

ARTICLE XI

LAND DEVELOPMENT INVOLVING SANITARY LANDFILLS OR SURFACE MINING OPERATIONS

SECTION 1100: GENERAL

All sanitary landfills and surface mining operations shall have minimum lot area of one-thousand (1,000) acres. The area utilized for landfill operations shall have a minimum setback line of one-thousand (1,000) feet from any street, road, vehicular or pedestrian right-of-way, adjacent property line or stream, creek, or other flowing body of water.

Fencing and Vegetative Screening:

All sanitary landfills and surface mining operations shall be enclosed by a high chain link fence. Said fence shall be screened from view on all perimeters by vegetative screening. Vegetative screening shall consist of trees, a hedge, or vegetative material at least eight (8) feet in height and of a density to conceal from the view of adjacent property owners and the general public the fence enclosing the perimeter and the structure and uses on the premises.

Environmental Impact:

No subdivision or land development plan shall be approved for the operation of a sanitary landfill or surface mining operation in Letterkenny Township, Franklin County, Pennsylvania, if such subdivision or land development plan shall reveal that the operation of the landfill is either bordered by, or has passing through it, a creek, run, stream, or other moving body of water into which drainage, surface runoff, leachate, sediment, or effluent will be deposited.

Construction of Landfills:

All landfills shall be constructed so as to insure that no liquid or solid waste or product thereof shall escape from the area utilized for landfill operations for a period of twenty (20) years from the time of deposit of the material on the site.

Change in Topography:

No landfill, surface mining operation or shale or slate excavating operation shall be permitted to permanently alter the natural grade or topography by more than 12 feet.

Liability Insurance:

The owner and/or operator of any sanitary landfill or surface mining operation shall provide evidence of liability insurance in an amount of not less than one million dollars (\$1,000,000) covering damage to property and personal injury which may be caused by the operation or maintenance of the facility.

ARTICLE XII

FEES

SECTION 1200: FEES FOR SUBDIVISION AND LAND DEVELOPMENT

1. Filing fees shall be paid by the applicant to the Township Secretary at the time of filing of any application. The Township also reserves the right to require a fee in escrow for any application to guarantee the cost of certain professional reviews. Such fees shall be as established most recently by the Board of Supervisors by resolution.
2. Subject to the provisions of this Section, concerning the applicant's payment of review and report fees, no final approval of any application will be granted by the Township unless and until the applicant reimburses the Township for the cost and expense of the following professional services incurred by the Township, or any agency, Commission or Board thereof, in connection with the review and approval of any plat or application, or the inspection of public improvements.
 - A. Engineering Services
 - B. Legal Services
 - C. Stenographer's Fees
 - D. Sewage Enforcement Officer's Fees

All of the fees for which the Township seeks reimbursement shall be certified by the Township Secretary to the applicant at the time when the Township is in a position to finally approve any application or plat. Such review fees may include reasonable and necessary charges by the Township's professional consultants, engineer or attorney, for review and report thereon to the Township. Such review fees shall be reasonable and in accordance with the ordinary and customary charges by the Township's professional consultants, engineer or attorney for similar service in the community, but in no event shall such review fees exceed the rate or cost charged by the Township's professional consultants, engineer or attorney to the Township when fees are not reimbursed or otherwise imposed on applicants.

In the event the applicant disputes the amount of any such review fees, the applicant shall, within fourteen (14) days of the billing date, notify the Township Secretary that such fees are disputed, in which case the Township shall not delay or disapprove a subdivision or land development application due to the applicant's request over disputed fees. If, within twenty (20) days from the date of billing, the Township and the applicant cannot agree on the amount of expenses which are reasonable and necessary, then the Township and applicant shall jointly, by mutual agreement, appoint another professional engineer licensed as such by the Commonwealth of Pennsylvania to review the said expenses and make a determination as to the amount thereof which is reasonable and necessary. The professional engineer so appointed shall hear such evidence and review such documentation as the professional engineer in his or her sole opinion deems necessary and render a decision within fifty (50) days of the billing date. The applicant shall be required to pay the entire amount determined in the decision immediately. In the event that the Township and applicant can not agree upon the professional engineer to be appointed within twenty (20) days of the billing date, then, upon

application of either party, the President Judge of the Court of Common Pleas of Franklin County shall appoint such engineer, who, in that case shall be neither the municipal engineer nor any professional engineer who has been retained by, or performed services for, the Township or the applicant within the preceding five (5) years, The fee of the appointed professional engineer for determining the reasonable and necessary expenses shall be paid by the applicant if the amount of payment required in the decision is equal to or greater than the original bill. If the amount of payment required in the decision is less than the original bill by One Thousand (\$1,000.00) Dollars or more, the Township shall pay the fee of the professional engineer, but otherwise the Township and the applicant shall each pay one-half (1/2) of the fee of the appointed professional engineer.

3. All of the above fees, requirements, and arrangements shall be subject to revision, modification and amendment, from time to time, by the Township Board of Supervisors, by Fee Resolution, duly adopted by a majority vote of the said Board of Supervisors at a public meeting duly convened in accordance with law.

ARTICLE XIII

STORMWATER MANAGEMENT

SECTION 1300 PURPOSE

The purpose of this chapter is to promote the public health, safety and welfare by minimizing damages described in the previous section of this chapter through provisions designed to:

- A. Manage accelerated runoff and erosion and sedimentation problems at their source by regulating activities that cause such problems.
- B. Utilize and preserve existing natural drainage systems.
- C. Encourage recharge of groundwater where appropriate and prevent degradation of surface water and groundwater quality, and to protect water resources.
- D. Maintain existing flows and quality of streams and watercourses in Letterkenny Township.
- E. Preserve the flood-carrying capacity of streams.
- F. Provide proper maintenance of all permanent stormwater management facilities that are constructed in Letterkenny Township.
- G. Provide performance standards and design criteria for stormwater management and planning within Letterkenny Township.

