2020 Progress Report

Green Stormwater Infrastructure

The Road to 700 Million Gallons

A Natural Approach to Stormwater Management

700milliongallons.org

Seattle Public Utilities

King County

WHY GSI

Green Stormwater Infrastructure

As the population of Seattle and Puget Sound grows, we continue to lose natural areas, plants, and soils that effectively filter, absorb and infiltrate the region's stormwater. The roofs, roadways, and other hard surfaces of our dense urban environment generate far more polluted runoff than our aging drainage and sewer systems can handle. Runoff to lakes, rivers, and creeks is now one of the leading sources of pollution in Puget Sound. Bringing nature back into the built environment helps urban areas manage stormwater more like forests and pasture. Seattle Public Utilities (SPU) and King County Wastewater Treatment Division (WTD) have partnered for the last decade to develop more of these natural solutions to managing stormwater, collectively known as "green stormwater infrastructure" (GSI).

GSI helps to keep our water clean

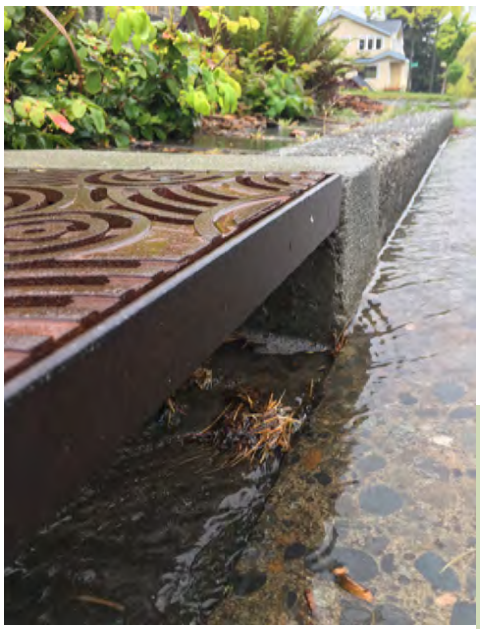
Through a combination of plants, soil, trees, and pipes, GSI is a nature-based engineering approach that slows and treats rain as close to where it falls as possible. That means cleaner stormwater entering our waterways and less of it entering our sewer system, which reduces the likelihood of combined sewer overflows (CSOs).

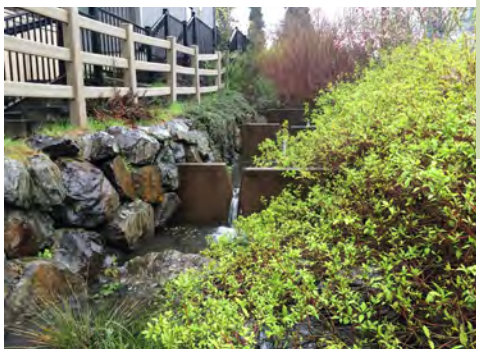
GSI fosters healthier communities

SPU and WTD are growing our focus on leveraging investments to help support community priorities. GSI can contribute to better public health outcomes, support workforce development, empower youth, enhance neighborhood walkability, and promote the creation of safe and inclusive gathering spaces.

GSI is key to meeting our goals

GSI is a key strategy to meet the goals of both King County's Clean Water Healthy Habitats initiative and Seattle City Council's challenge to manage 700 million gallons of stormwater annually with GSI by 2025.





