

N E W S R E L E A S E
FOR IMMEDIATE RELEASE

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HARHART TO CHAIR ENVIRONMENTAL TASK FORCE

Special task force to carry Joint Conservation Committee water infiltration study to next level

HARRISBURG (February 17, 2000) - Rep. David G. Argall (R-124), chairman of the Joint Legislative Air and Water Pollution Control and Conservation Committee, announced today that Rep. Julie Harhart (R-Lehigh/Northampton) will chair a special task force that will work to develop strategies to address water infiltration into sewer systems.

Formation of the task force was recommended by those testifying before the committee at two public hearings pursuant to House Resolution 376. The resolution directed the committee to "study the issues concerning the environmental, technological, economic and regulatory constraints and problems covering hydraulically overloaded municipal sewage treatment facilities."

- more -

Task Force -- Page 2

Harhart is a member of the committee and was an active participant in the committee's hearing process.

"Julie has a good understanding of the problem, and an excellent relationship with municipal governments, citizens and stakeholders in this issue," Argall said. "She will do a great job of following up on the committee's initial findings to develop ideas for solutions."

Argall said that Harhart and the committee staff will select the task force members over the next few weeks.

"The public hearings gave us a good picture of the extent of the infiltration problem," said Harhart. "Now we need to examine what options are already out there or should be put forward to better manage and control infiltration."

Argall noted that the Department of Environmental Protection (DEP) testified that in Pennsylvania there are 115 wastewater treatment facilities with existing overloads and 51 more projecting five-year overloads.

According to testimony, studies have shown that infiltration adds significant amounts of extraneous water to sewer systems, contributing in no small manner to system overloads.

"While it's not an issue that grabs peoples' attention, excessive infiltration poses potential threats to the environment and to public health and safety, as well as driving up the cost of operating and maintaining wastewater treatment systems," Harhart said.

Task Force -- Page 3

"We want to find out what makes successful systems work, look at new infiltration reduction technologies and see if new funding streams can be made available to help correct problems."

Among the specific study areas suggested to the task force by the committee are:

-- examination of inspection criteria for system hook-ups and certification and training programs for wastewater system operation;

-- assessment of system specifications to determine the potential for standardization;

-- public education programs on the costs and risks of infiltration;

-- funding alternatives to correct infiltration problems, including how to address infiltration problems from laterals on private property.

#

Good morning, and thank you Mr Chairman
On behalf of the 8th Legis District, and North
Middleton Twp, in particular, I want to welcome
the Joint Legislative Air and Water Pollution
Control and Conservation Committee to N.M.T.
and thank you for ^{deciding to} hold ~~ing~~ the first of a series
of hearings here in N.M.T. on the problems &
associated with hydraulically overloaded municipal
sewerage treatment facilities.

In 1995 or 96, Les Hurley, a N.M.T. supervisor,
came to me about a tremendous problem they
were having with rainwater and groundwater
infiltration into their sewerage treatment system
during wet weather.

This additional load on their treatment
plant, sometimes up to six or more times the
normal dry weather flow conditions, was
placing huge increases in their budgets, and the
available repair to the system was prohibitively
expensive. This system infiltration was
often causing manholes to overflow, discharging
raw sewage onto streets and into nearby streams.

They
Les asked that we have the state study
the problem and use our facilities to bring
private industry, Commonwealth agencies,
academia, and individuals together to find

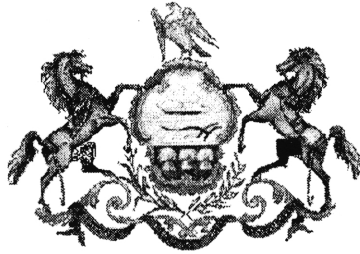
lower cost remedies,
In researching the problem, I discovered that it is a serious problem all across our state in most municipalities with older systems.

So Sen Mowery and I introduced concurrent resolutions in the House and Senate to direct the Joint Legis. Air and Water Pollution Control and Conservation Committee to undertake a comprehensive study to determine the exact extent and nature of the problem, and to find alternate techniques and procedures to abate or correct the problem at significantly reduced cost.

