PENNSYLVANIA STATE TRANSPORTATION
ADVISORY COMMITTEE

Storm Water Facilities on State Highways

FINAL REPORT
FEBRUARY 2007

The Pennsylvania State Transportation Advisory Committee (TAC)

The Pennsylvania State Transportation Advisory Committee (TAC) was established in 1970 by Act 120 of the State Legislature, which also created the Pennsylvania Department of Transportation (PennDOT). The Advisory Committee has two primary duties. First, the Committee "consults with and advises the State Transportation Commission and the Secretary of Transportation on behalf of all transportation modes in the Commonwealth." In fulfilling this task, the Committee assists the Commission and the Secretary "in the determination of goals and the allocation of available resources among and between the alternate modes in the planning, development and maintenance of programs, and technologies for transportation systems." The second duty of the Advisory Committee is "to advise the several modes (about) the planning, programs, and goals of the Department and the State Transportation Commission." The Committee undertakes in-depth studies on important issues and serves as a valuable liaison between PennDOT and the general public.

The Advisory Committee consists of the following members:

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- The heads (or their designees) of the following State Agencies
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  - Department of Education
  - Department of Community and Economic Development
  - Public Utility Commission
  - Department of Environmental Protection
  - Governor's Policy Office
- Two members of the State House of Representatives
- Two members of the State Senate
- Eighteen public members, seven appointed by the Governor, and six appointed by the President Pro Tempore of the Senate; and the Speaker of the House of Representatives.

Public members with experience and knowledge in the transportation of people and goods are appointed to represent a balanced range of backgrounds (industry, labor, academic, consulting, and research) and the various transportation modes. Appointments are made for a three-year period and members may be reappointed. The Chair of the Committee is annually designated by the Governor from among the public members.

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Executive Summary

Storm water infrastructure must be maintained and improved to protect health, safety, and welfare, and support the movement of goods, people, and services on PennDOT's highways. Currently, the responsibility for maintenance of storm water facilities on state highways running through townships, boroughs, and cities is unclear and in many cases disputed.

The burden is not only financial but also one of human resources, equipment, and liability.

This study was undertaken by TAC to identify the current responsibilities for storm water maintenance along state highways, to evaluate the extent and associated costs of storm water maintenance along state highways, and to develop equitable alternatives for improving the management of these facilities and the funding for ongoing maintenance and improvements.

The management of storm water on state highways is a complex issue. Legally, cities and boroughs have the responsibility for maintenance of storm water facilities along PennDOT highways. PennDOT policy requires townships to maintain storm water systems, as well. Indications are that the level of maintenance of storm water facilities is not consistent across cities and boroughs. The Pennsylvania State Association of Township Supervisors (PSATS) has expressed their opinion that PennDOT has imposed an "unfunded mandate" upon townships without any legislative basis.

There is a regulatory environment around which PennDOT and local municipalities currently build and manage their storm water infrastructure. As this system has become more sophisticated to manage both the quantity and quality of storm water runoff, the resources required have also grown.

Much of the discussion centers on the cost of providing storm water services. PennDOT has calculated total annual costs of $294 million for regular maintenance and cyclical replacement of all storm water structures. Since PennDOT considers municipalities responsible for replacement, all costs were considered for this analysis. However, it is significant that the cost for annual maintenance alone is estimated at $116 million.

Interviews with PennDOT and municipal officials have revealed that responsibilities for storm water facility maintenance currently outlined in PennDOT's policies, regulations and manuals are not being consistently applied across the Commonwealth. Some representatives at the local level have asserted that PennDOT is not providing the level of maintenance necessary because they do not have the human or financial resources to adequately maintain the substantial storm water infrastructure in the Commonwealth. Many boroughs have less ability to provide services because of eroding tax bases. PSATS does not feel that townships have legislative authority to provide the service, nor do they have the resources to fund their share of the $294 million maintenance and replacement cost.

The study investigated other storm water management practices across Pennsylvania and in other states. Possible alternatives range from establishment of special purpose authorities or districts to assessment of fees by PennDOT or local governments.

Study recommendations are based on areas of agreement among members of the TAC Study Task Force. Both PennDOT and municipalities agree that additional resources are needed for storm water maintenance along state highways, but neither believes they should have the responsibility for collection and administration of fees. Recommendations based on points of agreement are:

Funding

- Additional financial resources will be needed for maintenance of storm water facilities along state highways if they are to be maintained properly and meet cyclical replacement needs. Financial resources will need to come from actions of the General Assembly along with other sources to provide the financial base for continuing storm water management. Financial resources will need to cover both the cost of current and projected storm water facilities along state maintained highways as well as meet best management practices standards as defined by the PA Department of Environmental Resources.

- In addition to additional appropriations from the General Assembly, annual user fees should be assessed to users of the storm water system including PennDOT, private developers, property owners and municipalities. Each would pay according to the amount of runoff generated from their property and flowing into the storm water facilities on state highways. New development would also pay a one time additional fee.

Administrative Management

- This report offers numerous alternatives for the management of storm water facilities to clear up the current conflicts between local governments and PennDOT. Alternatives for who should collect and administer fees as well as the actual maintenance need further exploration. This report offers numerous alternative institutional arrangements including: local/PennDOT cost sharing; the use of storm water management districts, storm water management authorities; PennDOT fee assessment; and local government fee assessment. Some of these alternatives could be implemented through policy changes while others would require legislation by the General Assembly.

Actions of the General Assembly

- To improve storm water management along state highways in Pennsylvania, the General Assembly will need to provide both funding and administrative authorization. Funding would be provided to PennDOT to meet their storm water maintenance and facility replacement needs. Additional funding would come from fee assessments that would also be authorized in new legislation.

- The General Assembly should enact legislation to enable the establishment of special purpose entities and to allow for the collection of appropriate fees to adequately maintain storm water facilities along state highways. Key attributes such as ease of fee collection, maintenance and administrative capabilities and other factors should be considered in establishing such entities.

- Administrative authorization would come from amendments to both the Municipal Authorities Act of 1945 that would specifically include storm water management as a purpose for authority activities. Act 167 the Storm Water Management Act should be amended to provide for special purpose entitles or storm water management districts that could collect fees and provide maintenance and replacement of storm water management facilities.

- Which committees in the General Assembly should take the lead on these initiatives? The House Local Government Committee in 2001 undertook a study to examine PennDOT storm water maintenance practices in Boroughs of the Commonwealth. This report should be shared with the Local Government and Transportation Committees of the House and Senate for further consideration.

Introduction and Purpose

Each partner must agree to responsibilities and have the authority and resources to follow through.

The Pennsylvania Transportation Advisory Committee (TAC) formed a Task Force to study issues related to the maintenance of storm water facilities on state highways.

Legally, cities and boroughs in Pennsylvania are responsible for the maintenance of storm water facilities along PennDOT highway rights-of-way through their jurisdictions (if not done by PennDOT), as reflected in their respective codes. PennDOT policy requires townships to maintain storm water systems, as well. The responsibility for storm water maintenance along state highways in townships is disputed between PennDOT and the townships.

The adequacy of storm water facility maintenance throughout Pennsylvania has also been questioned. To be effective, each partner involved in the program must agree to responsibilities. They must also have the authority and resources to follow through.

Study Purpose

The purpose of this study is to identify the current responsibilities for storm water maintenance along state highways, to evaluate the extent and associated costs of storm water maintenance along state highways, and to develop equitable alternatives for improving the management of these facilities. The study identifies alternative funding mechanisms and resources that can support and maintain ongoing storm water improvements and management along state highways.

The Problem

Storm water maintenance responsibilities for state-owned highways in Pennsylvania's municipalities differ widely because of the time period and context in which related laws were written. Initial laws were written to serve the needs of both cities and boroughs, since these were traditionally the population centers in Pennsylvania and thus the location of most roadway maintenance concerns and problems. Policies in Pennsylvania for the maintenance of state highways have their roots in the State Highway Law of 1945, 36 P.S. §670, which provides the Secretary with discretionary authority. This law is the basis of PennDOT's current curb-to-curb maintenance policy.

PennDOT's current maintenance policies regarding storm water management and other maintenance are cited in Circular Letter E-2211 (June 27, 1988) and Circular Letter RM 93-04 (January 1993). The 1993 Circular Letter asserted PennDOT's policy that requires townships to maintain storm water systems along state highways.

The Pennsylvania State Association of Township Supervisors (PSATS) maintains that PennDOT does not have authority to impose this mandate without a legislative or regulatory basis. PSATS has stated that this is an unfunded mandate by PennDOT and that they have not been required to maintain storm water facilities along state highways, unless by agreement.

Storm water is an extremely dynamic issue with many different aspects, from commercial or residential development runoff to water quality and flood control. The Storm Water Management Act of 1978 (Act 167) charged the Department of Environmental Protection (DEP) with the oversight of storm water facilities. The statute does not make DEP responsible for storm water on state highways. With 2,565 municipalities and 350 designated watersheds, there have been many issues raised concerning the proper maintenance of facilities and its impact on water quality.

Approach

Methodology

The study used the following general process to analyze the questions raised above:

Background Research and Technical Memoranda - This included background information to identify key legal, regulatory, and policy issues; experiences in Pennsylvania and other states; experiences of PennDOT and local municipalities; and costs of storm water maintenance. Information is summarized in a "Background Briefing" and "Study Priorities" technical memoranda for review by the Task Force and other forums.

Data Gathering and Interviews - Data came from a wide range of public officials both within Pennsylvania and from other state DOTs. The PennDOT Office of Chief Counsel shared the legislative and historical perspectives on storm water management along state highways in Pennsylvania including current laws and PennDOT policies. Personnel in the Pennsylvania Department of Environmental Protection also provided their perspectives on alternatives for handling storm water along state highways. In addition, previous legislative efforts were reviewed, including House Resolution 31 introduced in 2001 by the House Local Government Committee's Subcommittee on Boroughs, and House Bill 88 of 2005. Initiatives offered by Act 167, the Pennsylvania Storm Water Management Act, were also considered.

Interviews were conducted with municipal officials in Pennsylvania to determine how they handle storm water management on state highways and to identify any special initiatives being undertaken to improve storm water management. Interviews were also conducted with other state DOTs to assess how they have addressed storm water management and coordinated maintenance and costs along their roadways. Results of these interviews are summarized in the Findings portion of the report. Details of these interviews are provided in Appendix B and C.

Task Force - The TAC Study Task Force was convened to focus on the issues and concerns associated with storm water management on state highways. The Task Force met quarterly to review study materials and provide input to the study. The Task Force included TAC members as well as a cross section of PennDOT representatives, including Central Office and District personnel, municipal representatives, other state agencies, and Pennsylvania State Association of Township Supervisors representatives. Working together, this group was instrumental in defining the issues, refining the focus of the study, and ultimately developing and evaluating alternatives and strategies.

Listening Session - The listening session was intended to broaden the study discussions. Representatives from various public entities and organizations were invited to participate, including townships; county conservation districts; the Pennsylvania Department of Community and Economic Development; the Pennsylvania Builders Association; County Conservation Districts; and state associations representing county commissioners, municipal authorities, boroughs, and cities. Listening session participants were briefed on the study background, legal and regulatory framework, and the work performed to date. Potential strategies were discussed with participants to seek their perspective on how effectively storm water is being managed on state highways and where there might be opportunities or initiatives to improve the current management system.

Key Questions

As part of the technical memorandum on Study Priorities, several key questions were developed by the Study Task Force under a select number of categories. For each question, specific study investigations and/or analysis were undertaken and results reviewed with the Task Force.

Status of Storm Water Management Maintenance Operations

- Is PennDOT maintaining its share of storm water management facilities? Why or why not?
- Are the townships, cities, and boroughs maintaining their storm water management facilities? Why or why not?

Authority/Responsibility

- What is the existing authority of PennDOT to convey responsibility to townships, cities, and boroughs?
- Is this legal basis sufficient to allocate the share of responsibility?
- Are environmental conditions changing that may further complicate the legal basis and/or policy authority?
- If the PennDOT-city/borough maintenance sharing is working, is it a good model for establishing the legal authority for townships?
- Is there an alternative jurisdictional unit (or units) that would be a more effective partner with PennDOT for storm water maintenance than cities, boroughs and townships?

- Are there local land use and storm water regulatory practices that PennDOT or municipalities could adopt as an alternative to maintenance that would be compatible with their existing legal authority, yet have a similar beneficial impact on highway storm water management facilities?

Funding and Costs

- What are the storm water maintenance needs and associated costs on the PennDOT highway system?
- What funding sources do the different responsible entities have access to and are they sufficient for their maintenance responsibilities?
- What other options exist for funding the maintenance of storm water management facilities?
- What program models exist that may work better or are more flexible for changing environmental conditions?
- What other factors, such as environmental regulations, will have a bearing on future costs?

Findings

Authority and Responsibilities for Storm Water Management along State Highways

Policies in Pennsylvania for the maintenance of state highways have their roots in the State Highway Law of 1945, 36 P.S. §670. This law is the basis of PennDOT's current curb-to-curb maintenance policy.

Department Responsibility Beyond Curblines

Circular Letter E-2211

This circular letter was issued in June 1988 with the purpose of stating PennDOT's legal responsibility beyond curblines. This policy varies according to the type of local government designation. On highways in first class cities, boroughs, and incorporated towns and cities other than first class, the policy states that PennDOT will not perform any maintenance beyond the curblines except as to maintain the structural integrity of the highway, such as slopes, walls, etc.

For highways formerly designated with five-digit L.R. numbers in townships, PennDOT may perform maintenance beyond curblines. Where PennDOT has not assumed responsibility to perform such maintenance, townships may do so. For highways formerly designated with one, two, three or four-digit L.R. numbers in townships, PennDOT will perform maintenance beyond curblines (see Appendix for full text of Circular Letter E-2211).

Circular Letter RM 93-04

This circular letter was issued in January 1993 and sets forth PennDOT's responsibilities for maintenance of a highway facility according to the type of municipality (see Appendix for full text of Circular Letter RM 93-04).

Boroughs

The circular letter indicates that within boroughs PennDOT will not assume any responsibilities for maintenance outside of the curbline unless by agreement. Maintenance responsibilities include inlet grates in the roadway surface between curblines. PennDOT is not responsible for inlets below grates and cross pipes unless PennDOT has assumed maintenance by agreement. PennDOT is also not responsible for maintaining storm and sanitary sewers. PennDOT will perform maintenance beyond curblines only as required to maintain the structural integrity of highway, such as slopes, walls, etc.

For Act 615 highways the same standards apply except that PennDOT could enter into an agreement assuming maintenance beyond curblines.

Townships

Storm water facility maintenance on state highways in townships has generally been at the discretion of PennDOT.

Circular Letter RM 93-04's policies for maintenance in townships are more complicated. Repairs and maintenance to state highways in townships have generally been at the discretion of PennDOT, including both within the curblines and beyond.

The Circular Letter provides the following guidance policies:

Former One, Two, Three and Four-Digit Legislative Routes

Areas and facilities maintained are the entire areas within the right-of-way lines:

- Including inlets and cross pipes.
- Excluding storm and sanitary sewers.
- Excluding curbing and sidewalks.

Former Five- Digit Legislative Routes

Areas and facilities maintained are within the curbline. Notes:

- On specific highways or sections PennDOT may have assumed maintenance beyond curblines.
- Includes inlet grates in the roadway surface between curblines.
- Includes drainage structures having a total spanned length no more than 10 feet measured along the centerline of the highway.
- Excludes inlets below grates and cross pipes except where PennDOT has assumed maintenance by agreement.
- Excludes storm and sanitary sewers.
- For Act 615 highways, the policies are the same except that PennDOT may enter into an agreement assuming maintenance beyond the curblines.

Within the context of the circular letter and those policies and current laws, repairs and maintenance of storm water facilities on state highways in townships have generally been at the discretion of PennDOT. This has been further complicated by different interpretation of policies across the PennDOT Districts in their application of maintenance policies for storm water facilities.

Sources of PennDOT Curb-to-Curb Maintenance Policy[1]

PennDOT's curb-to-curb maintenance policy can be found in Circular Letters E-2211 and RM 93-04, Chapter 8.5 of the Maintenance Manual, and Appendix C to Chapter 7.

Cities – First and Second Classes

Section 542 of the State Highway Law of 1945, 36 P.S. §670-542, provides that PennDOT's maintenance responsibility does not include "the curbing and footways" of any adopted state highway. The City of Philadelphia was found to be responsible for a sidewalk in the city along a state highway in *White v. City of Philadelphia* 712 A.2d 345 (Pa. Cmwlth. 1998).

Cities – Second Class A and Third Class

Section 522 of the State Highway Law of 1945, 36 P.S. §670-522, provides that PennDOT's maintenance responsibility is limited to the "curblines as established at the time of the passage of the act by which the street was designated a state highway" or where the Secretary of Transportation otherwise designates the curblines. PennDOT's curb-to-curb maintenance policy was upheld as in conformance with this section in *Wallace v. PennDOT*, 701 A.2d 307 (Pa. Cmwlth. 1997).

Boroughs and Incorporated Towns

Section 513 of the State Highway Law of 1945, 36 P.S. §670-513, gives the Secretary of Transportation the power to determine the width and type of maintenance activities PennDOT will perform. PennDOT's curb-to-curb maintenance policy was upheld as in conformance with this section in *O'Brien v. Borough of Jeannette*, 128 Pa. Super. 443, 194 A. 314 (1937).

Townships

PennDOT's policies on maintenance vary based upon the type of local government. These variations are based upon the State Highway Law of 1945 and in some cases have been confirmed by appellate court decisions. Section 502 of the State Highway Law of 1945, 36 P.S. §670-502, gives the Secretary of Transportation power to determine the width, type, and location of any state highway PennDOT constructs or improves, and to determine the types of maintenance activities PennDOT will perform. There is no reported case law in Pennsylvania reviewing PennDOT's policy in townships, which does allow for maintenance beyond curblines in certain circumstances.

[1] Source: PennDOT Office of Chief Counsel

Regulations and systems have become more complex to manage both the quantity and the quality of storm water runoff.

Environmental Requirements

Storm water facilities not only must effectively manage storm water runoff, they must also employ practices that will effectively protect and maintain water quality. The increasing cost of maintaining these facilities to meet permit conditions is attracting increasing attention by both PennDOT and municipal officials.

Storm Water Management Act of 1978 (Act 167)

This Pennsylvania Legislature enacted the Storm Water Management Act, No. 167, in 1978 (Act 167). This Act establishes a systematic program for counties to develop comprehensive watershed-based storm water management plans that provide control measures for development and activities that affect storm water runoff, including quality, quantity, and groundwater recharge. These control measures are implemented through adoption of ordinances and regulations by local municipalities.

