

Overcoming Barriers to Resilience: Individual & Multijurisdictional Approaches

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Reaching Across Boundaries:

Climate Resilience in Boston's Mystic River Watershed

Julie Wormser, Deputy Director
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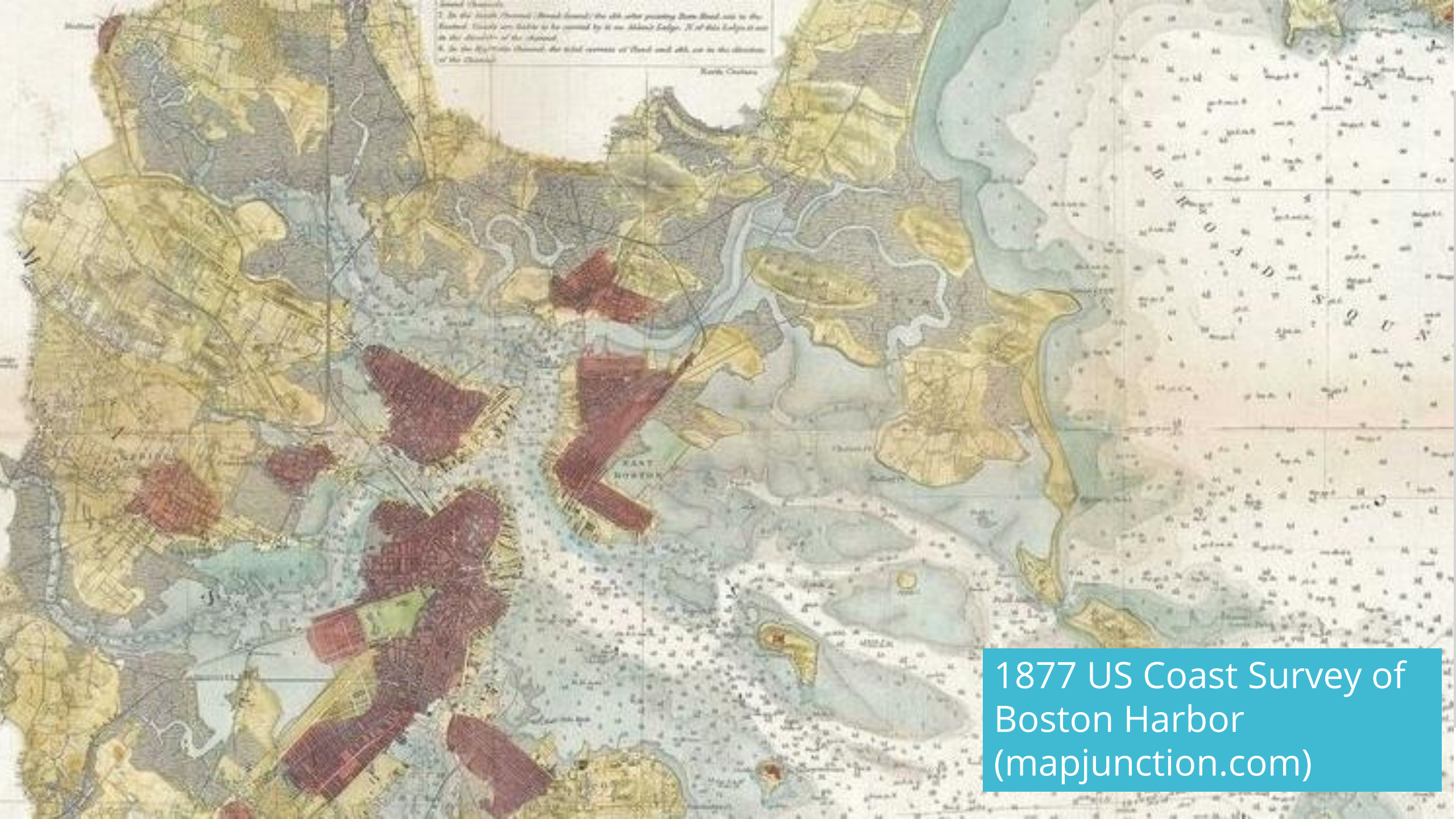
Credit: Caleb Dresser



