

LIST OF WATER REUSE PROJECTS

DESCRIPTION: Compilation of a working list of water reuse projects for potential case study development

CREATORS: The World Bank and the Environmental Protection Agency, Office of Water

WRAP ACTION AND MILESTONE: WRAP Action 11.3: Develop and Highlight Case Studies Relevant to the Water in Circular Economy and Resilience (WICER) Framework, Milestone 1

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Reuse project name	Location	Water source	Reuse application	Optional 2nd Reuse application	Optional 3rd Reuse application	Brief description; Primary motivation for reuse	Project size - volume of water (GPD)
	AK					Water and Sewer challenge -- National Blue Ribbon Commission for Onsite Water Reuse.	
	AZ (Lake Havasu)	Treated Municipal wastewater	Other centralized non-potable			Modify existing basin and distribution line to allow reuse of treated effluent and distribution for non-potable recycling.	
	AZ (Scottsdale)	Centralized urban water reuse	Potable applications			Scottsdale Water Campus (AZ) reuses up to 1.7 billion gallons of treated wastewater annually through aquifer recharge.	
	CA (City and County of San Francisco)	Onsite Collected water	Onsite non-potable applications	N/A	N/A	Adoption of Onsite Water Reuse for Commercial Multi-Family, and Mixed Use Development Ordinance for collection, treatment, and use of alternative water sources for non-potable applications.	
	CA (El Segundo)	Treated Municipal wastewater	Agriculture-related applications	Other centralized non-potable	Industrial applications	The West Basin Municipal Water District's the only water recycling facility in the world that produces five types of "designer" recycled waters tailored for irrigation, commercial and industrial applications, and potable groundwater augmentation. The facility supplies reclaimed water, which is treated using reverse osmosis, for low- and high-pressure boiler feed water for three major refineries. West Basin's water recycling efforts are the cornerstone of its "Water for Tomorrow" program.	
	CA (Los Angeles)	Treated Municipal wastewater	Potable applications			As part of its Water Independence Now (WIN) initiative, the Water Replenishment District of Southern California operates spreading grounds and coastal injection wells to recharge aquifers and prevent saltwater intrusion. A stormwater capture system also recharges aquifers with rainwater that would otherwise flow into the ocean.	
Montebello Forebay	CA (Los Angeles)					First indirect potable reuse project in the US. Utilizes soil aquifer treatment through spreading grounds following tertiary treatment.	44,000,000
Montebello Forebay Groundwater Recharge	CA (Los Angeles)	Treated Municipal wastewater	Potable applications			Montebello Forebay Groundwater Recharge Project using Reclaimed Water, Los Angeles County, California	

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CoCo San Sustainable Farm	CA (Martinez)	Treated Municipal wastewater	Agriculture-related applications			CoCo San Sustainable Farm is a farm built on reclaimed land, using reclaimed water, and started with a simple mission: to get kids to eat more vegetables. https://www.salads4schools.org/	
Eastern Municipal Water District	CA (Perris)	Treated Municipal wastewater	Landscape-related applications			EMWD is reusing wastewater for ag, irrigation, landscaping and industrial applications. Exploring future uses of recycled water, including recharging local groundwater supplies that could be extracted for drinking water.	
City of Pomona Water Reclamation	CA (Pomona)	Treated Municipal wastewater	Landscape-related applications	Industrial applications		The City of Pomona Water Reclamation Plant in California now recycles approximately 8 MGD of water for landscape irrigation, dust control, and industrial use.	
San Ysidro Land Port of Entry	CA (San Diego)	Onsite Collected water	Onsite non-potable applications			The San Ysidro Land Port of Entry features a membrane bio-reactor blackwater onsite treatment system, producing non-potable treated graywater that is combined with rainwater for flushing toilets, irrigation, and cooling towers.	
South Bay Water Recycling	CA (San Jose, CA)	Treated Municipal wastewater	Other centralized non-potable			Uses reclaimed water for city offices and a public fountain.	
Santa Margarita Basin	CA (Santa Margarita)		Impoundments			Convert an existing dam and reservoir to a recycled water reservoir to provide seasonal storage for recycled water.	
City of Santa Monica	CA (Santa Monica)	Treated Municipal wastewater				Integrates treatment of municipal wastewater, harvesting from municipal storm drain, and capture of brackish groundwater.	
Santa Rosa Regional Water Reuse System	CA (Santa Rosa)	Treated Municipal wastewater	Industrial applications	Agriculture-related applications	Landscape-related applications	The Santa Rosa Regional Water Reuse System pumps tertiary treated wastewater 40 miles uphill to steam fields where it generates electricity for 100,000 households as part of the Geysers Recharge Project.	
U.S. Coast Guard Headquarters	DC	Onsite Collected water	Landscape-related applications	Other		The green roof at the U.S. Coast Guard Headquarters intercepts, stores, and treats stormwater—up to and including water from a 95th percentile storm—and uses it for onsite irrigation and water features.	

