



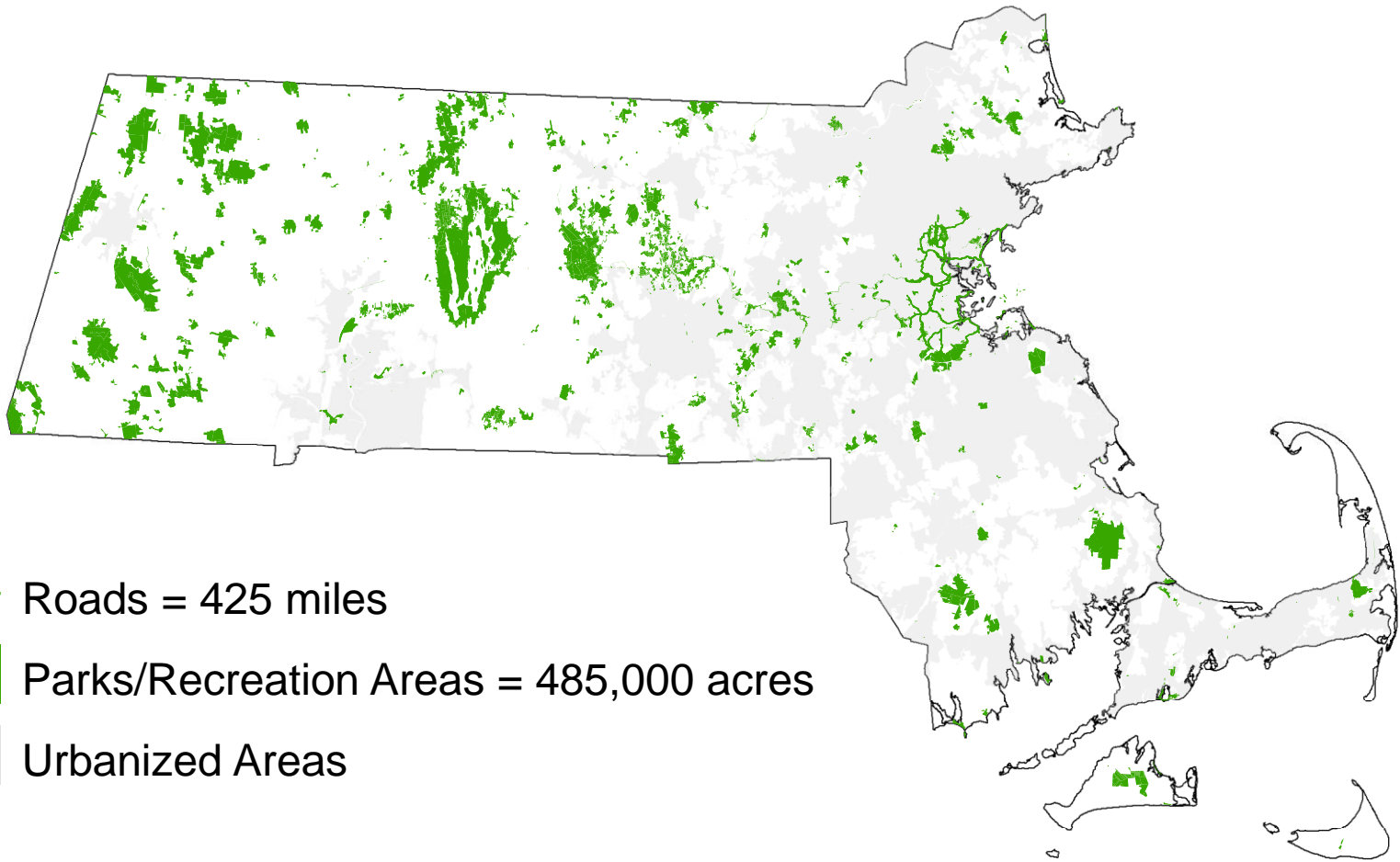
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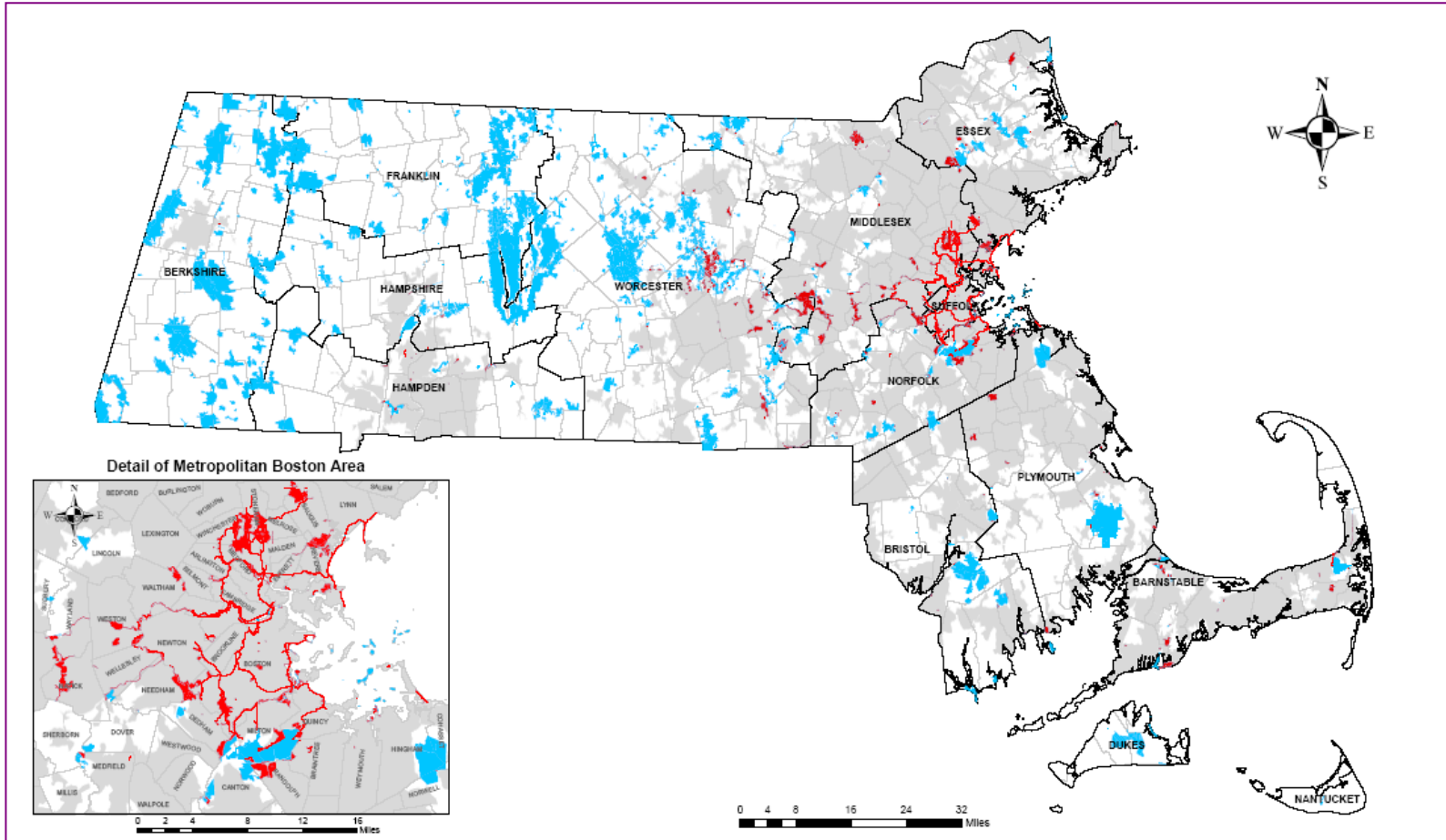
Storm Water Management  
USEPA NPDES Phase 2 Permit  
Department of Conservation and  
Recreation

