
STORMWATER INNOVATION CENTER

2024 ANNUAL REPORT



Stormwater
Innovation
Center

www.stormwaterinnovationcenter.org

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The Stormwater Innovation Center (SIC), led by the Audubon Society of Rhode Island, The Nature Conservancy, and the City of Providence Parks Department, is a collaborative initiative dedicated to improving water quality and stormwater management. By partnering with government, non-profits, and industry, SIC integrates research, education, outreach, and practical solutions to tackle stormwater challenges together and create cleaner, more resilient waterways for Rhode Island.

WHO WE ARE

Green infrastructure research, training, outreach and implementation

The Stormwater Innovation Center (SIC) is committed to improving stormwater management, promoting education, and fostering partnerships to enhance water quality throughout Rhode Island.

- **Innovative Stormwater Solutions:** By conducting research and monitoring green infrastructure projects, SIC develops and shares best practices in the design, construction, and maintenance of effective stormwater systems.
- **Education and Community Engagement:** SIC empowers individuals and professionals through programs such as public events, school outreach, guided tours, and hands-on training. Signature events like the Rain Harvest Festival encourage action and raise awareness.
- **Collaborative Partnerships:** Working with government agencies, non-profits, academic institutions, and the private sector, SIC builds networks to address complex stormwater challenges through shared knowledge and resources.
- **Impact Through Restoration:** SIC leads water quality improvement projects across Rhode Island, finding solutions that restore and protect local waters.

LEADERSHIP TEAM

ADVISORY COMMITTEE

The Stormwater Innovation Center **Leadership Team** meets weekly to provide input and ideas that advance our mission. They contribute to projects in research, training, outreach, and stormwater management while collaborating on grants and funding opportunities. This teamwork drives the Center's success and strategic direction.

Leadership Team Members

Brian Byrnes, Providence Parks Department

Wenley Ferguson, Save The Bay

Lee Ann Freitas, Providence Parks Department

Q Kellogg, University of Rhode Island

Heather Kinney, The Nature Conservancy of Rhode Island

Ryan Kopp, Stormwater Innovation Center, Audubon Society of Rhode Island

Meg Kerr, Retired Advisor and Consultant

Jose Ramirez, Roger Williams Park Conservancy

Rebecca Reeves, Stormwater Innovation Center, Audubon Society of Rhode Island

Kai L Muscio, The Nature Conservancy of Rhode Island

Angela Tuoni, The Nature Conservancy of Rhode Island

The Advisory Committee at the Stormwater Innovation Center is important in fostering collaboration and knowledge exchange within the stormwater management and water quality restoration community. Through our bi-annual meetings, we keep partners informed about ongoing projects and programs. These sessions provide a platform for presenters to share their expertise, insights, and experiences on various projects. The Advisory Committee actively encourages networking among stormwater professionals. Our goal is to cultivate an inclusive environment that promotes meaningful discussions, shared learning, and the advancement of stormwater solutions and practices.

Advisory Committee Members

Greg Avenia - Kleinfelder
Joe Baker - Rhode Island Department of Transportation
Johanna Barthmaier-Payne - Rhode Island School of Design
Brian Byrnes - City of Providence Parks Department
Jillian Chopy - Rhode Island Department of Health
Sara Churgin - Eastern Rhode Island Conservation District
Andrew Cortes - Building Futures
Priscilla De La Cruz - City of Providence Sustainability Department
Chris Dill - Rhode Island Department of Environmental Management
Sheila Dormody - City of Providence Policy and Resiliency
Holly Ewald - Artist and Educator
Wenley Ferguson - Save the Bay
Thaïs Fournier - Rhode Island Department of Environmental Management
Lee Ann Freitas - City of Providence Botanical Center
Art Gold - Stormwater Innovation Center
Joe Haberek - Rhode Island Department of Environmental Management
Heather Hamilton - Rhode Island Department of Transportation
Robert Hanley - Middletown Department of Public Works
Lance Hill - Pare Corporation
Craig Hochman - City of Providence Department of Public Works
Jamie Houle - University of New Hampshire
Q Kellogg - University of Rhode Island Coastal Institute
Meg Kerr - Stormwater Innovation Center
Heather Kinney - The Nature Conservancy
Kim Koriath - Rhode Island Department of Environmental Management
Brian Kuchar - Horsley Witten
Brian Lafaille - Rhode Island Department of Environmental Management
Todd Le - Northern Rhode Island Conservation District
Alicia Lehrer - Woonasquatucket River Watershed Council
Scott McLeish - Middletown Department of Public Works
Bonnie Nickerson - Roger Williams Park Conservancy
Jill Parrett - Providence College Facilities/Sustainability
Kevin Proft - City of Providence Sustainability Department
Jose Ramirez - Roger Williams Park Conservancy
Alisa Richardson - Rhode Island Department of Transportation
Elizabeth Scott - SNEP Network
Chris Shea - DiPrete Engineering
Jeanine Silversmith - Rhode Island Environmental Education Association
Renee Stoops - Plant Allies
Edward Tally - City of Cranston
Jed Thorp - Save the Bay
Angela Tuoni - The Nature Conservancy
Kate Venturini - University of Rhode Island Cooperative Extension
Nick Wentzell - Rhode Island Department of Transportation
Michael Wilkinson - USDA Natural Resources Conservation Service

OUR TEAM

Working together to achieve our shared goals



SIC Holiday Celebration

Emily Alberigo joined as our Outreach and Social Media Associate, elevating our communications efforts. She launched the SIC newsletter, redesigned and upgraded our website, created engaging social media content and educational videos, and initiated development on a new website dedicated to Mashapaug Pond projects.

