

City of Wichita Falls Water Supply Alternatives

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Historic Conditions

- 1950's Drought (worst drought recorded)
- 1970's Drought (smaller less severe)
- 1983 - 1985 Drought
- 1995 - 2000 Drought
- 2011 Drought (Worst single year drought continues through 2012 and into 2013)
- Historically the North Texas area has experienced a drought about every 10 to 15 years
- This is definitely not the last.

Current Conditions

- Current Drought Situation
 - Currently in Stage II (Drought Warning)
 - Lake Levels 50%
 - Active enforcement of restrictions
 - Stage III (Drought Emergency) ~Feb 1, 2013
 - Lakes Levels 40%
 - Restrictions developed and adopted on 9/4/12
 - Staff preparing to implement restrictions
 - Stage IV (Drought Disaster) ~Jun 15, 2013
 - Lake Levels 30%
 - Goal of 10-12 MGD total consumption

Lake Ringgold

- Long term alternative
- 20 to 30 years to permit, design, and build
- Estimated cost ~\$400 million
- Currently performing a Feasibility Study
 - Verify actual yield
 - Identify conflicts
 - Validation of Dam Site geology
 - Update construction costs

Purification of Treated Effluent

- Original project identified 1999/2000
- Analysis and treatment pilot work performed
- Project put on hold
 - Drought broke 2001
 - TCEQ kept changing the requirements for testing
 - Jasper expansions began
 - MF/RO plant construction began (Lake Kemp supply)
 - Cypress conventional treatment expansion ready to begin

Purification of Treated Effluent

- April 2012 staff met with consultants to revive the original project
- Reviewed original report
 - Treat with Ultrafiltration
 - Blend with lake water
 - Treat blended water through Jasper WTP
- Identified areas that needed to be completed
- Met with TCEQ to discuss status of project and what was required to move the project to the starting line

Purification of Treated Effluent

- Staff learned regulatory landscape has changed
- New terms developed
 - Direct Potable Reuse (DPR)
 - Brownwood Project (received TCEQ approval)
 - Indirect Potable Reuse (IPR)
 - Big Spring Project (project on-line in Feb 2013)
- TCEQ is required to review these types of projects individually based on the historic data and site specific conditions

Purification of Treated Effluent

- Direct Potable Reuse (DPR)
 - Extensive treatment required
 - Microfiltration
 - Reverse Osmosis
 - Ultraviolet Light Disinfection
 - Others as deemed by TCEQ
 - Water is ready for consumption
- Very time consuming process (years)
- Very expensive alternative

Purification of Treated Effluent

- Indirect Potable Reuse (IPR)
 - Water is discharged into an Environmental Buffer
 - Lake, River, Wetlands
 - Has been occurring for centuries in every river basin in the state
- Water is then treated by conventional methods
- Least expensive alternative

