

Private Inflow – Best Practices for Access and Source Identification

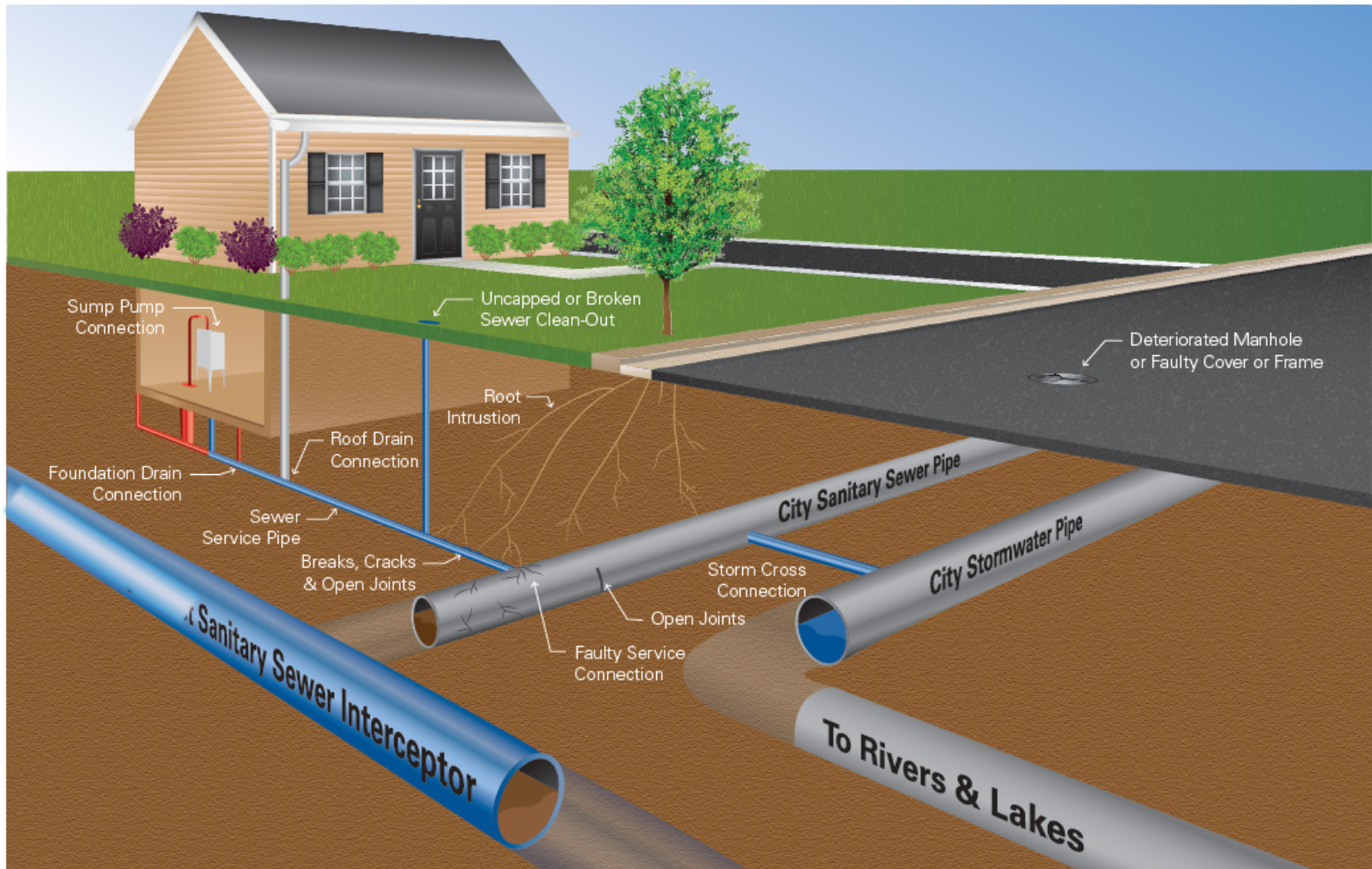


Steve Perdios, PE
Michael Hanley, EIT

AGENDA

- Inflow and Infiltration Programs and Private Inflow following Mass DEP I/I Regs
- Why and When is Private Inflow a Problem?
- Prioritizing Regions by Severity
- Scheduling Inspections
- Data Management
- Safety When Working on Private Properties
- Examples of Private Inflow Observations
- Conclusions

