

APPENDIX 1

**APPLICATION FOR A STORM WATER MANAGEMENT PERMIT
MINOR LAND DISTURBANCE ACTIVITY**

ORWIGSBURG BOROUGH
Schuylkill County, Pennsylvania

File No. _____

Date Received _____

Application is hereby made to Orwigsburg Borough for the issuance of a storm water management permit pursuant to the specifications herewith submitted.

1. Name of Property Owner(s): _____

Address: _____ Phone _____

2. Project Location: _____

3. Brief Description of Work to be Performed: _____

A general plan of the lot configuration, building location, grading, and storm water management facilities shall be provided.

4. Name of applicant (if other than owner): _____

Address: _____ Phone _____

The undersigned hereby represents that, to the best of his knowledge and belief, all information listed above and on the storm water management plan herewith submitted is true, correct and complete. _____ Date _____

Signature of Applicant

**PLEASE COMPLETE THE MINOR LAND DISTURBANCE PLAN
AND SUBMIT WITH APPLICATION**

(See Appendix 21 and 21a for Blank Plan and Example Plan)

APPENDIX 2

APPLICATION FOR A STORM WATER MANAGEMENT PERMIT MAJOR LAND DISTURBANCE ACTIVITY

ORWIGSBURG BOROUGH
Schuylkill County, Pennsylvania

File No. _____

Date Received _____

Application is hereby made to Orwigsburg Borough for the issuance of a Storm Water Management Permit pursuant to the specifications herewith submitted.

1. Name of Property Owner(s): _____
Address: _____ Phone _____
2. Project Location: _____
3. Type of Earth Disturbance Activity:
 - A. New impervious or semi-impervious surface _____ (sq. ft./ac.)
 - B. Diversion or piping of natural or man-made watercourse _____ (linear ft.)
 - C. Installation of the following:

Culvert	_____
Detention basin	_____
Retention basin	_____
Sediment basin	_____
Other	_____
 - D. Removal of ground cover, grading, filling, or excavation _____ (sq. ft./ac.)
4. Land disturbance plan prepared by: _____
Address: _____ Phone _____
5. Name of applicant (if other than owner): _____ Address: _____
Phone _____

The undersigned hereby represents that, to the best of his knowledge and belief, all information listed above and on the land disturbance plan herewith submitted is true, correct and complete.

Signature of Applicant

Date

APPENDIX 3

STORM WATER MANAGEMENT PERMIT

ORWIGSBURG BOROUGH
Schuylkill County, Pennsylvania

Minor Land Disturbance

Permit No. _____

The property of _____ located at _____
_____ has received approval of the land disturbance plans dated _____.
Construction may proceed in accordance with approved plans and permit inspection schedule.

Enforcement Officer _____

Date _____

Major Land Disturbance

Permit No. _____

The property of _____ located at _____
_____ has received approval of the land disturbance plans dated _____.
Construction may proceed in accordance with approved plans and permit inspection schedule.

Borough Council _____

Date _____

APPENDIX 4

RAINFALL INTENSITY-DURATION-FREQUENCY CHART						
ORWIGSBURG BOROUGH, SCHUYLKILL COUNTY, PENNSYLVANIA						
Storm Event	2 yrs.	5 yrs.	10 yrs.	25 yrs.	50 yrs.	100 yrs.
Time of Concentration (Minutes)	Rainfall Intensity (Inches/Hour)					
5	4.63	5.40	6.02	6.70	7.51	8.19
6	4.34	5.15	5.70	6.39	7.22	7.90
7	4.12	4.95	5.42	6.10	6.95	7.62
8	3.92	4.70	5.17	5.85	6.70	7.36
9	3.75	4.50	4.95	5.62	6.47	7.12
10	3.59	4.30	4.75	5.41	6.26	6.90
11	3.45	4.15	4.58	5.22	6.07	6.70
12	3.32	4.0	4.42	5.05	5.88	6.50
13	3.21	3.85	4.27	4.89	5.71	6.33
14	3.10	3.70	4.13	4.74	5.55	6.16
15	3.00	3.55	4.0	4.60	5.40	6.00
16	2.91	3.46	3.89	4.47	5.27	5.85
17	2.83	3.37	3.78	4.35	5.13	5.71
18	2.75	3.28	3.68	4.24	5.01	5.58
19	2.67	3.19	3.58	4.13	4.89	5.46
20	2.60	3.10	3.50	4.03	4.78	5.34
21	2.54	3.01	3.41	3.94	4.68	5.23
22	2.48	2.92	3.33	3.85	4.58	5.12
23	2.42	2.83	3.26	3.77	4.48	5.01
24	2.36	2.74	3.19	3.68	4.39	4.92
25	2.31	2.65	3.15	3.61	4.30	4.83
26	2.26	2.61	3.05	3.53	4.22	4.74
27	2.22	2.57	2.99	3.47	4.14	4.65
28	2.17	2.53	2.93	3.40	4.06	4.57
29	2.13	2.49	2.88	3.33	3.99	4.49
30	2.09	2.45	2.82	3.27	3.92	4.41
35	1.91	2.25	2.59	3.00	3.61	4.08
40	1.76	2.05	2.39	2.78	3.34	3.79
45	1.63	1.91	2.22	2.58	3.12	3.54
50	1.53	1.77	2.08	2.42	2.92	3.33
55	1.43	1.69	1.96	2.28	2.75	3.15
60	1.35	1.60	1.85	2.15	2.60	2.98

Source: Pennsylvania Department of Transportation, Region 5 Intensity-Duration-Chart, developed by Penn State University, Department of Engineering, October 1986.

APPENDIX 5

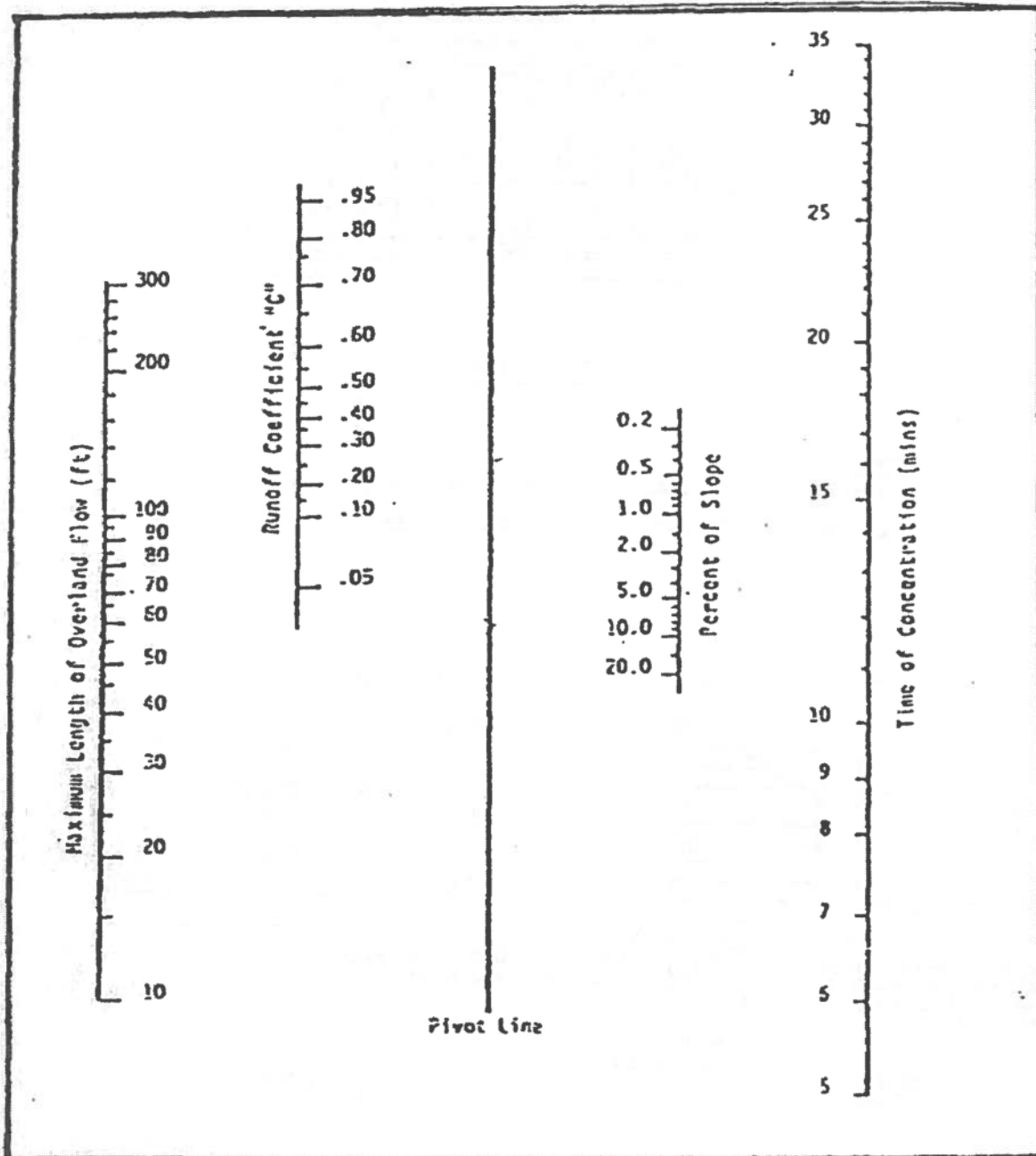
Runoff Coefficients "C" for Rational Formula												
Soil Group	A			B			C			D		
Slope	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+
Land Use												
Cultivated Land												
winter conditions	.14	.23	.34	.21	.32	.41	.27	.37	.48	.34	.45	.56
summer conditions	.10	.16	.22	.14	.20	.28	.19	.26	.33	.23	.29	.38
Fallow Fields												
poor conditions	.12	.19	.28	.17	.25	.34	.23	.33	.40	.27	.35	.45
good conditions	.08	.13	.16	.11	.15	.21	.14	.19	.26	.18	.23	.31
Forest/Woodland	.08	.11	.14	.10	.14	.18	.12	.16	.20	.15	.20	.25
Grass Areas												
good conditions	.10	.16	.20	.14	.19	.26	.18	.22	.30	.21	.25	.35
average conditions	.12	.18	.22	.16	.21	.28	.20	.25	.34	.24	.29	.41
poor conditions	.14	.21	.30	.18	.28	.37	.25	.35	.44	.30	.40	.50
Impervious Areas	.90	.91	.92	.91	.92	.93	.92	.93	.94	.93	.94	.95
Weighted Residential												
Lot size 1/8 acre	.29	.33	.36	.31	.35	.40	.34	.38	.44	.36	.41	.48
Lot size 1/4 acre	.26	.30	.34	.29	.33	.38	.32	.36	.42	.34	.38	.46
Lot size 1/3 acre	.24	.28	.31	.26	.32	.35	.29	.35	.40	.32	.36	.45
Lot size 1/2 acre	.21	.25	.28	.24	.27	.32	.27	.31	.37	.30	.34	.43
Lot size 1 acre	.18	.23	.26	.21	.24	.30	.24	.29	.36	.28	.32	.41