Madison Regan and **Sophia Motta** joined the team to support monitoring and research for the Treatment Train system. They installed advanced water quality sampling equipment, flow sensors, water level sensors, and a data collection platform, enabling real-time insights into the Treatment Train's performance.

In 2024, the Stormwater Innovation Center (SIC) continued to expand its talented team strengthening our capacity to fulfill our mission. While **Ryan Kopp**, SIC Director, and **Rebecca Reeves**, Education and Outreach Manager, remain integral to our success, we are thrilled to highlight several new additions who have significantly contributed to our projects and initiatives.

Fiona Harrington, this year's IBES intern, made significant strides in cyanobacteria monitoring and coordination of Watershed Watch volunteers. She also assessed infiltration rates at green infrastructure sites within Roger Williams Park and developed GIS maps to guide future work at Mashapaug Pond.



Left: Ryan installs flow meter at treatment train

Right: Emily prepares for a boat ride on Mashapaug Pond

Bottom: Madison catches carp for counting

Dr. Art Gold, a visiting professor and retired URI faculty member, brought invaluable expertise to our research on carp management and water quality. Dr. Gold has also provided technical guidance on the Roger Williams Zoo project and the Treatment Train system.

Q Kellogg contributed to the Treatment Train monitoring and conducted a reassessment of infiltration rates through continuous monitoring at green infrastructure sites within Roger Williams Park.

Starting in early 2025, we are excited to welcome **Molly Welsh** as our new Stormwater Program Manager. Molly, currently a Research Hydrologist with the USDA Agricultural Research Service, has a wealth of experience from her work with the Narragansett Bay Commission and RIDOT Stormwater Division. She will lead technical water quality and stormwater programs at SIC, further advancing our mission.



Upper Left: Rebecca delivers a maintenance training presentation
Right: Fiona uses an infiltrometer at a stormwater site
Bottom left: Art holds up a monster of a carp

Our growing team reflects SIC's commitment to innovation, collaboration, and actionable solutions. Together, we are better equipped than ever to address stormwater challenges and improve water quality for the communities we serve.



Rebecca displays our self-guided stormwater tour brochure



Madison, Q and Sophia installing monitoring equipment at the treatment train

The Stormwater Innovation Center is proud to recognize Lindsay Dulude as the 2024 Volunteer of the Year for her exceptional dedication to our mission. Over the past four years, Lindsay has collected and tested water samples and monitored green infrastructure during stormwater events in Roger Williams Park, providing high-quality data that guides our restoration efforts. Her commitment has been pivotal in improving green infrastructure across Rhode Island. Beyond fieldwork, Lindsay has raised public awareness about stormwater management and clean water through media outreach, making a lasting impact on both the environment and the community.



Lindsay, Ryan and Jeff Hall at the Volunteer of the Year Awards Ceremony

OUR PARTNERS

Our partnerships are our strength

In addition to our dedicated core staff, the Stormwater Innovation Center thrives thanks to the incredible support of our partners, collaborators, and volunteers. These individuals and organizations form a dynamic network of expertise that drives our mission and serves as the foundation of our success.

We extend our heartfelt gratitude to the following partners for their invaluable contributions on SIC projects and programs in 2024:

- Providence Parks Department
- Rhode Island Department of Transportation
- City of Providence
- City of Cranston
- City of Pawtucket
- Rhode Island Department of Environmental Management
- Rhode Island Department of Health
- Environmental Protection Agency (Narragansett and Chelmsford Labs)
- Massachusetts Statewide Municipal Stormwater Coalition
- University of Rhode Island
- Roger Williams University
- Rhode Island School of Design
- Brown University
- The Met School
- Paul Cuffee School
- Sophia Academy
- Eden Park Elementary
- URI Graduate School of Oceanography
- Metcalf Institute
- The Nature Conservancy of Rhode Island
- Audubon Society of Rhode Island
- Save the Bay
- Woonasquatucket River Watershed Council
- Green Infrastructure Coalition
- The Pawtucket Foundation
- Roger Williams Park Conservancy
- Roger Williams Park Zoo
- Providence Urban Wildlife Conservation Partnership
- Restore America's Estuaries
- Barrington Land Trust
- Groundwork RI
- Rhode Island Conservation Districts
- Narrow River Preservation Association
- SNEP Network
- Buena Grafica Social Studio
- The Below and Above Collective
- Movement Education Outdoors
- AS220
- Rhode Island Black Storytellers
- Tomaquag Museum
- Ferguson Water Works
- EJ Prescott
- Kleinfelder
- Pare Corporation
- Horsley Witten Group
- Groundbreaking Design
- DiPrete Engineering
- Contech Engineered Solutions
- Advanced Drainage Systems
- Bruce Hooke Consulting
- Cultech
- New Urban Arts
- Dwell Labs
- Atwater Donnelly
- Circus Dynamics
- Notable Works
- Prickly Ed's
- URI Watershed Watch
- US Fish and Wildlife Service
- Roger Williams Park Botanical Center
- Most importantly, all of our amazing volunteers!

