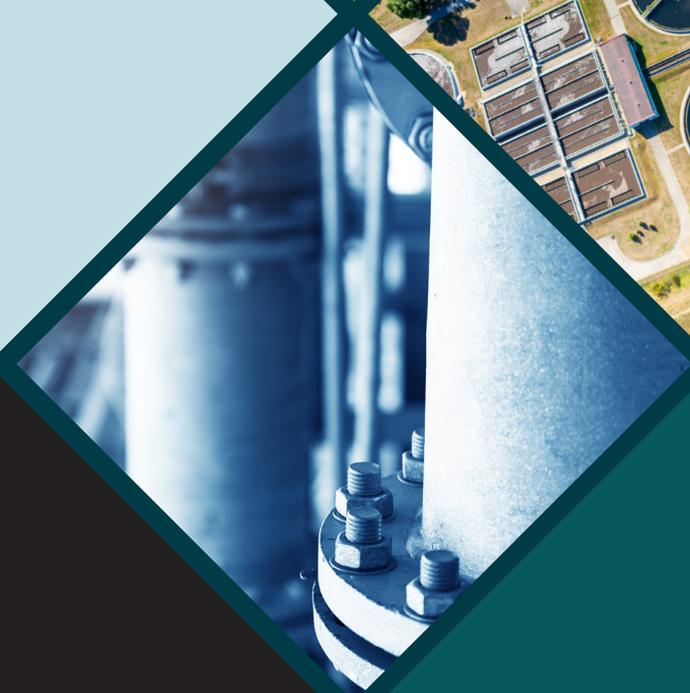


**CLEAN
WATER
STATE
REVOLVING
FUND
PROGRAMS**

**2018
ANNUAL
REPORT**



*Funding
Water Quality
Solutions:
Expanding the
CWSRF*



Dear Colleagues,

I am pleased to present the 2018 Clean Water State Revolving Fund Annual Report. Each year the Report celebrates major developments and activities in the program, and this year is no exception. This state/federal partnership continues to support communities in meeting the challenge of paying for clean water infrastructure projects. The 51 CWSRF programs have now passed \$133 billion in assistance provided with nearly 40,000 assistance agreements. 2018 was another banner year for CWSRF programs. You only need to review our latest round of individually recognized SRF projects (page 14) to get a good idea of the breadth of projects receiving CWSRF assistance.

This year's Annual Report covers a wide range of informative topics including an overview of our marketing and outreach program, highlights of our outstanding PISCES recipients, a progress report on our database modernization initiative, an overview of the WIFIA program's accomplishments, and a summary of our American Iron and Steel activities. And you will find, of course, our regular features showing the annual performance highlights and financial statements.

I particularly want to express my deep appreciation to all the state, regional, and headquarters staff and management that have made the CWSRF a successful leader in helping communities pay for their needed water infrastructure.

Congratulations on another successful year.

Sincerely,



Andrew Sawyers, Ph.D., Director
Office of Wastewater Management
Office of Water
United States Environmental Protection Agency





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Funding Water Quality Solutions: Expanding the CWSRF

The Clean Water State Revolving Fund (CWSRF) is a critical tool that addresses a broad range of the nation's water infrastructure needs. The Environmental Protection Agency (EPA) CWSRF's marketing initiative continues to expand and explore new areas for growth in the program. The EPA CWSRF branch and their partners have developed a variety of products and assistance to support state CWSRF programs in their marketing initiatives. From providing states with products like a CWSRF marketing template that states can tailor to promote state-specific marketing programs or facilitating relationships between the state programs and stakeholders, the CWSRF marketing initiative takes a flexible approach to addressing water quality concerns and explores the potential of the CWSRF to address these concerns both from a national and state perspective.

Recognizing that each state CWSRF program is unique and may have different objectives, EPA CWSRF has sponsored a limited number of surveys and focus groups in collaboration with individual state CWSRF programs across the country. Through these surveys and focus groups the CWSRF has gathered actionable information from former and potential CWSRF borrowers on the real and perceived barriers to using CWSRF financing. Whether a state is looking to increase demand or foster a better understanding of its borrower base, surveys and focus groups have resulted in many broadly applicable lessons learned and insight into effective marketing of the CWSRF programs. These surveys and focus groups will continue through 2019, exploring issues like small utility consolidation and the relationship between CWSRF demand and interest rates.

Non-Traditional Eligibilities

While the CWSRF has historically funded publicly owned treatment works, the enactment of the Water Resources and Reform Development Act in 2014 significantly expanded CWSRF eligibilities and has shifted the focus to nonpoint source pollution which is a significant contributor to impairments in water quality. Despite obstacles, many states have adapted their programs to promote the funding of nonpoint source projects.

Vermont CWSRF NPS Sponsorship Working Group Report

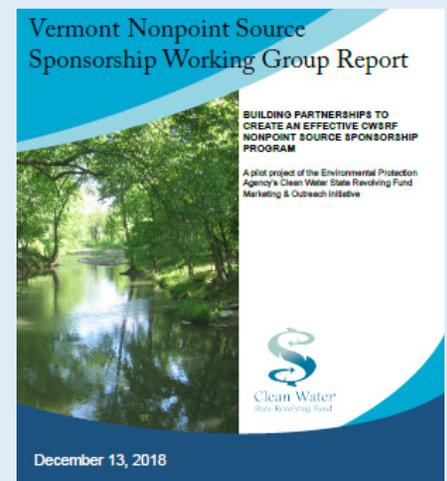
Recently, the EPA CWSRF partnered with the EPA 319 Program to contribute to efforts by the Vermont CWSRF program to make its lending program an appealing, affordable, and accessible source of funding for nonpoint source projects. Efforts centered around the implementation of a Nonpoint Source Sponsorship Program. To aid in this, Vermont CWSRF participated in a pilot project to build closer ties between the program and the state nonprofit community. Vermont's goal for the pilot was to develop an effective sponsorship program via partnerships between CWSRF borrowers and nonprofits. EPA's goal in funding the pilot was to assist state efforts to develop relationships with nonprofit groups who can serve as potential implementers for nonpoint source projects.

Vermont's efforts are relevant to many CWSRF programs around the country that are striving to devote more resources to nonpoint source projects but are having difficulty attracting potential project sponsors or borrowers to the CWSRF program. While the pilot focused on Vermont-specific barriers and limitations, it provided key takeaways and lessons learned for states looking to increase funding for nonpoint source projects. These findings were included in the "Vermont Nonpoint Source Sponsorship Working Group Report." We look forward to working with other state CWSRF programs on pilots to specifically address concerns or challenges in funding nonpoint source projects in their states.

EPA 319 Nonpoint Source Program

While many state CWSRF programs, like Vermont, are focusing on building closer ties at the community level, EPA CWSRF has been focusing on building partnerships with other EPA and non-EPA complementary federal programs to explore how collaboration can create economies of scale and leverage efforts to increase funding for water quality improvement projects.

Through our partnership with the EPA [Section 319 programs](#) EPA CWSRF is working with states to develop nonpoint source pilot projects to assist in increasing funding for these projects. In addition, the programs are collaborating to release a Best Practices Guide for Funding Nonpoint Source Projects in Summer 2019.



