

Strategic Meter Migration Leads to Accelerated Solutions in Dover, NH

January 2020

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Presentation Overview

System Overview
Previous Infiltration/Inflow (I/I) Initiatives
Phase 2 I/I Study
Investigative Fieldwork
Next Steps/Project Benefits

Background



Typical City WWTF Flows

- 2-4 MGD

Peak Flows During Significant Rain Events

- 20 MGD

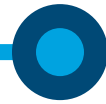
Previous Infiltration/Inflow (I/I) Initiatives

2000



Phase 1 I/I
Study

2003-2011



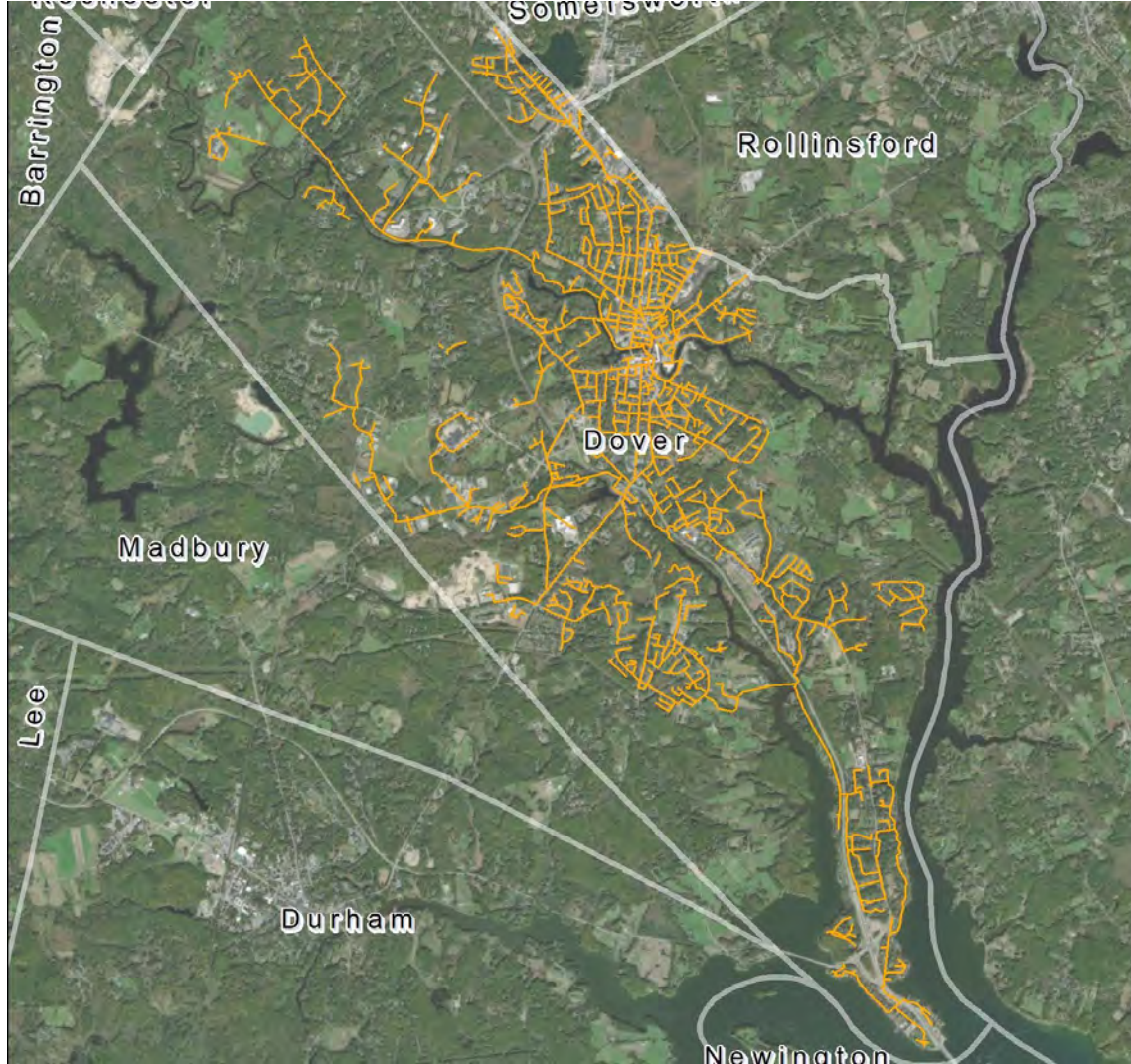
Disconnected Roof Leaders
Disconnected Catch Basins
Replaced Sewer
Lined

