



MassDEP Resources for Green Infrastructure Planning & Development

Dr. Padmini Das
Judy Rondeau

Nonpoint Source Management Program

Stormwater Financing Workshop
Mass Rivers Alliance
July 13, 2023





Bureau of Water Resources
(BWR)

Division of Watershed Management
(DWM)

Watershed Planning Program
(WPP)

Nonpoint Source (NPS) Section

604(b) and 319 Grant Program





Watershed Planning Program

We are stewards of the water resources of Massachusetts. Together with other state environmental agencies, we share in the duty and responsibility to protect, enhance, and restore the quality and value of the waters of the Commonwealth. We are guided by the federal Clean Water Act and work to secure the environmental, recreational, and public health benefits of clean water for the residents of Massachusetts.

Richard O. Carey, Ph.D.
Director, Watershed Planning Program

**Surface Water
Quality Standards
Section**

**Water Quality
Monitoring
Section**

**Data Management
and Water Quality
Assessment
Section**

**Total Maximum
Daily Load
Section**

**Nonpoint Source
Management
Section**

Nonpoint Source Management Section Watershed Planning Program



Dr. Padmini Das,
NPS Section Chief



Malcolm Harper,
319 Program
Coordinator



Meghan Selby,
604(b) Program
Coordinator



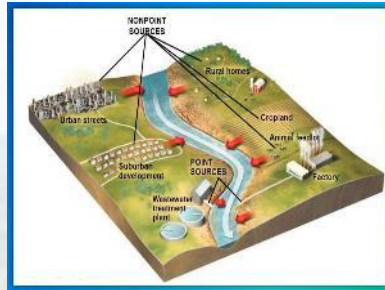
Judy Rondeau,
NPS Outreach
Coordinator

Grants





Stormwater Management Grants



Point Source Management

NPDES MS4 Permit

Grant - Stormwater MS4 Municipal Assistance Grant Program

- Projects that meet MS4 permit requirements
- planning
 - resource sharing
 - implementation

Grant - Water Quality Monitoring Grant

- Monitoring of rivers, streams, lakes, ponds, and estuaries
- Capacity-building actions

Nonpoint Source Management

604(b) Water Quality Management and Planning Grant Program

Water Quality Assessment

Healthy Watershed Protection Planning

Implementation Design and Planning

Watershed-Based Plan (nine-element)

Climate Resiliency Planning

Environmental Justice Capacity Building

319 NPS Pollution Competitive Grant Program

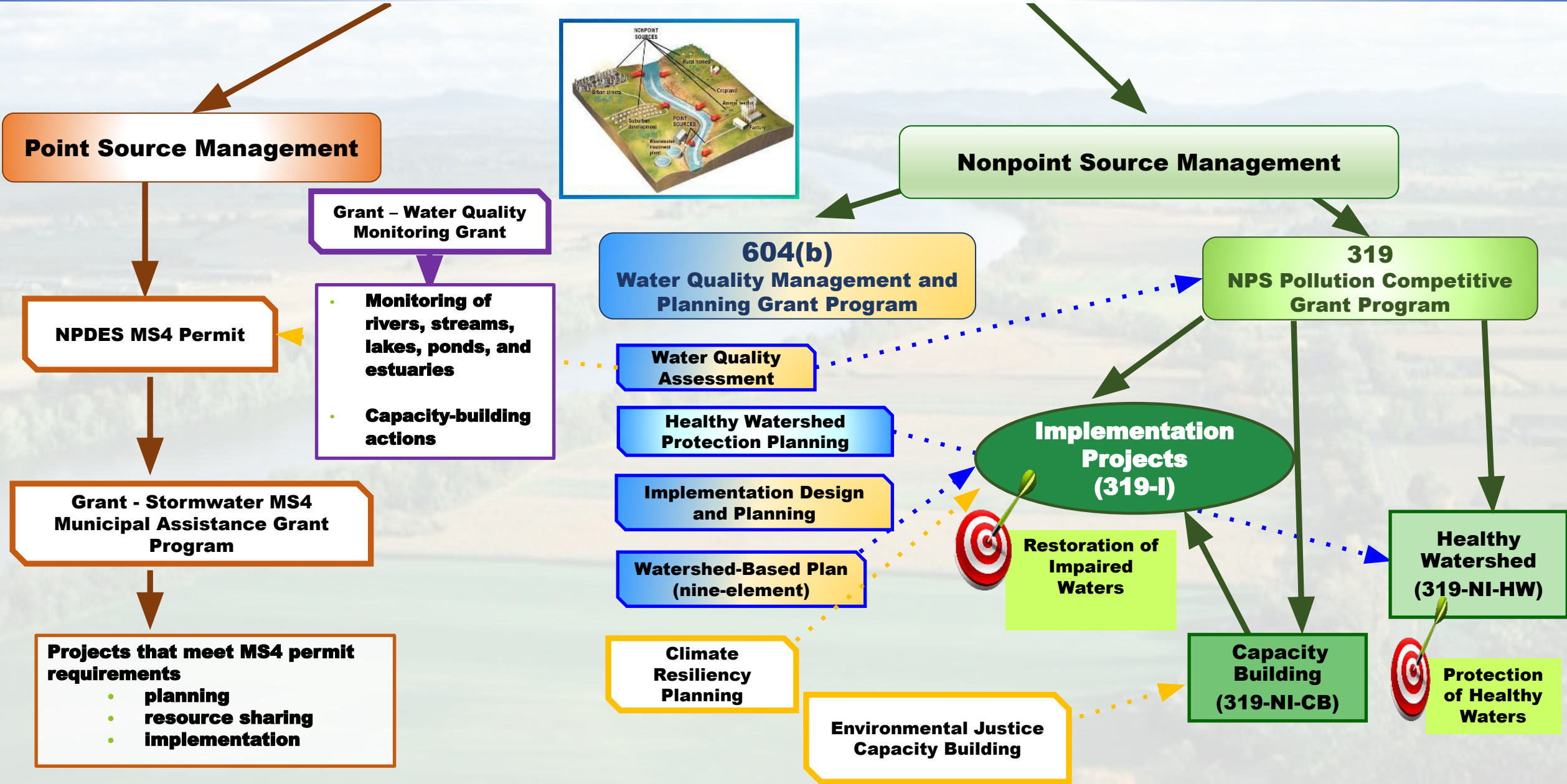
Implementation Projects (319-I)

