

Solutions for Future Flooding: Charles River Watershed

June 14, 2023

MVP Action Grant Funded Project



Language Instructions / Instrucciones de idioma / Instruções de idioma

(Credit: San Joaquin Valley Air District)

On your cellphone / Para el celular / usando seu celular

1



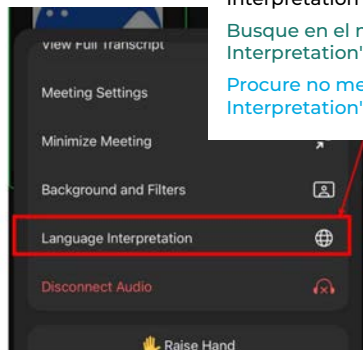
Click on the "More" icon with three dots.

Haga clic sobre el icono "More" con tres puntos

Clique no ícone "More" (com três pontos).



2



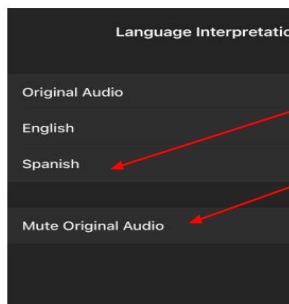
Look through the menu for the "Language Interpretation" option.

Busque en el menú la opción "Language Interpretation".

Procure no menu a opção "Language Interpretation".



3



Click your language to go to the appropriate channel. Then, select "Mute Original Audio" to ensure you only hear your language.

Haga clic en su idioma para ir al canal apropiado. Luego, seleccione "Mute Original Audio" para asegurarse de que solo escuche su idioma.

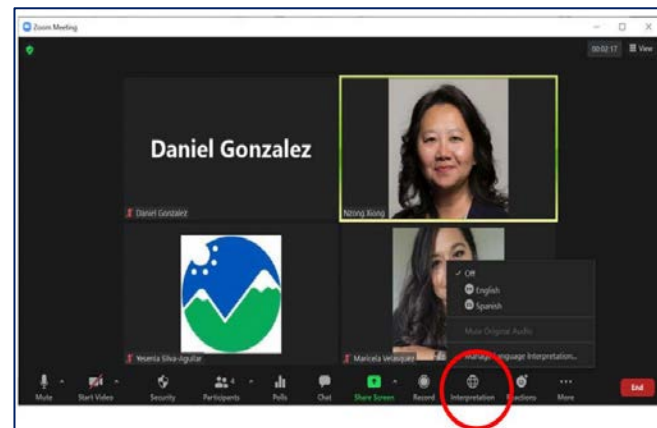
Clique no seu idioma para ir para o canal apropriado. Em seguida, selecione "Mute the original audio" para garantir que você ouça apenas o seu idioma.

On your computer Para la computadora Usando seu computador

You will see the interpretation options at the bottom of the screen, as seen below. Click the interpretation icon (globe) to view language options (English, Spanish, Mandarin).

Verá las opciones de interpretación en la parte inferior de la pantalla, como se ve a continuación. Haga clic en el icono de interpretación (globo) para ver las opciones de idioma (inglés, español, mandarín).

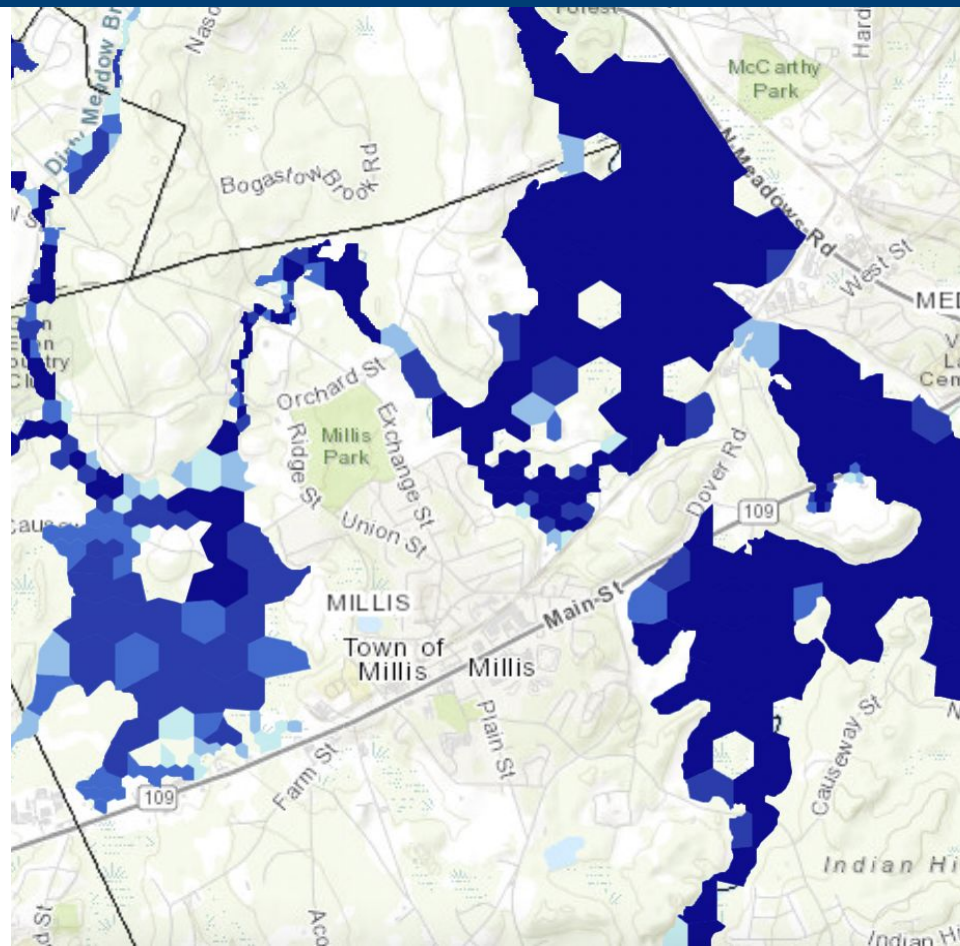
Você verá as opções de interpretação na parte inferior da tela, conforme abaixo. Clique no ícone de interpretação (globo) para ver as opções de idioma (inglês, espanhol, português).



Welcome! Bienvenido!

Tonight's Agenda

- Welcome
- Project Background
- Modeling and Design Results
- Municipal Perspective
- Outreach Summary
- What's Coming?
- Q&A



MISSION: To protect, restore, and enhance the Charles River and its watershed through science, advocacy, and the law.

NUESTRA MISIÓN: Protegemos, restauramos y mejoramos el río Charles y su cuenca a través de **la ciencia, la defensa y la ley**. Desarrollamos estrategias con base científica para **aumentar la resiliencia, proteger la salud pública y promover la equidad** ambiental mientras nos enfrentamos a un clima cambiante.





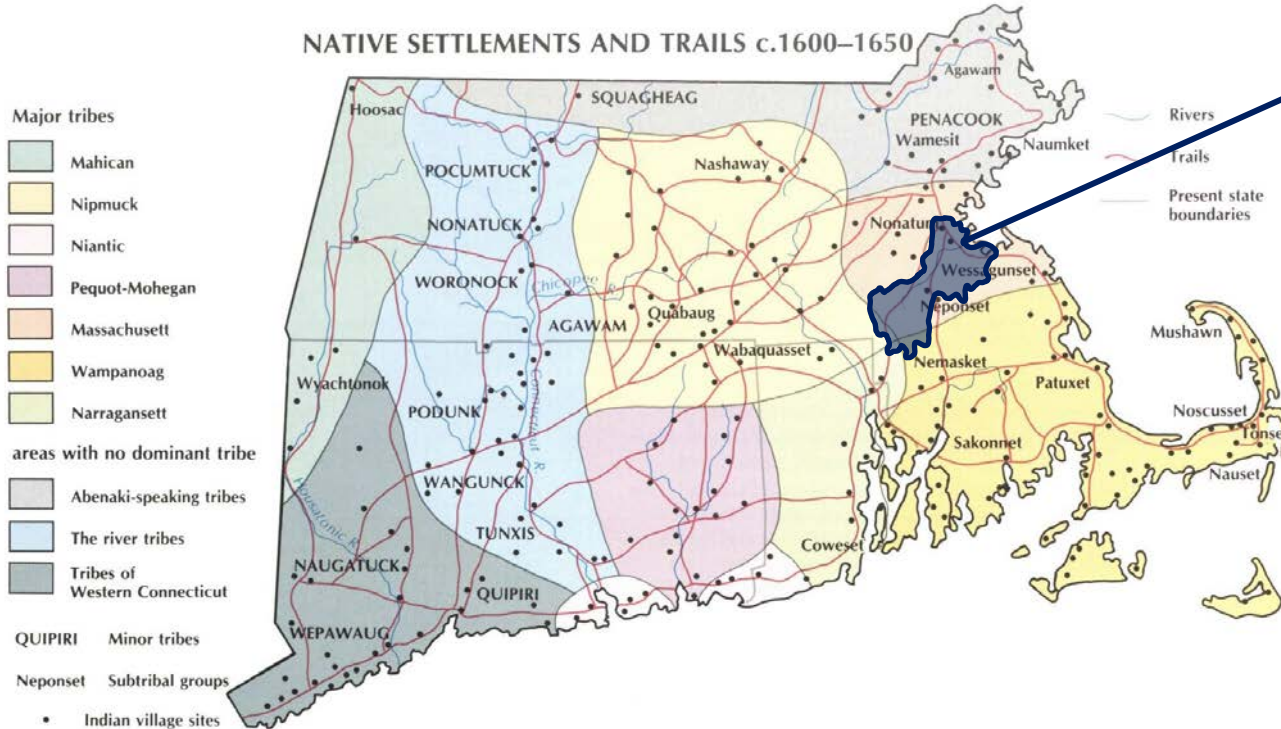
CRWA takes a watershed-scale view

- 80 mile river
- 35 towns in watershed
- 308 mi² watershed
- Approximately 1 million residents
- >60% of population lives in Environmental Justice neighborhoods



Land Acknowledgement

NATIVE SETTLEMENTS AND TRAILS c.1600–1650



The Charles River Watershed resides on occupied territory of the **Massachusetts, Nipmuc and Wampanoag** tribes.

La CRWA reconoce humildemente a las Naciones **Massachusetts, Wampanoag y Nipmuc**, ya que nuestro trabajo se lleva a cabo en su territorio tradicional, y los reconoce como los cuidadores pasados, presentes y futuros de esta tierra.

Tonight's Speakers



Julie Wood

Climate Compact Director,
CRWA



Indrani Ghosh, PhD

Resiliency Senior Technical Leader,
Weston & Sampson



Jennie Moonan, PE

Senior Project Manager,
Weston & Sampson



Claire Rundelli

Planner Conservation Agent,
Town of Natick, MA



Leigh Meunier

Project Coordinator,
Communities Responding
to Extreme Weather
(C.R.E.W.)

Climate change isn't coming—it's here.

**Godfrey
Brook, Milford**



Photo by Yari Korchnoy



99 Linden St., Waltham

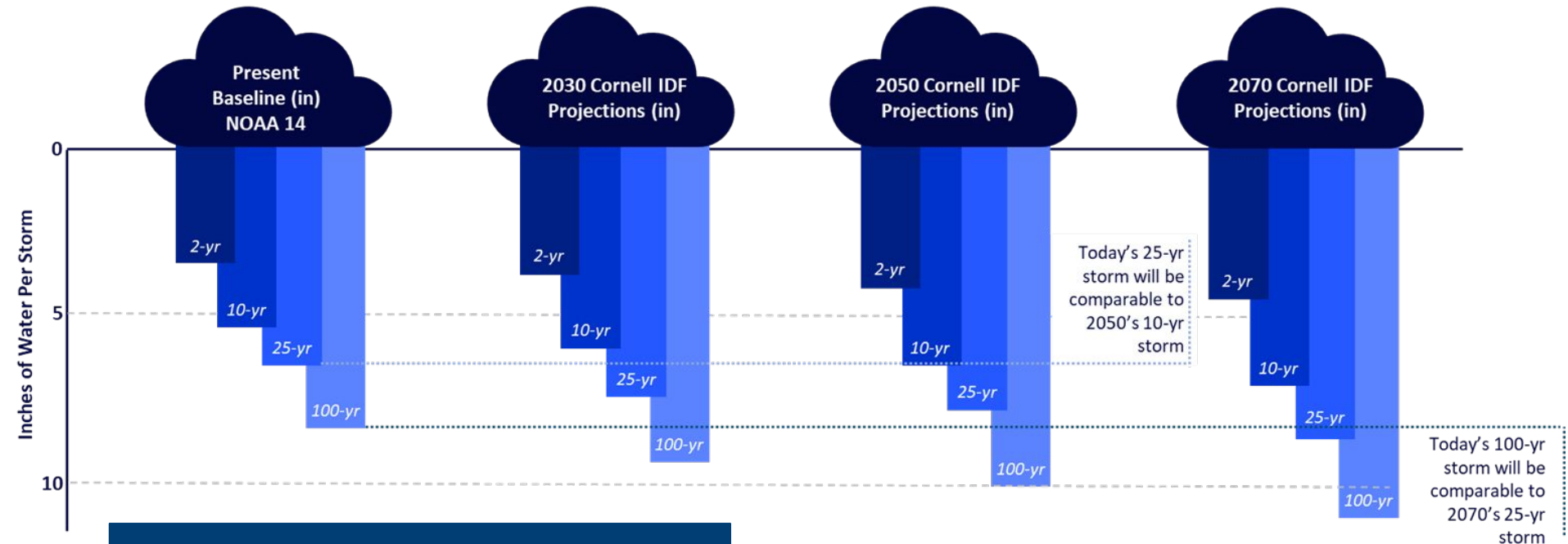


Charles River, Newton



Mill River, Norfolk

Storms Are Getting Stronger



Just a few more inches of rainfall could increase the Charles River's volume by millions of gallons during a heavy storm.

