



Financing Green Infrastructure: Best Practices from the Clean Water State Revolving Fund

May 12, 2021

Housekeeping

- ▶ This presentation is being recorded and will be made available via <https://www.epa.gov/green-infrastructure/green-infrastructure-webcast-series>
- ▶ All participants are muted to minimize background noise.
- ▶ To enlarge the slides, press the icon with the four outward pointing arrows on the top right of the slides.
- ▶ Technical issues or questions?
 - ▶ Contact us via the Question Box.

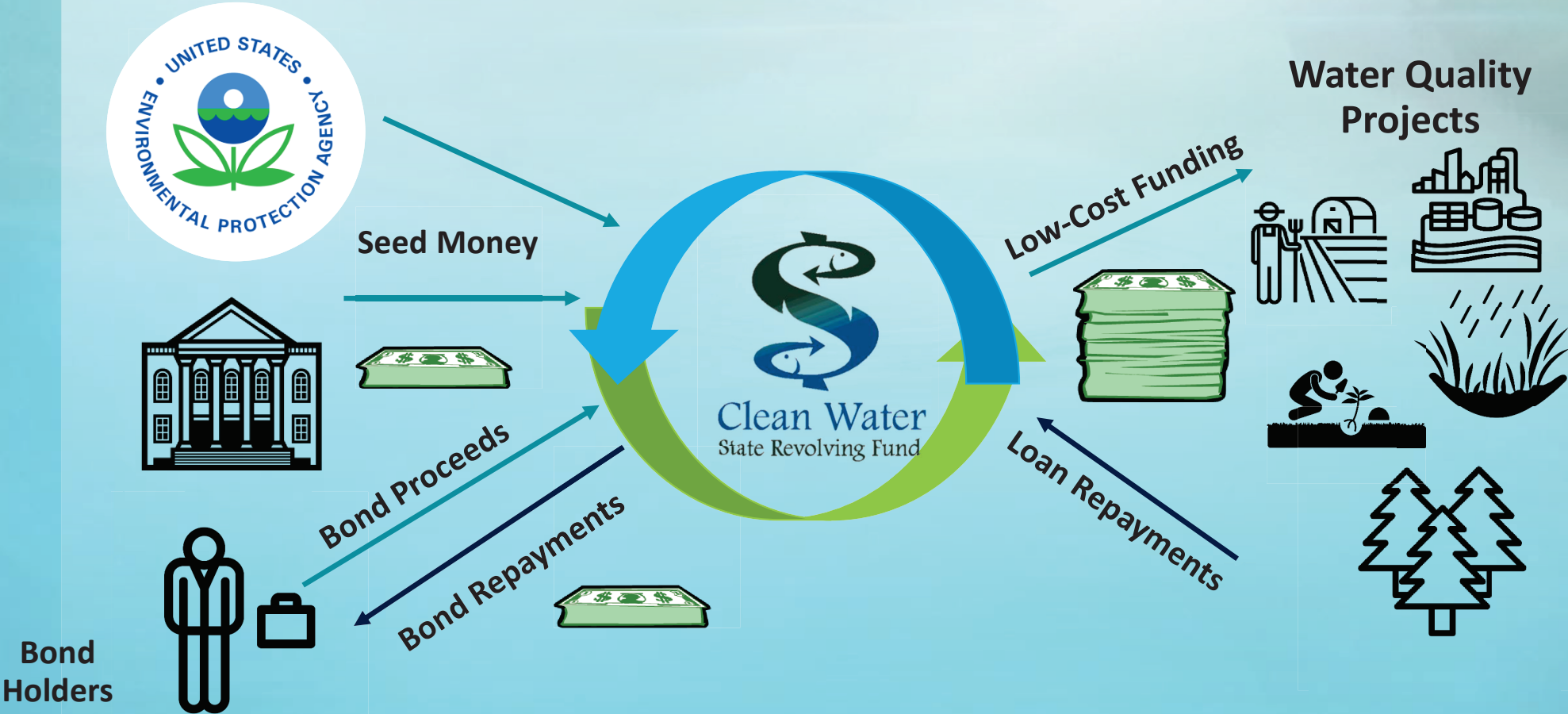
Clean Water State Revolving Fund

Updated April 2021



Clean Water
State Revolving Fund

The CWSRF provides below-market financing for water quality projects...



National CWSRF Accomplishments

\$145.5 billion provided via the 51 CWSRF programs since 1988

\$7.5 billion provided by the 51 CWSRF programs in FY20

\$1.64 billion = federal allotment in FY20

42,000 assistanc

1.2% - National average interest rate for CWSRF loan in 2020 (vs. 2.7% prevailing market r

What Projects are Eligible for CWSRF Assistance?



Squalicum Creek, Washington Stream Re-Route

Clean Water Act

- 603(c)(1) Construction of publicly owned treatment works (POTW)
- 603(c)(2) Implementation of a nonpoint source management program
- 603(c)(3) Implementation of a national estuary program CCMP
- 603(c)(4) Decentralized systems
- **603(c)(5) Stormwater management**
- 603(c)(6) Projects that reduce the demand for POTW capacity through water conservation, efficiency, and reuse
- 603(c)(7) Watershed pilot projects
- 603(c)(8) Projects that reduce the energy consumption needs for POTWs
- 603(c)(9) Reuse of wastewater, stormwater, or subsurface drainage water
- 603(c)(10) Security measures at POTWs
- 603(c)(11) Technical assistance to small and medium POTWs
- 603(3)(12) Assistance to a qualified nonprofit entity to provide assistance to an eligible individual for the repair or replacement of household decentralized treatment systems

CWSRF for Green Infrastructure

Assistance may be provided to any borrower for projects that manage, reduce, treat, or recapture stormwater or subsurface drainage water...

- Green roofs, green streets, and green walls
- Rainwater harvesting collection, storage, management, and distribution systems
- Real-time control systems for harvested rainwater
- Infiltration basins
- Constructed wetlands, including surface flow and subsurface flow (e.g., gravel) wetlands
- Land acquisition and conservation easements
- Bioretention/bioswales (e.g., rain gardens, tree boxes)
- Permeable pavement
- Wetland/riparian/shoreline creation, protection, and restoration
- Establishment/restoration of urban tree canopy
- Replacement of gray infrastructure with green infrastructure including purchase and demolition costs

A full listing of CWSRF eligibilities including examples of eligible projects can be found in the “Overview of Clean Water State Revolving Fund Eligibilities,” which can be downloaded from our website at: <https://www.epa.gov/cwsrf/overview-clean-water-state-revolving-fund-eligibilities>

Who is eligible?

(eligibility varies by state and project type)



Communities



Private Entities



Nonprofit
Organizations



Citizen
Groups

Financial Benefits of CWSRF Funding

- Coverage of up to 100 percent of project costs;
- Below-market rate loans down to zero percent; ·
- Repayment starts one year after project completion;
- Deferred payments of principal and/or interest; ·
- Terms up to 30 years and extended term financing options that reduce annual interest payments; ·
- Dedicated revenues for loan repayments that can come from any source; ·
- Low-cost project financing and reliable access to capital;
- Access to co-financing opportunities;
- Credit enhancements that lower the cost of borrowing for less than AAA green debt obligations; and ·
- Access to affordable assistance for technical assistance, project development, and planning



Significant Savings!