Mystic River Watershed

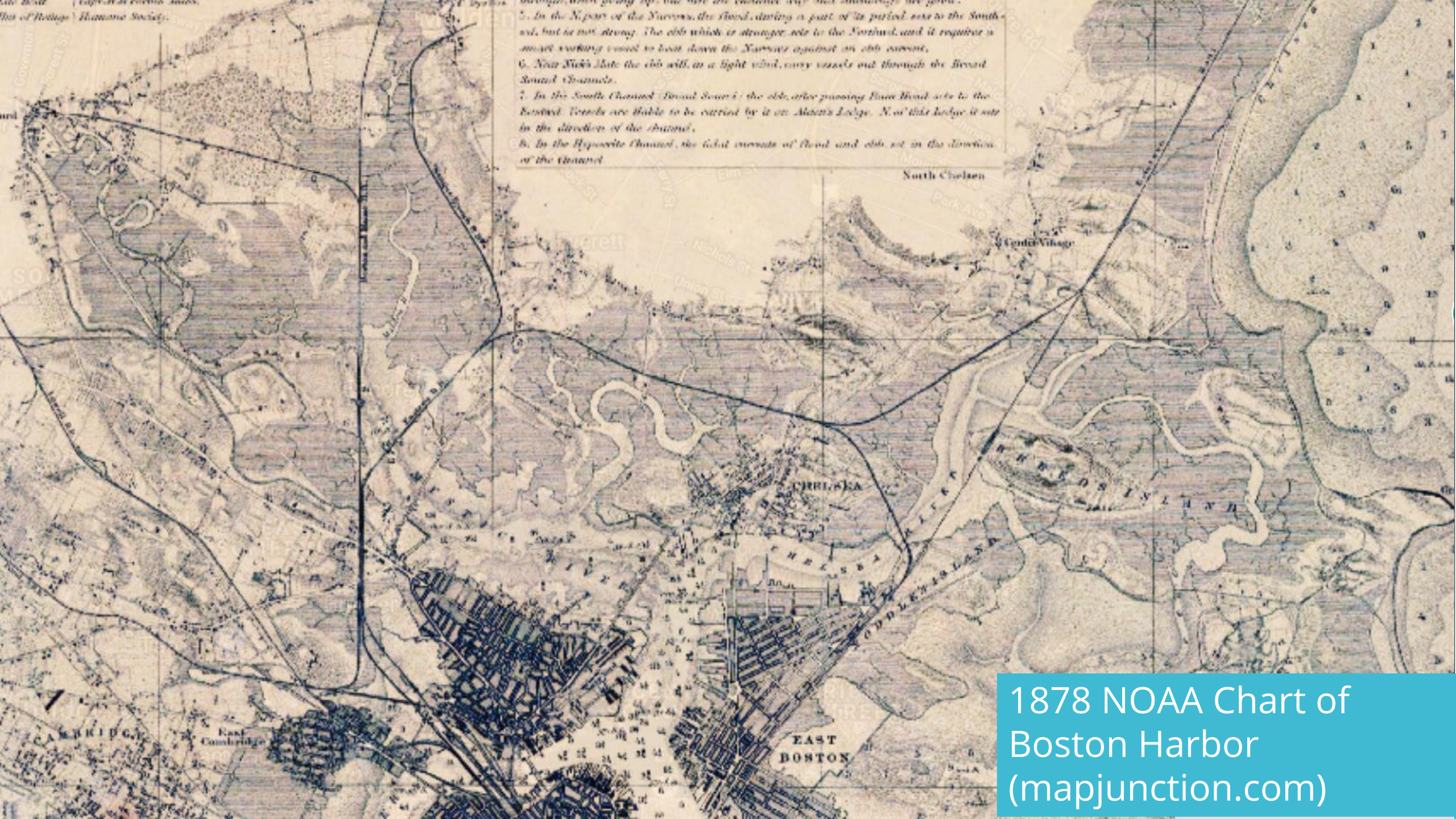
Credit: Sasaki Associates





1. In the North Channel (Broad Channel) the old water passing Stone Island is to be avoided. It is only safe to be carried by it on Abbot's Edge. N of this Edge is in the direction of the channel.
2. In the South Channel the old water of Broad and all, are in the direction of the channel.

1877 US Coast Survey of Boston Harbor (mapjunction.com)



5. In the N part of the Narrows, the flow during a part of its period sets to the South
and, but is not strong. The ebb which is stronger sets to the Northward, and it requires a
small working vessel to beat down the Narrows against an ebb current.

6. Near Nick's Hole the ebb will, in a light wind, carry vessels out through the Broad
Sound Channel.

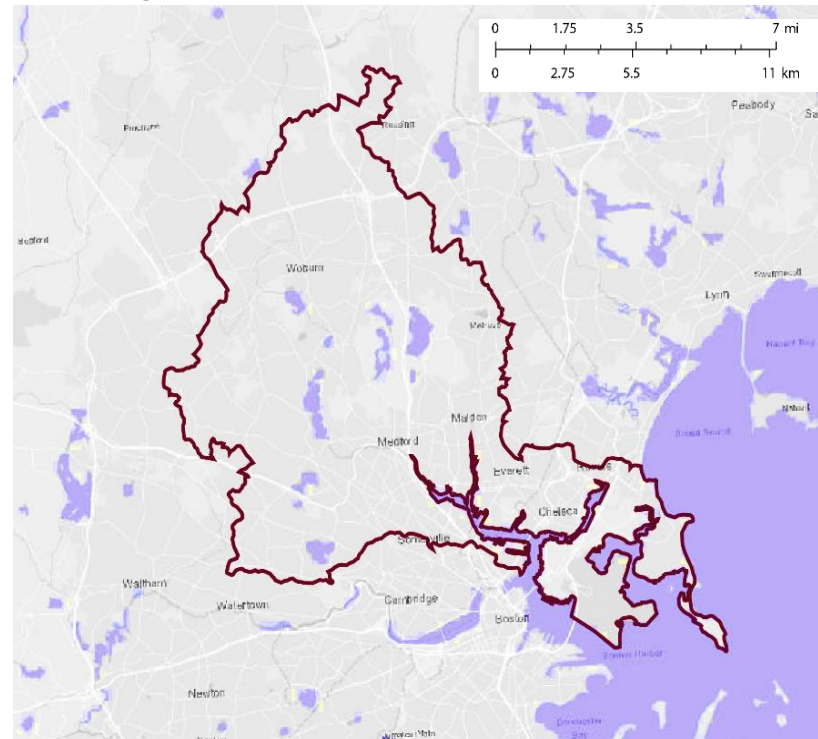
7. In the South Channel (Broad Sound) the ebb, after passing Blue Head sets to the
Eastward. Vessels are liable to be carried by it on Alcott's Ledge. Now this ledge it sets
in the direction of the channel.