So that is why we are here today. Thank you and all of the testifiers for agreeing to give us the benefit of your ^{knowledge and} wisdom. I look forward to hearing from you.

OCT 14 1999

JOSEPH F. MARKOSEK, MEMBER
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House of Representatives
Commonwealth of Pennsylvania
Harrisburg

*A/E
with report
on sewer
infiltration*

MEMO

TO: ALL MEMBERS
FROM: REP. JOSEPH F. MARKOSEK *JFM*
DATE: OCTOBER 6, 1999
RE: CO-SPONSORSHIP OF LEGISLATION

I WILL BE INTRODUCING LEGISLATION AMENDING THE TAX REFORM CODE OF 1971,
PROVIDING A LIMITED INCOME TAX CREDIT FOR CERTAIN SEWER IMPROVEMENTS.

THIS LEGISLATION WOULD PROVIDE A CREDIT IN THE AMOUNT OF THREE THOUSAND
DOLLARS (\$3,000) AGAINST PERSONAL INCOME TAXES FOR IMPROVEMENTS MADE TO THE LATERAL
SEWER CONNECTIONS OF AN INDIVIDUAL'S PRIMARY RESIDENCE, PROVIDED THAT ALL OF THE
FOLLOWING APPLY:

- 1) THE INDIVIDUAL'S PRIMARY RESIDENCE IS LOCATED IN THIS COMMONWEALTH.
- 2) IMPROVEMENTS WERE MADE PURSUANT TO AN ORDER OR OTHER MANDATE OF STATE GOVERNMENT, LOCAL GOVERNMENT OR A MUNICIPAL OR REGIONAL GOVERNMENTAL AUTHORITY;
- 3) A COPY OF THE ORDER OR OTHER MANDATE IS ATTACHED TO THE TAX RETURN;
- 4) A COPY OF THE INSPECTION REPORT OR OTHER DOCUMENTATION OF COMPLETION OF THE IMPROVEMENTS IS ATTACHED TO THE TAX RETURN;
- 5) THE INDIVIDUAL IS THE OWNER OF THE PROPERTY, AND IN THE CASE OF MULTIPLE OWNERS, NO OTHER OWNER HAS CLAIMED THE CREDIT.

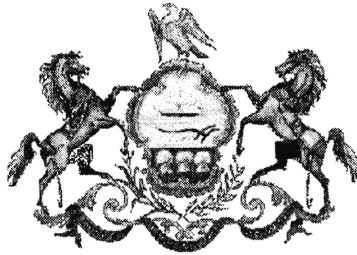
THE TAX CREDIT MAY BE CLAIMED OVER A PERIOD OF UP TO THREE CONSECUTIVE TAX YEARS.

IF YOU WOULD LIKE TO CO-SPONSOR THIS LEGISLATION, PLEASE CALL LYNDA, AT 3-1012.

/LDS

OCT 14 1999

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**House of Representatives
Commonwealth of Pennsylvania
Harrisburg**

MEMO

TO: ALL MEMBERS
FROM: REP. JOSEPH F. MARKOSEK *JFM*
DATE: OCTOBER 6, 1999
RE: CO-SPONSORSHIP OF LEGISLATION

I AM OFFERING CO-SPONSORSHIP TO LEGISLATION AMENDING PENNVEST (PENNSYLVANIA INFRASTRUCTURE INVESTMENT AUTHORITY), FURTHER PROVIDING FOR LEGISLATIVE INTENT AND FOR FINANCIAL ASSISTANCE.

THIS LEGISLATION ADDS TO SECTION 2. LEGISLATIVE INTENT, THE FACT THAT REPAIR AND REPLACEMENT OF PRIVATE RESIDENTIAL LATERAL SEWER CONNECTIONS OF PRIMARY RESIDENCES IS NECESSARY TO PROTECT THE PUBLIC HEALTH AND SAFETY OF MANY COMMUNITIES IN THIS COMMONWEALTH BUT IS BEYOND THE FINANCIAL ABILITIES OF MANY RESIDENTS.

