



Navigating Green Infrastructure Maintenance with Capitalized Establishment Costs

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EXECUTIVE SUMMARY

For nearly two decades, local stormwater managers have recognized green infrastructure (GI) as an effective, multi-benefit approach to manage stormwater. GI provides significant benefits for combating the water quality and climate change related challenges that municipalities face. In addition, GI is a centerpiece One Water strategy; it can capture and reuse stormwater to enhance water supply reliability, creating resilience to drought. Beyond these water management benefits, GI generates community and economic co-benefits including local green jobs, among others.

Yet, GI has mostly remained on the fringes of stormwater management. A “nice to have” amenity. To realize its potential and have a substantial impact for communities, GI needs to scale up rapidly. Lack of funds to pay for GI maintenance is often cited as a leading barrier to getting to scale.¹ This report presents a solution GI practitioners and proponents can add to the toolkit for navigating this funding barrier and getting to scale: ensuring that the three to five-year vegetative establishment period for GI is treated as a capital cost instead of a maintenance expense. Recognizing establishment period costs as capital costs unlocks access to key financing options.

The largest federal finance program for water infrastructure—the Clean Water State Revolving Fund (CWSRF)—finances construction costs, and planning and assessment costs. The CWSRF does not finance maintenance.² All infrastructure, both gray and green, requires a period of time and money to ensure that it is properly installed and is built to meet its estimated useful life.³ Costs during this period are always considered capital costs, i.e., part of construction of the project. The key difference between GI and traditional gray infrastructure is that the GI establishment period can be much longer than that of the equivalent gray infrastructure period. This can lead to the incorrect treatment of GI establishment costs as maintenance, preventing the use of CWSRF dollars to finance these elements of building GI.

Ensuring that vegetative establishment period costs are categorized as capital costs can help municipalities leverage more funding for GI to scale it up. By doing so, they can pay over time, shifting the impact of establishment costs away from annual operating budgets. Since establishment costs are typically higher than yearly long-term maintenance costs, this shift has potential for meaningfully advancing GI adoption. This approach also gives cities and utilities a few years to secure funding for ongoing maintenance. Additionally, during the establishment phase, municipalities can become more knowledgeable or train others about the long-term maintenance requirements of installed GI. Hoboken, New Jersey, and the Milwaukee Metropolitan Sewerage District have successfully taken this approach to covering the cost of establishment.

Based on these case studies and analysis of current CWSRF eligibilities, this report provides project managers and their advisors⁴ with an approach to classifying GI establishment costs as CWSRF-financeable expenditures. Further, to expand uptake of this pathway to scale, it offers several specific recommendations to the managers and the wider SRF stakeholder ecosystem, including SRF state administrators and the EPA:

Local Project Managers

Engage all stakeholders involved in the project planning process. Milwaukee Metropolitan Sewerage District convened committees composed of the department managers, legal advisors, engineers, and the finance team to properly categorize for the vegetative establishment period for a GI project. These committees helped all the different stakeholders involved in project implementation understand the importance and benefits of capitalizing establishment costs.

Engage with SRF administrators about potential GI projects. If your municipality wants to implement more GI projects but finds hurdles to accessing SRF funding, reach out to your state's SRF administrators and let them know that your municipality wants to fund GI projects through the SRF program. Contact information can be found on each state's SRF websites. Cultivating this relationship can help municipalities understand and gain assistance with the SRF application process, and help both parties gain mutual understanding about GI capital costs. This engagement also signals to the SRF administrators that GI investments are a priority in your state.

Consider a broad range of revenue streams that can pay for GI. Considering vegetative establishment periods in the capital program is only the first step to reducing the funding barrier for GI. Municipalities often consider stormwater utilities as the only dedicated revenue streams for GI. Yet, many municipalities do not have a stormwater utility⁵ because they can be difficult to implement. Because GI is a One Water strategy, other potential funding options include wastewater utilities and water rates.

SRF Administrators

Think creatively about how your state's SRF policy framework can incentivize GI. State-level regulations and SRF policies in Intended Use Plans can be unintentionally prohibitive to GI projects, but they likely do not completely bar the use of SRF funds for GI establishment costs. This report demonstrates that whether CWSRF loans finance the full scope of GI capital costs is likely dependent on water managers' and their advisors' understanding and familiarity with GI. In any event, updating CWSRF state policies to clarify that establishment costs are eligible will help project proponents correctly categorize these costs.

Use CWSRF set-aside funds to provide training and education to relevant financial advisors on what activities qualify as GI capital costs. Financial advisors determine what sources of funds can be legally used for certain activities and are crucial to recognizing establishment costs as capital costs.

Use technical assistance funds to help municipalities develop GI projects. SRF technical assistance funds can help communities with their GI project application. This can allow municipalities to receive help with funding coordination, project planning, assessments, and administrative work, among other things. During this assistance process, SRF administrators can help to ensure that municipalities and their municipal advisors understand the full capital costs of GI.

Develop useful life guidance for GI via factsheets and webinars to ensure that project proponents include establishment phase work in useful life measurements. When setting loan terms and interest rates, SRF administrators will review useful life averages for funded projects. Finding useful life estimates for GI can be difficult, and ensuring the establishment phase is included in those estimates will help set more accurate loan terms.

EPA

Provide specific guidance via memoranda and complementary workshops on defining what qualifies as capital costs for GI projects. Having this defined by EPA at the federal level will help state SRF administrators know that GI establishment costs do qualify as capital costs and that financing these costs is important to getting to scale.

Dedicate at least half of the Green Project Reserve to distributed infrastructure. The goal of the GPR is to promote SRF-financed nontraditional projects, but much of the GPR is invested in improvements to traditional centralized wastewater treatment plants. Dedicating half of the GPR to distributed water infrastructure⁶ will help to ensure more investments in GI, as well as decentralized water conservation and reuse technologies and strategies.

