George F. Ames

PISCES

2020

RECOGNITION PROGRAM

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Performance and Innovation in the SRF Creating Environmental Success
PISCES
A Program of the U.S. Environmental Protection Agency

Director's Address

The Clean Water State Revolving Fund (CWSRF) is proud to recognize clean water projects that demonstrate excellence through the Performance and Innovation in the SRF Creating Environmental Success (PISCES) program. These projects promote EPA's mission of protecting human health and the environment and exemplify the innovative, flexible, and collaborative nature of the program.
Since its inception in 1987 as a federal-state partnership, the CWSRF has provided over $145 billion in financing to water quality projects across the country. The affordable assistance provided by all 50 states and Puerto Rico produces multiple benefits in communities and watersheds across the country. The projects we showcase here deliver wastewater utility upgrades, community revitalization, economic investment, municipal partnerships, healthy ecosystems and much more. The CWSRF helps communities afford solutions that are innovative, modern, water and energy efficient, sustainable and resilient to their water quality challenges. By working creatively with the future in mind, these communities have created lasting benefits for not only the environment, but for the public health and the economy as well.

I thank all the assistance recipients recognized in this compendium, as well as the CWSRF programs that highlighted them for recognition. We appreciate your dedication to ensuring water quality in our communities and your commitment to the continuing success of this important program. Thank you.

Sincerely,

Andrew Sawyers, Ph.D., Director
Office of Wastewater Management

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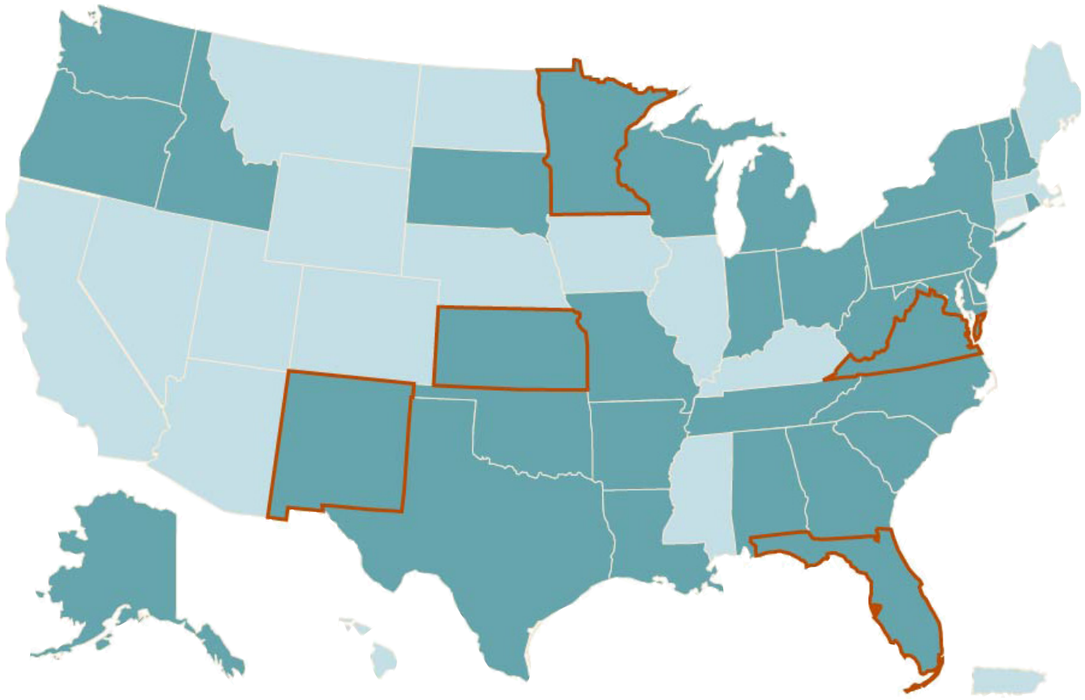
Recognizing Success

Nominations for the 2020 PISCES program were based on the following criteria categories. EPA selected one project from each category to be recognized as an Exceptional Project based on the project's overall impact in the category.

- Innovative Financing: Uses a creative financing mechanism that aligns with the needs of the community.
- System Partnerships: Creates a partnership that brings together stakeholder groups and resources to create a collaborative approach to addressing water quality needs.
- Community Engagement: Involves the community during the project design or includes a project element that encourages community engagement.
- Environmental and Public Health Protection: Employs a sophisticated approach to addressing water quality. These projects may include preemptive treatments, reduction in capacity loading, use of new technologies, or other aspects that focus on innovative design.
- Problem Solving: Uses an unconventional approach in meeting the community's needs.

Projects Recognized by the George F. Ames PISCES Program - 2020



Exceptional Projects are outlined in ***orange*** and Honorable Mention Projects are shaded in ***blue***.

Exceptional

Florida	Solar Array in Marianna
Kansas	Cover Crop Interseeding Pilot in Wetmore
Minnesota	Nutrient and Energy Recovery in St. Cloud
New Mexico	El Valle de Los Ranchos Sewer Collection System
Virginia	Clinch River Valley Land Conservation

Honorable Mention

Alabama	Mobile Master Plan Phase I
Alaska	Anchorage Wastewater Utility Programmatic Financing
Arkansas	Decommissioning the West Fork Wastewater Treatment Plant
Delaware	Wetlands Park in Wilmington
Georgia	Street Infrastructure Improvements in Cornelia
Idaho	Weiser Wastewater Treatment Plant Upgrades
Indiana	Wastewater Collection/Treatment for Romney Sewer District
Louisiana	Treatment Plant Upgrades in St. Gabriel
Maryland	Piscataway Bio-Energy Project
Michigan	Recirculation Plant Upgrades in Wayne County
Missouri	Blacksnake Creek Stormwater Separation Improvements
New Hampshire	Wastewater Treatment Facility Upgrade in Exeter
New Jersey	CSO Green Infrastructure Elizabeth City
New York	Tivoli Lake Preserve Stream Daylighting Project
North Carolina	Hendersonville Streambank Restoration
Ohio	Sewer Improvements in New Boston
Oklahoma	Water Meter Replacement in Altus
Oregon	Sutherlin Wastewater Treatment Plant Construction
Pennsylvania	Temple University Green Roof
Rhode Island	CSO Green Infrastructure Initiative Narragansett Bay Co.
South Carolina	Wastewater Pump Station and Lagoon Closure in Lexington
South Dakota	Nonpoint Source Improvements in Sioux Falls
Tennessee	Land Application System in Camden
Texas	Drainage Improvements in Lubbock
Vermont	Hadley Road Area Infrastructure in South Burlington
Washington	Liberty Lake Sewer District Reclamation Facility Upgrades
West Virginia	Wastewater Treatment and Collection System in Bergoo
Wisconsin	Koshkonong Sanitary District Commission Treatment Upgrades

Excellence in Problem Solving

Florida Department of Environmental Protection

City of Marianna Solar Array

Electricity for the City of Marianna wastewater plant and spray field constitutes over 23 percent of operational costs, with an expense exceeding $30,000 per month. Marianna is a small rural community with a population less than 6,000 and energy costs place a great deal of pressure on the wastewater rates of its residents. To reduce electrical costs, the City received a $5 million CWSRF loan for the installation of two solar facilities, including all transformers, power distribution lines, site clearing, grading, and fencing in addition to the installation of the solar arrays.

The solar power systems were designed to provide nearly all the energy needs for the City's wastewater treatment system through net metering. By reducing the operational cost over 20 percent, it will ensure that wastewater rates are stable and affordable for the future. As a direct result of this project, the electrical costs have been reduced by more than 90 percent. This reduction in costs is especially important since the City was devastated by Hurricane Michael in 2018. Completed approximately one year after the hurricane, this project is greatly assisting the City's residents in their recovery. In addition to a $301,000 state grant for this project, the $5 million CWSRF loan was made at zero percent interest with an extended term of 25 years, and it included $2,711,000 in principal forgiveness. As a result, the City is only responsible for repaying $41,000 annually. Since the savings is approximately $25,000 each month, the debt service can be paid annually from less than two months of savings. This solar project helps the City cover much of their expenses by allowing them to create their own energy. With this new source of energy, plus the affordable financing provided by the CWSRF, this project addresses the problem of affordability in a creative approach, especially for a community rebuilding after experiencing their most devastating hurricane.

