

Lindsey Sylvester, PE

Sump Pump Disconnection Programming and Ordinance Development

Presented at the 2018
NEWEA Annual Conference

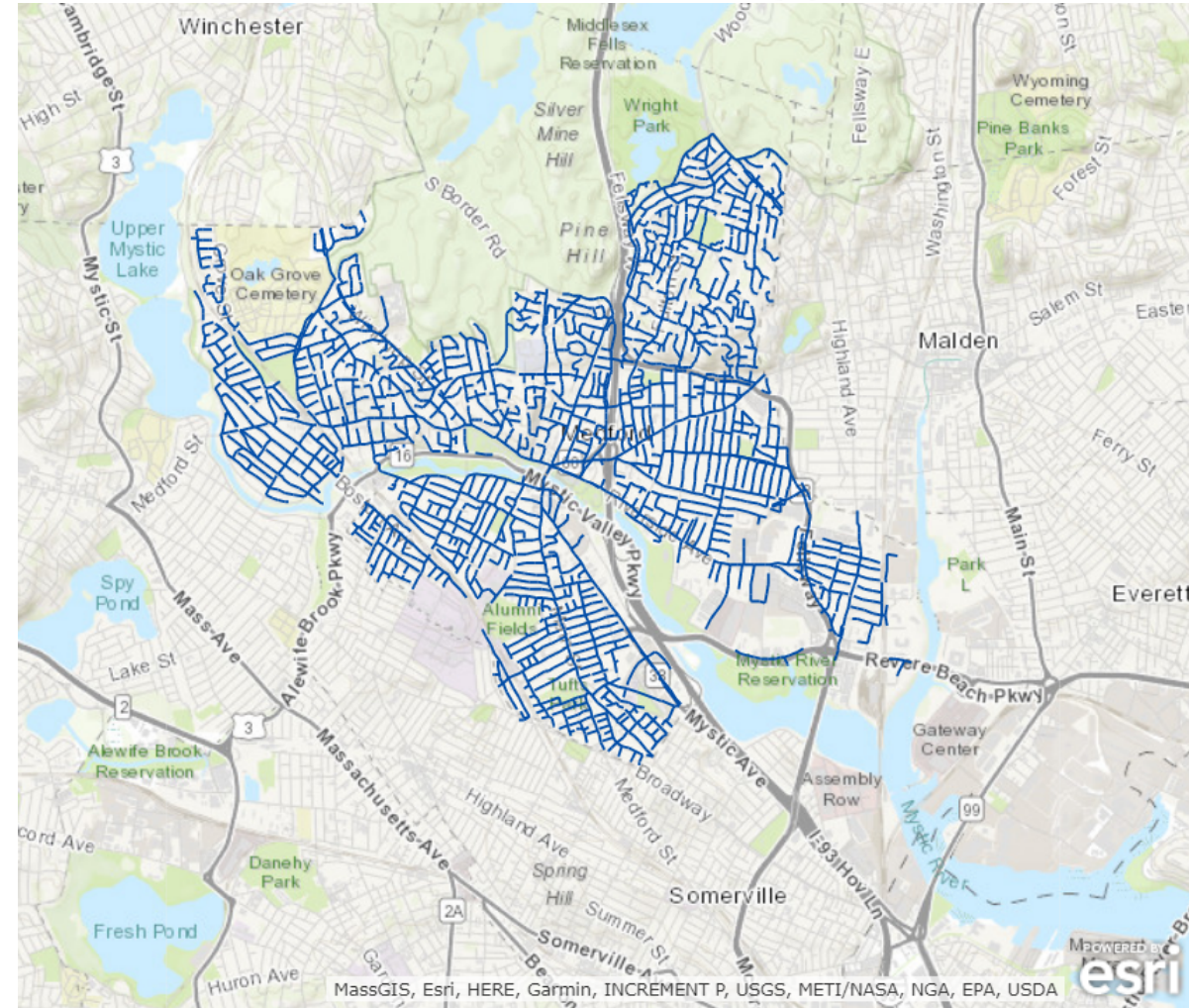
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- Background
- Issue
- Past Studies
- Removal Options
- Concerns
- Medford's Approach
- Questions & Discussion