MEET THE CHARLES RIVER CLIMATE COMPACT (CRCC):

- Founded in 2019
- Regional partnership of cities + towns focused on climate resilience
- Currently 28 cities + towns
- CRCC Strategic Plan finalized March 2023



CRCC MISSION STATEMENT

The Charles River Climate Compact's mission is to work collaboratively to increase climate resilience for people, and the natural ecosystems in the Charles River watershed by taking a regional approach to implementing climate adaptation and mitigation solutions.

Charles River Flood Model

Charles River Flood Model Results Viewer Stormwater Modeling StoryMap Nature Based Solution

Watershed



Subbasins

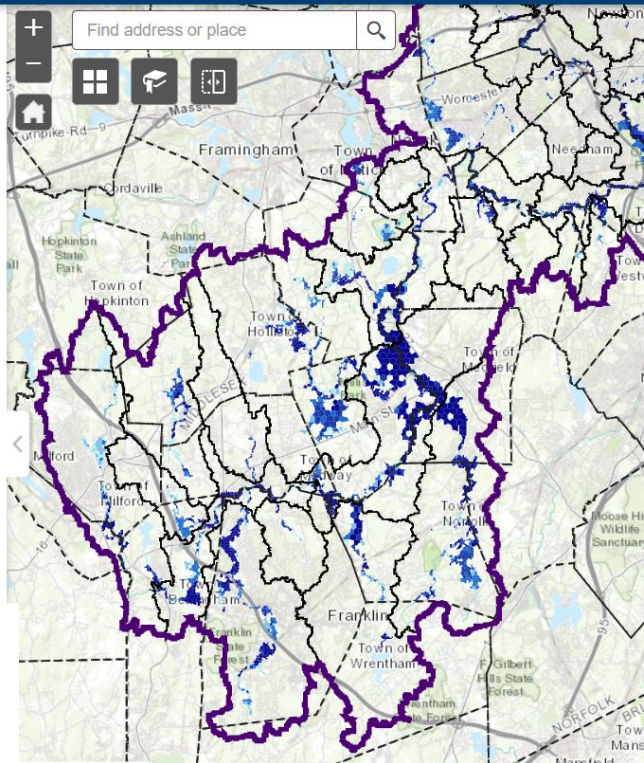
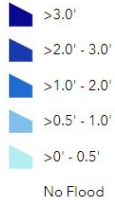


Massachusetts Cities and Towns



100-yr (1% AEP) 24-hour storm - 2070

MAXDEPTH



Congratulations!



Partially funded by Massachusetts
Municipal Vulnerability Preparedness
(MVP) Program Action Grant

PROJECT TEAM:



**Charles River
Climate Compact**



- Arlington
- Belmont
- Boston
- Brookline
- Cambridge
- Dedham
- Dover
- Franklin
- Medfield
- Medway
- Millis
- Natick
- Needham
- Newton
- Sherborn
- Waltham
- Watertown
- Wellesley
- Weston
- Wrentham

Climate Impacts to Solutions

BY 2070, A 100-YEAR STORM WOULD CAUSE:

100-year storms have a 1% chance of occurring every year.



61%

increase in runoff
+ 11 inches of
precipitation



2,600+

acres that don't
currently flood to
see severe flooding



50+

critical facilities like
hospitals, schools, +
highways impacted

WAYS TO PREPARE FOR FUTURE FLOODING:



**BUILD GREEN
INFRASTRUCTURE**



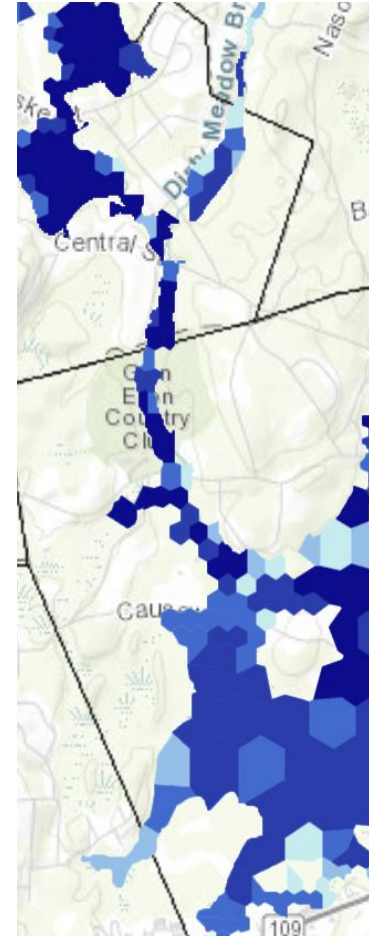
**INCREASE TREE
CANOPY**



**PROTECT &
RESTORE WETLANDS**



**CONSERVE
OPEN SPACE**



BIANNUAL PROJECT UPDATE!

- **JANUARY-JUNE 2023:**
 - Focus on site & neighborhood scale project design & modeling
 - More in-person events
 - Results tonight!
- **FUTURE: Watershed-scale planning**
 - Online meetings & surveys (tonight!)
 - In-person events
 - Updated Flood Mitigation Plan!



Charles River Flood Model

PROGRESS IN 2023:

PROJECT SELECTION

- Selected three priority site projects
- Two subwatershed “impact areas”

COMMUNITY INPUT

- Online community input sessions
- Online feedback survey
- In-person events

CONCEPT DESIGN & MODELING

- Incorporate feedback + develop preliminary designs
- Use model to assess flood impacts

Charles River Flood Model

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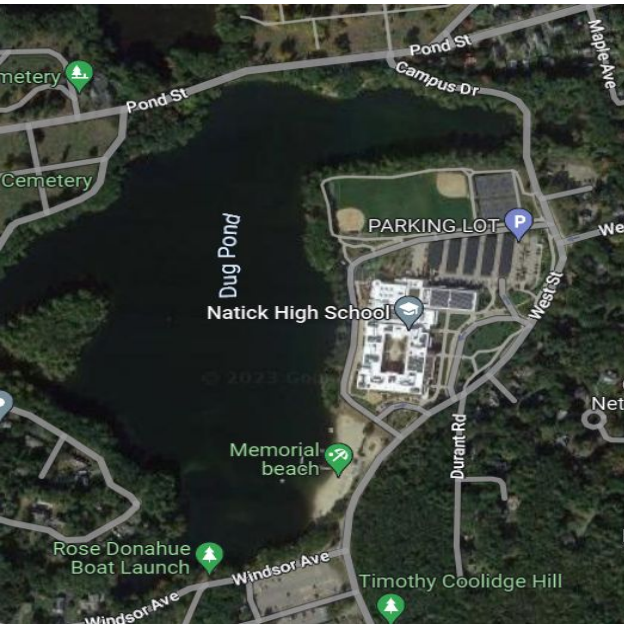
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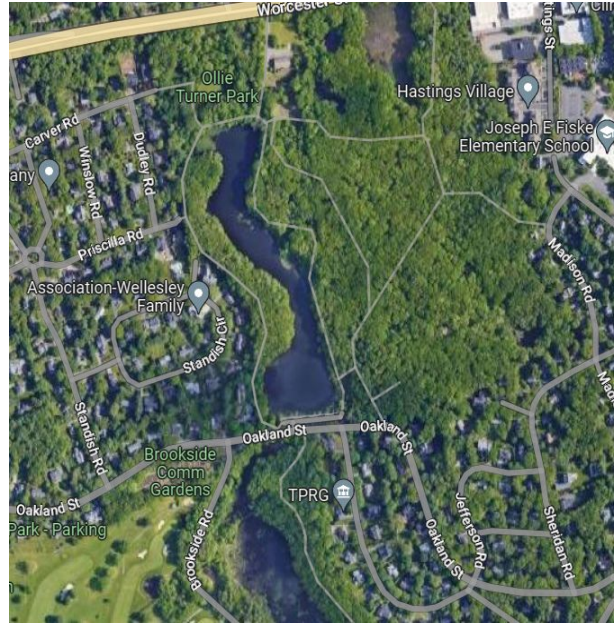


Interested to know more about these steps? Watch the recording of our Community Input sessions on CRWA’s YouTube channel and the project website.

Current Priority Projects



Natick High School



Longfellow Pond, Wellesley



Weston Town Center

Priority Impact Areas

Upper & Lower Watershed Priority Impact Areas



Milford



Waltham/Weston

Data source: Weston & Sampson GIS & MassGIS 2019 Aerial Imagery

CURRENT PRIORITY PROJECTS:



WALTHAM

Restoring wetlands in Hardy Pond to store floodwaters in extreme weather and designing green infrastructure, infiltration, and de-paving in the priority impact area of west Waltham.

NEWTON



Building green infrastructure + infiltration chambers on Albemarle Field to reduce flash flooding of nearby channelized stream, Cheesecake Brook.



WESTON

Maximizing benefits of green infrastructure, pervious pavement, infiltration, and flood storage in the priority impact area of Weston Town Center.



WELLESLEY

Restoring Longfellow Pond and Rosemary Brook using wetland restoration, and culvert repair to prevent flooding on Rt. 9 + surrounding neighborhoods.



NATICK

Constructing infiltration chambers, adding rain gardens, and restoring wetlands to prevent future flooding at Natick High School.



MEDWAY

Building green infrastructure + flood storage in Oakland Park to build climate resilience, restore groundwater, and reduce flooding.



MILFORD

Maximizing benefits of protected open space, constructed wetland, stream restoration, de-paving, and permeable pavement in the priority impact area of north Milford.

WAYS TO PREPARE FOR FUTURE FLOODING:



**BUILD GREEN
INFRASTRUCTURE**



**INCREASE TREE
CANOPY**



**PROTECT &
RESTORE WETLANDS**



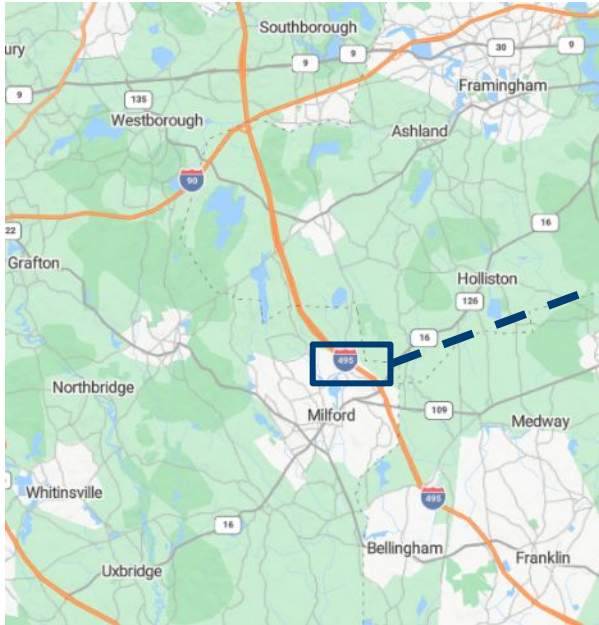
**CONSERVE
OPEN SPACE**

In developing concepts for Impact Areas and Priority Sites, the goal was to maximize the potential use of nature-based solutions and green stormwater infrastructure (beyond “maximum extent practicable”).

As we received feedback from municipal staff and the public, constraints and limitations that would affect implementation were conveyed, and concepts were updated accordingly.