Restoration of Impaired Waters

Capacity Building (319-NI-CB)

Healthy Watershed (319-NI-HW)

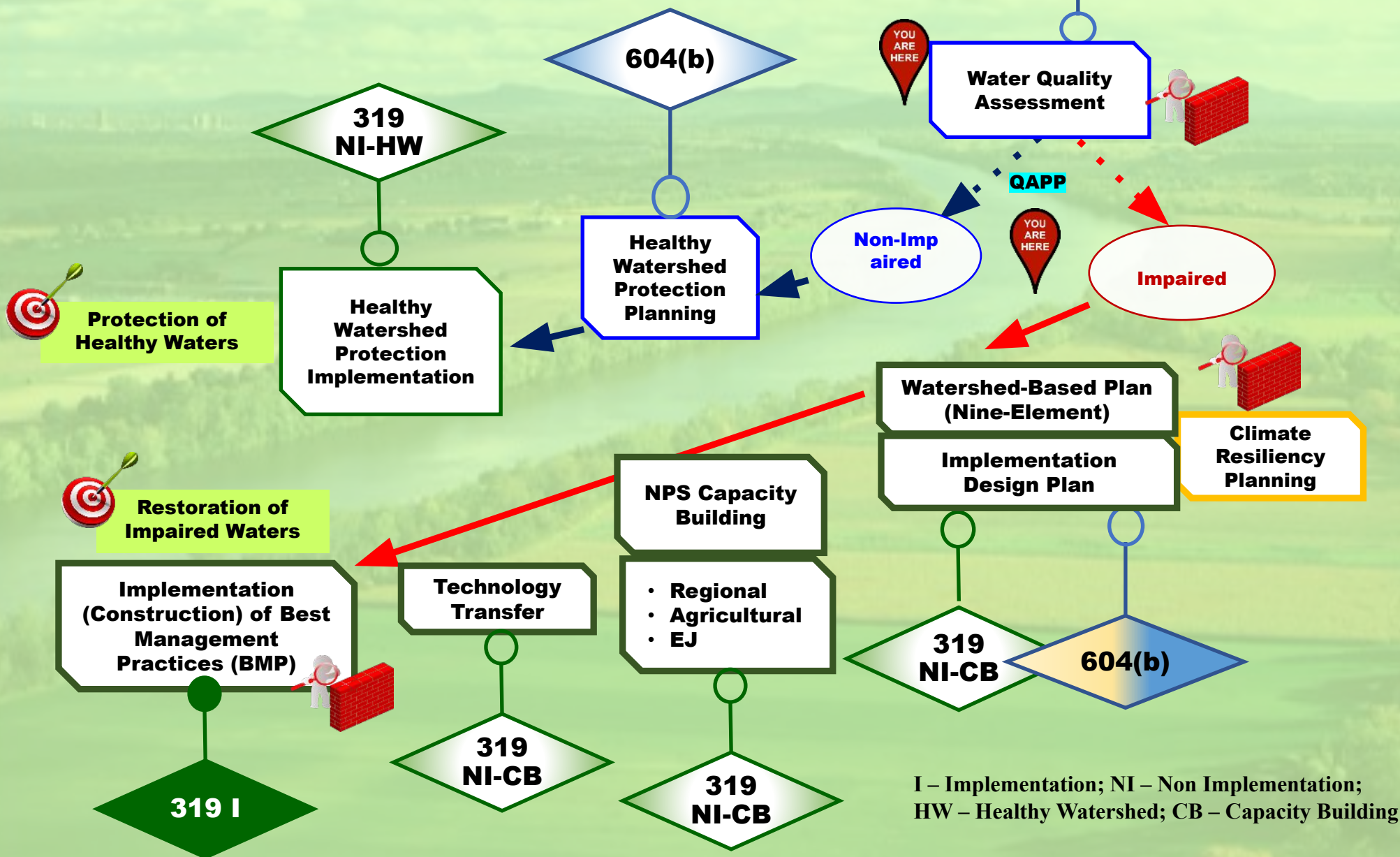
Protection of Healthy Waters





NPS Roadmap

Meeting Communities Where They Are



Tools

- Integrated List of Waters (303(d) List)
- Watershed-Based Plan Tool
- RMAT Tool
- Mass Stormwater Handbook
- Mass Clean Water Toolkit
- Mass EJ Definition and Tool

I – Implementation; NI – Non Implementation; HW – Healthy Watershed; CB – Capacity Building



EJ



Coordinators

604(b) - BIL



Eligible Entities
Regional Planning Agencies



Community Needs Assessment



Water Quality Assessment

- Develop a **General QAPP** and get it approved.
- Provide training to communities to monitor water quality.
- Collect data and submit it to MassDEP to be listed.