Excellence in System Partnerships

Kansas Water Pollution Control Revolving Fund

City of Wetmore
Cover Crop Interseeding Pilot Project

In 2019, the Kansas Department of Health and Environment (KDHE) forged a partnership between its CWSRF, the Bureau of Watershed Management, Glacial Hills Resource Conservation and Development, and the City of Wetmore to establish a new CWSRF Interseeder Program to promote the use of cover crops to farmers in northeast Kansas. When widely adopted, planting cover crops during the offseason can conserve water resources with less irrigation, reduce excess nutrients that could enter neighboring water bodies, and better protect water quality by improving the integrity of the soil profile over time. Producers also experience the long-term benefit of reduced costs for fertilizer and pesticides. High clearance interseeder equipment is used to plant cover crops, though the significant upfront capital costs of purchasing this expensive equipment is the largest barrier to wider adoption in the agricultural community.

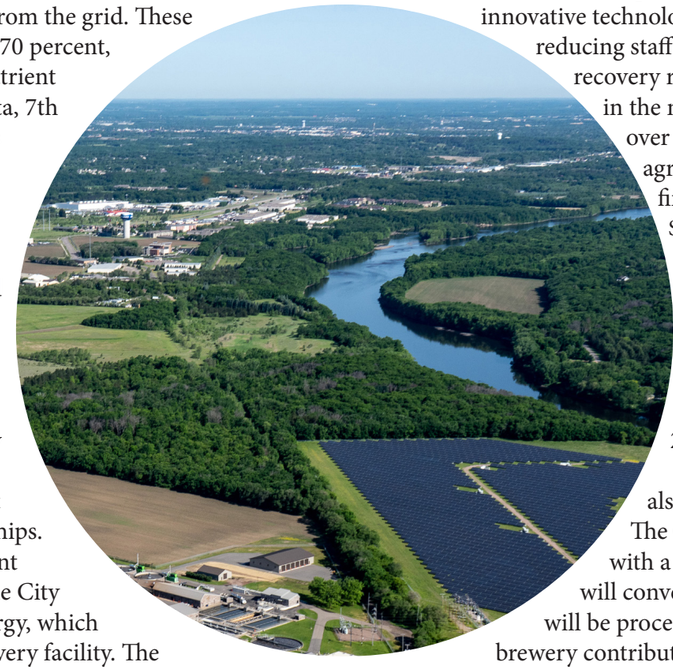
This project uses a $3.5 million pass-through loan made to the City of Wetmore that will be entirely forgiven. The City then provides the funding to its local nonprofit partner, Glacial Hills Resource Conservation and Development, which purchases the interseeding equipment, markets the program, and provides the equipment to agricultural service providers (ASPs) in targeted watersheds. The savings from the forgivable CWSRF allows ASPs to significantly discount the cost of leasing the equipment to farmers, allowing them to try the practice without the large capital investment of purchasing the equipment or leasing the equipment at market prices. The partners anticipate that the interseeder equipment will plant approximately 50,000 acres each year which will result in nutrient load reductions of 97,000 lbs of nitrogen, 48,000 lbs of phosphorus, and 33,000 tons of sediment. This project will empower the agricultural community to adopt and maintain crop covers, which will produce long-term and large-scale improvements in nonpoint source pollution remediation. After the initial project period, the equipment will be available for purchase by the agricultural service providers.

Excellence in Innovate Financing

Minnesota Public Facilities Authority

City of St. Cloud
St. Cloud Nutrient & Energy Recovery Project

The St. Cloud Nutrient and Energy Recovery Project is a wide-ranging initiative to efficiently capture, manage, and recycle nutrients from wastewater and to generate renewable energy. The St. Cloud facility received a $16.7 million CWSRF loan for the installation of a nutrient recovery reactor, a biogas membrane, a combined heat and power engine-generator, and the conversion of a storage digester to a primary digester. With these new technologies, biosolids will be used to enhance the nutrient recovery process and increase biogas production. This increase in biogas production allows the facility to expand its customer base by accepting additional high strength waste streams which results in a new source of revenue. This is done while spending less on energy needed to purchase from the grid. These innovative technologies decreased the facility's biosolids by 70 percent, reducing staff processing time and hauling costs. The nutrient recovery reactor, the first installed in Minnesota, 7th in the nation, and the 10th worldwide, generates over 100 tons of struvite product to be sold as agricultural fertilizer. In 2019, the annual financial benefit from the project was over $1 million ($587,000 in energy savings, $24,000 in fertilizer product revenue, and $400,000 in revenue for high-strength waste treatment). Energy production increased from 3.7 million kilowatts in 2017 to 5.1 million in 2019 and the facility is expected to be a net zero operation by 2021.



The St. Cloud project also involves unique community partnerships. The City entered into a long-term agreement with a local brewing company in which the City will convert byproducts from the brewery into energy, which will be processed in the engine-generator at the recovery facility. The brewery contributed $391,000 of capital toward the new engine-generator and will pay tipping fees to offset any additional operation and maintenance costs. Through the success of the St. Cloud project, the facility is also partnering with school districts, prisons, counties and healthcare facilities to divert food waste from landfills and instead, convert this waste into energy at the treatment facility. Investing in multiple innovative technologies installed at one site allows the facility to utilize the resources stored in the waste products. The new revenue from fertilizer sales and from processing high strength waste products, in addition to the reduction in the facility's energy expenses, are factors that contribute to keeping rates low for residents and businesses making this project an excellent example of innovative financing.

Excellence in Community Engagement

The communities of Ranchos de Taos, Talpa, Llano Quemado, Cordillera, and Los Cordovas have been experiencing rapid growth for years which created the need to regionalize their water treatment services and develop wastewater collection and treatment. The El Valle de Los Ranchos Water and Sanitation District was created in response to this challenge. The District's mission is "to promote and protect now and for future generations the quality of surface and ground water for the health and safety of the residents of the District." In 2004, the District began constructing wastewater collection systems in planned phases using funding from the CWSRF, U.S. Department of Agriculture, the state of New Mexico, and from customer payments collected by the District. These ongoing projects replace failing septic systems and leach fields with collection lines and centralized treatment at the Taos Valley Regional Wastewater Treatment and Reclamation Facility.

New Mexico Environment Department

El Valle de Los Ranchos Water and Sanitation District Wastewater Collection System

Since 2012, the District has received three loans from the CWSRF totaling over $4.5 million to install new sewer connections for residents. The latest phase of this project was completed in 2020 and installed 14,000 feet of collection lines that will serve 165 new sewer connections. This new sewer collection system will allow residents to decommission their former septic systems that were discharging sewage into ground water in this water scarce region. The El Valle de Los Ranchos Water and Sanitation District is a prime example of community engagement between multiple small communities and their residents, all working together to regionalize their wastewater services to provide much needed sewer collection and treatment.

Excellence in Environmental and Public Health

Virginia Department of Environmental Quality
The Nature Conservancy
Clinch River Valley Land Conservation

The Clinch River in Southwest Virginia is one of the most biodiverse river systems in North America. The river is also one of the last free-flowing tributaries of the Tennessee River system and provides vital habitat to support 20 federally listed mussel species and over 130 fish species. The Nature Conservancy received a $20.1 million CWSRF loan from the Virginia Department of Environmental Quality to implement the Clinch River Valley Land Conservation project, which will purchase and protect nearly 60,000 acres of land, including 47,000 acres of forest and over 112 miles of headwater streams that flow into the Clinch River. This project will protect drinking water sources, promote sustainable timber harvesting, and is part of a larger forest corridor that will ultimately protect over 254,000 acres of forestland. This stretch of land will provide a migratory path for wildlife that covers several important watersheds in the Appalachian Mountain range.

The Clinch River Land Conservation project supported by the CWSRF brings together multiple stakeholders and members of the community to work together for environmental and public health. In addition to protecting water quality in this economically depressed area, this project will improve the local economy by creating jobs in the sustainable forestry industry, expand the outdoor recreation sector, and allow continued access to ecotourism activities such as hunting, hiking, and biking.

