SNEP Watershed Grants Final Report - Executive Summary

1. Cover Information

Project Name: Private Property GI Retrofit and Maintenance Assessment and Support
Subaward Number: #SNEPWG21-4-GWRI2
Grant and Reporting Period: April 14, 2022 – March 31, 2025
Subawardee Organization: Groundwork Rhode Island
Report Contact Person/Project Leader: Amelia Rose, (401) 305-7174, arose@groundworkri.org
Report Type: Final

2. Project Report Narrative

Groundwork Rhode Island (GWRI) led a three-year project with our primary partners, the Woonasquatucket River Watershed Council (WRWC) and the Narragansett Bay Commission (NBC), to conduct outreach to commercial property owners in Providence, Pawtucket, and Central Falls, and gain their participation in both green stormwater infrastructure retrofits on their properties as well as maintenance of existing green infrastructure systems. Funded by a $238,274 EPA Southeast New England Program (SNEP) Watershed Implementation Grant and matched with over $100,000 of private funding and in-kind support, our project engaged many partners, community-based organizations, commercial property owners, and GWRI and WRWC's workforce development programs, and resulted in a total of eight properties with new green stormwater retrofit features and an additional four properties that received green infrastructure repairs and/or maintenance support.

The goal of this project was to engage commercial property owners in learning about and understanding the benefits of green (vegetated) stormwater infrastructure and provide additional support to keep the systems functioning well and thriving for maximum stormwater absorption and community benefit. Green infrastructure has many benefits including absorbing stormwater before it reaches a catch basin, combined sewer system, or water body, filtering stormwater pollutants, recharging groundwater, adding green space to a community, and creating wildlife habitat. In partnering with NBC, the wastewater utility for the metro Providence area, we sought to utilize a variety of levers to gain commercial property owner participation through the sewer connection permitting process as well as by developing and publicly promoting successful examples of green infrastructure through our project. Additionally, the Stormwater Innovation Center held a maintenance training geared to commercial property owners as part of our project, reaching 25 attendees who were primarily from municipalities but included some property owners as well. Around 50 property owners were invited to attend that training.

Early on in the project, we realized that maintenance support for existing green infrastructure was not the primary need within the two watersheds where we focused most of our efforts - the Blackstone/Seekonk Rivers in Pawtucket and Central Falls and the Woonasquatucket River in Providence. These areas do have some green stormwater infrastructure features, especially along the Woonasquatucket, but adding new green stormwater features to commercial properties was the more significant need. Thus, our project evolved into a multi-pronged effort that included both identifying commercial properties for new stormwater retrofits as well as maintaining and repairing existing green infrastructure where possible. Three of the final projects are located outside of these two watersheds.

We are pleased with the results of our project because we reached our goals of engaging multiple property owners, installing numerous and varied examples of green stormwater retrofits, providing maintenance for properties with existing green infrastructure, and employing over a dozen local

residents to perform green infrastructure installation and maintenance. One of the best aspects of the project was that in working with property owners, they themselves had their own stormwater management-related goals such as wanting to add green space to their property, prevent stormwater from entering their building's front door, prevent hillside erosion into parking areas, and create educational spaces for children who use their facilities. Our project demonstrates that there is indeed a tremendous amount of interest and need for green stormwater infrastructure across the metro Providence area, and that property owners are willing, and in many cases, excited, to be involved in these efforts.

2.A. Project Results

The table below lists the eight properties that received green infrastructure retrofits through our project. We were most successful in forming partnerships with nonprofit and community-serving organizations for these retrofits. One additional project included in the table is a major repair to a preexisting green infrastructure retrofit. Other routine maintenance performed under this grant are not included in the table below but are described later in the full report.

Groundwork Rhode Island - SNEP 2021 Project Green Stormwater Infrastructure Retrofit Installations		
Project Number	**Project Description**	**Area (in Sq Ft)**
1	**Project Weber Renew**: Parking Lot was originally installed with no drainage system. At the lowest grade of the lot, we depaved and ran a bioswale along the edge which runs into a rain garden. The whole system was planted with native plants. **Location: 45 Willard Avenue, Providence**	286
2	**Heritage Park YMCA/Chinese Christian Church of RI**: Rain garden with a rip rap inlet was installed at bottom of road way. The storm water from the roadway was dumping right into the river. To stop this we installed a riprap forebay to slow the water and let it drain into a large rain garden. An overflow system was installed in case of a large rain event. This system was planted with native plants. **Location: 333 Roosevelt Avenue, Pawtucket**	897
3a	**Boys & Girls Club of Pawtucket**: Dual rip rap bioswales that lead into a large rain garden were installed to slow water that was eroding a hill and taking sediment into the parking lot and drains connected to the river. This system was heavily planted with native plants. **Location: 1 Moeller Drive, Pawtucket**	432
3b	**Boys & Girls Club of Pawtucket**: Installed a line drain across the front of a building that was taking on water in large storms. We connected the line drain into a dual underground dry well to store the water underground. Location: 1 Moeller Drive, Pawtucket	17
4a	**Fuerza Laboral**: Removed all pavement in courtyard delivery area. Installed a new base with paver cells on top that hold in stone. The pavers can handle the weight of large trucks even in the lawn area so no damage will take place and we will have a permeable drivable surface. **Location: 6 Chace's Lane, Central Falls**	1,044

4b	**Fuerza Laboral**: Depaved parking spaces to create 2 rain gardens that take in all of the water from the surrounding drain pipes. Removed old drain pipes underground and connected them into the rain garden instead of the sewer system. These rain gardens were planted with native plants. **Location: 6 Chace's Lane, Central Falls**	451
5	**Former Providence Journal site**: 18 Parking spaces were depaved in a parking that is underused. We installed a large rain garden with several native trees and plants. The system takes on a portion of the parking lot watershed before it reaches the basin located at the overflow of the system. **Location: 210 Kinsley Avenue, Providence**	2,158
6	**GWRI's Ring Street Community Garden**: Parking lot prone to flooding was depaved, regraded, and replaced with permeable paver cells, similar to 4a above. Location: 61 Grove Street, Providence	4,620
7	**Walking School Bus Path**: Approximately 550 sq ft of sod was removed, the underlying soil replaced with higher-quality soil, and the space was densely planted with 39 trees and 32 shrubs to mimic a forest ecosystem. **Location: 434 Prairie Avenue, Providence**	550
8	**Cohen Heating Supply Co.**: 3 Rain Collecting Planter Boxes were installed to divert water from downspouts. **Location: 38 Bath Street, Providence**	N/A
9	**Puerta del Refugio Church:** Bioswales previously installed by WRWC were severely damaged during a major flood in January 2024. With this grant, WRWC and GWRI collaborated on a plan to repair damaged sites and prevent future erosion by filling cavities under sidewalks, regrading, and filling swales with wildflower/grass seed mix and straw mats. **Location: 247 Valley St, Providence.**	1,391

Photo (left) of riprap swales and rain garden at Boys & Girls Club of Pawtucket courtesy of GWRI and (right) rain garden at the Providence Journal property courtesy of WRWC.