Watershed-Based Plan

- Develop **Nine-Element Watershed-Based Plan**
- Develop **Alternative WBP** if appropriate (for example, for a historically unrepresented urban pollutant that is relevant to the community)



Resilient Implementation Design

- Develop **climate-resilient implementation project** design using the **RMAT Tool**
- Develop a plan for **Adaptive Management of BMPs**



Community Needs Assessment

Watershed-Based Plan

- Develop **Nine-Element Watershed-Based Plan**
- Develop **Alternative WBP** if appropriate (for example, for a historically unrepresented urban pollutant that is relevant to the community)



Resilient Implementation Design

- Develop **climate-resilient implementation project** design using the **RMAT Tool**
- Develop a plan for **Adaptive Management of BMPs**



Develop 319-I Grant Proposals and Submit

- Develop, write, and submit **at least two** grant proposals for 319 implementation projects that will directly benefit the EJ communities, who should be involved in this process through active collaboration.

Capacity Building (319-NI-CB)



Eligible Entities
Regional Planning Agencies
Watershed Associations
Environmental Support Groups



Active & Inclusive



Active & Inclusive



Active and Inclusive Community Engagement

**Beyond
Flyers**



**Community
Youth
Engagement**



**Citizen
Science**



**Equity
Modifiers**



**Facilitating
Participation
of All**



**Overcoming
Linguistic
Isolation**



**Universal
Signage**





NPS Case Studies





Recent Project - CWA S.604(b)

Greening Natick Streets - Town of Natick & CRWA (2019-03/604)

Project Summary:

- ▶ Conducted an existing conditions assessment for Pond Street
- ▶ Developed a conceptual green street design
- ▶ Created green stormwater infrastructure guide
- ▶ Conducted a green stormwater infrastructure outreach campaign

Proposed Pollutant Load Reductions:

- ▶ TP: 4.9 lb/yr
- ▶ TN: 29 lb/yr
- ▶ TSS: 3,914 lb/yr
- ▶ E. coli: 319,278 billion colonies/yr

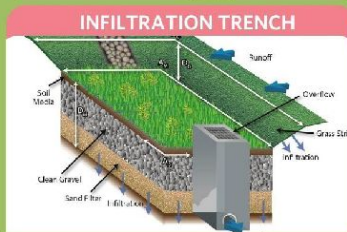
| | | |
|--------------------|-----------------|---|
| Total Cost: | \$37,820 | |
| Funding: | \$27,300 | U.S. Environmental Protection Agency |
| | \$10,520 | Town of Natick |

GREENING NATICK STREETS NATURE-BASED SOLUTIONS IN NATICK



WHAT?

Green Streets incorporate plant-based stormwater treatment systems and alternative roadway designs to help slow car traffic, promote non-carbon based transportation (like walking and biking), beautify the neighborhood, and improve the quality of local water bodies. The following Green Stormwater Infrastructure designs are two that the town of Natick is considering.



WHERE?

Pond Street in Natick has been identified as a potential opportunity site to add rain gardens and infiltration trenches.

BENEFITS

- Green Streets provide the following benefits:
- Clean stormwater of sediment, trash, and pollutants before it flows into Dug Pond and Fiske Pond
 - Recharge the groundwater
 - Mitigate flooding in Natick
 - Build climate resilience

LEARN MORE ABOUT STORMWATER IN NATICK

natickma.gov/315/Stormwater-Management



This project has been reviewed and approved by the U.S. Environmental Protection Agency (EPA) as a Model Stormwater Best Management Practice (BMP) for the Town of Natick, Massachusetts. The design and construction of this project was funded by the U.S. Environmental Protection Agency (EPA) and the Town of Natick. The design and construction of this project was funded by the U.S. Environmental Protection Agency (EPA) and the Town of Natick.





Recent Project - CWA S.604(b)