Financing GI establishment costs is an important pathway to large-scale GI deployment. The policy recommendation to expressly recognize establishment costs as capital costs eligible for CWSRF assistance is an important tool in the toolbox for scale. This solution can ensure that the costs of GI projects are accurately paid for and that these projects can provide multi-benefits over the long term.



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INTRODUCTION

The Clean Water State Revolving Fund (CWSRF) program is the most significant source of water infrastructure financing in the United States, enabling communities to invest in capital projects that improve water quality and protect public health with relatively low cost borrowing. The Infrastructure Investment and Jobs Act (IIJA) appropriated an additional \$12.7 billion to the CWSRF on top of annual Congressional appropriations to invest in water infrastructure between 2022-2026. A wide range of infrastructure projects are eligible for CWSRF assistance, including green infrastructure (GI)-like rain gardens or riparian buffers-which helps improve water quality issues caused by stormwater and nonpoint source pollution. GI has multiple other economic and social benefits, such as providing opportunities for green jobs, recreation, and physical activity.⁷ Historically, since it was created 1987, the CWSRF has primarily financed gray infrastructure, like wastewater treatment plant (WWTP) projects: about 91 percent of CWSRF investments have gone towards WWTP construction and improvements.⁸ These investments, while important, reflect 20th-century priorities. With ever-increasing 21st-century threats of climate change and a substantial increase in funds from IIJA, the CWSRFs present an opportunity for water managers to dramatically scale up local investments in GI.

A significant barrier to increasing CWSRF-financed GI and realizing the full potential of these programs at the local level is that ongoing maintenance costs are not eligible for CWSRF program funding. Funding for capital investments and maintenance are inextricably linked because local water managers are rightly cautious to make large-scale capital investments in GI they cannot maintain. The CWSRF is a debt-financing program that mainly distributes loans; therefore, it can only pay for capital costs, defined as fixed, nonrecurring expenditures. For example, construction costs, and related planning and assessment costs, are CWSRF-eligible. Maintenance, although crucial to the success of all water infrastructure, including GI, is not eligible. As a result, water managers who want to invest in GI often lack sufficient funds to pay for GI maintenance because they must rely solely on municipal general funds or utility annual operating budgets. Operations and maintenance for gray infrastructure, like wastewater treatment plants and associated sewer pipes, are paid for through wastewater rates. While wastewater rates and a variety of funding streams can be used to pay for loan repayments and annual maintenance for GI (see box on Revenue Streams for GI), examining project-phase categorization and eligibility reveals another pathway to help alleviate the cost burden of GI maintenance.

What is Green Infrastructure?

Green infrastructure (GI) often refers to stormwater management systems that replicate natural processes by storing, infiltrating, or evapotranspiring water, such as rain gardens and green roofs. GI at the neighborhood and parcel scale are most often hybrid systems that mix hard engineering components with natural elements. At the city or regional scale, GI often refers to natural areas, like wetlands or forests.

GI is cost effective, makes both natural and human-made water systems more robust, and provides for environmental, social, and economic co-benefits. Natural areas can address nonpoint source pollution and provide habitat, flood protection, water filtration, and cleaner air. Due to its use of vegetation and natural landscapes, GI brings with it a wide array of benefits that goes beyond stormwater management. GI allows for water infiltration that helps improve water quality, green neighborhoods to minimize urban heat islands, and reduce separate and combined sewer overflows.

The distinction between a GI capital cost and a GI maintenance cost is thus crucial. Like more commonly implemented, and CWSRF-financed, gray infrastructure projects, GI is implemented in phases. Specifically, similar to the commissioning period before bringing conventional systems online, GI requires an establishment period—a three to five-year phase that is more properly characterized as part and parcel with “planning and construction” than as part of maintenance. During this period, vegetation establishes its roots in the ground to uptake nutrients as well as filter air and water—key mechanisms that allow GI to function as intended.

This report tackles the challenge of financing GI by demonstrating that the CWSRF can finance the establishment period of GI because it is a capital cost. The report describes current CWSRF policies and practices to show that the program does legally allow for financing GI establishment periods. This recognition can reduce long-term maintenance costs for borrowers of the CWSRF because establishment costs are typically more expensive than yearly maintenance and because a proper establishment period can reduce the risk of failed infrastructure and the near-term need for more capital investments. The report also describes two municipalities that have already taken this approach.

Revenue Streams for GI

Municipalities may need to establish new dedicated funding streams for GI. Since the CWSRF is a loan program, projects must have revenue streams to repay the loans. Utility fees are one type of revenue that are charges imposed to provide services to customers. Although water and wastewater rates can be used for repaying CWSRF loans for GI, some municipalities have also established specific stormwater utility fees that aligns the fee with a proxy for the amount of runoff a property generates. Municipalities can also fund GI with tax revenues or grants. Using tax revenues can be difficult because these projects then compete with other priority projects like schools, public safety, and transport. Federal, state, and private grants are also options, which are ways to receive funding for green infrastructure without requiring a revenue stream for repayments. Some examples at the federal level include the EPA’s Overflow and Stormwater Grants and Section 319 Nonpoint Source Grants. Not having a revenue stream for green infrastructure affects a municipality’s ability to finance construction and to pay for long-term maintenance afterwards.



OVERVIEW OF THE CLEAN WATER STATE REVOLVING FUND

The CWSRF is legally authorized to finance a broad range of water infrastructure projects and strategies, including specifically GI. Federal policies support GI implementation as a stormwater strategy, but ultimately CWSRF funding decisions are established by the 50 state SRF programs. State and local understanding, priorities, and practices determine municipalities' abilities to use the CWSRF to fund the full capital costs of GI. The following sections describe how cooperative federalism approach of the CWSRF policy framework can either enable or constrain the availability of financing for GI implementation.