- UNC EFC Subsidized Loan Calculator Allows Potential Borrowers to compare a SRF loan to a commercial loan at the market rate.
- “Add Sub” (Principal Forgiveness)
- In this case, on a \$500k loan, the SRF loan with \$10,000 add sub (principal forgiveness) would save this borrower \$205,537 over the life of the loan.

<https://efc.sog.unc.edu/resource/what-value-srf-loan-subsidized-loan-calculator#panel-1>

What is the Value of an SRF Loan?

Subsidized Loan Calculator

Using the parameters below, calculate the cost of a subsidized loan versus a traditional market based loan. The value at the bottom of the dashboard represents the “grant equivalent” of the subsidized loan given the parameters selected from the dropdowns and average market interest rate. The calculations made and assumptions used in each calculation can be found by hovering over the resulting value.

Estimated Project Cost	Loan Term (in Years)
<input type="text" value="\$500,000"/>	<input type="text" value="25"/>
Subsidized Interest Rate	Principal Forgiveness
<input type="text" value="2.0%"/>	<input type="text" value="\$10,000"/>
Market Rate for Loan	
<input type="text" value="4.5%"/>	

Based on These Inputs, How Much Could You Save Compared to a Commercial Loan?

Grant Equivalent
(Principal Forgiven)

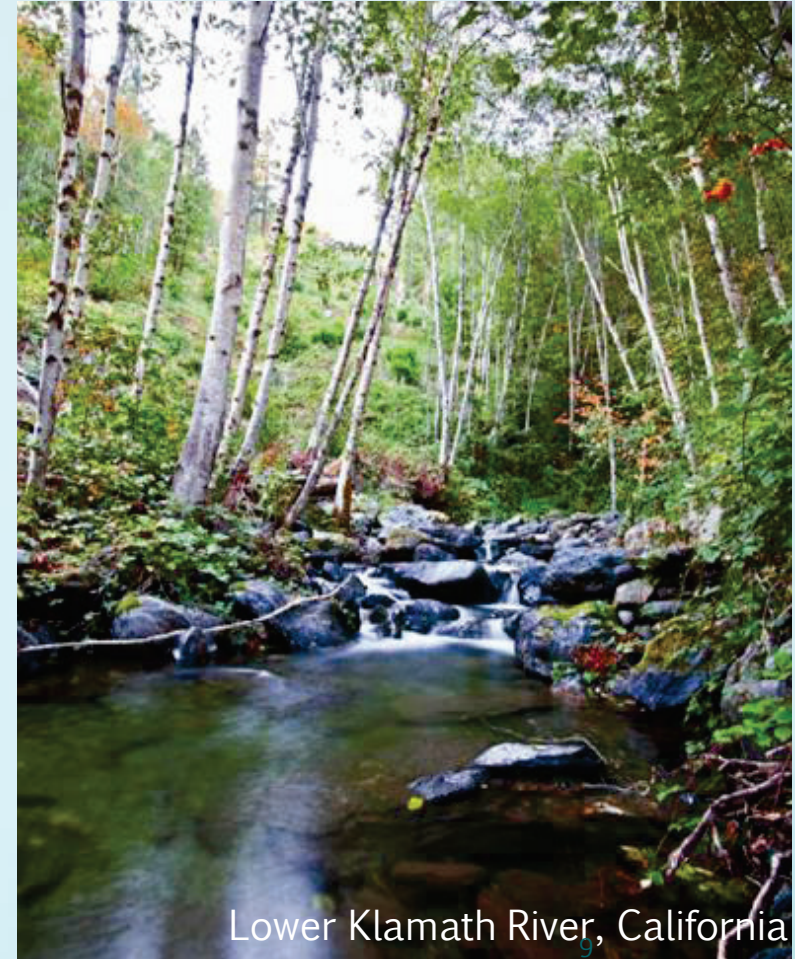
\$10,000

Interest Savings Over the
Life of the Loan
(in Nominal Dollars)

\$205,537

Flexible Repayment Options

- Identifying a repayment source can be challenging for some borrowers:
- Creative repayment sources:
 - Usage based wastewater bill charges
 - Stormwater district fees
 - Non-profit membership fees
 - Homeowner fees
 - Landfill fees
 - For profit company revenue
 - Property tax revenue
 - Etc.

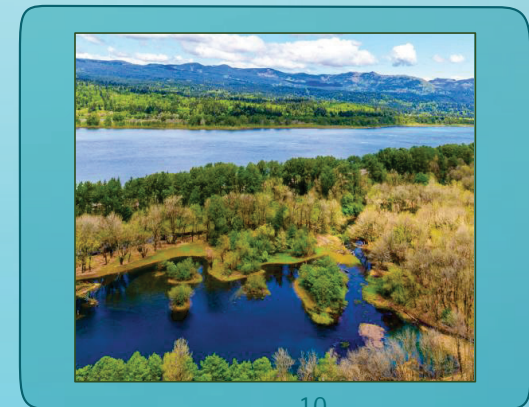


Lower Klamath River, California

Innovative Financing Mechanisms

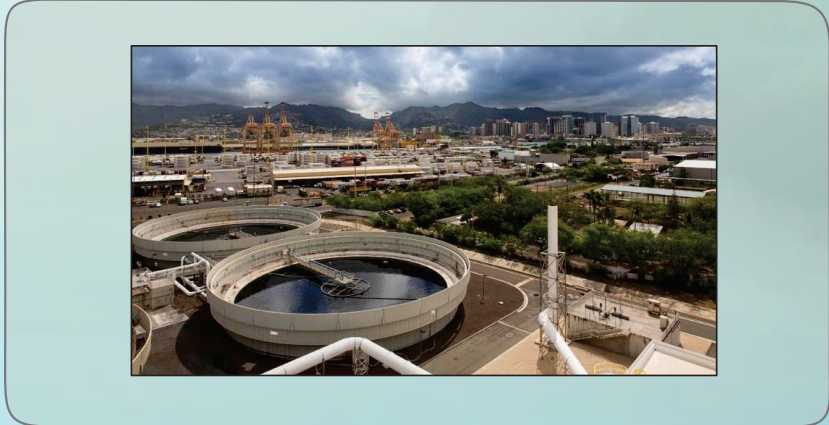


- Co-Funding
- Grant Match
- Sponsorship Financing
- Programmatic Financing
- State Incentives
- Linked Deposit
- Pass-Through Lending



The Sponsorship Lending Model: How it Works

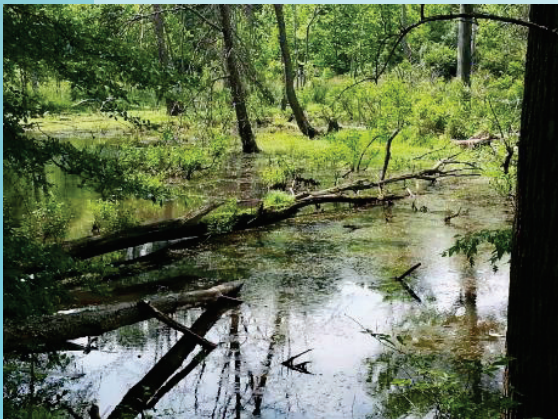
- A typical sponsor would be a wastewater utility willing to fund a NPS project that costs significantly less.
- CWSRF can finance both the POTW project and the NPS project in one loan and offer an incentive rate. To the sponsored project, the financing feels like a grant.