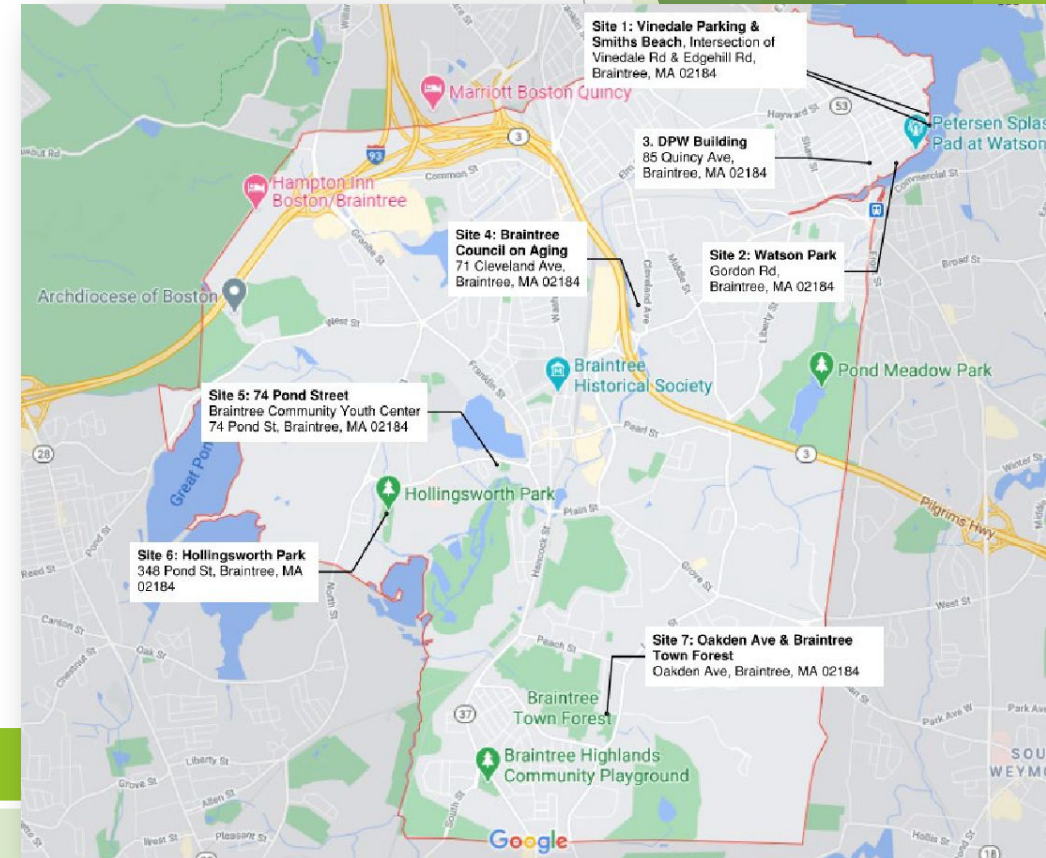
Braintree Sub-watershed Assessment & Stormwater Retrofit (2019-05/604)

Project Summary:

- ▶ Identify & prioritize potential sites
- ▶ Identify & evaluate town-owned sites
- ▶ Develop conceptual designs & cost estimates
- ▶ Conduct a public engagement program

Proposed Pollutant Load Reductions:

- ▶ TP: 84 lb/yr
- ▶ TN: 182 lb/yr
- ▶ TSS: 31,657 lb/yr
- ▶ E. coli: 2 billion colonies/yr



| | | |
|--------------------|-----------------|--------------------------------------|
| Total Cost: | \$39,881 | |
| Funding: | \$30,623 | U.S. Environmental Protection Agency |
| | \$9,258 | Town of Braintree |

Current Project - CWA S.319

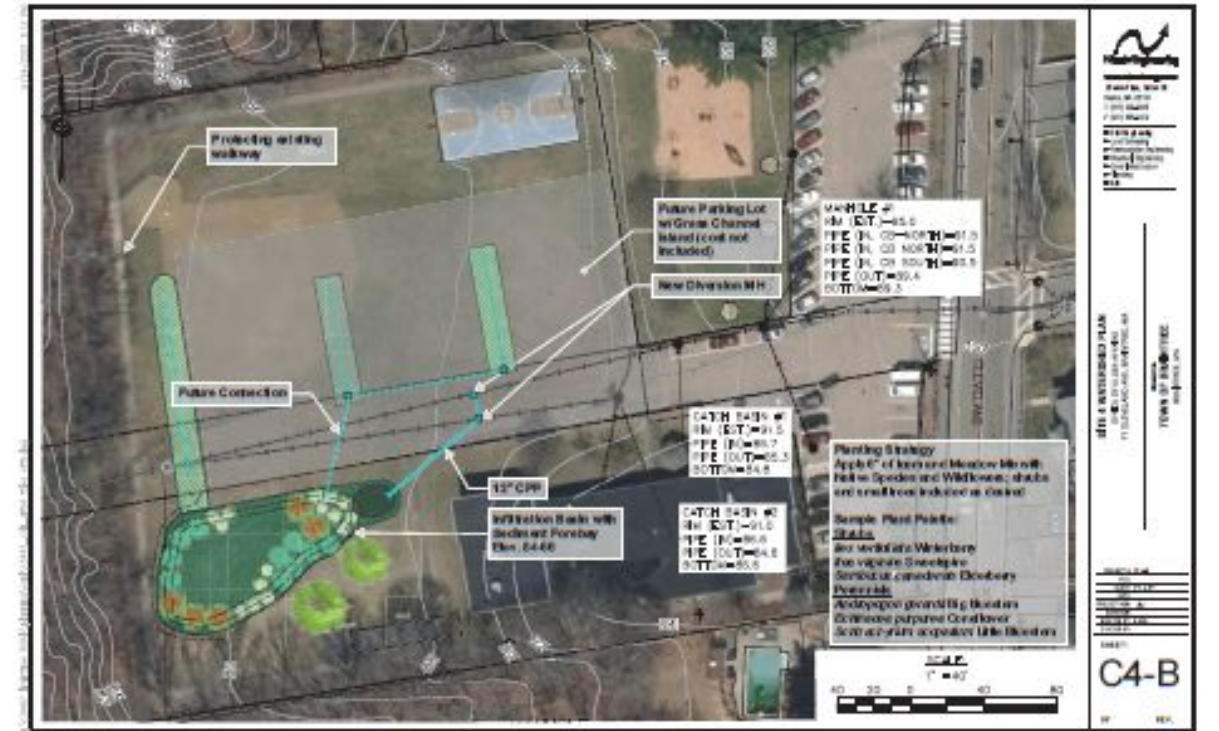
Braintree Council on Elder Affairs
 Retrofit- Town of
 Braintree (2022-06/319)