Eligible Project Phases for CWSRF Funding

In 1987, Congress established the CWSRF as a financial assistance program for water infrastructure projects.⁹ The CWSRF program is a federal-state partnership, in which Congress provides federal capitalization grants through the Environmental Protection Agency (EPA) to the states. States must match those federal grants with a certain percentage of state funding,¹⁰ and use these federal and state funds to issue low-interest loans to eligible borrowers for implementing certain types of water infrastructure projects. Since the program is primarily a debt-financing program, in which loans are issued for long-term projects, SRF proceeds can only pay for capital costs and not annual expenses. The borrowers—typically municipalities or sewer authorities—repay these loans with rate revenue and/or fees collected from local utility ratepayers.

Because the CWSRF is a loan program, eligible project phase classification for CWSRF funding must meet Generally Accepted Accounting Principles (GAAP).¹¹ GAAP defines capital costs as spending on items expected to provide long-lasting benefits, generally understood to be more than one year.¹² Accordingly, capital costs that the CWSRF can cover include construction, planning, and assessment costs. Capital costs are most often associated with spending on construction that directly results in an asset with a useful life greater than one year. The CWSRF can also fund planning and assessment costs that have a reasonable prospect of resulting in a long-term capital project. Eligible planning activities include capital improvement plans and stormwater or watershed management plans, among others. Assessment equipment and activities to gauge project effectiveness can include meters, sensors, sampling, or data analysis. Eligible assessment activities are done for a limited time, usually immediately after completion of construction, to assess whether the project was constructed correctly. Conversely, operating expenses, like annual maintenance, are not eligible project phase costs. GAAP requires maintenance costs to be expensed during the period in which they are incurred because they are short-lived benefits (a year or less).

Federal Law Creates the CWSRF Framework for GI Funding

Federal law defines the types of projects eligible for CWSRF funding. The original project eligibilities included the construction of publicly owned treatment works, implementation of nonpoint source management programs, and the development or implementation of conservation and management plans under the National Estuary Program. Over time, the CWSRF program has expanded, and other water quality projects were explicitly made eligible, including stormwater management practices, water reuse, and water conservation projects. In particular, in 2009, the Green Project Reserve (GPR) was established under the American Recovery and Reinvestment Act (ARRA), which required 20 percent of states' CWSRF federal capitalization grants to go towards green projects. These projects encompass four categories, including green infrastructure and "environmentally innovative activities."¹³ This amendment opened CWSRF eligibility to include nontraditional projects and elevated GI in particular as a priority for CWSRF funding. Congress carried forward the GPR requirement and project eligibility in further CWSRF appropriations, and in 2014, the Water Resources Reform and Development Act (WRRDA)¹⁴ amended the CWSRF to formally

expand the program’s eligibilities to include a focus on stormwater and subsurface drainage water.¹⁵ This demonstrates the Legislature’s increasing recognition of the need to address water quality challenges caused by stormwater runoff. In 2016, EPA released a Green Infrastructure Policy memorandum to guide state CWSRF programs to meet this challenge and increase the use of CWSRF financing for GI projects by improving priority ranking, increasing marketing, and using financial incentives for GI.¹⁶ These federal actions that gave eligibility to and helped promote investments in GI are important changes for the CWSRF. However, some GI practitioners say the CWSRF is not evolving fast enough to accommodate GI projects, which is largely due to state and local level practices and understandings.

“These federal actions that gave eligibility to and helped promote investments in GI are important changes for the CWSRF. However, some GI practitioners say the CWSRF is not evolving fast enough to accommodate GI projects, which is largely due to state and local level practices and understandings.”

States Have Flexibility to Prioritize and Incentivize GI, But Many Do Not

While federal law determines the types of projects eligible for CWSRF funding, the states still have wide discretion to set their own priorities through ranking criteria and incentives for preferred project types. Moreover, states have the flexibility to implement innovative practices with their SRF program that can uplift certain types of projects. For example, a few states have created alternative financing methods within their SRF programs, including sponsorship or linked-deposit programs, that help promote nontraditional projects for nonpoint source pollution.¹⁷ In these and other ways, states have immense discretion and flexibility in administering their CWSRF loan programs.¹⁸

To date, most states have not used these flexibilities to prioritize GI, and CWSRF-financed GI implementation varies widely from state to state.¹⁹ Many states have not adjusted ranking criteria to assign higher priority to GI, and still heavily favor WWTP projects. Thus, GI lags far behind energy efficiency improvements for treatment plants when it comes to state compliance with GPR requirements.²⁰ As a result, the state CWSRFs miss out on potentially valuable opportunities to finance GI projects with value to local communities. Despite the openness of federal policies for GI projects, state policies and practices have not yet caught up to fund GI projects that municipalities can implement with CWSRFs.

Municipalities Face Multiple Barriers to Financing GI with CWSRF

In addition to state policies and practices, municipalities face additional challenges at the local level for financing GI, including misunderstandings about how to capitalize GI investments. GI projects are not only newer than gray infrastructure projects to the CWSRF program, but also newer as a solution within the context of the past 100 years of water management. The US’s water infrastructure landscape has largely been based on hard, built solutions, and despite GI being another viable stormwater management solution for nearly two decades, many municipal project managers and advisors remain hesitant to pursue GI due to unfamiliarity or misconceptions of GI project financing and implementation.²¹ Unlike state policies and practices, which must be addressed by changing state administrative statute or agency rules, these municipal constraints can be overcome in other ways. From a financing perspective, one solution is the recognition of GI establishment periods as capital costs.

RECOGNIZING GI CAPITAL COSTS TO INCREASE CWSRF INVESTMENTS & REDUCE LONG-TERM MAINTENANCE BURDENS

Leveraging the CWSRF for GI investments at scale requires nuanced thinking about what qualifies as a capital cost in the GI context. The activities to construct GI are similar to what it takes to build capital projects typically funded by SRFs, but these existing categories may not translate squarely. Capital project timelines usually include a phase before ongoing maintenance that is associated with ensuring long-term project performance, including commissioning of treatment facilities, warranties, or assessment periods, which are described below.

