

GEORGE F. AMES

PISCES

2021 RECOGNITION PROGRAM



DIRECTOR'S ADDRESS

2021 marks the fifth year that we recognize clean water projects that demonstrate excellence through the George F. Ames Performance and Innovation in the SRF Creating Environmental Success (PISCES) program. In addition to the cost saving benefits of the Clean Water State Revolving Fund (CWSRF), one of the strengths of the program is the wide variety of eligible projects that can be funded. The projects highlighted in this compendium demonstrate this benefit, as they represent the diversity of project types and communities that CWSRF programs support in all 50 states and Puerto Rico.

Throughout these pages, you will also see partnerships that have formed across the country between the CWSRF programs and cities, utilities, tribes, and farmers. By coming together, we have the opportunity to provide water quality benefits to Americans and promote EPA's mission of protecting human health and the environment.

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

Sincerely,



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



Recognizing Success

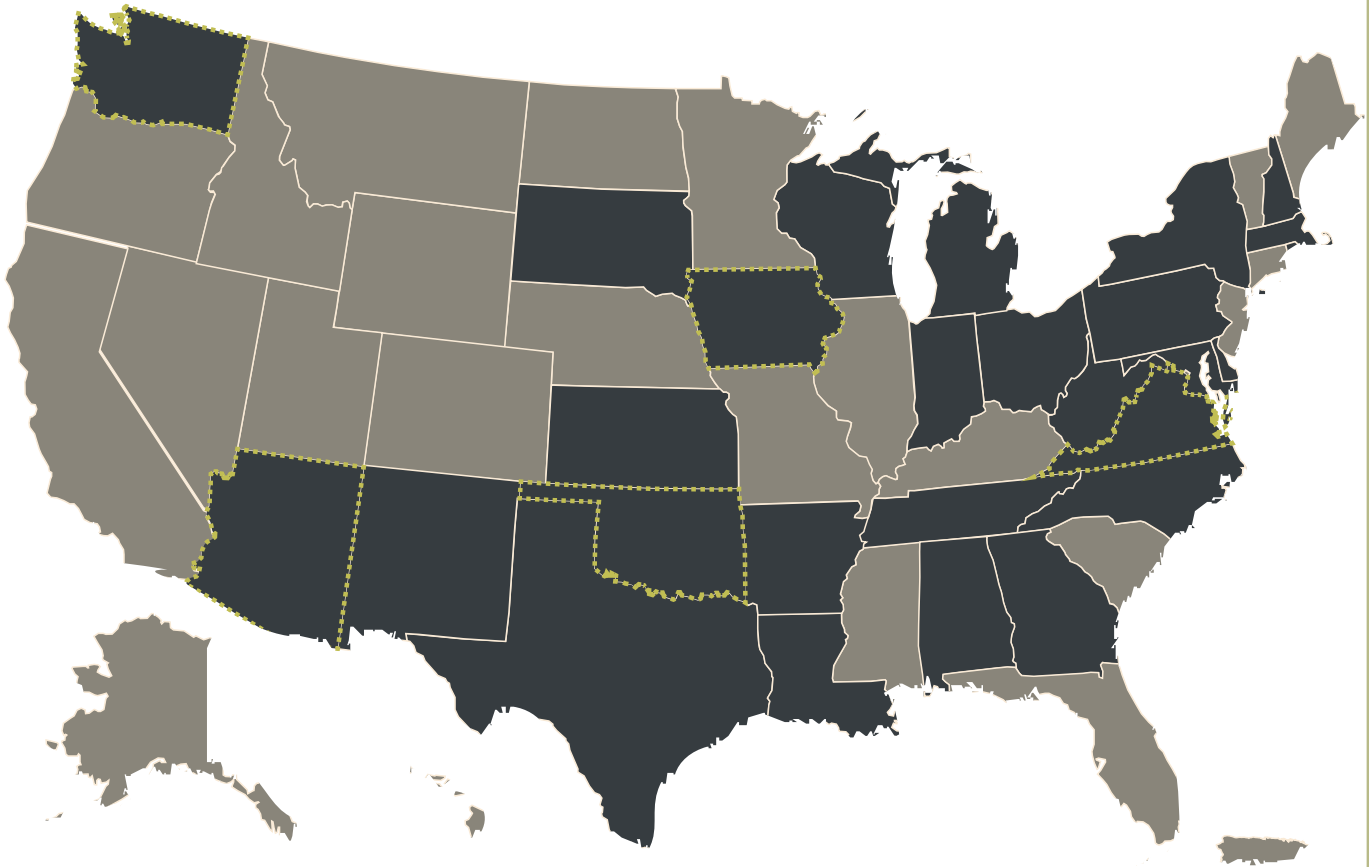
Nominations for the 2021 PISCES program were based on the following criteria categories. EPA selected one project from each category to be recognized as an Exceptional Project based on the project's overall impact in the category.

- **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.

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Projects Recognized by the George F. Ames PISCES Program - 2021



Recognized projects are shaded in dark gray.

Exceptional Projects are outlined in dashed green.

Recognized Projects

Exceptional

Arizona	Flagstaff Watershed Protection
Washington	Mashel River Protection
Virginia	Agriculture BMPs
Iowa	ReHarvest Pay for Success
Oklahoma	Bartlesville's Indirect Potable Water Reuse Solution

Honorable Mention

Alabama	Mobile Master Plan Phase I
Arkansas	Clarifier Repair
Delaware	Comfort Burton Land Conservation Sponsorship
Georgia	Stormwater System Improvements
Indiana	Wastewater Improvements
Kansas	Rock Creek Stream Bank Stabilization
Louisiana	North WWTP Improvements
Maryland	Back River WWTP
Massachusetts	York Street Pump Station and Connecticut River Crossing
Michigan	Lansing CSO Sub-Area 034C Project
New Hampshire	Peirce Island WWTF Upgrade
New Mexico	Roosevelt County Fairgrounds Stormwater
New York	Sauquoit Creek Floodplain Restoration
North Carolina	Wardola-Thompson School Creek Restoration
Ohio	Butler Regional WWTP
Pennsylvania	Agricultural BMPs
Rhode Island	Charlotte Hope Plaza Stormwater
South Dakota	Tea Sanitary Sewer Regionalization
Tennessee	Wastewater Treatment Plant Improvements
Texas	Regional Wastewater Improvements
West Virginia	Wastewater System and Infiltration/Inflow Rehabilitation
Wisconsin	Bluffview Wastewater Treatment Facility Upgrade

Excellence in Environmental and Public Health Protection

Water Infrastructure Finance Authority of Arizona

Project: Flagstaff Watershed Protection

Recipient: City of Flagstaff

The forests surrounding Flagstaff have evolved for thousands of years to survive frequent, low-intensity wildfires ignited by seasonal lightning storms. Over the past century, these landscapes have transformed through fire suppression-based management practices. It is now understood that these conditions increase the risk of unnatural, high-intensity fires, which impact nearby water resources. The build-up of vegetation, steadily declining precipitation, and climbing temperatures create ideal conditions for more frequent and dangerously intense wildfires. After a high-intensity fire, soils become hydrophobic, which can create flash flooding events that carry large amounts of debris, ash, chemicals, and sediment to nearby waterbodies. To protect water resources and avoid catastrophic wildfire damage, the City of Flagstaff created the Flagstaff Watershed Protection Project (FWPP). The project will reduce the risk of high-intensity fires and post-fire flooding across two priority watersheds. The FWPP features numerous benefits, including preserving drinking water treatment costs; protecting watershed health, human health, wildlife habitat, biodiversity, and old-growth trees; preserving property and recreational values; increased local economic prosperity; and creating restoration-based employment opportunities. This project will engage in modernized forest management practices on roughly 10,000 acres by reducing dry debris and thinning the forest by removing small and/or medium diameter trees. These practices have been proven to be effective in preventing significant environmental, financial, and social impacts from wildfires.

