

**BULL RUN WATERSHED
STORMWATER MANAGEMENT PLAN**

SECTION VII

EXISTING MUNICIPAL ORDINANCES

EXISTING MUNICIPAL ORDINANCES

As part of the development of this watershed stormwater management plan for the Bull Run Watershed, the Union County Planning Commission supplied copies of relevant existing municipal and County ordinances to the consultant. The municipal zoning ordinances and municipal and county subdivision / land development ordinances were reviewed to identify, to the extent possible, development objectives, the current extent of control of stormwater related aspects of development, existing enabling ordinance provisions, and current stormwater management responsibilities and procedures.

A matrix describing the content of the existing municipal ordinance packages based upon information made available to the consultant is presented in Table VII-1.

Lewisburg Borough and East Buffalo Township currently have subdivision / land development and zoning ordinances in place. Buffalo Township has an existing zoning ordinance, but no subdivision / land development ordinance. However, Union County Planning Commission staff have indicated that Buffalo Township may be considering the adoption of subdivision / land development ordinance in the relatively near future. Union County has a county subdivision / land development ordinance.

The East Buffalo Township subdivision / land development ordinance contains extensive language with respect to the control of stormwater runoff. It includes a requirement for controlling post-development peak runoff rates to the pre-development peak discharge rate. The ordinance specifies return frequencies for control storms and requires the use of identified acceptable computational methods. The ordinance also contains specific requirements relative to establishing maintenance responsibilities.

The Lewisburg Borough subdivision / land development ordinance and the County subdivision / land development ordinance contain only general references to stormwater management issues.

The Buffalo Township zoning ordinance is essentially silent with respect to stormwater management issues.

Incorporation of the key elements of this Plan will require relatively minor additions / modifications to the East Buffalo Township subdivision / land development and zoning ordinances. More significant revisions to the existing Lewisburg Borough ordinances. Implementation by Buffalo Township will necessitate the adoption of a subdivision / land development ordinance or a separate stormwater management

ordinance including the provisions contained in the model ordinance provided as a part of this Plan.

**Table VII-1
Existing Municipal Ordinance Matrix**

Existing Regulatory Controls	Municipality
	Buffalo Township
Relevant Ordinances	Zoning Ordinance
Land Use Planning Standards	Para. 300: Names zoning districts; Article VI contains requirements for cluster subdivisions. Para. 606 specifies maximum 30% percent impervious coverage applied to the entire development.
Stormwater Controls	None.
Rate of Runoff Standard	None.
Specific Calculation Method	None.
Design Standards for Stormwater Controls	None.
Erosion/Sedimentation Controls	None.
Plan Review Process	Para. 703: Zoning Officer issues permits.
Fees	Para. 713: Authorizes the collection of filing fees.
Inspection Schedule	Para. 703: Zoning Officer empowered to make site visits and inspections as are necessary to perform his duties at any reasonable hour.
Maintenance Provisions	None.

**Table VII-1
Existing Municipal Ordinance Matrix**

Existing Regulatory Controls	Municipality
	East Buffalo Township
Relevant Ordinances	Zoning Ordinance; Subdivision and Land Development Ordinance (S/LD)
Land Use Planning Standards	S/LD (Para. 401): Precautions shall be taken to preserve all natural and historic features determined to be worthy of preservation by the Township; grading plans may be required; where average slope exceeds 15% additional design standards may be required. Zoning (Para. 302) identifies classes of zoning districts. Zoning (Article 4) presents specific regulations for each zoning district including minimum lot sizes and maximum building coverages.
Stormwater Controls	S/LD (Para. 505): Post-development peak stormwater runoff rates not to exceed pre-development rates; developers are encouraged to consider various alternatives for stormwater management and select the most appropriate and economical system(s).
Rate of Runoff Standard	S/LD (Para. 505): Post-development peak rate not to exceed pre-development peak rate for the 2, 5, 10, 25, 50 and 100 year storm frequency events.
Specific Calculation Method	S/LD (Para. 505): U.S. S.C.S. soil-cover complex methods: Chapter 2 of SCS Engineering Field Manual and TR-55. Sizing of storm sewers, inlets and swales may be performed using the Rational Method.
Design Standards for Stormwater Controls	S/LD (Para. 505): General standards for design of storm sewers provided; construction standards provided for detention basins.
Erosion/Sedimentation Controls	S/LD (Para. 514): No increase in discharge of sediment from site; erosion and sedimentation devices shall be installed as required concurrent with earthmoving; earth moving and filling shall be minimized; development shall be done so as to minimize erosion; sediment in runoff shall be trapped and removed; description of provisions to be employed required for all developments