In the context of building GI, establishment periods are embedded in these familiar processes. Establishment periods are part of GI construction, just as commissioning (i.e., calibrating) is part of WWTP construction. During the three to five years needed to establish GI, the installation is arguably still being built. To the extent establishment is not strictly a construction cost, this phase of GI installation can also qualify for financing as part of a warranty and/or assessment period—which are CWSRF financeable costs. Just as an assessment phase for a new WWTP tests that the plant is working as intended, an assessment phase for GI should include the relevant establishment period because that timeframe determines whether it is correctly installed.

Defining the GI Establishment Period

A project manager unfamiliar with green infrastructure may think that tree construction for a tree trench²² is completed once the trees are planted in the ground and that the project can move immediately into assessment and then operations. However, the period of time trees and other types of vegetation need to establish their roots before they can provide benefits, such as absorbing nutrients and filtering runoff, is part of the tree installation. It is part of the construction of GI, even though the activities during this period—like deep watering, frequent weeding, and mulching—are similar to long-term maintenance activities. Establishment is a period that precedes maintenance and should precede any type of performance assessment or measurements. Without this period, trees and other vegetation cannot fully perform as they were intended to.

Figure 1. Project phases & CWSRF eligibility



There are analogous phases of construction of gray infrastructure, such as “commissioning” for WWTPs. Commissioning is the final stage of preparing a water or wastewater treatment plant for operations. It broadly covers final construction activities, including operator training, equipment calibration, performance testing, and integration of systems. These processes can take a few weeks to a few months to complete.²³ Even though commissioning does not include typical construction activities, like excavating or pouring concrete, it is still considered part of construction. Commissioning ensures that the construction contractors hand over facilities that are fully installed, function as intended, and are operation-ready. The commissioning

process is a crucial component to the construction of treatment facilities, much like the GI establishment period, because engineers know that not ensuring correct installation can increase maintenance costs later and decrease the life of the facility. This process requires collaboration between the construction contractors and the owner or operator that will take over operations and maintenance to ensure a smooth transition.

As explained in the Milwaukee Metropolitan Sewerage District case study below, defining GI establishment periods involves coordination amongst utility staff and decision-makers, and can help ensure successful GI investments. Moreover, correctly defining GI establishment periods is key to unlocking available financing. When project managers and their advisors classify the establishment period as long-term maintenance, it inadvertently prevents the full capital costs of GI from being financed with a CWSRF loan.

“Defining GI establishment periods involves coordination amongst utility staff and decision-makers, and can help ensure successful GI investments.”

CASE STUDY: MILWAUKEE METROPOLITAN SEWERAGE DISTRICT

Through its Fresh Coast Protection Partnership, the Milwaukee Metropolitan Sewerage District (MMSD) is installing GI to capture 11 million gallons of stormwater— projects that will advance MMSD’s goal to use GI to manage the first half-inch of rainfall across impervious surfaces in the area, which amounts to nearly 740 million gallons of stormwater per storm by 2035. As a crucial element of MMSD’s implementation of these GI projects, the utility included a five-year vegetative establishment period as capital project costs. This five-year GI establishment period was crucial for ensuring success. If MMSD did not categorize establishment phase costs as capital costs, the utility would not have sufficient funding for GI projects at this scale. To build the GI projects designed to capture 11 million gallons of stormwater per storm, MMSD estimated that the five-year establishment period would cost a total of \$1.2 million. The total estimated maximum project budget is about \$27 million.



Including the GI establishment costs in the project financing was not a given, however. MMSD staff and decision makers’ different levels of understanding of GI initially posed a barrier to full financing for GI capital costs. MMSD took a multipronged approach to overcome this barrier. First, sustainability staff worked with the utility’s finance team to show the benefits of including establishment periods in capital costs based on prior watercourse and flood management work. In this previous work, a five-year establishment period for trees and native vegetation planted along watercourses was covered as capital costs. This served as one

justification to set a five-year establishment period for GI. Second, the sustainability staff also worked with landscape architects and those knowledgeable about plant development to learn more about best practices when caring for vegetation. These discussions further supported the five-year establishment period.

Third, MMSD established a steering committee and technical committee to manage the program to meet organizational needs, follow required procurement practices, and deliver projects that are technically sound.

This five-year GI establishment period was crucial for ensuring success. If MMSD did not categorize establishment phase costs as capital costs, the utility would not have sufficient funding for GI projects at this scale.

The committees comprised of the various relevant advisors and stakeholders: department managers, the executive director,

the finance team, project managers, legal advisors, and engineers. The committee discussions promoted and built knowledge sharing, buy-in, and trust between the different teams involved in the project. They also helped each team to understand the technical engineering need of GI establishment periods and the financial benefits of considering this period as a capital cost. These factors—examples of best practice, collaboration, and knowledge sharing between different teams—were helpful towards changing the Partnership contract to extend the length of the establishment period covered by capital dollars from one year to five years.

Finding a pathway to financing a five-year establishment period not only helped make it possible for MMSD to pay for the capital costs of the Fresh Coast Protection Partnership program, but also provided MMSD the time needed to ensure project success. With a five-year establishment period, MMSD's contractors take on the most intensive care, have an appropriate window to decrease the threat of invasive species, and can ensure that the native plants that are part of the GI are well established and growing. The longer establishment period also gives MMSD time to train and familiarize property owners about long-term maintenance needs, reducing the risk of improper maintenance and eventual GI failure.



Using Assessment Periods as an Analogy for Establishment Periods

Assessment period eligibility for CWSRF financing demonstrates that the CWSRF can fund capital costs beyond direct construction costs. During the assessment period, activities take place to assess project effectiveness but only for a set amount of time. Assessment period activities for GI include water sampling, lab work, or data analysis. Assessment periods can be mistaken for continual, routine monitoring activities, just as establishment periods can be mistaken for long-term maintenance activities. Both assessment and establishment periods are nonrecurring and are crucial to the installation of GI. If assessment costs for GI can be eligible for CWSRF financing, then establishment periods can also be considered capital costs and eligible as well. The box below gives an example of a GI assessment period to draw parallels between it and establishment costs.