Information from DCR  
NPDES Reporting Year 15  
for  
Massachusetts Water Resources Commission

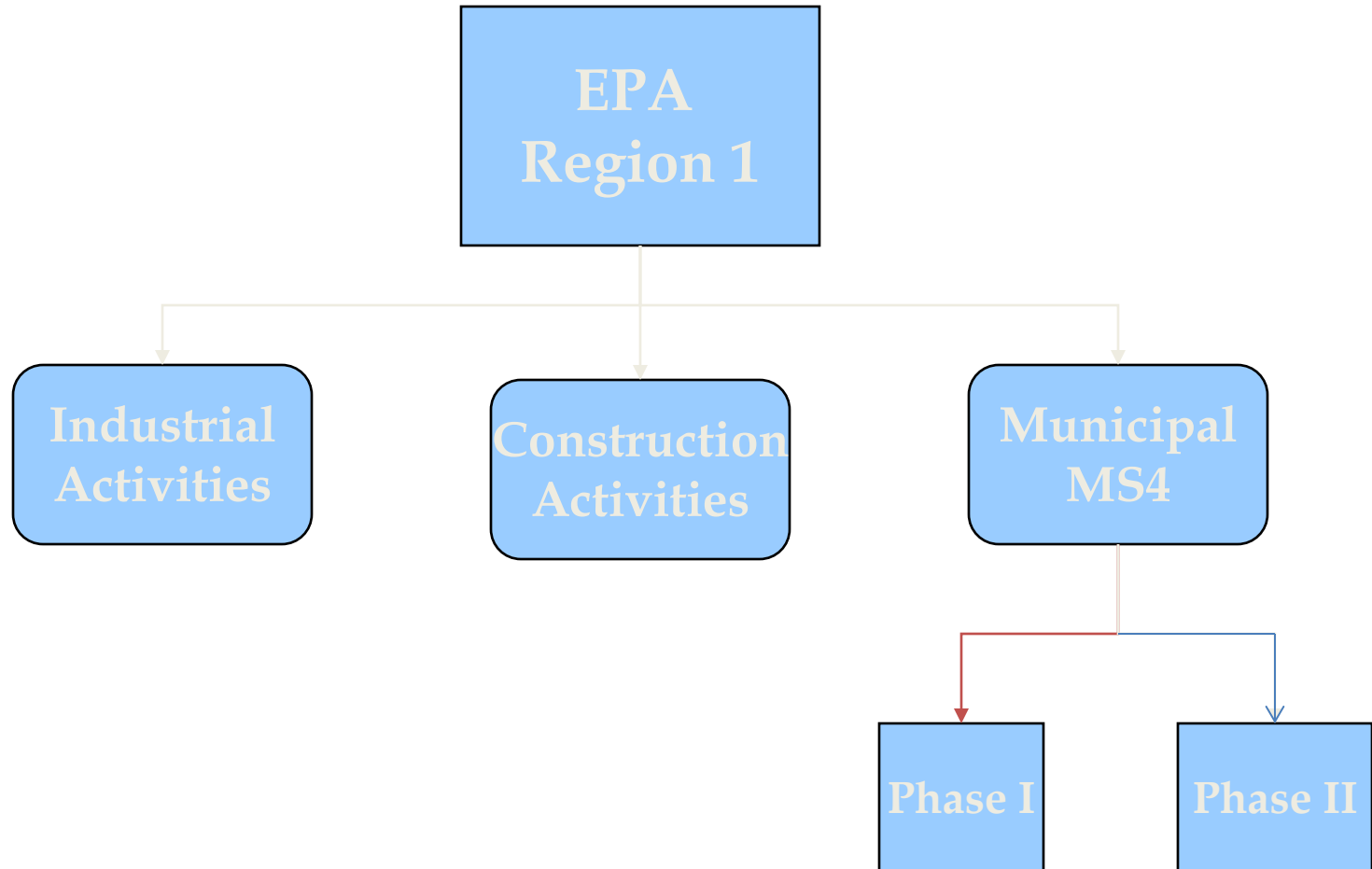
January 10, 2019

# DCR Properties





# EPA NPDES Phase II



## Permitted DCR Properties

- Beaches
- State Forests
- Labor Yards (New permit)
- Parkways
- State Parks & Reservations
- Water Supply Protection
- Historical Properties Assessment (Revise with newly acquired land)

# Minimum Control Measures

- Public Education & Outreach
- Public Involvement & Participation
- Illicit Discharge Detection and Elimination
- Construction Site Stormwater Runoff Control
- Post-Construction Site Monitoring
- Pollution Prevention & Good Housekeeping
- Best Management Practices (BMPs) for meeting Total Maximum Daily Loads (TMDLs) Waste Load Allocations (WLAs)

# NPDES Phase 2

- New Notice of Intent (September 2018)
- Revise Stormwater Management Program (July 2019)

## **DCR Accelerated Compliance Schedule**

- Public Education and Outreach Plan (July 2019)
- Sanitary Sewer Overflow (SSO) Inventory (July 2019)
- Prepare draft Catchment Boundaries (July 2019)
- Nitrogen Source Identification Report (Sept 2020)
- Phosphorus Source Identification Report (Sept 2020)
- Phosphorus Control Plan - Charles River (Sept 2020)
- Phosphorus Control Plan - Lakes & Ponds (Sept 2020)