8. In the Hypocrite Channel, the tidal currents of flood and ebb set in the direction
of the channel.

1878 NOAA Chart of
Boston Harbor
(mapjunction.com)

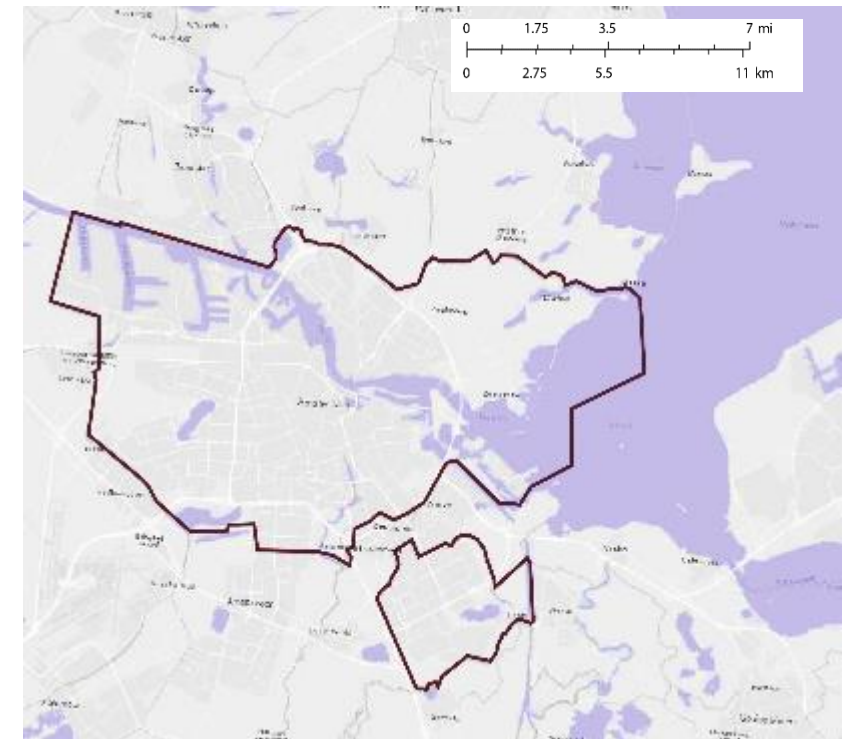
We have
a major
governance
challenge.

Mystic River Watershed



- 76 square miles
- 600,000+ people
- 21 municipalities

Amsterdam



- 85 square miles
- 800,000+ people
- 1 municipality

What can Amsterdam do that we can't?

Credit: Bowcrest

- Raise local and regional funds.
- Strengthen local building codes.
- Plan and regulate on a watershed scale.

The Commonwealth tightly controls our laws and taxes; our system is designed to move slowly.

