The Port Flooding Resiliency Project

Safeguarding At-Risk Populations from the Effects of Climate Change

JERRY FRIEDMAN, CAMBRIDGE DPW
KATE GOYETTE, KLEINFELDER
DAVID VAN HOVEN, STANTEC

NEWEA
WORKING FOR WATER QUALITY

JANUARY 23, 2023

THE WORKS
CAMBRIDGE DEPARTMENT OF PUBLIC

KLEINFELDER
Bright People. Right Solutions.

Stantec

THE PORT FLOODING RESILIENCY PROJECT

Agenda

Parking Lot No. 6 Stormwater Tank

- BACKGROUND
- GOALS
- PL6 STORMWATER TANK CONSTUCTION
- PL6 SUCCESS
- ENHANCING PORT RESILIENCY
- NEXT STEPS

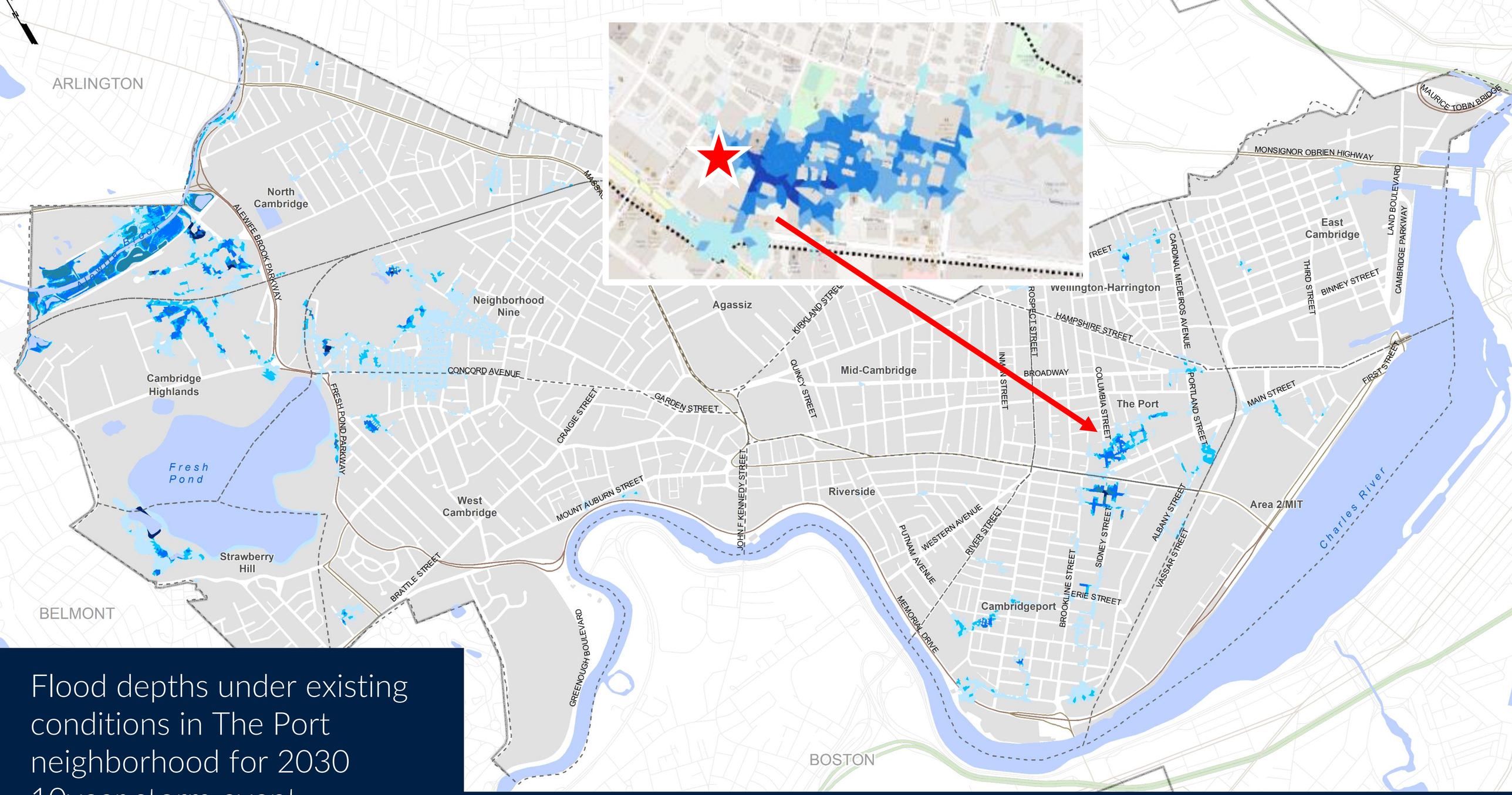
THE PORT FLOODING RESILIENCY PROJECT

Background

Flooding in The Port, July 2010

The Port Flooding Resiliency Project Background

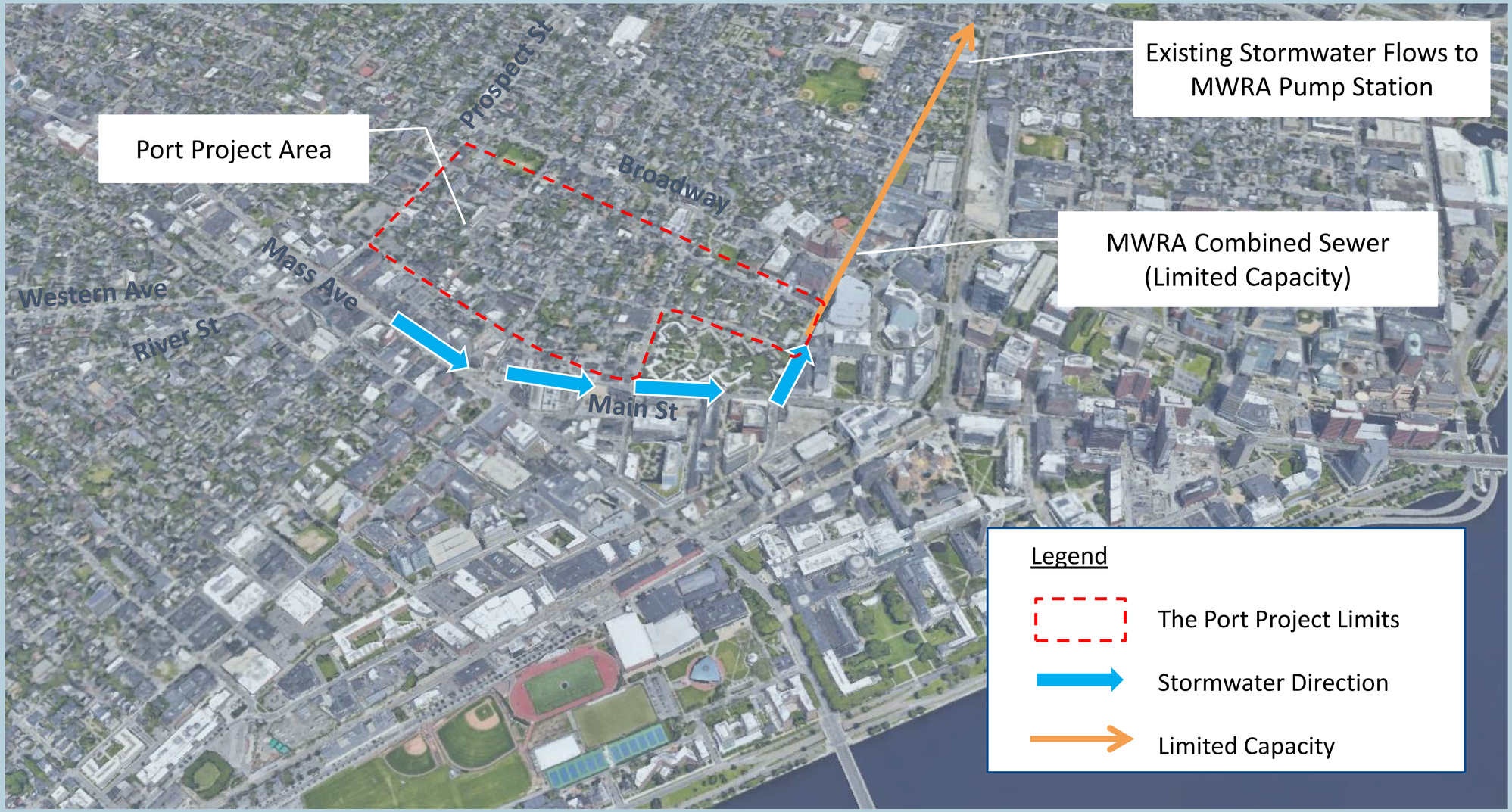
- The Port has experienced significant surface flooding and sewer backups
- Climate change has exacerbated the frequency and severity of storms
- The Port is especially at risk to the effects of climate change