The 45 Willard Avenue site has been partially depaved and prepped using SNEP funds, and plants have been purchased, but full project implementation will be completed using other funding sources, resulting in a rain garden in the area shown in the photos below along with a few other planted areas.

Before and after depaving photos at 45 Willard Ave with a few new perimeter trees planted, courtesy of GWRI.

GWRI retrofitted our community garden's parking lot at 61 Grove Street, Providence, which was experiencing significant flooding issues even in minor rain storms. The permeable paver cells filled with stone have so far worked perfectly and are much easier to maintain than permeable pavers that can get clogged with sand and sediment.

During and After photos of permeable paver cell install at Grove Street parking lot courtesy of GWRI.

We also installed Providence's first microforest through a combination of settlement funding from the RI Attorney General's Office and these SNEP funds. The microforest is located at 434 Prairie Avenue, Providence, and was planted in an area that was previously covered by turf grass.

GWRI and WRWC worked together on the Providence Journal property depaving and planting, located at 210 Kinsley Avenue, Providence. A project profile for this project can be found in the attachments and before, during, and after photos are included below.

Before, During, and After photos of Providence Journal retrofit project courtesy of WRWC.

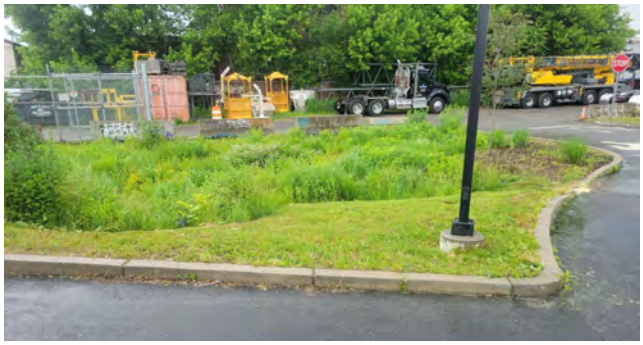
WRWC's River Ranger's Green Infrastructure Team installed three Rain Collecting Planter Boxes (photo and diagram below) at Cohen Heating Supply Co. at 38 Bath Street, Providence.

Photo – WRWC rain box install; Diagram – Draft Signage to explain rain boxes. Both courtesy of WRWC.

<u>Maintenance</u> - GWRI's GroundCorp crew performed routine maintenance for 18 bioswales in Wakefield, RI along a state road (photos below), which we used as non-federal match for this grant.

Photos of Old Tower HIll Road bioswales and maintenance courtesy of GWRI.

GWRI also performed routine maintenance for green infrastructure swales at 50 Sims Avenue, Providence (photos below) in the Woonasquatucket River watershed.




Photos of 50 Sims Avenue swales courtesy of GWRI.

WRWC performed maintenance at two locations along the Woonasquatucket as well - 1) routine maintenance of green infrastructure at the Farm Fresh Rhode Island complex at 10 Sims Avenue, Providence, and 2) repair work to two swales bordering the parking lot at Puerta del Refugio, a church located at 247 Valley Street, Providence, after a January 2024 flood.

Damaged swales (above) at Puerta del Refugio Church before WRWC repairs (below). Photos courtesy of WRWC.



Maintenance Training - The Stormwater Innovation Center held two green infrastructure maintenance trainings in May 2024. Around 50 property owners were invited to attend the training including those we conducted outreach to as part of this project for retrofits and maintenance support. Stormwater Compliance, a private green infrastructure maintenance company, facilitated the trainings and helped sponsor them along with Ferguson Waterworks.



Photos from the maintenance training courtesy of the Stormwater Innovation Center.

2.B. Next Steps & Recommendations

As described in the full report, maintenance of these new green infrastructure sites will continue through GWRI and WRWC's workforce development programs, including GWRI's GroundCorp landscape team and adult job training program, WRWC River Rangers, and GWRI's latest effort called Storm Crew, which is a smaller team focused exclusively on stormwater projects and maintenance.

We will be sending our final property list, project descriptions and photos to NBC for that agency to utilize in future permitting activities related to each of our project sites. We will ask NBC to track any future redevelopment plans for each of these site locations and propose that NBC require site owners to keep and integrate the installed GI as part of any future redevelopment proposals and sewer connection permit applications at these properties, where applicable.

We have created project profiles for most of the properties that we will post on our website and utilize in future educational and outreach efforts. One hope for these profiles is that they can help inspire other commercial property owners to add vegetated stormwater infrastructure to their properties and see GWRI and WRWC as potential resources for design, installation, and/or maintenance services.

2.C. Compliance

The EPA reviewed and approved our QAPP in October 2022. Final signatures were completed in December 2022 and early January 2023.

We have shared our GI retrofit final designs with the City Engineer in Providence and appropriate municipal personnel in Pawtucket/Central Falls in order to ensure compliance and communication with the municipalities regarding these private property retrofits. We worked closely with the Providence Parks Department on the microforest plans along the Walking School Bus Path.

2.D. Project Partners

Project partners include Jan Brodie, a consultant to the City of Pawtucket, the Woonasquatucket River Watershed Council (WRWC), the City of Providence Department of Public Works and Parks Department, Narragansett Bay Commission (NBC), the Stormwater Innovation Center (SIC), and the Providence Neighborhood Planting Program (PNPP).

2.E. Volunteer and Community Involvement

Almost all of our projects under this grant award have had some level of volunteer and community involvement:

Project Weber Renew - Approximately 25 employees from Enterprise, the rental car company, participated in the PNPP-led and GWRI-supported tree planting at and around the property.

Chinese Christian Church/Heritage Park YMCA - Preschool teachers at the YMCA brought four classes of about 15-20 kids per class out to see the rain garden after it was installed, totaling approximately 70 young children who were able to see GroundCorp finishing up the project.

Fuerza Laboral - Fuerza staff are watering the new plants and grass courtyard.

