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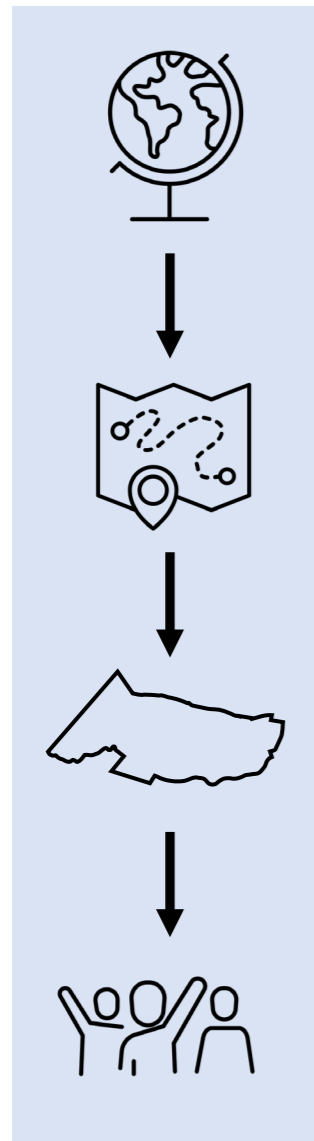


Trees for Watertown Annual Meeting, Sept. 30, 2023

*Climate change is here. Can trees make
a difference?*



Today's Discussion



1. Trees in the context of climate change
2. Regional tree & green infrastructure efforts
3. What Watertown is doing to grow our urban ecosystem
4. How individuals can contribute toward a greener future

Trees and Climate Change



Benefits of Trees

- Uniquely help **MITIGATE** and **ADAPT TO** climate change
- Mitigation: absorb CO₂ and other air pollutants; decrease demand for air conditioning by providing shade to buildings
- Adaptation: provide shade to protect against extreme heat; help manage stormwater and lessen impacts of extreme storms



Threats to Trees

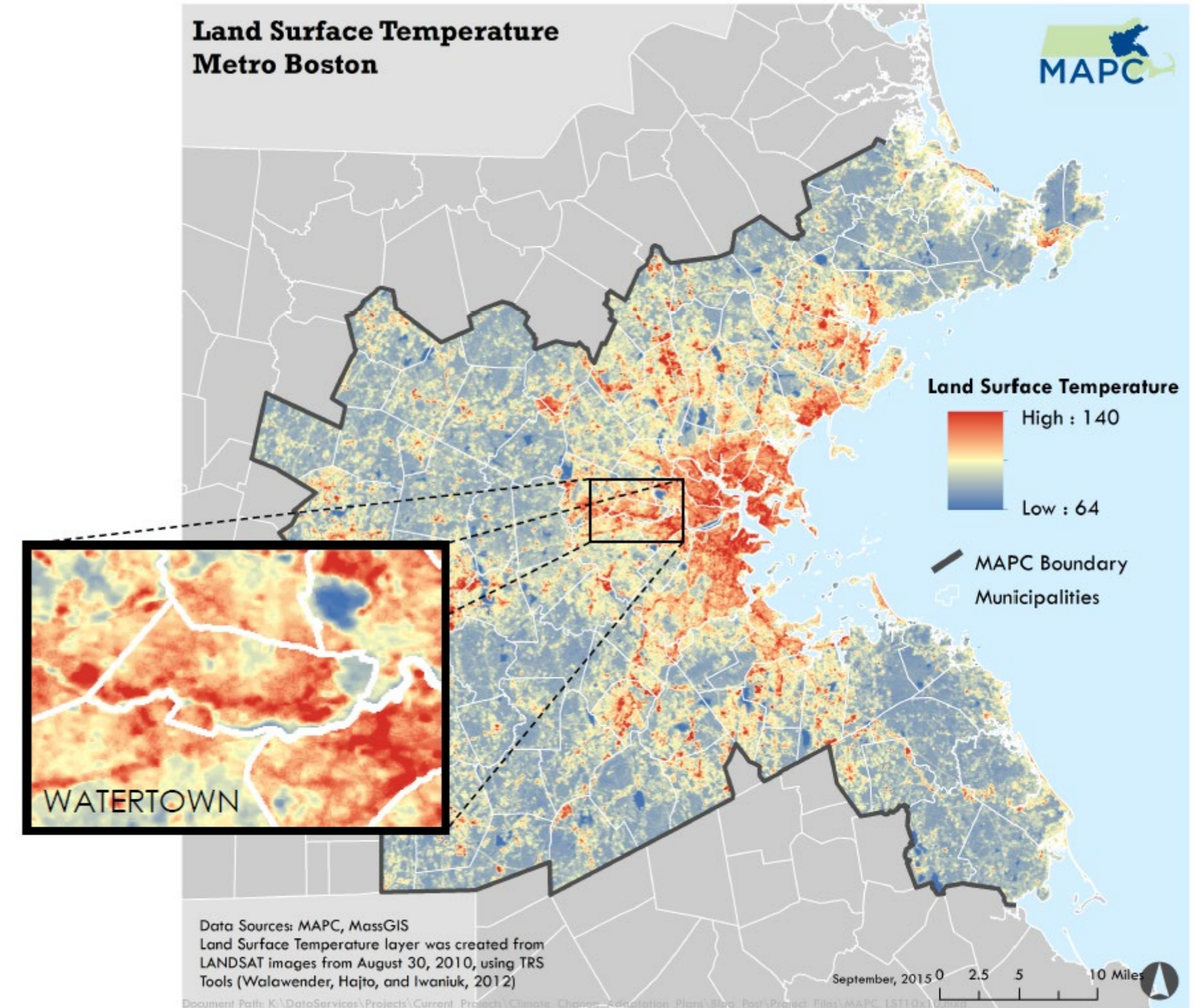
- High temperatures
- Drought
- Damaging storms/wind
- Pests and disease
- Species migration and extinction
- It is **CRUCIAL** to plant the right tree in the right place!