Inflow from Private Properties

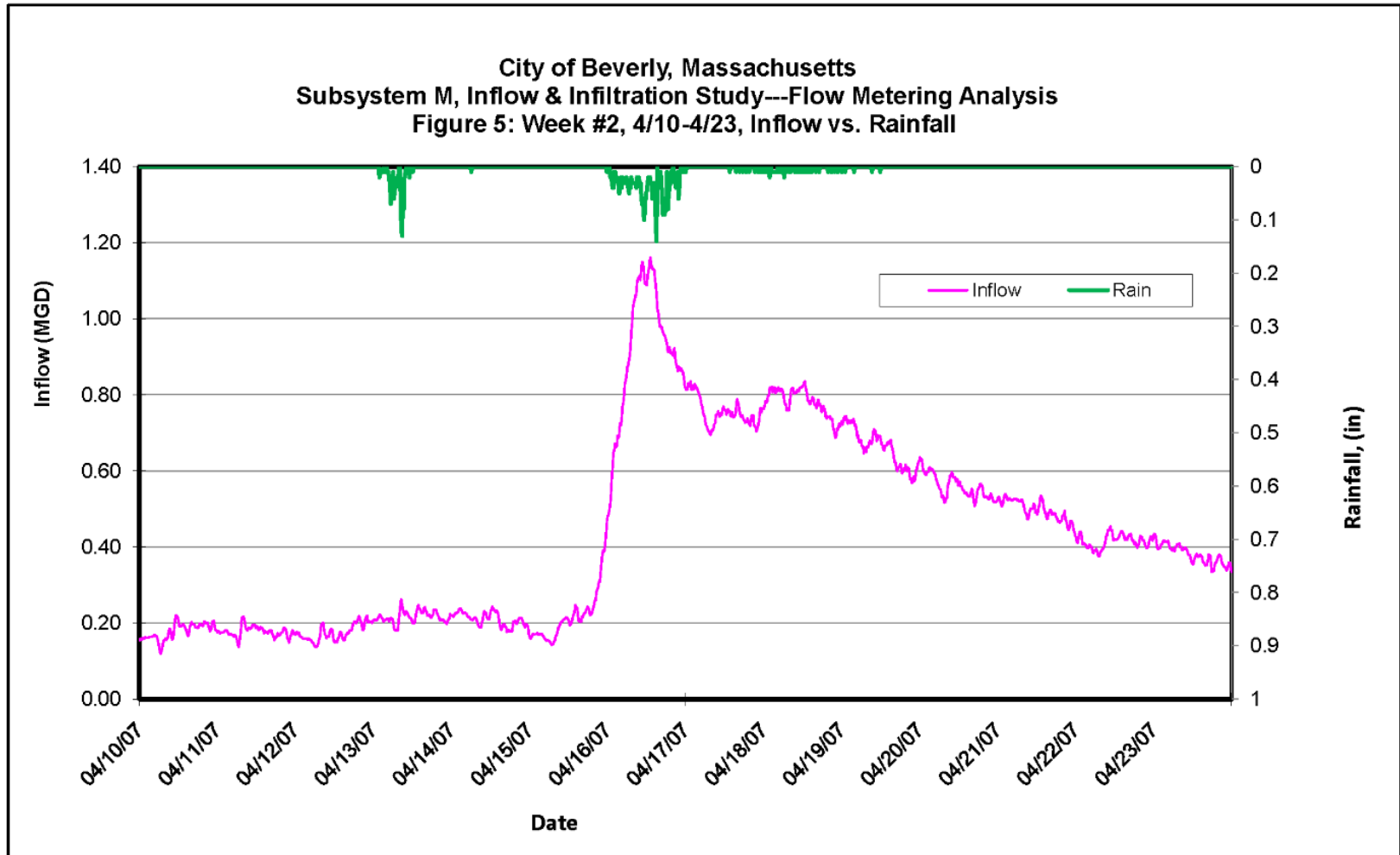


Why is Private Inflow a Problem