SECTION 1301 APPLICABILITY

The following activities are defined as “Regulated Activities” and shall be regulated by this Ordinance:

- A. Land Development
- B. Subdivision
- C. Construction of new or additional impervious or semi-pervious surfaces (driveways, parking lots, etc.)
- D. Construction of new buildings or additions to existing buildings
- E. Diversion or piping of any natural or man-made stream channel
- F. Installation of stormwater management facilities or appurtenances thereto

SECTION 1302 EXEMPTIONS

Regulated activities that meet the exemption criteria in Exhibit 1 may be eligible for an exemption from the requirements of this Article subject to a review by the Township Engineer, and at the sole discretion of the Township Supervisors. Requests for exemptions shall be submitted in writing for review by the Township and shall clearly identify the justification and basis for the request. The exemption criteria shall apply to all regulated activities proposing construction of impervious or semi-impervious surfaces after the effective date of this Ordinance. The total impervious surface area at a site shall be calculated for the areas inclusive of both existing and proposed impervious surfaces. Gravel and stone areas shall be included in the impervious area calculation, but can be reduced according to the impervious area reduction factors and sample calculation provided in Exhibit 2, Figure B-1.

Requests for exemption shall be reviewed by the Board of Supervisors on an individual site basis using the criteria outlined in Exhibit 1. An exemption shall not relieve the applicant from implementing any measures that would be necessary to protect the public health, safety, welfare, property, the resources of the people and/or the environment.

SECTION 1303 STATUTORY AUTHORITY

The Township of Letterkenny is empowered to regulate land use activities by the authority of the Act of October 4, 1978, P.L. 864 (Act 167), the Stormwater Management Act and the Second Class Township Code, the Act of May 1, 1933 (P.L. 103, No. 69), Re-enacted and Amended November 9, 1995 (P.L. 350, No. 60), as amended.

SECTION 1304 GENERAL REQUIREMENTS

- A. All regulated activities in Letterkenny Township not granted an exemption in accordance with Section 1302 shall submit a Stormwater Management Plan to Letterkenny Township for review.
- B. Design Standards. The design of all storm water management facilities shall incorporate sound engineering principles and practices. The Township shall reserve the right to disapprove any design that would result in the occupancy or continuation of an adverse hydrologic or hydraulic condition within the watershed. Computations for determining storm water runoff and for the design of storm water management facilities shall be based upon the NRCS Soil-Cover-Complex Methods (Technical Release 55 or Technical Release 20), the Modified Rational Method, or the Standard Rational Method. Use of the Standard Rational Method shall be acceptable for analysis of watersheds up to 10 acres in size. The Modified Rational Method shall be acceptable for watersheds up to 100 acres in size. NRCS Methods shall be acceptable for watershed analyses of all sizes. Stormwater credits for computing post development hydrographs are located in Exhibit 2, Table B-5. The following general requirements apply to all regulated activities in Letterkenny Township.
- C. The stormwater management plan shall consider and provide provisions for management of all stormwater runoff affecting the development site, including safe conveyance of the 100-year design storm runoff from offsite watersheds, if any.
- D. All pre-development calculations shall be based upon existing land uses except existing agricultural uses, which shall be based on Cultivated Land with Conservation Treatment, Pasture in Good Condition, Meadow in Good Condition, and Farmstead, unless the actual ground cover generates a lower Curve Number or Rational "C" value.
- E. Rainfall intensities utilized for Rational Method runoff computations shall be obtained from the PennDOT Storm Intensity-Duration-Frequency (I-D-F) curves for delineated Region 4 provided in Exhibit 2, Table B-3.
- F. 24-Hour rainfall depths used for TR-55 method runoff computations shall be obtained from Exhibit 2, Figure B-4.
- G. Runoff Curve Numbers (CN) for both existing and proposed conditions to be used in the soil cover complex method shall be obtained from Table B-2 in Exhibit 2 of this Ordinance.

- H. Runoff coefficients (c) for both existing and proposed conditions for use in the Rational method shall be obtained from Table B-3 in Exhibit 2 of this Ordinance.
- I. Storm sewers, swales and other stormwater conveyance structures shall be designed to convey post-development runoff from a 25-year design storm without surcharging inlets, and with adequate freeboard in open drainageways. Six inches of freeboard shall be provided in swales carrying 14 cfs or less. One foot of freeboard shall be provided for in drainageways designed to carry flows of 15 cfs or greater.
- J. The minimum pipe diameter permitted for use in storm sewer systems and/or stormwater carrying culverts shall be 15-inches.
- K. Stormwater drainage systems shall be provided in order to permit unimpeded flow along natural watercourses, except as modified by stormwater management facilities or open channels consistent with this Ordinance.
- L. The location, rate and flow characteristics of existing discharge onto adjacent properties shall not be altered without the written consent of the affected property owner.
- M. If existing diffused drainage discharge will be concentrated in the post development condition and discharged onto an adjacent property, the Developer must document that adequate downstream conveyance facilities exist to safely transport the concentrated discharge, or otherwise prove that no erosion, sedimentation, flooding or other harm will result from the concentrated discharge.
- N. Where a development site is traversed by watercourses, drainage easements shall be provided conforming to the line of such watercourses. The width of easements shall be based on the Federal and/or State Regulatory Status of the Watercourse and the physical limits of the regulated features. If the watercourse is not regulated, then easements shall have a minimum width of 20 feet. The terms of the easement shall prohibit excavation, the placing of fill or structures, and any alterations that may adversely affect the flow of stormwater within any portion of the easement.
- O. Any stormwater management facilities regulated by this Ordinance that would be located in or adjacent to waters of the Commonwealth or wetlands shall be subject to approval by PADEP and, if applicable, the U.S.Army Corps of Engineers. When there is a question whether wetlands may be involved, it is the responsibility of the Developer or his agent to demonstrate the applicable regulatory agencies that the land in question cannot be classified as wetlands.
- P. Any stormwater management facilities regulated by this Ordinance that would be located in State highway rights-of-way shall be subject to approval by the Pennsylvania Department of Transportation.
- Q. Cleanout structures for storm sewers shall be installed at the following maximum spacing:

<u>Size of Pipe (inches)</u>	<u>Maximum Allowable Spacing (Feet)</u>
15	200
18-36	300
42-60	500
66 or Larger	Unlimited

- R. The Storm Water Management Plan shall include calculations indicating velocities of flow, grades, sizes, and capacities of water carrying structures, and retention and detention structures as well as sufficient design information to construct such facilities.
- S. Proposed lots or buildings adjacent to basins and significant channels shall have a finished first floor elevation of two (2) feet above the one hundred (100) year storm event level calculated for these facilities. The plans shall specify the minimum allowable finished first floor elevation for these lots or buildings.
- T. Erosion and sediment pollution control measures shall be required for all plans submitted and shall be in accordance with the applicable standards and specifications set forth in the latest edition of the DEP Erosion and Sediment Pollution Control Program Manual and all other aspects of DEP Chapter 102 regulations.
- U. Special provisions may be required for watersheds draining to high quality (HQ) and exceptional value (EV) waters in accordance with PADEP regulations.
- V. Plans approved by Letterkenny Township shall be on site throughout the duration of the regulated activity.

SECTION 1305 PEAK DISCHARGE RATE CONTROLS

Post development peak discharge rates shall not exceed pre development peak discharge rates for the 2, 5, 10, 25, 50 and 100-year design storm events. If the applicant can mathematically demonstrate that post development peak discharge rates are less than or equal to pre development peak discharge rates without stormwater management controls, then the requirements of this section have been met. Otherwise, the applicant shall provide stormwater management controls as necessary to satisfy the stated requirements.

SECTION 1306 WATER QUALITY AND GROUNDWATER RECHARGE

- A. The water quality volume (WQV) shall be equal to the runoff volume from all proposed impervious surfaces generated by the first 2.0 inches of rainfall. The groundwater recharge volume shall be a component or portion of the WQV as described in Section 1306.B.
- B. The groundwater recharge volume (GRV) shall be equal to 25% (the first 0.5 inch) of the WQV. The GRV shall be infiltrated on the site if soil conditions meet the requirements of Section 1307.B.
- C. The water quality volume must be treated prior to discharge from the site. Water quality BMPs shall be designed for effective mitigation of pollution potential posed by discharge of nitrate and suspended solids.
- D. Guidance on the design and selection of water quality and groundwater recharge (infiltration) BMPs shall be obtained from the Pennsylvania Stormwater Best Management Practices manual, latest edition.

SECTION 1307 STANDARDS FOR STORMWATER STORAGE FACILITIES AND INFILTRATION BMP

A. Stormwater Storage Facilities (Detention And Retention Basins)

All stormwater storage facilities (i.e. detention and retention basins) shall be designed and constructed in accordance with the following minimum standards.

1. Embankment material used for basin construction shall be comprised of either on-site or imported fill which meets the following criteria:
 - Free of organic material, ash, cinders and demolition debris.
 - Particle size distribution that is well graded.
 - Plasticity index less than 10, liquid limit less than 30.
 - Less than 15% by weight rock fragments larger than 3 inches, less than 30% by weight larger than $\frac{3}{4}$ inch and less than 30% smaller than No. 200 sieve.
2. Embankment slopes shall not be steeper than one (1) foot vertical in three (3) feet horizontal.
3. The top width of basin embankments shall not be less than six (6) feet.
4. Emergency spillways in berms or earthen embankments shall be designed to convey the peak discharge from a 100-year design storm event while maintaining a minimum 1.0 foot of freeboard, assuming that the principal outlet structure is completely blocked. Where possible, emergency spillways shall be constructed in virgin material, not in fill. Proper erosion control measures shall be provided to protect the spillway and embankment against the erosive effects of accelerated discharge. Calculations for erosion protection shall be provided.
5. All embankments shall incorporate a compacted clay core and cutoff key trench meeting the criteria for embankment material as well as the following additional criteria:
 - Soil shall be relatively impermeable and meet the following USCS classification groups as determined by ASTM D2487/D2488: CL and/or CL-ML.
6. Top width of compacted clay core shall be a minimum of 2 feet with a top elevation equal to the 25-year storm peak water storage elevation or higher. The bottom width of clay key trench shall be a minimum of 4 feet and the key shall extend a minimum of 2 feet into virgin, undisturbed soil below the topsoil layer.
7. Anti-seep collars shall be installed on all basin outlet pipes. The required size and spacing of the collars shall be confirmed through calculations.
8. Basins designed for extended detention as a water quality control shall dewater in not less than 48 hours and not more than 96 hours.
9. Basins shall be kept in a maintainable condition with a minimum bottom slope of 1% toward the principal outlet. This requirement shall not apply to basins that do not dewater the entire storage volume through the principal outlet (i.e. infiltration basin, wet basin, retention basin, etc.).

B. Infiltration BMPs

1. A detailed soils evaluation of the project site shall be required to determine the suitability of infiltration BMPs. The evaluation shall be performed by a qualified design professional, and at a minimum, address soil permeability, depth to bedrock and normal or seasonal high water table, susceptibility to sinkhole formation, and subgrade stability.
2. Provide field tests to determine the presence of appropriate soil percolation rates between 0.10 and 10.0 in/hr. Testing shall be performed at the location of each proposed Infiltration BMP at the bottom elevation of the proposed facility. A plan including the frequency and locations of soil tests shall be submitted to the Township for review and approval.
3. Infiltration BMPs shall be capable of completely dewatering the infiltration volume within 48 hours.
4. Infiltration BMP bottoms shall be separated by a minimum 24" vertically from the static or seasonal high water table and bedrock layer, as documented by site soil testing.
5. Infiltration BMPs shall not be located within 50 feet of Karst geologic contacts such as sinkholes, closed depressions, fracture traces, faults, and pinnacles.
6. Infiltration BMPs shall be constructed after all site work is completed and the contributing drainage area has received final stabilization. Recharge/infiltration facilities shall not be used as sediment basins or traps at any time.
7. Specific requirements shall be included on the plans to protect infiltration BMPs from compaction by equipment and to prevent sediment from entering infiltration BMPs during construction.
8. Infiltration BMPs shall be at least 20 feet down-gradient, or 100 feet upgradient from on-site and/or offsite building foundations.
9. Infiltration BMPs shall be a minimum of 100 feet from any drinking water supply well.
10. Infiltration BMPs shall not be located within 50 feet of septic systems and/or septic system drain fields.
11. All infiltration BMP's shall incorporate a conveyance and control for overflow runoff.
12. In carbonate areas, BMPs shall be designed to disperse stormwater over the largest feasible area so as not to significantly modify the natural hydrologic regime.

