

Willard Street Drainage Improvements Project

Community Meeting #1

March 30, 2017

Consultants:

HDR Engineering, Inc.
McMahon Associates
Horsley-Witten Group
Halvorson Design Partnership

Project Team



Project Manager/DPW..... Diane Stokes, PE
Traffic Calming Project Manager/CDD..... Juan Avendano



Project Manager..... Roch Larochelle, PE
Civil & Utility Design..... Travis Lucia, EIT/Todd Undzis, PE



Stormwater Modelling..... Richard Claytor, PE
Permitting..... Amy Ball, PWS



Community Relations..... Christi Apicella, AICP
Traffic Analysis..... Erin Fredette, PE



Landscape Architecture &
Streetscape..... Cynthia Smith, FASLA

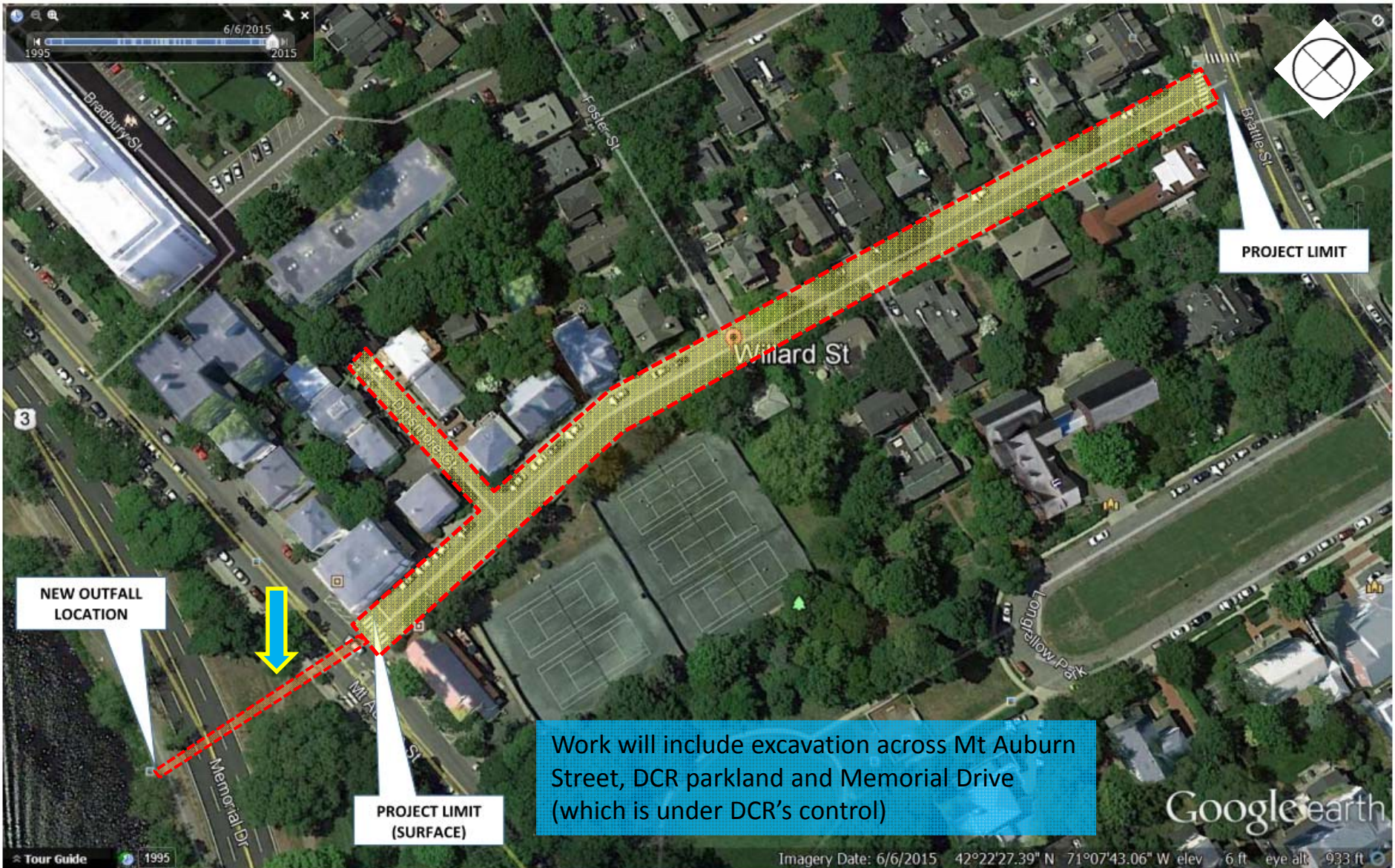


Geotechnical Investigations.... Ileene Gladstone, LSP, PE

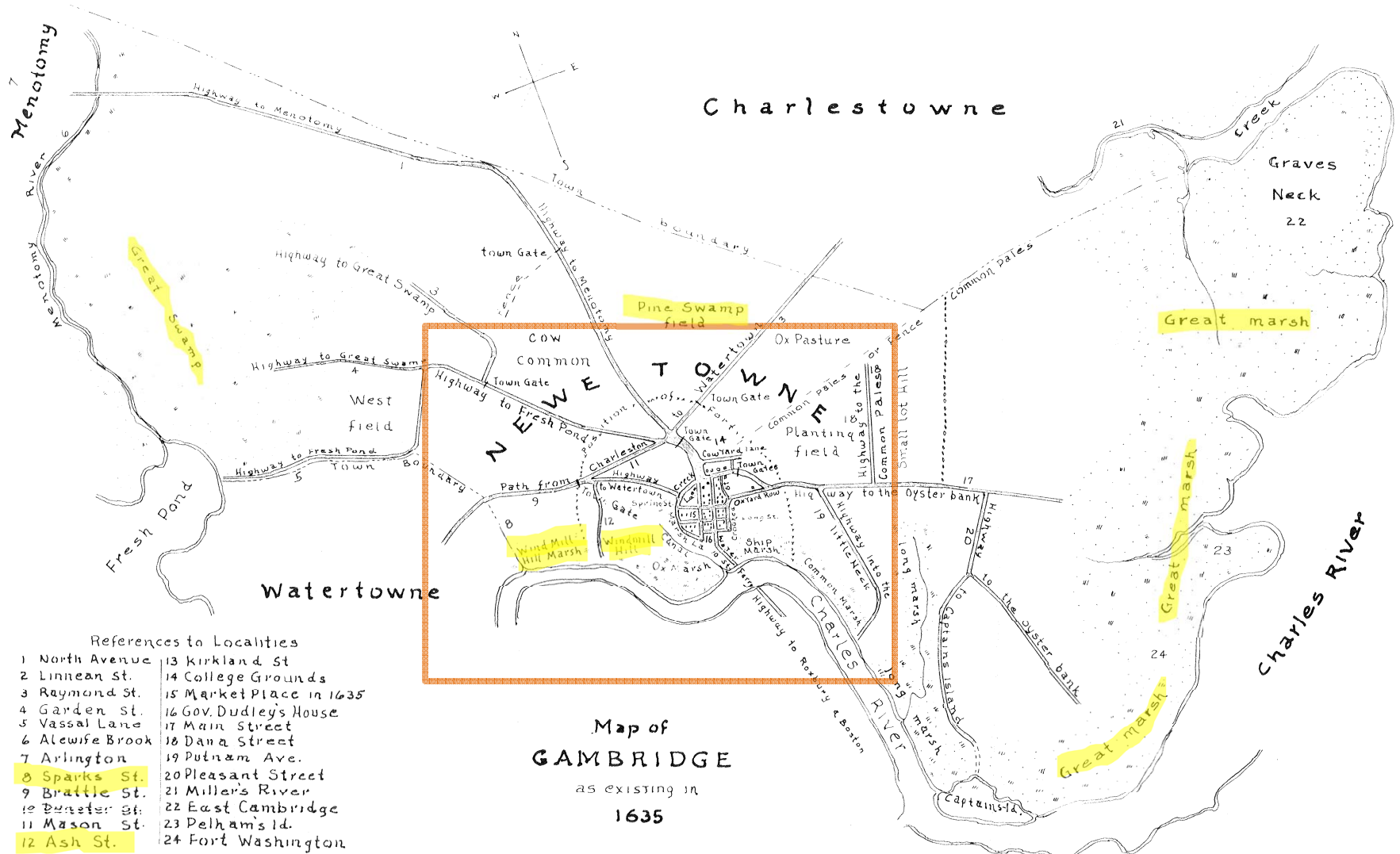
Tonight's Agenda

- Project Location & Background
- Reason for Project
- Goals & Objectives
- Current Conditions
- Community Concerns & Opportunities
- Schedule & Next Steps