	Loan Amount	Interest Rate	Total Repayment Over 20 Years
CWSRF Loan	\$1,000,000	3.8%	\$1,463,707
CWSRF Loan w/ Sponsored Project	\$1,393,442	0.3%	\$1,463,707

Ohio's Water Resource Restoration Sponsor Program (WRRSP) Medina Marsh Land Conservation Project

Northeast Ohio Regional Sewer District (NEOSD) received 0.06% discount on standard rate in exchange for sponsoring land protection



- NEORSD saved \$432,900 in reduced interest payments
- Sponsored acquisition of 87-acre Medina Marsh with partners Western Reserve Land Conservancy and Medina County Park District
- Protects 1,450 linear feet of floodplain and forested buffer along the Rocky River, 32 acres of high quality wetlands, and various habitats

Using CWSRF Financing to Match a Grant

City of Cocoa Beach, Florida Minuteman Causeway Project

\$1.8M CWSRF Loan at 0.315% interest to *match a 319 Nonpoint Source Grant*

- Green infrastructure/urban stormwater project to reduce nutrients discharged into the Banana River Lagoon
- Native landscape bioswales/tree filters, underground exfiltration, and pervious pavers.
- Project treats an 8.34-acre watershed



- EPA report on innovative financing options for funding projects that do not fall within the mainstream of grey infrastructure..

- <https://www.epa.gov/cwsrf/clean-water-state-revolving-fund-cwsrf-nontraditional-financing>



**Financing Options for
Nontraditional Eligibilities
in the Clean Water State
Revolving Fund Programs**



May 2017

EPA Publication Number 830B17003

<http://www.epa.gov/cwsrf/clean-water-state-revolving-fund-cwsrf-resources>

RESOURCES

Overview of CWSRF Eligibilities

<https://www.epa.gov/cwsrf/overview-clean-water-state-revolving-fund-eligibilities>

CWSRF Webinars

<https://www.epa.gov/cwsrf/cwsrf-webinars>

CWSRF Fact Sheets

<https://www.epa.gov/cwsrf/clean-water-state-revolving-fund-cwsrf-project-success-stories>

State CWSRF Websites

<https://www.epa.gov/cwsrf/forms/contact-us-about-clean-water-state-revolving-fund-cwsrf#state>

Water Finance Learning Modules (SRF, DWSRF, WIFIA, etc.)

A 101 of each EPA Water Finance program is available.

<https://ofmpub.epa.gov/apex/wfc/f?p=165:9:8014844532819::NO:9::>

Environmental Benefits of CWSRF Green Infrastructure Projects

https://www.epa.gov/sites/production/files/2018-09/documents/srf_gpr_case_studies.pdf

Next Steps:

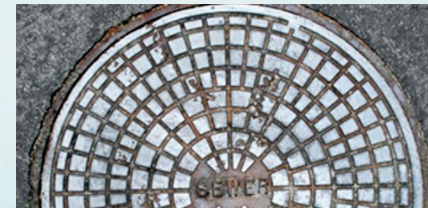
- Reach out to your state CWSRF & DWSRF program
 - <https://www.epa.gov/cwsrf/forms/contact-us-about-clean-water-state-revolving-fund-cwsrf#state>
- Encourage your states to fund green infrastructure activities.
- Have a discussion on the financing options available to you.

New EPA Grant

OSG Program

(Sewer Overflow and Stormwater Reuse
Municipal Grant Program)

-separate program than the CWSRF but designed to work together-



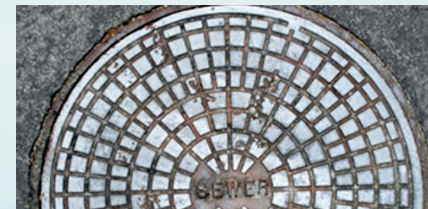
Background

- America's Water Infrastructure Act (AWIA) of 2018 reauthorized and expanded section 221 of the Clean Water Act which initiated the start of the OSG program. The program received an appropriation of \$28M in FY2020 and \$40M in FY2021.
- EPA will provide grants to states, DC, and the U.S. territories to make sub-awards for planning, design and construction of:
 - treatment works to intercept, transport, control, treat, or reuse municipal combined sewer overflows (CSOs), sanitary sewer overflows (SSOs), or stormwater; and
 - any other measures to manage, reduce, treat, or recapture stormwater or subsurface drainage water.



Requirements

- States must give priority to projects that:
 - are in a financially distressed community (as determined by the state)
 - are following a long term municipal CSO or SSO control plan
 - have a CSO, SSO, or Stormwater Grant request on their SRF IUP, or
 - are for an Alaskan Native Village
- 20% Green Project Reserve (GPR) requirement
- 20% state cost share requirement.



OSG grants can support:

- Ongoing work
- Can cover planning and design costs to help get a project started
- Can support disadvantaged communities and Environmental Justice initiatives
- May be paired with a CWSRF project to reduce the project costs for the community





Please reach out with any questions!

CWSRF@epa.gov

OSG@epa.gov

<http://www.epa.gov/cwsrf>

[Register for the EPA Water Finance Newsletter!](#)

PENNVEST Financing Green Infrastructure

PENNVEST Financing

Projects Approved: 4,255 for a Total Funding of \$9.8 Billion

\$700 Million Budgeted for 2020-2021

- 1,104 Drinking Water
- 1,705 Wastewater
- 17 Brownfield
- 177 Non-Point Source
- 3 Acid Mine Drainage
- 143 Stormwater
- 912 Onlot Repairs
- 19 Sewer Laterals Replaced
- 175 New Sewer Connections



Programmatic Financing

Why ProFi?

ProFi is an innovative financing vehicle that was created to align PENNVEST's financing to the annual or multi-year cash flow needs of utilities instead of the traditional project-specific lending strategy.



Programmatic Financing

ELIGIBLE APPLICANTS:



Applicants may be either public or private entities who are otherwise eligible for PENNVEST programs.



Programmatic Financing

ELIGIBLE PROJECTS:



All projects otherwise eligible for financing under the State Revolving Fund and identified in a Capital Improvement Plan (CIP) approved by its governing body.

Programmatic Financing

ELIGIBLE PROJECTS:



- In addition to funding traditional drinking water or wastewater projects through ProFi, PENNVEST can fund stormwater projects, **green infrastructure projects**, conservation and other types of restoration projects for wetlands, streambanks, and watersheds through a non-point source ProFi funding award.