Assessing a GI Project

If a municipality implements a GI project—for instance, the installation of multiple rain gardens—the contractor who constructs those rain gardens will typically return to the completed project site to monitor its performance. This may involve ensuring that stormwater infiltration is occurring at the expected rate and that flooding is not occurring. These visits generally take place after the first few rain events, which could take place many weeks or months after construction. These return trips by the contractor are part of the assessment period and are only CWSRF-eligible for a specific, reasonable amount of time. State CWSRF project engineers and managers have the discretion to determine the length of time for these activities. The municipality may also want to install monitoring equipment to evaluate the performance and effectiveness of the rain gardens. The initial costs of purchasing the monitoring equipment would be an eligible cost under the CWSRF, but any costs for continual, routine monitoring would not be eligible.

While they are distinct, establishment periods can occur during assessment periods. For example, project implementers can use assessment periods to help determine whether a GI installation is functioning properly. If not, the implementer may need to undertake establishment period activities, like frequent watering or weeding, to help the GI vegetation fully establish.

Employing Establishment Periods Within Warranty Periods

To the extent that establishment costs cannot be categorized as capital costs that are part of the physical construction of GI, establishment costs should be eligible for CWSRF financing as part of the project warranty. Warranties are used in capital projects as a guarantee that what has been installed will work as promised. It is an agreement that legally binds the construction contractor to ensuring that the GI is installed correctly and performs as intended. Warranty periods for GI are commonly one to three years and often include establishment period activities. Undertaking establishment period activities during the warranty period reflects how establishment is important for the effective functioning of GI and its true characterization as a capital cost. The next case study describes how Hoboken, New Jersey, has used warranty periods for its GI and how the city leveraged CWSRF dollars for GI in part by treating GI establishment periods as capital costs.

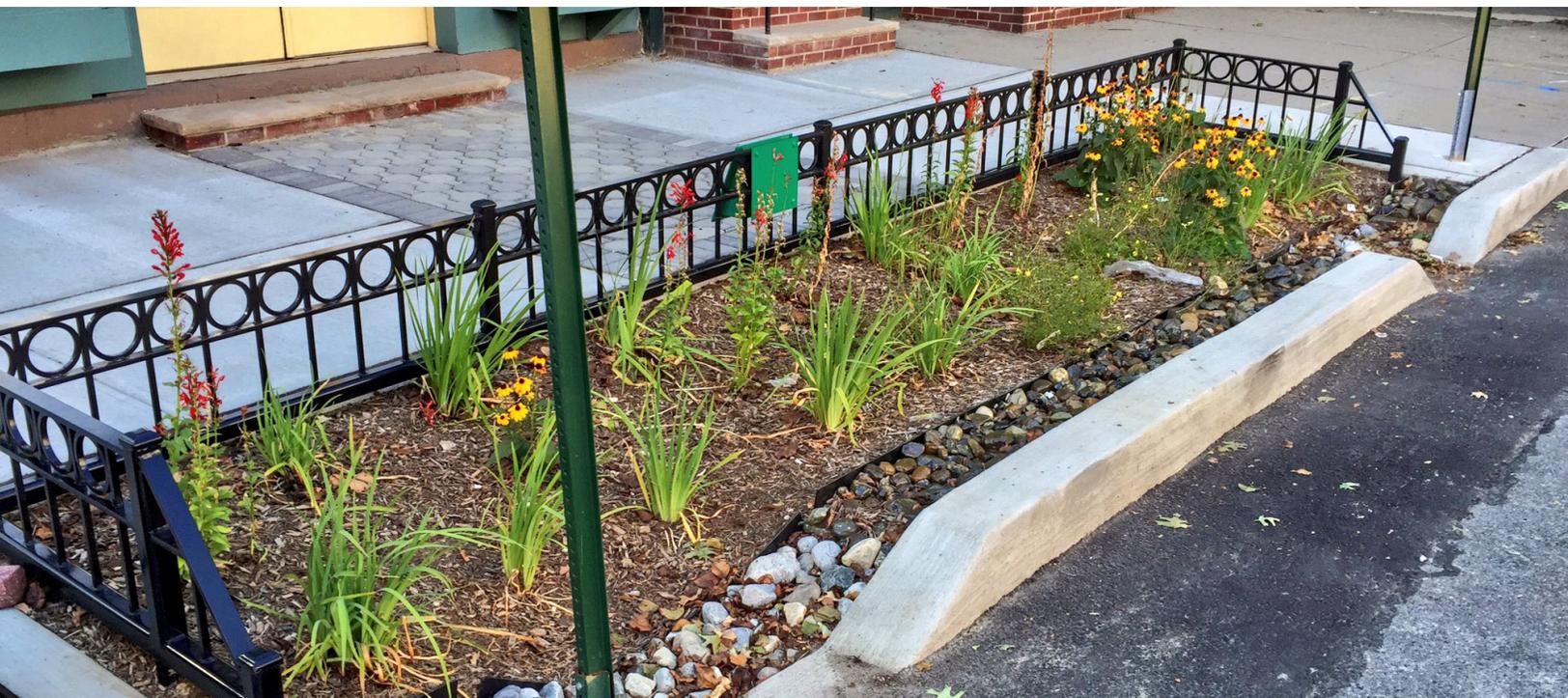
CASE STUDY: HOBOKEN, NEW JERSEY

For Hoboken, New Jersey, GI is an important tool to manage high stormwater flows after severe weather and heavy rainfall. Such storms have increased in intensity and frequency, so Hoboken has begun to prioritize resilient infrastructure such as GI. Accessing CWSRF loans that cover GI establishment costs was key to implementing two GI projects in Hoboken, the Washington Street Project and the Northwest Resiliency Park. By including performance-based metrics and specifications for the GI establishment period in the warranties for both these projects, Hoboken was able to leverage CWSRF financing to cover those costs.

