHEREAS, Hamiltonban Township, and the Landowner, his successors and assigns, agree that the health, safety, and welfare of the residents of the Hamiltonban Township and the protection and maintenance of water quality require that on-site Stormwater BMPs be constructed and maintained on the Property; and

WHEREAS, Hamiltonban Township requires, through the implementation of the approved Stormwater Management Site Plan (SWM Site Plan), that Stormwater BMPs as required by said SWM Site Plan and the Hamiltonban Township Stormwater Management Ordinance be constructed and adequately operated and maintained by the Landowner, successors, and assigns.

NOW, THEREFORE, in consideration of the foregoing promises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

1. The Landowner shall construct, or cause the construction of, the Stormwater BMPs in accordance with the plans and specifications identified in the SWM Site Plan.

2. The Landowner shall operate and maintain the Stormwater BMPs as shown on the SWM Site Plan in good working order in accordance with the specific operation and maintenance requirements noted on the approved O&M Plan.
3. The Landowner hereby grants permission to Hamiltonban Township, its authorized agents and employees, to enter upon the property, at reasonable times and upon presentation of proper credentials, to inspect the Stormwater BMPs whenever Hamiltonban Township deems it appropriate. Whenever possible, Hamiltonban Township shall notify the Landowner prior to entering the property.
4. In the event the Landowner fails to operate and maintain the Stormwater BMPs as provided in the O&M Plan, Hamiltonban Township or its representatives may enter upon the Property and take whatever action is deemed necessary to maintain said BMPs. It is expressly understood and agreed that Hamiltonban 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 Hamiltonban Township including engineering and legal fees incurred to enforce this agreement.
5. In the event that Hamiltonban 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 Landowner shall reimburse Hamiltonban Township for all expenses (direct and indirect) incurred within ten (10) days of receipt of invoice from Hamiltonban Township.
6. The intent and purpose of this Agreement is to ensure the proper maintenance of the onsite Stormwater BMPs by the Landowner; provided, however, that this Agreement shall not be deemed to create or affect 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 Hamiltonban Township 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 BMPs by the Landowner or Hamiltonban Township.
8. Hamiltonban Township intends to inspect the Stormwater BMPs at a minimum of once every three (3) years to ensure their continued functioning.

This Agreement shall be recorded at the Office of the Recorder of Deeds of Adams County, Pennsylvania, and shall constitute a covenant running with the Property and/or equitable servitude, and shall be binding on the Landowner, his administrators, executors, assigns, heirs, and any other successors in interests, in perpetuity.

ATTEST:

WITNESS the following signatures and seals:

For Hamiltonban Township: (SEAL)

<< Title >>

For the Landowner:

<< Title >>

CERTIFICATION

I, _____, a Notary Public in and for the county and state aforesaid, whose commission expires on the _____ day of _____, 20____, do hereby certify that _____, whose name(s) is/are signed to the foregoing Agreement bearing date of the _____ day of _____, 20____ has acknowledged the same before me in my said county and state.

GIVEN UNDER MY HAND THIS _____ day of _____, 20____.

NOTARY PUBLIC

(SEAL)

APPENDIX B

NOXIOUS AND INVASIVE PLANT CONTROL

NOXIOUS AND INVASIVE PLANT CONTROL

A list of noxious and invasive plants in Pennsylvania may be found in several locations:

The Pennsylvania Code

7 Pa. Code § 110. Noxious Weeds

§110.1. Noxious weed control list.

Under section 3(b) of the Noxious Weed Control Law (3 P.S. § 255.3(b)), the Noxious Weed Control Committee establishes the following noxious weed control list:

- (1) *Cannabis sativa*, commonly known as marijuana.
- (2) The *Lythrum salicaria* Complex: Any nonnative *Lythrum* including, *Lythrum salicaria* and *Lythrum virgatum*, their cultivars and any combination thereof.
- (3) *Cirsium arvense*, commonly known as Canadian thistle.
- (4) *Rosa multiflora*, commonly known as multiflora rose.
- (5) *Sorghum halepense*, commonly known as Johnson grass.
- (6) *Carduus nutans*, commonly known as musk thistle.
- (7) *Cirsium vulgare*, commonly known as bull thistle.
- (8) *Datura stramonium*, commonly known as jimson weed.
- (9) *Polygonum perfoliatum*, commonly known as mile-a-minute.
- (10) *Puerria lobata*, commonly known as kudzuvine.
- (11) *Sorghum bicolor* cv. *drummondii*, commonly known as shattercane.
- (12) *Heracleum mantegazzianum*, commonly known as Giant Hogweed.
- (13) *Galega officinalis*, commonly known as Goatsrue.

Pennsylvania Department of Conservation and Natural Resources (DCNR)

The PA Department of Conservation and Natural Resources (DCNR) lists Invasive Exotic Plants in Pennsylvania on their website:

<http://www.dcnr.state.pa.us/forestry/invasivetutorial/List.htm>

A copy of the (DCNR) publication "Invasive Plants in Pennsylvania" (rev. 2006) may be found on their web site:

www.dcnr.state.pa.us

A listing of plants is included on the following page.

