

Partnerships & Planning to Address Water Quality in a Mashpee Wampanoag Tribe Ancestral Pond

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Natural Resources Director
Mashpee Wampanoag
Tribe

SNEP Symposium
May 18, 2022



October 12, 2021 Site Visit: K. Groff

Project Partners & Contributors



KIMBERLY GROFF CONSULTING



Agenda

1. About the Mashpee Wampanoag Tribe & Lands
2. Santuit Pond Water Quality
3. Tribe & Town & SNEP partnered to plan for solutions
4. Key Facts about the WBP
5. Looking to the future



Mashpee Wampanoag Tribe

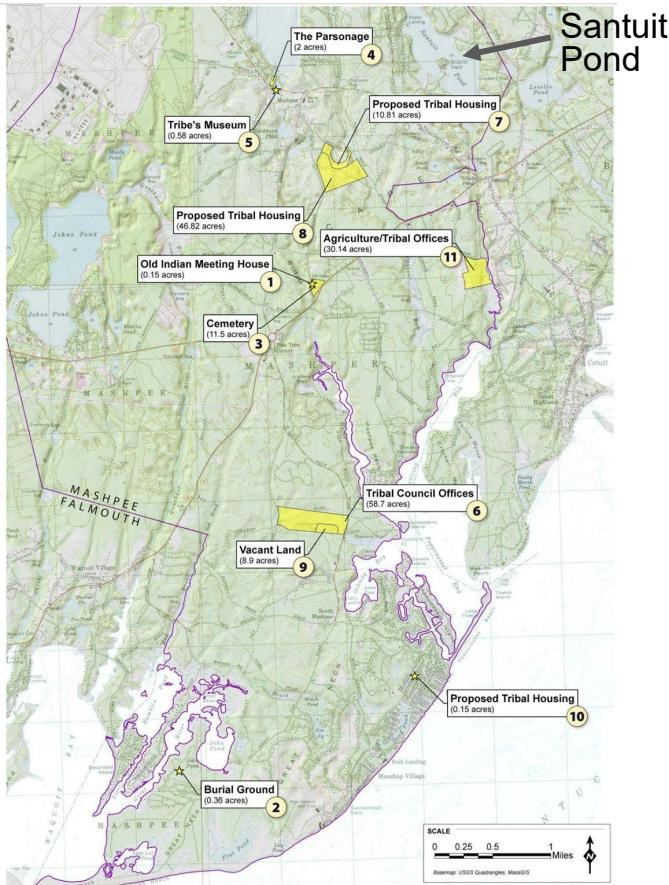
- People of The First Light
- Stewards of land and water for 12,000 years
- Land and water are sacred (*Herring and a variety of fish*)
- Trust lands distributed over 11 parcels
- Surrounding land use not under the Tribe's control