The Mobile Board of Water & Sewer Commissioners (MAWSS) will implement Mobile Master Plan that is expected to result in over $140 million in CWSRF funds over five years to rehabilitate existing infrastructure and replace aging equipment throughout the service area. Proposed projects include the replacement of dewatering systems, a new chlorine building, Severe Weather Attenuation Tank (SWAT) storage and conveyance, and supervisory control and data acquisition (SCADA) programming for a lift station.

To fund the entire Master Plan through the SRF program, the system is taking a portfolio financing approach and planning to submit additional supplemental applications each fiscal year until the completion of the project list. Proposed improvements are expected to ensure continued compliance with existing regulations and demands and provide increased efficiency and dependability to the Board's overall wastewater collection and treatment system.

Alabama Department of Environmental Management
Mobile Board of Water and Sewer Commisioners
Mobile Master Plan - Phase I

Alaska Department of Environmental Conservation
Anchorage Wastewater Utility
Anchorage ProFi Fiscal Year 2020

The Anchorage Water and Wastewater Utility (AWWU) is the largest utility in Alaska. In April 2020, the Alaska CWSRF issued its first Programmatic Financing (ProFi) loan, which was to AWWU. Rather than provide funding to individual projects through the conventional CWSRF loan process, the Alaska CWSRF offered AWWU a $10 million ProFi loan to fund any portion of eligible projects identified in an established project portfolio. This arrangement provides AWWU the flexibility to request disbursement on any project that has eligible expenses, thus keeping the funding stream active even when projects encounter unanticipated delays. Additionally, it provides the Alaska CWSRF a more realistic expectation of the utility's anticipated rate of loan disbursement which makes funding availability more predictable for other borrowers in the state. Through the ProFi loan, AWWU meets all federal grant conditions and satisfies the CWSRF equivalency requirement. Future ProFi loans will be offered to AWWU on an annual basis, thereby providing a reliable source of funding for their ongoing projects.
While this ProFi approach is unconventional for a small CWSRF state program, it meets both the needs of the Alaska CWSRF and the community which make it even easier to access affordable financing for water quality needs.

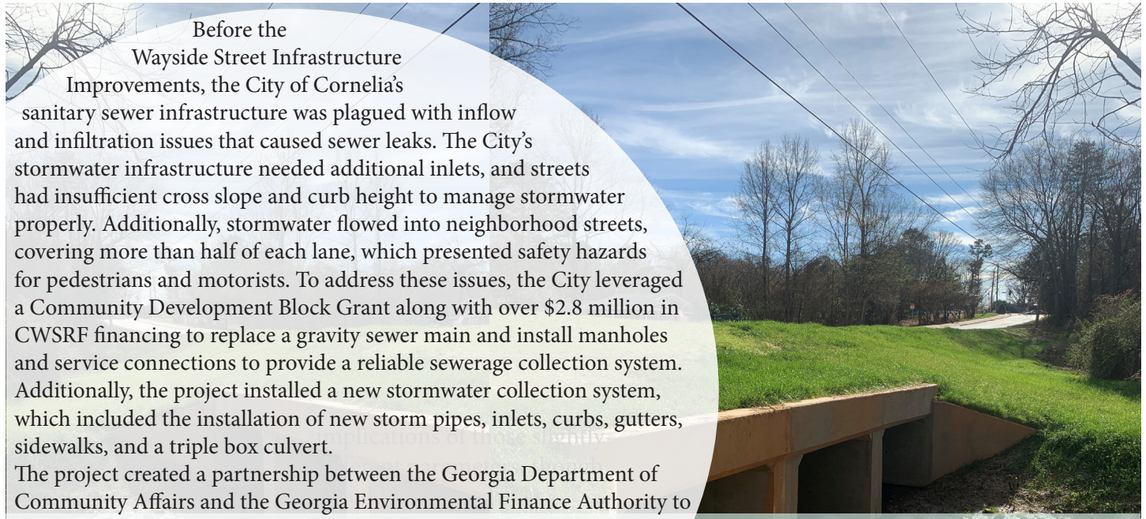
The City of West Fork was faced with the familiar challenge of providing affordable and efficient wastewater treatment with an outdated treatment plant that was struggling to meet its permit requirements. After an extensive study, the City determined the best alternative for wastewater treatment was to decommission the existing plant and transport the wastewater to a nearby facility on the east side of Fayetteville. The City went to great lengths to hold numerous town hall meetings and conducted thorough cost-benefit analyses of the available options to ensure resident buy-in and to promote transparency before settling on the solution. The proposed improvement involves construction of 3.3 miles of 15-inch gravity sewer pipe, a pump station, and 4.2 miles of 10-inch force main pipe running through the City of Greenland to Fayetteville's 24-inch gravity sewer line on the south side of Fayetteville. These improvements also allow for gravity flow to the sewer main in the currently unsewered portion of West Fork.

By bringing together the residents of West Fork and the City of Fayetteville's wastewater system, this project addresses the water quality needs of both cities and provides an overall environmental benefit for the region.

Arkansas Natural Resources Commission
City of West Fork
West Fork Upgrade

The City of Wilmington has experienced flooding during typical rain events. To address this issue, the City embarked on a $28.8 million project to replace their combined sewer system with separate sanitary and stormwater collection systems. This is being done in the City's Southbridge area and these new collection systems will reduce the frequency of combined sewer overflows from entering homes and flooding the neighborhood. In addition to alleviating flooding, this project will clean up one of the largest brownfields in the City and turn this site into a new community wetland park. This park will have a wide boardwalk pathway that complies with the Americans with Disabilities Act and will provide the community access to a neighborhood retail area.
This project received a $15.1 million CWSRF loan and a zero percent CWSRF Land Conservation Loan for $3.5 million to create more than 20 acres in permanent easement. In addition to the CWSRF funding, this project also received a $1.5 million DNREC Brownfields Grant, and $8.7 million in funds from the City. These City funds include a $2.9 million grant from The Nature Conservancy. Today, when it rains in Southbridge, water will flow through the new stormwater pipes and into the restored wetlands, where it will be held and gradually released into the Christina River.

Delaware Department of Natural Resources and Environmental Control
City of Wilmington
Wetlands Park



Before the Wayside Street Infrastructure Improvements, the City of Cornelia's sanitary sewer infrastructure was plagued with inflow and infiltration issues that caused sewer leaks. The City's stormwater infrastructure needed additional inlets, and streets had insufficient cross slope and curb height to manage stormwater properly. Additionally, stormwater flowed into neighborhood streets, covering more than half of each lane, which presented safety hazards for pedestrians and motorists. To address these issues, the City leveraged a Community Development Block Grant along with over $2.8 million in CWSRF financing to replace a gravity sewer main and install manholes and service connections to provide a reliable sewerage collection system. Additionally, the project installed a new stormwater collection system, which included the installation of new storm pipes, inlets, curbs, gutters, sidewalks, and a triple box culvert.

The project created a partnership between the Georgia Department of Community Affairs and the Georgia Environmental Finance Authority to address water quality needs and the failing sanitary sewer infrastructure. Addressing sewage and stormwater issues helped eliminate health and safety concerns that resulted from sewer leaks and flooding. Additionally, the City will no longer have to contend with frequent breaks and repairs, issues with manhole spacing, or structures that have been placed on top of the sewer main. Lastly, driving hazards that resulted from the excessive water on the roads will be greatly reduced.

Georgia Environmental Finance Authority
City of Cornelia
Street Infrastructure Improvements

Idaho Department of Environmental Quality
City of Weiser
Wastewater Treatment Plant Upgrade

The City of Weiser received $6 million in CWSRF financing to upgrade its wastewater treatment plant to meet the demand presented by increasing population and more stringent discharge requirements to the local Snake River. The energy efficient upgrades that are part of the project will create energy savings of almost 665,000 kilowatt-hours and $45,000 per year. Cost savings from reduced energy bills will rapidly offset the initial cost difference of the green components. This upgrade project includes biological phosphorus removal by converting an existing aeration tank to anaerobic and anoxic conditions. Other upgrades included installing a new dissolved oxygen control system, replacing aeration blowers, and adding new diffusers. Chemical treatment was also installed for additional phosphorus removal.

The CWSRF's Green Project Reserve program offered opportunities to upgrade Weiser's wastewater system that would provide additional energy and cost savings. The opportunities identified and recommended by the project's design team included installing fine-bubble diffusers throughout the plant with automated dissolved oxygen control along with premium energy efficient blowers and pumps equipped with variable frequency drives to ensure the equipment operates at optimum speeds. These upgrades not only save the facility energy and operating costs, but also increase the qualtiy of treatment for the plant while raising the treatment capacity needed for the growing community.