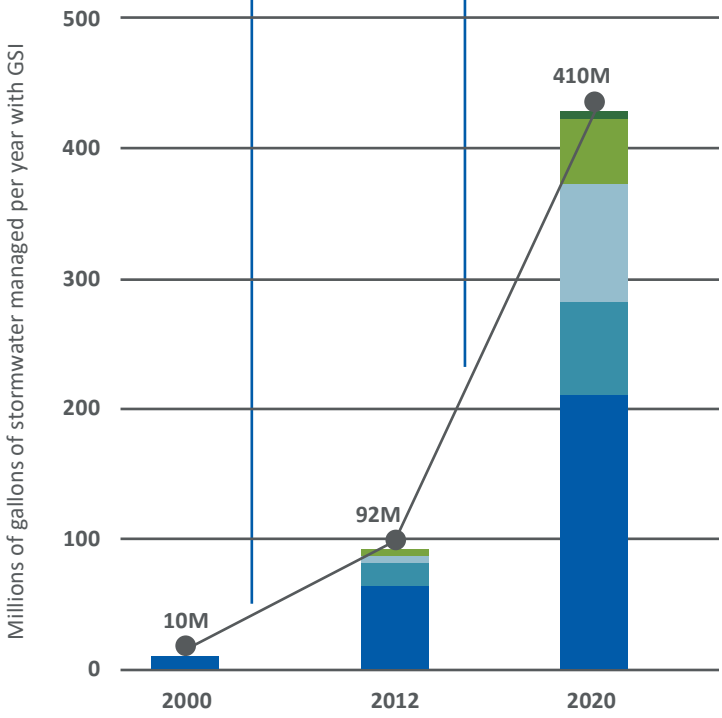
Top left: rain garden
Top right: bioretention in Ballard
Bottom left: cistern installation
Bottom right: cascading bioretention in Broadview

GSI Progress

SPU and WTD are on track to naturally control 700 Million Gallons of stormwater annually by 2025

Growth in GSI through SPU-led GSI projects, and launching the SPU/WTD RainWise Program (see page 3).

Accelerated growth in GSI through implementation of the updated Stormwater Code, continued agency-led projects, and partnering with other organizations.



GSI Project Types

- WTD-built projects
- Public-private partnerships (with SPU/WTD funding)
- Projects required by code
- Public-private partnerships (without SPU/WTD funding)
- SPU-built projects

In this report:

In the past two decades, SPU, WTD and partner-led efforts have produced hundreds of GSI projects in Seattle. This report showcases efforts in 2020 to continue growing GSI, including highlights across the GSI Program's four growth areas:

Expanding our toolbox

We continue to test new design approaches, technologies, and alternative delivery models to grow innovation in the GSI field.

Growing partnerships

Growing new partnerships across public, private, nonprofit, philanthropic, and education sectors is key to successfully scaling GSI throughout Seattle. Partnerships efficiently use resources to expand the impact of our work while opening new avenues for investment and innovation that grow expertise, capacity, and awareness of GSI.

Supporting community

We seek alignment between GSI implementation and the goals and aspirations of communities we serve. This includes providing incentives and leveraging investments to support environmental justice, public health and wellness, workforce development and green jobs, safe and walkable neighborhoods, internships and career pathways for youth, unemployed and underemployed community members, clean air and water, and access to healthy food.

Removing barriers

We work to reduce policy, process, legal, and regulatory barriers to GSI implementation and build broader understanding about GSI to encourage greater participation.