**Table VII-1
Existing Municipal Ordinance Matrix**

Existing Regulatory Controls	Municipality
	East Buffalo Township
	consisting of five or which include new roads or rights of way for access.
Plan Review Process	S/LD (Para. 303 and 305): Preliminary and final plans reviewed by County Planning Commission, Township Engineer, Township Zoning Officer, County Conservation District, Lewisburg Area Joint Sewer Authority and PennDOT. Board of Supervisors approve plans. Zoning (Para. 701): Zoning Officer issues permits.
Fees	Zoning (Para. 704) and S/LD (Para. 601): Authorize the collection of fees.
Inspection Schedule	S/LD (Para. 507): Inspection of improvements prior to completion. Zoning (Para. 703): Inspection of any use, structure, building, sign and/or land by Zoning Officer.
Maintenance Provisions	S/LD (Para. 306): Governing body may require posting of financial security in an amount of 15% of the cost of the improvements, for a period not to exceed 18 months to insure structural integrity and performance; final plan must define ownership and maintenance responsibilities for all stormwater management control devices and detail specific maintenance responsibilities. S/LD (Para. 505): Requires for all stormwater management facilities an agreement, between the Applicant and Township specifying the legal entity responsible for maintaining the stormwater management system, that the stormwater management structures will be maintained in proper working order, and a one year maintenance guarantee in the amount not less than 10% of the estimate of the cost of the stormwater management improvements.

**Table VII-1
Existing Municipal Ordinance Matrix**

Existing Regulatory Controls	Municipality
	Lewisburg Borough
Relevant Ordinances	Zoning (includes floodplain regulations), Subdivision/ Land Development (S/LD)
Land Use Planning Standards	S/LD calls for minimizing tree removal (Para. 421), Providing recreation space (Para. 423); allows cluster housing developments; developments with minimum open space requirement (Para. 602); Zoning establishes maximum impervious coverages for each zoning district (Part 4).
Stormwater Controls	S/LD (Para. 419): "Stormwater facilities shall be required, as necessary to provide for the controlled release of stormwater, to permit the unimpeded flow of natural water courses and ensure the drainage of low points along the street line. Facilities shall be designed to handle the runoff from the entire drainage basin.
Rate of Runoff Standard	S/LD (Para. 419): "When adequate existing storm sewers are readily accessible, the subdivider shall connect his storm water facilities to these existing sewers, however, pre-development run-off shall be maintained through the use of retention and controlled release facilities".
Specific Calculation Method	None
Design Standards for Stormwater Controls	S/LD (Para. 419): "When adequate existing storm sewers are readily accessible, the subdivider shall connect his storm water facilities to these existing sewers, however, pre-development run-off shall be maintained through the use of retention and controlled release facilities".
Erosion/Sedimentation Controls	S/LD (Para. 419): measures may be required to eliminate or reduce surface water erosion. Measures to comply with specifications in referenced erosion and sedimentation control handbooks. S/LD (Para. 420) contains land excavation, fill and topsoil requirements. S/LD (Para. 303) required for land developments 25 acres or more in size.

**Table VII-1
Existing Municipal Ordinance Matrix**

Existing Regulatory Controls	Municipality
	Lewisburg Borough
Plan Review Process	S/LD (Para. 205 and 206): Preliminary and final plans reviewed by Borough Building Permit Officer, Union County Planning Commission, Union County Conservation District, PennDot and Borough Planning Commission. Borough Council approves plans. Zoning (Para. 601): Zoning Officer issues zoning permits.
Fees	Zoning and S/LD authorize the collection of fees.
Inspection Schedule	S/LD (Para. 304): Requires inspection by the Borough upon completion of improvements.
Maintenance Provisions	S/LD (Para. 304) authorizes requirement for posting financial security to secure structural integrity and functioning of improvements to be accepted by the Borough by dedication. Term not to exceed 18 months, amount not to exceed 15% of the cost of installation of the improvements.