A resiliency project this large in scale is expensive to undertake, so the City worked with the Water Infrastructure Finance Authority of Arizona (WIFA) and the Coconino National Forest to fund the FWPP. WIFA provided a CWSRF loan for \$6 million with \$1 million in loan forgiveness to the City to invest in this \$10 million project. The environmental and public health benefits of this expansive project are numerous and support a forward approach in using modernized wildfire management techniques to create a more resilient community.





Excellence in Community Engagement

Washington State Department of Ecology

Recipient: Nisqually Tribe

Project: Mashel River Protection Project

Within the foothills of Mount Rainier lies the Mashel River, the primary salmon-spawning tributary of the Nisqually River. The Mashel River is an important site for salmon habitat. The River also serves as the direct source of water for the Town of Eatonville and is the indirect source for many rural residents. The largest sub-basin and headwaters for the Mashel River is the Busy Wild Creek, which is a declared federal critical habitat site for spawning and rearing of the listed Endangered Species: Chinook Salmon and Steelhead Trout. The forests around these headwaters are commercially logged, and sections of the forest remain in a state of recovery from massive clear-cut logging from the early and mid-1900s. These practices impact the headwaters by reducing water retention, elevating stream temperatures, reducing the woody-debris accumulation needed for spawning habitat, and through extensive sedimentation that fills spawning pools. These impacts to the river affect the Nisqually River Basin, which is home to the Nisqually Indian Tribe. Salmon is a prominent part of the Nisqually culture, and they rely on treaty-reserved fishing rights to sustain their fishing practices in the river.

To restore river quality and salmon habitat in these headwater forests, the Nisqually Tribe received a \$14.2 million loan from the Washington State Department of Ecology to purchase 1,240 acres of land along the North Fork of Busy Wild Creek. This land purchase adjoins next to nearly 3,000 acres of forested land managed by the Nisqually Land Trust and the Nisqually Community Forest. Future forest growth will permanently protect the entirety of the Busy Wild Creek headwaters and help restore critical salmon habitat for the Mashel River.



Excellence in System Partnerships

Virginia Department Of Environmental Quality

Recipient: Garber Farms, Inc.

Project: Agriculture BMPs

Garber Farms, a picturesque cattle farm located in Augusta County, Virginia, was experiencing significant over-grazing alongside a nearby stream that created severe streambank erosion. The stream that runs through the farm is a tributary to the Middle River, part of the Potomac River watershed in the Shenandoah Valley, and discharges to the Chesapeake Bay. Direct livestock access to the stream resulted in high bacterial and nutrient loads from livestock manure deposited in the stream. To address these water quality issues, the producer worked with the Headwaters Soil and Water Conservation District (SWCD) to draft a land management plan that incorporates new grazing practices and includes a riparian buffer along the Farm's stream. The Farm was eligible to receive funding from the Virginia Department of Conservation and Recreation (DCR) Agricultural Best Management Practices (BMP) Cost Share program (VACS). They also applied for a water quality grant for the installation of agricultural BMPs from the DuPont Natural Resource Damage Assessment and Restoration Settlement. Garber Farms received commitments from the VACS program and DuPont Settlement, covering the cost of the project. However, the Farm needed to provide funding up-front to construct the project, as grant funding would be received after project completion. This led the Farm to seek out a loan to cover these up-front expenses.



The newly relaunched Agricultural BMP Loan program, part of the Virginia Department of Environmental Quality's CWSRF, was able to provide a no-interest loan of nearly \$230,000 to Garber Farms for the full project cost. Thanks to CWSRF loan financing, this project installed over 5 miles of stream exclusion fencing, over 2 miles of water lines, 11 watering troughs, and created 77 acres of riparian buffers. These installments remove an estimated 3,481 pounds of total phosphorus annually at a cost of approximately \$66 per pound. Through the partnership between Garber Farms, Headwaters SWCD, DCR, DuPont, and DEQ's CWSRF, this cost-effective water quality project in the Shenandoah Valley was made possible.

EXCELLENCE IN INNOVATIVE FINANCING

Iowa State Revolving Fund

Project: ReHarvest Pay for Success

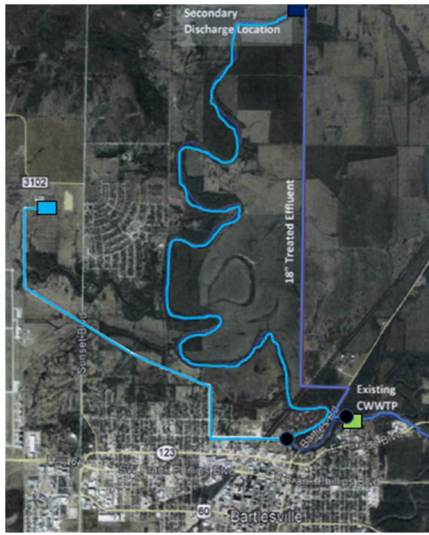
Recipient: ReHarvest



The Soil and Water Outcomes Fund was established by ReHarvest Partners, a partnership created by Quantified Ventures and the Iowa Soybean Association. The Iowa CWSRF invested \$7.5 million in ReHarvest Partners, which administers the Fund with AgOutcomes (a subsidiary of the Iowa Soybean Association). Iowa's CWSRF investment, for 16 years at 2 percent interest, will allow ReHarvest to sign up 85,000 acres in priority Iowa watersheds in 2021, with payments to farmers between \$20-\$40 per acre. This partnership utilizes a "pay for performance" structure to incentivize farmers to implement new conservation practices that improve water quality and sequester carbon. Rather than pay farmers for implementation of the practice, farmers are paid for the verified environmental outcomes these practices produce. The carbon and nutrients captured by these practices (utilizing no-till farming and planting cover crops) are verified, and the credits are then sold to a variety of private and public customers.

By earning slightly more from selling the credits than what is paid to the landowners, the structure is self-sustaining, enabling not only the repayment of the CWSRF's investment but a consistent source of funding that will perpetuate the program. This market driven approach will allow increasingly more acres to be enrolled each year with a corresponding improvement in water quality from the reduction in nutrient runoff. These significant environmental benefits will be achieved without any state or federal appropriations.