IT ADDS A DEFINITION OF "PRIMARY RESIDENCE", I.E., A PLACE WHICH A CITIZEN OF THIS COMMONWEALTH UTILIZES AS A DOMINCILE.

IT EXPANDS THE DEFINITION OF "PROJECT" TO INCLUDE ASSISTANCE TO PROPERTY OWNERS FOR:

- 1) THE CONSTRUCTION, REHABILITATION, IMPROVEMENT, REPAIR OR REPLACEMENT OF INDIVIDUAL SEWAGE SYSTEMS, TAP-IN FEES AND THE REHABILITATION, REPAIR OR REPLACEMENT OF LATERAL LINES ASSOCIATED WITH COMMUNITY SEWAGE PROJECTS;
- 2) ASSISTANCE TO AN INDIVIDUAL FOR THE SEALING OR REPLACEMENT OF A WATER WELL ON PRIVATELY OWNED PROPERTY;
- 3) TRANSPORT OF SEWAGE THROUGH LATERAL SEWER LINES OF PRIMARY RESIDENCES.

IT EXPANDS CRIERIA FOR OBTAINING ASSISTANCE TO INCLUDE CONSIDERATION OF DETERIORATING LATERAL SEWER LINES OF PRIMARY RESIDENCES.

IF YOU WOULD LIKE TO CO-SPONSOR THIS PROPOSED LEGISLATION, PLEASE CALL LYNDY, AT 3-1012.

ALLAN EGOLF, MEMBER

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House of Representatives
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HARRISBURG**

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LEGISLATIVE CAUCUS
HOUSE POLICY COMMITTEE

April 23, 1999

COPY

Peter R. Dorney, Executive Director
Hatfield Township Municipal Authority
3200 Advance Lane
Colmar, PA 18915

Dear Mr. Dorney:

Your letter of April 1, 1999, raised several interesting questions regarding the use of Act 339 funds for solving inflow problems. Should this idea proceed further, I will be sure to share your concerns with my House colleagues.

Although Act 339 program funding had been repeatedly targeted for elimination by the DEP, I am pleased to inform you that funding for sewage treatment plant operations has been restored into the state budget. This was done in response to fears that elimination of this key infrastructure grant program would force local governments to pass the cost onto the public. I heard from numerous sources that Act 339 funds delay likely sewer user fees increases by municipalities and authorities. I support reimbursing sewage treatment plants for the cost associated with plant expansion and upgrades and will continue to do so in the future.

I also want to take this opportunity to thank you for participating in the Joint Conservation Committee's hearing on March 30th. Your testimony was very helpful and I really appreciate your input. Thank you again.

Sincerely,

A handwritten signature in black ink that reads "Allan Egolf".

Allan Egolf
State Representative
86th Legislative District

AE/tcr

Faxed to D.O. 4/7/99

APR 7 1999

CHARLES MURGIA, Chairman
DONALD D. ATKISS, Vice Chairman
HARRY RUTHERFORD, Asst. Secretary
BARRY WERT, Secretary/Asst. Treasurer
CHARLES SIBEL, Treasurer

PETER R. DORNEY, Executive Director



CET ENGINEERING SERVICES
Engineer
717-541-0622

HAMBURG, RUBIN, MULLIN,
MAXWELL & LUPIN
Solicitor
215-661-0400

April 1, 1999

Honorable Representative Allan Egolf
House Post Office
Main Capitol
Harrisburg, PA 17120

Dear Representative Egolf:

Thank you for the opportunity to present my views on the problem of inflow to wastewater facilities on March 30. The hearing was as informative to me as it was to the Committee.

I believe Pennvest funding for fixing individual homeowner's lateral problems is a very good idea. I also have instructed our engineer to prepare specifications for plumbers who connect new laterals to our system to provide the "inspection connection" on each new lateral, and on any other existing lateral that needs to be excavated in our Township for any reason.