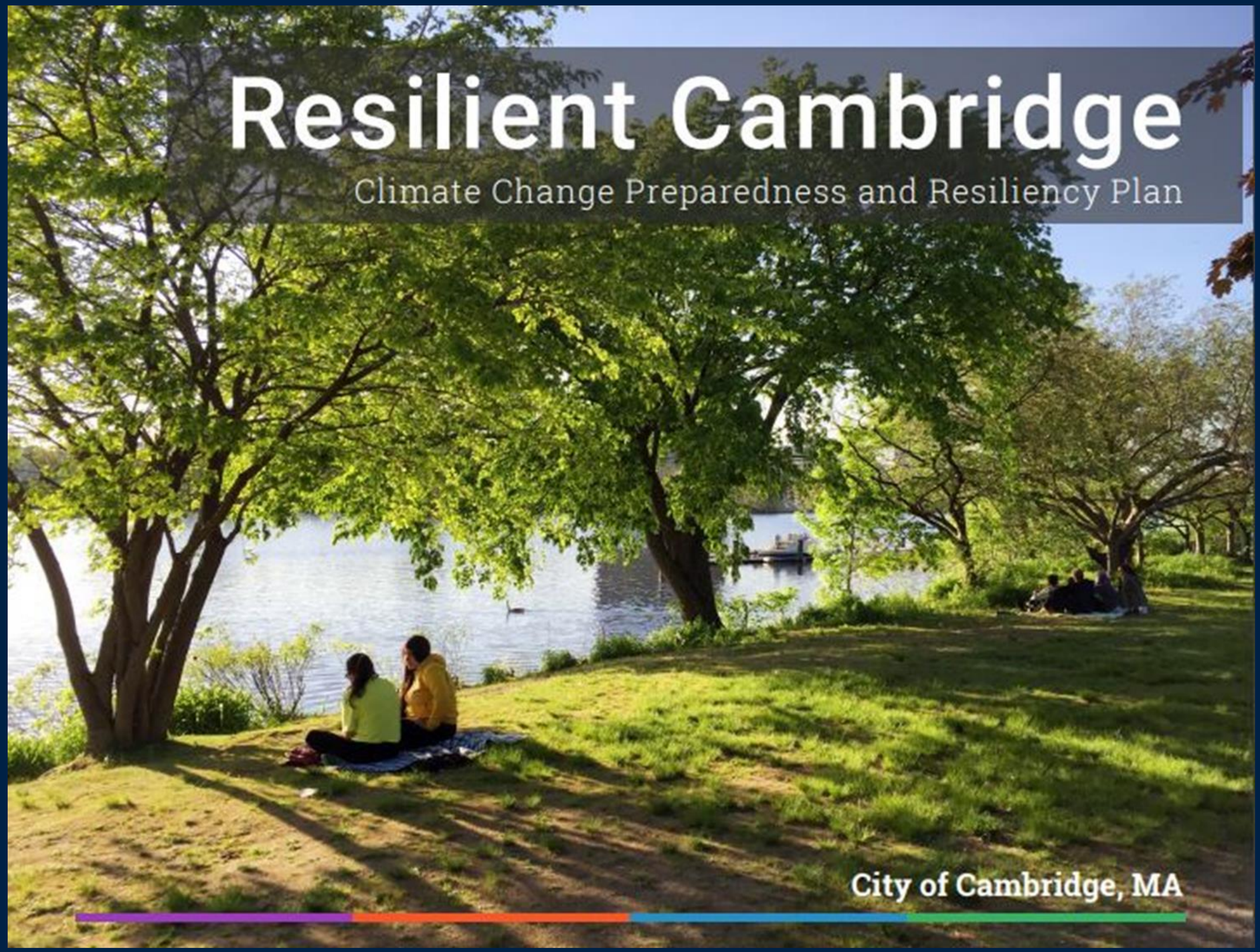
Flood depths under existing conditions in The Port neighborhood for 2030 10year storm event