EXCELLENCE IN PROBLEM SOLVING



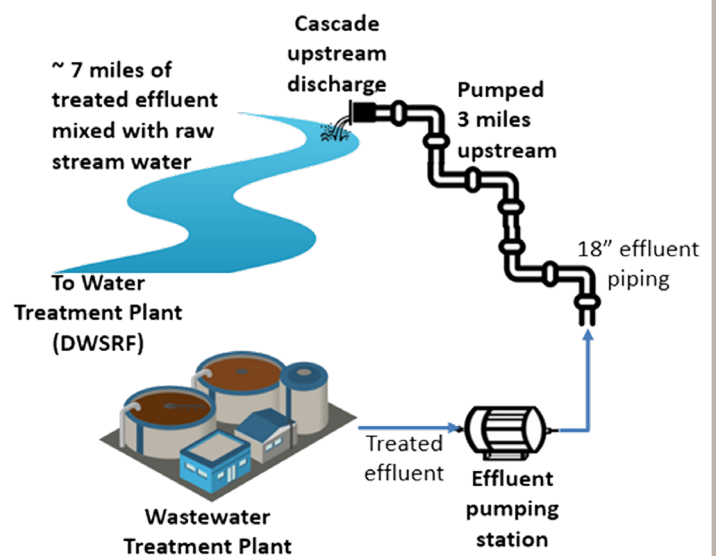
Oklahoma Water Resources Board

Project: Bartlesville's Indirect
Potable Water Reuse Solution

Recipient: Bartlesville Municipal
Authority

In 2001, a "Drought of Record" found Bartlesville Municipal Authority (Authority) with less than a 90-day supply of water for its approximate 36,500 residents. Impacts of the drought were felt state-wide. Shortly after, Oklahoma passed the Water for 2060 Act - becoming the first state in the nation to establish a goal of consuming no more fresh water in 2060 than in 2012. The Water for 2060 Act and the Authority's experience with drought provided the impetus to create a working group to explore the reuse and recycling of treated wastewater. The workgroup's study showed that indirect potable water reuse was possible due to the locations of Authority's existing water treatment and wastewater treatment plants. A plan was developed to pump treated effluent from the wastewater treatment plant three miles upstream and discharge into the Caney River, where it would then mix with stream water for about 7 miles before being pumped to the water treatment plant to produce potable water. This reuse project will extend Bartlesville Municipal Authority's water supply by 20-40 years, depending on water consumption.

Bartlesville's indirect potable water reuse project is the first of its kind permitted within the State of Oklahoma. It will support Oklahoma's Water for 2060 goals by focusing on water conservation and efficiencies along the Caney River. The total project cost is \$8,970,000 with \$750,000 coming from a Bureau of Reclamation grant and \$8,220,000 from the CWSRF. The Oklahoma Water Resources Board approved the project in August 2020, and it is currently under construction.



**Alabama Department
of Environmental
Management**

**Recipient: Board of
Water and Sewer
Commissioners**

**Project: Mobile Master
Plan Phase I**

Phase I of the proposed Mobile Master Plan by the Mobile Board of Water and Sewer Commissioners (MAWSS) will implement multiple projects that are expected to receive an estimated \$140,250,000 in CWSRF funds over a five-year period. These projects are expected to rehabilitate existing infrastructure and replace aging equipment throughout the entire service area. This will ensure continued compliance with existing regulations and demands, as well as provide increased efficiency and dependability to the overall wastewater collection and treatment system. The system has submitted an initial application, which estimates the full scope of the proposed projects to be completed over the plan's five-year period.

To fund the entire amount through the CWSRF program, the system is planning to submit additional supplemental applications each fiscal year until the completion of the project. For a municipality or utility, financing multiple projects in the same plan over several years like this, referred to as programmatic financing through the CWSRF, provides a stable, predictable funding source to incorporate into the annual budget process, as well as a simplified application process.

The Little Rock Water Reclamation Authority applied for CWSRF funding to repair, rehabilitate, and replace existing structures at the Fourche Creek Wastewater Treatment Plant. The Authority developed an emergency plan to repair damage to a 170-foot diameter clarifier and the concrete floor, subgrade, base material, and center column. This work was necessitated by rising flooding in the Arkansas River. Other improvements for this proposed work will include repairs to a manhole cover, vault, embankment, and access road and various linework repairs that were necessitated due to flood damage.

A \$7,500,000 loan with 1.75 percent interest rate from the Arkansas CWSRF allowed the Little Rock Water Reclamation Authority to move quickly to get a major problem repaired so the treatment plant could maintain its operations and meet wastewater discharge permit requirements, which resulted in less pollutants discharged to the Arkansas River.



**Arkansas Department of
Agriculture**

**Recipient: Little Rock Water
Reclamation Authority**

Project: Clarifier Repair



In Georgetown, Delaware, the Sussex County Council implemented the Comfort-Burton Property – Land Conservation/Water Quality Sponsorship project to prevent the development of a 190-acre parcel of land. Permanent protection of the parcel will create approximately 2000-acres of contiguous publicly owned open space in an area that is rapidly developing. CWSRF funds will be used to enhance biodiversity of the site which is currently planted as a monoculture pine plantation and to restore elements of a first order stream, including wetlands creation. The project will include the reforestation of approximately 60 acres of tillable land that is currently under County ownership as part of the Inland Bays Wastewater Treatment Plant. The financing for this project was made available through an interest rate reduction of the City of Rehoboth Ocean Outfall and Wastewater Treatment Plant Loans. The City requested a lower CWSRF interest rate for its two loans, and the Delaware CWSRF allowed them to go to a 2 percent interest rate for both loans, provided they sponsor a land conservation or water quality sponsorship project. The City's loans were \$40,481,095 and \$2,734,634, and the interest rate was reduced from 2.87 percent and 3.15 percent, respectively. This created \$5,744,784 in capacity to fund the Comfort-Burton Property – Land Conservation/Water Quality Sponsorship project with 0 percent interest while maintaining the same level of debt service for the City of Rehoboth.