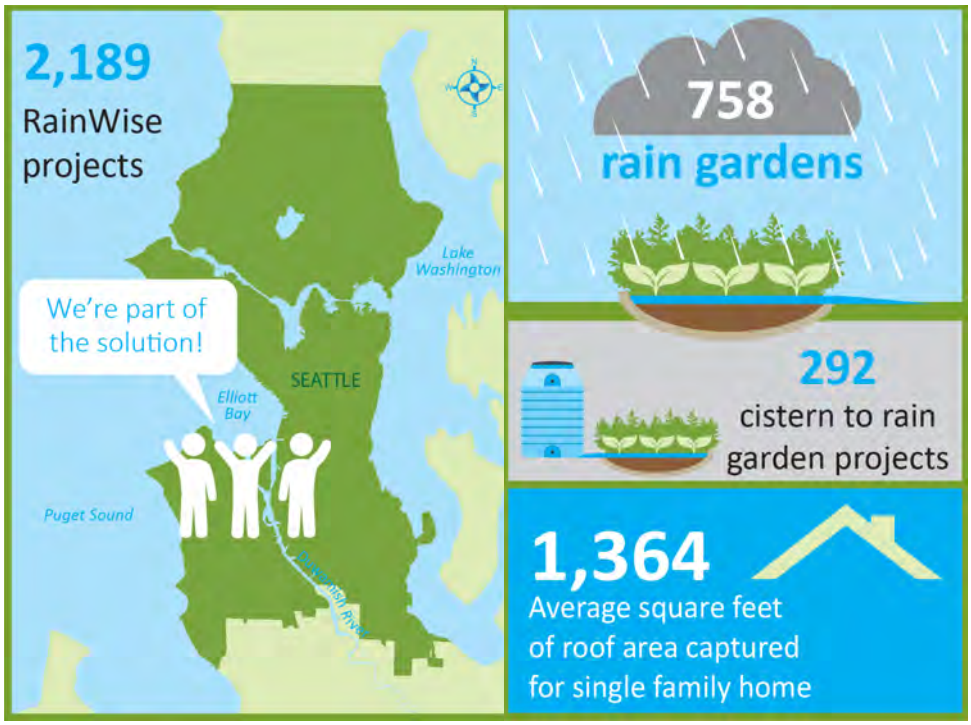
The following pages highlight some of the successful GSI efforts that have been completed, are underway, or are planned for the future!

RainWise

Growing partnerships | Supporting community | Removing barriers

RainWise helps private property owners be part of the stormwater pollution solution by managing the rain that falls on their properties. SPU and WTD provide rebates for rain gardens and cisterns in neighborhoods where the storm and sewer systems share the same pipes (areas in the city's combined sewer system).

RainWise also provides Access Grants to private property owners when their rebate does not meet the full cost of the installation, allowing easier and more affordable access to GSI for lower income applicants.



Contractors are the key to RainWise success

RainWise provides a business opportunity for contractors in landscaping and other GSI-related fields. RainWise expanded contractor training in 2020, offering three different opportunities.

1. Our existing RainWise Contractor Orientation went 100% virtual! July and November sessions trained 44 attendees, who reported the online option made working and attending the training easier.
2. SPU and WTD launched the RainWise Academy, a new small business incubator, designed to train participants in both business management and GSI construction. The Academy's first cohort included a diverse mix of candidates.
3. Offered the Online Multilingual RainWise Contractor Orientation in Spanish, Vietnamese and Chinese.

Big Roof Partnerships

SPU continues to expand investments beyond single-family residences, actively recruiting "Big Roof" projects. These include work with Seattle Public Schools, University of Washington's Green Greek Program, Seattle Housing Authority, and faith-based organizations.

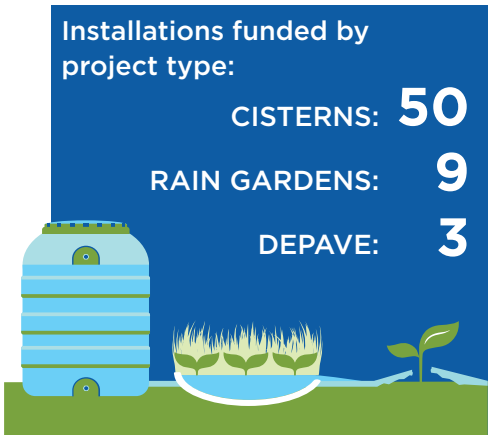
1,068
cistern projects

While the pandemic forced the cancellation of the ribbon-cutting for the Seattle Christian Formosan Church, the completed installation includes two large cisterns that capture the rain from the huge roof (over 3,000 square feet!) and manage 12,800 gallons of stormwater every year (equivalent to 160 bathtubs!).

Those not eligible for RainWise can apply for a GSI Mini Grant to install GSI on private property.

GSI Mini Grants

This innovative program is an easy way for private property owners to manage the rain that falls on their property through green infrastructure. Developed by Stewardship Partners and funded by WTD, these grants provide up to $1,500 for property owners and $4,500 for income-qualified individuals and non-profits. WTD has allotted part of this budget to focus on neighborhoods whose runoff drains into the Duwamish River.