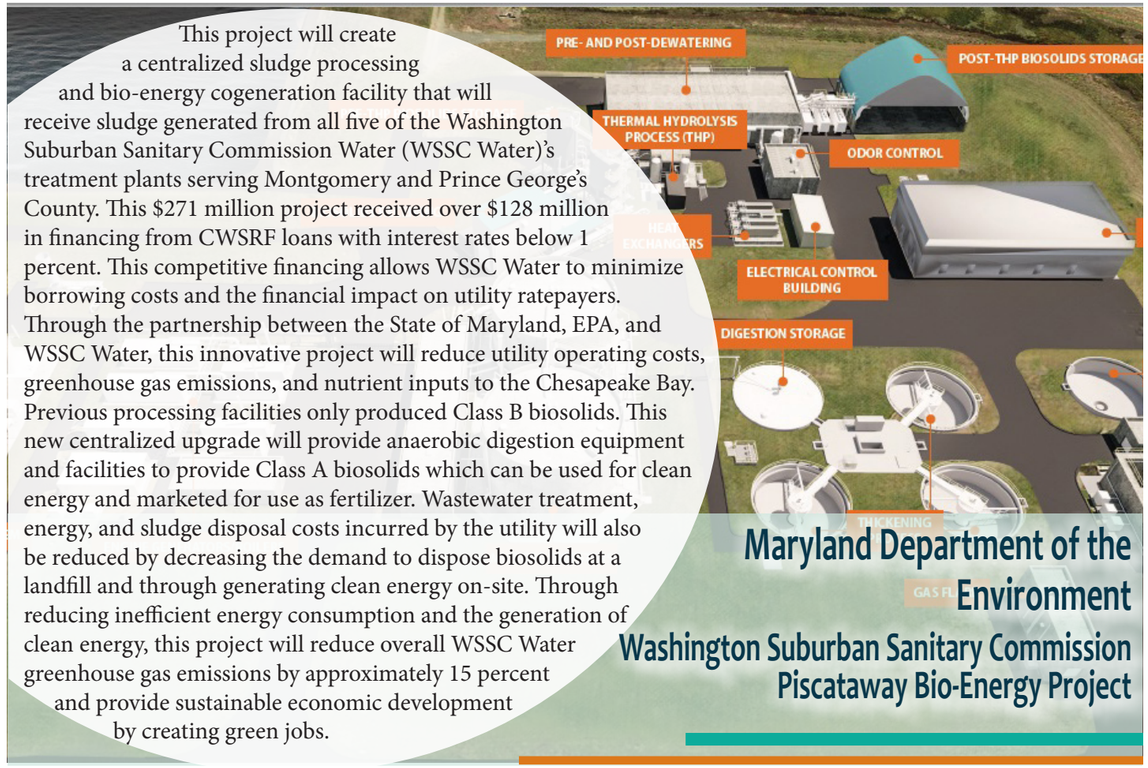
In 2004, an estimated 75 percent of the homes in Romney, Indiana, were discharging sewage to local ditches and streams in the Wea Creek watershed. These failing septic systems negatively impacted the local public health and environment of the area, prompting residents to advocate for change. After exploring regionalization alternatives and weighing the financial challenges, citizens worked with the Indiana Department of Environmental Management (IDEM) to form the Romney Regional Sewer District. Local leaders contacted Indiana's State Revolving Fund and United States Department of Agriculture's Rural Development (RD) programs to seek innovative low-cost solutions to correct the small community's wastewater management problem. After extensive review, they decided to construct a wastewater collection and treatment system that connects 135 residents and 12 commercial entities to the system. The plant includes ultraviolet disinfection, phosphorous removal, and an emergency generator, and it will significantly reduce the amount of pollution entering local waters.

Indiana's CWSRF provided the Romney District with a $2 million forgivable Bond Anticipation Note, and RD offered the community a grant of $1.6 million paired with a low-interest RD loan of $1.1 million. This project received a total funding amount of $4.8 million, 76 percent of which came in the form of grants or forgivable loans. This creative financing solution allowed the new district to address the environmental issues surrounding their community using an affordable solution.

Indiana Finance Authority
Romney Regional Sewer District
Wastewater Collection and Treatment Project

The City of St. Gabriel invested $3 million from a CWSRF loan to improve their wastewater system and decrease the loading of an impaired water body, Bayou Manchac. The City will reroute two discharge flows away from streams that lead to the Bayou by partnering with existing facilities to save on infrastructure costs. This will include the construction of pump stations and associated force mains to carry the effluent from the wastewater treatment plant to the Mississippi River. Collaborating with a private company and a correctional center to use their existing infrastructure to take the flows from the two decommissioned discharge points, this partnership delivered significant cost savings in pipe construction and prevented potential utility conflicts or public disruption. The loan term of 20 years and an interest of 0.95 percent ensure this project will allow user fees in this disadvantaged area to be affordable while also decreasing the pollution loading on an impaired water body.

Louisiana Department of Environmental Quality
City of St. Gabriel
Carville and Delta Project



This project will create a centralized sludge processing and bio-energy cogeneration facility that will receive sludge generated from all five of the Washington Suburban Sanitary Commission Water (WSSC Water)'s treatment plants serving Montgomery and Prince George's County. This $271 million project received over $128 million in financing from CWSRF loans with interest rates below 1 percent. This competitive financing allows WSSC Water to minimize borrowing costs and the financial impact on utility ratepayers. Through the partnership between the State of Maryland, EPA, and WSSC Water, this innovative project will reduce utility operating costs, greenhouse gas emissions, and nutrient inputs to the Chesapeake Bay. Previous processing facilities only produced Class B biosolids. This new centralized upgrade will provide anaerobic digestion equipment and facilities to provide Class A biosolids which can be used for clean energy and marketed for use as fertilizer. Wastewater treatment, energy, and sludge disposal costs incurred by the utility will also be reduced by decreasing the demand to dispose biosolids at a landfill and through generating clean energy on-site. Through reducing inefficient energy consumption and the generation of clean energy, this project will reduce overall WSSC Water greenhouse gas emissions by approximately 15 percent and provide sustainable economic development by creating green jobs.

Maryland Department of the Environment

Washington Suburban Sanitary Commission
Piscataway Bio-Energy Project

Michigan Department of Environmental Quality

Milk River Intercounty Drainage District
CSO RTB/ Recirculation Plant Upgrades

Originally built in 1958, the Milk River combined sewer overflow retention treatment basin (RTB) and recirculation system required significant renovations. The facilities border residential properties along the Milk River Drain where residents use the waterway for recreational activities, such as kayaking and fishing. The Milk River Drain, which is located closer to lake St. Clair, is also used as a marina for boaters during the summer months. In 2014, the Milk River facilities agreed to work with the Michigan Department of Environment, Great Lakes, and Energy to improve the effluent water quality, record keeping, and maintenance of the facilities. Enhancements to the recirculation facility include expansion of the building for zebra and quagga mussel control, upgrading valves and actuators, and repairing a force main under the Milk River Drain channel. The Milk River Pump Station and CSO RTB facility will receive upgraded flushing systems, storm pumps, disinfection and sampling system upgrades, and an overhaul of the buildings' electrical, light, heating, and venting systems.

As a result of this project, the Milk River facilities can continue to adequately treat the effluent entering the waterway, meet the identified National Pollutant Discharge Elimination System permit limits, and maintain water quality in the Milk River Drain to the benefit of residents and the environment. Final completion of the comprehensive upgrades is scheduled for 2021.

The City of St. Joseph uses a combined sewer system to collect sewage and flows from the Blacksnake Creek. The combined sewage then is sent to the City's wastewater treatment plant (WWTP) for treatment. During large storm events, flows in this combined system may exceed capacity at the WWTP and be discharged directly into the Missouri River. To eliminate approximately 303,000 gallons per year of combined sewer overflows, the City received a CWSRF loan for over $67 million to construct a separate storm sewer tunnel. This tunnel will redirect two million gallons per day of creek base flow away from the city's WWTP and direct it to the Missouri River. This tunnel was constructed using a custom-built boring machine that excavated through bedrock while simultaneously installing a segmented concrete lining. This project also repaired the existing creek's combined sewer and outfall, constructed five stormwater bioretention basins, and replaced approximately 1,100 trees along the conveyance corridor that were removed during construction. Elimination of combined overflows will greatly benefit the water quality in the Missouri River and will reduce flows to the WWTP. That will increase the facility's hydraulic capacity approximately 11 percent and reduce annual plant operation and maintenance costs by $1.5 million. Additional savings from using CWSRF financing will save the community an estimated $29 million in interest when compared with conventional financing.