Upon DEP's approval of Act 167 plans prepared by the counties, and according to Section 11a of the Act, anyone engaged in the alteration of land that may affect storm water runoff characteristics is required to implement measures consistent with the Plan. The Plan also applies to state agencies, projects for public utilities, and any other project that receives funding from the state.

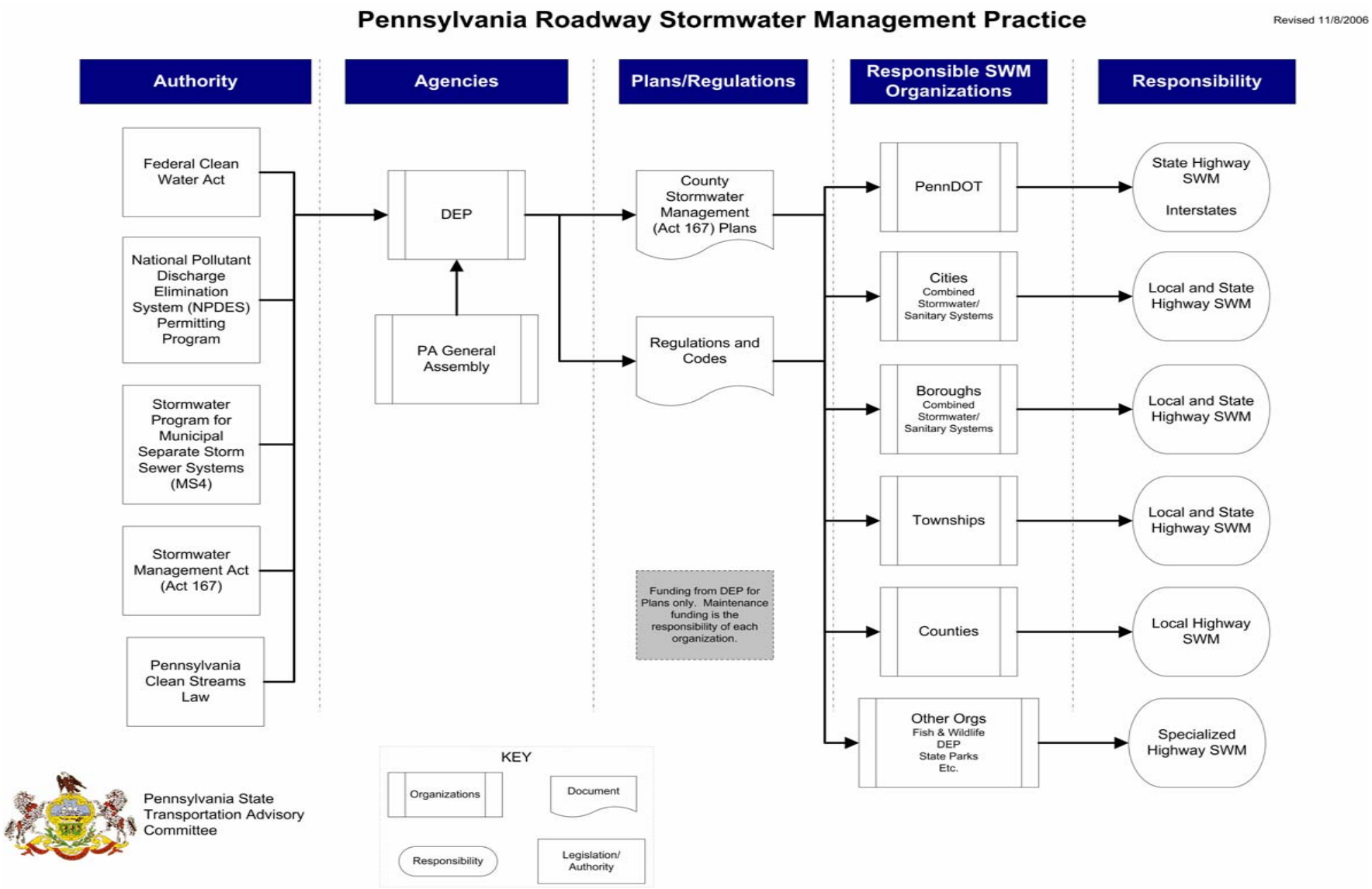
DEP develops grant agreements with counties to pay for 75% of the allowable costs incurred to prepare, adopt, and submit Plans. Municipalities may submit annual invoices to DEP for reimbursement of 75% of the net eligible costs of administration, enforcement and implementation incurred complying with Act 167.

NPDES Permits for Storm Water Discharges Associated with Construction Activities

In 1990, the U.S. Environmental Protection Agency promulgated National Pollutant Discharge Elimination System (NPDES) regulations for storm water discharges under the federal Clean Water Act. These regulations, among other discharge requirements, established the federal Phase I NPDES discharge program which requires permits for all operators of construction activities of five acres or more. This became effective in Pennsylvania in 1992. In December 1999, EPA promulgated NPDES Phase II regulations that require permit coverage for small construction activities that disturb one to five acres which result in a point source discharge to the waters of the United States (including those of less than one acre that occurs as part of a larger common plan of development or sale between one and five acres). In December 2002, the Pennsylvania Department of Environmental Protection integrated the federal Phase II requirements into the Phase I requirements for storm water discharges. DEP administers the program though the county conservation districts, which process and administer the permit requirements at the local level. The significance of this regulatory effort was that applicants must employ Best Management Practices to protect and maintain water quality in Pennsylvania.

Municipal Separate Storm Sewer Systems (MS4)

These are conveyance systems (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, channels, manmade channels, or storm drains) that are owned and operated by the state or municipalities. In Pennsylvania more than 900 municipalities in designated urban areas control storm water discharges through an MS4 NPDES permitting system. In areas where these permits exist and are supported by local ordinances, the applicant must submit a Post Construction Storm Water Management Plan (PCSM) in accordance with local rules and regulations. PennDOT has a single statewide MS4 permit for designated urban area storm water facilities. It is within this regulatory environment that PennDOT and local municipalities currently build and manage their storm water infrastructure. As the system has become more sophisticated to manage both the quantity and the quality of storm water runoff, the resources required have also grown. It is this regulatory framework that has led to growing concern over the future management of the storm water infrastructure along state highways.


Pennsylvania Roadway Stormwater Management Practice
Revised 11/8/2006
Authority
Agencies
Plans/Regulations
Responsible SWM Organizations
Responsibility
Federal Clean Water Act
National Pollutant Discharge Elimination System (NPDES) Permitting Program
Stormwater Program for Municipal Separate Storm Sewer Systems (MS4)
Stormwater Management Act (Act 167)
Pennsylvania Clean Streams Law
DEP
PA General Assembly
County Stormwater Management (Act 167) Plans
Regulations and Codes
Funding from DEP for Plans only. Maintenance funding is the responsibility of each organization.
PennDOT
Cities
Combined Stormwater/ Sanitary Systems
Boroughs
Combined Stormwater/ Sanitary Systems
Townships
Counties
Other Orgs
Fish & Wildlife
DEP
State Parks
Etc.
State Highway SWM
Interstates
Local and State Highway SWM
Local and State Highway SWM
Local and State Highway SWM
Local Highway SWM
Specialized Highway SWM
KEY
Organizations
Document
Responsibility
Legislation/ Authority
Pennsylvania State Transportation Advisory Committee

Division of responsibilities becomes unclear if not defined during the development permitting process.

PennDOT Perspectives

Among PennDOT Engineering Districts across Pennsylvania, the general consensus appears to be that the responsibilities for storm water facility maintenance currently outlined in PennDOT's policies, regulations, and manuals are not being consistently applied to local governments. PennDOT's policy is to require municipalities to maintain storm water facilities on state highways within their jurisdictional boundaries. The intent of PennDOT's maintenance policies was to equally apply these responsibilities to all levels of municipalities.

Within Pennsylvania, some townships, cities, and boroughs are not performing maintenance along state highways when connections have been made from the highway storm drainage system into municipal drainage systems. Reasons stated for lack of maintenance activity include inadequate funding, legal issues, and turnover of municipal staff.

If PennDOT District staff is notified of maintenance needs along state or city roads, county managers are then instructed to notify municipal staff responsible for the maintenance so the municipality can perform the work. PennDOT will perform the needed maintenance when there is an immediate safety or flood hazard concern.

PennDOT believes that the current system for storm water facility maintenance is generally working effectively in cities and boroughs. However, the division of responsibilities between the Commonwealth and municipalities often becomes unclear if responsibilities are not defined initially during the municipal permitting process for private properties along a state route. Currently, storm water maintenance responsibilities are outlined for the record when Highway Occupancy Permits are issued to developers and municipalities, to ensure that maintenance responsibilities are passed on to successive property owners.

Local Municipal Experiences

Interviews were conducted with municipal officials in Pennsylvania to determine how they handle storm water management on state highways and identify any special initiatives being undertaken to improve storm water management. Results of these interviews are summarized below. Details of these interviews are provided in the Appendices to this study.

- The overall message from local municipalities is mixed.
- Some municipalities partner effectively with PennDOT in the maintenance of state-owned highway storm water facilities.
- Other municipalities take on the majority of the work along state highways if they have the resources to perform the work.
- Some municipalities do not perform storm water maintenance work along state highways, regarding it as a responsibility of PennDOT.

Other Storm Water Practices in Pennsylvania

There are a number of entities in Pennsylvania, including storm water authorities that maintain storm water facilities. Recently, municipal water and sewer authorities have begun to integrate storm water maintenance into their operating practices.

The need to fund storm water maintenance has led some municipalities to create storm water authorities, also known as storm water utilities. Storm water utilities are public entities that create, monitor, and maintain storm water facilities in an area and charge users fees for those services. Instead of relying on a general tax fund or non-guaranteed funding source, utilities create their own funding, ensuring that storm water management will be adequately funded.

The storm water authority is a fairly new innovation, and Pennsylvania has only recently passed enabling legislation allowing municipalities to consider the use of such an authority. To date, two such authorities exist, the Coraopolis Municipal Authority (CMA) and the Sunbury Municipal Authority.

Coraopolis Municipal Authority (CMA)

The CMA became a fully operating authority in January 2005, and while it is still in its infancy and is embarking on the process of developing long-term control programs, the Authority has begun planning for as much as $20 million in future infrastructure improvements. Officials at CMA have already identified several advantages to these innovative integrated water authorities. Primary among these is that infrastructure improvements, which can often be costly, are free from politicized decision making. Without a municipal storm water authority, the municipality itself would have to raise revenue for infrastructure improvements, usually resulting in increased taxes. The result is a process through which improvements can be made without altering the municipal budget. It is also anticipated that funds for the CMA can be raised through PENNVEST and other grant and low interest loan programs.

City of Sunbury Municipal Authority

The City of Sunbury Municipal Authority has also recently incorporated storm water into its traditional water and sewer authority structure. Sunbury is protected by a floodwall and dike system, whereby most of the city's storm water equipment, such as gates and pumps, is used to convey water out of the city. To date, storm water maintenance is not broken out as part of the fees paid by users, but is instead absorbed as part of the general cost of service. However, the City of Sunbury has begun initial internal discussions about the possibility of creating new user fees, or tapping fees, for new development that must tap into the storm water system. These fees would be a major innovation and step forward in funding storm water management in Pennsylvania.

In general, both of these innovative integrated authorities perceive storm water as integral to the water and sewer system and combining it with these two services is envisioned to be both practical and cost-effective. These authorities have noted, however, that it is important to engage the community to explain the process and justify the rate increases that accompany infrastructure increases.

Agility Agreements

Agility Agreements are contracts between PennDOT and municipalities that provide the legal authority for in-kind services for a period of five years. An authorized Agility Agreement allows the parties to create a work plan, which is the actual document used to determine who will do what for whom. No money can change hands as part of the Agility Agreement or work plan. The plan includes a list of services provided by PennDOT detailing what municipalities can do and a list of services detailing what PennDOT can provide in kind. Among those services eligible for municipalities are several maintenance activities relevant to storm water:

- Inlet, endwall, or basin cleaning
- Ditch or drain channel cleaning
- Swale cleaning
- Pipe and culvert cleaning
- Replacing inlets and endwalls
- Repairing or replacing pipe and culvert

West Chester Borough in Chester County uses a work plan where municipal inlet cleaning and snow removal are provided over a four-year period in exchange for a one-time crack sealing service.

Experiences of Other States

Interviews were also conducted with other state DOTs to assess how they have addressed storm water management and coordinated maintenance and costs along their roadways. Results of these interviews are summarized below. Details of these interviews are provided in the Appendices to this study.

- With 2,565 municipalities in Pennsylvania, few state DOTs have to work with as many local governments as PennDOT does.
- New York has a cost sharing system based upon the quantity of storm water contributed by the states facilities and municipal sources.
- In Florida, water is treated as a commodity and storm water facilities are usually given back to the host municipality or water management district for ownership and maintenance. Regional Water Management Districts (WMD) provide an important flood protection role and manage water flows for irrigation (back-pumping in winter during growing season).
- The Maryland State Highway Administration performs maintenance on its storm water system, but does levy fees to property owners contributing flow into their system.
- In Minnesota, there is cost sharing through state/local agreements. In the metropolitan Minneapolis-St. Paul area, Minnesota DOT performs most of the storm water maintenance activities. In the outlying areas of the state, local municipalities perform the work but receive funding assistance from the state under the cost participation policy.
- In North Carolina, the state Department of Transportation approved and published Traditional Neighborhood Development (TND) design guidelines and other smart growth tools, such as cluster zoning and bio-swales, to minimize impervious surface and thereby mitigate storm water runoff.
- In New Jersey, a model for the administration of State storm water and smart growth goals and requirements has been adopted that divides its 566 municipalities into two tiers: Tier A municipalities are generally located within the more densely populated regions of the state or along or near the coast; Tier B municipalities are generally more rural and in non-coastal areas.

Cost of Storm Water Maintenance on State Highways

Determining the extent of the storm water system and the cost for maintenance is imperative to give a perspective on the scope of the issue. PennDOT's Roadway Management System (RMS) includes much of the known structure inventory but includes only a portion of the entire system. Roadside drainage swales and storm water systems at interchanges are not included in the inventory and have been estimated for this study. The Maintenance Operations and Resources Information System (MORIS) and PennDOT's Engineering and Construction Management System (ECMS) were also tapped to estimate storm water system maintenance costs.

Statewide cost estimates were derived based on this information, supplemented by various assumptions. The costs are estimated based on actual unit costs and estimated maintenance and replacement cycles which results in costs required to maintain a state of good repair (which are different from actual costs incurred). The results of these cost estimates are described below. A complete list of the assumptions and estimates can be found in Appendix E. Costs have also been estimated for select municipalities to illustrate the extent of the storm water maintenance burden on them and municipalities with similar infrastructure.

Storm Water Infrastructure on Pennsylvania Highways

Determining the breadth of the storm water management infrastructure on Pennsylvania highways is important in estimating the maintenance costs and thus the scope of the issue. There are nearly 500,000 storm water management systems along Pennsylvania highways stretching over 70,000 miles which include catch basins, retention ponds, roadside ditches, etc.

Storm Water on State Highways System Inventory: Statewide

	# of Systems	System Miles
INTERSTATE HIGHWAYS	34,810	5,310
OTHER EXPRESSWAYS & PRINCIPAL ARTERIAL	101,200	11,380
MINOR ARTERIAL HIGHWAYS	107,000	10,060
COLLECTOR HIGHWAYS	179,150	21,790
LOCAL ACCESS HIGHWAYS	76,320	21,960
INTERCHANGES*	485	N/A
TOTAL	**498,965**	**70,500**

* Interstate interchanges only and assumes one system per interchange. No mileage information exists for interchanges.

Source: PennDOT RMS, ditch miles estimated

Storm water maintenance along state-maintained highways costs an estimated $116 million annually.

Storm Water Maintenance on State Highways—Statewide Costs

The cost of maintaining storm water systems is often overlooked as part of road maintenance. However, the cleaning and maintenance of storm water systems is not only necessary to keep water off the road surface and adjacent land, but is required under the DEP's MS4 permitting process. Storm water maintenance is a distinct activity to ensure statewide infrastructure is functioning properly. The annual cost of storm water maintenance along Pennsylvania highways (excluding replacement costs is estimated at nearly $116 million.

Pennsylvania Highway Storm water System Annual Maintenance Costs

DRAINAGE ELEMENT		TOTAL QUANTITY	UNITS	WORK ITEM	AVG. UNIT COST	CYCLE FREQUENCY (YRS)	ANNUAL COST
CROSS PIPE	Under 36"	32,990,862	FEET	CLEAN	$ 6.20	5	$ 40,908,700
	Over 36"	2,567,809	FEET	CLEAN	$ 6.20	5	$ 3,184,100
INLETS	Inlets	321,016	EACH	CLEAN	$ 39.67	1	$ 12,734,700
	Endwalls	177,931	EACH	CLEAN	$ 39.67	1	$ 7,058,500
DITCHES		40,000,000	FEET	CLEAN	$ 1.64	5	$ 13,120,000
GUTTERS		30,249,046	FEET	CLEAN	$ 0.05	1	$ 1,512,500
PARALLEL PIPE		30,249,046	FEET	CLEAN	$ 6.20	5	$ 37,508,800
							$ 116,027,300

The annual cost of routine maintenance is only a portion of the need. Once the stormwater facilities are established, PennDOT considers cyclic replacement the responsibility of the local municipalities. However, it is noted that replacement of such facilities are included in the scope of work for some PennDOT projects. Adhering to replacement cycles are required to ensure a well-functioning storm water system. These annualized replacement costs along with on-going maintenance results in more than double the price tag at $295 million.