Invasive Plants in Pennsylvania

SCIENTIFIC NAME	COMMON NAME	PLANT FORM	NOTES
The species below are serious threats to our native ecosystems. Many have been designed as "Noxious Weeds" by the PA Department of Agriculture and are also a major concern to our agricultural community.			
<i>Aegopodium podagraria</i>	Goutweed	Flower	Commonly planted in the past and escaped; spreads aggressively by roots
<i>Alliaria petiolata</i>	Garlic mustard	Flower	Invasive in many states; spreading aggressively in woodlands by seed
<i>Carduus nutans</i>	Musk thistle	Flower	PA Noxious Weed
<i>Cirsium arvense</i>	Canada thistle	Flower	PA Noxious Weed
<i>Cirsium vulgare</i>	Bull thistle	Flower	PA Noxious Weed
<i>Datura stramonium</i>	Jimsonweed	Flower	Sometimes cultivated; spreads by seed; PA Noxious Weed
<i>Galega officinalis</i>	Goatsrue	Flower	PA and Federal Noxious Weed
<i>Heracleum mantegazzianum</i>	Giant hogweed	Flower	PA and Federal Noxious Weed; sap can cause burning blisters
<i>Hesperis matronalis</i>	Dame's rocket	Flower	Planted in gardens; escaped and naturalized along roads; spreads by seed
<i>Lithium salicaria</i> , L. <i>virgatum</i>	Purple loosestrife	Flower	Garden escape which has become invasive in many states; PA Noxious weed
<i>Myriophyllum spicatum</i>	Eurasian water-milfoil	Flower	Invasive in many states; aquatic
<i>Ornithogalum nutans</i>	Star-of-Bethlehem	Flower	Common garden plant which has widely escaped
<i>Pastinaca sativa</i>	Wild parsnip	Flower	Found commonly along roadsides; widespread and abundant; spread by seed
<i>Penttila frutescens</i>	Beefsteak plant	Flower	Garden escape; widespread mostly along roadsides; spreads by seed
<i>Polygonum (Falop.) cuspidatum</i>	Japanese knotweed	Flower	Invasive in many states; difficult to control; spreads by roots and seeds
<i>Ranunculus ficaria</i>	Lesser celandine	Flower	Spreads by roots and shoots; can be very aggressive in wetlands
<i>Tapa natans</i>	Water chestnut	Flower	Wetland plant; should not be introduced as it will escape, spread, and naturalize
<i>Bromus tectorum</i>	Cheatgrass	Grass	Annual grass; very invasive throughout the west; spreads by seed
<i>Microstegium vimineum</i>	Japanese stilt grass	Grass	Annual grass; invasive in many states; spreading through woodlands by seed
<i>Miscanthus sinensis</i>	Maiden grass	Grass	Commonly planted ornamental grass which can escape and spread by seed
<i>Phalaris arundinacea</i>	Reed canary grass	Grass	Aggressive wetland grass; native and introduced strains; widespread and abundant
<i>Phragmites australis</i>	Common reed	Grass	Native and introduced strains; wetland grass which can form huge colonies
<i>Sorghum bicolor</i> ssp. <i>drummondii</i>	Shattercane	Grass	Grass; PA noxious weed
<i>Sorghum halepense</i>	Johnson grass	Grass	Grass; PA noxious weed; spreads by roots and seeds
<i>*Berberis thunbergii</i>	Japanese barberry	Shrub	Escaped from cultivation and invasive in many states; spread by birds
<i>Berberis vulgaris</i>	European barberry	Shrub	Escaped from cultivation; spread by birds
<i>Elaeagnus angustifolia</i>	Russian olive	Shrub	Escaped from plantings and invasive in many states; spread by birds
<i>Elaeagnus umbellata</i>	Autumn olive	Shrub	Escaped from plantings and invasive in many states; rapidly spread by birds
<i>*Euonymus alatus</i>	Winged Euonymus	Shrub	Escaped from plantings; invasive in moist forests
<i>Ligustrum obtusifolium</i>	Border privet	Shrub	Escaped from cultivation; seeds spread by birds
<i>Ligustrum vulgare</i>	Common privet	Shrub	Planted very commonly in the past and escaped; invasive in many states
<i>Lonicera maackii</i>	Amur honeysuckle	Shrub	Escaped from plantings; seeds spread by birds
<i>Lonicera morrowii</i>	Morrow's honeysuckle	Shrub	Escaped from plantings and invasive in many states; seeds spread by birds
<i>Lonicera morrowii</i> x <i>tatarica</i>	Beck's honeysuckle	Shrub	Escaped from cultivation
<i>Lonicera standishi</i>	Standish honeysuckle	Shrub	Escaped from plantings; seeds spread by birds
<i>Lonicera tatarica</i>	Tatarian honeysuckle	Shrub	Escaped from plantings; seeds spread by birds
<i>Rhamnus cathartica</i>	Common buckthorn	Shrub	Becoming a problem in PA
<i>Rhamnus frangula</i>	Glossy buckthorn	Shrub	Becoming a problem in PA
<i>Rosa multiflora</i>	Multiflora rose	Shrub	Invasive in many states; seeds spread by birds; PA noxious weed
<i>Rubus phoenicolasius</i>	Wineberry	Shrub	Common bramble; not cultivated; spreads by seed
<i>*Spiraea japonica</i>	Japanese spiraea	Shrub	Frequently planted; escaped in some areas
<i>*Viburnum opulus</i> var. <i>opulus</i>	Guelder rose	Shrub	Resembles native <i>Viburnum trilobum</i> which it replaces; both are cultivated and planted
<i>*Acer platanoides</i>	Norway maple	Tree	Commonly planted and escaped; invasive in many states; wind spreads prolific seeds
<i>Acer pseudoplatanus</i>	Sycamore maple	Tree	Escaped from cultivation; wind spreads prolific seeds
<i>Ailanthus altissima</i>	Tree-of-heaven	Tree	Invasive in many states; wind spreads prolific seeds
<i>Paulownia tomentosa</i>	Empress tree	Tree	Prolific seeds fail to start new seedlings
<i>*Pyrus calleryana</i>	Callery pear	Tree	Commonly planted street tree; becoming a problem as an escape
<i>Ulmus pumila</i>	Siberian elm	Tree	Escaped from cultivation
<i>Akebia quinata</i>	Fiveleaf akebia	Vine	Escaped from cultivation and becoming a major problem in the Philadelphia area
<i>Ampelopsis brevipedunculata</i>	Porcelain-berry	Vine	Escaped from cultivation; spread by birds
<i>Celastrus orbiculatus</i>	Oriental bittersweet	Vine	Escaped from cultivation and invasive in many states; spreading rapidly (by birds)
<i>Lonicera japonica</i>	Japanese honeysuckle	Vine	Invasive in many states
<i>Polygonum perfoliatum</i>	Mile-a-minute vine	Vine	Range expanding; PA Noxious weed
<i>Pueraria lobata</i>	Kudzu	Vine	Invasive in many states; PA Noxious weed

This list of invasive species is not meant to be definitive, but rather a guideline to some of the most troublesome species that degrade native plant communities in Pennsylvania. These species were chosen from a more extensive list compiled from adjacent state or regional lists of invasive plant species. Input was sought from experienced individuals familiar with Pennsylvania's flora from a field perspective. For a more extensive list of invasive species, please contact DCNR, Bureau of Forestry, P.O. Box 8552, Harrisburg, PA 17105-8552.

SITUATIONAL INVASIVES: Some plants become problematic invasive species to a given area. For example, some species are commonly planted for quick groundcover but can be a serious problem when planted, seeded or discarded near native herbaceous communities. These situational invasives require greater care and monitoring when planted near native plant communities. These species include: *Crown-Vetch*, *Coronilla varia*; *English Ivy*, *Hedera helix*; *Tall fescue*, *Festuca elatior*; **Orange day-lily*, *Henrocallis fulva*; *periwinkle*, *Yucca minor*; and *Chinese and Japanese wisteria*, *Wisteria sinensis* and *W. floribunda*.

(ASTERIX): An asterix (*) denotes that the species has cultivars that are not known to be invasive. Cultivars are cultivated varieties of plant species bred for predictable attributes like shorter height, showier flowers, or colored foliage. An example is Norway Maple 'Crimson King' grown for its reddish leaves; this cultivar is not known to be invasive. Another example are the day lilies which have a host of cultivars that are not known as invasives. If you choose to plant a cultivar of an invasive species, ask a PA certified horticulturalist (PCH), your Penn State extension agent, or a professional horticulturalist about the cultivar's potential to be invasive.

APPENDIX C

Tables 1-3

TABLE 1
Runoff Curve Numbers
[From NRCS (SCS) TR-55]

LAND USE DESCRIPTION		HYDROLOGIC SOIL GROUP			
		A	B	C	D
Open Space (Good)		39	61	74	80
Meadow		30**	58	71	78
Agricultural		59	71	79	83
Forest		36**	60	73	79
Commercial	(85% Impervious)	89	92	94	95
Industrial	(72% Impervious)	81	88	91	93
Institutional	(50% Impervious)	71	82	88	90
Residential					
Average Lot Size	% impervious				
1/8 acre or less*65		77	85	90	92
1/8 - 1/3 acre	34	59	74	82	87
1/3 - 1 acre	23	53	69	80	85
1 - 4 acres	12	46	66	78	82
Farmstead		59	74	82	86
Smooth Surfaces (Concrete, Asphalt, Gravel or Bare Compacted Soil)		98	98	98	98
Water		98	98	98	98
Mining Newly Graded Areas (Pervious Areas Only)		77	86	91	94

* Includes Multi-Family Housing unless justified lower density can be provided.
 ** Caution - CN values under 40 may produce erroneous modeling results.

NOTE: Site conditions of bare earth or fallow shall be considered as meadow when choosing a CN value for existing undeveloped conditions.

TABLE 2
RATIONAL RUNOFF COEFFICIENTS
By Hydrologic Soils Group and Overland Slope (%)