**Delaware Department of
Natural Resources and
Environmental Control**

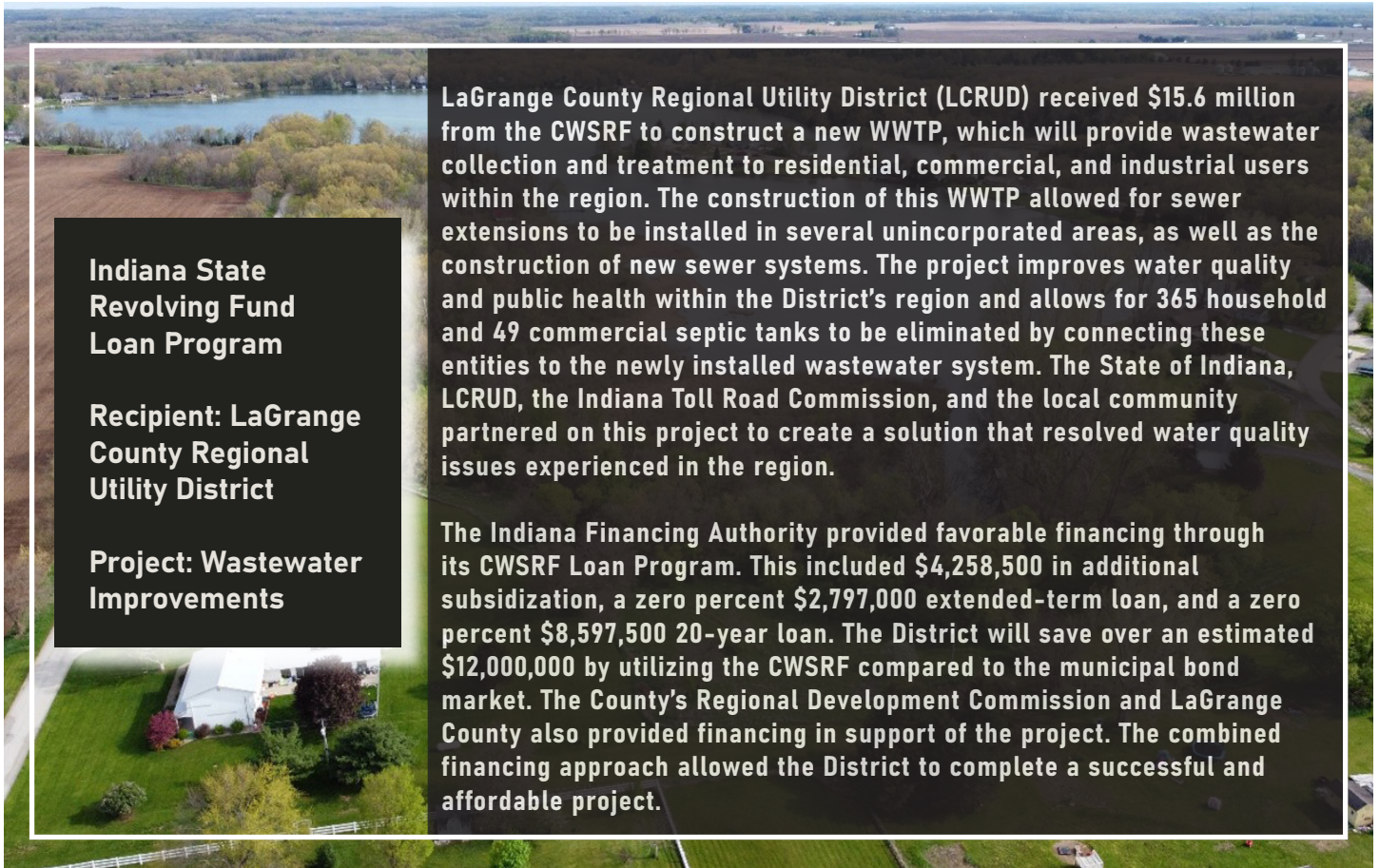
**Recipient: Sussex County
Council**

**Project: Comfort Burton Land
Conservation Sponsorship**



In August of 2019, the City of Griffin secured a \$4 million low-interest loan through the Georgia CWSRF for stormwater system improvements at the City's Veteran's Memorial Park and Golf Course. The Park's culvert was creating sink holes and special care was required to ensure that the Park's stone memorials could be repaired without any major disturbance to them. This project was completed using a trenchless technique to line the interior of the corrugated metal pipe with centrifugally cast concrete pipe (CCCP). This CCCP lining not only improved the structural integrity of the culvert, but also eliminated safety issues with flooding and saved the city over \$750,000 in construction costs since relocating monuments was not necessary. This project also addressed the litter buildup at the Golf Course's irrigation pond, where a litter trap was installed at the pond, which removed approximately 75 pounds of debris to-date. Both the Park and the Golf Course projects required coordination within the City's Public Works Department and other city departments, such as Planning and Development and Public Safety, which facilitated a quick and seamless funding and construction process. In addition, the City encouraged coordination and communication with the public throughout the process. The community was invited to comment on the project through public meetings and they were kept up to date via newsletters and social media on disruptions to the regular use of these facilities.

**Georgia Environmental Finance Authority
Recipient: City of Griffin
Project: Stormwater System Improvements**



Indiana State Revolving Fund Loan Program

Recipient: LaGrange County Regional Utility District

Project: Wastewater Improvements

LaGrange County Regional Utility District (LCRUD) received \$15.6 million from the CWSRF to construct a new WWTP, which will provide wastewater collection and treatment to residential, commercial, and industrial users within the region. The construction of this WWTP allowed for sewer extensions to be installed in several unincorporated areas, as well as the construction of new sewer systems. The project improves water quality and public health within the District's region and allows for 365 household and 49 commercial septic tanks to be eliminated by connecting these entities to the newly installed wastewater system. The State of Indiana, LCRUD, the Indiana Toll Road Commission, and the local community partnered on this project to create a solution that resolved water quality issues experienced in the region.

The Indiana Financing Authority provided favorable financing through its CWSRF Loan Program. This included \$4,258,500 in additional subsidization, a zero percent \$2,797,000 extended-term loan, and a zero percent \$8,597,500 20-year loan. The District will save over an estimated \$12,000,000 by utilizing the CWSRF compared to the municipal bond market. The County's Regional Development Commission and LaGrange County also provided financing in support of the project. The combined financing approach allowed the District to complete a successful and affordable project.

In May of 2019, storm events in the Westmoreland Rock Creek Watershed produced approximately 8-12 inches of rain. This event resulted in flooding and erosion of Rock Creek's streambank to within 20 feet of the City of Westmoreland's wastewater lagoon site, which is adjacent the Creek. To protect its wastewater lagoon facilities and prevent further erosion in the Creek, the City developed a streambank reinforcement and nonpoint source sedimentation plan. The City collaborated with the Natural Resource Conservation Service, which designed the Rock Creek Stream Bank Stabilization project and gave the City a \$200,000 grant for the project. The Kansas Water Pollution Control Revolving Fund provided an additional \$67,000 in financing for the remaining project costs.

The project removed debris and stabilized the Creek's streambank where previous erosion threatened the wastewater lagoon site. Rock riprap, earth fill, and geotextile materials were placed along the streambank to stabilize it to prevent further erosion. The project increases the integrity of the City's wastewater lagoons and protects the Creek's water quality from future erosion and sedimentation.



Kansas Department of Administration

Recipient: City of Westmoreland

Project: Rock Creek Stream Bank Stabilization



Through a partnership between the City of Ruston and the Louisiana Department of Environmental Quality (LDEQ), the City received \$6 million in financing to upgrade aging equipment in its WWTP. This upgrade includes a bar screen replacement, headworks improvements, clarifier rehabilitation and lining, and improvements to the activated sludge/water and sewer pump station. It will also replace the existing sand filters with a cloth media filter, which is a newer type of tertiary filter technology.

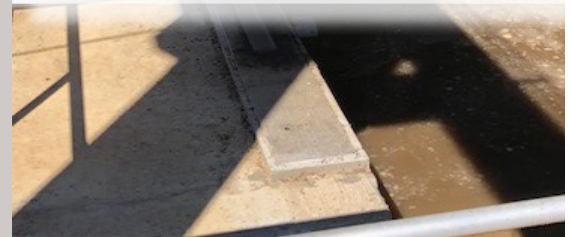
The overall rehabilitation of the WWTP, along with the addition of the new cloth media filter, will provide more effective treatment, allowing the City to meet all permitting requirements. This project will also extend the life of the WWTP and mitigate potential critical system failures.