APPENDIX 6

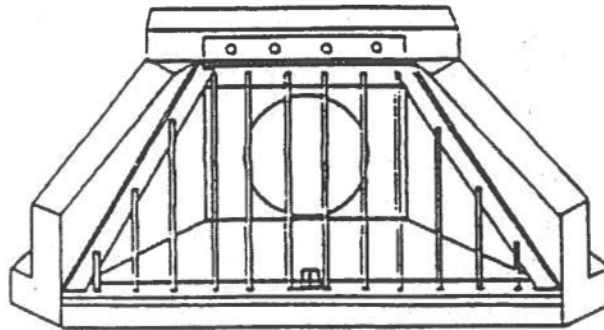
Runoff Curve Numbers "CN" for SCS Method													
Soil Group		A			B			C			D		
	Slope	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+
Land Use													
Cultivated Land													
	winter conditions	48	60	75	62	73	82	68	78	90	77	88	95
	summer conditions	35	51	58	48	55	65	57	65	73	64	69	79
Fallowed Fields													
	poor conditions	45	54	65	56	63	73	64	74	81	69	77	87
	good conditions	30	44	48	43	48	55	48	54	63	56	60	68
Forest/Woodland		30	40	43	42	46	50	45	50	53	50	56	61
Grass Areas													
	good conditions	35	51	53	48	54	63	56	59	73	62	63	79
	average conditions	45	53	58	52	55	65	60	63	75	65	69	82
	poor conditions	48	55	67	56	67	77	66	74	85	73	81	90
Impervious Areas		96	97	98	96	97	98	96	97	98	96	97	98
Weighted Residential													
	Lot size 1/8 acre	71	75	78	74	76	82	78	80	87	81	83	90
	Lot size 1/4 acre	62	67	71	66	69	76	67	69	76	75	78	88
	Lot size 1/3 acre	59	65	69	64	66	74	65	66	75	74	77	87
	Lot size 1/2 acre	57	63	68	62	64	73	63	65	73	72	76	86
	Lot size 1 acre	55	62	67	61	63	72	61	64	72	71	75	85

APPENDIX 7

TIME OF CONCENTRATION NOMOGRAPH (for use with the Rational Method)



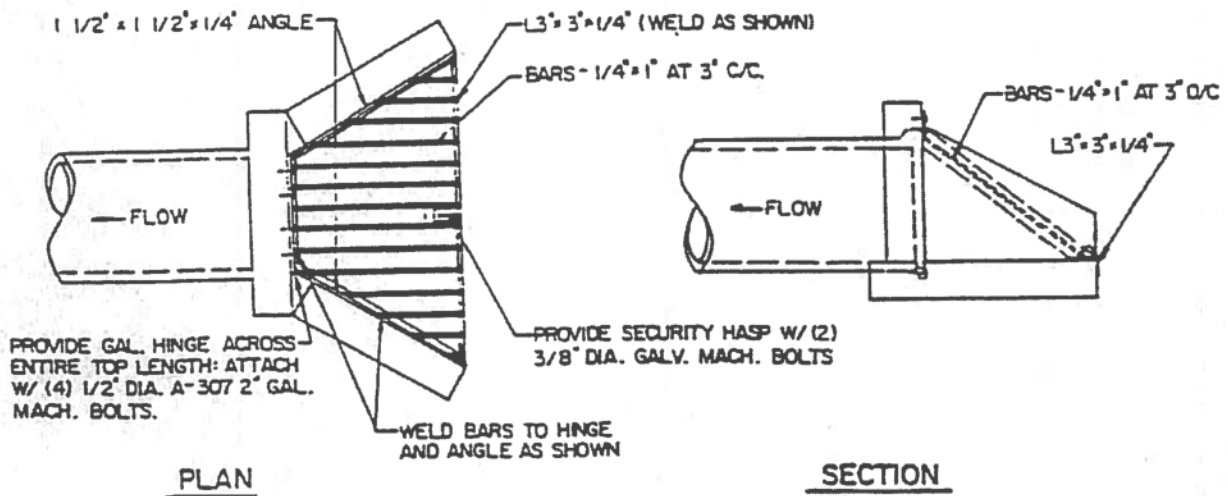
APPENDIX 8



ISOMETRIC

NOTES:

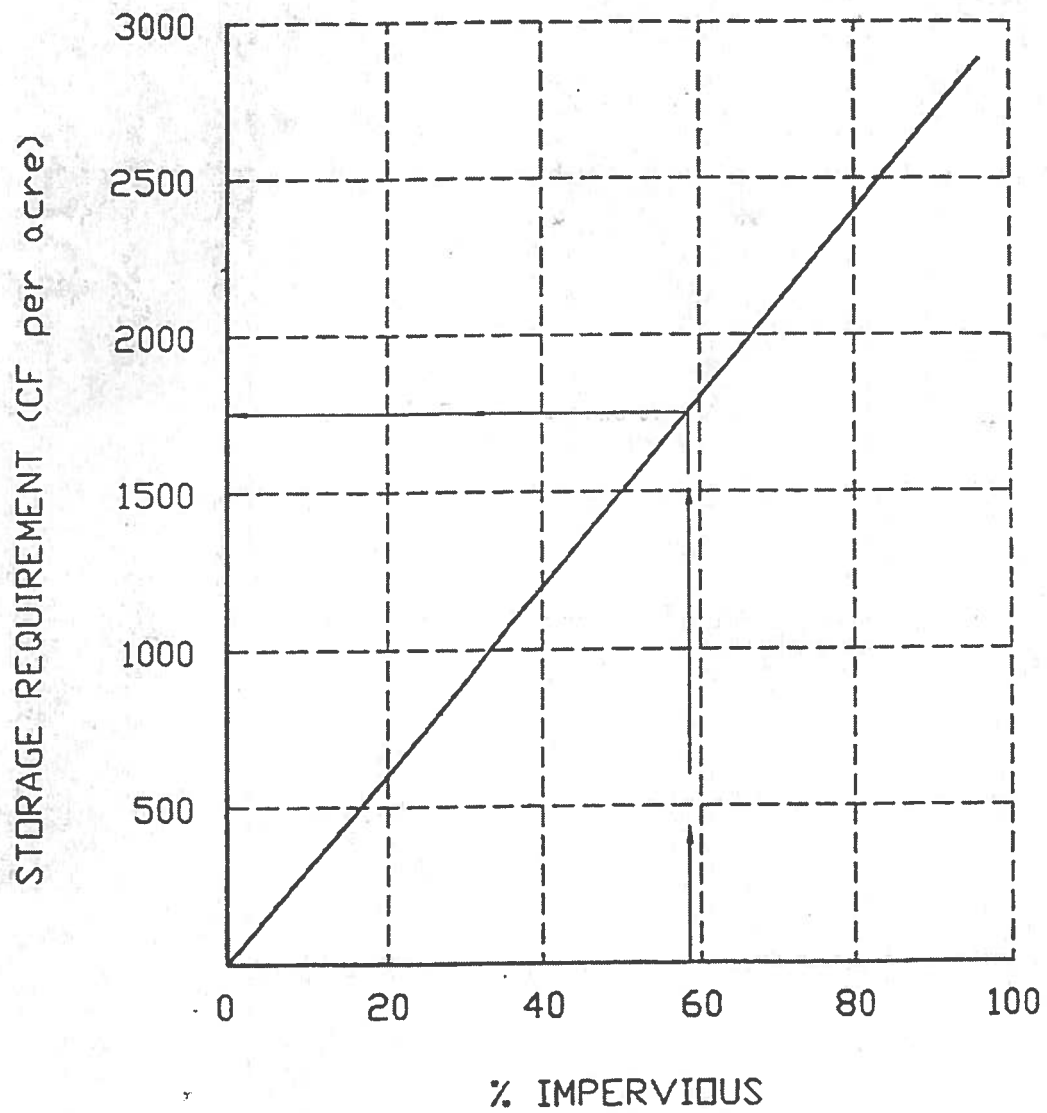
1. MATERIAL TO BE: GALVINIZED STEEL W/ RUST INHIBITOR, OR ALUMINUM.
2. DIMENSION APPROPRIATELY FOR HEADWALL UTILIZED.