# MS4 Challenges

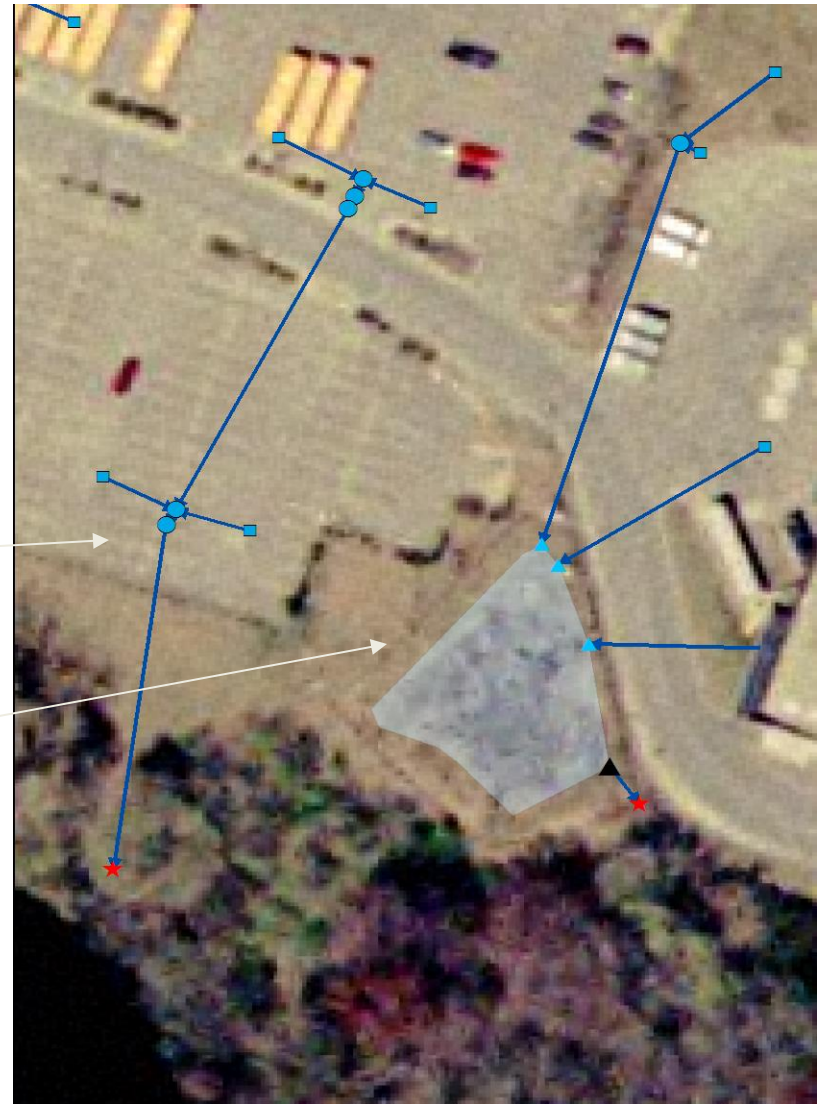
- Diverse Properties
  - Type
  - Size
  - Location
- Funding
- Range of existing knowledge and data
- Overlaps with other municipalities and state organizations





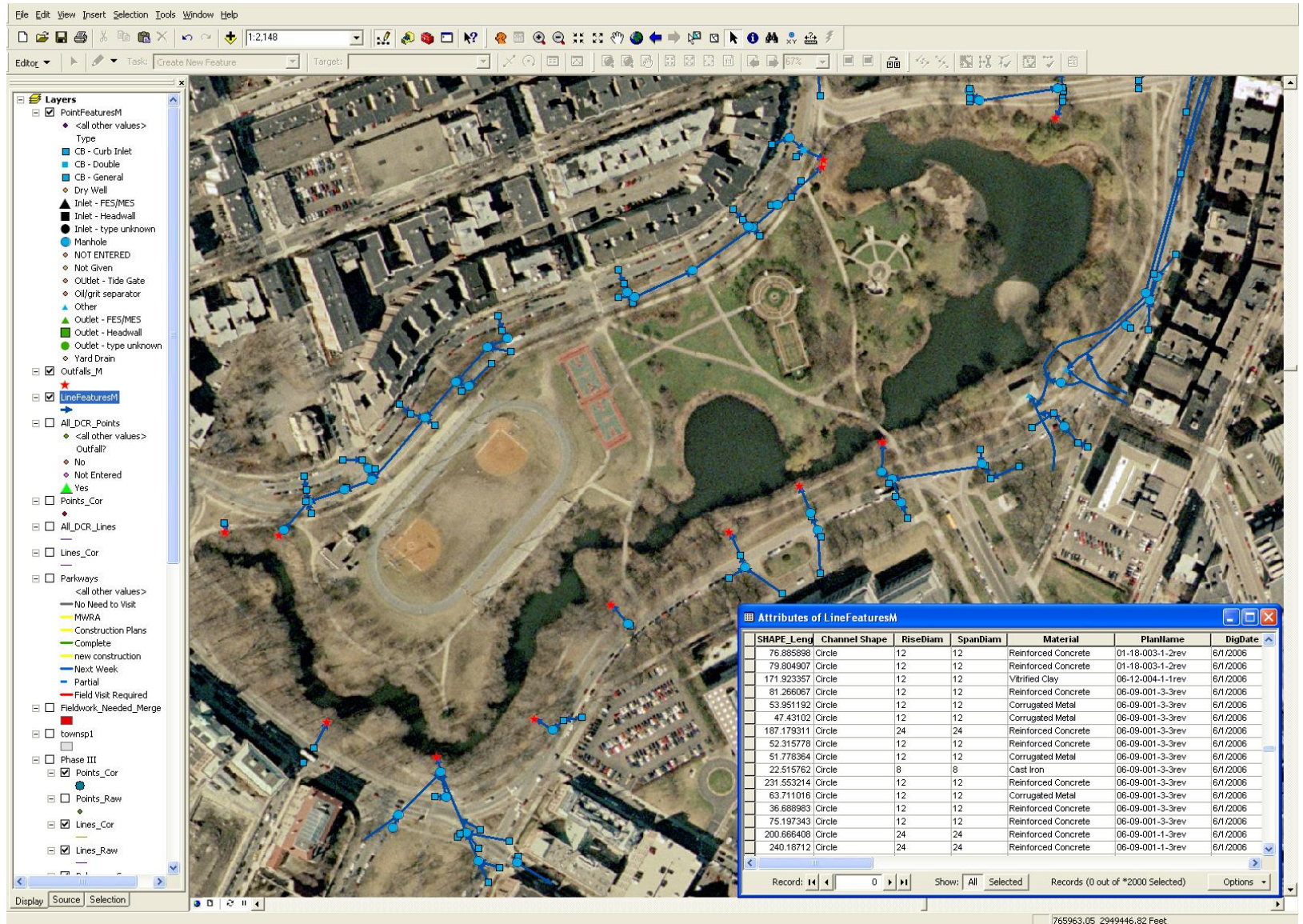
# Drainage Database

- Points
  - Catch Basins
  - Manholes
  - Oil/Grit Separators
  - Outlets/Outfalls
    - headwalls, flared ends, etc.
- Lines
  - Pipes
  - Swales
- Polygons
  - Detention/Retention Ponds
  - Infiltration Chambers