**Louisiana Department of
Environmental Quality**

Recipient: City of Ruston

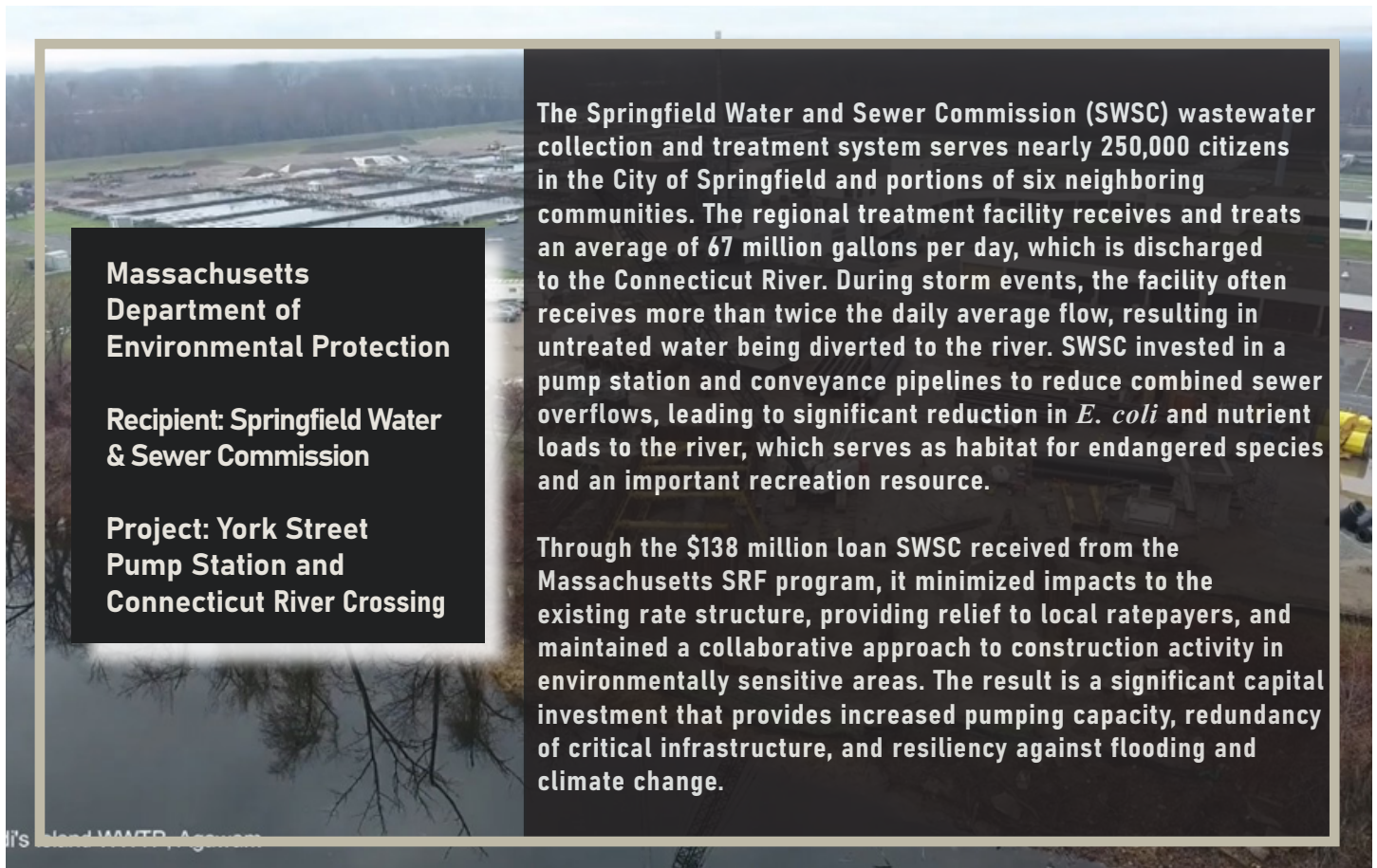
**Project: North WWTP
Improvements**



The Back River Wastewater Treatment Plant Headworks Project was implemented to help Baltimore City and Baltimore County to comply with an EPA and Maryland Department of Environment (MDE) Wet Weather Consent Decree to eliminate sanitary sewer overflows (SSOs). The Headworks Project, which received \$368 million in CWSRF assistance, increases capacity at the initial stage of the wastewater treatment process to be able to handle excess flows that typically come into the plant during heavy rains.

This project will eliminate up to 80 percent of Baltimore City's SSOs, putting the City in a very good position to meet the terms of its EPA/MDE Wet Weather Consent Order. It will also significantly reduce the incidence of basement backups for Baltimore's residents. The Back River Wastewater Treatment Plant Headworks Project provides cost-savings for the Plant's customers as well as protecting local water quality, Chesapeake Bay water quality, public health, and quality of life.

Maryland Department of the Environment
Recipient: Baltimore City and Baltimore County
Project: Back River Wastewater Treatment Plant



**Massachusetts
Department of
Environmental Protection**

**Recipient: Springfield Water
& Sewer Commission**

**Project: York Street
Pump Station and
Connecticut River Crossing**

The Springfield Water and Sewer Commission (SWSC) wastewater collection and treatment system serves nearly 250,000 citizens in the City of Springfield and portions of six neighboring communities. The regional treatment facility receives and treats an average of 67 million gallons per day, which is discharged to the Connecticut River. During storm events, the facility often receives more than twice the daily average flow, resulting in untreated water being diverted to the river. SWSC invested in a pump station and conveyance pipelines to reduce combined sewer overflows, leading to significant reduction in *E. coli* and nutrient loads to the river, which serves as habitat for endangered species and an important recreation resource.

Through the \$138 million loan SWSC received from the Massachusetts SRF program, it minimized impacts to the existing rate structure, providing relief to local ratepayers, and maintained a collaborative approach to construction activity in environmentally sensitive areas. The result is a significant capital investment that provides increased pumping capacity, redundancy of critical infrastructure, and resiliency against flooding and climate change.

The City of Lansing formed a partnership with the Lansing Board of Water and Light in order to implement a project that would reduce and control untreated sewage overflow into the Grand and Red Cedar Rivers and replace an aging water main located in the combined sewer overflow (CSO) project area. This project constructed approximately 14,605 linear feet of sanitary sewer to separate combined sewers and eliminate the overflows into the rivers and will help reduce the frequency of sewer backups into the basements of homes and residential businesses during severe storms. It is the 23rd CWSRF loan that the City of Lansing has received since 1992 to separate combined sewers in the service area. To date, the program has removed approximately 952 million gallons of sewage overflow annually to the Grand River and Cedar River from an area covering 5,000 acres that were tributary to the combined sewers. In addition, 23 of the original 41 CSO structures have been decommissioned.

Thanks to the collaboration between the City of Lansing and the Lansing Board of Water and Light, they collaborated to combine resources into one project to separate sewers owned by the City and replace the water main owned by the Lansing Board of Water and Light. The total project cost was \$17,517,000. The City received a 20-year CWSRF loan to finance the CSO portion of the project, while the water main portion of the project was paid for by the Lansing Board of Water and Light.



**Michigan Department of
Environment, Great Lakes, and
Energy**

Recipient: City of Lansing

**Project: Lansing CSO Sub-Area
034C Project**



The Great Bay Estuary, located near New Hampshire's coastline, is identified as having water quality impairments, including high nitrogen levels. Reasons for these high amounts include nonpoint source pollution from leaking septic systems, fertilizer runoff from lawns, and stormwater runoff from impervious areas. Another cause is nitrogen-rich effluent that is discharged from the Peirce Island WWTF in the City of Portsmouth into the Piscataqua River, which then flows into the Great Bay. This created a need to modernize the facility and decrease nitrogen levels, as improvements to the plant would benefit the Bay's water quality. The City used financing from the New Hampshire CWSRF to embark on the challenging task of comprehensively upgrading the Peirce Island WWTF into a modern facility that meets limit-of-technology effluent nitrogen limits in a very small island footprint space. The facility's upgrade utilizes a Biological Aerated Filter secondary treatment process that now removes organic material and nitrogen from the plant's discharged water. During the initial year of the plant's operation with the upgrades, the total nitrogen levels in discharged effluent between May and October decreased 79 percent when compared to the prior year. This decrease in nitrogen in the Peirce Island WWTF effluent will help improve water quality in both the Piscataqua River and the Great Bay.