Missouri Department of Natural Resources

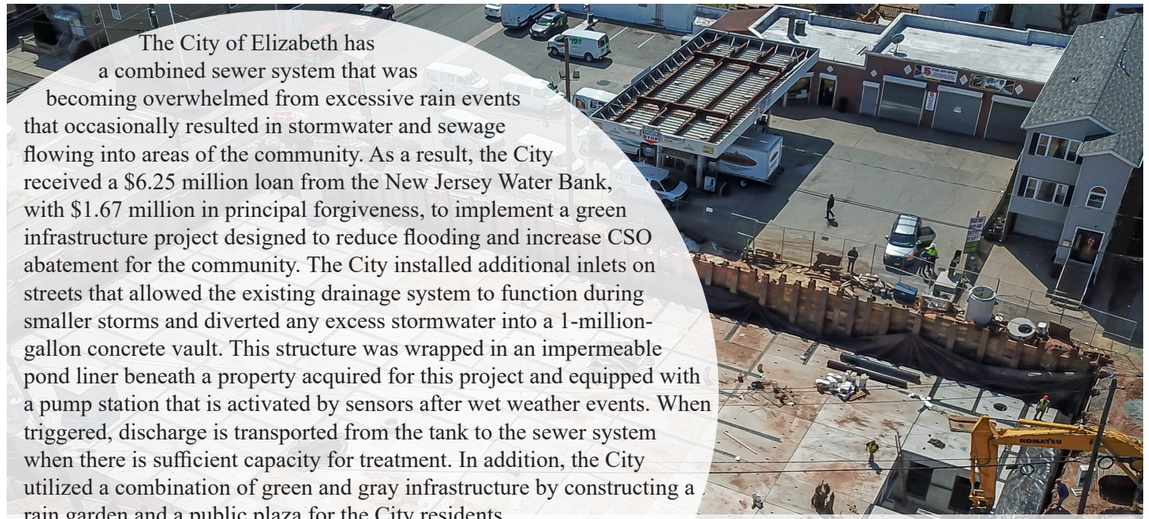
City of St. Joseph
Blacksnake Creek Stormwater Seperation Improvements

The Town of Exeter received $53.6 million in CWSRF funds to perform a comprehensive upgrade to their wastewater treatment plant (WWTP). This project replaced an aerated lagoon treatment facility and included the construction of a new sludge sewage treatment plant that utilizes a four stage Bardenpho treatment process to biologically remove nitrogen. When the treatment process began in June of 2019, total nitrogen levels declined within a month. This put the Town in a position to significantly reduce nitrogen levels being discharged from the WWTP into the Squamscott River and Great Bay Watersheds. With continued use of their existing lagoon system and an upgrade of the Main Pump Station, most of the Town's CSOs were also eliminated. Additionally, the upgrade improved energy efficiency through the installation of two aeration tanks and sludge storage tanks.

Exeter received $2.7 million in principal forgiveness as part of their CWSRF loan and $12 million in the form of a New Hampshire state grant. This significant cost savings, along with the Town's effort to upgrade the Exeter WWTP, will help to continually improve the water quality in the Squamscott River and Great Bay Watersheds.

New Hampshire Department of Environmental Services

Town of Exeter
Wastewater Treatment Facility Upgrade



New Jersey Department of Environmental Protection
Elizabeth City
Street CSO Green Infrastructure Project

The City of Elizabeth has a combined sewer system that was becoming overwhelmed from excessive rain events that occasionally resulted in stormwater and sewage flowing into areas of the community. As a result, the City received a $6.25 million loan from the New Jersey Water Bank, with $1.67 million in principal forgiveness, to implement a green infrastructure project designed to reduce flooding and increase CSO abatement for the community. The City installed additional inlets on streets that allowed the existing drainage system to function during smaller storms and diverted any excess stormwater into a 1-million-gallon concrete vault. This structure was wrapped in an impermeable pond liner beneath a property acquired for this project and equipped with a pump station that is activated by sensors after wet weather events. When triggered, discharge is transported from the tank to the sewer system when there is sufficient capacity for treatment. In addition, the City utilized a combination of green and gray infrastructure by constructing a rain garden and a public plaza for the City residents.

Thanks to the strategic financing offered by the NJ Water Bank, the City provided a unique approach to CSO abatement while engaging the public in collaborative discussions about the project. In doing so, the quality of life for its residents improved simultaneously with environmental and human health conditions.

New York Environmental Facilities Corporation
Albany Water Board
Tivoli Lake Preserve Stream Daylighting Project

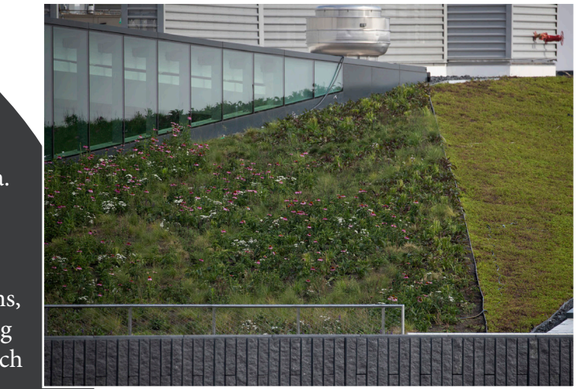
The City of Albany completed a unique $3.5 million project in January 2020 where a substantial portion of Patroon Creek in the Tivoli Lake Preserve was restored through the process of daylighting. This process involved removing a piped section of the Creek that was previously undersized and created a stream corridor in its place. The new stream will enable the Creek, which flows into the Hudson River, to better handle large storms and provide additional downstream flood protection, mitigate erosion, and stabilize critical infrastructure within the preserve. Additionally, the project is in an Environmental Justice Area that runs through a park serving under-privileged neighborhoods and will provide an opportunity to connect the residents with the Creek.

This project combined a $1.1 million Green Innovation Grant Program grant, with a New York State Department of Environmental Conservation grant to leverage funding from the City and the Albany Water Board. By working with these funding partners and the community to design a process that maximizes both environmental and social benefits, the Stream Daylighting Project was able to alleviate multiple issues and created a new environmental attraction for residents to enjoy at the Tivoli Lake Preserve.

North Carolina Department of Environmental and Natural Resources
City of Hendersonville
Multi-Area Streambank Restoration