Project Summary:

- ▶ Completed conceptual design and installed BMPs for one site identified during Sub-watershed Assessment & Stormwater Retrofit project
- ▶ Developed and implemented a long-term Operation and Maintenance Plan

Proposed Pollutant Load Reductions:

- ▶ TP: 34 lb/yr
- ▶ TN: 66 lb/yr
- ▶ TSS: 11,280 lb/yr
- ▶ E. coli: 172,980 billion colonies/yr



| | | |
|--------------------|------------------|--------------------------------------|
| Total Cost: | \$233,765 | |
| Funding: | \$138,250 | U.S. Environmental Protection Agency |
| | \$95,515 | Town of Braintree |

Current Project - CWA S.319

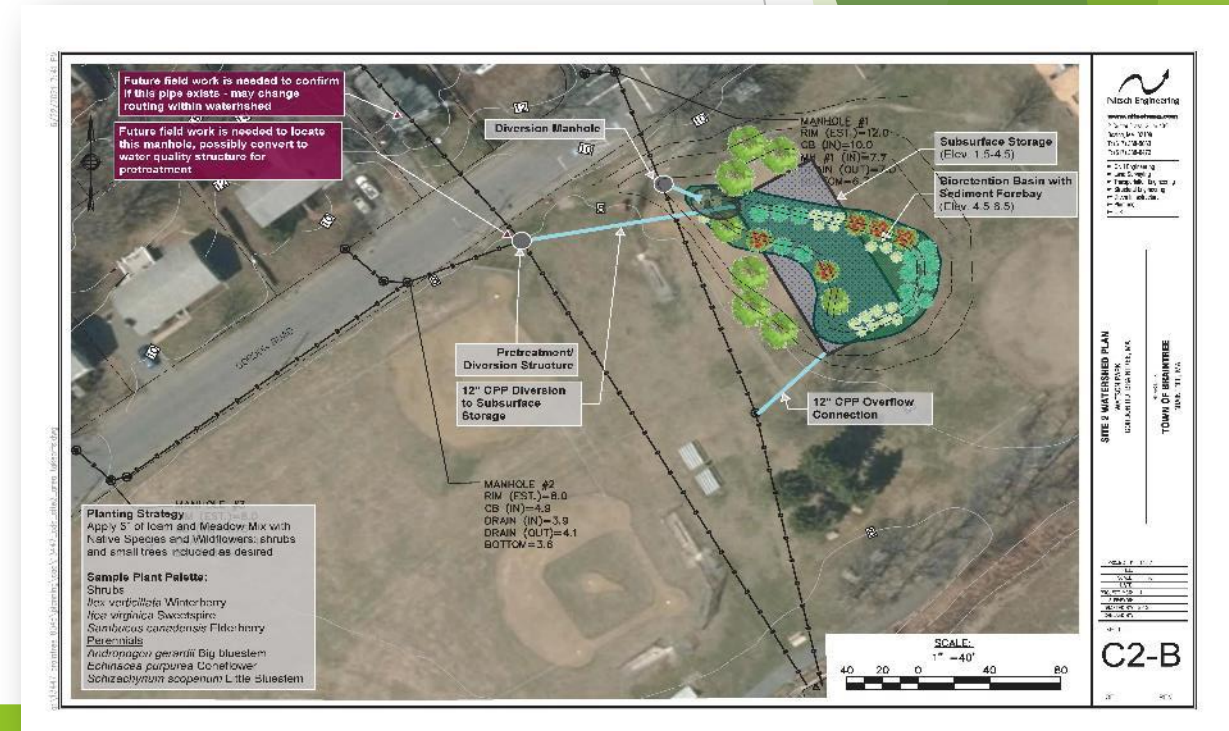
Watson Park BMP Implementation Project - Town of Braintree (2022-09/319)

Project Summary:

- ▶ Compete conceptual designs
- ▶ Install bioretention basin with subsurface storage
- ▶ Develop Operations & Maintenance Plan

Proposed Pollutant Load Reductions:

- ▶ TP: 14 lb/yr
- ▶ TN: 24 lb/yr
- ▶ TSS: 6,530 lb/yr
- ▶ E. coli: 1.3 billion colonies/yr



| | | |
|--------------------|------------------|--------------------------------------|
| Total Cost: | \$639,592 | |
| Funding: | \$375,000 | U.S. Environmental Protection Agency |
| | \$264,592 | Town of Braintree & Project Partners |

Recent Project - CWA S.604(b)

Mystic Infiltration Trench Siting and Design Project - City of Everett (2020-04/604)

Project Summary:

- ▶ Review Town of Arlington's Infiltration Trench Pilot Project
- ▶ Conduct desktop assessment to determine suitable areas of focus
- ▶ Inspect 250 sites in 8 towns identified in desktop assessment
- ▶ Obtain municipal feedback and develop a finalized list of candidate sites
- ▶ Develop individual design packages for each municipality
- ▶ Develop a stormwater outreach and education program

