Chapter 26

Water

Part 1
Stormwater Management

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Stormwater Management

§26-101. General Provisions.

1. *Purpose*. These regulations are adopted and implemented to achieve the following general purposes and objectives:

A. To manage and control stormwater runoff resulting from land alteration and disturbance activities in accordance with the water shed stormwater management plans adopted pursuant to the Pennsylvania Storm Water Management Act, 32 P.S. §680.1 *et seq*.

B. To utilize and preserve the desirable existing natural drainage systems and to preserve the flood-carrying capacity of streams.

C. To encourage natural infiltration of rainfall to preserve and recharge groundwater supplies and stream flows.

D. To provide for the design, installation and adequate maintenance of all permanent stormwater management structures in the Borough.

2. *Applicability*. The following activities are included within the scope of this Part:

A. Land development.

B. Subdivision.

C. Construction of new or additional impervious or semipervious surfaces (driveways, roadways, parking lots, buildings and additions thereto, etc.) which increases the rate of runoff equal to or more than 0.30 cfs as calculated using the Rational Formula for a 10-year storm, except that residential construction creating less than 5,000 square feet of impervious surfaces shall not apply.

D. Diversion or piping of any natural or manmade drainage channel.

E. Installation of stormwater systems or appurtenances thereto, except those areas covered by PennDOT or other governmental agencies.

F. Earth moving activity involving five or more acres of land.

3. *Liability Disclaimer*.

A. Neither the granting of any approval under the stormwater management provisions of this Part, nor the compliance with the provisions of this Part, or with any condition imposed by a municipal official hereunder, shall relieve any person from any responsibility for damage to persons or property resulting therefrom, or as otherwise imposed by law, nor impose any liability upon the Borough for damages to persons or property.

B. The granting of a permit which includes any stormwater management facilities shall not constitute a representation, guarantee or warranty of any kind by the Borough, or by an official or employee thereof, of the practicability or safety of any structure, use or other plan proposed, and shall create no liability upon or cause of action against such public body, official or employee for any damage that may result pursuant thereto.

4. *Compatibility*. Permits and approvals issued pursuant to this Part do not

relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other applicable code, rule, act or ordinance. If more stringent requirements concerning regulation of stormwater control are contained in the other code, rule or ordinance, the more stringent regulations shall apply. The following permit requirements apply to certain land development activities and must be met prior to municipal approval of subdivision or land development plan approval, or issuance of zoning or occupancy permits, where applicable:

A. All earth disturbance activities subject to standards and possible permit requirements by PADEP under 25 Pa.Code, Chapter 102, regulations.

B. Work within natural drainage ways subject to permit by PADEP under 25 Pa.Code, Chapter 105.

C. Any stormwater management facility that would be located in or adjacent to surface waters of the Commonwealth, including wetlands, subject to permit by PADEP under 25 Pa.Code, Chapter 105.

D. Any stormwater management facility that would be located on a State highway right-of-way subject to approval by the Pennsylvania Department of Transportation.

E. Culverts, bridges, storm sewers or any other facilities which must pass or convey flows from the tributary area and any facility which may constitute a dam subject to permit by DEP under 25 Pa.Code, Chapter 105.

[*Ord. 978*]

(*Ord. 850*, 4/15/1992, §101; as amended by *Ord. 978*, 5/31/2011)

§26-102. Stormwater Management Performance Standards.

1. *Stormwater Management Performance Districts*.

A. For purposes of stormwater management, the Borough of Pitcairn is divided into the following stormwater management districts:

(1) Turtle Creek.

One or more of these districts may be further subdivided into subareas which have similar hydrological characteristics and drain to a common point.

B. The location and boundaries of the watershed(s) and subareas are shown on the "Borough Stormwater Management District Map" which is hereby adopted as a part of this Section.

2. *General Standards*.

A. The following provisions shall be considered the overriding performance standards against which all proposed stormwater control measures shall be evaluated and shall apply throughout the Borough of Pitcairn:

(1) Any landowner and any person engaged in the alteration or development of land which may affect stormwater runoff characteristics shall implement such measures as are reasonably necessary to prevent injury to health, safety or other property. Such measures shall include such actions as are required:

(a) To assure that the maximum rate of stormwater runoff is no greater after development than prior to development activities.

(b) To manage the quantity, velocity and direction of resulting stormwater runoff in a manner which otherwise adequately protects health and property from possible injury.

(2) The Stormwater Management Plan for the development site must consider all the stormwater runoff flowing over the site.

(3) No discharge of toxic materials shall be permitted into any stormwater management system.

3. *Watershed Standards; Turtle Creek Stormwater Management District*.

A. The stormwater performance standards contained in this Section are intended to implement the standards and criteria contained in the Turtle Creek Stormwater Management Plan, adopted and approved in accordance with the Pennsylvania Storm Water Management Act. If there is any discrepancy between the provisions of this Section and the standards and criteria of the plan, or if the watershed plan is subsequently amended, then the standards/criteria of the current watershed plan shall govern.

B. *Storm Frequencies*. Stormwater management facilities on all development sites shall control the peak stormwater discharge for the 2-, 10-, 25- and 100-year storm frequencies. The SCS 24 hour, Type II rainfall distribution shall be used for analyzing stormwater runoff for both pre- and post-development conditions. The 24-hour total rainfall for these storm frequencies in the watershed are:

Storm Frequency	Rainfall Depth (inches)
2 year	2.50
10 year	3.61
25 year	4.31
100 year	5.71

(For additional information or data on other storm return periods, consult the "Rainfall Duration Frequency Tables for Pennsylvania," produced by PennDOT, Office of Resource Management, Bureau of Dams and Waterways Management, Division of Stormwater Management, Harrisburg, February 1983).

C. *Calculation Methods*.

(1) *Development Sites*. For the purpose of computing peak flow rates and runoff hydrographs from development sites, calculations shall be performed using one of the following: SCS publications, Technical Release (TR) 55 or 20, HECI, or Penn State Runoff Model.

(2) *Stormwater Collection/Conveyance Facilities*. For the purposes of designing storm sewers, open swales and other stormwater runoff collection and conveyance facilities, any of the above listed calculation methods or the Rational Method may be used. Rainfall intensities for design should be obtained from the Pennsylvania Department of Transportation rainfall charts.

(3) *Pre-development Conditions*. Pre-development conditions shall be assumed to be those which exist on any site at the time of adoption of the Turtle Creek Stormwater Management Plan. Hydrologic conditions for all

areas with pervious cover (i.e., fields, woods, lawn areas, pastures, crop land, etc.) shall be assumed to be in "good" condition, and the lowest recommended SCS runoff curve number (CN) shall be applied for all pervious land uses within the respective range for each land use and hydrologic soil group.

D. *Release Rate Percentage*.

(1) *Definition*. The release rate percentage defines the percentage of the pre-development peak rate of runoff that can be discharged from an outfall on the site after development. It applies uniformly to all land development or alterations within a subarea. A listing of the release rate percentage by subarea appears in Appendix "26-A" of this Part; the subareas are delineated on the Borough Stormwater Management District Map (refer to §26-102).

(2) *Procedure for Use*.

(a) Identify the specific subarea in which the development site is located from the watershed map and obtain the subarea release rate percentage from Appendix "26-A".

(b) Compute the pre- and post-development runoff hydrographs for each stormwater outfall on the development site using an acceptable calculation method for the 2-, 10-, 25- and 100-year storms. Apply no on-site detention for stormwater management but include any techniques to minimize impervious surfaces and/or increase the time of concentration for stormwater runoff flowing from the development site. If the post-development peak runoff rate and the runoff volume are less than or equal to the pre-development peak runoff rate and volume, then additional stormwater control shall not be required at that outfall. If the post-development peak runoff rate and volume are greater than the pre-development peak runoff rate and volume, then stormwater detention will be required and the capacity of the detention facility must be calculated in the manner prescribed below.

(c) Multiply the subarea release rate percentage by the pre-development rate of runoff from the development site to determine the maximum allowable release rate from any detention facility for the four prescribed storm events.

(d) Design the outlet control facilities and size the volume of the detention facility using the calculated post development hydrograph and accepted hydrograph routing procedures in consideration of the maximum allowable release rate.

E. *No Harm Evaluation*.

(1) An applicant may seek to exceed the otherwise applicable subarea release rate percentage by performing the "no harm evaluation." This elevation requires an independent engineering analysis to demonstrate that other reasonable options exist to prevent the occurrence of increased stormwater runoff discharge rates and/or velocities from increasing flood elevations and accelerating erosion at all downstream points in the watershed.

(2) "No harm evaluation" will be considered only in instances where the discharge to a stream channel from the development occurs directly to the

Monongahela River or through a properly sized and designed regional stormwater detention facility.

(3) The analysis for the no harm evaluation shall be submitted to the Borough Engineer and Allegheny Planning Department for review and approval.

(*Ord. 850*, 4/15/1992, §102)

§26-103. Design Criteria for Stormwater Management Controls.

1. *General Criteria*.

A. Applicants may select runoff control techniques, or a combination of techniques, which are most suitable to control stormwater runoff from the development site. All controls must be subject to approval of the Borough Engineer. The Borough Engineer may request specific information on design and/or operating features of the proposed stormwater controls in order to determine their suitability and adequacy in terms of the standards of this Part.

B. The applicant should consider the effect of the proposed stormwater management techniques on any special soil conditions or geological hazards which may exist on the development site. In the event such conditions are identified on the site, the Borough Engineer may require in-depth studies by a competent geotechnical engineer. Not all stormwater control methods may be advisable or allowable at a particular development site.

C. The stormwater management practices to be used in developing a Stormwater Management Plan for a particular site shall be selected according to the following order of preference:

(1) Infiltration of runoff on-site.

(2) Flow attenuation by use of open vegetated swales and natural depressions.

(3) Stormwater detention/retention structures.

D. Infiltration practices shall be used to the extent practicable to reduce volume increases and promote groundwater recharge. A combination of successive practices may be used to achieve the applicable minimum control requirements. Justification shall be provided by the applicant for rejecting each of the preferred practices based on actual site conditions.

E. Design and implementation of stormwater management BMPs shall be in accordance with the PADEP *Pennsylvania Best Management Practices Manual*. [*Ord. 978*]

2. *Criteria for Infiltration Systems*.

A. Infiltration systems shall be sized and designed based upon local soil and ground water conditions.

B. Infiltration systems shall be greater than 3 feet deep and shall be located at least 10 feet from basement walls.

C. Infiltration systems shall not be used to handle runoff from commercial or industrial working or parking areas.

D. Infiltration systems may not receive runoff until the entire drainage area

to the system has received final stabilization.

E. The stormwater infiltration facility design shall provide an overflow system with measures to provide a nonerosive velocity of flow along its length and at the outfall.

F. Infiltration systems shall not be located on fill slopes, landslide prone soil areas or in areas where there is potential for slope saturation. [*Ord. 978*]

G. Infiltration facility locations shall be approved by the Borough Engineer. [*Ord. 978*]

3. *Criteria for Stormwater Detention Facilities*.

A. If detention facilities are utilized for the development site, the facility(ies) shall be designed such that post-development peak runoff rates from the developed site are controlled to those rates defined by the subarea release rate percentage for the 2-, 10-, 25- and 100-year storm frequencies.

B. All detention facilities shall be equipped with outlet structures to provide discharge control for the four designated storm frequencies. Provisions shall also be made to safely pass, at minimum, the post-development 100-year storm runoff without breaching or otherwise damaging (i.e., impairing the continued function of) the facilities.

C. Shared-storage facilities, which provide detention of runoff for more than one development site within a single subarea may be considered and are encouraged. Such facilities shall meet the criteria contained in this Section. In addition, runoff from the development sites involved shall be conveyed to the facility in a manner that avoids adverse impacts (such as flooding or erosion) to channels and properties located between the development site and the shared-storage facilities.