PROJECT AND PROGRAM FUNDERS

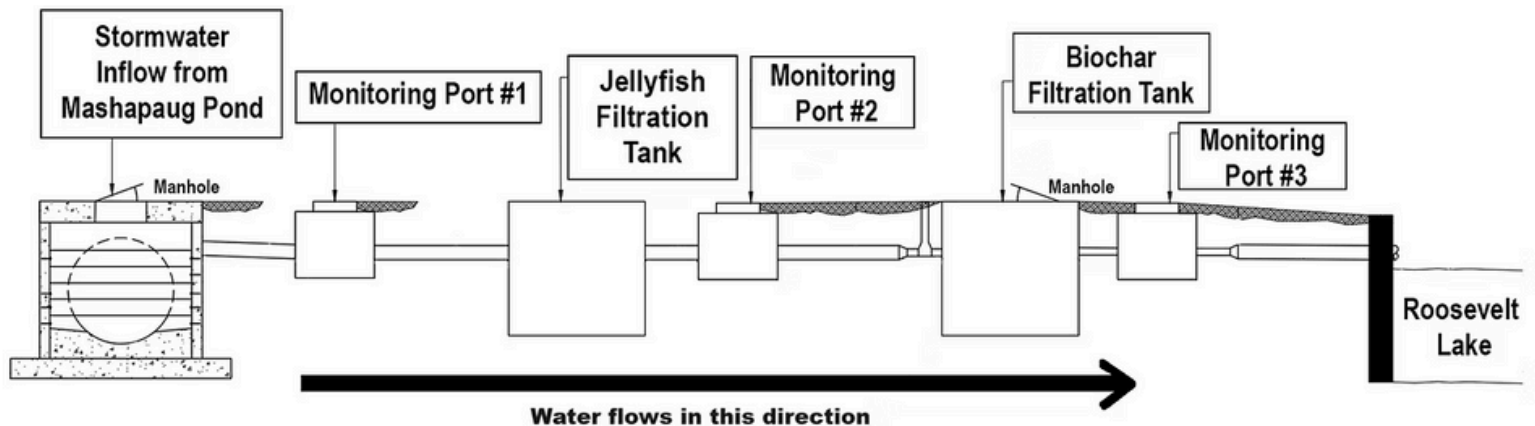
Narragansett Bay Estuary Program
 Rhode Island Department Of Transportation
 SNEP Network
 Restore America's Estuaries
 Providence Parks Department
 The Rhode Island Foundation

STORMWATER MANAGEMENT PLANNING, DESIGN, CONSTRUCTION

STORMWATER TREATMENT TRAIN

In 2025, the Providence Parks Department continued its commitment to improving water quality in Roger Williams Park with the construction of a new stormwater treatment train, funded by the Rhode Island Infrastructure Bank.. This project, designed by Pare Corporation and constructed by Manafort Brothers, diverts and filters stormwater runoff from Mashapaug Pond and nearby stormwater catch basins.

During rain events, stormwater from the upper watershed is directed into the treatment train using modular stop logs, which can be adjusted to control the volume of diverted runoff. The treatment train uses two primary filtration technologies:



Treatment Train construction photo



Inside the treatment train diversion structure during construction

1-Jellyfish Filter Tank:

- This filter features cartridges that resemble jellyfish in appearance.
- As water enters the tank, trash, debris, and sand-sized particles are removed.
- The filter also captures smaller pollutants such as nitrogen, phosphorus, metals, and hydrocarbons.
- After this filtration step, the water flows into the next stage.



Treatment Train vault filled with biochar



Stormwater Compliance installing jellyfish filter cartridges.

2-Biochar Filtration Tank:

- The biochar tank contains charcoal produced from natural materials like wood chips and plant residues.
- Biochar effectively filters out harmful nutrients and contaminants.
- Future plans include experimenting with other natural materials to enhance water quality further.

The treatment train was designed with research and continuous monitoring in mind. Monitoring ports are installed between each stage to collect data on water quality before and after filtration. This data helps improve maintenance practices and optimize filtration performance. We will also use this site to host and coordinate hands-on maintenance trainings for staff responsible for maintaining Jellyfish filters.



Treatment Train presentation and training at the Stormwater Expo

RWP ZOO STORMWATER MASTER PLAN

SIC started a new collaboration with the Roger Williams Park Zoo in 2024. The City of Providence and the Parks Department are key partners for this project. The Horsley Witten Group is leading the initiative to develop a Stormwater and Water Quality Master Plan for the Zoo. This project is funded by a SNEP Watershed Implementation grant.

The pond within the Zoo frequently experiences cyanobacteria blooms due to high nutrient levels and elevated water temperatures. Through the Master Plan, we will:

- Delineate the watershed to better understand drainage from the Zoo property into the Zoo pond and Polo Lake.
- Map and assess existing stormwater and sewer infrastructure.
- Identify stormwater outfalls that drain into the ponds and other sources of nutrients and bacteria.
- Identify preliminary locations for stormwater management solutions using green infrastructure.



The Horsley Witten team going over drainage plans during a field assessment at the Roger Williams Park Zoo

Once implemented, these green infrastructure practices can also be integrated into the Zoo's existing education and outreach programs, which are already highly effective. Upon completing the Master Plan, we will coordinate a field trip with Zoo staff to the Stormwater Innovation Center to explore existing green infrastructure in Roger Williams Park. During this visit, we will discuss stormwater management and green infrastructure solutions. This will provide the Zoo team with a solid knowledge base to enhance their educational and outreach initiatives moving forward.

INVASIVE CARP MANAGEMENT

Through our investigations at the Roger Williams Park Zoo, common carp have been identified as a potential major source of nutrients affecting the Roger Williams Park Pond system. Carp can degrade water quality by disturbing sediments, uprooting aquatic plants, and releasing nutrients that fuel harmful algal blooms, including cyanobacteria.

In collaboration with partners from The Nature Conservancy, the EPA's Chelmsford and Narragansett Labs, and the Roger Williams Park Zoo, we conducted electrofishing surveys in the park's ponds. These surveys revealed a significant population of large carp that have the potential to degrade water quality.



Left: Steven Shivers (EPA) transports carp to shore, Upper right: Sarah Paulson (TNC) measures a carp, Lower right: Electrofishing survey in RWP

The next phase of the project will focus on selectively removing carp from designated exclusion zones. This study will evaluate the impact of carp removal on aquatic vegetation, water quality, and cyanobacteria levels. By reducing carp populations in these targeted areas, we aim to determine whether broader carp management and removal efforts could benefit the pond ecosystem.