Programmatic Financing

FINANCING TERMS:

- All loan at county cap rates
- 20 year repayment term – no extended terms
- Not eligible for grant
- If applicants want to be considered for grant or an extended term, those projects must come in for the traditional program
- Able to meet all Federal Funding Requirements

Programmatic Financing

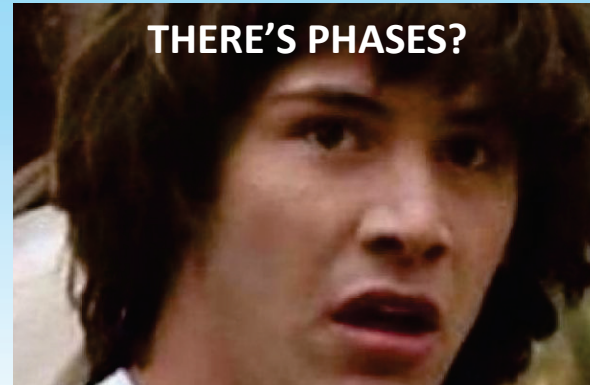
APPLICATION PROCEDURE:

- **First phase of projects need to be shovel ready with all necessary permits to submit the ProFi application.**
- **Funding requests should cover three years or fewer of a CIP and should contain the total dollar amount requested, the maximum dollar value per year, and the number of years the request covers.**



Programmatic Financing

SUBSEQUENT PHASES:



- Once additional phases are ready and satisfy all program requirements, a modified settlement will take place to release additional funds from the original award making them available for disbursement.
- The final phase of a ProFi is expected to settle on any uncommitted funds within three years of the initial settlement.



Questions?





CAPITAL REGION[™]

WATER

Investing in Our Community from Raindrop to River

PENNVEST SW Programmatic Financing

May 12, 2021

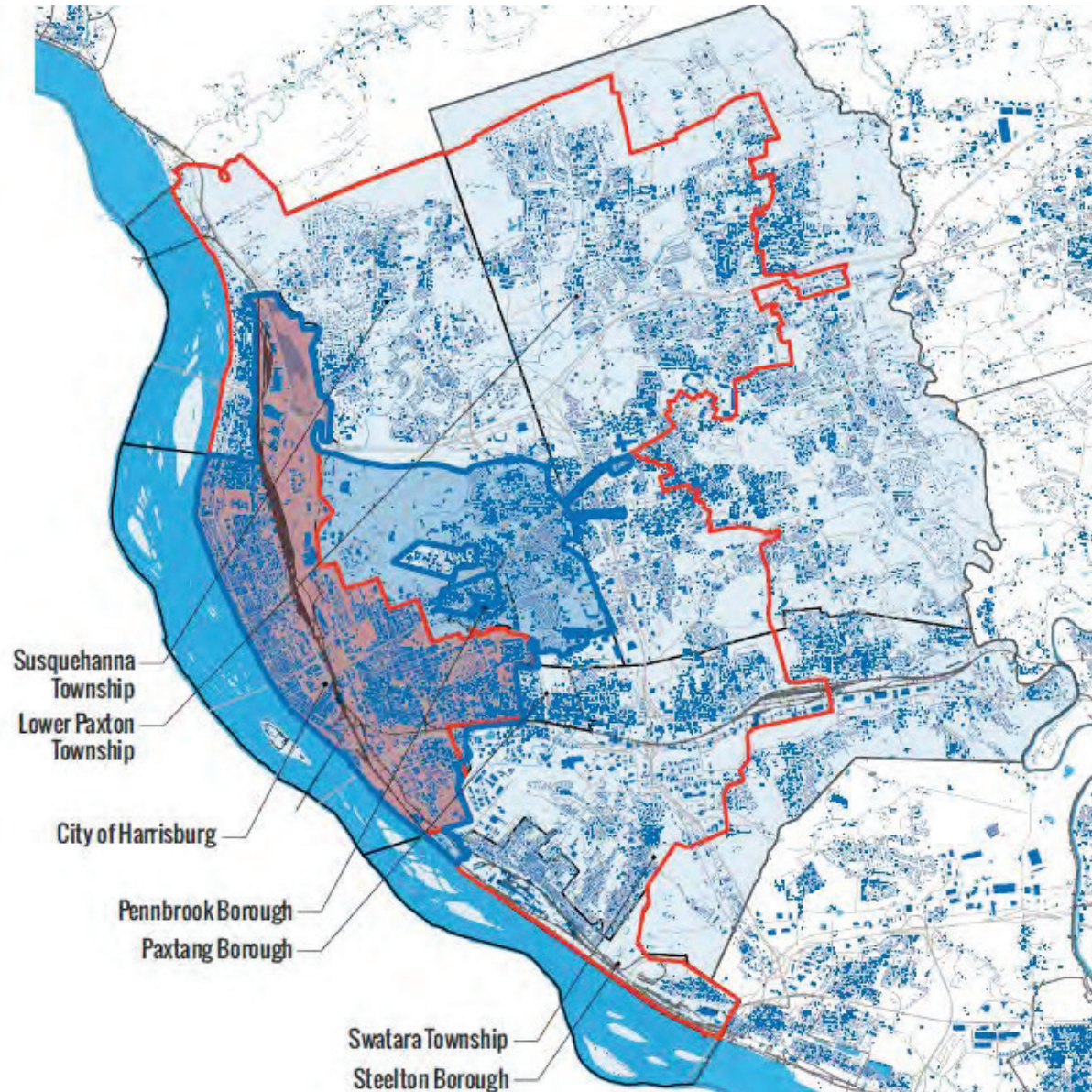


Where we are

Drinking Water
~ about 60,000

Wastewater
~ about 120,000

Stormwater
~ about 50,000



Our Guiding Principles

- Protect Public Health By Balancing Wastewater and Stormwater Responsibilities and Requirements
- Optimize Opportunities and Benefits for Capital Region Water's Infrastructure and Community
- Be Affordable



COLLECTION SYSTEM
REHABILITATION
AWTF / CONVEYANCE
SYSTEM RENEWAL

**SYSTEM
REHABILITATION**



**WET WEATHER
CONTROL**

CSO REDUCTION
SSO / UNAUTHORIZED
RELEASE MITIGATION
STREAMBANK
STABILIZATION



A COMMUNITY-BASED APPROACH TO GREEN INFRASTRUCTURE



COMMUNITY GREENING CONCEPTS

GREEN PARKS





COMMUNITY GREENING CONCEPTS

GREEN NEIGHBORHOODS





COMMUNITY GREENING CONCEPTS

GREEN VACANT LOTS





COMMUNITY GREENING CONCEPTS
GREEN SCHOOLS





COMMUNITY GREENING CONCEPTS

GREEN STREETS



PENNVEST SW Programmatic Financing



Decentralized Green/Grey Controls

- Target: Manage 50 acres of impervious area with Green Stormwater Infrastructure (GSI) and decentralized grey stormwater controls
- First 5 years of the program are funded thru PENNVEST low interest loan - \$13MM
- The projects are focused in three priority planning areas to address the need for more stormwater control in those areas

Schedule:

- 2020 - 2021 Phase 1 & 2: South Allison Hill GSI, 4th & Dauphin Park GSI (Approx. 3 managed acres)
- 2021 - 2022 Phase 3: Camp Curtin YMCA GSI and Bellevue Park SW Ponds (Approx. 8 managed acres)
- 2022 - 2024 Phase 4: Lower Paxton Creek, Uptown, and Lower Front planning areas GSI Projects Package (Approx. 21 managed acres)
- 2023 - 2025 Phase 5: Lower Paxton Creek, Uptown, and Lower Front planning areas GSI Projects Package (Approx. 18 managed acres)