D. Where detention facilities will be utilized, multiple use facilities, such as wetlands, lakes, ballfields or similar recreational/open space uses are encouraged wherever feasible, subject to the approval of the Borough.

E. Other considerations which should be incorporated into the design of the detention facilities include:

(1) Inflow and outflow structures shall be designed and installed to prevent erosion and bottoms of impoundment type structures should be protected from soil erosion.

(2) Control and removal of debris both in the storage structure and in all inlet or outlet devices shall be a design consideration.

(3) Inflow and outflow structures, pumping stations and other structures shall be designed and protected to minimize safety hazards.

(4) The water depth at the perimeter of a storage pond should be limited to that which is safe for children. This is especially necessary if bank slopes are steep or if ponds are full and recirculating in dry periods. Restriction of access (fence, walls, etc.) may be necessary depending on the location of the facility.

(5) Side slopes of storage ponds shall not exceed a ratio of 2.5:1 horizontal to vertical dimension. Steeper slopes can be considered if designed by a geotechnical engineer and approved by the Borough Engineer. [*Ord. 978*]

(6) Landscaping shall be provided for the facility which harmonizes with the surrounding area.

(7) Facility shall be located to facilitate maintenance, considering the frequency and type of equipment that will be required.

(8) *Spillway Design*. The outlets for the retention ponds shall consist of a combination of principal and emergency spillways. The outlets must pass the peak runoff expected from the drainage area for a 100-year storm without damage to the embankment of the pond. Runoff computations shall be based upon the soil cover conditions which are expected to prevail during the life of the basin.

(9) *Principal Spillway*. The principal spillway shall consist of a solid vertical pipe or box of corrugated steel pipe, or reinforced concrete joined by a water-tight connection to a horizontal pipe (barrel) extending through the embankment and outletting beyond the downstream toe of the fill. The principal spillway shall have a minimum capacity of 0.2 cfs per acre of drainage area when the water surface is at the crest of the emergency spillway. The maximum capacity of the barrel will be the 25-year pre-development flow. The construction materials must be approved by the Borough. Refer to Plate 26-A. The maximum barrel capacity established herein may be reduced in those areas of the Borough which are regulated or controlled by any other duly authorized Stormwater Management Plan.

(10) *Design Elevations*. When the principal spillway is used in conjunction with an emergency spillway, the crest of the principal spillway shall be a minimum of 2 feet below the crest of the emergency spillway. The crest of the principal spillway shall be a minimum of 3 feet below the top of embankment or shall be designed so that there is a minimum of 2 feet of freeboard above the emergency spillway design 100 year water elevation. Refer to Plate 26-A. [*Ord. 978*]

(11) *Antivortex and Trash Rack*. An antivortex device and trash rack shall be attached to the top of the spillway and prevent floating debris from being carried out of the basin. The antivortex device shall be of the concentric type as shown in Plate 26-B and Plate 26-C, or approved equal.

(12) *Base*. The base of the principal spillway must be firmly anchored to prevent its floating. If the riser of the spillway is greater than 10 feet in height, computations must be made to determine the anchoring requirements. As a minimum, a factor of safety of one and a quarter shall be used (downward forces equals 1¼ multiplied by upward forces). For risers 10 feet or less in height, the anchoring may be done in one of the two following ways.

(a) A concrete base 18 inches thick and twice the width of the riser diameter shall be used and the riser embedded 6 inches into the concrete. See Plate 26-D for design details.

(b) A square steel plate, a minimum of ¼-inch thick and having a width equal to twice the diameter of the riser, shall be welded to the base of the riser. The plate shall then be covered with 2½ feet of stone, gravel or compacted soil to prevent floatation. See Plate 26-D for design details.

(13) *Barrel*. The barrel of the principal spillway, which extends through the

embankment, shall be designed to carry the 25-year pre-development flow (or any required reduction thereof) provided by the riser of the principal spillway with the water level at the crest of the emergency spillway. The connection between the riser and the barrel must be watertight. The outlet of the barrel must be protected to prevent erosion or scour of downstream area. This will include an end section or end wall with a designed riprap apron.

(14) *Anti-Seep Collars*. Anti-seep collars shall be used on the barrel of the principal spillway within the normal saturation zone of the embankment to increase the seepage length by at least 10 percent, if either of the following conditions is met:

(a) The settled height of the embankment exceeds 10 feet.

(b) The embankment has a low silt-clay content and barrel is greater than 10 inches in diameter.

The anti-seep collars shall be installed within the saturated zone. The maximum spacing between collars shall be 14 times the projection of the collar above the barrel. Collars shall not be closer than 2 feet to a pipe joint. Collars should be placed sufficiently far apart to allow space for hauling and compacting equipment. Connections between the collars and the barrel shall be watertight. The length of the barrel within the saturation zone can be obtained by entering Plate 26-E with variable "Y." "Y" is the depth of water at the principal spillway crest in feet. This chart will provide saturated length. This number is entered in Plate 26-F to size the anti-seep collars. Refer to Plate 26-G for details of the anti-seep collar.

(15) *Emergency Spillway*. The emergency spillway shall consist of an open channel constructed adjacent to the embankment over undisturbed material (not fill). The spillway shall have a control section at least 20 feet in length. The control section is a level portion of the spillway channel at the highest elevation of the channel. The emergency spillway shall be designed to carry the peak rate of runoff expected for a 100-year storm, less any reduction due to the flow through the principal spillway. The spillway channel shall return the flow of water to a defined channel downstream from the embankment. The maximum allowable velocities in the emergency spillway channel will depend on the type of lining used. For vegetated linings, allowable velocities are listed in Table 26-4. For nonerodible linings, such as concrete, asphalt paving and riprap, design shall return the flow to the natural channel at noneroding velocities. See Plate 26-H and Plate 26-I for design of the emergency spillway.

(16) *Embankment*. The material for the detention pond embankment shall consist of mainly cohesive soil material placed in horizontal layers. The material should be placed in maximum 8-inch thick loose lifts and compacted with a sheepsfoot or segmented wheel roller until the in-place density is equal to or greater than 100 percent of the maximum dry density as determined by ASTM D698 (Standard Proctor) methods. The material should be no more than 3 percent above the optimum moisture content at the time of placement. Acceptable embankment material shall conform to the current PennDOT Publication 408, §206, "Embankment," or as approved by the Borough Engineer. [*Ord. 978*]

(17) *Rock Lining*. The riprap rock lining material used for outlet protection and energy dissipaters in stormwater management facilities shall be designed based on the maximum design velocities for that particular outlet. Riprap shall be in accordance with PennDOT Publication 408, §850, "Rock Lining." [*Ord. 978*]

(18) *Fence*. A chain link fence must be installed around the pond at a height of 6 feet. A 3-foot wide gate with lock and keys must be provided to allow access for future maintenance. Fence details and specifications shall be submitted to the Borough.

(19) *Access Road*. The subdivider shall provide a 10-foot wide access road constructed of 2B stone at a depth of 4 inches. Such access road shall run from the paved Borough street to the retention pond.

(20) *Forebays*. Forebays shall be considered in the design of stormwater detention facilities. Forebays shall be designed in accordance with in accordance with the PADEP *Pennsylvania Best Management Practices Manual*. [*Ord. 978*]

(21) *Freeboard*. A detention pond shall be designed with a minimum 2 feet of freeboard as measured from the top of the embankment to the design 100 year water level of the emergency spillway. [*Ord. 978*]

4. *Criteria for Collection / Conveyance Facilities*.

A. All stormwater runoff collection or conveyance facilities, whether storm sewers or other open or closed channels, shall be designed in accordance with the following basic standards:

(1) All sites shall be graded to provide drainage away from and around the structure in order to prevent any potential flooding damage.

(2) Lots located on the high side of streets shall extend roof and french drains to the curb line storm sewer (if applicable). Low side lots shall extend roof and french drains to a stormwater collection/conveyance/control system or natural watercourse in accordance with the approved Stormwater Management Plan for the development site.

(3) Collection/conveyance facilities should not be installed parallel and close to the top or bottom of a major embankment to avoid the possibility of failing or causing the embankment to fail.

(4) All collection/conveyance facilities shall be designed to convey the 25-year storm peak flow rate from the contribution drainage area and to carry it to the nearest suitable outlet such as a stormwater control facility, curbed street, storm sewer or natural watercourse.

(5) Where drainage swales or open channels are used, they shall be suitably lined to prevent erosion and designed to avoid excessive velocities.

B. Wherever storm sewers are proposed to be utilized, they shall comply with the following criteria:

(1) Where practical, designed to traverse under seeded and planted areas. If constructed within 10 feet of road paving, walks or other surfaced areas, drains shall have a narrow trench and maximum compaction of backfill to

prevent settlement of the superimposed surface or development.

(2) Preferably installed after excavating and filling in the area to be traversed is completed, unless the drain is installed in the original ground with a minimum of 3 feet cover and/or adequate protection during the fill construction.

(3) Designed: (a) with cradle when traversing fill areas of indeterminate stability, (b) with anchors when gradient exceeds 20 percent, and (c) with encasement or special backfill requirements when traversing under a paved area.

(4) Designed to adequately handle the anticipated stormwater flow and be economical to construct and maintain. The minimum pipe size shall be 15 inches in diameter.

(5) Drain pipe, trenching, bedding and backfilling requirements shall conform to the requirements of the Borough and/or applicable PennDOT specifications, Form 408.

(6) All corrugated metal pipe shall be polymer coated, and with asbestos bonding and paved inverts where prone to erode. Pipe within a municipal right-of-way shall be reinforced concrete pipe with a minimum diameter of 15 inches.

(7) Storm inlets and structures shall be designed to be adequate, safe, self-cleaning and unobtrusive and consistent with Borough standards.

(8) Appropriate grates shall be designed for all catch basins, stormwater inlets and other entrance appurtenances.

(9) Manholes shall be designed so that the top shall be at finished grade and sloped to conform to the slope of the finished grade. Top castings of structures located in roads or parking areas shall be machined or installed to preclude "rattling."

(10) Where proposed sewers connect with an existing storm sewer system, the designer shall demonstrate that sufficient capacity exists in the downstream system to handle the additional flow or demonstrate that there is a reduction in flow to the downstream system. [*Ord. 978*]

(11) Storm sewer outfalls shall be equipped with energy dissipation devices to prevent erosion and conform with applicable requirements of the Pennsylvania DEP for stream encroachments (25 Pa.Code, Chapter 105 of Pennsylvania DEP Rules and Regulations). [*Ord. 978*]

(12) *Stormwater Inlets*. The maximum spacing between stormwater inlets shall be designed according to the 10-year storm flow and the capacity of the inlets, taking into account gradient of roadway, maximum allowable street flooding and drainage-way capacity. When a possibility of clogging of grates, side opening, or combination inlets exists, use the capacity reduction factors shown in Table 26-1 applied to theoretical capacity of the inlet. The maximum amount of water that should be bypassed on to the next downstream inlet for inlets on continuous grades is 10 percent.

(13) *Pipes*. Horizontal and vertical curves with radii of 100 feet or greater are allowed for all pipe sizes. Friction losses to the pipe shall be calculated

using the Manning Formula: V = A * 1.486/n * R2/3 * S1/2. Values for "n" are found in Table 26-2. The minimum value for "v" in pipes shall be 3 feet per second. The maximum value for "v" in pipes shall be based on engineering judgment and experience. Pressure flow is permitted in storm sewers. The elevation of the hydraulic gradient shall be at least 1 foot below ground level. Pressure heads up to 25 feet can be used with concrete pipe with rubber gasketed joints.

(14) *Spacing of Structures*. The maximum allowable spacing between structures to be used for inspecting and cleaning storm sewers shall be based on the pipe size and spacing shown in Table 26-3.