**Table VII-1
Existing Municipal Ordinance Matrix**

Existing Regulatory Controls	Municipality
	Union County
Relevant Ordinances	Union County Subdivision and Land Development Ordinance
Land Use Planning Standards	Para. 402: Land subject to hazards may not be subdivided unless the hazard(s) has been eliminated or adequate safeguards are provided. Para. 403: Land subject to flooding hazards shall not be developed for inappropriate uses unless provisions are made to alleviate the hazards. Para. 404: Land with slopes > 30% should not be developed. Article V: contains standards for mobile home parks. Article VI: contains requirements for multi-unit housing, recreational vehicle parks and campgrounds, commercial and industrial land developments, clustering housing developments and recreational developments.
Stormwater Controls	Para. 480: "Storm sewer culverts and related facilities shall be required, as necessary, to permit the unimpeded flow of natural water courses and ensure the drainage of low points along the street line.
Rate of Runoff Standard	None.
Specific Calculation Method	None.
Design Standards for Stormwater Controls	Para. 480: Facilities shall be designed to handle the run-off from the entire drainage basin. Existing storm sewers should be used when accessible. Storm sewers or drainage channels opening onto adjoining land shall empty into natural watercourses, otherwise written approval of adjoining affected owners may be required.
Erosion/Sedimentation Controls	Para. 480: Planning Commission may require improvements or actions to eliminate or reduce surface water erosion. Measures to do so shall as a minimum meet the PA Clean Streams Law. Municipalities or PADER shall ensure compliance with specifications contained in referenced documents.

**Table VII-1
Existing Municipal Ordinance Matrix**

Existing Regulatory Controls	Municipality
	Union County
Plan Review Process	Sect. 220 and 230: Preliminary and final plans are reviewed and approved by the Union County Planning Commission.
Fees	Para. 230.5: Requires payment of application fee established by the Union County Planning Commission and approved by the Union County Commissioners.
Inspection Schedule	None.
Maintenance Provisions	None.

**BULL RUN WATERSHED
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**SECTION VIII
INSTITUTIONAL AND REGULATORY REQUIREMENTS**

INSTITUTIONAL AND REGULATORY REQUIREMENTS UNDER ACT 167

INTRODUCTION

The purpose of stormwater management is to control surface drainage, flooding, soil erosion and to a certain extent, pollutants in stormwater runoff. In Pennsylvania, stormwater management is regulated on a watershed-wide basis by the terms and provisions of Act 167, The Storm Water Management Act. Generally, the intent of the Act is to prevent or mitigate the adverse impacts related to the conveyance of excessive rates and volumes of stormwater runoff on persons or property in the watershed. The Act requires counties to prepare stormwater management plans for each state designated watershed within their jurisdiction; subsequent land development must include stormwater management measures that are consistent with the county plans to assure that stormwater problems are not created or worsened in the watershed.

WATERSHED STORMWATER MANAGEMENT PLAN IMPLEMENTATION

The process for adopting a watershed stormwater management plan as required by Act 167, includes the following steps:

Planning

The county's responsibility for developing a watershed plan includes the preparation of a planning program and the establishment of an advisory committee composed of representatives of each municipality within the watershed and the conservation district.

Review

The county's watershed plan must be reviewed by the advisory committee, the planning commission and governing body of each municipality within the watershed, and county and regional planning agencies.

Adoption

Once a plan has been prepared, the county must schedule public hearings with public notice, prior to adoption of the plan by a majority vote of the county commissioners.

Approval

The watershed stormwater plan must be submitted to the Pennsylvania Department of Environmental Resources (DER) for approval. DER has ninety days to review the plan using the following criteria:

1. Is it consistent with flood plain management plans, flood control programs, and dams and encroachment regulations?
2. Is it compatible with the stormwater management plans of other watersheds in the basin?
3. Is it compatible with the purposes and policies of Act 167?

Implementation

Once a watershed stormwater management plan has been adopted and approved, implementation of the plan is the responsibility of the municipalities within the watershed. Act 167 requires each municipality to adopt a stormwater management ordinance within six months of the plan's adoption and approval, in order "to regulate development within the municipality in a manner consistent with the applicable watershed stormwater plan and the provisions of this Act." Penalties for failure to adopt such an ordinance are included in Section 12 of the Act.

By placing the responsibility for implementation with the municipalities, Act 167 emphasizes the importance of local support for the watershed plan, and recognizes the ability of municipalities to use their police powers to enforce the plan and assure that stormwater controls are implemented.

STORMWATER MANAGEMENT FUNCTIONS

The stormwater activities necessary to implement the plan are implied by Section 11 of Act 167 and by the watershed stormwater management plan itself. A municipal ordinance that satisfies these requirements must provide for the various stormwater activities or functions. However, not all of these activities must be performed by the municipality; the county planning agency, the county conservation district and other private and public sector organizations can participate in stormwater management throughout the watershed.

