Water Reuse

Water reuse is the practice of using water that has already been used. The terms *reclaimed water, reused water,* and *recycled water* are used interchangeably in the water industry. The Texas Administrative Code (TAC) defines reclaimed water as "domestic or municipal wastewater that has been treated to a quality suitable for a beneficial use," (30 TAC §210.3).

Reclaimed water is not the same as graywater, which is untreated household water from sinks, showers, and baths.

Water Reuse Terminology

There are two major categories of water reuse: direct reuse and indirect reuse.

Direct reuse refers to the introduction of reclaimed water via pipelines, storage tanks, and other necessary infrastructure directly from a water reclamation plant to a distribution system. For example, treating wastewater and then piping it to an industrial center or a golf course is considered direct reuse.

Indirect reuse is the placement of water, usually treated effluent, back into a water supply source, such as a lake, river, or aquifer, and then retrieved to be used again. Indirect reuse projects that involve a watercourse require a bed and banks permit from the state, which authorizes the permit holder to convey and subsequently divert water.

Both direct and indirect reuse can be applied to potable (suitable for drinking) and non-potable (suitable for uses other than drinking) purposes. As a result, water reuse is categorized further into four classes:

Direct potable reuse refers to the use of reclaimed water that is piped directly from a wastewater treatment facility to a drinking water treatment and distribution system.

Indirect potable reuse refers to the use of reclaimed water to augment drinking water supplies by discharging it to a water body, such as groundwater or surface water, which is subsequently treated for potable consumption.

Direct non-potable reuse refers to the use of reclaimed water that is piped directly from a wastewater treatment facility to a site for non-potable beneficial uses such as golf course and landscape irrigation, power plant cooling, or manufacturing.

Indirect non-potable reuse refers to the use of reclaimed water for non-potable purposes by discharging it to a water body that is a supply source for non-potable uses.

Regulations

Federal Regulations

A water reuse project that involves discharge to waters of the United States must comply with federal and state requirements pursuant to the Clean Water Act. If applicable, water reuse projects must also comply with the requirements of the Safe Drinking Water Act, which ensures the quality of drinking water.

State Regulations

In Texas, the use of reclaimed water is regulated by:

- 30 TAC Chapter 210
- 30 TAC Chapter 321, Subchapter P
- Texas Water Code § 26.0271

These regulations establish quality, design, and operational requirements for the beneficial use of reclaimed water.

The TAC also further categorizes reclaimed water and provides water quality standards for Type I and Type II uses (30 TAC§ 210.32). Type I use includes applications where the public may come in contact with the reclaimed water and Type II use includes applications where the public would not.

Facilities in Texas

In the past few decades, several major water reuse projects have been implemented in Texas, including the City of Abilene's Lake Fort Phantom Hill project, the Tarrant Regional Water District's constructed wetland project, Cleburne's water reclamation project for power plant cooling water, and the San Antonio Water System's recycled water project.

In May 2013, the Colorado River Municipal Water District began operating the first direct potable reuse facility in the state and the nation. The water district reclaims the wastewater effluent from the City of Big Spring, treats it using advanced treatment technology, and produces approximately 2 million gallons per day of water that is blended with other raw water from surface water reservoirs.

In July 2014, the City of Wichita Falls began operating a direct potable reuse facility. The city conveys wastewater effluent from the River Road Wastewater Treatment Plant through a 12-mile, above-ground pipeline, treats it in an existing treatment plant, and produces approximately 5 million gallons per day of water that is stored in a holding lagoon and then blended with other raw surface water. The plant was decommissioned in July 2015.

2012 State Water Plan

The 2012 State Water Plan estimates that existing supply from water reuse would produce about 614,000 acre-feet of water per year by 2060. Additionally, new water supplies from water reuse strategies are projected to produce 915,000 acre-feet per year by 2060. This constitutes about 10 percent of all recommended reuse water management strategies.

Reuse Studies

In 2011, the Texas Water Development Board (TWDB) published a three-part report documenting the history, current technological state and practical challenges, and the future research needs of reuse in Texas.

In 2012, the TWDB funded a study to assess the potential for direct potable reuse in Texas. The study, which will be completed in 2015, will develop a resource document that can assist in planning future direct potable reuse projects in the state.

In 2013, the TWDB funded a study to monitor the water quality and treatment efficiency at the Raw Water Production Facility in Big Spring, Texas. The study, which is ongoing, will develop a resource document that provides monitoring guidelines for direct potable reuse facilities.

In 2014, the TWDB funded the construction of an engineered wetland to study and evaluate how endocrine disrupting compounds can be reduced or removed from treated wastewater effluent. The study is expected to be completed in 2017.

More Information

To learn more about the TWDB's water reuse activities, please visit:
www.twdb.texas.gov/innovativewater/reuse/index.asp

Or please contact:
Erika Mancha
erika.mancha@twdb.texas.gov
(512) 463-7932