Pennsylvania Highway Storm Water System Annual Maintenance Costs
with Replacement Considered

DRAINAGE ELEMENT		TOTAL QUANTITY	UNITS	WORK ITEM	AVG. UNIT COST	CYCLE FREQUENCY (YRS)	ANNUAL COST
CROSS PIPE	Under 36"	32,990,862	FEET	CLEAN	$ 6.20	5	$ 40,908,700
				REPLACE	$ 52.26	30	$ 57,470,100
	Over 36"	2,567,809	FEET	CLEAN	$ 6.20	5	$ 3,184,100
				REPLACE	$ 124.27	30	$ 10,636,700
INLETS	Inlets	321,016	EACH	CLEAN	$ 39.67	1	$ 12,734,700
				REPLACE	$ 559.63	30	$ 5,988,300
	Endwalls	177,931	EACH	CLEAN	$ 39.67	1	$ 7,058,500
				REPLACE	$ 5,000.00	30	$ 29,655,200
DITCHES		40,000,000	FEET	CLEAN	$ 1.64	5	$ 13,120,000
				REPLACE			
GUTTERS		30,249,046	FEET	CLEAN	$ 0.05	1	$ 1,512,500
				REPLACE	$ 39.11	30	$ 39,434,700
PARALLEL PIPE		30,249,046	FEET	CLEAN	$ 6.20	5	$ 37,508,800
				REPLACE	$ 34.75	30	$ 35,038,500

* Ditches are not expected to need replacing with on-going maintenance

$ 294,250,800

In addition, the Pennsylvania Department of Environmental Protection (DEP) has finalized the Pennsylvania Storm Water Best Practices Manual. In it, maintenance procedures have been recommended to ensure the good condition of the system as well as maintaining good water quality. These procedures include the maintenance of the various systems at the following levels:

- **Cross Pipes—**inspect 48 hours after major event, at least 3 times a year; clean as necessary.
- **Inlets—**inspect and clean at least 2 times/yr. or after large storm events.
- **Ditches (swale)—**inspect 48 hours after major event, at least 3 times a year; clean and mow as necessary; rototill and replant if draw down time is >48 hrs.
- **Gutters—**Minimum frequency for cleaning and sweeping to be once a year. Another requirement is the evaluation of areas/structures to determine those that may require more frequent cleaning such as traffic volumes, number of accidents which number of catch basins, proximity to watercourses and wetlands, litter frequency (which can lead to clogged catch basins) and overhead vegetation, e.g. tree canopies (which may contribute to clogged catch basins in the fall).
- **Parallel Pipes**—inspect 48 hours after major event, at least 3 times a year; clean as necessary.

PennDOT does not have the resources or the manpower to maintain the systems to this level. If these procedures were able to be followed it would likely double or triple the current cost of storm water system maintenance.

Storm Water Infrastructure and Costs on Highways in Selected Municipalities

Selected municipalities were chosen to give perspective on storm water maintenance costs within distinct municipalities of varying sizes. These municipalities include:

- Allentown—Third Class City
- Lower Paxton Township (Dauphin County)—Relatively Urban Second Class Township
- Patton Township (Centre County)—Relatively Rural Second Class Township
- West View Borough (Allegheny County)

The storm water infrastructure and maintenance costs for each municipality are described below.

Storm Water Infrastructure and Costs in Allentown

Allentown has a significant amount of state-owned roadways and accompanying storm water systems. As a third class city, Allentown is responsible under the city code for maintaining the storm water systems on state highways within the city limits. It is estimated that it costs Allentown over $227,000 to maintain its storm water systems annually, $1.5 million when replacement costs are considered.

Storm Water on State Highways System Inventory: Allentown

	# of Systems	System Miles
INTERSTATE HIGHWAYS	167	8
OTHER EXPRESSWAYS & PRINCIPAL ARTERIAL	434	6
MINOR ARTERIAL HIGHWAYS	220	59
COLLECTOR HIGHWAYS	15	85
LOCAL ACCESS HIGHWAYS	7	25
INTERCHANGES	2	N/A
TOTAL	**845**	**183**

* Interstate interchanges only and assumes one system per interchange. No mileage information exists for interchanges.

Source: PennDOT RMS, ditch miles estimated

It is estimated that it costs Allentown over $227,000 to maintain its storm water systems annually, $1.5 million when replacement costs are considered.

Allentown Highway Storm Water System Annual Maintenance Costs

DRAINAGE ELEMENT		TOTAL QUANTITY	UNITS	WORK ITEM	AVG. UNIT COST	CYCLE FREQUENCY (YRS)	ANNUAL COST
CROSS PIPE	Under 36"	53,898	FEET	CLEAN	$ 6.20	5	$ 66,800
				REPLACE	$ 52.26	30	$ 93,900
	Over 36"	4,182	FEET	CLEAN	$ 6.20	5	$ 5,200
				REPLACE	$ 124.27	30	$ 17,300
INLETS	Inlets	544	EACH	CLEAN	$ 39.67	1	$ 21,600
				REPLACE	$ 559.63	30	$ 10,100
	Endwalls	302	EACH	CLEAN	$ 39.67	1	$ 12,000
				REPLACE	$ 5,000.00	30	$ 50,300
DITCHES		89,232	FEET	CLEAN	$ 1.64	5	$ 29,300
				REPLACE			
GUTTERS		802,560	FEET	CLEAN	$ 0.05	1	$ 40,100
				REPLACE	$ 39.11	30	$ 1,046,300
PARALLEL PIPE		42,240	FEET	CLEAN	$ 6.20	5	$ 52,400
				REPLACE	$ 34.75	30	$ 48,900

$ 1,494,200

* Ditches are not expected to need replacing with on-going maintenance

** Assumed that there is one inlet for every structure; 90% of all roadways have curb and gutter, 10% have ditches
*** Assumed that the cross pipe and inlet types are equal to the state percentages (of the total cross pipes 92.8% are under 36"and 7.2% are over 36"; of the total inlets 35.7% are endwalls and 64.3% are inlets)

Storm Water Infrastructure in Lower Paxton Township (Dauphin County)

Lower Paxton is a relatively urban second class township with two interstates (I-81 and I-83) within its boundaries. It has fewer miles of storm water facilities than Allentown but a greater number of systems. These systems have an annual maintenance cost of over $242,000, and $765,000 when replacement costs are considered.

Storm Water on State Highways System Inventory: Lower Paxton

	# of Systems	System Miles
INTERSTATE HIGHWAYS	235	19
OTHER EXPRESSWAYS & PRINCIPAL ARTERIAL	221	8
MINOR ARTERIAL HIGHWAYS	457	11
COLLECTOR HIGHWAYS	147	27
LOCAL ACCESS HIGHWAYS	-	-
INTERCHANGES	4	N/A
TOTAL	**1,064**	**65**

* Interstate interchanges only and assumes one system per interchange. No mileage information exists for interchanges.

Source: PennDOT RMS, ditch miles estimated

Lower Paxton Highway Storm Water System Annual Maintenance Costs

DRAINAGE ELEMENT		TOTAL QUANTITY	UNITS	WORK ITEM	AVG. UNIT COST	CYCLE FREQUENCY (YRS)	ANNUAL COST
CROSS PIPE	Under 36"	122,496	FEET	CLEAN	$ 6.20	5	**$ 151,900**
				REPLACE	$ 52.26	30	**$ 213,400**
	Over 36"	9,504	FEET	CLEAN	$ 6.20	5	**$ 11,800**
				REPLACE	$ 124.27	30	**$ 39,400**
INLETS	Inlets	684	EACH	CLEAN	$ 39.67	1	**$ 27,100**
				REPLACE	$ 559.63	30	**$ 12,800**
	Endwalls	380	EACH	CLEAN	$ 39.67	1	**$ 15,100**
				REPLACE	$ 5,000.00	30	**$ 63,300**
DITCHES		73,920	FEET	CLEAN	$ 1.64	5	**$ 24,200**
				REPLACE			
GUTTERS		105,600	FEET	CLEAN	$ 0.05	1	**$ 5,300**
				REPLACE	$ 39.11	30	**$ 137,700**
PARALLEL PIPE		26,400	FEET	CLEAN	$ 6.20	5	**$ 32,700**
				REPLACE	$ 34.75	30	**$ 30,600**
							$ 765,300

* Ditches are not expected to need replacing with on-going maintenance

** Assumed that there is one inlet for every structure; 58% of all roadways have curb and gutter, 42% have ditches
*** Assumed that the cross pipe and inlet types are equal to the state percentages (of the total cross pipes 92.8% are under 36"and 7.2% are over 36"; of the total inlets 35.7% are endwalls and 64.3% are inlets)

Storm Water Infrastructure in Patton Township (Centre County)

Patton Township is smaller with less development and highway infrastructure than Lower Paxton. As a result there are approximately two-thirds fewer storm water systems than in Lower Paxton Township, and Patton Township spends only one-third what Lower Paxton must spend on maintenance ($87,000 without replacement, $232,000 with).

Storm Water on State Highways System Inventory: Patton Twp.

	# of Systems	System Miles
INTERSTATE HIGHWAYS	-	-
OTHER EXPRESSWAYS & PRINCIPAL ARTERIAL	179	8
MINOR ARTERIAL HIGHWAYS	32	2
COLLECTOR HIGHWAYS	77	10
LOCAL ACCESS HIGHWAYS	-	-
INTERCHANGES	-	N/A
TOTAL	**288**	**20**

* Interstate interchanges only and assumes one system per interchange. No mileage information exists for interchanges.

Source: PennDOT RMS, ditch miles estimated

Patton Twp. Highway Storm Water System Annual Maintenance Costs

DRAINAGE ELEMENT		TOTAL QUANTITY	UNITS	WORK ITEM	AVG. UNIT COST	CYCLE FREQUENCY (YRS)	ANNUAL COST
CROSS PIPE	Under 36"	24,499	FEET	CLEAN	$ 6.20	5	$ 30,400
				REPLACE	$ 52.26	30	$ 42,700
	Over 36"	1,901	FEET	CLEAN	$ 6.20	5	$ 2,400
				REPLACE	$ 124.27	30	$ 7,900
INLETS	Inlets	185	EACH	CLEAN	$ 39.67	1	$ 7,300
				REPLACE	$ 559.63	30	$ 3,500
	Endwalls	103	EACH	CLEAN	$ 39.67	1	$ 4,100
				REPLACE	$ 5,000.00	30	$ 17,100
DITCHES		65,472	FEET	CLEAN	$ 1.64	5	$ 21,500
				REPLACE			
GUTTERS		42,240	FEET	CLEAN	$ 0.05	1	$ 2,100
				REPLACE	$ 39.11	30	$ 55,100
PARALLEL PIPE		15,840	FEET	CLEAN	$ 6.20	5	$ 19,600
				REPLACE	$ 34.75	30	$ 18,300
							$ 232,000

* Ditches are not expected to need replacing with on-going maintenance

** Assumed that there is one inlet for every structure; 38% of all roadways have curb and gutter, 62% have ditches
*** Assumed that the cross pipe and inlet types are equal to the state percentages (of the total cross pipes 92.8% are under 36"and 7.2% are over 36"; of the total inlets 35.7% are endwalls and 64.3% are inlets)

Storm Water Infrastructure in West View Borough (Allegheny County)

West View Borough is a small borough in Allegheny County with relatively little state infrastructure. As a borough, West View is required to maintain all storm water systems on state highways as part of the borough municipal code. West View has 66 total systems (totaling four miles) on state highways. It is estimated that it costs the borough $14,900 annually to maintain its storm water systems, $53,000 considering annual replacement costs.

Storm Water on State Highways System Inventory:
West View Borough

	# of Systems	System Miles
INTERSTATE HIGHWAYS	-	-
OTHER EXPRESSWAYS & PRINCIPAL ARTERIAL	1	1
MINOR ARTERIAL HIGHWAYS	65	3
COLLECTOR HIGHWAYS	-	-
LOCAL ACCESS HIGHWAYS	-	-
INTERCHANGES	-	N/A
TOTAL	**66**	**4**

* Interstate interchanges only and assumes one system per interchange. No mileage information exists for interchanges.

Source: PennDOT RMS, ditch miles estimated

West View Borough Highway Storm Water System Annual Maintenance Costs

DRAINAGE ELEMENT		TOTAL QUANTITY	UNITS	WORK ITEM	AVG. UNIT COST	CYCLE FREQUENCY (YRS)	ANNUAL COST
CROSS PIPE	Under 36"	4,900	FEET	CLEAN	$ 6.20	5	$ 6,076
				REPLACE	$ 52.26	30	$ 8,536
	Over 36"	380	FEET	CLEAN	$ 6.20	5	$ 471
				REPLACE	$ 124.27	30	$ 1,575
INLETS	Inlets	42	EACH	CLEAN	$ 39.67	1	$ 1,658
				REPLACE	$ 559.63	30	$ 780
	Endwalls	23	EACH	CLEAN	$ 39.67	1	$ 921
				REPLACE	$ 5,000.00	30	$ 3,868
DITCHES		5,280	FEET	CLEAN	$ 1.64	5	$ 1,732
				REPLACE			
GUTTERS		15,840	FEET	CLEAN	$ 0.05	1	$ 792
				REPLACE	$ 39.11	30	$ 20,650
PARALLEL PIPE		2,640	FEET	CLEAN	$ 6.20	5	$ 3,274
				REPLACE	$ 34.75	30	$ 3,058
							$ 53,389

* Ditches are not expected to need replacing with on-going maintenance

** Assumed that there is one inlet for every structure; 75% of all roadways have curb and gutter, 25% have ditches

*** Assumed that the cross pipe and inlet types are equal to the state percentages (of the total cross pipes 92.8% are under 36"and 7.2% are over 36"; of the total inlets 35.7% are endwalls and 64.3% are inlets)

Listening Session

The listening session was intended to broaden the study discussions. Representatives from various public entities and organizations were invited to participate. Listening session participants were briefed on the study background, legal and regulatory framework, and the work performed to date. The Potential Strategies Evaluation Sheet was discussed with participants to seek their perspective on how effectively storm water is being managed on state highways and where there might be opportunities or initiatives to improve the current management system. Following are some of the major points that came out of this discussion:

- There is concern that PennDOT is increasingly relying on local governments to handle drainage and storm water maintenance on state highways.
- County Conservation Districts may have the technical expertise to assist with the problem but lack funding.
- There have been limited multi-municipal efforts statewide to work together to address storm water problems.
- Participants suggested developing a fee system to support the future maintenance and improvement of the storm water management systems on state highways.
- House Resolution 31 from 2001 was also offered as a recent review of the storm water maintenance issue and its impact on municipalities.

House Resolution 31 of 2001

In 2001, the Pennsylvania House of Representatives adopted House Resolution 31, calling for the House Local Government Committee's Subcommittee on Boroughs to examine applicable state laws and PennDOT maintenance practices in boroughs and contrast them with other municipalities. This report came out of the effort of the House Subcommittee of Boroughs and was reported to the House Local Government Committee. The study had widespread participation and offered findings and recommendations listed below. However, this effort led to no appreciable actions that would have alleviated storm water concerns by both local municipalities and PennDOT.

Recommendations from House Resolution 31 of 2001

- Encourage consistent maintenance practices regardless of the type of municipality.
- Encourage the General Assembly to provide more direction to PennDOT through legislation.
- Encourage adequate funding to PennDOT to carry out their maintenance responsibilities.
- Encourage action on storm water management legislation before the legislature, primarily House Bill 606 which would provide for comprehensive watershed storm water management plans by counties throughout the watersheds.

During this time, many borough councils adopted resolutions regarding the "inequity of maintenance" practices regarding state highways traversing through the Commonwealth's boroughs. These resolutions requested that PennDOT "promote and establish equitable maintenance policies and practices throughout the Commonwealth between townships and boroughs regarding storm water infrastructure."

Alternatives and Recommendations

The burden is not only financial but also one of human resources, equipment, and liability.

The management of storm water on state highways is a complex issue. Cities and boroughs have the responsibility for maintenance of storm water facilities along PennDOT highways. Indications are that the level of maintenance of storm water facilities is not consistent across cities and boroughs. Townships and the Pennsylvania Association of Township Supervisors have expressed their opinion that PennDOT has imposed an "unfunded mandate" upon townships without any legislative basis. However, PennDOT maintains that it derives its authority from the State Highway Law of 1945.

Much of the discussion centers on the cost of providing storm water services. In fact, some representatives at the local level have asserted that PennDOT is not providing the level of maintenance necessary either due to PennDOT's position on local responsibilities or they do not have the human or financial resources to adequately maintain the substantial storm water infrastructure in the Commonwealth or a combination thereof. Boroughs have less ability to provide services because of eroding tax bases. PSATS does not feel they have legislative authority to provide the service, nor do they have the resources to fund their share of the estimated $294 million maintenance cost.

The burden in many instances is not only financial but also one of adequate human resources, equipment, and ultimately liability by both local governments and PennDOT. However, storm water infrastructure needs to be maintained and improved to protect health, safety, and welfare, and support the movement of goods, people, and services on PennDOT's highways. New approaches need to be developed and implemented that will lead to sustainable long-term maintenance and funding practices for storm water facilities along the Commonwealth's highways.

Alternative Strategies

Alternative strategies have been developed, evaluated, and discussed with the Task Force and with the listening session attendees. Additional research with local and state government officials as well as discussions with other states have yielded additional ideas and alternatives for consideration. These strategies provide alternative approaches that can lead to both short-term and long-term strategies for effectively maintaining and funding storm water facilities on state highways. Alternative strategies considered are outlined below. Each alternative is stated and is followed by pros and cons.

Local/PennDOT Cost Sharing – Continue sharing of responsibilities between PennDOT and local municipalities similar to current practices. Perform work through agreements with cost sharing among local and PennDOT resources.

Pros

- No additional legislation or authority needed.

Cons

- Continuing disputes over responsibility and costs which in some cases result in minimal attention to storm water management.
- Lack of uniformity in implementation and administration.

Storm Water Management Districts - Create Storm Water Management Districts that would operate on a watershed basis and require the cooperation of municipalities in the watershed. They would levy fees and perform maintenance activities on storm water facilities on state highways as well as other roadways.

Pros

- Separate entity on storm water management and maintenance.
- Fees based on generation rates.
- Authority to impose fees and incur debt.
- Organization by watershed could have regional benefits.
- Currently, County Conservation Districts under Act 217 may provide framework.
- Focus on management and maintenance

Cons

- Adds another layer of government.
- Additional fees to property owners.

Storm Water Management Authorities - Create Storm Water Management Authorities that would levy fees and maintain facilities. This is an extension of the current authority system and would have authorities expand their powers to collect fees and provide the necessary maintenance.

Pros

- Separate entity on storm water management and maintenance.
- Authority to impose fees and incur debt.
- Focus on management and maintenance.
- Fee based on generation rates.

Cons

- Adds another layer of government.
- Additional fees to property owners.

PennDOT Fee Assessment - Create within PennDOT an entrepreneurial system that charges users of the storm water system and uses these fees to maintain the system. Fees would be either used by PennDOT to perform storm water maintenance or they would be turned back to the municipalities for their storm water maintenance resources.

Pros

- No new level of government.
- Fee tied to property owner.
- Would cross municipal boundaries.