Medford, MA

- 119 miles sewer
- Varying age and condition
- Conveyed to MA Water Resource Authority (MWRA)
- Treated at Deer Island WWTP



Background

**I/I Analysis and Sewer
System Evaluation
Survey (SSES)**



**EPA
Administrative
Order**

1900's

2000

2002

2009

**Infiltration and
Inflow (I/I)
efforts begin**



**I/I Analysis
and SSES
Part 2**



Background

Phase 1 SSES for Mini-System P and Mini-System K, L, & N rehabilitation work begins



I/I Control Plan extension letter submitted to MassDEP

2011

Phase 1 SSES for Mini-Systems K, L, & N



2014

2016

Phase 2 SSES in Mini-Systems K, L, N, & P and Mini-System P rehabilitation planning begins

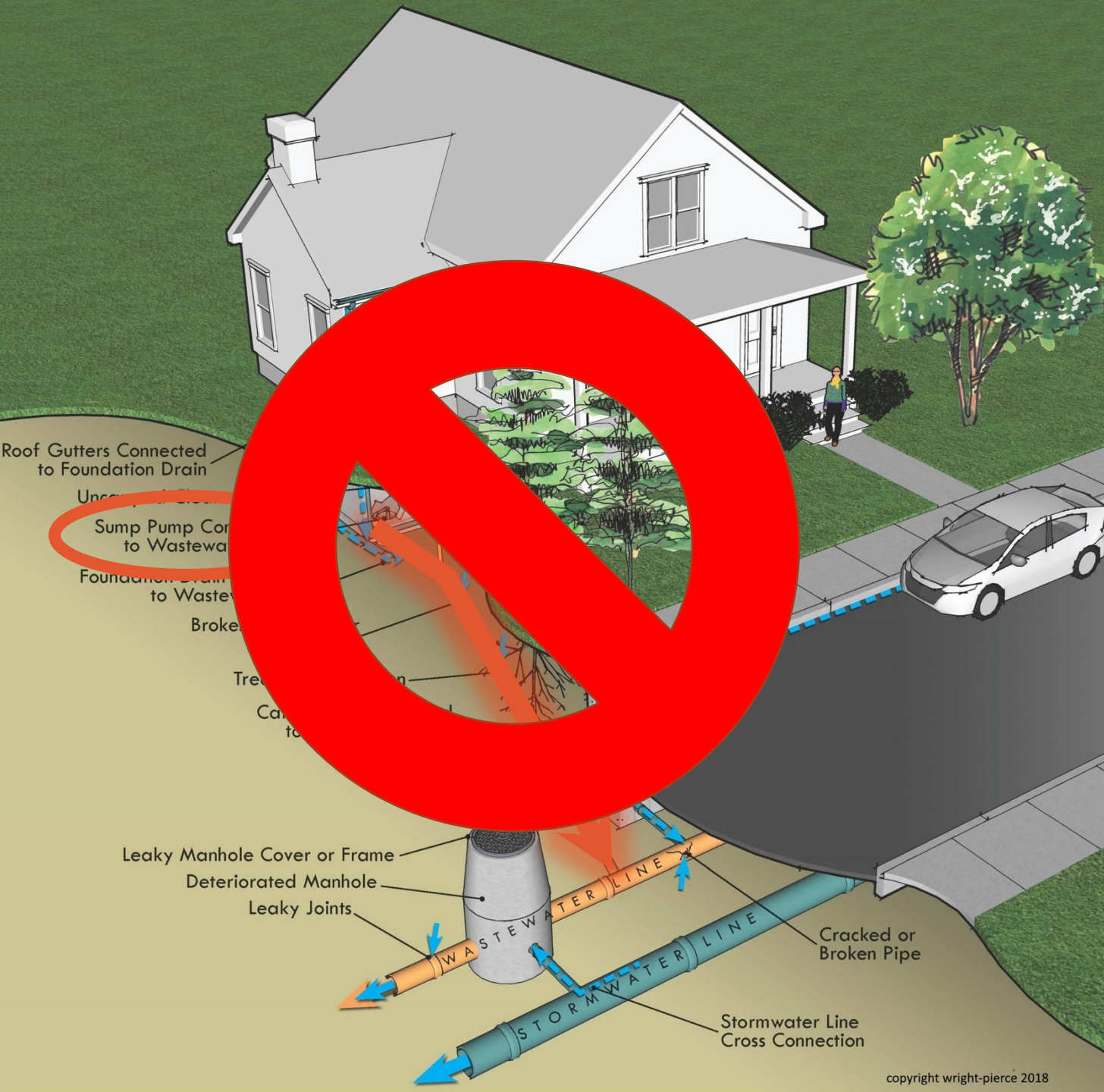
2017





Sump Pumps

- 50% of I/I originates from private sources
- Possible source of inflow
 - Stormwater and groundwater
 - 3-6 gpm average inflow rate (MassDEP)
- Contributes to capacity issues



MA plumbing code **does not allow** sump pump connections to sanitary sewers

MassDEP Guidelines

Defect	Source	Average Inflow Rate (gpm)
Cross Connections	Public	5.0 – 25.0
Sump Pump	Private	3.0 – 6.0
Foundation/Floor Drain	Private	3.0 – 6.0
Ponding Manhole	Public	3.0
Downspout	Private	3.0
Driveway Drain	Private	3.0
Manhole Vent Hole (1/2" – 1 1/4")	Public	1.2 – 7.5
Manhole Rim Seal	Public	1.0 – 5.0
Manhole Cracked Frame Seal	Public	0.5 – 1.5
Window Well	Private	0.5 – 1.0

Table 4, May 2017

2011 and 2014 Phase 1 SSES house-to-house survey results

- Only 1-5% of surveys found connected sump pumps
- **40%** denied access or no response

Using process of elimination as other sources of I/I are identified and removed

Ordinance-Based Enforcement

- Stormwater System
- Sanitary System

vs.

Formal Removal Program

- Amnesty
- Time of Sale
- 50/50

ARTICLE V. - STORMWATER SYSTEM

Sec. 82-123. - Purpose.

The purpose of this article is to improve and protect water quality, reduce erosion and sedimentation, promote environmentally sensitive site design practices, stormwater reuse and groundwater recharge, and insure long term maintenance of stormwater control to meet all applicable federal and state requirements of the city's National Pollutant Discharge Elimination System for Small Municipal Separate Storm Drain Systems permit, commonly known as the "NPDES MS4 permit".