Land Use	A			B			C			D		
	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+
*Cultivated Land	0.33 ^a	0.37	0.42	0.40	0.43	0.49	0.45	0.49	0.55	0.48	0.53	0.59
	0.37 ^b	0.43	0.48	0.44	0.49	0.55	0.51	0.55	0.63	0.54	0.59	0.69
Pasture	0.12	0.20	0.30	0.18	0.28	0.37	0.24	0.34	0.44	0.30	0.40	0.50
	0.15	0.25	0.37	0.23	0.34	0.45	0.30	0.42	0.52	0.37	0.50	0.62
Lawn	0.10	0.16	0.25	0.14	0.22	0.30	0.20	0.28	0.36	0.24	0.30	0.40
	0.14	0.22	0.30	0.20	0.28	0.37	0.26	0.35	0.44	0.30	0.40	0.50
Forest	0.05	0.08	0.11	0.08	0.11	0.14	0.10	0.13	0.16	0.12	0.16	0.20
	0.08	0.11	0.14	0.10	0.14	0.18	0.12	0.16	0.20	0.15	0.20	0.25
Residential												
Lot Size 1/8 Acre	0.25	0.28	0.31	0.27	0.30	0.25	0.30	0.33	0.38	0.33	0.36	0.42
	0.33	0.37	0.40	0.35	0.39	0.44	0.38	0.42	0.49	0.41	0.45	0.54
Lot Size 1/4 Acre	0.22	0.26	0.29	0.24	0.29	0.33	0.27	0.31	0.36	0.30	0.34	0.40
	0.30	0.34	0.37	0.33	0.37	0.42	0.36	0.40	0.47	0.38	0.42	0.52
Lot Size 1/3 Acre	0.19	0.23	0.26	0.22	0.26	0.30	0.25	0.29	0.34	0.28	0.32	0.39
	0.28	0.32	0.35	0.30	0.35	0.39	0.33	0.38	0.45	0.36	0.40	0.50
Lot Size 1/2 Acre	0.16	0.20	0.24	0.19	0.23	0.28	0.22	0.27	0.32	0.26	0.30	0.37
	0.25	0.29	0.32	0.28	0.32	0.36	0.31	0.35	0.42	0.34	0.38	0.48
Lot Size 1 Acre	0.14	0.19	0.22	0.17	0.21	0.26	0.20	0.25	0.31	0.24	0.29	0.35
	0.22	0.26	0.29	0.24	0.28	0.34	0.28	0.32	0.40	0.31	0.35	0.46
Industrial	0.67	0.68	0.68	0.68	0.68	0.69	0.68	0.69	0.69	0.69	0.69	0.70
	0.85	0.85	0.86	0.85	0.86	0.86	0.86	0.86	0.87	0.86	0.86	0.88
Commercial	0.71	0.71	0.72	0.71	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
	0.88	0.88	0.89	0.89	0.89	0.89	0.89	0.89	0.90	0.89	0.89	0.90
Streets	0.70	0.71	0.71	0.71	0.72	0.74	0.72	0.73	0.76	0.73	0.75	0.78
	0.76	0.77	0.79	0.80	0.82	0.84	0.84	0.85	0.89	0.89	0.91	0.95
Meadow	0.05	0.10	0.14	0.08	0.13	0.19	0.12	0.17	0.24	0.16	0.21	0.28
	0.11	0.16	0.20	0.14	0.19	0.26	0.18	0.23	0.32	0.22	0.27	0.39
Parking	0.85	0.86	0.87	0.85	0.86	0.87	0.85	0.86	0.87	0.85	0.86	0.87
	0.95	0.96	0.97	0.95	0.96	0.97	0.95	0.96	0.97	0.95	0.96	0.97

^a Runoff coefficients for storm recurrence intervals less than 25 years.

^b Runoff coefficients for storm recurrence intervals 25 years or more.

Source: Rawls, W.J., S.L. Wong and R.H. McCuen, 1981, "Comparison of Urban Flood Frequency Procedures", Preliminary Draft, U. S. Department of Agriculture, Soil Conservation Service, Baltimore, MD.

*Cultivated land "C" coefficients were compiled using other sources to reflect varying conditions of the ground cover due to tilling, plant growth, harvesting, maintenance, land management and similar factors.

** Meadow and Grass Conditions were compiled using other sources to correspond to definitions grass and open space with SCS Methodology

TABLE 3
Roughness Coefficients (Manning's "n") for Overland Flow
(U.S. Army Corps Of Engineers, HEC-1 Users Manual)

<u>Surface Description</u>	<u>n</u>
Dense Growth	0.4-0.5
Pasture	0.3-0.4
Lawns	0.2-0.3
Bluegrass Sod	0.2-0.5
Short Grass Prairie	0.1-0.2
Sparse Vegetation	0.05-0.13
Bare Clay-Loam Soil (eroded)	0.01-0.03
Concrete/Asphalt - very shallow depths (less than 1/4 inch)	0.10- 0.15
- small depths (1/4 inch to several inches)	0.05-0.10

Roughness Coefficients (Manning's "n") for Sheet Flow
(U.S. Soil Conservation Service Technical Release 55)

<u>Surface Description</u>	<u>n</u>
Smooth Surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue) 0.05	
Cultivated Soils:	
Residue Cover Less Than or 20%	0.06
Residue Cover Greater Than 20%	0.17
Grass:	
Short Grass Prairie	0.15
Dense Grasses	0.24
Bermuda Grass	0.41
Range (natural)	0.13
Woods:	
Light Underbrush	0.40
Dense Underbrush	0.80

Appendix D
Hamiltonban Township
SIMPLIFIED APPROACH

**For Minor Regulated Activities in
Hamiltonban Township, Adams County, Pennsylvania**

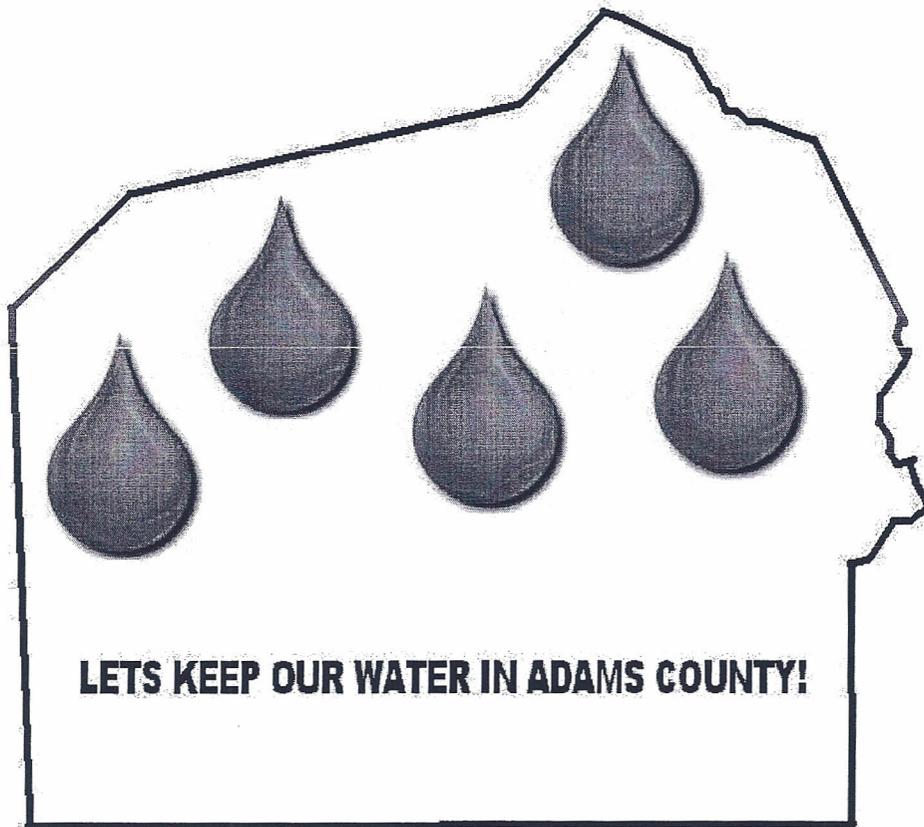


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Introduction:

This Simplified Approach 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 new, relatively minor residential and accessory structure projects. 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-not a comprehensive list of options. Residents should contact Hamiltonban Township or the Adams County Conservation District to discuss alternative solutions for site specific applications.

I. Simplified Approach Directions

Step 1:

- Fill out Worksheet 1 (Section II) and create a Minor Stormwater Management Plan (hereinafter referred to as a “Plan”) as required under List A of the Minor Stormwater Plan Requirements (Section IV). (The Adams County GIS/Mapping Department can create a map that is to scale for items 1-6 of List A, for a small fee.) Proposed impervious areas shall be drawn on the plan by hand by the applicant.
- Fill out columns 1-3 on the “Record of Proposed Impervious (since November 23, 2011)” (Section III) (hereinafter referred to as the “Record”) for proposed impervious surface created by the proposed project. Impervious area is defined under section 301. T of the Hamiltonban Township Stormwater Management Ordinance. (The impervious area number on the Record (column 1) shall correspond to the impervious area number shown on the Plan as dictated under plan requirements.) Note that development of a property shall consider the total cumulative impervious since November 23, 2011; therefore, for all projects proposed after a Record has been generated, additional impervious area shall be shown on the original Record.
- If the proposed or Record (cumulative impervious added since November 23, 2011) impervious surface area is **less than or equal to 1,000 ft²**, the project may be eligible for an exemption from additional stormwater management requirements of the Simplified Approach and the Hamiltonban Township Ordinance. File Worksheet 1, the Record and the Plan (Items in List A) with Hamiltonban Township. If the total Record is **greater than 1,000 ft² and less than or equal to 5,000 ft²** (where the total cumulative impervious added since November 23, 2011 is **less than or equal to 5,000 ft²**) continue to Step 2.