Proposed Pollutant Load Reductions:

- ▶ TP: 0.09 lb/unit/yr
- ▶ TN: 0.56 lb/unit/yr
- ▶ TSS: 26 lb/unit/yr
- ▶ Volume reduction: 144 cf/unit/yr

Cost: \$48,802

Funding: \$40,450 - U.S. Environmental Protection Agency
\$8,352 - City of Everett



Current Project - CWA S.319

Distributed Small-Scale Street Trenches for Phosphorus Load Reduction Project - MyRWA, Medford, Melrose and Winchester (2021-01/319)

Project Summary:

- ▶ Install 50 small-scale infiltration street trenches in three municipalities, replicating a design pioneered by the Town of Arlington.

Proposed Pollutant Load Reductions:

- ▶ TP: 4.5 lb/yr
- ▶ TN: 28 lb/yr
- ▶ TSS: 1,300 lb/yr
- ▶ Volume reduction: 7,200 cf/yr

Total Cost: \$868,715

Funding: \$498,715 - U.S. Environmental Protection Agency
\$370,000 - Mystic River Watershed Association



Current Project - CWA S.604(b)

Improving Water Quality Through Green Infrastructure Capacity Building - Pioneer Valley Planning (2020-05/604)

Project Summary:

- ▶ Convene project advisory committee
- ▶ Meet with project engineer to guide BMP selection
- ▶ Develop designs for 5-7 BMPs optimized for nutrient removal, size, and ease of maintenance
- ▶ Identify soil specifications that best serve nutrient removal objectives
- ▶ Develop model operation and maintenance plan with information for each BMP
- ▶ Provide green infrastructure training and certification exam

Proposed Pollutant Load Reductions:

- ▶ TP: tbd
- ▶ TN: tbd
- ▶ TSS: tbd
- ▶ E. coli: tbd

| | | |
|-----------------|----------|--------------------------------------|
| Cost: | \$41,400 | U.S. Environmental Protection Agency |
| Funding: | \$1,950 | City of Easthampton |
| | \$870 | City of Northampton |
| | \$1,325 | Town of Southwick |



Recent Project - CWA S.319



Armory Village Green Infrastructure Project - Town of Millbury (2018-09/319)

Project Summary: Implementation of green infrastructure practices to the intersection of Main and Elm Streets including:

- ▶ five vegetated bump outs
- ▶ five rain gardens
- ▶ three tree box filters
- ▶ one flow-through planter
- ▶ 19 new trees planted
- ▶ one large underground infiltration chamber
- ▶ 4,198 square feet of permeable pavers

Proposed Pollutant Load Reductions:

- ▶ TP: 2.9 lb/yr
- ▶ TN: 18.9 lb/yr
- ▶ TSS: 723.2 lb/yr
- ▶ E. coli: 25.2 million colonies/yr

Total Cost: \$250,000

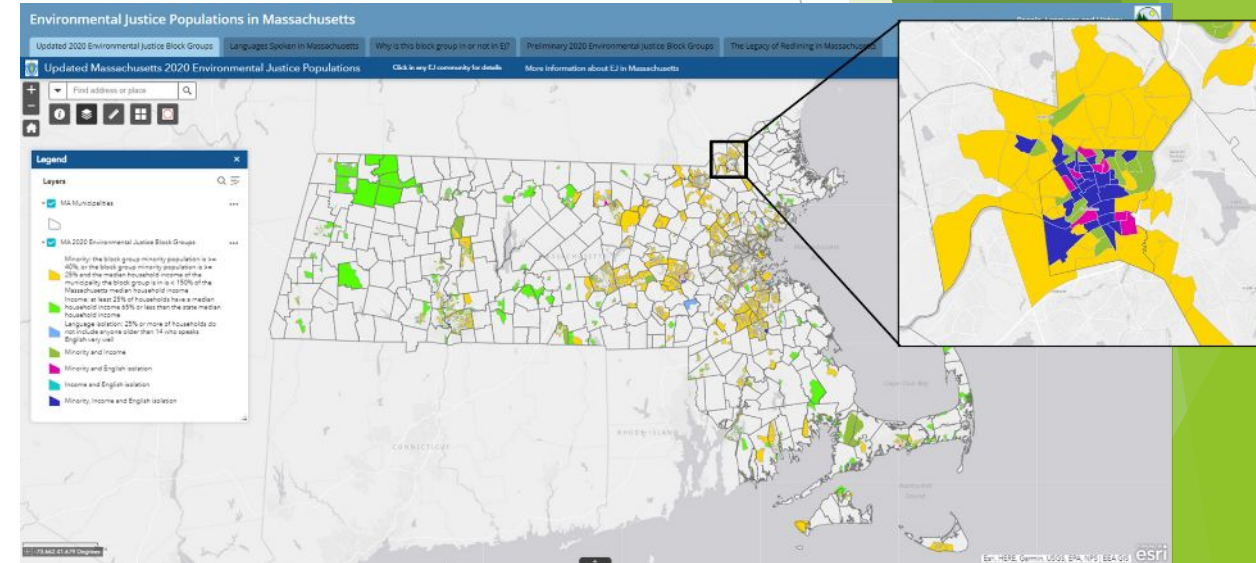
Funding: \$150,000 - U.S. Environmental Protection Agency
\$100,000 - Town of Millbury