Microforest - Over 20 GWRI staff, youth Green Team members, job training graduates, and other volunteers participated in the microforest planting day in November 2024. Photo courtesy of GWRI.

Providence Journal - About 15 WRWC and GWRI staff, as well as a few community volunteers, all participated in the planting day for the Providence Journal GI project also in November 2024. Photo courtesy of WRWC.

Other community engagement that took place during this grant award's time period include:

GWRI delivered a four-part training series for WRWC on stormwater management and green infrastructure to approximately 12 community members (Campeones) and 6 River Rangers in July 2023, which WRWC paid for with separate federal funding. WRWC presented again to the Campeones group in November 2023 specifically about this project to solicit ideas from community residents and get help identifying properties that would benefit from green infrastructure retrofits. We repeated this 4-part series for a different Campeones group - along with new River Rangers and GWRI's Storm Crew team members - totaling 20+ people - starting in March 2025.

GWRI trained and certified 16 Rhode Island residents through the Clean Water Certificate (CWC) program from the Center for Watershed Protection, which is a nationally-accredited certificate in GI inspection, maintenance, and installation in 2023. In 2024, we provided training and certification to 27 individuals, including six WRWC staff, six GroundCorp crew, and three adult job training graduates, for a total of 15 people who are all currently employed in GI installation, inspections, and maintenance locally.

2.F. Outreach & Communications

GWRI and WRWC developed outreach flyers that were distributed to commercial property owners via email and mail. Our project team conducted email, phone, and in-person outreach to property owners or developers. The Stormwater Innovation Center conducted outreach for its maintenance trainings via email and social media. Samples of outreach materials are included in the attachments.

3. Supporting Materials

The following supporting materials are included as attachments:

1- Completed Project Profiles
2- Outreach Materials

4. Certification

The undersigned verifies that the descriptions of activities and expenditures in this progress report are accurate to the best of my knowledge; and that the activities were conducted in agreement with the grant contract. I also understand that matching fund levels established in the grant contract must be met.

Grantee Signature:

Name: Amelia Rose
Job Title: Executive Director
Date: May 31, 2025
Organization: Groundwork Rhode Island

Boys & Girls Club of Pawtucket

1 Moeller Place, Pawtucket, RI

Problem

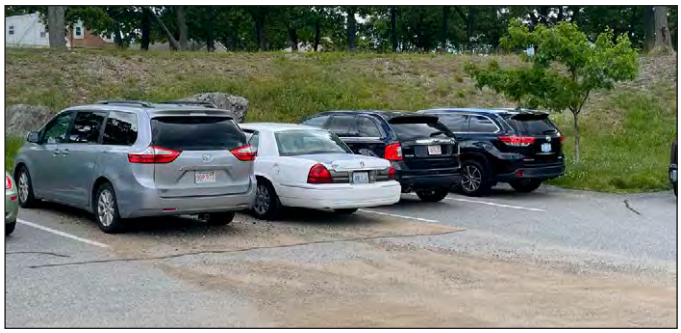
The Boys & Girls Club of Pawtucket, located on a slope at the bank of the Seekonk River, experiences runoff from its driveway (which slopes steeply down from School St) bringing stormwater, uninterrupted by a series of impervious surfaces, into a building entrance causing damage to the building. **(1).**

Site context on banks of Seekonk River

There is also regular erosion of a hillside uphill of its parking area **(2)** which causes a buildup of sandy debris in the parking area.

Our project sought to address these problems for the property owner, as well as prevent sediment and polluted stormwater from entering the Seekonk, a historically impaired river.

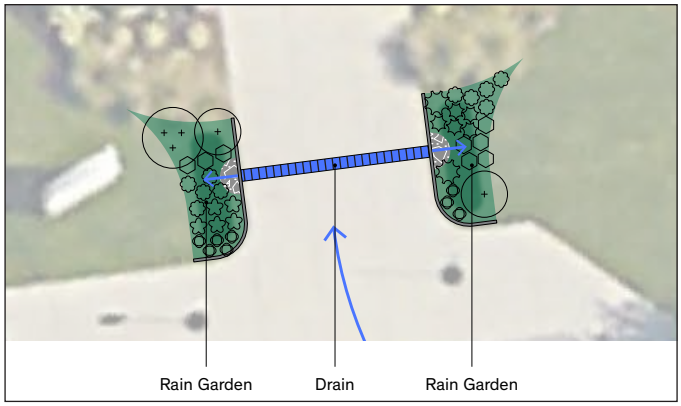
Problem areas.



Sediment eroded from hillside into the parking area.

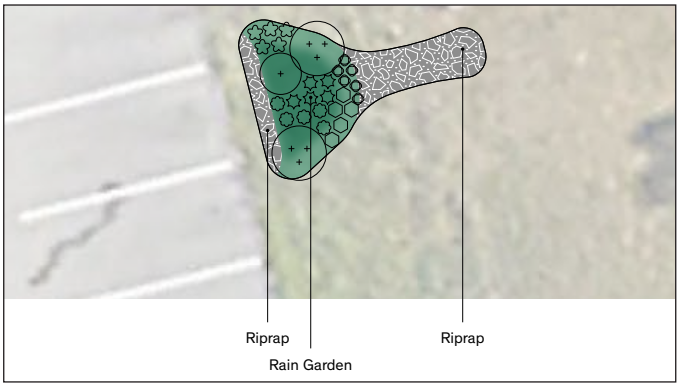
Proposal

In **area 1**, we proposed to install a linear drain across the entry path which would interrupt runoff headed into the building from the sloped driveway. This linear drain would be connected to two small rain gardens with native shrubs and perennials flanking the entry pathway and connected into the existing gardens.



Area 1 proposal

In **area 2**, we proposed to install a riprap inlet to a rain garden filled with shrubs and perennials at the base of the eroded area along the parking lot to slow the flow of runoff and capture sediment.



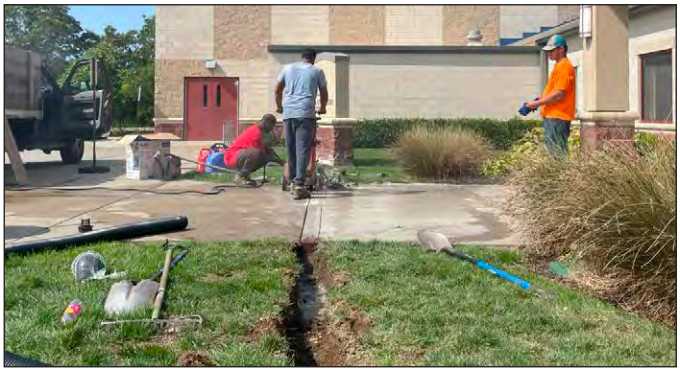
Area 2 proposal.