Step 2:

- Complete the Additional Requirements for “complete” Minor Stormwater Management Plan (Section IV). Determine if any of the proposed impervious areas are Disconnected Impervious Areas (hereinafter referred to as DIAs) (Section VI). The DIA flow paths and contributory areas must be shown on the Plan.
- Fill out column 4 of the Record. If all proposed impervious areas meet the requirements for DIA, the project may be eligible for exemption from additional stormwater management requirements of the Simplified Approach and the Hamiltonban Township Ordinance. Complete and Sign Owner’s Acknowledgement (Section VIII) and O&M agreement (Section IX) and file with Hamiltonban Township along with Worksheet 1, the Record and “complete” Plan.
- If the proposed or Record (cumulative impervious added since November 23, 2011) impervious surface area is **greater than 1,000 ft² and less than or equal to 5,000 ft²**, and cannot be completely disconnected, continue to Step 3.

Step 3:

- If the proposed impervious surface cannot be completely disconnected, calculate the volume of stormwater runoff required to be captured by Stormwater BMPs in Column 5 of the Record. Multiply the contributory square footage of impervious draining to the BMP by 0.25 (Column 2 multiplied by 0.25 = Column 5).
- Using the “Chart for Determining BMPs based on Volume Required” (Section VII) and standard details (Section X) provided by the Hamiltonban Township, choose the BMP and size required for each contributory impervious area. The standard details is by no means a comprehensive list

of stormwater BMP's available. Additional information and variation may be located in the *Guide to Choosing Stormwater BMPs*, as may be updated or amended (see Appendix C of the Adams County Stormwater Management Plan), as taken from the *PA Handbook of Best Management Practices for Developing Areas* and the *PA Stormwater Management BMP Manual*. It is the Owner's responsibility to select a facility, determine the appropriate size and agree to construct and maintain that facility or facilities.

- Complete and Sign Owner's Acknowledgement and O&M agreement and file with Hamiltonban Township along with the Worksheet 1, the Record and "complete" Plan.

II. Worksheet 1

Property Owner's Name: _____

Address of Property: _____

Parcel ID #: _____

Phone Number: _____ New Impervious Area Associated with this Project: _____

Stormwater Management Submission Type: _____ Minor Stormwater Site Plan-List A

_____ Minor Stormwater Site Plan- "Complete"

Total Existing Impervious on the Property _____

Total Impervious on the Lot after Project _____

Are there any known existing drainage problems or the potential for the proposed project to create drainage problems? (if yes please explain)

Declaration-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 understand that false information may result in a stop work order or revocation of permits. Municipal representatives are also granted reasonable access to the property for review and/ or inspection of this project.

Signature _____

Date _____

III. Record of Proposed Impervious (since November 23, 2011)

Record of Proposed Impervious (since November 23, 2011)							
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8
Number (corresponding to Minor Stormwater Management Plan Proposed Impervious)	Area of Proposed Impervious (ft ²)	Description (Roof, Patio, Pavement, Driveway, Gravel, etc.)	Does the Impervious Area Meet the Requirements to be Disconnected? Section 6 (yes/no)	Contributory Area Storage Requirement; Storage (ft ³) = Area (ft ²) x .25; Column 4 x .25	BMP used to Control Required Volume (ft ³)	BMP Size Requirement from Chart for Determining BMPs Sizing Based on Volume Required- Section 7	Notes (minimum date)
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
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16							
17							
18							
19							
20							

IV. Minor Stormwater Management Plan Requirements

All projects require the submission of a Minor Stormwater Site Plan with the items required under List A, Worksheet 1 and the "Record of Proposed Impervious (since November 23, 2011)". If the proposed project requires stormwater management BMPs, the applicant may prepare and submit to Hamiltonban Township a "complete" Minor Stormwater Site Plan as defined under additional requirement below, Worksheet 1, the "Record of Proposed Impervious (since November 23, 2011)", Owner's Acknowledgement and Stormwater Mangement/BMP Facilities Maintenance Agreement.

The Adams County Office of Planning and Development can provide assistance to applicants to obtain property maps with the below required items. Two copies and an electronic PDF on CD/DVD shall be submitted to the Municipality. A Minor Stormwater Site Plan must show the following:

List A:

1. Property Boundary
2. North Arrow and Scale (graphic) of 1"=50' or less.
3. Aerial Photo (if the land use has changed from the photo then draw in the approximate land uses (grass, woods, etc.).
4. Building Setbacks (Labeled)
5. 2' Contours (Labeled)
6. Soils (Labeled)
7. Location of all existing and proposed impervious (home, accessory structures, driveways, etc.). The proposed impervious areas draining to a discharge point shall be numbered (1, 2,) and the location of discharge from the existing and proposed impervious shall be shown, marked with an "x" or appropriate other symbol. The proposed impervious area reference number shown on the Minor Stormwater Management Plan shall correspond to the number on the Record of Proposed Impervious (since November 23, 2011) sheet where the impervious area is recorded. The proposed impervious area on the plan shall be dimensioned.

Additional Requirements for "complete" Minor Stormwater Mangement Plan:

1. Slope/flow direction arrows on and 50 feet beyond the property. (If the property is of substantial size and the proposed impervious is within the lot interior the slope/flow direction arrows shall be shown for minimum of 100 ft beyond the site Regulated Activity area.)
2. Distance from proposed downspouts along flow path to property lines, drainage ways (natural or manmade), wooded areas, offsite structures on and 50 feet beyond the property line. If applying for the DIA credit, label the DIA flow path and length on the plan.
3. Natural features such as drainage ways, streams, wetlands, on and 50 feet beyond the property line.
4. Any other pertinent information that may be significant to the project site (steep slopes, etc.).
5. Wells and on-site septic systems.
6. Size and location of stormwater BMP's with dimensions and details (as required)
7. Soil hydrologic soil group (listed under the soil)
8. Any existing and proposed structures first floor elevations
9. Grading spot elevations and or contours defining the proposed flow characteristics
10. Approximate distance from house and elevation of proposed stormwater BMPs and overflow paths for storms greater than 2 year events.

V. Simplified Approach Review and Approval Process

- A. The property owner shall complete Worksheet 1, the Record of Proposed Impervious, and the Minor Stormwater Management Plan in accordance with the Simplified Approach instructions for each element. The property owner shall submit this material, along with the applicable fee, to Hamiltonban Township. The application shall not be considered to be complete unless it includes all of the information required.
- B. Upon receipt of a complete application, the official designated by Hamiltonban Township to administer the Simplified Approach process shall review the application against the requirements applicable to Simplified Approach submissions. The designated official shall approve the application if the application conforms to applicable requirements. The designated official shall deny the application if the application does not conform to applicable requirements. Any denial shall be in writing and shall state the reasons for such denial.
- C. The designated official shall approve or deny the complete application within fifteen (15) working days of the date of filing.
- D. The property owner may, in response to denied Simplified Approach submission, resubmit the application with revisions necessary to address the reasons for denial. Any such revised application shall be reviewed in accordance with Parts B and C above.
- E. Upon approval of a complete application, the designated official shall require the property owner to complete the Owner's Acknowledgement form. Upon receipt of the signed form, the designated official shall acknowledge such receipt. Once the Owner's Acknowledgement form is signed and its receipt acknowledged, the property owner is authorized to initiate construction of the approved project.

VI. How to Determine a Disconnected Impervious Area (DIA)

When impervious surface areas like rooftops and paved areas are directed to a pervious area that allows for infiltration, filtration, and increased time of concentration, the impervious surface areas may qualify to be treated as Disconnected Impervious Area (DIAs).

Disconnected Impervious Area: Impervious is considered to be disconnected if it meets the requirements listed below:

- The contributing impervious drainage area is less than 500 SF.
- The overland flow path from runoff discharge point has a slope of five percent (5%) or less.
- Soils along the overland flow path are not classified as hydrologic group "D"
- The overland flow path is maintained as at least 90% uniformly vegetated condition.
- The receiving pervious area shall not include another person's property unless written permission has been obtained from the affected property owner.
- The length of flow path must 75' in length for lots over 10,000 SF and 35' for lots under 10,000 SF for disconnection.
- The distance between discharge points and flow paths must be and remain a minimum of 8' apart for entire 75'.