Trees and Climate Change

How trees mitigate Urban Heat Island Effect

- “Shaded surfaces may be 20–45°F cooler than the peak temperatures of unshaded materials. Evapotranspiration, alone or in combination with shading, can help reduce peak summer temperatures by 2–9°F.” (EPA)
- Heat maps of the region reveal this concept to be true
 - Compare Arsenal Street to Mount Auburn Cemetery



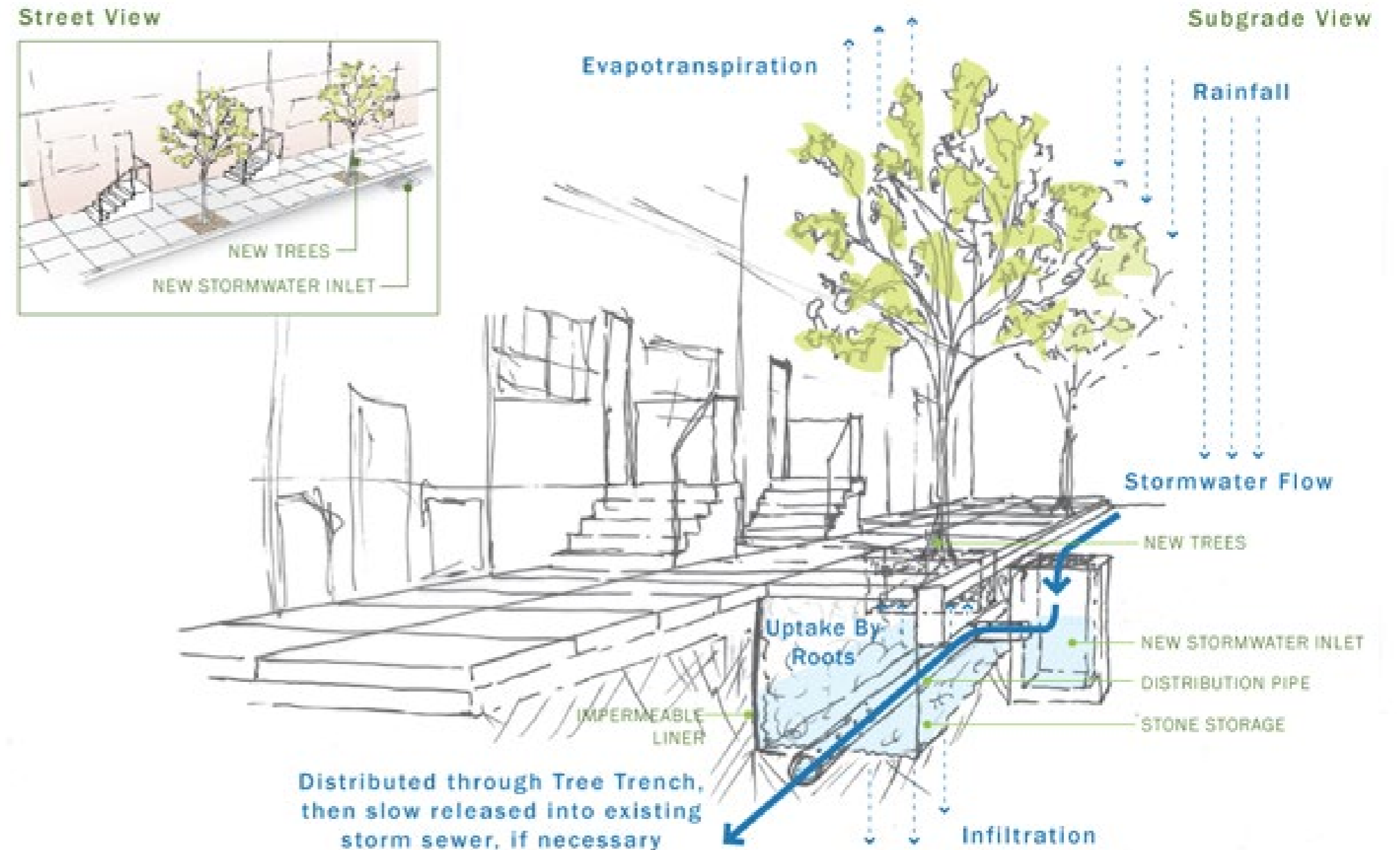
Source: MAPC

Trees and Climate Change

How trees manage stormwater

- Trees absorb water through their roots and help infiltrate water down into the groundwater, rather than it rushing into a storm drain, which can get overwhelmed during extreme storms
- Also create water quality benefits by naturally removing phosphorous and other pollutants
- Engineered options like stormwater tree trenches (pictured to the right) maximize this ability and add extra stormwater retention capacity beneath the street/sidewalk