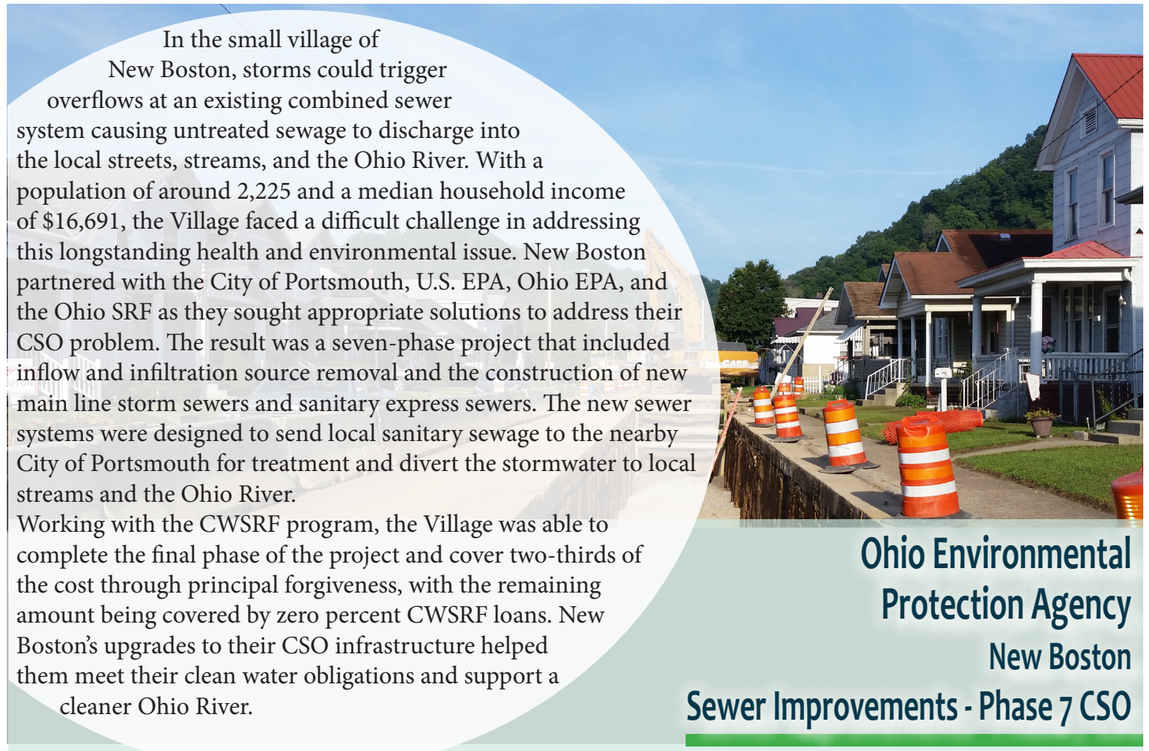
The City of Hendersonville received a $2.98 million CWSRF Green Reserve loan at zero percent interest for the Multiarea Streambank Restoration project. The project will restore 13 sections of urban streams, along with their associated vegetative buffers, to promote stormwater quality and improve the quality of Mud Creek, an impaired water body. Approximately 11,000 linear feet of urban streambanks will be restored, 1,000 linear feet of sewer line that is threatened by streambank erosion will be rehabilitated, and a stormwater Best Management Practice (BMP) with educational features will be installed in the City's Patton Park which is adjacent to a tributary of Mud Creek.

The stormwater BMP in Patton Park will consist of modifying an existing stormwater pond that has become turbid and turn it into a wetland. The proposed wetland will not only improve the overall quality of Mud Creek but will also be used as a public outreach and educational opportunity for the City.



Pennsylvania Department of Environmental Protection
Temple University
Green Roof Project

While designing a new campus library, Temple University determined that traditional impervious roofing would contribute to runoff, exacerbating combined sewer overflows in the City of Philadelphia. The University received a $6.7 million CWSRF loan to install a green roof to reduce urban runoff both on its campus and in north central Philadelphia. The green roof and drainage include two infiltration basins, 25,000-gallon rainwater harvesting cisterns, absorbing Silva Cells, area landscaping, stormwater piping, trench drains, storm manholes, yard drains, overflow drains, green roof assembly, and green roof landscaping combined with porous paving. The University also planted native flowering plants on the green roof to help support local pollinator populations and to create a green space for local fauna within the urban landscape.



In the small village of New Boston, storms could trigger overflows at an existing combined sewer system causing untreated sewage to discharge into the local streets, streams, and the Ohio River. With a population of around 2,225 and a median household income of $16,691, the Village faced a difficult challenge in addressing this longstanding health and environmental issue. New Boston partnered with the City of Portsmouth, U.S. EPA, Ohio EPA, and the Ohio SRF as they sought appropriate solutions to address their CSO problem. The result was a seven-phase project that included inflow and infiltration source removal and the construction of new main line storm sewers and sanitary express sewers. The new sewer systems were designed to send local sanitary sewage to the nearby City of Portsmouth for treatment and divert the stormwater to local streams and the Ohio River.

Working with the CWSRF program, the Village was able to complete the final phase of the project and cover two-thirds of the cost through principal forgiveness, with the remaining amount being covered by zero percent CWSRF loans. New Boston's upgrades to their CSO infrastructure helped them meet their clean water obligations and support a cleaner Ohio River.

Ohio Environmental Protection Agency

New Boston

Sewer Improvements - Phase 7 CSO

Oklahoma Water Resources Board

Altus Municipal Authority

Electric and Water Meter Replacement and WWTP Project

As a strong proponent of careful water resource management, the Oklahoma Water Resources Board provides CWSRF funds for water infrastructure projects that incorporate water efficient designs. Using the CWSRF, the City of Altus undertook an $11 million improvement project to the City's wastewater treatment plant, with $5 million used to replace outdated water meters throughout the City. Approximately 10,000 water and electric meters were replaced with modern Advanced Metering Infrastructure (AMI), which will help residents better assess the amount of water they use. Prior to the installation of the AMI, the City issued a campaign to inform the general public on the upcoming activity, explain the new billing statement design, and introduce the upcoming utility App called Altus Smart Hub. Altus Smart Hub went live in April of 2020 and allows residents to monitor their usage in near real-time intervals and view water reports, helping residents learn ways to better conserve water. The City's investment in AMI is one example of how communities across Oklahoma are deploying innovative technologies to better manage the State's water resources.

To meet new discharge permit requirements and protect the water quality of Calapooya Creek, the City of Sutherlin invested in an ambitious multi-stage project with the help of Oregon's CWSRF and Department of Environmental Quality (DEQ). The City used DEQ's 30-year bond purchase option to fund the construction of a new activated-sludge treatment plant, significant upgrades to the City's existing wastewater treatment plant, and a land purchase encompassing a 90-acre pond for effluent storage. The new plant will feature UV disinfection, tertiary filtration, and a solids-handling facility. Upgrades to the current plant will allow treated recycled water to be pumped to multiple recipients, including a pasture, an olive farm, and a golf course.

The multi-prong approach of this project allowed the City of Sutherlin to address a wide range of requirements with minimal impact on ratepayers. In addition to improving its capacity and flexibility to treat wastewater, the City designated a former storage pond, known as Ford's Pond, as a park and partnered with a local community group to create recreational opportunities. The overall result will be more sustainable water use and the creation of a new nature reserve and community space.

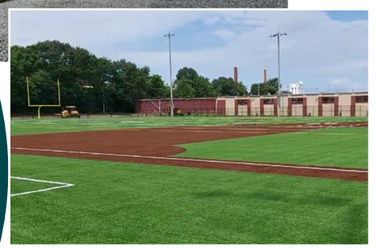
Oregon Department of Environmental Quality

City of Sutherlin

New Wastewater Treatment Plant

The Narragansett Bay Commission (NBC) provides wastewater treatment to 10 communities in the greater Providence area. NBC entered into a $35 million programmatic financing arrangement (ProFi) with the CWSRF that creates an agreement to fund any portion of a NBC's eligible projects identified in an established project portfolio. NBC's ProFi agreement contains a commitment to fund a CSO Phase 3A Green Stormwater Infrastructure (GSI) Initiative. The City of Central Falls, which had limited green space and 548 acres of impervious surface, is considered the smallest, most densely populated, and economically disadvantaged community in the State. This GSI Initiative will include two construction projects within the City designed to infiltrate over 778,000 gallons of stormwater that would have otherwise been discharged as CSOs. Through investing in the Initiative, the City significantly expanded its green infrastructure and added a new soccer field for Central Falls residents to enjoy.