Upper Watershed Impact Area

Located in Milford



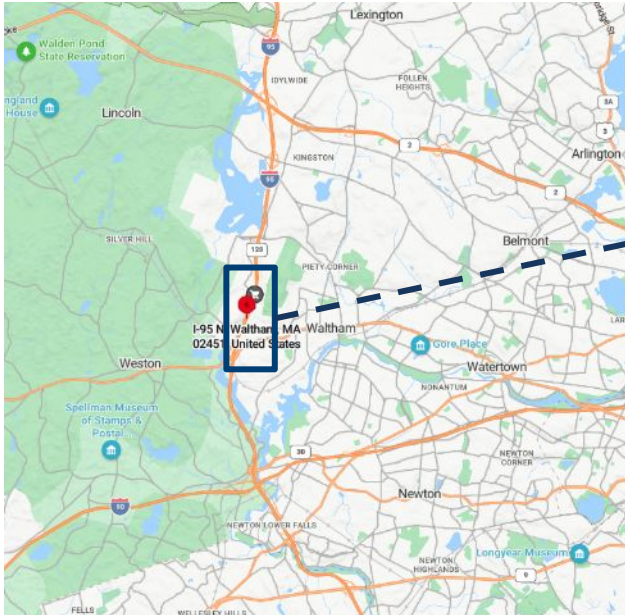
Data source: MassGIS



Data source: Weston & Sampson GIS & MassGIS 2019 Aerial Imagery

Lower Watershed Impact Area

Located in Waltham/Weston



Data source: MassGIS

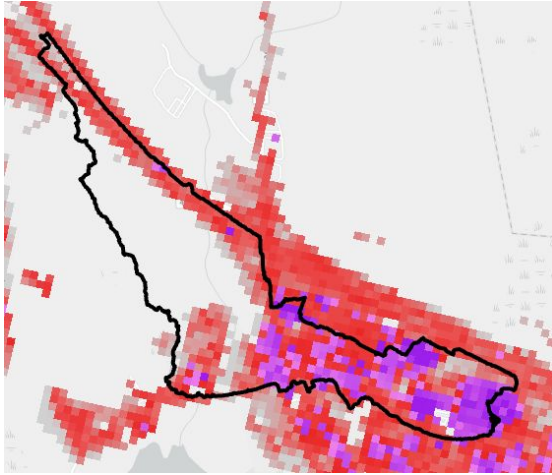


Data source: Weston & Sampson GIS & MassGIS 2019 Aerial Imagery

Impervious Cover



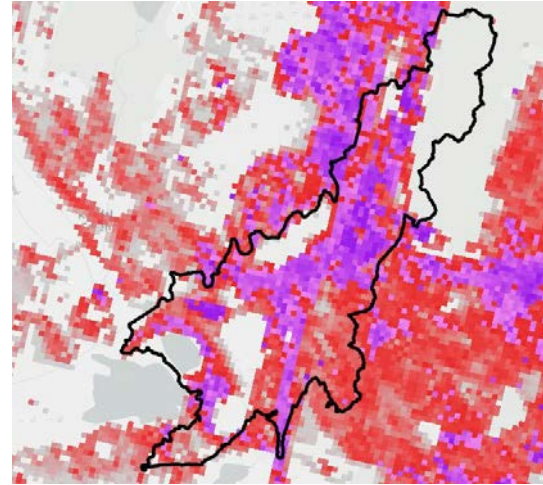
Upper Watershed Impact Area



Catchment Area: 170 Acres
Impervious Area: 110 Acres

66% Impervious

Lower Watershed Impact Area



Catchment Area: 440 Acres
Impervious Area: 312 Acres

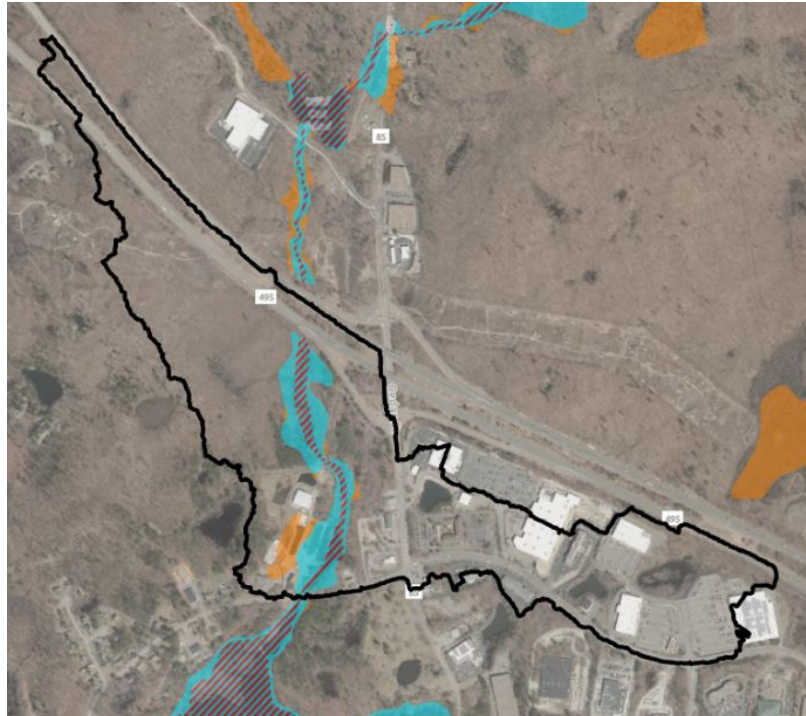
71% Impervious



Where is current flooding shown on maps?

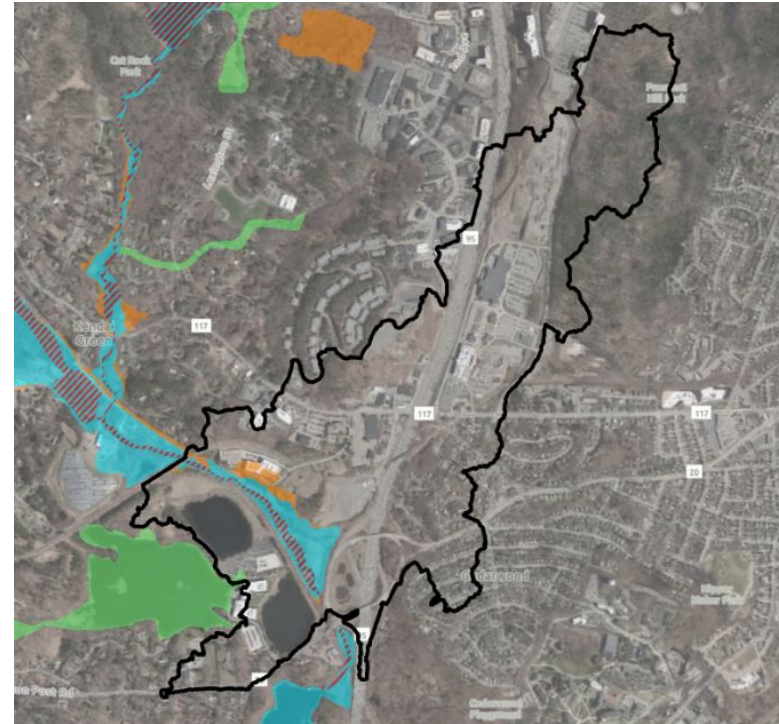


FEMA Flood Hazard Zones



Legend

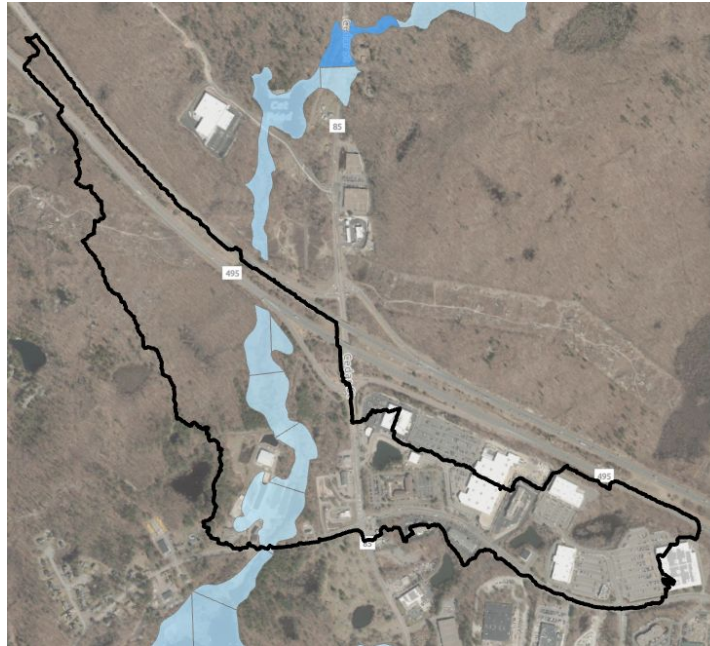
- CRWA Priority Catchments
- A: 1% Annual Chance of Flooding, no BFE
- AE: 1% Annual Chance of Flooding, with BFE
- AE: Regulatory Floodway
- X: 0.2% Annual Chance of Flooding



Where might it flood in the future?



Projected Flooding from 2070 10-yr storm – 7.1 inches of rain in 24 hours



Subbasins



10-yr (10% AEP) 24-hour storm - 2070

MAXDEPTH



>3.0'



>2.0' - 3.0'



>1.0' - 2.0'



>0.5' - 1.0'

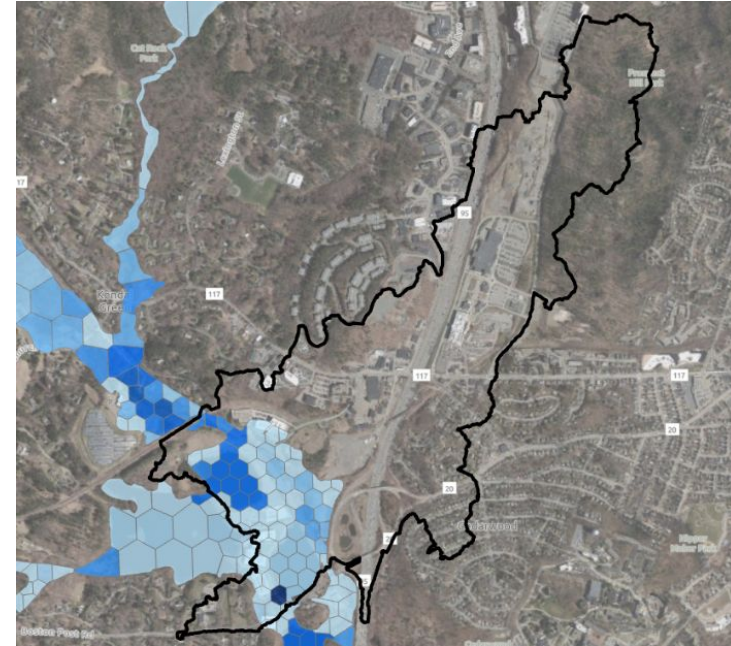


>0' - 0.5'