(15) *Open Channels*. Maximum allowable velocities of flow in swales, open channels and ditches as relating in slope and grass cover are shown in Table 26-4. Higher velocities require invert stabilization. If they do not present a hazard, velocity dissipators may be approved by the Borough or its representative.

(16) Where seepage pits, seepage tanks, seepage trenches and/or french drains are proposed, the developer shall include an analysis of the potential for accelerated sinkhole development in the specific geology of the site due to the concentration of water introduction to the subsurface.

(*Ord. 850*, 4/15/1992, §103; as amended by *Ord. 978*, 5/31/2011)

§26-104. Erosion and Sedimentation Controls.

1. Erosion/Sedimentation plan shall be provided in accordance with the Pennsylvania Erosion/Sedimentation Regulations (25 Pa.Code, Chapter 102), the standards and guidelines of the County Conservation District.

2. Proposed erosion/sedimentation measures shall be submitted with the Stormwater Management Plan as part of the preliminary and final applications.

(*Ord. 850*, 4/15/1992, §104)

§26-105. Maintenance of Stormwater Management Controls.

1. *Maintenance Responsibilities*.

A. The Stormwater Management Plan for the development site shall contain an operation and maintenance plan prepared by the developer and approved by the Borough Engineer. The operation and maintenance plan shall outline required routine maintenance actions and schedules necessary to insure proper operation of the facility(ies).

B. The Stormwater Management Plan for the development site shall establish responsibilities for the continuing operation and maintenance of all proposed stormwater control facilities, consistent with the following principals:

(1) If a development consists of structures or lots which are to be separately owned and in which streets, sewers and other public improvements are to be dedicated to the Borough, stormwater control facilities should also be dedicated to and maintained by the Borough.

(2) If a development site is to be maintained in single ownership or if sewers and other public improvements are to be privately owned and

maintained, then the ownership and maintenance of stormwater control facilities should be the responsibility of the owner or private management entity.

(3) The owner shall keep on file with the Borough the name, address and telephone number of the person or company responsible for maintenance activities; in the event of a change, new information will be submitted to the Borough within 10 days of the change.

(4) Maintenance by a private entity shall be secured by performance security in an amount equal to 110 percent of the cost as determined by the Borough to be necessary to adequately maintain said system.

(5) If the owner fails to maintain the stormwater control facilities following due notice by the Borough to correct the problem(s), the Borough may perform the necessary maintenance work or corrective work and the owner shall reimburse the Borough for all costs.

C. Other items may be included in the agreement where determined necessary to guarantee the satisfactory maintenance of all facilities. The maintenance agreement shall be subject to the review and approval of the Borough Solicitor and Borough Council.

3. *Maintenance by Individual Lot Owners*. When any stormwater management facility is located on an individual lot, and when maintenance thereof is the responsibility of that landowner, a description of the facility or systems and the terms of the required maintenance shall be incorporated on a plat of the property. The plat shall be recorded with the County Recorder of Deeds within 90 days following Borough approval. In addition, the Borough may require as a condition of approval that any deed conveying any interest in such lot contain language indicating that the conveyance is subject to an express covenant by the grantee that the grantee will maintain the stormwater management facility.

(*Ord. 850*, 4/15/1992, §105)

§26-106. Stormwater Plan Requirements.

1. *General Requirements*. No final subdivision/land development plan shall be approved, no permit authorizing construction issued, or any earthmoving or land disturbance activity initiated until the final Stormwater Management Plan for the development site is approved in accordance with the provisions of this Part.

2. *Exemptions for Small Developments*.

A. At the time of application, the Borough shall determine if the subdivision/land development qualifies as a "small development" and, therefore, is eligible for a simplified stormwater plan submission. For the purposes of this Part, a small development is any subdivision or land development which results in (or will result when fully constructed) the creation of 5,000 or less square feet of impervious area.

B. Applications for small developments shall include a plan which describes the type and location of proposed on-site stormwater management techniques or the proposed connection to an existing storm sewer system. The plan should show accurately the boundaries, 5-foot interval contours, locations of watershed and/or

subarea boundaries on the site (if applicable) and any watercourses, floodplains, or existing drainage facilities or structures located on the site. Contingent upon the approval of the Borough Engineer, alternative runoff computational techniques such as the Rational Method may be used where applicable. The Borough reserves the right to require that the plan be prepared by a registered professional engineer, surveyor or landscape architect.

C. The Borough Engineer shall review and approve the proposed provisions for stormwater management in accordance with the standards and requirements of this Part.

3. *Stormwater Plan Contents*.

A. *General Format*. The stormwater plan shall be drawn to a scale of not less than 1 inch equals 200 feet. All sheets shall contain a title block with name and address of applicant and engineer, scale, north arrow, legend and date of preparation. Plan should show the location of the project relative to highways, municipal boundaries or other identifiable landmarks.

B. *Existing and Proposed Features*. The plan shall show the following:

(1) *Watershed Location*. Provide a key map showing the location of the development site within the watershed(s) and watershed subarea(s). On all site drawings, show the boundaries of the watershed(s) and subarea(s) as they are located on the development site and identify watershed names(s) and subarea number(s).

(2) *Floodplain Boundaries*. Identify 100-year floodplains on the development site (as appropriate) based on the Borough flood insurance study maps.

(3) *Natural Features*. Show all bodies of water (natural or artificial), water courses (permanent and intermittent), swales, wetlands and other natural drainage courses on the development site, or which will be affected by runoff from the development.

(4) *Soils*. Provide an overlay showing soil types and boundaries within the development site (consult County, SCS and U.S. Geological Survey for information).

(5) *Contours*. Show existing and final contours at intervals of 2 feet; in areas with slopes greater than 15 percent, 5-foot contour intervals may be used.

(6) *Land Cover*. Show existing and final land cover classification as necessary to support and illustrate the runoff calculations performed.

(7) *Drainage Area Delineations*. Show the boundaries of the drainage areas employed in the runoff calculations performed.

(8) *Stormwater Management Controls*. Show any existing stormwater management or drainage controls and/or structures, such as sanitary and storm sewers, swales, culverts, etc., which are located on the development site, or which are located off-site but will be affected by runoff from the development.

(9) Location of existing and proposed overhead and underground utilities

including water and sewer lines.

C. *Professional Certification*. The Stormwater Management Plan (including all calculations) must be prepared and sealed by a registered professional engineer, surveyor or landscape architect with training and expertise in hydrology and hydraulics. Documentation of qualifications may be required by the Borough.

D. *Runoff Calculations*. Calculations for determining pre and post-development discharge rates and for designing proposed stormwater control facilities must be submitted with the Stormwater Management Plan. All calculations shall be prepared using the methods and date prescribed by §26-102 of this Part.

E. *Stormwater Controls*. All proposed stormwater runoff control measures must be shown on the plan including methods for collecting, conveying, storing stormwater runoff on-site, which are to be used both during and after construction of all proposed facilities and relationship to the existing watershed drainage system.

(1) If the development is to be constructed in stages, the applicant must demonstrate that stormwater facilities will be installed to manage stormwater runoff safely during each stage of development.

(2) A schedule for the installation of all temporary and permanent stormwater control measures and devices shall be submitted.

(3) If appropriate, a justification should be submitted as to why any preferred stormwater management techniques, as listed in §26-103, are not proposed for use.

F. *Easement, Right-of-Way, Deed Restrictions*. All existing and proposed easements and rights-of-way for drainage and/or access to stormwater control facilities shall be shown and the proposed owner identified. Show any areas subject to special deed restrictions relative to or affecting stormwater management on the development site.

G. *Other Permits/Approvals*. A list of any approvals/permits relative to stormwater management that will be required from other governmental agencies (e.g., an obstructions permit from Pennsylvania DEP) and anticipated dates of submission/receipt should be included with the stormwater plan submission. Copies of permit applications may be requested by the Borough where they may be helpful for the plan review. [*Ord. 978*]

H. *Maintenance Program*. The application shall contain a proposed maintenance plan for all stormwater control facilities in accordance with the following:

(1) Identify the proposed ownership entity (e.g., municipality, property owner, private corporation, homeowners association or other entity).

(2) Include a maintenance program for all facilities, outlining the type of maintenance activities, probable frequencies, personnel and equipment requirements and estimated annual maintenance costs.

(3) Identify method of financing continuing operation and maintenance if the facility is to be owned by other than the Borough or a governmental agency.

(4) Submit any legal agreements required to implement the maintenance program and copies of the maintenance agreement as required by this Part.

I. *Financial Guarantee*. Submit financial guarantees in accordance with the provisions of this Part.

(*Ord. 850*, 4/15/1992, §106; as amended by *Ord. 978*, 5/31/2011)

§26-107. Plan Review Procedures.

1. *Pre-Application Phase*.

A. Before submitting the stormwater plan, applicants are urged to consult with the Borough, County Planning Department and County Conservation District on the requirements for safely managing from the development site in a manner consistent with the Borough ordinances and applicable watershed Stormwater Management Plan. These agencies may also be helpful in providing necessary data for the Stormwater Management Plan.

B. Applicants are encouraged to submit a sketch plan with a narrative description of the proposed stormwater management controls for general guidance and discussion with the Borough and other agencies.

C. The pre-application phase is not mandatory; any review comments provided by the Borough or other agencies are advisory only and do not constitute any legally binding action on the part of the Borough or any County agency.

2. *Stormwater Plan Reviews*.

A. *Submission of Plans*. Stormwater plan applications shall be submitted with the preliminary and final subdivision/land development applications.

B. *Notification of Affected Municipalities*. The Borough shall notify municipalities upstream and downstream of the development site which may be affected by the stormwater runoff and proposed controls for the site. Copies of the plans will be made available to the municipalities upon request. Comments received from any affected municipality will be considered by the Borough Engineer and County agencies in their review.

C. *County Planning Review*.

(1) A copy of the stormwater plan, along with all runoff calculations, shall be forwarded to the Allegheny County Planning Department. A report of the findings will be returned to the Borough within 30 days.

(2) If the Planning Department review identifies that the plan fails to comply with the watershed standards and criteria or that a possibility exists for harmful downstream impacts from the development site, the applicant will be advised so that the necessary modification can be made to the stormwater management controls for the development site. The Borough Engineer shall not approve the development site's Stormwater Management Plan until modifications are made and the plan receives a positive review from the County Planning Department.

D. *Borough Engineer's Review*. The Borough Engineer shall approve or disapprove the Stormwater Management Plan based on the requirements of the Borough ordinances, the standards and criteria of the watershed plan and good engineering practice. The engineer shall submit a written report, along with

supporting documentation, stating their reasons for approval or disapproval.

E. *Status of the Engineer's Determination*. The approval/disapproval of the site's Stormwater Management Plan by the Borough Engineer shall be considered final. The Borough Council shall not reverse the Engineer's determination by approving or disapproving the site's Stormwater Management Plan or any specific control measure in contradiction to the Engineer's action. The Borough Council may request modifications or alternative approaches to the stormwater management controls, provided these are agreed to by the Borough Engineer and the applicant's engineer.

F. *Permits Required from Other Governmental Agencies*. Where the proposed development requires an obstruction permit from the Pennsylvania DEP or an erosion/sedimentation permit from the County Conservation District, then final Stormwater Management Plan approval shall be conditional upon receipt of such permits. However, no building permit shall be issued, nor construction started, until the permits are received and copies filed with the Borough. [*Ord. 978*]

(*Ord. 850*, 4/15/1992, §107; as amended by *Ord. 978*, 5/31/2011)

§26-108. Status of the Stormwater Plan after Final Approval.

1. Upon final stormwater plan approval and receipt of all necessary permits, the applicant may commence to install or implement the approved stormwater management controls.