I would however like to address one question that was posed to another speaker regarding Act 339 funding. He was asked how the recipients of this funding would respond to using this money only for solving inflow problems. I do not feel that this is a good idea.

First, townships and authorities don't receive this money in equal proportion to their total budget. For instance one authority may have a \$5 million budget and receive \$100 thousand. The other authority may have a \$5 million budget and receive \$200 thousand. In reality, the authority who receives the \$200 thousand may not need to spend all of it on inflow control. Would they lose the rest of the money that they don't need to spend?

Second, many of these projects to correct inflow problems take many years to plan, design, bid, and complete. Could monies received in one year from Act 339 be carried over into subsequent years, and credited towards total costs once project funds are actually requisitioned for payment?

Third, the purpose of Act 339 funding is to repay monies already expended by the township or authority to construct

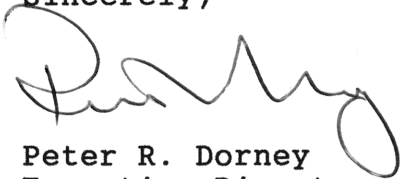
facilities necessary to meet its effluent requirements. Instead of having received this money up front in one lump sum, as many facilities have, these townships and authorities already expended large sums of money with the promise of receiving their grants over time. Forcing them to only use this money for inflow may cause hardship in other areas of their budget.

Fourth, who develops the criteria as to what can be considered an eligible expense for correcting inflow problems? Could employee wages, and their costs of benefits be included? Could equipment that the facility purchases to inspect and seal cracks in its lines be included, or does this money go to private contractors for excavation and repair?

It is important enough to maintain Act 339 funding and provide funding in some other manner for inflow control. There is no reason to divert money from Act 339 funding to do this. I attended a public meeting on March 23 to present our authority's annual budget to the township commissioners. The potential loss of Act 339 funding and its effect on our budget was questioned by both the commissioners and the public in attendance. One issue raised by those in attendance was the question of how the Governor and the legislature can conceive of eliminating this valuable funding when hundreds of millions of dollars are being promised for new stadiums, and the other community development projects that were necessary to finalize the deal. These people read the newspapers. They know that Pennsylvania is not in a budget crunch, and in fact will undoubtedly have the largest budget surplus in many years. Understanding the significance of the problem, why can't some of this surplus be used without the threat of losing valuable Act 339 funding?

In closing, I would like to stay involved in some fashion in the process your Committee has begun regarding inflow control. Our Authority will be doing several "test" projects in the near future, and I would be more than willing to share the successes or failures of our work with the Committee.

Sincerely,



Peter R. Dorney
Executive Director

PRD/pd

MAR 8 1999

CHARLES MURGIA, Chairman
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BARRY WERT, Secretary/Asst. Treasurer
CHARLES SIBEL, Treasurer

PETER R. DORNEY, Executive Director



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March 1, 1999

Honorable Representative Allan Egolf
House Post Office
Main Capitol
Harrisburg, PA 17120

Dear Representative Egolf:

I received a letter regarding House Resolution 376 of 1998, to address infiltration of water into municipal sewer systems. I am the Executive Director of the Hatfield Township Municipal Authority Advanced Wastewater Treatment Facility. Our wastewater collection and treatment facilities serve Hatfield Township, Hatfield Borough, and portions of Montgomery Township, Franconia Township Hilltown Township, Towamencin Township, and Lansdale Borough.

Like most wastewater treatment facilities in Pennsylvania, we experience significant inflow and infiltration problems into our collection system. We have spent hundreds of thousands of dollars fixing old leaking sewer lines. We have purchased line-sealing equipment, and have hired two additional full time employees to locate and seal leaks in the system. We have an additional project, estimated to cost \$450 thousand dollars planned for 1999, to replace an additional 4000 feet of old, leaking clay sewer line. Our efforts so far have only put a small dent into alleviating our facility's inflow. We will continue to search for problems, and correct them as necessary.

