February 2021

WATER PAGES eNEWSLETTER

Project Update:
Improving the Effectiveness of Green Infrastructure by Enhancing the Urban Tree Canopy
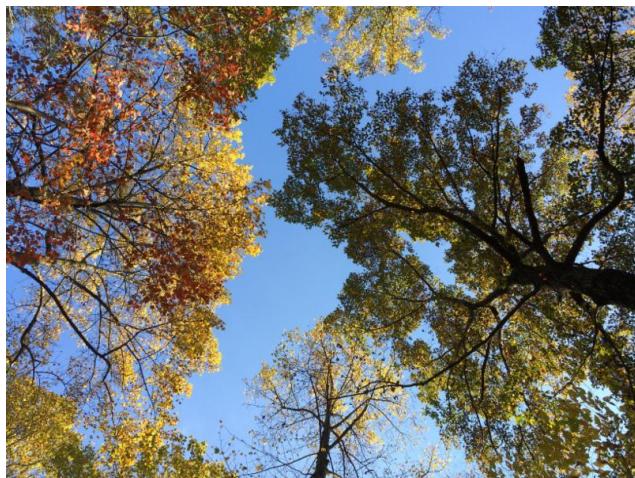
In this study, sewersheds with connected sewers in six cities of New Jersey were targeted to be analyzed on an individual basis to determine how much stormwater is managed by trees in conjunction with green infrastructure practices. The six cities initially selected were Jersey City, Camden, Newark, Perth Amboy, Trenton, and Paterson. US metropolitan areas are losing 36 million trees each year, leading to economic losses of $96 million per year[1]. Green infrastructure practices like rain gardens and bioswales are used to sustainably manage stormwater in urbanized environments by recharging groundwater resources and reducing pollutant loads in runoff. Although the care of and use of trees in urban areas is known to have many social and environmental benefits like reducing air and noise pollution,[2,3] providing wildlife habitat,[4] and improving overall quality of life for city residents,[5,6] trees are not often used in green infrastructure practices. The goal of this study was to determine how much more effective, if at all, green infrastructure practices can be when trees are incorporated by using models provided by i-Tree Hydro+.

This modeling effort showed that tree canopy can make a significant contribution to stormwater runoff reductions if increased by a large enough degree. With a target of 40% tree canopy, an average of about 2% reduction in runoff volumes can be realized. In the case of Jersey City, a goal of 40% tree canopy produces results that are similar to a 10% reduction in directly connected impervious area (DCIA) which is comparable to a reasonable target for green infrastructure implementation. This allows greater understanding of the scale at which tree canopy can affect stormwater calculations. While reducing impervious cover areas may have a larger impact proportionally, it is helpful to understand that tree canopy can lead to measurable reductions.

The feasibility of implementing 40% tree canopy would also need to be more closely examined as this is merely a general target that has been recommended in the past. Given

the high levels of urban development, it may not be realistic to reach this target, and a more reasonable goal would be needed to lower the potential impact. Regardless, increasing tree canopy has a multitude of ancillary benefits, to include stormwater management.

An investigation into the role urban tree canopy plays in stormwater management clearly should continue to better understand how it should be incorporated into planning efforts. Further efforts are needed to determine how variables can influence this analysis and how to expand efforts to more municipalities.

References
[1] Nowak, D.J., & Greenfield, E.J. 2018. Declining urban and community tree cover in the United States. Urban Forestry & Urban Greening. 32: 32-55.
[2] Aylor D. E., 1972. Noise Reduction by vegetation and ground, J. Acoust. Soc. Am. 51(1):197-205.
[3] Smith, W.H., 1990. Air Pollution and Forests, Springer-Verlag, New York.
[4] Howenstine, W.L., 1993. Urban forests as part of the whole ecosystem, in Proceedings of the 6th National Urban Forestry Conference, American Forests, Washington, DC, pp. 118-200.
[5] Nowak, D. J., & Dwyer, J. F., 2007. Urban and Community Forestry in the Northeast. p. 25-57. New York, NY: Springer.
[6] Wolf, K.L., 2007. City Trees and Property Values. Arborist News (August):34–36.