Boys & Girls Club of Pawtucket

1 Moeller Place, Pawtucket, RI

Process

After the site was marked with the locations of underground utilities, it was discovered that a gas line runs through the proposed rain gardens in area 1. Following this discovery, the linear drain was shifted, and linked to a buried dry well instead of plantings.



Dry well and linear drain install at area

At area 2, the size of the rain garden was expanded and rip rap was installed in two strips around some existing ledge. We also installed some shrubs between the courses of rip rap.

Site work and planting at area 2.

Result

The Boys and Girls club has reported great success from the rain garden which has stopped sediment from eroding into the parking area. The drain and drywell has reduced but not eliminated water from flowing into the entrance to their building. Our team intends to follow up this season (Spring 2025) to evaluate potential solutions to this problem.

Deliverables:

- 200 ft² raingarden installed with:
  - » 5 Native shrubs and 78 perennials planted
- 1 linear drain installed
- 1 dry well installed

Maintenance: GWRI's Storm Crew and GroundCorp teams will share maintenance responsibilities for the next few years.

genus	species	common name	Quantity
Perennials			
Iris	versicolor	blue flag iris	12
Helenium	autumnale	common sneezeweed	12
Chelone	glabra	white turtlehead	12
Geranium	maculatum	wild geranium	9
Asclepias	tuberosa	butterfly milkweed	9
Penstemon	digitalis	foxglove beardtongue	12
Panicum	virgatum	switchgrass	21
Shrubs			
Clethra	alnifolia	sweet pepper bush	1
Aronia	arbutifolia	chokeberry	1
Cephalanthus	occidentalis	buttonbush	3

Plant species and quantities planted in the rain garden.

This project is supported by Southeast New England Program (SNEP) Watershed Grants. SNEP Watershed Grants are funded by the U.S. Environmental Protection Agency (EPA) through a collaboration with Restore America's Estuaries (RAE). For more on SNEP Watershed Grants, see www.snepgrants.org

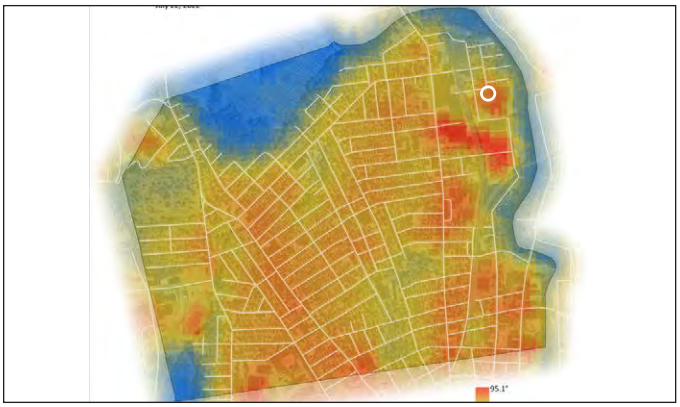
Fuerza Laboral

6 Chace's Lane
Central Falls, RI

GROUNDWORK Rhode Island

Problem

Fuerza Laboral is a non-profit located in an extremely industrial part of Central Falls that is also very close to the Blackstone River. The area is characterized by nearly uninterrupted impervious surfaces and particularly high surface temperatures. Fuerza Laboral is highly motivated to make the area more hospitable to the community they serve and to be a model land steward in their neighborhood. The challenge was to add as much green space as possible into their small property and to divert as much runoff as possible from their roof into those green spaces.

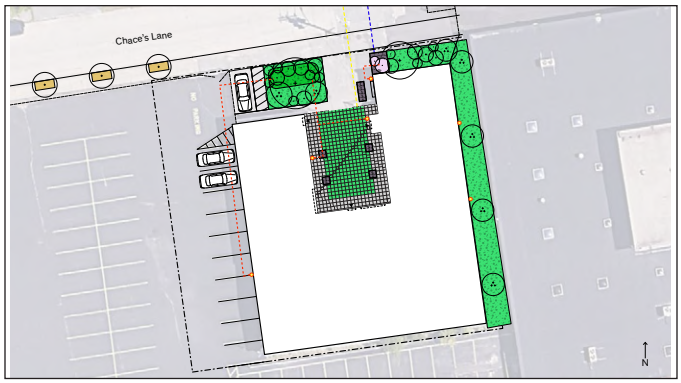


Green Infrastructure Center's surface temperatures map with site marked.

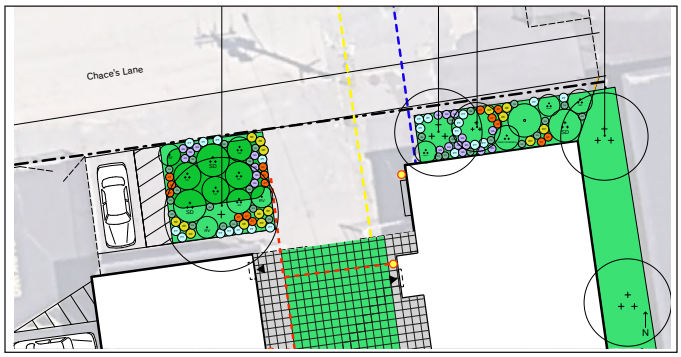
Site aerial before project installation.

Proposal

We proposed depaving the inner couryard area and installing permeable pavers with gravel around the perimeter and grass in the center. This area is used for events and there are trucks that occasionally pull into the courtyard for deliveries, so it was not suitable for more garden plantings. In the front, Fuerza Laboral was willing to remove 2 existing parking spaces, leaving one handicap spot remaining, and to expand an existing planting bed. All of the plants chosen are native species in order to expand habitat availability in the Blackstone River riparian area. Plants were also chosen for urban environment tolerances like salt. We were able to connect 3 of the building's downspouts to different parts of the new garden space. In the permeable pavers area, we proposed a 5 ft perimeter of gravel and an inner zone of grass.



Proposed site plan with downspout connections.