2. If site development or building construction does not begin within 2 years of the date of final approval of the Stormwater Management Plan, then before doing so, the applicant shall resubmit the Stormwater Management Plan to verify that no condition has changed within the watershed that would affect the feasibility or effectiveness of the previously approved stormwater management controls. Further, if for any reason development activities are suspended for 2 years or more, then the same requirement for resubmission of the Stormwater Management Plan shall apply.

(*Ord. 850*, 4/15/1992, §108)

§26-109. Stormwater Plan Modifications.

1. If the request for a plan modification is initiated before construction begins, the stormwater plan must be resubmitted and reviewed according to the procedures contained in §26-107 above.

2. If the request for a plan modification is initiated after construction is underway, the Borough Engineer shall have the authority to approve or disapprove the modification based on field inspection; provided: (A) the requested changes in stormwater controls do not result in any modifications to other approved municipal land use/development requirements (e.g., building setbacks, yards, etc.) and (B) the performance standards in §26-102 are met. Notification of the Engineer's action shall be sent to the Borough Council which may issue a stay of the plan modification within 5 days and require the permittee to resubmit the plan modification for full stormwater plan review in accordance with §26-107 above.

(*Ord. 850*, 4/15/1992, §109)

§26-110. Inspections of Stormwater Management Controls.

1. The Borough Engineer or a designated representative shall inspect the construction of the temporary and permanent stormwater management system for the development site. The permittee shall notify the engineer 48 hours in advance of the completion of the following key development phases:

A. At the completion of preliminary site preparation, including stripping of vegetation, stockpiling of topsoil and construction of temporary stormwater management and erosion control facilities.

B. At the completion of rough grading but prior to placing topsoil, permanent drainage or other site development improvements and ground covers.

C. During construction of the permanent stormwater facilities at such times as specified by the Borough Engineer.

D. Completion of permanent stormwater management facilities including established ground covers and plantings.

E. Completion of final grading, vegetative control measures or other site restoration work done in accordance with the approved plan and permit.

2. No work shall commence on any subsequent phase until the preceding one has been inspected and approved. If there are deficiencies in any phase, the Borough Engineer shall issue a written description of the required corrections and stipulate the time by which they must be made.

3. If during construction the contractor or permittee identifies any site condition, such as subsurface soil conditions, alterations in surface or subsurface drainage which could affect the feasibility of the approved stormwater facilities, he/she shall notify the Borough Engineer within 24 hours of the discovery of such condition and request a field inspection. The Borough Engineer shall determine if the condition requires a stormwater plan modification.

4. In cases where stormwater facilities are to be installed in areas of landslide-prone soils or other special site conditions exist, the Borough may require special precautions such as soil tests and core borings, full-time inspectors and/or similar measures. All costs of any such measures shall be borne by the permittee.

(*Ord. 850*, 4/15/1992, §110)

§26-111. Financial Guarantees and Dedication of Public Improvements.

1. *Guarantee of Completion*. A completion guarantee in the form of a bond, cash deposit, certified check or other negotiable securities acceptable to the Borough shall be filed. The guarantee shall cover all streets, sanitary sewers, stormwater management facilities, water systems, fire hydrants, sidewalks and other required improvements; it shall be in the amount and form prescribed by the Municipalities Planning Code, §509, 53 P.S. §10509.

2. *Release of Completion Guarantee*. The completion guarantee shall be returned or released upon written certification by the Borough Engineer or a designated agent that improvements and facilities have been installed and completed in accordance with the approved plan and specifications. The procedures for requesting and obtaining a release of the completion guarantee shall be in a manner prescribed by the Municipalities Planning Code, §510, 53 P.S. §10510.

3. *Default of Completion Guarantee*. If improvements are not installed in accordance with the approved final plan, the Borough Council may enforce any corporate bond or other security by appropriate legal and equitable remedies. If proceeds of such bond or other security are insufficient to pay the cost of installing or making repairs or corrections to all the improvements covered by said security, the Borough Council may, at its option, install part of such improvements in all or part of the development and may institute appropriate legal or equitable action to recover the monies necessary to complete the remainder of the improvements. All proceeds, whether resulting from the security or from any legal or equitable action brought against the developer, or both, shall be used solely for the installation of the improvements covered by such security and not for any other municipal purpose.

4. *Dedication of Public Improvements*.

A. When streets, sanitary sewers, stormwater management facilities, water lines or other required improvements in the development have been completed in accordance with the final approved plan, such improvements shall be deemed private until such time as they have been offered for dedication to the Borough and accepted by separate ordinance or resolution or until they have been condemned for use as a public facility.

B. Prior to acceptance of any improvements or facilities, the Borough Engineer shall inspect it to ensure that it is constructed in accordance with the approved plan and is functioning properly. In the case of any stormwater control facility, it must be free of sediment and debris.

C. The owner shall submit as-built plans for all facilities proposed for dedication. Drawings shall bear the seal of the registered engineer indicating the as-built improvements have been constructed in accordance with the approved plans.

5. *Maintenance Guarantee*. Prior to acceptance of any improvements of facilities, the applicant shall provide a financial security to secure the structural integrity and functioning of the improvements. The security shall: (A) be in the form of a bond, cash, certified check or other negotiable securities acceptable to the Borough, (B) be for a term of 18 months, and (C) be in an amount equal to 15 percent of the actual cost of the improvements and facilities so dedicated.

(*Ord. 850*, 4/15/1992, §111)

§26-112. Fee Schedule.

1. The Borough Council may adopt by resolution from time to time a reasonable schedule of fees to cover the cost of plan reviews, inspections and other activities necessary to administer the provisions of this Part. All fees shall be set in accordance with the applicable provisions of the Municipalities Planning Code, 53 P.S. §10101 *et seq*., and any dispute over the fee amount shall be resolved in the manner prescribed by the Municipalities Planning Code, 53 P.S. §10101 *et seq*. No approval to begin any work shall be issued until the requisite fees have been paid.

2. If it is determined that a modification to the existing Stormwater Management Plan is required under §26-109 of this Part, a new approval shall not be issued until the additional fees have been paid by the applicant.

(*Ord. 850*, 4/15/1992, §112)

§26-113. Enforcement Procedures and Remedies.

1. *Right of Entry*. Upon presentation of proper credentials, duly authorized representatives of the Borough may enter at reasonable times upon any property to investigate or ascertain the condition of the subject property in regard to an aspect regulated by this Part.

2. *Notification*. In the event that the applicant, developer, owner or his/her agent fails to comply with the requirements of this Part or fails to conform to the requirements of any permit, a written notice of violation shall be issued. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of the violation(s). Upon failure to comply within the time specified, unless otherwise extended by the Borough, the applicant, developer, owner or his/her agent shall be subject to the enforcement remedies of this Part.

3. *Preventive Remedies*.

A. In addition to other remedies, the Borough may institute and maintain appropriate actions by law or in equity to restrain, correct or abate a violation, to prevent unlawful construction, to recover damages and to prevent illegal occupancy of a building or premises.

B. If the defendant neither pays nor timely appeals the judgment, the Borough may enforce the judgment pursuant to applicable rules of civil procedure.

C. Each day that a violation continues shall constitute a separate violation unless the magisterial district judge further determines that there was a good faith basis for the person violating this Part to have believed that there was no such violation. In such case there shall be deemed to have been only one such violation until the fifth day following the date of the magisterial district judge's determination of a violation; thereafter, each day that a violation continues shall constitute a separate violation. [*Ord. 978*]

D. All judgments, costs and reasonable attorney fees collected for the violation of this Part shall be paid over to the Borough.

E. The court of common pleas, upon petition, may grant an order of stay, upon cause shown, tolling the per diem fine pending a final adjudication of the violation and judgment.

F. Nothing contained in this Section shall be construed or interpreted to grant to any person or entity other than the Borough the right to commence any action for enforcement pursuant to this Section.

4. *Additional Remedies*. In addition to the above remedies, the Borough may also seek remedies and penalties under applicable Pennsylvania statutes, or regulations adopted pursuant thereto, including but not limited to the Storm Water Management Act (32 P.S. §693.1 *et seq*.) and the Erosion and Sedimentation Regulations (25 Pa. Code, Chapter 102). Any activity conducted in violation of this Part or any Pennsylvania approved watershed Stormwater Management Plan may be declared a public nuisance by the Borough and abatable as such.

5. *Additional Legal Proceedings*. In addition to the fines for violations, costs and penalties provided for by this Part, the Borough may institute proceedings in courts of law or equity, to collect damages to require owners and/or occupants of real estate to comply with the provisions of the Part.

6. *Municipal Lien*. The cost of removal, fine and penalties herein above mentioned may be entered by the Borough as a lien against such property in accordance with existing provisions of law.

7. *Existing Rights and Penalties Preserved*. The collection of any penalty under the provisions of this Part shall not be construed in estopping the Commonwealth of Pennsylvania, the County, the Borough, or any aggrieved person from proceeding in courts of law or equity to abate nuisances under existing law or to restrain, at law or in equity, a violation of this Part. Moreover, it is hereby declared to be the purpose of this Part to provide additional and cumulative remedies to abate nuisances.

8. *Appeals*. Any person aggrieved by any action of the designee of the Borough may appeal to the Borough Council within 30 days of that action.

(*Ord. 850*, 4/15/1992, §113; as amended by *Ord. 978*, 5/31/2011)

§26-114. Definitions.

Accelerated erosion–the removal of the surface of the land through the combined action of human activities and natural processes, at a rate greater than would occur because of the natural processes alone. [*Ord. 978*]

Act–the Storm Water Management Act, Act of October 4, 1978, P.L. 864 No. 167, 32 P.S. §680.1 *et seq*., as amended by Act of May 24, 1984, No. 63.

Alteration–as applied to land, a change in topography as a result of the moving of soil and rock from one location or position to another; the changing of surface conditions by causing the surface to be more or less impervious; or earth disturbance. [*Ord. 978*]

Applicant–a landowner or developer who has filed an application for development including his/her heirs, successors and assigns.

Best Management Practice (BMP)–activities, facilities, measures or procedures used to manage stormwater impacts from land development, to protect and maintain water quality and groundwater recharge and to otherwise meet the purposes of this Part including, but not limited to, infiltration, filter strips, low impact design, bioretention, wet ponds, permeable paving, grassed swales, forested buffers, sand filters and detention basins. [*Ord. 978*]

Building–an independent and detached structure having a roof supported by columns or walls or resting on its own foundation including, but not limited to, mobile homes, garages, greenhouses and other accessory structures utilized for storage, housing, shelter or enclosure of person, animals, chattels or activity sites. [*Ord. 978*]

Channel–a perceptible natural or artificial waterway which periodically or continuously contains moving water or which forms a connecting link between two bodies of water. It has a definite bed and banks which confine the water.

Cistern–an underground reservoir or tank for storage of rainwater.

Conservation District–the Allegheny County Conservation District.

Culvert–a closed conduit for the free passage of surface drainage under a highway, railroad, canal or other embankment.

Design storm–the magnitude of precipitation from a storm event measured in probability of occurrence (e.g., 50-year storm) and duration (e.g., 24-hours), and used in computing stormwater management control systems.

Designee–unless otherwise noted, the official designee of the Borough for action on behalf of the Borough under the terms of this Part shall be the Borough Engineer.

Design criteria–

A. Engineering guidelines specifying construction details and materials.

B. Objectives, results or limits which must be met by a facility, structure or process in performance of its intended functions.

Design storm–(See "storm frequency.")

Detention–the slowing, dampening or attenuating of runoff flows entering the natural drainage pattern or storm drainage system by temporarily holding water on a surface area, in a detention basin or within the drainage system.

Detention facility–a detention basin, pond, or alternative structure designed for the purpose of temporary storage of surface runoff for gradual release of the design frequency rainfall events(s) at controlled rates. [*Ord. 978*]

Detention pond–a pond or reservoir, usually small, constructed to impound or retard surface runoff temporarily.