If successful, this demonstration project could serve as a model for other organizations looking to improve water quality in ponds throughout the region.

GREEN INFRASTRUCTURE RESTORATION

Building on our past performance monitoring and research in Roger Williams Park, we identified 11 stormwater sites that are not functioning as intended. These sites aren't capturing or treating stormwater effectively due to design, construction, or maintenance issues. With this underperformance, the sites aren't improving water quality as planned. Thanks to grants from the Narragansett Bay Estuary Program and Restore America's Estuaries SNEP Watershed Implementation grant, we are redesigning and reconstructing these sites to restore their function and boost water quality in the park.

This project focuses on upgrading green stormwater infrastructure, which will significantly improve the water quality of the park's ponds. Additionally, it will provide an educational platform for decision-makers, planners, engineers, contractors, and maintenance staff to learn about innovative stormwater solutions—encouraging similar projects across the region.



Left: Sam Greenwood (Parks) surveys a GI site for re-design, Right: Wenley Ferguson (STB) and Dave Manoni (Groundbreaking Design) visit GI Sites in RWP

GREEN INFRASTRUCTURE NATIVE PLANTINGS

We supported and staffed native planting events at Roger Williams Park and at Barrington Middle School. Native grasses and shrubs were installed in two infiltration basins at Roger Williams Park, with help from Save the Bay staff.

We supplied plants, with the help of Prickly Ed's Cactus Patch Native Plant Emporium, to a project led by the Barrington Land Conservation Trust and a group of local high school students. The Conservation Trust had been collaborating with students to install a native plant garden in a bioswale located on the edge of the Barrington Middle School campus. The new planting area is adjacent to an existing teaching garden, and will be used by students to learn more about the benefits of native plants to support pollinators and wildlife populations, as well as to prevent flooding and improve water quality.



Left: Fiona Harrington works on installing native plants in RWP



Right: BLCT Executive Director Cindy Elder and Barrington High School students installing native plants in teaching garden

MONITORING

Cyanobacteria, Green Infrastructure, Water Quality

CYANOBACTERIA MONITORING

This year, we had another successful season collaborating with The Nature Conservancy, the Rhode Island Department of Environmental Management (RIDEM), the Rhode Island Department of Health (RIDOH), and the Cyanobacteria Monitoring Collaborative to monitor cyanobacteria in the Roger Williams Park watershed. Our monitoring covered key sites, including Tongue Pond, Spectacle Pond, Mashapaug Pond, Fenner Pond, and the Roger Williams Park Ponds.

We collected samples to analyze for chlorophyll and phycocyanin levels, microcystin toxin concentrations, and the genus types of cyanobacteria present. We encourage community participation in science monitoring through the BloomWatch App, where users can report potential cyanobacteria blooms by submitting photos.

Community outreach is vital to our mission. We provide education on the dangers of cyanobacteria blooms, how to identify them, and their causes. Long term, this outreach helps reduce bloom occurrences by minimizing stormwater runoff and keeps the public safe.

Our monitoring results are publicly accessible via a [real-time data dashboard](#), ensuring transparency and promoting awareness of water quality in the community.



Left: Cyanobacteria monitoring team analyzes samples, Right: cyanobacteria bloom in RWP

MASHA PAUG POND WATER QUALITY MONITORING

This year, [we collaborated](#) with the EPA Narragansett Lab to advance the permitting, deployment, and data visualization for a real-time water quality monitoring buoy in Mashapaug Pond. The buoy is equipped with instrumentation and sensors that collect key indicators of cyanobacteria and other water quality parameters vital for EPA research.

To ensure high-quality data, EPA scientists routinely maintain, clean, and calibrate the sensors. The [data collected](#) serves as valuable baseline information to evaluate ongoing restoration efforts and regulatory initiatives in the Mashapaug watershed.

We are also developing a public-facing website that will provide real-time access to this water quality data. The website will feature educational content on various stormwater management practices, regulatory actions, and research projects happening in the watershed. This will inform the community about these efforts and inspire action by demonstrating how their participation in stormwater management can positively impact water quality.

Stay tuned for the website launch in 2025!



Left: Real-time treatment train buoy in Mashapaug Pond. Right: EPA Narragansett team prepares the buoy for deployment

WATER QUALITY MONITORING

This year marked our 5th season participating in the Watershed Watch community science program. From May through October, we recruited, trained, and coordinated volunteers to collect water quality samples at five locations within Roger Williams Park.

Due to a significant backlog in processing lab results at the University of Rhode Island, we are still awaiting data from 2023 and 2024. Once received, these results will be added to our database and made publicly available on our [dashboard](#).

This community science program provides valuable insights into the effectiveness of stormwater management and restoration efforts in the park. The data helps inform decisions and strategies for both current and future projects while actively engaging the community, empowering them as stewards of the park's ponds.



Watershed Watch volunteers analyze water samples in RWP

TREATMENT TRAIN MONITORING

After the Treatment Train was constructed in October, we installed equipment to measure water flow and water quality within the system. This monitoring helps us understand the site's performance under various conditions and maintenance schedules.



We will experiment by diverting different stormwater flows and events through the system. This will help determine the pollutant reduction potential for a range of flows, identify the optimal depth and size of stormwater events for treatment, and establish the best maintenance frequency to achieve maximum pollutant reduction. The data collected is transmitted via cellular signal to an internal database. This real-time data allows us to quickly identify any issues with the system and check whether the sensors are clean and properly calibrated.