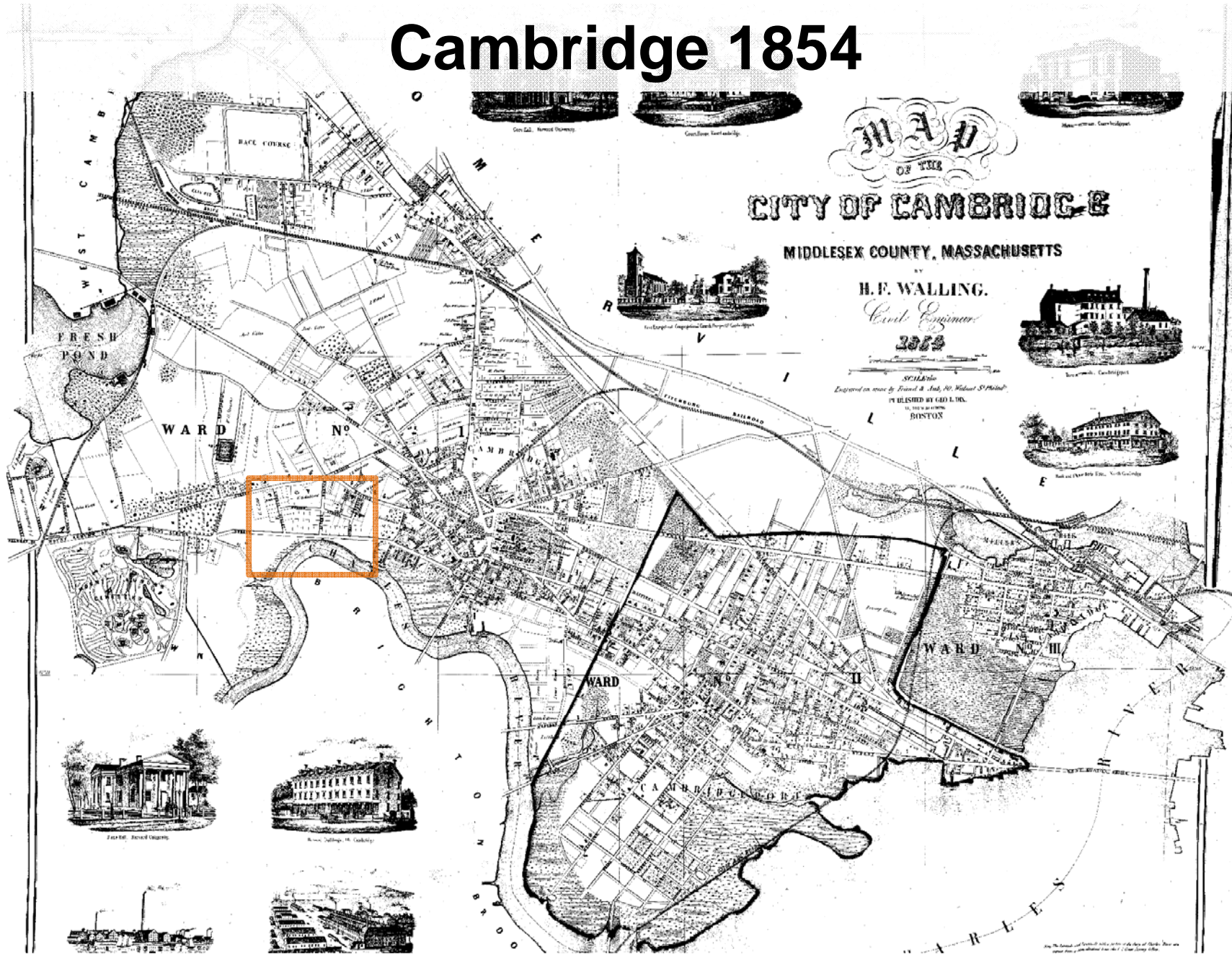
Project Location & Background



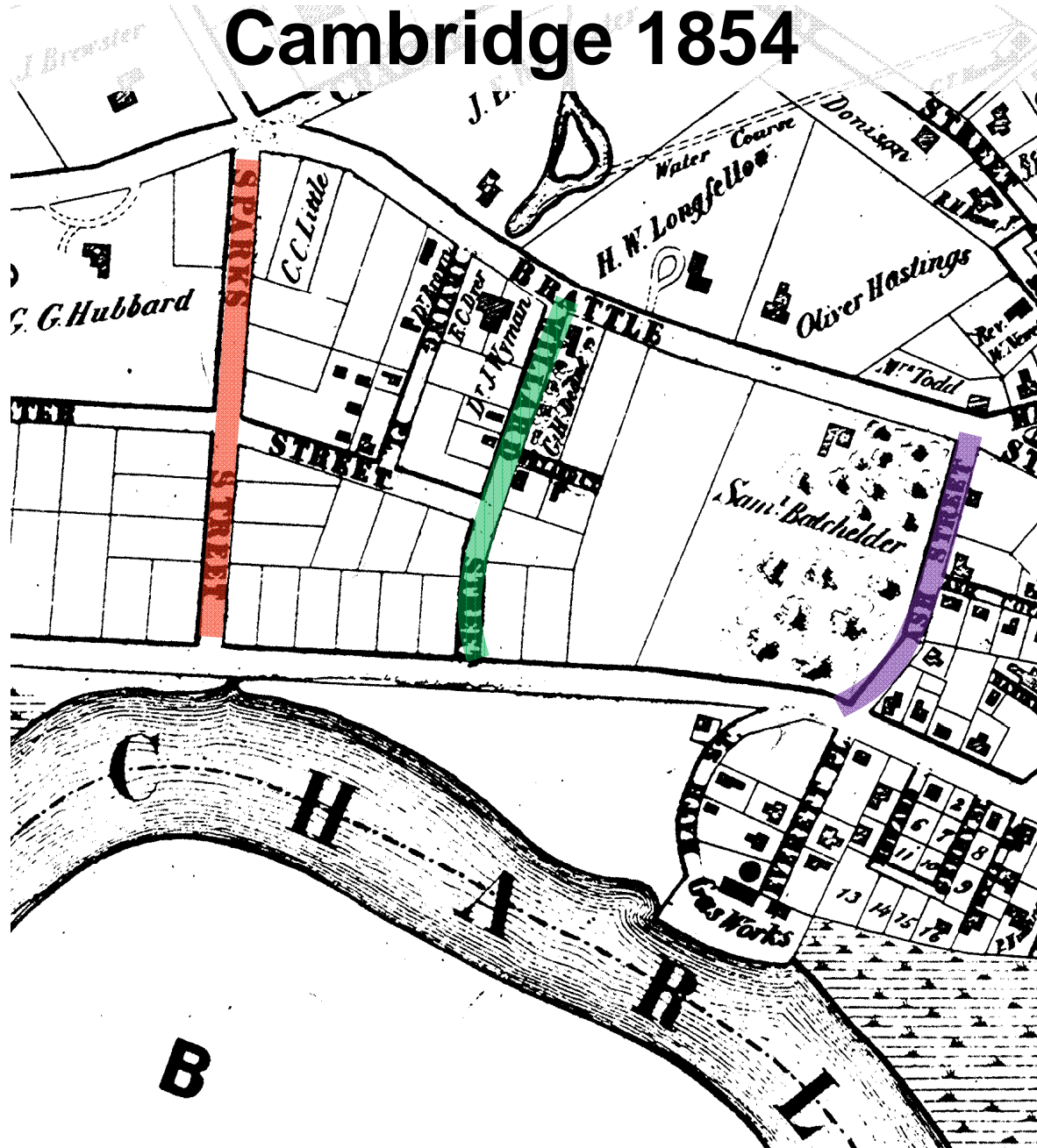
Cambridge 1635



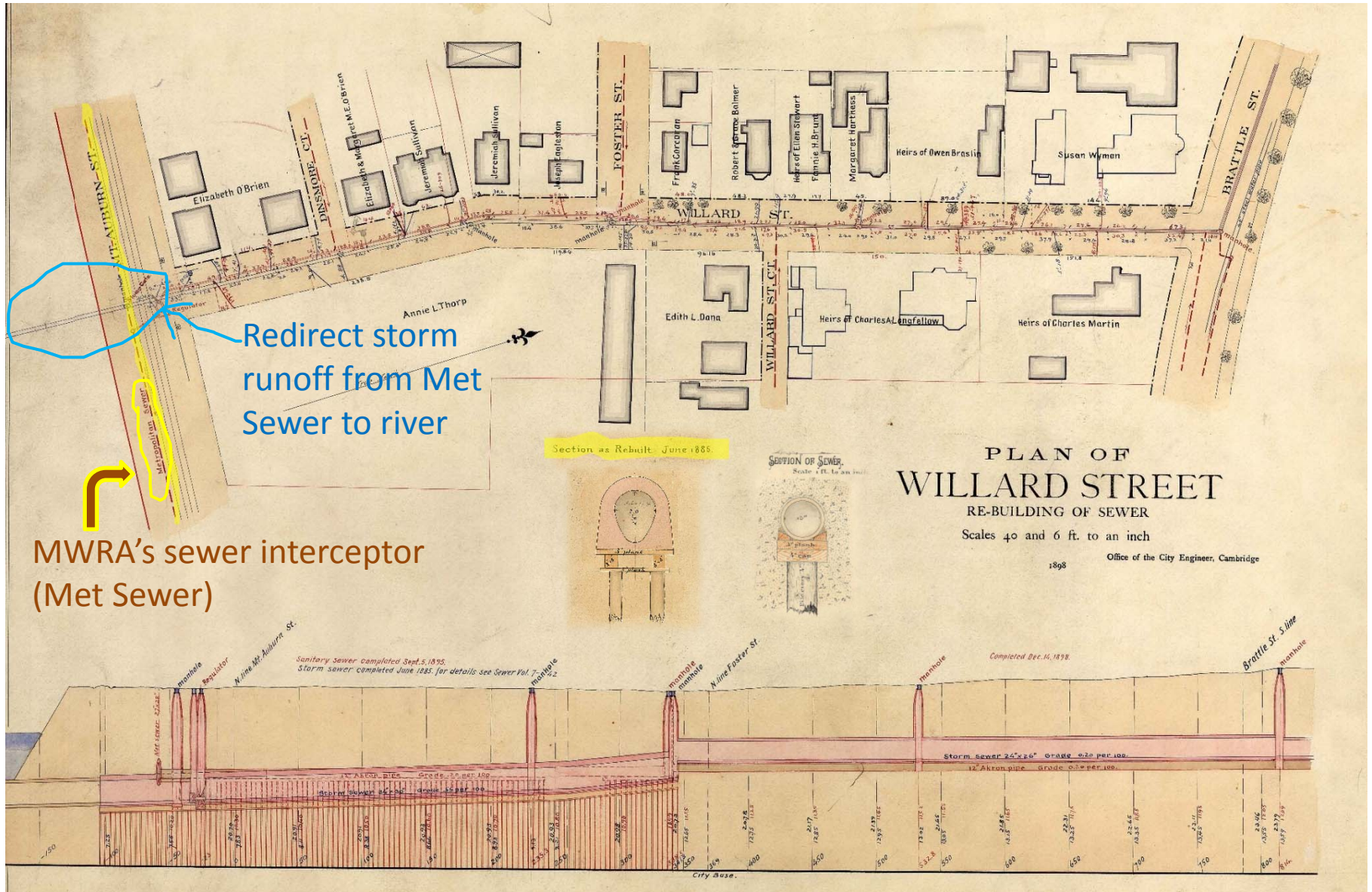
Cambridge 1854



Cambridge 1854



Cambridge Sewer Plan 1898



Redirect storm runoff from Met Sewer to river

MWRA's sewer interceptor (Met Sewer)

Reason for Project

- Reduce periodic flooding in Willard Street neighborhood
 - *Insufficient hydraulic capacity during large storm events*
- Aging subsurface infrastructure
- Surface improvements



Goals & Objectives (1)

1. Reduce Periodic Flooding

- Drainage separation
- New outfall to Charles River
- Stormwater treatment requirements

2. Utility Upgrades

- New stormwater and sewer infrastructure
- New water main
- New gas main (by Eversource)

Goals & Objectives (2)

3. Surface Improvement Opportunities

- Sidewalk improvements/ADA compliance
- Bicycle and pedestrian access improvements*
- Traffic calming opportunities
- Landscape opportunities

**On Cambridge Bicycle Network Plan~Goal: Reduce Speed & Volume.*

4. Work Already Done

- Ground survey & field review
- Pipe cleaning and inspections
- Diver inspection of old outfall
- Initial traffic counts
- Coordination with water & gas utilities