# department of Conservation and Recreation





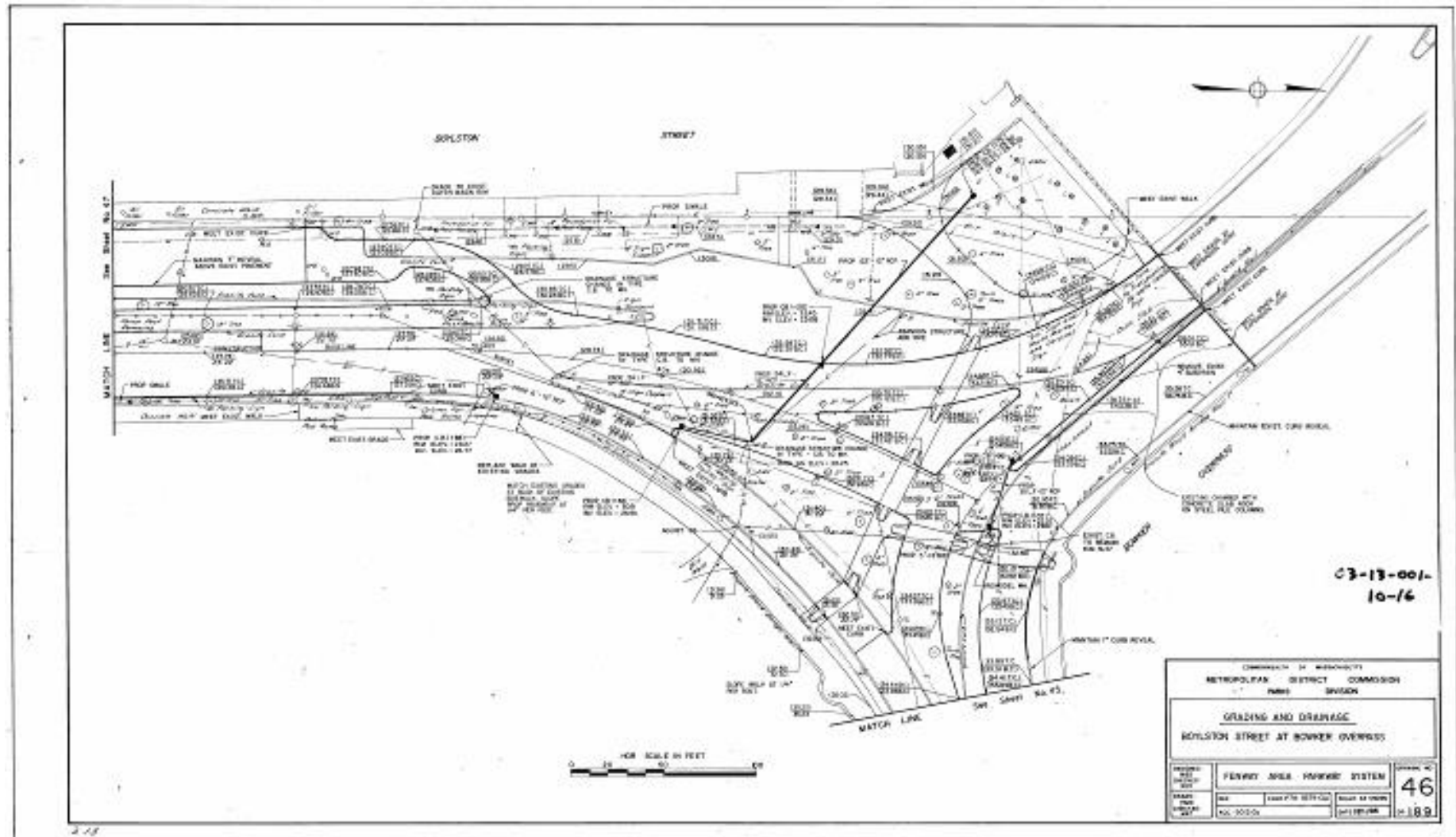
# Attributes

- Points
  - Type (catch basin, manhole, outlet, etc)
  - Material (concrete, brick, etc)
  - Structural Condition
  - Dry weather flow
- Lines
  - Material (concrete, paved, grass, etc)
  - Size (rise and span)
  - Inverts
  - Condition
- Polygons
  - Type (detention, retention, infiltration)
  - Key Elevations (bottom, wet pool, etc)

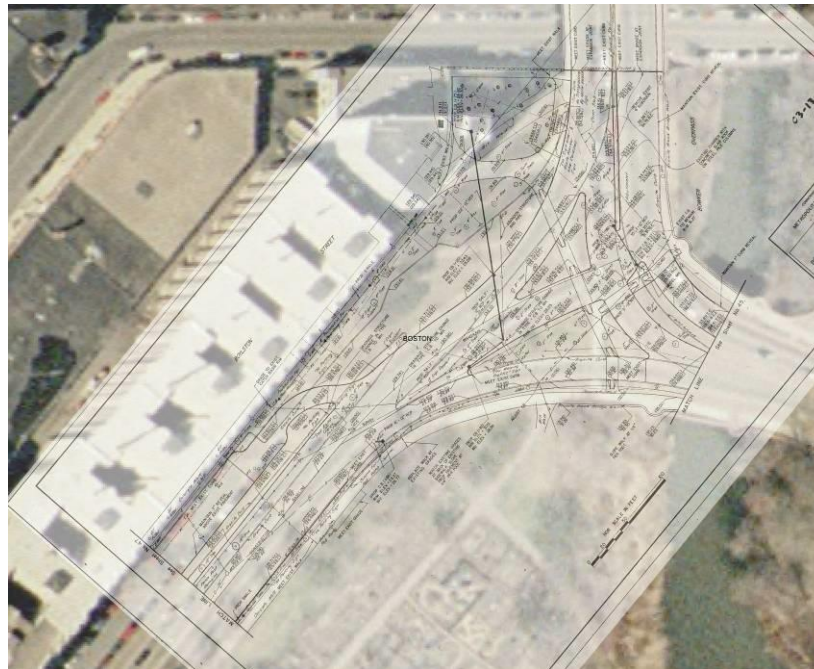
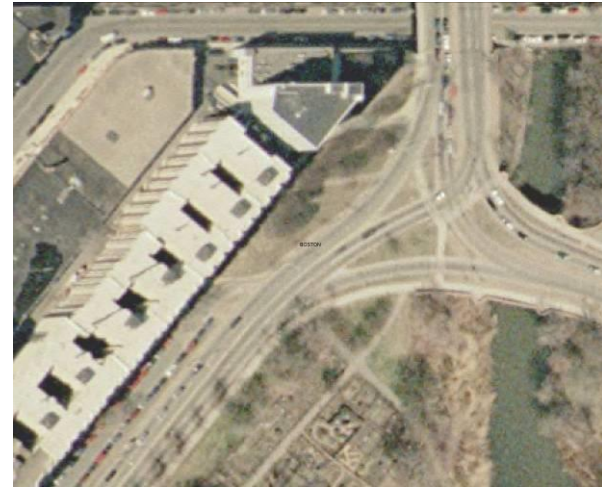
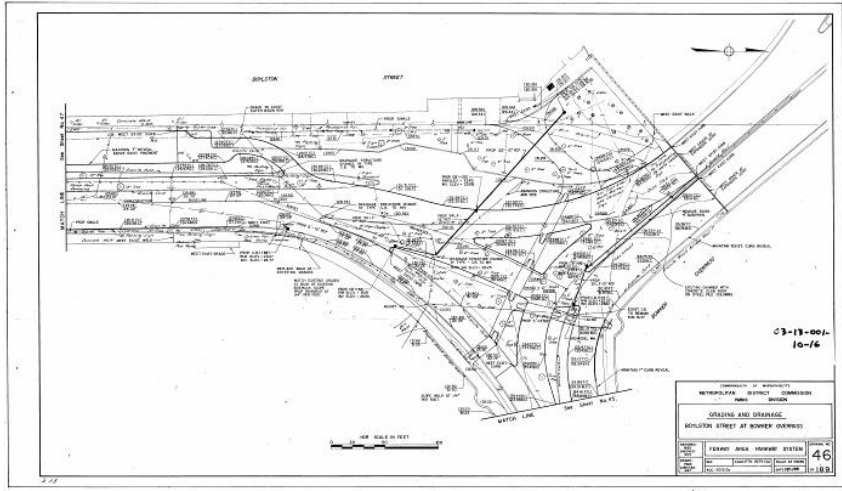
Pipe_Shape	RiseDiam	SpanDiam	InvertUp	InvertDown	PlanName
Circle	12	12	87.8	78.5	13-6-001-2-2
Circle	24	24	87.95	87.6	04-16-001-3-11rev
Circle	24	24	88	87.1	04-16-001-4-11rev
Circle	30	30	88	-777	04-16-001-5-11
Ditch/Swale	Not Given	Not Given	88	88	04-16-001-4-11rev
Circle	30	30	88.2	88	04-16-001-5-11
Circle	24	24	88.25	87.3	04-16-001-4-11rev
Circle	24	24	88.25	87.95	04-16-001-3-11rev
Circle	15	15	88.5	88.25	04-16-001-3-11rev
Circle	18	18	88.6	88.5	04-16-001-2-11rev
Circle	12	12	88.89	88.89	12-15-003-3-3
Circle	24	24	89	88.7	04-16-001-5-11
Ditch/Swale	Not Given	Not Given	89.3	89	04-16-001-4-11rev
Rectangle/Box	48	96	89.33	89.5	12-4-001-03-13
Circle	12	12	89.5	89.3	04-16-001-3-11rev
Circle	12	12	89.7	89.3	04-16-001-3-11rev
Circle	24	24	89.7	89.41	04-16-001-10-11rev
Circle	18	18	89.75	90.25	04-16-001-1-11
Circle	18	18	89.8	89.5	04-16-001-5-11
Circle	24	24	89.89	89.28	04-16-001-5-11
Circle	18	18	89.9	89.5	04-16-001-10-11rev
Circle	36	36	89.9	90.1	04-16-001-10-11rev
Circle	12	12	90	89.7	04-16-001-5-11
Circle	18	18	90	89.65	04-16-001-1-11
Circle	30	30	90	89.9	04-16-001-10-11rev
Circle	12	12	90	89.75	04-16-001-3-11rev
Ditch/Swale	Not Given	Not Given	90.1	89.3	04-16-001-4-11rev
Circle	18	18	90.15	89.75	04-16-001-1-11
Circle	12	12	90.3	89.9	04-16-001-10-11rev
Circle	18	18	90.3	89.9	04-16-001-10-11rev
Circle	12	12	90.3	89.9	04-16-001-10-11rev
Circle	8	8	90.3	90	04-16-001-10-11rev
Circle	12	12	90.4	89.85	04-16-001-1-11
Circle	12	12	90.4	89.5	04-16-001-3-11rev
Circle	12	12	90.4	89.85	04-16-001-1-11

