



RHODE ISLAND
GREEN INFRASTRUCTURE
COALITION

Putting Nature to Work in Rhode Island



The Green Infrastructure Coalition is a collaborative of more than 40 non-profit organizations, businesses, and government agencies focused on using nature-based solutions to reduce stormwater pollution.

In 2013, a shared concern about water quality impairments from polluted stormwater run-off, aging, inadequate and failing infrastructure, and increased enforcement of stormwater management requirements inspired the formation of the Green Infrastructure Coalition. The Coalition brings together expertise across sectors to promote sustained investment in effective stormwater management, strengthen the community of practice using nature-based solutions to mitigate climate change impacts and to foster local job creation. The Coalition identified the Providence metro area and Aquidneck Island as focus areas to prioritize the needs of low-income communities and maximize the multiple benefits of natural stormwater infrastructure to reduce flooding, improve water quality, reduce air pollution and heat islands, and help promote social equity and healthier communities.

Over the past six years, coalition partners have engaged in a wide range of approaches to advance our vision:

“We have been able to engage at the national level. We were part of an urban flooding and equity cohort that was run by the River Network, who saw the GIC as a nation model around collective impacts.”

Amelia Rose,
Executive Director,
Groundwork
Rhode Island

- We have supported municipal leaders in analyzing current investments and needs for stormwater management and reviewing potential strategies for sustainable funding mechanisms.
- Partners have built showcase projects on residential, commercial and public properties. The projects demonstrate the potential of natural infrastructure through guided tours, hands on training, and signage.
- Partners have supported municipal policy strategies such as Green and Complete Streets ordinances.
- We have provided hands on and classroom training on green infrastructure design and maintenance for industry professionals to share lessons learned.
- We provided ongoing gatherings in Providence, on Aquidneck Island, and statewide to share current best practices and leverage partner work for maximum impact.
- The 2019 launch of the Stormwater Innovation Center at Roger Williams Park builds from that experience to continue trainings and public outreach, monitor water quality, and test innovate design approaches for stormwater management.



Armory Animal Hospital



Roger Williams Park



Roger Williams Park



Aquidneck Island Homeowner

The Rhode Island Foundation has provided consistent funding to keep the Coalition coordinated from the outset. That support has helped leverage more than \$9 million to implement the partner's projects and strategies over the years. This report evaluates the impact of these substantial investments. In summer 2019, we interviewed a number of stakeholders, exploring how the Coalition's work has affected the practices of stormwater management and green infrastructure implementation in Rhode Island. We asked stakeholders to also share their insights about future directions and challenges that the Coalition will need to address in the coming years.

Survey Results

Stakeholders report that the Green Infrastructure Coalition has had significant positive impacts on communities and the state. Most notably, these impacts include:

- Promoting connectivity among partners working to develop and install natural infrastructure,
- Educating the public and policy makers about using nature to improve water quality and community health,
- Showcasing partner successes in achieving multiple benefits through projects,



Installation of Green Roof on Red Shed Bike Shop



Common Fence Point Volunteers

- Training practitioners in best policy and practice approaches, and
- Promoting culture change to create more community demand for natural solutions to stormwater management.

The following quotes from our stakeholder interviews provide specific information related to each of these five impacts.

