

## **DEFINITION**

Stormwater management has been traditionally defined as measures used by property owners and local governments to limit the amount of stormwater runoff from urban development and to control the path of runoff through space and time. More recently, the concept of stormwater management is being expanded to include water quality considerations. The content of this paper is limited to stormwater quantity management.

## **SIGNIFICANCE OF STORMWATER MANAGEMENT CONCERNS**

### **General**

Traditionally, curbs, gutters, and underground pipes have been provided to remove stormwater from developed property as quickly as possible so as to minimize the possibility of localized flooding. Moreover, in the past little or no efforts were expended to minimize increases in the amounts of runoff generated or the rates at which the increased runoff occurred due to the conversion of land from a permeable, vegetated condition to an impervious, paved condition. As development in a watershed progresses, this approach results in ever increasing stormwater runoff until damaging downstream problems develop. Problems attributable to increased stormwater runoff resulting from indiscriminate and uncontrolled development include both flooding and accelerated erosion.

Common law rule regarding surface runoff holds that an owner of lowlands must accept the amount (i.e. the volume and velocity) of runoff that naturally drains on his or her land. Similarly, an owner of uplands cannot by artificial means cause (1) an unnatural quantity of runoff; (2) an unusual velocity of runoff; or (3) an unnatural contamination of runoff water to be discharged to another person's property, thereby causing damage.

These common law rules apply to the actions of communities and government agencies as well as individual landowners. These rules have historically been applied when excessive runoff or runoff velocity is "unnaturally" cast onto other lands or streams with recognizable harmful results. For instance, courts have awarded damages to:

- a landowner whose parcel was subjected to the discharge of a neighbor's ditch which was being used to drain a swamp;
- a township whose highway, bridges and culverts were injured by the increase flow from the digging and deepening of drains;
- lake owner's injured by the contamination and increased runoff from a subdivision drain. The subdivision developer was ordered to undertake a variety of corrective measures; and
- a landowner whose land was eroded by the increased runoff coming from the development of farmland. A city storm sewer flow had to be diverted and the developer was enjoined from increasing runoff.

In general, responsibility for preventative approaches to stormwater management lies squarely at the local level of government where land use changes are reviewed and regulated.

Consequently, the potential responsibility for downstream damages resulting from approved developments must be recognized by all local government officials.

The common law surface water rules indicate that landowners and communities have never had the unrestricted right to alter natural runoff patterns so as to cause damage to the property of others. Fear of damages to downstream communities and resulting law suits has been a strong factor influencing local governments in upstream areas to develop stormwater management programs.

In Pennsylvania, the responsibilities of levels of government in stormwater management are clearly defined. Statutory statements of responsibility make the risks associated with inaction on the local level even more pronounced than those implicit in common law.

### **ACT 167 STORMWATER MANAGEMENT**

The Pennsylvania General Assembly passed and the Governor signed the "Storm Water Management Act, No. 167 P.L. 864" on October 4, 1978. The policy and purpose of the Act is to:

1. Encourage planning and management of stormwater runoff in each watershed which is consistent with sound water and land use practices.
2. Authorize a comprehensive program of stormwater management designated to preserve and restore the flood-carrying capacity of Commonwealth streams, to preserve, to the maximum extent practicable, natural storm water runoff regimes and natural course, current and cross-section of water of the Commonwealth; to protect and conserve ground waters and ground water recharge areas.
3. Encourage local administration and management of stormwater consistent with the Commonwealth's duty as trustee of natural resources and the people's constitutional right to the preservation of natural, economic, scenic aesthetic, recreational and historical values of the environment.

The general procedure established by the Act for achieving these goals consists of: 1) development of guidelines and regulations to be applied statewide; 2) the preparation of stormwater management plans for designated watersheds throughout the state; 3) implementation of the stormwater management plans; and 4) adherence to the plan requirements by land developers.

In 1980, the Department of Environmental Resources (DER) designated 353 watersheds that need stormwater management plans. Model ordinances were made available to localities in September 1981, followed by detailed stormwater management guidelines in June 1983. These guidelines and model ordinances were approved by the Pennsylvania General Assembly in June 1985 and now have the force of law.

In May 1984, Act 167 was amended to authorize the Department of Environmental Protection (DEP) to administer grants to municipalities and counties to cover 75% of the costs of preparing and administering stormwater management plans and regulations.

The Act stipulates that each county must prepare and adopt a watershed stormwater management plan for each designated watershed within two (2) years following the promulgation of guidelines by DEP and shall review and revise such plan at least every five (5) years. The stormwater management guidelines were approved on May 14, 1985. Stormwater

Management Plan preparation should, therefore, have been completed by May of 1987. This clearly has not been the case. Plans have been completed for a small percentage of the designated watersheds. Completion of the plans is currently proceeding at a relatively slow pace to the extent that state funding is adequate to permit commitment of the associated 75% reimbursement.