No Flood

Massachusetts Boundaries

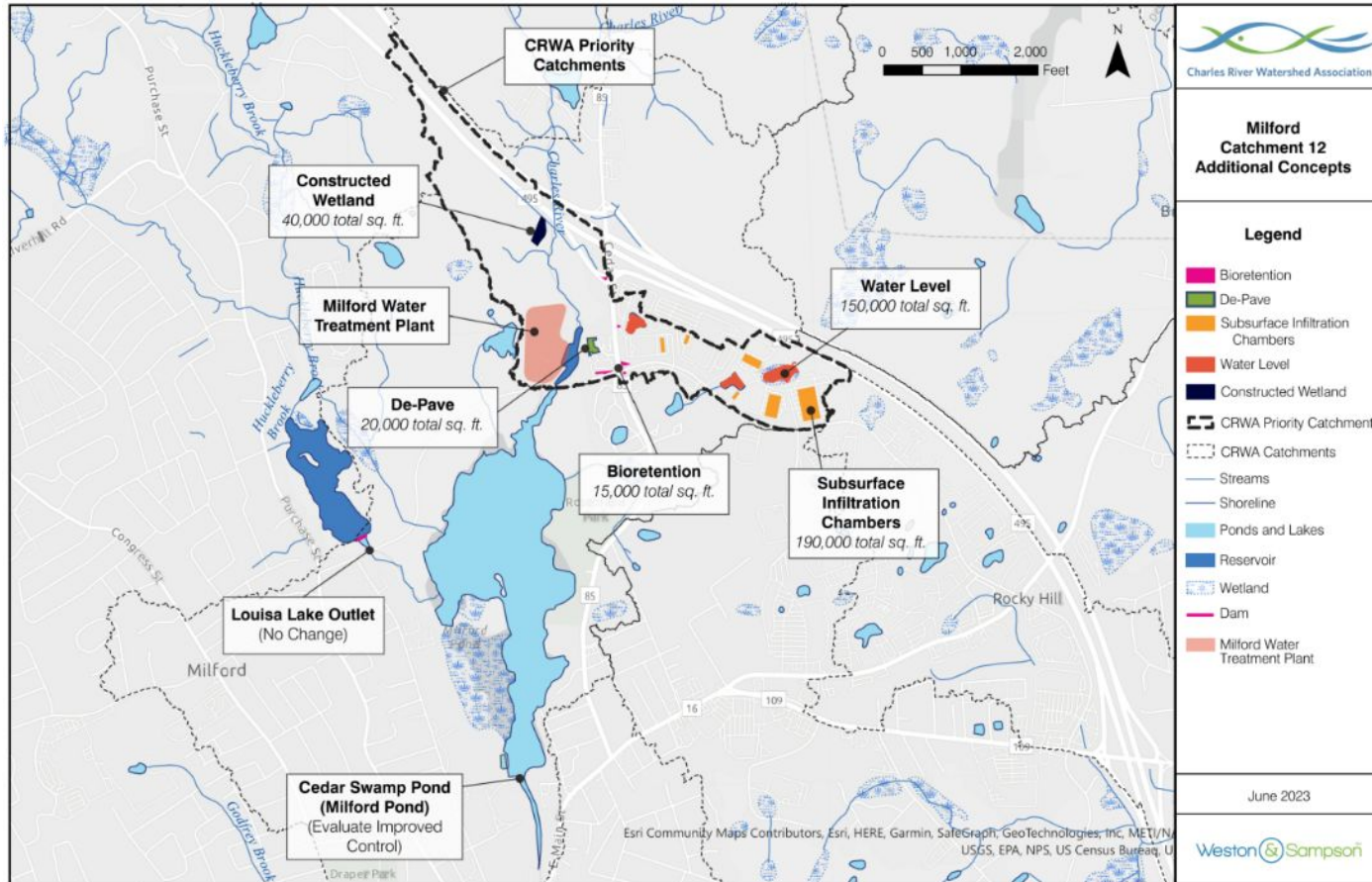
Massachusetts Municipalities



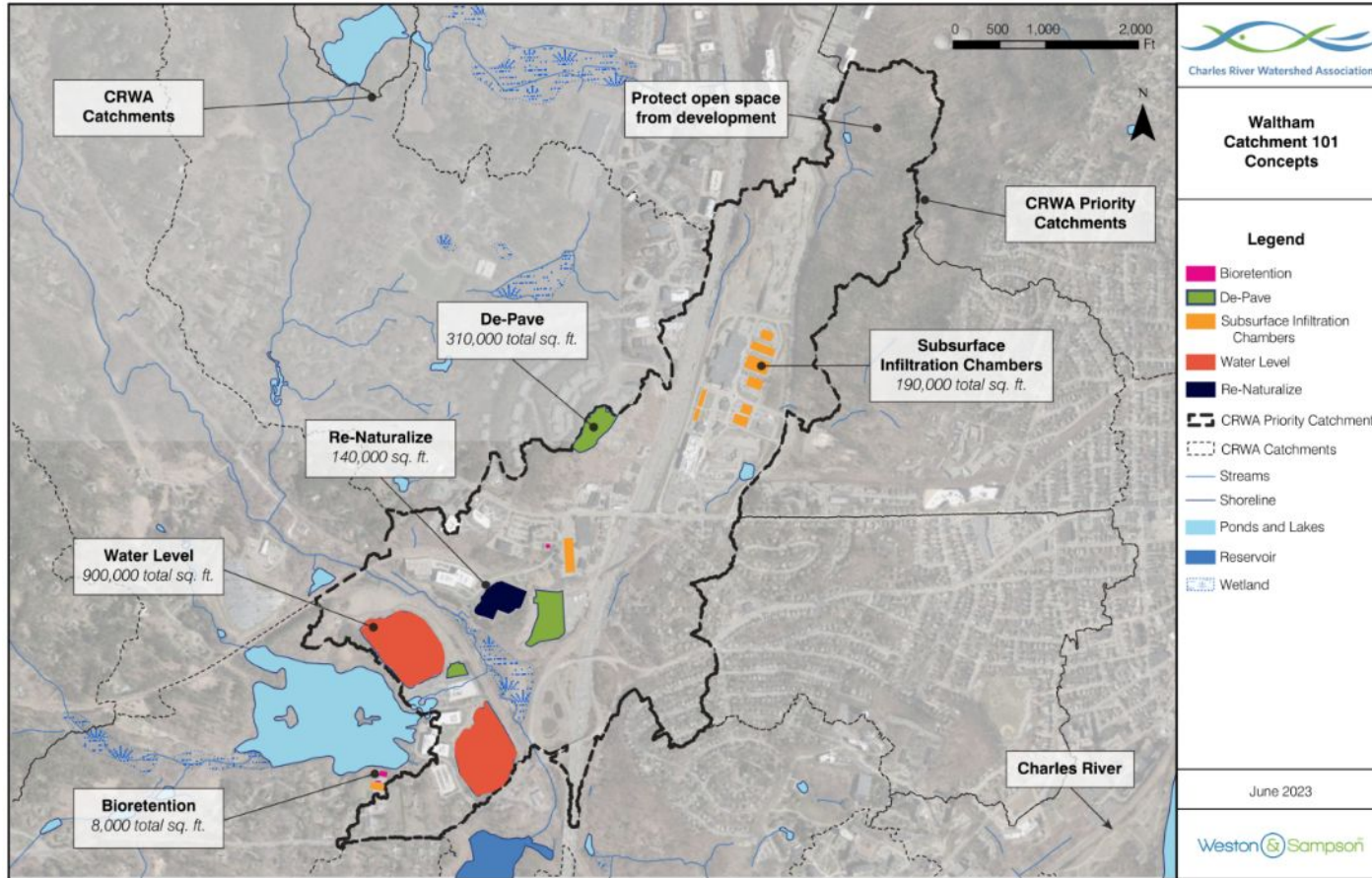
Upper Watershed Impact Area

Overview of Solutions Explored

- Approx. **9.5 ac** available in the catchment area where nature-based solutions/ green stormwater infrastructure can be implemented



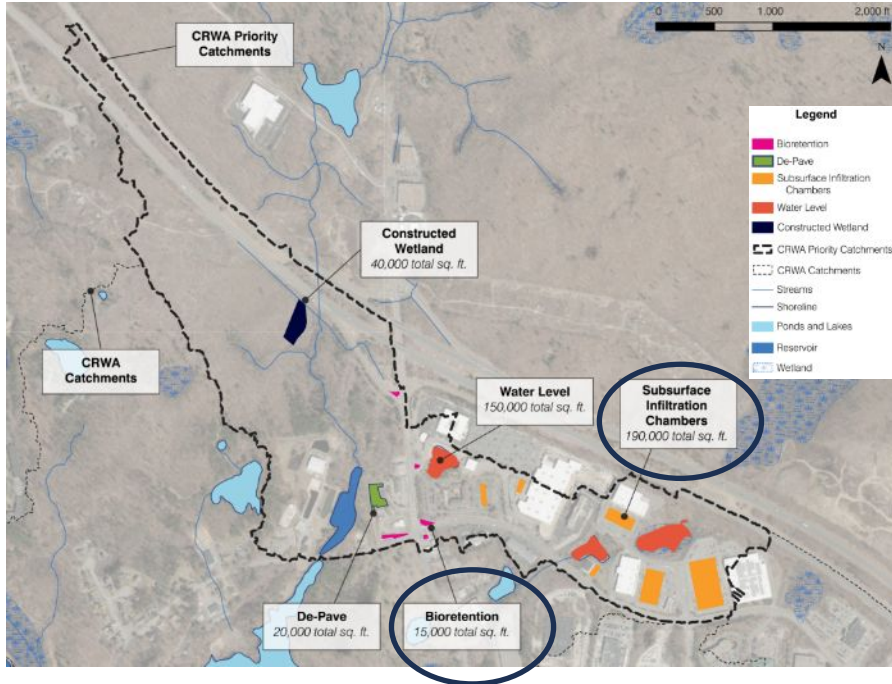
Lower Watershed Impact Area



Overview of Solutions Explored

- Approx. **35.5 ac** available in the catchment area where nature-based solutions/ green stormwater infrastructure can be implemented

Opportunities



Source: Weston & Sampson GIS



Retrofit space to improve stormwater storage

Source: Google Earth



Subsurface infiltration chambers

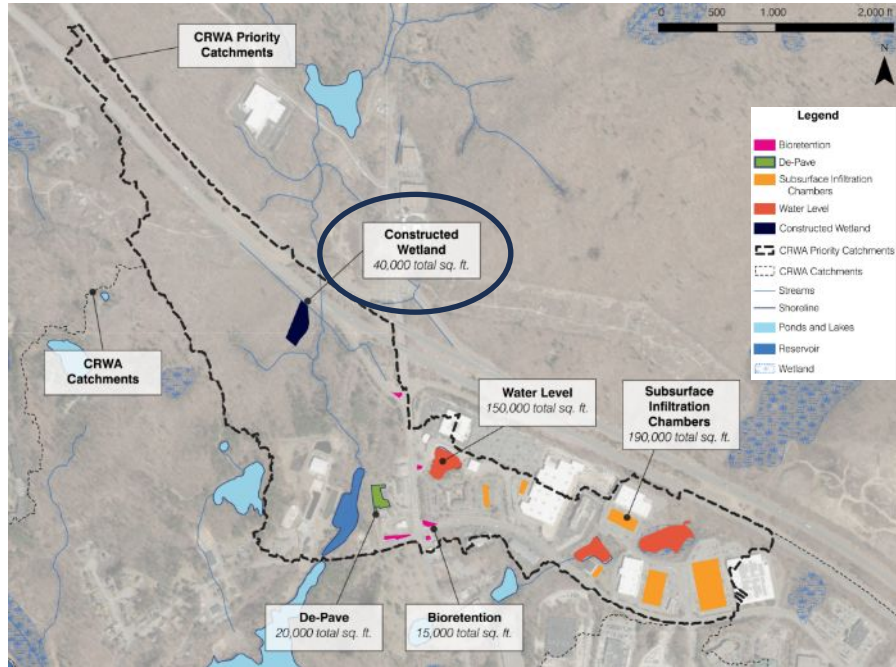
Source: Weston & Sampson project with City of Lynn