Current Conditions

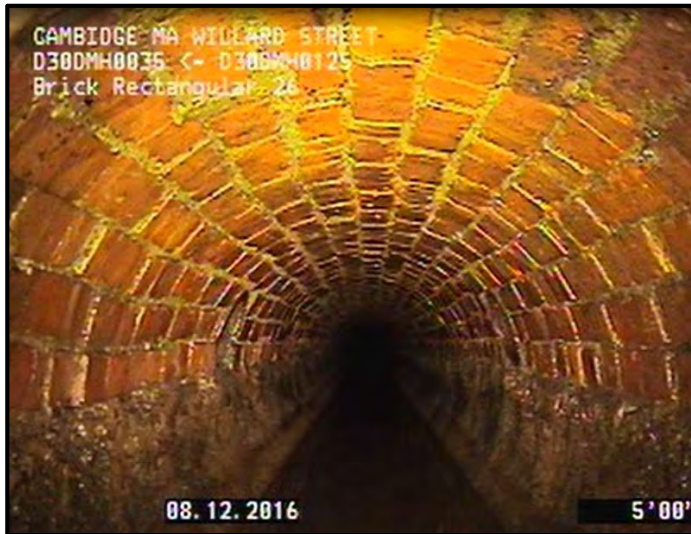


Google earth

Imagery Date: 5/10/2016 42°22'32.59" N 71°07'41.56" W elev 0 ft eye alt 646 f

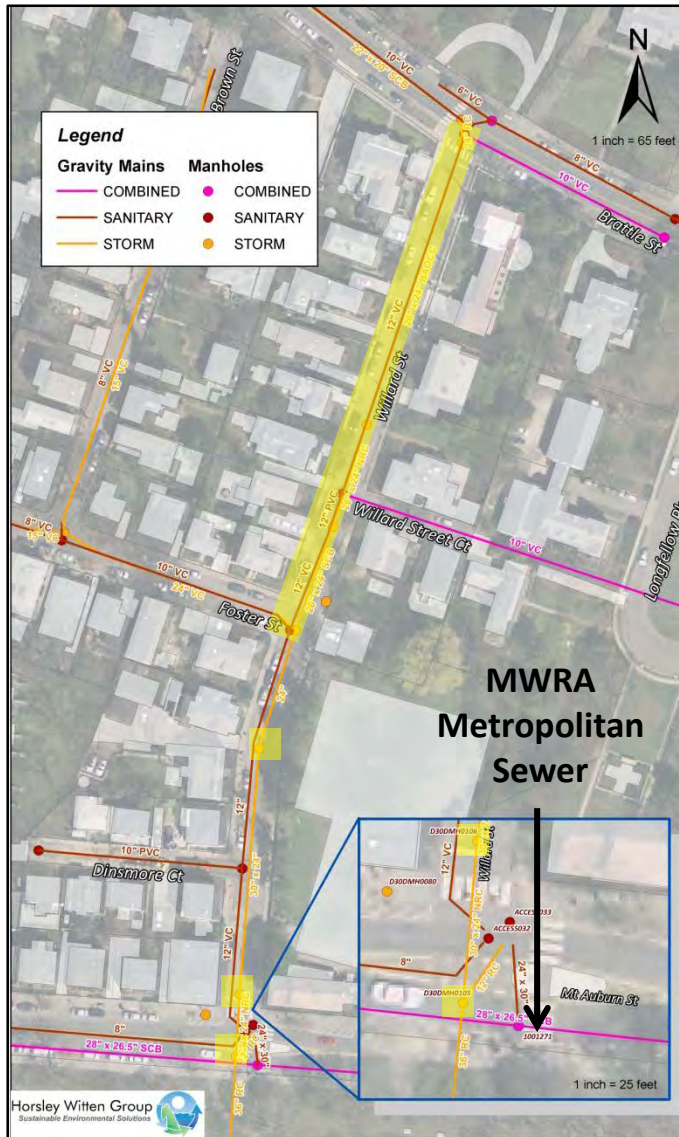
1995

Current Conditions – Subsurface Infrastructure



- In December 2016 and March 2017, National Water Main completed cleaning and inspections of:
 - 1,000 ft of storm drain pipe, 8 drain manholes and 9 catch basins
 - 1,300 ft of sanitary sewer pipe, including laterals on Dinsmore Court, and 6 sewer manholes
- HW conducted manhole and catch basin inspections and reviewed drainage area to Willard Street
- Review of Cambridge Skating Club drainage and Willard Street improper connection inspections (dye testing) to be completed in April 2017

Current Conditions – Storm Drain Inspections



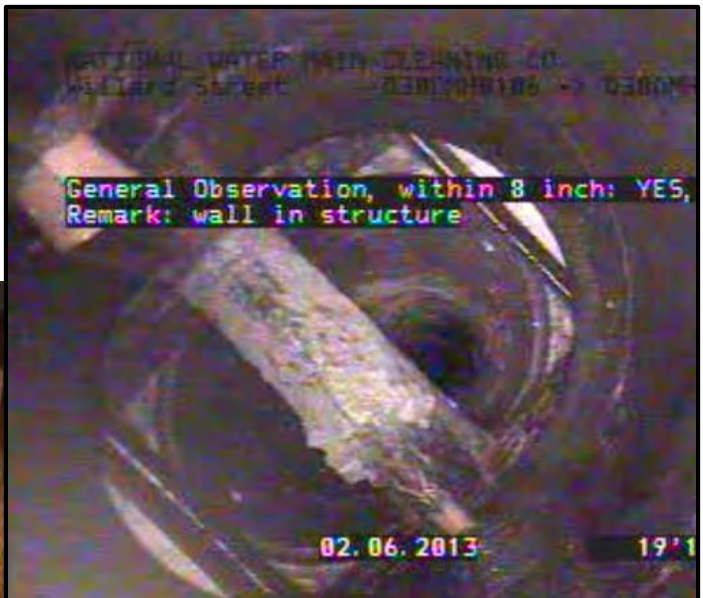
- **Materials:** brick and concrete
- **Condition:** good (minor holes)
- **Initial findings:**
 - Bulkhead at manhole near Dinsmore Court redirects flow to downstream structure
 - Hydraulic capacity issues observed
 - Higher flows than expected in MWRA’s Met Sewer (under review by MWRA)

Current Conditions – Storm Drain Inspection Photos



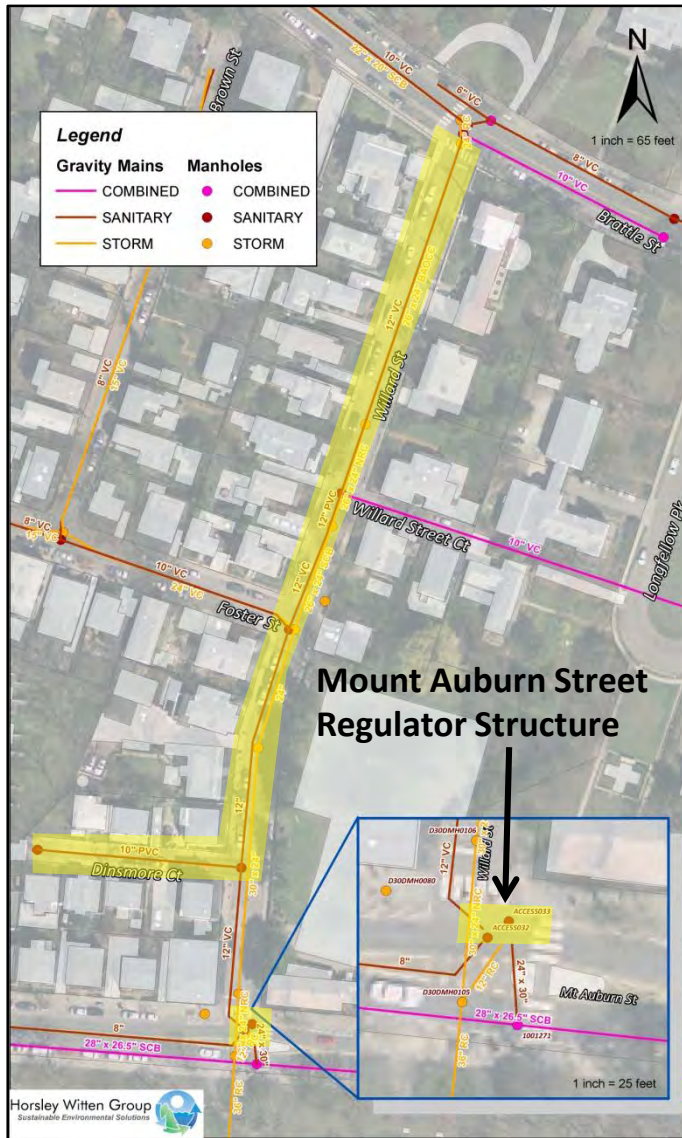
24"x 26" Brick sewer ↗

↖
Wood and slate in structure at Willard/Foster Street manhole



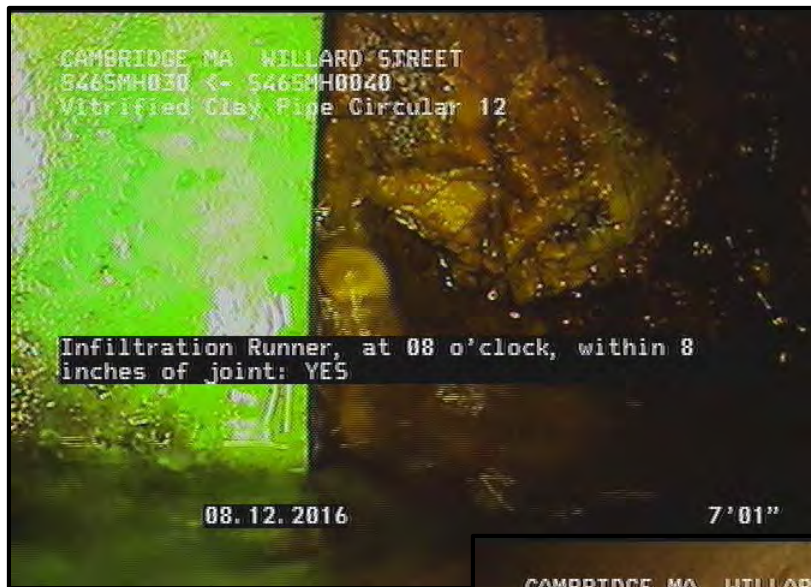
↖
Bulkhead and pipe redirecting flow to access structure (from 2013 inspection)