Act 167 stipulates that municipalities must adopt or amend and implement such ordinances and regulations as are necessary to manage stormwater in a manner consistent with the applicable plan within six (6) months of adoption and approval of the plan.

### **Delineation of Responsibilities**

Act 167 establishes certain duties and responsibilities for individuals and various governmental agencies as follows:

**PERSONS ENGAGED IN LAND DEVELOPMENT:** Act 167 states that any landowner and any person engaged in the alteration or development of land which may affect stormwater runoff characteristics must implement such measures consistent with the provisions of the applicable stormwater management plan as are reasonably necessary to prevent injury of health, safety or other property. Such measures must include such actions as are required:

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

**DEPARTMENT OF ENVIRONMENTAL RESOURCES:** Act 167 assigns the Department of Environmental Resources the primary responsibility to carry out the policies and purposes of the Act. These responsibilities include providing guidelines for county stormwater management plans; designating watersheds for which stormwater management plans should be prepared; review and approval of these plans; providing technical assistance and model local ordinances; developing grants and reimbursement regulations governing the disbursement of grant monies; and generally coordinating stormwater management activities statewide.

**COUNTIES:** Counties are required to prepare and adopt a watershed stormwater management plan for each designated watershed in their jurisdiction.

**MUNICIPALITIES:** Municipalities are required to adopt new or to amend existing regulations as necessary to comply with and implement the stormwater management plans.

### **Procedure**

As the preceding delineation of responsibilities suggests, there is an established procedure which must be followed in order to satisfy the stormwater management responsibilities established by Act 167. As indicated above, the counties are responsible for completing and adopting the stormwater management plans. In general, the active county agency involved in these efforts is the County Planning Commission or Planning Department. Stormwater management has also been completed by regional planning agencies. The following

paragraphs summarize the PA Act 167 Watershed Stormwater Management Plan preparation process.

### **Watershed Designation**

As was indicated previously, full fledged stormwater management is required by Pennsylvania law to be implemented in designated watersheds. The responsibility for the watershed designation was assigned and completed by the Department of Environmental Resources. DEP has designated over 350 watersheds statewide. These designations were completed and approved and published in 1980 in consultation with the counties and following public hearings.

### **Obtain Phase I Planning Grant**

The Department of Environmental Resources has notified all counties to inform them of the designation of watersheds in their jurisdictions and invite them to respond through the preparation of stormwater management plans. At the present time, DEP is not forcing counties to prepare the plans. If a county desires to perform a stormwater management plan it must notify DEP. If sufficient funds are available, DEP will fund Phase I of the plan.

Watershed stormwater management plans are completed in two phases. The first phase is the preparation and submission of a Scope of Study to DEP for its review and approval. The Scope of Study generally consists of a determination of the level of effort required by the county to satisfactorily complete the second phase. The second phase is the preparation of the detailed stormwater management plan meeting the requirements of Act 167.

If funds are available for the preparation of the Phase I "Scope of Study", the state and county execute a grant agreement under which the state will reimburse the county for 75% of the eligible costs for the preparation of the document.

### **Completion of Phase I "Scope of Study"**

The Department of Environmental Resources has developed a Sample Act 167 Stormwater Management Plan Scope of Study which requires the completion of the following major work elements:

1. General review and categorization of watershed characteristics.
2. Completion of a survey of conditions distributed to each municipality in the watershed.
3. Selection of appropriate modeling approach and techniques to be employed.
4. Development of manpower and cost estimates and project schedule for the completion of Phase II.
5. Presentation of proposed project team, qualifications and resumes.

Generally, counties retain a consultant to prepare the bulk of the Phase I document. The county typically performs the less technical work elements and coordinates

activities; nevertheless, the lion's share of the Phase I work is typically completed by the stormwater management consultant.

### **Obtain Phase II Stormwater Management Planning Grant**

Once the Phase I Scope of Services document has been completed and approved, the next step is the receipt of a Phase II planning grant. Phase II of the process is the preparation and adoption of the actual Stormwater Management Plan meeting all of the requirements of Act 167. Grant funding must be formally requested by the county and, assuming grant funds are available, an award will be made through a Phase II grant agreement between the state and the county. The state will reimburse counties at a level of 75% of the eligible costs.

### **Complete the Stormwater Management Plan**

The Phase II Stormwater Management Plan is the basis for the entire management system and ongoing stormwater management activities throughout the watershed. The content of Stormwater Management Plans is outlined in subsequent sections of this paper.

In most cases, the bulk of the work is performed under contract to the county by the same stormwater consultant retained to complete the Phase I work. As is the case with Phase I activities, the county must be involved at least in administration of the project, should be involved in local coordination, and may be involved in certain less technical elements of the planning process. Since the county's labor cost and expenses are reimbursable from the state, county participation in appropriate work elements can be an effective means of off-setting local share out-of-pocket study costs.