NJASLA Annual Conference Goes 100% Virtual in 2021!

This year's annual conference for the New Jersey American Society of Landscape Architects (NJASLA) was not the usual setup. No one had to worry about being stuck in a snowstorm at Harrah's Convention Hall in Atlantic City since the conference was 100% virtual due to the COVID19 Pandemic. This was the first time ever that the conference had to be held on a virtual platform between January 31st and February 2nd. This was a huge undertaking for the NJASLA Annual Meeting Planning Committee to hold an online virtual conference that provided licensed landscape architects, planners, and engineers their continuing education credits (CEUs) about current important topics within the profession. With months of planning and online coordination during the unprecedented year of 2020, the Annual Meeting Committee pulled off the virtual conference with impressive statistics. The number of registered online attendees was 742, which is about the same number of attendees as the in-person conference held the previous year in February 2019. The largest increase of registered attendees were the students, jumping from an average of 40-50 students to an all-time high of 116 students! NJASLA believes in providing the necessary resources for the emerging professionals of landscape architecture and related fields.

The virtual conference consisted of live student introductions for each speaker session followed by a pre-recorded lecture and concluding with a live Q & A between the speaker, student, and live virtual audience. Attendees could put up questions in the live chat saved at the end of each lecture. The educational lecture sessions throughout the conference focused on various topics such as designing inclusive communities, diversity within the profession, advanced computer programming for mapping inventory, updated stormwater management revised policies and regulations, along with contract documentation and park services. Some well-known professionals spoke such as Walter Hood, David Rubin, and Nette Compton. Many professors from the Rutgers University Landscape Architecture program spoke as well such as Kathleen John-Alder, Laura Lawson, and Richard Alomar

whose sessions consisted of reflecting on their academic work at Rutgers.

The conference was a complete success overcoming all the new challenges during the midst of a pandemic. Attendees were satisfied with the programming and setup of the conference and gave feedback on what they thought went well and what could be improved. The Annual Meeting Planning Commitee is already underway planning for the 2022 conference. 2022 is an important year as it marks the 200th birthday of the father of Landscape Architecture, Frederick Law Olmsted. Stay tuned to see if the 2022 conference will be held in a hybrid style or virtually! Either way, it's highly encouraged to attend and learn more about how Landscape Architecture shapes the world!

Check out our calendar of events to see what we're up to!

Our calendar is quickly filling up with virtual Rain Garden Educational and Design Sessions for March and April!

Don't miss out on all the fun!

http://water.rutgers.edu/UpcomingEvents.html

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50 Rain Gardens for the 50th Anniversary of Earth Day - Featured Rain Gardens for February 2021

The Water Resources Program worked with our partners to install over 50 rain gardens in 2020, while following social distancing guidelines, as part of our *50 Rain Gardens for the 50th Anniversary of Earth Day Initiative*. This month we highlight rain gardens #3, #4, #50, and #51.

#3
American Legion
530 Smith Street, Perth Amboy, NJ

The Water Resources Program was awarded a 319(h) grant from the New Jersey Department of Environmental Protection to implement green infrastructure projects in the city of Perth Amboy. With funding from the 319(h) grant, a rain garden was installed at the American Legion on April 6-8, 2020. Enviroscapes, Inc. excavated the rain garden and added bioretention media and mulch. Water Resources Program staff designed the rain garden and installed the plants. The managed drainage area for the rain garden is 7,820 square feet. The rain garden is 390 square feet in size and filled with native plants that will attract pollinators. The rain garden will capture, treat, and infiltrate approximately 160,180 gallons of stormwater runoff per year.

American Legion, Perth Amboy, NJ, April 2020

#4
Avon Grove Library
117 Rosehill Ave, West Grove
Borough, PA

The Water Resources Program partnered with West Grove Borough to design a green infrastructure master plan. The first demonstration project was a rain garden completed on May 29, 2020 at the Avon Grove Library. The Borough Department of Public Works excavated the rain garden, and Water Resources Program staff worked with the White Clay Watershed Association to install the plants. The managed drainage area for the rain garden is 3,350 square feet. The rain garden is 625 square feet in size and filled with native plants that will attract and nurture pollinators. The rain garden will capture, treat, and infiltrate approximately 58,850 gallons of stormwater runoff per year.

