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Memorandum

To: Catherine Woodbury, Senior Project Manager, Cambridge DPW

Fr: Garrett Bergey, CPMSM and Elizabeth Olson

Re: **Illicit Discharge Detection and Elimination Investigation Progress**

Dt: September 24, 2021

This memorandum summarizes the progress made on the IDDE catchment investigations during the Year 3 reporting period of July 1, 2020, through June 30, 2021.

At the end of March 2020, the IDDE investigation was put on hold due to the COVID-19 pandemic shutdown. In August of 2020 the dry weather work portion of the IDDE investigation resumed. And in February of 2021 dye testing resumed to a limit capacity with only educational and commercial/retail type buildings being tested.

Below is the summary of the dry weather work and/or dye testing conducted in each drainage area.

DeWolfe (D21) Drainage Area

Dry weather work for this area found multiple locations with high hits for contamination.

- Cleared streets: Mt Auburn St, Bow St, Arrow St, Prescott St, Ware St, Ellery St, upstream portion of Harvard St, Broadway, Quincy St, Felton St, Irving St, Hovey Ave, Leonard Ave and Camelia Ave
- Standing water streets: Plympton St, downstream portion of Harvard St, Trowbridge St, Trowbridge Pl, Ellsworth Ave and Chatham St
- Locations with contamination listed below:

MH ID	Pipe	Location	Contamination	Comment
D21DMH2030	East	1643 Cambridge St	Visual Evidence	
D21DMH2065	Southeast	73 Highland Ave	Visual Evidence	
D21DMH2065	Southwest	73 Highland Ave	Visual Evidence	
D21DMH2205	South	Dana St at Cambridge St	A=10, S=3, C=2.9, E. coli = 223,974 MPN/100ml	
D21DMH2602	Southwest	73 Dana St	Standing Water *	* Upstream of D21MDH2205
D21DMH1730	Southwest	Dana St at Broadway	A=4, S=0.5, C=0.14, E. coli = 483,914 MPN/100ml	Found by sandbag
D21DMH1905	Southwest	Dana St at Chatham St	A=10, S=0.5, C=2.57, E. coli > 483,920 MPN/100ml	Found by sandbag, upstream of D21DMH1730
D21DMH1905	Southeast	Dana St at Chatham St	Standing Water *	* Upstream of D21DMH1730
D21DMH1305	Northeast	1050 Mass Ave	A=4, S=0.0, C=0.23, E. coli < 1 MPN/100ml	
D21DMH1350	Northeast	3 Dana St	A=3, S=0.5, C=0.55, E. coli = 250 MPN/100ml	
D21DMH0905	Northeast	1 Remington St	A=0.3, S=0.0, C=0.03, E. coli = 44.79 MPN/100ml	

SDE conducted dye tests of the commercial and educational buildings along Cambridge St for the contamination found at drain manhole D21DMH2030. All fixtures in the War Memorial Recreation Center at 1640 Cambridge St were found to be not legal. The dye tests were performed again at later date while a CCTV crew was monitoring the drain and it was determined that all fixtures connected to the same lateral in the drain line. The City corrected the illicit connection. SDE returned to conduct a post correction check dye test and dry weather work to verify the correction. PCC of D21DMH2030 test kit results were A=0.3, S=0.25, C=0.17 and the lab results E. coli=4.09MPN/100ml, A=0.398 mg/l and S=ND.

The following buildings were also dye tested as part of the investigation for D21DMH2030 and found to be legally connected to the sanitary sewer: 1611, 1613, 1621, 1627, 1629, 1640 Cambridge St and 449 Broadway. Additional 1629 Cambridge St and 459 Broadway were partial no dye founds.

SDE plans to conduct dye testing at the buildings adjacent to the remaining contaminated pipes segments when dye testing of residential building types can be resumed.

Broad Canal (D07) Drainage Area

Dry weather work for this area found to be mostly standing water, particularly in the downstream portion, with some of the sidelines in the upstream portion being cleared.

- Cleared streets: upstream portion of Main St, upstream portion of Cardinal Medeiros Ave, Marcella St, James Way, Marney St, Michael Way, Cornellius Way, York St and Plymouth St
- Standing water streets: downstream portion of Cardinal Medeiros Ave, downstream portion of Main St, Ames St, Broadway and Third St

Contamination was found at two locations:

- D07DMH0555 (Main St) - visual evidence found in starter manhole
- North inlet of D01DMH3030 (Berkshire St) - A=0.0, S=0.5, C=4.12 and E. coli = 10 MPN/100ml

The commercial buildings on Main St near the contaminated drain line were dye tested. An illicit ejector pump at 255 Main St was found tied into drain manhole D07DMH0555. No dye testing was conducted for D01DMH3030 as all adjacent buildings are residential.

Jackson Place (D38 - CAM401a) Drainage Area

Dry weather work for this area was conducted downstream of regulator CAM401a.