Installing and programming the data collection platform and monitoring equipment at the treatment train in RWP

RAIN SNAP MONITORING

2024 brought new collaborations and partnerships to our community green infrastructure monitoring platform, [RainSnap](#). New sites in South Kingstown and Narragansett were added through a partnership with the Narrow River Preservation Association. Neighbors of the selected sites received training directly from the NRPA on how to monitor them. We have had initial conversations with other organizations, such as the Blackstone Parks Conservancy, to potentially add new sites following this model. Existing volunteer networks can then be leveraged for recruitment. Through a collaboration with the City of Providence, we also added a few frequent flood sites to the platform. We also trained two “RainSnap Ambassadors” to help us recruit volunteers and approve new users and report submissions.



INFILTRATION RATE MONITORING

This year we evaluated infiltration rates at various green infrastructure sites in Roger Williams Park to assess whether sediment buildup in treatment areas is reducing infiltration rates below their original design specifications. This investigation employs multiple methods. Using an infiltrometer, we measure infiltration by adding a known volume of water and timing how long it takes for a specific depth to drain into the soil. Additionally, we have installed water level sensors in treatment areas to collect storm data at five-minute intervals. We can then calculate the time required for basins to infiltrate the collected stormwater. These efforts help identify maintenance and repair needs and improve the long-term performance of green infrastructure systems.



Fiona using an infiltrometer at a GI site in RWP

PROFESSIONAL TRAINING

Stormwater Expo, Webinars, Tours, Maintenance Training

STORMWATER EXPO

The sold-out 2024 Stormwater Innovation Expo, co-hosted with The Rhode Island Green Infrastructure Coalition, was a huge success. Held at the Roger Williams Park Casino, the event brought together municipal leaders, engineers, and industry professionals to explore the 2024 theme, “Partnerships for Statewide Climate Resilience.” The SIC organized outdoor field presentations, featuring expert insights from The Below and Above Collective, The Nature Conservancy in Rhode Island, Providence Parks Department, Pare Corporation, University of Rhode Island, Low Impact Development Technologies, LLC (LIDTECH), Everett J. Prescott Inc., and Kleinfelder. Continuing education credits for landscape architects were offered via LACES.



Greg Avenia delivers a GI design presentation at the Stormwater Expo



Mike Everhart delivers an erosion control presentation at the Stormwater Expo



Indoor panel of presenters at the Stormwater Expo

MAINTENANCE TRAININGS

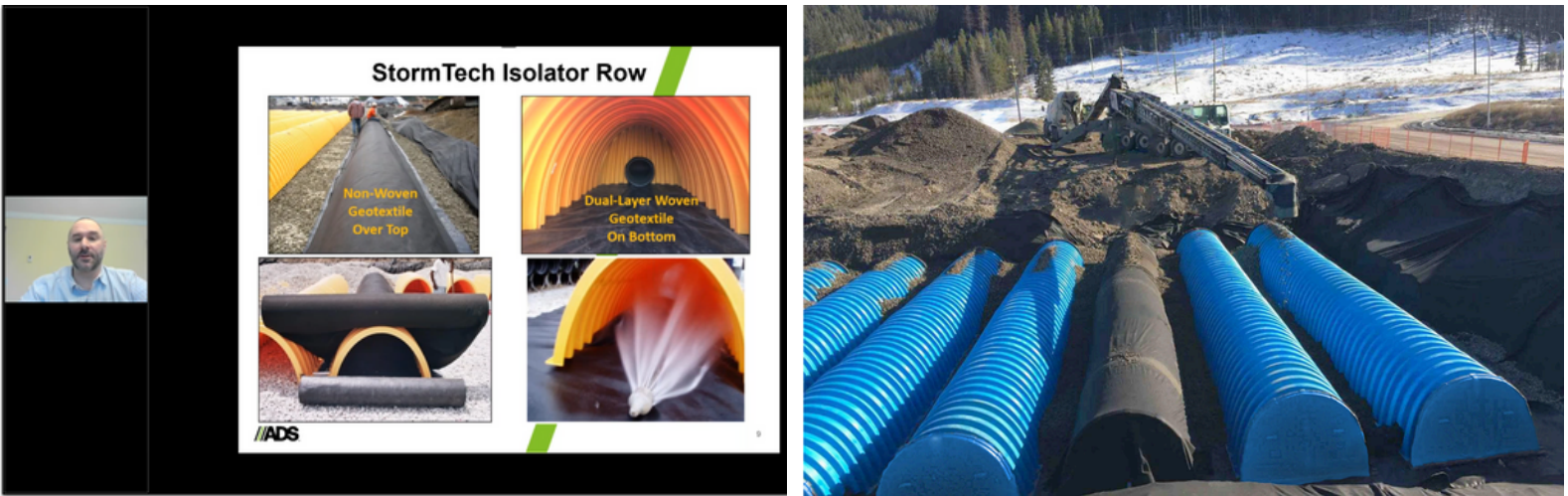
We offered two green infrastructure maintenance trainings in 2024. Stormwater Compliance, a private green infrastructure maintenance company, facilitated the trainings along with Ferguson Waterworks. Gregg Novick and Nate Marles of Stormwater Compliance delivered content on BMP inspection and maintenance based on their experience in the field, serving primarily private GI owners. They brought along some of their specialized equipment, including a vac truck, to show attendees.



Rebecca and Stormwater Compliance staff deliver presentations during our maintenance trainings

EMERGING TECHNOLOGIES WEBINAR

We offered a webinar as part of our yearly Emerging Stormwater Technologies series. In 2024, we focused on Cultec's Separator Row and StormTech Isolator Row Plus. Representatives from Cultec, Advanced Drainage Systems (ADS), and DiPrete Engineering presented on their experiences manufacturing and installing separator & isolator row technologies. Over 115 people registered for our webinar, and over 70 attended. A full recording of the webinar can be found on our website at stormwaterinnovation.org/cultec-ads-webinar.