Before presenting an analysis of a model ordinance, the stormwater functions must be reviewed. Stormwater management consists of the following key functions:

- Planning (watershed plan updates)
- Development Regulations (site plan review and approval)
- Construction
- Inspection
- Maintenance

- Financing
- Monitoring and Enforcement
- Information and Education

Planning

Act 167 requires watershed stormwater plans to be reviewed, revised and updated at least every five years. In order to perform this task, the data base on stormwater facilities within the watershed that had been developed for the initial plan should be maintained. Another aspect of the planning function could be the coordination of the stormwater management plan with other functional type plans that are required for development in the watershed, i.e. land use plans, recreation plans, etc.

Development Regulation

Stormwater facilities and construction practices must comply with the standards and criteria established in the watershed stormwater management plan. The municipalities must adopt and enforce ordinances to implement these standards and criteria, and apply them to all types of development activity to assure compliance with the stormwater plan. For example, subdivision plans that are routinely reviewed by the local and county planning agencies, must also be reviewed and approved for compliance with the stormwater plan.

Other regulatory activities that could be undertaken as part of this stormwater management function include: a review of site development plans to assure that erosion and sedimentation plans and/or permits are in place, and; a review of all public improvement projects to assure their compliance with the standards and criteria of the watershed stormwater management plan.

Construction

This function includes providing private developers with the specifications for construction of stormwater facilities, and assuring that publicly-built stormwater control facilities are designed and constructed in conformance with the standards and criteria of the watershed plan. Also valuable in the management of stormwater is coordination with other public agencies involved in the construction of stormwater-related structures, such as flood control projects, to assure consistency with the watershed plan.

Inspection

It is important that the inspection of development projects are scheduled and conducted for stormwater control measures -- from preliminary site preparation through the completion of final grading. To satisfy this requirement, it is necessary that inspectors have the legal right of entry onto private property and the right to stop work if soil conditions are different from the plan application or if stormwater controls are not being built in accordance with the standards and criteria of the watershed plan. This stormwater management function can be broadened to include the scheduling of inspections of stormwater facilities annually, or after a major storm event.

Maintenance

Stormwater maintenance includes such tasks as clearing debris from detention ponds, cleaning catch basins, dredging creeks and repairing stream embankments. Provision to perform this task vary according to ownership and responsibility for maintenance of stormwater control facilities. Publicly owned facilities require ongoing maintenance; formal agreements may be executed to assure maintenance of privately owned stormwater control facilities; coordination with state agencies may be necessary to be sure that state-owned stormwater control structures (i.e., culverts, bridges) are adequately maintained; services may be provided by contract for the maintenance of both public and private facilities within the watershed.

Financing

This function includes such items as funding for the costs associated with the administration of the Stormwater ordinance, inspections and maintenance, ongoing planning and monitoring of stormwater facilities, and long term financing for the construction of any public stormwater control facilities.

In the past, the financial burden for stormwater control rested with the local municipality, the private developer and the new user or property owner. More recently, however, stormwater runoff has been viewed as a concern of all the municipalities, developers and users within the watershed, and stormwater management, as a watershed-wide responsibility. This approach to the management of stormwater runoff would ensure the consistent implementation of the plan throughout the watershed and would allocate the management costs in an equitable manner throughout the watershed as well.

Recent amendments to the Pennsylvania Infrastructure Investment Authority (PENNVEST) Act makes municipalities located within watersheds for which stormwater management plans have been approved by the Pennsylvania Department of Environmental Resources and which have enacted stormwater ordinances consistent with the plans eligible to receive assistance from PENNVEST to construct stormwater management improvements. Examples of eligible stormwater projects include the construction of detention basins to control runoff and the upgrade of existing or construction of new storm sewer systems. In instances where municipalities may involved in the construction of such stormwater management facilities, consideration should be given to pursuing funding under the PENNVEST program.

Monitoring and Enforcement

This is a police function that is essential to any stormwater management program. The municipalities can exercise their police powers to take a variety of enforcement actions, such as fines, the use of permits, court actions and civil penalties. With regard to enforcement of erosion and sedimentation controls, the county conservation district has the power to enforce compliance with DER regulations.

Information and Education

In order to prepare specifications and review site development plans for consistency with the standards and criteria of the watershed stormwater management plan, municipal officials must have a working knowledge of the technical aspects of the plan. Similarly, information regarding the stormwater plan and stormwater control facilities should be available to private developers. Workshops, seminars and well-informed agency staff can perform this stormwater management function.