Promoting Connectivity

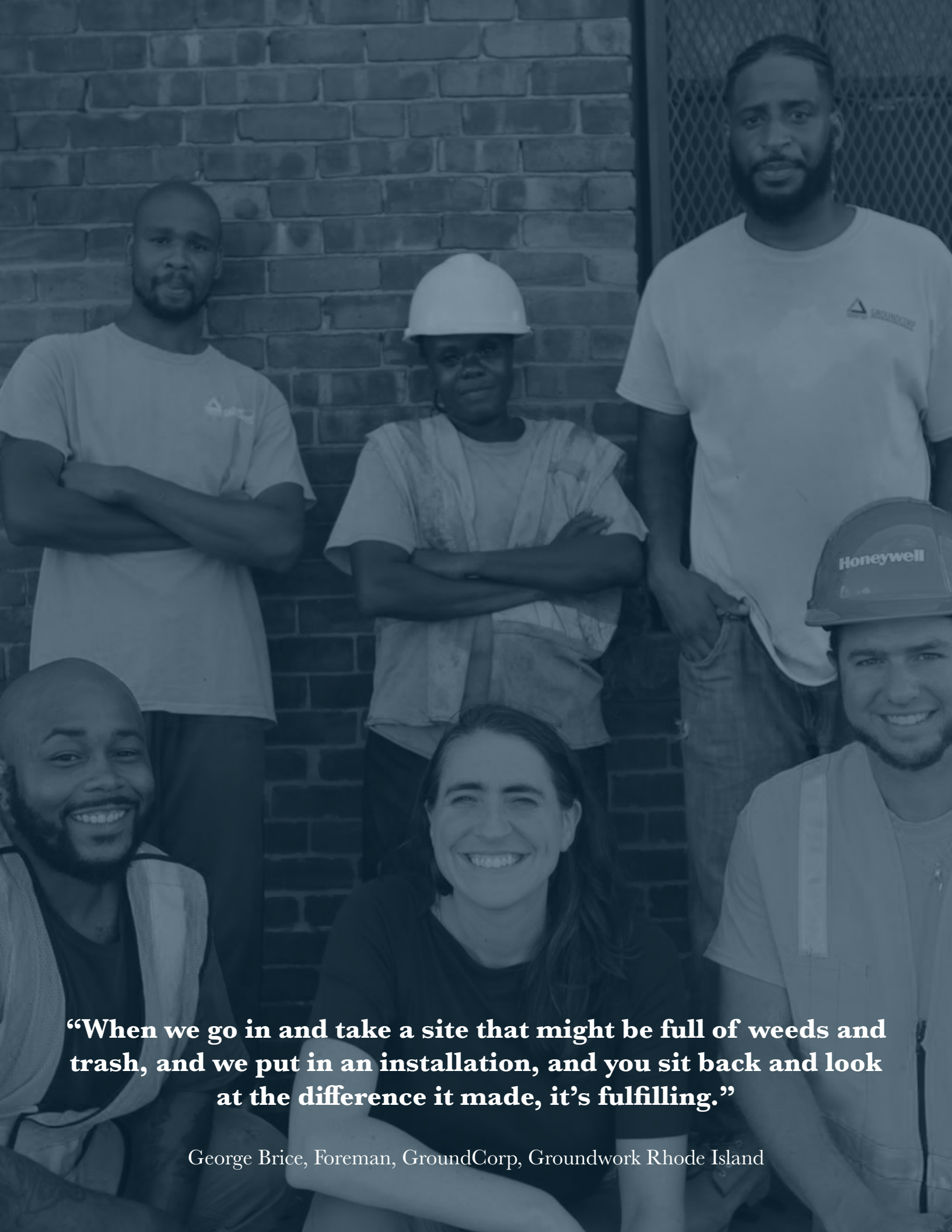
The Green Infrastructure Coalition has connected people and organizations to share technical expertise and resources and to work together to address policy challenges. The Coalition has increased the impact of the work, and individual organizations reported that they are stronger because they are part of the Coalition.

"We think about green infrastructure as a series of small improvements that add up to a lot, and I think of this coalition of people in the same way. We weren't connected. GI as a technical topic is relatively new, so seeing people connect through the GIC, while at the same time smaller-scale

projects start to get implemented... People started to see what a difference green infrastructure can make, and meet people throughout the process... That's been within the last five years," said Jonathan Ford, Senior Project Manager Community Design, Horsley Witten Group, Inc.

"We have seen the elevation of stormwater management into an upper tier of priority within many of our municipalities."

Shaun O'Rourke, Chief Resiliency Officer for the State of Rhode Island



“When we go in and take a site that might be full of weeds and trash, and we put in an installation, and you sit back and look at the difference it made, it’s fulfilling.”