Left: Screenshot of Emerging Technologies webinar, Right: StormTech Isolator Row being installed at a site

RWP SITE TOURS

Among the many tours we hosted in 2024 were two comprised of water quality leaders in both Rhode Island and Massachusetts.

In June, we helped plan and host URI Coastal Institute Fellows on a tour that followed the Mashpaug watershed from start to finish. The SIC provided information to attendees at both the Mashpaug Pond and Roger Williams Park stops on the tour, highlighting our research, monitoring education, and outreach initiatives.



Ryan leads a discussion about GI performance



MA Statewide Municipal Stormwater Coalition group tour in RWP



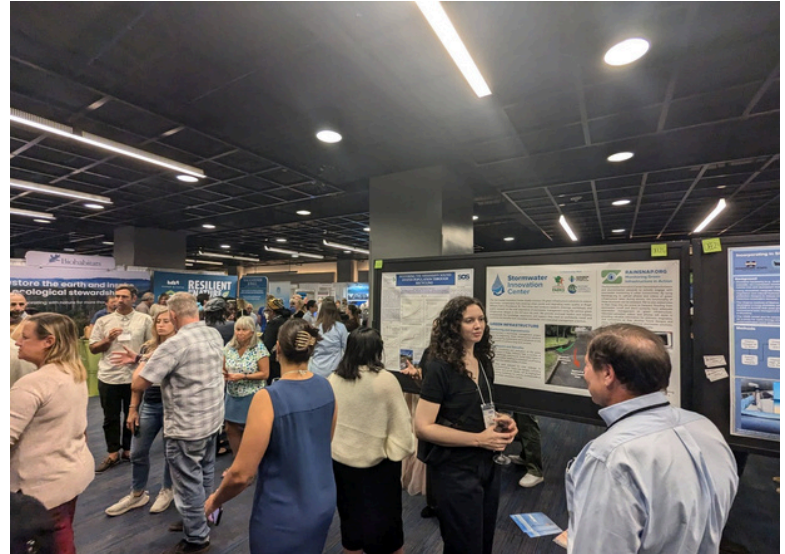
Rebecca leads a discussion about SIC outreach and education

In August, we hosted the Massachusetts Statewide Municipal Stormwater Coalition on a tour at Roger Williams Park. The Coalition is comprised of leaders across a variety of municipalities in Massachusetts that have MS4 permits. The SIC highlighted several BMPs at the Park, discussing lessons learned in the design, construction, maintenance, and restoration of municipal green infrastructure projects.

POSTERS AND PRESENTATIONS

We participated in two water quality conferences in 2024: Restore America's Estuaries (RAE) Annual Summit, which was held in Arlington, VA, and the Southeast New England Program (SNEP) Symposium, which was held in Bristol, RI.

At both events, we provided poster presentations on projects funded by RAE/SNEP, which include our green infrastructure monitoring program RainSnap, as well as stormwater retrofit projects at Roger Williams Park.



Left: Poster presentation at the SNEP symposium, Right: Poster presentation at the RAE Summit

Throughout the year, the Stormwater Innovation Center team actively shared our findings and expertise through various presentations to diverse audiences. For the Narragansett Bay Estuary Program (NBEP), we presented our ongoing monitoring and research on the performance of green infrastructure across the Providence metropolitan area. For the Rhode Island Flood Mitigation Association's (RIFMA) "Flood Talk Fridays," we highlighted lessons learned from our monitoring and research, focusing on challenges in the design, construction, and maintenance of stormwater projects. Additionally, we presented to the Rhode Island chapter of the American Society of Landscape Architects (RI ASLA), sharing the programs and professional trainings to engage their members. In North Kingstown, as part of the "Climate Conversations" series, we engaged residents on the importance of managing stormwater at home through practical solutions like rain gardens and rain barrels. Links to these presentations and additional resources can be found on our website.

PUBLIC OUTREACH-ENGAGEMENT

Festival, School Programs, Tours, Signage, Media

RAIN HARVEST FESTIVAL

The SIC hosted its fifth annual Rain Harvest Festival at the Botanical Center Pavilion in 2024 - a day filled with community, education, and fun! The festival began with a land acknowledgment by Thawn Harris, who honored the traditional homelands of the Narragansett people and their enduring connection to the land and water. This set the tone for a day focused on our shared responsibility to protect the environment. We were treated to storytelling from the Rhode Island Black Storytellers (RIBS), and enjoyed local folk music from Atwater-Donnelly. Local artist Savonnara Alexander Sok, from AS220, installed a beautiful new mural located near green infrastructure adjacent to the Botanical Center, illustrating themes of aquatic life and green infrastructure. Visitors engaged in interactive tables from organizations, like Save the Bay and The Nature Conservancy, and local vendors, providing hands-on learning opportunities. Attendees were also encouraged to tap into their own creativity with crafts and sidewalk chalk art pieces. This event was our most well-attended yet, and we received glowing feedback from all partners and attendees who took part.



Left: GI and mural tour during the RHF, Right: Chalk art activity during the RHF

STORMWATER IN SCHOOLS

The SIC delivered Stormwater in Schools programming to students at Sophia Academy in Providence, Central High (New Urban Arts) in Providence, and Eden Park Elementary School in Cranston. Students assembled and painted bird and pollinator boxes that contained green roofs made with upcycled wooden boxes and native sedum. Pollinator boxes were placed at various Audubon refuges, the Roger Williams Park Botanical Center, and along the Blackstone River by the Blackstone River Watershed Council. Painted bird boxes were also auctioned at Audubon's Solstice Soiree or given to students to take home and install with their families, and one box was placed at Eden Park's campus. Educational signage with drawings and definitions from participating students will now accompany all of the box placements.