Bioretention basins

Source: U.S. EPA Publication

Opportunities



Source: Weston & Sampson GIS



Increase storage and restore natural conditions

Source: Google Earth



Constructed Wetland

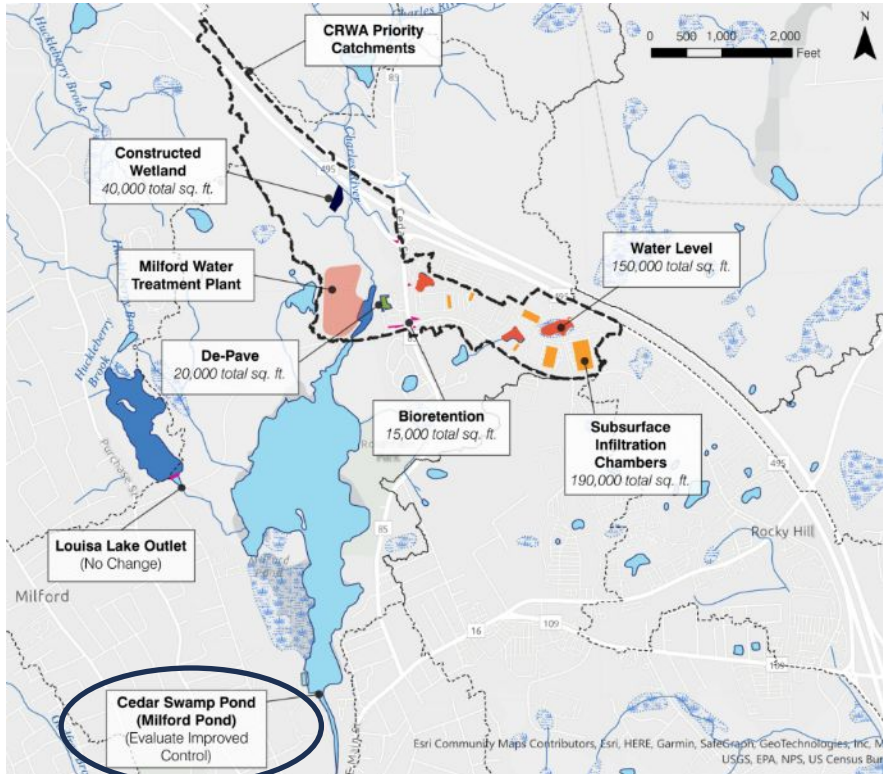
Source: U.S. EPA



Stream Restoration

Source: Weston & Sampson Project with the Town of Arlington

Opportunities



Increase stormwater storage through water level management

Source: Google Earth



Cedar Swamp Pond Dam

Source: Dam Emergency Action Plan, Weston & Sampson

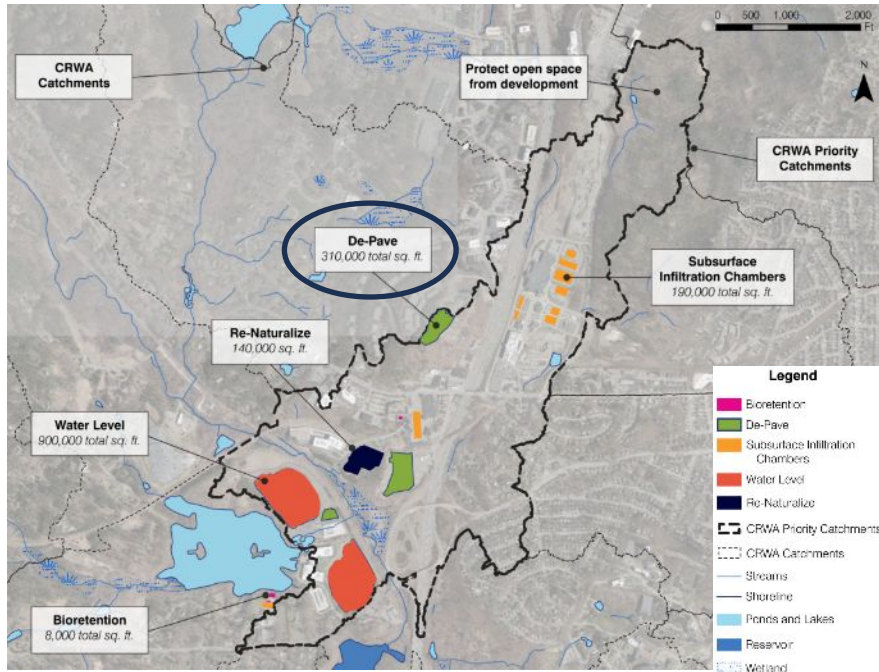


Example of stop logs

Source: North Attleborough Dam Inspection Report

Lower Watershed Impact Area

Opportunities



Source: Weston & Sampson GIS



Depave

Source: Google Earth



With Porous Pavement

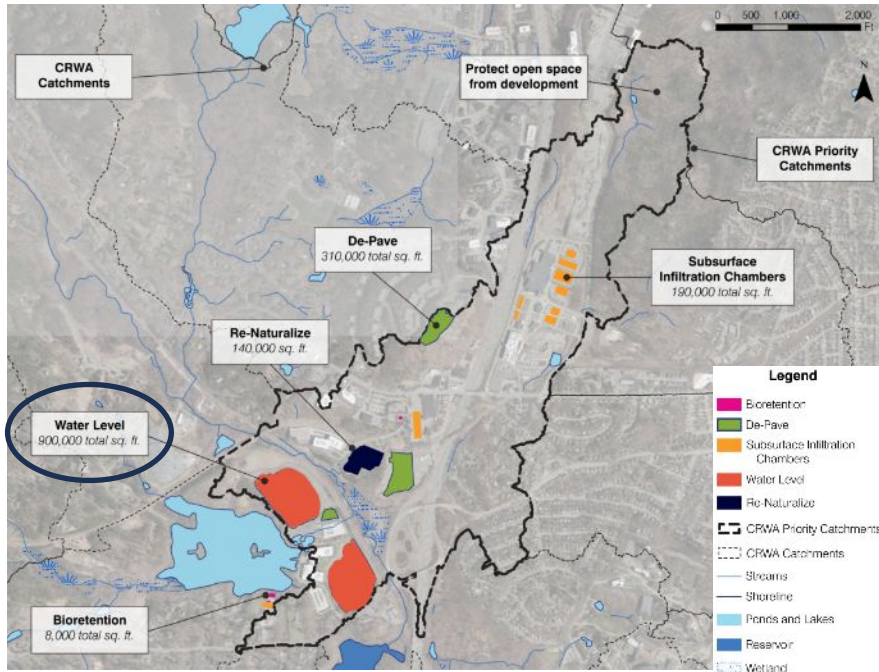
Source: U.S. EPA



With Pavers

Source: U.S. EPA

Opportunities



Source: Weston & Sampson GIS



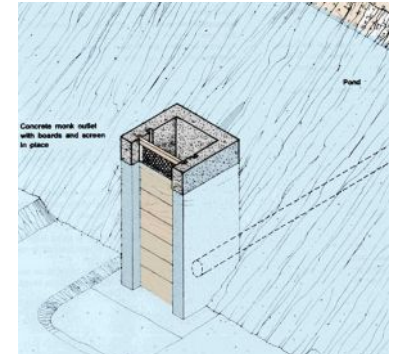
Retention Pond Retrofit

Source: Google Earth



Increase storage by excavating existing basins

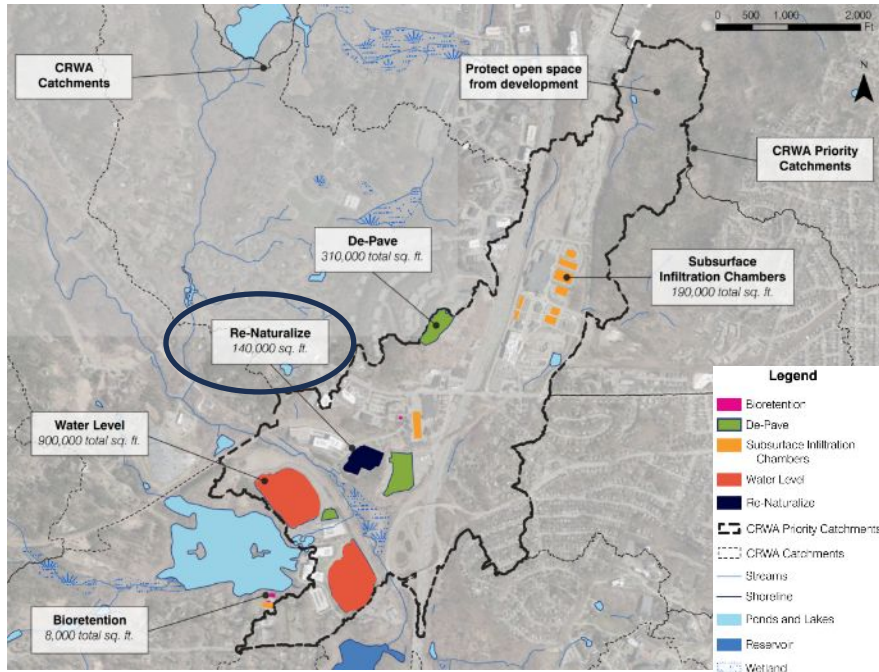
Source: U.S. EPA



Example of outlet control

Source: U.N. Food and Agriculture Organization

Opportunities



Source: Weston & Sampson GIS



Re-naturalize developed space and protect open spaces

Source: Google Earth



With native plants and trees

Source: U.S. EPA



Bioretention basins

Source: U.S. EPA

Impact-area concepts showed great benefits

- For the 2070 10-year storm, proposed solutions for the impact area (catchment) are able to reduce flooding by almost
 - 3.7 MG in the upper watershed area
 - 6.4 MG in the lower watershed area
- These targeted proposed solutions resulted in a greater flood reduction benefit for this catchment compared to overall watershed-wide scenario 1A (GSI to store 4.5" of rain from 50% of impervious cover)

Benefits and Co-Benefits



- Improved water quality
- Community education / STEM resource
- Create outdoor spaces (a.k.a. “placemaking”)
- Less-intense and more frequent storms can be managed
- Reduction in “heat islands” in parking lots and paved areas
- Addition of vegetation and potential creation of habitat

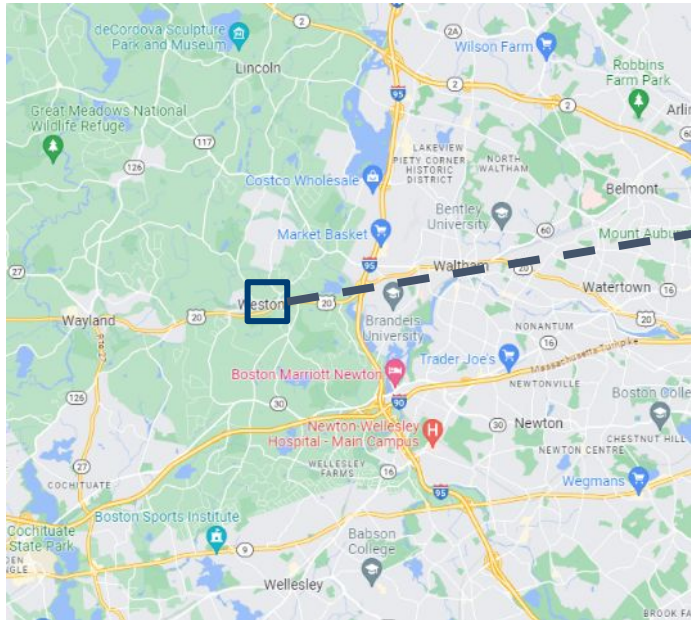
Potential Challenges/Concerns

- Significant coordination required among various landowners and municipality
- Coordination with drinking water suppliers
- Environmental permits necessary
- Maintenance capacity of public and private entities

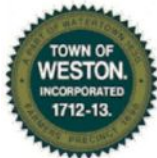


Weston Town Center

Project Location



Site Location



- Drainage Features Current**
 - Catch Basin - Single
 - Catch Basin - Double
 - Catch Basin w/ Hood
 - Catch Basin/Curb Inlet
 - Aux. Catch Basin
 - Manhole
 - Culvert Inlet
 - Culvert Outlet
 - Outfall
 - Clean Out
 - Ceep
 - Curb Inlet
 - Deflection
 - Junction
 - Drop Inlet
 - Dry Well
 - Pipe Drainage
 - Treatment Line
 - Pipe End Inlet
 - Pipe End Outlet
 - Other
 - Swale
 - Temporary
 - Unknown
- Drainage Pipes Current**
- Stewalks**
- Roads**
 - Bridge
 - Paved Road
 - Unpaved Road
- Parking Lots**
 - Paved Parking
 - Unpaved Parking
- Driveways**
 - Paved Driveway
 - Unpaved Driveway
- Stream Centerlines**
- Streams**
 - Stream
 - Floodwall
 - Ditch
- Ponds and Rivers**
 - Rivers
 - Ponds
- Parcels With Aerials**
- MA Highways**
 - Interstate
 - US Highway
 - Numbered Routes
- Town Boundary**
- MA Towns**
- MA Towns Opaque**



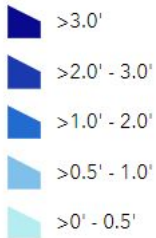
Projected Future Flooding

Subbasins



10-yr (10% AEP) 24-hour storm - 2070 (7.1 inches)

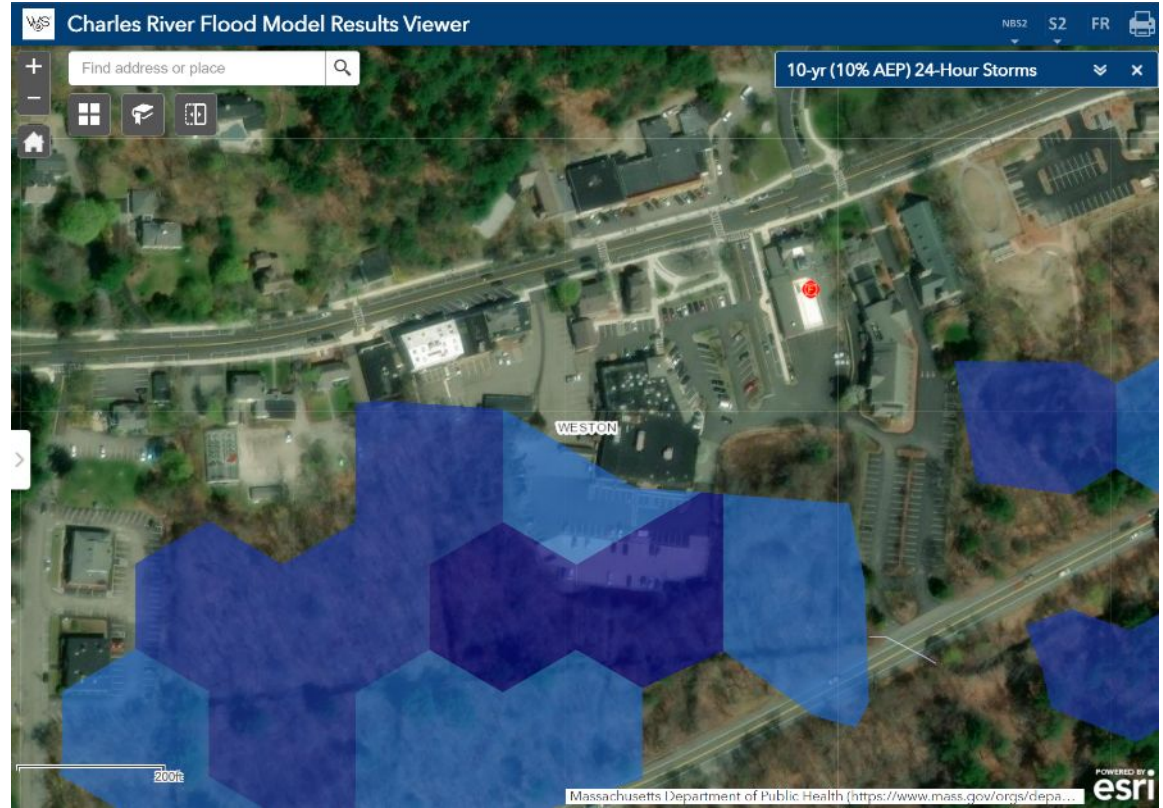
MAXDEPTH



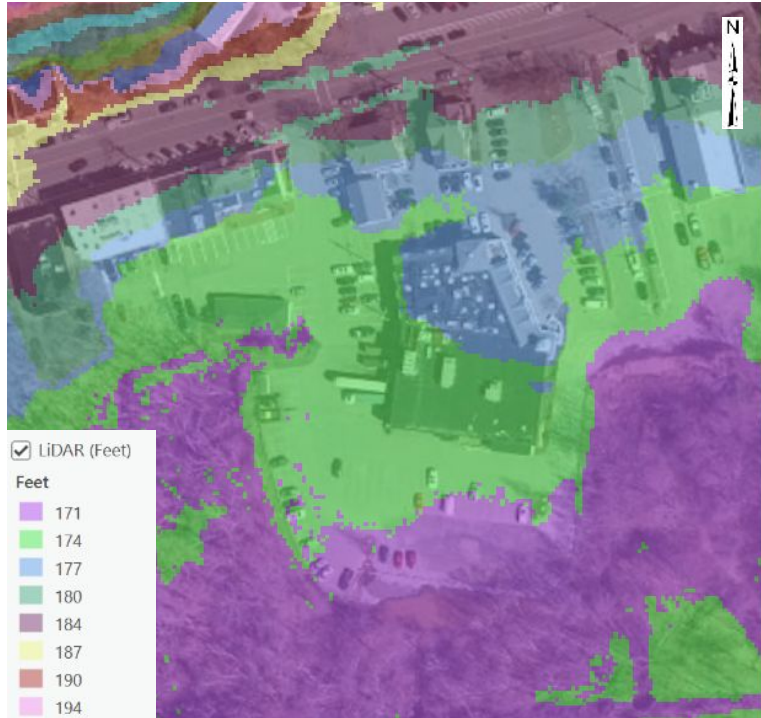
No Flood

Massachusetts Boundaries

Massachusetts Municipalities



Site Description

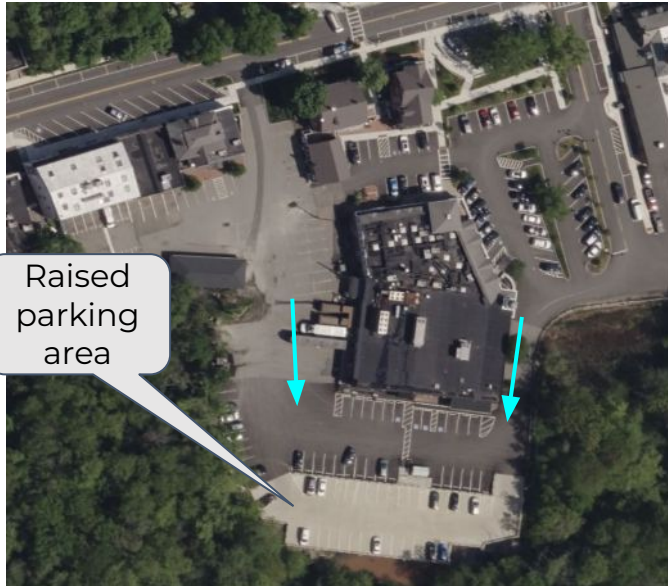


Site Topography



FEMA 500 year flood zone

Site Description



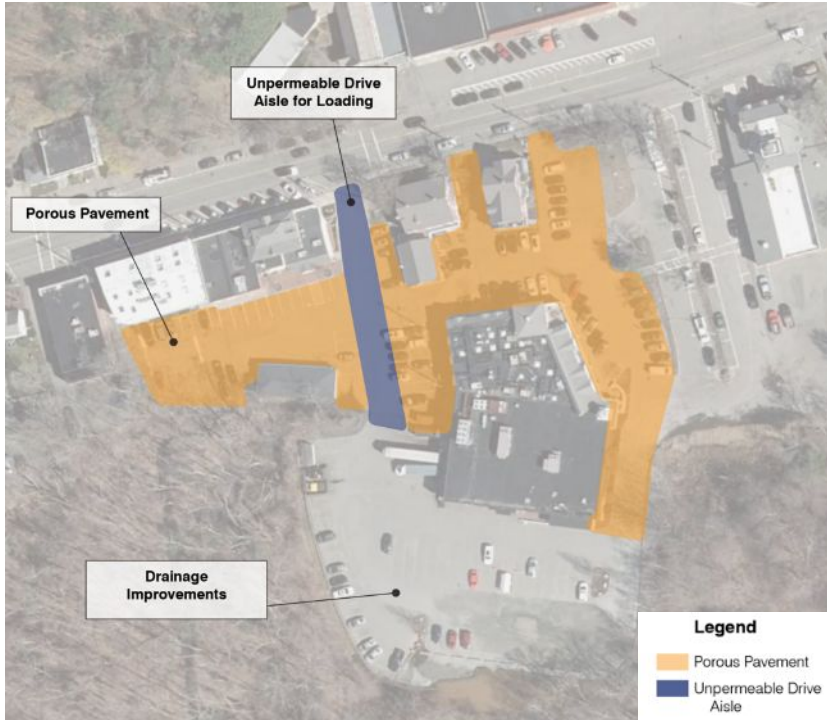
Frequent flooding occurred at the southern end of the parking lot, in 2019 property owner raised that section