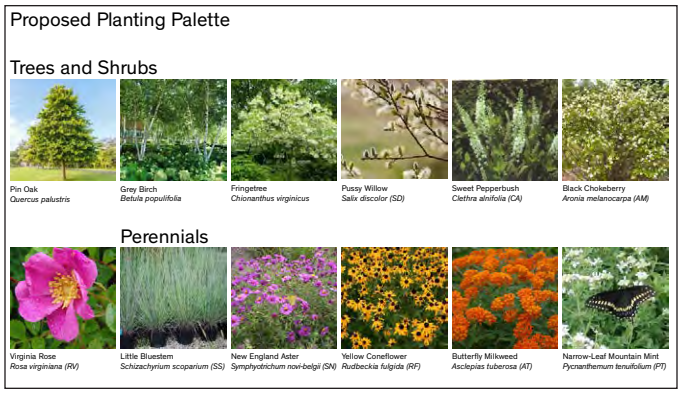


Proposed planting plan.

Fuerza Laboral

6 Chace's Lane
Central Falls, RI

GROUNDWORK Rhode Island



Images of the native plants selected for the project.

Process

Prior to installation we shifted one bed slightly after working with Pawtucket Water to figure out the exact location of their line. The client also decided they preferred to keep asphalt at the building entrances so we reduced the overall size of the permeable paving.

Depaving and new fill installation in the rain garden.

In the large new planting area, starting 10 feet away from the building, GroundCorp excavated the planting bed down to 3 feet and installed a course of gravel as well as new soil with a greater drainage capacity so that part of that garden (about 200 square feet) could easily hold extra water from the connected downspouts.

Result

We were able to add 7 trees to the property and, with our USDA Forest Service Landscape Scale Restoration grant, we planted an additional 21 trees in the sidewalk around 6 Chace's Lane and two additional large industrial properties. These trees are being watered by staff and volunteers at Fuerza Laboral. The organization is very happy with their new garden and is continuing to water their trees this summer. They are learning how to identify weeds as their garden starts to grow again this year.

Project deliverables

- 1400 ft² of pavement removed including
  - » 200 ft² rain garden
  - » 850 ft² permeable pavers
- 7 native trees, 15 native shrubs, 95 native perennials planted in the gardens
- 3 downspouts connected to the rain garden
- 21 trees paid for by other funding

Watering the new garden after planting.

Maintenance: Staff and volunteers involved with Fuerza will be performing watering and maintenance with support from GWRI as needed.

SNEP Southeast New England Program

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Chinese Christian Church of Rhode Island

333 Roosevelt Ave, Pawtucket, RI

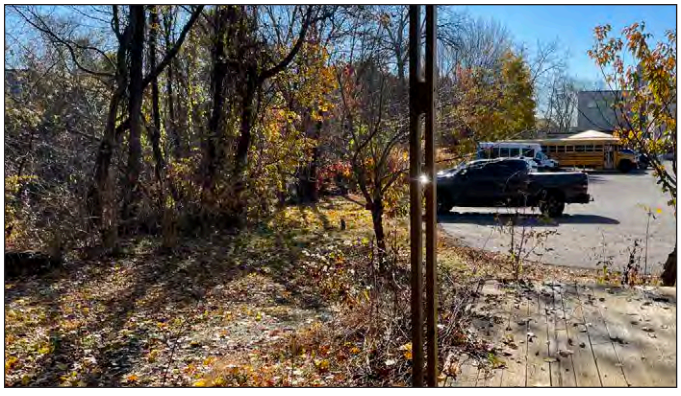
GROUNDWORK Rhode Island

Problem

The Chinese Christian Church of Rhode Island, which is also the location of the Heritage Park YMCA, directly borders the Blackstone River. Runoff from the street and driveway down to

Site location with contours, project area marked in red.

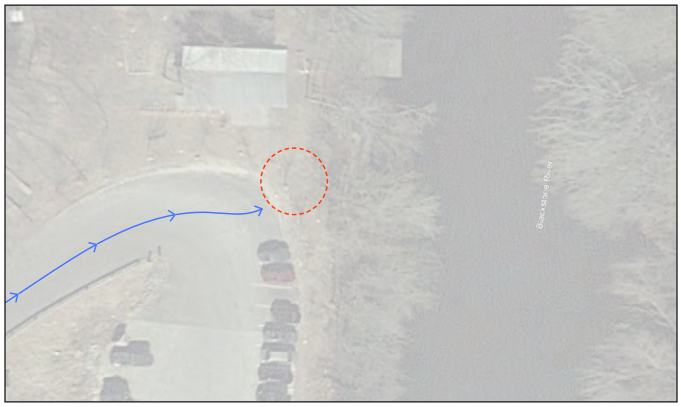
their parking area flows unimpeded, directly into the banks of the river. At the exact location where this occurs, there is little existing vegetation on the banks to capture and treat that runoff before it enters the Blackstone.



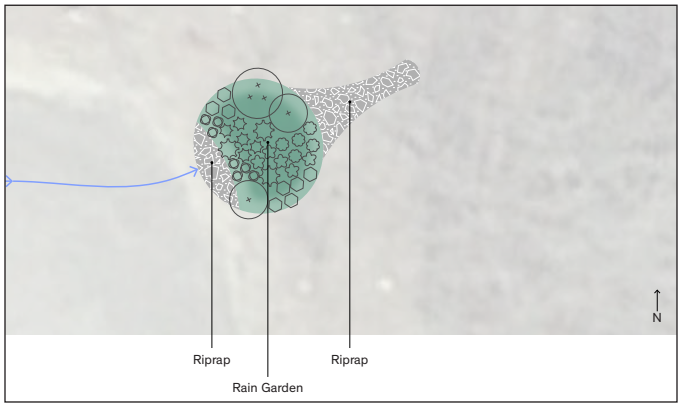
Grassy area at the base of the driveway.

Proposal

A rain garden with a rip rap inlet was proposed at bottom of the driveway. Stormwater from the roadway would flow into a riprap forebay to slow the water and drain into a large rain garden planted with native shrubs and perennials. An overflow of riprap was also proposed to slow water on its way out of the system, in the event of a particularly large storm event.



Aerial showing direction of runoff from driveway.



Proposal showing rain garden with rip rap inlet and outlet

Chinese Christian Church of Rhode Island

333 Roosevelt Ave, Pawtucket, RI

Process

During construction, the shape of the garden was altered to fit more seamlessly with the existing vegetation and we also reconstructed a gravel path that leads to a nearby pergola. Native plant availability was scarce at this point in the season so a first round of plants was installed and a second round will be planted this spring (2025).

Construction of riprap inlet

Final project with path, inlet, and rain garden.

Close up of plantings.