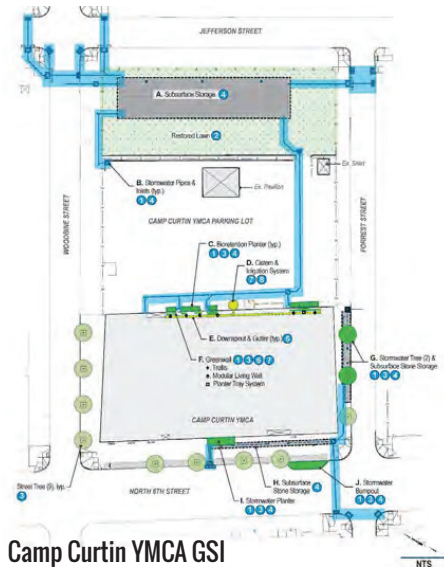


4th and Dauphin Park GSI



South Allison Hill GSI

PENNVEST SW Programmatic Financing



PPA	Project	Catchment	# of GSI	Potential GSI Types	GSI Location
Lower Front	Court at Washington Square	S-018; S-019	3	2 rain gardens, 1 subsurface trench	Private
Lower Front	Intersection of Dewberry and 3rd Street	S-018	1	Subsurface trench	Public Parcel
Lower Front	Intersection of Vine and 2nd Street	S-019	1	Subsurface GSI, maybe tree trench	
Lower Front	Riverfront Park	S-017; S-057; S-018, S-019	2	Rain Garden	
Uptown	Midtown Development	S-010; S-011	8	Bioswales, tree trenches, subsurface extension	Private/ROW
Uptown	Hamilton School	S-051	5	Subsurface GSI, maybe trees?	Private Parcel
Uptown	4th and Emerald Park	S-050; S-051	1	Rain garden/subsurface	
Uptown	326 Peffer St		3	Rain garden/subsurface	HRA Parcel
Lower Paxton	Vernon St Park	S-059; S-048	1	Bioswales, splash pad GSI	Public Parcel
Lower Paxton	Boys and Girls Club	S-048; S-044	2	Rain garden/subsurface	
Lower Paxton	Swatara Park	S-048; S-044	4	Rain gardens	

Early Action Projects - Phase 4 PENNVEST GSI Projects Package

PENNVEST SW Programmatic Financing



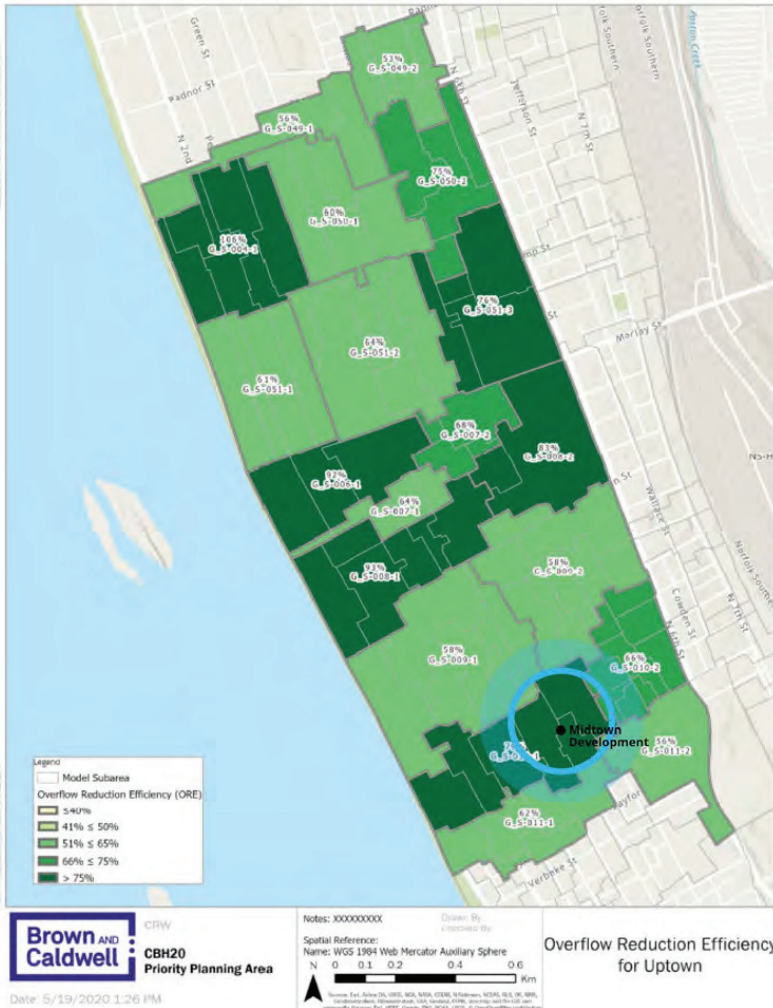
Target Project Categories	Basis	Lower Front IA (ac)	Lower Paxton IA (ac)	Uptown IA (ac)	Stakeholder(s)
Businesses/ Industries - Large	10,000 sf and over	7.15	121.53	18.96	Large IA Property Owners; Top 50 IA
Businesses/ Industries - Small	10,000 sf and under	0.91	10.63	5.24	Mid-size IA Property Owners; Top 200 IA
Community Centers & Faith-Based Organizations	Church Exempt, Community Center, Legion/VFW/Club Exempt, Misc. Exempt, Libraries	9.23	13.39	12.10	YMCA; Boys and Girls Club; YWCA; Churches; Jewish Community Center
Homes	Residential	11.03	148.62	83.82	All Residents
Other Publicly Owned Spaces	Public ownership (excludes vacant lots)	0.26	0.28	1.62	City Public Works/ Facilities; Neigh. Assoc.; Greenbelt Assoc.
Parking Lots	Parking	11.36	16.81	12.00	City, State, Standard Parking; Developers, Private Owners
Parks	Parks / Rec. LU	0.63	7.95	0.82	City of Harrisburg Parks Department
Publicly Owned Vacant Lots	Publicly owned vacant	0.06	0.04	0.84	HRA
Redevelopment	Private Vacant Lots, certain owners	0.67	14.54	8.10	HRA; Greenworks; Harristown; WCI; Varton
Schools	Edu. Exempt and Private Educ. Facility	0.00	5.39	3.39	Harrisburg School District; Individual School Leadership; Charter School Leadership; Private School Leadership
State Owned	State/Govt Buildings Exempt	2.05	0.48	1.52	Commonwealth, DGS, PennDOT, Department of Agriculture
Streets	Streets from impervious layer	26.65	185.34	100.38	City of Harrisburg Engineering; PennDOT

ANALYZE PROJECT TYPES

This analysis:

- + demonstrates the different land use characteristics
- + identifies which project categories may maximize management of impervious area, and
- + identifies potential stakeholders who can partner with CRW to implement projects.

PENNVEST SW Programmatic Financing



ORE ANALYSIS

The Overflow Reduction Efficiency (ORE) = ratio of the **CSO volume reduction** to **the wet-weather inflow reduction** for an alternative condition.

- + ORE of 1.0 would indicate that every gallon of runoff managed equals a gallon of CSO reduction
- + a higher ORE indicates a better opportunity for CSO reduction

ORE data was added to the analysis to determine the CSO reduction potential for any given area.

- + even with slight differences in scoring, it can help prioritize one project over another
- + The Uptown PPA has the most variability in ORE estimates, with relatively significant differences in close proximity.