Section VII. Chart for Determining BMP Sizing

	BMP						
	Rain Garden/ BioRetention	Infiltration Trench	Infiltration Bed	Infiltration Berm	Rain Barrel (55 Gal Typ)	PA Native Deciduous Tree*	PA Native Evergreen Tree*
	Variable Determining Size						
Volume Required (ft ³)	Area (ft ²)	Length (ft)	Area (ft ²)	Length (ft)	Quantity (ea)	Quantity (ea)	Quantity (ea)
50	36	31	83	11	7	8	5
100	75	63	167	22	13	17	10
150	125	94	250	33	20	25	15
200	175	125	333	44	27	33	20
250	225	156	417	56	33	42	25
300	275	188	500	67	40	50	30
350	325	219	583	78	47	NA	NA
400	375	250	667	89	53	NA	NA
450	425	281	750	100	60	NA	NA
500	475	313	833	111	67	NA	NA
550	525	344	917	122	74	NA	NA
600	575	375	1000	133	80	NA	NA

*No More than 25% of total volume can be mitigated by use of trees

VIII. Owner's Acknowledgement

- Development activities shall begin only after Hamiltonban Township approves the Minor Stormwater Site Plan.
- The installed Stormwater BMPs will not adversely affect any property, septic systems, or drinking water wells on this or any other property.
- If, after approval of the Minor Stormwater Site Plan by Hamiltonban Township, the applicant wishes to pursue alternative stormwater management measures in support of the project, the applicant will submit a revised Minor Stormwater Site Plan to Hamiltonban Township for approval. If a site requires a more complex system or if problems arise, the applicant may need the assistance of a licensed professional.
- The applicant acknowledges that the proposed Stormwater BMPs will be a permanent fixture of the property that cannot be altered or removed without approval by Hamiltonban Township.

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 the Minor Stormwater Site Plan, the Hamiltonban Township Stormwater Worksheet 1, "Record of Proposed Impervious (since November 23, 2011)" and the Stormwater Management / BMP Facilities and Maintenance Agreement (if applicable) will be adhered to.

Applicant Acknowledgement of Submission

Signature: _____ Date: _____

Hamiltonban Township Acknowledgement of Receipt

Signature: _____ Date: _____
<< Title >>

IV. Stormwater Management/ BMP Facilities Operation and Maintenance Agreement

THIS AGREEMENT, made and entered into this ____ day of _____, 20____, by and between _____ hereinafter called the "Landowner," and Hamiltonban Township, Adams County, Pennsylvania, hereinafter called the Hamiltonban Township.

WHEREAS, the Landowner is the owner of certain real property described as (Adams County Tax Map / Parcel Identification Number) _____ as recorded by deed in the land records of Adams County, Pennsylvania, Book _____ Page _____, hereinafter called the "Property";

WHEREAS, the Landowner is proceeding to build on and develop the property; and

WHEREAS, the Minor Stormwater Site Plan, which is expressly made a part hereof, as approved or to be approved by Hamiltonban Township, provides for detention of stormwater within the confines of the property through the use of Stormwater Best Management Practices (Stormwater BMPs); and

WHEREAS, Hamiltonban Township and the Landowner, its successors and assigns, agree that the health, safety, and welfare of the residents of Hamiltonban Township, require that on-site Stormwater BMPs be constructed and maintained on the Property; and

WHEREAS, Hamiltonban Township requires that on-site Stormwater BMPs as shown on the Plan be constructed and adequately maintained by the Landowner, its successors and assigns. Any additional requirements imposed by Hamiltonban Township are considered part of the Plan.

NOW, THEREFORE, in consideration of the foregoing premises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

1. The Landowner in accordance with the specifications identified within the Plan shall construct the onsite Stormwater BMPs.
2. The Landowner, its successors and assigns, shall adequately maintain the Stormwater BMPs. This includes all pipes and channels built to convey stormwater to the facility, 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. The Landowner, its successors and assigns, shall inspect the Stormwater BMPs after all rainfall events exceeding one inch of precipitation in a 24-hour period.
4. The Landowner, its successors and assigns, hereby grant permission to Hamiltonban Township, its authorized agents and employees, to enter upon the Property without prior notification at reasonable times and upon presentation of proper identification to inspect the Stormwater BMPs whenever Hamiltonban Township deems necessary.
5. In the event the Landowner, its successors and assigns, fails to maintain the Stormwater BMPs as shown on the Plan and in good working condition, Hamiltonban Township may enter upon

the Property and take whatever action is deemed necessary to maintain said Stormwater BMPs and to charge the costs of such repairs to the Landowner, its successors and assigns. This provision shall not be construed to allow Hamiltonban Township to erect any structure of permanent nature on the land of the Landowner unless such structures were part of the approved Plan. It is expressly understood and agreed that Hamiltonban Township 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 Hamiltonban Township.

6. In the event that Hamiltonban 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 Landowner shall reimburse Hamiltonban Township within thirty (30) days of receipt of invoice for all expenses incurred. Hamiltonban Township 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.

7. The intent and purpose of this Agreement is to ensure the proper maintenance of the Stormwater BMPs by the Landowner. This Agreement shall not be deemed to create any additional liability of any party for damage alleged to result from or be caused by nonpoint source pollution runoff. This Agreement imposes no liability of any kind whatsoever on Hamiltonban Township and the Landowner agrees to hold Hamiltonban Township harmless from any liability in the event the Stormwater BMPs fail to operate properly. In the event that a claim is asserted against Hamiltonban Township, its designated representatives or employees, Hamiltonban Township 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 Hamiltonban Township shall be allowed, the Landowner shall pay all costs and expenses regarding said judgment.

8. This Agreement shall be binding to the Landowner, its administrators, executors, assigns, heirs and any other successors in interests, in perpetuity.

Landowner:

Signature: _____
Printed Name: _____

Date: _____

Hamiltonban Township:

Signature: _____
Printed Name: _____
Title: _____

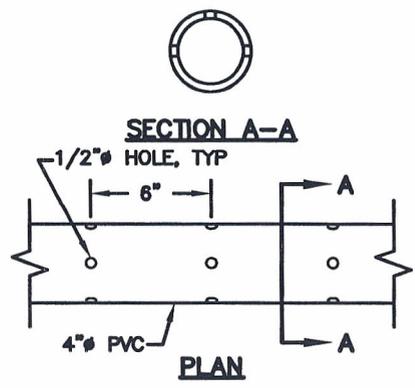
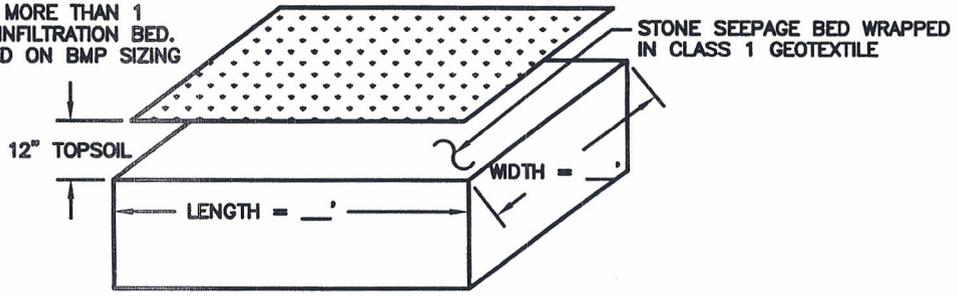
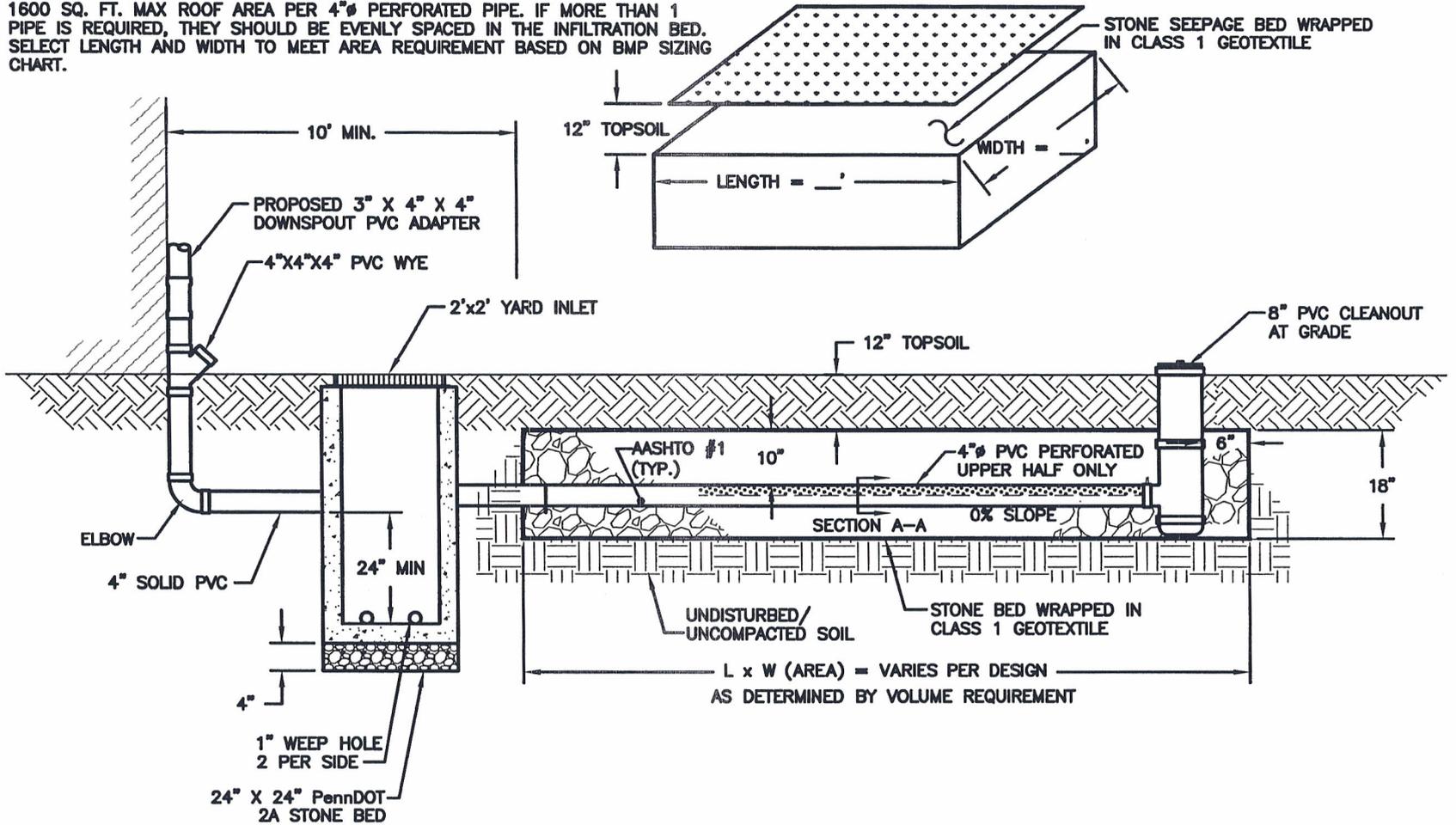
Date: _____