GREEN STREETS: STORMWATER TREE TRENCH

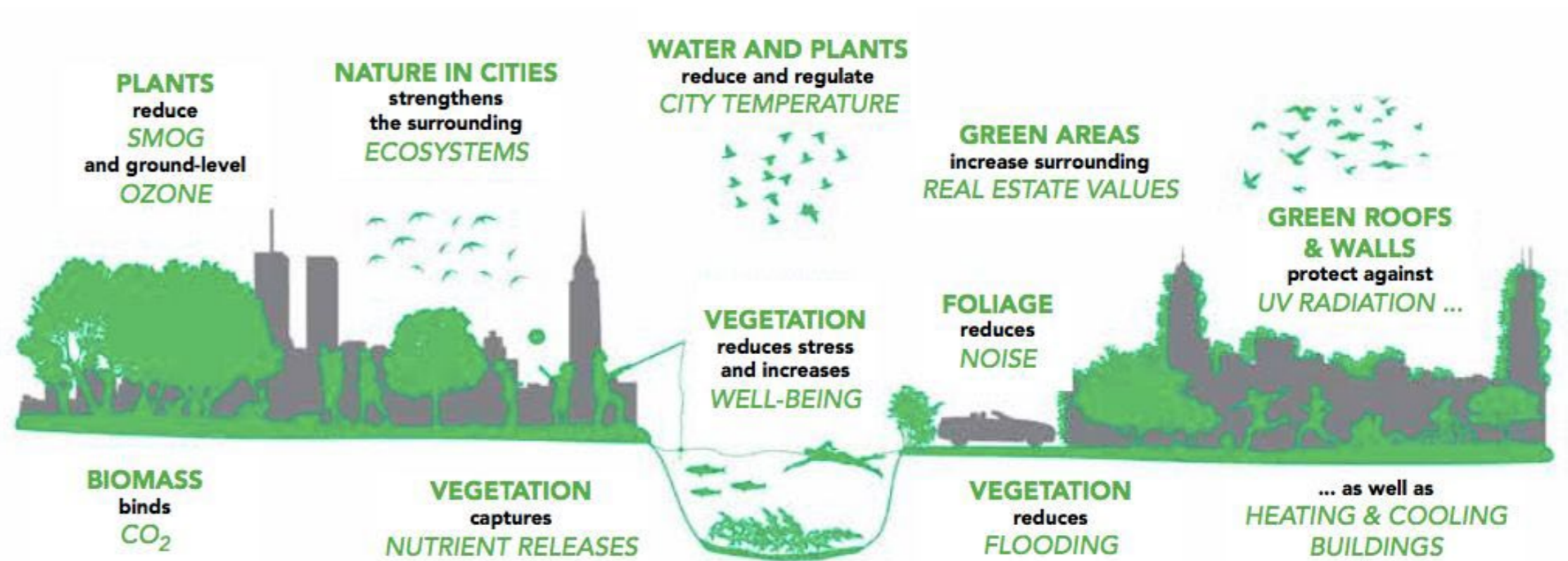


Source: phillywatersheds.org

Trees and Climate Change

Trees don't thrive in isolation

- Trees are critical but they are part of a larger urban ecosystem that is not “untouched” by human influence
- In this region we will never get back to an untouched state, but we can improve the natural habitat we do have by encouraging a healthy balance of tree and plant species that support biodiversity
- Our goal is broad urban ecosystem expansion and restoration



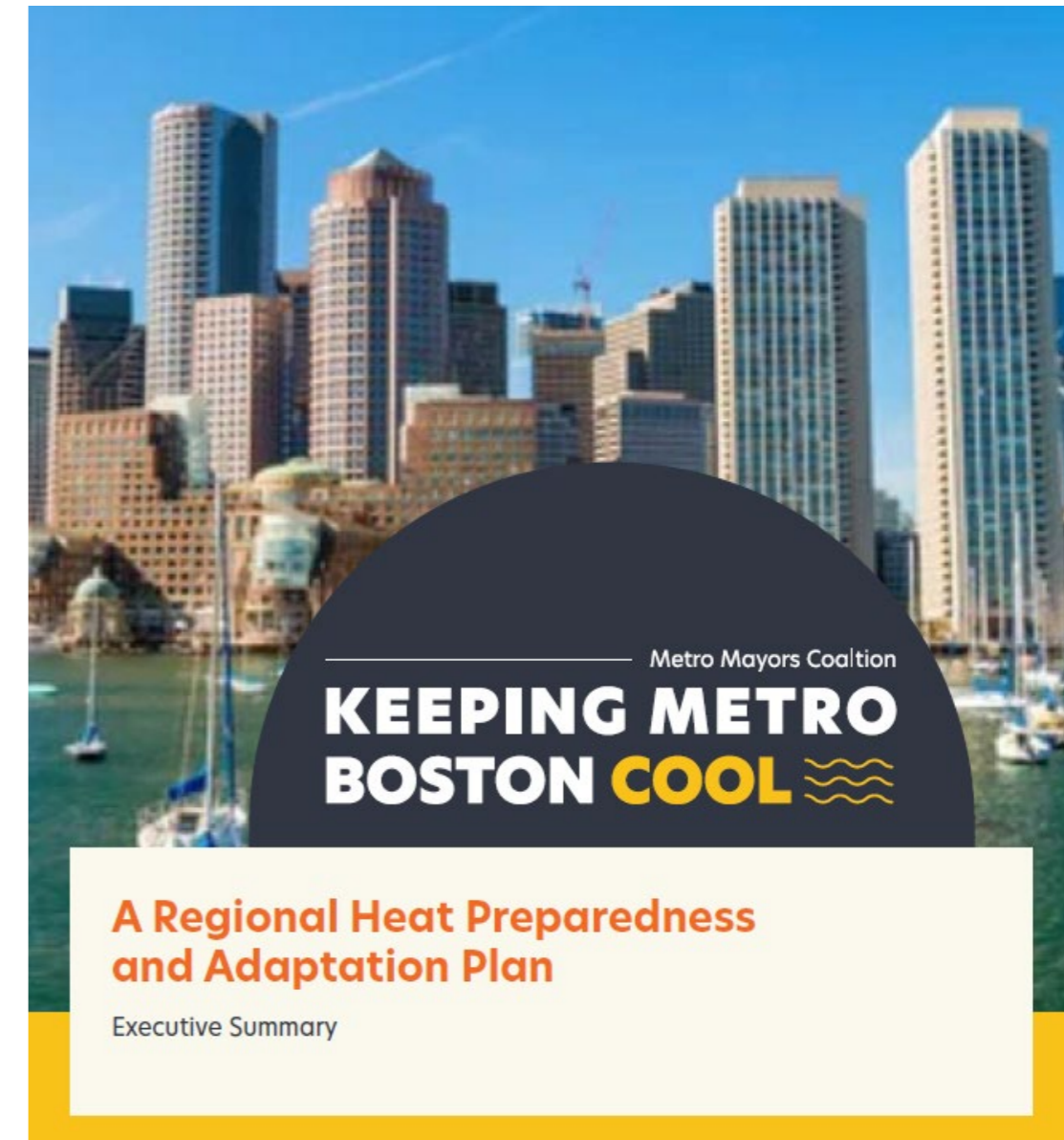
Source: c/o city



Regional Efforts

Multiple Examples of Regional Collaboration

- *We are not in this alone!*
- Watertown participates in:
 - Charles River Watershed Assn. [Climate Compact](#) (currently focused on flooding)
 - Mystic River Watershed Assn. [Resilient Mystic Collaborative](#) (currently focused on heat)
 - MAPC Metro Mayor's Coalition [Climate Preparedness Taskforce](#) (priorities are mitigating heat and flooding)
- All three of these initiatives recognize the vital importance of a healthy tree canopy if the Boston region is to be climate resilient