Number of grants awarded:
53

Amount of money awarded:
$91,000

64%
of capital awarded to limited income or nonprofit applicants

WTD's WaterWorks Grant Program

Expanding our toolbox | Growing partnerships | Supporting community | Removing barriers

The WaterWorks Grant Program provides grants of $20,000 to $200,000 for projects that improve water quality and encourage community partnerships within the WTD service area, including GSI projects.

The Chua Van Hanh Temple in Othello can now manage 22,400 gallons of stormwater each year with new cisterns. Additionally new trees reduce parking lot flooding and add shade and beauty to the property.

Building community health and wellness through GSI

This past year, the WaterWorks Grant Program funded new GSI infrstructure for the Chua Van Hanh Temple, installed several GSI features at the Georgetown Mini Mart Park, a community-led effort to turn an abandoned gas station into a local community center and park, and installed a large rain garden at Labateyah Youth Home – a transitional home for youth operated by the United Indian's of All Tribes. (Labateyah means "The Transformer" in the Lushootseed language).

The Georgetown Mini Mart City Park received several types of GSI, including permeable pavers as seen here. This project demonstrates how people can reimagine community spaces through environmental remediation and community engagement.

The United Indians' Labateyah Youth Home in Crown Hill used a WaterWorks grant to install a large rain garden, and engage youth residents through garden internships and a water stewardship program with Native cultural components. Garden interns and Labateyah residents assisted the crew in creating the rain garden.

Find out about more WaterWorks Grant projects.

GSI in the Streets

Growing partnerships

Supporting community

Bringing green stormwater solutions to the public right of way

WTD and SPU lead large capital projects to help our streets function more like forests and let the rain soak into the ground naturally through the use of roadside rain gardens (bioretention).

Barton Roadside Rain Garden.

Ballard natural drainage system.

Current projects

- 12th Ave NW Basin Drainage Improvements project
- Longfellow Creek Natural Drainage Systems (NDS) Project
- North Thornton NDS Project
- South Thornton NDS Project
- Longfellow Starts Here Project
- 12th Ave NE

  In partnership with SDOT's Safe Routes to Schools Program, the Natural Drainage System Partnership program constructed several blocks of bioretention cells on 12th Ave NE.

Completed projects

- 2017 — Ballard NDS Project
- 2016 — Venema NDS Project
- 2016 — Delridge NDS Project
- 2015 — Barton Roadside Rain Gardens Project
- 2009 — High Point NDS Project
- 2006 — Pinehurst Green Grid Project
- 2005 — Broadview Green Grid Project
- 2002 — 110th Cascade Project
- 2000 — SEA Streets

Public-Private Partnerships

Leveraging resources and driving innovation

Cross-Sector Partnership at Equinox Studios in Georgetown

Expanding our toolbox | Growing partnerships | Supporting community | Removing barriers

Equinox Studios has installed a number of "industrial strength" GSI solutions to manage runoff from over 60,000 square feet of roof area including boxed rain gardens, a green wall, oyster barrels to remove contaminants and three kinds of permeable pavement, demonstrating solutions that can be replicated widely by manufacturing and heavy industry.

Informational sign at Equinox Studios.

University of Washington Regional Water Quality Project

Expanding our toolbox | Growing partnerships | Removing barriers

SPU and the University of Washington (UW) are partnering on an innovative approach to managing stormwater runoff from the UW's new Health Sciences Education Building (HSEB). The UW will build a regional biofiltration swale as an equivalent alternative to meeting stormwater requirements for the runoff produced by the HSEB and other future projects.

The swale will provide "beyond code" treatment of public runoff from the surrounding 34-acre drainage basin, including from nearby streets that would not have been treated otherwise. Slated to begin construction in 2021, the project is a model for how SPU and private development can work together to achieve better stormwater outcomes beyond the limits of a single building.

Supporting Research to Quantify GSI Benefits

Expanding our toolbox | Growing partnerships | Removing barriers

National researchers have been working to develop tools to quantify the value of GSI's many benefits, including social and environmental ones. In 2020, SPU participated in a research effort funded by the Water Research Foundation (WRF) to review and test a GSI Benefits Valuation Framework and Tool.