PERFORMANCE OF FUNCTIONS

RECOMMENDATIONS

The responsibility for performance of the stormwater management functions may be shared among public agencies and the private sector. In the case of the Bull Run Watershed, the planning and development regulation activities described above may be performed by the county planning agency, the conservation district and local municipality. The recommended delineation of stormwater management responsibilities of the various governmental and quasi-governmental agencies active in the watershed is as follows:

1. **Local municipalities:** Primary responsibility for the administration and enforcement of stormwater management ordinances and regulations, including plan review and approval; inspections; and either performing or requiring the performance of routine maintenance.
2. **County Agencies:** General monitoring of status of enforcement of watershed standards and qualifications and the extension of technical assistance to the extent mutually agreeable to the county and municipality. This would essentially be limited to those relative to the attainment of the standards and criteria of the watershed stormwater management plan. Where warranted and agreeable to both the county and municipality, this review function could be expanded and strengthened to provide more in depth county reviews and include the requirement for county concurrence with the plan as a necessary condition for local municipal review. General monitoring of enforcement status of stormwater management requirements could be accomplished by monitoring development activities to ascertain whether the municipalities are requiring the provisions of necessary stormwater controls as required by their ordinances.

It is recognized that the implementation and on-going administration of the watershed stormwater management plan will be a dynamic process. The roles and functions of the various involved entities should be permitted to be sufficiently fluid

so as to permit shifts of responsibilities and activities as necessary to maximize the particular capabilities of the agencies involved and deal with specific limitations. This is particularly true in the early stages of plan implementation when the application of new stormwater management requirements, standards and criteria may tax the capabilities of some of the smaller municipalities. In such cases, the resources of the county agencies may be used to maximum benefit until local capabilities are improved. Similarly, if the proliferation of stormwater detention facilities warrant, future cooperative arrangements for shared labor, equipment and materials utilization for facility maintenance may be explored through increased county level involvement.

STORMWATER MANAGEMENT ORDINANCES

A municipal stormwater management ordinance may be implemented by adopting it as a single purpose ordinance or by incorporating it as an amendment to the existing development ordinances (zoning, subdivision/land development, etc.). However, all stormwater management ordinances must include the following key provisions in order to implement the performance standards and criteria of the watershed plan:

- Storm frequencies
- Release rate percentages
- "No harm" evaluation
- Method of calculation
- Control techniques
- Site plan requirements
- Plan review procedures
- Continuing maintenance agreements
- Fees
- Enforcement remedies and penalties

STORM FREQUENCIES OR CONTROL STORM

The design frequency criteria developed in the watershed plan refers to the peak rates of discharge for which the components of drainage systems are designed, i.e. the 2-, 10-, 25- and 100-year storms. Typical criteria require storm water facilities to manage the runoff in such a manner that the discharge from new development will maintain the predevelopment discharge level. The design frequency criteria that is developed as part of the watershed plan should be established by the municipalities as a provision of their stormwater management ordinances.

RELEASE RATE PERCENTAGES

The Bull Run Watershed Stormwater Management Plan divided the watershed into subareas, each of which was assigned a release rate percentage that had been calculated by engineering analysis and computer modeling. The release rate percentage is used to assure that the post-development runoff volume does not exceed the predevelopment volume. The percentage is multiplied by the pre-development peak rate of runoff from the site which determines the allowable post-development peak discharge from the site.

The release rate percentage is a reasonably straight forward and easily applied regulatory tool. The incorporation of the percentage into the municipal ordinances

will encourage its use and make its application easier for both developers and municipalities.

NO HARM EVALUATION

In certain limited cases, the applying developer may be able to utilize the no harm evaluation to exceed the otherwise applicable release rate. The use of the option will be permitted only in very restricted circumstances (i.e., a site that may discharge directly into a major river), which will be spelled out in the watershed plan and the municipal ordinances.

METHOD OF CALCULATION

The ordinance will prescribe the acceptable calculation method for use in determining storm water runoff. The following methods have been stipulated in the standards and criteria of the watershed plan: SCS TR-55 and TR-20, HEC-1, the Penn State Runoff Model and the modified rational method. The "Rational Method" may be approved for small residential sites and for sizing storm sewers.

CONTROL TECHNIQUES

Each developer must select the technique or combination of techniques that are most appropriate to the site. In order to make these selections, the developer may be required to perform soil or geotechnical investigations. It is important to encourage the developer to utilize the techniques that reduce runoff volume and promote groundwater discharge; therefore, in selecting control techniques the developer should first apply all suitable runoff infiltration techniques, then apply flow attenuation methods by the use of vegetated swales and natural depressions, and finally, utilize stormwater retention/detention facilities.

The watershed plan includes a section on the possible infiltration techniques and the developer will have to justify the rejection of each practice based on site conditions. The municipal stormwater management ordinance should also contain certain design performance standards for retention and detention facilities.