The objectives of this article are to:

- (1) Create a stormwater board to promulgate, adopt and amend stormwater regulations;
- (2) Prohibit non-stormwater and unauthorized discharges to the city's municipal separate storm drain system (MS4); and
- (3) Establish procedures to regulate construction and post-construction stormwater runoff management from new development and redevelopment.

(Ord. No. 757, 3-16-2010)

Sec. 82-124. - Definitions.

[The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:]

City. City of Medford, Massachusetts.

Clean Water Act. The Federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.) as hereafter amended.

Discharge of pollutants. The addition from any source of any pollutant or combination of pollutants into the city's storm drain system or into the waters of the United States or commonwealth from any source.

Erosion. The wearing away of the land surface by natural or artificial forces such as wind, water, ice, gravity, or vehicle traffic and the subsequent detachment and transportation of soil particles.

Groundwater. Water beneath the surface of the ground.

Illicit connection. A surface or subsurface drain or conveyance, which allows an illicit discharge into the municipal storm drain system, including without limitation sewage, process wastewater, or wash water and any connections from indoor drains, sinks or toilets, regardless of whether said connection was previously allowed, permitted, or approved before the effective date of the ordinance from which this article

Illicit discharge. Direct or indirect discharge to the city's storm drain system that is not composed entirely of stormwater, except as exempted in section 82-129. The term does not include a discharge in compliance with a NPDES stormwater discharge permit or a surface water discharge permit.