Source: Bing Maps



Recent photograph of actual site conditions, Town of Weston

Concept



Reduce Impervious Surfaces

Source: Google Earth



Porous Pavement

Source: U.S. EPA



Pavers for Commercial Use

Source: U.S. EPA

Opportunities Considered



Restore Natural Systems
and Wetlands



Culvert Improvements

Source: CRWA



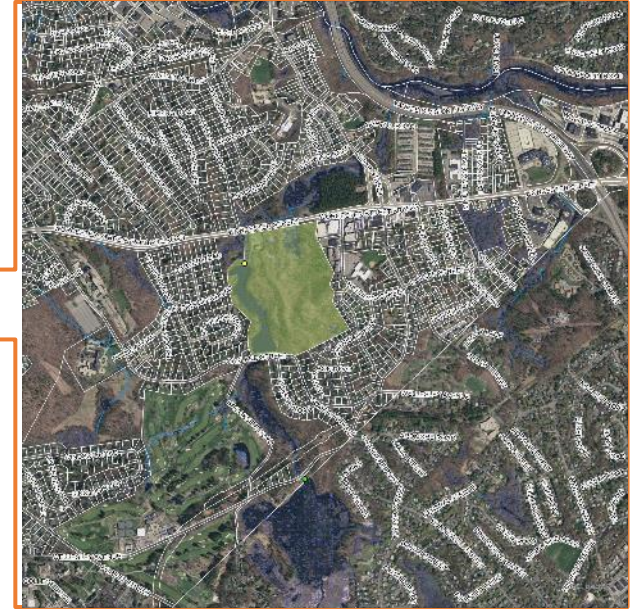
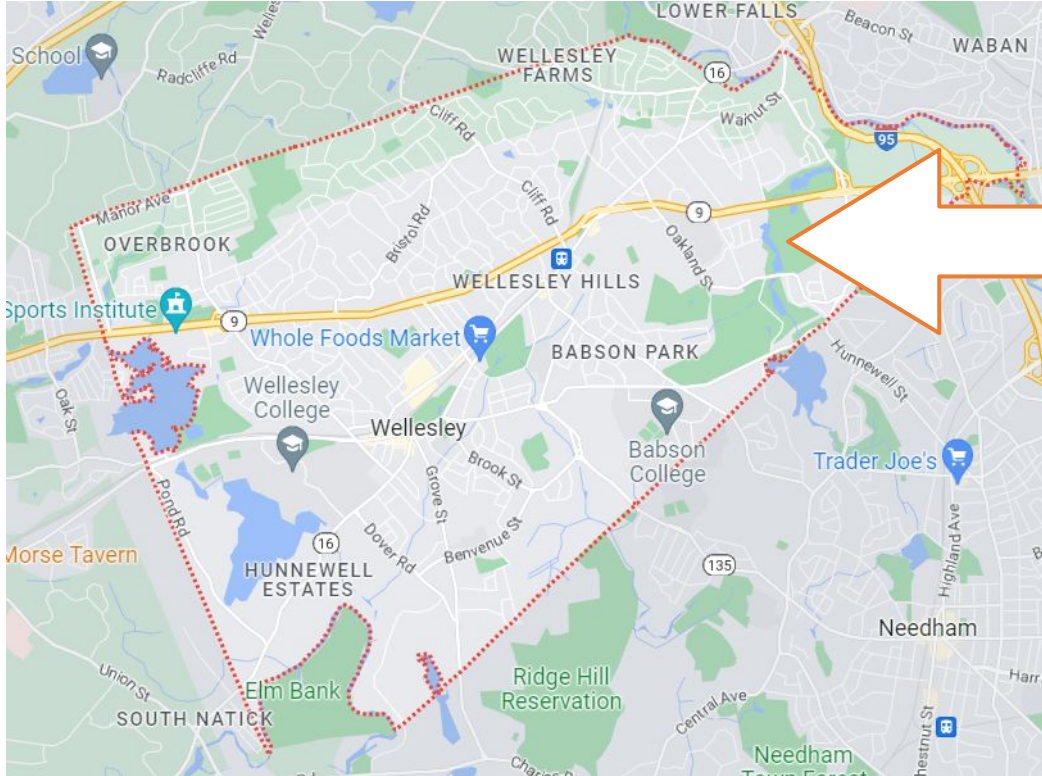
Stream Restoration

Source: Weston & Sampson Project with the Town
of Arlington

Results of Modeling

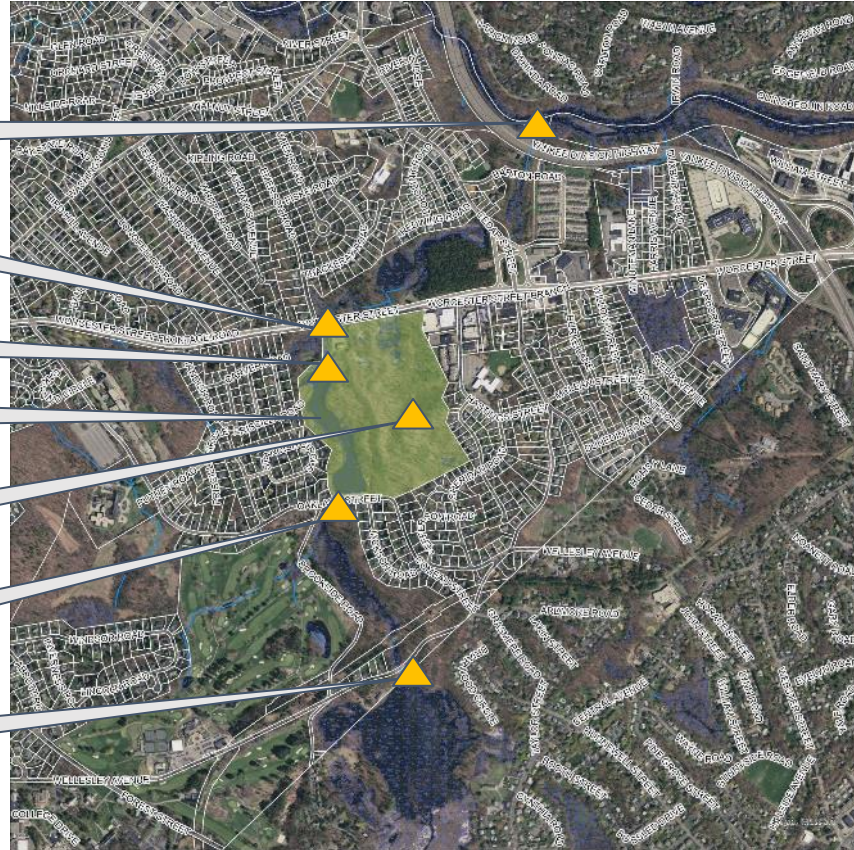
- The Concept for Weston Town Center is able to reduce flooding for the 2070 10-year storm by:
 - 200,000 Gallons
 - 0.3 cubic feet per second (cfs)

Project Location

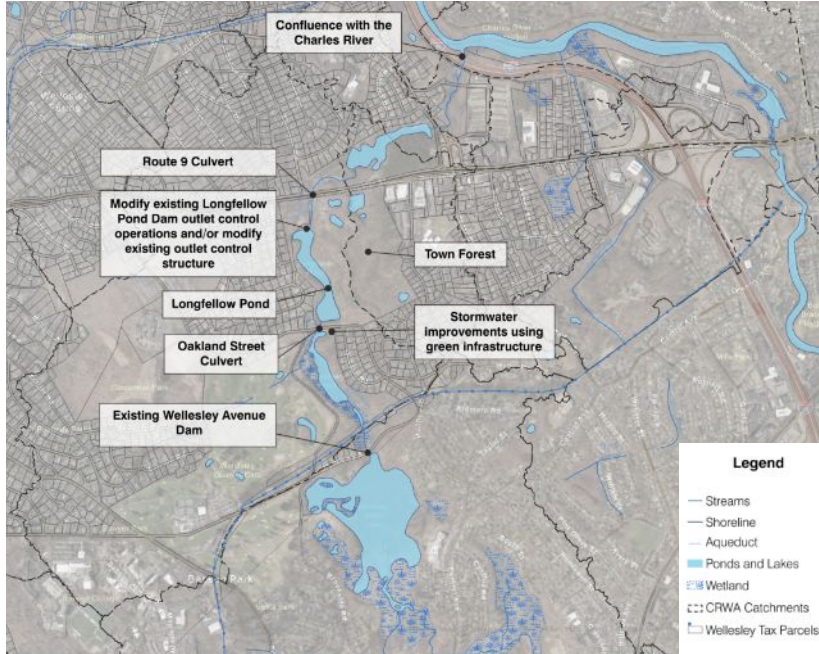


Project Location

- Confluence with the Charles River
- Route 9 culvert
- Longfellow Pond Dam
- Longfellow Pond
- Town Forest
- Oakland Street Parking Lot
- Wellesley Avenue Dam



Proposed Concept



Source: Weston & Sampson GIS



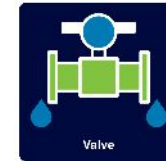
Longfellow Pond Outlet from downstream

Source: Source: Phase I Inspection Report, August 2012



Stoplogs or Hydraulic Gates

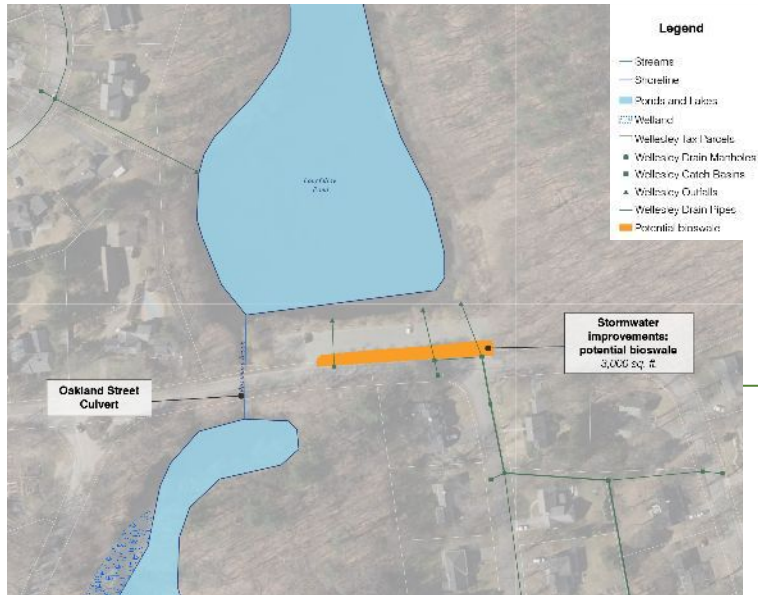
Source: R.K. Trading Co, Model Town, Yamuna Nagar, Haryana