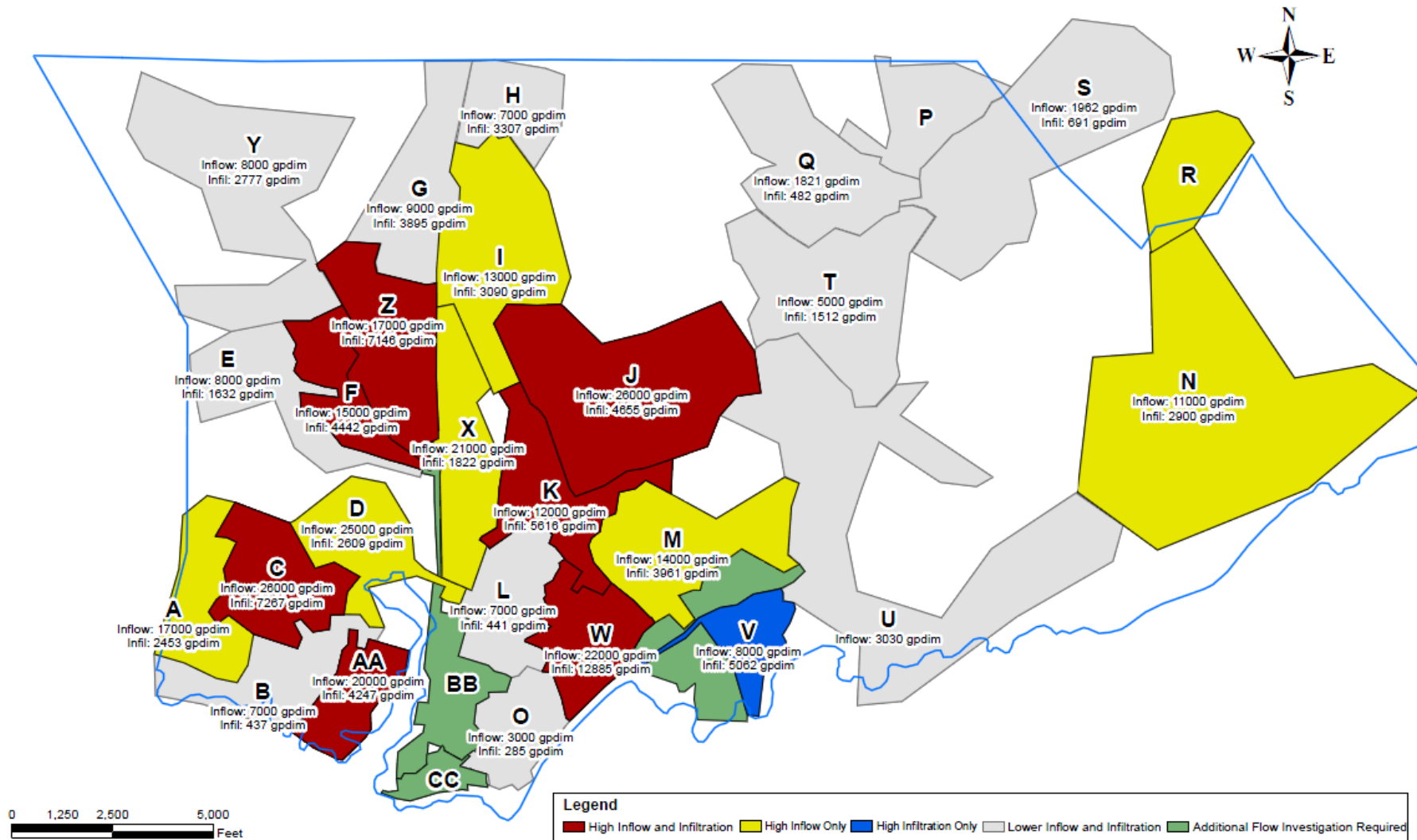
- Capacity, SSOs, pollution, public health, nuisance, moving clean water outside basin