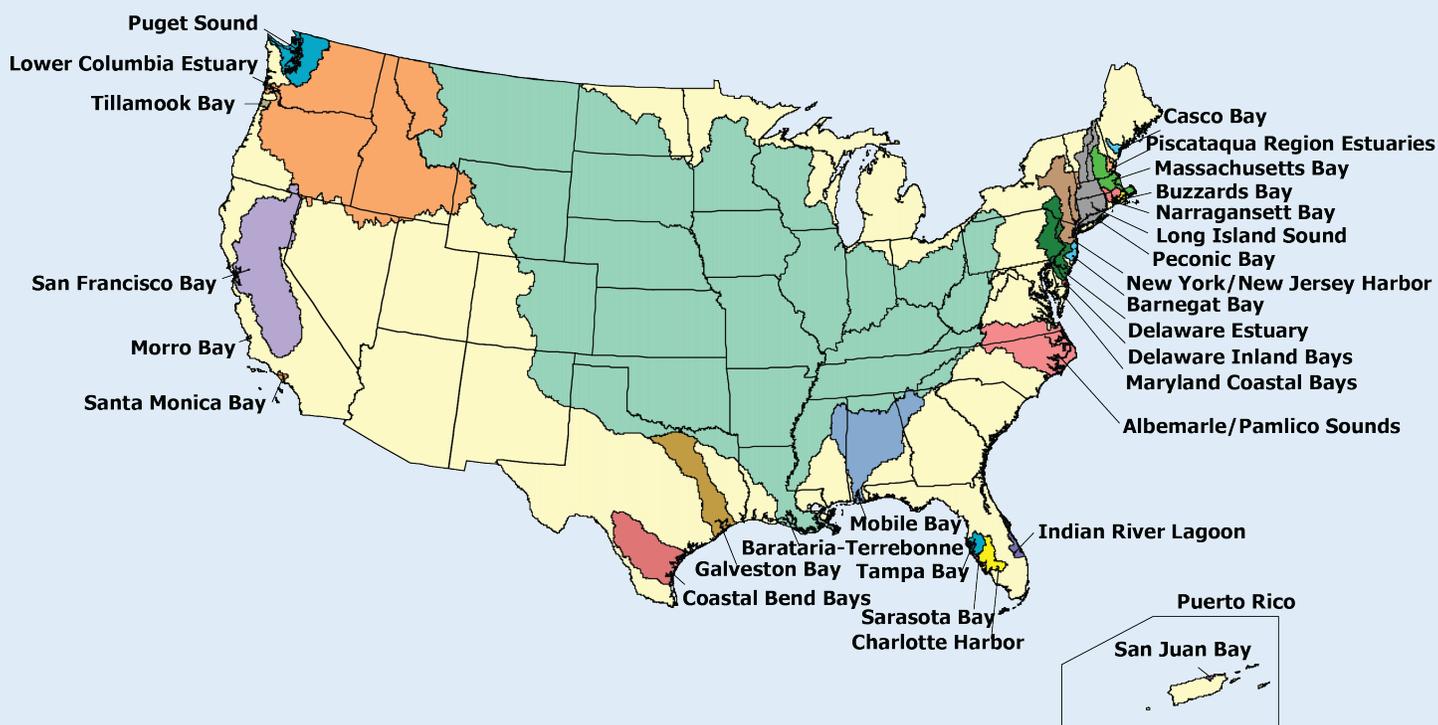
EPA 320 National Estuary Program

The EPA National Estuary Program (NEP) is a program to protect and restore the water quality and ecological integrity of estuaries of 28 estuaries of national significance located across the country. Each NEP develops and implements a Comprehensive Conservation and Management Plan (CCMP), a long-term plan to address water quality challenges and priorities.

Most water quality improvement projects implemented in estuaries, or by National Estuary Programs and their partners, are eligible for CWSRF financing. Specifically, CWSRF projects that are located within an NEP watershed and develop, amend, or implement a Section 320 CCMP are eligible for funding under the Clean Water Act Section 603(c)3.

EPA CWSRF is working with EPA NEP to educate the 28 NEP programs of the opportunity for low-cost financing through the CWSRF to fill in funding gaps. This includes speaking at NEP meetings as well as releasing the new document, "Funding Clean Water State Revolving Fund Projects Under Clean Water Act Section 320 Authority (National Estuary Program)" that highlights case studies of CWSRF projects implemented in National Estuary Program watersheds using a variety of eligibilities and financing mechanisms.

Map of the Watersheds Eligible for CWSRF Funding Under Clean Water Act Section 320



Watershed Financing Partnerships

CWSRF funding can be used to implement nonpoint source projects through Watershed Financing Partnerships. In a typical CWSRF funding model, CWSRF assistance is delivered on a project by project basis directly to an assistance recipient, and the assistance may not be linked to a particular watershed. In a watershed financing partnership funding approach, the CWSRF works with a watershed partner to finance and implement a group(s) of eligible projects within a watershed. The partner(s) may act as a broker, an intermediary funding projects, or a recipient of CWSRF assistance. The broad range of eligibilities, assistance recipients, and the various types of financial assistance available to CWSRF programs make them uniquely positioned to support many kinds of watershed financing partnerships.

EPA headquarters has developed a program bulletin on the concept of Watershed Financing Partnerships. To access this bulletin, please email CWSRF@epa.gov.

Asset Management and the Clean Water State Revolving Fund

EPA CWSRF has been working on different types of marketing and outreach projects to help define asset management plans and highlight the benefits of implementing these plans to both states and CWSRF borrowers, some of which are major water and wastewater utilities. An Asset Management Plan (AMP) is an eligible CWSRF expense and is defined as a set of practices used to ensure that utility assets provide a level of service that meets the needs of utility customers at both the lowest life-cycle cost and an acceptable level of risk. Asset management methods track inventory, the condition of that inventory, service levels, useful life, and repair costs, and use that information to produce insights regarding where, how much, and when to invest in system maintenance, rehabilitation, and replacement. This puts utilities in control of changing resource demands and emerging regulations, improving both their competitive position and service reliability.

Currently, there is an Asset Management Plan Activity Update under development by the CWSRF Marketing and Outreach Team which is meant to inform the public about innovative ideas and changes that are taking place in the CWSRF program. Once completed, this document will be available for viewing and distribution on our website and will describe what the components and requirements of an asset management plan are, as well as the incentives to borrowers who implement an asset management plan into their projects. These incentives include increased funding, interest-rate reductions on loans, priority and bonus points, and principal forgiveness. The minimum requirement for eligibility for these incentives varies from state to state. CWSRF programs that provide incentives and educate their borrowers on their specific requirements for the development of an asset management plan offer borrowers the opportunity to finance more affordable loans and also help them establish effective accountability, communication, and momentum in establishing an Asset Management plan.

The CWSRF is also in the process of planning a webinar giving an overview of the CWSRF program and highlighting project success stories that illustrate key ways that states have promoted the funding of Asset Management Plans to their borrowers.





American Iron and Steel 2018

The American Iron and Steel (AIS) provision requires CWSRF and Drinking Water State Revolving Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States. Since the enactment of the AIS provision in 2014, the Agency's AIS team has provided training and outreach to SRF assistance recipients, states, and others interested groups and individuals to ensure smooth implementation of the law. To this end, the AIS team has performed over 300 outreach site visits to SRF recipients in every state since the AIS requirements were enacted, providing SRF recipients a thorough understanding of how to comply with the law. In 2018, the team conducted five in-person trainings in four states. The team continued to educate manufacturers of water infrastructure products through talks at conferences and webinars. Two refresher webinars are scheduled for early 2019, one for manufacturers and their representatives, and one focusing on issues affecting states and recipients.