The Port Project Area

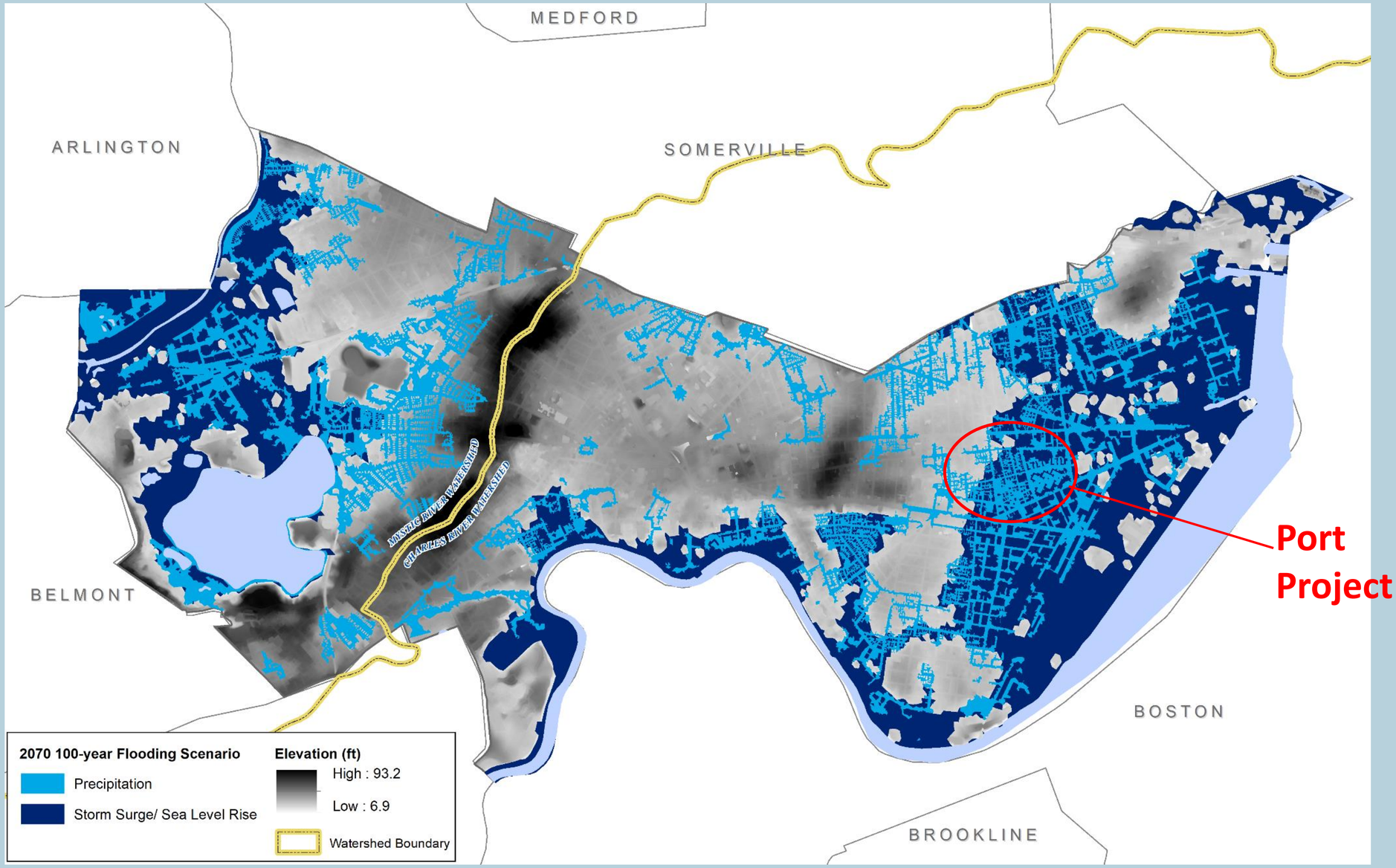
Why the Port Floods



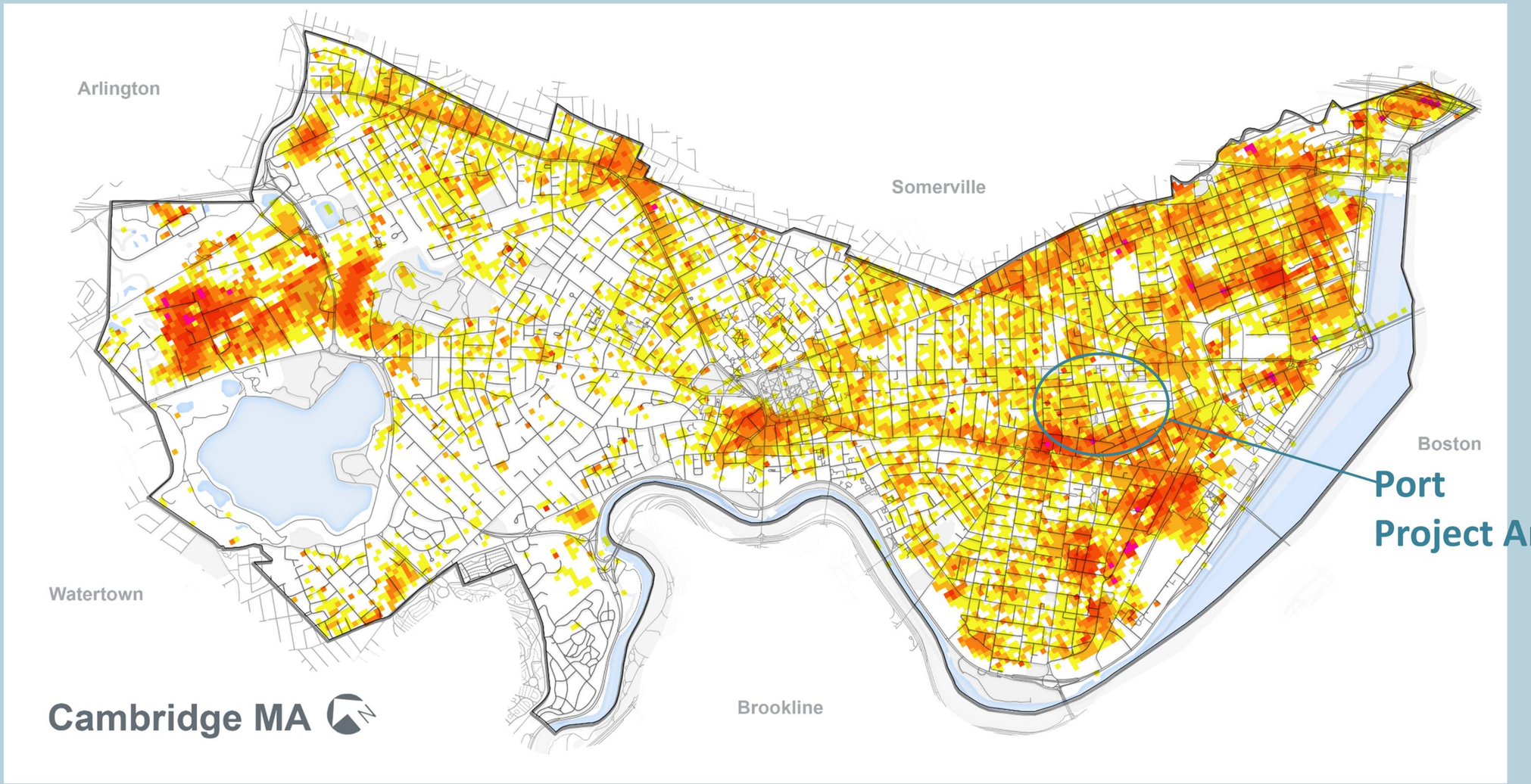
Existing Port Stormwater Flow


Resilient Cambridge
Climate Change Preparedness and Resiliency Plan
City of Cambridge, MA

Resilient Cambridge Projected Flooding



Resilient Cambridge Projected Heat



THE PORT FLOODING RESILIENCY PROJECT

Goals

Flooding in The Port, August 2021

The Port Resiliency Goals

- Reduce today's surface flooding and sewer backups in the Port neighborhood
- Mitigate future risks of flooding impacts from more frequent and intense storm events due to climate change
- Consider opportunities to increase neighborhood resiliency against extreme heat