Result

Deliverables:

- 897 ft² rain garden with riprap inlet and outlet

Chinese Christian Church of Rhode Island		
genus	**species**	**common name**
Perennials		
Iris	versicolor	blue flag iris
Helenium	autumnale	common sneezeweed
Chelone	glabra	white turtlehead
Geranium	maculatum	wild geranium
Asclepias	tuberosa	butterfly milkweed
Penstemon	digitalis	foxglove beardtongue
Panicum	virgatum	switchgrass
Shrubs		
Clethra	alnifolia	sweet pepper bush
Aronia	arbutifolia	chokeberry
Cephalanthus	occidentalis	buttonbush

Plants planned for Spring 2025.

(photos of final project forthcoming)

Maintenance: GWRI's Storm Crew and GroundCorp teams will share maintenance responsibilities for the next few years.

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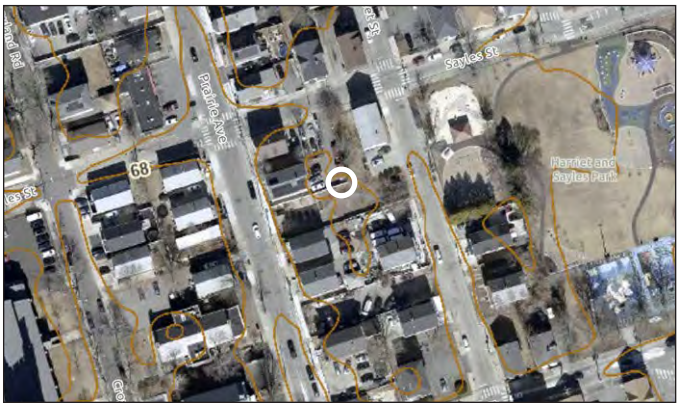
Walking School Bus Path Microforest

434 Prairie Avenue Providence, RI

Problem

The Walking School Bus Path is located in Lower South Providence, a neighborhood characterized by low tree canopy coverage and a lack of accessible, safe, and healthy public spaces for

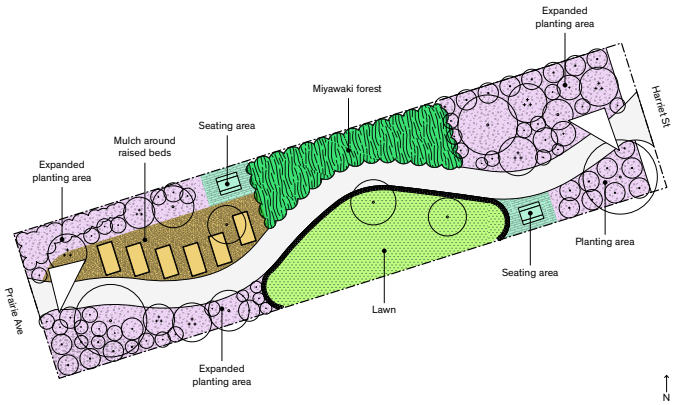


Site context in Lower South Providence.

community use. According to American Forests' Tree Equity Score Analyzer, the area has only 20% tree canopy coverage, a heat disparity of +20°F, and 71% of the population lives in poverty. This small existing green space has some existing trees and raised beds, but had the potential to deliver more benefits to the community within its small footprint.

Proposal

We have proposed a number of improvements to the space including the planting of a very small microforest (Providence's first!), along the north edge of the property. The idea of a microforest is to bring ecological benefits to



Proposed plan.

degraded landscapes much more quickly than in traditional plantings. The process was developed by a Japanese botanist, Akira Miyawaki, who was tasked with ecological restoration on degraded landscapes following World War II. Native trees and shrubs are planted very densely (3/m²) and grow much more quickly as they compete for light and intermingle their root systems. Benefits like cooling, air quality improvements, sound buffering, soil quality improvement, and habitat provision are impacting the surrounding area much more quickly. We also know that forest soils absorb and hold as much as 4 times the volume of stormwater than a turf grass landscape can hold.

Process

Working with the City of Providence, we refined the location of the microforest within the Walking School Bus Path. We tested the soil and found there to be slightly elevated lead levels. GroundCorp excavated and replaced 18" of soil to prep the site. It is a typical part of a microforest process to do significant soil replacement. It also represents one of the larger costs of this

River Birch	Betula nigra
American Elm	Ulmus americana
White Oak	Quercus alba
Balsam Fir	Abies balsamea
Hophornbeam	Ostraya virginiana
Pagoda Dogwood	Cornus alternifolia
Serviceberry	Amelanchier canadensis
Umbrella Magnolia	Magnolia tripetala
Sassafras	Sassafras albidum
Black Elderberry	Sambucus canadensis 'york'
Spicebush	Lindera benzoin
Witch Hazel	Hamamelis virginana
Pussy Willow	Salix discolor
Nannyberry	Viburnum lentago
Silky Dogwood	Cornus amomum
Winterberry	Ilex verticillata
American Hazelnut	Corylus americana
Red Chokeberry	ronia arbu Brilliantissim
Witherod	iburnum nudum 'Brandywine
Smooth Blackhaw	Viburnum prunifolium
Fragrant Sumac	Rhus aromatica
Virginia Rose	Rosa virginiana
Steeplebush	Spiraea tomentosa

All species planted in the microforest.

Walking School Bus Path Microforest

434 Prairie Avenue Providence, RI

type of planting. We have completed a second microforest where we did not replace the soil to see if there are signficant differences in the success of the plants.

After some back and forth with the nursery we were able to procure 23 different species for the forest which fit the 4 size categories that should be in a microforest. All the plants in a microforest are woody (trees and shrubs). There is a canopy layer, which consists of trees which mature to 40 feet or taller and should make up 15-20% of the overall composition. The understory layer is composed of trees 25-40 feet tall and makes up 40-50% of the plants. The shrub layer is trees and shrubs that reach between 6-25 ft at maturity and is 25-30% of the plants. Finally, the herbaceous layer is shrubs up to 6 feet tall and makes up 8-12% of the plant material.

Many native species are difficult to locate because they are not seen as high value plants by the landscaping industry from an aesthetic perspective. Many wonderful native plants are simply not known by nursery customers and so are not stocked by most nurseries. Because we do not have the organizational capacity to drive long distances to many different nurseries to procure the exact plants we're looking for, we made a number of substitutions and reduced the number of species somewhat.

Ultimately we felt we were able to achieve quite good species diversity in spite of these obstacles. There were 9 species of trees and 14 shrubs. The forest was planted by volunteers in early November and is watered by our staff and youth.