In 2018, we achieved a significant milestone by clearing the accumulation of pending waiver decisions. The waiver review process has been affirmed and we expect future requests to be processed in a timely manner. The AIS team continues to assist the United States Department of Agriculture Rural Utilities Service with the implementation of AIS requirements for their new water infrastructure grants. State SRF programs, SRF assistance recipients and manufacturers are strongly encouraged to contact SRF_AIS@epa.gov with any questions, comments or training requests.



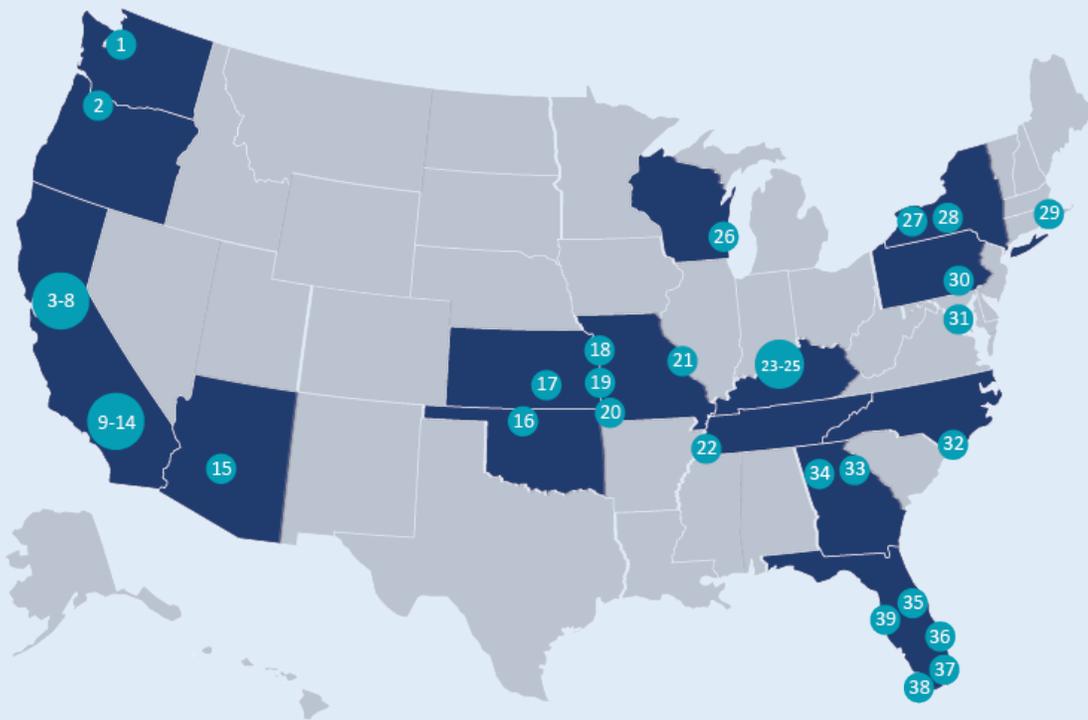
WIFIA Program 2018

In 2018, the Water Infrastructure Finance and Innovation Act (WIFIA) program closed seven loans totaling nearly \$2 billion in loans to help finance over \$4 billion for water infrastructure projects. Several of these projects are financed in part by SRF dollars. In April 2018, the WIFIA program closed its first-ever loan to King County, Washington to help finance its Georgetown Wet Weather Treatment Station. The project is estimated to cost \$275 million and EPA's WIFIA loan will help finance nearly half that—up to \$134.5 million. The other six loans closed by the WIFIA program in 2018 are:

- City of Omaha's Saddle Creek Combined Sewer Overflow Retention Treatment Basin (\$69.7 million)
- San Francisco Public Utilities Commission's Southeast Water Pollution Control Plant Biosolids Digester Facilities Project (\$699 million)
- Orange County Water District's Groundwater Replenishment System Final Expansion (\$135 million)
- Metropolitan St. Louis Sewer District's Deer Creek Sanitary Tunnel (\$47.7 million)
- City of San Diego's Pure Water Project (\$614 million)
- Baltimore City Department of Public Works' Comprehensive Wastewater Repair, Rehabilitation, and Replacement Program (\$202 million)

In total, the WIFIA loans will save borrowers approximately \$705 million and create over 6,000 jobs. More information is available at <https://www.epa.gov/wifia/wifia-financing-requests#selectedprojects>.

In November 2018, the WIFIA program invited 39 projects in 16 states and Washington, D.C. to apply for WIFIA loans. Together, the selected borrowers will receive WIFIA loans totaling up to \$5 billion to help finance over \$10 billion in water infrastructure investments and create up to 155,000 jobs. These loans will allow large and small communities across the country to implement projects to address two national water priorities – providing for clean and safe drinking water including reducing exposure to lead and other contaminants and addressing aging water infrastructure. More information is available at <https://www.epa.gov/wifia/wifia-selected-projects>



**FY 2018
WIFIA
Projects**

\$5B
WIFIA Loans

\$10B
Project Costs

- 1. City of Seattle**
Ship Canal Water Quality Project
- 2. City of Hillsboro & Tualatin Valley WD**
Willamette Water Supply Program
- 3. San Juan Water District**
Reservoir Rehab and Replacement
- 4. City of Antioch**
Brackish Water Desalination
- 5. City of Stockton**
Wastewater Control Facility Modifications
- 6. San Mateo-Foster City**
WWTP Upgrade and Expansion
- 7. Silicon Valley Clean Water**
SVCW RESCU
- 8. City of Sunnyvale**
Cleanwater Program Phase 2
- 9. City of Los Angeles**
Advanced Water Purification Facility
- 10. Sanitation Dist. No. 2 of Los Angeles County**
Water Pollution Control Plant
- 11. Inland Empire Utilities Agency**
Rp-5 Expansion Project
- 12. Coachella Valley Water District**
Stormwater Channel Improvement
- 13. Coachella Valley Water District**
North Indio Flood Control

- 14. Poseidon Resources**
Carlsbad Intake Project
- 15. City of Phoenix**
Water Main Replacement Program
- 16. Enid Municipal Authority**
KLWS Pipeline
- 17. City of Wichita**
Northwest WWTF
- 18. Kansas City Water Services Dept**
Blue River WWTP Biosolids Facility
- 19. City of Frontenac**
Capital Improvements
- 20. American Water Capital Corp**
Joplin Water Supply Reservoir
- 21. American Water Capital Corp**
St. Louis Water Main Replacement
- 22. City of Memphis**
WWF Process and Biosolids Upgrades
- 23. Louisville & Jefferson County MSD**
Upper Middle Fork Pump Station
- 24. Louisville & Jefferson County MSD**
Ohio River Flood Protection Pump Station
- 25. Louisville & Jefferson County MSD**
Biosolids Processing Solution
- 26. City of Waukesha Water Utility**
Great Lake Water Supply Project

- 27. Monroe County**
Secondary Treatment Upgrades
- 28. City of Cortland**
Clinton Avenue Gateway
- 29. Narragansett Bay Commission**
CSO Phase III Facilities
- 30. City of Lancaster**
Sewer System Improvements
- 31. DC Water & Sewer Authority**
Capital Improvements
- 32. Brunswick County**
Northwest WTP Improvements
- 33. DeKalb County**
PASARP Consent Decree
- 34. City of Atlanta**
North Fork Tank and Pump Station
- 35. Pinellas County**
Water Reclamation Facility Improvements
- 36. Tohopekaliga Water Authority**
Gravity Sewer Assessment
- 37. North Miami Beach Water**
Potable Water Improvements
- 38. Miami-Dade County**
WWTP Building Upgrade
- 39. Florida Keys Aquaduct Authority**
Imperiled Water Supply Rehab



SRF Database Modernization

To help streamline CWSRF and DWSRF data collection, OWM partnered with EPA's Office of Ground Water and Drinking Water (OGWDW) to modernize and consolidate the multiple databases currently used to collect SRF performance information into a single system. Through this effort, we will collect the required information needed to meet our oversight responsibilities while minimizing the reporting burden placed on our state partners.