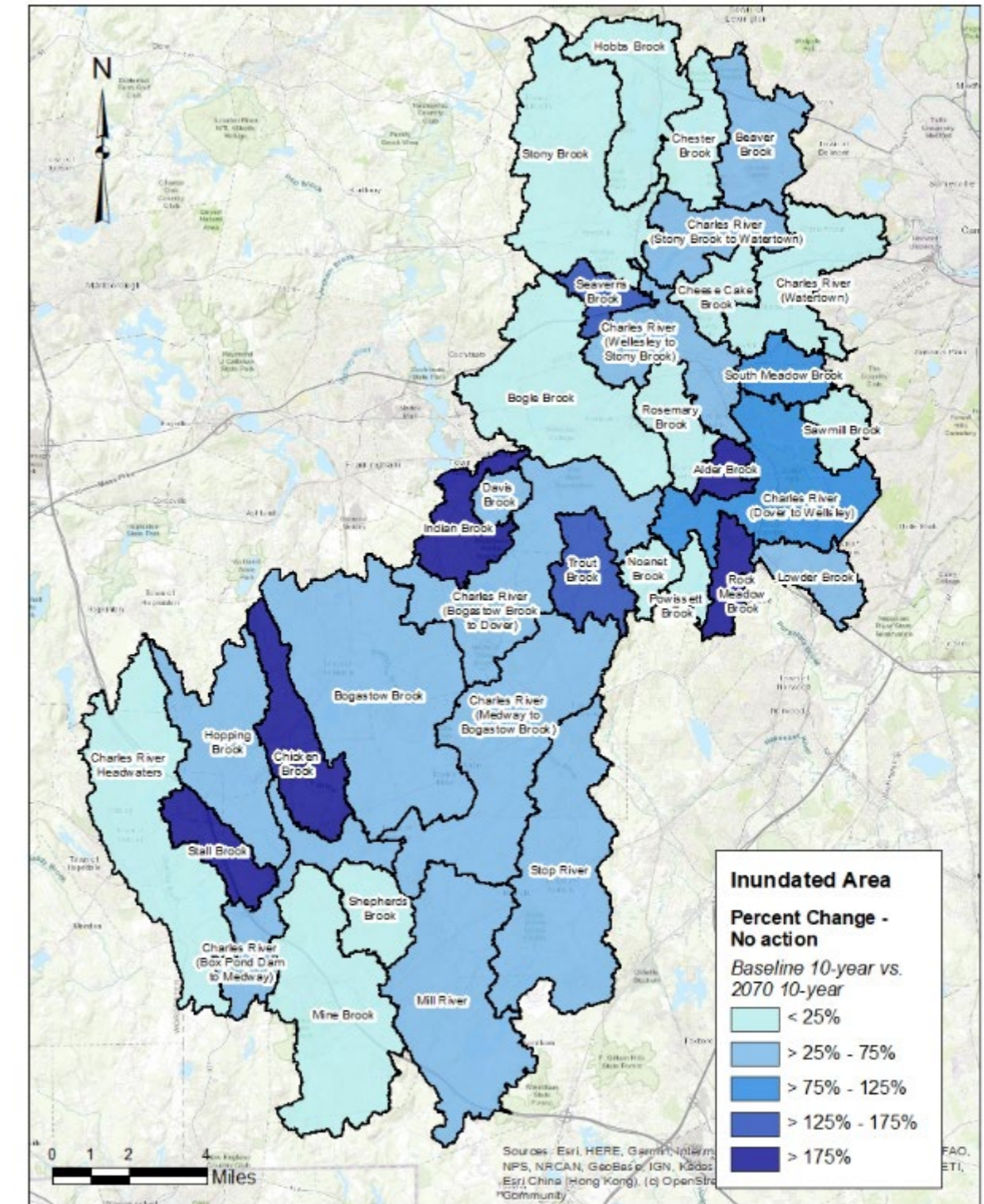
Source: MAPC, CRWA, MyRWA



Regional Efforts

Charles River Watershed Flood Model

- Watertown participates in the Charles River Watershed Association’s Climate Compact, wherein the watershed’s municipalities work together on climate resilience projects. The CRCC has received multiple state MVP Action Grants to create a dynamic watershed flood model to project a multitude of flooding scenarios up through 2070.
- The model also enables us to model different potential solutions to determine what will make the biggest impact in flood mitigation watershed-wide.
- [Link to CRCC flood model](#)