George Brice, Foreman, GroundCorp, Groundwork Rhode Island

“We have been able to engage at the national level. We were part of an urban flooding and equity cohort that was run by the River Network, who saw the GIC as a national model around collective impacts - bringing all the resources and players together to make that bigger impact instead of just a bunch of individual organizations doing their own thing,” said Amelia Rose, Executive Director, Groundwork Rhode Island

“The GIC has built a lot of momentum to my work. As head of a watershed council, I was interested in adding green infrastructure to improve water quality in the river and reduce flooding – my river is a river that floods a lot. But with the GIC behind me I feel like there is a lot more momentum. Not only do we have on the ground projects, but there is this [additional] political movement that people are working towards, folks that are getting the word out about what we are doing. To be part of a statewide coalition that is really interested in moving the issues around stormwater, flooding, water quality forward is amazing,” said Alicia Lehrer, Executive Director, Woonasquatucket River Watershed Council.

“The GIC brought resources and most importantly partnerships. Folks that showed up were from all over. They offered expertise, muscle – the brains and the brawn – and really helped guide our neighborhood in making good choices for the situation we have here,” said Conley Zani, President of the Common Fence Point Improvement Association.

“To be part of a statewide coalition that is really interested in moving the issues around stormwater, flooding, water quality forward is amazing,”

Alicia Lehrer, Executive Director, Woonasquatucket River Watershed Council.

“The GIC’s education and outreach awareness-building has been hugely helpful and it helps us get projects implemented, have our clients understand what green infrastructure is before we start designing.”

Jonathan Ford, Senior Project Manager
Community Design, Horsley Witten Group, Inc.



Painting Rain Barrels

“When I think about what the impact of the GIC and this particular project was for our community, it represented a groundswell of volunteers... This concrete project that allowed people to get out a shovel – we had 50 people out here. I’ve never in my tenure as a leader in this community seen anything as overwhelming as that...it gave people a real sense of being part of something bigger than they are,” said Conley Zani, President of the Common Fence Point Improvement Association.

“The GIC’s impact comes from being a one stop shop for green infrastructure expertise in Rhode Island. This makes it very easy to understand who the superheroes are in Rhode Island working on stormwater related issues,” said Shaun O’Rourke, Chief Resiliency Officer for the State of Rhode Island.

“Groundwork has really benefited from being part of the GIC, and we have benefited the coalition, too. It’s been a great

partnership for us because we do a lot of the hands-on work through our GroundCorp program and job training program. Other coalition members do other big pieces like communications and policy work and advocacy, which we can all be a part of. Since we do more of the hands-on stuff, it is a great complement to the rest of the coalition, and we all contribute to the greater whole,” said Amelia Rose, Executive Director, Groundwork Rhode Island.

Educating the Public and Policy Makers

The Green Infrastructure Coalition has helped educate decision makers and the public about softening built environments to let nature absorb rainfall and reduce stormwater pollution. The Coalition's work has supported state policy and increased investment in green infrastructure projects.

"The GIC played a major role in supporting the Governor's Climate Resilience Action Strategy (Resilient Rhody) which was released in July 2018. The GIC participated in drafting the strategy, with many folks contributing on stakeholder groups and co-authors. Inside the strategy we have a number of actions which are directly related to stormwater management and how it impacts the state's water quality," said Shaun O'Rourke, Chief Resiliency Officer for the State of Rhode Island.

"Trying to incorporate using green infrastructure to address runoff and the negative impacts on the Bay has been a priority to me as a council-person. I learned everything I know from the Woonasquatucket River Watershed Council and GIC... More exciting is the partners that we have built around this effort. We need to educate more and more people at the community level that every small thing they do adds up to make a difference.. We recognized early on we needed to get the community involved and get the community to take ownership of this beautiful space," said Providence City Council Majority Leader Jo-Ann Ryan.