Cons

- Assumes acknowledgement of ownership by PennDOT.
- Requires new organization and legislative authority within PennDOT to impose, collect and administer fees, which would require additional staff and time.
- Despite PennDOT's ownership of a relatively small total real estate area contributing to storm water drainage, this will require PennDOT to manage storm water runoff from many other contributors.
- Not part of PennDOT's core mission to provide good transportation to the citizens of Pennsylvania
- Managing storm water facilities beyond PennDOT right-of-way would require legislative authority to enter onto private property.

Local Government Fee Assessment - Look to local governments to levy storm water assessment fees to all system users, including PennDOT, and use these fees to maintain and improve storm water facilities.

Pros

- No new level of government.
- Collection close to property owner.
- Fee tied to property owner
- Administrative procedures are already in place for collection of fees/taxes from property owners, thereby implementation should be relatively easy.

Cons

- No regional benefits.
- Establishment of a fee collection system in each municipality.
- Inconsistent administration across 2,565 municipalities.
- Local government do not issue permits for state highways.

During discussions among Task Force members and the listening session participants, it was clear that none of these strategies is perfect. Maintaining the status quo is not ideal if it is not working. Creating new levels of government brings questions of efficiency. It is also unlikely that municipalities would universally enlist to levy fees for storm water management to their residents. This would be viewed as an additional tax by many elected officials and would be unpopular among many local officials. PennDOT, as well, does not have an interest in establishing new administrative processes for collection and dispersion of fees.

Recommendations

Recommendations are based on areas of agreement among members of the Task Force. Both PennDOT and municipalities agree that additional resources are needed for storm water maintenance along state highways, but neither believes they should have the responsibility for collection and administration of fees. Recommendations based on points of agreement are:

Funding

- Additional financial resources will be needed for maintenance of storm water facilities along state highways if they are to be maintained properly and meet cyclical replacement needs. Financial resources will need to come from actions of the General Assembly along with other sources to provide the financial base for continuing storm water management. Financial resources will need to cover both the cost of current and projected storm water facilities along state maintained highways as well as meet best management practices standards as defined by the PA Department of Environmental Resources.

- In addition to additional appropriations from the General Assembly, annual user fees should be assessed to users of the storm water system including PennDOT, private developers, property owners and municipalities. Each would pay according to the amount of runoff generated from their property and flowing into the storm water facilities on state highways. New development would also pay a one time additional fee.

Administrative Management

- This report offers numerous alternatives for the management of storm water facilities to clear up the current conflicts between local governments and PennDOT. Alternatives for who should collect and administer fees as well as the actual maintenance will need to be further explored. This report offers numerous alternative institutional arrangements including: local/PennDOT cost sharing; the use of storm water management districts, storm water management authorities; PennDOT fee assessment; and local government fee assessment. Some of these alternatives could be implemented through policy changes while others would require legislation by the General Assembly.

Actions of the General Assembly

- To improve storm water management along state highways in Pennsylvania, the General Assembly will need to provide both funding and administrative authorization. Funding would be provided to PennDOT to meet their storm water maintenance and facility replacement needs. Additional funding would come from fee assessments that would also be authorized in new legislation.

- The General Assembly should enact legislation to enable the establishment of special purpose entities and to allow for the collection of appropriate fees to adequately maintain storm water facilities along state highways. Key attributes such as ease of fee collection, maintenance and administrative capabilities and other factors should be considered in establishing such entities.

- Administrative authorization would come from amendments to both the Municipal Authorities Act of 1945 that would specifically include storm water management as a purpose for authority activities. Act 167 the Storm Water Management Act should be amended to provide for special purpose entities or storm water management districts that could collect fees and provide maintenance and replacement of storm water management facilities.

- Which committees in the General Assembly should take the lead on these initiatives? The House Local Government Committee in 2001 undertook a study to examine PennDOT storm water maintenance practices in Boroughs of the Commonwealth. This report should be shared with the Local Government and Transportation Committees of the House and Senate for further consideration.

PENNSYLVANIA STATE TRANSPORTATION ADVISORY COMMITTEE

STORM WATER FACILITIES ON STATE HIGHWAYS

APPENDICES

FINAL REPORT

FEBRUARY 2007

Contents

Appendix A: PennDOT Circular Letters

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

No. RM93-04

CIRCULAR LETTER

SUBJECT	DATE
MAINTENANCE RESPONSIBILITY BY MUNICIPALITY	
EXPIRES None	**RESCINDS** RM91-05

TO: CENTRAL OFFICE
ENGINEERING DISTRICTS

The Department's responsibility for maintenance of a highway facility varies by type of municipality and is governed by the provisions of the law under which the individual highway was added to the State System.

The Office of Chief Counsel has prepared a reference chart which may be useful in evaluating individual tort claims against the Department. A copy of the chart is attached for your use.

This RM Letter is a reissuance of RM 91-05 which carried an expiration date of January 1, 1993.

Attachment

William R. Moyer, P.E.
Deputy Secretary
Highway Administration

-90 (4-74)

Type of Municipality	Areas and Facilities Maintained
	* Excludes inlets below grates and crosspipes unless PennDOT has assumed maintenance by agreement. * Excludes storm and sanitary sewers. * Maintenance beyond curblines only as required to maintain structural integrity of highway, such as slopes, walls, etc.
2. Act 615	Same as nonAct 615 highways * Exception: PennDOT enters into agreement assuming maintenance beyond curblines.
III. Townships	
A. Former 1-, 2-, 3-, and 4-Digit Legislative Routes	Entire area within right-of-way lines * Includes inlets and crosspipes. * Excludes storm and sanitary sewers. * Excludes curbing and sidewalks.
B. Former 5-Digit Legislative Routes	Area within curblines
1. NonAct 615	* On specific highways or sections, PennDOT may have assumed maintenance beyond curblines. * Includes inlet grates in roadway surface between curblines. * Includes drainage structures having total spanned length of 10 feet measured along centerline of highway. * Excludes inlets below grates and crosspipes except where PennDOT has assumed maintenance by agreement. * Excludes storm and sanitary sewers.
2. Act 615	Same as nonAct 615 highways * Exception: PennDOT enters into agreement assuming maintenance beyond curblines.

Type of Municipality	Areas and Facilities Maintained
IV. Counties	
1. Act 615 only	Area available to vehicular traffic, whether curbed or not. * Excludes guiderail and drainage facilities. * Exception: PennDOT enters into agreement assuming maintenance on guiderail or drainage facilities or outside areas available to vehicular traffic.
V. All Municipalities Interstate and Other Limited Access Highways	Entire area within right-of-way lines * Includes all drainage facilities that receive and carry water from roadway. (Excludes storm and sanitary sewers, which are rarely present in limited access rights-of-way.)

SUMMARY

A. PennDOT by statutory requirement maintains (1) entire width of right-of-way and (2) all drainage facilities except for storm and sanitary sewers on following highways:

1. Former 1-, 2-, 3-, 4-digit legislative routes in townships.
2. Interstate and other limited access highways in all municipalities.

B. PennDOT by discretion maintains, as a general rule, only (1) area within curblines (actual or projected) and (2) inlet grates in roadway surface on all other highways, unless it has by agreement assumed maintenance.

1. On inlets below grates and crosspipes.
2. On Act 615 highways only, on areas beyond curblines.

PENNDOT MAINTENANCE RESPONSIBILITY BY MUNICIPALITY

Type of Municipality	Areas and Facilities Maintained
I. Cities	
A. First-Class	Area within curblines
1. NonAct 615	* Includes inlet grates in roadway surface between curblines. * Excludes inlets below grates and crosspipes unless PennDOT has assumed maintenance by agreement. * Excludes storm and sanitary sewers.
2. Act 615	Same as nonAct 615 highways * Exception: PennDOT enters into agreement assuming maintenance beyond curblines.
B. Second, Second A and Third-Class	Area within curblines
1. NonAct 615	* Includes inlet grates in roadway surface between curblines. * Excludes inlets below grates and crosspipes unless PennDOT has assumed maintenance by agreement. * Excludes storm and sanitary sewers. * Maintenance beyond curblines only as required to maintain structural integrity of highway, such as slopes, walls, etc.
2. Act 615	Same as nonAct 615 highways * Exception: PennDOT enters into agreement assuming maintenance beyond curblines.
II. Boroughs	
1. NonAct 615	Area with curblines * Includes inlet grates in roadway surface between curblines.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

No. E-2211

CIRCULAR LETTER

SUBJECT	DATE
Department Responsibility Beyond Curblines	June 27, 1988
EXPIRES: N/A	RESCINDS: E-2205

TO:

CENTRAL OFFICE
ENGINEERING DISTRICTS
MAINTENANCE DISTRICTS

PURPOSE

To reissue the policy of the Bureau of Maintenance and Operations with regard to legal responsibility for maintenance beyond curblines.

POLICY

A. Highways in First-Class Cities

On non-Act 615 highways Department of Transportation normally will not perform any maintenance beyond the face of curb. However, in its discretion Department may perform maintenance beyond the face of curb on non-Act 615 highways. On Act 615 highways Department of Transportation may not perform any maintenance beyond the face of curb, unless it has entered into an agreement assuming such maintenance. (However, for both categories of highways P.U.C. may order such maintenance on bridges and approaches under its jurisdiction).

B. County Highways Taken over by Act 615 of 1961

Department of Transportation may not perform any maintenance (1) beyond portions available to vehicular traffic or (2) upon guiderail and drainage facilities, unless it has entered into an agreement assuming such maintenance.

C. Highways in Boroughs, Incorporated Towns and Cities Other than First Class

Department of Transportation will not perform any maintenance beyond curblines except as required to maintain the structural integrity of the highway, such as slopes, walls, etc., unless, with respect to Act 615 highways only, Department has entered into an agreement assuming such maintenance.

Where some properties are curbed and others are not, the curbline can be projected on the uncurbed properties.

If there are no existing curblines, the Secretary can indicate on a plan of public record the width of the street or highway Department will maintain.

D. Highways Formerly Designated with Five-Digit L.R. Numbers in Townships

Department of Transportation may perform maintenance beyond curblines. Where the Department has not assumed responsibility to perform such maintenance, townships may do so. (For former L.R. designations, consult S.R./L.R. conversion tables and county maps.)

E. Highways Formerly Designated with One-, Two-, Three- or Four-Digit L.R. Numbers in Townships

Department of Transportation will perform maintenance beyond curblines. (For former L.R. designations, consult S.R./L.R. conversion tables and county maps.)

BASIS

This policy is based on the letter of the Chief Counsel dated May 20, 1988, which is attached.

Howard Yerusalim

Howard Yerusalim, P.E.
Secretary of Transportation

Attachment

Appendix B: PennDOT Polices and Perspectives, Municipal Practices and Perspectives, Other Storm Water Maintenance and Regulatory Practices in Pennsylvania

Management and Maintenance Operations of Pennsylvania Storm Water Facilities

Storm Water Maintenance Responsibilities

PennDOT Policies and Perspectives

Upon interviewing engineers from several PennDOT Districts as well as municipalities throughout Pennsylvania, the general consensus appears to be that the responsibilities for storm water facility maintenance currently outlined in PennDOT's policies, regulations, and manuals are not being consistently applied to local governments. Generally PennDOT requires municipalities to maintain storm water facilities on state highways within their jurisdictional boundaries. The intent of PennDOT's 1993 maintenance policies (see Chapter 3) was to equally apply these responsibilities to all levels of municipalities. However, these interviews revealed a need to clarify existing policy in order to equally apply these responsibilities.

Within Pennsylvania, numerous townships as well as a handful of cities and boroughs are not following PennDOT's current policy that requires municipalities to perform maintenance along state highways when connections have been made from the highway storm drainage system into municipal drainage systems. Reasons stated for lack of maintenance activity include inadequate funding, legal issues, and high turnover of municipal staff. Municipalities, particularly townships, are claiming that the PennDOT policy that requires all municipalities, regardless of class or governmental unit, to take responsibility for facilities along state highways is an unfunded mandate.

PennDOT does not actively monitor storm water maintenance activities within municipal boundaries. However, if PennDOT District staff is notified of maintenance needs along state or city roads, county managers are then instructed to notify municipal staff responsible for the maintenance so the municipality can perform the work. PennDOT will perform the needed maintenance when there is an immediate safety or flood hazard concern.

Overall, the current system for storm water facility maintenance is working effectively in cities and boroughs. However, the division of responsibilities between the Commonwealth and municipalities often becomes unclear if the division is not defined initially during the municipal permitting process for private properties along a state route. Currently, storm water maintenance responsibilities are outlined for the record when Highway Occupancy Permits are issued to developers to ensure that maintenance responsibilities are passed on to successive property owners.

Several PennDOT districts have begun to clarify storm water maintenance policies to improve communication and reduce confusion:

PennDOT District 11-0 (Pittsburgh)

According to District 11, current PennDOT policies and legislation related to storm water management requires clarification. In District 11-0, the Maintenance Operations Engineer is a current member of a State Task Force assigned with revising the PennDOT Maintenance Manual and will be involved in clarifying the existing language within these policies. One recommendation of the Task Force is to refine the definitions of the types of storm water and storm sewer systems that each party (including the Commonwealth and municipality) is responsible for maintaining. District 11 noted that there can be some confusion as to what is considered an open or closed system, which has an impact over who is assigned maintenance operations.

PennDOT District 3-0 (Montoursville)

In clarifying responsibilities, PennDOT District 3-0 has expanded on the Department's state-wide policy by developing its own "Curb, Sidewalk, and Parallel Storm Sewer Policy," released in January 2006. This policy outlines funding and maintenance responsibilities of the state and local governments for both separate and combined storm sewer facilities.

PennDOT District 5-0 (Allentown)

In addition to the need to clarify policy, PennDOT District 5-0 noted the need for ensuring follow-through with municipalities on maintaining storm water facilities. Thus, despite programmatic documentation of storm water problems, there is often no accountability for fixing existing problems. District 5-0 currently maintains approximately 2,000-3,000 ditches, swales, and other non-pipe storm water facilities, mostly in rural areas. Within these rural, low-density areas, it is often difficult to provide constant oversight of each storm water facility. For instance, when illicit discharges are reported as required by municipal separate storm sewer systems (MS4) permitting and notification is made to the relevant municipality for further processing, the District 5-0 Office notes that it has often experienced an inadequate response from the townships in managing clean-up.

In District 5-0, an additional maintenance hurdle involves obtaining the required environmental clearances from several agencies to construct storm water facilities. Approximately 75% of the 2,000-3,000 ditches and swales in District 5-0 require some form of environmental clearance due to the presence of wetlands or threatened species.

While District 5-0 generally appears satisfied with the existing maintenance system, it was suggested that maintenance divisions should have more input into best management practice construction and implementation. This would avoid future maintenance difficulties such as when other PennDOT divisions fence off storm water management areas that require maintenance, thereby limiting the functioning of the area as a mitigation tool.

Municipal Practices and Perspectives

To better understand how municipalities are following PennDOT policy, several municipalities from all classes of government were contacted.

City of Allentown, Lehigh County (PennDOT District 5-0)

The City of Allentown, a Third Class City with a population of 106,632, reported a similar operational arrangement with PennDOT to the one underway in West Chester. Within city limits, the City of Allentown maintains almost all storm water facilities, including inlets and outfalls, swales. Some of these facilities are located on state roads and highways. However, unlike West Chester, there are several state highways, such as Interstate 78, on which the City does not maintain any storm water facilities. Allentown reported that for certain storm water facilities along state highways it is easier for the City to maintain these facilities than to have PennDOT complete the maintenance on an alternate timetable. There are no known agreements between Allentown and PennDOT, though officials from both were interested in the possibility of formalizing some agreement that may improve storm water maintenance in the City.

The City reported no issues with maintenance and did not indicate that county inclusion was necessary, though they also were amenable to any help that outside agencies could provide. In particular, it was mentioned that any PennDOT assistance provided prior to an anticipated large storm would allow the City to ensure that all storm water management facilities were clear and fully operational, thus reducing adverse outcomes associated with large storms.

Ferguson Township, Centre County (PennDOT District 2-0)

Ferguson Township (population 14,063) is a Township of the Second Class, located down stream from Patton Township, and has been more susceptible to storm water management problems. Nonetheless, Ferguson Township's informal policy on maintenance is very similar to that of Patton Township. The Township performs routine maintenance on local roads, but not along PennDOT roads. This policy is in place despite acknowledged storm water problems on State Route 3014 (Atherton Street), where storm water runs over a culvert onto the street during large storms. This position further reemphasizes the extent to which townships of the second class are dissatisfied with current maintenance requirements.

City of Hermitage, Mercer County (PennDOT District 1-0)

Hermitage, is a home rule municipality encompassing 30 square miles with a population of 16,157, struggles to maintain storm water facilities throughout the city. As a result, maintenance on state highways is particularly limited. There are 30-40 miles of state roads in the city, and a large array of structural storm water management tools in use. The City prioritizes local roads, and does sporadic work on highways and state roads on a case-by-case basis. However, a local official noted that PennDOT has occasionally done some storm water maintenance while working on other aspects of state roads. The official acknowledged that occasional maintenance, and the disparity between ownership and maintenance, constitutes a mixed message from PennDOT. Additionally, it was mentioned that Hermitage struggled with storm water maintenance despite being one of the wealthier communities in Mercer County. Less affluent municipalities were also believed to struggle to provide maintenance service, suggesting that the lack of proper maintenance could be county-wide.

Lower Paxton Township, Dauphin County (PennDOT District 8-0)

Lower Paxton Township is a Township of the Second Class with a population of 44,424, according to the 2000 U.S. Census. State routes are extensive throughout this municipality, and the Township is responsible for maintaining approximately 187 miles of municipal roads.

Since the Township is not rural and covers approximately 29 square miles, it has the capability and resources to perform maintenance along state highways and does so when problems arise on drainage inlets. Within the Township, PennDOT performs maintenance along state highways for storm drainage structures only. PennDOT and the Township operate on a case by case basis to determine who is responsible for maintenance on other storm water facilities. It was noted that this system is generally working, though there is still room for improvement.

Lower Paxton Township officials suggested that with the gradual implementation of U.S. EPA's National Pollutant Discharge Elimination System (NPDES) Phase II program and associated permitting requirements for municipal separate storm sewer systems (MS4), storm water maintenance issues between PennDOT and the Township could potentially be resolved over time through the six minimum requirements outlined for the NPDES program.

Montoursville Borough, Lycoming County (PennDOT District 3-0)

The Borough of Montoursville (Pop. 4,777) is currently performing maintenance along state highways when time and funding permits. Within its boundaries, the Borough has approximately four miles of state highways which are difficult to maintain given the Borough's limited equipment and funding resources. The Borough's Streets Department staff is aware that several townships are not performing the same activities and note that this creates a disproportionate burden for those municipalities who are funding these efforts out of their own budget.