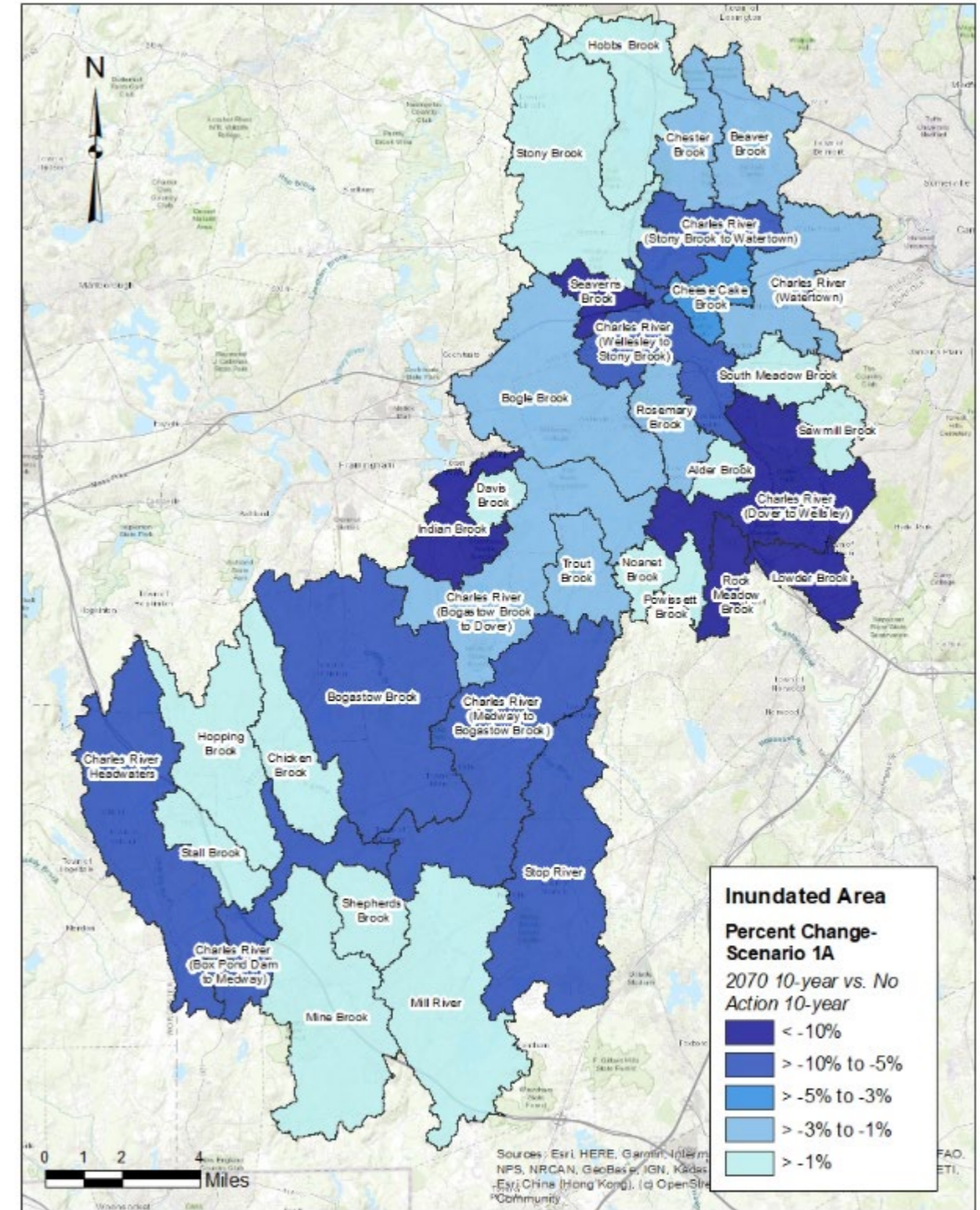
Source: CRWA flood model



Regional Efforts

Charles River Watershed Tree Protection Plan

- Scenario modeling revealed that utilizing green stormwater infrastructure, including trees, watershed-wide would reduce stormwater runoff in all sub-basins
- This map shows the percent reduction in total inundated areas for Nature-Based Scenario 1A, by sub-basin, during a 2070 10-year storm event, in comparison to No Action
- Consequently, CRWA is launching a **Regional Tree Canopy Protection and Planting Plan** this fall. Watertown will be heavily involved!



Source: CRWA flood model



Local Action

Resilient Watertown Climate and Energy Plan

- Adopted unanimously by City Council in August 2022
- Guides the city to be net-zero energy by 2050
- Includes actions for both mitigating emissions and becoming more resilient to climate impacts
- Orgs. and residents were involved in making the plan and ensuring it has robust natural resource goals! Trees were a strong priority according to survey results
- The Comprehensive Plan update, adopted recently, underscores climate resilience as a community priority
- Go to resilient.watertown-ma.gov to learn more





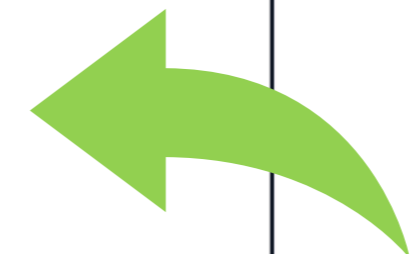
Local Action


Resilient Watertown Climate and Energy Plan

- Natural Resource Strategies relate to open space, trees, regenerative landscaping/biodiversity, and stormwater management

Strategy NR 2: Protect, enhance, and diversify the tree canopy

- NR 2.1: Establish an enforceable tree ordinance focused on preservation, diversification, and equitable distribution of tree canopy on public and private property
- NR 2.2: Establish a community outreach program to increase awareness and appreciation of the importance of the urban forest in mitigating climate change impacts
- NR 2.3: Increase tree plantings and prioritize plantings in areas at risk for urban heat impacts
- → All of these are underway!





Natural Resources

Goal 1: By 2050, Watertown's natural assets and green space are enhanced, equitably distributed, and delivering full ecosystem benefits

- » Strategy NR1: Protect and enhance forest and open space parcels
 - ◆ Action NR1.1: Incorporate pocket parks into all neighborhoods lacking green space
 - ◆ Action NR1.2: Promote biodiversity improvements to existing and new parks and open space by codifying existing DPW planting and maintenance practices and strengthening requirements for private development
 - ◆ Action NR1.3: Acquire more open space, where possible, and create more open space on private property
 - ◆ Action NR1.4: Establish equitable and accessible natural-habitat corridors along water bodies, trails, and utility easement areas, and protect existing ones
- » Strategy NR2: Protect, enhance, and diversify the tree canopy
 - ◆ Action NR2.1: Establish an enforceable tree ordinance focused on preservation, diversification, and equitable distribution of tree canopy on public and private property
 - ◆ Action NR2.2: Establish a community outreach program to increase awareness and appreciation of the importance of the urban forest in mitigating climate change impacts
 - ◆ Action NR2.3: Substantially increase annual street and municipal tree plantings and prioritize tree plantings in neighborhoods at high risk for urban heat impacts
- » Strategy NR3: Promote regenerative landscaping and maintenance practices
 - ◆ Action NR3.1: Develop a regenerative landscaping education and outreach plan with expanded opportunities for resident involvement (e.g., "Leave the Leaves" campaign)
 - ◆ Action NR3.2: Utilize school gardens and community gardens as nature-based landscaping demonstration sites
 - ◆ Action NR3.3: Update current development regulations to require the use of appropriate native plants for new- and re-development and de-emphasize non-native lawn spaces
- » Strategy NR4: Minimize quantity and improve quality of stormwater runoff
 - ◆ Action NR4.1: Expand and accelerate existing Green Stormwater Infrastructure (GSI) policies and management programs for public projects
 - ◆ Action NR4.2: Promote and/or incentivize the incorporation of green stormwater infrastructure into existing large impervious areas
 - ◆ Action NR4.3: Enhance incentives and ongoing education related to individual actions such as rain barrels, planting strips, and depaving private residential properties




Image Credit: City of Watertown

Resilient Watertown Climate & Energy Plan

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Local Action

Working towards a tree protection ordinance

- A draft was recently created by a working group of residents. It is currently under review by DPW, with progress expected this fall/winter.
- Would regulate the removal, replacement, and maintenance of trees on properties of various sizes and types (as well as other proposed items)
- Verifying and monitoring tree plans already occurs for large redevelopments, but this ordinance would codify and regularize the process