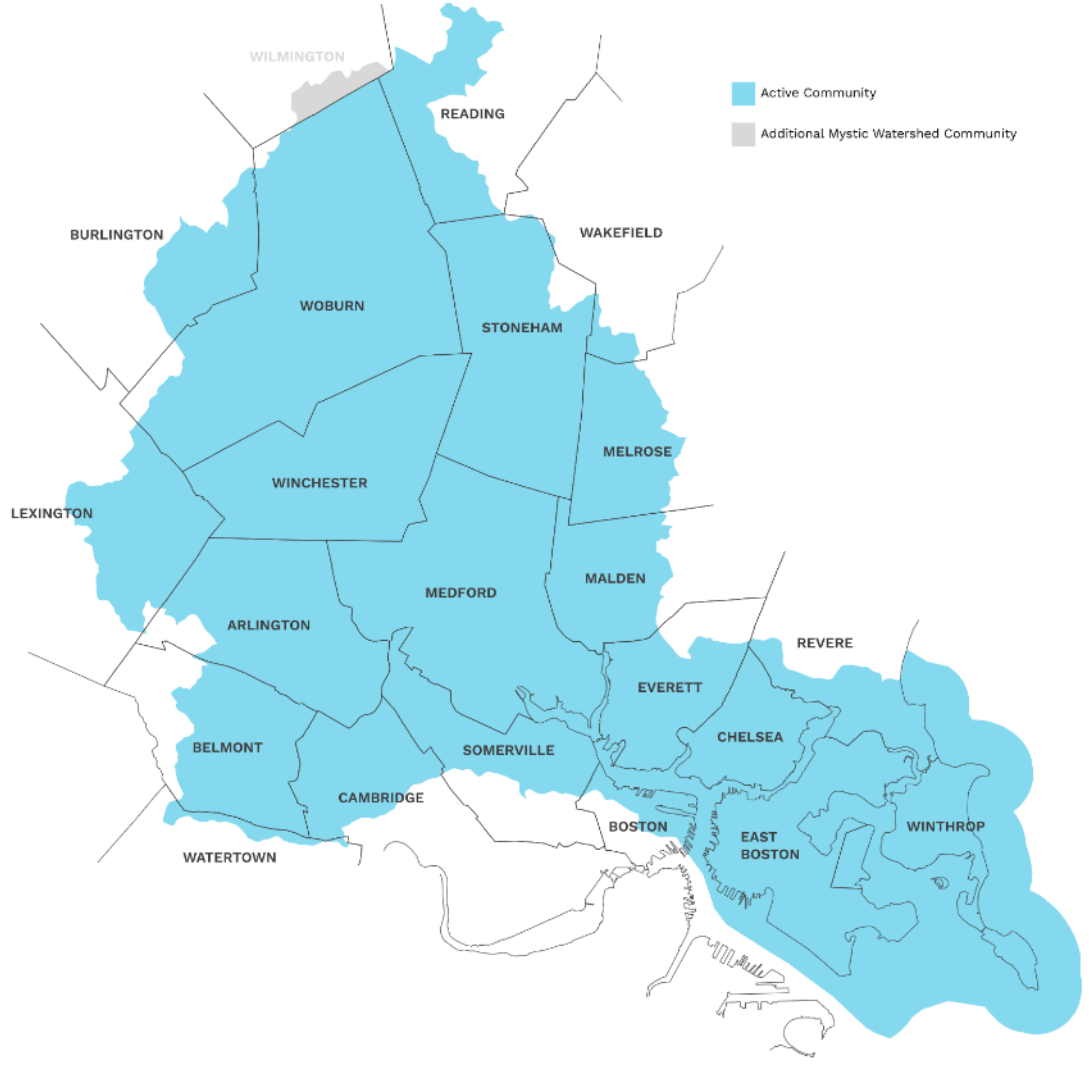
This now makes it really hard for cities and towns to protect ourselves.

However, some good news

Credit: David Mussina

- Multiple climate-forward cities and towns are in the Mystic, along with outstanding universities.
- We do control zoning.
- The State Municipal Vulnerability Preparedness (MVP) program is providing support and funding.
- Our municipal staff are among the best people you'll ever meet.

- Voluntary partnership of 20 cities and towns
- Founded in 2018
- 98% of watershed
- Secured \$2.5 million in regional climate funding



Vision

Credit: David Mussina

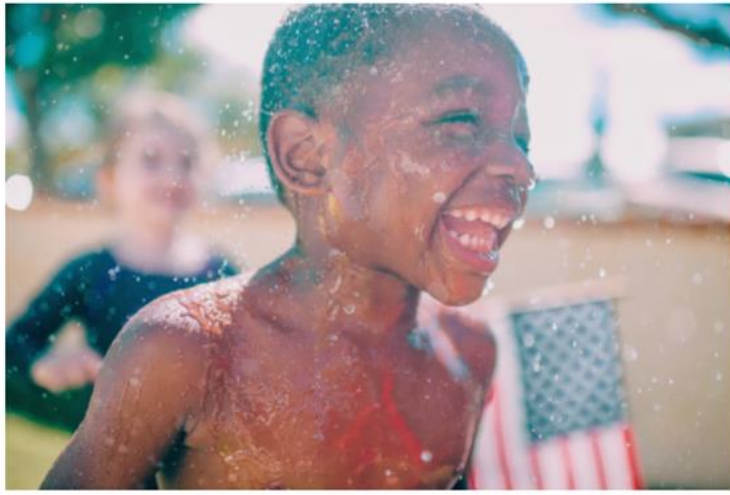
- We work together on regional projects that no single city or town can accomplish alone.
- We are data-driven.
- We are action-oriented.
- We are pragmatic and optimistic.
- We are mutually supportive.
- Our structure lets us succeed and learn.

Steering Committee

Credit: Jesse Costa

- Professionally facilitated, regionally funded.
- Voting members are all municipal staff.
- Non-voting experts participate in discussions.
- Working groups are more inclusive.

