



AMERICAN WATER

## Utilities Privatization Success Story

### Reclaimed Water Reuse – Fort Sill, OK

#### Objective

- Mid-west drought management
- Enhance water conservation
- Enhance environmental sustainability

December 2015

## Background -

- American Water operates Fort Sill's water and wastewater utility systems, through the federal government's Utilities Privatization program.
- Fort Sill purchases all of its drinking water from the City of Lawton.



## Background –

### ❖ *Water*

- By eliminating leaking water pipes and implementing changes to daily operation of the water system, American Water has reduced the amount of metered purchased potable water loss at Fort Sill by 32% since the start of the contract. American Water accomplished this reduction despite a growing population and the rising use of water during heavy construction periods at Fort Sill. Assuming a cost of \$0.75 / 1000 gallons, and a baseline daily water consumption of 3,199,988 gallons at the start of the contract in 2003, this represents a theoretical savings of many thousands of dollars over the years. American Water will endeavor to continue reducing the water usage at Fort Sill through the Unidirectional Hydrant Flushing project, which American Water implemented in December of 2014. Conservation coupled with the treated wastewater effluent reuse program will assure Fort Sill as a leader in water sustainability for the future.

## Background

- The Fort Sill Wastewater Treatment Plant treats an average of 1.5 million gallons of wastewater per day, with a treatment capacity of 4.3 mgd
- The treated wastewater is discharged to East Cache Creek nearby

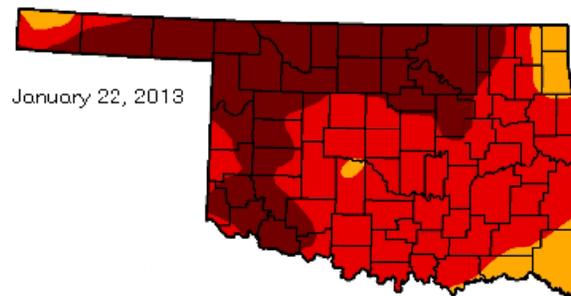


Fort Sill Wastewater Treatment Plant



- Mid-west US is experiencing long term drought
- Water conservation measures in place
- Limited wastewater reuse in place

### Oklahoma Drought Monitor Archives 2013



#### Drought Severity

- D0 - Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Week	D2-D4	D3-D4	D4
January 22, 2013	100.00	91.80	39.58

## Added Incentives-

### Executive Order (EO) 13693, Planning for Federal Sustainability in the Next Decade

- *Federal Agencies shall improve agency water use efficiency and management, including storm water management by:*
- Reducing potable water consumption intensity....by 36 percent by 2025, through reductions of 2 percent annually through 2025
- Reduce agency industrial, landscaping, and agricultural (ILA) water consumption by 2 percent annually through 2025
- Install appropriate green infrastructure features on federally owned property to help with storm water and waste water management



E.O. 13693

Planning for Federal Sustainability in the Next Decade

### Oklahoma House Bill 3055 (the "Water For 2060 Act") in 2012

- Oklahoma became the first state in the Nation to establish a bold, statewide goal of consuming no more fresh water in 2060 than was consumed in the year of 2012



## The American Water Fort Sill Reuse Water Story

- Oklahoma Department of Environmental Quality (ODEQ) permits wastewater reuse using a 1 to 5 category scale (5 = lowest treatment technology / least option for reuse). AW's current facility would qualify as a Category 3 reuse plant.
- In 2014, AW secured a category 3 reuse permit – which allowed for limited reuse for building HVAC make-up water, Central Wash facility make-up water, and limited irrigation– but didn't maximize the possible value of treated wastewater.
- To obtain a category 2 permit, allowing significant expansion of reuse, would require several million dollars to upgrade the facility.
- AW worked with ODEQ and undertook an intense treatment plant reliability assessment and water quality testing to determine if upgrades could be avoided.

## The Success

- American Water, with the great support of Fort Sill, worked with ODEQ teams for 18 months and secured **Oklahoma's first ever Category 2 wastewater reuse permit, without plant upgrades!**
- WWTP upgrades not required – millions in cost avoidance.
- The Category 2 permit allows for much more extensive application of reuse water..
- Probable uses include – irrigation, make-up water for building chillers, watering trees, bulk fill stations for construction trucks to fill and use for dust control, geothermal HVAC, and in-plant water use for cleaning wastewater plant clarifiers etc.



## Benefits:



**Mission Resiliency:** Improves Base self-sufficiency



**Executive Order 13693:** progress toward compliance



**Water savings:** The reclaimed water has the potential to reduce Fort Sill's water usage by 37 million gallons a year – roughly 5% of total use



**Cost savings / avoidance:** Reduces purchased water cost (annually), and ability to use funds saved in capital upgrades to WWTP for other infrastructure projects



**Environmental Sustainability:** Eases the demand on Lawton's precious water supply and reduces pollutant loading on East Cache Creek



## Future

- **Several projects will soon be constructed to maximize the potential of the reuse permit.**
  - Several more chillers on post
  - Polo field irrigation will utilize reuse water
  - Cemetery will be irrigated with reuse water
  - Horse corrals will be irrigated with reuse water
  - Golf Course Irrigation