Patton Township, Centre County (PennDOT District 2-0)

Patton Township (population 11,420) is a Township of the Second Class in Centre County in the headwaters of the watershed. Patton Township performs routine maintenance on local roads, but not on state roads. Township officials reiterated the common stance that the Township should not be responsible for maintenance. However, the Township does limited maintenance on a periodic basis, whenever it is easy or convenient. The Township would also do any maintenance in anticipation of major storms or other large events, but have yet to need to take such actions. In effect, storm water systems along state roads are maintained only when convenient.

Officials who were interviewed were amenable to management arrangements between PennDOT and the Township that would improve storm water maintenance on state roads and highways, but cautioned that presently there is no funding mechanism that would be acceptable to Township officials.

Upper Merion Township, Montgomery County (PennDOT District 6-0)

Upper Merion Township, a Township of the Second Class with a population of approximately 27,000, has a public works department that is responsible for storm water facilities on city roads. The Township is not maintaining storm water facilities along state highways that are separate from the municipality's combined sewer system, though it will perform maintenance along the 35 miles of state highways when such work is requested.

West Chester Borough, Chester County (PennDOT District 6-0)

West Chester Borough is a largely built-out municipality with a population of 17,861. There is no non-pipe storm water management infrastructure as a result of the build out. The Borough maintains all 980 inlets, 55 outfalls, and storm water pipes within Borough limits as part of their MS4 permit, including all storm water maintenance that occurs on State Highway 322. West Chester Borough maintains storm water facilities on state highways through an "Agility Agreement" with PennDOT whereby West Chester agrees to maintain storm water facilities in exchange for PennDOT performing crack sealing services on locally-owned roads. While this clause is rarely used by the Borough, officials interviewed were content with the arrangement.

The relationship between West Chester and PennDOT is viewed as extremely positive by the Borough, and no changes to the current arrangement were suggested or requested. According to the Borough, however, there is concern about new state-mandated Total Maximum Daily Load (TMDL) requirements and any financial burden for state roadway maintenance this may place on the Borough in the future.

Borough of West View, Allegheny County (PennDOT District 11-0)

The Borough of West View (population 7,762) is not performing maintenance of storm water facilities of any kind along state highways and is currently in conflict with PennDOT over maintenance issues. The Borough does not currently have funding set aside in its budget for maintenance along state highways, though it is currently working with the Council of Governments and other municipalities to resolve this issue. According to the Borough, it is important that PennDOT clarify the legislation in order to outline responsibilities between the Department of Transportation and the municipalities.

City of Williamsport, Lycoming County (PennDOT District 3-0)

The City of Williamsport is a 3rd Class city with a population of 30,706, according to the 2000 U.S. Census. PennDOT maintains cross pipes and inlets along the state highways within the city limits. The City is satisfied with the division of responsibilities between PennDOT and the City. Maintenance activities performed by the City on municipal streets include street sweeping and catch basin cleaning.

Other Storm Water Maintenance and Regulatory Practices in Pennsylvania

There are a number of entities in Pennsylvania, including storm water authorities and the Pennsylvania Turnpike Commission, that maintain storm water facilities. Recently, municipal water and sewer authorities have begun to integrate storm water maintenance into their operating practices. To date, two such authorities exist, the Coraopolis Municipal Authority (CMA) and the Sunbury Municipal Authority.

Storm Water Authorities

The need to fund storm water maintenance has led some municipalities to create storm water authorities, also known as storm water utilities. Storm water utilities are public entities that create, monitor, and maintain storm water facilities in an area and charge users fees for those services. Instead of relying on a general tax fund or non-guaranteed funding source, utilities create their own funding, ensuring that storm water management will be adequately funded.

The storm water authority is a fairly new innovation, the first of which were created in Colorado and Washington State in the 1970's. Only a handful of states had implemented them a decade later. But during the 1990's, prompted by increased public interest in water resource protection and stricter new regulations such as NPDES permitting, a boom occurred. A 1994 EPA report estimated there were over 100 storm water utilities in the country, and more recent estimates place the current figure at over 400.[1] Pennsylvania has only recently passed enabling legislation allowing municipalities to consider the use of such an authority, led by the cities of Sunbury and Coraopolis

Coraopolis Municipal Authority (CMA)

The CMA became a fully operating authority in January 2005, and while it is still in its infancy and is embarking on the process of developing long-term control programs, the Authority has begun planning for as much as $20 million in future infrastructure improvements.

Officials at CMA have already identified several advantages to these innovative integrated water authorities. Primary among these is that infrastructure improvements, which can often be costly, are free from politicized decision making. Without a municipal storm water authority, the municipality itself would have to raise revenue for infrastructure improvements, usually resulting in increased taxes. Additionally, municipalities may borrow only up to 2.5 times annual revenue, which in the case of Coraopolis falls short of projected storm water infrastructure improvement costs. A municipal storm water authority, on the other hand, has the ability to charge rates for the provision of services and borrow money based on that ability, greatly increasing borrowing power. The result is a process through which improvements can be made without altering the municipal budget. It is also anticipated that funds for the CMA can be raised through PENNVEST and other grant and low-interest loan programs.

[1] Kaspersen, J. The Storm water Utility: Will It Work In Your Community? www.forester.net

City of Sunbury Municipal Authority

The City of Sunbury Municipal Authority has also recently incorporated storm water into its traditional water and sewer authority structure. Sunbury is protected by a floodwall and dike system, whereby most of the City's storm water equipment, such as gates and pumps, is used to convey water out of the city. To date, storm water maintenance is not broken out as part of the fees paid by users, but is instead absorbed as part of the general cost of service. However, the City of Sunbury has begun initial internal discussions about the possibility of creating new user fees, or tapping fees, for new development that must tap into the storm water system. These fees would be a major innovation and step forward in funding storm water management in Pennsylvania.

In general, both of these innovative integrated authorities perceive storm water as integral to the water and sewer system and combining it with these two services is envisioned to be both practical and cost-effective. These authorities have noted, however, that it is important to engage the community to explain the process and justify the rate increases that accompany infrastructure increases.

Pennsylvania Turnpike Commission

The Pennsylvania Turnpike Commission has storm water maintenance issues similar to those of the Pennsylvania Department of Transportation. While the Commission is working to improve its storm water management capabilities, much of the management system is applicable to PennDOT.

The Turnpike Commission primarily utilizes piped storm water systems, with occasional detention basins in select areas. The Turnpike Commission has been active in recent years in working to connect Turnpike storm water systems to those of the municipalities through which the Turnpike has right-of-way. As of this year, the Turnpike's storm water systems have been connected to targeted municipalities.

Agility Agreements

Agility Agreements are contracts between PennDOT and municipalities that provide the legal authority for in-kind services for a period of five years[2]. An authorized Agility Agreement allows the parties to create a work plan, which is the actual document used to determine who will do what for whom. No money can change hands as part of the Agility Agreement or work plan, but rather includes a list of services provided by PennDOT detailing what municipalities can do, and a list of services detailing what PennDOT can provide in kind. Among those services eligible for municipalities are several maintenance activities relevant to storm water:

- Inlet, endwall or basin cleaning
- Ditch or drain channel cleaning
- Swale cleaning

[2] Agility Center, 'Completing the Agility Agreement FAQ';
http://www.dot.state.pa.us/Internet/Bureaus/pdAgility.nsf/infoAgilityCenterFAQ

- Pipe and culvert cleaning
- Replacing inlets and endwalls
- Repairing or replacing pipe and culvert

All of these actions are appropriate storm water maintenance activities. West Chester Borough in Chester County uses a work plan where municipal inlet cleaning and snow removal are provided over a four year period in exchange for a one-time crack sealing service. Interestingly, the services provided by West Chester are valued at $20,873.35, while services provided to them are valued at $12,028.77.

There are several advantages to the use of Agility Agreements for improved storm water maintenance on state roads and highways:

- **Maintenance is most effectively handled locally.** Given the large number of state road and highway miles, it is impractical for PennDOT to provide service themselves. Agility Agreements would keep maintenance on a local level.
- **Municipalities receive a benefit, but no money changes hands.** Agility Agreements provide municipalities an opportunity to receive some benefit for maintenance without requiring PennDOT to create a new source of funding. While there is a cost assumed with doing in-kind services, PennDOT can use discretion the types and dollar value of services provided. For example, PennDOT could provide crack sealing services to multiple municipalities on one day as part of separate agility agreements, minimizing time and labor costs associated with service provision. Additionally, PennDOT could enter into a work plan where only services above and beyond routine maintenance, such as cleanup before a major storm, or installation of innovative BMPs are offered. In this manner, there is incentive to improve maintenance beyond minimum requirements.
- **Each work plan can be uniquely tailored to maximize efficiency and efficacy of maintenance.** Some interviewed municipalities had significant capacity to perform storm water maintenance on state roads, while others were not able to maintain local roads sufficiently, let alone state roads. Work plans that are sensitive to current municipal conditions provide flexibility that is non-existent in current maintenance policy to the detriment of storm water systems. County office agility coordinators are responsible for the negotiation of appropriate work plans, rather than regional coordinators or the Agility Center in the Central Office. These officials can more easily negotiate work plans that fit a municipality's needs and capabilities.
- **Agility Agreements can involve multiple municipalities.** Multi-municipal agreements provide further flexibility for storm water maintenance. For example, if one community is more capable of providing maintenance than another, the more capable municipality could serve both municipalities and receive in-kind services from PennDOT equal to the additional effort. This would increase maintenance efficacy without requiring ill-equipped communities to do the work themselves.

- **Agility Agreements can be implemented without major changes to current PennDOT maintenance policy.** Agility Agreements are already well established throughout the state, with nearly all interviewed municipalities using or at least aware of them. By changing current maintenance policy to require municipalities to maintain state roads within their borders, but allowing them to initiate Agility Agreements with County offices, the onus of responsibility still lies with the municipality while allowing them an incentive to do the work.

Creating appropriate work plans: The most commonly stated difficulty with Agility Agreements centers around the need to create work plans where the services exchanged are of a value agreeable to both parties. The municipality is responsible for determining the price of provided services, through either a cost basis method, from contractor rates, or from the market value of the service. To allay some of the pricing difficulties faced in the past, several sources have been used for determining maintenance costs. Each source is accompanied by an evaluation of its suitability to municipalities:

- The most reliable source for maintenance rates come from the work plan already in place in West Chester Borough. The Borough used a unit price of $14.99 for inlet cleaning in 2003 and 2004, determining the full cost of cleaning by multiplying unit price by number of units.
    - Suitability: Any municipality with a piped inlet/outfall system.
- Delaware Department of Natural Resources says that routine maintenance costs in residential areas, which usually consist of cleaning inlets and mowing swales, filter strips, and other vegetated materials, costs about $100 per acre, while more intensive maintenance is approximately $500.
    - Suitability: Rural and suburban areas, where there is a wider array of management tools in place along state roads, and large areas need to be maintained instead of discrete point sources such as inlets.
- Annual maintenance costs for an average 10-acre watershed in North Carolina were listed as $4,411 for wet ponds, $752 for wetlands, and $583 for bioretention areas. Bioretention maintenance is typically similar to the cost of normal landscaping maintenance, and generally has the lowest maintenance cost of vegetated BMPs.
    - Suitability: Rural situations where the state road is the major pervious surface.
- In New York City, catch basin cleaning costs are about $170 per inlet, and inspection costs are about $45 per inlet.
    - Suitability: Highly urban areas where maintenance costs are higher, such as Philadelphia or Pittsburgh.
- A report by the US Environmental Protection Agency evaluated the costs of street cleaning for six urban areas. The total cost for street cleaning in this report is derived by calculating two variables; number of miles swept, and the time taken to sweep. Their findings were summarized in the following table.

	Nationwide Urban Runoff Program Studies						
	Milwaukee, Wisconsin	Winston-Salem, Forsyth County, North Carolina	San Francisco Bay area, California	Champaign, Illinois	San Jose, California (Pitt, 1979)	City of Milwaukee (1988)	Mean of all studies
$/curb-mile swept	25	17.9	12.9-19.4	14.3-18	27.2	25	21.2
$/hour of sweeping operation	36	21.8-46.6	NA	NA	29.7	NA	33.3

- Suitability: This can be used throughout the state, though the six communities in the study are all urban, and costs may therefore be higher here than in rural areas.

Summary

Agility Agreements may be an appropriate compromise on the current impasse between PennDOT and townships of the second class. Agility Agreements offer municipalities the possibility of gaining some benefit from doing maintenance, but they can be tailored to minimize work for PennDOT. They are also flexible, so they can be used in communities with varying degrees of maintenance capacity. Work plans focused on storm water maintenance have been created in the past, so they could easily be introduced to a larger audience. And there are several sources for determining maintenance costs, which may help allay difficulties in creating mutually agreeable contracts.

Appendix C: Storm Water Facility Management in Other States

With over 2,565 local municipalities in Pennsylvania, few state Departments of Transportation have to work with as many local governments as the Commonwealth in relation to storm water management. However, how other states approach storm water management on state highways can still be useful to the Commonwealth as it reconsiders its current policies.

Maryland State Highway Administration Storm Water Management

Maryland's local government consists of 157 municipalities and 24 counties. The Maryland State Highway Administration (SHA) is one of the nation's leaders in environmental permitting and storm water compliance issues. Maryland SHA maintains storm water facilities along all state highways, regardless of whether or not the roadway enters a local municipality. Under SHA's NPDES program, the Storm water Management Facilities Program was created to facilitate compliance with NPDES permit requirements and to assist with the maintenance requirements of hundreds of miles of storm drain systems and over 2,000 storm water management facilities. This program involves detailed inventories, facility condition assessments, and characterization of facilities based on their original intent and function. Facilities are rated based on their performance and are prioritized to determine the need for maintenance, repair, or rehabilitation.

When access to a state highway storm water system is required by a private or local government's development and the project will be contributing storm water flow into the state highway storm water facility and drainage system, Maryland SHA charges a flat collection fee of $30,000 to the property owner. Following construction, the SHA continues performing maintenance on its highway facilities collecting runoff from the development.

New Jersey's Statewide Storm Water Administration

In New Jersey, a potentially useful model for the administration of State storm water and smart growth goals and requirements has been adopted that divides its 566 municipalities into two tiers: Tier A municipalities are generally located within the more densely populated regions of the state or along or near the coast; Tier B municipalities are generally more rural and in non-coastal regions. Such a system may be applicable to Pennsylvania and could potentially be adapted to the state's existing hierarchy of cities, boroughs, and townships; however, as a township can be larger or smaller in size and population than a borough or city, the distinction of a municipality's class or assigned unit may not be an ideal method for assigning responsibilities. Townships are designated as first class if the population density is greater than 300 people per square mile. Second class townships are the most common form of government in Pennsylvania, totaling approximately 1,450 townships. Many of these meet the density requirements to become first class townships but choose to stay as a second class municipality. Therefore, tiering may be applicable to Pennsylvania by delegating storm water maintenance responsibilities on the basis of population density instead of by type of governmental unit.

North Carolina DOT's Design Guidelines

In North Carolina, the state Department of Transportation in 2000 approved and published Traditional Neighborhood Development (TND) design guidelines to simplify street design for local governments. These guidelines, which are described in the U.S. EPA publication, *Using Smart Growth Techniques as Storm Water Best Management Practices*, recommend smart growth tools, such as cluster zoning and bio-swales, to minimize impervious surface and thereby mitigate storm water runoff. PennDOT may be able to work with local or state governments to reduce storm water runoff by encouraging the use of similar TND strategies as well as Context Sensitive Design elements.

Pennsylvania DEP's Storm Water BMP Manual

The Pennsylvania Department of Environmental Protection (DEP)'s *Storm water Best Management Practices Manual* (Draft) describes several case studies in the Commonwealth where BMPs have worked effectively to reduce storm water runoff. The Manual describes numerous examples that showcase infiltration trenches used throughout the Commonwealth, including a single-family development in London Grove Township. At the time the development was constructed 15 years ago, London Grove Township was one of the few municipalities in Chester County to require that pre-development storm water runoff volumes remain unchanged post-development for a two-year storm event. Such trenches are applicable to sites where a large storm water detention or retention basin would typically be used and where low amounts of contaminants are present in runoff as the trench system has limited pollutant removal capabilities. Detention and retention basins are BMPs usually implemented to reduce rate and volume of runoff where grassed swales, filter strips and bioretention, catch basin inserts, filters, manufactured treatment units and maintenance measures such as street sweeping and vacuuming are options that may be implemented to address water quality or runoff. Implementing BMPs that do not require a connection to an existing storm sewer system and treat storm water runoff on-site to maintain pre-construction runoff rates would reduce the need for maintenance associated with structures receiving storm water discharge from multiple sites.

New York State DOT's Highway Design Manual

New York State Department of Transportation (NYSDOT) has implemented an approach to storm water runoff outlined in Chapter 8 of its Highway Design Manual that is similar to that described above in the Pennsylvania DEP's BMP Manual PennDOT's Maintenance Manual[3]. Under this policy, NYSDOT is responsible for all existing storm water flow across and along the state highway right-of-way; however, several exceptions exist throughout the state where storm water management agreements between municipalities and the state have been implemented. If a new development adds impervious surface to the drainage area being conveyed to state-owned drainage structures, the DOT highway work permit process and the municipality's site plan approval process will ensure that no increases in flow occur from the new development. If increases in storm water flow do occur, the developer is responsible for the cost of any alterations to the downstream drainage system necessary to accommodate the increased flow.

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[3] Pennsylvania Department of Transportation, Bureau of Maintenance and Operations. 2004. *Maintenance Manual* (Publication 23).

NYSDOT has also developed a cost-sharing method for situations in which a municipality is collecting storm water and contributing to storm water flow within the state highway drainage system. The methods used to calculate state versus municipal shares is classified based on whether funding is provided from the state or federal level. Formulas are then used for calculating the state vs. municipality cost allocation's of the proposed drainage system. A similar method could also be applied to assigning maintenance responsibilities once the drainage system has been constructed.

Florida Department of Transportation

FDOT avoids taking discharges from others. If they take in the water, they must treat it. Occasionally may combine flows from "mom and pop" retail site, but generally avoids it. FDOT generally responsible for building facilities, then they try to "give them away" through transfer of property with the storm water management facilities to the local government.

Florida has regional regulatory Water Management Districts (WMDs) authorized by Florida Department of Environmental Protection and independent, privately operated and managed, WMDs which are holdovers from historic irrigation / water supply districts. The independent WMDs maintain important flood protection roles and still manage water flows for irrigation (back-pumping in winter during growing season). They were established by their own legal authorities and are taxing districts. FDOT does use MOUs with the regulatory WMDs to outline who will pay for what.