Working Groups



Preparing People for Extreme Weather

Social Resilience



Storm Proofing Critical Infrastructure

Lower Mystic



State Funding and Policy

Advocacy and Outreach



Managing Regional Flooding

Upper Mystic Stormwater

Upper Mystic Stormwater Management

Credit: Andy Hrycyna

- Goal: 17 communities work together to manage stormwater flooding.
- Cambridge and Lexington have received \$1.3 million in EPA and regional MVP action grants on behalf of RMC.
- We identified and ranked over 400 potential stormwater wetlands and are working on 75-100% design for the first three projects.

Lower Mystic Infrastructure Storm- hardening

Credit: David Burson

- Goal: We have the highest concentration of critical regional infrastructure in New England. We don't want it to fail during and after major coastal storms.
- We have secured a \$400,000 MVP action grant to do a regional vulnerability assessment.
- By mid-2021, we will identify key needs for capital and operational improvements based on keeping residents and workers safe.

Mystic-wide Social Resilience

Credit: Chris McIntosh

- Goal: Prevent extreme weather from harming the health, housing and livelihood of our most vulnerable residents and workers.
- Over \$500,000 from the Barr Foundation and MVP have allowed us to hire dedicated staff and pursue Wicked Hot Mystic, a watershed-wide assessment of urban heat islands.
- Our regional working group is working to integrate social resilience into municipal actions.

Advocacy and Outreach

Credit: Philip Marcelo

- Goal: Use our strength as a region to influence statewide policy and funding:
- Increase resiliency of the Amelia Earhart Dam
- Propose improvements to the Stormwater Handbook and MVP grants program
- Pursue increased statewide climate resilient funding

Two Examples: Flooding and Heat



Regional Stormwater Management



Started with
City of
Cambridge
hydrologic
model



Mystic River Watershed Inundation Map (assumes 3 Pumps On at the Amelia Earhart Dam)

Stantec Web Mapping Application - BETA Product - Use for Calibration, not design or policy