Results

Deliverables:

- 550 ft² of soil replaced
- 38 trees and 32 shrubs planted

Volunteers planting the microforest.

Maintenance: A recent graduate of GWRI's adult job training program and GWRI's youth Green Team have been watering and performing cleanups at the Walking School Bus Path and will continue this stewardship in the future. The path is located directly across the street from GWRI's Prairie Avenue Farm, which is one of the Green Team's primary meeting locations.

This project is supported by Southeast New England Program (SNEP) Watershed Grants. SNEP Watershed Grants are funded by the U.S. Environmental Protection Agency (EPA) through a collaboration with Restore America's Estuaries (RAE). For more on SNEP Watershed Grants, see www.snepgrants.org

Former Providence Journal Parking Lot

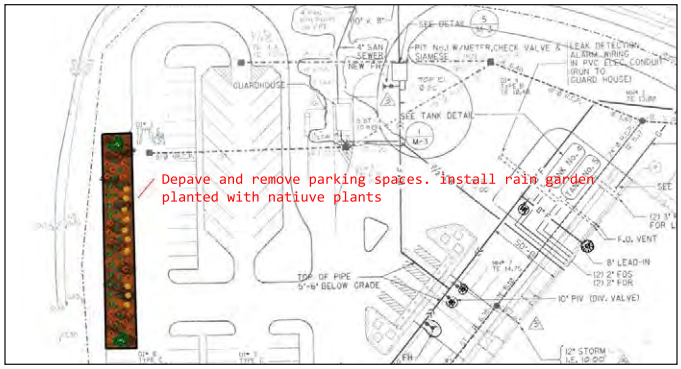
210 Kinsley Avenue Providence, RI

GROUNDWORK Rhode Island

Problem

The former Providence Journal property sits along the Woonasquatucket River in Providence. Its parking lot is part of a vast landscape of impervious surfaces directly bordering the river. Our project sought to reduce this surface area somewhat by preventing some sediment and polluted stormwater from the parking area from entering the Woonasquatucket.

Site location along Woonasquatucket River.



Proposal

GWRI and WRWC worked together on the Providence Journal property depaving and planting, located at 210 Kinsley Avenue, Providence. It was proposed that 18 Parking spaces could be depaved in a parking lot that is underused. We proposed a large rain garden with several native trees and plants.

Depaving and planting process.

Process

A subcontractor depaved the 18 parking spots, GWRI selected and installed plants. This was a late autumn/winter planting, so we planted Red Maple, clethra, and wintergreen.

Results

Deliverables:

- 3,000 ft² of asphalt removed and rain garden installed

Maintenance: WRWC's River Rangers will provide routine maintenance for the rain garden.

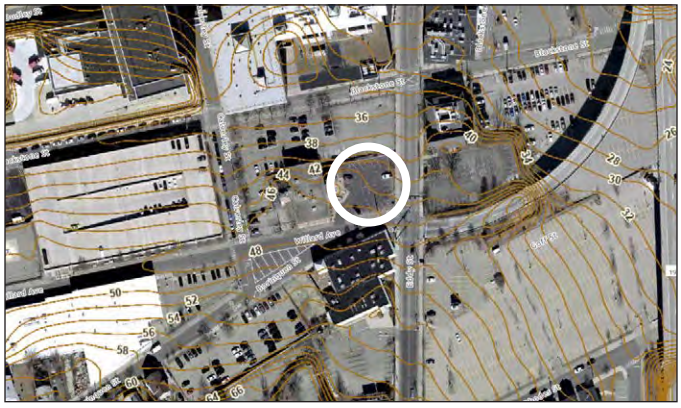
SNEP Southeast New England Program

This project is supported by Southeast New England Program (SNEP) Watershed Grants. SNEP Watershed Grants are funded by the U.S. Environmental Protection Agency (EPA) through a collaboration with Restore America's Estuaries (RAE). For more on SNEP Watershed Grants, see www.snepgrants.org

Project Weber/RENEW	45 Willard Ave Providence, RI	GROUNDWORK Rhode Island

Problem

Project Weber/RENEW is located in Upper South Providence, among the city's vast area of medical facilities and associated sprawl of parking lots. Upper South Providence is a historically redlined neighborhood bordered by I-95 and the toxic industrial Port of Providence, where the impacts of racist urban renewal policies and decades of disinvestment are still felt sharply today: of the



Site location among medical facilities.

2 census block groups the project area spans, 77% of residents are nonwhite and 60% live in poverty. Childhood asthma rates are some of the highest in Rhode Island, as are the impacts of urban heat island effect. Tree canopy cover in the project area is 8%, and the Tree Equity Scores for the block groups are 68 and 44—among the very lowest in Providence. Winds from Narragansett Bay move pollutants and noise from the Port and I-95 directly into residential neighborhoods.

Existing conditions.

Proposal

Our project proposes enhancing green spaces surrounding the building and parking area to help buffer noise and wind and filter pollutants. Beautiful new plantings along the sidewalks will benefit passersby, rain gardens will capture and clean stormwater runoff from our parking area, and a secluded garden by the building will accommodate the needs for privacy and relaxation of our patients.

We're hoping to be a demonstration project for the area, showing how much green infrastructure can be integrated along sidewalks and in parking areas and how advantageous lush gardens are for patient outcomes. These plantings will test best practices for plantings that are appropriate to the difficult conditions of the right-of-way such as salt and compaction, while also showing how beneficial dense plantings can be for overall plant health and habitat provision. These design features supplement tree plantings completed by Providence Neighborhood Planting Program in 2024.