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	FL (Pensacola)	Treated Municipal wastewater	Industrial applications			Emerald Coast Utilities Authority (FL) recycles 100 percent of the wastewater from its Central Water Reclamation Facility, providing it to Gulf Power and International Paper.	
City of St. Petersburg	FL (St. Petersburg)	Treated Municipal wastewater	Other centralized non-potable	Other		The City of St. Petersburg's (FL) reclamation system provides 37 MGD of reclaimed water for non-potable uses including 300 fire hydrants.	
Sterling Creek Water Reclamation Facility	GA (Richmond Hill)	Treated Municipal wastewater	Environmental restoration	Landscape-related applications		The Sterling Creek Water Reclamation Facility provides 3 MGD of treated effluent to the Elbow Swamp, sustaining a constructed wetland system and providing water for irrigation.	
Clear Lake Sanitary District	IA (Clear Lake)	Treated Municipal wastewater	Industrial applications			Alliant Energy, in partnership with Clear Lake Sanitary District, uses tertiary treated water that is further disinfected and blended with groundwater for power plant cooling processes.	
State of Idaho	ID	Treated Municipal wastewater	Landscape-related applications			Beginning in 1989, Idaho began issuing permits for water recycling and issued the first municipal land application/reuse permit to the City of Rupert to irrigate 407 acres of agricultural fields. As the program grew, a wastewater land application technical working group, comprised of agency, industry, municipalities, and technical consultants, was formed in September 1993 to expand the original guidelines.	
Hayden Area Regional Sewer Board (HARSB)	ID (Hayden)	Treated Municipal wastewater	Agriculture-related applications			During the irrigation season, 100% of the effluent is used for irrigation of 486 acres of alfalfa and poplar, which require Class C water. The main motivation for agricultural irrigation is to avoid discharge of the wastewater effluent to a sensitive receiving body during periods of low-flow.	1,200,000
Hayden Area Regional Sewer Board	ID (Hayden)	Treated Municipal wastewater	Agriculture-related applications			Provides treatment for 1.2 MGD of wastewater for the City of Hayden and surrounding area. During irrigation season, 100% of effluent is used for irrigation of 486 acres of alfalfa and poplar.	1,200,000

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Dodge City South Wastewater Treatment Plant	KS (Dodge City)	Treated Municipal wastewater	Agriculture-related applications	Landscape-related applications	Potable applications	Dodge City adopted an innovative approach to processing their wastewater. In recent years, the Dodge City South Wastewater Treatment Plant received an EPA grant toward 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. Due to inclusion of a large meat packer's wastewater at the treatment facility, the treatment process produced a significant amount of carbon dioxide and methane gas, which were then burned off in a flare.	
City of Hutchinson	KS (Hutchinson)					A city of Hutchinson well located at the intersection of 4th Avenue and Carey Street was found to be contaminated with volatile organic compounds (VOCs). The groundwater contamination findings issued as a result of EPA and Kansas Department of Health and Environment (KDHE) investigations led to the establishment of the 4th and Carey Site. The city evaluated alternatives that included beneficial reuse of contaminated water, including a regional solution that addressed the site's contamination, the high chloride waters, water appropriation issues, and other industrial groundwater contamination in the area.	10,000,000

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The City of Oswego	KS (Oswego)	Treated Municipal wastewater	Landscape-related applications			The city's treatment system consists of a three-cell lagoon with a total surface area of 33.8 acres. The lagoon is designed to handle 305,000 gallons/day during normal flow and 709,000 gallons/day during wet weather flows. During warmer months, some of the lagoon effluent is disinfected with chlorine, pumped to a holding pond and used to irrigate fairways and greens at the Oswego Golf Association golf course. Using treated effluent instead of treated drinking water to irrigate the golf course saves the city a considerable amount of money each year. The KDHE permit also requires periodic testing of treated wastewater at irrigation system sprinkler heads for both residual chlorine and E. coli. The city only irrigates the course at times when public access to irrigated areas is restricted. The permit also requires irrigation in a manner that avoids runoff to adjacent landowners or ponding on the ground surface.	305,000-709,000
Kansas Department of Health and Environmental State Revolving Fund	KS (Stockton)	Treated Municipal wastewater	Landscape-related applications			The project being funded will completely replace the mechanical wwtp with a new lagoon, which includes an effluent storage cell, disinfection with chlorine, effluent pumping station, and force main to the golf course. Reuse water in lieu of potable water. A review of the FFY 2010 GPR guidance as presented below indicates portions of this project meets the requirements to qualify as a Green Project Reserve project in accordance with these Federal guidelines.	