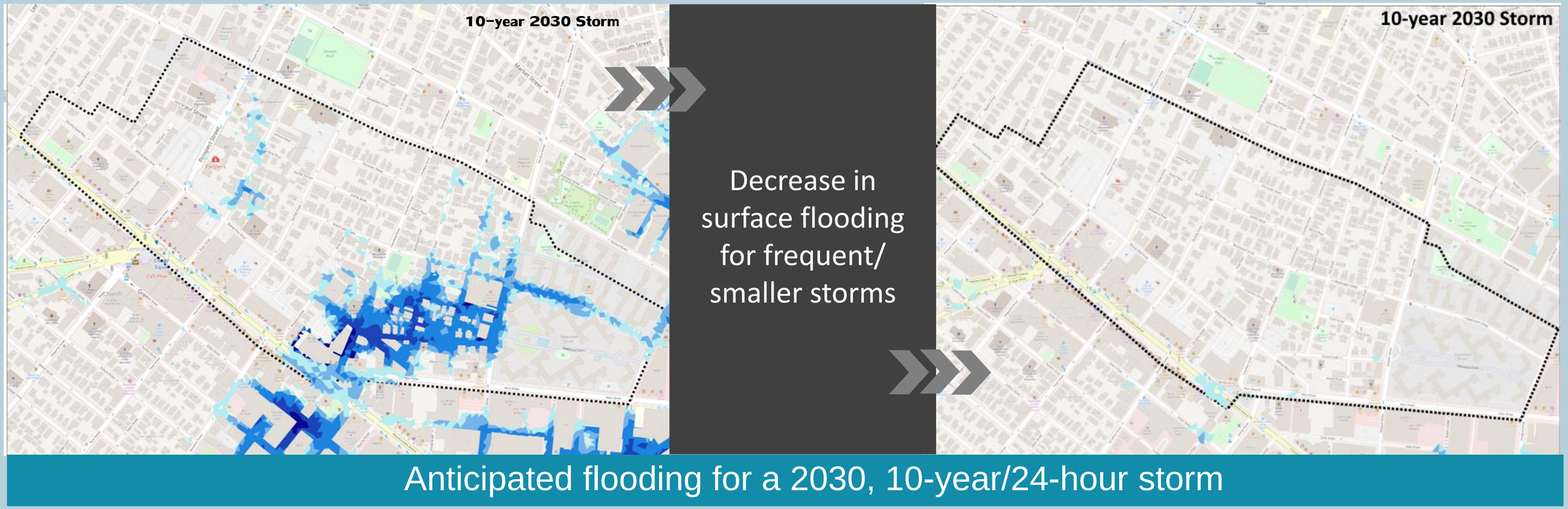
THE PORT FLOODING RESILIENCY PROJECT

Goals

Stormwater and Sanitary Service Design Criterion

- Flood control up to 10-year, 24-hour 2030 storm event (5.63 in rainfall, 1.81 in/hr intensity)
- Sanitary level of service at least 4.5 ft freeboard

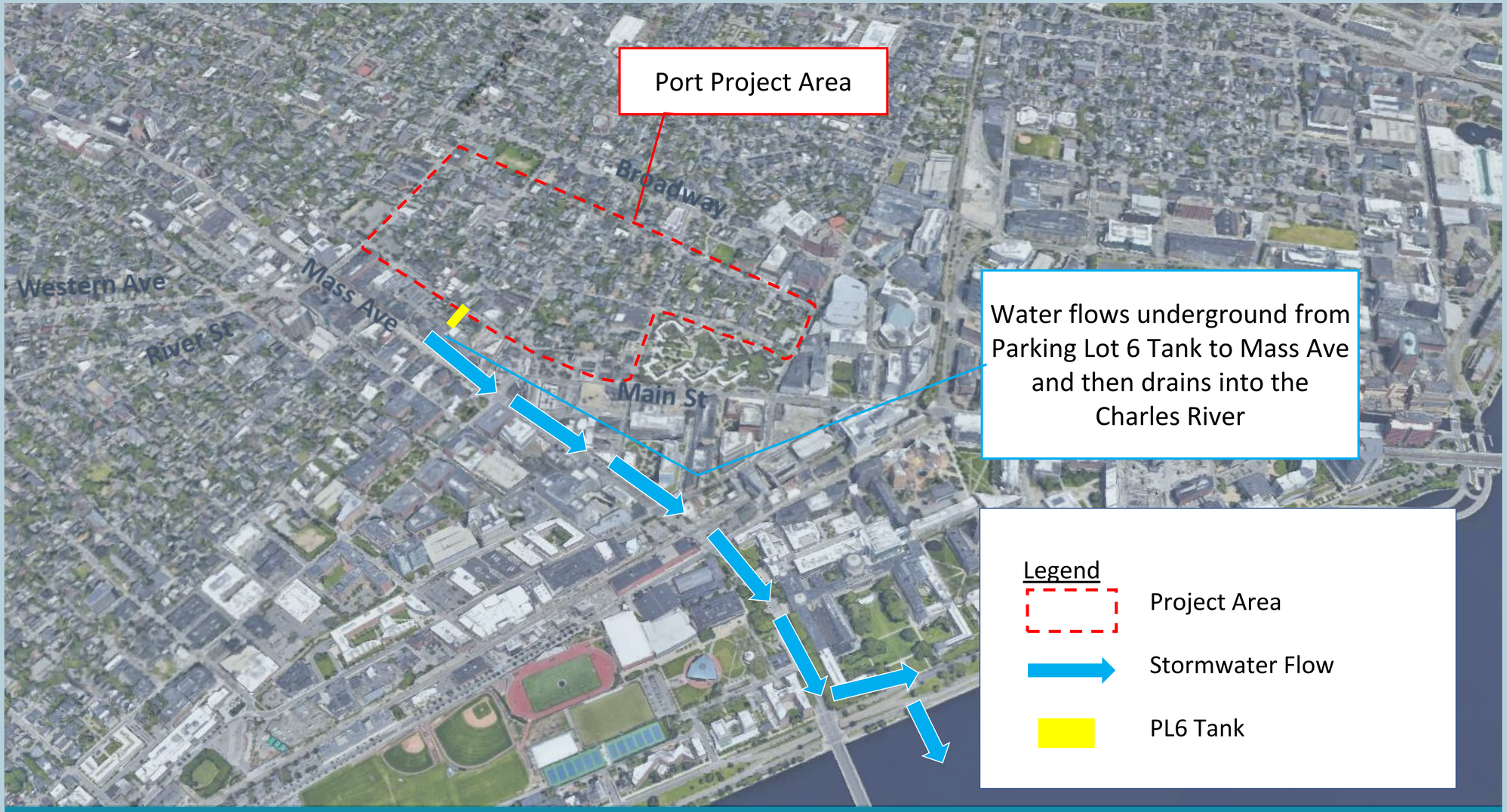
Stormwater and Wastewater Infrastructure to Meet City's Goals