SITE PLAN REQUIREMENTS

Local ordinances should precisely describe site plan submission requirements for stormwater management. For example, the ordinance should require stormwater plans to be prepared by a registered professional, engineer, surveyor or landscape architect, and should set forth the content and form of information that must be included on the plan. Generally, the stormwater plan submission will be made in two stages: preliminary and final. The watershed plan will probably recommend simplified plan submission requirements for "small developments" or certain special uses.

PLAN REVIEW PROCEDURE

Ordinarily, all stormwater plans will be submitted to local municipality as part of the overall development plan application. The County Planning Department and/or the County Conservation District will review the stormwater plan to check for downstream impacts and to assure that the plan meets the general release rate

requirements of the watershed plan. These agencies can run the computer model if necessary to assure compliance. The local municipality reviews and approves the design of specific control measures in accordance with each municipality's specifications. The extent and depth to which the county agencies provide reviews should be negotiated between the county and municipalities. More detailed routine county reviews can be provided as a service if requested by the municipalities.

CONTINUING MAINTENANCE AGREEMENTS

As a condition of stormwater plan approval, the developer must submit a maintenance plan for all proposed stormwater control facilities. This is necessary regardless of whether the facilities will be publicly or privately owned. The maintenance plan should indicate the proposed ownership arrangement, the type and frequency of required maintenance activities, personnel and equipment necessary for adequate maintenance, the estimated annual cost, and the method of financing the cost of maintenance if the facilities are not publicly owned. The developer must submit a signed maintenance agreement if the facilities will be privately owned. The plan must be approved by the municipal engineer.

The municipal stormwater management ordinance may establish a system of financing maintenance activities through a special fund. In the case of privately owned facilities, the ordinance may require developers to deposit fees to cover municipal inspections for a stated period of time (i.e. 10 years). In addition to the maintenance agreement, the ordinance should also provide for the submission of construction or performance bonds and maintenance bonds consistent with the Municipal Planning Code.

FEEES

The municipal ordinance may provide for a fee schedule to cover the cost of administering the stormwater program and implementing the requirements of the ordinance. A system of flat fees or direct reimbursement for costs may be imposed if consistent with the Municipalities Planning Code. Municipalities may be able to be reimbursed for some of their administrative costs through the Pennsylvania Department of Environmental Resources under the terms of Act 167.

INSPECTIONS

The ordinance should include a schedule for periodic inspections of stormwater facilities during the course of construction to assure that they are installed as specified in the approved stormwater plan application.

ENFORCEMENT, REMEDIES AND PENALTIES

In order to enforce the provisions of the stormwater management ordinance, municipalities may incorporate into the ordinance remedies and penalties similar to those prescribed by the Municipalities Planning Code for violations of zoning, subdivision and land development, or other municipal codes. Recent changes in the Municipalities Planning Code eliminate criminal penalties and substitute civil judgements.

Municipalities can also utilize the enforcement remedies of Act 167, whereby action to enforce the provisions of the watershed plan or the stormwater management ordinance can be instituted by the municipality or any "aggrieved person."

MODEL STORMWATER PROVISIONS

INTRODUCTION

Under the provisions of the Storm Water Management Act (Act 167), local municipalities will take the lead in implementing stormwater management through the adoption, administration and enforcement of various regulatory controls. While certain management functions may be collectively performed, each municipality will have the responsibility for initiating the ordinances which provide the legal basis for stormwater management in the Bull Run Watershed.

The model ordinances presented in Appendix C provide guidelines for constructing a workable regulatory approach using the legal authorities that are presently available to Pennsylvania municipalities. The recommended ordinance provisions are designed to meet the standards and criteria of the Bull Run Stormwater Management Plan.

The model stormwater management provisions are presented here as a unit in the form of a new article or section that can be added to a municipality's existing subdivision and land development (S/LD) ordinance. Since two of the three municipalities in the watershed (Lewisburg Borough and East Buffalo Township) currently have S/LD ordinances, this seems the preferable approach. Most of the land alteration activities with significant stormwater impacts will fall under the purview of this ordinance, and the municipalities have established procedures for administering their subdivision/land development regulations.

Buffalo Township currently does not have a subdivision and land development ordinance; however, it may adopt such an ordinance in the near future. Consideration should be given to accelerating the adoption of a subdivision and land development ordinance in Buffalo Township and incorporating the provisions of the model stormwater ordinance. As an alternative, the Township can utilize a separate, single-purpose stormwater management ordinance incorporating the basic provisions contained in the model stormwater ordinance.

The model ordinance provisions also include recommended additions to the municipal zoning ordinances to ensure that stormwater management standards apply to single lot or structure developments, expansions or reuses of existing sites, and certain specialized land use activities such as farming and mining.