TRASH RACK DETAIL (TYPE 'DW' HEADWALLS ONLY)

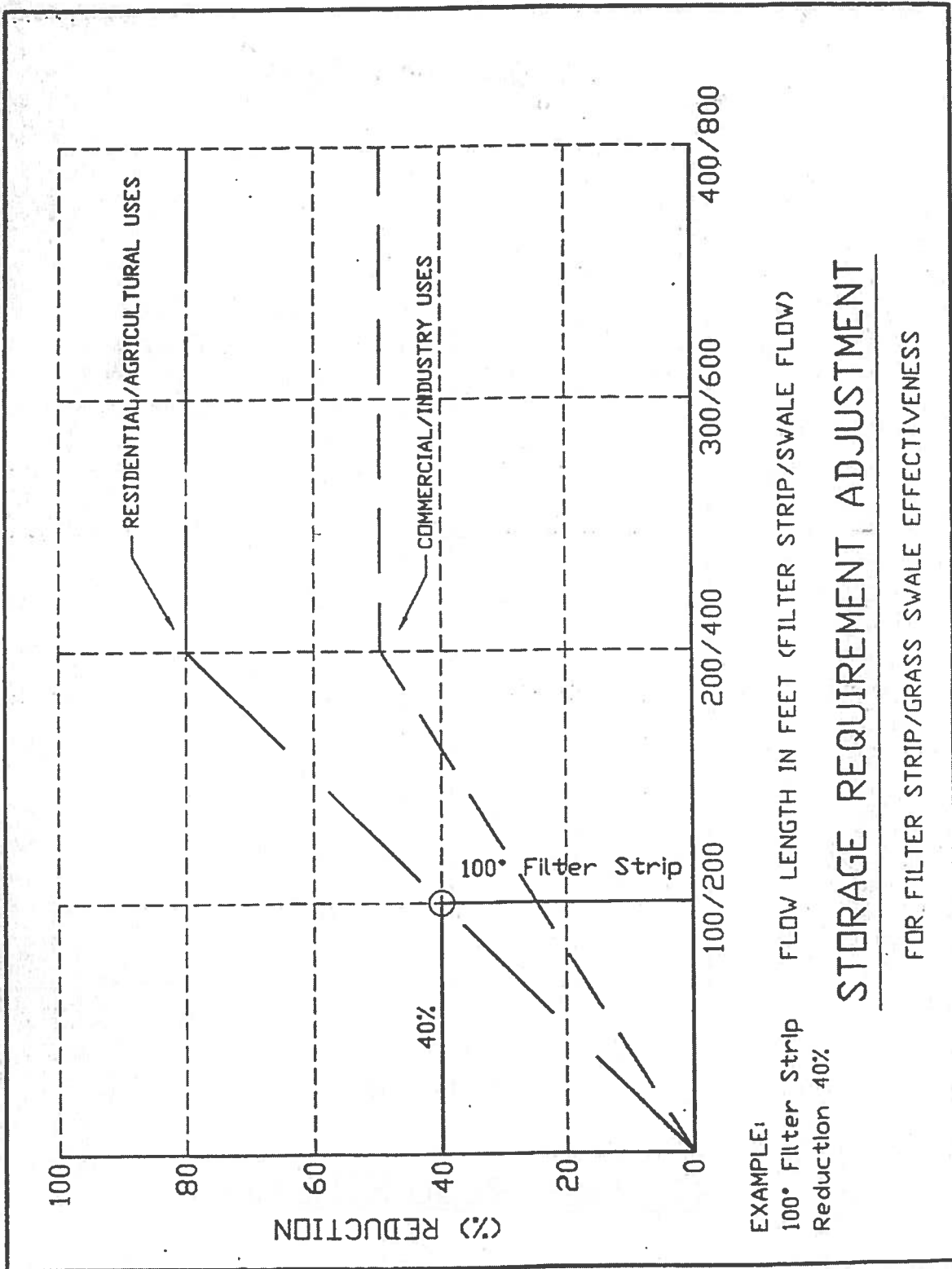
NO SCALE

APPENDIX 9

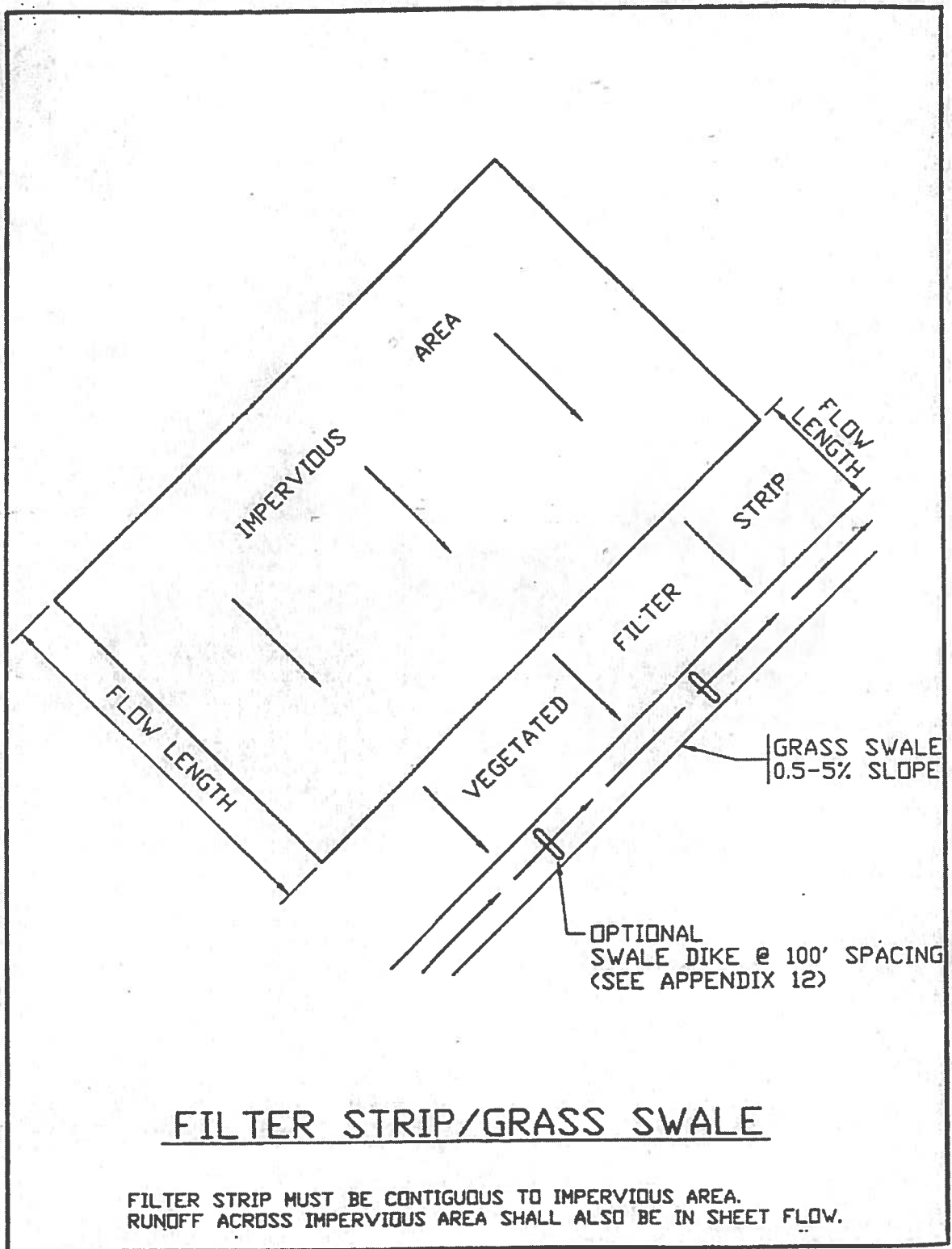


STORAGE REQUIREMENTS

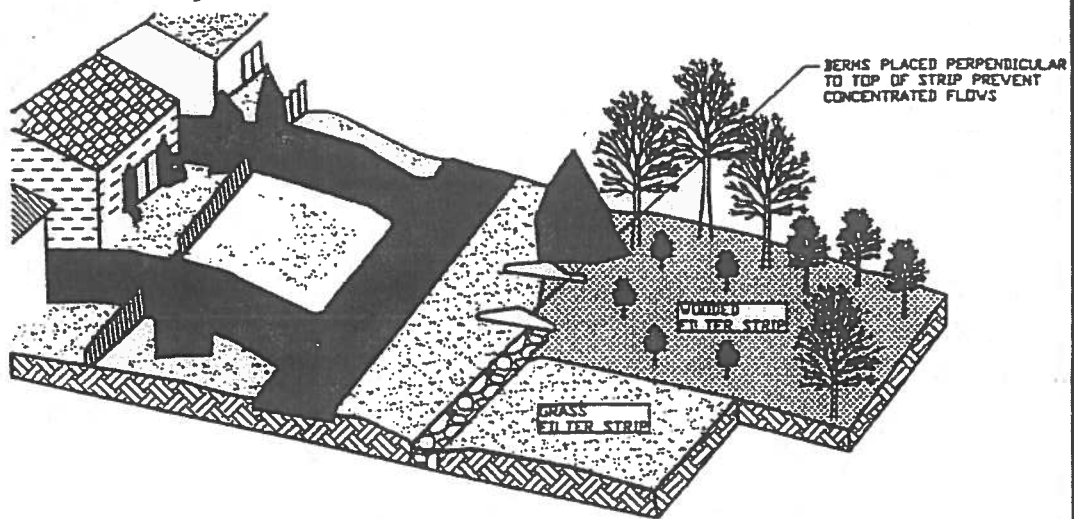