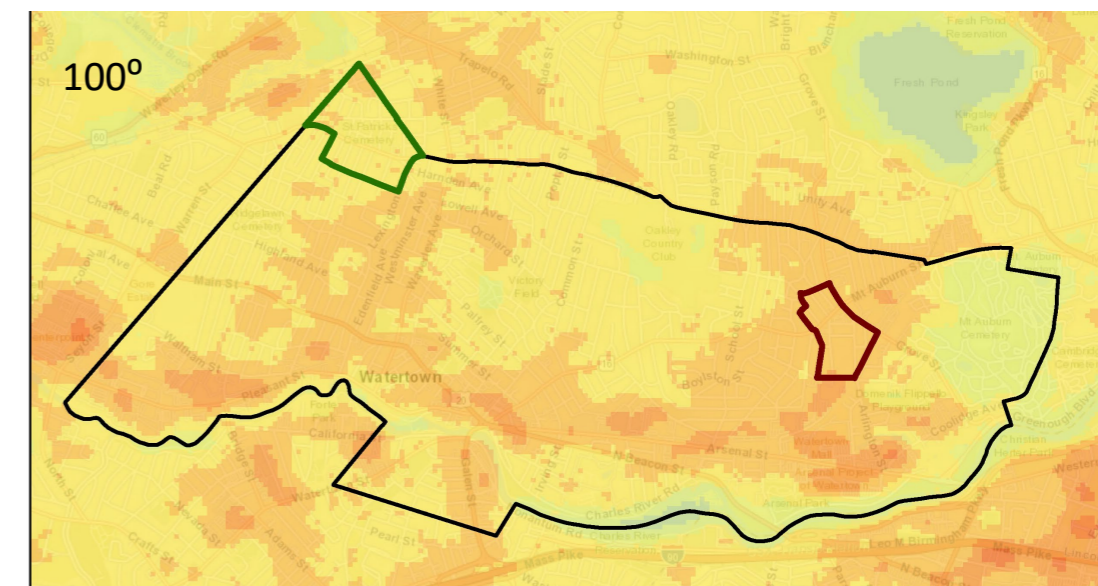
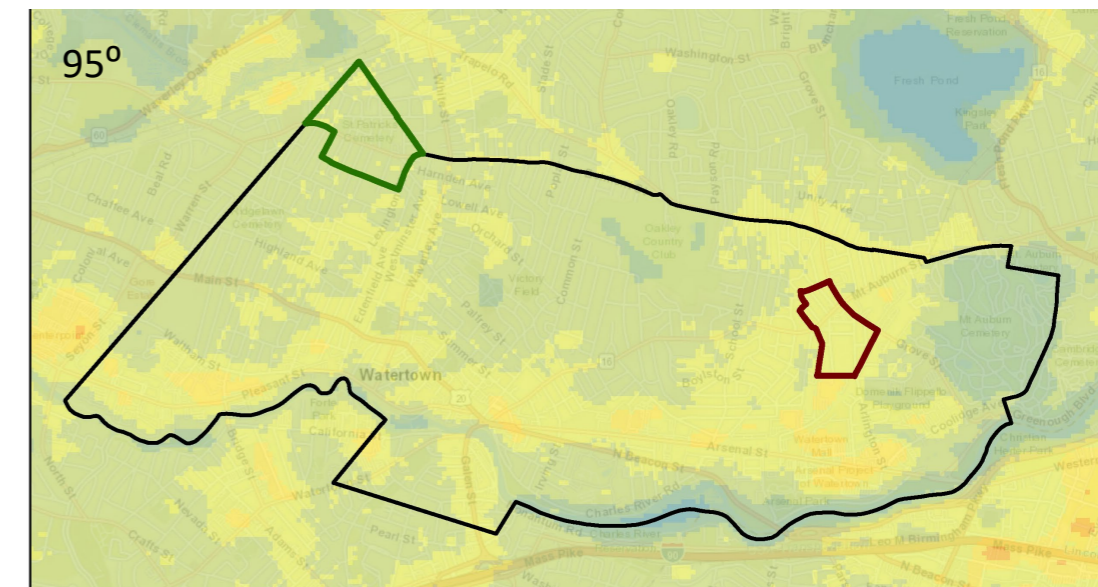
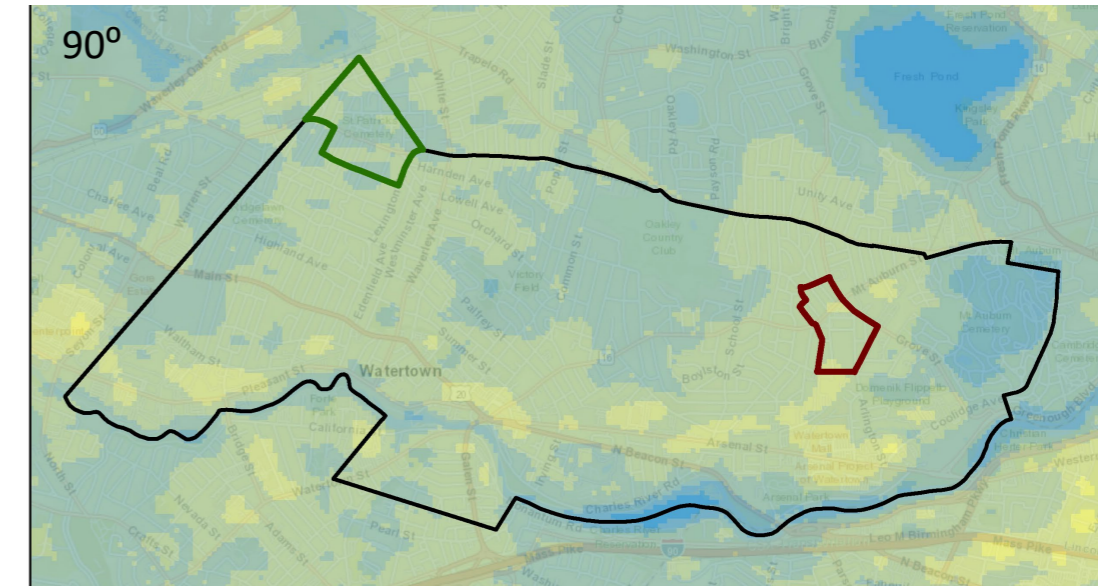
1. Trees/open space on redeveloped property
2. Professionals inspecting a large tree