Record: 11965 Show: All Selected Records (0 out of 12754)

# Plans: Collect, Identify and Scan



# Plans: Georeference

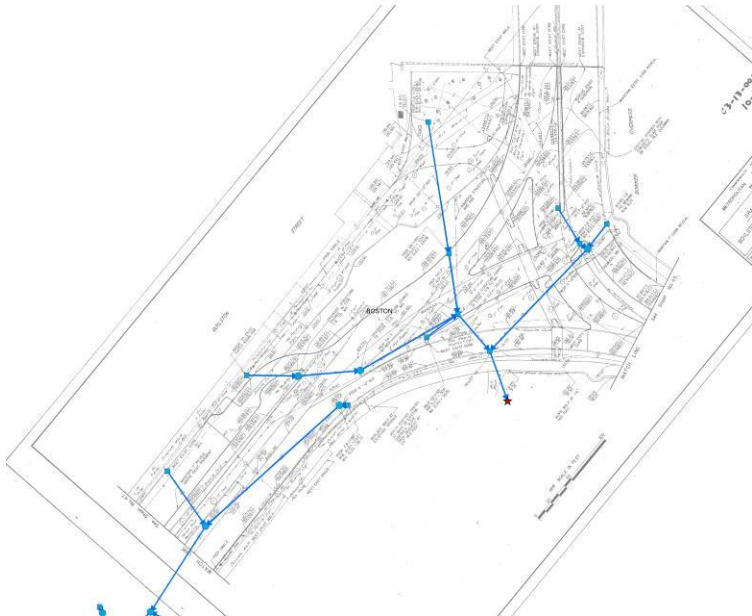
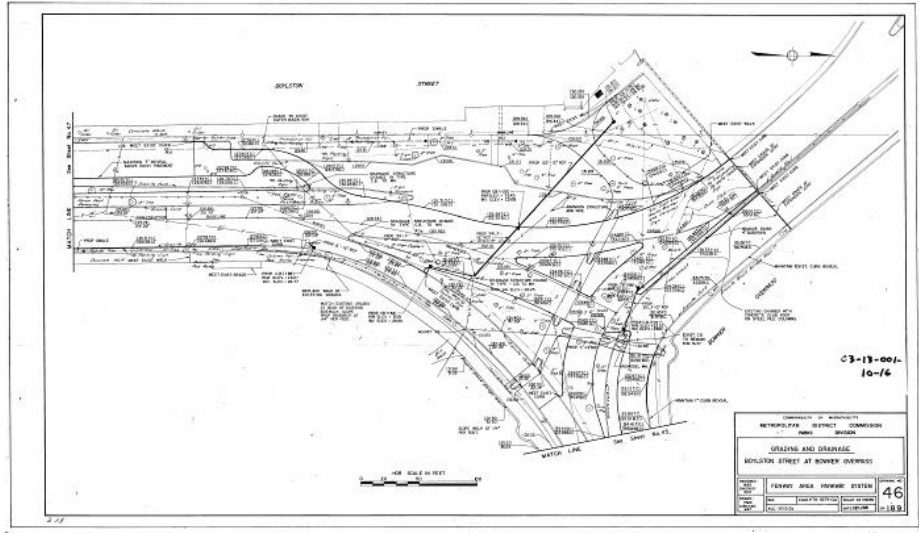