Environmental Justice Initiatives

Federal Initiatives:

- Justice40
- Bipartisan Infrastructure Law (BIL)
- 604(b) and 319 grant programs will prioritize projects that address EJ and benefit EJ communities
- [Massachusetts EJ Map Viewer](#)
- Mass EJ Website:
<https://www.mass.gov/info-details/environmental-justice-populations-in-massachusetts>



Contact Information

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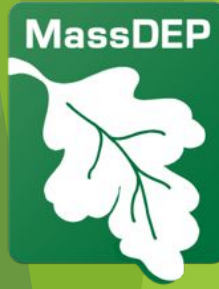
Judy Rondeau, NPS Outreach Coordinator

judith.rondeau@mass.gov 617-512-3429





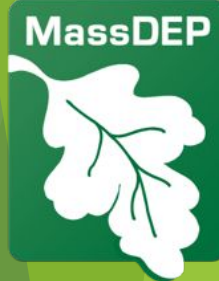
Questions??



Watershed Planning Program Resources for Green Infrastructure Planning and Development

Watershed Planning Program: <https://www.mass.gov/guides/watershed-planning-program>

- **Surface Water Quality Standards:** <https://www.mass.gov/doc/314-cmr-400/download>
- **Water Quality Monitoring**
 - Annual Monitoring Summaries: <https://www.mass.gov/lists/annual-monitoring-summaries>
 - Annual Monitoring Data: <https://www.mass.gov/guides/water-quality-monitoring-program-data>
 - Other Reports & Guidance: <https://www.mass.gov/guides/surface-water-quality-monitoring>
- **Data Management & Water Quality Assessments**
 - Water Quality Data Viewer: <https://arcgisserver.digital.mass.gov/MassDEPWaterQuality>
 - MassMapper: <https://maps.massgis.digital.mass.gov/MassMapper/MassMapper.html>
 - WQ Assessment Reports: <https://www.mass.gov/service-details/water-quality-assessments>
 - Integrated List of Waters (303(d) List): <https://www.mass.gov/lists/integrated-lists-of-waters-related-reports>
- **Total Maximum Daily Loads**
 - TMDL Reports by Watershed: <https://www.mass.gov/lists/total-maximum-daily-loads-by-watershed>
 - TMDL Viewer: <https://www.mass.gov/info-details/total-maximum-daily-load-tmdl-viewer>
- **NPS:** <https://www.mass.gov/guides/watershed-planning-program#-nonpoint-source-pollution->



State Resources for Green Infrastructure Planning and Development

- Mass Stormwater Handbook
- Massachusetts Clean Water Toolkit
- Smart Growth / Smart Energy Toolkit Modules - Low Impact Development (LID)
- Case Studies - Low Impact Development (LID)
- New England Stormwater Retrofit Manual (SNEP Network)



**New England
Stormwater
Retrofit Manual**

DEVELOPED BY
VHB
The University of New
Hampshire Stormwater Center

TECHNICAL SUPPORT FROM
Southeast New England Program
State Agencies
EPA Region 1

FINANCIAL SUPPORT FROM
SNEP Network

July 2022

massachusetts
Clean Water Toolkit

Roads BMPs:
Bioretention Area
Rain Gardens
Catch Basin Maintenance
Constructed Stormwater Wetlands
Leaching Catchment
Leaching Basins
Outlet Sedimentation
Pollution Prevention
Municipal DPW
Road Salt Management
Sediment Forebay
Unpaved Road
Vegetated Filter
Water Quality Treatment
Additional Factors





Watershed-Based Plan Tool

Sign In

MASSACHUSETTS
watershed-based plans

Resources.
Tools.
Guidance.

A Watershed Plan in 3 Easy Steps

1 | Choose Your Watershed

2 | Review Information Sources

3 | Develop Your Plan

Get Started! →

for instant access to your watershed's maps, data, modeling and more.

What is a Watershed-Based Plan?
Click [here](#) to learn more.

Click [here](#) to see completed
Massachusetts Watershed-Based Plans

MassDEP Home
Contact Us

- Template for the development of WBPs
- BMP pollutant load reduction calculator
- WBPs are required for CWA S.319 Implementation projects
- WBP development is eligible as match for CWA S.319 grants

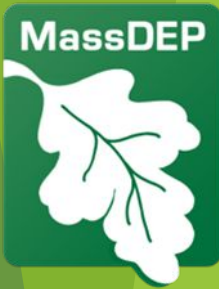
<https://prj.geosyntec.com/MassDEPWBP>

Grants





Grants - CWA S.604(b) Watershed Planning Grant Program



Funds:

- Impaired Waters or Healthy Watersheds
- Water Quality Assessments
- Development of Watershed-Based Plans
- Development of Implementation Plans
- Preliminary construction designs (up to 50%)
- ***Green Infrastructure & Low Impact Development Projects***
- Projects with deliverables that can advance to implementation funding via Section 319 of the Clean Water Act.
- Regional planning agencies, councils of governments, counties, conservation districts, tribes, and cities and towns are eligible

Funding amount:

\$400,000-\$600,000 total
\$50,000 per award
No match required

RFR Release Date:
Summer 2023

More Info:

<https://www.mass.gov/info-details/grants-financial-assistance-watersheds-water-quality>

Contact: Meghan Selby
Meghan.Selby@mass.gov





Grants - CWA S.319 Competitive Grant Program



Funds projects to:

- Restore impaired waters
- Protect high-quality, unimpaired waters
- Build upon previous 319-funded work
- Environmental Justice Capacity Building
- Healthy Watersheds and Protection of High-Quality Waters
- Outreach and Education
- Regional NPS Implementation Project Development
- ***Development of Municipal and Regional Stormwater Collaboratives and Funding Mechanisms***
- Cannot be used to fund MS4 or other NPDES permit-required activities
- Any Massachusetts public or private organization is eligible.