2017



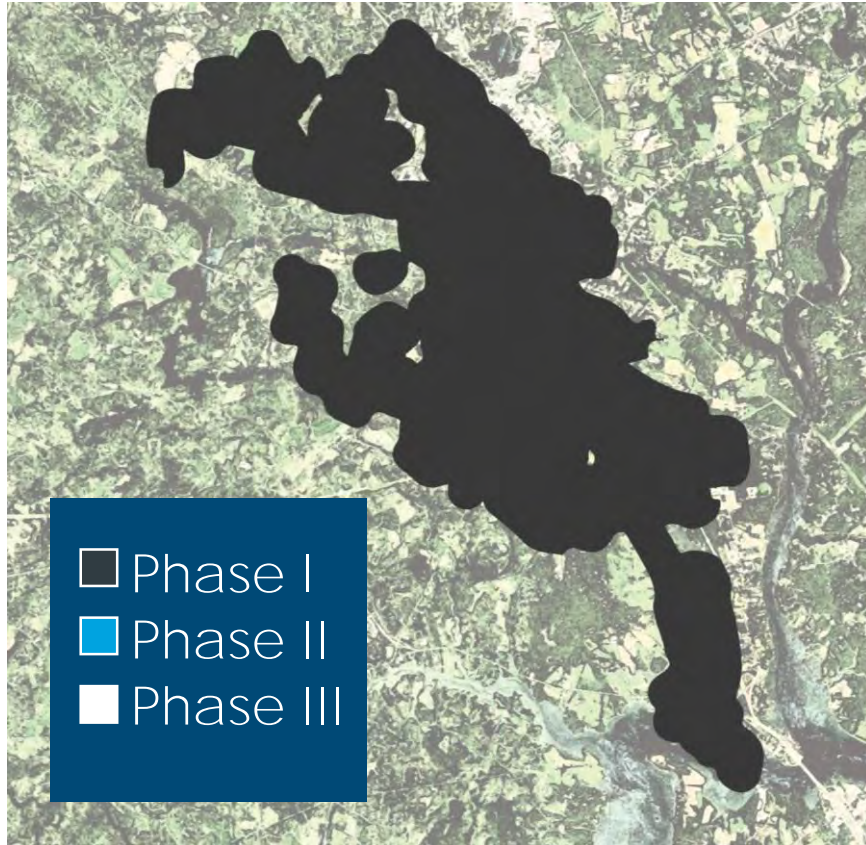
Phase 2 I/I
Study

Phase 2 I/I Study



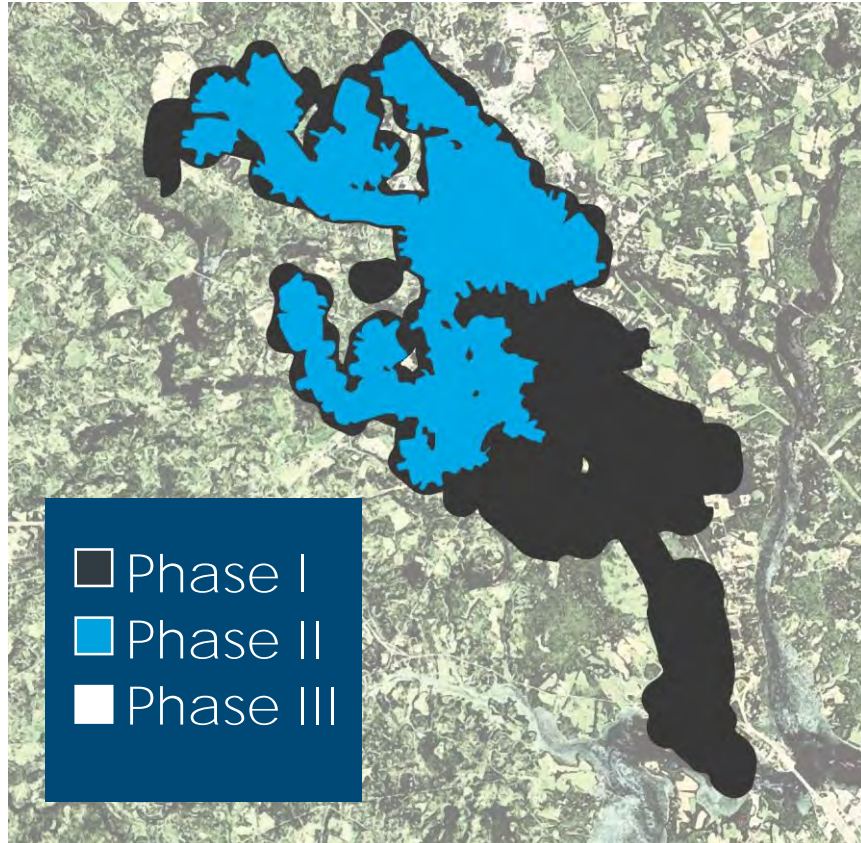
- Expedited Discovery I/I Hot Spots
- Accelerated Results
- Client Customized Approach
- Cost Savings

Phase I – Flow Metering



- October to December 2017
- 10 Basins
 - 95% of entire collection system
- Preliminary I/I Evaluation
 - 5 basins - excessive inflow (52%)
 - 1 basin - excessive inflow & infiltration
 - Downtown Area (1%)
- Results directed flow meter relocation plan for Phase II

Phase II – Flow Metering



- March to April 2018
- Relocated 6 Meters
 - **3 areas didn't warrant additional** investigation (below threshold)
 - Downtown meter removed
 - Small basin
 - Known historical issues
 - Investigative Fieldwork
- 4 basins with high inflow reduced in size
- Results
 - 2 basins – excessive inflow (17%)
 - 2 basin – excessive infiltration (8%)
 - 1 basin – excessive inflow & infiltration (5%)