- The main line was found to be mostly standing water including the easement that runs parallel to Rindge Ave located immediately downstream of the regulator.
- Standing water was also found along Cambridge Park Dr with a few sidelines being cleared by sandbags.

Only hit for contamination was found in an unmapped inlet coming from the north in S72CMH0095

- Test kit results: A=6.0, S=0.75, C=0.46 and lab results: E. coli=1 MPN/100ml, A=3.21 mg/l, S=0.09 mg/l
- SDE dye tested commercial buildings (2 Cambridge Park Dr and 149 - 151 Alewife Brook Pkwy) near contamination but all results were Legal.

Flagg St (D19) Drainage Area

Dry weather work conducted in this area found mostly standing water.

- Cleared streets: Putnam Ave, upstream portion of Green St and downstream portion of Flagg St
- Standing water streets: downstream portion of Green St, Bay St, Franklin St, Kinnard St and upstream portion of Flagg St.
- No pipe segments were identified that have contamination.

Southeast inlet of D19DMH1505 was found to have significant standing water.

- Since there was no mapping upstream of the inlet SDE was uncertain of the source.

- Record drawings from 1974 (SS Contract, Ph 1, Contract 3, Sheet 17) showed the line had previously connected to the combined system but had since been capped.
- SDE used a camera to confirm that the inlet had been capped.

No dye testing for the area has been conducted as the buildings adjacent to the standing water are residential. SDE will attempt to reinspect some of the standing water pipe segments during a future dry weather period. If standing water is still present, the area will have to be cleared through dye testing.

University Rd (D27) Drainage Area

Dry weather work conducted in this area found a mix of standing water and clean flowing pipe segments.

- Cleared streets: Bennett St and Mt Auburn St
- Standing water streets: University Rd

SDE is working to gain access to commercial use buildings adjacent to the standing water along University Rd for dye testing.

Matignon Rd (D44) Drainage Area

No work was performed in this area by SDE between July 1, 2020, through June 30, 2021.

Sparks St (D31) Drainage Area

For this area most of the dry weather work and dye testing had been started before the pandemic shutdown but there were a few locations that SDE was unable to complete prior to the shutdown.

A post correction check dry weather work was performed for 9 Gray Gardens East.

- SDE confirmed that the unmapped inlet in starter drain manhole D31DMH5510 had been capped
- Dry weather work (test kits and bacteria sampling) results of the downstream manholes along Gray Gardens East and Raymond St were clean and verified the correction.

SDE conducted follow-up dry weather work on the northeast inlet of D31DMH2405

- Located at the intersection of Sparks St and Hemlock Rd.
- Inlet had a clean test kit (A=0, S=0, C=0.66) and a high hit for bacteria (52,050 MPN/100ml).
- SDE was unable to find a point of upstream clean before the pandemic shutdown.
- When work resumed an upstream clean was located
- Addresses for dye testing were identified for when dye testing in residential buildings is resumed