Layers

Legend

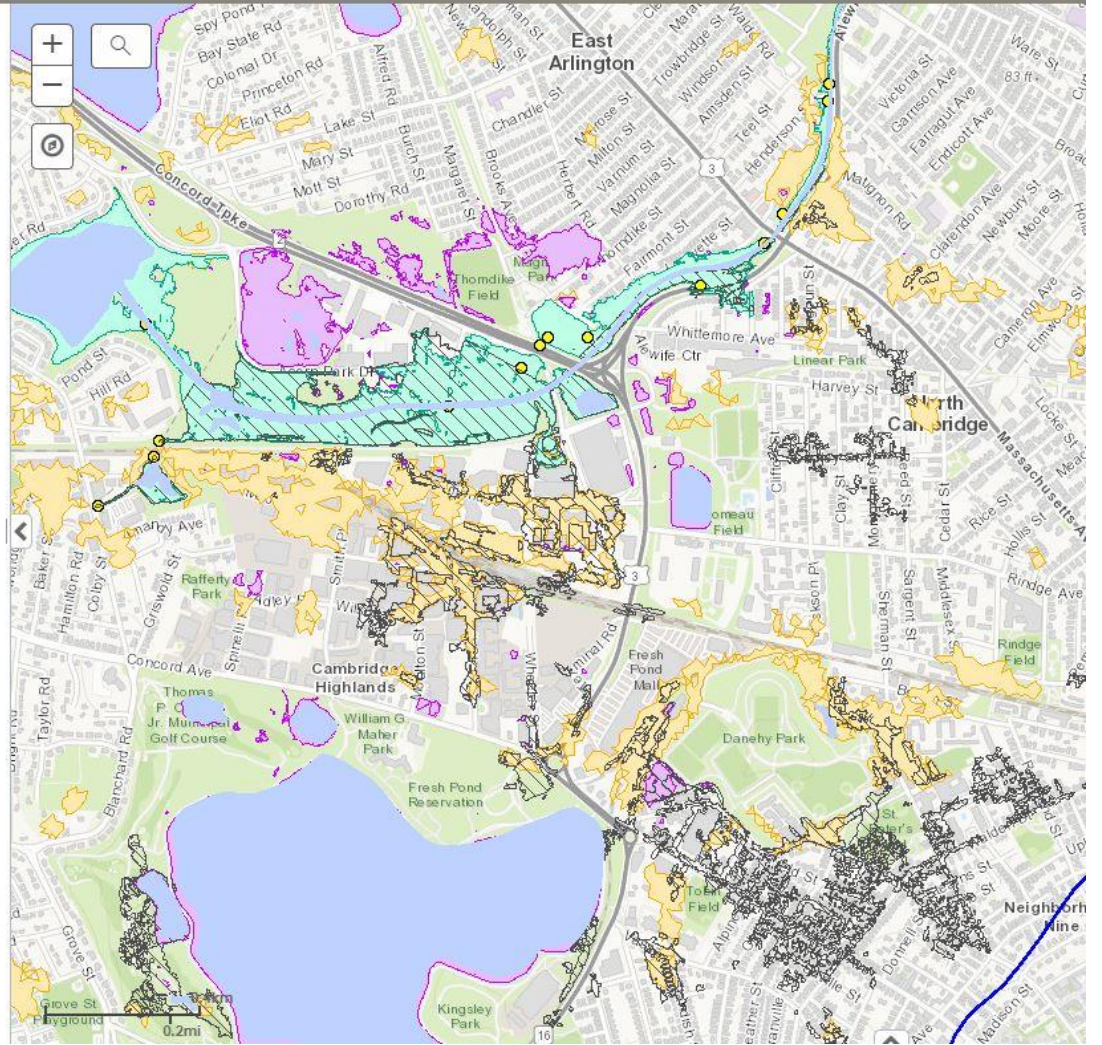
Mystic River Model

- Mystic River Watershed
- Waterbodies (USGS 25k)
- 10-Year, 24-hour, 2070 Storm Event
- 10 Year, 2070 CCVA Peak Flood Extent
- Mystic River Analysis Layers
 - 10 Year-Model Points
 - 10 Year-Riverine Overbank Flooding Areas
 - 10 Year-Low Lying Areas Disconnected from the River
 - 10 Year-Low Lying Areas above River Elevation