X. Standard Details

DRAWING PREPARED BY C. S. DAVIDSON, INC.

DESIGN NOTE:

1600 SQ. FT. MAX ROOF AREA PER 4"Ø PERFORATED PIPE. IF MORE THAN 1 PIPE IS REQUIRED, THEY SHOULD BE EVENLY SPACED IN THE INFILTRATION BED. SELECT LENGTH AND WIDTH TO MEET AREA REQUIREMENT BASED ON BMP SIZING CHART.



NOTES:

1. INFILTRATION PITS TO BE INSTALLED IN UNDISTURBED SOIL.
2. SUBGRADE BELOW THE INFILTRATION PIT SHOULD NOT BE COMPACTED. IF THE SUBGRADE BECOMES COMPACTED FOR ANY REASON, THE SOIL SHALL BE SCARIFIED PRIOR TO CONSTRUCTING THE BED.
3. SEDIMENT ACCUMULATION SHALL BE MONITORED SEASONALLY.
4. WHEN SEDIMENT ACCUMULATES TO A DEPTH OF 18" IN THE YARD BASIN, IT SHALL BE REMOVED.

TYPICAL INFILTRATION BED DETAIL
N.T.S.

SIMPLIFIED APPROACH STANDARD DETAIL
INFILTRATION BED

SIMPLIFIED APPROACH DETAILS.DWG
DATE: JULY 2012

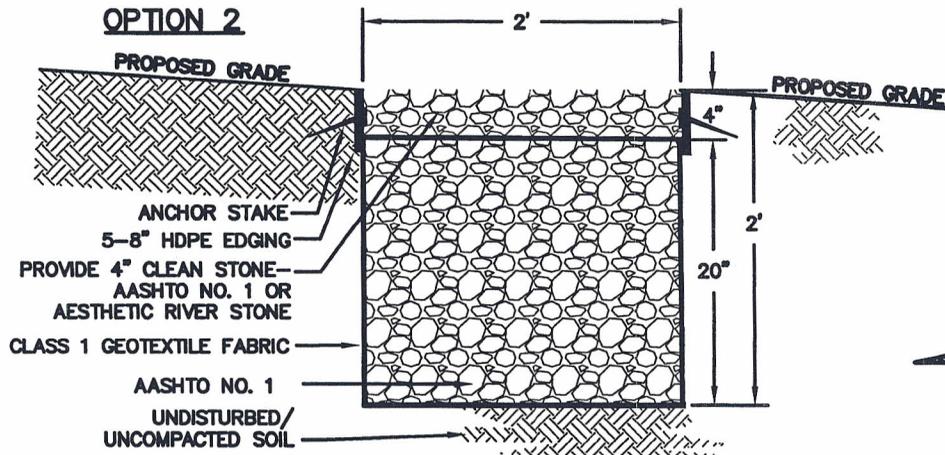
ADAMS COUNTY, PENNSYLVANIA

SIMPLIFIED APPROACH STANDARD DETAIL INFILTRATION TRENCH

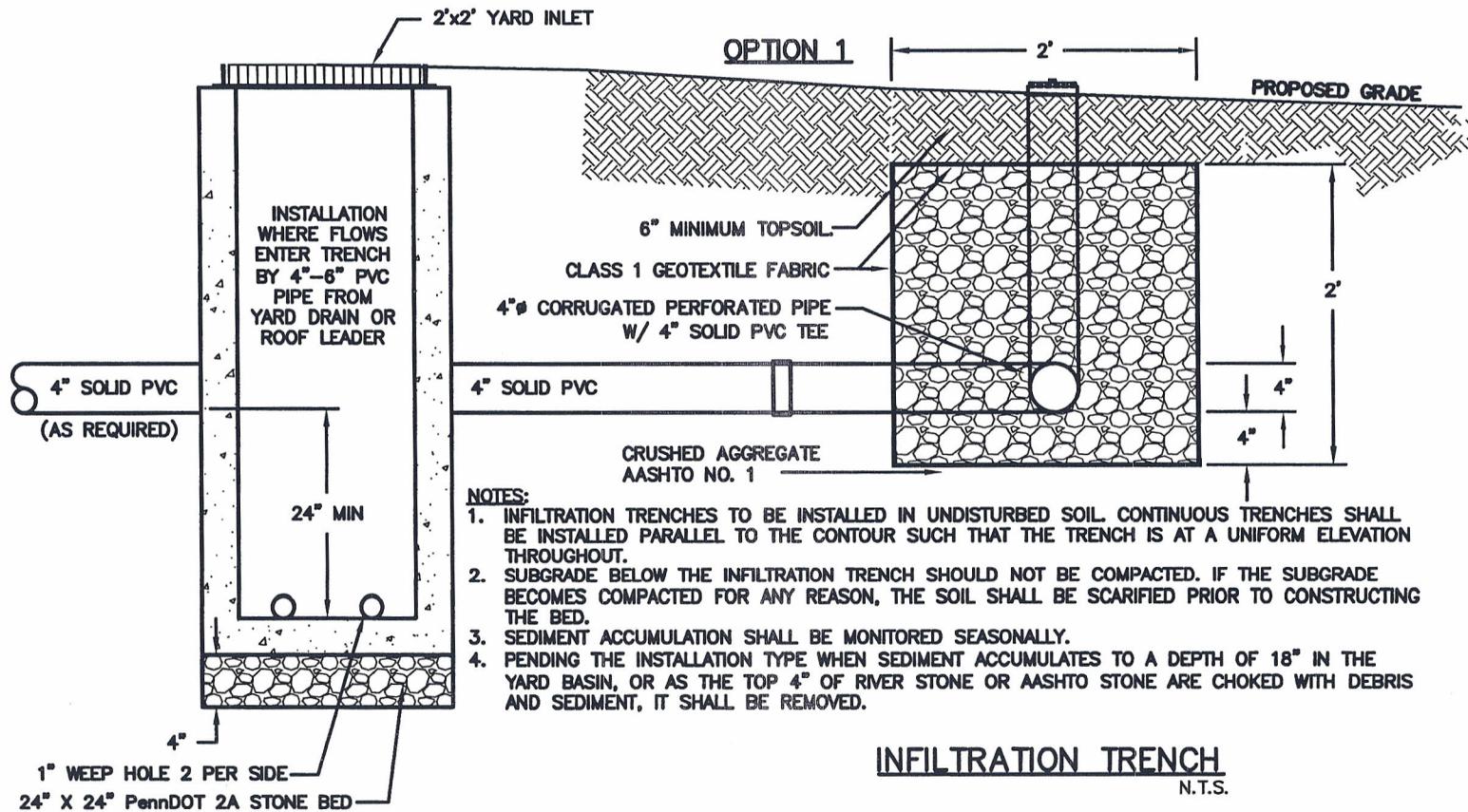
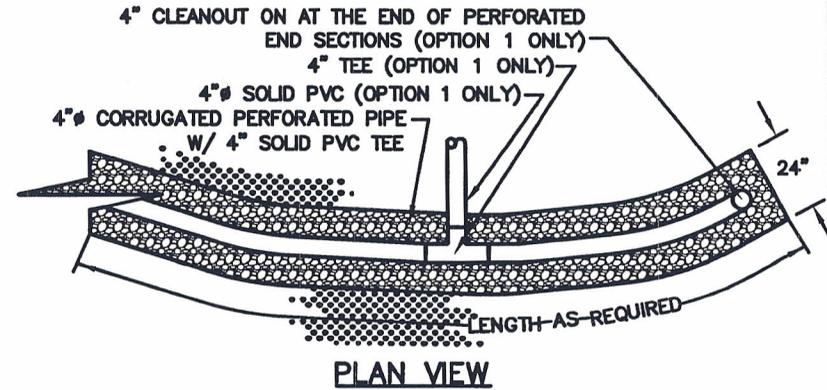
ADAMS COUNTY, PENNSYLVANIA