FDOT's approach is to "give away" the storm water too. They look for adjacent users who may need water, such as golf courses, and try to strike arrangements to locate storm water ponds in those areas. FDOT goes out of their way to develop a storm water management site in a way that will be appealing to a potential jurisdiction; e.g. has created park spaces in order to incorporate SW ponds in a usable property for recreation. FDOT usually pays for construction of storm water management facilities as part of road construction costs. Maintenance costs are paid for using state funds and budgeted/carried out by the FDOT districts. WMDs –both regulatory and private - are taxing districts and can cover storm water management costs via taxing. There is no special funding stream for FDOT's storm water management maintenance. Agreements for construction, land transfer and ultimate storm water management maintenance may be between FDOT and private sectors.

Very few local jurisdictions fail to maintain their SW facilities – in fact they generally do a much better job than FDOT. By FDOT's standard agreement, if locals fail to maintain facilities, the state has the right to enter to maintain them and then bill the jurisdiction.

Minnesota Department of Transportation

Minnesota is similarly structured to Pennsylvania in that the state is composed of approximately 2,650 municipalities. Minnesota Department of Transportation (Mn/DOT) is responsible for the majority of storm water maintenance within the metropolitan area of Minneapolis-St.Paul, an eight-county region referred to as Mn/DOT Metro District. Exceptions to this general rule involve agreements with municipalities under the Cost Participation Policy in specific locations for cost sharing of maintenance activities for storm water features within Mn/DOT's right-of-way; however, the work is predominantly performed by Mn/DOT. These agreements assign maintenance duties based on the amount

of contributing flow to the system. Within the surrounding rural areas outside the Metro District, more responsibility is placed on the municipalities for maintenance activities.

Other State Storm Water Management Practices

In general, states in the northeastern region of the U.S. (i.e. Massachusetts, Virginia, and New Jersey) tend to assign maintenance duties to the state Department of Transportation for storm water facilities along state highways; however, several states include language in their policies and regulations to specify actions that would be taken if municipal development activities led to increased runoff on state highways that resulted in greater costs of maintenance or diminishment in public safety.

Appendix D: Innovative Best Management Practices

Structural BMPs

Traditional structural BMPs such as detention ponds, infiltration basins, and retention ponds are used throughout Pennsylvania, and are often reported by maintenance officials to be effective. Traditional BMPs are considered to be most effective for roads and highways include vegetated swales with at least a 2-to-1 length to width ratio; dry detention ponds with small but highly impervious drainage areas; and wet ponds or similar retention measures.

In addition to these traditional structural BMPs, a series of innovative Best Management Practices have been designed in recent years, some of which have been identified as particularly desirable by maintenance engineers and storm water management experts.

One method in particular is the use of specially designed and eco-friendly "outfall mats." Adverse water velocity, pollutant load, and temperature are all considered as negative consequences of roadway surfacing. In order to slow velocity and increase infiltration of suspended solids at outfalls, alternative methods to the conventional rock-lined "rip rap" system have been created that use a porous plastic mat through which natural greenery can grow. These mats, placed at any outfall point, are designed to reduce velocity more effectively than the conventional rip rap system. The natural growth of vegetation through the mat also improves infiltration and sedimentation of suspended solids. The mats are particularly effective along roadways whose storm water empties into nearby water bodies. The Delaware River, for instance, which is mirrored by Pennsylvania state roads along much of its length, is likely to have significant storm water management impacts caused by the velocity, temperature, and pollutant load of storm water from adjacent roadways. The use of these outfall mats (termed ScourStop Transitional Mat by one manufacturer of the same name) may reduce velocity and pollutant loads while requiring little change to existing storm water facilities. Because the mats promote natural vegetation, they have the additional benefit of easier maintenance and longer lifetimes than traditional rock lined rip raps. However, the purchase price of the mat and any accessory components is higher than these traditional systems.

Another structural BMP that is currently being applied with success by the Pennsylvania Turnpike Commission at three locations is a specially designed inlet that uses vertical aluminum panels to remove sediment. These inlets have been highly successful in sediment removal and filtration, and are also NPDES approved but do not require separate NPDES permits. The only downside to this product is that it requires more cleaning than traditional inlets.

Non-Structural BMPs

Non-structural BMPs are policies, initiatives, and strategies through which storm water impacts can be minimized. A major non-structural BMP that deserves PennDOT consideration involves incorporating storm water mitigation techniques and methods into the roadway design process. It must be cautioned, however, that storm water mitigation may run counter to other design concerns. For instance, a recommendation for tree planting designed to reduce sediment load may be discounted due to sight distance concerns and the risk of creating a safety hazard. Instead of attempting to find post-construction storm water solutions, PennDOT could include new storm water management requirements in the highway design manuals that are followed as part of the design process. Design approval would be contingent upon satisfying storm water management criteria, just as approval is contingent upon satisfying safety criteria. In this manner, storm watermanagement would be incorporated into the design process at the earliest stages, making effective and safe storm water management possible.

This BMP could be initiated through the creation of a toolkit for design engineers that would present appropriate mitigation solutions that are harmonious with all requirements of highway design. This toolkit ideally would be developed by PennDOT highway design professionals, in association with storm water experts from agencies such as Pennsylvania Department of Environmental Protection. Such toolkits already exist around the country and could be used as a starting point for storm water mitigation efforts in Pennsylvania. The Federal Highway Administration's *Retention, Detention, and Overland Flow for Pollutant Removal from Highway Storm water Runoff* provides guidelines for the design of management measures for highway storm water runoff, including vegetative controls.

Smart Growth Techniques to Enhance Storm Water Management

At the forefront of recent trends in non-structural BMP implementation are those that fall under the umbrella of smart growth. Smart growth policies promote compact, organized development as opposed to sprawling and environmentally insensitive development patterns. There is considerable literature on applying smart growth policies to improve storm water management. Those policies most often cited include cluster zoning, which promotes pockets of intensified development surrounded by undeveloped land as opposed to low-density development spread over a larger area; transfer of development rights (TDR), where development rights in environmentally sensitive or important areas are transferred to an area more suited to development, thereby limiting development in sensitive areas without depriving landowners of development opportunity; and conservation easements, which are created through donation of future development rights by current landowners.

These policies can have major benefits for storm water management; however, they generally are applied by municipalities. While PennDOT may have significant influence with municipal decision makers, the decision to apply these techniques resides outside of PennDOT. Therefore, recommendations in this report will focus on those techniques over which PennDOT has direct control.

"Fix It First" Infrastructure Policies

Another smart growth-related BMP includes "Fix It First" infrastructure policies. These policies place emphasis on the repair of existing, over installation of new, infrastructure. In particular, this policy encourages limiting new road construction. Construction of new roads in rural and suburban areas can counteract smart growth efforts, particularly when appropriate land use controls around roadways are not put in place by the local municipality. Evidence from a wide range of sources suggests that the construction of new roads induces demand for new commercial and residential development as well as for more travel. The storm water impacts from induced development are wide ranging as the added impervious surface contributes to increased flood risk and added vehicle miles increase pollutants associated with driving.

Storm water impacts from induced development are substantial, but equally substantial are the impacts caused simply by the presence of the road. It has long been understood that roads contribute a large percentage of runoff volumes. Source area runoff from roads contributes 54% of total runoff in residential areas, and 80% of total runoff in commercial areas. Additionally, streets account for 80% of suspended solids in residential runoff, and 68% in commercial areas. Recent research further illuminates the storm water impacts from new roadway infrastructure.

One study in particular (Rogers and DeFee, 2005) found that a high ratio of new roads to new development is a stronger indicator of flood risk than impervious surface levels. In other words, the mere presence of roads in areas with limited development is a significant contributor to storm water management issues, regardless of any future development that results from its construction. These findings suggest that limiting development of new roads, particularly in rural and suburban settings, is itself a best storm water management practice, and one that is consistent with the principles of smart growth.

Other Smart Growth Techniques to Enhance Storm Water Management

Several additional recommendations, many of which can be implemented by PennDOT alone, and all of which are consistent with proven best management practice, are presented below:

1. Emphasize routine roadway maintenance as a means to reduce storm water impacts. Repaving of streets can reduce pollutant loads, particularly of suspended solids. Street sweeping helps prevent clogs in storm water inlets and outlets, improving efficacy of existing storm water maintenance facilities.
2. Utilize Smart Growth Toolkits for municipalities to reduce development along state roads and highways, particularly in rural areas.
3. Improve coordination with the Pennsylvania DEP and the Federal Highway Administration, both of whom have extensive experience in storm water management along highways.
4. Consider / implement line-item funding for storm water projects along existing roadways, both state- and locally-owned.

5. Implement Low Impact Development (LID).
6. Encourage the creation of municipal storm water authorities.

General Recommendations / Potential Applications

Since not all municipalities may be receiving regular updates on policy changes, PennDOT should consider communicating its changes in policies and regulations to municipalities more effectively. Vehicles through which this may be implemented include the existing PennDOT Local Technical Assistance Program or the Municipal Services Unit of each DOT district. The need to create a new storm water management partnership between PennDOT and another government entity other than municipalities is not deemed necessary. Using and enhancing the roles of existing PennDOT units and departments that currently deal with storm water management issues would assist PennDOT and local municipalities in developing a more effective system.

However, PennDOT should actively seek outside agencies to act as proponents of storm water management in local government, and act as intermediaries between PennDOT and those municipalities that have so far been reluctant to work with PennDOT on storm water management. The Susquehanna Economic Development Association COG (SEDA-COG) has partnered with PennDOT's Local Technical Assistance Program (LTAP) to provide its region's municipalities with free or low cost training. Such agencies may be helpful in bridging the current gap in storm water management discussions between PennDOT and the municipalities.

Finally, PennDOT districts should cooperate more effectively with each other to ensure that policies are being implemented consistently state-wide. It may be beneficial to pool resources, especially in regards to policies produced specifically for one district that have been successful, in order to unify and improve the system of storm water maintenance state-wide.

- Use of Models and Case Studies
- Innovative Best Management Practices
- Smart Growth Techniques to Enhance Storm Water Management
- Potential Actions (Application of Models for PA)

Conclusions

Maintenance responsibilities for new developments should be clearly spelled out before construction begins. Agreements between PennDOT and the local municipality for access to state highways need to be clarified to specify maintenance responsibilities for individual storm water facilities along state highways. This in turn will require effective communication among county, district, and local maintenance staff.

- PennDOT/City/Borough Maintenance Sharing
- Operational Models – Is the System Working
- Other Storm Water Maintenance and Regulatory Practices in Pennsylvania

Appendix E: Cost Analysis

Statewide Pennsylvania Storm Water Cost Assumptions

Source: BOMO Submission of Storm Water Facilities Annual Operational Costs

Quantity of Storm Water Facilities

- Cross Pipes, Inlets, Gutters: Derived from TAC consultant figures adjusted by inventory data contained in PennDOT Roadway Management System (RMS). RMS data are current as of December 2006.
- Parallel Pipes: Derived from RMS data of curbed areas and curbed gutter areas.
- Ditches: Derived from data acquired from PennDOT Highway Features Inventory (HFI) report.

Unit Cost of Storm Water Facilities

- Cross Pipes/Parallel Pipes, Inlets, Ditches: Derived from PennDOT department force state wide activity cost as recorded by the Maintenance Operations and Resources Information System (MORIS) FY 05-06.
- Gutter Cleaning: Not specifically defined by MORIS activity code. Derived from related MORIS cleaning/sweeping activities FY 05-06.
- Gutter Replacement: Derived from curbing cost data in the PennDOT Engineering and Construction Management System (ECMS) for FY 05-06.

Frequency of Operations

- Cross Pipes/Parallel Pipes, Ditches, Gutters: PennDOT does not have a pre-established quantifiable scheduled maintenance activity requirement for specific storm water facilities. Derived from New York Department of Transportation (NYDOT) schedule of routine maintenance activities as reviewed by PennDOT operational managers.
- Inlets: Derived from judgment using input from PennDOT operational managers.

Statewide Drainage Estimate Data Sources

DRAINAGE ELEMENT	WORK ITEM	QUANTITY	UNIT COST	FREQUENCY
Cross Pipes	Clean	PennDOT Highway Features Inventory (RMS)	05/06 MORIS Statewide Average	NY State DOT Schedule
	Replace	PennDOT Highway Features Inventory (RMS)	05/06 MORIS Statewide Average	NY State DOT Schedule modified to account for metal pipe (30 yrs. Vs. 50 years)
Inlets	Clean	PennDOT Highway Features Inventory (RMS)	05/06 MORIS Statewide Average	NY State DOT Schedule
	Replace Inlets	PennDOT Highway Features Inventory (RMS)	05/06 MORIS Statewide Average	NY State DOT Schedule
	Replace Endwalls	PennDOT Highway Features Inventory (RMS)	05/06 MORIS Statewide Average	NY State DOT Schedule
Ditches	Clean	PennDOT Highway Features Inventory (RMS) adjusted to account for ditches with less than 18" flat bottom	05/06 MORIS Statewide Average	NY State DOT Schedule
Gutters	Clean	PennDOT Highway Features Inventory (RMS)	05/06 MORIS Statewide Average	NY State DOT Schedule
	Replace	PennDOT Highway Features Inventory (RMS)	05/06 MORIS Statewide Average	NY State DOT Schedule
Parrallel Pipes	Clean	Estimated to be equal to amount of gutter shoulder	05/06 MORIS Statewide Average	NY State DOT Schedule
	Replace	Estimated to be equal to amount of gutter shoulder	05/06 MORIS Statewide Average	NY State DOT Schedule modified to account for metal pipe (30 yrs. Vs. 50 years)

Municipal Storm Water Cost Assumptions

- Inventory (number of structures and type) is from the 2006 Roadway Management System (RMS) provided by the PennDOT Bureau of Maintenance and Operations (BOMO).
- Inventory information for interchanges is unavailable. It is assumed that there is one pond structure per interchange.
- Interchanges are only estimated for the interstate system based on PennDOT's Mileage-Based Exit Numbering System documentation.
- Structure mileage information is from the 2006 Roadway Management System (RMS) provided by the PennDOT Bureau of Maintenance and Operations (BOMO).
- Mileage information for parallel ditches is estimated from PennDOT Type 10 maps.
- Mileage information for interchanges is unavailable.
- Complete parallel ditch information is unavailable. It is assumed that parallel ditches on state highways equals 2 X interstate miles; 2 X expressway and arterial miles; 1 X minor arterial miles; 1 X collector miles; 0.25 X local roadway miles.
- Average unit costs and maintenance frequencies are assumed to be the same as the statewide estimate.

Conclusions

Maintenance responsibilities for new developments should be clearly spelled out before construction begins. Agreements between PennDOT and the local municipality for access to state highways need to be clarified to specify maintenance responsibilities for individual storm water facilities along state highways. This in turn will require effective communication among county, district, and local maintenance staff.

- PennDOT/City/Borough Maintenance Sharing
- Operational Models – Is the System Working
- Other Storm Water Maintenance and Regulatory Practices in Pennsylvania

Appendix F: Act 167 of 1978

Providing for the regulation of land and water use for flood control and storm water management purposes.

AN ACT

Providing for the regulation of land and water use for flood control and storm water management purposes, imposing duties and conferring powers on the Department of Environmental Resources, municipalities and counties, providing for enforcement, and making appropriations.

TABLE OF CONTENTS

The General Assembly of the Commonwealth of Pennsylvania hereby enacts as follows:

Section 1. Short title.

This act shall be known and may be cited as the "Storm Water Management Act."

Section 2. Statement of legislative findings.

The General Assembly finds that:

(1) Inadequate management of accelerated runoff of storm water resulting from development throughout a watershed increases flood flows and velocities, contributes to erosion and sedimentation, overtaxes the carrying capacity of streams and storm sewers, greatly increases the cost of public facilities to carry and control storm water, undermines flood plain management and flood control efforts in downstream communities, reduces ground-water recharge, and threatens public health and safety.

(2) A comprehensive program of storm water management, including reasonable regulation of development and activities causing accelerated runoff, is fundamental to the public health, safety and welfare and the protection of the people of the Commonwealth, their resources and the environment.

Section 3. Purpose and policy.

The policy and purpose of this act is to:

(1) Encourage planning and management of storm water runoff in each watershed which is consistent with sound water and land use practices.

(2) Authorize a comprehensive program of storm water 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; and to protect and conserve ground waters and ground-water recharge areas.

(3) Encourage local administration and management of storm water 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 historic values of the environment.

Section 4. Definitions.

The following words and phrases when used in this act shall have, unless the context clearly indicates otherwise, the meanings given to them in this section:

"Department." The Department of Environmental Resources of the Commonwealth of Pennsylvania.

"Municipality." A city, borough, town or township, or any county or other governmental unit when acting as an agent thereof, or any combination thereof acting jointly.

"Pennsylvania Municipalities Planning Code." The act of July 31, 1968 (P.L.805, No. 247), as amended.

"Person." An individual, partnership, public or private association or corporation, firm, trust, estate, municipality, governmental unit, public utility or any other legal entity whatsoever which is recognized by law as the subject of rights and duties. Whenever used in any section prescribing or imposing a penalty, the term "person" shall include the members of a partnership, the officers, members, servants and agents of an association, officers, agents and servants of a corporation, and the officers of a municipality or county, but shall exclude any department, board, bureau or agency of the Commonwealth.

"Public utility service." The rendering of the following services for the public:

(1) gas, electricity or steam production, generation, transmission or distribution;

(2) water diversion, pumping, impoundment, or distribution;

(3) railroad transportation of passengers or property;

(4) operation of a canal, turnpike, tunnel, bridge, wharf or similar structure;

(5) transportation of natural or artificial gas, crude oil, gasoline or petroleum products, materials for refrigeration or other fluid substances by pipeline or conduit;

(6) telephone or telegraph communications; and

(7) sewage collection, treatment or disposal.

"Storm water." Drainage runoff from the surface of the land resulting from precipitation or snow or ice melt.

"Watershed." The entire region or area drained by a river or other body of water, whether natural or artificial.

"Watershed storm water plan." A plan for storm water management adopted by a county in accordance with section 5.

Compiler's Note: The Department of Environmental Resources, referred to in the def. of "department," was abolished by Act 18 of 1995. Its functions were transferred to the Department of Conservation and Natural Resources and the Department of Environmental Protection.

Section 5. Watershed storm water plans and contents.

(a) Within two years following the promulgation of guidelines by the department pursuant to section 14, each county shall prepare and adopt a watershed storm water management plan for each watershed located in the county as designated by the department, in consultation with the municipalities located within each watershed, and shall periodically review and revise such plan at least every five years. The department may, for good cause shown, grant an extension of time to any county for the preparation and adoption of a watershed storm water management plan.