Current Conditions – Sanitary Sewer Inspections

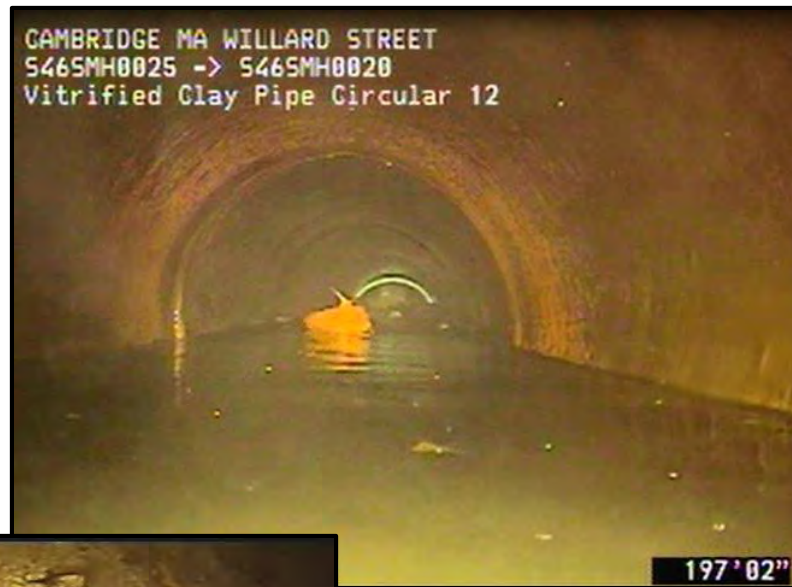


- **Materials:**
 - PVC and vitrified clay pipe
- **Condition:**
 - minor to major defects (cracks, infiltration, roots, joint offsets)
- **Initial findings:**
 - Hydraulic capacity issues observed
 - Higher flows than expected in MWRA's Met Sewer (under review by MWRA)

Current Conditions – Sanitary Sewer Inspection Photos



Example of infiltration (at joint)

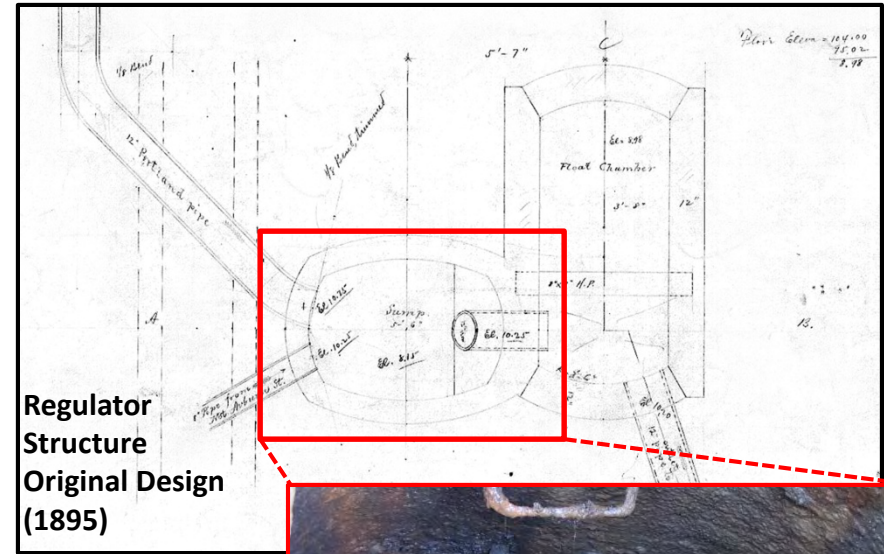
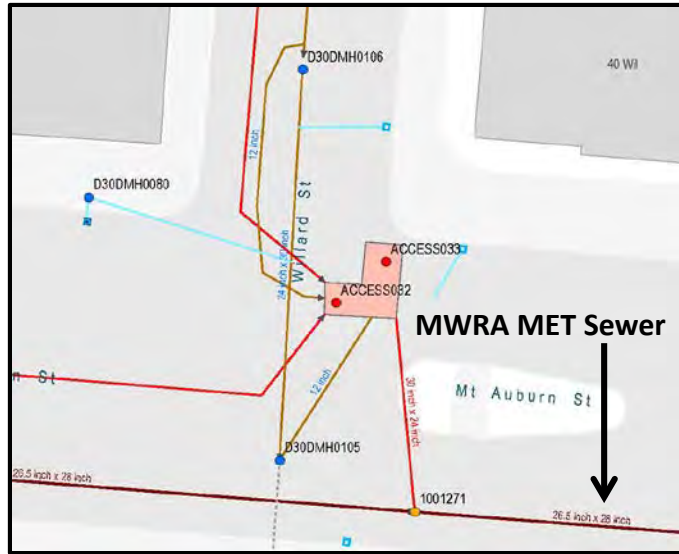