New Hampshire Department of Environmental Services

Recipient: City of Portsmouth

Project Name: Peirce Island WWTF Upgrade



In Roosevelt County, New Mexico, stormwater runoff from the county fairgrounds impacted local residents, New Mexico Department of Agriculture facilities, the New Mexico State University Extension Office, and the Hampton Farms peanut shelling facility. One of the county's largest employers, Hampton Farms, experienced the significant flooding of their facility during rain events. Numerous issues caused by the flooding were cited by the U.S. Food and Drug Administration and made addressing stormwater management a priority for the County.

Roosevelt County contracted engineering services and determined that the best solution was to construct three retention ponds and underground drainage to control the fairground's stormwater runoff to eliminate flooding at the fairgrounds and nearby structures. Roosevelt County successfully applied for a \$625,000 loan to construct the stormwater control infrastructure. The project is estimated to be complete by September 2021.

New Mexico Environment Department
Recipient: Roosevelt County
Project: Roosevelt County Fairgrounds Stormwater

Downstream, the creek is straightened and channelized along its mid and lower reaches to accommodate new development. According to the Federal Emergency Management Agency, over 13 significant floods have occurred on Sauquoit Creek since 1910, including Hurricane Irene and Tropical Storm Lee in 2012, which produced over 12 inches of rain in 5 hours and substantial damage to the greater Ulster region. The most severe flood-related damages have occurred within an area of dense commercial and industrial land use along Commercial Drive in the town of Whitestown. Most of these properties directly abut the Creek and lie within the 1-percent annual chance flood zone. Flood damage continues to increase to surround



equivalent of approximately 489 million 8 oz glasses of water!

New York Environmental Facilities Corporation

Recipient: Oneida County/ Town of Whitestown

Project: Sauquoit Creek Floodplain Restoration

The Sauquoit Creek basin has historically experienced flash flooding, which impacted nearby communities. In recent years, these flooding events increased in frequency, which necessitated a basin-wide flood study. This study looked holistically at the entire basin and identified specific projects to mitigate impacts from rising water levels. The study results led to the \$7.8 million Sauquoit Creek Floodplain Restoration project, which received over \$3.8 million in funding from the CWSRF. This restoration project is being done in two phases. Phase one was completed in the fall of 2019 and created six acres of floodplains that provide three feet of flood water relief. Phase two is ongoing and builds upon the success of phase one to provide additional downstream floodplain drain systems.

The installation of floodplain drain systems, as well as in-stream features to re-naturalize the stream channel, increased the floodplain area and reduced localized flooding. The project is located on both sides of an existing undersized rail bridge and required five new culverts to connect constructed wetlands to balance the hydrodynamics and return the flow to Sauquoit Creek. Once completed, the project will provide nearly four feet of flood water relief and improve the stream flow in the Creek.



RESTORING SAUQUOIT
at Dunham Manor Park

Enhancing Aquatic Habitat

Wilson Bay and its tributaries, including the Thompson School Creek estuary, have been designated as primary nursery areas for anadromous fish species such as Red Drum, Blue Crab, Sea Trout, Bass, and Sturgeon. Two undersized drainage pipes under Wardola Drive used to drain residential stormwater into the Thompson School Creek watershed. The pipes were 75 percent filled with sediment and flanked by a dam on both sides, which reduced the flow of brackish water and turned the Creek into a freshwater ecosystem. This created velocity and behavioral barriers which prevented fish migration and spawning habitat. This blockage also inhibited proper drainage and periodically flooded the community during large rain events.

To upgrade this drainage system and restore the fish passage to the estuary, the City of Jacksonville received nearly \$500,000 from the CWSRF towards a \$717,000 drainage improvement project. The project replaced two undersized culverts and a dam that blocked the Creek with a 30-foot-long bridge to improve connectivity for anadromous fish passage. This will help restore the estuary by creating over one acre of primary nursery habitat. The project enhanced approximately 230 feet of stream buffer and recorded a conservation easement through the replacement of invasive plants with native species. This drainage project will protect the estuary from increased tidal flux and will ensure the long-term conservation function of Thompson School Creek and Wilson Bay estuary habitat in a manner consistent with the Estuary Habitat Restoration Strategy.



North Carolina Department of Environmental Quality

Recipient: City of Jacksonville

Project: Wardola-Thompson School Creek Restoration



Located in northeastern Ohio along the Clear Fork Mohican River, the Villages of Butler and Bellville both faced challenges with their respective aging wastewater infrastructures that were discharging into the River. Instead of independently addressing the issues, the Villages collaborated to design a new regional WWTP that improved local water quality. The joint project includes the construction of a new 550,000 gallons per day sequence batch reactor WWTP, a new 320,000-gallon equalization basin, a new force main, new pump stations, and the demolition of four failing wastewater treatment plants. Butler and Bellville also collaborated to inform the communities about the project's progress.

To help pay for the over \$15 million project, Butler received a \$500,000 grant from the Ohio Public Works Commission, a \$730,000 Community Development Block Grant, and \$4 million in principal forgiveness and a zero percent interest loan from the Ohio Water Pollution Control Loan Fund. This project eliminated sanitary sewer discharges to the River and will pass on the cost savings associated with decreased operation and maintenance expenses to the communities and businesses.



Ohio Environmental Protection Agency

Recipient: Village of Butler

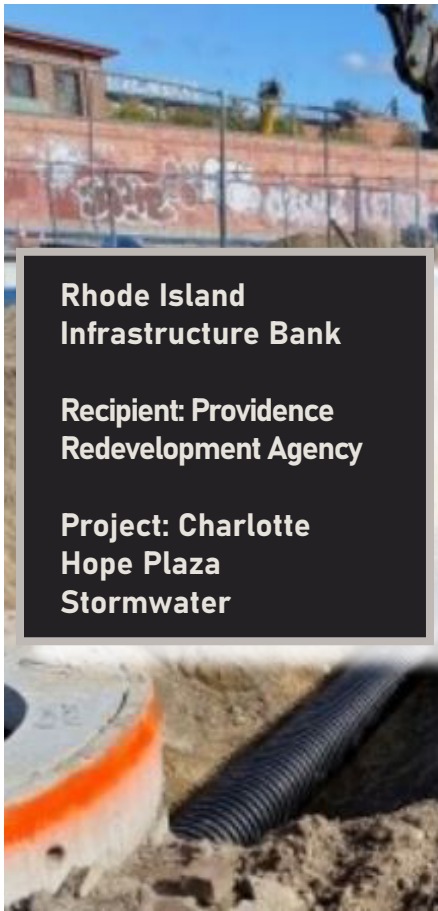
Project: Butler Regional WWTP



To improve the local water quality of Nittany Creek and assist Pennsylvania in meeting its Chesapeake Bay Watershed Implementation Plan, Murmac Farms LLC invested in significant upgrades to the manure management system at its dairy farm where it manages about 18.8 million gallons of manure annually. The farm, which is a concentrated animal feeding operation, operates a two-stage lagoon system with a flush system that recycles water from the second stage lagoon to clean the barns and recover sand for bedding. Through the farm's recycling and reuse, the manure storage capacity was increased to six months. This eliminates the need to spread manure in the winter, reduces the risks of spills, and significantly reduces phosphorus loading on farm fields.