DRAWING PREPARED BY C. S. DAVIDSON, INC.

SIMPLIFIED APPROACH DETAILS.S.dwg
DATE: JULY 2012



DESIGN NOTE:
CHOOSE TRENCH LENGTH TO MEET REQUIREMENT PER THE BMP SIZING CHART. TRENCHES SHALL BE INSTALLED PARALLEL TO THE EXISTING CONTOUR SUCH THAT THE TOP OF TRENCH IS INSTALLED AT A UNIFORM ELEVATION.

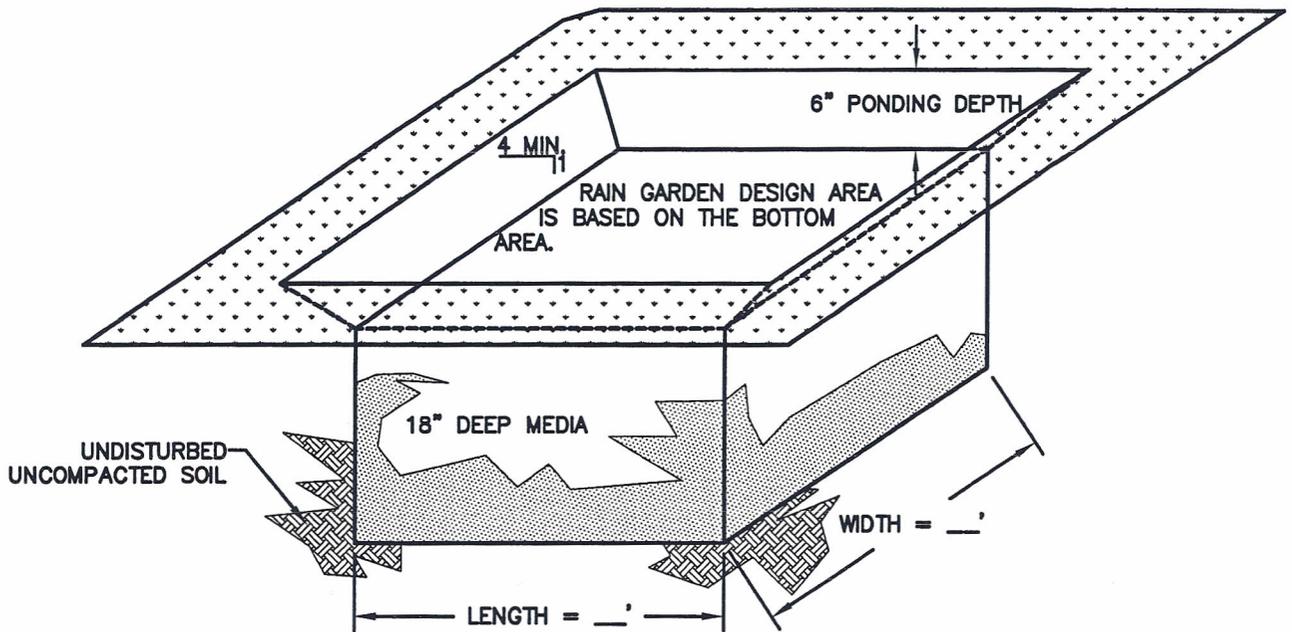


NOTES:

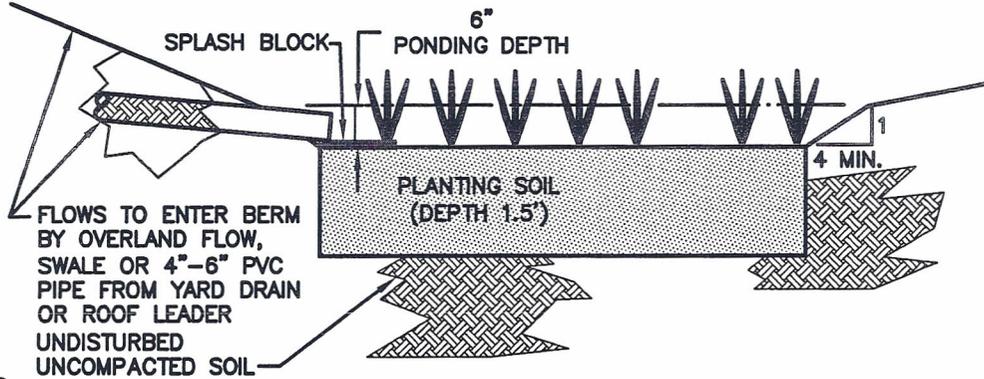
1. INFILTRATION TRENCHES TO BE INSTALLED IN UNDISTURBED SOIL. CONTINUOUS TRENCHES SHALL BE INSTALLED PARALLEL TO THE CONTOUR SUCH THAT THE TRENCH IS AT A UNIFORM ELEVATION THROUGHOUT.
2. SUBGRADE BELOW THE INFILTRATION TRENCH SHOULD NOT BE COMPACTED. IF THE SUBGRADE BECOMES COMPACTED FOR ANY REASON, THE SOIL SHALL BE SCARIFIED PRIOR TO CONSTRUCTING THE BED.
3. SEDIMENT ACCUMULATION SHALL BE MONITORED SEASONALLY.
4. PENDING THE INSTALLATION TYPE WHEN SEDIMENT ACCUMULATES TO A DEPTH OF 18" IN THE YARD BASIN, OR AS THE TOP 4" OF RIVER STONE OR AASHTO STONE ARE CHOKED WITH DEBRIS AND SEDIMENT, IT SHALL BE REMOVED.

INFILTRATION TRENCH
N.T.S.

1" WEEP HOLE 2 PER SIDE
24" X 24" PennDOT 2A STONE BED



DESIGN NOTE:
 CHOOSE LENGTH AND WIDTH TO MEET AREA REQUIREMENT PER THE BMP SIZING CHART. BERMS SHALL BE INSTALLED PARALLEL TO THE EXISTING CONTOUR SUCH THAT THE TOP OF BERM IS INSTALLED AT A UNIFORM ELEVATION.