My letter to you, however, is related more to Governor Ridge's plan to eliminate Act 339 Operational Grants, and Secretary Seif's continual criticism of these funds as entitlements and sacred cows. To compare this money to welfare is ludicrous. To say this money has no strings attached is ludicrous. The "strings" are the stringent state and federal requirements imposed upon wastewater treatment facilities on a daily basis to protect the waterways of the Commonwealth. Will Secretary Seif push to lighten the effluent requirements for wastewater facilities destined to lose this funding?

Our facility will need to increase sewer rates approximately 23% to offset the loss of Act 339 funding. Are Governor Ridge's tax cuts guaranteed to replace the increased

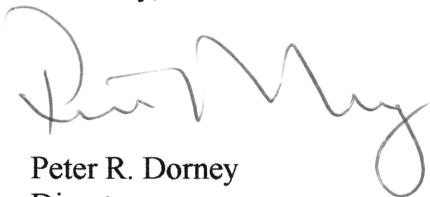
sewer rates? Our Authority, like Governor Ridge and Secretary Seif, is also focusing on the 21st Century. We look at the Act 339 Grants as a promise the state has made to us in lieu of up front grants that many other facilities have received. The funding is promised over time, instead of as one lump sum.

How does this relate to House Resolution 376? The costs associated with addressing the problems referred to in this Resolution will be significant. And it is my experience that if an Authority's budget becomes tight, the first area that will be underfunded, or unfunded, in order to meet operating expenses will be inflow and infiltration. Now we are going to eliminate Act 339 Grants for Sewer Authorities. The result will be Authorities pulling money from infrastructure repair instead of putting money into infrastructure repair. The opponents of Act 339 funding would say that these monies aren't supposed to be used for finding and fixing leaks in the system. But if Authorities lose funding from one hand, they will make it up by taking it from the other hand. If there is to be a comprehensive, effective plan to reduce inflow and infiltration into sewage treatment plants, Authorities will have to increase rates, or receive funding from the State. It makes no sense to eliminate any current funding. After all, Resolution 376 recognizes that infiltration can cause a "public nuisance and potential public health hazard by environmental pollution... and the abatement of this problem costs, or would cost if all affected municipalities properly addressed the problem, tens of millions of dollars each year... and this problem is likely to recur continuously into the foreseeable future and grow even worse..."

The preamble to Act 339 also states that "...the responsibility to preserve and improve the purity of the waters of the Commonwealth does not rest solely upon the municipal government but is also a function and responsibility of State Government acting in the interest of the general public health..."

For these reasons, I respectfully request your support to reinstate Act 339 funding into the State's budget, so that we can continue to do the job you expect us to do, and plan to do the job House Resolution 376 begins to address.

Sincerely,



Peter R. Dorney
Director

PRD/pd

CC: co-sponsors, House Resolution 376

*John Bartley, Approp. Chair,
stated in a Mar 25 letter to Repub.
House mbrs. that HB 980 was changed
in committee to restore funds for the
sewage treatment plant operations
grants (Act 339 funding) - this was
done in response to many
members' requests (including mine).*

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House of Representatives
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FOR EDUCATION
CHILDREN AND FAMILIES TASK FORCE

January 29, 1997

TO: All House Members
FROM: Rep. Allan Egolf 
SUBJECT: Cosponsorship - Concurrent Resolution - Sewer Infiltration

Senator Mowery and I will soon introduce concurrent resolutions in the Senate and House to direct the Joint Legislative Air and Water Pollution Control and Conservation Committee to undertake a comprehensive study on the state-wide problem of groundwater infiltration into sanitary sewers.

Infiltration resulting in gross overloading of treatment facilities during wet weather is a serious problem shared by all municipalities who depend on public sewerage system for treatment of waste water. Abatement of this problem can be enormously expensive.

We hope to determine the extent of the problem and to find less expensive techniques and solutions for abatement or correction of the problem.

