Addressing Water Reuse with the Drinking Water State Revolving Fund

Communities can use the Drinking Water State Revolving Fund (DWSRF) for water reuse projects that will augment their source water capacity or reduce their potable water demand.

BACKGROUND

Water reuse is a practice that reclaims water from a variety of wastewater and stormwater sources then treats and uses it for other beneficial purposes. Also known as water recycling or water reclamation, it can provide alternatives to existing water supplies and be used to enhance water security, sustainability, and resilience.

Water reuse can be defined as planned or unplanned. Unplanned or "de facto" water reuse occurs when a source of water is composed of previously used water. For example, some communities draw their water supplies from rivers that receive treated wastewater discharges from other communities upstream.

Planned water reuse refers to water systems designed with the goal of beneficially using a recycled water supply. Often communities seek to optimize their overall water use by reusing water to the extent possible within the community, before the water is reintroduced to the environment. Example applications of planned reuse include irrigation, industrial water, potable water supplies, and groundwater supply management.

EPA does not require or regulate any type of water reuse. Instead, states maintain primary authority in developing regulations and other policies governing water reuse. Some states have established programs to specifically address reuse, while others are in the process of establishing water reuse programs or they address such issues on a case-by-case basis. EPA, states, tribes, and local governments implement programs under the Safe Drinking Water Act (SDWA) and the Clean Water Act (CWA) to protect the quality of drinking water source waters, community drinking water, and waterbodies like rivers and lakes. Together, the SDWA and the CWA provide a foundation from which states can enable, regulate, and oversee water reuse as they deem appropriate. To establish a framework and maximize the potential of water reuse, in February 2020 EPA released the National Water Reuse Action Plan to better integrate federal policy and leverage the expertise of both industry and government to ensure the effective use of the Nation's water resources.

Additional EPA Water Reuse Resources:

https://www.epa.gov/waterreuse

https://www.epa.gov/dwsrf/dwsrf-eligibility-handbook

https://www.epa.gov/waterreuse/water-reuse-action-plan

https://www.epa.gov/ground-water-and-drinking-water/2017-potable-reuse-compendium

EPA 810-F-19-002 December 2020

DWSRF ASSISTANCE

The DWSRF can provide financial assistance to publicly-owned and privately-owned community water systems, as well as non-profit non-community water systems, for drinking water infrastructure projects. Projects must either facilitate the system's compliance with national primary drinking water regulations or significantly further the health protection objectives of the Safe Drinking Water Act (SDWA).

Each of the 50 states and Puerto Rico operates its own DWSRF program. They receive annual capitalization grants from EPA, which in turn provide low-interest loans and other types of assistance to water systems. Repayments of DWSRF loans begin up to 18 months after project completion, with loan terms up to 30 years for most communities, or up to 40 years for disadvantaged communities.

Additionally, states may use a portion of their capitalization grant from the EPA as "set-asides" to help communities build the technical, managerial, and financial capacities of their systems. With an emphasis on small systems, these funds help ensure sustainable infrastructure and public health investments.

Treatment Projects

DWSRF financial assistance can be used for water reuse related infrastructure projects. Treatment projects for water reuse involve the implementation of technologies to achieve a desired level of water quality, as shown in Figure 1 (EPA's 2012 Guidelines for Water Reuse). Examples of eligible projects include upgrades in wastewater treatment to improve the quality of effluent for a variety of potable and non-potable uses, or the development of infiltration basins or spreading grounds to facilitate soil aquifer treatment in groundwater recharge.

Transmission and Distribution Projects

The components of a non-potable reclaimed water distribution system (aka "purple pipe") are DWSRF eligible, since these projects typically mitigate the need for additional water supply or replace existing potable water demand. These systems are needed to convey reclaimed water to end-users for a variety of uses such as irrigation or manufacturing processes.

Storage Projects

An aquifer storage and recovery (ASR) system for water storage is an eligible DWSRF project. These projects could include wells, pumps, pipes, storage tanks, and wellhead structures for ASR systems using recycled water.