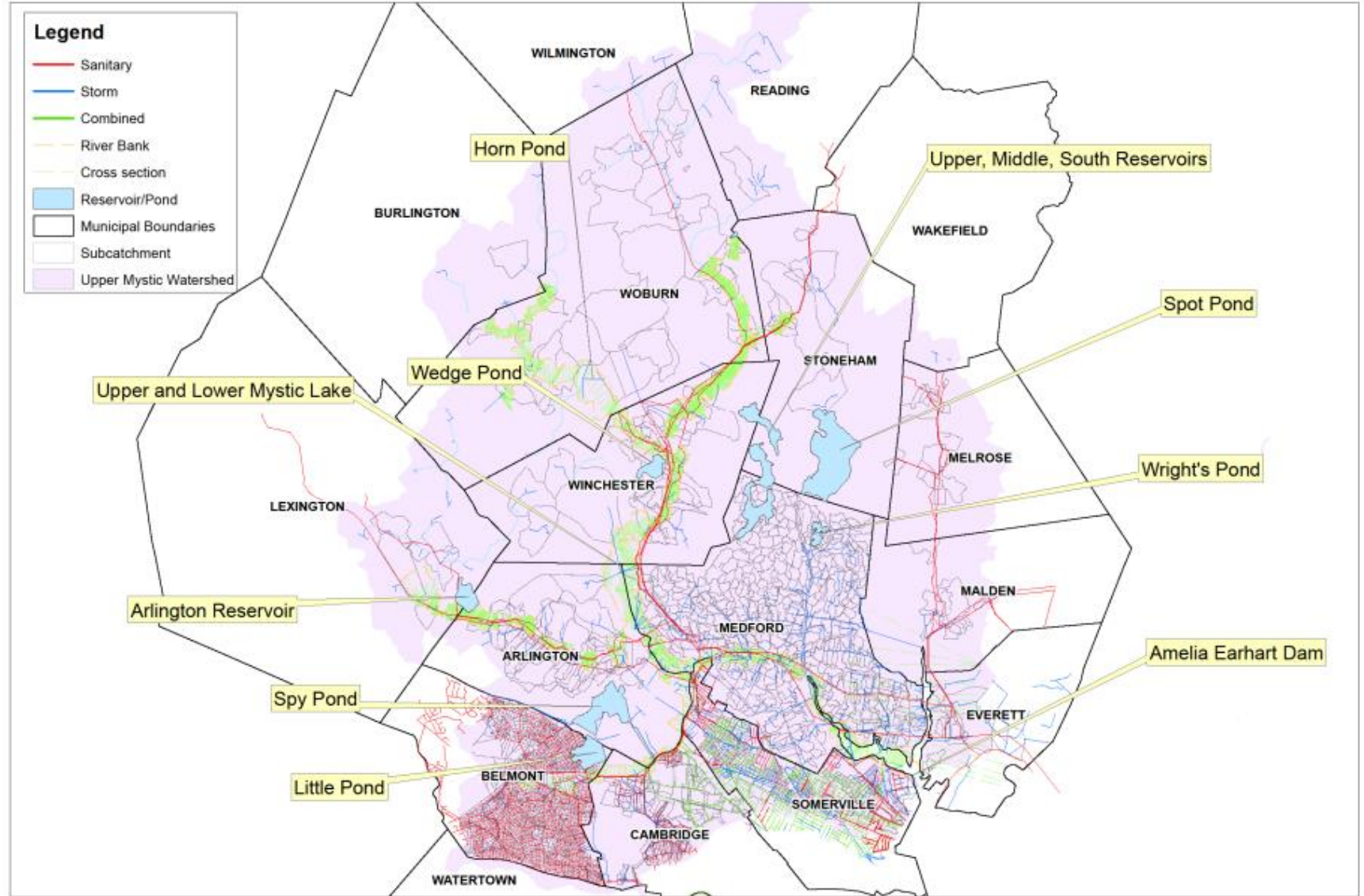
Identify

Draw

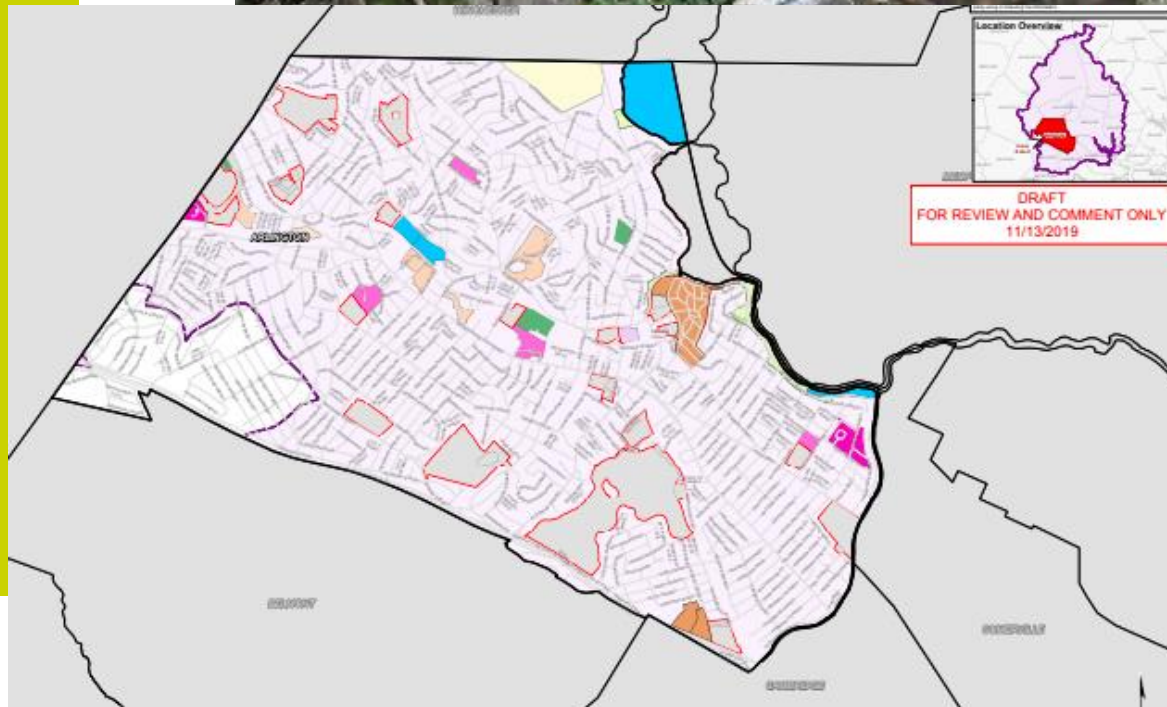
Measurement



Added local stormwater infrastructure across 17 communities

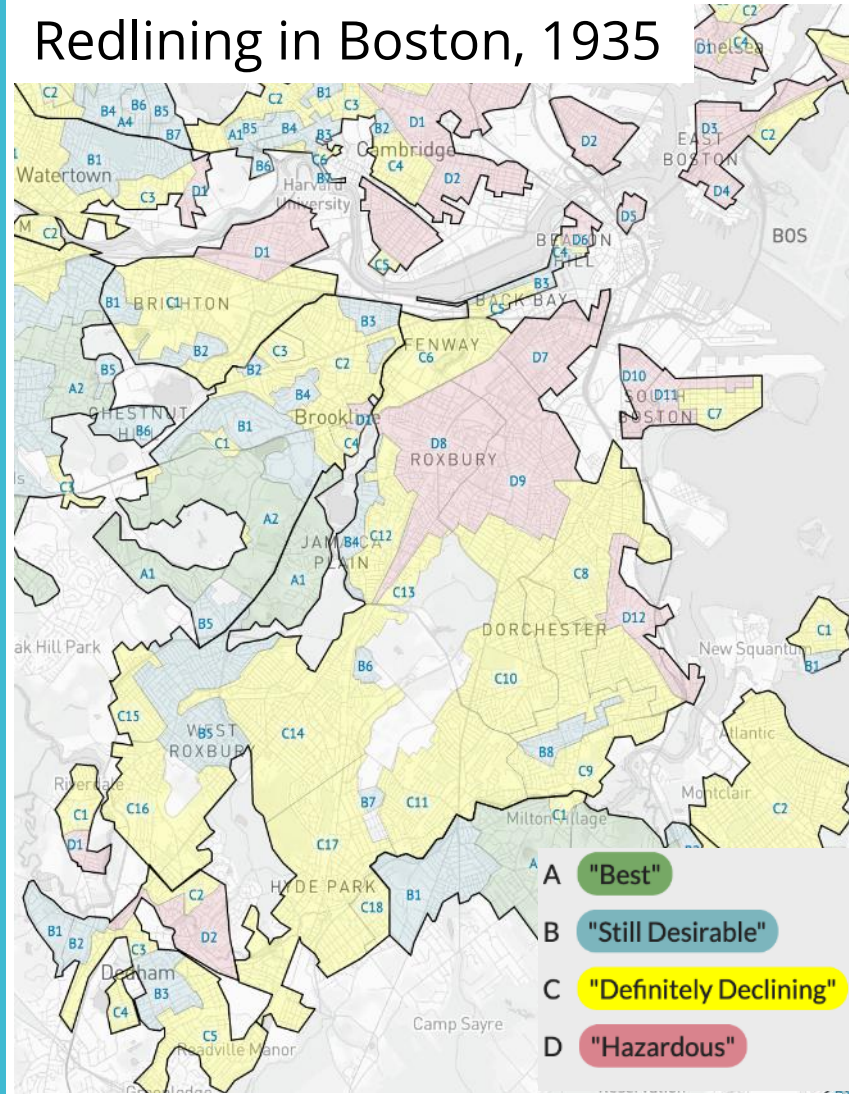


465
candidate
stormwater
wetlands
winnowed to
18. Three
are funded
for 75-100%
design.



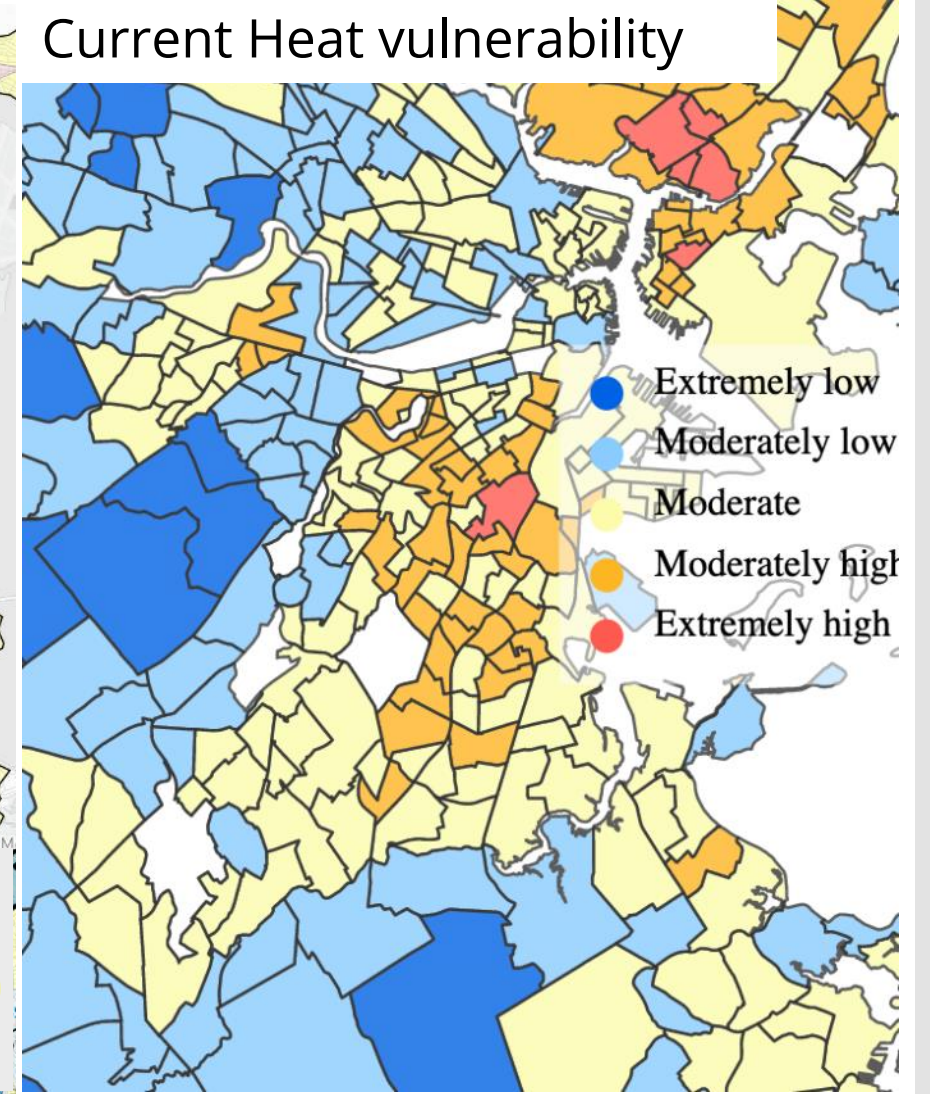
Wicked Hot Mystic

Redlining in Boston, 1935



Source: Mapping Inequality, richmond.edu

Current Heat vulnerability



Source: <http://climate-vulnerability.mapc.org/>

2019 Wicked
Hot Boston
will be
expanded in
2021 to the
full watershed



Volunteers from every community will measure heat, humidity and air quality



Results will
drive
community-
designed
interventions



<http://resilient.mysticriver.org>



[About](#) [Our Work](#) [Climate Data](#)

21 communities. One watershed.

We partner on climate challenges no
single municipality can solve alone

[Learn More](#)



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