Ordinance-Based Enforcement

- Illicit connections may only be addressed for storm
- Add language for
 - Prohibited activities
 - Enforcement
 - Fines

Formal Removal Program

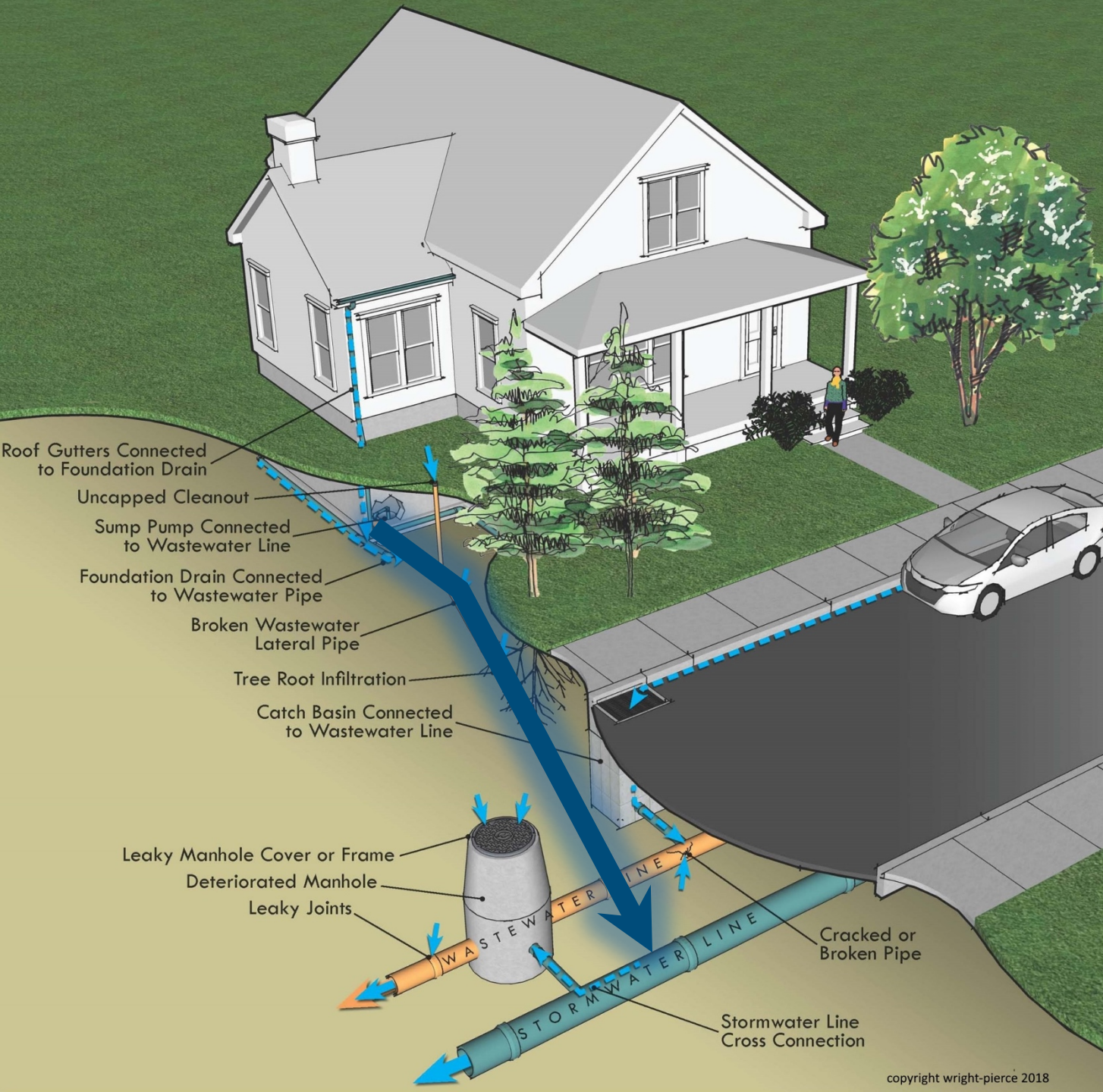
- Amnesty
 - Free inspection and disconnection during enrollment period for suspected illicit connections
 - Homeowners responsible for disconnection costs after enrollment period end
 - Part of water meter replacement program
- Time of Sale
 - Completion of sump pump inspection or dye test required to sell home

Formal Removal Program

- 50/50
 - Disconnection costs shared between municipality and homeowner
 - Sewer separations
 - Shared costs from property line to within 5 feet of home
 - Homeowner responsible for remaining 5 feet
 - Municipality makes connection to storm main