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RANKING CRITERIA

Phase	Performance	Feasibility	Community	*Cost
Opportunity	ORE % (from GIS)	Total # of Constraints Present (from GIS)	Subjective (H-M-L)	N/A
Project	Runoff Reduction, CSO reduction, Flood	Multiple Scoring Factors	Multiple Scoring Factors	Unit Area based on project category (Class 5)
Design	SWMM Model	N/A	N/A	Quantity-based (Class 4)

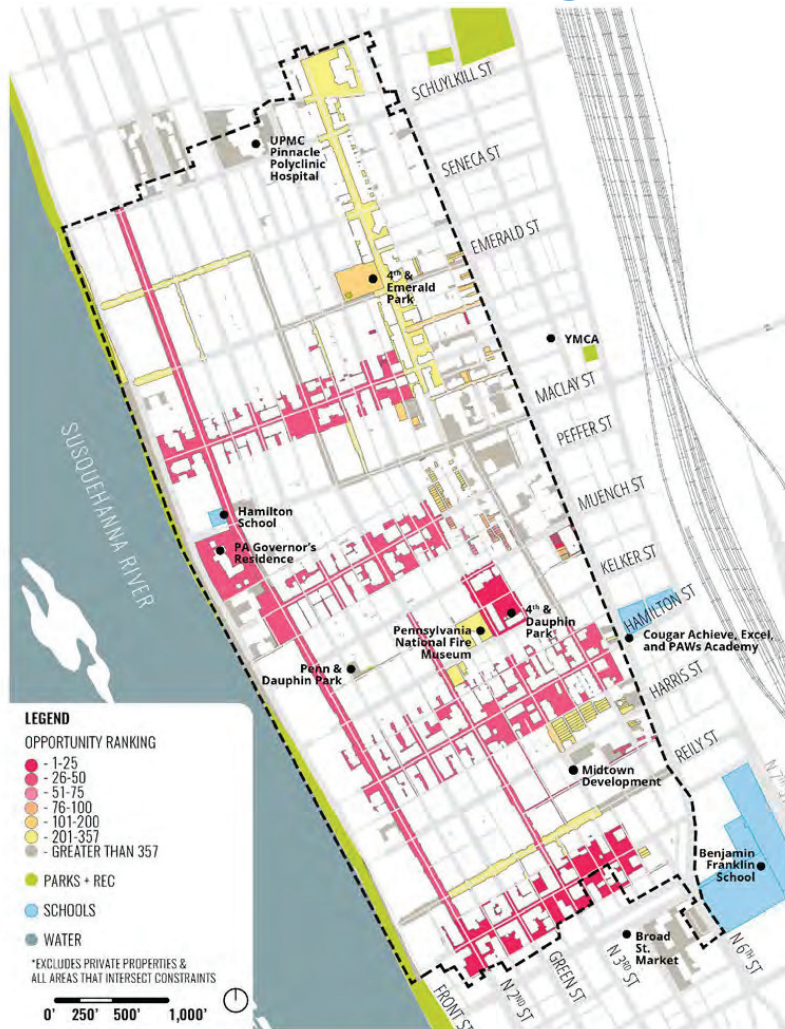
3 categories of ranking criteria:

- + **Performance** – assess performance of projects for environmental regulatory requirements and objectives.
- + **Feasibility** – support feasibility, integration with other CRW/City projects, ease of construction, and maintenance
- + **Community** – evaluate level of community support and impact of projects
- + **Cost*** – application cost methodology has not been finalized and the consultant teams used slightly different methodologies

Three different levels of project definition:

- + **Opportunity** – Project ideas with general location and community / city level of interest defined, but project extents and drainage area not well defined.
- + **Project** – Project with sufficient definition to determine drainage area, GSI area, performance (conceptual), and Cost (simplify approach).
- + **Design** – Project approved by CRW to enter detailed design phase.

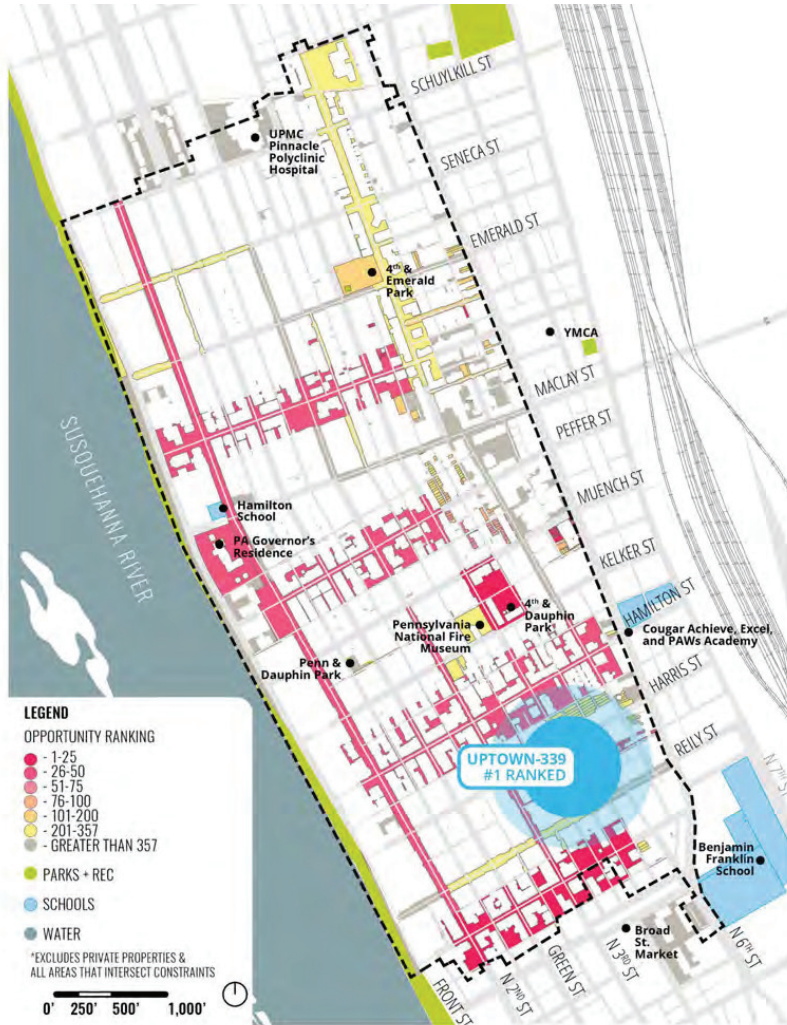
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OPPORTUNITY ANALYSIS