Sewer pipe on Willard Street



Example of fracture

Current Conditions – Mount Auburn Street Regulator Structure



Regulator Structure Storm and Sewer Connections



Downstream MWRA MET Sewer Manhole



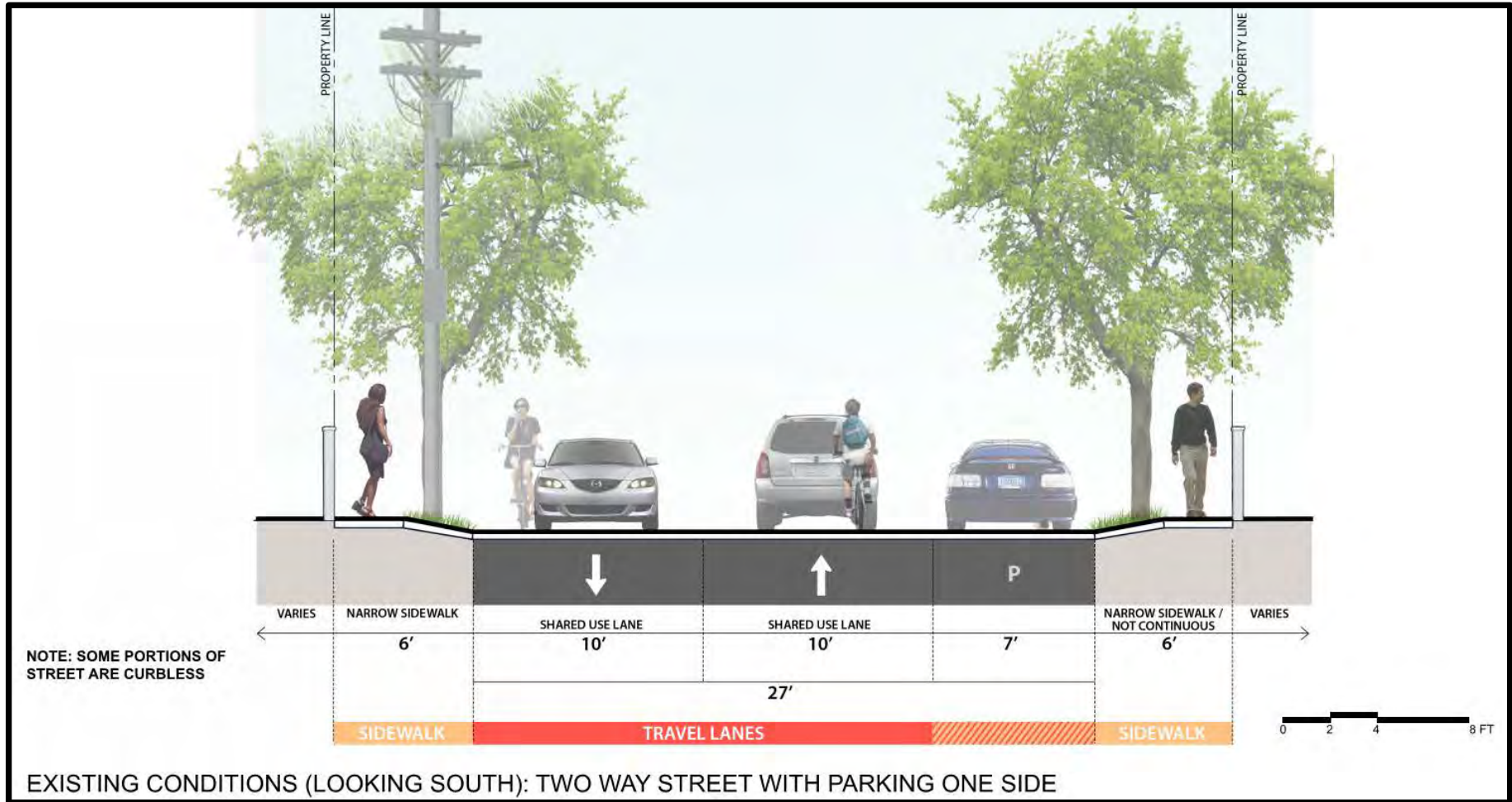
Access 032 Manhole at Regulator Structure (Sump)

Current Conditions – Manhole & Catch Basin Inspections



- **Materials:**
 - brick (MHs, some CBs)
 - concrete (CBs)
- **Condition:** fair to good
- **Initial findings:**
 - A couple MHs have missing bricks/mortar
 - Moderate amount of debris (leaves, dirt, etc.) in catch basins (all CBs required cleaning)
 - Many CBs have hoods on outlet pipes

Current Conditions – Street Programming



Current Conditions - Looking South (from Brattle end)



- **Parking West Side**
- **10' Travel Lanes**
- **Narrow/Obstructed Sidewalks**

Current Conditions - Looking South (from Brattle end)



- **Parking West Side**
- **Overhead Utilities/Lighting**
- **Narrow/Obstructed Sidewalks**

Current Conditions - Looking West (#11-#15 Willard)



- **Narrow/Obstructed Sidewalks**
- **ADA Accessibility Issues**

Current Conditions - Looking South (at Foster Street)



- **Parking West Side Only**
- **Limited opportunity for street trees**
- **Narrow/Obstructed Sidewalks on both sides**

Current Conditions - Looking South (Skate Club/Foster)



- **Parking West Side**
- **10' Travel Lanes, both directions**
- **Narrow Sidewalks**

Current Conditions - Looking North (Skate Club)



- **Narrow/Obstructed Sidewalks**
- **Little opportunity for treatment enhancements**
- **Constrained Tree-pit zone and uplifted concrete**

Current Conditions – Mt. Auburn / Willard Street intersection Looking East (on Mt. Auburn St.)



- **Important Multi-Modal Portal (Mt. Auburn Street)**
- **Bike Lanes/Pedestrian Crossing**
- **Transit Oriented (bus stop both sides)**

Current Conditions - Looking North (at Mt. Auburn St.)



- **Parking West Side**
- **10' Travel Lanes, both directions**
- **Narrow/Obstructed Sidewalks**

Current Conditions – Traffic Data Summary

Counts Taken:

- Nov 30–Dec 1, 2016 (W-Th)

Speed (NB/SB):

- 50% Percentile: 21 MPH
- 85% Percentile: 26 MPH

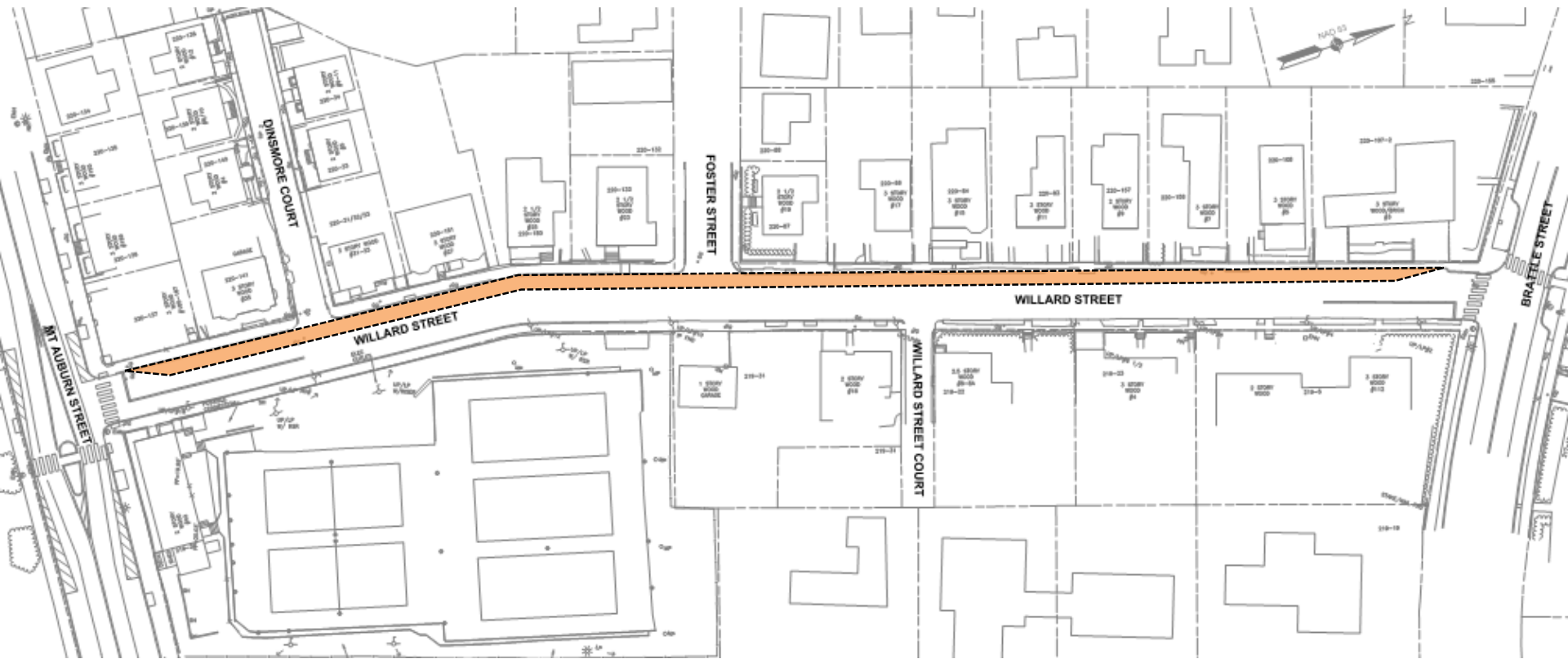
Volume (Average):

Peak Period	SB	NB	Total
AM Peak (8am):	60	185	245
PM Peak (5pm):	[40]	[324]	[364]