If you wish to cosponsor this resolution, please contact Teri via E-mail at TROOT or by phone at 3-1593.

AE/tcr

file

**PREVENTION AND CORRECTION OF EXCESSIVE INFILTRATION
INTO MUNICIPAL WASTEWATER SYSTEMS**

Aging municipal wastewater systems are often incapable of meeting the demands placed upon them due to increasing population and economic growth. In many areas, wastewater treatment plants are overloaded and plagued by operational problems due to years of neglect and deferred maintenance. An increasing number of communities are imposing sewer moratoriums or sewer capacity restrictions.

One option is to expand existing wastewater treatment plants. However, this option is expensive and sometimes impractical. With sewage treatment costs rising and many municipal systems strained to the breaking point, municipalities are taking a closer look at streamlining plant operations and reducing demand on sewer systems. One way to make treatment plants more efficient is to eliminate unwanted water from the sewer system.

A significant source of unwanted water is the infiltration of water into the sewer system. Infiltration is unwanted groundwater and stormwater that indirectly enters a sewer system through defective pipes, pipe joints, connections, or man-hole walls. Infiltration can cause very significant increases in the total flow to a wastewater treatment plant.

House Resolution 376, Printer's Number 3182, adopted on March 16, 1998, directed the Joint Legislative Air and Water Pollution Control and Conservation Committee to investigate and determine the exact extent and nature of the infiltration problem in Pennsylvania. The resolution directed the committee to prepare a report on infiltration issues with its findings and recommendations and to present it to the General Assembly. A copy of House Resolution 376 is found in the Appendix.

This report describes infiltration and how it occurs; identifies where infiltration occurs; explains why infiltration is a problem; discusses the impacts of infiltration on the community; and offers some technological solutions.

BACKGROUND

A municipal sewer system is designed to handle the steady flow of wastewater. Any water entering a sewer system, which is not wastewater, is considered extraneous. These waters, which are recognized as being detrimental to the operation of the wastewater system, are classified according to one of two categories; these being infiltration and inflow. These terms are defined as follows:

1. **Infiltration** – is generally defined as clean water that enters the sewer system from subsurface defects. It is the volume of groundwater entering sewers and sewer connections from the soil, through defective joints, broken or cracked pipes, improper connections, and manhole walls. Infiltration does not include, and is distinguished from inflow.
2. **Inflow** – is defined as storm water runoff that enters the sewer system through direct connections. It is the volume of any kind of water discharged into sewer lines from such sources as overflow from storm drains; and rooftop drains, foundation drains, and sump pumps connected to the system. It is distinguished from infiltration.

House Resolution 376 states that the committee is to investigate infiltration issues exclusively.

A 1996 Clean Water Needs Survey, conducted by the Pennsylvania Department of Environmental Protection (DEP), surveyed 792 wastewater treatment facilities in Pennsylvania. The survey indicates that infiltration and inflow are widespread problems. According to the survey, almost \$15 million is needed to rehabilitate systems in order to reduce the amount of unwanted water that is being treated at facilities.

In general, levels of infiltration vary depending on location, age, and structural integrity of a system. Infiltration is longer lasting than inflow and can continue to enter a sewer system as long as the groundwater level is above the elevation of a defect in the sewer system. Infiltration of water into sanitary sewer systems can be caused by:

- ◆ **poor soil conditions in which the sewer lines are laid; poor quality of materials and construction workmanship;**
- ◆ **excessive groundwater levels;**
- ◆ **precipitation and percolation of surface waters;**
- ◆ **water retained in the surrounding soils; and**
- ◆ **pipes, joints, and connecting sewer structures lines being in poor condition.**

Any of these reasons can cause sewer lines to crack or shift, causing unwanted water to infiltrate a sewer system.