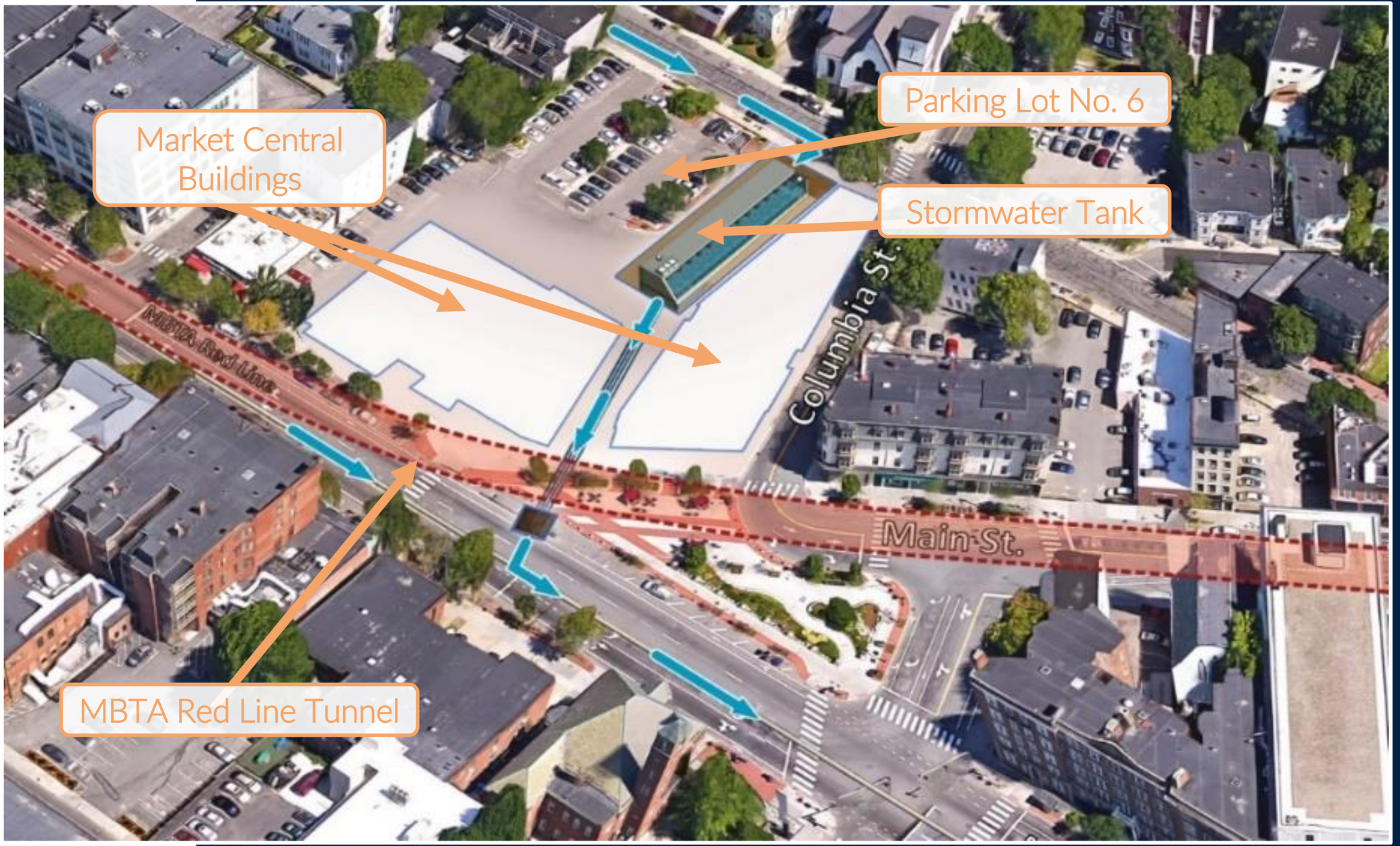
Anticipated flooding for a 2030, 10-year/24-hour storm

- 0.39 MG PL6 Stormwater Tank, 10 MGD Pump Station
- 1.2 MG 2nd Stormwater Tank, 15 MGD Pump Station
- 0.65 MG Sanitary Storage Tank, 5 MGD Pump Station
- Additional conveyance improvements and system modifications

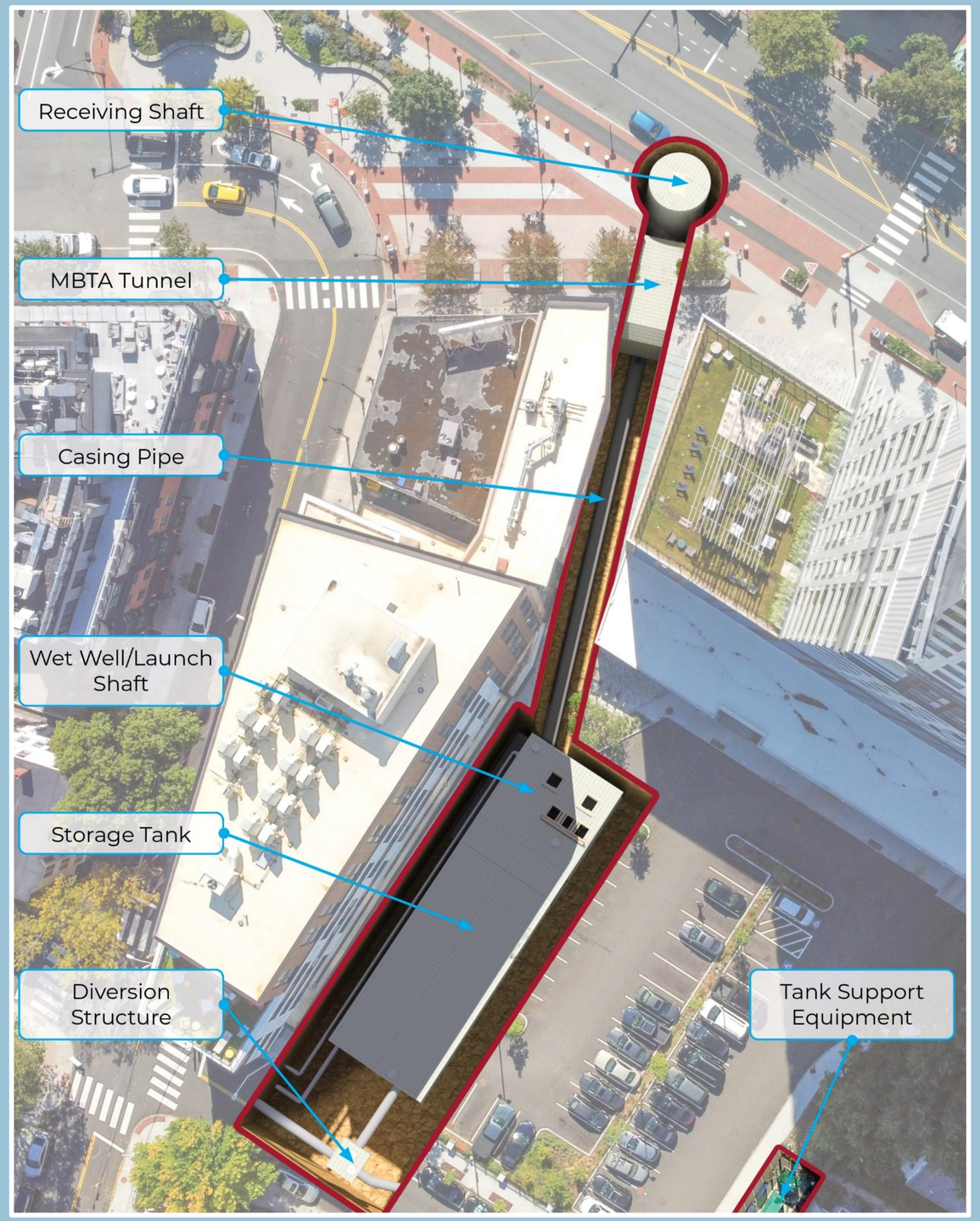
Redirect Stormwater to the Charles River