Mashpee Wampanoag Trust Lands

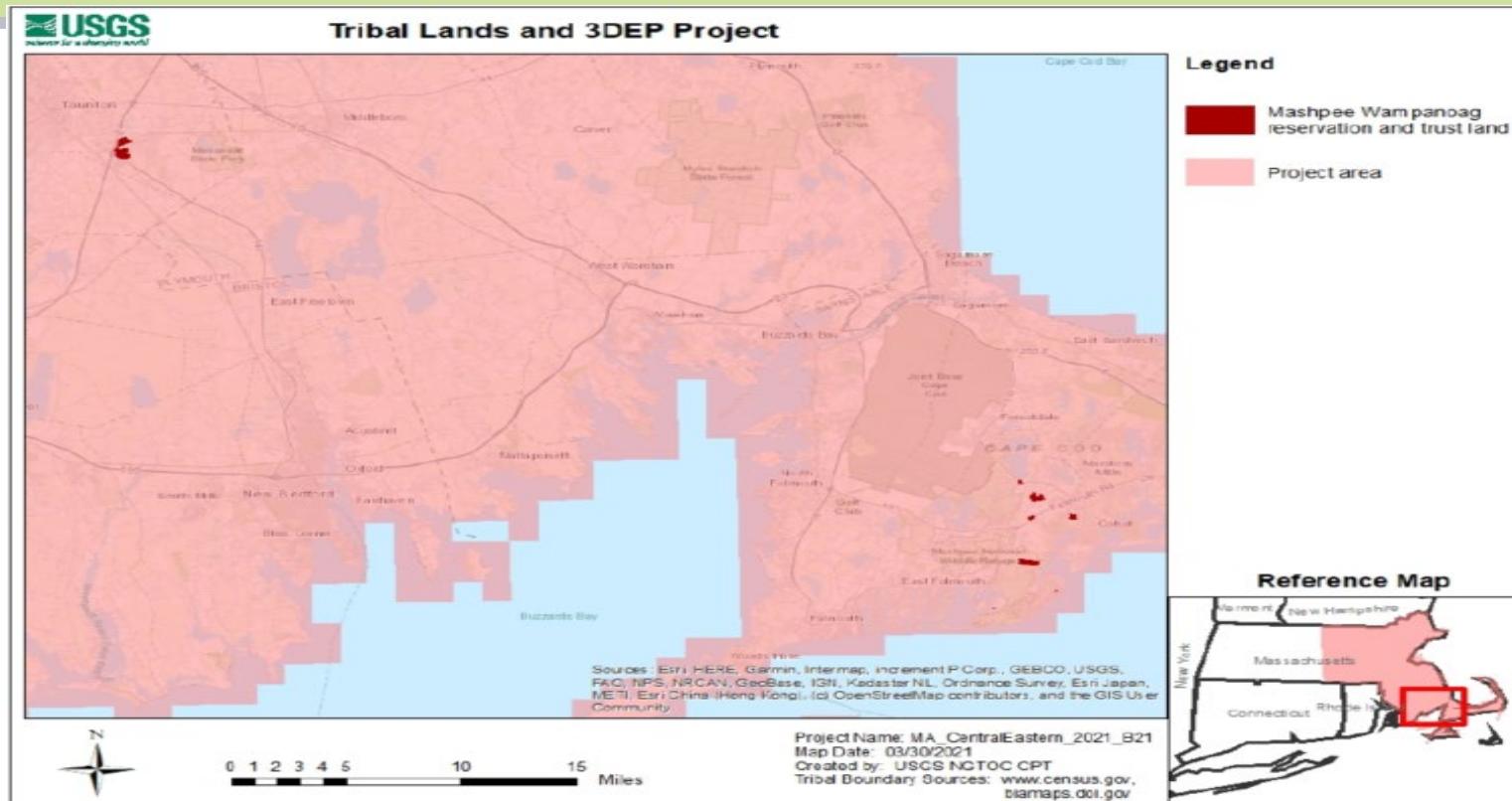


Mashpee Wampanoag Trust Lands

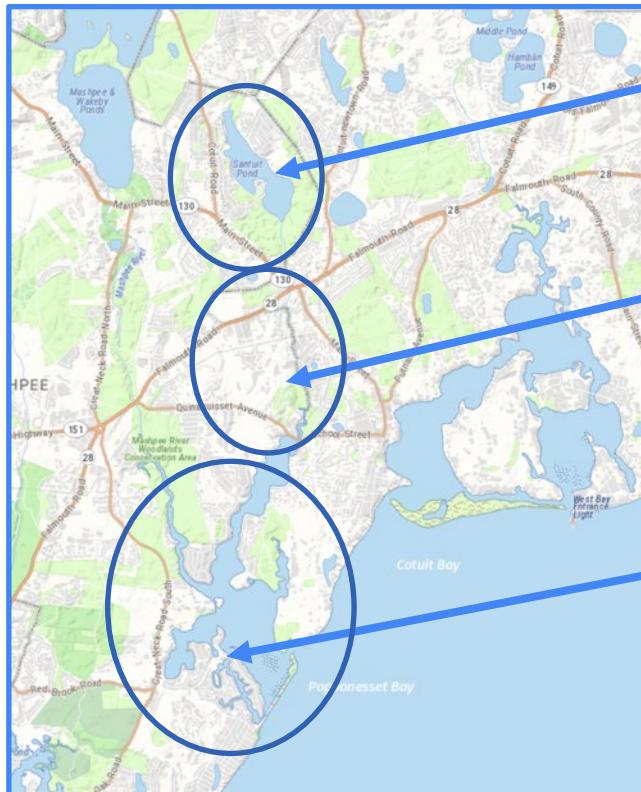


- Trust lands cover 321 Acres, 12 Parcels
- Partnership with town, state, and federal governments is essential for the Tribe to meet goals for water and land management.

Mashpee Wampanoag Trust Lands



Santuit Pond Project Location



Santuit Pond:
-Impaired for TP
-Herring Spawning
Habit

Santuit River: *-Herring Run Habitat*

Popponesset Bay:
- *Impaired for TN*
- *Nitrogen TMDL*
- *Shellfishing Habitat*

Santuit Pond Water Quality

- Frequent “No Swimming” Advisories due to HABs
- Listed as Impaired for fish passage, abnormal fish deformities, **chlorophyll-a**, **nutrient eutrophic** biological indicators, pH, total phosphorus, and clarity.
- Total Phosphorus - 50-500 ug/L
- 8 feet of sediment

- 170 acre fresh water Great Pond
- Maximum depth of approx. 9 ft



Development and a Legacy of Phosphorus



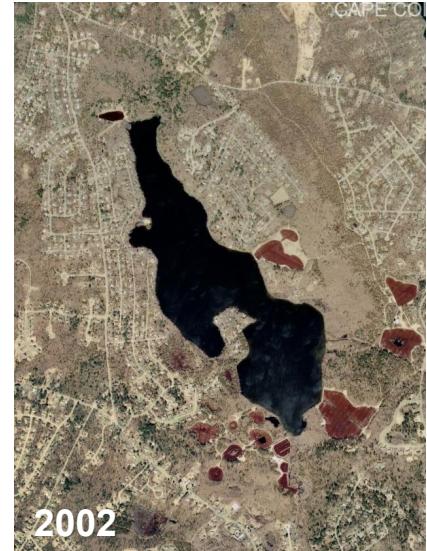
1952



1971



1984



2002

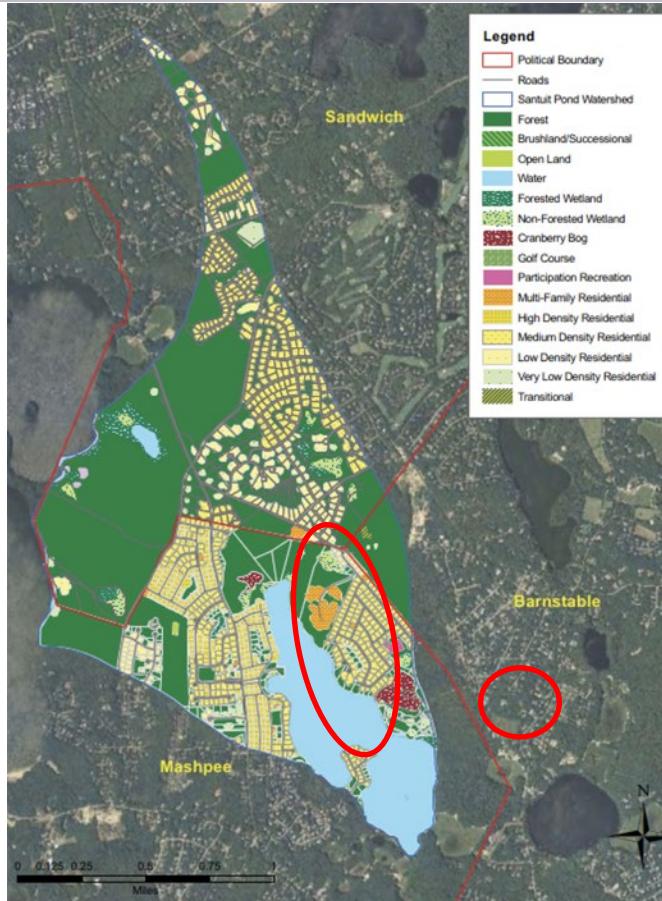
Source: Cape Cod Commission Chronology Viewer
(<https://ww2.capecodcommission.org/chronology/>)

Internal nutrient cycling from 50+ years of development
is the biggest source of phosphorus to the pond (78%)

Relationship Between Watershed and Water Quality

Santuit Phosphorus Load

- 78%: In-pond Nutrient Cycling (sediment)
- 13%: Stormwater Runoff (pavement, housing, landscaping)
- 5%: Septic Systems
- 3%: Cranberry bogs (fertilizer)



Source: *Lake Diagnostic Feasibility Study, AECOM, 2010*

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Santuit Pond: Actions Taken or Underway

Short Term < 5 years

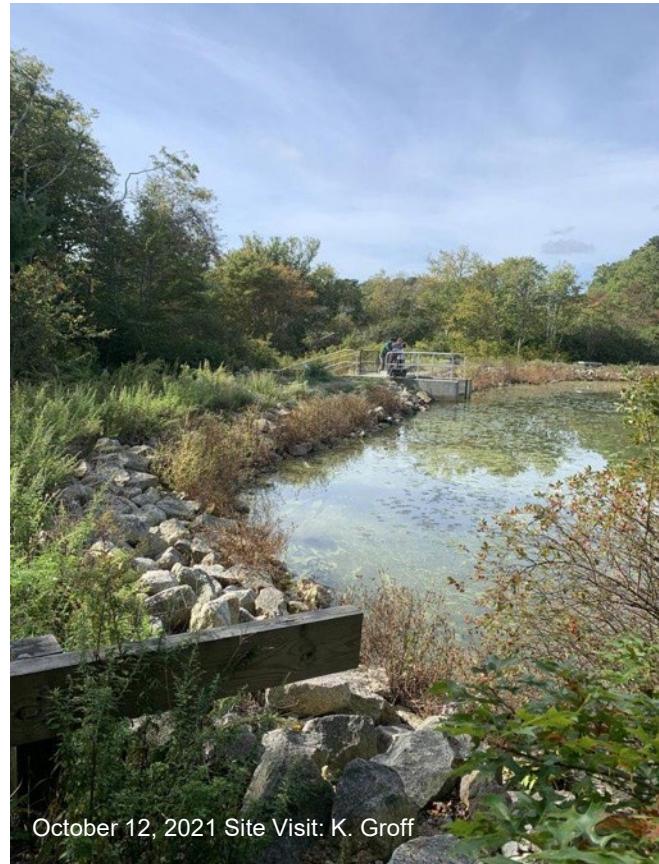
- Town - Installation of Solarbees - *Ineffective*
- ACOE/MWT - Sediment Dredging of Pond bottom - *Infeasible*
- Town - Enforcement of Septic System Maintenance - *by 2023*
- Town (FANDO) - MVP Action Grant - 5 Stormwater BMPs, 1 Design, Private Home GI Makeover, Public Education - *by June 2022*
- SNEP Network (ESS) - Feasibility Study of Interim Measures to address water column Phosphorus - *by February 2022*
- SNEP Network - Stormwater Training (UNH Stormwater Center) - *May 2022*
- SNEP Network - Draft Watershed Based Plan (KAG) - *Complete*