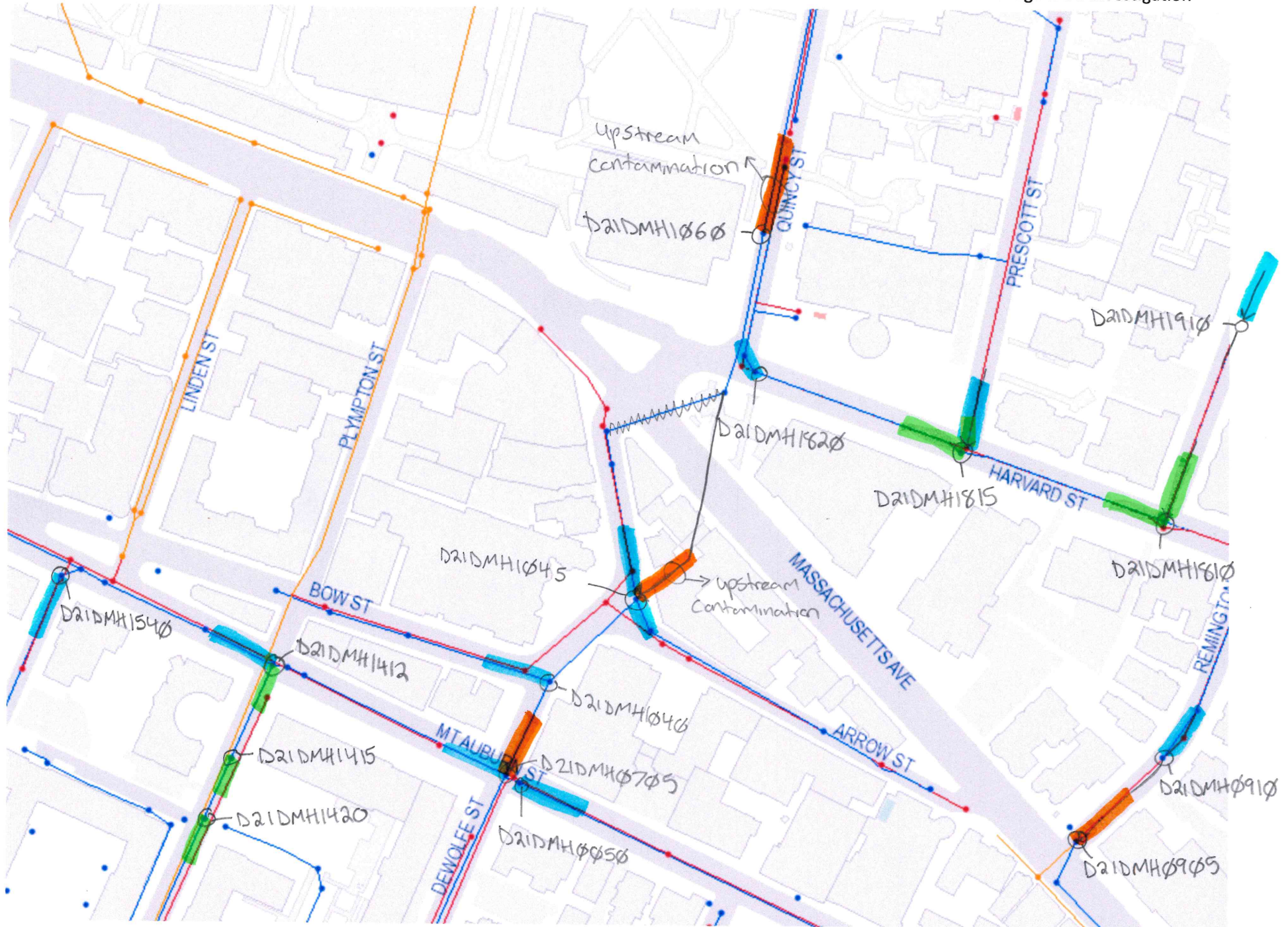
SDE conducted dye tests at the three buildings apart of Buckingham Browne & Nichols Middle School at 80 Sparks St. Two of buildings tested legal and the third tested partial no dye found. Residential buildings identified for dye testing during the pandemic and those buildings not completed pre-pandemic will resume when dye testing is permitted.



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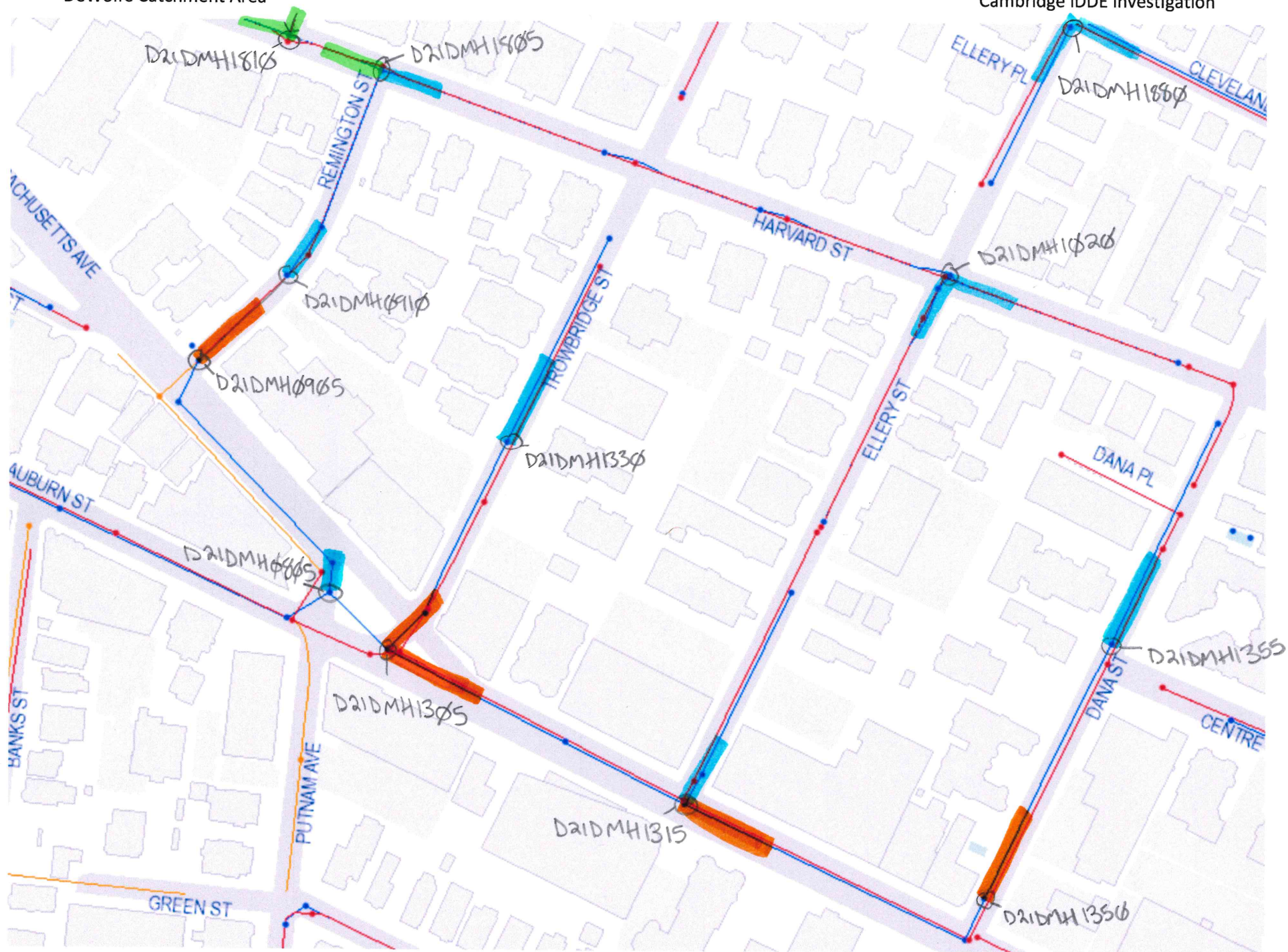
Future catchment investigations will proceed based on the City's recently revised priority ranking. Two outfalls were identified based on recent dry weather sampling with sewage indicators: D33 Blanchard Rd and D46 Acorn Park Dr.