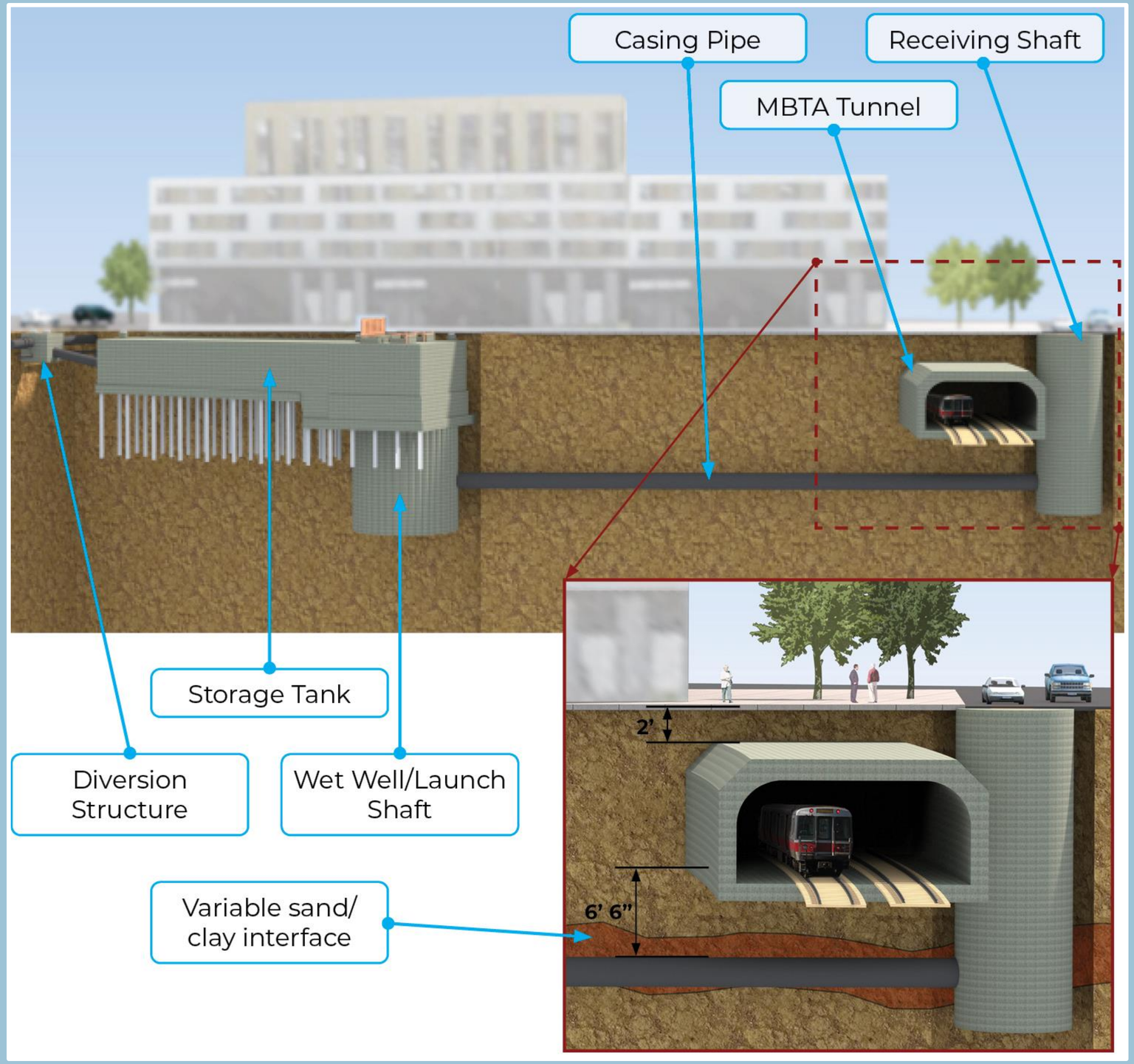
Stormwater Flow After PL6 Storage Tank Installed

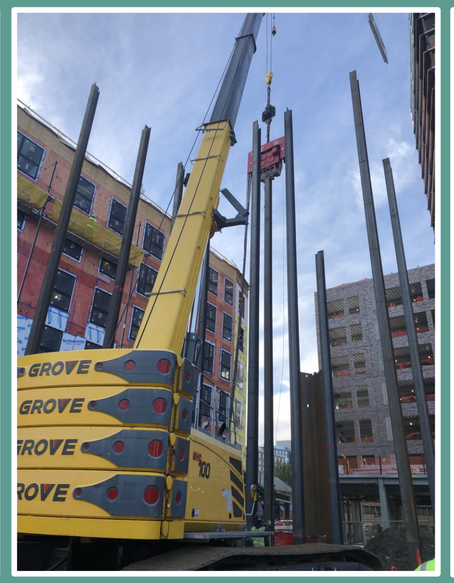

Market Central Buildings
Parking Lot No. 6
Stormwater Tank
MBTA Red Line
Columbia St.
Main St.
MBTA Red Line Tunnel