APPENDIX 10



APPENDIX 11



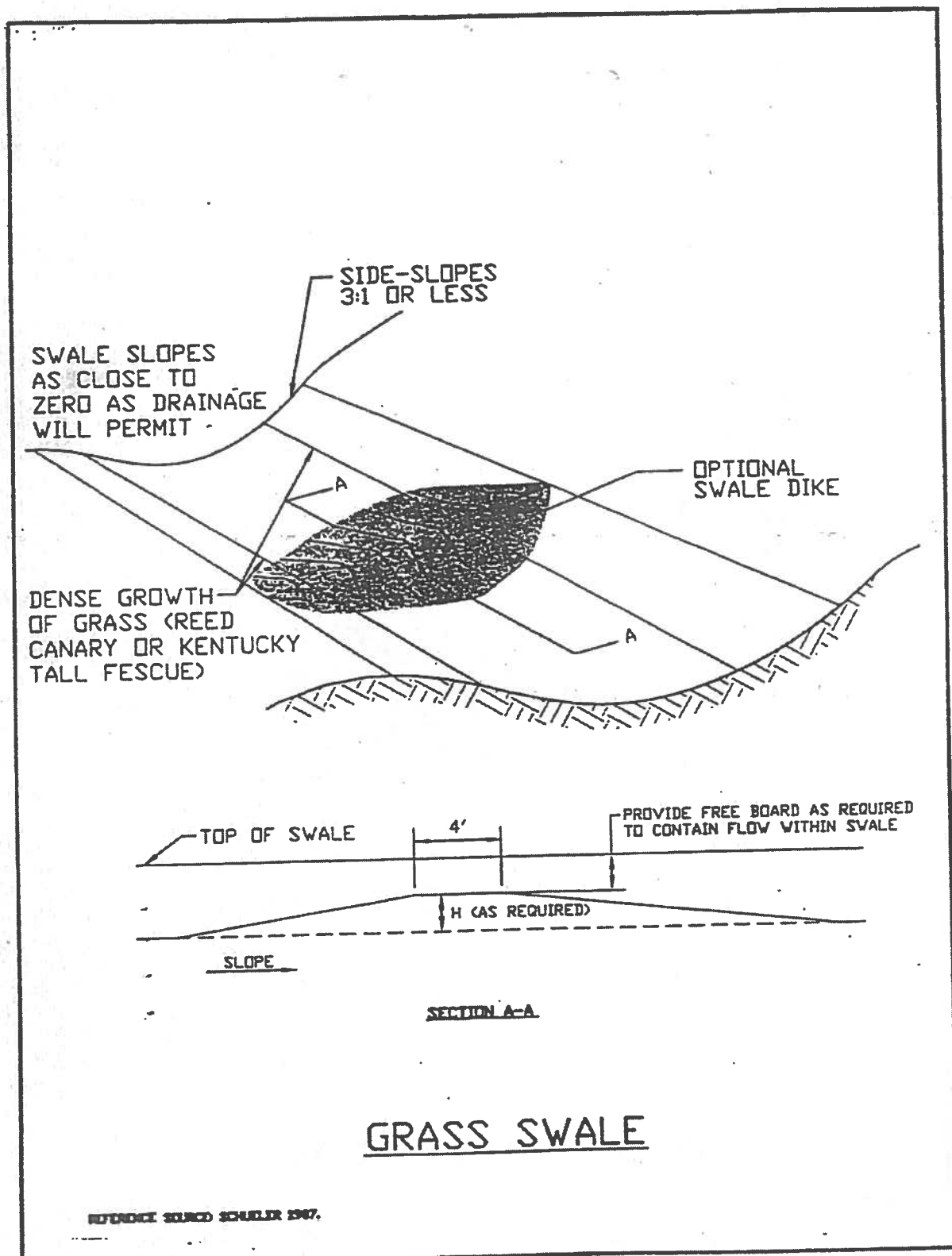
APPENDIX 12



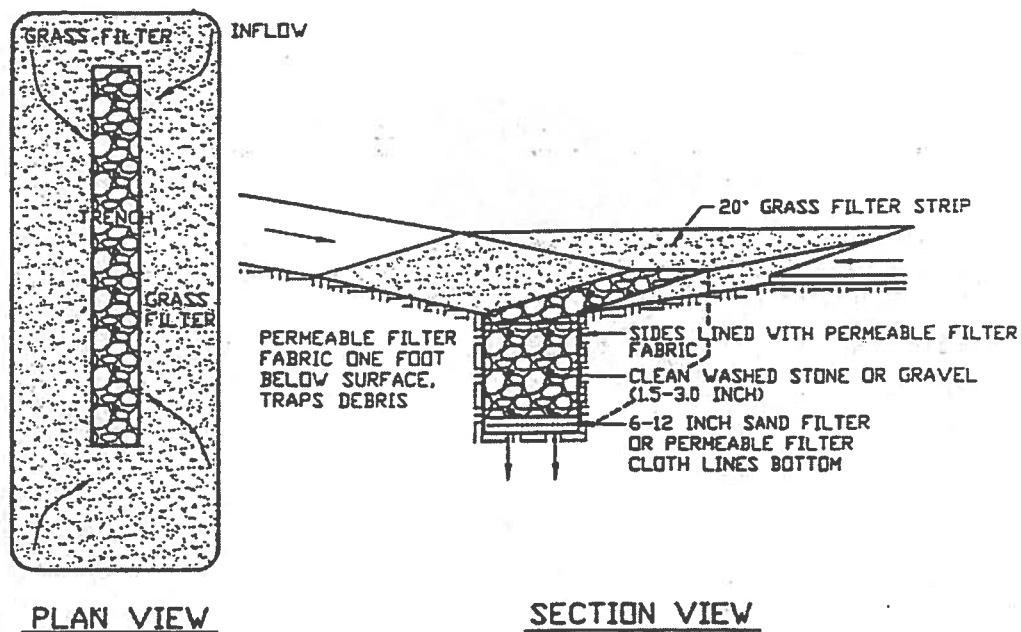
FILTER STRIP

REFERENCE SOURCE: SCHUELER 1987.