Long Term - >10 years

- Town Planning - Implementation of Sewer Collection (Nitrogen) - *Ongoing*
- Cranberry Bog Management - land purchased - *Ongoing*

Tribe - Town Partnerships to Advance Water Quality

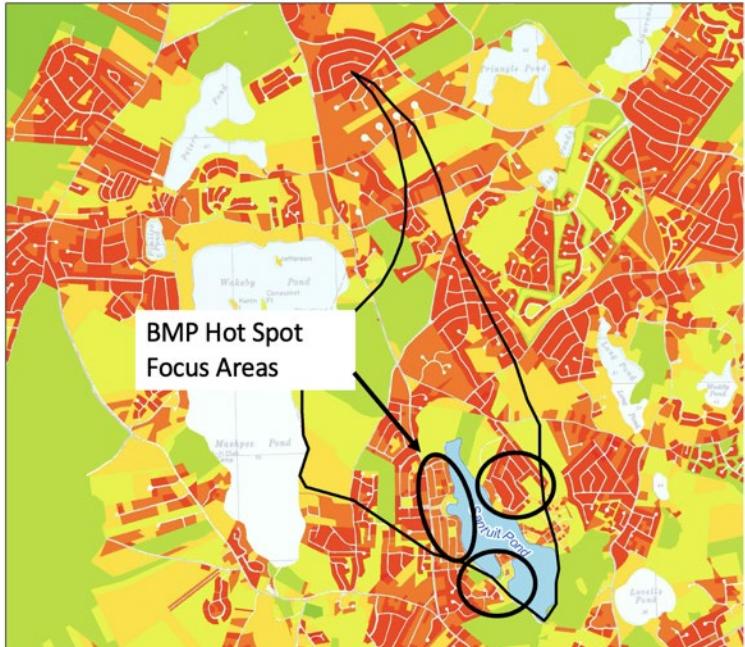
- **Partnerships Enhance Grant Applications**
- **Precious Natural Resource to the Tribe and Town**
- **History of Collaborations**
 - *Popponessett and Waquoit Bay Collaborative*
 - *Mashpee Wampanoag Tribe Aquaculture Grant*
 - *Mashpee River Sondes*



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Santuit Pond Watershed Based Plan

- Goal: Manage 91% of Phosphorus
- Alum Treatment for internal cycling
- Stormwater retrofit at 10-20 locations
- Public engagement
- Implementation schedule and budget



MASSACHUSETTS
watershed · based plans

Looking to the Future

Many More Ponds and Rivers at Risk in Mashpee

- Mashpee Pond Algae Blooms

Funding Opportunities

- Second Round of MVP funding
- Treatment as a State/EPA
- Lack of Land Ownership/Control

Continued Partnerships

- Town of Mashpee; SNEP Network; USGS; Fish & Wildlife



Key Lessons / Takeaways

Technical Assistance through SNEP MOA allowed Tribal Staff a hands on approach to evaluate and implement measures to address nutrient pollution.

Allowed capacity building to plan and manage water quality issues related to stormwater on a watershed scale.

Stormwater Planning Training Sessions helped the Tribe develop conceptual designs for stormwater retrofits and green infrastructure solutions

Assisted Tribe in creating a Draft Watershed Based Plan.

The Tribe was given a voice. We have the confidence to meet with engineers and project consultants and will be able to submit better grant proposals.

Key Contacts:

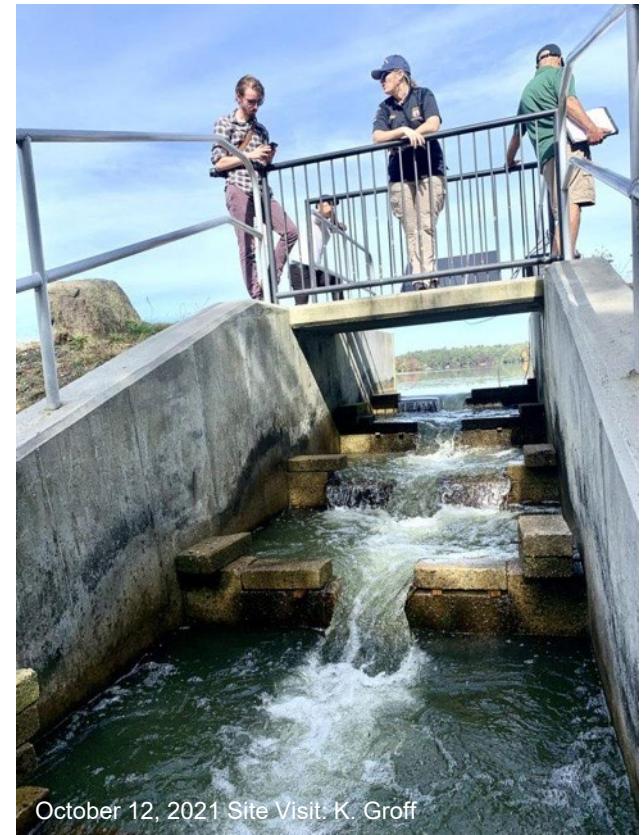
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Building a Resilient Rhode Island: Municipal Resilience Program



