City of New Haven

Public Works Department

Reducing I&I Crucial for New Haven's Success

1. Background

The older sewers in the City of New Haven's wastewater collection system were combined sewers that were built to collect and convey both wastewater and stormwater. Over the past few decades, the City has installed separate sanitary sewers and converted all the combined sewers to storm sewers. However, during rain events (wet weather), there is still too much stormwater entering the sanitary sewer system. During larger storms, the stormwater sometimes causes backups in basements or overflows through the City's combined sewer overflow into Martin Ditch which flows into the Maumee River.

Basement backups can be costly for home owners to clean up and can increase public health risks. When an overflow to Martin Ditch occurs, it is called a combined sewer overflow (CSO). To comply with current EPA and State of Indiana CSO regulations, reduce basement backups, and minimize the environmental impacts on the receiving streams, New Haven must reduce the frequency and duration of overflows from the wastewater collection system. The City's success in complying with the CSO regulations all hinges on the reduction of the inflow and infiltration into the collection system.

2. What, When and Why

What is Inflow and Infiltration?

Inflow and infiltration (I&I) are terms used to describe the ways stormwater and groundwater enter a sewer system. Inflow occurs when clear water from air conditioners, sump pumps, gutters and downspouts, storm inlets, foundation or perimeter drains, trench drains, or field tiles are directed into the sanitary sewer through an improper connection.

Infiltration occurs when surface or groundwater seeps or flows into the sanitary sewers and service laterals through pipe cracks, leaky joints, broken cleanouts, or deteriorated manholes. In addition to causing basement backups and CSOs, I&I entering the sanitary sewer system increases the costs the City has to pay throughout the year for wastewater treatment; costs which the City's ratepayers ultimately have to pay.

What has the City been doing to reduce I&I?

The City has been repairing and replacing damaged or failing sewers and will continue to do so. The City recently identified and remedied cross connections between the sanitary and storm sewer systems; redirected flows from the last few stormwater inlets which were discharging to the sanitary sewer system; and continue to line manholes in the system annually. The City has been smoke testing sewers throughout the community to identify damaged or failing service laterals and gutters/downspouts that are directly connected to the sanitary sewers.

What is the City's plan to reduce I&I?

The City's CSO Long Term Control Plan (LTCP) for complying with the CSO regulations requires implementation of the following programs to reduce I&I:

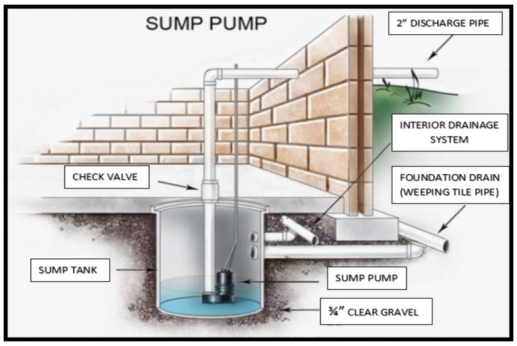
1. Public Education Program
2. Sump Pump and Downspout Redirection Program
3. Perimeter Drain Redirection Program
4. Lateral Repair and Replacement Program

When will these be implemented?

The education program is already in progress and the distribution of this flyer is part of the program. The Sump Pump and Downspout Redirection and the Perimeter Drain Redirection Programs have to be initiated by the end of 2017 and completed in 2019. The Sewer Lateral Repair and Replacement Program will be initiated in 2018 and completed by 2026.

Why should I&I be reduced?

By reducing I&I volumes, the City can lower monthly power and treatment costs; reduce the need for and costs of enlarging sewers; reduce the frequency and magnitude of basement backups and combined sewer overflows; reduce the size and costs of CSO controls; free system capacity for growth; and keep sewer rate increases to a minimum.



3. CSO Control Facilities

What else is planned to reduce the frequency and duration of CSOs?

The City's CSO LTCP also requires the construction of CSO storage facilities to capture and store the overflows from the system until they can be returned and successfully conveyed through the collection system to where the wastes can be properly treated.

What kind of storage facilities will be built to reduce CSO's?

The LTCP requires the City to install a large buried storage pipe which will function as a surge storage facility and a new 10 million gallon per day pumping station that will pump from the storage pipe into a new 1 million gallon CSO storage tank. In addition, the LTCP requires the City to retrofit the two existing circular trickling filter tanks into additional CSO storage facility.

Where will the Control Facilities be located?

The buried storage pipe will be installed adjacent to the City's ball fields in Havenhurst Park near the existing combined sewer overflow control facilities. The new pumping station and storage tank will be constructed in the fenced enclosure where the City's old wastewater treatment plant was located.

When will construction of the Control Facilities likely begin?

The City's CSO LTCP requires the City obtain bids for and begin construction of the control facilities in 2021 and have the facilities operational by the end of 2022.

4. Community's Help Needed

What can home/business owners do to reduce I&I and keep rate increases to a minimum?

Inspect your properties and buildings for sources of clearwater. This would include:

- Improper Connections
- Defective Service Laterals
- Foundation/Perimeter Drains

If these sources are found, make arrangements to eliminate or redirect the connections so the clearwater flows are directed to the stormwater collection and conveyance systems in your area. Contact the Public Works Department if you have questions (260-748-7056).

What is an improper home/business connection?

Illegal connections to the sewer, as defined in the City Code, are connections which allow surface runoff, groundwater, roof runoff, subsurface drainage, condensation, or other clear water to flow directly or indirectly to a sanitary sewer of the City. Typical prohibited connections include, but are not limited to the following: gutters or downspouts, sump pump drains, storm inlets or drains, trench drains, foundation or perimeter drains, field tile drains, and air conditioning condensation drains.

What are defective service laterals?

A sewer lateral is the underground pipe that connects a residence or business to the City's sewer line and are the responsibility of the property owner. Infiltration into laterals may occur when the lateral pipes are not connected properly to the sewer; they are cracked or broken; the joints are opened by tree roots; or when cleanouts are broken or not capped properly.

Have your sewer lateral and cleanouts inspected or tested, and repaired or replaced if they are defective and allowing surface or groundwater into the sewer system.

What are foundation or perimeter drains and why are they a problem?

Foundation or perimeter drains are perforated drains that are commonly installed adjacent to building foundations primarily to collect and keep groundwater, and sometimes surface water, runoff out of the building. When the perimeter drains are directly connected to sewer laterals, they can convey clear water into the sanitary sewer system.

Perimeter drains should be redirected so they drain by gravity into an adjacent drainage swale, retention pond, or storm sewer. When this is not possible, property owners may need to install a sump pump that pumps the flows from the perimeter drain to a drainage swale, retention pond, or storm sewer.