### **Municipal Adoption of Stormwater Ordinances and Regulations**

Act 167 requires that within six months following adoption and approval of the watershed stormwater management plan, each municipality must adopt or amend ordinances and regulations that are necessary to implement the plan. These ordinances and regulations may include zoning, subdivision and development, building code, and erosion and sedimentation ordinances.

The Stormwater Management Plan typically contains specific recommendations for each municipality in the watershed relative to necessary legislative actions. Once the Plan is adopted the municipalities take the formal actions necessary to enact the recommended legislation.

Under Act 167, eligible costs associated with enactment of the required legislation is reimbursable by the state.

### **Municipal Administration of Stormwater Management Ordinances**

Ongoing implementation of the Stormwater Management Plan entails administration of the local stormwater management ordinances on the municipal level. The review and approval of developers' stormwater management plans on the municipal level is generally completed as an element of the normal land development planning and permitting procedures. Frequently, an additional review and approval step is incorporated into the procedure to allow a regional stormwater management agency to monitor program compliance and consistency of application throughout the watershed.

**Periodic Plan Review and Update**

Act 167 requires that Stormwater Management Plans be reviewed and updated every five years. The purpose of these periodic reviews is to insure that the stormwater management system in place and the stormwater controls mandated by the system continue to be valid in the face of changing watershed hydrologic and hydraulic conditions. The reviews and updates will be completed by the county unless the responsibility is assigned to another agency by the original plan or previous update.

Costs associated with periodic plan reviews and updates are eligible for 75% funding from the state.

**STATUS OF ACT 167 STORMWATER MANAGEMENT PLANNING IN ALLEGHENY COUNTY**

The boundaries of the designated Act 167 watersheds in Allegheny County are illustrated in the attached figure. The watershed map also indicates the current status of Act 167 planning in the watersheds as listed in the following table. The watershed boundaries were obtained from the Pennsylvania DEP as shapefiles. The status of watershed planning was obtained from PA DEP.

**Status of Act 167 Planning in Allegheny County Watersheds**

<b>Watershed</b>	<b>Act 167 Plan Status</b>	<b>Watershed</b>	<b>Act 167 Plan Status</b>
Allegheny River	No Plan	Montour Run	Completed
Big Sewickley Creek	No Plan	Ohio River	No Plan
Breakneck Creek	No Plan	Peters Creek	No Plan
Buffalo Creek	No Plan	Pine Creek	Being Updated
Bull Creek	No Plan	Plum Creek	No Plan
Chartiers Creek	No Plan	Pucketa Creek	No Plan
Connoquenessing Creek	No Plan	Raccoon Creek	No Plan
Deer Creek	Being Updated	Robinson Run	No Plan
Flaugherty Run	Completed	Sawmill Run	No Plan
Girtys Run	Being Updated	Squaw Run	Being Updated
Little Sewickley Creek	Under Preparation	Turtle Creek	Completed
Lowries Run	No Plan	Youghiogheny River	No Plan
Monongahela River	Completed		

**SIGNIFICANCE OF ACT 167 STORMWATER MANAGEMENT PLANNING STATUS TO THE ALLEGHENY PLACES COMPREHENSIVE PLAN**

PA Act 167 watershed stormwater management planning is significant to the Allegheny Places comprehensive plan for several reasons:

1. Implementation of effective stormwater controls is an important tool for reducing the potential for the increasing the occurrence of flooding and erosion problems as land development progresses.

2. Local governments have the responsibility to review and approve land development plans. Inherent in this responsibility under common law is the obligation to prevent stormwater runoff from land development activities from damaging downstream landowners.
3. The completion and implementation of PA Act 167 Stormwater Management Plans is the prescribed method of insuring that municipalities adopt effective ordinances that address stormwater management issues on a watershed basis.

The status of Act 167 stormwater management plan should be considered during the preparation of the Allegheny Places comprehensive plan in the following ways:

1. During the evaluation of alternative land use futures, consideration should be given that, in general and at least in the short term, the management of stormwater runoff is likely to be more effective in watersheds for which Act 167 stormwater management plans have been implemented.
2. An inventory of streams and watersheds that have been identified by the Allegheny County Emergency Services Department as priority streams based upon flooding histories and property damage is being assembled. Overlaying these watersheds over watersheds where no Act 167 planning has been completed will identify areas where stormwater runoff management constraints may be most significant.
3. The comprehensive plan should encourage the implementation of Act 167 plans where they do not currently exist. Consideration of anticipated future land use patterns, the locations of priority streams, and the status of Act 167 watershed stormwater management planning will provide a basis for prioritizing watersheds for Act 167 planning.

# Designated PA Act 167 Watersheds and Status of PA Act 167 Planning