(b) Each watershed storm water plan shall include, but is not limited to:

(1) a survey of existing runoff characteristics in small as well as large storms, including the impact of soils, slopes, vegetation and existing development;

(2) a survey of existing significant obstructions and their capacities;

(3) an assessment of projected and alternative land development patterns in the watershed, and the potential impact of runoff quantity, velocity and quality;

(4) an analysis of present and projected development in flood hazard areas, and its sensitivity to damages from future flooding or increased runoff;

(5) a survey of existing drainage problems and proposed solutions;

(6) a review of existing and proposed storm water collection systems and their impacts;

(7) an assessment of alternative runoff control techniques and their efficiency in the particular watershed;

(8) an identification of existing and proposed State, Federal and local flood control projects located in the watershed and their design capacities;

(9) a designation of those areas to be served by storm water collection and control facilities within a ten-year period, an estimate of the design capacity and costs of such facilities, a schedule and proposed methods of financing the development, construction and operation of such facilities, and an identification of the existing or proposed institutional arrangements to implement and operate the facilities;

(10) an identification of flood plains within the watershed;

(11) criteria and standards for the control of storm water runoff from existing and new development which are necessary to minimize dangers to property and life and carry out the purposes of this act;

(12) priorities for implementation of action within each plan; and

(13) provisions for periodically reviewing, revising and updating the plan.

(c) Each watershed storm water plan shall:

(1) contain such provisions as are reasonably necessary to manage storm water such that development or activities in each municipality within the watershed do not adversely affect health, safety and property in other municipalities within the watershed and in basins to which the watershed is tributary; and

(2) consider and be consistent with other existing municipal, county, regional and State environmental and land use plans.

Section 6. Municipal and public participation in watershed planning.

(a) The county shall establish, in conjunction with each watershed storm water planning program, a watershed plan advisory committee composed of at least one representative from each municipality within the watershed, the county soil and water conservation district and such other agencies or groups as are necessary and proper to carry out the purposes of the committee.

(b) Each committee shall be responsible for advising the county throughout the planning process, evaluating policy and project alternatives, coordinating the watershed storm water plans with other municipal plans and programs, and reviewing the plan prior to adoption.

(c) Prior to adoption, each plan shall be reviewed by the official planning agency and governing body of each municipality, the county planning commission and regional planning agencies for consistency with other plans and programs affecting the watershed. All such reviews shall be submitted to the department with the proposed plan.

Section 7. Joint plans and coordination of planning.

Where a watershed includes land in more than one county, the department may require the affected counties to prepare, adopt and submit a joint plan for the entire watershed.

Section 8. Adoption and amendment.

(a) Prior to adoption or amendment of a watershed storm water plan, the county shall hold a public hearing pursuant to public notice of not less than two weeks. The notice shall contain a brief summary of the principal provisions of the plan, and a reference to the places within each affected municipality where copies may be examined or purchased at cost.

(b) Adoption or amendment of the plan shall be by resolution carried by an affirmative vote of at least a majority of the members of the county governing body. The resolution shall refer expressly to the maps, charts, textual matter and other materials intended to form the hole or part of the official plan, or amendment thereto, and the action shall be recorded on the adopted plan, part or amendment.

Section 9. Review and approval by the department.

(a) The department shall, in consultation with the Department of Community Affairs, review all watershed storm water plans and revisions or amendments thereto. It shall approve the plan if it determines:

(1) that the plan is consistent with municipal flood plain management plans, State programs which regulate dams, encroachments, and water obstructions, and State and Federal flood control programs; and

(2) that the plan is compatible with other watershed storm water plans for the basin in which the watershed is located, and is consistent with the policies and purposes of this act.

(b) Should the department neither approve or disapprove a watershed plan or amendment or revision thereto within 90 days of its submission to the department, the plan or amendment or revision shall be deemed to be approved.

(c) Any person aggrieved by a final decision of the department approving or disapproving a watershed plan or amendment thereto, may appeal the decision to the Environmental Hearing Board in accordance with the provisions of section 1921-A of the act of April 9, 1929 (P.L. 177, No. 175), known as "The Administrative Code of 1929," and the "Administrative Agency Law." ((c) repealed in part Oct. 5, 1980, P.L. 693, No. 142)

Section 10. Failure to submit plan; mandamus.

The department may institute an action in mandamus to compel counties to adopt and submit plans in accordance with this act. (10 repealed in part Oct. 5, 1980, P.L. 693, No. 142 and repealed insofar as inconsistent Oct. 15, 1980, P.L. 950, No. 164)

Section 11. Effect of watershed storm water plans.

(a) After adoption and approval of a watershed storm water plan in accordance with this act, the location, design and construction within the watershed of storm water management

systems, obstructions, flood control projects, subdivisions and major land developments, highways and transportation facilities, facilities for the provision of public utility services and facilities owned or financed in whole or in part by funds from the Commonwealth shall be conducted in a manner consistent with the watershed storm water plan.

(b) Within six months following adoption and approval of the watershed storm water plan, each municipality shall adopt or amend, and shall implement such ordinances and regulations, including zoning, subdivision and development, building code, and erosion and sedimentation ordinances, as are necessary to regulate development within the municipality in a manner consistent with the applicable watershed storm water plan and the provisions of this act.

Section 12. Failure of municipalities to adopt implementing ordinances.

(a) If the department finds that a municipality has failed to adopt or amend, and implement such ordinances and regulations as required by section 11, the department shall provide written notice of violation to the municipality.

(b) Within 60 days of receipt of the notice of violation, the municipality shall report to the department the action which it is taking to comply with the requirement or regulation.

(c) If within 180 days of receipt of the notice of violation, the municipality has failed to comply with such requirement or regulation, as determined by the department, the department shall notify the State Treasurer to withhold payment of all funds payable to the municipality from the General Fund. Provided, that prior to any withholding of funds, the department shall give both notice to the municipality of its intention to notify the State Treasurer to withhold payment of funds and the right to appeal the decision of the department within the 180-day period following notification. The hearing shall be conducted before the Environmental Hearing Board in accordance with the provisions of the act of April 9, 1929 (P.L. 177, No. 175), known as "The Administrative Code of 1929," and Chapters 5 and 7 of Title 2 (Administrative Law and Procedure), of the Pennsylvania Consolidated Statutes. If an appeal is filed within the 180-day period, funds shall not be withheld from the municipality until the appeal is decided.

(d) Any person, other than a municipality, aggrieved by an action of the department shall have the right within 30 days of receipt of notice of such action to appeal such action to the Environmental Hearing Board, pursuant to section 1921-A, act of April 9, 1929 (P.L. 177, No. 175), known as "The Administrative Code of 1929," and the provisions of Chapters 5 and 7 of Title 2 (Administrative Law and Procedure) of the Pennsylvania Consolidated Statutes.

Section 13. Duty of persons engaged in the development of land.

Any landowner and any person engaged in the alteration or development of land which may affect storm water runoff characteristics shall implement such measures consistent with the provisions of the applicable watershed storm water plan as are reasonably necessary to prevent injury to health, safety or other property. Such measures shall include such actions as are required:

(1) to assure that the maximum rate of storm water runoff is no greater after development than prior to development activities; or

(2) to manage the quantity, velocity and direction of resulting storm water runoff in a manner which otherwise adequately protects health and property from possible injury.

Section 14. Powers and duties of the Department of Environmental Resources.

(a) The Department of Environmental Resources shall have the power and its duty shall be to:

(1) Coordinate the management of storm water in the Commonwealth.

(2) Provide in cooperation with the Department of Community Affairs technical assistance to counties and municipalities in implementing this act.

(3) After notice and public hearing and subject to the requirements of subsection (b) of this section, publish guidelines for storm water management, and model storm water ordinances for use by counties and municipalities.

(4) Review, in cooperation with the Department of Community Affairs, and approve all watershed plans and revisions thereto.

(5) Cooperate with appropriate agencies of the United States or of other states or any interstate agencies with respect to the planning and management of storm water.

(6) Serve as the agency of the Commonwealth for the receipt of moneys from the Federal Government or other public or private agencies or persons and expend such moneys as appropriated by the General Assembly for studies and research with respect to planning and management of storm water.

(7) Conduct studies and research regarding the causes, effects and hazards of storm water and methods for storm water management.

(8) Conduct and supervise educational programs with respect to storm water management.

(9) Require the submission of records and periodic reports by county and municipal agencies as necessary to carry out the purposes of this act.

(10) After notice and hearing and with the approval of the Environmental Quality Board, designate watersheds for the purpose of this act.

(11) Do such other acts consistent with this act required to carry out the purposes and policies of this act.

(b) The guidelines for storm water management and model storm water ordinances shall be submitted to the General Assembly for approval or disapproval and shall be considered by the General Assembly under the procedures created for consideration of Reorganization Plan provided in the act of April 7, 1955 (P.L. 23, No. 8), known as the "Reorganization Act of 1955."

Compiler's Note: Section 502(c) of Act 18 of 1995, which created the Department of Conservation and Natural Resources and renamed the Department of Environmental Resources as the Department of Environmental Protection, provided that the Environmental Quality Board shall have the powers and duties currently vested in it, except as vested in the Department of Conservation and Natural Resources by Act 18 of 1995, which powers and duties include those set forth in section 14.

Section 15. Civil remedies.

(a) Any activity conducted in violation of the provisions of this act or of any watershed storm water plan, regulations or ordinances adopted hereunder, is hereby declared a public nuisance.

(b) Suits to restrain, prevent or abate violation of this act or of any watershed storm water plan, regulations or ordinances adopted hereunder, may be instituted in equity or at law by the department, any affected county or municipality, or any aggrieved person. Except in cases of emergency where, in the opinion of the court, the circumstances of the case require immediate abatement of the unlawful conduct, the court may, in its decree, fix a reasonable time during which the person responsible for the unlawful conduct shall correct or abate the same. The expense of such proceedings shall be recoverable from the violator in such manner as may now or hereafter be provided by law. ((b) repealed in part Oct. 5, 1980, P.L. 693, No. 142)

(c) Any person injured by conduct which violates the provisions of section 13 may, in addition to any other remedy provided under this act, recover damages caused by such violation from the landowner or other responsible person. (15 repealed insofar as inconsistent Oct. 15, 1980, P.L. 950, No. 164)

Section 16. Preservation of existing rights and remedies.

(a) The collection of any penalty under the provisions of this act shall not be construed as estopping the Commonwealth, any county, municipality or aggrieved person from proceeding in courts of law or equity to abate nuisances under existing law or to restrain, at law or in equity, violation of this act.

(b) It is hereby declared to be the purpose of this act to provide additional and cumulative remedies to abate nuisances.

Section 17. Grants and reimbursements to municipalities and counties.

(a) The Department of Environmental Resources is authorized to administer grants to municipalities and counties to assist or reimburse them for costs in preparing official storm

water management plans and actual administrative and enforcement and implementation costs and revisions to official plans for storm water management required by this act. Grants and reimbursements shall be made from and to the extent of funds appropriated by the General Assembly for such purposes, and shall be made in accordance to rules and regulations adopted by the Environmental Quality Board.

(1) The grant shall be equal to 75% of the allowable costs for preparation of official storm water management plans, administrative, enforcement and implementation costs incurred by any municipality or county.

(2) For the purposes of this section, such State grants shall be in addition to grants for similar purposes made to any municipality or county by the Federal Government: Provided, That the grants authorized by this section shall be limited such that the total of all State and Federal grants does not exceed 75% of the allowable costs incurred by the municipality or county.

(b) Nothing in this section shall be construed to impair or limit application of this act to any municipality or person, or to relieve any municipality or person of duties imposed under this act.

(c) If, in any fiscal year, appropriations are insufficient to cover the costs or grants and reimbursement to all municipalities and counties eligible for such grants and reimbursements in that fiscal year, the Department of Environmental Resources shall report such fact to the General Assembly and shall request appropriation of funds necessary to provide the grants authorized in this section. If such a deficiency appropriation is not enacted, any municipality or county which has not received the full amount of the grant for which it is eligible under this section shall be as a first priority reimbursed from appropriations made in the next successive fiscal year. (17 amended May 24, 1984, P.L. 324, No. 63)

Compiler's Note: Section 502(c) of Act 18 of 1995, which created the Department of Conservation and Natural Resources and renamed the Department of Environmental Resources as the Department of Environmental Protection, provided that the Environmental Quality Board shall have the powers and duties currently vested in it, except as vested in the Department of Conservation and Natural Resources by Act 18 of 1995, which powers and duties include those set forth in section 17.

Section 18. Appropriations.

The sum of §500,000, or as much thereof as may be necessary, is hereby appropriated for the fiscal period beginning July 1, 1978, and ending June 30, 1979, to the Department of Environmental Resources for the purposes of administrative and general expenses in implementing the provisions of this act.

Compiler's Note: The Department of Environmental Resources, referred to in this section, was abolished by Act 18 of 1995. Its functions were transferred to the Department of Conservation and Natural Resources and the Department of Environmental Protection.

Section 19. Repealer and savings clause.

(a) All acts or parts of acts inconsistent herewith are hereby repealed to the extent of such inconsistency.

(b) The provisions of this act shall not affect any suit or prosecution pending or to be instituted to enforce any right or penalty or punish any offense under the authority of any act of Assembly or part thereof repealed by this act.

Section 20. Effective date.

This act shall take effect immediately.

Appendix G: Report of the Subcommittee of Boroughs to the House Local Government Committee

Pursuant to House Resolution 31

Report of the

Subcommittee of Boroughs

to the

House Local Government Committee

Pursuant to House Resolution 31

Mark McNaughton, Chairman
Subcommittee on Boroughs

Table of Contents

I. Introduction

On June 18, 2001, the Pennsylvania House of Representatives adopted House Resolution 31 (Printer's Number 2254) by a vote of 195 to 0. Generally, this resolution called for the House Local Government Committee's Subcommittee on Boroughs to examine the applicable State laws and the Pennsylvania Department of Transportation's (PENNDOT's) maintenance practices in boroughs versus other classes of municipalities. The resolution noted the impacts on roads created by poor maintenance practices such as crumbling storm sewers and cross pipes, winter icing and improper drainage which could cause flash flooding and property damage. Specifically, this resolution stated that the House of Representatives "due to the impact on economic and environmental conditions resulting from an inconsistent policy concerning State highways within borough limits, direct the Subcommittee on Boroughs of the Committee on Local Government to consider borough issues relating to the State highway system, including:

(1) Establishment of consistent infrastructure maintenance procedures.

(2) The study of State highways as they impact the economies of boroughs.

(3) The study of creating more efficient methods of managing storm water runoff and its effect on borough communities, properties and associated watersheds.

(4) An examination of the existing Borough Code language relating to transportation and the environment and proposed amendments reflecting 21st century concerns."

This resolution further provided that the "subcommittee prepare a report with findings and recommendations to the Committee on Local Government of the House of Representatives."

II. Drafting and Consideration of House Resolution 31

The introduction of House Resolution 31 was the result of considerable effort, led by the Pennsylvania State Association of Boroughs (PSAB). By January 10, 2001, shortly before the resolution was introduced, the borough councils of more than 253 boroughs (out of 962 boroughs) had passed resolutions regarding the "inequity of maintenance practices" regarding State highways traversing through boroughs. These resolutions continued to request that PENNDOT "promote and establish equitable maintenance policies and practices throughout the Commonwealth between townships and boroughs regarding storm water infrastructure." Due to the large number of boroughs involved, these resolutions were adopted in boroughs all across the Commonwealth, from Erie County to Delaware County and from Greene County to Susquehanna County.

Rep. Thomas Armstrong was the prime sponsor of the resolution. In the 1999-2000 Legislative Session, Rep. Armstrong was Chairman of the House Local Government Committee's Subcommittee on Boroughs and formerly was a member of Marietta Borough Council, Lancaster County. House Resolution 31 also enjoyed broad support in the House of Representatives, with 51 members signing as co-sponsors of the resolution. The original version of the resolution was a concurrent resolution which called for the creation of a select committee of the House and Senate to study the issue. However, the resolution was amended on the House floor to assign this duty on the House Local Government Committee's Subcommittee on Boroughs. As indicated previously, House Resolution 31 passed the House unanimously with little of debate.

III. Public Meetings

In an attempt to gather relevant information, the Subcommittee on Boroughs held two (2) public meetings to examine the issues related to House Resolution 31. The first meeting was held on October 25, 2001 outside of York. This meeting was attended by a large number of borough officials and representatives of PENNDOT. Written statements by borough officials ranged from very specific commentaries, with photographs and detailed attachments, to brief, heartfelt comments of frustration. Perhaps because of the location of the meeting in York County, there were a large number of central Pennsylvania attendees. However, the participants in this meeting appeared to reflect a cross section of Pennsylvania's borough officials. (A listing of the participants at both meetings can be found in the appendix.)

In general, borough officials offered several main themes (importance of State roads in boroughs and the importance of sound maintenance practices on these roads) as reflected in talking points prepared by PSAB and distributed at the beginning of this process. These PSAB talking points are as follows;

- Boroughs in PA are often located along or have located within their boundaries State highways. These highways have a great impact on the community's social and economic well-being.
- Drainage structures that protect and maintain Pennsylvania's investment in the State highway system face inconsistent maintenance practices as a result of Act 428 of 1945, the "State Highway Law".
- Specifically, State highway drainage infrastructure has become the sole responsibility of boroughs. Conversely, PENNDOT maintains this same infrastructure within townships.

- Current PENNDOT policy requires boroughs to maintain all storm water sewers serving State roads and highways in boroughs, while the Department maintains such sewers in townships. Moreover, PENNDOT will not remove anti-skid materials for boroughs, even though the Department has applied those materials. The combination of these two policies leads to increased dilapidation of borough storm water infrastructure. Anti-skid materials accumulate in borough storm sewers leading to ineffective drainage. Storm water is then forced to travel over the road surface where in cold weather it can freeze or in hot weather can penetrate an unsealed surface thereby eroding the base of the roadway causing high maintenance costs.
- Recent "Pennsylvania Municipal Planning Code" changes encourage multi-municipal planning and zoning. The changes promote consistency in community management. Sadly, as various municipalities develop consistence through joint comprehensive plans, the Commonwealth is inadvertently undermining their efforts by upholding elements of inconsistency through their drainage structure maintenance practices.
- Pennsylvania's State highway system in the 21st Century should be recognized as an entire network and managed comprehensively. The antiquated term "Rural State Highway System" has become outmoded.
- The urban nature of boroughs offers new challenges unseen in 1945. For example, the recently identified West Nile Virus. Crumbling drainage structures within populated boroughs lead to hidden pockets of standing water creating an environment conducive to the West Nile Virus. Boroughs provide a higher concentration of population susceptible to West Nile carriers thus increasing health threats to the entire community. Contrast this with the rural nature of townships and the need is clear.