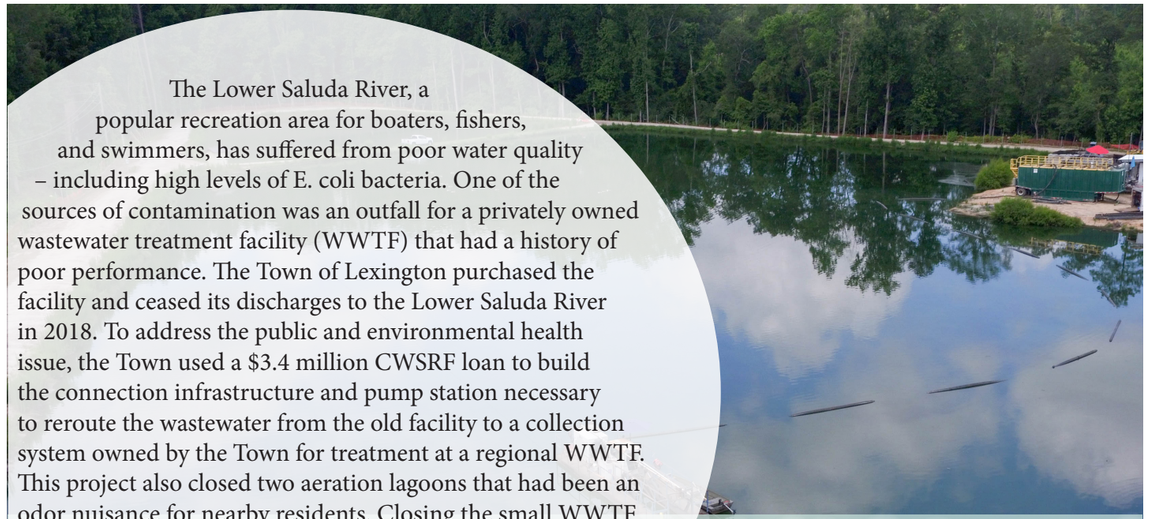
In addition to the $35 million ProFi CWSRF loan made by Rhode Island Infrastructure Bank in partnership with Department of Environmental Management (RIDEM), over $1 million in additional subsidy was incorporated as principle forgiveness, which further reduced the economic impact on the community. These GSI projects also received a combined $700,000 in state water quality and recreation grants from RIDEM, as well as $500,000 Community Development Block Grant. Funding these GSI projects reflects how utilizing a collaborative approach with innovative financing can yield water quality and recreational benefits for the residents of Central Falls.



Rhode Island Department of Environmental Management

Narragansett Bay Commission

CSO Phase 3A Green Infrastructure Iniative



The Lower Saluda River, a popular recreation area for boaters, fishers, and swimmers, has suffered from poor water quality – including high levels of E. coli bacteria. One of the sources of contamination was an outfall for a privately owned wastewater treatment facility (WWTF) that had a history of poor performance. The Town of Lexington purchased the facility and ceased its discharges to the Lower Saluda River in 2018. To address the public and environmental health issue, the Town used a $3.4 million CWSRF loan to build the connection infrastructure and pump station necessary to reroute the wastewater from the old facility to a collection system owned by the Town for treatment at a regional WWTF. This project also closed two aeration lagoons that had been an odor nuisance for nearby residents. Closing the small WWTF was in line with the area's 208 Water Quality Management Plan, which calls for the regionalization of wastewater services and aims to eliminate all domestic wastewater discharges to the Lower Saluda River.

South Carolina Department of Health and Environmental Control

Town of Lexington

I-20 Wasterwater System Pump Station & Lagoon Closure

South Dakota Department of Environment and Natural Resources

City of Sioux Falls

Nonpoint Source Improvements - Skunk Creek

The Big Sioux River serves as a drinking water source for the residents of Sioux Falls and is listed as an impaired water body. The City of Sioux Falls, utilizing South Dakota CWSRF's incentive loan rates for nonpoint source (NPS) projects, funded various NPS projects in the Big Sioux River watershed. Over $3.3 million in CWSRF loans were made using incentive interest rates for NPS best management practices for Skunk Creek, a former impaired tributary of the Big Sioux River. Using these funds, the community worked to restore the Creek and applied a Seasonal Riparian Area Management (SRAM) practice to support landowners within the 100-year floodplain of the Creek. Landowners found this SRAM practice an attractive option for using land on the river corridor because protected the land from livestock grazing during the recreation season. This program paid livestock producers to defer grazing or maintain a minimum vegetation stand in the river corridor during the growing season.

Over 1,200 acres of riparian area along Skunk Creek have been entered into this SRAM practice to date, which has led to a decrease in total suspended solids in the Creek and, in turn, allowed the Creek to be removed from the State's impaired list.

The City of Camden's wastewater treatment facility consists of a 0.5 million gallons per day lagoon treatment system and a wastewater collection system. Before making upgrades, the facility did not meet National Pollutant Discharge Elimination System permit limits for discharges to Cypress Creek. The City received a $9 million CWSRF loan to make improvements to the wastewater treatment system and installed a land application site for additional disposal of treated wastewater effluent. The City now has two wastewater discharge options: to discharge to the Creek or land apply the treated effluent on approximately 340 acres of land. The land application system helps the community protect the Kentucky Lake and Tennessee River watershed by eliminating excess nutrient loading and biological oxygen demand levels from Cypress Creek. The City benefits from having treatment options to maintain environmental compliance and protect the fragile ecosystems in streams and rivers.

Tennessee Department of Environment and Conservation

City of Camden

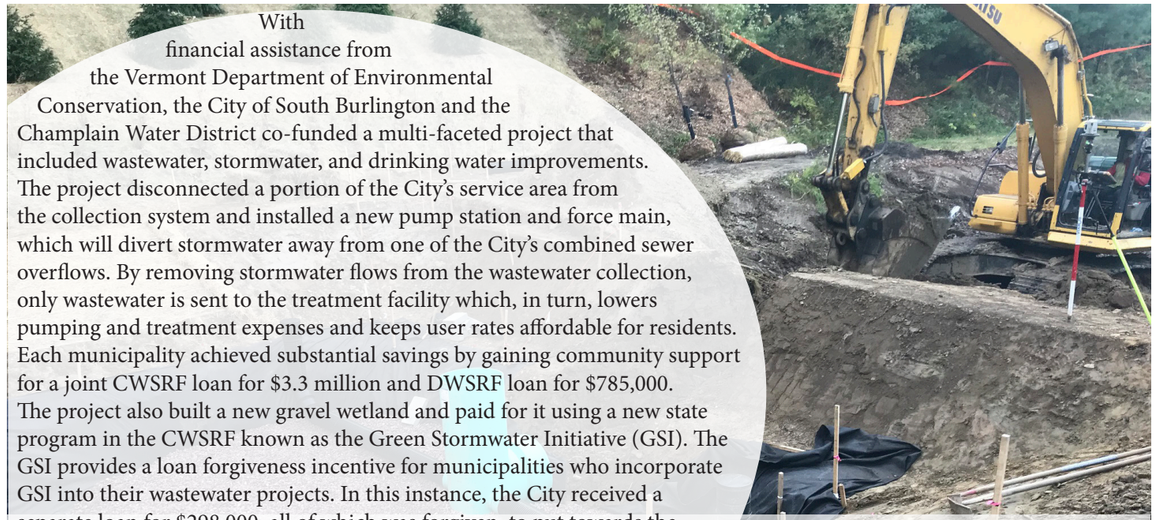
WWTP Improvements - Land Application System

The increased intensity of rainfall events has presented challenges to the City of Lubbock's wastewater infrastructure. The areas along Quaker Avenue in the northwest portions of the City have historically been prone to flooding, affecting residential and commercial structures and a major medical district. A flooding event in 2015 made roads inaccessible, which highlighted the public health threat posed by flooding as ambulances were forced to find alternate routes to medical facilities. To address this issue, the City went to the CWSRF to finance the installation of lateral trunk lines and inlets to divert stormwater into shallow wetlands known as "playa lakes" in the Texas High Plains. By taking advantage of low-interest financing through the Texas CWSRF, the City saved its ratepayers nearly $7 million compared to having financed through the open market.

Texas Water Development Board

City of Lubbock

Northwest Drainage Improvements



With financial assistance from the Vermont Department of Environmental Conservation, the City of South Burlington and the Champlain Water District co-funded a multi-faceted project that included wastewater, stormwater, and drinking water improvements. The project disconnected a portion of the City's service area from the collection system and installed a new pump station and force main, which will divert stormwater away from one of the City's combined sewer overflows. By removing stormwater flows from the wastewater collection, only wastewater is sent to the treatment facility which, in turn, lowers pumping and treatment expenses and keeps user rates affordable for residents. Each municipality achieved substantial savings by gaining community support for a joint CWSRF loan for $3.3 million and DWSRF loan for $785,000. The project also built a new gravel wetland and paid for it using a new state program in the CWSRF known as the Green Stormwater Initiative (GSI). The GSI provides a loan forgiveness incentive for municipalities who incorporate GSI into their wastewater projects. In this instance, the City received a separate loan for $298,000, all of which was forgiven, to put towards the total cost of the project. Additionally, the City entered into an inter-municipal agreement with the Champlain Water District to include the water transmission upgrades into a wastewater improvements contract and financed this portion of the contract with a Drinking Water SRF loan. Lastly, the State provided approximately $700,000 in the form of a pollution control grant to the City for the wastewater improvements under the State's CSO abatement funding program.