When is Rain Induced I/I Excessive?



Prioritizing Regions by Severity



Scheduling Inspections



Subject: Basement Plumbing Inspection

Dear Homeowner:

A representative from Dewberry, an firm hired by the City of Beverly, today to inspect your basement part of the ongoing sewer improve in your neighborhood. Unfortunately we were not home. **PLEASE CALL** at the number below to arrange convenient for you in order to inspection.

Wes Silva / 617-223-1721

Thank you.

Michael P. Collins, PE
Commissioner

CITY of BEVERLY
Department of Public Services
191 Cabot Street, Beverly
Phone: 978-921-6000



Mayor
Michael P. Cahill
Commissioner
Michael P. Collins, P.E.

April 25, 2018

Dear property owner or resident:

The City of Beverly is committed to a clean environment, to reliable City. As you will no doubt recall, the City was hit by severe flooding storms, the sewers are often flooded with extra clean water, consisting of push sewage into your or your neighbor's basement, or spill-out onto a severe disruption and damage.

In order to reduce the risk of the sewer system overflowing in the future, the defects that allow rain and ground water to enter the sewer system in your neighborhood, and house service laterals were completed during the summer of 2017 to complete the project.

As part of this work, the City is identifying other sources that may be contributing events. We have contracted with Dewberry Engineers of Boston to conduct inspection flow. Examples of such sources are depicted on the figure printed overleaf, and could be:

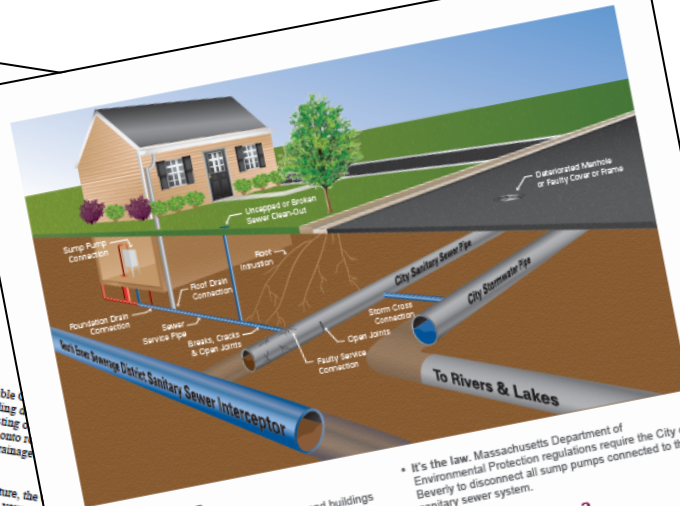
- Gutter connected to the sanitary sewer
- Basement Sump pump connected to the sanitary sewer
- Basement drain connected to the sanitary sewer

We would like to conduct a brief inspection of your property to determine if it contributes to the inspection. You should receive a call from Dewberry Engineers within the next few weeks to a better water environment. The inspection will work with you to identify the sources. The inspection will be in the basement and the outside of the property. The inspectors will carry City-issued ID cards, and a sample copy of this letter. The City Public Services at (978) 921-6053.

We request your cooperation with the inspectors. If you have any questions regarding these inspections, please contact the City Public Services at (978) 921-6053.