APPENDIX 13



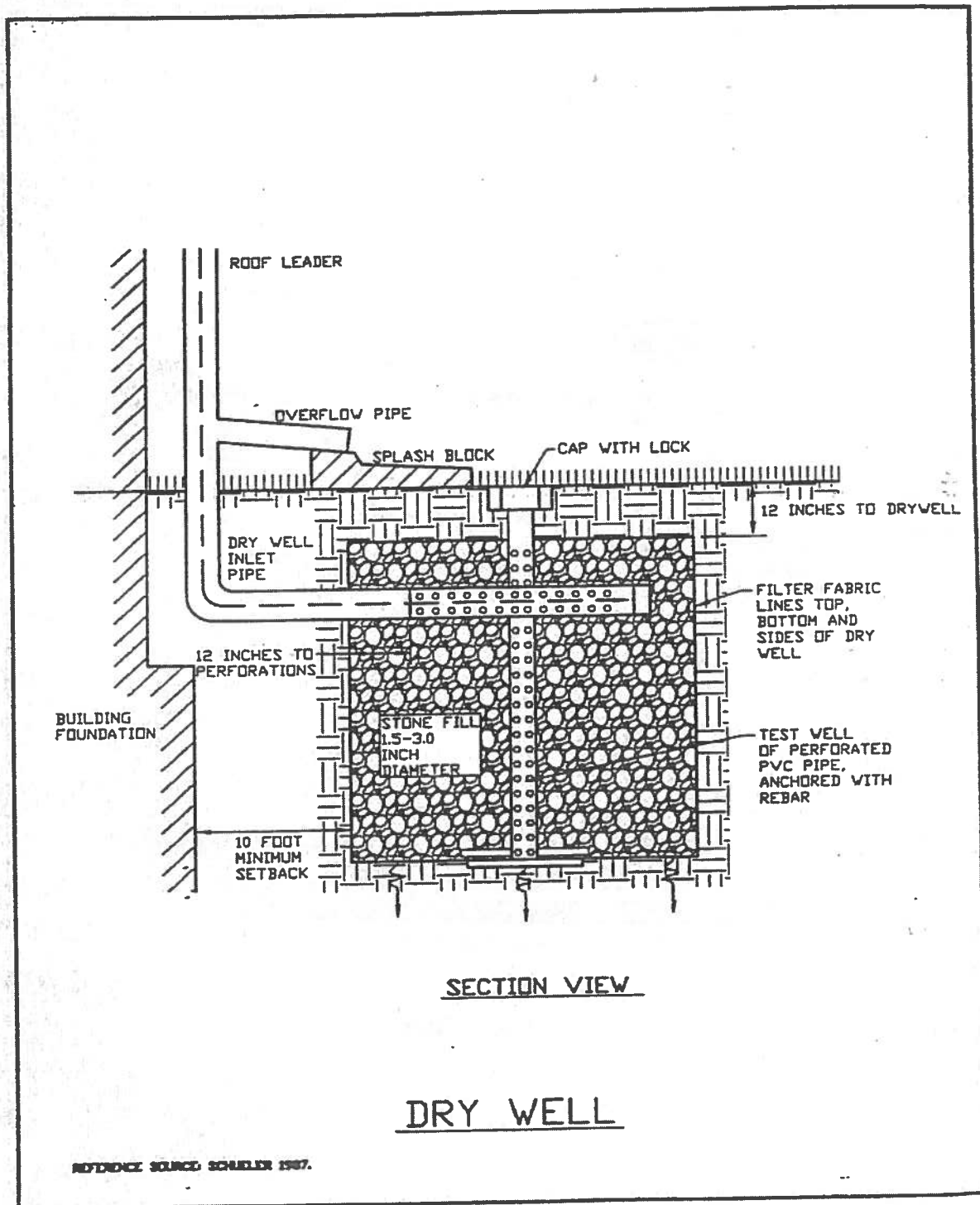
APPENDIX 14



INFILTRATION TRENCH

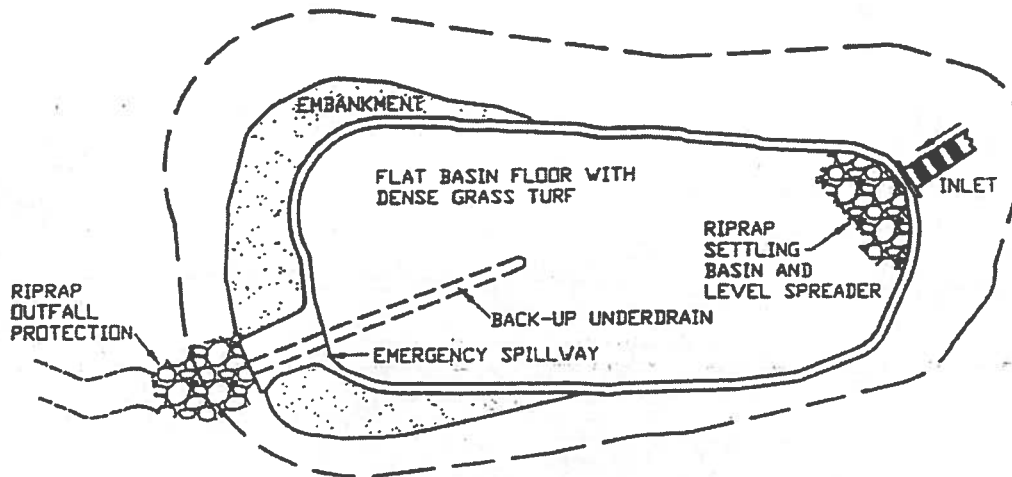
REFERENCE: SLOAN SCHLEIER 1987.

APPENDIX 15

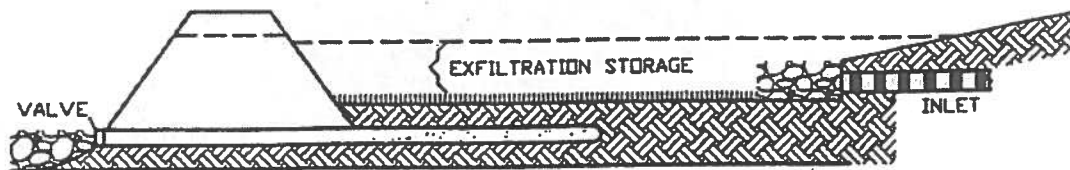


Note: an in-line sump with cleanout access shall be provided between the roof leader and the drywell/infiltration bed/leach ring or other similar infiltration facility. This is an example. Actual design, size and shape may vary as long as function is met.