The Washington Street Project is a cross-cutting complete streets redesign project with the goal to improve transportation, sustainability, and resiliency. It includes a five-block green streets component comprised of 15 rain gardens to capture 150,000 gallons of stormwater and to reduce combined sewer overflows (CSOs). In 2018, the project received a \$5 million CWSRF loan from the New Jersey Infrastructure Bank for construction of the rain gardens. The project had a one-year warranty that was paid for with the CWSRF loan to cover the cost of the plants and the vegetative establishment phase activities. Project costs were recognized as capital through the end of the warranty period.

The Northwest Resiliency Park is a five-acre recreational park that uses green infrastructure features for stormwater management and is also intended to help meet Hoboken's CSO control plan goals. The project was funded in two phases. Hoboken received an initial CWSRF loan in 2017 for Phase I of this project, which included land acquisition, environmental investigation, design and planning of the park. In 2021, Hoboken received a \$38 million CWSRF loan for Phase II, the construction of the park. The park includes various GI elements to manage surface stormwater flows and to treat about 680,000 gallons of stormwater per storm. The park had a two-year warranty on construction that was paid for using its CWSRF loan.

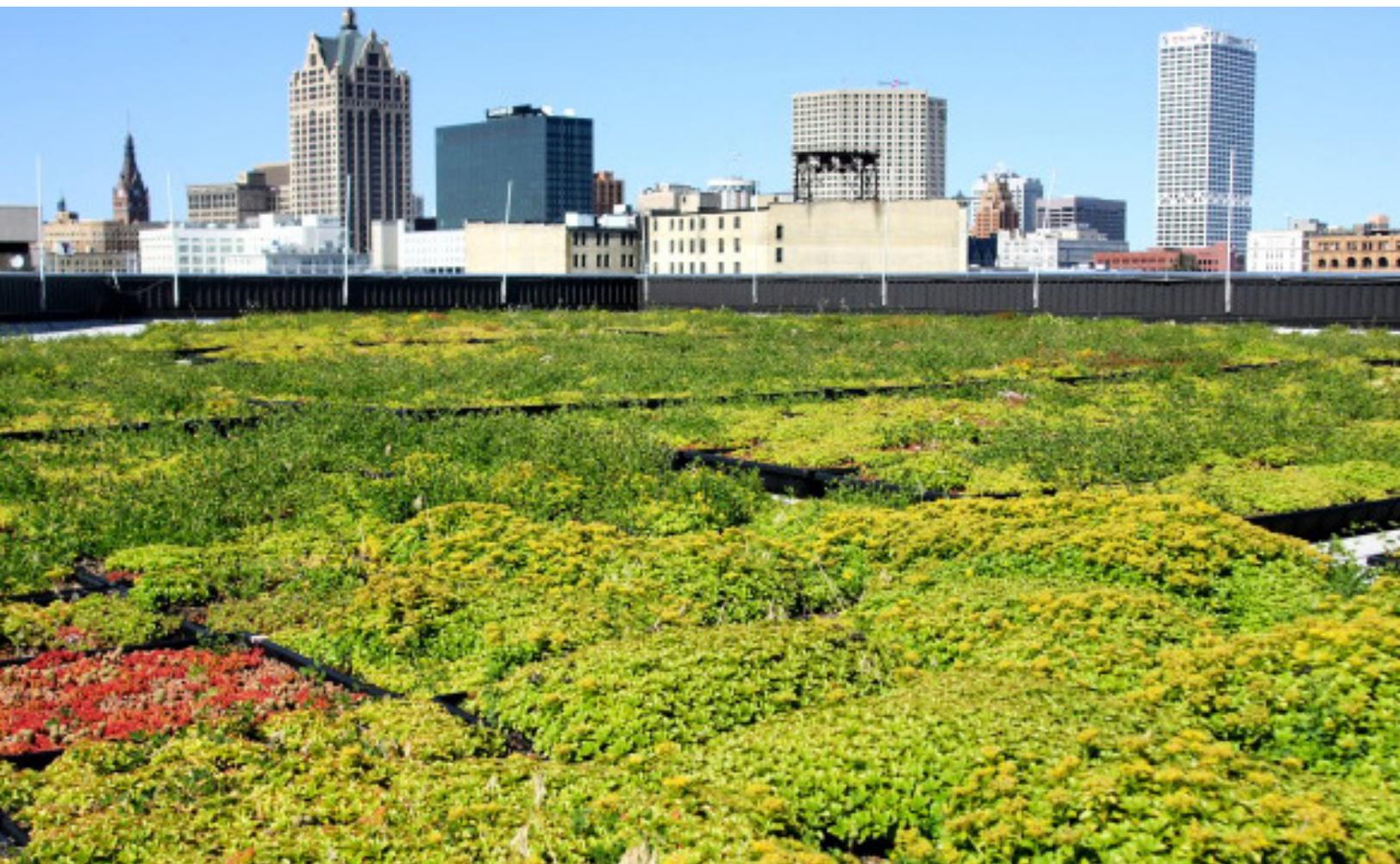
The CWSRF loans covering establishment costs were important to Hoboken's ability to upscale its investments in GI. The city needed CWSRF financing to provide the upfront capital dollars needed for these projects that could not have been obtained from annual rate revenue without substantial hardship. The proper recognition of establishment costs as capital costs helped to guarantee the functionality of the City's multi-million dollar investments. Moreover, using the CWSRF to pay for establishment costs also helped Hoboken float construction costs as well as delay long-term maintenance costs. Hoboken used that time to train and hire long-term maintenance staff and did not need to designate any of its annual operating budget to maintain the new GI installations until the establishment period was complete.