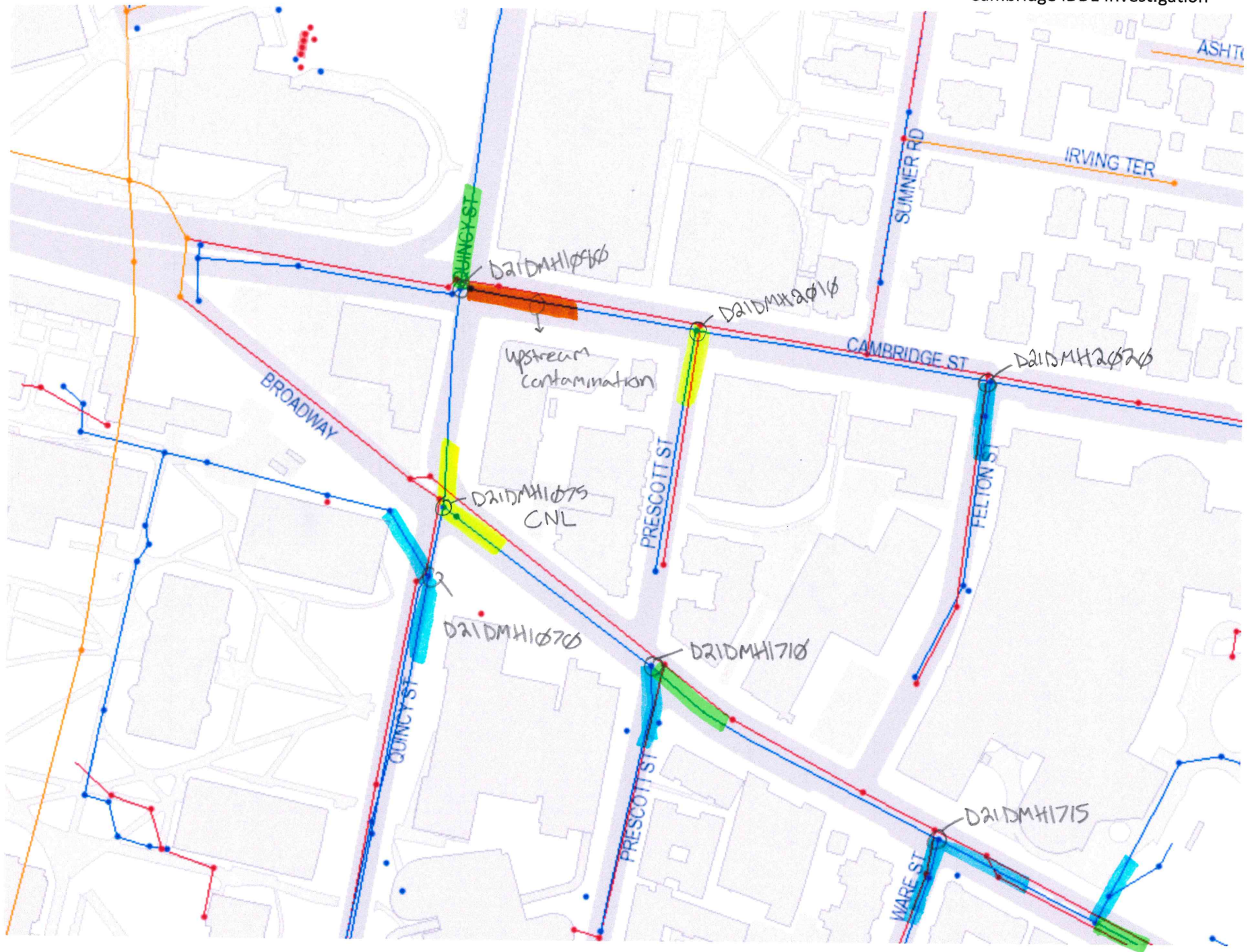


DeWolfe Catchment Area

Cambridge IDDE Investigation

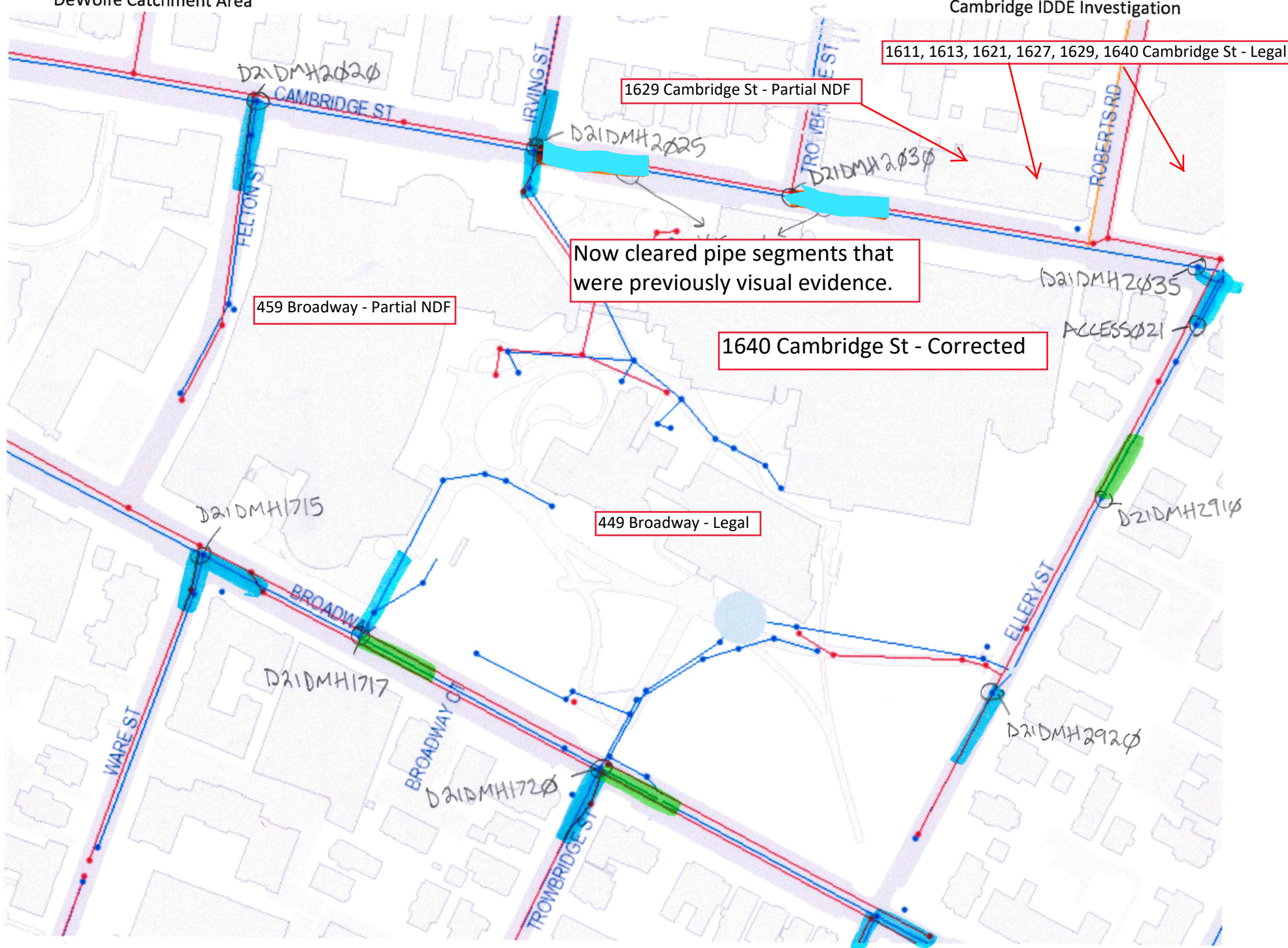




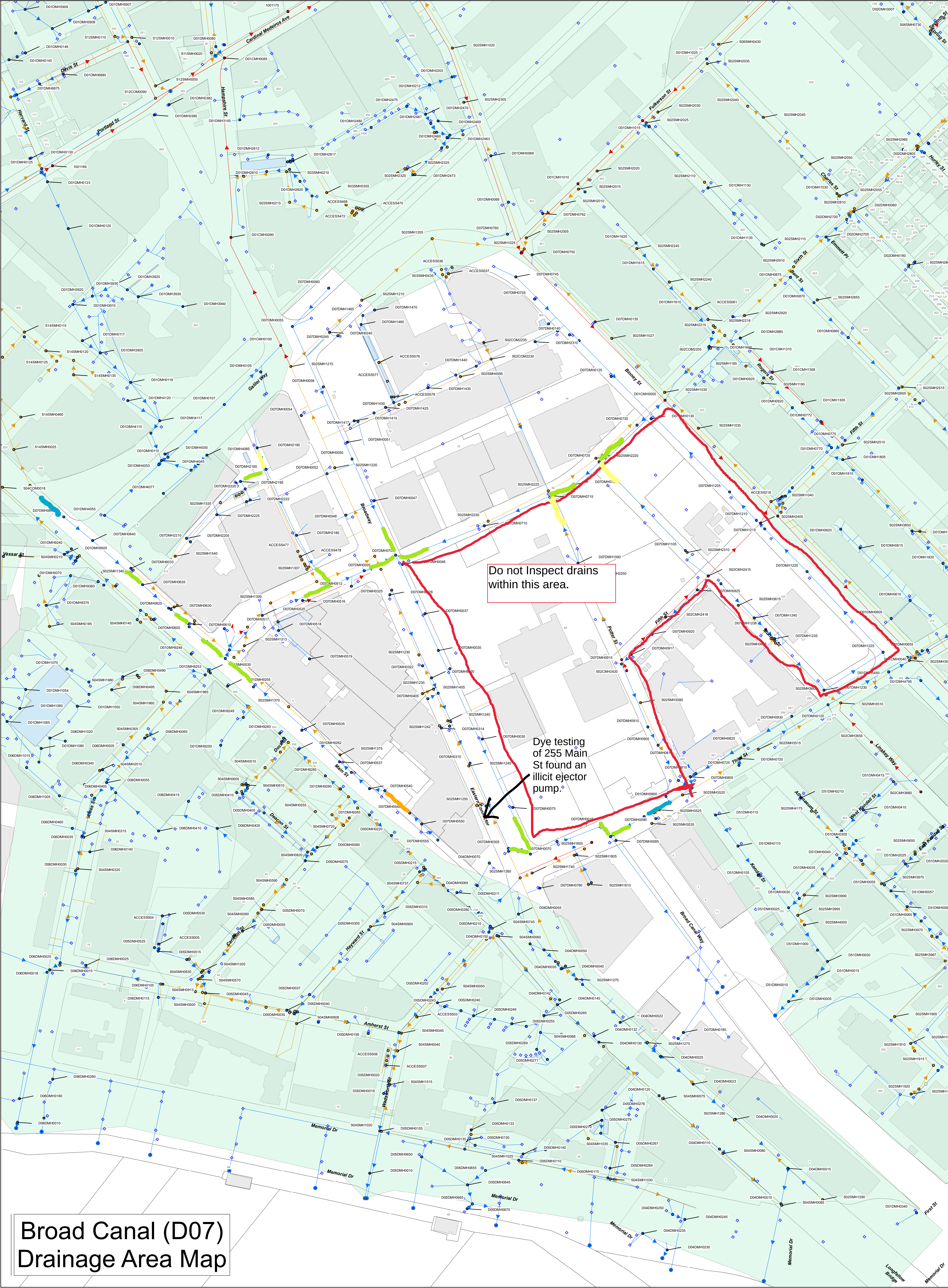


DeWolfe Catchment Area

Cambridge IDDE Investigation







Broad Canal (D07) Drainage Area Map

Legend

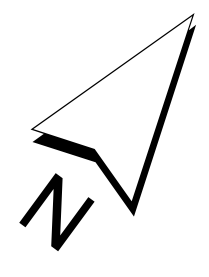
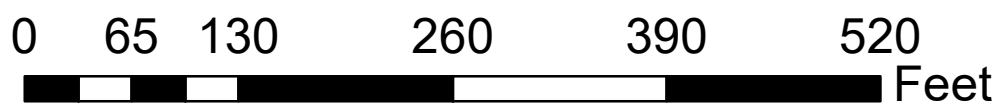
- | | | | | |
|---------------|-----------------|----------------------|-------------------------|----------------------|
| • Outfalls | Manholes | Gravity Mains | Service Laterals | All Other Catchments |
| □ Catch Bains | • COMB | → COMB | → COMB | AreaNo |
| | • SEW | → SEW | → SEW | D07 - Broad Canal |
| | • STORM | → STORM | → STORM | |

= CONTAMINATION

= CLEAN

= STANDING WATER

= NO ACCESS





Legend

- | | Outfalls | Manholes | Gravity Mains | Service Laterals |
|-------------|----------|----------|---------------|------------------|
| Catch Bains | | COMB | COMB | COMB |
| | | SEW | SEW | SEW |
| | | STORM | STORM | STORM |

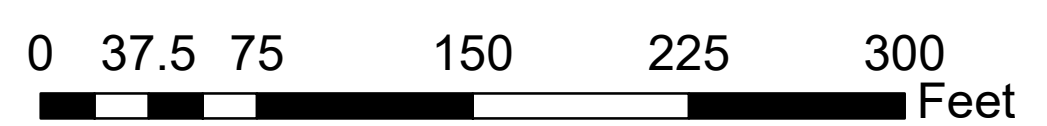
No dye testing has been conducted in this area at this time.