Over the past year, OWM and OGWDW worked actively with our state and regional partners to solicit feedback on what data should be collected by the new system. This was accomplished by conducting an extensive review of the data being collected by the current systems and determining which data fields should continue, which data field should be revised, and which data fields should be archived. Additionally, we solicited feedback regarding what functions, features, and reports should be included as part the modernization effort. One of the most popular recommendations was the ability for states to upload data directly from their databases into the new system. Other recommendations included the ability to create tailored reports and to export data in a variety of accessible formats, including Microsoft Excel. The new system is estimated to go live by late 2020.





2018 Financial Overview

The Clean Water Act (CWA) requires an annual financial audit of the 51 state-level CWSRF programs. Each state and Puerto Rico conducts these audits according to the generally accepted accounting standards (GAAP) established by the Governmental Accounting Standards Board (GASB). States often define their CWSRF programs as ongoing enterprise funds under the GASB definitions of funds.

2018 Financial Highlights

- The CWSRF programs provided over \$6.8 billion in funding for high priority water infrastructure and other water quality projects. Cumulatively, CWSRF programs have provided \$133 billion in assistance, mainly in the form of low cost financing, to a wide range of eligible borrowers.
- Since 2009, approximately \$4.2 billion has been provided as additional subsidy in the form of direct grants and principal forgiveness. Approximately \$250 million was provided in 2018 alone.
- Total assets are approximately \$72 billion. This represented a \$1.5 billion increase from the previous year.
- Net assets have exceeded \$51 billion. This is a \$1.4 billion increase from the previous year.
- In 2018, federal contributions were over \$1.2 billion.
- In 2018, operating revenues exceeded operating expenses by over \$80 million.
- In 2018, earnings from loans and investments exceeded \$1.3 billion.
- The CWSRF programs issued nearly \$2 billion in leveraged bonds to provide additional funding for projects.

National aggregate financial statements were developed using data entered in EPA's National Information Management System between July 1, 2017 and June 30, 2018. Because the 51 CWSRF programs are independent state-level entities, no nationally audited CWSRF program financial reports are available. The financial statements are non-audited, cash-based financial reports. The four statements are described below.

Statement of Fund Activity (Page 10)

Provides an overview of major indicators of fund activity, including capitalization grant levels, project commitments, project disbursements, and subsidies provided. Both annual and cumulative data are given.

Statement of Revenues, Expenses, and Earnings (Page 11)

Describes the overall performance of the CWSRF fund over the reporting period that is reflected in the increase or decrease in net assets.

Statement of Cash Flows (Page 12)

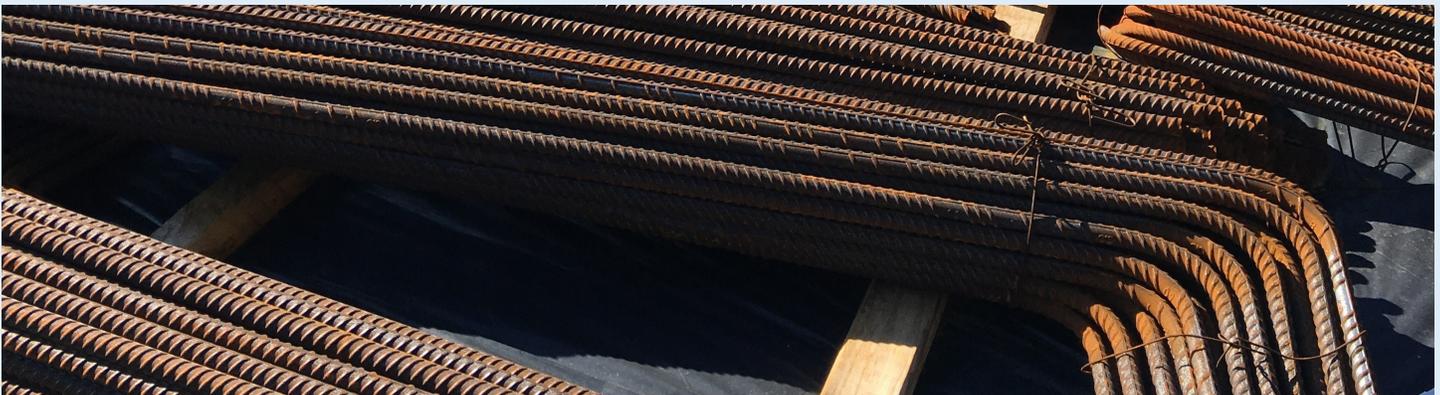
Provides a detailed accounting of the actual flow of cash into and out of the CWSRF fund.

Statement of Net Assets (Page 13)

Describes CWSRF assets and liabilities through the end of the fiscal year. Assets include financial assets and capital assets. Liabilities include both current and long-term liabilities. CWSRF assets include grant funds that have been drawn from the federal treasury to date, but do not include total grant awards. CWSRF assets also include state matching contributions that have been deposited in the fund.

Statement of Fund Activity (Millions of Dollars)

Annual Fund Activity	FY 2017	FY 2018
Federal Capitalization Grants	996.5	1,364.5
State Matching Funds	220.1	560.6
New Funds Available for Assistance	6,625.9	6,567.9
Executed Assistance Agreements	7,451.9	6,788.7
Project Disbursements	6,368.5	6,255.4
Cash Draws from Federal Capitalization Grants	1,259.7	1,225.7
Total Annual Subsidy	300.1	250.8
Grants	101.5	19.9
Negative Interest	0.0	0.0
Principal Forgiveness	198.6	231.0
Cumulative Fund Activity		
Federal Capitalization Grants	41,978.7	43,343.2
State Matching Funds	7,873.7	8,434.2
Funds Available for Assistance	128,120.2	134,688.1
Executed Assistance Agreements	126,190.0	132,978.7
Project Disbursements	110,188.1	116,443.6
Cash Draws from Federal Capitalization Grants	40,508.9	41,734.6
Total Cumulative Subsidy	4,596.2	4,847.0
Grants	634.9	654.7
Negative Interest	0.0	0.0
Principal Forgiveness	3,961.3	4,192.2



Statement of Revenues, Expenses, and Earnings (Millions of Dollars)

Operating Revenues	FY 2017	FY 2018
Interest on Investments	254.8	325.1
Interest on Loans	979.8	989.9
<i>Total Operating Revenues</i>	1,234.6	1,315.0
Operating Expenses		
Bond Interest Expense	866.8	907.5
Amortized Bond Issuance Expense	18.7	27.0
Administrative Expenses	61.4	49.0
Additional Subsidy Provided	300.1	250.8
<i>Total Expenses</i>	1,247.0	1,234.3
Nonoperating Revenues and Expenses		
Federal Contribution (Cash Draws)	1,259.7	1,225.7
State Contributions	151.4	152.6
Transfers from (to) DWSRF	(1.9)	(61.4)
<i>Total Nonoperating Revenues (Expenses)</i>	1,409.1	1,317.0
Increase (Decrease) in Net Assets	1,396.7	1,397.7
Net Assets		
Beginning of Year	48,268.9	49,665.6
End of Year	49,665.6	51,063.3