Left: Central High School students display their painted bird boxes, Right: Sophia Academy students paint pollinator boxes

We also planned for 2025 school programming, and are looking forward to working with some new schools. Collaborating with the City of Pawtucket, we will provide the program to environmental science students at Jacqueline Walsh School for the Arts. Students will work with art teacher Chris Kane to paint rain barrels that the City will give to residents free of charge. We will also be working with an environmental science class at Toll Gate High School in Warwick. This program will allow us to work in a new watershed and utilize a new field trip location that will be most relevant to the student body. We'll be working with Alvarez High School in Providence so we can engage the community in the Mashpaug Watershed as well. We also applied for a community grant from the Wood-Pawcatuck Wild and Scenic Stewardship Council. If granted, we would work with the Greene School in West Greenwich and tailor the content of our program, including the field trip, to that particular watershed area.

STORMWATER IN SCHOOLS



Left: Finished green roof pollinator boxes from Eden Park Elementary, Right: Eden Park students show off their assembled pollinator box

STORMWATER PSA VIDEO

We worked with a video production company to develop a [Stormwater PSA video](#), depicting a character named “Stormwater” who creates havoc all around him! The style of the video mimics Allstate “mayhem” commercials. We created a list of contacts at local environmental nonprofits, as well as nonprofits focused on water quality and conservation in other coastal states. These contacts helped us promote the PSA as we rolled it out on social media in July, to many positive reviews. The video has received nearly 10,000 views on Facebook, YouTube and Instagram! As part of this project, we also created a [new page](#) for our website on how the community can take action to manage stormwater.



Screenshot from the Stormwater PSA video

UNIVERSITY PARTNERSHIPS

In 2024, the Stormwater Innovation Center strengthened its collaborations with local universities, providing students with real-world case studies and hands-on learning opportunities in stormwater and water quality management.

Students from the Rhode Island School of Design (RISD) developed conceptual designs for proposed Total Maximum Daily Load (TMDL) Implementation Plan sites in Roger Williams Park, showcasing innovative approaches to addressing water quality challenges.



RISD class on a GI site tour in RWP

We partnered with the Metcalf Institute to engage a national cohort of journalists, offering insights into our work in stormwater management, research, and water quality monitoring. This collaboration aimed to help journalists effectively translate complex scientific concepts into accessible stories for the public.

Through our ongoing collaboration with Brown University's Institute at Brown for Environment and Society (IBES) internship program, we hosted an intern who contributed to our projects while gaining career experience, exposure to local Rhode Island initiatives, and valuable networking opportunities.



Left: Ryan explains stormwater performance monitoring to the Metcalf Cohort, Right: Heather Kinney points out microscopic cyanobacteria to a Metcalf fellow

EARTH APRIL

The City of Providence and the Stormwater Innovation Center collaborated on the City's "Wonders of Water" Earth Month activities. The mission of our collaboration was to engage youth around stormwater concepts, as well as to engage community members by raffling barrels painted by after-school youth – a process facilitated by local teaching artists throughout the month of April. On the City's Earth Day event, the SIC spoke alongside Mayor Brett Smiley and other representatives from the City of Providence. The SIC also provided a green infrastructure tour alongside Parks Deputy Superintendent Brian Byrnes. We also highlighted the "Water is Life" mural restoration that local Narragansett artist Dawn Spears completed as part of the month's events.



Left: Artist Dawn Spears showing her RWP mural restoration progress, Right: Providence after-school youth painting rain barrels

DIGITAL MEDIA UPDATES

The addition of a temporary social media and outreach staff member, Emily Alberigo, allowed us to create a regular newsletter for our subscribers. These newsletters contain information about what the SIC is working on, but also custom educational pieces, and all is presented with engaging graphics and links.

With Emily's help, we redesigned our website for more user-friendliness, consistency, and the most up-to-date information. Updates will continue on our website on a rolling basis, but our 2024 website makeover has made navigation much simpler, and the content looks much more engaging!

FLOATING WETLAND

The Below and Above Collective, a group of scientists, artists, and botanists in Rhode Island, worked with the SIC to obtain required permits from RIDEM, as well as funding from NBEP, to install a floating wetland structure in Roger Williams Park. The floating wetland is a scientific experiment, allowing the Collective to gather information on how plant material removes harmful nutrients from water, as well as how the structure provides habitat for macroinvertebrates and other beneficial wildlife.



Left: Floating Wetland in RWP, Right: Below and Above and SIC team observe microscopic organisms living around the Floating Wetland

The structure also serves as a community engagement and education site. Local community members helped gather materials for the structure, and helped to launch it, and the SIC collaborated on a summer program, “Floating Artlands”, with students from New Urban Arts. These students studied the floating wetland and created art for a zine about the life the structure hosts. Educational signage has also been installed by the structure so that parkgoers can learn more about its impact on local water quality and community building.



Left: “Floating Artlands” students learning about a bioswale at RWP, Right: Below and Above Collective presentation at Stormwater Expo

OUTREACH EVENTS

We tabled at a variety of events in 2024, reaching a diversity of audiences. We handed out a host of outreach materials, including educational handouts, volunteer recruitment materials, postcards, and even fun freebies like native seed packages and rain gauges. We tabled at the City of Providence's Volunteer Appreciation Event held at the Roger Williams Park Botanical Center, at Audubon's Transforming the Landscape native plants and pollinators symposium, Audubon's famous Raptor Weekend event, US Fish & Wildlife's Cops & Bobbers family event held at Roger Williams Park, URI's Science Saturdays free family event, and even tabled at a series of Cranston's farmers' markets, promoting the work the City of Cranston was completing to install green infrastructure on streets leading into Spectacle Pond. Artist Holly Ewald, with the help of graphic designers at Buenagrafica Social Studio, created postcards to make the mission of this project more accessible.