Local Action

Identifying local heat islands

- Watertown is highly urbanized and heavily paved, which can create heat islands if not ameliorated by trees and vegetation
- In 2021 the City engaged consultants to do a heat island analysis (maps pictured at right)
- This data helps us identify priority projects for green stormwater infrastructure, pocket parks, privately owned public green space, and tree canopy investments



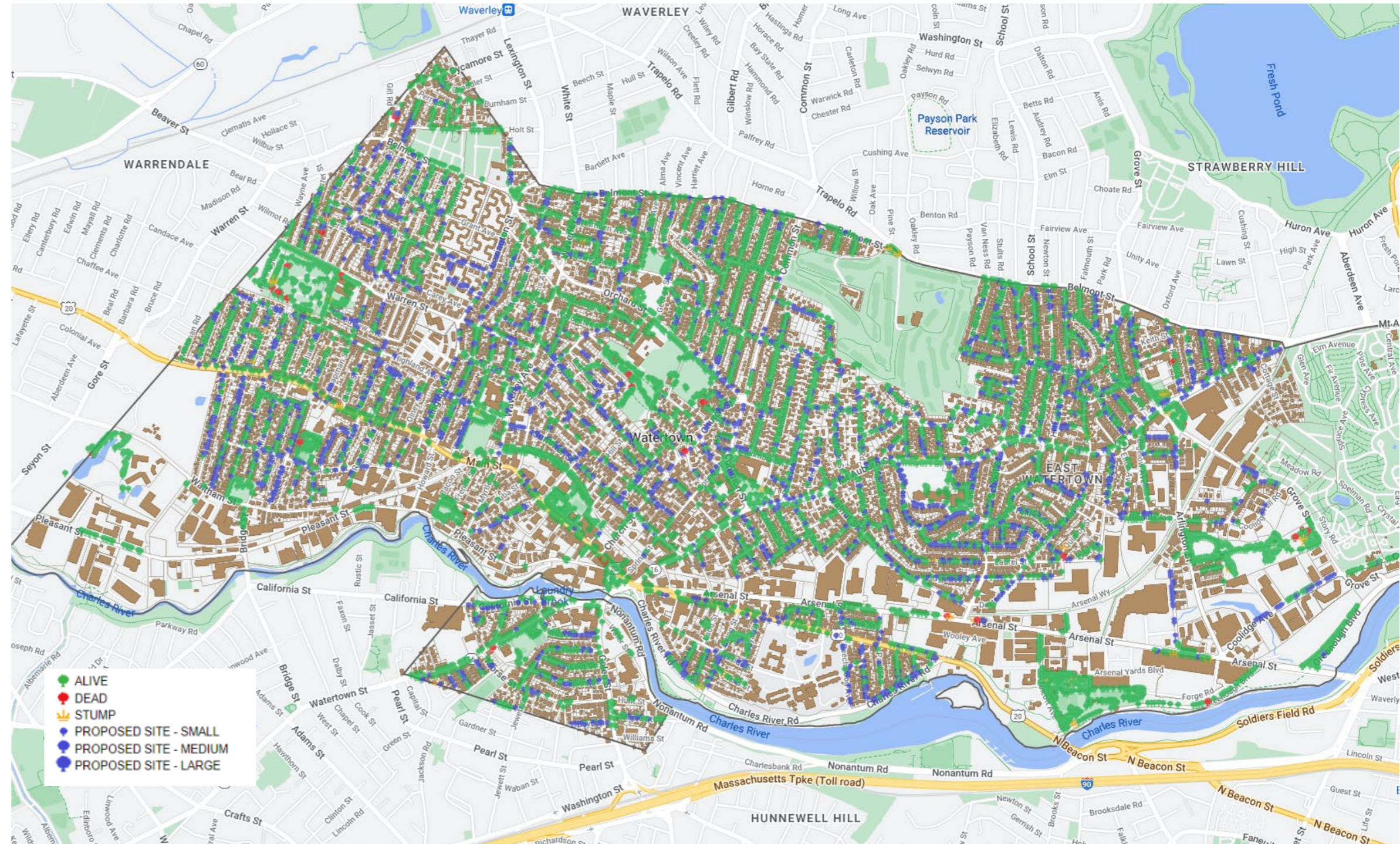
Source: Weston and Sampson, 2021



Local Action

Planting public street trees

- Goal of 360 plantings in 2023
- \$100,000 IRA grant recently awarded
- New trees will come with an informational tag to aid resident abutters in caring for the tree
- Tree Warden is prioritizing tree plantings in heat island areas, consistent with Climate and Energy Plan



Source: [Watertown public tree map](#)



Local Action

Investigating micro-forests on public and private property

- A dense and diverse planting of tree and shrub species
- New and planned projects in surrounding municipalities: Cambridge, Newton, Brookline, Natick...
- Benefits of micro-forest(s) on public property: shade, heat mitigation, biodiversity improvements, and abundant educational/volunteer opportunities
- Watertown Mall redevelopment is proposing several on their property