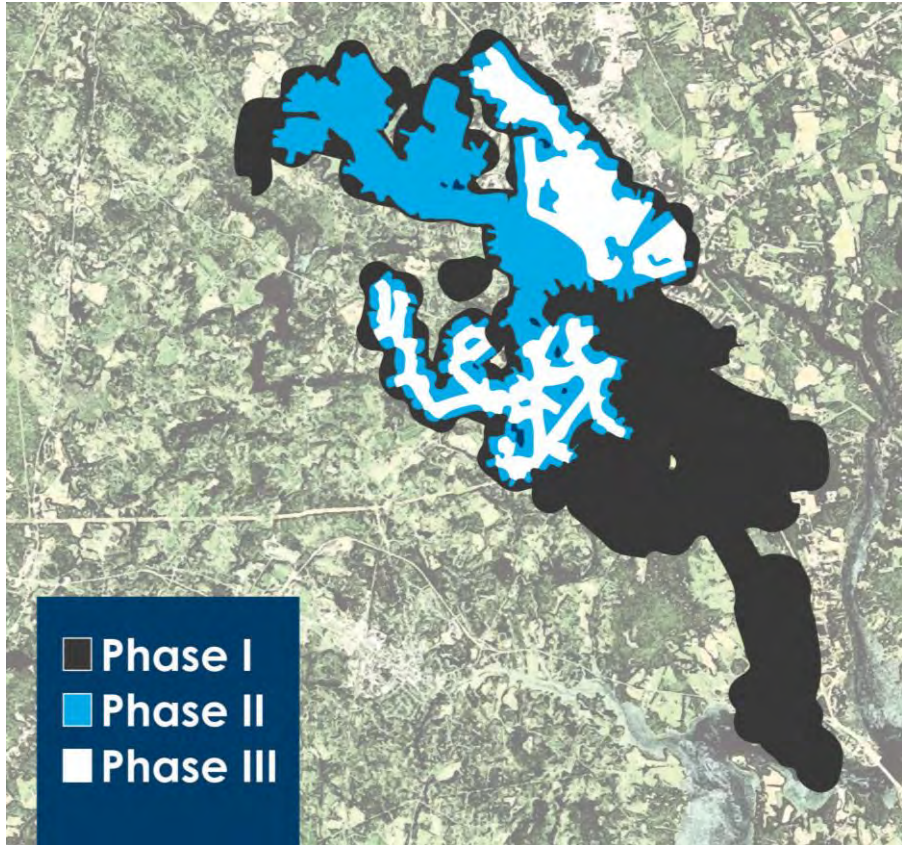
Phase 2 – Investigative Fieldwork

Closed Circuit Television Video (CCTV)



- February 2018
- Downtown basin
- Included Mill Street
 - 5% not evaluated
- 11,500 LF inspected
 - NASSCO PACP

Phase 3 – Flow Metering



- May to June 2018
- Continued Sub-Dividing Basins
- Meter reinstalled in Downtown
 - Identify potential sources of direct inflow
- Results:
 - 1 basin – excessive inflow (9%)
 - 1 basin – excessive infiltration (7%)
 - 2 basins – excessive inflow and infiltration (5%)

Phase 3 – Investigative Fieldwork



BUY PHOTO

HIDE CAPTION

4/7

Dover's Deputy Community Services Director Bill Boulanger points out gutters that are showing smoke to Eliza Morrison of Wright-Pierce. It's part of a smoke test the city is conducting with Wright-Pierce to find places where groundwater is entering the sewer line where it shouldn't. [Deb Cram/Fosters.com]



Smoke Testing

- July 2018

SEWER SMOKE TESTING IN DOWNTOWN DOVER BEGINS JULY 12

posted on: 7/6/2018

On July 12 and 13, 2018 crews will test the sanitary sewers in a portion of downtown Dover by blowing nontoxic smoke into the sewer system. This process – smoke testing – can help the City locate spots where stormwater and groundwater can enter the sewer system.

Crews from Wright-Pierce will oversee and conduct the smoke testing. Community Services crews will monitor the testing. Smoke testing will occur between 7 a.m. and 3 p.m. each day.

Smoke testing involves forcing nontoxic, harmless smoke through the sewer system. The odorless smoke used will not stain clothes or furniture and does not create a fire hazard. Smoke will appear if there are leaks in the system. Some smoke may enter homes and businesses if there are dried up drain pipes or defective plumbing. Residents in the area being tested can fill seldom-used drains with water to prevent smoke from entering the home.

Community Services crews will begin notifying residents before the work begins by placing door hanger cards on the doorknobs of affected properties. These cards have additional information about what to expect during the smoke testing. The testing does not require crews to enter homes, and residents do not need to be home during the testing. If residents see smoke in their home or on their property during the testing, they should notify the crew working on their street or contact Community Services at 516-6450.

More information, including a map of where smoke testing will occur, [can be found here](#).

For additional information, contact Community Services at 516-6450.