Financing for this unique SRF project comes from PENNVEST, the state's SRF loan program, with an \$800,000 loan for 20 years and an interest rate of rate of 1.7 percent for years 1-5 and 2.2 percent for years 6-20. Beyond the benefits of conserving material resources, this investment is projected to remove 43,161 pounds of total phosphorus from farm fields. As of June 2021, the project is 68 percent complete.

Pennsylvania Infrastructure Investment Authority
Recipient: Murmac Farms LLC
Project: Agricultural BMPs



**Rhode Island
Infrastructure Bank**

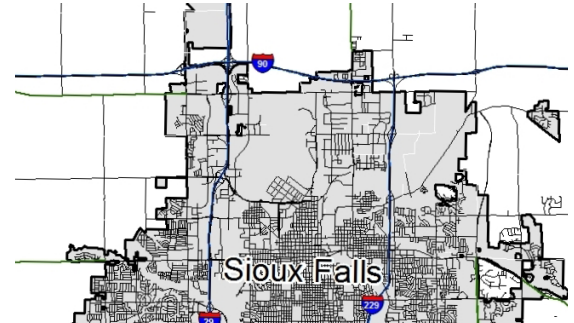
**Recipient: Providence
Redevelopment Agency**

**Project: Charlotte
Hope Plaza
Stormwater**

The Providence Redevelopment Agency (PDA) partnered with EPA's Office of Brownfields and Land Revitalization (OBLR) and the Rhode Island Department of Environmental Management (RIDEM) to implement a project to redevelop a brownfield within one of the most economically distressed areas in Providence, Rhode Island. The production of a holistic design plan for this site provided for the conversion of a blighted property into a subsurface infiltration and stormwater management system and prioritized improving public health and environmental conditions at the Charlotte Hope Plaza. The project removed contaminated soil, eliminated harmful discharges into the Woonasquatucket River, and incorporated site reuse strategies developed from community engagement with residents and local non-profits like the Woonasquatucket River Watershed Council. This led to the cross-utilization of the capped land to create a new community parking facility with 150 free parking spaces to serve adjacent businesses, employees, patrons, and residents while also encouraging further creation of 15,000 square feet of publicly accessible green space for the community. This project illustrates how a collaborative approach to problem solving can yield multiple benefits for a community. PRA received a 20-year, \$2.7 million loan through RIDEM, which included approximately \$1.07 million in principal forgiveness, that allowed for an affordable cleanup and also preserved PRA's borrowing capacity to complete other projects in its pipeline. Through these partnerships with federal, state, and non-profits, PRA delivered a cost-effective, community enhancing Plaza for residents.

The City of Tea is a growing community adjacent to Sioux Falls, the largest city in South Dakota. Given the growth seen over the last decade and anticipated future growth, Tea's existing facultative lagoon system would no longer have adequate treatment capacity or be able to meet permit requirements. Building additional treatment capacity would be an expensive undertaking due to upfront capital costs along with long-term operation and maintenance costs. Instead, the City of Tea and Sioux Falls collaborated on a regionalization agreement wherein Tea wastewater users buy into the excess capacity within Sioux Falls' wastewater collection and treatment system through the payment of a system development charge (SDC). This arrangement will help offset future capital costs for Sioux Falls, reduce long-term costs for Tea residents, and reduce the number of permitted discharge facilities.

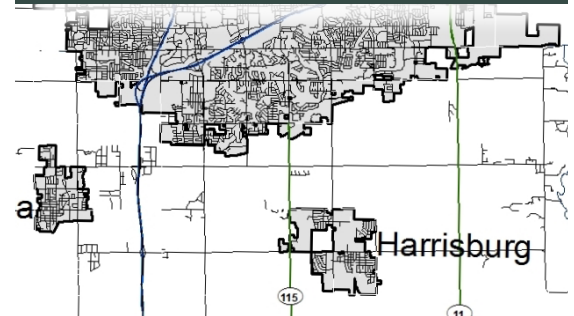
The creation of the SDC payment framework allowed the City of Tea to seek \$12,825,000 in funding from the CWSRF program. Part of the CWSRF funds were used to pay for existing Tea users' SDC payment. CWSRF funds will also be used for planning, design, and construction of a lift station and force main to convey the wastewater from Tea to the Sioux Falls collection system.



**South Dakota Department of
Agriculture & Natural Resources**

Recipient: City of Tea

**Project: Tea Sanitary Sewer
Regionalization**



The Town of Humboldt is a disadvantaged community in West Tennessee with a population of approximately 9,300. The Town's 2.6 MGD wastewater treatment plant needed major renovations due to the plant's age, discharge to an impaired receiving stream, and new discharge limits for nutrients. As the Town was designing renovations to the aging plant, Tyson Foods announced the construction of a new facility in Humboldt with a discharge of up to 2 MGD of waste. To accommodate the increased flow, Humboldt constructed a new 5 MGD Sequencing Batch Reactor (SBR) wastewater treatment plant to handle the increased waste from the industry.

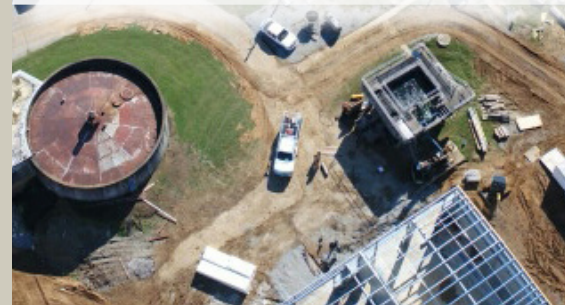
These improvements were made possible with a \$15,700,000 CWSRF assistance agreement that includes \$300,000 in loan forgiveness. The new plant with additional capacity allowed for a well-needed economic boost for Humboldt and the surrounding area, creating 1,600 new jobs with Tyson Foods and producing a cleaner effluent for the impaired receiving stream.