"The GIC's education and outreach awareness - building has been hugely helpful, and it helps us get projects implemented, have our clients understand what green infrastructure is before we start designing. So the awareness in Rhode Island amongst developers, regulators, architects, and property owners has been incredibly useful in implementing this stuff," said Jonathan Ford, Senior Project Manager Community Design, Horsely Witten Group, Inc.

"We need to educate more and more people at the community level that every small thing they do adds up to make a difference..."

Providence City Council Majority Leader
Jo-Ann Ryan



Installing the Rain Garden at Common Fence Point

"I've never in my tenure as a leader in this community seen anything as overwhelming as that... it gave people a real sense of being part of something bigger than they are."

Conley Zani, President of the Common Fence Point Improvement Association

We have seen the elevation of storm-water management into an upper tier of priority within many of our municipalities. One of the things we have seen most acutely is the impact that stormwater has on water quality in receiving water bodies. For instance, in the summer time we get lots of heavy, intense rainstorms - we are seeing more and more of those as the climate changes - and it is having an impact on the water quality at many of the beaches around the state. So in my work with municipalities and the GIC, we have identified priority projects that can capture that water, slow it down and treat it before it gets in to those places that we love such as the beaches all along Narragansett Bay and the south shore of RI," said Shaun O'Rourke, Chief Resiliency Officer for the State of Rhode Island.

Showcasing Successes

The Green Infrastructure Coalition has demonstrated the effectiveness of green stormwater practices and proven the multiple additional benefits that green solutions provide to communities.

“Without the training that we put on, we cannot sustain the methods that we are installing. Water quality will not improve without the training of our workers.”

Brian Byrnes, Deputy Superintendent of Parks, City of Providence

“When we go in and take a site that might be full of weeds and trash, and we put in an installation, and you sit back and look at the difference it made, it’s fulfilling,” said George Brice, Foreman, GroundCorp, Groundwork Rhode Island.

“It definitely makes the communities look better. When you drive by and see this in your community, it brings out nature, looks nice, and it’s actually helping by giving the water somewhere to go. It’s a win win,” said Ricardo Tillman, GroundCorp, Groundwork Rhode Island.

“It’s fun cutting up pavement, putting more green infrastructure in, that the water that goes into the drains carries a lot of sediment and bacteria and makes it difficult to treat the [storm]water. I believe that green infrastructure best helps reduce the amount of pollution that we are sending to the WWTP that they can’t keep up with that they have to ditch in to the bay. Green infrastructure is very important, especially in the urban communities especially where so many young people and old people deal with health issues,” said Javon Threats, GroundCorp, Groundwork Rhode Island.

“The GIC has demonstrated that there are solutions out there that are fairly easy to implement. The public was amazed at how inexpensive they were and easy for them to do and how they enhanced their yards. Reception has been good where we have had demonstration projects. [We] just need to spread the word some

more,” said Bob McMahon, volunteer with the WRWC and former Providence Parks superintendent.

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Training Practitioners

The trainings and seminars hosted by the Green Infrastructure Coalition have helped build a community of practitioners in the state and set the stage for the Stormwater Innovation Center at Roger Williams Park.

“It’s fun cutting up pavement, putting more green infrastructure in, reducing our carbon footprint.”

Javon Threats, GroundCorp, Groundwork Rhode Island

“GIC has been a great partner to the Providence Parks Department and to multiple collaborations that we have done related to stormwater in Roger William Park and around the city. Their help with trainings and seminars and conferences around stormwater has been a great assistance to us. Their work with testing and signage has been a great help. They have been a huge partner with the creation of

the Stormwater Innovation Center, probably the major partner and the reason why it got off the ground,” said Brian Byrnes, Deputy Superintendent of Parks, City of Providence.



Residential Rain Garden



Chase Road



Common Fence Point



**Southside
Cultural Center**



Providence Rain Box

“Without the training that we put on, we cannot sustain the methods that we are installing. Water quality will not improve without the training of our workers. No one has come forward with the workforce to provide this service, and municipalities can’t outsource this work, so we use our own employees. Luckily here in Providence we have a group of employees that are all in. They have been bought into the training and have attended every one and are now well versed in stormwater. But it never ends... we continually train because the industry continually changes. If we are not keeping up with the best methods and practices, we are not going to be doing the best things in terms of water quality,” said Brian Byrnes, Deputy Superintendent of Parks, City of Providence.