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# Data Collection





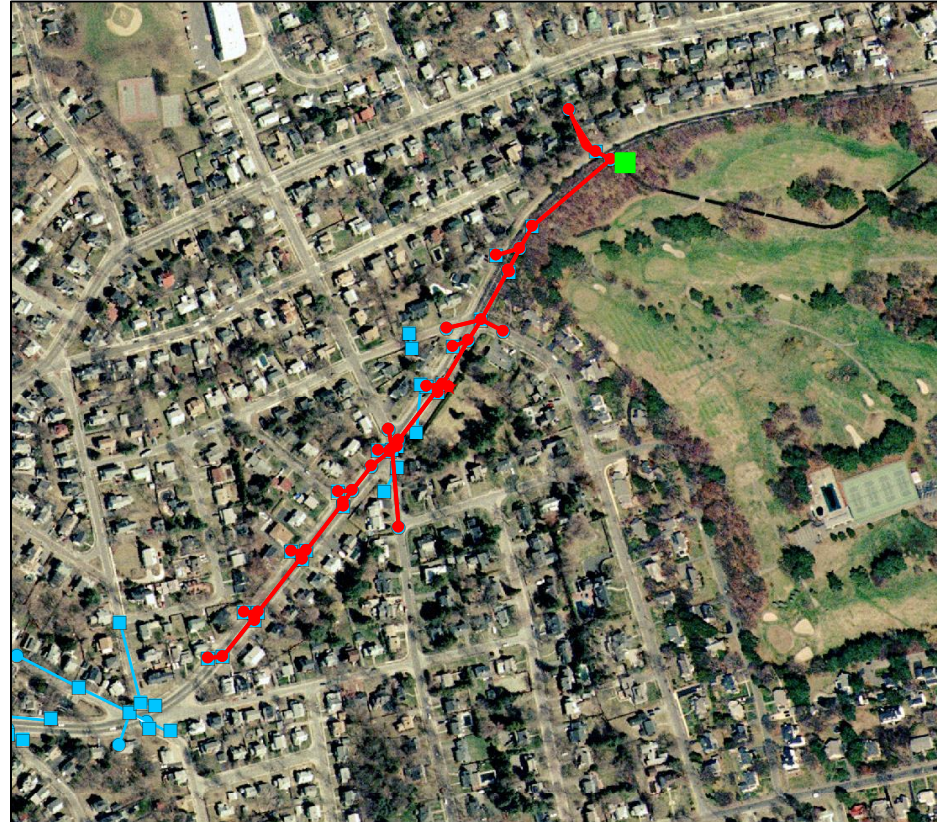
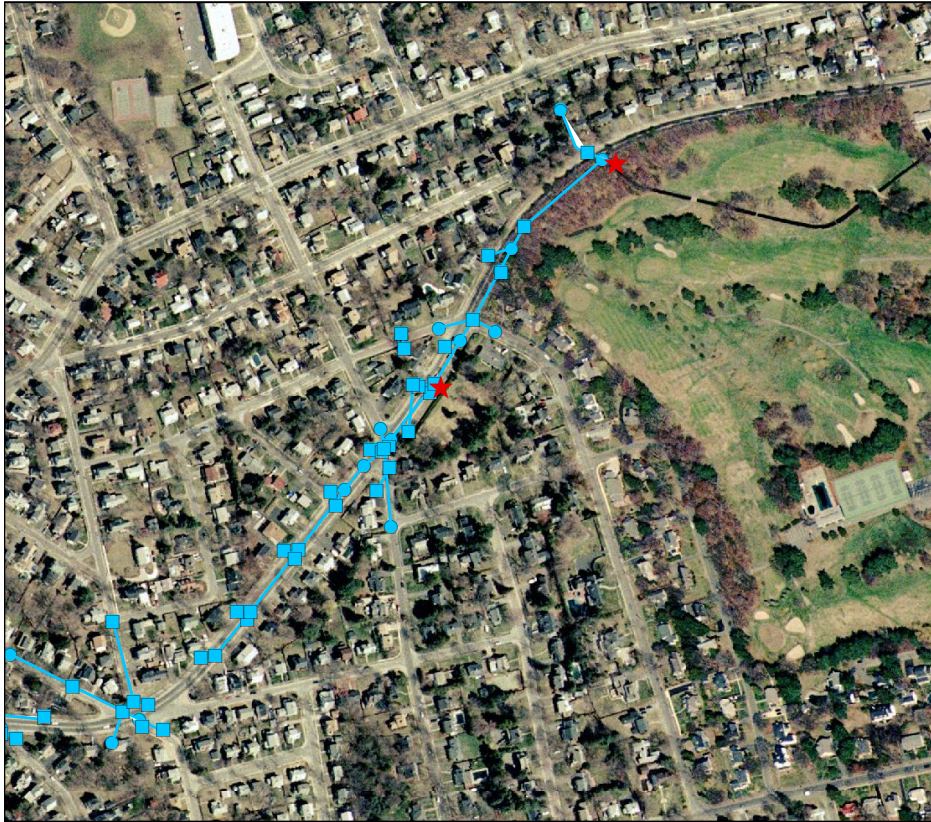
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# Field Survey: Data Post Processing

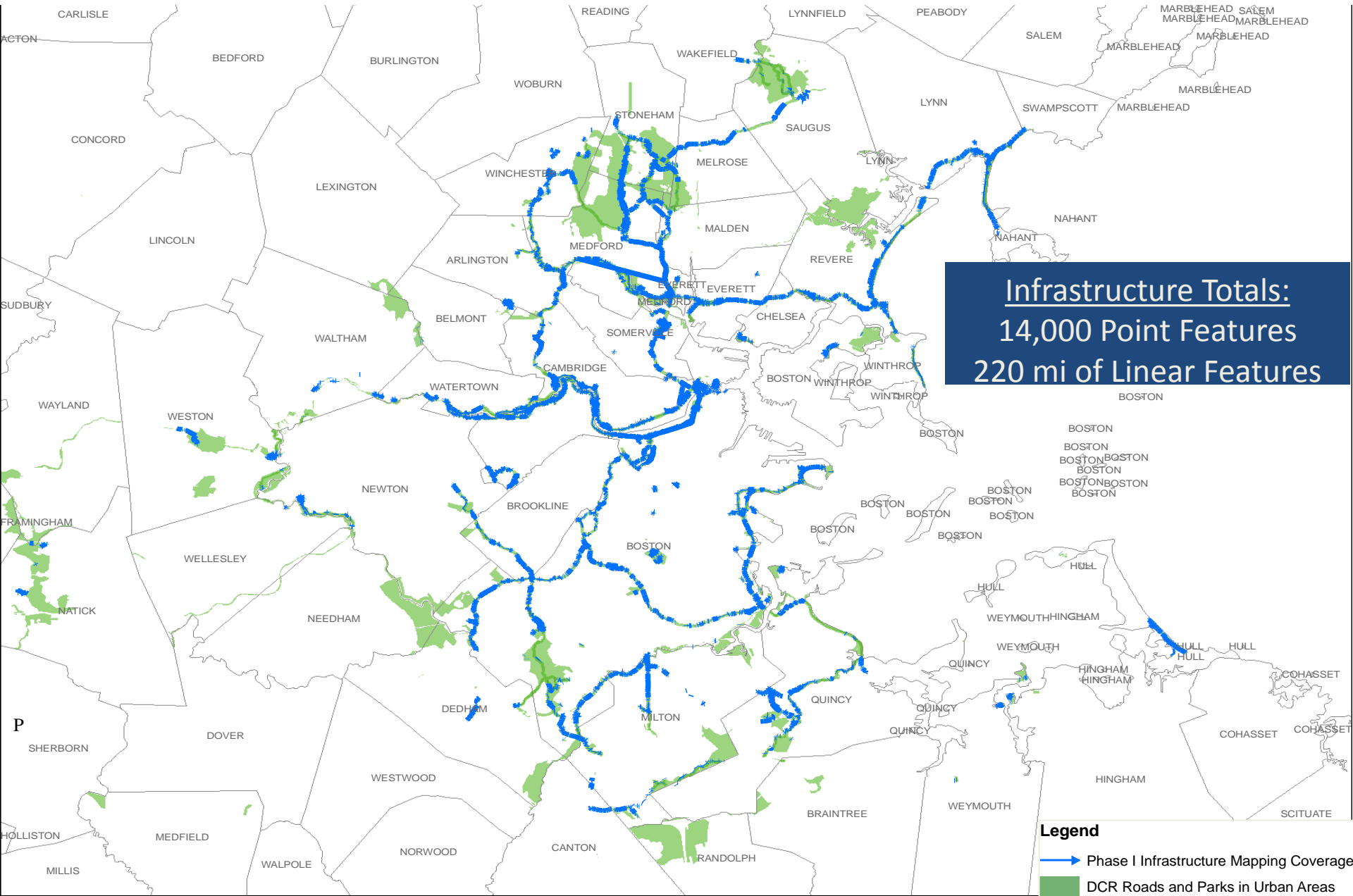




# Finalize Database – Network Connectivity







# Urban Watershed Delineation



## **NPDES MS4 Year 15 Reporting**

- Public Education & Outreach
- Public Participation
- Illicit Discharge Detection & Elimination (IDDE)
- Construction Site Storm Water Management (during & post-construction monitoring)
- Pollution Prevention and Good Housekeeping
- Best Management Practices (BMPs) to meet Total Maximum Daily Loads (TMDL) and Waste Load Allocations (WLA)

# Public Education

## Unused & Expired Pharmaceuticals

Reduce water pollution and promote a healthy environment by properly disposing of unneeded or expired medications



- Household Stormwater Pollution Prevention Brochures
- Unused and Expired Pharmaceuticals
- Fertilizer Best Use Practices
- Pet Waste Management

# Pet & Animal Waste Management

- Mutt Mitt Stations & Waste Collection Programs
- Public Education Campaigns (pet waste management, advisory notices to not feed waterfowl, gulls, etc.)