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Spirit AeroSystems Inc.	KS (Wichita)					Spirit AeroSystems Inc. announced the installation of a water recycling project designed to improve factory efficiencies and conserve water. Construction of a dedicated three-mile pipeline has been completed, allowing Spirit to begin purchasing up to 500 million gallons of recycled water per year from the City of Wichita for use in manufacturing aerospace structures. To further improve its factory efficiencies and prepare for production rate increases, Spirit will begin purchasing more than a million gallons of recycled water daily, decreasing its total potable water usage by 70 percent.	
Gillette Stadium	MA (Foxborough)	Onsite Collected water	Onsite non-potable applications	Potable applications		Performs onsite reuse of wastewater for toilet flushing and groundwater recharge https://nsuwater.com/portfolio-item/gillette-stadium-and-patriot-place/	
Umass Amherst	MA (Umass)	Treated Municipal wastewater	Other centralized non-potable	Landscape-related applications	Industrial applications	UMass Amherst in Massachusetts offsets its water consumption by using reclaimed water from the Amherst Wastewater Treatment Plant for non-potable applications such as steam and hot water, cooling water, and irrigation.	
National Security Agency	MD	Treated Municipal wastewater	Industrial applications			The National Security Agency (MD) uses reclaimed wastewater from Howard County as industrial cooling water for critical IT infrastructure at its East Campus, addressing all first phase cooling needs.	
City of Westminster	MD (Westminster)					The city of Westminster -- indirect potable reuse WESTMINSTER --- case study https://www.youtube.com/watch?v=1LE2Xt5Y YEI&t=52s	
	ME (Carrabassett Valley)	Industrial water reuse		Municipal wastewater	Commercial and other non-potable	Provides treated wastewater to Sugarloaf Mountain Ski Resort to generate snow.	
Hart-Dole-Inouye Federal Center	MI (Battle Creek)	Onsite Collected water	Onsite non-potable applications	Landscape-related applications		The Hart-Dole-Inouye Federal Center (MI) sends rainwater to a 125,000-gallon cistern, treats and filters the water, and uses it onsite for cooling tower make-up water and irrigation.	

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Shakopee Mdewakanton Sioux Community	MN	Treated Municipal wastewater	Landscape-related applications	Environmental restoration		Shakopee Mdewakanton Sioux Community in Minnesota operates a water reclamation facility, using reclaimed water for irrigation and discharge to wetlands for wildlife habitat.	
Allianz Field	MN (Saint Paul)	Onsite Collected water	Landscape-related applications			Allianz Field soccer stadium in Saint Paul recycles more than 2 million gallons of rainwater every year for irrigation of trees and grass using a smart hub to clean the water and adjust its levels.	
City of Columbia	MO (Columbia)	Treated Municipal wastewater	Environmental restoration	Other		The City of Columbia (MO) constructed wetlands in 1994 and 2001 as part of its wastewater treatment process. These deliver treated water into the Eagle Bluffs managed wetlands, providing managed habitat for migratory waterfowl and saving electrical costs.	
City of Cary	NC (Cary)	Treated Municipal wastewater	Landscape-related applications	Industrial applications		Cary, North Carolina, operates two water reclamation facilities providing a total of nearly 25 MGD of treated wastewater for non-potable reuse including irrigation, cooling, and industrial processes.	
UTC Aerospace Systems	NC (Charlotte)	Onsite Collected water	Industrial applications			UTC Aerospace Systems installed a closed loop system to recycle 80 percent of its wastewater as deionized water for reuse in its industrial processes, such as metal finishing.	
UNC Chapel Hill	NC (UNC Chapel Hill)	Treated Municipal wastewater	Landscape-related applications	Industrial applications		UNC-Chapel Hill partnered with Orange Water and Sewer Authority to use treated wastewater effluent, in parallel with rainwater captured by cisterns, for irrigation and cooling water.	
Theresa Street Wastewater Treatment Facility	NE (Lincoln)	Treated Municipal wastewater	Landscape-related applications	Industrial applications		Currently the Theresa Street Wastewater Treatment Facility utilizes an average of 710,000 gallons per day (gpd) of non-potable water. This non-potable water is used for process requirements and irrigation on the facilities and as a heat/cooling source for facility buildings. The use of non-potable water for these purposes reduces the usage of 305,505,000 gallons per year of fresh water provided by the Lincoln Water System. The potential cost savings to the Lincoln Wastewater System is \$816,858 annually.	710,000