Vermont Department of Environmental Conservation
City of South Burlington
Hadley Road Area Infrastructure

Washington Department of Ecology
Liberty Lake Sewer District
Water Reclamation Facility Upgrades

The Spokane River Regional Toxics Task Force is a voluntary group of business; Tribes; conservation groups; and state, local and federal government agencies who collaborate to reduce harmful compounds from entering the Spokane River, which is listed as impaired. The Liberty Lake Sewer and Water District (LLSWD), a member of this Task Force, operates drinking water and wastewater utilities for the community's growing population. As part of their work within the Task Force, LLSWD adopted a Toxics Management Plan to reduce Polychlorinated Biphenyls (PCBs) in their wastewater effluent. LLSWD received assistance from the CWSRF to fund over $16 million in upgrades for its Water Reclamation Facility to meet requirements under its National Pollutant Discharge Elimination System permit, Total Maximum Daily Load limits, and Toxics Management Plan. This project builds on existing treatment processes and includes improved headworks screening, a tertiary membrane filtration system, upgrades to the UV disinfection system, and an expanded Laboratory and Operations Center. The Operations Center includes an education center that offers tours and learning opportunities to school and community groups.

The upgrades to the facility have significantly improved effluent quality by reducing phosphorus levels and by removing 98 percent of the PCBs that enter the system. These system improvements by LLSWD can be considered an integral part of the ongoing regional strategy for protecting the Spokane River.

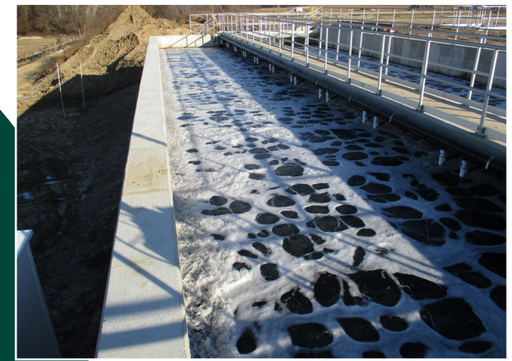
The Webster Springs Public Service District received over $2.8 million from the CWSRF to construct a public wastewater collection system and a new decentralized wastewater treatment plant to serve approximately 61 customers. Prior to receiving CWSRF assistance, the community of Bergoo used a rudimentary wastewater collection system, septic tanks, and direct discharges into Leatherwood Creek and the Elk River. These approaches were impairing the Creek and affecting the drinking water, as well as the surface water, in the area. This project will reduce the fecal matter in the stream by eliminating direct discharges and failing septic systems. Since water in the area is provided through private wells that are influenced by surface water, this project will also significantly improve drinking water quality for the community.

Through the structure of the CWSRF's partnership with the West Virginia Infrastructure and Jobs Development Council, this decentralized project was financed through 100 percent principal forgiveness and grants. As a result, a small rural community that would not otherwise been able to afford the system upgrade can better protect their drinking water sources and outdoor recreation areas.

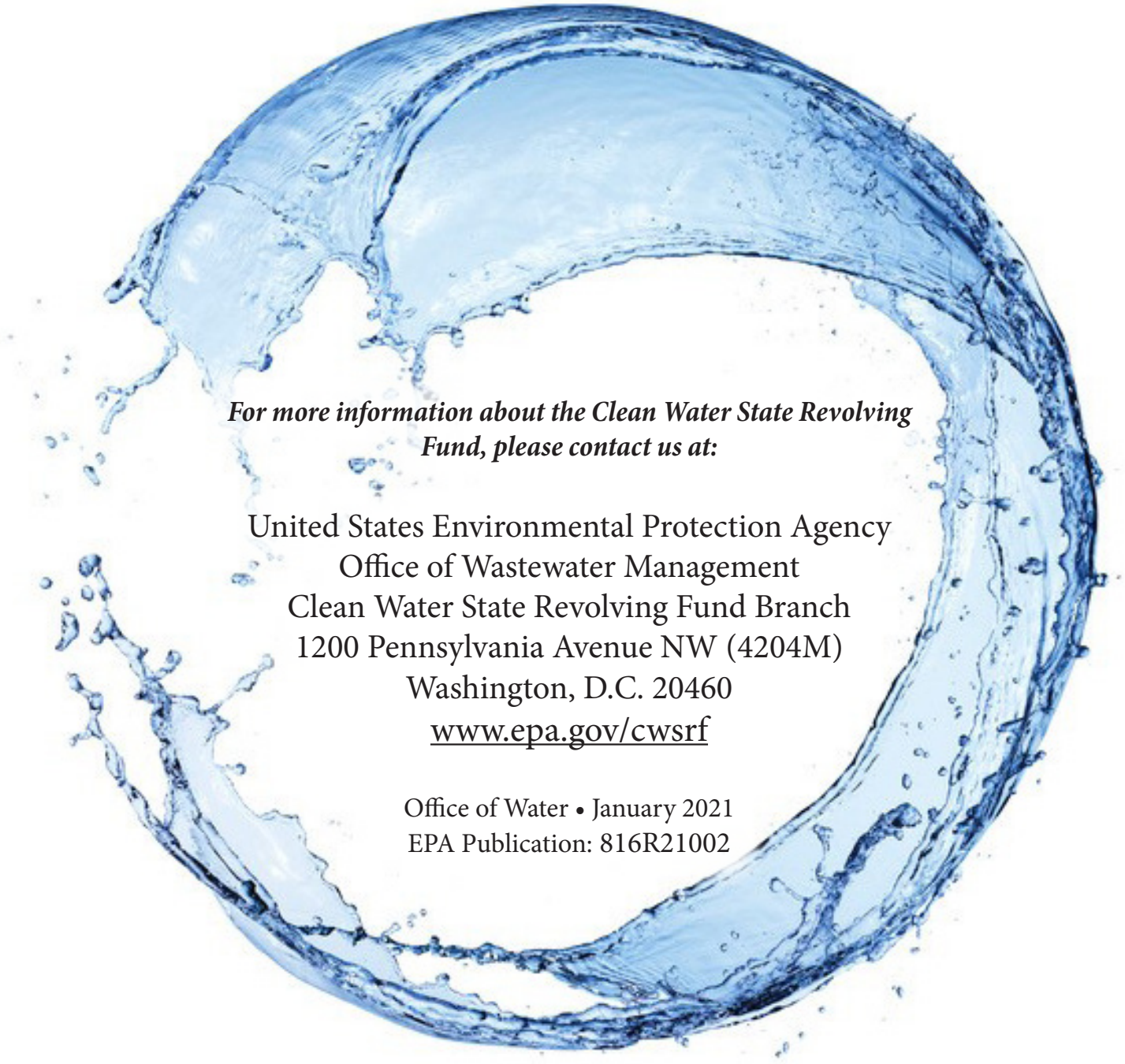
West Virginia Department of Environmental Protection
Community of Bergoo
Wastewater Treatment & Collection System

With population growth and existing facility deficiencies in mind, members of the Consolidated Koshkonong Sanitary District Commission devised a creative financing solution to fund construction on their main pump station and treatment lagoons. With an expected completion date of February 2021, installation of synthetic liners and other lagoon upgrades will improve the management of seepage rates and groundwater separation. Upgrades will also address new ammonia and phosphorus limits established in the District's Wisconsin Pollutant Discharge Elimination System Permit. These improvements will allow the District to meet future permit requirements and provide the staff flexibility to adapt to daily operational conditions.

Financing for the project was provided through six individual loan agreements to the sanitary districts that comprise the Commission. The four smallest of the six sanitary districts qualified for principal forgiveness, allowing the Commission to spread the financial burden and make the project more affordable for the communities. The principal forgiveness included costs related to compliance with new phosphorus limits. These treatment upgrades will support the Commission in achieving reliable, year-round treatment and contribute to the protection of local groundwater.



Wisconsin Department of Natural Resources
Consolidated Koshkonog Sanitary District Commission
Wastewater Treatment Plant Upgrade



For more information about the Clean Water State Revolving Fund, please contact us at:

United States Environmental Protection Agency
Office of Wastewater Management
Clean Water State Revolving Fund Branch
1200 Pennsylvania Avenue NW (4204M)
Washington, D.C. 20460
www.epa.gov/cwsrf

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