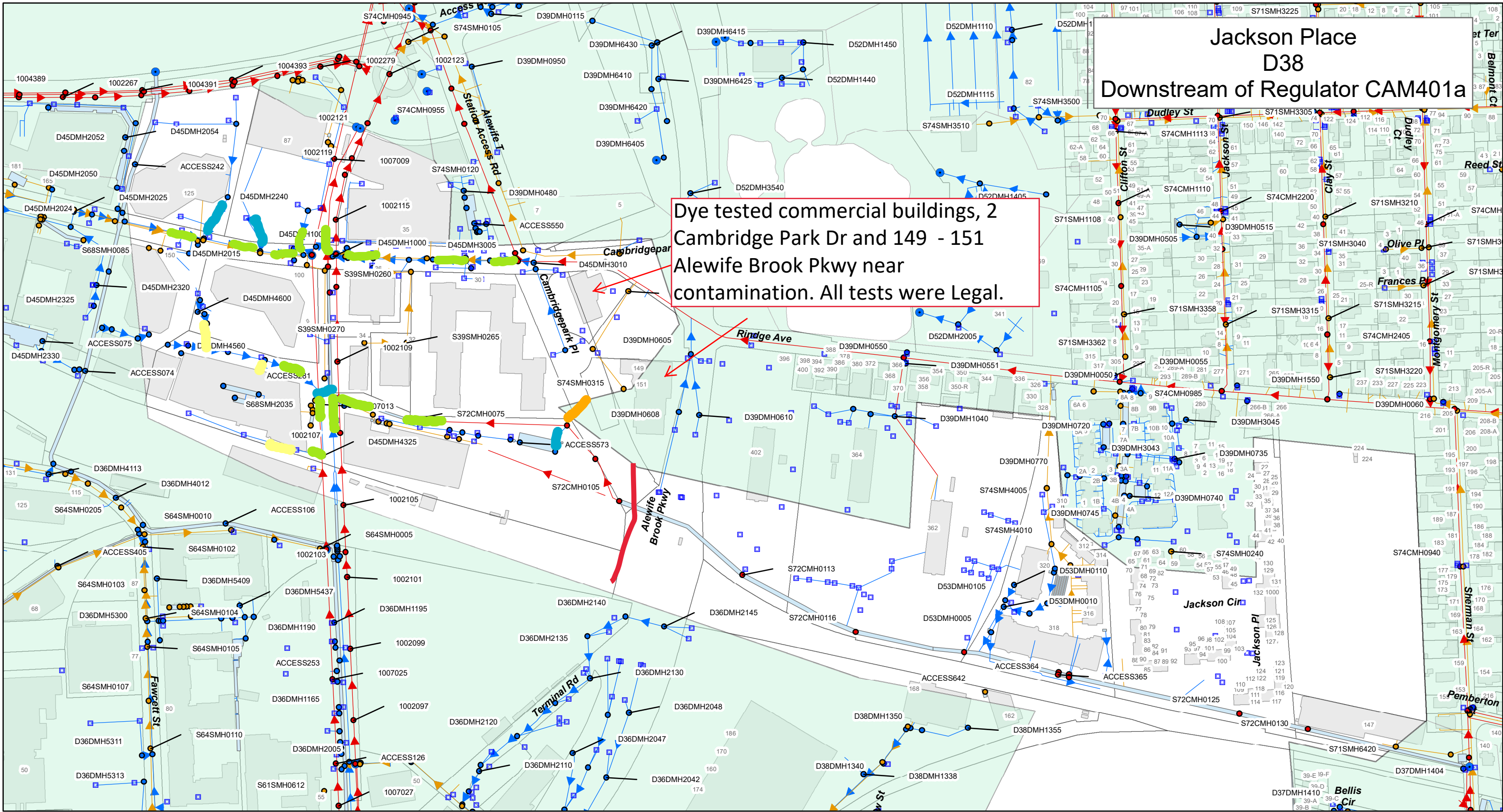
 = STANDING WATER

 = CLEAN

 = CONTAMINATED

 = NO ACCESS





Legend

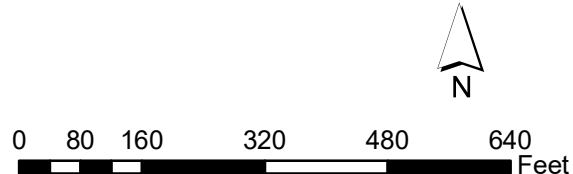
- | | | | | |
|----------------|-----------------|----------------------|-------------------------|------------------------|
| □ Catch Basins | Manholes | Gravity Mains | Service Laterals | □ All Other Catchments |
| | ● COMB | → COMB | — COMB | AreaNo |
| | ● SEW | → SEW | — SEW | □ D38 |
| | ● STORM | → STORM | — STORM | |
| | ● Outfalls | | | |