Statement of Cash Flows (Millions of Dollars)

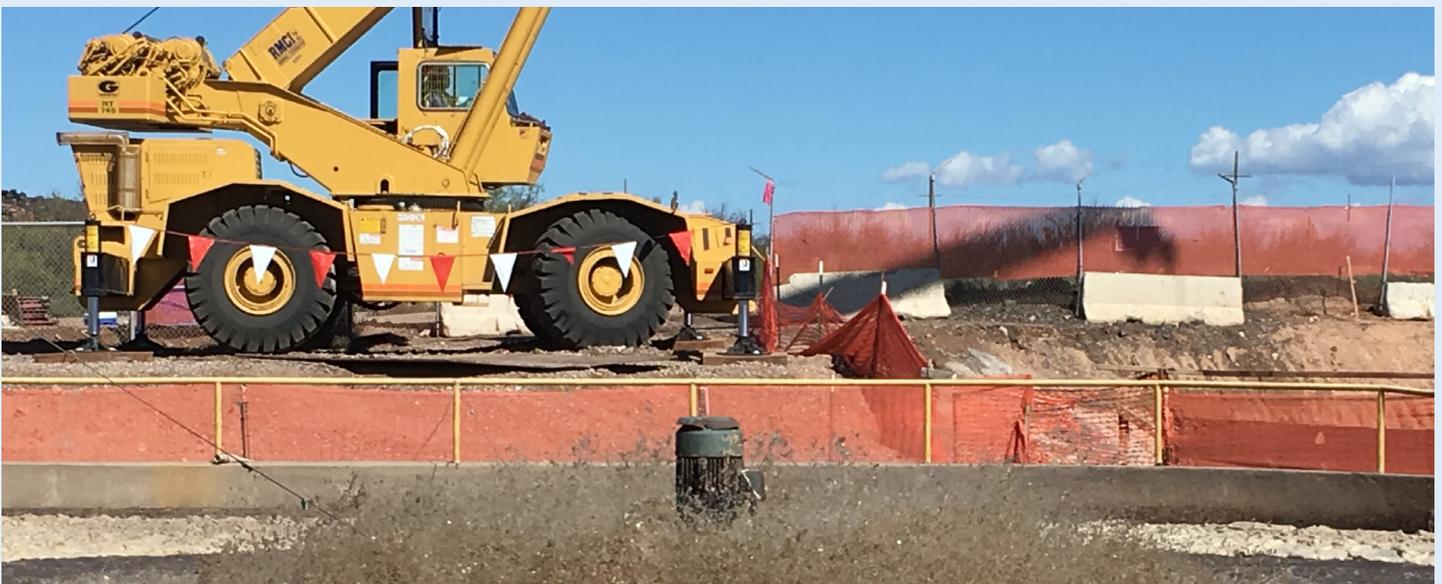
Operating Activities	FY 2017	FY 2018
Cash Draws from Federal Capitalization Grants	1,259.7	1,225.7
Contributions from States	151.4	152.6
Loan Disbursements (Including Additional Subsidy)	(6,368.5)	(6,255.4)
Loan Principal Repayments	3,930.8	4,110.4
Interest Received on Loans	979.8	989.9
Administrative Expenses	(61.4)	(49.0)
<i>Total Cash Flows from Operating Activities</i>	(108.2)	174.2
Noncapital Financing Activities		
Gross Leveraged Bond Proceeds	2,215.4	1,962.8
Bond Issuance Expense	(18.7)	(13.3)
State Match Bond Proceeds	68.8	407.9
Cash Received from Transfers with DWSRF	(1.9)	(61.4)
Interest Paid on Leveraged and State Match Bonds	(866.8)	(907.5)
CWSRF Funds Used for Refunding	(23.0)	0.0
Principal Repayment of Leveraged Bonds	(1,470.7)	(2,102.4)
Principal Repayment of State Match Bonds	(65.8)	(133.4)
<i>Net Cash Provided by Noncapital Financing Activities</i>	(162.7)	(847.2)
Investing Activities		
Interest Received on Investments	254.8	325.1
Release (Deposit) of Leveraged Bond Debt Service Reserve	32.0	281.4
<i>Net Cash Provided by Investing Activities</i>	286.7	606.4
Net Increase (Decrease) in Cash and Cash Equivalents	15.9	(66.5)
Cash and Cash Equivalents		
Beginning of Year	13,624.1	13,640.0
End of Year	13,640.0	13,573.4



Statement of Net Assets (Millions of Dollars)

Assets	FY 2017	FY 2018
Cash and Cash Equivalents	13,640.0	13,573.4
Debt Service Reserve - Leveraged Bonds	3,642.3	3,360.9
Loans Outstanding	52,889.0	54,783.3
Unamortized Bond Issuance Expenses*	256.8	243.1
<i>Total Assets</i>	<i>70,428.0</i>	<i>71,960.7</i>
Liabilities		
Match Bonds Outstanding	607.5	882.0
Leveraged Bonds Outstanding	20,155.0	20,015.4
<i>Total Liabilities</i>	<i>20,762.4</i>	<i>20,897.4</i>
Net Assets		
Federal Contributions (Cash Draws)	40,508.9	41,734.6
State Contributions	5,648.6	5,801.3
Transfers - Other SRF Funds	(534.3)	(595.6)
Other Net Assets	4,042.3	4,123.1
<i>Total Net Assets</i>	<i>49,665.6</i>	<i>51,063.3</i>
Total Liabilities and Net Assets	70,428.0	71,960.7

* Unamortized Bond Issuance Expenses are costs that have been incurred but have not been fully recognized (amortized). These costs will be recognized (amortized) over time over the remaining life of the bonds outstanding, similar to a pre-paid expense, and consistent with GAAP.





Highlighted CWSRF PISCES Projects 2018

The Clean Water State Revolving Fund's Performance and Innovation in the SRF Creating Environmental Success (PISCES) program allows assistance recipients to gain national recognition for exceptional projects funded by the CWSRF. Participating state programs each nominated one project that demonstrates one or more of the evaluation criteria:



- Water Quality, Public Health, or Economic Benefits
- Sustainability
- Innovation

Projects eligible for recognition may be any size but must have an executed assistance agreement in place. Also, projects may be operational or in the planning phase. After all project nominations were reviewed, EPA selected five exceptional projects for further recognition. These five projects demonstrated excellence in matching the PISCES criteria and pushed the envelope for being innovative in using the CWSRF to achieve clean water for their communities. Several additional projects closely demonstrated this level of innovation and are recognized as an Honorable Mention. This Annual Report highlights both the Exceptional Projects and those projects chosen as Honorable Mentions.

Exceptional Projects

PROGRAM: DELAWARE CLEAN WATER STATE REVOLVING FUND
ASSISTANCE RECIPIENT: CITY OF WILMINGTON
PROJECT TITLE: RENEWABLE ENERGY AND BIOSOLIDS FACILITY

The City of Wilmington's wastewater treatment facility received a \$36 million CWSRF loan (largest in the program at the time) to construct a renewable energy and biosolids facility for its treatment plant. This new facility captures previously flared off methane gas from the plant's anaerobic digester and gas from a nearby landfill and uses it to power two reciprocating internal combustion engines that generate four megawatts of electricity. This offsets the treatment facility's electricity needs by 90 percent. These reductions in electricity and solid waste disposal costs are estimated to save the City \$16.7 million over 20 years.