Assessment periods and warranties are ways to integrate the GI establishment period into the traditional capital project timeline and fully capitalize those costs. The Hoboken case study gives an example of how it can be done with warranties. Likewise, establishment periods can also be financed separately, which was demonstrated in the MMSD case study. Moreover, the parallels between the commissioning period of water and wastewater treatment facilities and the GI establishment period helps further qualify establishment costs as capital costs.

Looking ahead: Supporting long-term maintenance with community-based public private partnerships

Financing GI establishment costs has many benefits, but this approach is only the first step to reducing the cost burden of maintenance. Thus, it will need to be paired with strategies for ongoing maintenance after establishment is completed. One model that MMSD is using is a community-based public private partnership, or CBP3. This model aims to promote community-led green infrastructure around the MMSD service area and sets the stage for effective long-term maintenance on private property by carrying out one-on-one outreach and comprehensive project sourcing and management. Ensuring there is input and engagement from communities is crucial to the longevity of installed GI, as it creates ownership and buy-in from the community itself. MMSD and its private partner, Greenprint Partners, started the CBP3 in 2022, and more is to come on the successes of this program.



RECOMMENDATIONS FOR NEXT STEPS

Based on the case studies and analysis of current CWSRF eligibilities, project managers, SRF state administrators, and EPA can take several steps to ensure GI capital costs are fully recognized and further accelerate GI investments:

Local Project Managers

Engage all stakeholders involved in the project planning process.

The Milwaukee Metropolitan Sewerage District convened committees composed of the department managers, legal advisors, engineers, and the finance team to properly categorize the vegetative establishment period for a GI project. To build understanding and gain trust and buy-in for GI projects, collaboration and collective decision-making are crucial. These committees helped all the different stakeholders involved in project implementation understand the importance and benefits of capitalizing establishment costs.

Engage with SRF administrators about potential GI projects.

If your municipality or utility wants to implement more GI projects but finds hurdles to accessing SRF funding, reach out to your state's SRF administrators and let them know that your municipality wants to fund GI projects through the SRF program. Contact information can be found on each state's SRF websites. Cultivating this relationship can help municipalities understand and gain assistance with the SRF application process, and help both parties gain mutual understanding about GI capital costs. This engagement also signals to the SRF administrators that GI investments are a priority in your state.

Consider a broad range of revenue streams that can pay for GI.

Considering vegetative establishment periods in the capital program is only the first step to reduce the funding barrier for GI. Municipalities often consider stormwater utilities as the only dedicated revenue streams for GI. Yet, many municipalities do not have a stormwater utility because they can be difficult to implement. Because GI is a One Water strategy, other potential funding options include wastewater utilities and water rates, which are commonly already established. GI projects applying for CWSRF assistance already need to make a water quality argument for the project, and given the multiple benefits of GI, including water use efficiency or alternative sources of water supplies, municipalities may also be able to use water rates to secure GI investments.

SRF Administrators

Think creatively about how your state's SRF policy framework can incentivize GI.

State-level regulations and SRF policies in Intended Use Plans can be unintentionally prohibitive to GI projects, but they likely do not completely bar the use of SRF funds for GI establishment costs. This report demonstrates that whether CWSRF loans finance the full scope of GI capital costs is likely dependent on water managers' and their advisors' understanding and familiarity with GI. In any event, updating CWSRF state policies or providing state specific guidance to clarify that establishment costs are eligible will help project proponents correctly categorize these costs.

Use CWSRF set-aside funds to provide training and education to relevant financial advisors on what activities qualify as eligible GI capital costs.

Financial advisors determine what sources of funds can be legally used for certain activities and are crucial to recognizing establishment costs as capital costs. States can set aside two percent of their base and supplemental federal capitalization grant for technical assistance to rural, small, and tribal systems. Program administration set-asides, for which states can set aside four percent of their federal capitalization grants, can also be used for technical assistance to larger systems.

Use technical assistance funds to help municipalities develop GI projects.

SRF technical assistance funds can also help communities with their GI project application. This can allow municipalities to receive help with funding coordination, project planning, assessments, and administrative work, among other things. To submit an SRF application requires a large amount of upfront costs and work, which can be prohibitive to many municipalities who want to implement GI projects. During this assistance process, SRF administrators can help to ensure that municipalities and their municipal advisors understand the full capital costs of GI.

Develop useful life guidance for GI via factsheets and webinars to ensure that project proponents include establishment phase work in useful life measurements.

When setting loan terms and interest rates, SRF administrators will review useful life averages for funded projects. Finding useful life estimates for GI can be difficult, and ensuring the establishment phase is included in those estimates will help set more accurate loan terms.

EPA

Provide specific guidance via memoranda and complementary workshops on defining what qualifies as capital costs for GI projects.

Having this defined by EPA at the federal level will help state SRF administrators know that GI establishment costs do qualify as capital costs and that financing these costs is important to getting to scale.

Dedicate at least half of the Green Project Reserve to distributed infrastructure.

The goal of the GPR is to promote SRF-financed nontraditional projects, but much of the GPR is invested in improvements to traditional centralized wastewater treatment plants. Dedicating half of the GPR to distributed water infrastructure will help to ensure more investments in GI, as well as decentralized water conservation and reuse technologies and strategies. Distributed water infrastructure can extend and serve the same functions as WWTPs while reducing environmental impacts. Distributed infrastructure includes GI, as well as water use efficiency measures, onsite reuse, and watershed restoration. The EPA should prioritize increased GPR investments towards these types of green water infrastructure projects.