Real time controls

Source: Weston & Sampson

Proposed Concept



Source: Weston & Sampson GIS



Address Parking Lot Area

Source: Google Earth



Bioswale with plantings

Source: U.S. EPA



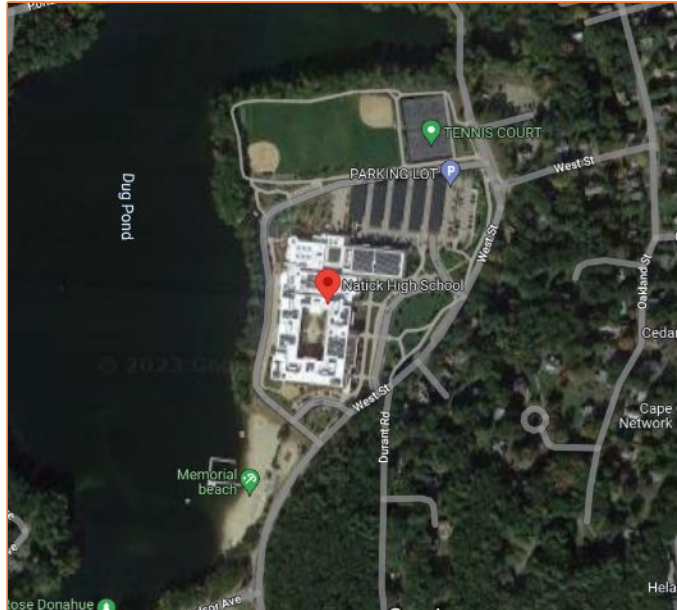
Bioswale with Trees

Source: U.S. EPA

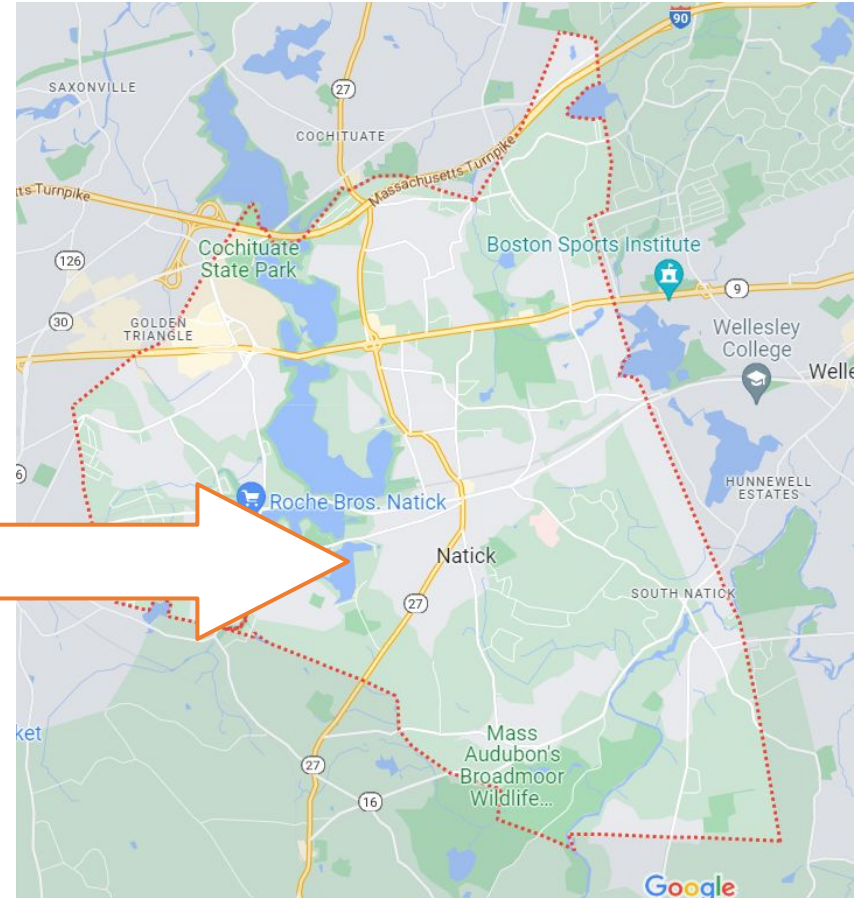
Results of Modeling

- The Concept at Longfellow Pond is able to reduce flooding by for the 2070 10-year storm
 - 40,000 Gallons
 - 0.1 cubic feet per second

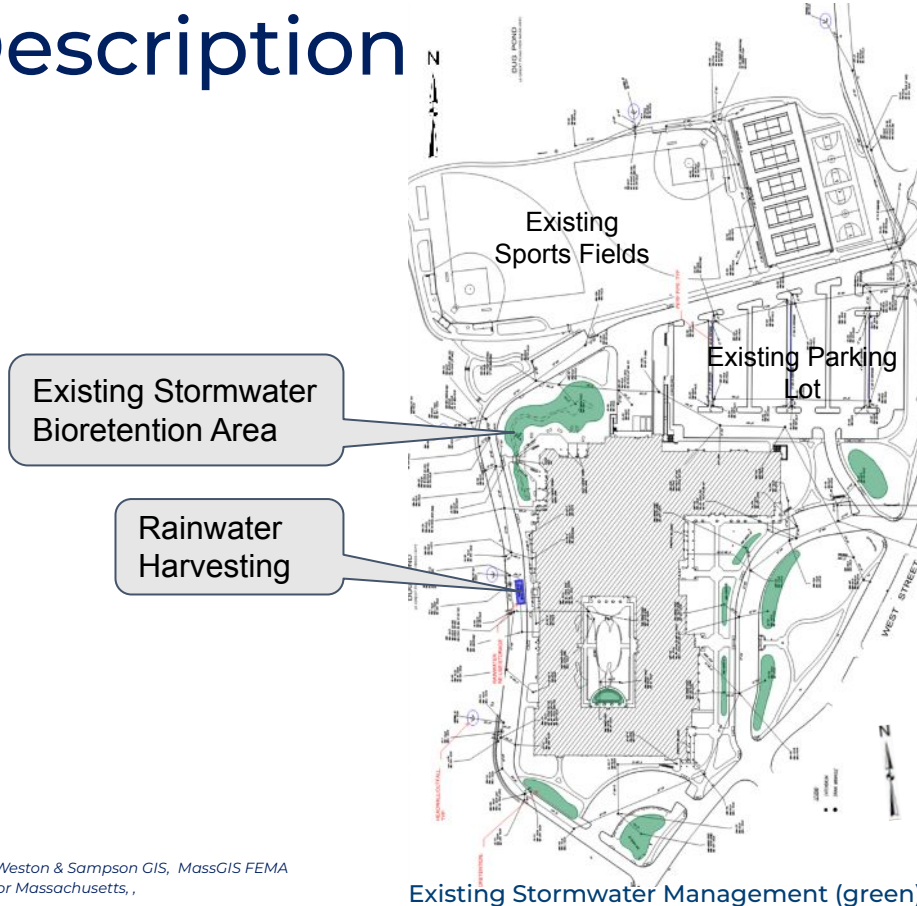
Project Location



Source: Google Maps



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Projected Future Flooding

Subbasins



10-yr (10% AEP) 24-hour storm - 2070 (7.1 inches)

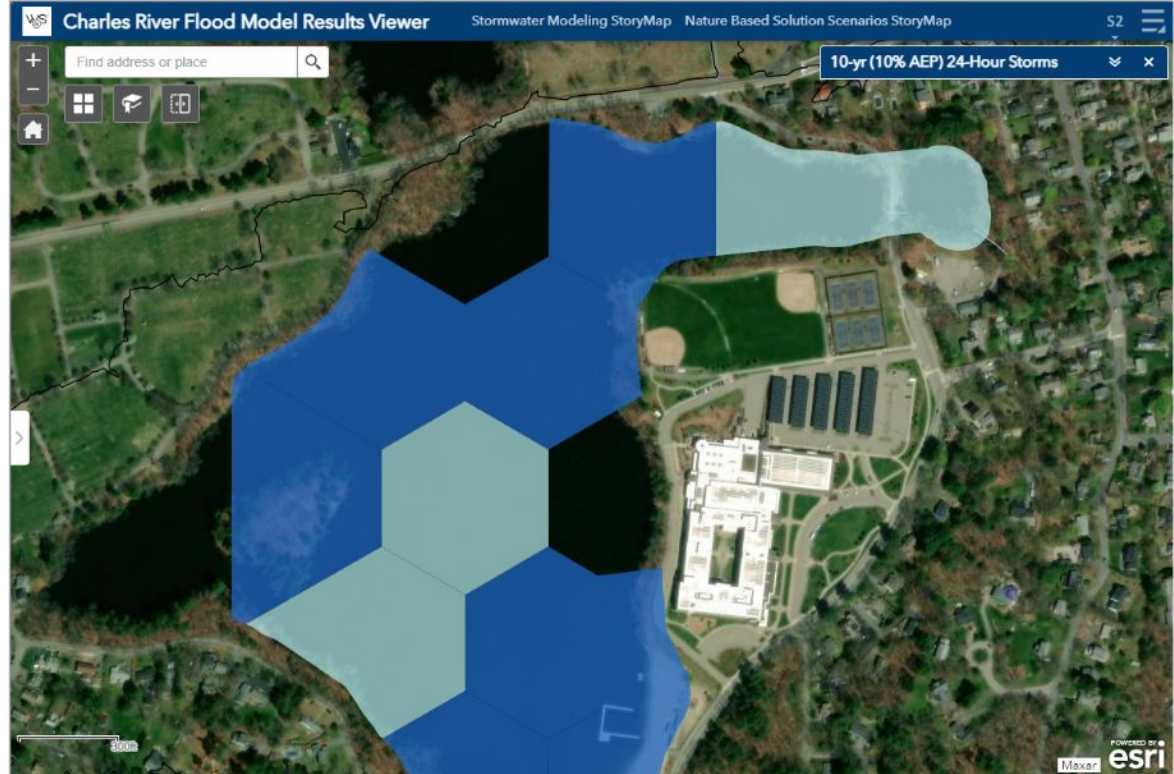
MAXDEPTH

- >3.0'
- >2.0' - 3.0'
- >1.0' - 2.0'
- >0.5' - 1.0'
- >0' - 0.5'

No Flood

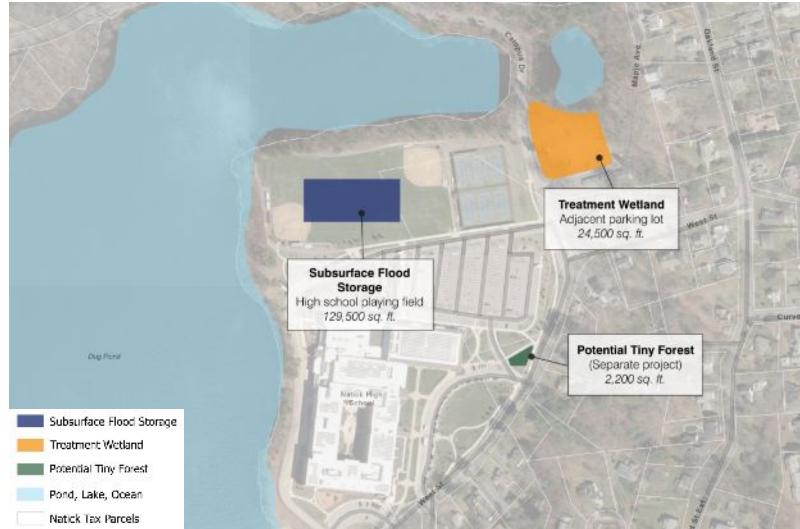
Massachusetts Boundaries

Massachusetts Municipalities



Concept

- Auxiliary parking lot
- Frequent flooding from small pond (yellow circle)



Source: Weston & Sampson GIS



Renaturalize space

Source: Google Earth



Constructed Wetland

Source: U.S. EPA



Additional floodable
storage space

Source: U.S. EPA

Concept

- Underground storage with controlled outlet structure
- Combined grey and green infrastructure



Subsurface storage underneath playing field

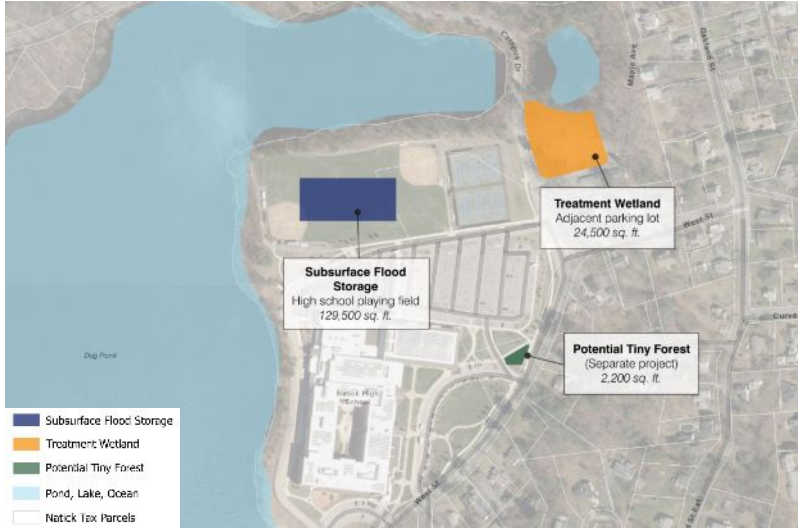
Potential to connect existing drainage system

Source: Google Earth



Subsurface infiltration chambers

Source: Weston & Sampson project with City of Lynn



Source: Weston & Sampson GIS

Approx. **3.6 ac** available at this site where additional stormwater storage opportunities can be implemented

Results of Modeling

- The Concept for Natick High School is able to reduce flooding for the 2070 10-year storm
 - 2.1 Million Gallons
 - 0.8 cubic feet per second

Engaging & Empowering Charles River Watershed Communities

Conectando y Empoderando Comunidades de la Cuenca del Río Charles



CREW's primary focuses:

Awareness

- Share out the Charles River Flood Model (CRFM)

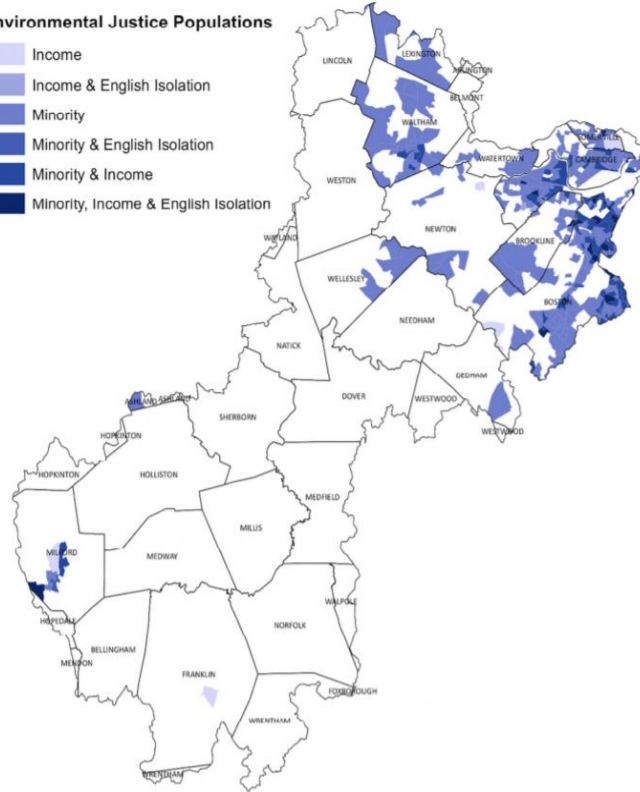
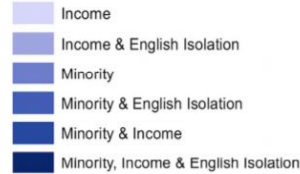
Education

- Increase communities' understanding of and connection to nature-based solutions / green infrastructure

Preparedness

- Flooding preparedness: Meaningfully reach and empower community members most vulnerable to riverine flooding impacts (i.e. env'l justice populations; flood zone residents)

Environmental Justice Populations



Los principales enfoques de CREW:

Conciencia

- Distribuir información sobre el Modelo de Inundación del Río Charles (CRFM)

Educación

- Aumentar la comprensión y la conexión de las comunidades con las soluciones basadas en la naturaleza / infraestructura verde

Preparación

- Preparación para inundaciones: Contactar y empoderar significativamente a los miembros de la comunidad más vulnerables a los impactos de las inundaciones fluviales (i.e. comunidades de justicia ambiental; Residentes en zonas inundables)

Who is CREW? ¿Quién es CREW?