Developer–the person, persons or any corporation, partnership, association or other entity or any responsible person therein or agent therefor that undertakes the activities associated with changes in land use. The term "developer" is intended to include but not necessarily be limited to the term "subdivider," "owner," and "builder" even though the individuals involved in successive stages of a project may vary.

Development–any activity, construction, alteration, change in land use or practice that affects stormwater runoff characteristics.

Discharge–the flow or rate of flow from a canal, conduit, channel or other hydraulic structure.

Diversion–a channel and a ridge constructed to a predetermined grade across a slope, and designed to collect and/or divert runoff from slopes which are subject to erosion.

Drainage–in general, the removal of surface water from a given area. Commonly applied to surface water and ground water.

Drainage area–

A. The area of a drainage basin or watershed, expressed in acres, square miles or other unit of area. Also called catchment area, watershed, river basin.

B. The area served by a sewer system receiving storm and surface water, or by a watercourse.

Drainage easement–a right granted by a land owner to a grantee, allowing the use of private land for stormwater management purposes.

Earth disturbance–construction or other human activity which disturbs the surface of the land including, but not limited to, clearing and grubbing, grading, excavations, embankments, land development, road maintenance, installation of subsurface utilities and the moving, depositing, stockpiling or storing of soil, rock or earth materials. [*Ord. 978*]

Encroachment–any structure or activity which in any manner changes, expands or diminishes the course, current or cross section of any watercourse, floodway or body of

water.

Erosion–wearing away of the lands by running water, winds and waves.

Erosion and sedimentation control plan–a site specific plan identifying proposed BMP's used to minimize accelerated erosion and sedimentation, pursuant to 25 Pa.Code, Chapter 102. [*Ord. 978*]

Erosion control–the application of measures to reduce erosion of land surfaces.

Floodplain–for a given flood event, that area of land inundated by water from the adjacent watercourse. [*Ord. 978*]

Ground cover–materials covering the ground surface.

Ground water–subsurface water occupying the saturation zone, from which wells and springs are fed.

Ground water recharge–replenishment of ground water naturally by precipitation or runoff or artificially by spreading or injection.

Hydraulic grade line–a line joining points whose vertical distance from the center of the cross section of the fluid flowing in a pipe are proportional to the pressure in the pipe at the point.

Hydraulic gradient–the slope of the hydraulic grade line.

Impervious–not allowing or allowing only with great difficulty the movement of water; impermeable.

Impervious surface–a surface that prevents the percolation of water into the ground. Impervious surfaces include, but are not limited to, any roof, parking or driveway areas and any new streets or sidewalks. Any surface areas designed to initially be gravel or crushed stone shall be considered impervious. [*Ord. 978*]

Infiltration–

A. The flow or movement of water through the interstices or pores of a soil or other porous medium.

B. The absorption of liquid by the soil.

Infiltration facility–any structure or device designed to promote infiltration of stormwater to the subsurface. [*Ord. 978*]

Land development–any of the following activities:

A. The improvement of one lot or two or more contiguous lots, tracts or parcels or land for any purpose involving:

(1) A group of two or more residential or nonresidential buildings, whether proposed initially or cumulatively, or a single nonresidential building on a lot or lots regardless of the number of occupants or tenure.

(2) The division or allocation of land or space, whether initially or cumulatively, between or among two or more existing or prospective occupants by means or, or for the purpose of streets, common areas, leaseholds, condominiums, building groups or other features.

B. A subdivision of land.

Land disturbance–any activity involving the changing, grading, transportation, fill and any other activity which causes land to be exposed to the danger of erosion.

Landowner–the legal or beneficial owner of land, including those holding the right to purchase or lease the land, or any other person holding proprietary rights to the land. [*Ord. 978*]

Maintenance–the upkeep necessary for efficient operation of physical properties.

Maintenance agreement–a legally recorded document that acts as a property deed restriction and which provides for long term maintenance of stormwater management practices. [*Ord. 978*]

Municipality–Pitcairn Borough, Allegheny County, Pennsylvania.

Natural stormwater runoff regime–a watershed where natural surface configurations, runoff characteristics and defined drainage conveyances have attained the conditions of equilibrium.

Outfall–

A. The point, location or structure where drainage discharges from a sewer, drain or other conduit.

B. The conduit leading to the ultimate discharge point.

Outlet control structure–the means of controlling the relationship between the headwater elevation and the discharge, placed at the outlet or downstream end, of any structure through which water may flow.

Performance standard–a standard which establishes an end result or outcome which is to be achieved but does not prescribe specific means for achieving it.

Peak discharge–the maximum rate of flow of water at a given point and time resulting from a specified storm event.

Peak flow–maximum flow.

Pennsylvania DEP–Pennsylvania Department of Environmental Protection. [*Ord. 978*]

Private entity–a partnership, corporation, homeowner's association, condominium association or any other similar association as distinguished from an individual lot owner.

Rational formula–a rainfall–runoff relation used to estimate peak flow, expressed by the following formula:

$$Q = CIA$$

Q = peak runoff rate in cfs
C = runoff coefficient
I = design rainfall intensity (in/hr) lasting for a critical time, Tc, or longer
Tc = time of concentration
A = drainage area in acres

Recurrence interval–the average interval of time, stated in years, within which a given storm "event" will be equaled or exceeded once.

Release rate percentage–the watershed factor determined by comparing the maximum rate of runoff from a subbasin to the contribution rate of runoff to the watershed peak rate at specific points of interest.

Retention pond–a basin, usually enclosed by artificial dikes, that is used to retard stormwater runoff by temporarily storing the runoff and releasing it at the

predetermined rate.

Return period–the average interval in years over which an event of a given magnitude can be expected to recur.

Runoff–that part of precipitation which flows over the land.

Runoff characteristics–the surface components of any watershed which affect the rate, amount and direction of stormwater runoff. These may include, but are not limited to, vegetation, soils, slopes and manmade landscape alterations.

SCS–U.S. Department of Agriculture Soil Conservation Service.

Sediment–mineral or organic solid material that is being transported or has been moved from its site of origin by air, water or ice and has come to rest.

Sedimentation–the process by which mineral or organic matter is accumulated or deposited by moving water, wind or gravity.

Seepage pit / seepage trench or french drain–an area excavated in earth filled with loose stone or similar material and into which surface water is directed for infiltration into the ground.

Seepage tank–a subsurface concrete tank surrounded by stone into which surface water is directed for infiltration into the ground.

Semipervious surface–a surface such as stone, rock or other materials which permits some vertical transmission of water.

Soil cover complex method–a method of runoff computation developed by SCS, and found in its publication *Urban Hydrology for Small Watersheds*, Technical Release No. 55, SCS, Jan., 1975, Revised 1986.

Storage facility–(See "detention pond" and "retention pond.")

Storm frequency–the average interval in years over which a storm event of a given precipitation volume can be expected to occur.

Storm sewer–a sewer that carries intercepted surface runoff, street water and other drainage but excludes domestic sewage and industrial waste.

Stormwater–that portion of precipitation which runs over the land.

Stormwater collection system–natural or manmade structures that collect and transport stormwater through or from a drainage area to the point of final outlet including, but not limited to, any of the following: conduits and appurtenant features, canals, channels, ditches, streams, culverts, streets and pumping stations.

Stormwater structures–basins, pipes, swales, terraces, etc., designed and installed to collect, transport, detain and/or retain stormwater.

Stormwater Management Plan–the plan for managing stormwater runoff adopted by Allegheny County and Westmoreland County as required by the Storm Water Management Act, 32 P.S. §6801 *et seq*.

Subdivision–the division or redivision of a lot, tract or parcel of land by any means into two or more lots, tracts, parcels or other divisions of land including changes in existing lot lines for the purpose, whether immediate or future, of lease, partition by the court for distribution to heirs or devisees, transfer of ownership or building or lot development; provided, however, that the subdivision by lease of land for agricultural purposes into parcels of more than 10 acres, not involving any new street or easement

of access or any residential dwelling, shall be exempted.

Swale–a low lying stretch of land which gathers or carries surface water runoff.

Time of concentration–the time, in hours, surface stormwater runoff takes to travel from the hydraulically most distant point in the drainage basin to the point under design consideration. This time is the combined total of overland flow time and flow time in pipes or channels, if any.

Watercourse–any channel for conveyance of surface water having a defined bed and banks, whether natural or artificial, with perennial or intermittent flow.

Watershed–the entire region or area drained by a river or other body of water, whether natural or artificial. A "designated watershed" is an area delineated by the Pennsylvania DEP and approved by the Environmental Quality Board for which counties are required to develop watershed Stormwater Management Plans. [*Ord. 978*]

Watershed Stormwater Management Plan–the plan for managing stormwater runoff throughout a designated watershed adopted by Allegheny County and Westmoreland County as required by the Pennsylvania Storm Water Management Act, 32 P.S. §6801 *et seq*.

(*Ord. 850*, 4/15/1992, §114; as amended by *Ord. 978*, 5/31/2011)

APPENDIX "26-A"