Set-aside Activities for Water Reuse

DWSRF set-asides can be used for multiple water reuse related purposes. For example, a study to evaluate new regulations for Advanced Wastewater Treatment Facilities operations in potable reuse schemes, developing a certification program for operators of water reuse facilities, or integrating a process control and monitoring program for the transformation of municipal wastewater to a high-quality drinking water supply. Also, states and communities can use set-asides to develop ordinances to promote and increase public awareness on water reuse, or to do a feasibility study for aquifer recharge.

APPLY FOR FUNDING

Water systems receive DWSRF assistance directly from state agencies. Each state has its own application procedure. Contact information for each state is posted at https://www.epa.gov/drinkingwatersrf/state-dwsrf-website-and-contacts.

Figure 1. Fit for purpose water reuse

DWSRF Case Studies: Water Reuse

How communities are using the Drinking Water State Revolving Fund (DWSRF) for water reuse projects to increase their source water capacity and secure their potable water for the future.

FORT WORTH, TX

In Texas, the City of Fort Worth has experienced significant population growth since the beginning of this century. Increased demand for water caused the City to evaluate water reuse, as highly treated wastewater can be used for non-potable purposes such as landscape irrigation. In 2007, the City conducted a study to determine the best location to implement a project and selected eastern Fort Worth as the site for a reclaimed water system.

The City received $16.3 million in DWSRF funding in 2010 for this project. The project involved the construction of a 14 million gallon per day (MGD) pump station at the Village Creek Wastewater Treatment Plant and a 9-mile transmission main to deliver recycled water to the Dallas-Fort Worth airport and the City of Euless, as well as a 2-mile transmission main to the City of Arlington. The reclaimed water is being used at golf courses and sports complexes in Euless and Arlington, and at the airport for irrigation and in cooling towers.

HELENA, MT

The City of Helena, Montana, received two DWSRF loans in 2012 and 2016 totaling approximately $2.5 million to upgrade their Missouri River and the Tenmile Water Treatment Plants. Previously, the filter backwash water was discharged to the ground by percolation in large surface basins. The new projects included the construction of filter backwash recycle ponds and a distribution system for irrigation. With the improvements the City now reuses the backwash water for managed irrigation and recycles the backwash water back into the treatment facilities. These upgrades allowed them to become a "zero discharge facility," not only saving permitting and operational costs, but also conserving previously wasted water.

EPA 816-F-20-004 December 2020

PRESCOTT, AZ

In 2014 the City of Prescott, Arizona, completed an integral major expansion project at their Airport Water Reclamation Facility to add capacity due to increasing wastewater flows. The facility had a limit of 1.2 MGD and was receiving influent flows of 1.1 MGD. The project upgraded its capacity to 3.75 MGD and included an aeration system, blower building, tertiary filtration, disinfection, and effluent pump station and qualified as a green project reserve within the water efficiency category.

To complete the project, Prescott received a CWSRF loan of $45.8 million. This new capacity allows the City to meet current and near-term needs and results in an increased ability to reliably treat the current wastewater flows and produce Class A+ reclaimed water. This effluent is utilized for recharging the aquifer through one or more of the eight percolation basins located on-site. Other uses include irrigation for golf courses, washing aggregate materials, and dust abatement on construction projects. Although this project was funded by the CWSRF, similar projects would be partially eligible for DWSRF assistance.

LAWTON, OK

In Oklahoma, the Lawton Water Authority conducted an $800,000 feasibility study to evaluate the viability of water reuse in 2016. The Authority contributed $600,000 and the rest was funded with a CWSRF loan that qualified for principal forgiveness.

The study was necessary because of the impact of prolonged drought conditions over the previous years in the southwest region of Oklahoma, which threatened the Authority's water supply sustainability and resulted in the implementation of water usage restrictions. In order to provide a long-term solution for future water supply shortages, the Authority evaluated three different alternatives to address this issue: aquifer storage recharge, direct potable reuse, and indirect potable reuse. Although this project was funded by the state and the CWSRF, similar projects would be eligible for DWSRF assistance. This study could have been funded either with DWSRF set-asides or with the loan fund.

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