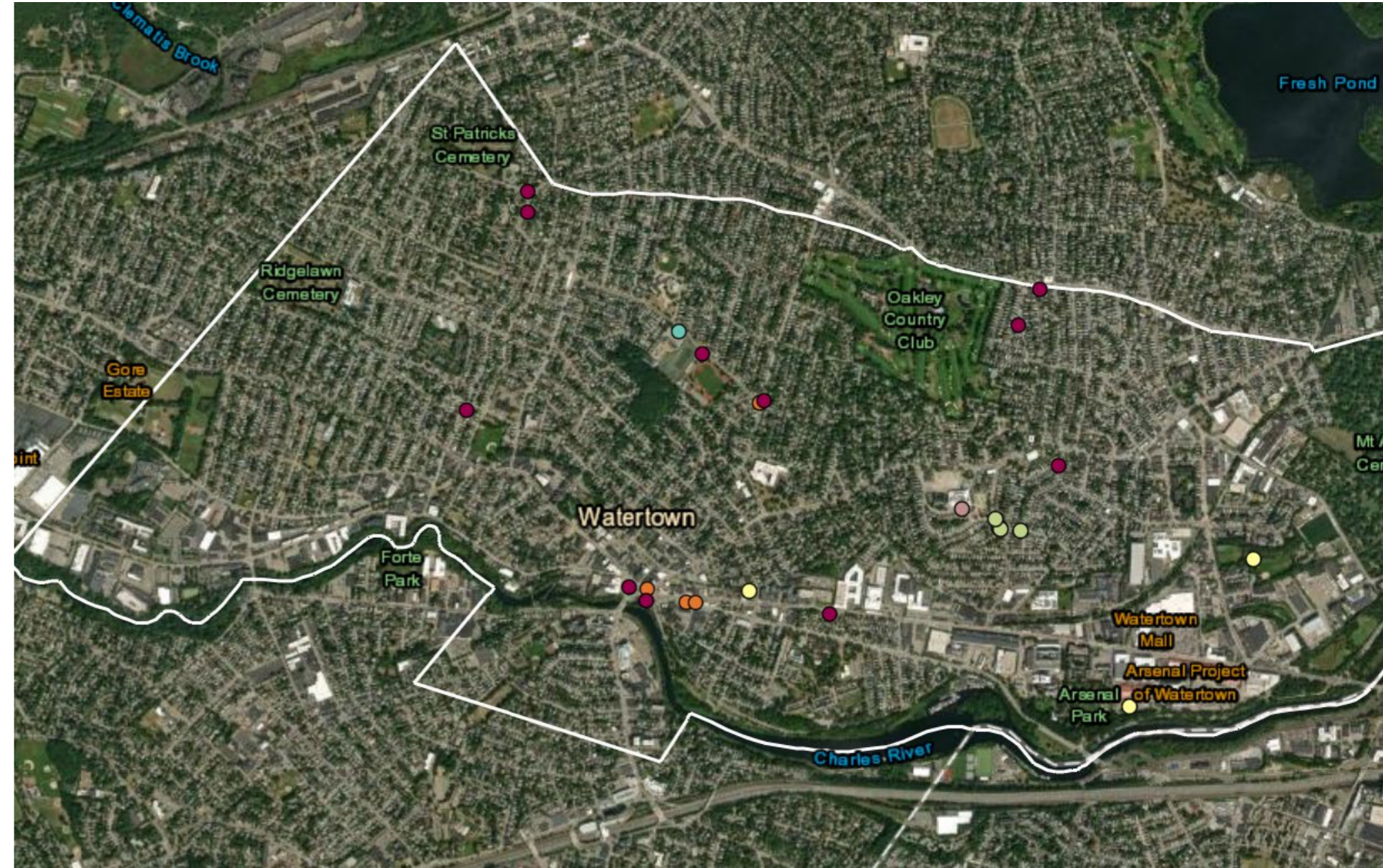
Cambridge Miyawaki forest



Local Action

Enhancing pollinator habitat and native plants

- City Manager signed “Mayor’s Monarch Pledge” spring 2023
- DPW working with volunteers to plant pollinator gardens on public property and installing official signage
- Developing a public pollinator garden map which includes municipal, school, community, and bumpout/curb gardens. Goal is for private properties to “opt-in” and place their own garden on the map (forthcoming)



Pollinator garden map



Local Action

Natural resource-related outreach and education

- Consistent posts on all City of Watertown social media accounts (Facebook, Twitter, Instagram) about the role of natural resources and our urban ecosystem in climate resilience
 - Trees is the theme for the month of October!
- Newly launched [Resilient Watertown Newsletter](#)
- ACR Garden Intern program/outreach to schools
- Nascent sustainability walking series with Live Well Watertown
- How can TFW and the City collaborate?



1. Hosmer school garden 2. Recent Facebook post



Make a Difference at the Individual Level

Plant more trees and pollinators

- Get a free tree for your yard during the Tree Warden's fall giveaway
- [Request a street tree](#) in front of your home
- Plant pollinator and/or native species in the curb strip [with help from our guide](#)
- Plant your own pollinator garden and put up an informational sign for neighbors
- [Educate yourself and others](#) about proper care and maintenance of trees and native plants



1. Local tree tagging 1. Pollinator garden signage



Make a Difference at the Individual Level

Help manage stormwater on your block

- De-pave your driveway and/or property.
Alternative driveway options include permeable pavers or drive strips.
- Plant a rain garden (with expert help)
- Utilize a rain barrel (offered at a discount at DPW)
- Adopt-a-drain program- coming soon! Keep litter, leaves, and debris out of your nearest storm drain



1. A working rain garden 2. Rain barrels

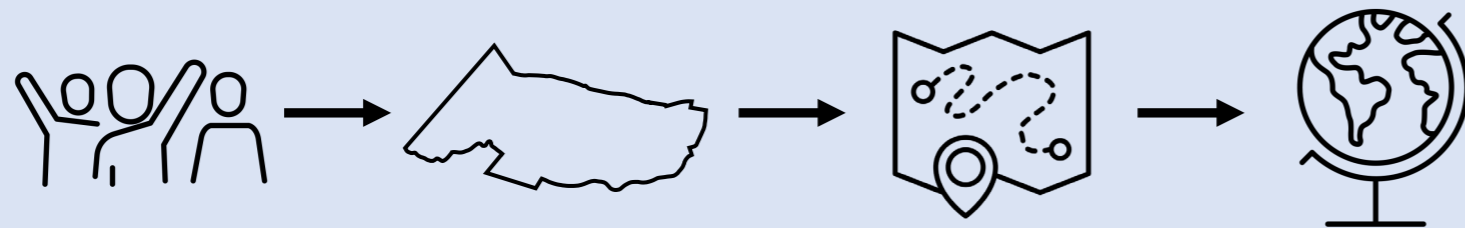


Make a Difference at the Individual Level

Volunteer and get involved!

- Volunteer with [TFW](#), [Watertown Community Gardens](#), [Friends of Bees](#), [Charles River Conservancy](#), [CRWA](#), etc. to plant new vegetation and remove invasive species
- Advocate for shade trees in the Watertown Square project
- Attend or join one of Watertown's sustainability-related Committees (WE3C, Stormwater, etc.)

Individual actions may feel small, but if we all do them, think of the scale of our impact!



1. WCG volunteers 2. Volunteers planting a micro forest



Thank you!

My email: lschwab@watertown-ma.gov

Image credit: Ellen Menounos