**Tennessee Department of
Environment & Conservation**

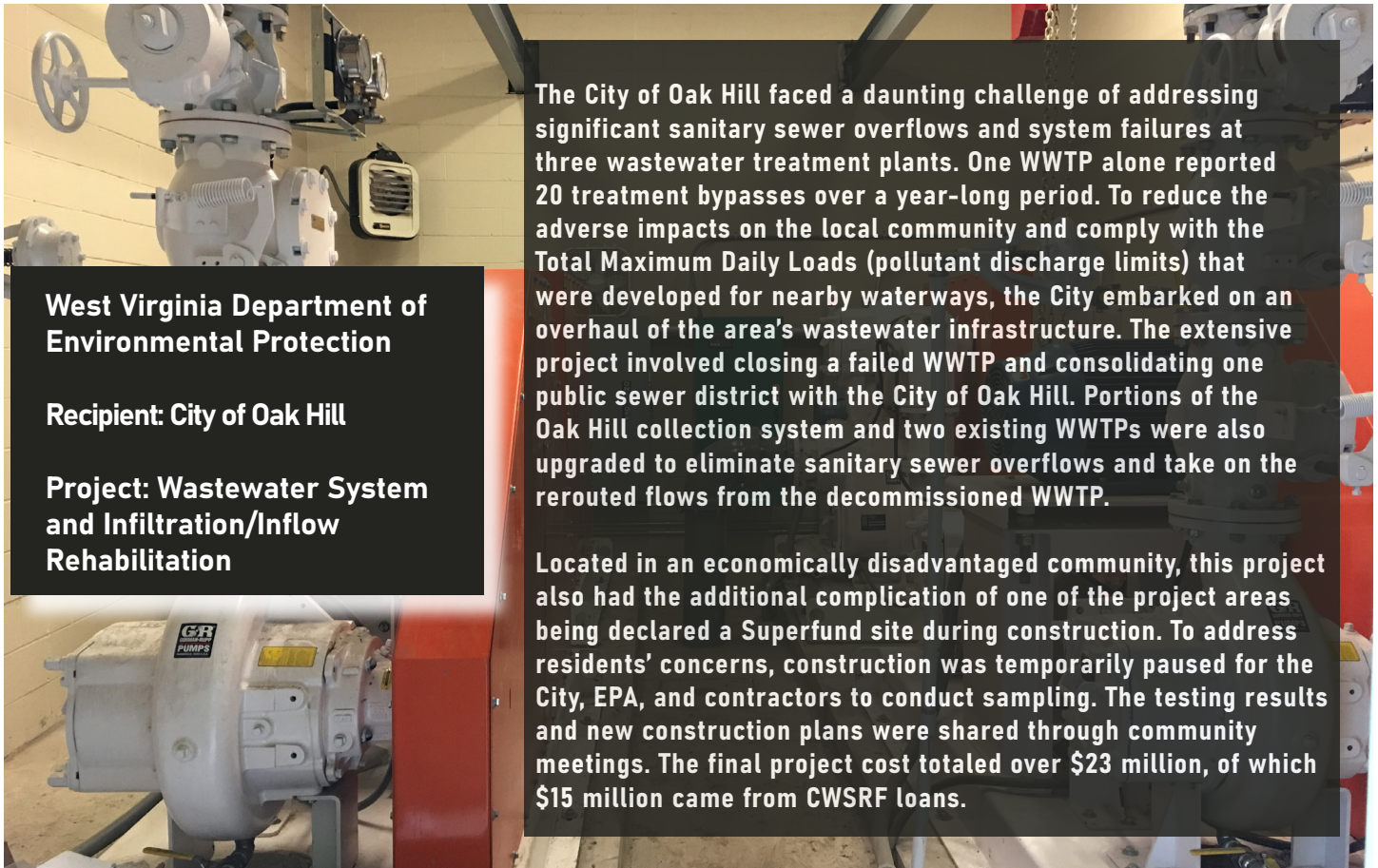
Recipient: Humboldt Utilities

Project: WWTP Improvements



Several municipal utility districts in the Missouri City area in Texas are currently using temporary package treatment plants for their wastewater service. These temporary plants will soon exceed their design lives, and the districts will need new facilities to continue service. The municipal utility district for Sugarland received \$25 million from the CWSRF to put towards a \$41 million project to update these systems. The funding was used for the design and construction of a Regional Wastewater Treatment Plant that will receive and treat wastewater from existing users and will expand capacity for future users from the south portion of the growing Sienna Plantation neighborhood. This project will reclaim water from the treatment process and reuse it for irrigation and detention pond recharge. The new regional plant will utilize membrane bioreactor technology to treat the effluent to Type I reuse standards. Additionally, the project includes the construction of a storage and pressurization system for the reclaimed water. This project will increase treatment capacity and reliability for customers in this expanding area.

**Texas Water Development Board
Recipient: Sienna Plantation
Project: Regional Wastewater Improvements**



West Virginia Department of Environmental Protection

Recipient: City of Oak Hill

Project: Wastewater System and Infiltration/Inflow Rehabilitation

The City of Oak Hill faced a daunting challenge of addressing significant sanitary sewer overflows and system failures at three wastewater treatment plants. One WWTP alone reported 20 treatment bypasses over a year-long period. To reduce the adverse impacts on the local community and comply with the Total Maximum Daily Loads (pollutant discharge limits) that were developed for nearby waterways, the City embarked on an overhaul of the area's wastewater infrastructure. The extensive project involved closing a failed WWTP and consolidating one public sewer district with the City of Oak Hill. Portions of the Oak Hill collection system and two existing WWTPs were also upgraded to eliminate sanitary sewer overflows and take on the rerouted flows from the decommissioned WWTP.

Located in an economically disadvantaged community, this project also had the additional complication of one of the project areas being declared a Superfund site during construction. To address residents' concerns, construction was temporarily paused for the City, EPA, and contractors to conduct sampling. The testing results and new construction plans were shared through community meetings. The final project cost totaled over \$23 million, of which \$15 million came from CWSRF loans.

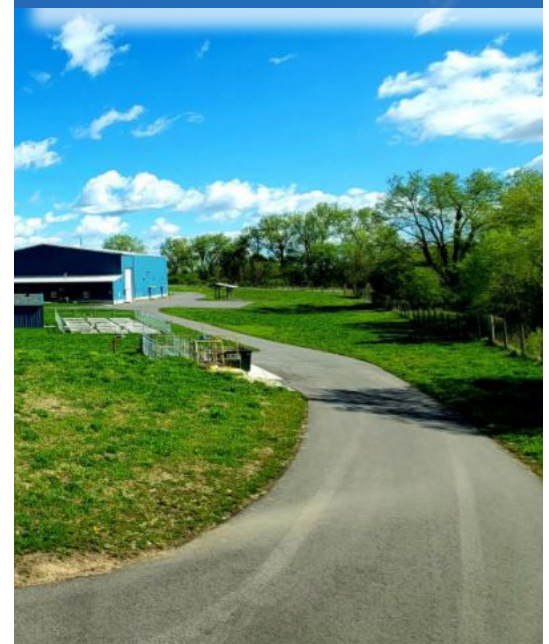
The Bluffview Wastewater Treatment Facility, located in south central Wisconsin, was built to treat wastewater from the Badger Army Ammunition Plant. This military industrial installation was constructed in 1942 to support efforts in World War II and later the Korean War and Vietnam War. Original housing built for the Army has been converted to multi-unit housing for the community and now has a population of approximately 700 people. The Bluffview Sanitary District provides wastewater service for this community, which has a low median household income. In 2016, the Army transferred ownership of the treatment facility to the Bluffview Sanitary District. At the time of property transfer, the facility was not able to meet the discharge permit limitations for total nitrogen.

In order to meet the total nitrogen limit, the District implemented a \$4.3 million facility upgrade. The District qualified for hardship assistance and received \$2.3 million in CWSRF loan forgiveness and received a Community Development Block Grant for \$500,000 to make the project affordable for its users. Facility upgrades included the construction of a moving bed biofilm reactor, a groundwater disposal system, a pressure distribution drainfield system, an effluent pump station, a potable well, and additional improvements. The treated effluent is now discharged to a newly installed groundwater distribution system with groundwater monitoring wells. These upgrades will produce a cleaner effluent and enable the plant to meet the groundwater total nitrogen limit.

Wisconsin Department of Natural Resources

Recipient: Bluffview Sanitary District

Project: WWTP Upgrade





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

**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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