- Boroughs often contain many impervious surfaces placing a higher demand on drainage infrastructure. This strain may hasten the degradation of road surfaces as well. This attribute of borough roadways warrants a higher level of concern than areas containing less impervious surfaces.
- There have been accounts of PENNDOT tying into sanitary sewer systems within boroughs and thereby placing a greater burden of maintenance and responsibility on the municipality.
- Storm water management faces obstacles when it is based upon political subdivision. Waterways and watersheds often define these limits.

These general comments were supplemented by specific comments offered by participants in the public meetings. The first comments were presented by Leon Rudy, President of Council, and Ron Turo, Borough Solicitor of Franklintown Borough. According to Mr. Rudy, during the 1990s, the leaders of Franklintown (in northern York County) became increasingly concerned about storm water runoff on several sections of State highways within the borough limits. The runoff caused damage to both borough and privately owned property and created hazardous driving conditions during inclement weather. Citing Departmental policy based upon a 1937 court decision, local PENNDOT officials denied any responsibility.

Mr. Rudy continued by noting that for over six decades, the Pennsylvania Department of Transportation has required local taxpayers in boroughs to perform maintenance on storm water runoff facilities along State highways that extend beyond the curb lines. In addition, they have constructed inadequate storm water runoff facilities within the boundaries of boroughs that perform poorly and, in some instances, cause damage to other public and private property. Since

these problems extend down below the curb lines, borough taxpayers have been held accountable for any expenses involved in the repairing or improving the facilities. In other instances, PENNDOT has directed its storm water runoff into local sewage systems, severely depleting the system's capabilities. Again, borough taxpayers pay the bill to redirect storm water runoff or increase the sewage capacity. The inequality of the situation is magnified when we realize that the same policies do not apply to taxpayers in townships.

"A 1937 Superior Court Decision, O'Brian v. Borough of Jeannette, determined the Secretary had the power to limit the Department's responsibility to the area between the curbs." This court decision had great influence in the justification for PENNDOT's argument in the battle with boroughs. Mr. Rudy stated that PENNDOT relies greatly on the 1937 court decision to defend its policy to maintain and repair storm water runoff facilities in townships while abrogating that responsibility in boroughs. This decision relies largely on a phrase in Section 513 of the "State Highway Law." This section states that "The department shall, at the expense of the Commonwealth, improve or reconstruct and maintain all State highways within boroughs and incorporated towns to such width and of such type as shall be determined by the secretary."

The Franklintown officials argue that the "State law clearly allows PENNDOT to maintain and repair storm water runoff systems beyond curb lines. Furthermore, the law does not specifically require boroughs to maintain or repair these facilities."

Additional information was taken from the comments of Kenneth Myers, Borough Manager of Greencastle in Franklin County. Mr. Myers described the "burden" PENNDOT has placed upon boroughs by not aiding in the maintenance of storm water facilities. "This burden is not only financial, it is also a matter of manpower, time, equipment, and liability."

As an example, Mr. Myers described a resurfacing job PENNDOT did on North Allison Street (Rt. 2001) in 1978. Apparently, prior to that project, the Borough required property owners to install curbing. After the resurfacing it was discovered that a section of road was too low. The pavement was not kept even with the PENNDOT approved curbing. "As a result, there is a low spot several hundred feet in length where water ponds along the curb and also in the intersection of North Allison and Tyrone Street." Myers went on to state, that this problem was created by PENNDOT when they paved their own street. "And yet they tell us that the borough needs to correct the problem. This is not right!"

In regard to the long time flooding problem on Rt. 11 in the southern end of the borough, Myers informed the subcommittee that apparently the southern end of Rt. 11 runs under a railroad underpass. The location of Rt. 11 is therefore in a very low area. Myers stated, "When PENNDOT built the highway they installed a large sump area which filled up and flooded before the highway was ever opened." Apparently the pipe PENNDOT installed, Myers commented, was not large enough to function with any degree of effectiveness when large volumes of storm water were present.

Discussing the water flow issues on Route 11 further, Myers went on to state: "As a result the underpass floods frequently during periods of heavy rainfall to a depth of 3 or 4 feet closing both lanes in each direction for periods of time up to 72 hours." Myers mentions the complications of such intense flooding by stating: "there have been numerous incidents where motorists did not see the flooding in time, became stranded in the storm water and had to be rescued by police and firefighters." In addition, Myers states that Route 11 is an emergency route when Interstate 81 is impassable. This causes the issue to become more pressing.

Other comments were offered by Robb Green, Mayor of Jefferson Borough, York County. Mayor Green referred to the paving and "betterment" projects on S.R. 516 in his community. According to Green, "The additional paving in the middle has exacerbated the frustration of the taxpayers who can not easily park in front of their house on this crowned road nor travel out of their driveways without bottoming out." Green went on to state that overlay projects stop at the gutter lines creating a very steep transition between the state highways and borough road. This results in a very steep transition between the state highway and borough roads or driveways. Repeated overlays have caused some side streets to be impassable forcing the borough to spend scarce tax dollars to make grade corrections.

Also attending was Candace M. Dannaker, Mayor of the Borough of Bellefonte in Centre County. In regard to a declining tax base in her borough, Dannaker noted that, early in the 20th century, boroughs enjoyed a healthy economic climate and a solid tax base. "However, one hundred years (100) later, our borough of 6,400 citizens is experiencing a declining tax base and economy that unfortunately mirrors the plight of most other boroughs." Dannaker then described the population distribution in her community by stating that according to the 2000 census, borough residents age 62 and over comprise 38.7% of the population and 16.7 % of the residents are between the ages of 45 and 59, conceivably approaching retirement age. These factors lead to a relatively small tax base and result in the lack of adequate funding for the Borough of Bellefonte. "Development outside our boundaries impacts dramatically the daily use of these State highways. I note these statistics and potential impact of development in adjoining townships to emphasize the concern that should, a major failure of the internal infrastructure of its State highways in our borough occur, we would be faced with a financial burden that would be very difficult to manage."

Edward J. Arnold, Borough Manager of the Borough of Columbia (Lancaster County), describes the 22.4 miles of street that pass through the borough. He stated that Columbia Borough is mostly developed containing buildings, sidewalks, and parking lots which create challenges in storm water management. Arnold states that if left uncontrolled, rapid deterioration of the borough's and the residents' assets will occur. Arnold states that Route 462 and Route 30 are the main transport routes through the borough. "These roads impact the local environment while providing access routes for vehicular transport. Unmanaged storm water causes adverse driving conditions such as ice in the winter and standing water or slippery roads at other times." Arnold cited environmental problems caused by the inadequate storm water plan. "It also overloads environmentally sensitive watershed areas which the borough is currently studying under a PA Growing Greener grant." Arnold stresses the matter is too expensive for the borough to control. "We can not continue to afford conditions that were not created by us and ask that the State do its share to control and manage the same."

Michael R. Bonn, Mayor of the Borough of Dunlevy (Washington County), described the conditions and importance of State Route 88 which runs through the Borough for over a mile. Bonn states: "It is a main thoroughfare between Interstate 70 and the Allenport plant of Wheeling Pittsburgh Steel, Interstate Paper Products of Roscoe, as well as the University of California which is located in the Borough of California. Any disruption of access to this vital two lane roadway causes great distress to many communities and businesses." Bonn goes on to state the problems and damages associated with poor storm water management. Bonn states: "In the past and continuing into the present, during times of heavy downpours of rain, run-off water has poured over Route 88 at both north and south ends of town causing dangerous conditions

such as planeing and sliding. Accidents have occurred causing bodily injury and property damage."

A second public meeting was held on November 15, 2001, in Harrisburg. At this time, testimony was offered by Holly Hood, on behalf of the Pennsylvania State Association of Township Supervisors, and Cheri Grumbine, Township Manager of North Lebanon Township. According to Miss Hood, "We believe that PENNDOT should be required to fully maintain state roads, including drainage structures. Also today, two township officials will talk about the experiences that they have had regarding PENNDOT's policy. We are very concerned about recent changes to PENNDOT's drainage maintenance policy. Prior to July of this year, PENNDOT's policy was to maintain storm water drainage facilities on state roads according to legislative route number and type of municipality. While there were many concerns that the old policy was confusing and applied inconsistently, it was set in accordance with the State Highway Law..." "We question how these very significant changes, in some cases policy reversals, can be made as a policy decision without authorizing legislation? Particularly when these changes specifically give townships liability and financial responsibility for drainage structures on state roads that are not found in existing law. If PENNDOT can alter their responsibility on this issue simply by changing their policy, what other legislative mandates will they attempt to abandon using the same procedure? Policy is significantly different from statutes and implementing regulations. Again, we believe that it is PENNDOT's sole responsibility to maintain state roads, including the drainage structures. Our townships simply do not have the funds to maintain the drainage facilities on state roads. Neither do we feel that they should be forced to step in if PENNDOT declines to maintain state roads."

IV. State Laws

Numerous State laws were cited in House Resolution 31 and in the course of the meetings on this matter. However, the "State Highway Department Law" (Act 193 of 1911) and the "State Highway Law" (Act 428 of 1945) appear to be central to the PENNDOT legal authority and responsibility. Key parts of these two statutes are, as follows:

STATE HIGHWAY DEPARTMENT LAW
Act of 1911, P.L. 468, No. 193

"Section 6. From and after the adoption of this act, all those certain existing public roads, highways, turnpikes, and toll-roads, or any parts or portions thereof, subject to the provisions hereinafter made in the case of turnpikes and toll-roads, forming and being main traveled roads or routes between the county-seats of the several counties of the Commonwealth, and main traveled roads or routes leading to the State line, and between principal cities, boroughs, and towns, shall be known, marked, built, rebuilt, constructed, repaired, and **maintained by and at the sole expense of the Commonwealth**; and shall be under the exclusive authority and jurisdiction of the State Highway Department, and shall constitute a system of State Highways, the same being more particularly described and defined." (Emphasis added)

"STATE HIGHWAY LAW"
Act of 1945, P.L. 1242, No. 428

Article V
Rural State Highway System and State Highways in Cities, Boroughs and Towns

(b) State Highways in Boroughs and Towns.

"Section 513. Improvement, Reconstruction and Maintenance.--The department shall, at the expense of the Commonwealth improve or reconstruct and **maintain all State highways within boroughs and incorporated towns, to such width and of such type as shall be determined by the secretary.**" (Emphasis added)

When reviewing these statutes, in their entirety and in the excerpts presented here, the subcommittee would like to highlight two (2) items about the "State Highway Law." First, clearly Article V of the Act contains subarticles with different provisions for State highways in boroughs and towns (Subarticle B), streets in second A and third class cities (Subarticle C), streets in first and second class cities (Subarticle D) and provisions "applicable to all municipalities" (Subarticle E). This law appears to contemplate different treatment for State highways in different types of municipalities. Second, when enacted in 1945, the "State Highway Law" repealed all or part of 70 different acts, including much of Act 193 of 1911. However, the "State Highway Law" did not repeal Section 6 which is cited above. The preservation of Section 6 of Act 193 appears to be deliberate.

V. PENNDOT Maintenance Policy

While the Subcommittee was conducting its work, PENNDOT was in the process of reviewing its maintenance policy as described in the following statement, "During the past year, PENNDOT has changed maintenance policy to address inequities between townships and boroughs. Drainage maintenance practices now are applied on an operational basis and not with respect to local governmental entity. Open systems will be maintained by PENNDOT and closed systems will not be maintained by PENNDOT in either borough or township locations. A closed highway drainage system (i.e. one with curbs and drop inlets) is very different from an open highway drainage system (i.e. one without curbs and drop inlets). In many cases, closed systems convey water to a municipal storm sewer, or to a combination storm and sanitary sewer system. Generally, PENNDOT does not have resources, expertise, or equipment to become

involved with these kinds of systems. Updates to our policy were incorporated into the July 2000 edition of the PENNDOT Maintenance Manual (Publication No. 23). We believe that our policies now are consistent across townships and boroughs.

"We recognize that sweeping anti-skid off state highways inside the borough limits has been a problem for us and for local governments. PENNDOT lacks the necessary amount of sweeping equipment and lacks sufficient control over parked cars within borough limits to ensure efficient and effective sweeping operations. Many local governments have sufficient equipment and control in these areas and already do street sweeping within their communities. PENNDOT is receptive to identifying solutions through this committee which will help resolve issues related to sweeping.

"PENNDOT's involvement with local storm water management issues is based on the Storm Water Management Act (1978 Act 167). This Act created a program that is run by DEP to help communities develop DEP-approved watershed-based storm water management plans that contain model storm water management ordinances. When these DEP-approved ordinances are adopted by local municipalities they are binding on PENNDOT because they are based on a state-wide and state-run program. There are more than 360 designated storm water management watersheds in Pennsylvania of which approximately 72 have approved plans. In watersheds with DEP-approved plans and ordinances, we are likely to handle storm water management issues different from the way we handle them in watersheds without DEP-approved plans."

X. Findings and Recommendations

As a result of our investigation, the subcommittee would like to make the following findings and recommendations:

- **Encourage Consistent Maintenance Practices.** At the heart of this resolution is the suggestion that the Pennsylvania Department of Transportation should employ consistent maintenance practices on State roads, regardless of the type of municipality where the road is located. The Commonwealth is known for its large number of small municipalities. Many of these municipalities are small in both population and geography. This results in municipal boundaries that are very close together. Many, many of our roads appear exactly the same as they travel from borough to township to borough. Our system of roads, our system of local government, and basic fairness suggest that PENNDOT maintenance of State roads throughout the Commonwealth should not be predicated on the classification of municipalities. Moreover, as indicated in the report, it appears that PENNDOT has already moved to a consistent maintenance policy that is based on the type of drainage systems rather than the type of municipality. Beyond this we would encourage PENNDOT, within available resources, to work with all classes of municipalities to provide the highest level of maintenance practical to State roads regardless of the type of municipality or drainage system. This work would benefit all citizens of the Commonwealth.
- **Encourage the General Assembly to Provide More Direction in Legislation.** As documented in the report, the applicable State laws, especially the 1945 law, grants the

Secretary of Transportation broad discretion to determine maintenance practices on state roads. In this case, there may be far too much discretion for any cabinet department or cabinet secretary. We encourage the General Assembly to provide much more specific direction to any and all cabinet departments in legislation. If the General Assembly wishes to pursue a legislative remedy to this specific issue, even though it has been addressed by PENNDOT, it could clean up the competing statutes mentioned in the report by enacting a comprehensive statute pertaining to State roads and repealing current laws. Such legislation would properly come before the House Transportation Committee, and we defer to the committee of jurisdiction for action on this matter.

- **Encourage Adequate Funding for Duties of State Agencies.** Just as the General Assembly could provide direction to the various departments in statutes, the General Assembly should be consistent and provide an appropriate level of funding to achieve the desired result. If members of the General Assembly want PENNDOT to provide a particular level of maintenance to all State roads, the General Assembly should provide adequate funding to accomplish this goal.
- **Reluctant to Arbitrate Legal Dispute.** Part of the material presented to the Subcommittee addresses different interpretations of the various statutes involved in determining the level of maintenance required of PENNDOT. While this material was thorough and well presented, we do not believe it is the appropriate role of a legislative committee to settle such a dispute.
- **Reluctant to Initiate Rewrite of the Borough Code.** House Resolution 31 calls for an "examination of the existing Borough Code language relating to transportation and the environment and proposed amendments reflecting 21st Century concerns." While we

have reviewed provisions of the "Borough Code," we are very reluctant to initiate the process to rewrite these provisions. When it comes to rewrites of the various local government codes, it has been the practice of the General Assembly to receive recommendations from the appropriate local government organization(s) when considering major revisions to one of the codes. We point to the complete rewrite of the "Second Class Township Code" which was signed into law in 1995. In this case, the Pennsylvania State Association of Township Supervisors (PSATS) worked for years to prepare a draft rewrite of the "Code" and then worked with the staff of the Local Government Commission to refine the document, still in draft form. When introduced, the bill proceeded through the legislative process with the full and complete deliberations of the appropriate committees. However, the work completed by PSATS and the Local Government Commission may have saved a considerable amount of time and improved the quality of the final legislation. The County Commissioners Association of Pennsylvania (CCAP) is proceeding in a slightly different way to rewrite the "County Code." CCAP is attempting to rewrite the "Code" in pieces, based roughly on subject areas (such as fiscal matters), rather than propose an entire rewrite of the "Code" at one time. Here again, once the legislation is introduced it must be considered by the appropriate House and Senate Committees. Regardless of the strategy, in both instances the local government association initiated the proposal and the first draft was prepared by working groups created by the association. We prefer to continue the practice that major proposed amendments to the codes originate with the respective association.

- **Encourage Action on Storm Water Management Legislation.** During our deliberations on this resolution we heard several comments on the subject of storm water

management. Most of the water on highways comes from other sources. Better control of storm water runoff from other sources will help reduce drainage problems on local streets and State roads. The existing "Storm Water Management Act" dates to 1978 (Act 167 of 1978) and is being utilized to varying degrees of success throughout the Commonwealth. Currently before the General Assembly is House Bill 606 (Rep. David Steil) which would provide for adoption of comprehensive watershed storm water management plans by counties throughout the watershed. While we do not endorse the specific provisions of House Bill 606, we encourage the General Assembly to consider this important bill.

House Resolution 31
Participants

York, October 25, 2001

Ed Troxell, Director of Government Affairs, PA State Association of Boroughs

Leon Rudy & Ron Turo, Franklintown Borough, York County (Attachment)

Scott Depoe, New Freedom Borough York County

Robb Green, Jefferson Borough, York County

Buck Buchanan, Shrewsbury Borough, York County

Mike Bonn, Dunleavy Borough, Westmoreland County

Betty Ann Moyer, Danville Borough, Montour County

Candace Dannaker, Bellefonte Borough, Centre County

Ed Arnold, Columbia Borough, Lancaster County

Charles Slenker, West York Borough, York County

Ken Myers, Greencastle Borough, Franklin County

Gary Hoffman & Sherrie Zimmerman, Pennsylvania Department of Transportation

Harrisburg, November 15, 2001

Holly Hood, Pennsylvania State Association of Township Supervisors

Cheri Grumbine, North Lebanon Township, Lebanon County

Sherrie Zimmerman, Pennsylvania Department of Transportation