Permitted Release Rate Percentage by Subarea

Pitcairn Borough

Subbasin Number	Release Rate Percentage
5	100
241	100
242	60
248	100

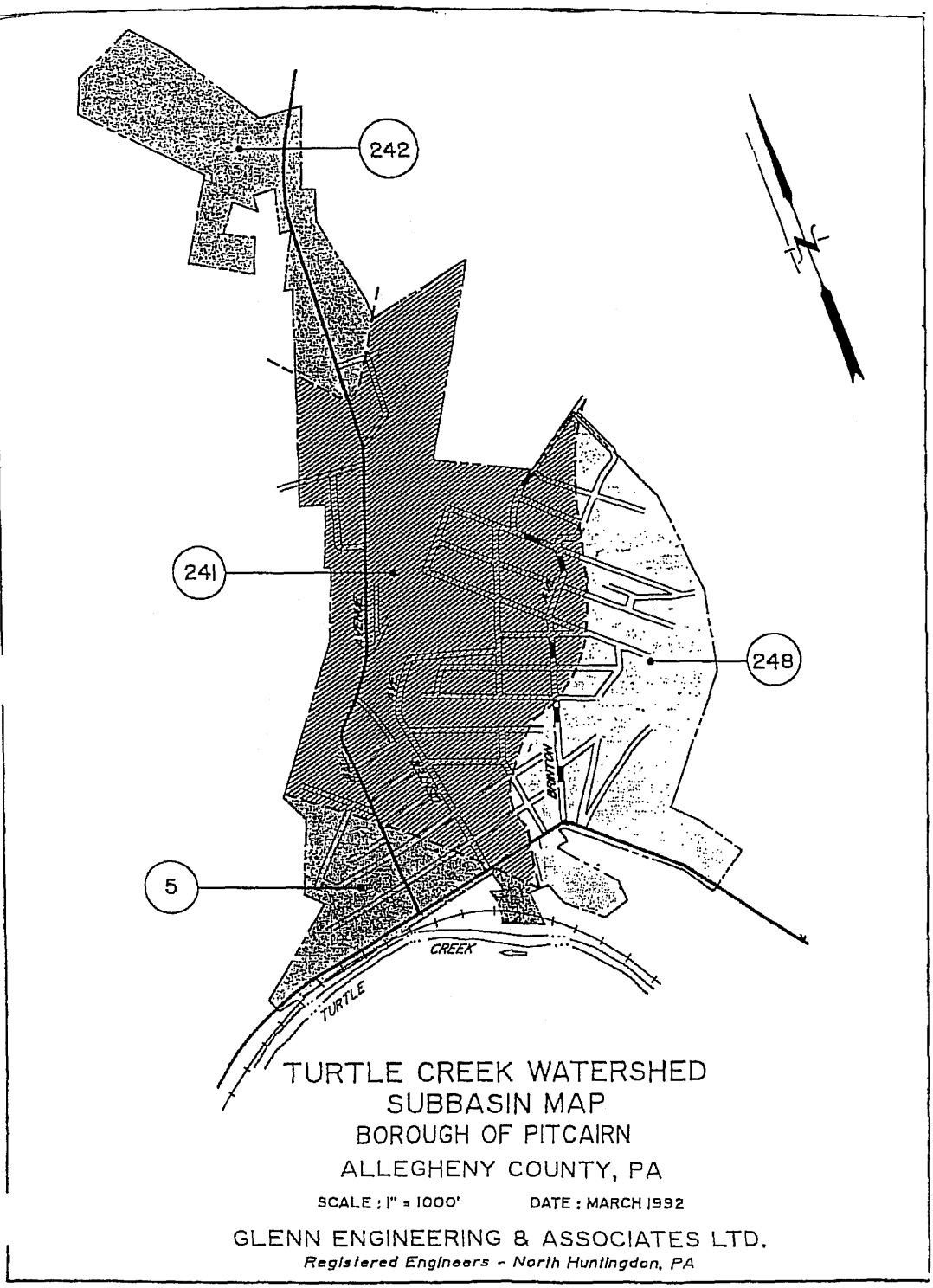
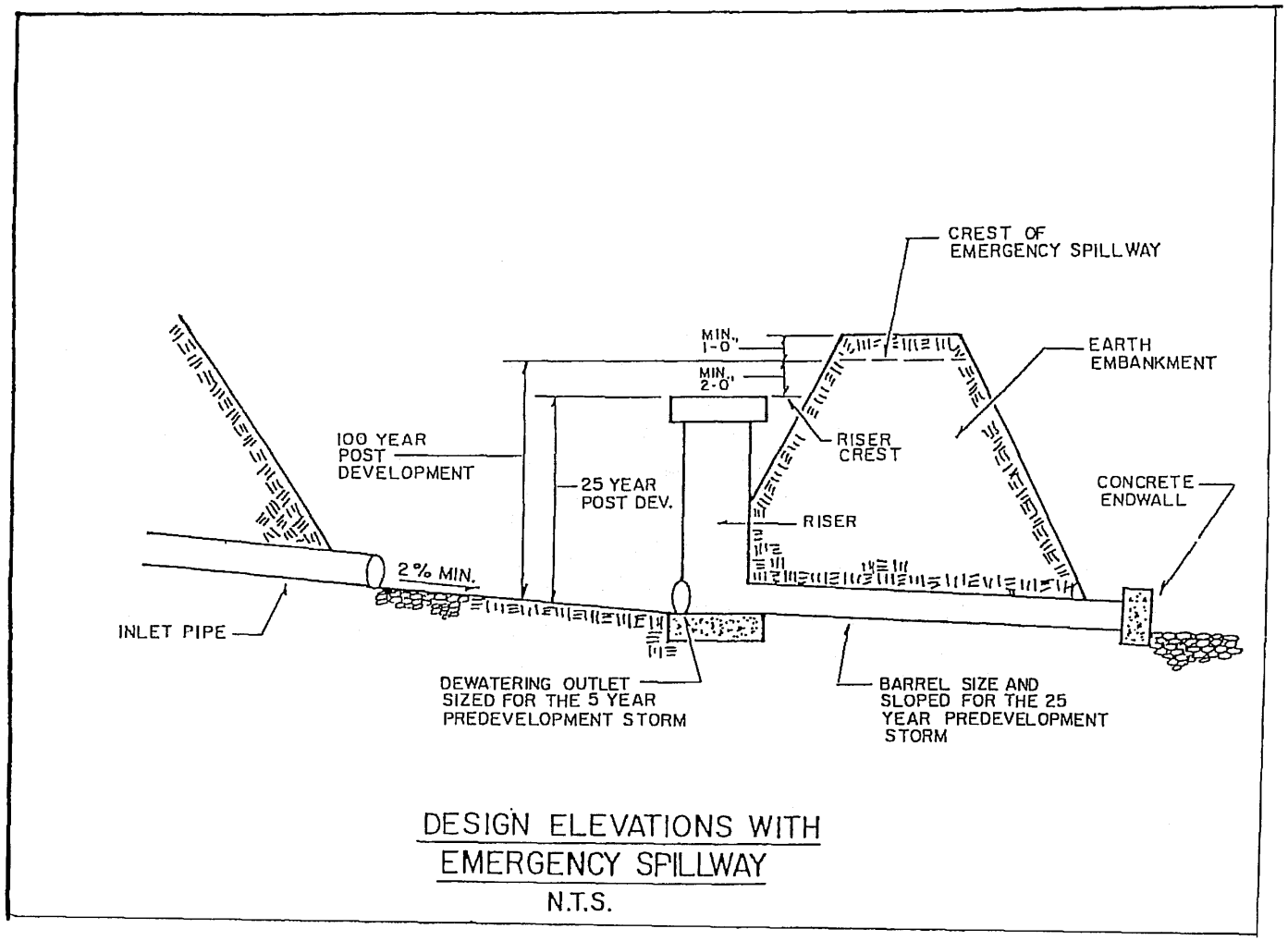

242
241
248
5
TURTLE
CREEK
TURTLE CREEK WATERSHED
SUBBASIN MAP
BOROUGH OF PITCAIRN
ALLEGHENY COUNTY, PA
SCALE : 1" = 1000'
DATE : MARCH 1992
GLENN ENGINEERING & ASSOCIATES LTD.
Registered Engineers - North Huntingdon, PA

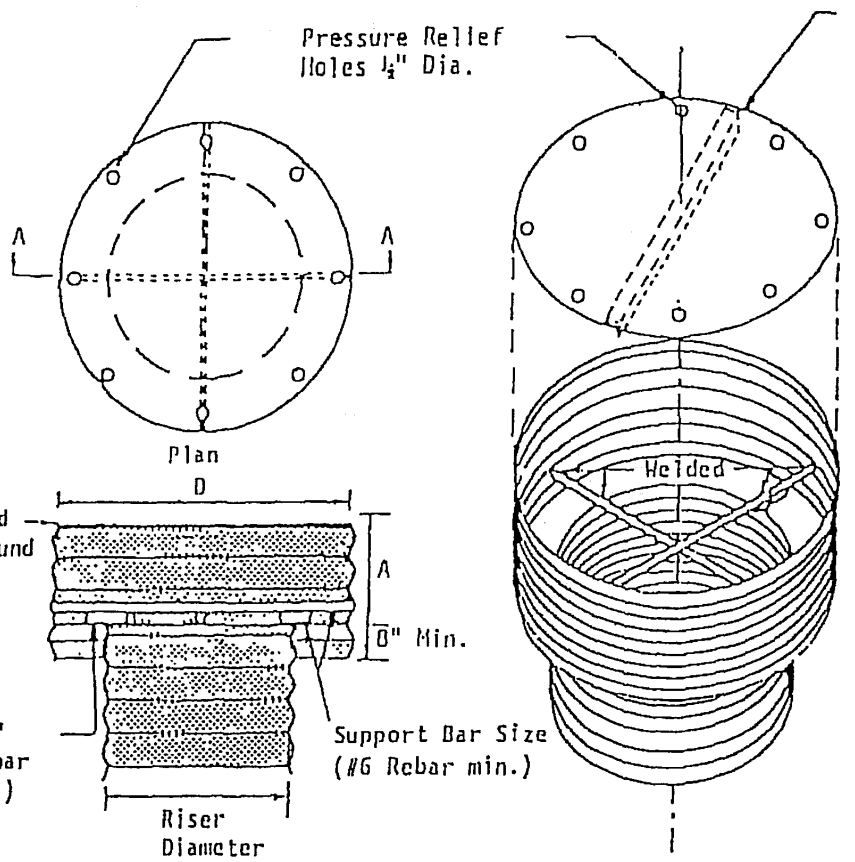
Plate 26-A



DESIGN ELEVATIONS WITH
EMERGENCY SPILLWAY
N.T.S.

Plate 26-B

SOURCE: USDA-SCS



Top stiffener (If required) is ___x___x___ angle welded to top and oriented perpendicular to corrugations.

Top is ____ gage corrugated metal or 1/8" steel plate. Pressure relief holes may be omitted, if ends of corrugations are left fully open when the top is attached.

Cylinder is ____gage corrugated metal pipe or fabricated from 1/8" steel plate.

Notes:
1. The cylinder must be firmly fastened to the top of the riser.
2. Support bars are welded to the top of the riser or attached by straps bolted to top of riser

ANTI - VORTEX DEVICE DESIGN

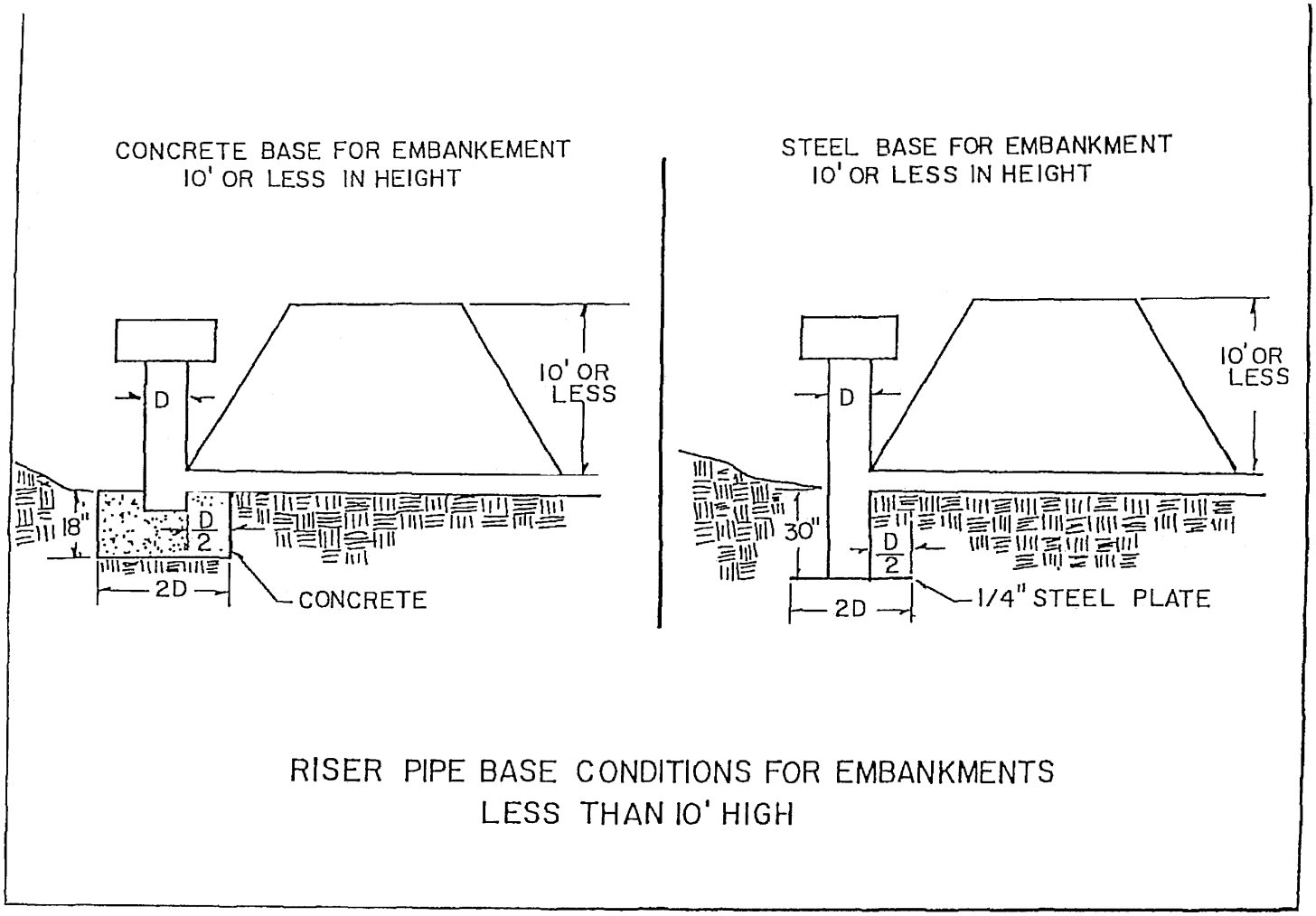
CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE DESIGN TABLE