Proposed parking lot with green infrastructure

Project Weber/RENEW

45 Willard Ave Providence, RI

250424 GWRI - 45 Willard Ave						
	Species	Common Name	Type	Quantity	Size	Second Choice
Stormwater Garden NW	Sambucus canadensis	Elderberry	Shrub	3	#3	
	Salix discolor	Pussy Willow	Shrub	4	#3	
	Clethra alnifolia	Summersweet, Sweet pepperbush	Shrub	3	#7	
	Monarda fistulosa	Bee balm varieties	Perennial	20	#1	
	Lobelia cardinalis	Cardinal flower	Perennial	46	#1	
	Hibiscus laevis	Halberd-leaf rosemallow	Perennial	10	#2	
	Schizachyrium scoparium	Little Bluestem	Grass	80	#1	
	Achillea millefolium	Common Yarrow	Perennial	25	#1	
	Eutrochium purpurea	Purple Joe pye weed	Perennial	10	#1	
Dry Garden SW	Opuntia humifusa	Eastern Prickly Pear	Cactus	10	#1	
	Prunus maritima	Beach Plum	Shrub	5	#7	
	Arctostaphylos uva-ursi	Bearberry	Shrub	15	#1	
	Monarda didyma	Bee balm varieties	Perennial	15	#1	
	Aquilegia canadensis	Columbine	Perennial	18	#1	
	Asclepias tuberosa	Butterfly milkweed	Perennial	20	#1	
	Sporobolus heterolepis	Prairie Dropseed	Grass	20	#1	
	Schizachyrium scoparium	Little bluestem 'Blaze'	Grass	15	#1	
Transition Garden SE Corner	Morella spp.	Bayberry	Shrub	1	#3	
	Amelanchier spp (canadensis preferred)	Serviceberry	Tree	3	?	
	Achillea millefolium	Common Yarrow	Perennial	10	#1	
	Pycnanthemum	Mountain mint	Perennial	15	#1	
	Monarda fistulosa	Bee balm varieties	Perennial	15	#1	
	Schizachyrium scoparium	Little bluestem	Grass	15	#1	
	Sporobolus heterolepis	Prairie Dropseed	Grass	20	#1	
Trees	Ostrya virginiana	Hop hornbeam	Tree	1	1.5-2.5 CAL	Celtis occidentalis
	Oxydendrum arboreum	Sourwood	Tree	1	1.5-2.5 CAL	Nyssa sylvatica

Plant palette.

Process

So far, GroundCorp has depaved one corner of the parking area and installed a rain garden filled with native shrubs and perennials. They have also dug a trench along the east side of the parking area and replaced the soil with layers of gravel and well-draining soil to improve the storage capacity of this strip which transports much of the water from other areas of the parking lot down to the rain garden.

Moving forward we plan to also increase the storage capacity of the northern strip of soil along the parking lot which transports some of the other runoff towards the rain garden in the northeast corner of the lot. Another garden, with drought tolerant plants, will be cut and installed in the southeast corner of the lot. Granite curbing will be installed around the parking areas in the lot to protect plantings from cars. We are currently designing a privacy garden, for patients, in the lawn area nearby the building. We have applied for further funding from the AARP to install furnishings in that space.

Results

Deliverables:

- 700 ft² of asphalt removed and rain garden installed
- 900 ft² rain garden installed

Maintenance: Ongoing maintenance will be conducted by GroundCorp, Project Weber/ RENEW staff, and Canopy Crew.

This project is supported by Southeast New England Program (SNEP) Watershed Grants. SNEP Watershed Grants are funded by the U.S. Environmental Protection Agency (EPA) through a collaboration with Restore America's Estuaries (RAE). For more on SNEP Watershed Grants, see www.snepgrants.org

IT'S EASY BEING GREEN... AND KEEPING OUR BAY BLUE!

WHO?

Groundwork Rhode Island and partners are leading a new **FREE Green Stormwater Infrastructure** program for commercial properties in Providence, Pawtucket, and Central Falls!

WHAT?

Participating properties will be eligible for **FREE educational workshops and trainings, FREE maintenance and performance consultations for any existing green infrastructure, and FREE design consultations** to identify opportunities to retrofit your property with new green infrastructure.

WHY?

Green Stormwater Infrastructure (GSI or GI) is a crucial strategy for increasing climate resilience in our cities and protecting the health of local rivers, ponds, and Narragansett Bay.

HOW?

GI can include rain gardens, bioswales, permeable pavement, and many other features that absorb stormwater when it rains, filtering out pollutants and reducing stormwater flow into our overburdened combined stormwater/sanitary sewer and separate stormwater sewer systems.

The Narragansett Bay Commission

PAWTUCKET FOUNDATION

RHODE ISLAND GREEN INFRASTRUCTURE

GROUNDWORK Rhode Island

WOONASQUATUCKET RIVER WATERSHED COUNCIL

Providence Stormwater Innovation Center

Supported by an EPA Southern New England Program (SNEP) grant and other private funding, **your property could be eligible for a FREE green infrastructure demonstration project worth up to $20,000!**

Your property can be part of the solution to protect Narragansett Bay and improve the health of our communities!

Contact info@groundworkri.org for more information.

…YOU CAN BE PART OF THE SOLUTION!

To help address this issue, the Woonasquatucket River Watershed Council (WRWC) and partners are leading a pilot **Green Stormwater Infrastructure Program** for commercial properties in Providence.

Supported by an EPA Southern New England Program (SNEP) grant and other private funding, your property could be eligible for a **FREE** Green Infrastructure demonstration project worth up to **$20,000** – and much more!

Stormwater Innovation Center

The Narragansett Bay Commission

WOONASQUATUCKET RIVER WATERSHED COUNCIL

GROUNDWORK Rhode Island

RHODE ISLAND GREEN INFRASTRUCTURE COALITION

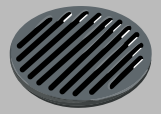
WOONASQUATUCKET RIVER
WATERSHED COUNCIL
45 Eagle St, Suite 202
Providence, RI, 02909-1802

It's raining, it's pouring... but it doesn't have to be flooding!

As a commercial property owner in Providence, you can help reduce flooding and increase your property values... **for FREE!**

Find out more about how a new Green Infrastructure outreach program can benefit you.

PROVIDENCE HAS A BIG PROBLEM…



In our city's outdated "combined sewer system," stormwater and sewage flow through the same pipes.

During heavy rains, the system backs up, flooding neighborhoods and releasing untreated wastewater into our local river and Narragansett Bay.

In 2022, our regional wastewater utility reported an alarming **279 releases of raw sewage** from Providence's 35 Combined Sewer Overflows (CSOs).

WHAT IS GREEN INFRASTRUCTURE?

Green Stormwater Infrastructure (GSI or GI) can include:

Rain gardens

Bioswales

Rain barrels

and many other features that absorb stormwater when it rains, filtering out pollutants and reducing stormwater flow into overburdened sewer systems.

WHAT ARE WE OFFERING?

Participating properties will be eligible for:

FREE educational workshops and trainings,

FREE maintenance and performance consultations for any existing green infrastructure,

FREE design consultations to identify opportunities to retrofit your property with new green infrastructure, and

FREE installation of a Green Infrastructure project worth up to **$20,000** if selected as a demonstration site.

Interested? Contact Sam Blair at **sblair@wrwc.org** or call **(401) 861-9046** for more information.