PROBLEMS CAUSED BY INFILTRATION

Some problems caused by infiltration have already been mentioned, however, on a much larger scale, infiltration is not only a major deterrent to the suc-

cessful performance of a sewer system, but it can also adversely affect a community's environment and the overall quality of water resources. The effects of infiltration can cause the following:

- ◆ **the use of sewer facility capacity that would otherwise be reserved for present sanitary wastewater flows and future growth;**
- ◆ **the need for construction of relief sewer facilities before originally scheduled dates;**
- ◆ **backflooding of sewers into streets and private properties;**
- ◆ **hydraulic overload of the treatment plant and the potential washout of treatment process;**
- ◆ **increased run time for pumps and pump stations;**
- ◆ **additional costs for repair, replacement, recovery, energy, and supplies; and**
- ◆ **environmental health effects.**

In addition to basement overflows and yard flooding caused by infiltration, increased costs at the treatment facility will eventually mean a higher service charge to the customer.

WASTEWATER MANAGEMENT IN PENNSYLVANIA

The Pennsylvania Sewage Facilities Act (Act 537) requires municipalities to plan for their current and future sewage treatment and disposal needs. Sewage plans can be comprehensive, taking into account growth patterns, land use issues, and the building of wastewater treatment facilities.

In their annual report to DEP, municipalities are required to project, in five years, anticipated capacity and overloads due to a variety of causes, including infiltration. If overloads occur, the municipality needs to develop and adopt a "Compliance Action Plan" which details how the municipality plans to address and resolve its hydraulic overload problem. About fifty percent of the Act 537 Plan Revision, including the "Compliance Action Plan" would be reimbursable by the DEP if done in accordance with department guidelines.

IDENTIFYING THE PROBLEM

According to water managers, the only way to determine if an infiltration problem exists, besides the obvious signs like basement flooding and sewer overflows, is to perform a system-wide inventory. A field inspection of the system will allow officials to examine surface and subsurface conditions.

There are three methods to identify the source of excessive water in the system: the smoke test, dye testing, and television inspection.

Smoke Testing – An easy and inexpensive way to locate infiltration problems near the surface. The test works by forcing smoke from a smoke bomb through an isolated section of sewer pipe. The idea is that if there are defects along the lines or connections the smoke will surface at these points.

Dye Testing – Dye testing, similar to smoke testing, is helpful when detecting storm drains and storm sources, as well as sources from private property. First, isolated storm sewer sections that are parallel to or cross sanitary sewers are flooded with dye. The presence of dye or absence in adjacent downstream man-hole indicates the infiltration potential.

Television Inspection – This type of inspection is generally the most accurate for locating pipe or joint separations, root intrusions, protruding or defective lateral connections, and illegal storm water connections.

When the location of excessive amounts of infiltration are determined, there are a number of methods for rehabilitating sewer systems to prevent infiltration. They are:

Spot Repair – Repairing only a small section of the line.

In Place Replacement – Replacing an entire run of the sewer line.

Alternative Location Replacement – Constructing a new line to replace the function of the damaged line section.

Chemical Grouting – Chemical grouting is used to fill voids in backfill outside the sewer wall.

Sliplining – Sliplining is a technique where the sewer line is rehabilitated by placing a rigid liner inside the existing pipe, either by pushing or pulling the liner into place.

Inversion Lining – This technique uses a felt sleeve soaked with a thermo setting reaction-based plastic material. The sleeve is pulled through the system. As it travels down the line, the chemical material is placed in the inside of the pipe. When the material hardens, it creates a solid liner in the pipe.

There are many factors that will determine the cost of a rehabilitation project. Factors such as flow diversion, condition of the system, and available resources will determine the final cost of a project.

CONCLUSION

Infiltration of water into sewer systems will never be completely solved. In fact, a certain amount of infiltration is taken into account when determining average flow rates. However, excessive amounts of infiltration are becoming a common occurrence in many communities.

According to wastewater managers, reducing municipal wastewater flows would eliminate the need for funding treatment plant expansions. Besides generating treatment savings, greater efficiency often improves water quality. Capacity freed up at existing sewage plants reduces the occurrence and duration of combined sewer overflows caused by storm water surges. And money that would have gone to building new plants can be spent upgrading treatment at existing plants instead.