SECTION 1308 PLAN CONTENT

The stormwater management plan shall contain the following, and shall be signed and sealed by a qualified design professional.

- A. A general description of the project and a detailed narrative of the stormwater management proposal and conclusions describing the management techniques, types of storage and conveyance facilities, and a

comparison between the pre-development and post-development peak runoff levels at all affected points of discharge from the property.

- B. Complete hydrologic and hydraulic structural computations for all stormwater management facilities. Structural computations can be requested at the discretion of the Municipality and their Engineer.
- C. Runoff calculations and related design computations of the total drainage area necessary to substantiate the proposed temporary and permanent stormwater management facilities.
- D. Map(s) of the project area shall be submitted on 24-inch x 36-inch sheets and shall be prepared in a form that meets the requirements for recording at the offices of the Recorder of Deeds of Franklin County. The contents of the maps(s) shall include, but not be limited to:
 - 1. The location of the project relative to highways, municipalities or other identifiable landmarks.
 - 2. The 100-year flood plain as determined by the Federal Emergency Management Agency (FEMA).
 - 3. Existing contours at intervals of two feet. In areas of steep slopes (greater than 15 percent), five-foot contour intervals may be used.
 - 4. Existing streams, lakes, ponds, or other bodies of water and wetlands within the project area.
 - 5. A map showing the extent of the entire watershed contributing runoff to the site including offsite watersheds, if any.
 - 6. The downstream area including existing improvements that will receive runoff from the proposed development.
 - 7. Other physical features including sinkholes, streams, existing drainage courses, and areas of natural vegetation to be preserved.
 - 8. The locations of all existing and proposed utilities, sanitary sewers, and water lines on the property being developed and within 50 feet of the subject property lines.
 - 9. An overlay showing soil names and boundaries.
 - 10. A note specifying the type and amount of impervious area that would be added.
 - 11. Existing and proposed structures, roads, paved areas, and buildings. These features shall be shown within 50 feet of the property lines when access is permitted.
 - 12. Final contours at intervals of two feet. In areas of steep slopes (greater than 15 percent), five-foot contour intervals may be used.
 - 13. Construction details, sections and specifications for stormwater facilities with sufficient information and dimensions for construction interpretation that will provide the developer and constructor with sufficient information to meet the requirements of this Ordinance.
 - 14. The name of the development, the name and address of the owner of the property, and the name of the individual or firm preparing the plan.

15. The date of submission and all subsequent revisions.
16. A graphic and written scale of one (1) inch equals no more than fifty (50) feet; for tracts of twenty (20) acres or more, the scale shall be one (1) inch equals no more than one hundred (100) feet.
17. North arrow.
18. Access easements around all stormwater management facilities that would provide ingress to and egress from a public right-of-way. Access easements shall have a minimum width of 20.0 feet and be centered on the facility (i.e. pipe, swale) to which access is being provided. For storage, retention and infiltration facilities the easement shall conform substantially to the size, shape and configuration of such facility. For regulated activities proposing individual on lot controls. A note shall be provided to grant the Township access to inspect on-lot facilities in the event of a malfunction.
19. A note on the plan indicating the location and responsibility for maintenance of stormwater management facilities that would be located off-site. All off-site facilities shall meet the performance standards and design criteria specified in this Ordinance.
20. Staging and implementation schedule for constructing the proposed stormwater management facilities.
21. A statement, signed by the landowner, acknowledging the stormwater management system to be a permanent fixture that can be altered or removed only after approval of a revised plan by the municipality.
22. A note which states that no person shall place any structure, fill, landscape or vegetation into a stormwater facility or a drainage easement, which would limit or alter the intended function of the facility without written approval of the Municipality.
23. Maintenance and ownership provisions in accordance with Section 1310.
24. Vertical profiles on all proposed storm sewers.
25. The following signature block for the design engineer who is licensed in the Commonwealth of Pennsylvania:
I, _____, on this date _____, have
(Design Engineer) (date of signature)
reviewed and hereby certify that, to the best of my knowledge and ability, the stormwater management plan meets all design standards and criteria of Letterkenny Township.
26. A list of the waivers of this Article that are requested.
27. The locations of all existing and proposed septic tank infiltration areas and wells.

SECTION 1309 PERFORMANCE GUARANTEE

The applicant shall provide a financial guarantee to the Township for the proper installation and construction of all stormwater management controls as required by the approved stormwater plan and this ordinance in the amount of 110% of the total estimated construction cost of all elements of the approved plan. Performance guarantees will be released only upon submittal of Record Drawings, which shall consist of an As-Built Survey of all stormwater management facilities included in the approved Stormwater Management Plan. Record Drawings shall be submitted to the Municipal Engineer for final approval, and shall include an explanation of any discrepancies, alterations and or modifications with the approved stormwater management plans. Record drawings shall be certified by a qualified design professional.