BULL RUN WATERSHED STORMWATER MANAGEMENT PLAN

SECTION IX

IMPLEMENTATION, ADOPTION AND UPDATING

GENERAL

The Bull Run Stormwater Management Plan preparation process for Union County and the three (3) affected municipalities will be complete with the adoption of the final plan by the county commissioners, receipt of Department of Environmental Resources' approval, the completion of the associated training program and the deliver of the watershed model and supporting documentation to the county.

The plan has been prepared in order to present the mechanisms through which the requirements of Act 167 can be met throughout the watershed. The specific standards and criteria presented in this plan have been developed to represent a rationally derived set of requirements which must be satisfied by land developers in order to protect downstream persons and/or properties from damage from stormwater runoff originating at the development site. The measures to be taken by the developers actions as required to:

1. assure that the maximum rate of stormwater runoff is no greater after development than prior to development activities; and
2. manage the quantity, velocity and direction of resulting runoff in a manner which otherwise adequately protects health and property from possible injury.

This plan also contains recommendations relative to the roles to be played by the various governmental agencies in the watershed and presents specific ordinance provisions recommended for inclusion in local municipal ordinances. These recommendations are presented in order to assist local governments in fulfilling their mandated role in the administration of stormwater management requirements within the watershed. Since Act 167 places the ultimate responsibility for implementation and on-going administration and enforcement of stormwater management requirements in the hands of the local municipalities, each of the municipalities in the watershed will be involved in plan implementation.

PRIORITIES FOR IMPLEMENTATION

The Bull Run Watershed Stormwater Management Plan preparation process is complete with the Union County Commissioners' adoption of the Plan and submission of the Plan to DER for approval. Subsequent activities necessary to carry out the provisions of the Plan are considered by DER to be part of the implementation of the Plan. The initial step in Plan implementation is DER approval. Plan approval sets in motion the mandatory schedule of adoption of municipal ordinance provisions to implement the stormwater management standards and criteria. The Bull Run watershed municipalities will have six months from the date of DER approval within which to adopt the necessary ordinance

provisions. Failure to do so could result in the withholding of all state funds to the municipality(ies) per Act 167.

Additional implementation activities are the development of a local program to coordinate Chapter 105 and 106 permit application reviews and the development of a systematic approach for the correction of storm drainage problem areas.

County Plan Adoption

Formal adoption of the Plan is the responsibility of the Board of Commissioners of Union county. Under the requirements of Act 167, prior to adoption of the Plan, each county will hold a public hearing pursuant to public notice of not less than two (2) weeks prior to the hearing date. Act 167 also stipulates that adoption of the Plan must be by a resolution carried by an affirmative vote of at least a majority of the members of the Boards of Commissioners. The resolution must refer expressly to the plan and all associated maps, charts and textural materials.

DER Approval of the Plan

Upon adoption of the watershed plan by the County, the Plan is submitted to DER for approval. The DER review process involves the determination that all of the activities specified in the approved Scope of Work have been satisfactorily completed in the Plan. Further, DER will only approve the plan if it determines the following:

1. That the Plan is consistent with municipal floodplain management plans, State programs which regulate dams, encroachments and other water obstructions and State and Federal flood control programs; and
2. That the Plan is compatible with other watershed stormwater plans for the basin in which the watershed is located and is consistent with the policies and purposes of Act 167.

DER action to either approve or disapprove the Plan must take place within ninety (90) days of receipt of the Plan by DER. Otherwise, the Plan would be approved by default.

Municipal Adoption of Ordinance Provisions to Implement the Plan

The key ingredient for implementation of the Plan is the adoption of the necessary ordinance provisions by the Bull Run watershed municipalities. Model subdivision/land development and zoning ordinance provisions to be used by the municipalities as a guide to modifying their ordinances are provided as part of the Plan.

Development of a Local Program to Coordinate With DER Regarding Chapter 105 and 106 Permit Application Reviews

Stream encroachments, stream enclosures, waterway diversions and other activities regulated by Chapter 105 and 106 of DER's Rules and Regulations may have a bearing on the effectiveness of the runoff control strategy developed for the Bull Run watershed. Activities of this type may modify the conveyance characteristics of

the watershed and, thereby, impact the relative timing of watershed peak flows and/or the ability of the conveyance facilities to safely transport peak flows. Therefore, to ensure that the DER permitting process is consistent with the adopted and approved watershed plan, a local review of Chapter 105 and 106 applications should be coordinated with the DER review process.