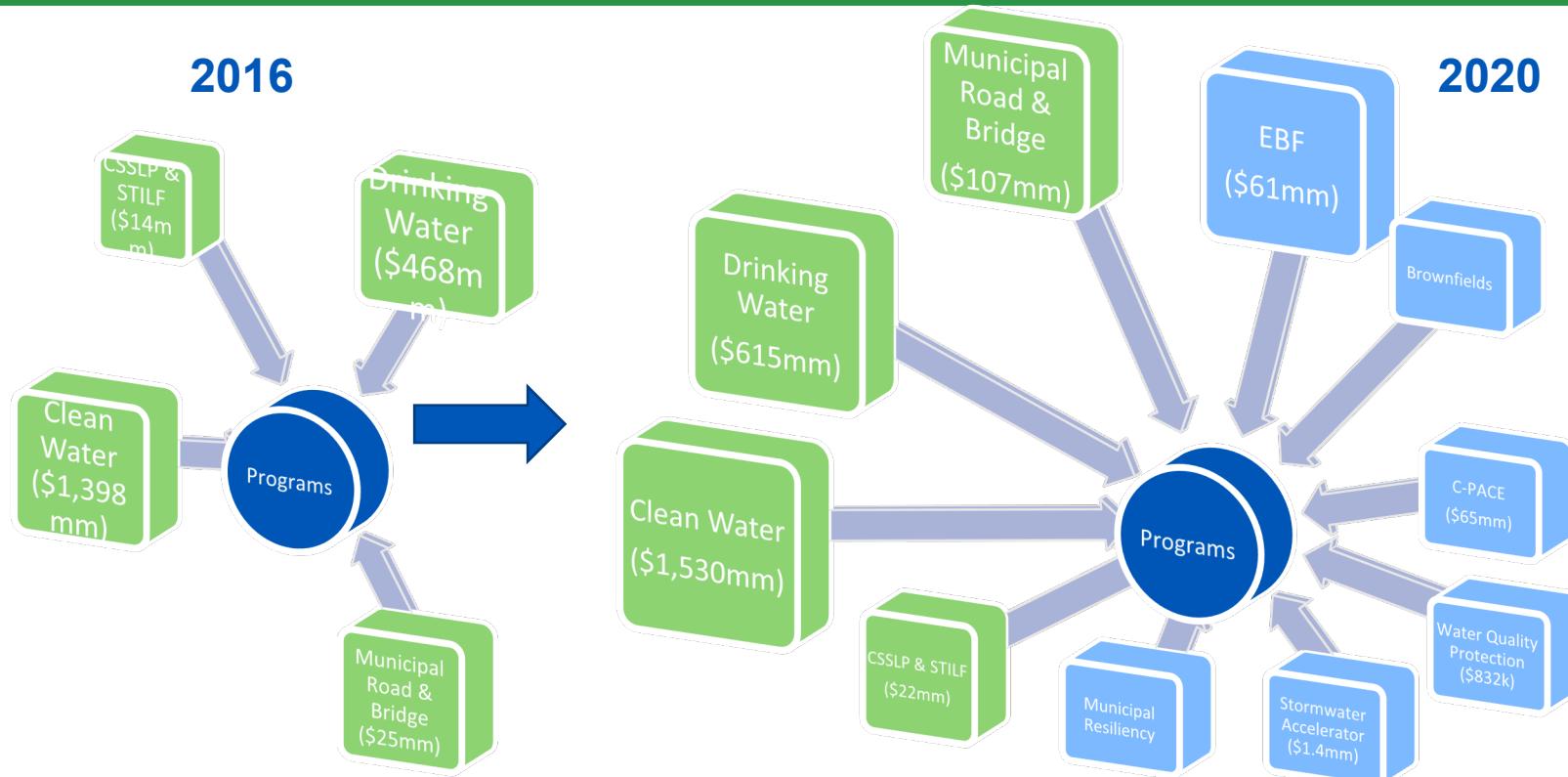
RHODE ISLAND
INFRASTRUCTURE BANK

About Rhode Island Infrastructure Bank

**Rhode
Island's
centralized
hub of local
infrastructur
e investment**



Expansion of RIIB's Programs, 2016-2020





RESILIENT RHODY

AN ACTIONABLE VISION FOR ADDRESSING THE
IMPACTS OF CLIMATE CHANGE IN RHODE ISLAND



Resilient Rhody → Municipal Resilience Program



RESILIENCE THEME:
Natural Systems



RESILIENCE THEME:
Community Health
and Resilience



RESILIENCE THEME:
Emergency Preparedness



RESILIENCE THEME:
Critical Infrastructure
and Utilities

Resilient Rhody:

- Resilient Rhody established key **climate resilience focus areas**
- **61 established goals**
- **Recognized need to support municipalities** in prioritizing local resilience actions to further these goals

Municipal Resilience Program – Primary Objectives:

1. **Identify and advances local priority resilience actions** that support the 61 statewide goals
2. **Open to all 39 municipalities** in RI





Municipal Resilience Program - Overview

MRP Workshops:

- **Identify** community hazards, strengths, vulnerabilities, and priority actions
- **Develop** localized resilience strategies

MRP Action Grants:

- **Fund** construction of shovel-ready capital projects with resilience benefits

MRP Project Pipeline:

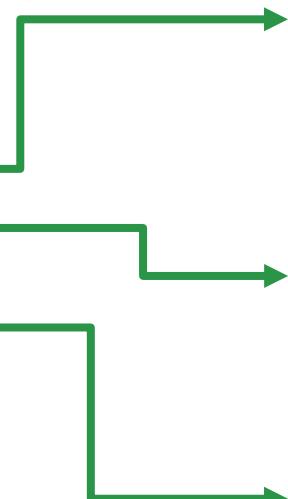
- **Support** municipalities to identify further funding/financing sources



Municipal Resilience Program - Process

Three Core MRP Stages:

1. Community Resilience Building Workshops
2. MRP Action Grants
3. Project Pipeline & Readiness for Resilience



How Workshop Information is Utilized:

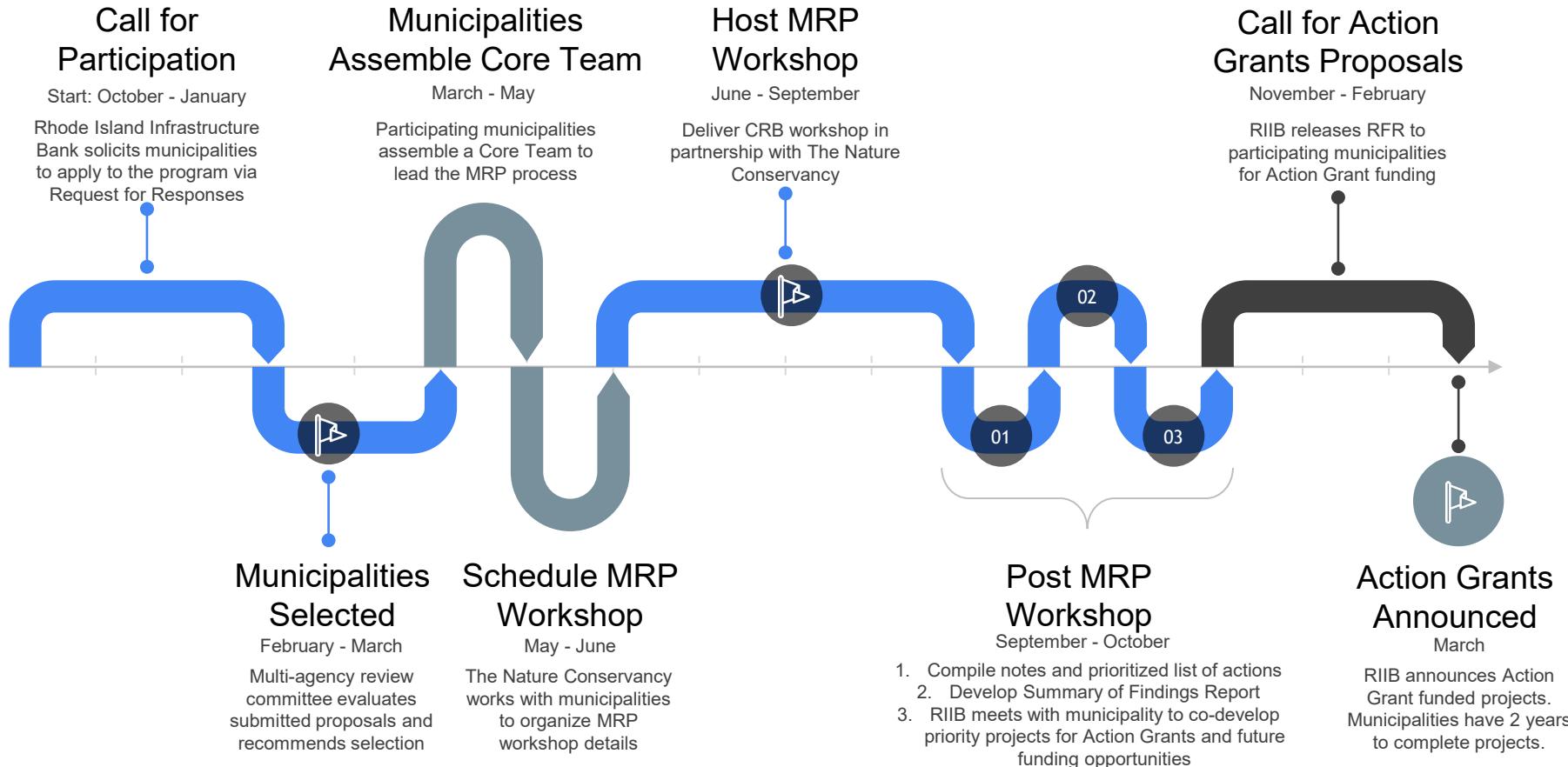
Actions are compiled into a **Summary of Findings Report** and are sorted into three major categories:

1. Capacity Building;
2. Capital Projects; and
3. Plans/Preparedness/Studies/Outreach (P/P/S/O).

Capital Project actions are considered for **RIIB MRP Action Grants**, which provide MRP municipalities ~\$200,000 to construct these projects.

MRP municipalities are notified of **state and federal grant opportunities** that can support their specific **Capacity Building**, **Capital Project**, and/or **P/P/S/O** actions. RIIB provides ongoing **technical assistance** to MRP municipalities to advance resilience actions.

Municipal Resilience Program - Timeline



Municipal Resilience Program - Requirements

MRP Participating Municipality Requirements:

- **Statements of support** from town leadership and other municipal stakeholders
- **Description of need** to address climate change driven and natural hazards, as well as description of vulnerable communities & **Description of how the municipality will use the results** of the process

MRP Action Grants Eligibility:

- **Shovel-ready, capital project that falls within the Bank's enabling legislation**
 - Need for Climate Change Adaptation / Vulnerability
 - Project Rationale & Benefits
 - Project Feasibility & Transferability
 - Community Outreach & Engagement
 - Incorporation of Nature Based Solutions
 - Project Partners

MRP Progress To Date

Projects Identified in Workshops:

- MRP 2019 → 5 municipalities; **52 Projects** totaling **~\$14mm in need**
- MRP 2020 → 8 municipalities; **151 Projects** totaling **~\$80mm in need**
- MRP 2021 → 7 municipalities; **158 Projects**, total TBA

Projects Implemented:

- To date, RIIB has committed **\$7.4mm in MRP Action Grant funding to priority resilience projects**
- The MRP has also catalyzed **over \$6mm in external funding sources to support 8 MRP identified projects**

Additional Program Funding:

- MRP received \$7mm from the 2021 Beaches Clean Water and Green Economy Bond (statewide Green Bond)
- MRP has received ~\$650k in federal and charitable funding to continue the program, expand program assistance services, and pilot new regional efforts
- Governor McKee has proposed \$16mm for MRP through the Green Bond as part of the FY23 State Budget

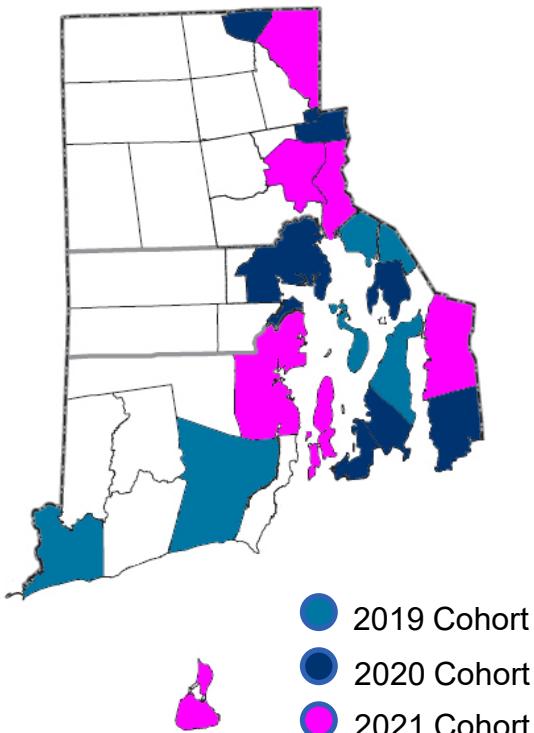
Current MRP Municipalities

2019 | *Westerly, South Kingstown, Portsmouth, Barrington & Warren*

2020 | *Bristol, Woonsocket, Little Compton, Warwick, Pawtucket & Central Falls, Newport, Middletown*

2021 | *Cumberland, East Providence, Jamestown, New Shoreham, North Kingstown, Providence, Tiverton*

2022 | *Burrillville, Charlestown, Gloucester, Lincoln, Narragansett, Richmond*

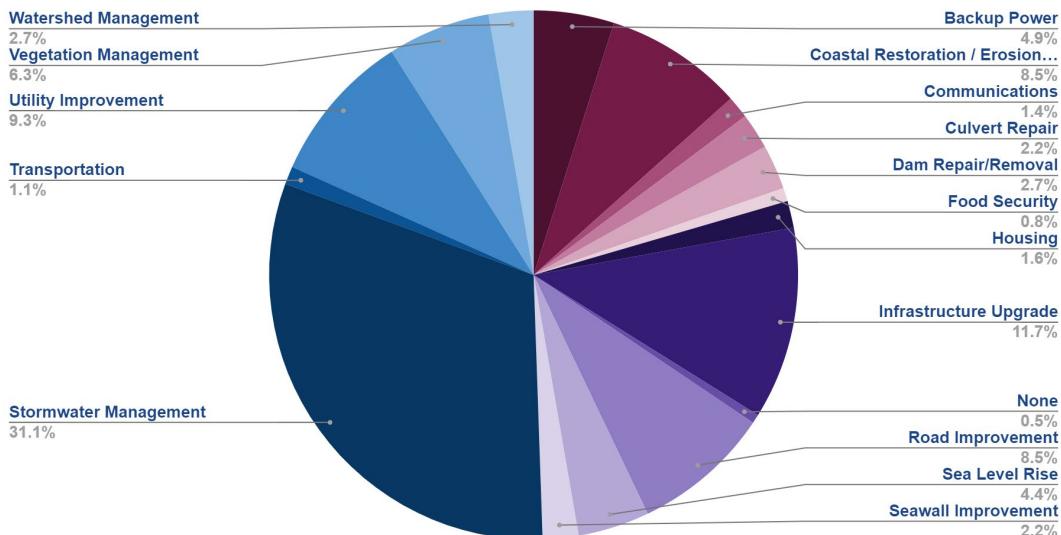


MRP Project Needs

Top 5 Project Types Identified through MRP, 2019-2021:

- 1. Stormwater Management = 114 projects**
- 2. Infrastructure Upgrades = 43 projects**
- 3. Utility Improvement = 34 projects**
- 4. Coastal Restoration / Erosion Control = 31 projects**
- 5. Road Improvement = 31 projects**