Avon Grove Library, West Grove, PA, October 2020

#50 & #51
Woodbridge Main Library
1 George Frederick Plaza, Woodbridge, NJ

Through an ongoing partnership with Woodbridge Township, the Water Resources Program teamed up with the Woodbridge Department of Public Works (DPW) and completed two rain garden installations at the Woodbridge Main Library on October 19, 2020. The Woodbridge DPW excavated the rain garden areas, and Water Resources

Program staff worked alongside the DPW to fine tune the envisioned engineered design plan. The managed drainage area for the two rain gardens combined is 3,430 square feet, with one rain garden that is 380 square feet and the other 390 square feet. Sand and compost were added to the gardens to increase infiltration and provide nutrients for the native plants used. The native plants will enhance the aesthetics at the Library while attracting and nurturing pollinators. The rain gardens will also serve as a demonstration project to residents of how they can incorporate green infrastructure on their property. The rain gardens will capture, treat, and infiltrate approximately 16,720 gallons of stormwater runoff per year.

Woodbridge Main Library, Woodbridge, NJ, October 2020

Christopher Obropta presents Mayor McCormac
with a 50th Rain Garden Site award, Woodbridge, NJ, October 2020

Raritan Headwaters Seminar Series - *Watershed Tools for Local Leaders* - is back for 2021!

Raritan Headwaters Seminar Series
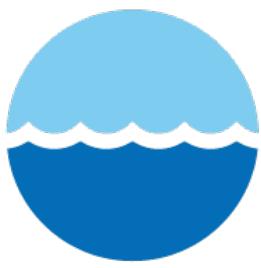
Watershed Tools for Local Leaders

Winter/Spring 2021 Webinars

Municipal and county officials in the Upper Raritan River watershed region are responsible for making many important decisions affecting local drinking water and stream water quality. Empowering them with knowledge to make the best possible decisions and forming partnerships is the aim of Raritan Headwaters' "Watershed Tools for Local Leaders."

The goal of the seminars is to provide expert-level knowledge and practical guidance on scientific principles, useful tools, government regulations and funding sources for watershed protection. Workshops are presented by Raritan Headwaters scientists and policy experts, as well as visitors from regulatory agencies, universities, and other non-profit organizations. In addition, participants and presenters learn from one another's experiences and find ways to partner on projects to protect and restore water resources. We have adapted our program into a webinar series to provide easy and safe accessibility from home or office.

To learn more about this seminar series and view past presentations,
visit RHA's Watershed Tools for Local Leaders webpage.

February 24, 2021 | 1:00-2:00 PM
Local issues, local solutions: How to address stormwater in your community
Register Here

March 11, 2021 | 3:00-4:00 PM
Working together for lead-free drinking water in your community
Register Here

April 15, 2021 | 1:00-2:00 PM
Watershed planning for municipalities: control stormwater, improve water quality and save money ~ *Christopher Obropta is the presenter!* ~
Register Here

April 22, 2021 | 1:00-2:00 PM
Intro to Sustainable Jersey's Gold Star Standard in Water: Pathways for protecting & enhancing community water resources
Register Here

April 29, 2021 | 1:00-2:00 PM
How healthy are streams in your municipality? An intro to RHA's stream monitoring program
Register Here

May 6, 2021 | 1:00-2:00 PM
A guide to incorporating climate vulnerability and adaptation planning into municipal master plans
Register Here

Webinars are free of charge and open to the public.

Municipal Action Team Green Infrastructure

Initiative Updates

Camden SMART

Camden SMART (Camden Collaborative Initiative Water group) met on February 10th via Zoom. The main purpose of the meeting was to put together a list of goals and actionable objectives for the year. The major issues were broken down into stormwater, drinking water, and public access to waterways. The main focus on the stormwater side is on implementation of the Combined Sewer Overflow Long Term Control Plan (CSO LTCP) as well as continued efforts on how to implement a stormwater utility fee to aid in funding. Addressing localized flooding and implementing green infrastructure continue to be high priorities. For drinking water, lead education is at the forefront as well as encouraging safe use of tap water while public access to waterways is to be approached with programming and enhancing access to the waterfront. The next monthly meeting is scheduled for Wednesday, March 10th at 2:00PM via Zoom.