TRAFFIC DATA SUMMARY
CITY OF CAMBRIDGE – WILLARD STREET DRAINAGE IMPROVEMENT PROJECT

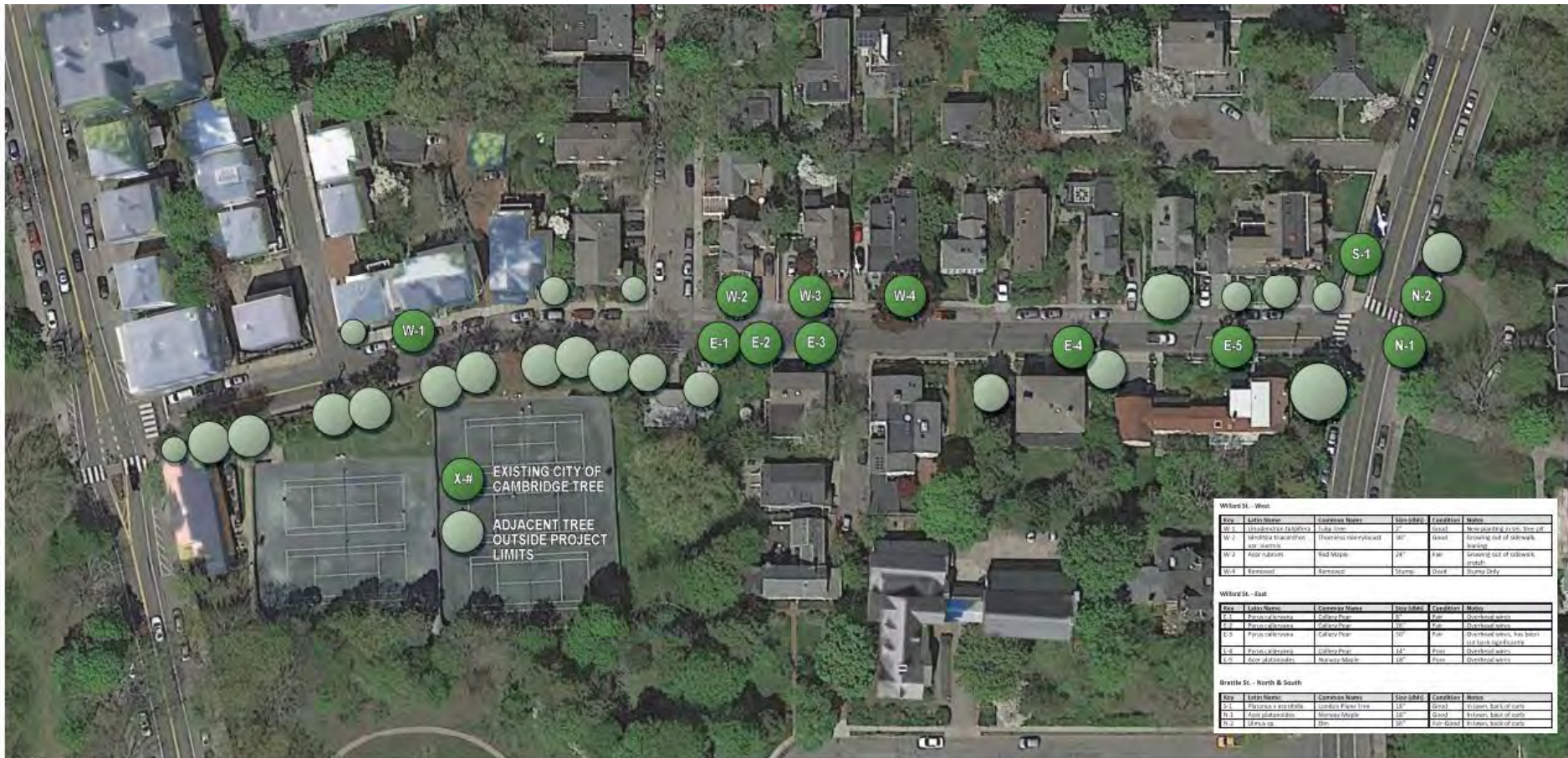
Current Conditions – On-Street Parking



Existing Two-Way	Metered	Handicap	Loading	Private/P ermit	TOTALS	Comments
Existing On-Street Parking Inventory						
Willard btwn Mt Auburn St & Dinsmore Ct				5	5	
Willard btwn Dinsmore Ct & Foster St				10	10	
Willard btwn Foster St & Willard St Ct				3	3	
Willard btwn Willard St Ct Brattle St				9	9	
TOTALS:	0	0	0	27	27	

Note: Parking On West Side of Willard St

Current Conditions – Tree Inventory



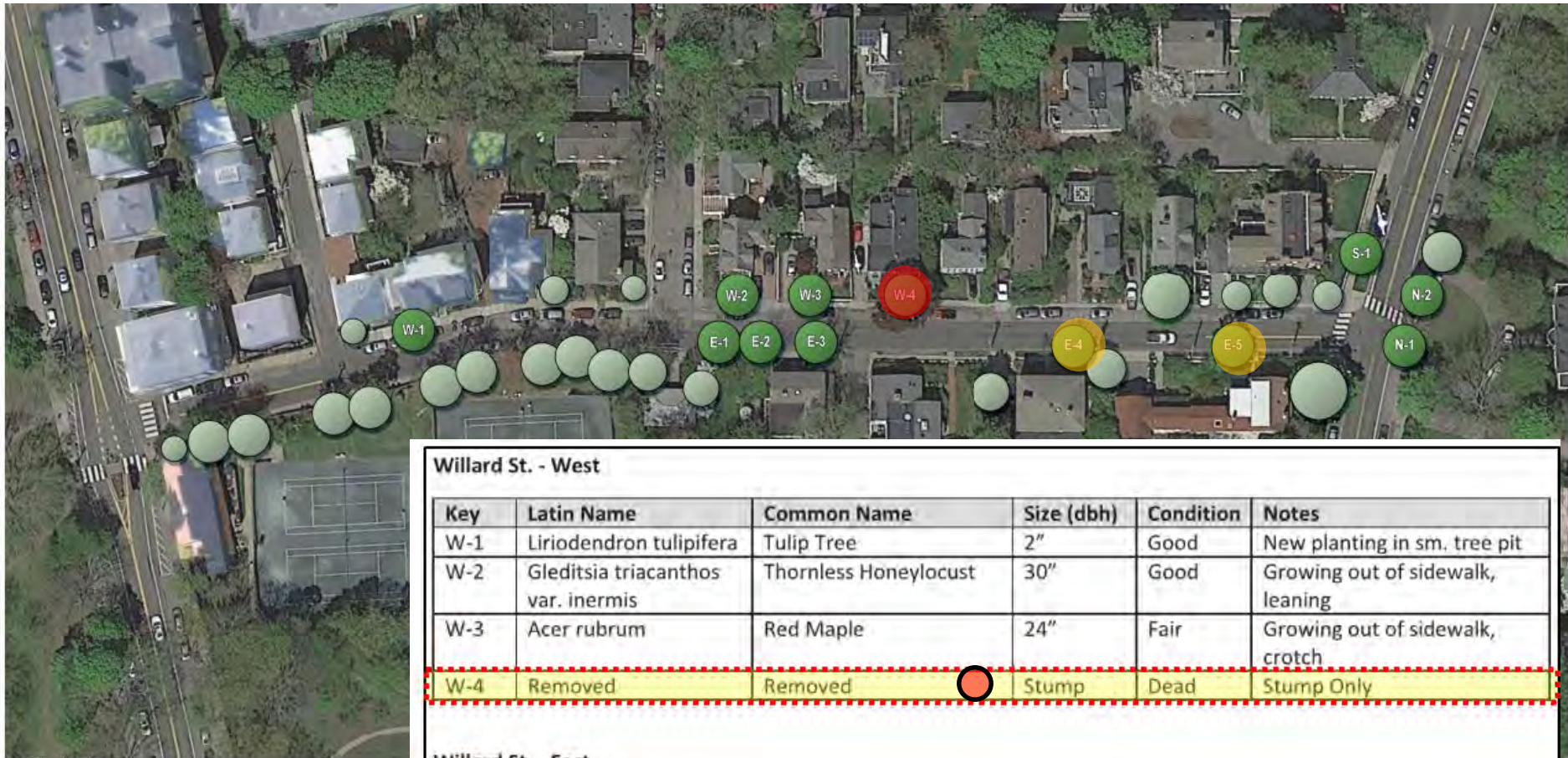
Tag	Latin Name	Common Name	Size (DBH)	Condition	Notes
W-5	Ulmus americana	White Elm	27"	Good	Non-planting to curb, line of
W-2	Malus baccata	Thornless rose-hawthorn	40"	Good	Growing out of sidewalk, hanging
W-3	Ailanthus altissima	Tree of Heaven	24"	Fair	Growing out of sidewalk, trash
W-4	Fraxinus americana	White Ash	Stump	Dead	Stump only