NOTES:

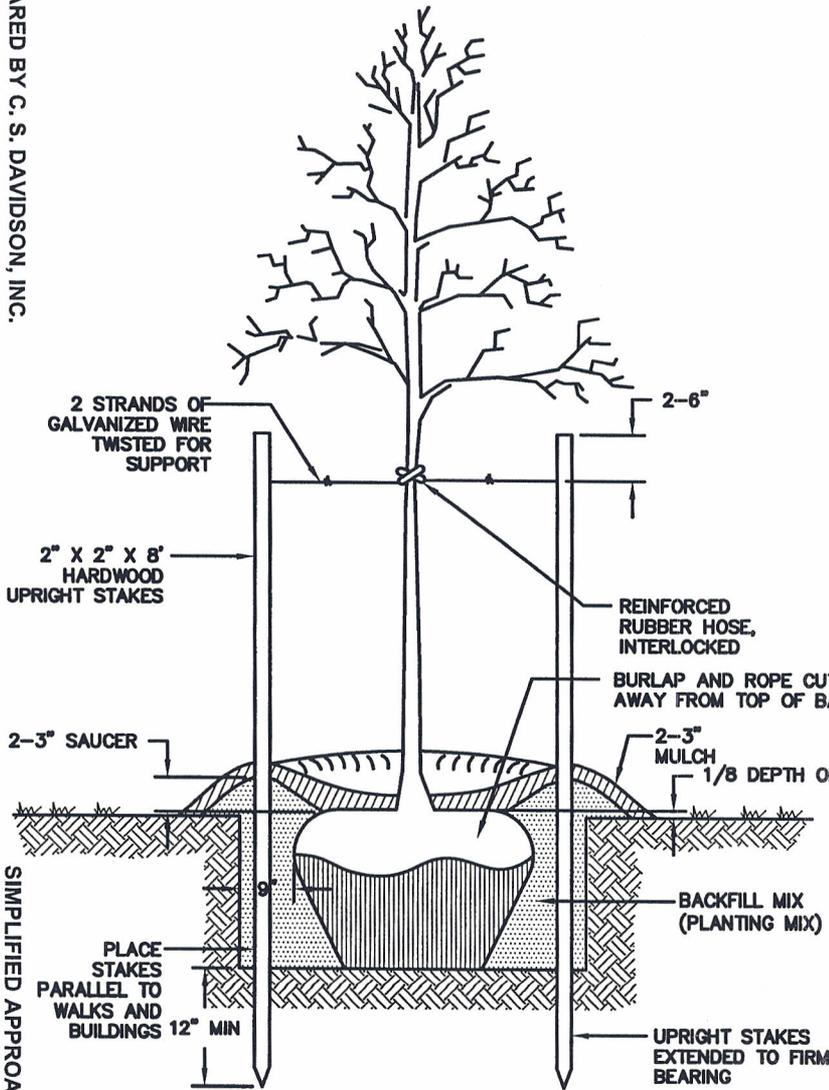
1. PLANTING SOIL SHOULD BE A SANDY LOAM, LOAMY SAND, LOAM (USDA), OR A LOAM/SAND MIX. RATIO FOR RAIN GARDEN SOIL MIX SHOULD CONTAIN AN APPROXIMATE RATIO OF 50% SAND, 30% COMPOST AND 20% NATIVE SOILS
2. THE SOILS SHALL BE FREE OF STONES, STUMPS, ROOTS OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER.
3. BRUSH OR SEEDS FROM NOXIOUS WEEDS SHALL NOT BE PRESENT IN THE SOILS.
4. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN 9" LIFTS THAT ARE LOOSELY COMPACTED.
5. BIO-RETENTION AREA MUST BE PROTECTED FROM EROSION/SEDIMENTATION DURING CONSTRUCTION.
6. WET PLANTINGS IN RAIN GARDEN SHOULD BE NATIVE TO PA. DIRECTION FOR PLANTING SCHEDULE AND DENSITY BASED ON SITE CONDITIONS (SUN/SHADE/APPEAL) CAN BE OBTAINED FROM THE ADAMS COUNTY CONSERVATION DISTRICT
7. SUBGRADE IN THE RAIN GARDEN BOTTOM SHOULD NOT BE COMPACTED. IF THE SUBGRADE BECOMES COMPACTED FOR ANY REASON, IT SHALL BE SCARIFIED PRIOR TO SOIL PLACEMENT
8. IN BOROUGH'S WHERE INFILTRATION MAY BE IMPOSSIBLE DUE TO SOIL CONDITIONS OR BASEMENTS, IT IS RECOMMENDED THAT A 60 MIL HDPE POND LINER BE INSTALLED ALONG WITH 30" OF PLANTING SOIL MEDIA.

RAIN GARDEN
 N.T.S.

SIMPLIFIED APPROACH STANDARD DETAIL
RAIN GARDEN

DRAWING PREPARED BY C. S. DAVIDSON, INC.

DESIGN NOTE:
 TREES MUST BE PA NATIVE SPECIES, A MINIMUM OF 1" CALIPER. DEAD TREES SHALL BE REPLACED BY PROPERTY OWNER WITHIN A MINIMUM OF 12 MONTHS. NO MORE THAN 25% OF VOLUME REQUIREMENT CAN BE TAKEN FOR TREE PLANTING.

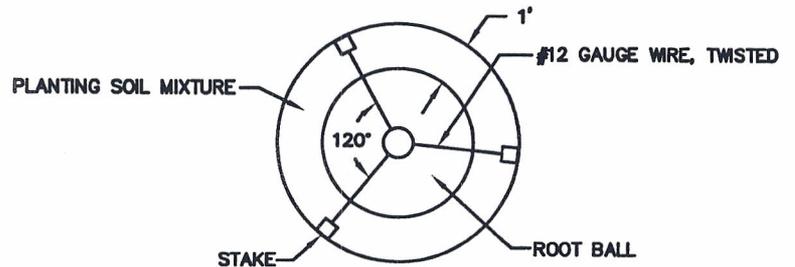


NOTES:

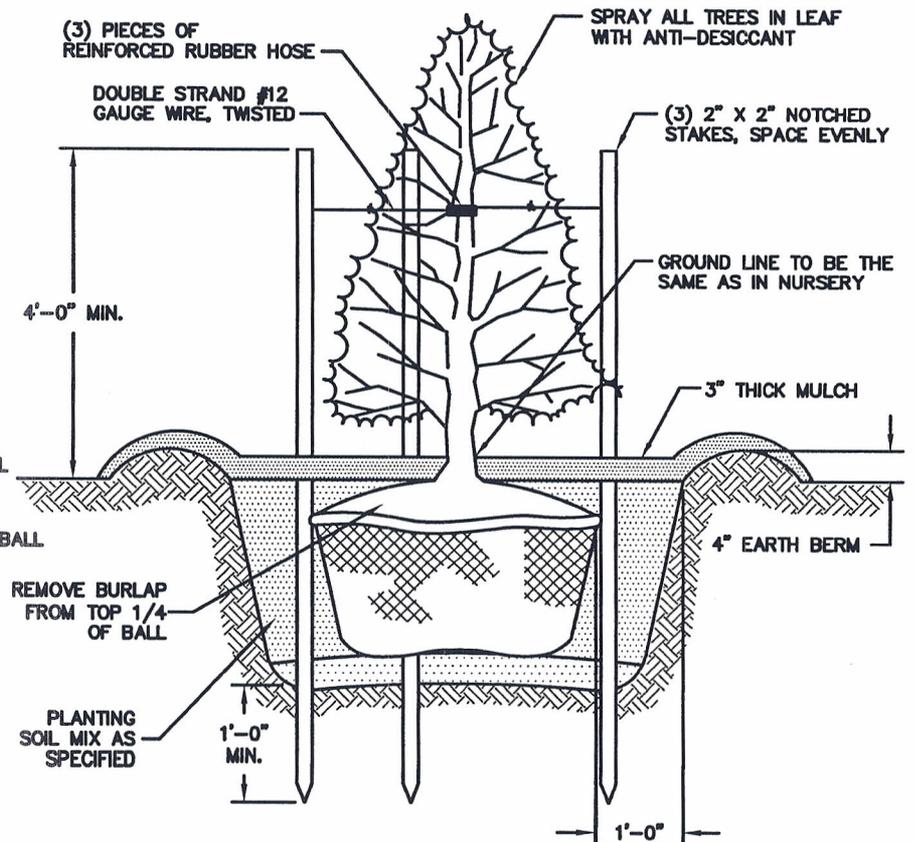
1. SPRAY ALL TREES IN LEAF WITH ANTI-DESSICANT PRIOR TO PLANTING.
2. FLOOD SAUCER WITH WATER TWICE WITHIN 24 HOURS OF PLANTING.

DECIDUOUS TREE PLANTING DETAIL

N.T.S.



STAKING PLAN



NOTE:

1. FLOOD SAUCER WITH WATER TWICE WITHIN 24 HOURS OF PLANTING.

EVERGREEN TREE PLANTING DETAIL

N.T.S.

TREE PLANTING
 SIMPLIFIED APPROACH STANDARD DETAIL

DATE: JULY 2012

SIMPLIFIED APPROACH DETAILS.dwg