Upper left to lower left clockwise: Heather Kinney talks cyanobacteria at URI Science Saturdays, Holly Ewald engages the public on work being done by the City of Cranston around Spectacle Pond, Rebecca talks about stormwater runoff at a City of Providence Volunteer Appreciation event, Audubon staff demonstrating the stormwater runoff model at Raptor Weekend, Rebecca at the Transforming the Landscape Symposium

YOUTH CONSERVATION LEAGUE

We worked with Audubon's seasonal Youth Conservation League, as well as the Roger Williams Park Botanical Center and Save the Bay, to manage invasive vegetation at a few sites in Roger Williams Park. This impressive crew was able to cut down heaping piles of *Euonymus alatus*, or burning bush, a rapidly-spreading invasive shrub frequently used as an ornamental, that had overtaken a walking path in the Park. They also cut back invasives along the shoreline at the Botanical Center, making walking paths more accessible and water views more visible.



YCL team photo after clearing invasive plants in RWP

A LOOK AHEAD

Future plans and strategies

RWP AS A CLEAN WATER CLASSROOM

In 2025, we are excited to expand our community education initiatives through a recently secured EPA Education Grant. This funding will support the establishment of Roger Williams Park as a place-based learning center for stormwater and water quality education. We will hire an Education Coordinator to collaborate with community members and nonprofit organizations, delivering hands-on educational programs that emphasize real-world environmental impacts and solutions. Key partnerships with Building Futures, The Below and Above Collective, Movement Education Outdoors, the Woonasquatucket River Watershed Council, and the Providence Urban Wildlife Conservation Partnership will ensure diverse perspectives and meaningful engagement, fostering a deeper understanding of water quality and stormwater management within the community.

MASHAPAUG POND

Next year will bring significant stormwater management and water quality improvement initiatives around Mashapaug Pond. The City of Providence has developed a Total Maximum Daily Load (TMDL) Implementation Plan aimed at meeting the state's water quality criteria. This plan focuses on implementing stormwater management solutions to minimize direct stormwater discharge into the pond. We have been actively contributing to the planning process and look forward to assisting until the projects are completed and operational.

Once the stormwater sites are established, we plan to expand our Rain Snap green infrastructure community science program to include these locations, helping to collect valuable performance data. Additionally, the Residual Designation Authority (RDA) Permit, which regulates stormwater runoff from commercial properties, is set to be issued. To support compliance, a stormwater guide for commercial property owners has already been developed.

Research and innovative management strategies addressing cyanobacteria and carp management will also be explored. We will collaborate with Alvarez High School to deliver water quality and stormwater education programs, and with UPP Arts to engage and encourage local communities to take action regarding stormwater on their properties.

To tie these efforts together, we plan to launch a website showcasing all these projects and initiatives. The website will also feature real-time EPA water quality buoy data, allowing the public to track the progress and effectiveness of these efforts

GEESE POPULATION MONITORING

In 2025, we are renewing efforts to address Canada geese challenges in Roger Williams Park. A 2012 survey estimated over 600 geese in the park, contributing approximately 154 pounds of phosphorus annually to the ponds, worsening algae blooms and water quality.

To evaluate current management strategies—egg addling, public education, and no-feeding signage—we are launching a geese population monitoring initiative. In collaboration with Jessy Minker and Dr. Charles Clarkson of the Audubon Society of Rhode Island, we are developing a community science program where volunteers conduct weekly geese counts and document feeding behaviors.

These efforts aim to refine management, reduce phosphorus pollution, and improve water quality.



Jessy Minker points out problematic geese in RWP and delivers a training to volunteers on how to collect geese survey data in RWP

PAWTUCKET PARTNERSHIPS

The Stormwater Innovation Center (SIC) will strengthen partnerships in Pawtucket through providing technical support on stormwater management and educational initiatives. Central to this effort is the Tidewater Landing development, featuring a soccer stadium, retail and residential spaces, and a nature-based Stormwater Park to improve Seekonk River water quality. Once completed, SIC will monitor and research these sites to help the City prioritize maintenance and future stormwater designs. The park will incorporate student-created art and interpretive signage, enhancing public awareness of stormwater challenges. SIC is also collaborating with local schools on rain barrel art projects and educational materials for the site's boardwalk trails. Additionally, pending a NOAA grant approval being led by TNC, debris capture nets and a community engagement campaign will address environmental impacts, creating opportunities for education, workforce development and trainings. We look forward to this partnership for years to come!

STORMWATER PLANNING SERIES

In 2025, the Stormwater Innovation Center (SIC) will continue its support of the SNEP Network's Stormwater Planning Series, providing technical assistance to this valuable training program. This year's cohort will include four municipalities and community organization groups:

Portsmouth, RI,
Central Falls, RI and Groundwork RI,
Douglas, MA,
Old Colony Planning Council, Brockton, MA.

The series will guide participants through the development of conceptual designs for nature-based stormwater retrofits tailored to their selected drainage areas. Through virtual training sessions, site visits, and ongoing planning support, participants will identify low-cost, innovative stormwater solutions while building interdisciplinary teams to foster collaboration. This training series will help empower communities to integrate stormwater strategies aligned with their local culture, maintenance capacity, and environmental goals, ultimately contributing to stronger, more sustainable approaches to stormwater management.