Tag	Latin Name	Common Name	Size (DBH)	Condition	Notes
E-1	Prunella americana	Black Cherry	26"	Fair	Overhead wires
E-2	Prunella americana	Black Cherry	20"	Fair	Overhead wires
E-3	Prunella americana	Black Cherry	20"	Fair	Overhead wires, low branch
E-4	Prunella americana	Black Cherry	22"	Fair	Overhead wires
E-5	Prunella americana	Black Cherry	18"	Fair	Overhead wires

Tag	Latin Name	Common Name	Size (DBH)	Condition	Notes
N-1	Prunella americana	Black Cherry	18"	Good	In lawn, back of yard
N-2	Prunella americana	Black Cherry	20"	Fair-Good	In lawn, back of yard

TREE INVENTORY

Current Conditions – Tree Inventory



Willard St. - West

Key	Latin Name	Common Name	Size (dbh)	Condition	Notes
W-1	<i>Liriodendron tulipifera</i>	Tulip Tree	2"	Good	New planting in sm. tree pit
W-2	<i>Gleditsia triacanthos</i> var. <i>inermis</i>	Thornless Honeylocust	30"	Good	Growing out of sidewalk, leaning
W-3	<i>Acer rubrum</i>	Red Maple	24"	Fair	Growing out of sidewalk, crotch
W-4	Removed	Removed	Stump	Dead	Stump Only

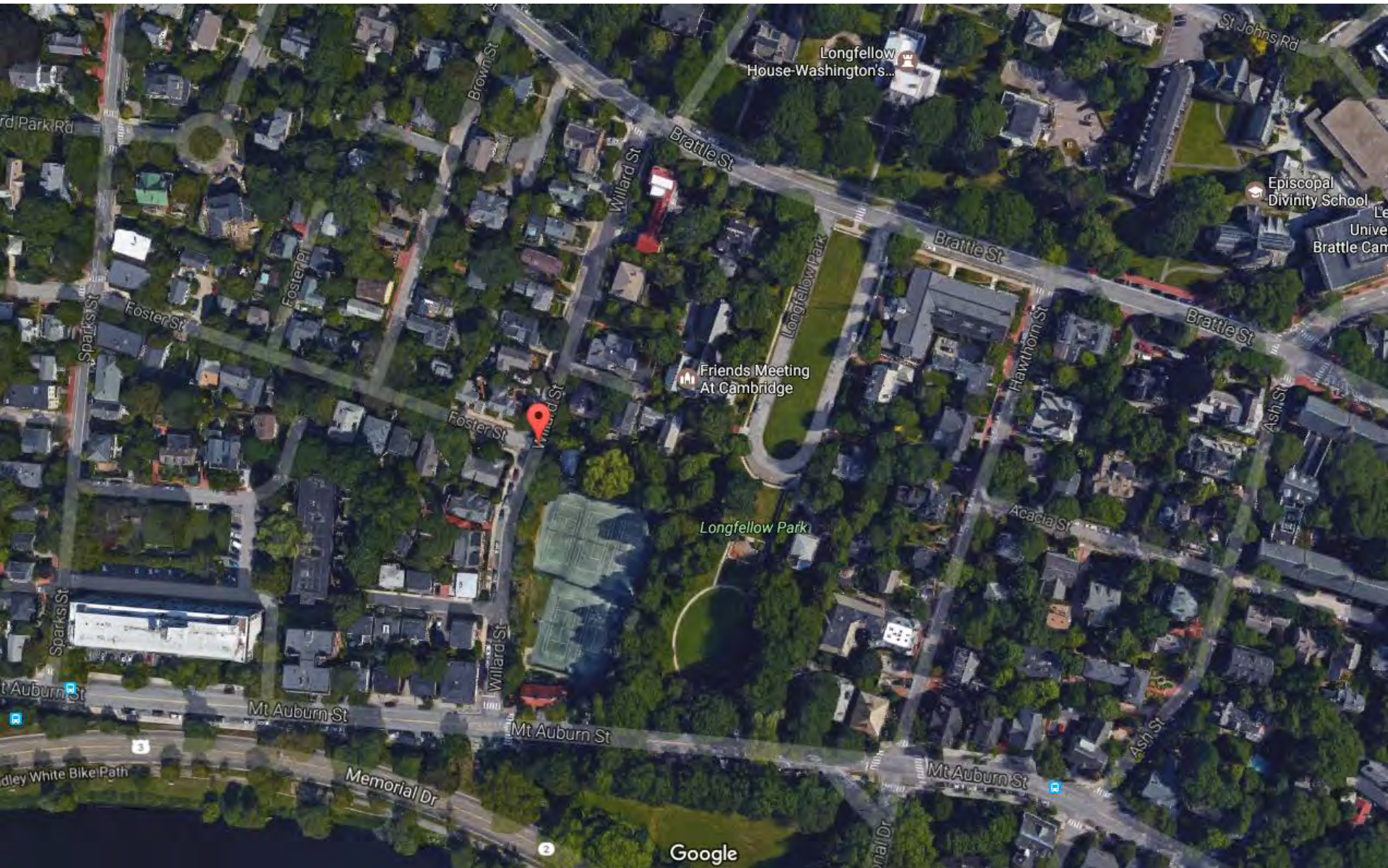
Willard St. - East

Key	Latin Name	Common Name	Size (dbh)	Condition	Notes
E-1	<i>Pyrus calleryana</i>	Callery Pear	8"	Fair	Overhead wires
E-2	<i>Pyrus calleryana</i>	Callery Pear	26"	Fair	Overhead wires
E-3	<i>Pyrus calleryana</i>	Callery Pear	30"	Fair	Overhead wires, has been cut back significantly
E-4	<i>Pyrus calleryana</i>	Callery Pear	14"	Poor	Overhead wires
E-5	<i>Acer platanoides</i>	Norway Maple	18"	Poor	Overhead wires

Community Concerns & Opportunities

Now it's your turn!

Community Concerns & Opportunities



Schedule & Next Steps

- Field Survey..... Completed (2016)
- Sewer/Storm Drain Video Inspection..... Completed (2017)
- Public Information Meeting #1..... March 30, 2017
- Additional Traffic Data Collection..... April 2017
- Development of Conceptual Solutions..... April-May 2017
- Public Information Meeting #2..... June 2017
- Eversource Gas replacement (tentative)..... Summer 2017
- Public Information Meeting #3 (tentative).... Fall 2017
- Construction Begins (tentative)..... 2018

Questions?

Stay in Touch!

For more information visit:

www.cambridgema.gov/theworks/willardstreet

To join email distribution list for updates visit:

bit.ly/WillardSt

For questions about this project, contact:

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