This project also sponsored a \$3.4 million CWSRF loan for the permanent conservation of 22 acres of wetlands in the historic Southbridge region. This sponsored project was funded with the savings made from having the total loan interest rate reduced. The two loans have the same annual debt service of the original loan which means conserving the wetlands required no extra funds. This has led to an application from the City for an additional \$15.2 million CWSRF loan to remediate the wetlands for flood control and stormwater management for the nearby Southbridge community.



PROGRAM: KANSAS WATER POLLUTION CONTROL REVOLVING FUND

ASSISTANCE RECIPIENT: DODGE CITY

PROJECT TITLE: BIOGAS REUSE TO MOTOR FUEL

Dodge City adopted an innovative approach to processing their wastewater byproducts. In recent years, the Dodge City South Wastewater Treatment Plant received an EPA grant towards a project to reuse 100 percent of its 1.7 billion gallons a year of treated effluent as irrigation for over 3,000 acres of agricultural fields, conserving groundwater for the public water supply. This treatment process produced a significant amount of carbon dioxide and methane gas, which were then burned off in a flare.

This new project plans to clean and pressurize the biogas to high quality natural gas that can be used as fuel. This process will occur by removing water from the gas and using pressure swing adsorption molecular sieves to separate the gasses. A more purified methane biogas will then be pumped to a nearby gas line and entered into the commercial market as a renewal resource. The methane will be sold by the City as motor vehicle fuel across the Midwest. The project costs are expected to be less than \$10 million and the City expects to receive about \$2.5 million a year in revenue from methane sales. The annual amount of methane fuel produced is estimated to be the equivalent of 3.5 million gallons of gasoline per year.



PROGRAM: NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

ASSISTANCE RECIPIENT: SOUTH MONMOUTH REGIONAL SEWERAGE AUTHORITY

PROJECT TITLE: PUMP STATION RESILIENCY INITIATIVE

The South Monmouth Regional Sewerage Authority (SMRSA) operates a sewage treatment plant and a conveyance system servicing several coastal communities that have recently experienced extreme weather events. Using the NJ Water Bank’s Statewide Assistance Infrastructure Loan (SAIL) Program, SRF funds were used to provide short-term financing to SMRSA as an advance for Federal Emergency Management Agency (FEMA) assistance to build three resilient pump stations.

Two of these pump stations are fully operational mobile units that can be disconnected during a severe storm and hauled to a safe location. Once the storm subsides, the mobile stations are returned and reconnected. These mobile resilient pump stations (MRPS) contain main electrical components, computer equipment, and an emergency generator all located on a mobile trailer at the original pump station site. Older pump stations in coastal areas have received serious damage in recent years, costing millions of dollars to repair and left the community without sewer services. The MRPS limits the disruption in conveyance, minimizes sewer overflows, and saved SMRSA millions of dollars by preventing damage from future storms. The third pump station replaced an older station that was in a 100-year flood zone. This new pump station is a permanent fixture designed to look like the neighboring residential housing and was placed outside the floodplain. All three of these pump stations were made possible through the NJ Water Bank’s SAIL Program which helped SMRSA save an estimated \$1.9 million in short and long-term interest costs.



PROGRAM: OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

ASSISTANCE RECIPIENT: CITY OF PRINEVILLE

PROJECT TITLE: CROOKED RIVER WETLANDS COMPLEX



Several years ago, the City of Prineville needed to increase their wastewater treatment capacity to keep up with the City’s growth. A new treatment plant was estimated to cost \$62 million, so the City opted to look for a more cost-effective option. The City received a grant to fund a groundwater study and conduct a pilot using a constructed wetland for wastewater treatment. The results of the pilot were promising, so the 120-acre Crooked River Wetlands Complex was designed and constructed to reduce instream water temperature and augment stream flow to meet the effluent limits in the City’s National Pollutant Discharge Elimination System (NPDES) wastewater permit.

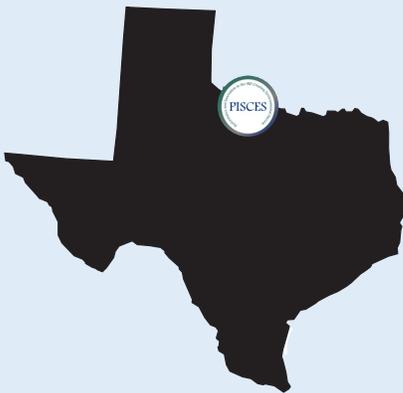


The project has over 2 miles of riparian improvements and over 5.4 miles of new trails for recreational use – of which 3.25 miles are paved for use year-round. The complex also serves as an outdoor classroom, and to date approximately 500 school children have visited the complex for educational opportunities. The wetland wastewater treatment system cost \$7.7 million to construct, saving the City \$54 million by eliminating the need to build a traditional treatment plant. Overall, this innovative project expanded the City’s wastewater capacity, lowered residential and business system development charges, stabilized monthly wastewater rates, created a new public hiking trail system with numerous educational opportunities, and improved riparian and instream conditions in the Crooked River.

PROGRAM: TEXAS WATER DEVELOPMENT BOARD

ASSISTANCE RECIPIENT: CITY OF WICHITA FALLS

PROJECT TITLE: PERMANENT REUSE PROJECT



The increasingly drought prone City of Wichita Falls has proposed a permanent reuse project that will deliver indirect potable reuse water from the River Road Wastewater Treatment Plant to the City’s raw water source, the Arrowhead Lake. This \$33.5 million CWSRF loan is a green project reserve loan with over \$252,000 of principal forgiveness. When complete, this project will allow the plant to meet stringent effluent limits that will allow up to 16 Million Gallons Per Day (MGD) of processed wastewater to be added to the lake.

Improvements will consist of a chemical coagulation, filtration, and reaeration system along with a new pump station and a 15-mile outfall pipeline that will run to the lake to make the City compliant with the newly established Texas Pollutant Discharge Elimination System (TPDES) discharge requirements. In recent years, Wichita Falls imposed strict water restrictions on the community, which have reduced the average MGD use by approximately 72 percent during the summer season. This reuse system will provide a long-term solution that will assist the City in meeting their source water needs.



All PISCES photos courtesy of related projects.

PISCES Honorable Mentions 2018

PROGRAM: CALIFORNIA SRF
RECIPIENT: SAN FRANCISCO PUC
PROJECT: LAKE MERCED GREEN INFRASTRUCTURE

The San Francisco Public Utilities Commission (SFPUC) used CWSRF financing to install green infrastructure best management practices within the disadvantaged neighborhood of Ingleside in San Francisco to reduce the volume of stormwater entering the combined sewer collection system and the San Francisco Bay. The project converted nine blocks of Holloway Avenue, a two-acre drainage area that was nearly 100% paved, into a greener, more pedestrian- and bike-friendly corridor. The project includes multifunctional green infrastructure technologies, such as vegetated bioretention planters, pervious pavement, underdrains, and a solar powered irrigation system, which together will manage an estimated 950,000 gallons of stormwater each year. The complete retrofit of this corridor into a green street encourages pedestrian and bicycle traffic along this important linkage between San Francisco State University and the City College/Balboa Bay Area Regional Transit station. In addition to its water quality benefits, the project beautified an urban residential street within a disadvantaged community by creating new green spaces and a more pleasant streetscape.