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Northeast Wastewater Treatment Facility	NE (Lincoln)	Treated Municipal wastewater	Industrial applications			The Northeast Wastewater Treatment Facility utilizes an average of 127,000 gpd of non-potable water. The LES Terry Bundy Generating Station also uses 50 to 60 million gallons per year of treated wastewater for their cooling towers from the Northeast Treatment Facility. This also reduces the demand for fresh water provided by the Lincoln Water System.	127,000
Southern Nevada Water Authority	NV	Treated Municipal wastewater	Other centralized non-potable	Potable applications		Southern Nevada Water Authority reclamation facilities treat water for non-potable use as well as input to Lake Mead and the Las Vegas Wash to supplement drinking water supplies.	
	NV (Reno)		Other centralized non-potable	Potable applications		Support enlarging and upgrade treatment plant to support reuse of a larger proportion of treated water for aquifer recharge and other non-potable uses.	
Water Conservation and Reuse Grant Pilot Program	NY	Other				Provides incentives to property owners to install water efficiency technologies.	
Comprehensive Water Reuse Program	NY	Other				Provides a 25% water and wastewater fee discount to customers who install onsite reuse systems that reduce building consumption by at least 25%.	
Solaire Building	NY	Onsite Collected water	Onsite non-potable applications	Landscape-related applications	Industrial applications	Generates non-potable water for toilet flushing in ~300 apartments, cooling towers, sidewalk upkeep, and rooftop/park irrigation. Reduces water consumption by 48% and reduces wastewater discharge by 56%.	25,000
New School	NY	Onsite Collected water	Onsite non-potable applications	Landscape-related applications	Industrial applications	Generates non-potable water for toilet flushing, green roof irrigation, cooling tower makeup, and laundry machines. Reduces potable usage by 70+% and reduces sewer discharge by 80+%.	
Domino District Non-Potable Reuse	NY	Other				Provides incentives to new urban district scale developments to reuse water onsite, reducing potable water demand and wet weather burden on combined sewers. Generates non-potable water for toilet flushing, cooling tower makeup, and irrigation.	400,000

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Long Island Water Reuse Initiative	NY (Long Island)		Landscape-related applications			The Long Island Water Reuse Initiative created an interactive permitting roadmap displaying reuse opportunities for golf courses.	
Pure Water Brew	OR (Hillsboro)	Treated Municipal wastewater	Other			Clean Water Services is one of the founding members of the alliance; it has one of the largest water reuse programs in Oregon. They launched Pure Water Brew to deliver high-quality reclaimed water to Oregon homebrewers, along with a competition to showcase the homebrews. https://www.purewaterbrew.org/about	
	Sioux, MN		Landscape-related applications			One of the membrane systems such as at Sioux, MN for landscaping	
Murfreesbor Water Resources	TN (Murfreesboro)	Treated Municipal wastewater	Potable applications	Environmental restoration	Agriculture-related applications	The Murfreesboro Water Resources Department provides drinking-water-quality reclaimed water to the West Fork Stones River, supporting downstream users, aquatic life, and agricultural irrigation.	
Austin Water Forward Plan	TX (Austin)	Onsite Collected water				The Austin Water Forward Plan provides community-scale onsite reuse for up to one-third of Austin's water, creating a diversified water portfolio.	
	TX (Houston)	Industry process water	Industrial applications			An oil and gas company, recycles produced water, reducing its freshwater withdrawals to only 1 to 2 percent.	
East Fork Wetland Project	TX (Wylie)	Treated Municipal wastewater	Landscape-related applications	Environmental restoration	Potable applications	The East Fork Wetland Project of the North Texas Municipal Water District treats wastewater for irrigation and aquatic habitat through wetland enhancement before further treatment for drinking water.	
	WA (Ephrata)					The Ephrata WRF treats municipal wastewater to produce water for groundwater recharge, irrigation, holding in a seasonal fish pond, and equipment cleaning.	
Holmes Harbor Sewer District	WA (Freeland)	Treated Municipal wastewater	Landscape-related applications	Impoundments		The Holmes Harbor Sewer District facility discharges reclaimed water for golf course irrigation in dry months and stores it in lagoons during wet months.	
	WA (Lacey)					Polishing ponds for wetlands and groundwater recharge.	

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Microsoft	WA (Quincy)	Onsite Collected water	Onsite non-potable applications	Industrial applications		Microsoft teamed with the City of Quincy (WA) to build a water treatment plant, which provides reclaimed water for cooling at data centers and injection into the local aquifer.	
Walla Walla Water Reclamation Plant	WA (Walla Walla)	Treated Municipal wastewater	Agriculture-related applications			The Walla Walla Water Reclamation Plant (WA) produces 7.2 MGD reclaimed water for agricultural use and to satisfy Mill Creek water rights.	
City of Yelm	WA (Yelm)	Treated Municipal wastewater	Landscape-related applications	Potable applications		City of Yelm, Washington	