Phase 3 – Investigative Fieldwork



Dye Testing

- September 2018
- Locations based on smoke test results

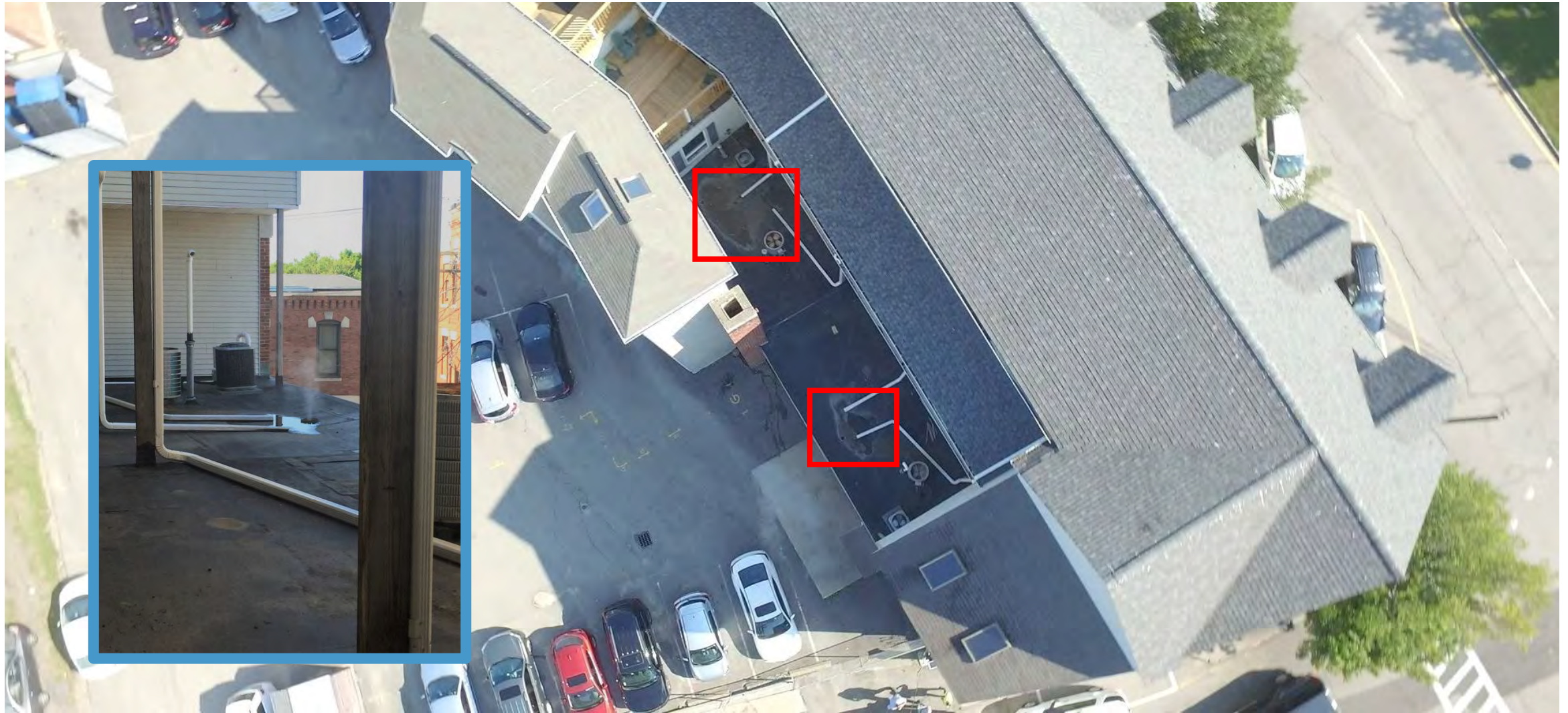
Phase 3 – Investigative Fieldwork



Manhole Inspections

- November/December 2018
- Downtown
- 50+ Completed Inspections
 - NASSCO MACP

Phase 3 – Investigative Fieldwork



Next Steps



1. Roof Leader Investigation
2. Update priority projects **in “hot spot” locations**
3. Rehabilitation
4. Flow Monitoring
 1. City Owned Meters

Project Benefits

1 Cost-Saving Approach

2 Interim data analysis expedited decisions on where area-specific field investigation tasks should occur

3 Utilizing in-house drone technology

4 Use of standardization to assist with Asset Management Program (AMP)

The program and resulting I/I mitigation received an ACEC-NH Engineering Excellence Award!



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THANK YOU



What famous comic
was “born” in Dover, NH?

Hint: It can be considered relevant to the industry.