“I engage with GIC by going to some of the meetings, and the biggest thing I have gotten out of it was working with some of the members from the GIC doing some project installations. We have helped them out by installing signage at some of their installations. Sometimes they have just called and asked questions and used us to gain some knowledge. And we’ve also gone out and installed projects for them. The GIC has had quite an impact on Groundwork RI, not only helping us expand our knowledge and expand the number of job sites we have worked on all over the state, but also helped us teach the crew as we go along,” said Steve Ricci, Director of Field Operations, Groundwork Rhode Island.

**“I have seen
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Alicia Lehrer,
Executive Director,
Woonasquatucket
River Watershed
Council

Promoting Culture Change

The work of the Green Infrastructure Coalition is shifting the culture in Rhode Island around stormwater and building momentum for addressing stormwater with green, nature-based solutions.

“Climate change is now a thing that is being funded, and when we are talking about climate change, we are now talking about water where we weren’t before. The GIC is a great place to bring together all the different players, from environmental consulting firms to planning departments to DPWs to all the municipal partners. There is a cultural shift for cities and state agencies to know that people outside the government really care about these issues, that are clamoring for better stormwater management and better and more sustained funding, and that are here to help,” said Amelia Rose, Executive Director, Groundwork Rhode Island.

“I have seen a huge momentum built around green infrastructure in the last five years. Now when I start talking to people about the projects and the kinds of things we are trying to do they already understand it, and these are people who do not do green infrastructure. These are folks at Waterfire and Brown University...these are people trying to figure out what impacts they can have. There is also a momentum building around issues of climate resilience and climate change. That has finally made it to the forefront, especially in the Providence area. That is a huge change. Five years ago, it wasn’t even a discussion,” said Alicia Lehrer, Executive Director, Woonasquatucket River Watershed Council.



“The GIC has demonstrated that there are solutions out there that are fairly easy to implement.”

Bob McMahon, volunteer with the WRWC and former Providence Parks superintendent

“When we started this project, I had no idea the impact that stormwater management could have. It’s changed the way this building looks and feels aesthetically, as well as from a sustainable standpoint moving forward. It brought our community together because everybody participated in creating this, and we have seen a ripple effect in those people in this community wanting to recreate this at their own residencies,” said Conley Zani, President of the Common Fence Point Improvement Association.

“The signs I see throughout the city of Providence and other places really make a move to increase awareness on green infrastructure. I think the kids today have a much better understanding about green infrastructure. The schools are partnering with us, we have U.S. Fish and Wildlife Service programs that bring not only students out into the environment, but also the teachers. We have a program with Fish and Wildlife to teach the teachers... the teachers are up front now teaching students about green infrastructure and other environmental issues,” said Brian Byrnes, Deputy Superintendent of Parks, City of Providence.

“Education is one of the biggest impacts. We’ll put in a curb cut tree pit and no one knows what it is, what it does, but they ask questions because it’s different. So they tell their friends or relative or brother or sister ‘hey this is what this does.’ And then other organizations see them and say ‘wow, you know it’d be great if we could get a grant or get some funding or try and do this,’ and even sometimes residents want to do it for their own good, on their property. Educating people on what stormwater management is, what GI is, how it works - a lot of people don’t know. We’re not really educated on it, so I think that’s the biggest positive impact it has,” said Steve Ricci, Director of Field Operations, Groundwork Rhode Island.

Future Directions and Challenges

Our stakeholders provided several insights about where we go from here to advance sustainable funding for natural infrastructure, committing to long-term project maintenance, and expanding success to the watershed scale.



Aquidneck Island

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Sustainability and Funding

“For this project, partners came together to create a program and brought together neighbors and educated them; work needs to continue past the end of the pilot project. We need to measure success and replicate it elsewhere in the city,” said Providence City Council Majority Leader Jo-Ann Ryan.