CONCLUSION

Green infrastructure is crucial to ensuring the vitality of our water systems and communities. Yet, to realize their full impact, GI needs to be implemented at scale. At full-scale deployment, many municipalities may struggle to pay for widespread implementation and maintenance. This report describes a step along the path to overcoming this hurdle. Funding and financing from the CWSRF – the largest federal program for water infrastructure – can cover the full capital costs of GI. These capital costs include the establishment period, a three- to five-year period when vegetation establishes its roots to function optimally. The establishment period ensures that the GI is operating as designed, and can infiltrate, filter, and evapotranspire water. Treating this establishment period as a capital cost opens up the opportunity to use more of the CWSRF to invest in GI, minimizing the impact on municipalities' annual operating budgets.

Reframing the definition of GI capital costs is crucial to supporting widespread GI implementation, but is only one part of decreasing barriers to this important water management strategy. EPA and states will need to update SRF policies and continue to spread awareness and understanding of GI and how it fits into the CWSRF program. Municipalities and the communities they serve will need to work together to think holistically about GI solutions. New approaches to and innovative ideas for the CWSRF program can help support GI in all communities and help them become resilient and thriving.



END NOTES

- 1 The Green Infrastructure Leadership Exchange. (2023). The State of Public Sector Green Stormwater Infrastructure: 2022. <https://giex-change.org/wp-content/uploads/TheStateOfPublicSectorGSI.pdf>
- 2 Under Generally Accepted Accounting Principles, entities can capitalize costs of activities if they increase the value or extend the useful life of the asset, in this case green or gray infrastructure. Maintenance costs are typically paid annually as an expense.
- 3 The useful life is an accounting method that gives an estimate for how long an asset, such as green infrastructure, will have value and provide benefits.
- 4 Municipal advisors refers to the municipal bond counsel, engineers, lawyers, and those who are involved in SRF project implementation.
- 5 Campbell, W. (2022). Western Kentucky University Stormwater Utility Survey 2022. Western Kentucky University. https://digitalcommons.wku.edu/seas_faculty_pubs/6/
- 6 “Distributed systems that extend beyond the central infrastructure and are located at or near the point of use. These include improvements, devices, and technologies installed onsite that enhance a utility system by reducing the need for expanding the utility system or the scale of expansion needed.” See WaterNow Alliance. (2019). Innovation in Action: 21st Century Water Infrastructure Solutions. https://tapin.waternow.org/wp-content/uploads/sites/2/2019/11/WaterNowAlliance_Innovation-In-Action_FINAL-1.pdf
- 7 Office of Research and Development. (2017). Healthy Benefits of Green Infrastructure in Communities. EPA. https://www.epa.gov/sites/default/files/2017-11/documents/greeninfrastructure_healthy_communities_factsheet.pdf
- 8 Vo, S. (2022). What types of projects do states actually invest in with Clean Water State Revolving Funds?. EPIC. <https://www.policyinnovation.org/blog/what-types-of-projects-do-states-actually-invest-in-with-clean-water-state-revolving-funds>
- 9 Water pollution control revolving loan funds, 33 U.S. Code § 1383. (1987).
- 10 For FY2022 and FY2023, each state must match only ten percent of its annual federal capitalization grant. For FY2024 through FY2026, the state match returns to 20 percent. See EPA. (2022). Memorandum: Implementation of the Clean Water and Drinking Water State Revolving Fund Provisions of the Bipartisan Infrastructure Law. https://www.epa.gov/system/files/documents/2022-03/combined_srf-implementation-memo_final_03.2022.pdf
- 11 For an example of CWSRF financial statements and an audit report in accordance with GAAP, see CliftonLarsonAllen LLP. (2020). California State Water Resources Control Board Water Pollution Control Revolving Fund: Financial Statements And Single Audit Reports. https://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/docs/cwsrf/cwsrf_audit_report_18_19.pdf
- 12 What exactly qualifies as a capital cost will vary with each municipality, but this definition captures how a capital cost is defined generally.
- 13 The other two GPR categories are energy and water efficiency improvements.
- 14 Water Resources Reform and Development Act of 2014, Public Law 113–121. (2014). <https://www.congress.gov/113/plaws/publ121/PLAW-113publ121.pdf>
- 15 Projects and activities eligible for assistance include “measures to manage, reduce, treat, or recapture stormwater or subsurface drainage water.” Ibid.
- 16 EPA. (2016). Memorandum: Green Infrastructure Policy for the Clean Water State Revolving Fund Program. https://www.epa.gov/sites/default/files/2016-01/documents/cwsrf_green_infrastructure_policy_final.pdf
- 17 EPA. (2021). CWSRF Best Practices Guide for Financing Nonpoint Source Solutions. <https://www.epa.gov/system/files/documents/2021-12/cwsrf-nps-best-practices-guide.pdf>
- 18 “The Agency intends to implement the State water pollution control revolving fund program in a manner that preserves for States a high degree of flexibility for operating their revolving funds in accordance with each State’s unique needs and circumstances. [emphasis added]” See State Water Pollution Control Revolving Funds, 40 CFR § 35.3100.
- 19 Hansen et al. (2022). Financing Green Stormwater and Natural Infrastructure with Clean Water State Revolving Funds. EPIC. <https://www.policyinnovation.org/publications/cwsrf-financed-gsi-ni>.
- 20 EPA. (2015). ARRA Clean Water State Revolving Fund Green Project Reserve Report. https://www.epa.gov/sites/default/files/2015-04/documents/arra_green_project_reserve_report.pdf.
- 21 EPA. (2022). Overcoming Barriers to Green Infrastructure. <https://www.epa.gov/green-infrastructure/overcoming-barriers-green-infrastructure#maintenance>
- 22 Tree trenches are networks of trees that are connected by an underground infiltration system to manage stormwater runoff. See Philadelphia Water Department. (n.d.). Tree Trenches. <https://water.phila.gov/gsi/tools/tree-trench/>
- 23 EPA. (1974). Start-Up of Municipal Wastewater Treatment Facilities. National Service Center for Environmental Publications. <https://nepis.epa.gov/Exe/Zy-PURL.cgi?Dockey=00000IDV.TXT>