SECTION 1310 MAINTENANCE PROGRAM PROVISIONS

- A. Each stormwater management plan shall contain provisions, which clearly set forth the ownership and maintenance responsibility of all permanent stormwater management facilities. The provisions shall include:
 1. Description of maintenance requirements and outline of routine maintenance actions and schedules necessary to ensure proper operation of the facility(ies).
 2. Establishment of suitable easements for access to all facilities from public right-of-ways. Easement locations, dimensions and prohibitions shall be as required by Section 1308.D.18. The Township, its agents and employees shall have the right to enter easement areas where stormwater management and erosion and sediment control facilities are located for the purpose of inspecting said facilities.
 3. Identification of the responsible party or entity for ownership and maintenance of both temporary and permanent stormwater management and erosion and sediment control facilities. In meeting these requirements, the following priority for ownership is herein established:
 - a. As a first priority, the facilities should be incorporated within individual lots so that respective lot owners will own and be responsible for maintenance in accordance with this section and the recorded deed restrictions.
 - b. As a second priority, in the event that the first priority cannot be achieved, ownership and maintenance shall be the responsibility of a Homeowners' Association. The Township shall have complete discretion in determining whether or not the first priority can be achieved. The stated responsibilities of the Homeowners' Association in terms of owning and maintaining the stormwater management facilities shall be submitted with final plans for determination of their adequacy and, upon their approval, shall be recorded with the approved subdivision and / or land development plan with the recorder of deeds of Franklin County, Pennsylvania. In addition, the approved subdivision and / or land development plan and any deed written from said plan for a lot or lots shown therein shall contain a condition that it shall be mandatory for the owner or owners of said lot to be members of said Homeowners' Association.
 - c. Municipal ownership shall not be permitted.

4. When ownership will ultimately be the responsibility of a Homeowner's Association an agreement shall be provided to the Township by the Applicant/Owner/Developer defining the terms and conditions under which ownership and maintenance responsibilities will be transferred to the Homeowner's Association. Other items may be required in the agreement where determined necessary to guarantee satisfactory installation and maintenance of all facilities. The agreement shall be subject to the review and approval of the Municipality and shall be recorded with the County Recorder of Deeds and shall constitute a covenant running with the property and/or equitable servitude and shall be binding on the Landowner, his administrators, executors, assigns, heirs and any other successors in interests in perpetuity.

SECTION 1311 SCHEDULE OF INSPECTIONS

- A. The Municipal Engineer or his Municipal assignee shall observe any phases of the installation of the permanent stormwater management facilities that are deemed appropriate by the Municipality.
- B. During any stage of the work, if the Municipality determines that the permanent stormwater management facilities are not being installed in accordance with the approved Stormwater Management Plan, the Municipality shall revoke any existing land use permits until a revised Drainage Plan is submitted and approved, as specified in this Ordinance.

SECTION 1312 RIGHT-OF-ENTRY

Upon presentation of proper credentials, duly authorized representatives of the municipality may enter at reasonable times upon any property within the municipality to inspect the condition of the stormwater structures and facilities in regard to any aspect regulated by this Ordinance.

EXHIBIT 1	
Stormwater Management Plan	
Exemption Criteria	
Parcel Size (acres)	Total Impervious Area Exempt from Stormwater Management Plan Preparation (square feet)
0.1 AND SMALLER	1,000
0.2	1,400
0.3	1,900
0.4	2,300
0.5	2,700
0.6	3,100
0.7	3,500
0.8	3,900
0.9	4,200
1.0	4,600
1.1	4,900
1.2	5,200
1.3	5,500
1.4	5,900
1.5	6,200
1.6	6,500
1.7	6,800
1.8	7,100
1.9	7,300
2.0	7,600
2.1	7,900
2.2	8,200
2.3	8,400
2.4	8,700
2.5	9,000
2.6	9,200
2.7	9,500
2.8	9,800
2.9	10,000
3.0	10,300
3.1	10,500
3.2	10,800
3.3	11,000
3.4	11,300
3.5	11,500
3.6	11,700
3.7	12,000
3.8	12,200
3.9	12,500
4.0	12,700
4.1	12,900
4.2	13,200
4.3	13,400
4.4	13,600
4.5	13,800
4.6	14,100
4.7	14,300
4.8	14,500
4.9	14,700
5.0 AND LARGER	15,000

EXHIBIT 2

FIGURE B-1: Gravel / Stone Impervious Area Reduction Factor Table and Sample Impervious Area Calculation

FIGURE B-2: PennDOT Delineated Regions

FIGURE B-3: Storm Intensity-Duration-Frequency Curve (PennDOT Region 4)

FIGURE B-4: NRCS 24-Hour Rainfall Depths

TABLE B-2: Runoff Curve Numbers (NRCS TR-55)

TABLE B-3: Rational Runoff Coefficients

TABLE B-4: Roughness Coefficients (Manning's "N") for Overland Flow (U.S. Army Corps of Engineers, Hec-1 Users Manual)

TABLE B-6: Stormwater Credits for Computing Post Development Hydrograph

FIGURE B-1

Gravel / Stone Impervious Area Reduction Factor				
Hydrologic Soil Group	A	B	C	D
Reduction Factor	0.58	0.77	0.85	0.89

Sample Impervious Area Calculation

GIVEN:	Property Size (parent tract)	= 5+ acres
	Hydrologic Soil Group	= C
	Existing Impervious Areas (paving, rooftops, etc.)	= 2,500 SF
	Proposed Impervious Areas	= 8,000 SF
	Existing Gravel / Stone Areas	= 1,000 SF
	Proposed Gravel / Stone Areas	= 3,000 SF

FIND: Total impervious area to determine if the project is eligible for an exemption review by the Township based on the criteria in Section 905.3

SOLUTION:

1. For hydrologic soil group C, the gravel / stone area impervious reduction factor is 0.85.
2. Total Impervious Area = $(2,500 \text{ SF} + 8,000 \text{ SF}) + [(1,000 \text{ SF} + 3,000 \text{ SF}) \times 0.85]$

$$\begin{array}{rcl}
 = & 10,500 \text{ SF} & + & 3,400 \text{ SF} \\
 = & & & 13,900 \text{ SF}
 \end{array}$$

3. 13,900 SF < 15,000 SF therefore, in accordance with Section 905.3, this site may be exempt from the stormwater management requirements, subject to the review of the Township Engineer and at the sole discretion of the Township Supervisors.