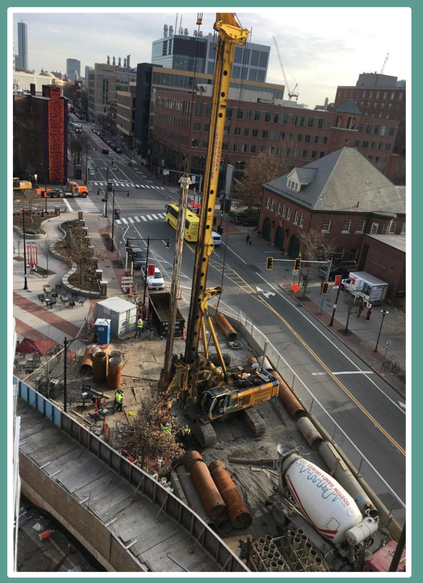
Aerial view of PL6 project area

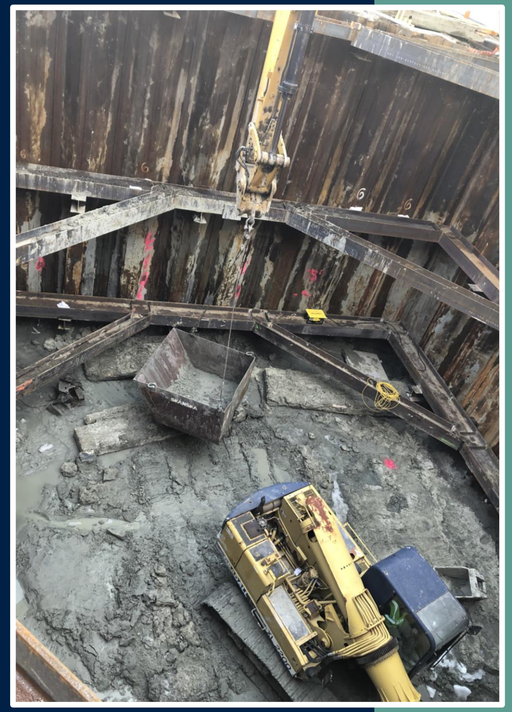


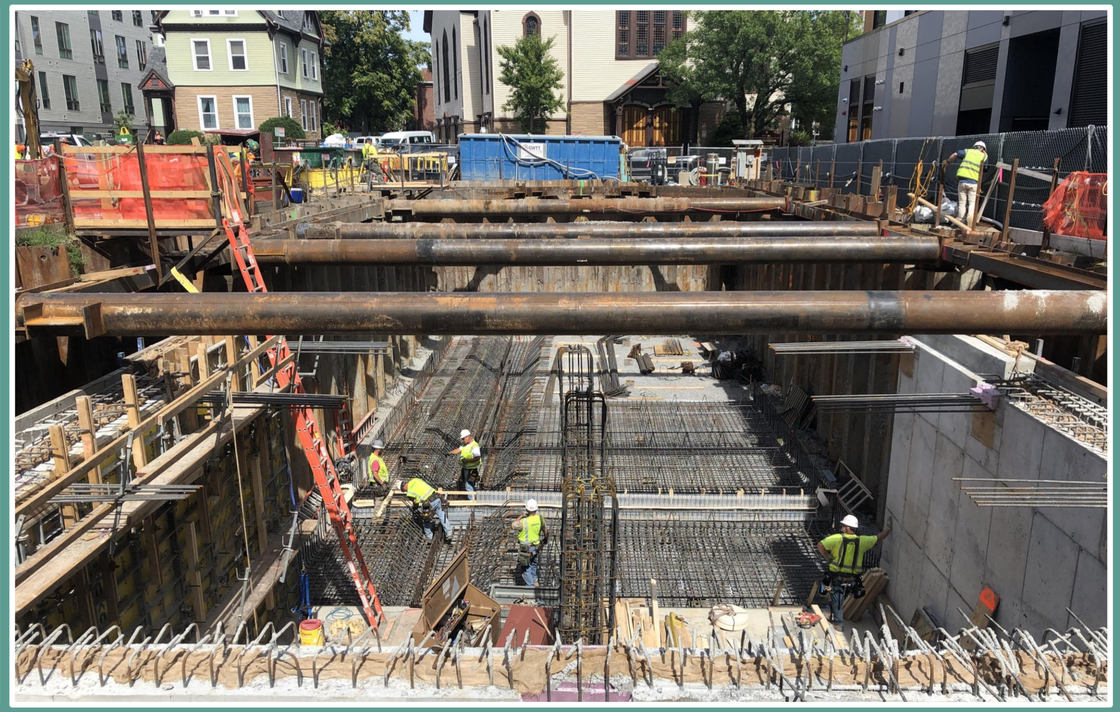
Complexity of microtunneling under MBTA Red Line tunnel

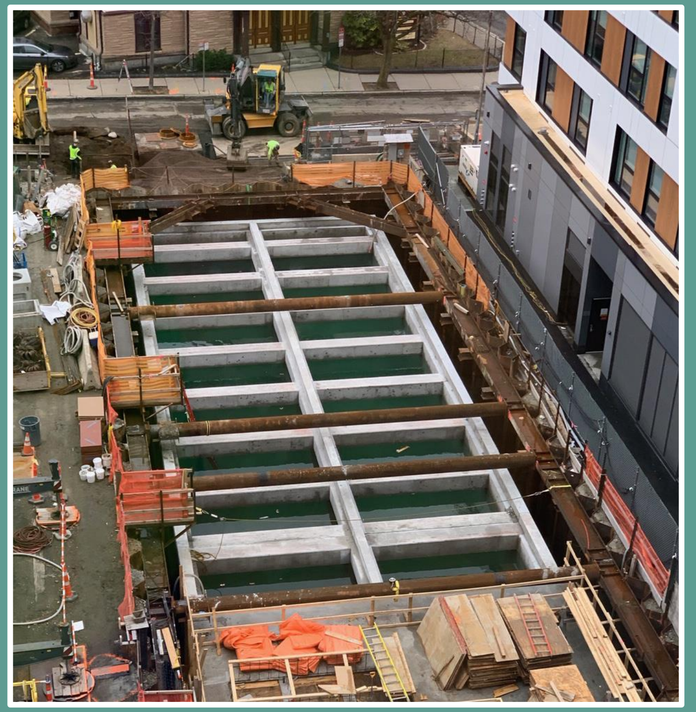



GROVE
GROVE
GROVE
GROVE









THE PORT FLOODING RESILIENCY PROJECT

PL6 SUCCESS

Completed Parking Lot No. 6 Stormwater Tank

Summer 2021
(19.6 inches of rain)

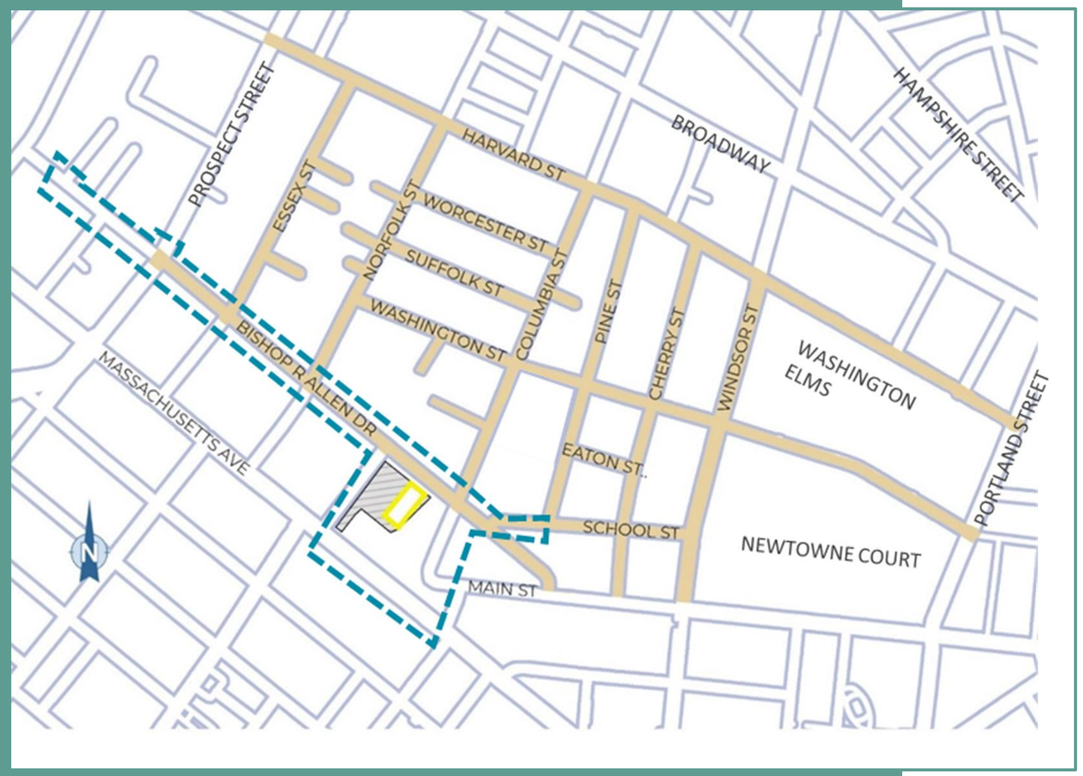
- Tank and pump station online May 2021
- 3,480,000 gallons stormwater diverted in Summer 2021
- Performed exactly as engineered
- Record rainfall helped emphasize importance of future resiliency work