■ = STANDING WATER

■ = CLEAN

■ = NO ACCESS

■ = CONTAMINATED



Matignon Road Drainage Area Map

Legend

- Outfall
- Catchbasin
- Catchment Boundary

Manholes

- CMH
- SMH
- DMH

Pipes

- Combined Sewer
- Sanitary Sewer
- Storm Drain



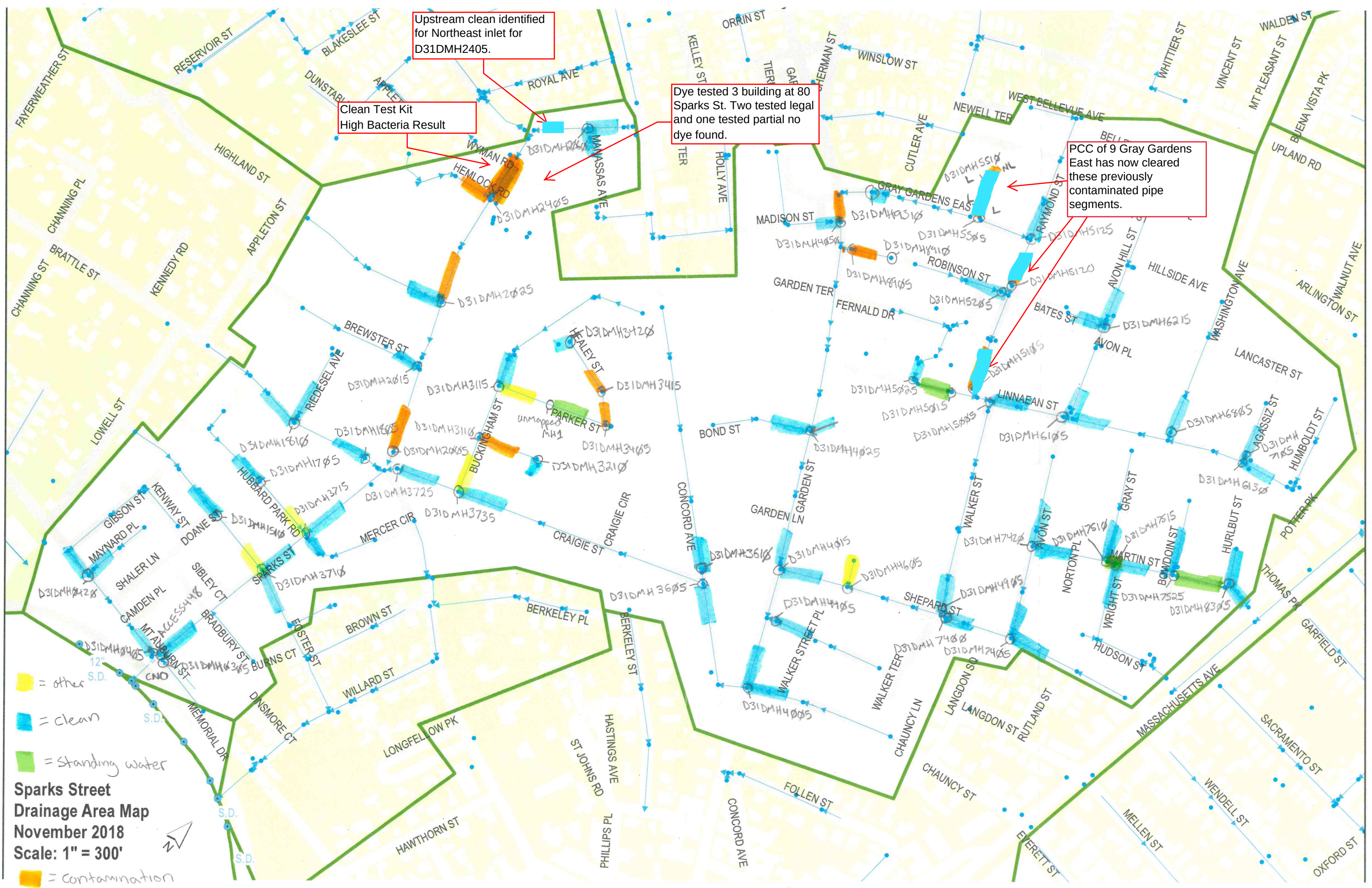
0 20 40 80 120 160 Feet



= standing water

= clean

= dye tested Legal



Upstream clean identified for Northeast inlet for D31DMH2405.

Clean Test Kit
High Bacteria Result

Dye tested 3 building at 80 Sparks St. Two tested legal and one tested partial no dye found.

PCC of 9 Gray Gardens East has now cleared these previously contaminated pipe segments.

= other
 = clean
 = standing water
 = contamination

**Sparks Street
Drainage Area Map
November 2018
Scale: 1" = 300'**