PROGRAM: COLORADO SRF
RECIPIENT: CITY OF DURANGO
PROJECT: WATER RECLAMATION FACILITY

In 2012, the State of Colorado set water quality standards in the State's waterways and numeric effluent limits for wastewater dischargers. The expanding City of Durango needed to upgrade its Santa Rita Water Reclamation Facility (SRWRF) to meet these new regulations for its 18,000 customers. The last time the plant was upgraded was 36 years ago, so the decision was made to upgrade the plant to a Johannesburg secondary treatment facility to enhance performance, operation, redundancy, and capacity deficiencies. Upgrades include a second anaerobic digester and micro turbine system that is expected to produce 80 kilowatts of power, doubling the plant's current power generation. A high-speed turbo secondary blower system will be installed, which will result in 30 percent in annual energy savings compared to the current blowers. A fats, oil, and grease receiving station will be built that will significantly increase the amount of renewable energy the anaerobic digesters produce. Primary clarifiers will now be active primary clarifiers, increasing the efficiency in primary sludge removal and enabling the anaerobic digesters to generate additional biogas. Finally, biosolids will be dewatered by a Fournier dewatering rotary press that will reduce the annual \$250,000 cost for hauling and disposing biosolids.

PROGRAM: FLORIDA SRF
RECIPIENT: CITY OF COCOA BEACH
PROJECT: STORMWATER/STREETScape IMPROVEMENTS

The City of Cocoa Beach constructed an urban stormwater project that will reduce nutrients from entering into the Banana River Lagoon, which is part of the Indian River Lagoon system, a designated Estuary of National Significance. This project treats stormwater from an 8.34-acre watershed by using Low-Impact Design (LID) best management practices which include native landscape bioswales/tree filters, underground exfiltration, and pervious pavement. Sorption media was also used to further reduce nitrogen and phosphorous from seeping into the groundwater. The total construction costs for this project were \$5.2 million of which the CWSRF financed \$1.8 million that was used to match a 319 Nonpoint Source grant. This large green infrastructure project reduced nutrient loading for the Indian River Lagoon and has also added an aesthetic value along City streets which is said to have attracted new businesses to the area.

PROGRAM: IDAHO DEQ
RECIPIENT: CITY OF NAMPA
PROJECT: TREATMENT PLANT UPGRADE

The City of Nampa, with its population of approximately 91,000, showed foresight and determination to address their wastewater quality needs by committing to \$165 million in financing from the Idaho's Department of Environmental Quality's State Revolving Fund. These funds will be used to upgrade the existing wastewater treatment facility to meet the future standard phosphorus limit of 0.1 milligrams per liter by 2026 and to also meet summer seasonal temperature limits. With such a large project for a city of this size, a three-phase funding approach was adopted to fund the City's Capital Improvement Plan over a 30-year period with an interest rate of 1.68 percent. It is estimated that the City will save \$38 million by using these flexible SRF terms and by avoiding the market's transaction costs and other various fees. For the three phase upgrades, Phase I will include a primary effluent pump station, a third aeration basin, an anaerobic digester, and a solids handling facility. Phase II will bring a fourth aeration basin, tertiary filtration, ultraviolet disinfection, side-stream phosphorus removal, a new primary thickening process, a fifth anaerobic digester, and expand the solids handling facility. Phase III will include individual pump stations and pipelines for irrigation and industrial conveyance, along with internal mixed liquor return pumps for the activated sludge process.

PROGRAM: KENTUCKY SRF
RECIPIENT: LINCOLN COUNTY SANITATION DISTRICT
PROJECT: JUNCTION CITY TO HUSTONVILLE SEWER

Located in central Kentucky, Lincoln County constructed a sanitary sewage system to service 535 previously unsewered residential and 50 previously unsewered commercial customers. This new collection system was a critical upgrade because it replaced 223 failing septic tanks, 101 straight pipes, and 2 package treatment plants that resulted in the direct discharge of raw sewage. This raw sewage was a direct public health issue with documented findings of pathogens and E. coli contaminations in local waterbodies. Additionally, an elementary school in the area retired an inadequate sewage treatment package plant, which meant the school cafeteria's dishwashers could no longer be used due to the capacity overload. Instead, meals were served on styrofoam trays with plastic utensils at a large cost to the school district. These problems were mitigated with the new conveyance system, which was made possible through the collaboration of many supporting partners including the Kentucky Infrastructure Authority CWSRF who provided over \$4 million in financing towards the overall project costs.

PROGRAM: MAINE SRF
RECIPIENT: LEWISTON-AUBURN WPC AUTHORITY
PROJECT: ANAEROBIC DIGESTION & COGENERATION

The Lewiston-Auburn Water Pollution Control Authority (LAWPCA) needed new options for disposal of their biosolids due to rising costs for application to farm fields. LAWPCA received a one percent interest SRF loan to construct an anaerobic digestion facility to reduce their biosolids capacity. The project had the added benefit of producing significant amounts of electricity, which is used to power the water reclamation facility. The project's two 230-kilowatt biogas cogeneration engines produce an average of 200,000-kilowatt hours per month and have gone as high 380,000-kilowatt hours in some months. This self-generated power significantly reduces the facility's energy costs, and the low interest rate financing made this project affordable. LAWPCA turned a problem into a success by converting their biosolid disposal issue into a process that now produces energy for the facility without raising rates for their community.

PROGRAM: MASSACHUSETTS SRF
RECIPIENT: TOWN OF GRAFTON
PROJECT: TREATMENT PLANT UPGRADE

In keeping up with new nitrogen and phosphorus effluent limit standards, the town of Grafton implemented a series of treatment plant upgrades to improve nutrient loading for the Blackstone River. Grafton uses both decentralized wastewater treatment as well as a sewer system that is serviced by a secondary treatment facility to service its population of 15,000. Their loan financed 14 projects, which include upgrades to the treatment facility that address nutrient removal, water efficiency, energy efficiency, and green infrastructure. These upgrades included the installation of a 300-kilowatt solar photovoltaic system, a green roof, a new UV system to replace a sodium hypochlorite system, installation of pervious walkways, upgrades to aeration tanks, a new grit separator, new daylighting windows, lighting conversion to LEDs, and Energy Star domestic hot water heaters. These improvements will significantly reduce electricity costs and produce a higher effluent quality for Grafton's treatment facility.

PROGRAM: OHIO EPA
RECIPIENT: AVON LAKE
PROJECT: LATERAL LOAN PROGRAM

Lake Erie is the drinking water source for over 11 million people. To help reduce harmful bacteria and fecal matter from entering the lake from combined sewer overflows, the Avon Lake Regional Water Utility (ALRWU) received an Ohio Water Pollution Control Loan Fund (WPCLF) loan for \$5 million at zero percent interest to finance the creation of a revolving loan fund that will help private property owners address separation of stormwater discharges from sanitary sewers. ALRWU realized that infiltration and inflow from private property was a major component leading to sewer overflows and basement backups and required that all homeowners remove clean water sources from their adjacent sanitary laterals. This new loan program helps homeowners not only remove clean water from sanitary laterals, but also supports directing the clean water through a new storm lateral to the storm sewer. In the first two years of the program, approximately 300 customers of ALRWU had applied for loans resulting in more than \$1 million in assistance. Customers will pay the loan back over a ten-year period as part of their water and wastewater bills.