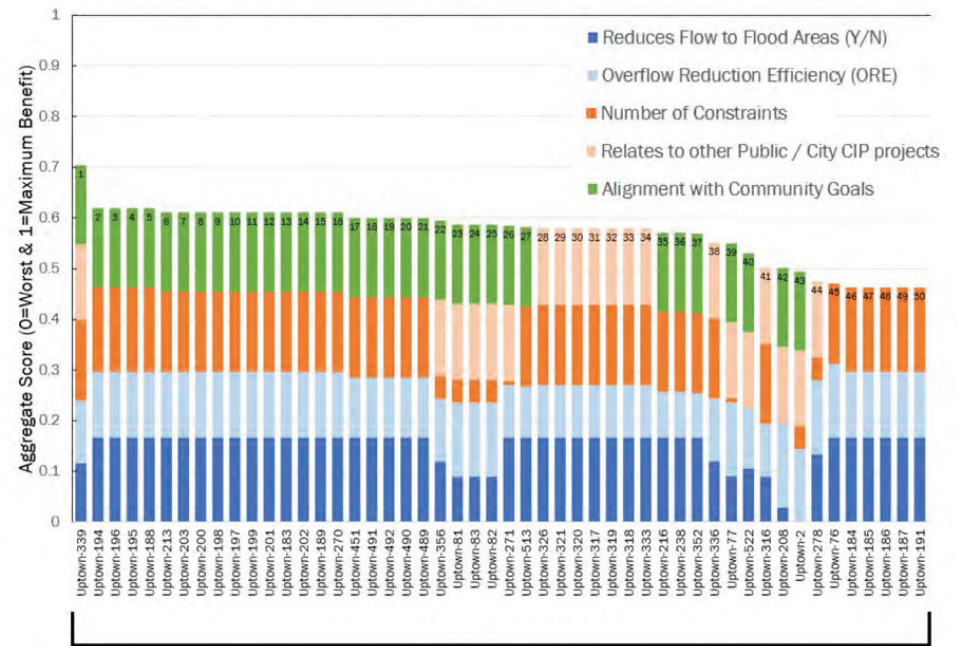
- + CGP Opportunity Sites
- + CGP Top Land Owners
- + Private Property Cost Less than \$300k per acre
- + Planned/Potential CRW or Partner Projects (rehab, city's 5 year plan, street segment rehab)
- + Existing Separate Sewer into Combined
- + Parcel with ground level impervious greater than 1 acre
- + ROW wider than 75 feet

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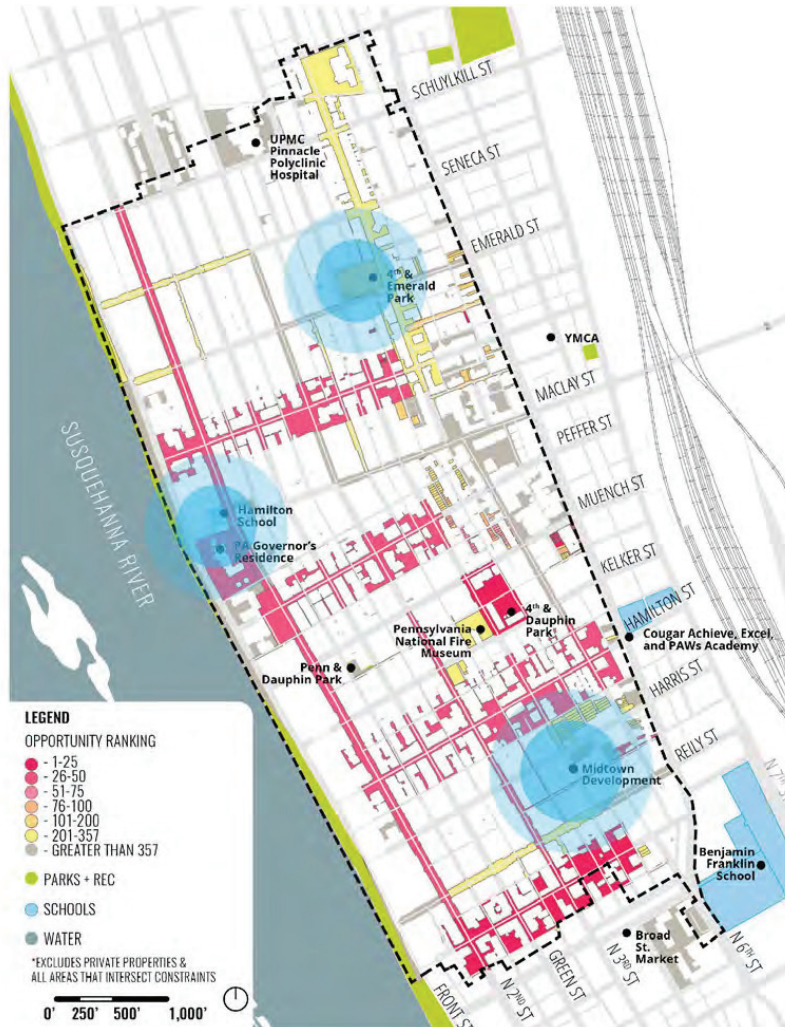
OPPORTUNITY RANKING

Opportunities were evaluated using criteria from the Green/Grey Scoring Tool:



Top 50

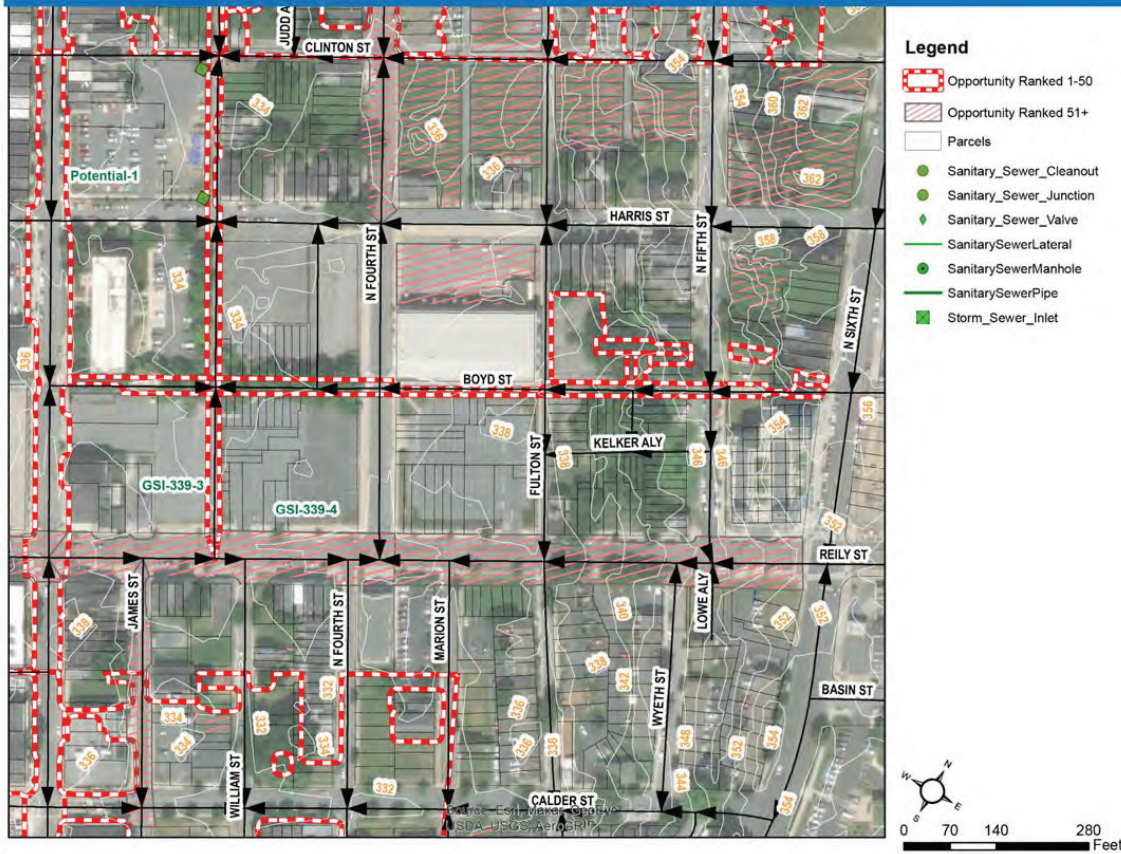
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PROJECT EVALUATION