Gloucester City Green Team

The Gloucester City Green Team met on February 10th via Zoom. The NJ Tree Foundation brought up a grant opportunity that would allow more funding to continue implementing rain gardens and tree plantings in the city. Spring tree plantings are also planned on the 800 and 900 blocks of Mercer Street. The remaining funding in the 319(h) grant is reserved to maintain the Gloucester City Water Department rain garden. The High School project has been a resounding success for everyone who has seen it, and an educational opening celebration is being discussed for the spring or fall. The Community Forestry Management Plan work is complete except for the inventory that is to be completed in the spring. The next monthly meeting is scheduled for Wednesday, March 10th at 1:30PM via Zoom.

Jersey City START

Jersey City START did not have a meeting in February but will meet via Zoom on Thursday March 18th at 10:30AM. Contact **lsigmund@jcnj.org** to be added to the email list.

Newark DIG

Newark DIG held a virtual meeting at 11:00 AM on January 26, 2021. The Green Infrastructure Subcommittee met with City of Newark officials on January 25, 2021 to discuss action plans for green infrastructure projects planned and prioritized for 2021. Newark DIG partners contributed comments that addressed financial, social, and environmental equity in

Municipal action teams have been formed to foster collaboration and collective action that helps the municipality speak with a common voice and achieve a common goal while advocating for green infrastructure. Updates on the various municipal action teams across the state are listed in this newsletter.

Technical assistance provided to these municipal action teams by the RCE Water Resources Program is currently funded in part by the Rutgers New Jersey Agricultural Experiment Station (NJAES) and the Passaic Valley Sewerage Commission with support from the New Jersey Department of Environmental Protection (NJDEP) and our local partners.

Camden SMART

Gloucester City Green Team

Jersey City START

Newark DIG

Paterson Green Team

Perth Amboy SWIM

Trenton Green Infrastructure Partners

municipal and regional commitments in the CSO (combined sewer overflow) Long Term Control Plan. The City of Newark's Love Your Block mini-grants program for neighborhood-based beautification projects will return for 2021. The Newark Office of Sustainability shared efforts to create a plan to better prioritize street tree planting locations using available data and the Newark Environmental Resource Inventory. Construction of porous pavement sidewalks for the Fairmount Street Model Block Project has been completed at several houses built by the Urban League of Essex County, and rain gardens will be installed next. Newark DIG meetings are held at 11:00 AM on the fourth Tuesday of the month. Please contact **newarkdig@gmail.com** for information.

Paterson Green Team
The Paterson Green Team met virtually on Thursday February 18th at 3PM to discuss the plan for the Adopt-A-Catch Basin initiative in the city for 2021. The members plan to work with the City Council to educate the public on the necessity of keeping clean catch basins, especially in the context of a combined sewer system. The city's chief data officer is working to create a user-friendly mapping app that allows residents to sign up to adopt a catch basin and report their cleaning activities. The group is planning to hold a public meeting at the end of March for residents to sign up. To join the green team mailing list, please contact **marthaaren333@yahoo.com**.

Perth Amboy SWIM
Perth Amboy SWIM will meet virtually for an evening meeting the week of February 22nd. Please contact **epyshnik@envsci.rutgers.edu** to be added to the email list.

Trenton Green Team
The Trenton Green Team met via Zoom on Tuesday February 16th and finalized the work plan and goals for 2021. The group plans to get re-certified with Sustainable Jersey and to keep the silver certification status, complete five green infrastructure plans for the city, install 10 street trees, and hold more meetings at night to include more Trenton residents. The group is also continuing to work with the Green New Deal design studio group from the University of Pennsylvania, who provided updates on their progress thus far into the semester. Please contact **atabas@njfuture.org** to be added to the mailing list.

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