APPENDIX 16



PLAN VIEW



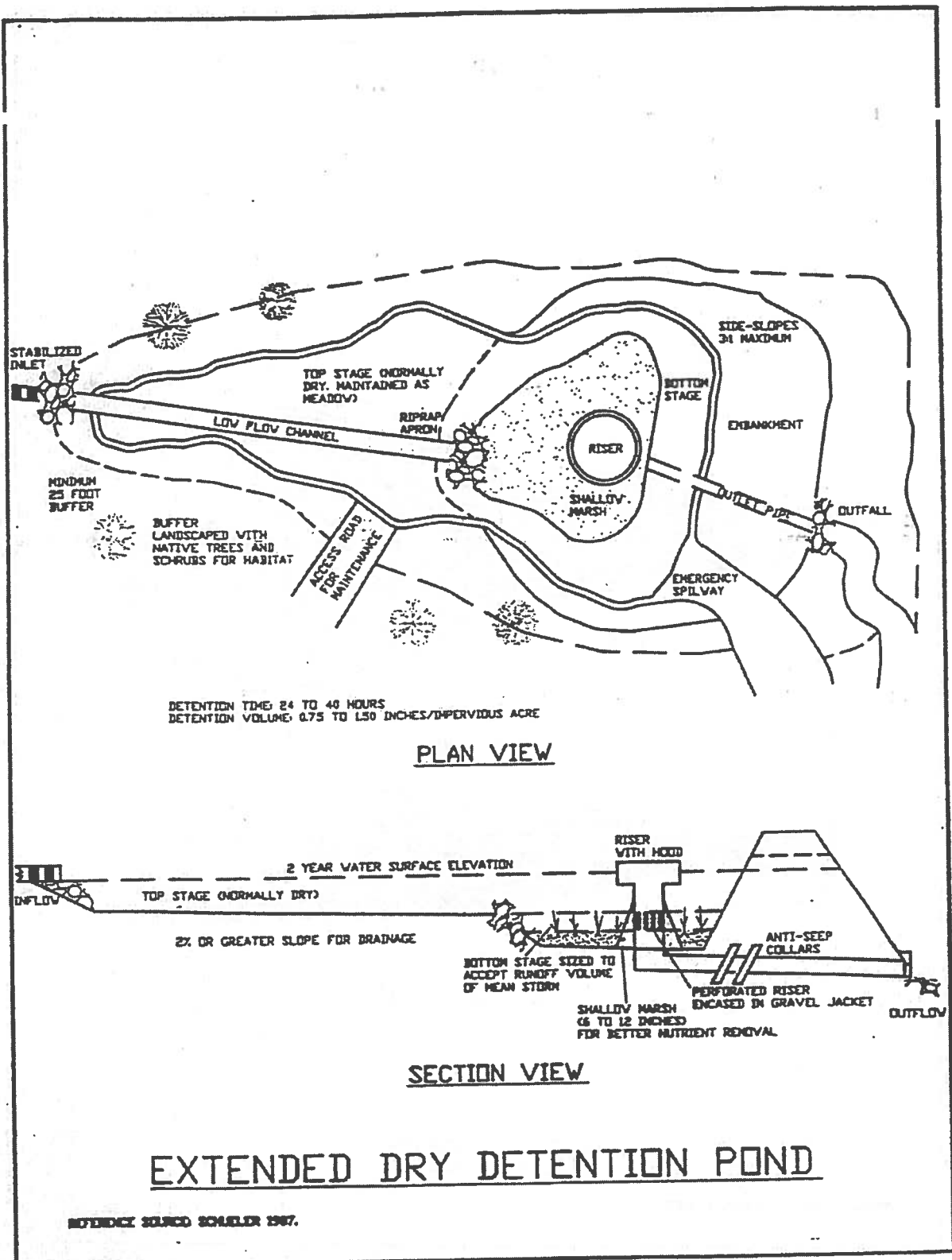
NOTE: BACK-UP UNDERDRAIN PIPE IN CASE OF STANDING WATER PROBLEMS

SECTION VIEW

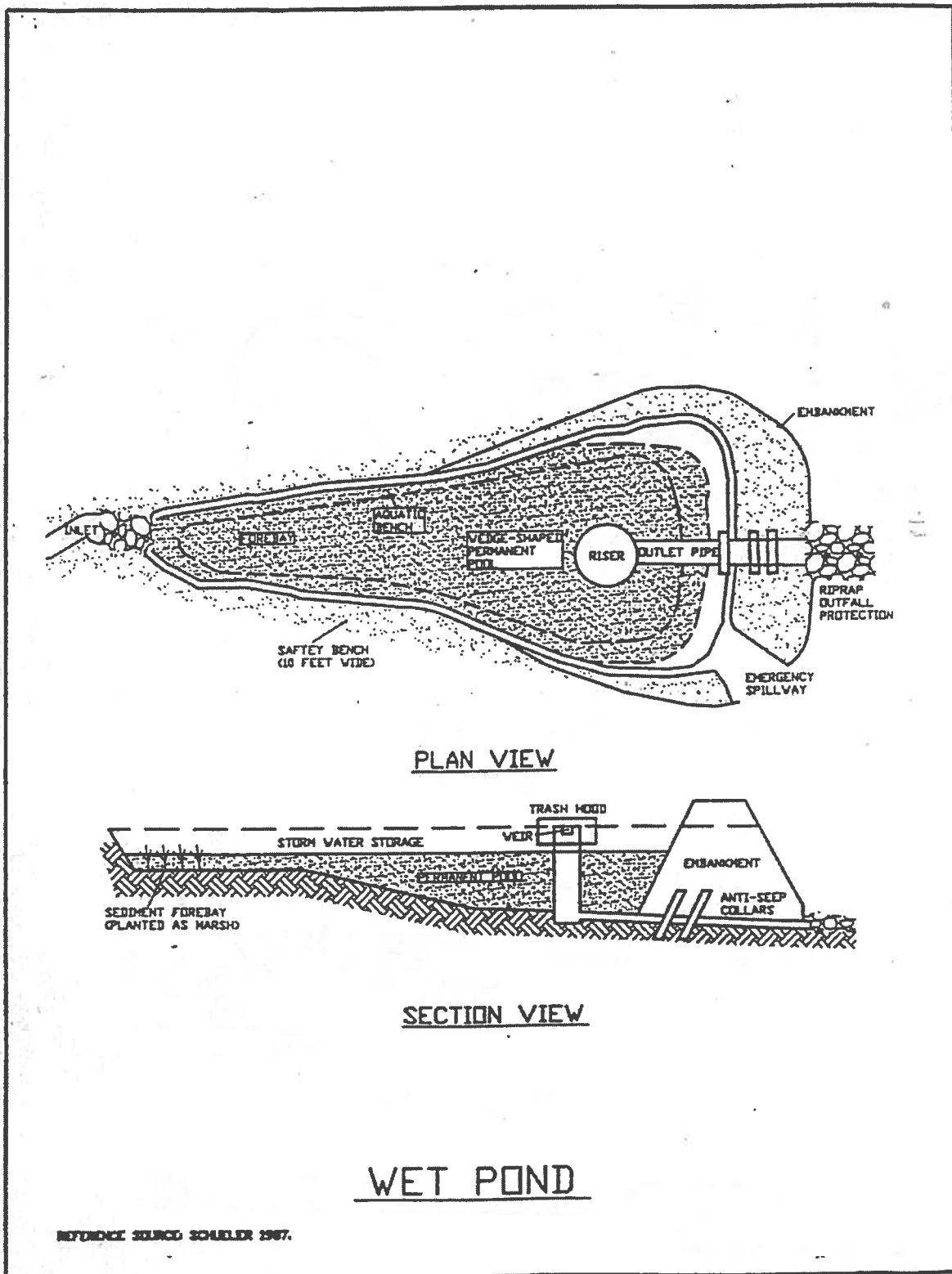
INFILTRATION BASIN

REFERENCE SOURCE: SCHUELER 1987.

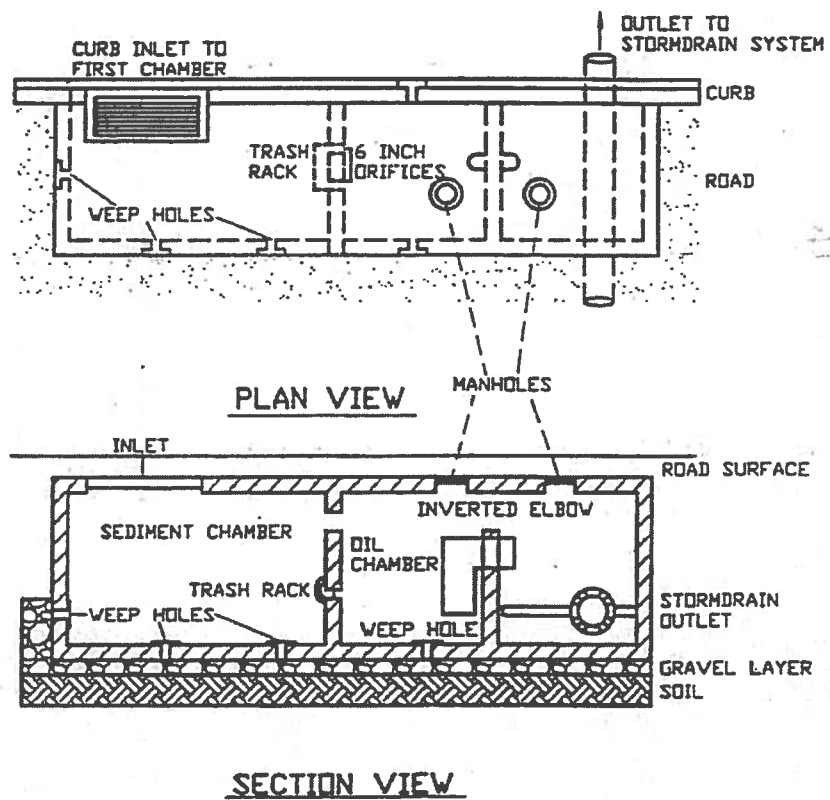
APPENDIX 17



APPENDIX 18



APPENDIX 19

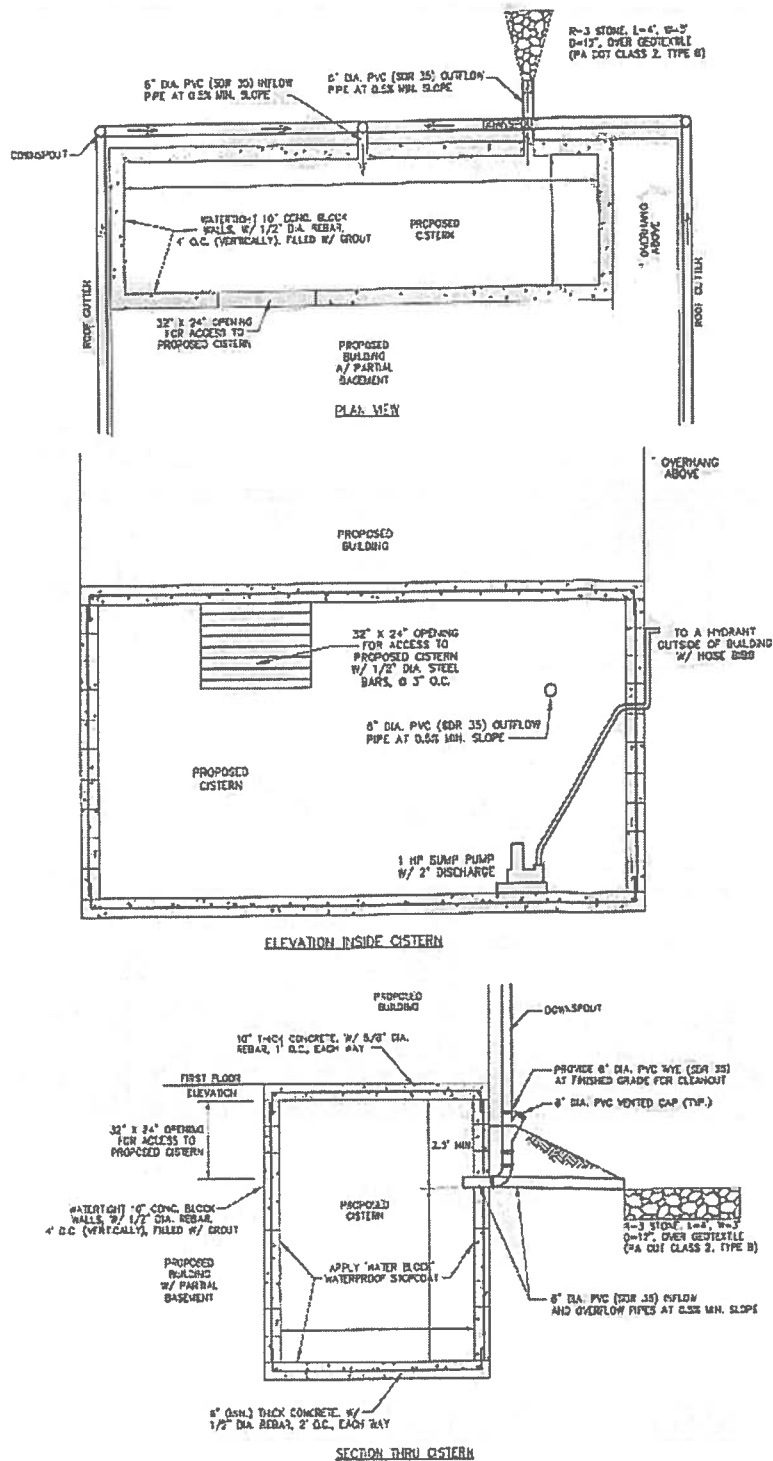


WATER QUALITY INLET

REFERENCE SOURCE SCHULZ 1987.