Riser Diam. in.	Cylinder Diam. in.	Cylinder Thick. gage	H, in.	Minimum Size Support Bar	Minimum Top Thickness	Minimum Top Stiffener
12	18	16	6	#6 Rebar	16 ga.	-
15	21	16	7	"	"	-
18	27	16	8	"	"	-
21	30	16	11	"	"	-
24	36	16	13	"	14 ga.	-
27	42	16	15	"	"	-
36	54	14	17	#8 Rebar	12 ga.	-
42	60	14	19	"	"	-
48	72	12	21	1-1/4" pipe or 1-1/4x1-1/4x1/4 angle	10 ga.	-
54	78	12	25	"	"	-
60	90	12	29	1-1/2" pipe or 1-1/2x1-1/2x1/4 angle	8 ga.	-
66	96	10	33	2" pipe or 2x2x3/16 angle	8 ga., w/stiffener	2x2x1/4 angle
72	102	10	36	"	"	2-1/2x2-1/2x 1/4 angle
78	114	10	39	2-1/2" pipe or 2x2x1/4 angle	"	"
84	120	10	42	2-1/2" pipe or 2-1/2x2-1/2x1/4 angle	"	2-1/2x2-1/2x 5/16 angle

Note: The criterion for sizing the cylinder is that the area between the inside of the cylinder and the outside of the riser is equal to or greater than the area inside the riser. Therefore, the above table is invalid for use with concrete pipe risers.

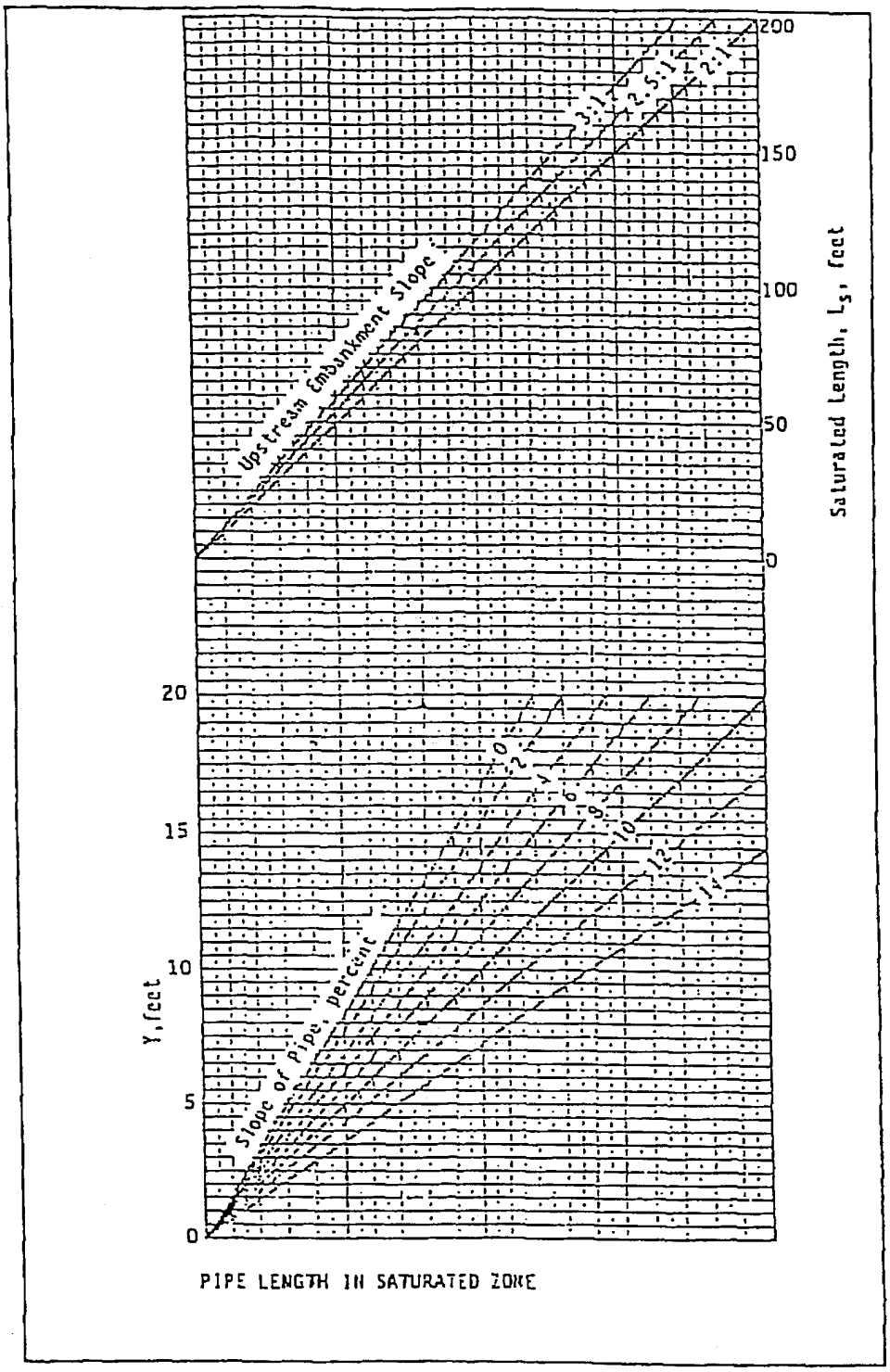
Source: USDA-SCS

Plate 26-D



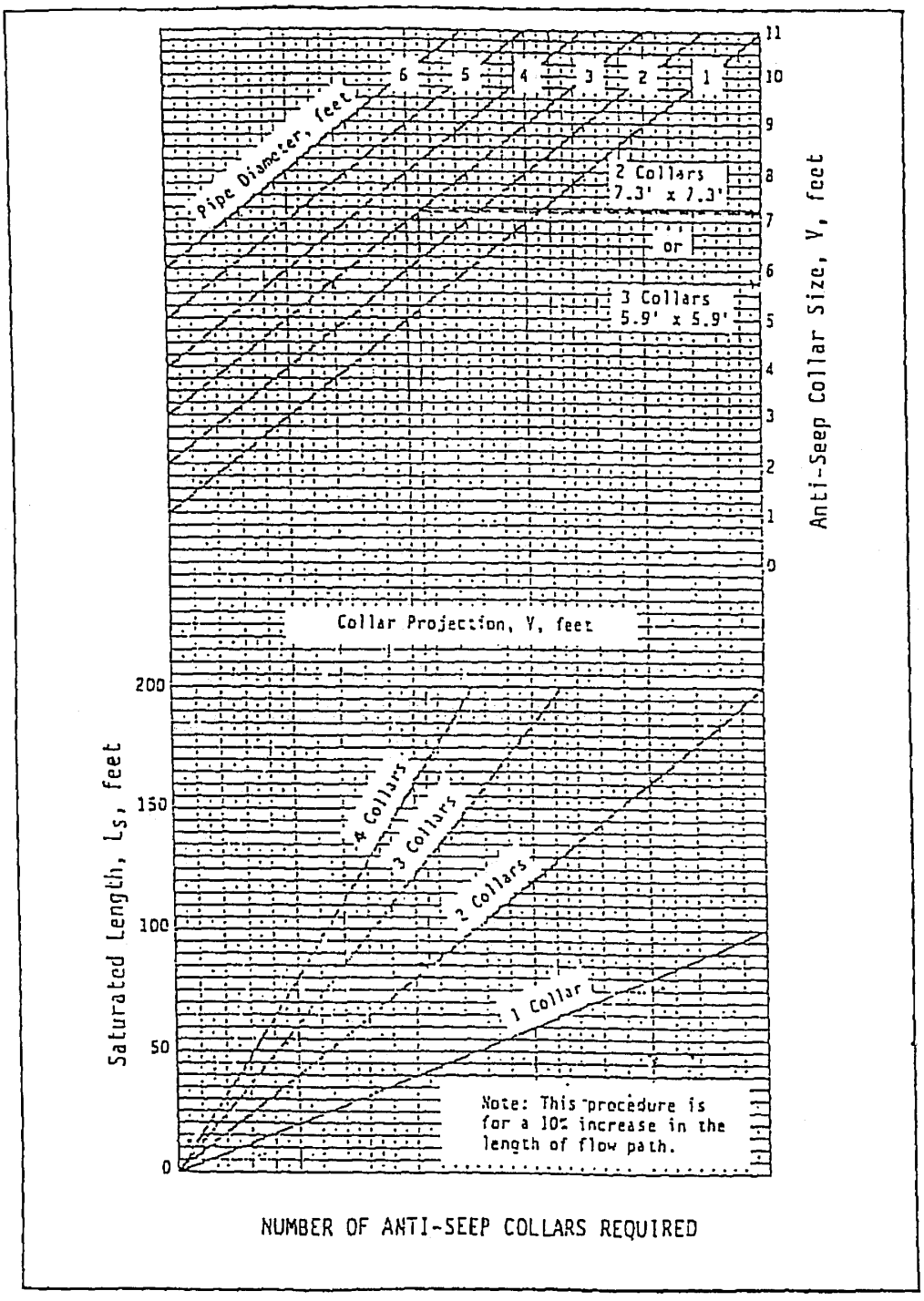
RISER PIPE BASE CONDITIONS FOR EMBANKMENTS
LESS THAN 10' HIGH

Plate 26-E



Source: USDA-SCS

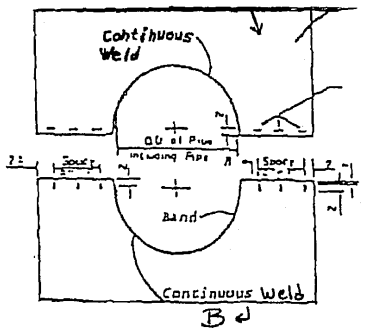
Plate 26-F



Source: USDA-SCS

Plate 26-G

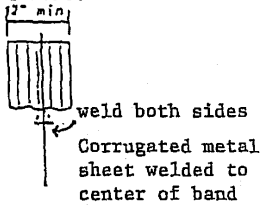
Install collar with connections vertical



ELEVATION OF UNASSEMBLED COLLAR

Collar to be of name gage as the pipe with which it is used

1/2" x 2" slotted holes for 1/3" diameter holes



SECTION B-B

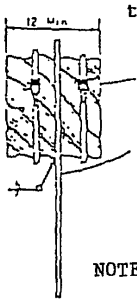
NOTES FOR COLLARS:

1. All materials to be in accordance with construction and construction material specifications.
2. When specified on the plans, coating of collars shall be in accordance with construction and construction material specifications.
3. Unassembled collars shall be marked by painting or tagging to identify matching pairs.
4. The lap between the two half sections and between the pipe and connecting band shall be caulked with asphalt mastic at time of installation.
5. Each collar shall be furnished with two 1/2" diameter rods with standard tank lugs for connecting collars to pipe.