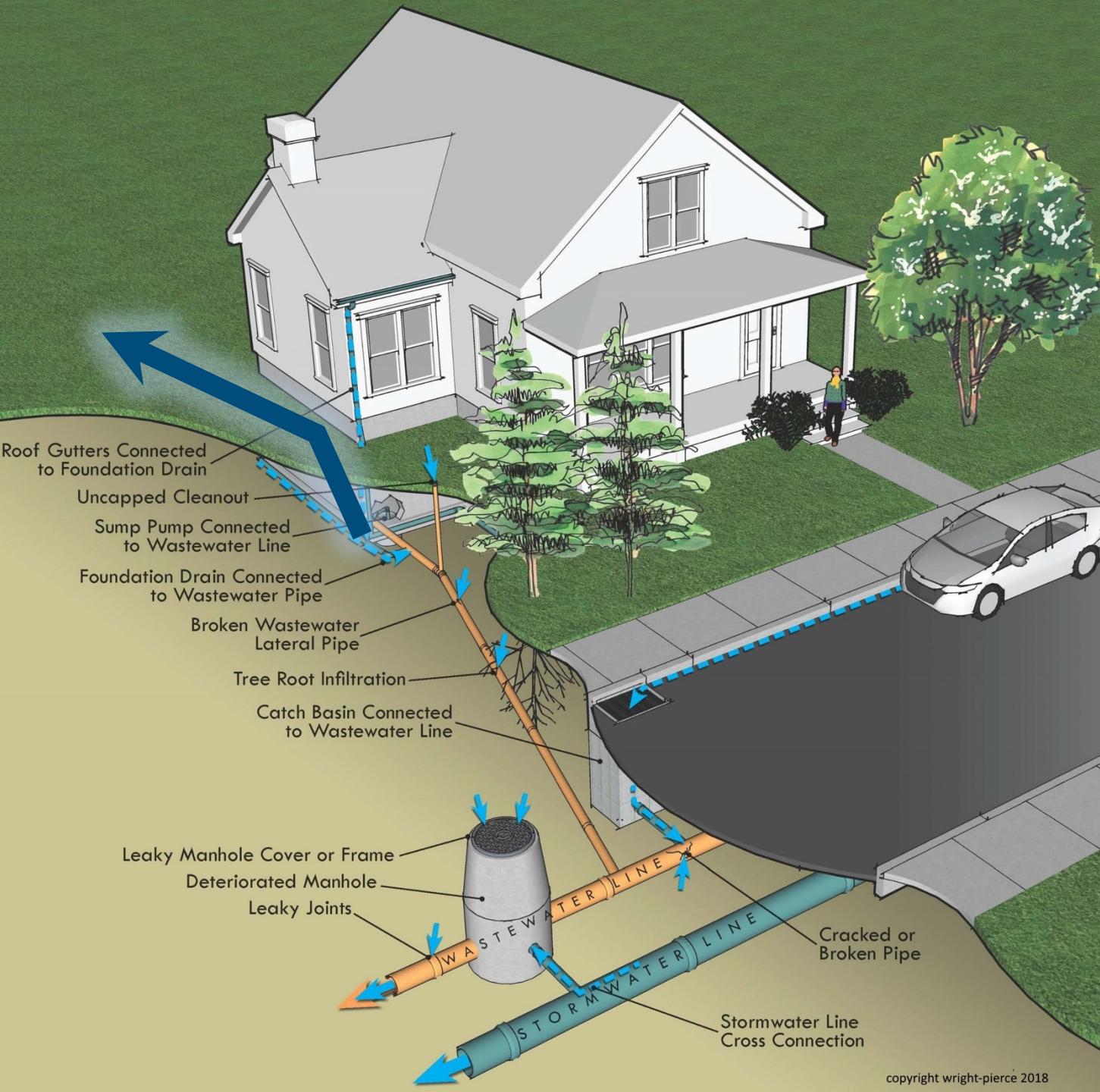
- Political or legal ramifications
 - **Political and legal involvement early on**
- Funding
 - **SRF, MWRA, City, Homeowner (i.e. fines)**
- Public education
 - **Public education program established throughout**
- Environmental capacity
 - Contaminants
 - Stormwater system flows
 - **Option to discharge to pervious areas**