Funding amount:

\$2,000,000 total
\$50,000 - \$500,000 per award

Required match: 40% of total project cost (non-federal)

Important Dates:

Pre-RFR meeting: early spring 2023

RFR release: spring 2023

RFR deadline: late spring 2023

More Info:

<https://www.mass.gov/info-details/grants-financial-assistance-watersheds-water-quality#section-319-non-point-source-competitive-grants-program>



Contact: Malcolm Harper
Malcolm.harper@mass.gov



Grants - Water Quality Monitoring Grant Program

Funds:

- Ongoing or new monitoring and data collection:
 - monitoring of rivers, streams, lakes, ponds, and estuaries
 - capacity-building actions
 - developing regional and long-term monitoring programs and networks
 - Must have approved QAPP
- Eligible Entities:
 - federally recognized Tribal Nations within the Commonwealth of Massachusetts
 - non-profit organizations
- Contact: Robert Smith
robert.smith@mass.gov

Funding amount:

\$500,000 in SFY2023
\$25,000 minimum - \$50,000
maximum per award

No required match

Important Dates:
RFR release: typically early fall
RFR deadline: late fall

More Info:
<https://www.mass.gov/info-details/grants-financial-assistance-watersheds-water-quality#water-quality-monitoring-grant-program>





Grants - Stormwater MS4 Municipal Assistance Grant Program

Funds:

- Projects that meet MS4 permit requirements
 - planning
 - resource sharing
 - education/outreach
 - implementation
- All project stages are eligible for funding
- Projects must benefit multiple municipalities
- Contact: Laura Schifman - laura.schifman@mass.gov

Funding amount:

\$300,000
\$50,000 per award

No required match

Important Dates:

RFR release: August

RFR deadline: September

More Info:

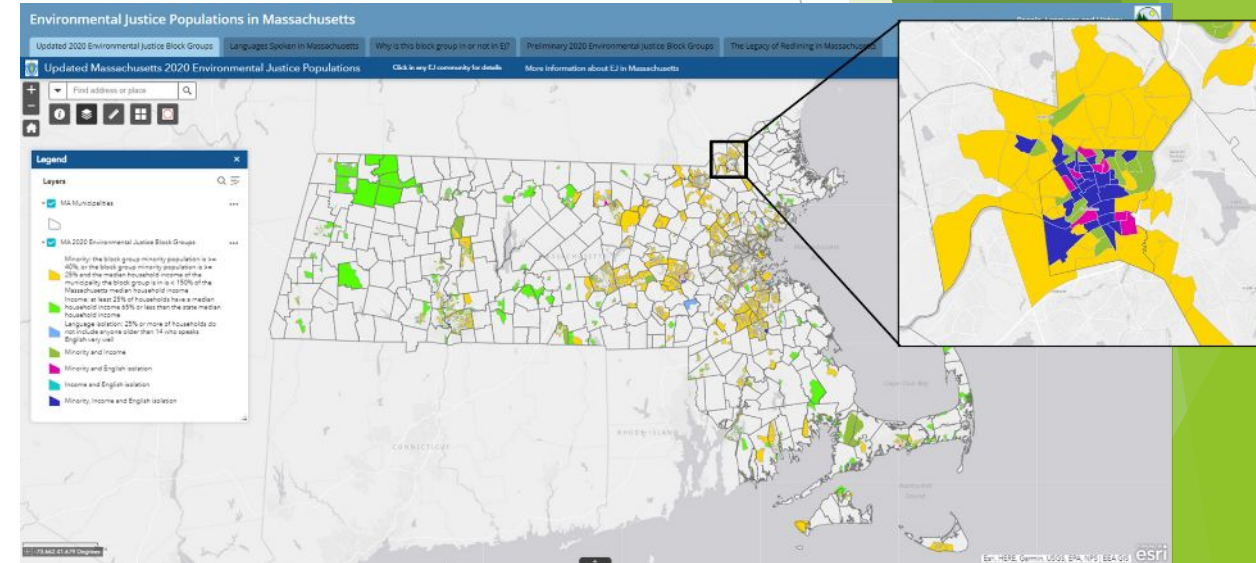
<https://www.mass.gov/info-details/grants-financial-assistance-watersheds-water-quality#stormwater-ms4-municipal-assistance-grant-program>



Environmental Justice

Federal Initiatives:

- Justice40
- Bipartisan Infrastructure Law (BIL)
- 604(b) and 319 grant programs will prioritize projects that address EJ and benefit EJ communities
- [Massachusetts EJ Map Viewer](#)
- Mass EJ Website:
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Presentation Outline

- Watershed Planning Program
- State resources available for GI planning & implementation
- Grants Supporting Stormwater Management
- GI Case Studies