“The work ahead is to definitely figure out how to do sustainable funding for green infrastructure to incorporate it seamlessly into everyday planning that happens at the city level... creating that cultural shift in various cities and towns around Rhode Island and on the state level as well. Seeing GI as one of the tools that are in the toolbox of helping the environment, helping manage flooding and helping manage stormwater. All of those things, making sure it’s embedded into what every agency and every organization works on – that it’s part of the everyday work. I think that’s the biggest next step. It’s a challenge, but it’s something that people are already starting to do, and that’s exciting. In terms of maintenance, that’s another big challenge. There is a lot

of learning going on because of the GIC bringing players together to talk about how to do maintenance. And then figuring out that sustainable funding piece so that we can pay people to have jobs, to do maintenance on GI, will go a long way to build public support for it and make it a stronger program,” said Amelia Rose, Executive Director, Groundwork Rhode Island.

“The biggest challenge is finding sustainable movement and partnerships around these issues. Ideally, I want to see some stormwater utilities created or fee-for-service platform created. That could create a fund for ongoing investment in green infrastructure. I think that’s the biggest stumbling block at the moment. We are starting to see lots of grant funding and bigger grant funding coming in to the area to address the issue, but until we build that sustainable method of constantly and methodically looking at the problem here then we are just not going to make it,” said Alicia Lehrer, Executive Director, Woonasquatucket River Watershed Council.

Long-term Maintenance

“Awareness is the number one issue, and we have made strides towards that. The next biggest problem is maintenance of these structures. We get funding to build these structures, we do great design work and look at improving design, but we haven’t really mastered the maintenance on it. And as we build more, and more come on line, if they’re not maintained, they’re not worth building... Who is going to be the entity doing the maintenance on that installation? Is it volunteer stewardship or is it professionally done and hired out? Due to the volume that different municipalities and the state of Rhode Island are undertaking now, there is a great need for [a look] at maintenance,” said Brian Byrnes, Deputy Superintendent of Parks, City of Providence.

“The GIC has had quite an impact on Groundwork RI, not only helping us expand our knowledge and expand the number of job sites we have worked on all over the state, but also helped us teach the crew as we go along.”

Steve Ricci, Director of Field Operations,
Groundwork Rhode Island

Working at the Watershed Scale

“There is a need to think more than just project-by-project, or one bioswale or green infrastructure installation at a time, and to really think about the role it plays at the watershed level. Many of our state agencies are thinking at that scale. So RIDEM as well as RIDOT are working to build a pipeline of projects at the watershed scale and who to partner with. I look forward to helping those agencies identify how we can use green infrastructure to solve larger problems in our watersheds and build that pipeline of projects so we can better allocate resources in the future,” said Shaun O’Rourke, Chief Resiliency Officer for the State of Rhode Island;

“There is potential now that there is a greater awareness about what this stuff is, and the next step is unlocking money to get green infrastructure built on a more wide-spread basis. We see demonstration projects here and there, but we really need this stuff in every neighborhood, on every block, every street, every site, and we know that we can do it. This is real infrastructure, this is stormwater management. We are going to be required to do a better job with our drainage infrastructure. We believe green infrastructure is a better way to do it. It should cost less, and it should add value. So finding money and grants to get it done more often is going to help that a lot,” said Jonathan Ford, Senior Project Manager Community Design, Horsley Witten Group, Inc.



Pervious Driveway Installed on Aquidneck Island

Conclusion

The demand for the Green Infrastructure Coalition’s work to promote natural infrastructure for stormwater management continues as Rhode Island municipalities face an increasing need to address the impacts of climate change including more intense precipitation and higher heat days. Through this analysis we have learned how stakeholders have used the coalition to advance and enhance their work as well the next steps on our journey. Coalition partners are committed to continuing to share our learning together to improve strategies for cost effective project design and maintenance, community engagement, and building momentum to institutionalize investments in natural infrastructure and water quality improvements. Together we will face the challenge to expand the suite of policy strategies to scale our successes to watersheds and communities across the state.