APPENDIX 20

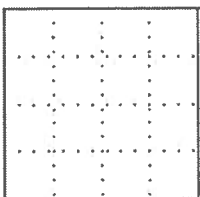
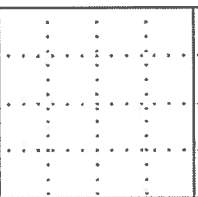
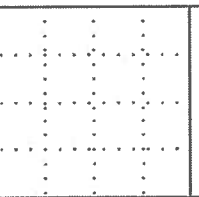
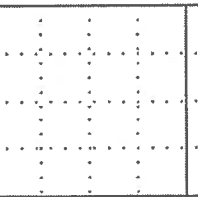
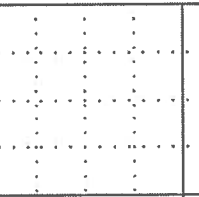
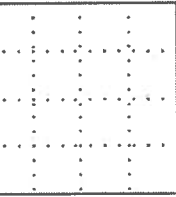
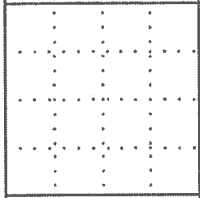
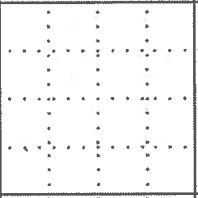
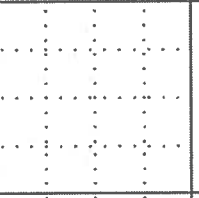
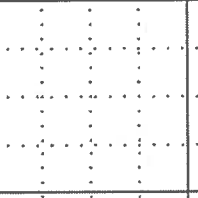
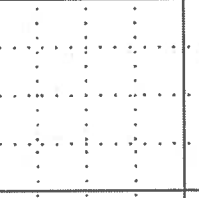
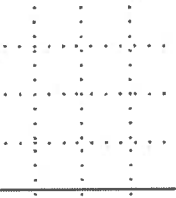
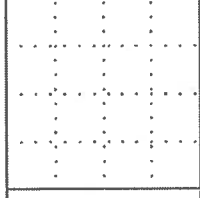
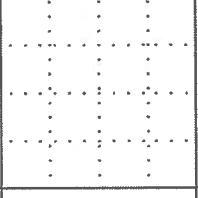
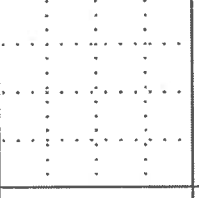
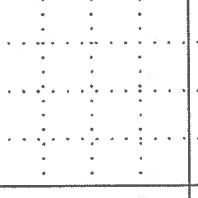
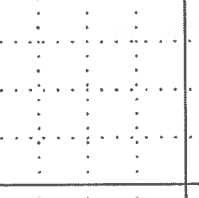
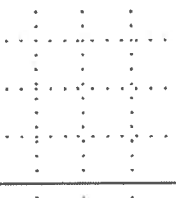
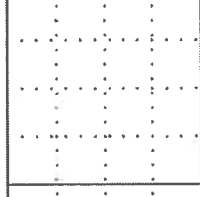
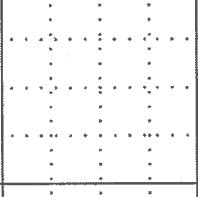
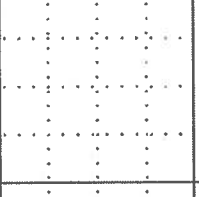
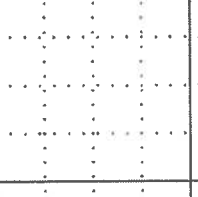
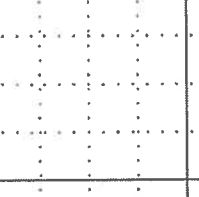
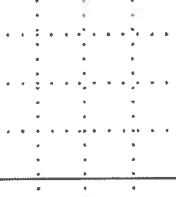
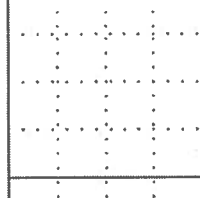
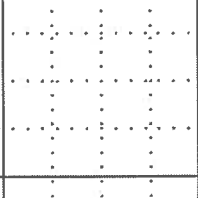
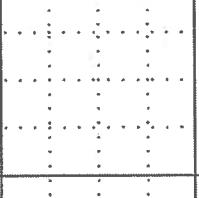
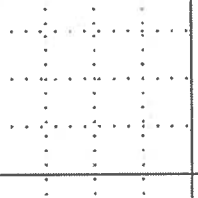
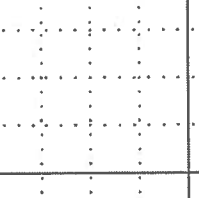
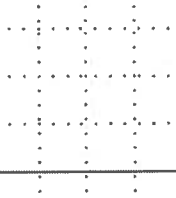
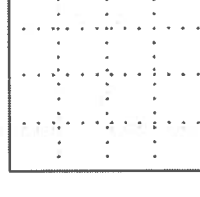
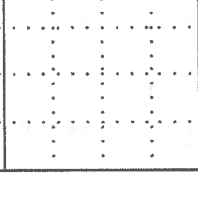
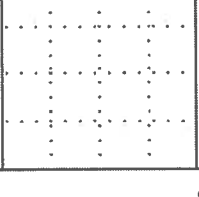
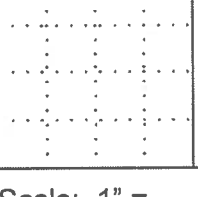
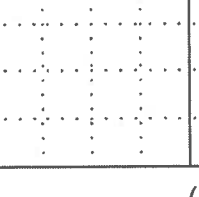
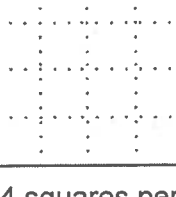
CISTERN



Note: Actual size and shape of cistern will vary depending on required amount of storm water storage volume. This is an example. Actual design, size and shape may vary as long as function is met. External access must be provided with a lockable mechanism. All cisterns shall include structural design information for review prior to approval

APPENDIX 21

MINOR LAND DISTURBANCE PLAN

Scale: 1" = _____ (4 squares per inch)

The following shall be shown on the Plan:

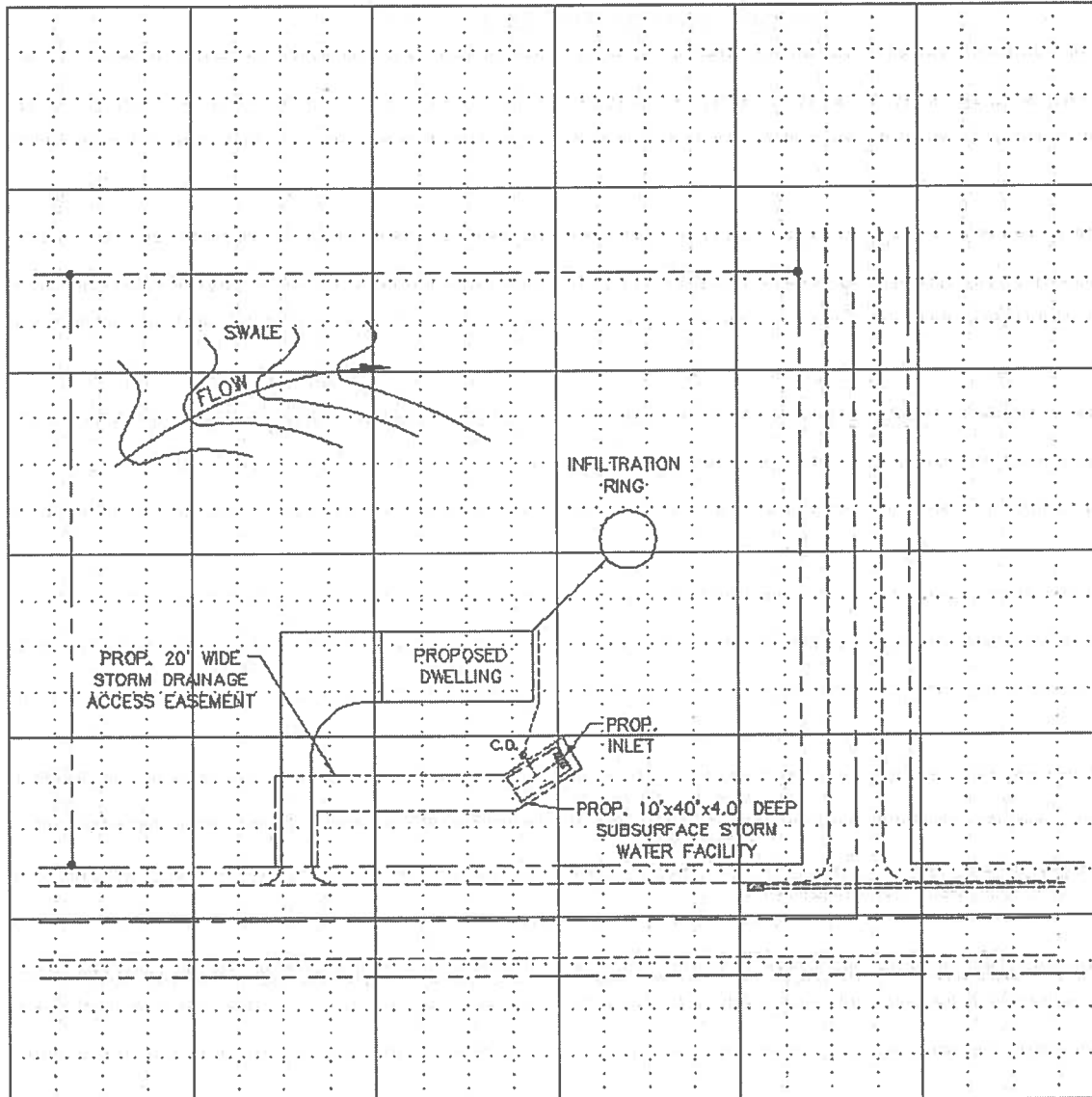
Lot Configuration
Building Location
Contours or Flow Arrows
Storm Sewers
Detention Basins
Cisterns
Sidewalks