- + Identified large impervious areas in aerials to evaluate additional GSI projects
- + Evaluated impervious drainage areas as High, Medium, Low
- + GSI footprint sized to target 10:1 Loading Ratio
- + Identified high-level GSI type (tree trench, bumpout, etc to generally denote if GSI would be surface or subsurface based on location)
- + Focus on projects CRW could execute solo that align with larger organization & community goals

MIDTOWN EXAMPLE: OPPORTUNITY EVALUATION



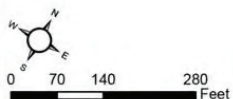
- + area included multiple highly ranked opportunities (*the #1 - Uptown-339, #357 and #437 opportunities - Reily Street, Boyd Street & adjacent parcels*)
- + further investigation was done on the large impervious areas (parking lots) and street ROWs
- + hosted a number of stakeholder conversations with developers (e.g., Greenworks) about future and current plans for the area

MIDTOWN EXAMPLE: PROJECT EVALUATION



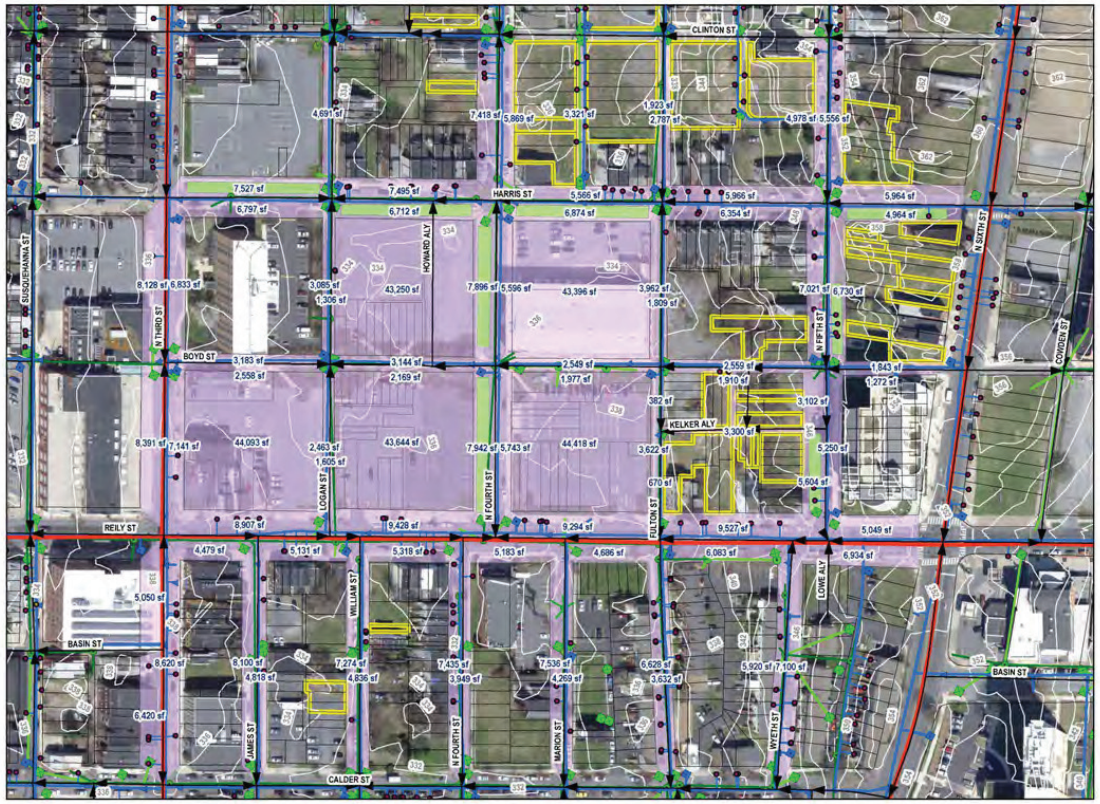
- Legend**
- Unevaluated Drainage Area
 - Drainage Area Feasibility**
 - High Potential Drainage Area
 - Low Potential Drainage Area
 - Medium Potential Drainage Area
 - GSI Footprint
 - Parcels
 - Sanitary_Sewer_Cleanout
 - Sanitary_Sewer_Junction
 - Sanitary_Sewer_Valve
 - SanitarySewerLateral
 - SanitarySewerManhole
 - SanitarySewerPipe
 - Storm_Sewer_Inlet

- + evaluated potential drainage areas for feasibility (e.g., how easy it would be to capture drainage)
- + discussed potential plans with stakeholders and developers
- + provided estimated GSI footprints and locations sized to manage potential ROW drainage



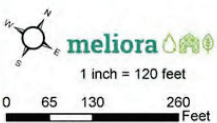
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MIDTOWN EXAMPLE: NEXT STEPS



CBH2O PPA Phase 4
Analysis & Assumptions
2/24/2021

- Midtown**
- Legend**
- Parcels
 - Public Ownership
 - State Roads (PennDOT Coordination Required)
 - Street Flow
 - SanitarySewerLateral
 - SanitarySewerManhole
 - SanitarySewerPipe
 - Storm_Sewer_Inlet
 - Storm_Sewer_Manhole
 - Storm_Sewer_Pipe
 - WaterHydrant
 - WaterManhole
 - WaterLateral
 - WaterPipe
 - WaterPipe_Abandoned
 - UGI Contaminated Site
 - Potential Phase 4 GSI Footprints
 - Potential Survey Extents



- Can provide up to 17.51 greened acres.
- Potential issues and opportunities include:
 - + coordination with private developers and proposed development plans
 - + PennDOT review
 - + model process for using the incentive program to form partnerships with private developers
 - + cost sharing

PENNVEST SW Programmatic Financing



Planning Area	Early Action Projects - Under Investigation for Phase 4 PENNVEST Package
Lower Front	Court at Washington Square
Lower Front	Intersection of Mulberry and 3rd Street
Lower Front	Intersection of Vine and 2nd Street
Lower Front	Pinnacle Health Parking Lots
Lower Front	Riverfront Park
Uptown	Midtown Development
Uptown	Hamilton School
Uptown	4th & Pepper (HRA Community Garden)
Uptown	4th & Emerald Park
Lower Paxton	Vernon St Park
Lower Paxton	Boys and Girls Club
Lower Paxton	Swatara Park

SHORT LIST OF PROJECTS

Each PPA developed a short list of early action projects to ***meet the target acres managed for the first 10 years of the program.***

+ 21 identified projects

+ reduced to 12 projects (left) under consideration for the Phase 4 PENNVEST Construction Package

PENNVEST SW Programmatic Financing



GSI O&M - Highlights of CRW Program

- Operation and Maintenance Program was established in parallel with the first GSI Projects
- No gap in O&M after construction of the early GSI Projects
- New GSI Projects completed in Phase 1 & 2 of the PENNVEST funding are being incorporated into the O&M Program immediately this Spring/Summer - watering is a **CRITICAL** component for plant establishment and long-term health.





CAPITAL REGION™

WATER