It is recommended that the local review be performed by the Union County Planning Commission and would be accomplished by monitoring the applications as published in the Pennsylvania Bulletin. The Planning Commission will provide comments consistent with the adopted Act 167 Plan within the State DER review period. Further the Planning Commission will keep records of applications reviewed and the DER actions.

Development of a Systematic Approach for the Correction of Storm Drainage Problems

Correction of storm drainage problem areas in the watershed is not specifically part of the Act 167 planning process. However, the development of a watershed plan has provided a framework for the correction of problems because: (1) existing storm drainage problems have been identified; (2) implementation of the runoff control criteria specified in this Plan should prevent the existing drainage problems from becoming worse; and (3) the hydrologic model developed to formulate the runoff control criteria could be used as an analytical tool for identifying engineering solutions to major drainage problems.

With the above in mind, the Bull Run watershed municipalities should include the following steps in any efforts to implement solutions to storm drainage problems:

1. Priorities storm drainage problems with the municipality based upon frequency of occurrence, potential for injury to persons or property, damage history, public perception of the problems and other appropriate criteria.
2. For the top priority drainage problems in the municipality, conduct detailed engineering evaluations to determine the exact nature of the problems, determine alternative solutions, provide cost estimates for the alternative solutions, and recommend a course of municipal action. The number of drainage problems to be evaluated by a municipality as a first cut from the priority list should be based on a schedule commensurate with completing engineering studies on all problem areas. The Bull Run hydrologic model will be available through the County to provide input to the engineering studies. The engineering studies must include consideration of the downstream effects of eliminating specific drainage problems so as to avoid the transfer of problems progressively downstream.
3. On a priority and cost basis, incorporate implementation of recommended solutions to the drainage problems in the annual municipal capital or maintenance budgets as funds are available. Also, evaluate the potential for receiving low interest loans from the Pennsylvania Infrastructure Authority (PENNVEST) to address stormwater drainage problems.

The above stated procedure for dealing with storm drainage problems is not a mandatory action placed on the municipalities with the adoption of this Plan. Rather, it represents a systematic method to approach the problems uniformly throughout the watershed and attempt to improve the current runoff situation in the basin. The key elements involved in the success of the remedial strategy will be the ability of the municipalities to construct any required corrective measures and the consistent and proper application of the runoff control standards and criteria specified in this Plan. The latter element is essential to ensure that remedial measures do not become obsolete (under-designed) by increases in peak flows as a consequence of development activities.

PROVISIONS FOR UPDATING THE PLAN

GENERAL

Union County has been provided with data describing the physical system of the Bull Run watershed which affect local hydrology and hydraulics. Principal types of data and information provided to the counties include: Penn State Runoff Models for the watershed, input data for the runoff models which reflect existing hydrologic and hydraulic conditions. These materials serve as the basis for the development of the standards and criteria presented in this Plan. Changes to the hydrologic and hydraulic conditions in the watershed as reflected in the Penn State Runoff Model input data files may warrant changes in the resulting standards and criteria.

PROVISIONS FOR UPDATING THE PLAN

The previously referenced data files provided to the counties can be updated to reflect: 1) changes in land use / land cover which may affect runoff conditions; 2) changes to the streams, major culverts and other flow conduits which may materially affect watershed hydraulics; 4) and the construction of regional detention facilities which may significantly affect watershed peak discharge timings associated release rate percentages.

Once the input data files have been modified as necessary to reflect the changed conditions, the Penn State Runoff Model can be run under the new conditions in order to identify needed changes (if any) to the standards and criteria presented in this Plan. In order to facilitate updating this Plan, the counties have been provided with a custom "users' manual" which describes the structure, application and interpretation of the Penn State Runoff Model used in the development of this Plan.

SCHEDULE FOR PLAN UPDATING

Under the requirements of Act 167, this Plan should be updated at intervals not exceeding five (5) years. More frequent updating of this plan may be warranted if significant changes in the watershed occur sooner. Factors which would warrant an update prior to the statutory date may include the following:

1. Changes to major stream segments or primary stormwater conveyance elements which serve to affect watershed hydraulics such that the potential for damage is materially changed or peak discharge timings are significantly changed.

2. Regional detention facilities are constructed, such that changes to the release rate percentages assigned to tributary subbasins are warranted.
3. Extensive changes to land use occur to the extent that significant changes to subbasin times of concentration and runoff volumes are changed.
4. Peculiarities in the application of specific standards and criteria are experienced which interfere with the effective and equitable administration of the Plan requirements.

All of the involved agencies (county, municipalities, and DER) should monitor conditions in the watershed. In the event that any of the above listed conditions (or others) arise, the county should proceed with updating this Plan as warranted.