FIGURE B-2: PENNDOT DELINEATED REGIONS

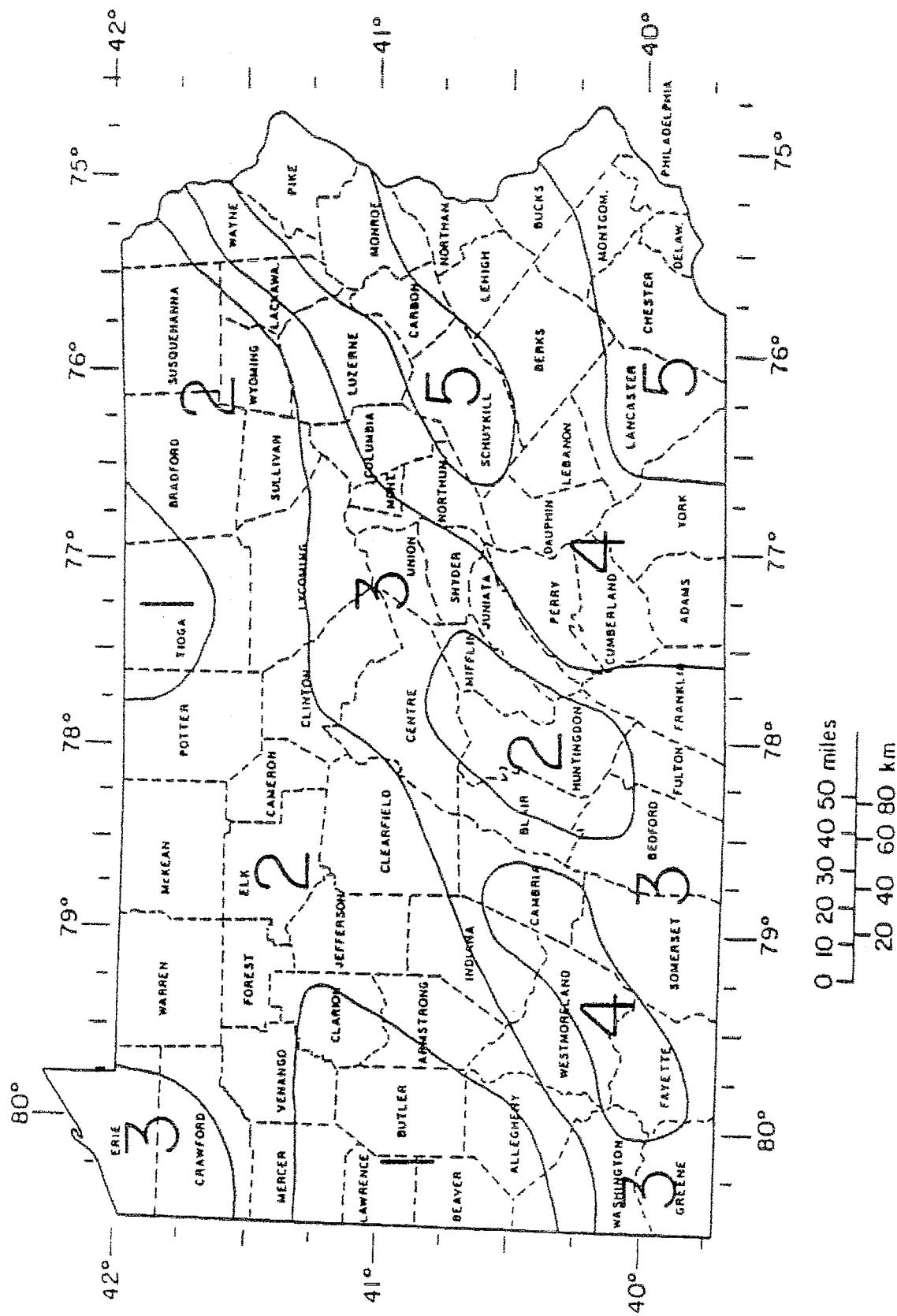


FIGURE B-3: PENNDOT STORM INTENSITY-DURATION-FREQUENCY CURVE

REGION 4

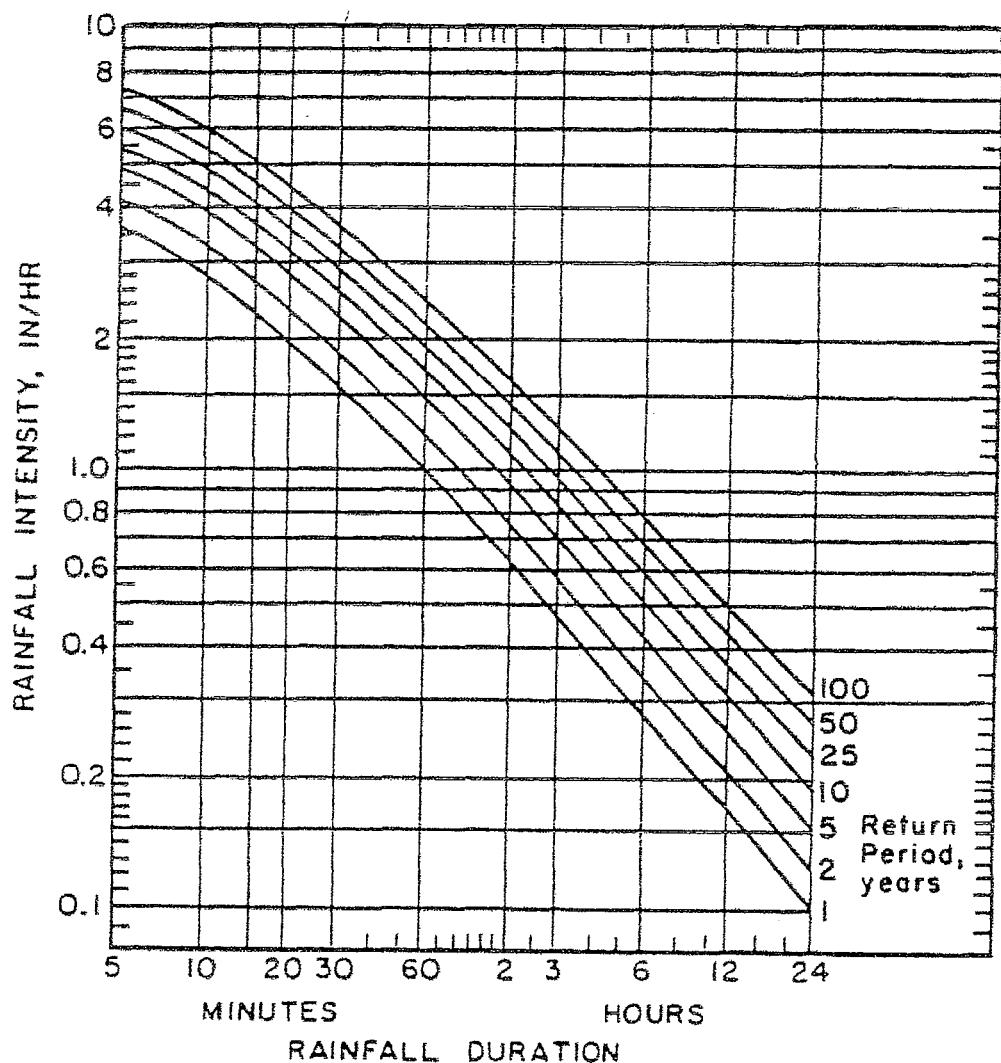


Figure B-4
NRCS 24-hour Rainfall Depths
(in inches)

Storm Event	Rainfall Depth (in.)
1-year	2.4
2-year	2.9
5-year	3.8
10-year	4.7
25-year	5.1
50-year	5.8
100-year	6.4

Source:

"PADEP Erosion and Sediment Pollution Control
Program Manual", April 15, 2000, Page 6, Table 1

TABLE B-2
NRCS Runoff Curve Numbers

LAND USE DESCRIPTION	HYDROLOGIC SOIL GROUP			
	A	B	C	D
Cultivated Land	61	70	77	80
Pasture or Rangeland	39	61	74	80
Meadow	30	58	71	78
Forest	30	55	70	77
Open space / Grass Areas	39	61	74	80
Commercial (85% Impervious)	89	92	94	95
Industrial (72% Impervious)	81	88	91	93
Residential:				
1/8 Acre Lots & Smaller	77	85	90	92
1/4 Acre Lots & Smaller	61	75	83	87
1/3 Acre Lots & Smaller	57	72	81	86
1/2 Acre Lots & Smaller	54	70	80	85
1 Acre Lots & Smaller	51	68	79	84
Gravel	76	85	89	91
Impervious (Streets, Parking, Roofs, etc.)	98	98	98	98

Source:

"Technical Release 55: Urban Hydrology for Small Watersheds", NRCS (SCS), June 1986

TABLE B-3
RATIONAL RUNOFF COEFFICIENTS

LAND USE DESCRIPTION	HYDROLOGIC SOIL GROUP			
	A	B	C	D
Cultivated Land	0.22	0.28	0.34	0.41
Pasture or Rangeland	0.37	0.45	0.52	0.62
Meadow	0.30	0.37	0.44	0.50
Forest	0.14	0.18	0.20	0.25
Open space / Grass Areas	0.20	0.26	0.32	0.39
Commercial (85% Impervious)	0.89	0.89	0.90	0.90
Industrial (72% Impervious)	0.86	0.86	0.87	0.88
Residential:				