Sincerely,
CITY of BEVERLY

Michael P. Collins, PE
Commissioner of Public Services and Engineering



Did You Know?

Underneath our homes, city streets, parks, and buildings is a system of pipes that brings clean water to you, takes stormwater away, and removes sanitary sewage.

What is Sanitary Sewerage?

The sanitary sewerage system takes wastewater from your kitchen, bathrooms, and laundry through pipes and pumps into a treatment facility. Water can also enter into the sanitary sewerage system through cracks in pipes or basement sump pumps connected to the system.

Why are Sump Pumps an Issue?

- Connecting sump pumps to the sanitary sewerage system is no longer permitted for these key reasons:
 - It's very expensive. Water pumped from the sump pump ends up at the treatment facility instead of the stormwater/drainage system. So we pay for it to be treated when it doesn't need to be.
 - It can cause pollution. The water from sump pumps can sometimes fill sanitary sewer pipes—leaving no room in the pipes when you need to flush. This can cause an overflow of untreated sewage.
 - It can impact the treatment plant. When all the clean water arrives at the treatment plant, it can flood the plant, making it difficult to treat the sanitary sewage.

- It's the law. Massachusetts Department of Environmental Protection regulations require the City of Beverly to disconnect all sump pumps connected to the sanitary sewer system.

What is the City Doing?

- We're investing in identifying and fixing cracked pipes across the city.
- We're upgrading more than three miles of sewer system in the Hurd Stadium area that contain cracked pipes.
- We're monitoring flow across the city to identify specific areas where sump pumps may be connected and there are more cracked pipes, so these can be upgraded.
- We're reaching out to residents to identify sump pumps that are sending clean water to the sanitary sewer system.

What Can You Do to Help?

Think your sump pump might be connected? Please call City Public Services at 978.921.6053.
<http://www.beverlyma.gov/>

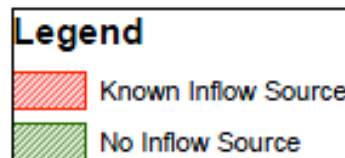
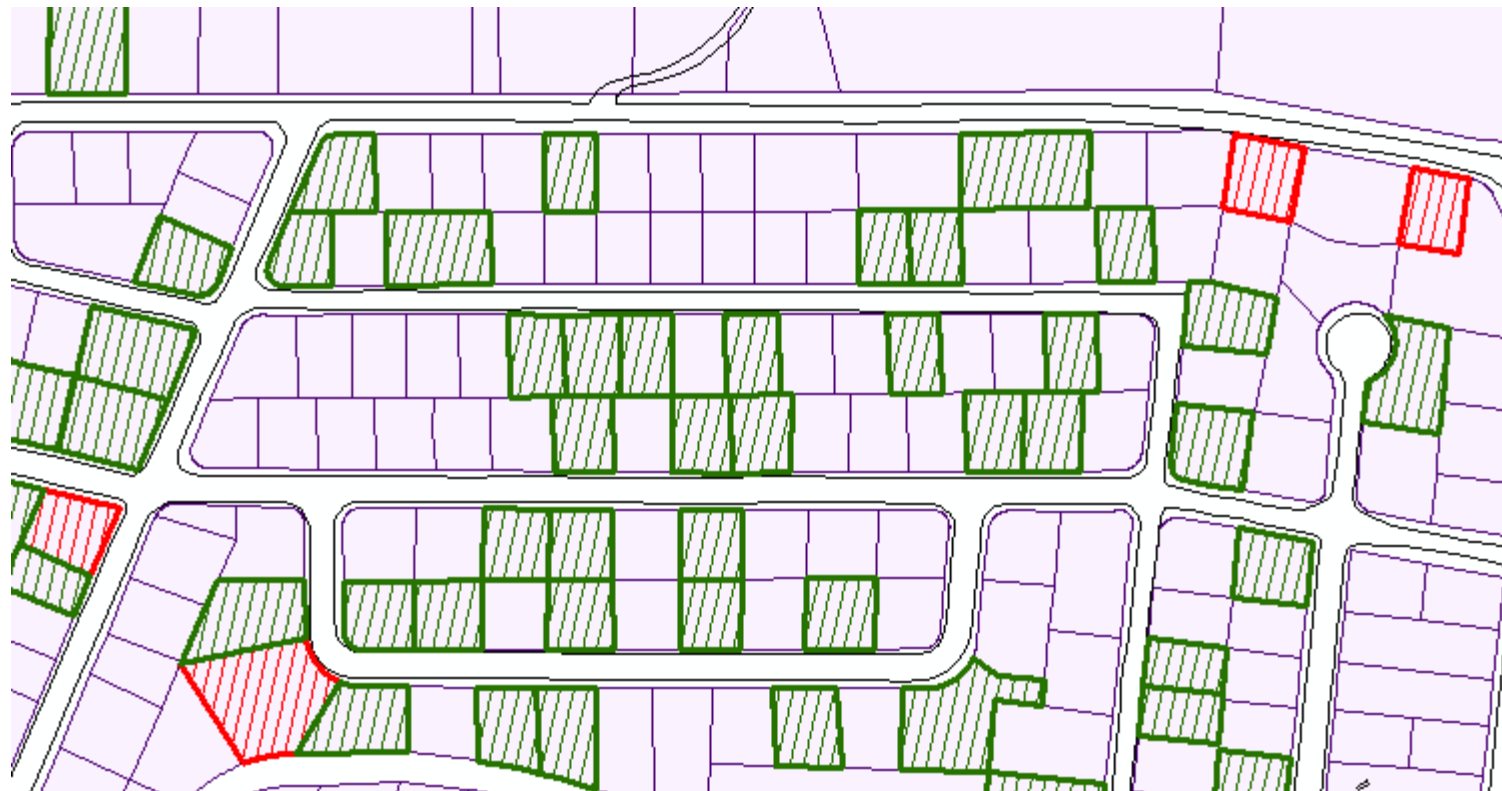