Building enthusiasm and support for next phases of Port Infrastructure work

PORT INFRASTRUCTURE PROJECT

THE PORT FLOODING RESILIENCY PROJECT

PHASE 2

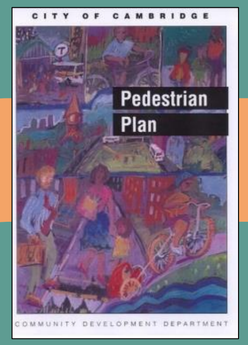


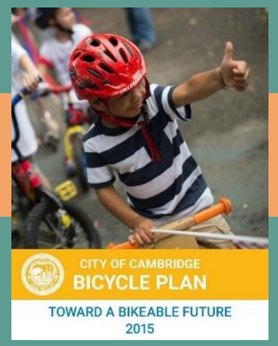
Completed – PL6 Tank

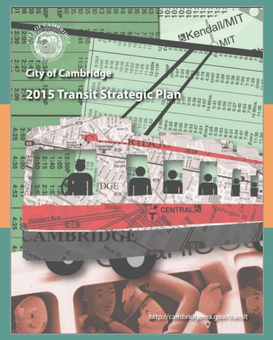
The Port Infrastructure Improvements Project

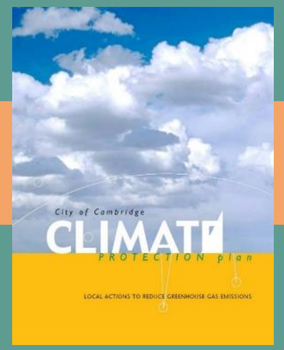
- Replace and upsize neighborhood sewers and storm drains
- Upgrade water, gas, electric utilities
- Roadway and sidewalk improvements
- New tree plantings
- Green infrastructure

City's Guiding Plans and Policies Inform Design



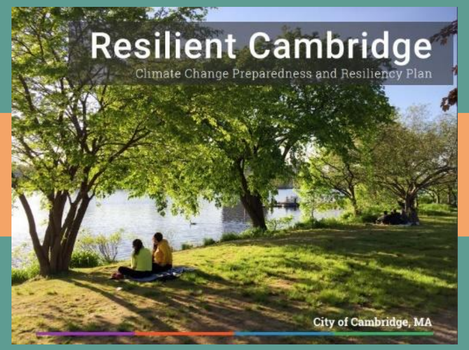






ENVISION CAMBRIDGE

VISION ZERO CAMBRIDGE



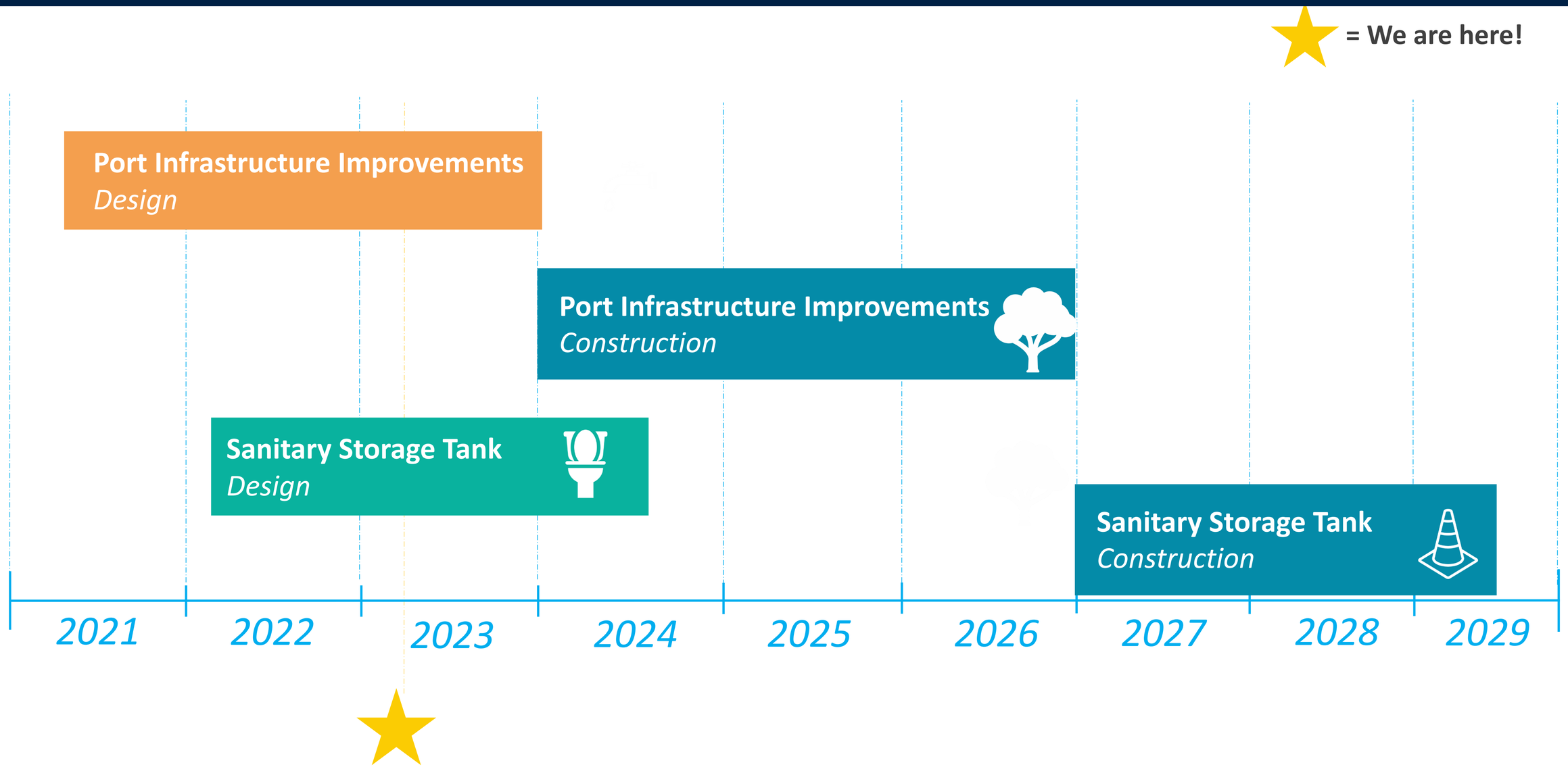
Urban Forest Master Plan goal to increase tree canopy cover by 6% in the Port

Over 300 new tree plantings

Suffolk Street: Today

Suffolk Street: Shared Street

Port Resiliency Project Next Steps



THE PORT FLOODING RESILIENCY PROJECT

Questions

Questions?