% MRP Identified Projects by Project Type, 2019-2021



Key Needs for Local Resilience

- Need to further **support inland municipalities** on resilience
 - While MRP municipalities are primarily coastal, inland municipalities experience hazards such as intense rainfall and snowfall events, flooding, high winds, invasive species, wildfires, etc.
 - Identification of statewide and regional issues can allow for streamlined approaches to pursuing funding
- Need for **increased local staff capacity** to manage local resilience work
 - Commonly identified need across MRP Summary of Findings reports
- Need for **further support for planning, design / engineering, and policy-based** initiatives
 - Resilience projects identified through MRP workshops are not always shovel-ready
 - With design and engineering support, communities could more readily seek funding for construction
 - Support for other resilience actions will advance systems-level resilience across communities

Municipal Resilience Program - The Vision

3 key areas of programmatic growth:

- 1. Expanding the MRP to all 39 municipalities** (increasing inland municipality engagement, increasing collaborative engagement between municipalities, etc.)
- 2. Expanding the breadth of technical assistance the MRP can offer** (including design & engineering assistance, identification of additional funding & financing sources, etc.)
- 3. Expanding local capacity for resilience building through regional resilience initiatives** (increasing support for regional resilience efforts through hiring Regional Resilience Coordinators, providing training to existing staff as needed to increase local capacity, etc.)

These programmatic expansions will further increase local ability to identify, implement, and manage resilience projects.

Achieving the Vision

Funding sources for these 3 key areas of programmatic growth:

- 1. Expanding the MRP to all 39 municipalities – FEMA Building Resilient Infrastructure and Communities grant**
- 2. Expanding the breadth of technical assistance the MRP can offer – National Fish and Wildlife Foundation National Coastal Resilience Fund grant**
- 3. Expanding local capacity for resilience building through regional resilience initiatives – local charitable foundation grant**

Expanding to all 39 Municipalities

We've applied and been awarded a FEMA Building Infrastructure and Communities grant to support:

- **Workshops for the remaining 19 MRP municipalities** (20 have completed workshops to date)
 - Workshop preparation, facilitation, and preparation of Findings reports
- **Increased MRP technical assistance** to help MRP municipalities pursue funding for identified actions & projects
 - Support for municipalities to pursue state and federal funding sources



FEMA



**RHODE ISLAND
INFRASTRUCTURE BANK**

Expanding Technical Assistance



SHORELINE ADAPTATION, INVENTORY AND DESIGN

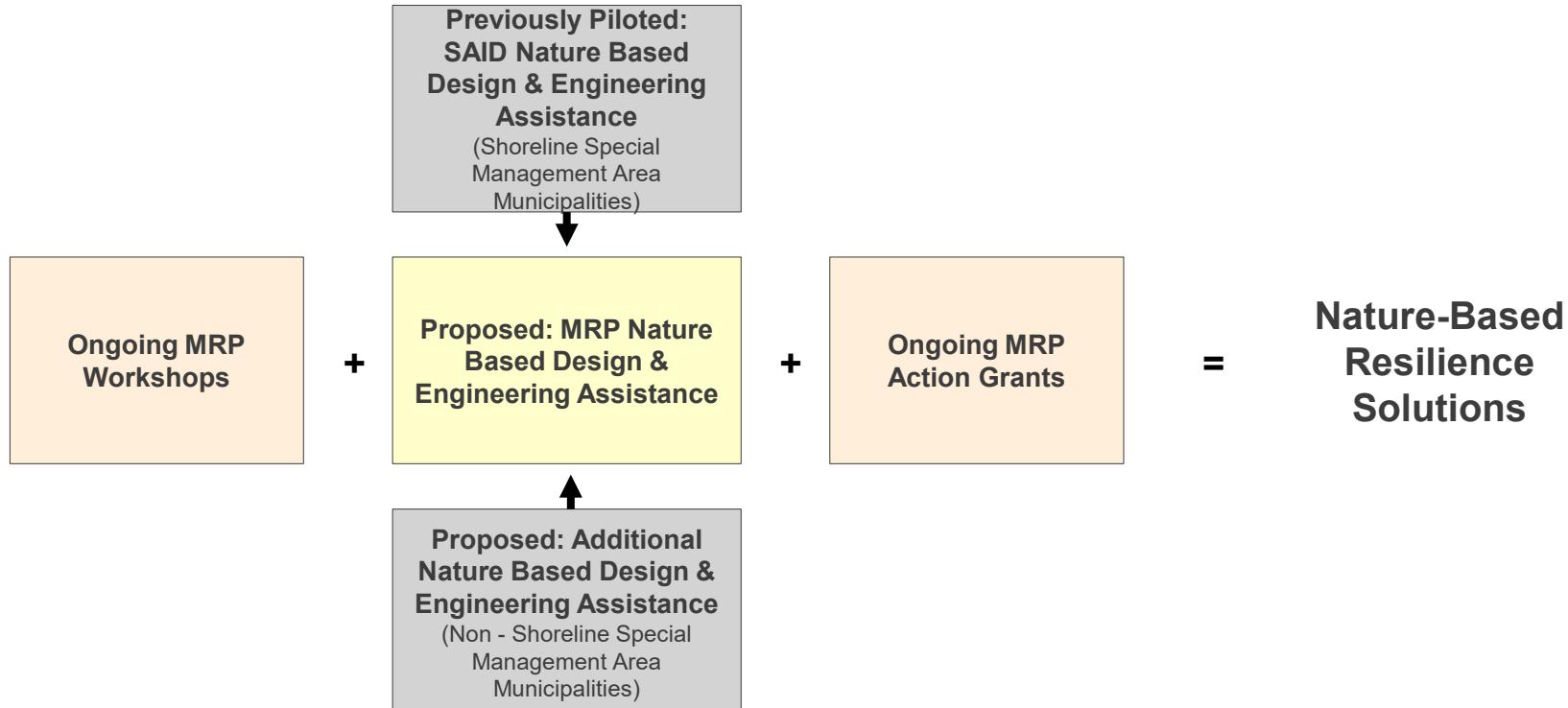
A PARTNERSHIP BETWEEN CRMC, URI CRC / SEA GRANT, SAVE THE BAY AND RWU
FUNDED BY THE NATIONAL FISH AND WILDLIFE FOUNDATION



Our NFWF National Coastal Resilience Fund grant will support:

- A centralized nature-based solutions resilience program for RI
- Site visioning, design / engineering, and permitting assistance for nature-based solutions resilience projects
 - Building on the piloted Shoreline Adaptation, Inventory, and Design program
- Capacity building for the implementation of nature-based solutions

Expanding Technical Assistance



Capacity Building & Regional Resilience

Through the support of a local charitable foundation, we've launched our Aquidneck Island Regional Resilience Coordinator position:

- Two-year position, which launched in April 2022
- Technical Assistance for the advancement of intra- and inter- municipal resilience actions & projects
- Resilience Updates & Technical Assistance Packages
- Through this position, the Bank aims to generate a model for Regional Resilience Coordination within the MRP

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SNEP Network

Making Space for Resilience: A Capacity Assessment Framework for the Town of Mansfield, MA

May 18, 2022 | SNEP Symposium

Tess Clark, Program Manager, Syracuse University Environmental Finance Center
&

Katelyn Gonyer, Conservation and Environmental Planner, Town of Mansfield





What to Expect from Our Talk:

1. *The SNEP Network: Our Approach to Capacity Building*
2. *Why Capacity Assessment? Mansfield's Climate Needs and Resilience Goals*
3. *Project Goals, Methods, and Process*
4. *Engagement*
5. *Preliminary Results and Findings*
6. *Reflections*

What types of activities do YOU think about when you think about Capacity Building?