Concerns



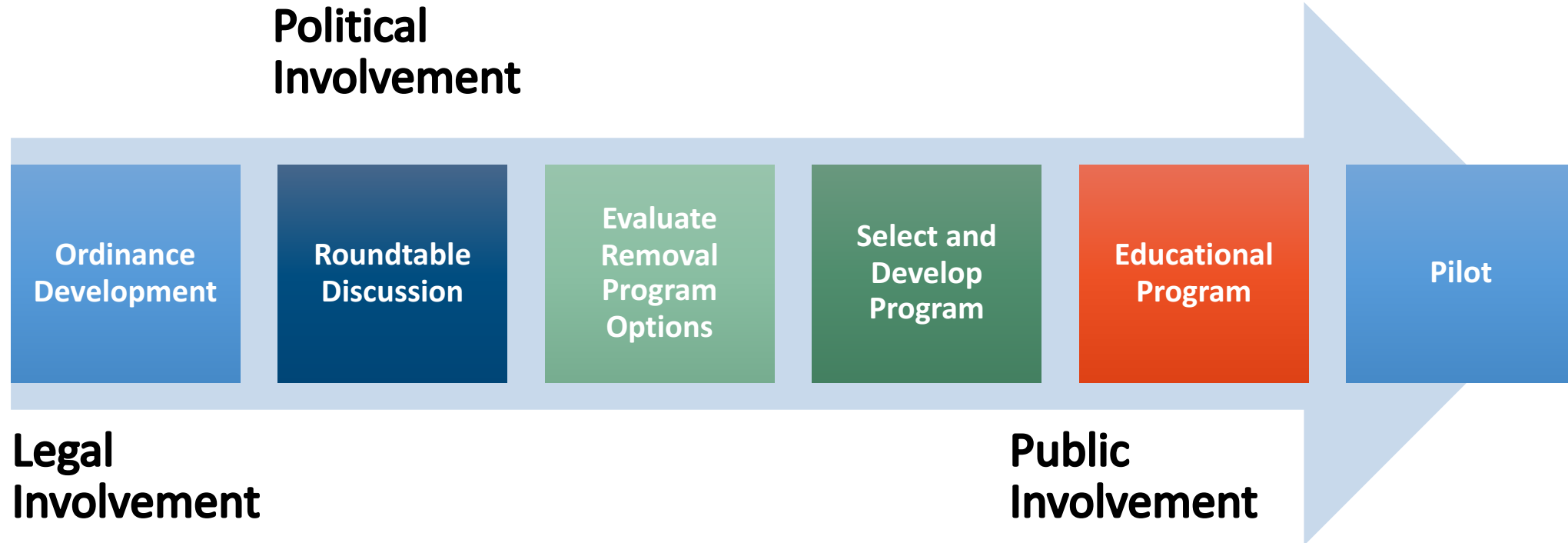
Prefer Connection to Private Infiltration Basin/Sump vs. Storm Drain

Concerns



Prefer Connection to Private Infiltration Basin/Sump vs. Storm Drain

Medford's Approach



ROUNDTABLE DISCUSSION IN SPRING 2018

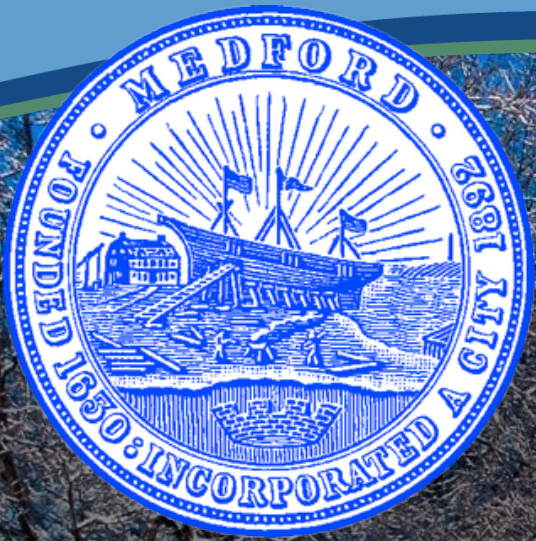
Thank You Questions?



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Thank You

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