The WRF research team partnered with SPU to gather input and prepared a case study of the Longfellow Natural Drainage System (NDS) project. The Longfellow Creek Path at the SW Kenyon St and 24th Ave SW will provide an important community gathering space and safe access to the creek. It's pocket park style amenities were estimated to have recreational benefits of approximately $2.9 million. Over a 50-year lifecycle evaluation, the project benefits exceeded costs by 24 percent.

Looking to the Future

New tools and pathways for partnering

Partnering Incentive Map

Expanding our toolbox | Growing partnerships | Removing barriers

SPU is creating an interactive map to show all the areas SPU offers incentives for GSI. Incentives are aligned with problem areas throughout SPU's system where GSI investments could help reduce flooding, prevent sewer backups and improve water quality. The map will launch by early 2022 in conjunction with RainCity Partnerships, and will also show eligible incentive areas for RainWise, the GSI in Urban Villages Program, and private development projects interested in building GSI beyond code requirements.

RainCity Partnerships

Growing partnerships | Supporting community

SPU is developing a new program, RainCity Partnerships, a community-based public private partnership to fund community-identified GSI improvements in areas with high priority drainage and wastewater system needs (these areas will be shown in the new interactive partnering incentive map, also referenced on this page). The pilot phase will invest $6-10 million over 3 to 5 years to incentivize the design, installation, and initial maintenance of GSI projects and creek area restoration work throughout the City.

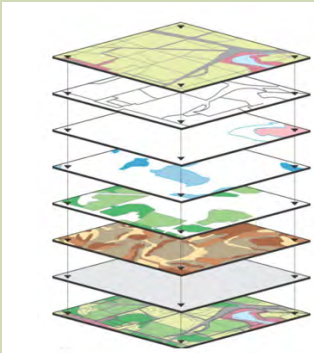
A focus on community

The RainCity program design will focus GSI investments to improve community spaces like schoolyards and under-utilized parking lots and courtyards. Importantly, the program's design, from funding criteria to contracting, will build in key community outcomes as a condition for partnering, including generating local jobs and youth development opportunities.

GSI Planning through Community Lens

Expanding our toolbox | Supporting community

SPU is piloting a new mapping tool designed to center community needs in the City's infrastructure planning process. Through a series of "heat" maps that overly planning data from multiple City Family agencies, SPU can identify gaps in accessible green open space, prioritized mobility routes and existing infrastructure risks, and work with community members to co-create a vision for GSI investments that address multiple needs at once.



Combined map layers work together to show the overlap between city and community needs in prioritizing projects.

New Tools to Improve Water Quality

Expanding our toolbox

Bioswale on Yale Avenue in South Lake Union.

Phosphorus Removal Polishing Layer

The Swale on Yale project in South Lake Union is composed of a series of bioswales that manage nearly 200 millions gallons a year of polluted runoff flowing down from Capitol Hill. Monitoring showed elevated levels of phosphorus leaving the facility which was a by product of the soil being used to clean the water. In response, SPU developed an innovative "polishing layer" to reduce the export of phosphorus and other nutrients from the soil. Early monitoring of this "polishing layer" indicates it to be highly effective at removing phosphorus, a key innovation that SPU will continue testing in future projects.

Floating Wetlands

Floating wetlands are a new and exciting tool for clean water and healthy habitats. Constructed floating wetlands (CFWs) are human-made structures that float and support wetland ecosystems, which have a unique capacity for improving water quality and providing fish and wildlife habitat. The WTD WaterWorks Grant Program has funded two CFW projects for the construction, deployment and monitoring of floating wetlands on the Duwamish River and the Lake Washington Ship Canal. Research by the University of Washington has demonstrated that the CFWs removed nitrogen, copper, lead and zinc from the water during their two-year deployment in the lower Duwamish.

Alternate Formats Available

206-477-5371 TTY Relay 711