Thank you to the following stakeholders who interviewed for this report:

Chris Barboza,
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George Brice,
Foreman, Groundwork Rhode Island
GroundCorp;

Brian Byrnes,
Deputy Superintendent of Parks, City of
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Jonathan Ford,
Senior Project Manager Community Design,
Horsley Witten Group, Inc.;

Alicia Lehrer,
Executive Director,
Woonasquatucket River Watershed Council;

Bob McMahon,
Volunteer with the WRWC
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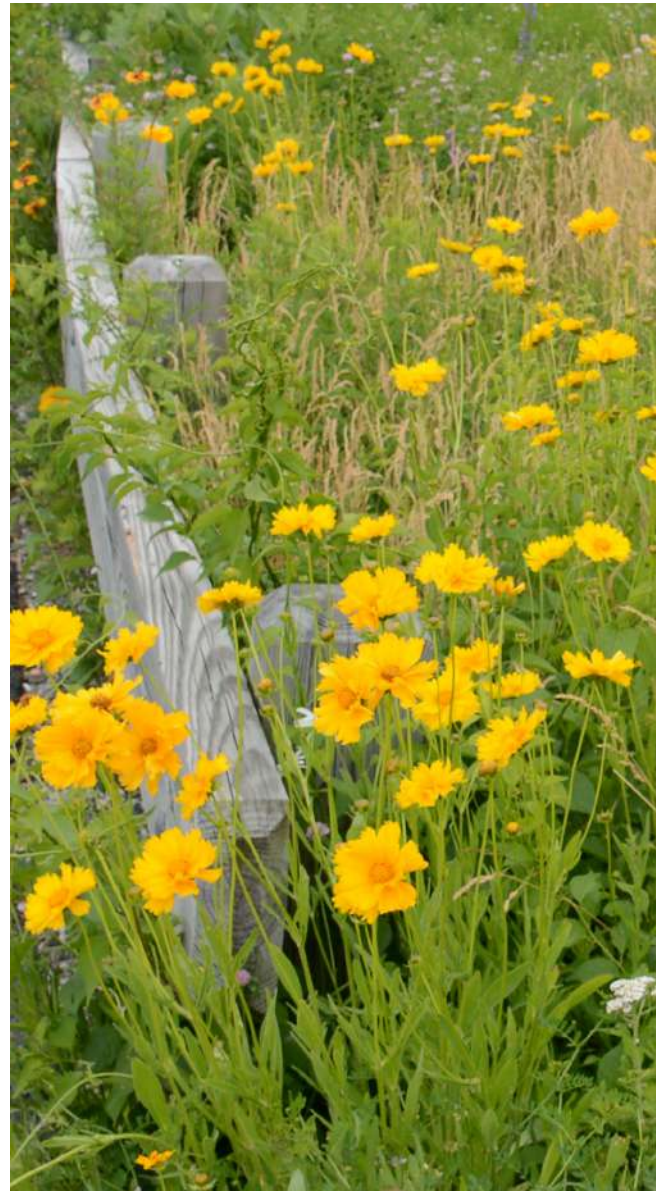
Amelia Rose,
Executive Director, Groundwork Rhode Island;

Jo-Ann Ryan,
Providence City Council Majority Leader;

Javon Threats,
Groundwork Rhode Island GroundCorp;

Ricardo Tillman,
Groundwork Rhode Island GroundCorp;

Conley Zani,
President of the Common Fence Point
Improvement Association.



Bristol Beach Rain Garden



**Alicia
Lehrer**



**Amelia
Rose**



**Chris
Barboza**



**Conley
Zani**



**Jon
Ford**



**George
Brice**



**Brian
Byrnes**



**Bob
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**Javon
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**Jo-Ann
Ryan**



**Shaun
O'Rourke**



**Ricardo
Tillman**



**Steve
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