What is Capacity Building?



- Capacity Building is both a process and an outcome.¹
- Made up of activities that strengthen the **knowledge, abilities, skills and behavior** of individuals, and improve institutional structure and processes, so that the organization can efficiently meet its goals in a sustainable way.²
- As a climate-change focused effort, our process is also informed by **adaptive capacity**-- a system's ability to respond to stress or take advantage of opportunities





Why Does Mansfield need an OCA?

- In the last few years, the Town of Mansfield's Conservation Department's responsibilities have increased directly related to the growing need to provide the community with climate change resiliency planning strategies.
- New programs/responsibilities stemming from climate change resiliency planning include: MVP program, MS4 permit, open space management, new stormwater management regulations, regional collaborations (i.e. SNEP Canoe River Aquifer Resilience Project).
- These impacts continue strain the town's resources, especially the Department of Public Works (DPW) budget and staff.

Complex Climate Change Impacts

- Complex, water-rich hydrogeology from the Canoe, Rumford and Wading Rivers, as well as many small brooks which are all part of the Taunton River Watershed.
- Mansfield has also been subject to intense development pressure and has mixed commercial use including the Mansfield Municipal airport, I495/95, Route 140, 106 the Xfinity center and the expanded MBTA station.





Organizational Capacity Assessment (OCA)

The outcome of this OCA will prepare the Town for the increased responsibilities and resources needed to effectively respond to the impacts of climate change.

Individual goals of the OCA:

- provide a systematic analysis and internal review of relevant initiatives and key program functions
- identify current strengths, weaknesses, opportunities and threats to help develop a decision-making tool for future forecasting
- identify opportunities to create more efficient work flows within key departments
- help facilitate the acquisition of funding and financing resources, including how to finance a new staff position and/or increase annual budgets
- assist DPW in managing the anticipated increased cost of repairing and replacing failing infrastructure due to severe climate change conditions



Capacity Assessment Framework

- Capacity Assessment Goal: through a limited-scope capacity assessment, identify processes and actions that will serve as a roadmap for the Town's next steps in climate resilience and lead to improved stormwater management and enhanced climate resilience.
- Syracuse University Environmental Finance Center (SU-EFC) completed an inventory of stormwater and resilience planning activities along with a “SWOT-inspired” analysis of each initiative and the challenges, responsibilities, and progress made in terms of climate resiliency.



Mansfield's Adopted Plans	Not Current or Not Available:
<input checked="" type="checkbox"/>	
2020 Master Plan	Hazard Mitigation Plan
2016 Open Space and Recreation Plan	Climate Adaptation Plan/ Resilience Plan
Mansfield MVP Report	
Mansfield Stormwater Management Plan	



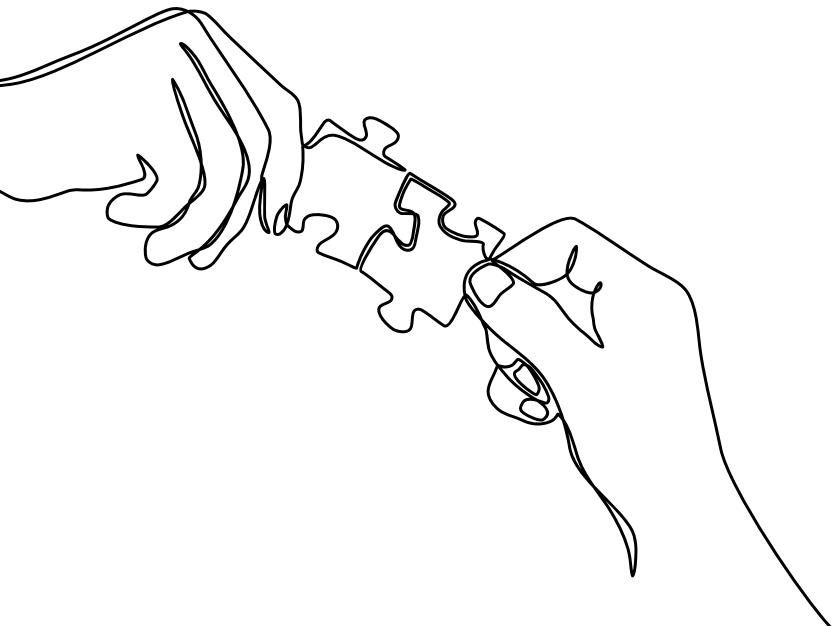
*"It strikes me that the **Only** real reason to take apart a pocket watch, or a car engine, aside from the simple delight of disassembly, is to find out how it works. To understand it, so you can put it back together again better than before, or build a new one that goes beyond what the old one could do."*

- Kurt Busiek





Taking everything apart; and then putting it back together: Inventory Development