1/8 Acre Lots & Smaller	0.40	0.44	0.49	0.54
1/4 Acre Lots & Smaller	0.37	0.42	0.47	0.52
1/3 Acre Lots & Smaller	0.35	0.39	0.45	0.50
1/2 Acre Lots & Smaller	0.32	0.36	0.42	0.48
1 Acre Lots & Smaller	0.29	0.34	0.40	0.46
Gravel	0.57	0.76	0.84	0.88
Impervious (Streets, Parking, Roofs, etc.)	0.97	0.97	0.97	0.97

Source:

"Recommended Hydrologic Procedures for Computing Runoff from Small Watersheds in Pennsylvania", 1982, The Pennsylvania State University, Chapter 4, pp 4.18 - 4.19

TABLE B-4
Roughness Coefficients (Manning's "n") for Overland Flow

Surface Description		n
Dense Growth	0.4	- 0.5
Pasture	0.3	- 0.4
Lawns	0.2	- 0.3
Bluegrass Sod	0.2	- 0.5
Short Grass Prairie	0.1	- 0.2
Sparse Vegetation	0.05	- 0.1
Bare Clay-Loam Soil (eroded)	0.01	- 0.0
Concrete/Asphalt	- very shallow depths (less than $\frac{1}{4}$ inch) - small depths (1/4 inch to several inches)	0.10 - 0.1 0.05 - 0.1

Roughness Coefficients (Manning's "n") for Channel and Pipe Flow

Reach Description	n
Natural stream, clean, straight, no rifts or pools	0.03
Natural stream, clean, winding, some pools or shoals	0.04
Natural stream, winding, pools, shoals, stoney with some weeds	0.05
Natural stream, sluggish deep pools and weeds	0.07
Natural stream or swale, very weedy or with timber underbrush	0.10
Concrete pipe, culvert or channel	0.013
Corrugated metal pipe	0.012 – 0.024*
Spiral rib metal pipe	0.012
Corrugated polyethylene pipe	0.020
Smooth-lined corrugated polyethylene pipe	0.012

* Based on pipe diameter and manufacturer's design specifications.