Berms
Terraces
Bridges
Dams
Retention Basins
Seepage Beds
Driveways

Infiltration System
Swales
Watercourses
Floodplains
Inlets
Leach Rings
Patio

APPENDIX 21a

MINOR LAND DISTURBANCE PLAN (EXAMPLE)



Scale: 1" = _____ (4 squares per inch)

The following shall be shown on the Plan:

Lot Configuration
Building Location
Contours or Flow Arrows
Storm Sewers
Detention Basins
Cisterns
Sidewalks

Berms
Terraces
Bridges
Dams
Retention Basins
Seepage Beds
Driveways

Infiltration System
Swales
Watercourses
Floodplains
Inlets
Leach Rings
Patios

APPENDIX 22

CERTIFICATE FOR APPROVAL BY THE BOROUGH COUNCIL

Approved by the Orwigsburg Borough Council this ____ day of _____,

20____

=====

APPENDIX 23

CERTIFICATE FOR REVIEW BY THE PLANNING AND ZONING COMMISSION

Reviewed by the Orwigsburg Borough Planning and Zoning Commission this _____ day of

_____,

20____

=====

APPENDIX 24

CERTIFICATE FOR REVIEW BY THE BOROUGH ENGINEER

(if required by the Borough)

Reviewed by the Orwigsburg Borough Engineer this ____ day of _____, 20____

APPENDIX 25

STORM WATER MANAGEMENT CERTIFICATION

I hereby certify that, to the best of my knowledge, the storm water management facilities shown and described hereon are designed in conformance with the Orwigsburg Borough Storm Water Management and Earth Disturbance Ordinance of 2010.

_____, 20____ *

**

- * Signature of the registered professional responsible for the preparation of the plan.
- ** Seal of the individual

APPENDIX 26

STORM WATER MANAGEMENT EXEMPTION CRITERIA

Existing Developed Properties:

Lands improved with existing structures as of the date of adoption of this Ordinance (effective date) may be exempted for an additional 1,000 square feet of impervious surface in all Zoning Districts provided that the total impervious surfaces do not exceed ten thousand (10,000) square feet in the aggregate and flows from the site after development leave the site in the same manner as the pre-development condition and there are no adverse effects to the adjacent property (ies). This exemption is limited to Single-Family Residential Dwellings and Two-Family detached and semi-detached Residential Dwellings and is not to be construed to include single unit mobile homes unless located on separate parcels (non-mobile home park).

Wellhead Protection Areas

Wellhead protection areas are exempt from certain types of storm water management facilities as listed in Appendix 26 for specific Wellhead Protection Zones, may be adopted by the Borough.

Existing Properties in Effective Agricultural Use Areas:

The following criteria shall apply to all existing lots in effective agriculture** areas (1 lot per 20 acres or larger***).

Total Parcel Size	Minimum Distance* (Feet)	Cumulative New Impervious Areas Exempt from Ordinance
0-0.5 acre	10	500 sq. ft.
0.5-1 acre	50	2,500 sq. ft.
1-2 acres	100	10,000 sq. ft.
2-5 acres	250	15,000 sq. ft.
>5 acres	500	20,000 sq. ft.

* The minimum distance between the proposed impervious area and/or storm water controls/structure discharge point to the downslope property line of the Parent Tract. In lieu of meeting the minimum distance criteria, the applicant may provide documentation from a Qualified Registered Professional in the state of Pennsylvania that the increased flows from the site leaves the site in the same manner as the pre-development condition and that there will be no adverse effects to adjacent property, or the increased flows reach a natural drainage way or existing storm water management structure before affecting adjacent property.

** All farms for which an exemption is requested shall have a Conservation Plan approved by the appropriate officials. For existing Farms, the exemptions shall only apply where the property is still used as a functioning Farm in accordance with the definition of Agricultural use

*** All parcels under consideration for this exemption must provide proof that they were subdivided from the parent tract of at least 20 acres in size with no more than one (1) lot subdivided from the parent tract for each 20 acres of the said parent tract. Any lot subdivided from a parent tract of less than 20 acres or more than one lot subdivided from the same parent tract for each 20 acres of said parent tract is not eligible for the above exemptions for Effective Agricultural Use Areas

Forestry Operation Exemptions

Forestry operations as defined in Section 201 of this Ordinance are exempt provided that a Timber Harvesting Plan is submitted and approved by the Schuylkill Conservation District. Clear cutting for later Land Development purposes does not qualify for this exemption.

Maintenance of Utility Lines:

Linear Land Disturbance involving the maintenance and/or replacement of underground Utility Lines is exempt from the requirements of this Ordinance with regard to obtaining a Minor or Major Land Disturbance Permit. Such Linear Land Disturbance shall be exempt provided that the actual disturbance is limited only to the trenching required for the maintenance and/or replacement of such Linear Utility Line. The Enforcement Officer shall determine through field visits if the work involved meets the Linear Land Disturbance exemption criteria. All such linear construction/maintenance shall satisfy the requirements of the Schuylkill Conservation District as well as any other permits required by any other governing agency as stated in Section 108 of this Ordinance. Evidence of such permits and/or approved plans shall be available at the job site at all times at the request of the Enforcement Officer. All runoff flowing from the Linear Land Disturbance area after restoration/stabilization shall leave the area in the same manner as the pre-development condition and there are no adverse effects to the adjacent property(ies).

This linear exemption does not include situations where such disturbance is part and parcel with any use requiring a Minor or Major Land Disturbance Activity Permit.

Wellhead Protection Areas

Prohibitions per Wellhead Protection Zone:

- Zone I - No storm water storage volume attenuation of any type, whether for detention, retention, infiltration, recharge or water quality purposes regardless of watershed designation, i.e. High Quality (HQ), Exceptional Value (EV), Cold Water Fishery (CWF), etc.
- Zone II – Retention, infiltration and recharge facilities are specifically prohibited. Storm Water volume for surface detention and surface water quality facilities is permitted provided that a geological assessment is provided. The geological assessment shall certify specifically that ground water from such storm water attenuation facilities that are located in areas associated with Karst features will not contaminate the ground water within the wellhead protection area. In situations where such certification cannot be provided all required surface storage volume attenuation facilities whether for detention and/or water quality must be lined with impermeable liners.
- Zone III – Storm water storage volume attenuation of any type, whether for detention, retention, infiltration, recharge or water quality purposes is permitted provided that a geological assessment is provided. The geological assessment shall certify specifically that ground water from such storm water attenuation facilities that are located in areas associated with Karst features will not contaminate the ground water within the wellhead protection area. In situations where such certification cannot be provided no infiltration facility will be permitted and all required surface storage volume facilities whether for detention and/or water quality must be lined with impermeable liners.

APPENDIX 27

MINIMAL IMPACT ACTIVITY APPLICATION GUIDELINES

Single residential lots proposed to be developed with new impervious area not exceeding 3,500 SF to be added and meet the requirements below:

% Slope of Site	Distance to Downstream Property Line or Receiving Body of Water (Feet)*	Cumulative New Impervious Allowed
0-2	20	10% of remaining pervious area
2-6	30	
6+	40	

*The minimum distance between the proposed impervious area and/or stormwater controls/structure discharge point to the down-slope property line of the Parent Tract. In lieu of meeting the minimum distance criteria, the applicant may provide documentation from a Qualified Registered Professional in the Commonwealth of Pennsylvania that the increased flows from the site leaves the site in the same manner as the pre-development condition and that there will be no adverse effects to adjacent property, or the increased flows reach a natural drainage way or existing stormwater management structure before affecting adjacent property.

Remaining Pervious Area = Total Lot Area – Existing Impervious Area**

Example:

Lot Area = 0.75 acre

Existing Impervious = 1,500 SF

Site Slope = 4%

Distance between proposed improvements and nearest property line = 35 feet

Lot Area = 0.75 acre (43,560 SF/Acre) = 32,670.0 SF

Remaining Pervious Area = 32,670 SF – 1,500 SF

Remaining Pervious Area = 31,170.0 SF

10% of Remaining Pervious Area = Allowable New Impervious

10% of 31,170 SF = 3,117 SF

Meets the minimum setback requirements and 3,117 SF is less than 3,500 SF, therefore the project qualifies as a Minimal Impact project.

**At the date of the adoption of this Ordinance.