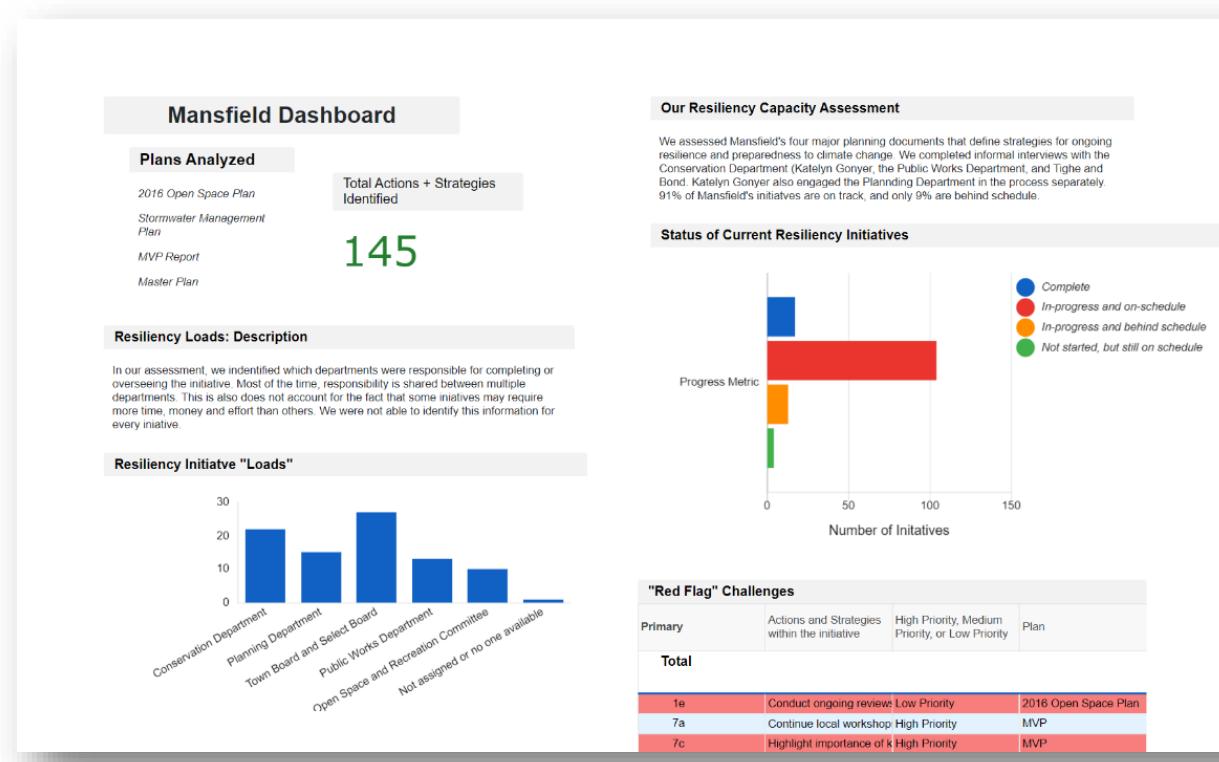


- We assessed: each planning document by their major stated initiatives- or the major building blocks of the planning document that describe a desired end state, and that enumerate specific actions and strategies.
- We asked: what actions and strategies on this list pose a major challenge? What actions and strategies on this list represent a high priority for climate preparedness?
- We engaged: The Town Manager, the Conservation Department, The Department of Public Works, the Planning Department, and the Town's stormwater consulting firm Tighe & Bond

Preliminary Findings



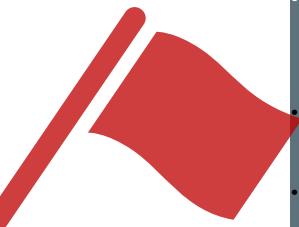
- Our analysis identified 38 unique initiatives that together enumerate 145 strategies and actions.
- We published an [interactive dashboard](#) with our data inputs and live inventory.
- 91% of Mansfield's actions and across the four planning documents are complete or on-schedule
- Low-priority actions that are behind schedule may pose a greater stress on capacity, as they may be important to operations but not integral to the process of preparing for climate related risks



Preliminary Findings



- Outreach-oriented tasks make up a significant component of behind-schedule tasks, including outreach related to developing signage and way-finding on trails, hosting on-site events, and drawing attention to watershed connections between Mansfield's critical waterways.
- Many of Mansfield's "red flag" challenges—actions that staff believe may be challenging to complete—are related quickly evolving regional initiatives, outreach, and in some technical assessments related to the Massachusetts Vulnerability Preparedness process.
- Even some actions that are still proceeding in a timely manner can pose challenges- 2 of the 7 "red flag" actions are on schedule.



"Flagged" Actions and Strategies	Priority	Plan	Progress
• Conduct ongoing reviews of existing open space parcels, including trail conditions, parking and equipment safety.	Low Priority	2016 Open Space Plan	In-progress and behind schedule
• Continue local workshops with Canoe River Aquifer Advisory Committee (CRAAC) to increase outreach, tax payer education through local cable and other outreach	High Priority	MVP	In-progress and on-schedule
• Highlight importance of keeping local water local for better water quality and increased quantity	High Priority	MVP	In-progress and behind schedule
• Draw attention to the connection between the Three Mile River and the Taunton River through public education, special focus on middle school aged students	High Priority	MVP	In-progress and behind schedule
• Complete a baseline assessment of dams and bridges; fill in gaps of existing assessments done at different frequencies around town	High Priority	MVP	In-progress and on-schedule
• Create a more consistent methodology for monitoring and maintaining critical infrastructure	High Priority	MVP	In-progress and behind schedule

Notable Recommendations



Develop and refine community planning to address the diverse nature of resilience, thereby encompassing environmental, social, and economic issues.

- As the Town pursues a Hazard Mitigation Planning grant, there is a clear opportunity to center climate change impacts in the Town's planning activities. This effort should address the "red flag" actions identified in this analysis, and, to the extent possible, align with ongoing regional resiliency efforts.

In the next 5 years, the Town should assemble a resiliency financing workgroup to explore long-term financing solutions such as a new financing institution or enterprise program.

- As the Town continues to develop a portfolio of climate-resilient initiatives, a strategic approach will be needed to ensure that dedicated financial resources are available to make resilient infrastructure investments. Mansfield should consider the process undertaken by the nearby coastal [Town of Bourne](#), MA, and participate in a strategic effort to assess the benefits of establishing an enterprise fund, model its corporate structure, and assess potential revenue streams

Implement a short-term outreach "blitz": develop key messages, share success stories, and bolster stakeholder engagement around the upcoming HMP process.

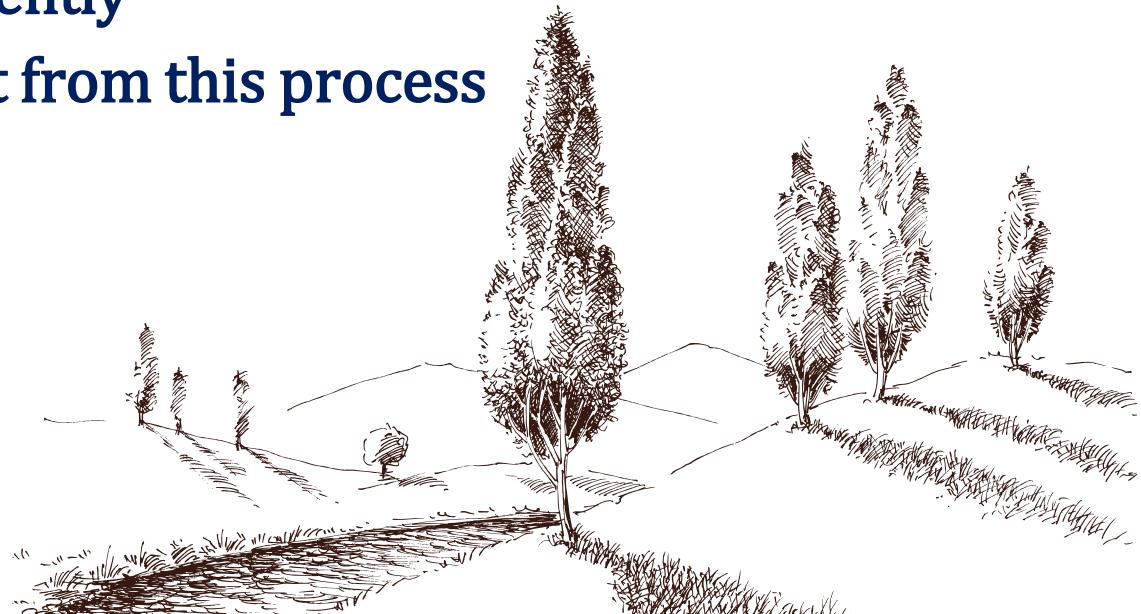
- Outreach is one of the main types of tasks that stress current capacity at the Town, but the good news is that a short-term "push" can have long-term benefits. The town can tap into existing technical assistance offerings or engage volunteer board members.

Lastly, 2 of our recommendations highlighted the need for expanded staffing within the next 5 years, and we suggested potential roles based on existing goals of the 2020 Masterplan.

Reflections



- **What we can learn**
- **What we will do differently**
- **Who else could benefit from this process**



Contact Us



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