CREW – A network of local leaders building grassroots climate resilience through inclusive & hands-on education, service, and planning.

Together, we work to empower and equip families and communities with the resources and capacity to prepare for and respond to local climate changes and extreme weather **equitably, sustainably, & collaboratively**.

CREW – Una red de líderes locales que construyen resiliencia climática de base a través de la educación, el servicio y la planificación inclusivos y directos.

Juntos, trabajamos para empoderar y equipar a las familias y comunidades con los recursos y la capacidad para prepararse y responder a los cambios climáticos locales y al clima extremo de manera **equitativa, sostenible y colaborativa**.

For more info / Para más información climatecrew.org

Engagement Efforts

Esfuerzos para conectar con la gente

Raise Awareness with Watershed Residents

- Watershed-wide virtual events (like this one!)
- CRFM Town-specific posters
- **Large, town-wide celebrations – Celebrate Milford, Medway Pride Day, Newton Earth Fest**

Engage Residents in Planning Efforts

- **Flyer outreach in communities with green infrastructure projects**
- Virtual sessions – Wellesley, Natick, Waltham, Weston, Milford
- **Project visuals and on-site planners to collect feedback**

Engage EJ and Climate Vulnerable Residents

- Establish relationships with groups addressing acute and chronic community needs
- **Engage intermediaries and get creative!**

Educar a los habitantes de la cuenca.

- Actos virtuales en toda la cuenca (como éste)
- Carteles específicos de la ciudad de CRFM
- Grandes celebraciones en toda la ciudad - Celebrete Milford, Medway Pride Day, Newton Earth Fest

Involucrar a los residentes en los esfuerzos de planificación

- Divulgación mediante folletos en comunidades con proyectos de infraestructuras verdes
- Sesiones virtuales - Wellesley, Natick, Waltham, Weston, Milford
- Virtual Sessions - Wellesley, Natick, Waltham, Weston, Milford

Involucrar a la justicia ambiental y a los residentes vulnerables al clima

- Establecer relaciones con grupos que se ocupan de las necesidades agudas y crónicas de la comunidad.
- Involucre a los intermediarios y sea creativo.

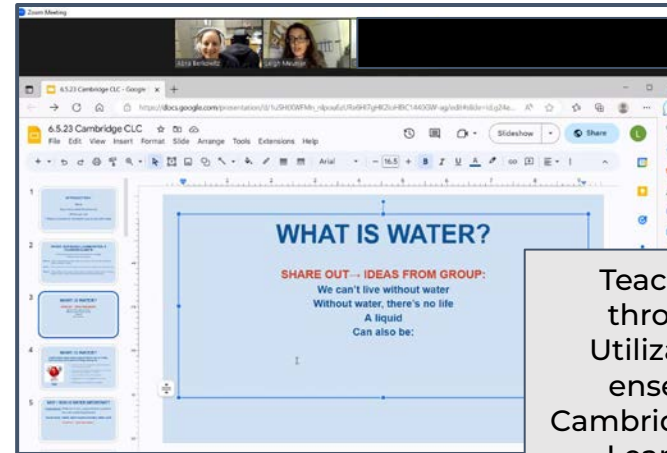
Newton!



ROSETTA
LANGUAGES

Apply language lessons to
new moment! /
Aplique las lecciones de
idiomas a un nuevo
momento

Cambridge!



Teaching English
through CRFM /
Utilizar CRFM para
enseñar inglés -
Cambridge Community
Learning Center



Place-based outreach along the Charles River /
Educar a la población directamente a lo largo del río Charles

**READY
BOSTON**

www.cityofboston.gov/readyboston

Keep this
somewhere
handy!

Household Emergency Kit Checklist

Get it in Your Kit! Keep enough supplies in your Household Emergency Kit to last you and your family at least 3 days. Though you should personalize your Kit to suit your specific needs, below are some key items that will start you on the road to being ready!

- Water: one gallon a day per person for drinking and sanitation
- Food: non-perishable that does not require cooking
- Manual can opener
- First aid kit
- Battery powered AM/FM radio & extra batteries
- Flash light & extra batteries
- Toiletries & personal items
- Filter mask
- Phone that does not require electricity
- Whistle
- Garbage bags & plastic ties for personal sanitation
- Blankets
- Warm clothes & extra changes of clothes
- Wrench or pliers to turn off utilities
- Other specialty items such as: prescription medication, pet supplies, baby necessities, and copies of important documents



**READY
BOSTON**

www.cityofboston.gov/readyboston

¡Mantén esto en
algún lugar a
mano!

Hogar Kit de Emergencia Lista

Al prepararse para una posible situación de emergencia, conviene pensar primero en los fundamentos de la supervivencia: agua potable, comida, aire limpio y retención del calor.

Suministros Recomendados Para Incluir en un Equipo Otro

- Agua, un galón de agua por persona al día, por lo menos para tres días, para tomar y para la higiene.
- Comida, provisiones por lo menos para tres días de alimentos no perecederos.
- Radio portátil de pilas o de manivela y un Radio Meteorológico NOAA con alerta de tonos y pilas extras para ambos.
- Linterna y pilas extras.
- Botiquín de primeros auxilios
- Silbato para alertar y pedir ayuda.
- Máscara contra polvo
- Toallitas húmedas, bolsas de basura y tiritas plásticas de amarre para utilizar con fines de higiene personal.
- Llave inglesa o alicates para cerrar los servicios públicos.
- Abrelatas para la comida (si el equipo contiene alimentos enlatados)
- Mapas locales
- Teléfono que no requiere electricidad
- Manta
- Ropa de abrigo extra y cambios de ropa
- Otras especialidades tales como: la prescripción de medicamentos, suministros para mascotas, bebé necesidades, y de las copias de documentos importantes



Want to help your community
prepare for extreme weather?

CLIMATE RESILIENCE HUBS

educate residents about extreme weather preparedness. They can be libraries, schools, faith institutions, or any other place that serves the community.

- Climate Resilience Hubs may provide services such as:
- educational events and information
 - cooling shelter during a heat wave
 - phone charging during a power outage
 - medical supplies



Are you connected with a business or
organization that wants to learn more?

Contact CREW: www.climatecrew.org/resilience_hubs



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Celebrations! | ¡Celebraciones!

**Invited to and presented at regional conference -
Cross-pollination! Learning from others!**

**Invitación a presentar en la conferencia regional -
!Polinización cruzada!
!Aprender de los demás!**

Partnered with language services and provided support for 10 events (in-person, virtual, translated materials)

Colaboración con los servicios lingüísticos y apoyo a 10 actos (presenciales, virtuales, materiales traducidos)

Identified new, creative ways of engagement for Phase 4 – curriculum, workshops, parties!

**Determinación de formas de participación nuevas y creativas para la Fase 4:
planes de estudios, talleres, fiestas**



Trees and rain gardens are awesome!!

¡Los árboles y los jardines de lluvia son increíbles!

This work is an opportunity to heal relationships with the land and indigenous tribes.

Este trabajo es una oportunidad para sanar las relaciones con la tierra y las tribus indígenas.

What about development – in flooding zones, wetlands, forests?

¿Y más edificios? – en zonas de inundación, humedales, bosques

Who do I contact locally if I want to learn more?

¿Con quién puedo ponerme en contacto si quiero saber más?

**Thank you for the emergency blanket!
Can I take a few?**

**¡Gracias por la manta de emergencia!
¿Puedo tener algunos?**

Working with City/Town staff | Colaboración con el personal municipal

**Continued community events |
Continuación de los actos
comunitarios**



**Social
conversations |
Conversaciones
sociales**

**Dialogue and workshops with
climate-vulnerable residents |
Diálogo y talleres con
residentes vulnerables al clima**



Thank you! | ¡Gracias!

*Interested in
learning more
and partnering
with CREW?*

www.climatecrew.org

*¿Está interesado
en aprender más
y asociarse con
CREW?*

Leigh Meunier, Project Coordinator/
Coordinador de proyectos

leigh@climatecrew.org

Vernon Walker, Program Director/
Director del programa

vernon@climatecrew.org



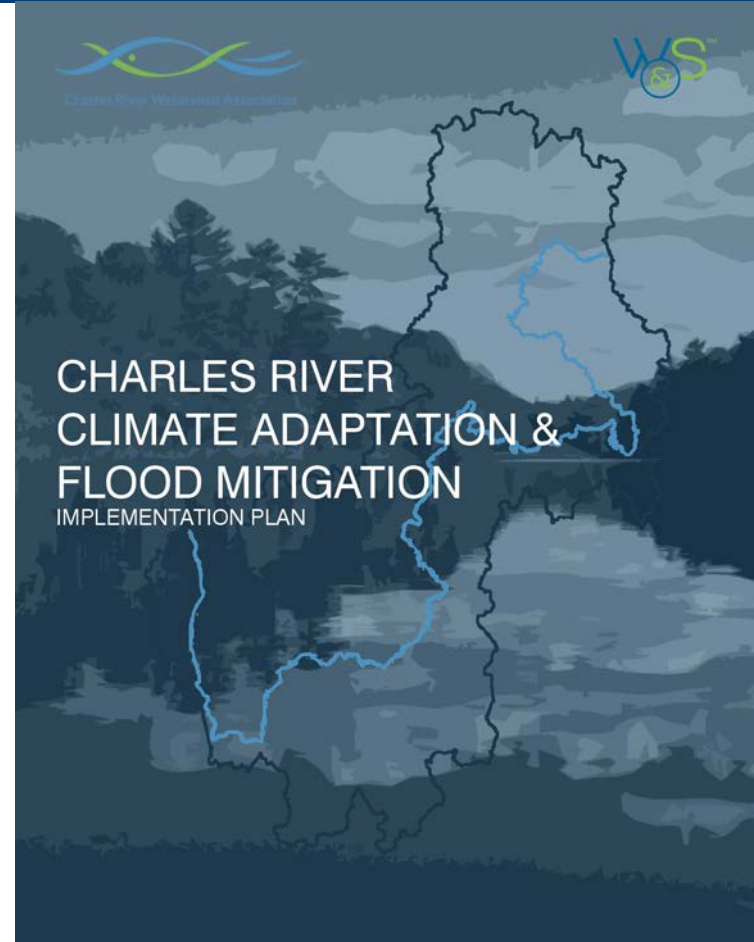
CREW

Communities Responding
to Extreme Weather

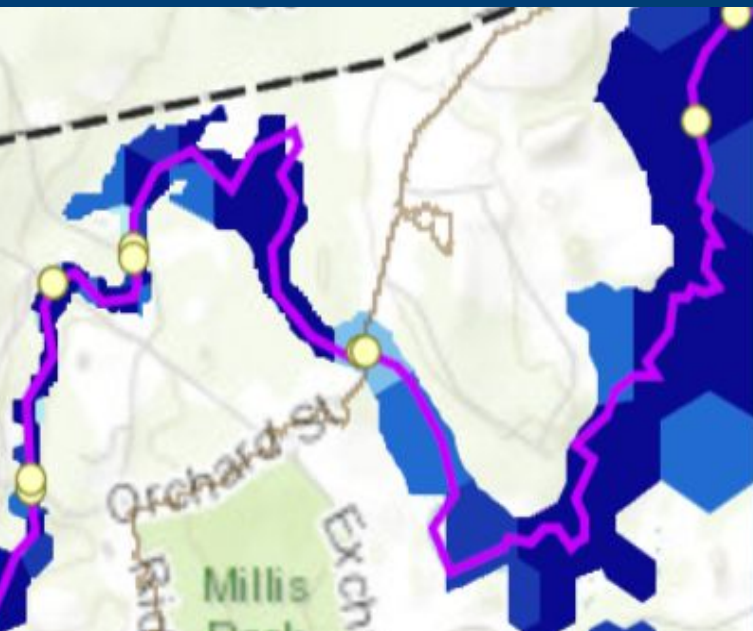
Looking Ahead...

WHAT'S NEXT:

- Building on past modeling work, use the CRFM to **identify and assess various alternative “pathways” that will mitigate flooding down to present day levels** or even further
- **Update the Charles River Climate Adaptation Flood Mitigation Plan** to include additional site scale / impacted area project concepts, flood reduction alternatives analysis, and additional community input



Share Your Thoughts!



TAKE THE SURVEY:

What do you think?

What is your top concern about how climate change will effect you, your family, and community?

TAKE THE SHORT SURVEY!

VISIT [CRWA.ORG/CRFM-23](https://www.crwa.org/crfm-23)

¡TOMA LA ENCUESTA CORTA!

VISITE [CRWA.ORG/CRFM-23](https://www.crwa.org/crfm-23)

Learn More



Available in seven languages!



Flood Predictions Become Flood Solutions

Climate change isn't coming—it's here. Precipitation during heavy rain events increased by 55% between 1958 and 2016 in



GO TO >
CRWA.ORG/WATERSHED-MODEL