PROGRAM: OKLAHOMA WATER RESOURCE BOARD
RECIPIENT: OKLAHOMA CITY WATER UTILITIES TRUST
PROJECT: ATOKA RESERVOIR DAM REHABILITATION

The Atoka Reservoir is a major drinking water supply for the residents of Oklahoma City. Past flooding has damaged the reservoir's dam and spillway chute, creating safety concerns for the City's pump stations and transmission lines. These critical components serve approximately 1.2 million people within the City and surrounding communities and were left vulnerable during high-risk conditions. The City responded to this concern by financing \$34 million through the CWSRF for the repair of the spillway chute and to increase the height of the reservoir embankment to allow for greater flood storage capacity. Improved flood resilience allows the reservoir to hold more stormwater, which provides a nonpoint

source benefit by reducing sediment and nutrients from flowing into the neighboring North Boggy Creek. Overall, these repairs reduce the risk of a dam breach while improving the water quality of the lake which is on Oklahoma's 303(d) Impaired Waters List.

PROGRAM: PENNSYLVANIA PENNVEST

RECIPIENT: CITY OF READING

PROJECT: SOLIDS & LIQUIDS TREATMENT UPGRADE

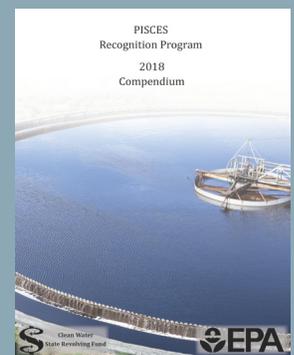
EPA Region 3's largest CWSRF project undertaken to date is a complete upgrade of the sludge handling facility for the City of Reading's wastewater treatment plant. With a service population of 137,800 residents, Reading is Pennsylvania's fifth largest city and a financially distressed municipality. PENNVEST, Pennsylvania's infrastructure investment authority, financed this CWSRF project for \$149 million at 1 percent interest for 20 years, which produced a calculated subsidy value of more than \$21 million. The existing trickling filter plant is being upgraded to an extended aeration activated sludge plant that will use energy efficient variable speed motors and linear Motion Mixers in the digesters that use 70 percent less power than conventional mixers. This project will replace the previously overloaded system and will improve the water quality for the Schuylkill River and the Delaware Estuary which are both important culturally, economically, and recreationally for the distressed area.

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2018 PISCES Recognized Projects

- ◆ Cullman Wastewater Treatment Plant Improvements, AL
- ◆ Kodiak Compost Facility, AK
- ◆ Lake Peachtree Dam Spillway, GA
- ◆ West Monroe Solar Panel Farm, LA
- ◆ Cumberland Combined Sewer Overflow Storage Facility, MD
- ◆ East Lansing Headworks Upgrades and Outfall Retrofit Into a Relief Interceptor, MI
- ◆ Afton Stormwater Green Infrastructure and Advanced Wastewater Treatment , MN
- ◆ Liberty Design-Build Wastewater Treatment Facility, MO
- ◆ Cuba Solids Handling and Effluent Reuse, NM
- ◆ Wellington Avenue CSO Treatment Facility Upgrade, RI
- ◆ Reedy River Basin Sewer Tunnel, SC
- ◆ Waterbury Wastewater Treatment Facility Upgrade, VT
- ◆ Harrisonburg-Rockingham Regional Sewer Authority Biogas Recovery & Reuse, VA
- ◆ Squalicum Creek Water Quality and Biotic Integrity Improvements, WA
- ◆ Pennsboro Wastewater System Improvement Project, WV

More information about all of the exciting 2018 PISCES Projects can be found in the 2018 PISCES Compendium, which can be accessed at www.epa.gov/cwsrf/pisces.



State Agencies That Manage CWSRF Programs

EPA Region 1 — Boston, Massachusetts

Connecticut Department of Environmental Protection
Connecticut Office of the Treasurer
Maine Municipal Bond Bank
Maine Department of Environmental Protection
Massachusetts Water Pollution Abatement Trust
Massachusetts Department of Environmental Protection
New Hampshire Department of Environmental Services
Rhode Island Clean Water Finance Agency
Rhode Island Department of Environmental Management
Vermont Department of Environmental Conservation
Vermont Municipal Bond Bank

EPA Region 2 — New York, New York

New Jersey Department of Environmental Protection
New Jersey Environmental Infrastructure Trust
New York State Environmental Facilities Corporation
New York Department of Environmental Conservation
Puerto Rico Environmental Quality Board
Puerto Rico Infrastructure Financing Authority

EPA Region 3 — Philadelphia, Pennsylvania

Delaware Department of Natural Resources and Environmental Control
Maryland Department of the Environment
Pennsylvania Infrastructure Investment Authority
Pennsylvania Department of Environmental Protection
Virginia Department of Environmental Quality
Virginia Resources Authority
West Virginia Development Authority
West Virginia Department of Environmental Protection
West Virginia Infrastructure and Jobs Development Council

EPA Region 4 — Atlanta, Georgia

Alabama Department of Environmental Management
Florida Department of Environmental Protection
Georgia Environmental Facilities Authority
Georgia Environmental Protection Division
Kentucky Infrastructure Authority
Kentucky Division of Water
Mississippi Department of Environmental Quality
North Carolina Department of Environmental and Natural Resources
South Carolina Department of Health and Environmental Control
South Carolina Budget and Control Board
Tennessee Department of Environment and Conservation
Tennessee Comptroller of the Treasury

EPA Region 5 — Chicago, Illinois

Illinois Environmental Protection Agency
Indiana Department of Environmental Management
Indiana Finance Authority
Indiana State Budget Agency
Michigan Department of Environmental Quality
Michigan Municipal Bond Authority
Minnesota Pollution Control Agency
Minnesota Public Facilities Authority
Minnesota Department of Agriculture
Ohio Environmental Protection Agency
Ohio Water Development Authority
Wisconsin Department of Natural Resources
Wisconsin Department of Administration

EPA Region 6 — Dallas, Texas

Arkansas Natural Resources Commission
Arkansas Development Finance Authority
Louisiana Department of Environmental Quality
New Mexico Environment Department
Oklahoma Water Resources Board
Texas Water Development Board

EPA Region 7 — Kansas City, Missouri

Iowa Department of Natural Resources
Iowa Finance Authority
Kansas Department of Health and Environment
Kansas Department of Administration
Kansas Development Finance Authority
Missouri Department of Natural Resources
Missouri Environmental Improvement and Energy Resources Authority
Nebraska Department of Environmental Quality
Nebraska Investment Finance Authority

EPA Region 8 — Denver, Colorado

Colorado Water Resources and Power Development Authority
Colorado Department of Public Health and Environment
Colorado Department of Local Affairs
Montana Department of Environmental Quality
Montana Department of Natural Resources and Conservation
North Dakota Department of Health
North Dakota Public Finance Authority
South Dakota Department of Environment and Natural Resources
Utah Department of Environmental Quality
Wyoming Department of Environmental Quality
Wyoming Office of State Lands and Investments

EPA Region 9 — San Francisco, California

Arizona Water Infrastructure Finance Authority
California State Water Resources Control Board
Hawaii Department of Health
Nevada Department of Conservation and Natural Resources

EPA Region 10 — Seattle, Washington

Alaska Department of Environmental Conservation
Idaho Department of Environmental Quality
Oregon Department of Environmental Quality
Washington Department of Ecology

To access state program websites, please visit www.epa.gov/cwsrf





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
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Washington, DC 20460
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