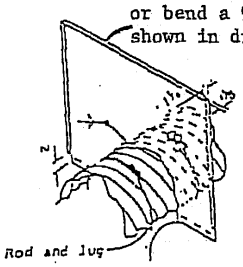
DETAILS OF CORRUGATED METAL ANTI SEEP COLLAR

Size and spacing of slotted openings shall be the same as shown for CM collar

Use rods and lugs to clamp bands securely to pipe



Weld 1/1/8"x1 1/8"x1/8" angles to collar or bend a 90 degree angle 1 1/8" wide as shown in drawing



NOTE FOR BANDS AND COLLARS: Modifications of the details shown may be used providing equal watertightness to be maintained and detailed drawings are submitted and approved by the Engineer prior to delivery.

Sheet metal collar shall be cut to fit corrugations of helical band and welded with a continuous weld.

ISOMETRIC VIEW

NOTE: For details of fabrication dimensions, minimum gages, slotted holes, and notes, see detail above.

DETAILS OF HELICAL PIPE ANTI-SEEP COLLAR

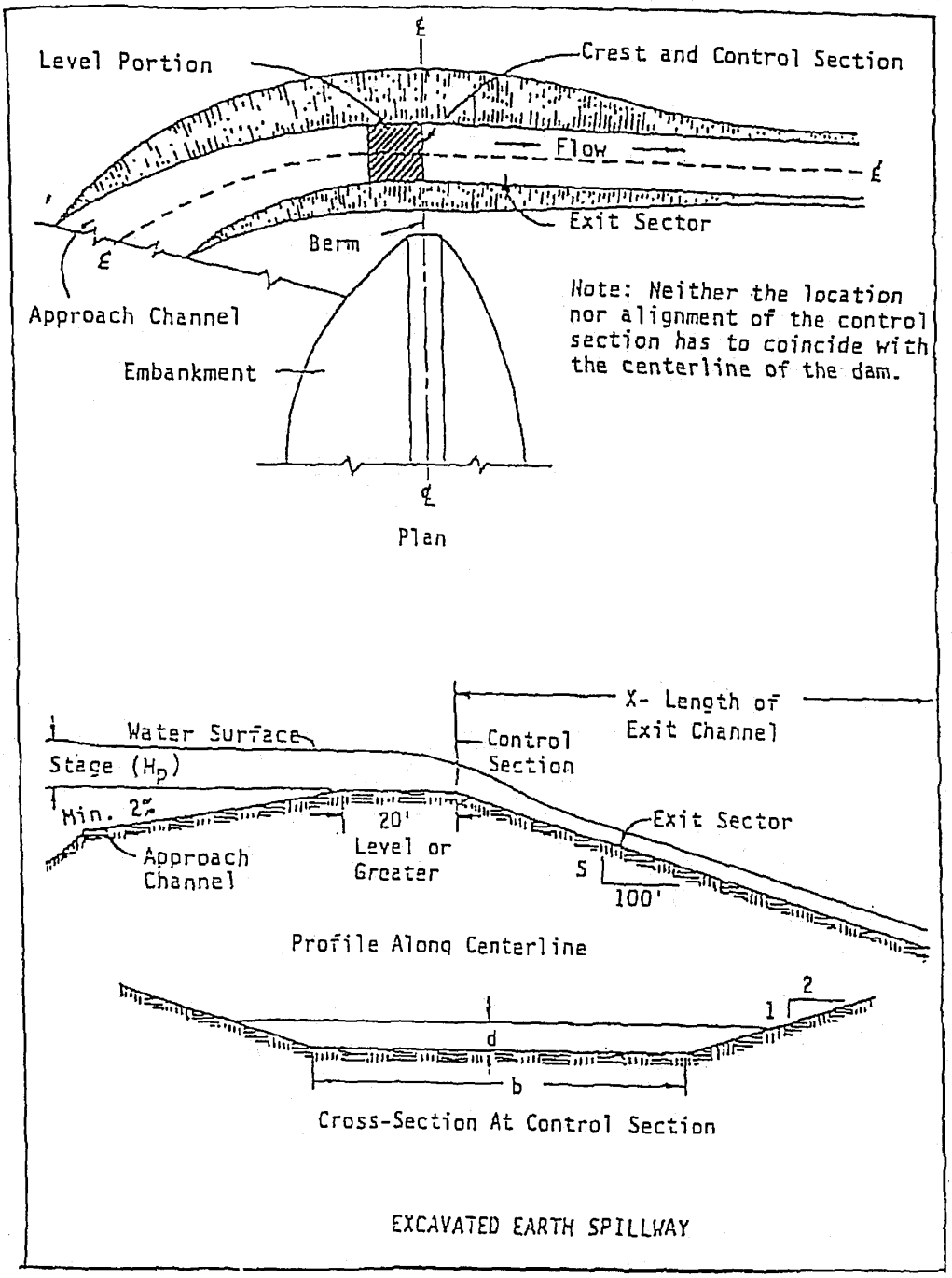
NOTE: Two other types of anti-seep collars are:

1. Corrugated metal, similar to upper detail, except shop welded to a short (4 ft.) section of the pipe and connected with connecting bands to the pipe.
2. Concrete, six inches thick formed around the pipe with #3 rebar spaced 15" horizontally and vertically.

PARTIAL ELEVATION
Ref: Engr. Field Manual

Source: USDA-SCS

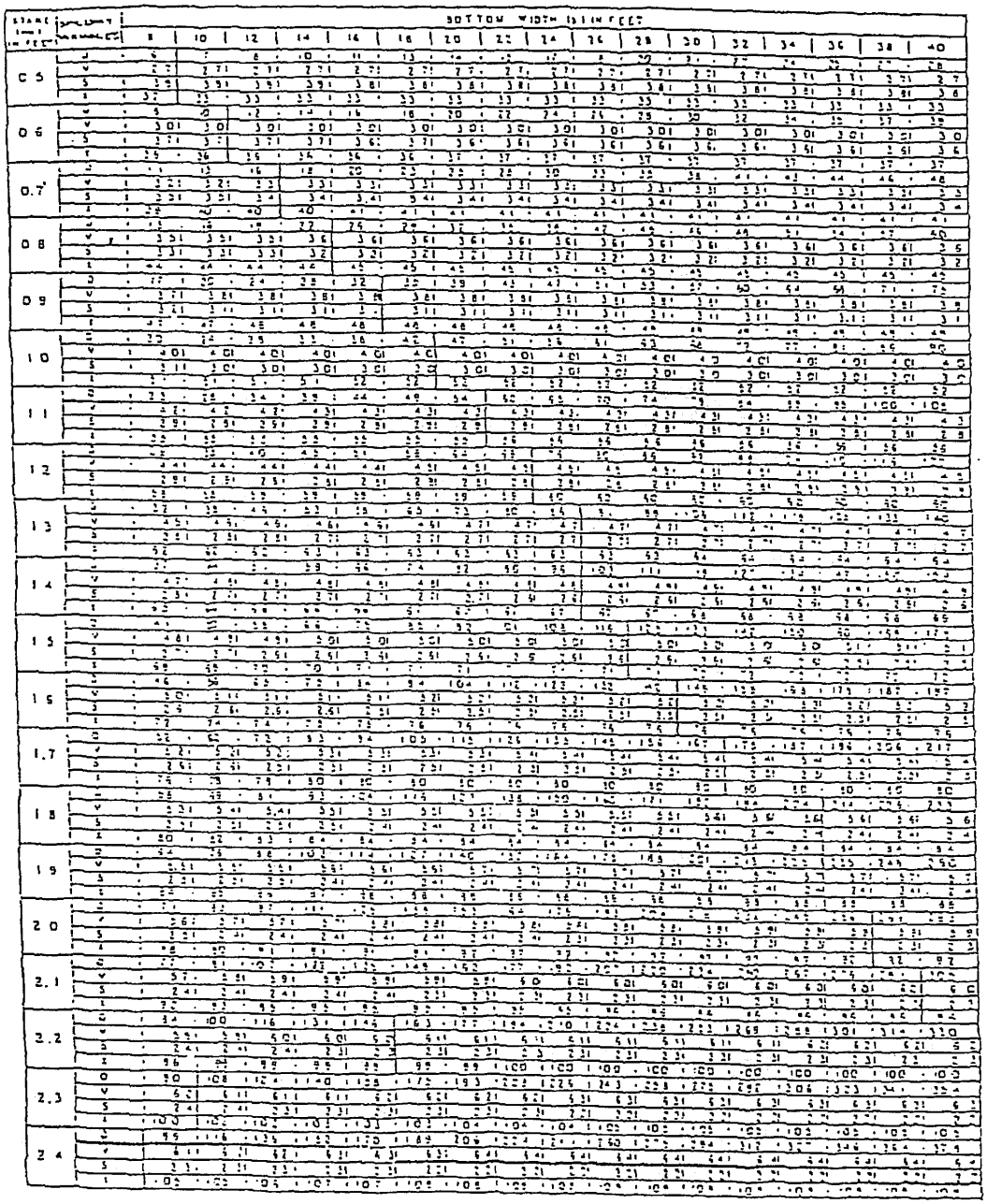
Plate 26-H



SOURCE USDA-SCS

Plate 26-I

DESIGN DATA FOR EARTH SPILLWAYS



Source: USDA-SCS

TABLE 26-1

INLET CAPACITY REDUCTION FACTORS

ASSUMING PARTIAL CLOGGING

Condition	Inlet Type	Reduction Factor*
Sump	Side Opening	0.80
Sump	Grate	0.50
Sump	Combination	0.65
Continuous Grade	Side Opening	0.80
Continuous Grade	Side Opening with Deflector	0.75
Continuous Grade	Longitudinal Bars	0.60
Continuous Grade	Transverse Bars	0.50
Continuous Grade	Combination	0.60

*Percentage of theoretical capacity

TABLE 26-2

"n" VALUES FOR MANNING FORMULA

Type of Pipe	"n" Value*
Asbestos Cement	0.013
Concrete Culvert Pipe	0.013
Concrete Sewer Pipe	0.013
Cast Iron	0.013
Corrugated Metal (plain)	0.024
Corrugated Metal (coated)	0.021
Plastic (smooth inside)	0.011
Verified Clay	0.013

*Adjustments for specific conditions shall be based on engineering experience and judgment and submitted to the Township Engineer for approval.

TABLE 26-3

SPACING OF INSPECTION AND CLEANOUT

STRUCTURES FOR STORM SEWERS

Size of Pipe (inches)	Maximum Allowable Spacing (feet)
15	400
18–36	500
42–60	700
66 or Larger	Unlimited

TABLE 26-4

PERMISSIBLE VELOCITIES FOR CHANNELS

CHANNEL LINING	PERMISSIBLE CHANNEL VELOCITY (Feet Per Second)
Vegetation	
Crownvetch	3 - 5
Kentucky Bluegrass	4 - 6
Kentucky 31 Tall Fescue	3 - 7
Reed Canary	3 - 5
Ryegrass	2.5 - 3.5
Small Grains	2.5 - 3
Bare Earth, Easily Eroded	
Sandy Loam	1.75
Silt Loam or Alluvial Silts, Loose	2
Firm Loam	2.25
Bare Earth, Erosion Resistant	
Fine Gravel	2.5
Stiff Clay or Alluvial Silts, Firm	3
Loam to Cobbles (graded)	3.75
Silt to Cobbles (graded) or Coarse Gravel	4
Cobbles & Stones or Shales & Hardpans	5
Durable Bedrock	8
Other	
Plastic	4
6" Rip Rap	6
Asphalt	7
9" Rip Rap	8
12" Rip Rap or Wood	9
Concrete or Steel	15

Slope, soil conditions, climate and management must be considered in channel design. If different channel linings exist in a channel and size and slope do not change, design the channel for the lining with the lower velocity listing.

Where velocity ranges are listed, the lower velocity is for design with easily eroded soils and slopes greater than 10 percent. The higher velocity is for design with erosion resistant soils and slopes less than 5 percent.

Filtration and/or sedimentation of sediment in the channel is encouraged. However, this must be considered for velocity determination in the design of the channel cross-section.