Data management

SUBSYSTEM M Private Inflow Study



Data management



Safety during Inspections



Example of Clear Inflow Source



- Sump Pump discharges to basement sink

Example of Clear Inflow Source



- Uncapped Cleanout in basement



Example of Unclear Inflow Source



- Sump Pump with flexible hose nearby to sewer connection (laundry machine drain pipe).



Example of Unclear Inflow Source



- Roof Downspouts connected directly into ground, with unknown discharge location.

Properly Installed Sump Pumps



- Sump Pump hard-piped to outside the house and connected directly into ground.

Properly Installed Sump Pumps



- Sump pump hard-piped to outside the house, and discharges to lawn.

Properly Installed Sump Pumps



- Sump Pump hard-piped to outside the house and connected directly into ground.

Flat Roof Investigation

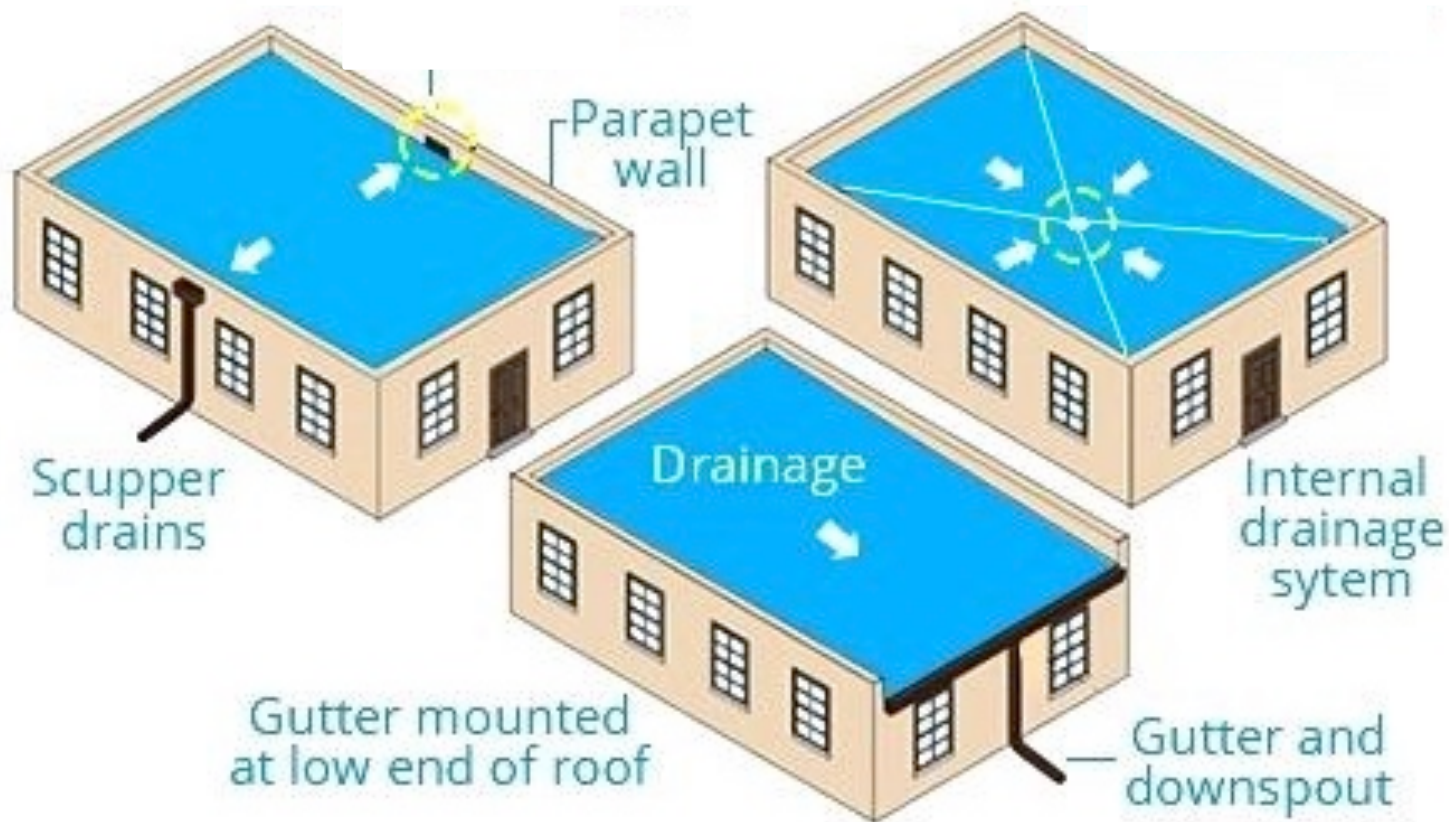
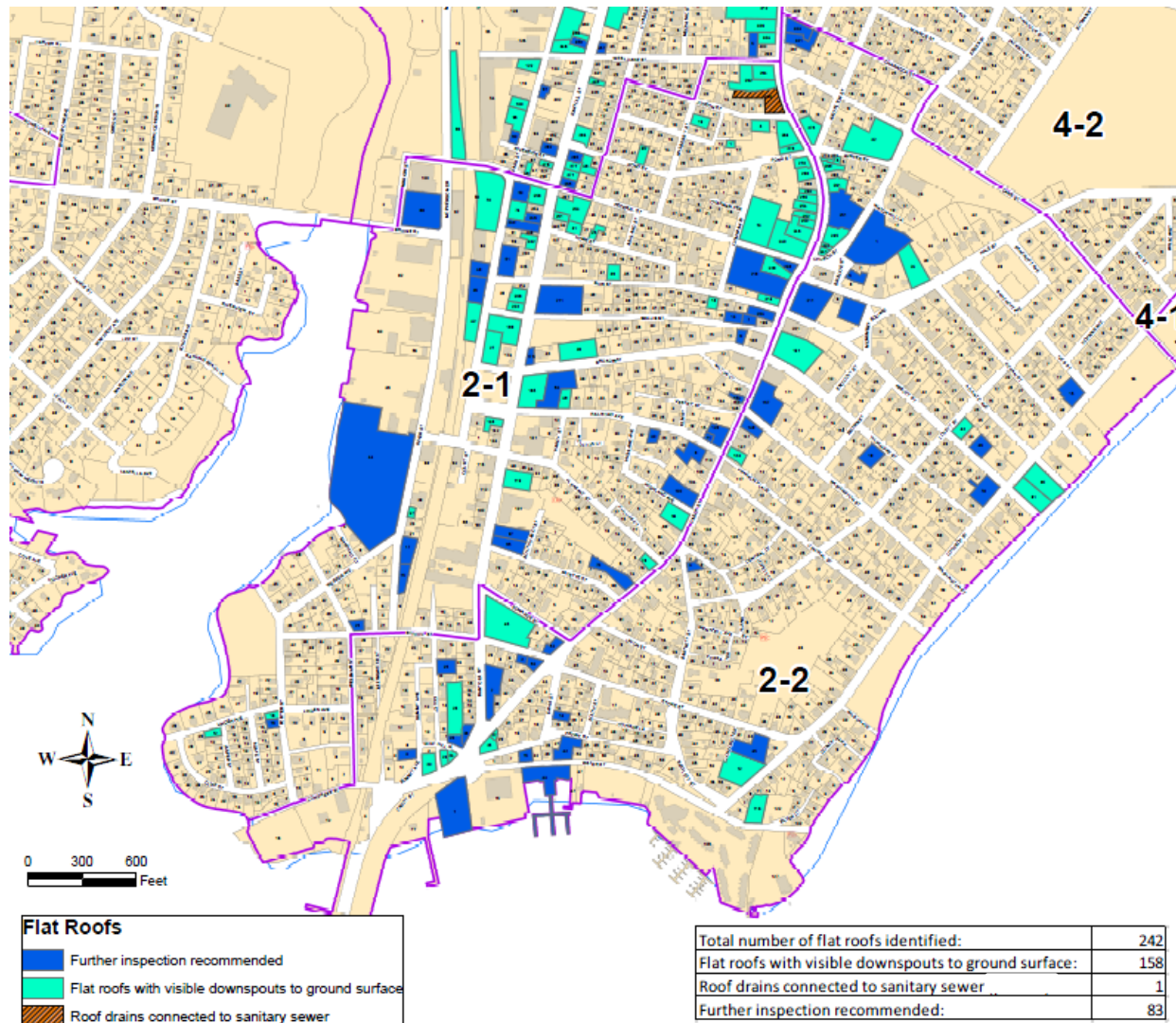


Image Source: <https://www.raingutterssolution.com/blog/why-you-need-a-drainage-system-if-you-have-a-flat-roof/>

Flat Roof Investigation



MassDEP Guidelines on Private Property Inspections

Outside the building(s), the inspector should look for and make note of any:

- yard drains;
- patio drains;
- driveway drains;
- sidewalk drains;
- window well drains; and
- roof downspouts leading underground or through the building foundation

Inside the building(s), the inspector should look for and make note of any:

- Wet or damp basement floors and walls;
- sump pumps, discharge pipe type and discharge location;
- floor drains, and sumps;
- Perimeter drains;
- roof leader or foundation drain pipes coming in from outside; and
- removed, uncapped sewer cleanouts, or cleanouts located below the basement floor elevation.

Conclusions

- Needs planning and careful data management
- Perseverance, make many calls, letters, follow up contact....
- Flat Roofs...
- Next Steps: Development of a program for re-directing Private Inflow Sources