## DID YOU KNOW?

There are over 5,500 licensed dogs in the Wachusett Reservoir Watershed.



Each of these dogs produces about  $\frac{3}{4}$  lb of solid waste and 7.8 billion bacteria per day!



## **Public Participation**

- Park Serve Volunteer Annual Clean-up
- Partnerships with Conservation Law Foundation and Charles River Watershed Association
- University of Massachusetts Water Quality Studies at Wachusett Reservoir
- Technical Assistance to Conservation Commissions
- DCR Storm Water Website

## Public Participation

- Partnerships with Charlesgate Alliance/  
Muddy River Management and Oversight  
Committee (MMOC)
- Park Serve Volunteer Annual Clean-up (>700  
people)
- Coincides with Earth Day last weekend in April
- In 2018: 35 parks; 216 bags of trash collected,  
32 tons of vegetation composted

# Illicit Discharge, Detection & Elimination

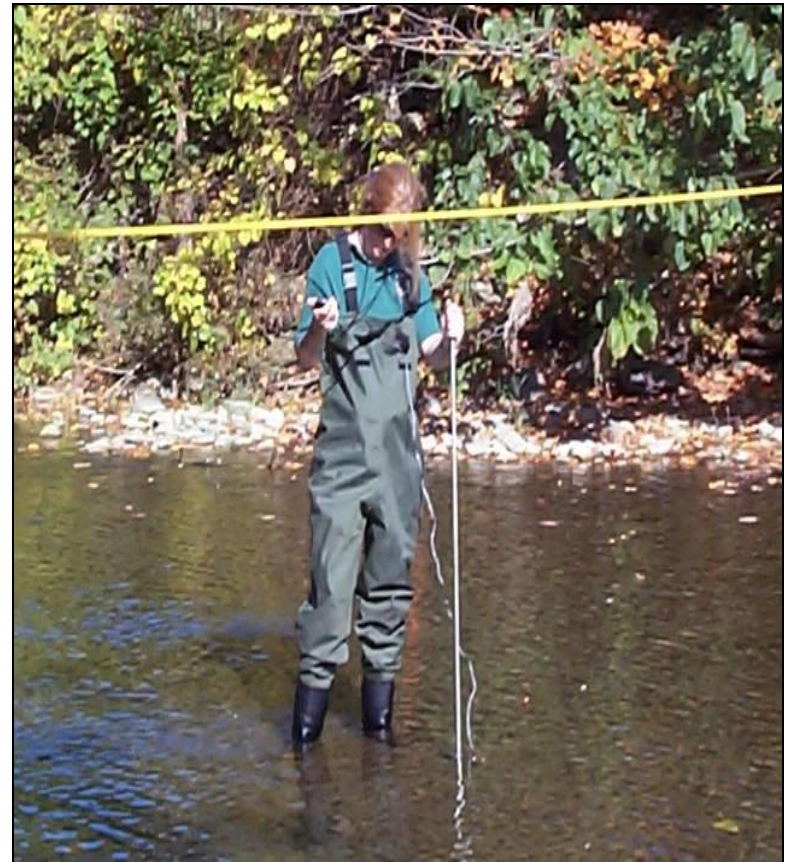




# Illicit Discharge Detection

## Storm Water Sampling – Dry Weather

- Illicit discharge detection and elimination – 5 year cycle to sample all DCR permitted outfalls
- Samples screened using field tests (laboratory analysis for pathogens, if necessary)
- Photo Record of Feature
- Test for Surfactants, Fluoride
- 1,625 sample locations
- Identify suspected source



## Catch Basin Cleaning

- Drainage structures mapped on GPS
- DCR has over 15,000 catch basins/drainage manholes
- Dedicated staff hired to track and quantify required maintenance services
- Geo-referenced database created to identify drainage structures and to track maintenance activities

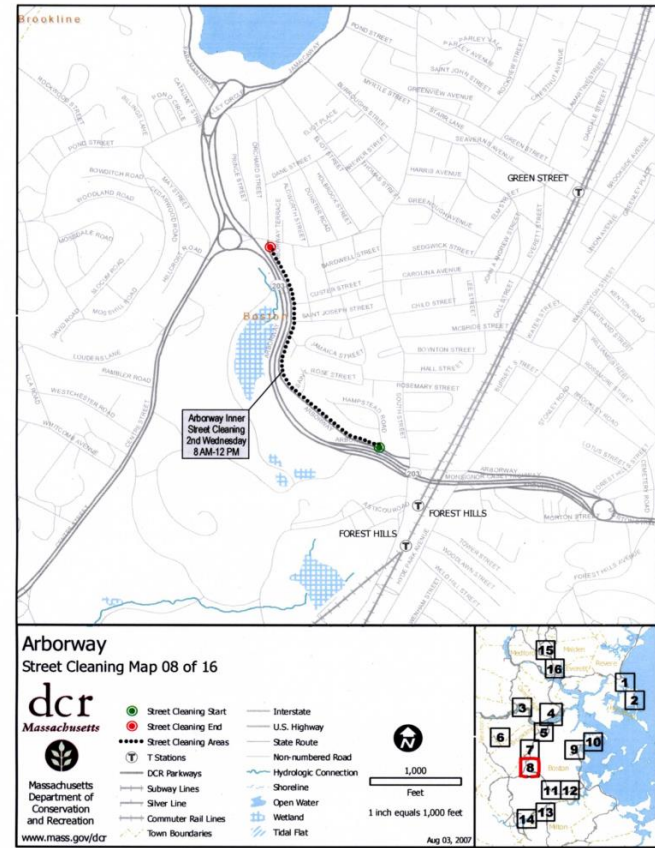
## Street Sweeping

- Street sweeping program targets roadways that drain to impaired water bodies
- High efficiency vacuum sweeper units
- Program April 1st to November 30th
- Currently, four sweeping cycles per year for most roadways ; eight cycles per year in commercial/residential zones (tag & tow)
- Sweeping residuals are composted/recycled
- 4,104 cubic yards in 2017