TABLE B-6
Stormwater Credits for Computing Post-Development Hydrograph

The developer may, subject to approval of the municipal engineer, use the stormwater credits, described in the following table, in computing post-development hydrograph:

Stormwater Credit	Description
Natural Area Conservation	Conservation of natural areas such as forest, wetlands, or other sensitive areas in a protected easement thereby retaining their pre-development hydrologic and water quality characteristics. Using this credit, a designer may subtract conservation areas from total site area when computing the required water quality volume. Additionally, the post-development curve number (CN) for these areas may be assumed to be forest in good condition.
Disconnection of Rooftop Runoff	Credit is given when rooftop runoff is disconnected and then directed over a pervious area where it may either infiltrate into the soil or filter over it. Credit is typically obtained by grading the site to promote overland flow or by providing bioretention on single-family residential lots. If a rooftop area is adequately disconnected, the impervious area may be deducted from the total impervious cover. Additionally, the post-development CNs for disconnected rooftop areas may be assumed to be forest in good condition.
Disconnection of Non-Rooftop Runoff	Credit is given for practices that disconnect surface impervious cover by directing it to pervious areas where it is either infiltrated or filtered through the soil. As with rooftop runoff, the impervious area may be deducted from the total impervious cover thereby reducing the required water quality volume.
Stream Buffer Credit	Credit is given when a stream buffer effectively treats stormwater runoff. Effective treatment constitutes capturing runoff from pervious and impervious areas adjacent to the buffer and treating the runoff through overland flow across a grass or forested area. Areas treated in this manner may be deducted from total site area in calculating and may contribute to meeting requirements for groundwater recharge.
Grass Channel (Open Section Roads)	Credit may be given when open grass channels are used to reduce the volume of runoff and pollutants during smaller storms. Use of grass channels will automatically meet the minimum groundwater recharge requirement. If designed according to appropriate criteria, these channels may meet water quality criteria for certain types of residential development.
Environmentally Sensitive Rural Development	Credit is given when a group of environmental site design techniques are applied to low density or rural residential development. This credit eliminates the need for structural practices to treat both the required recharge volume R_e and water quality volume. The designer must still address the channel protection volume, the overbank protection and overbank /extreme flood event requirements for all roadway and connected impervious surfaces.

ARTICLE XIV

ENFORCEMENT, PENALTIES, SEVERABILITY AND ADOPTION

SECTION 1400: ENFORCEMENT

It shall be the duty of the Building Inspector, Zoning Officer, or other such duly authorized representative of the Board of Supervisors to enforce the provisions of the Ordinance. Said Enforcement Officer shall require that the application for a building permit contain all information necessary to enable him/her to ascertain whether the proposed building, alteration or use is located in an approved subdivision or land development. No building permit shall be issued until the Enforcement Officer has certified that the site for the proposed building, alteration, or use complied with all of the provisions of this Ordinance and conforms to the site description as indicated on the approved and recorded Final Plat.

SECTION 1401: APPEALS TO COURT

The decisions of the Board of Supervisors or the Planning Commission with respect to the approval or disapproval of plans may be appealed in accordance with the law.

SECTION 1402: PENALTIES

Any person, partnership, or corporation who or which being the owner or agent of the owner of any lot, tract or parcel of land shall lay out, construct, open or dedicate any street, sanitary sewer, storm sewer, water main or other improvements for public use, travel or other purposes or for the common use of occupants of buildings abutting thereon, or who sells, transfers or agrees or enters into an agreement to sell any land in a subdivision or land development whether by reference to or by other use of a plat of such subdivision or land development or erect any building thereon, unless and until final plat has been prepared in full compliance with the provisions of this Ordinance and of the regulations adopted thereunder and has been recorded as provided herein, shall be guilty of a misdemeanor and, upon conviction thereof, such person or the members of such partnership or the officers of such corporation or the agent of any of them responsible for such violation shall pay a fine not exceeding one thousand dollars (\$1,000.00) per lot or parcel or per dwelling within each lot or parcel. All fines collected for such violations shall be paid over to the municipality. The description of metes and bounds in the instrument of transfer or other document used in the process of selling or transferring shall not exempt the seller or transferor from such penalties or from the remedies herein provided.

SECTION 1403: REPEALER

All ordinances or parts of ordinances inconsistent herewith are hereby repealed. Nothing in this Ordinance hereby adopted shall be construed to affect any suit or proceeding now pending in any court or any rights accrued or liability incurred or any cause or causes of action accrued or existing under any ordinance repealed by this Ordinance. Nor shall any right or remedy of any character be lost, impaired or affected by this Ordinance.

SECTION 1404: SEVERABILITY

The provisions of this Ordinance are severable and any provision, sentence, clause, section, part of application thereof shall be held illegal, invalid or unconstitutional, such illegality or unconstitutionality shall not affect or impair any of the remaining provisions, sentences, clauses, sections or applications. It is hereby declared to be the legislative intent of the Board of Supervisors that this Ordinance would have been adopted had such illegal, invalid or unconstitutional provision, sentence, clause, section or part not been included therein and if such illegal, invalid unconstitutional application had been specifically exempted therefrom.

In any case where a provision of this Ordinance is found to conflict with the provision of a building, fire, safety or health ordinance or code of this Municipality of law, rule or regulation of the Commonwealth of Pennsylvania, the provisions which establishes the higher standard for the promotion and protection of the health and safety of the people shall prevail. In any case where a provision of this Ordinance is found to be in conflict with the provisions of another ordinance or code of this Municipality or law, rule or regulation of the Commonwealth of Pennsylvania which establishes a lower standard for the promotion and protection of the health and safety of the people, the provisions of this Ordinance shall be deemed to prevail and such other ordinances or codes are hereby declared to be repealed to the extent that they may be found in conflict with this Ordinance.

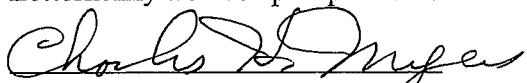
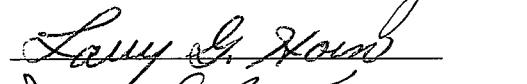
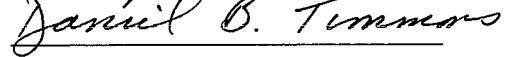
SECTION 1405:

This Ordinance, amending the Letterkenny Township Ordinance of 1988 is adopted this 15th day of December, 2009.

Attest:


Joann P. Wright
Secretary

Letterkenny Township Supervisors


Charles D. Dryer

Lucy G. Horn

Daniel B. Timmons