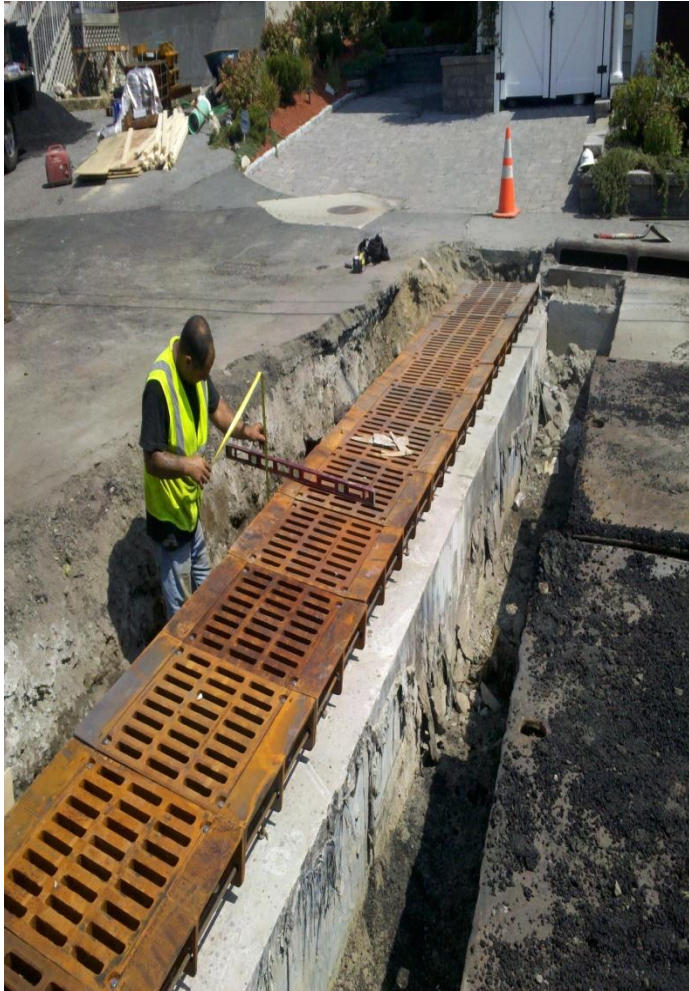
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# High Efficiency Street Sweepers





# Drainage Repairs



- Identified by CB inspection
- Drainage connection permit program
- Illicit discharge detection and elimination (IDDE)
- Repairs recorded on GPS

# Drainage Repairs





# Waste Management

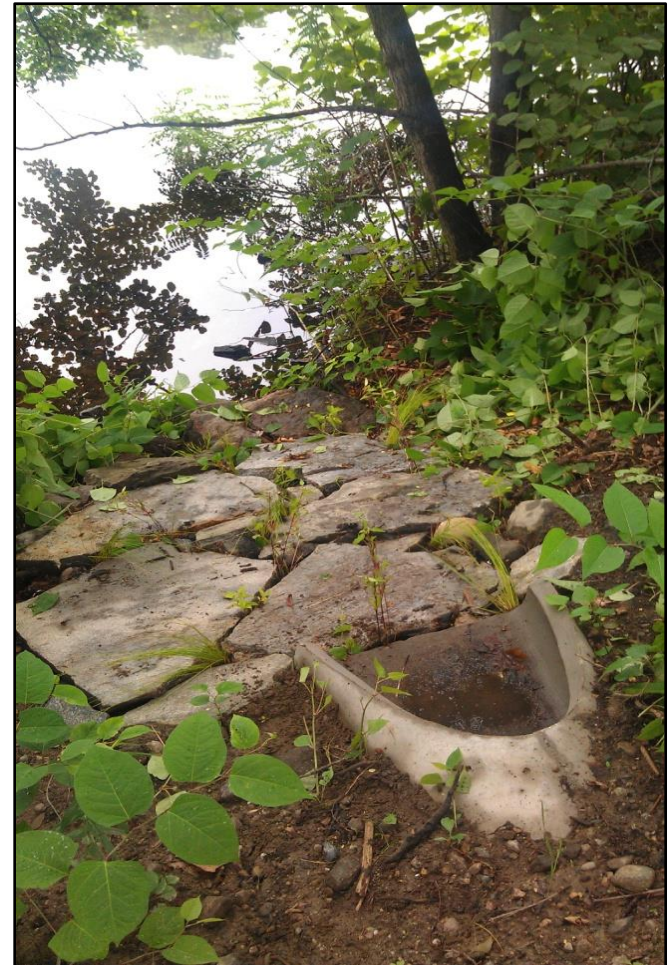
Street Sweepings –  
4,104 cubic yards  
sweepings removed

Catch Basin Residuals –  
1,635 cubic yards to  
Solid Waste Landfill

Abandoned Materials –  
15.47 tons hazardous  
waste managed at DEP/EPA  
permitted facilities



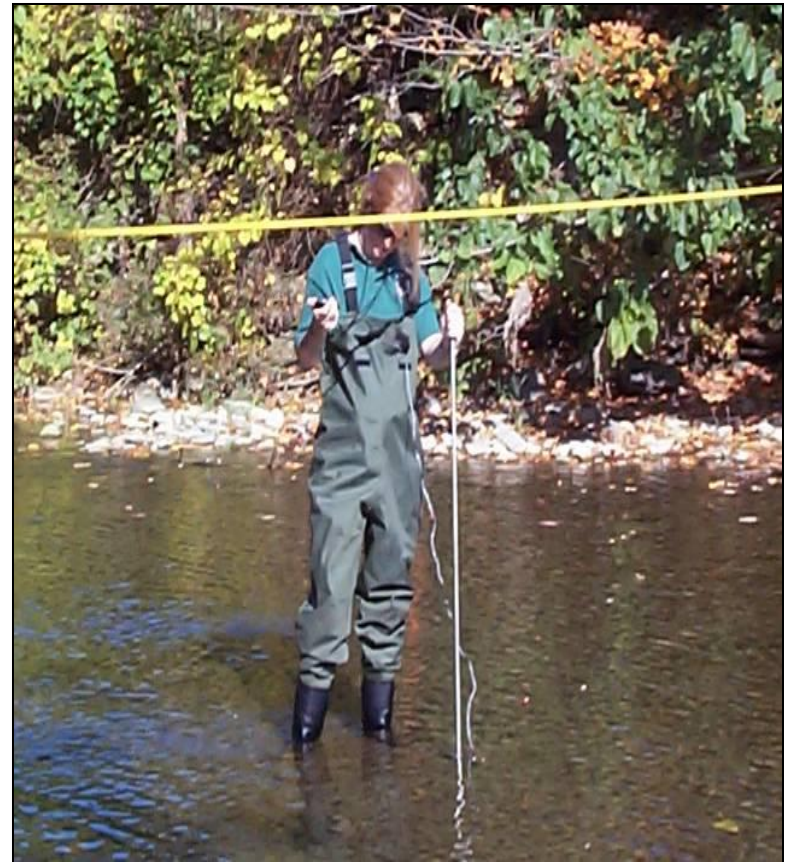
# Planning using Low Impact Development





# Storm Water Sampling – Dry Weather

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- Photo Record of Feature
- Test for Surfactants, Fluoride
- 1,625 sample locations
- Identify suspected source



# Planning Using Low Impact Development





## Total Maximum Daily Loads (TMDLs)

- Upper/Lower Charles River (Phosphorus, Pathogens)
- Blackstone River (Phosphorus)
- Boston Harbor (Pathogens)
- Cape Cod/Waquoit Bay National Estuarine Research Reserve (Nitrogen studies)





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Questions?