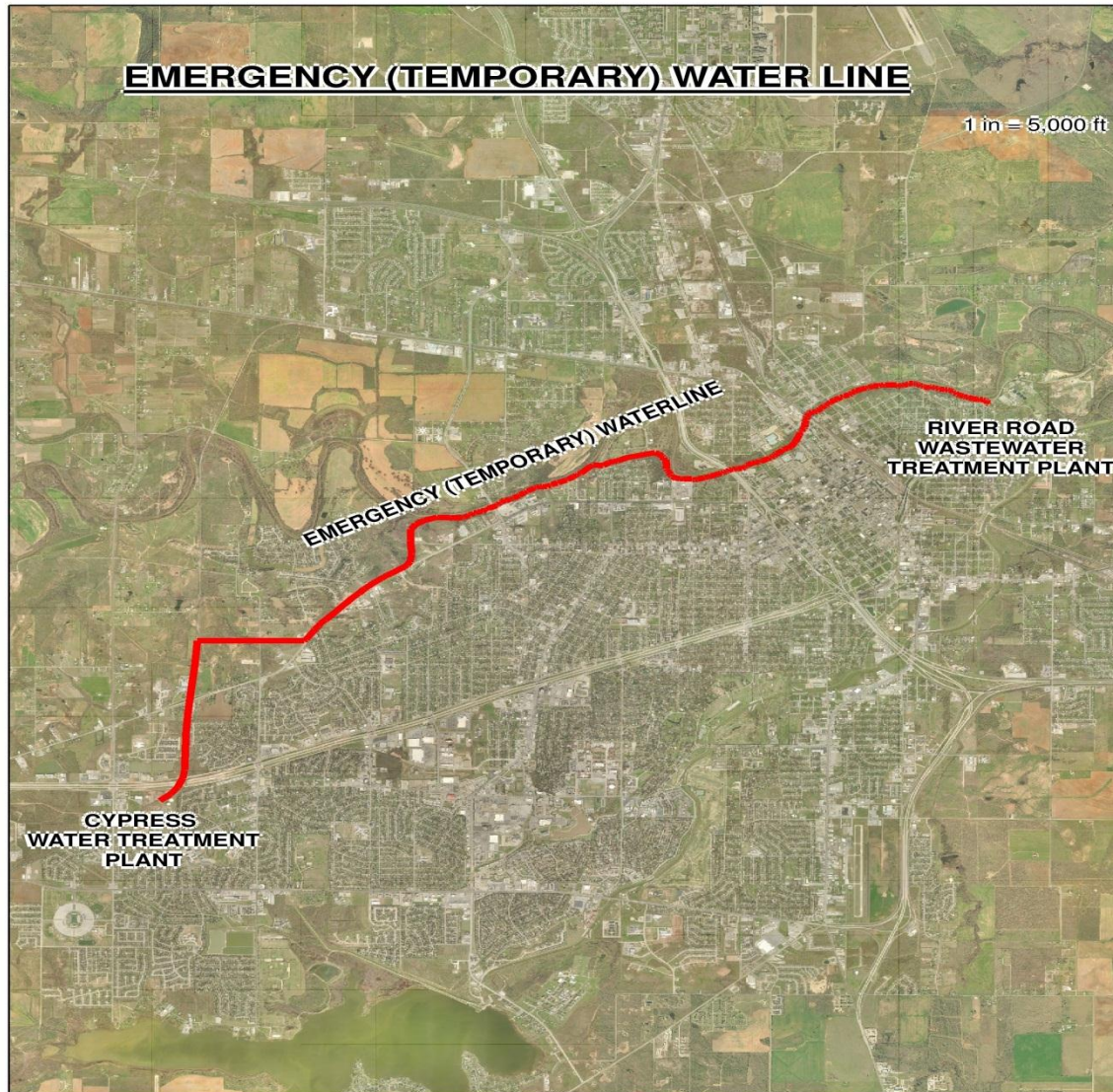
Purification of Treated Effluent

- Consultants to look at all alternatives
 - Discharge to Lake Arrowhead
 - Discharge to Lake Wichita
 - Construct additional treatment at Jasper WTP
- Identify the most economical / flexible project
- Feasibility Report should be complete soon
- 2 to 3 years to implement project (will not help during this drought)

Purification of Treated Effluent

- Emergency (Temporary) Project
 - Install temporary pumps at River Road WWTP
 - Install a temporary pipeline on top of the ground along the trail to Cypress WTP
 - Treat water through existing MF/RO plant
 - Discharge into lagoons on site
 - Pump treated water back and blend with lake water 50/50
 - Retreat through conventional treatment plant
 - Water is treated 3 times through 3 separate processes

Purification of Treated Effluent



Purification of Treated Effluent

- TCEQ approval required
 - Numerous meetings and conference calls with TCEQ
 - Concept paper for Emergency Project submitted to TCEQ
- Design contract is ready for approval
- Developed an approximate cost estimate of \$9.0 million
 - A portion of this cost will be recovered and utilized for the long-term project

Conclusion

- Tasks to accomplish
 - Long-Term Purification Project
 - Complete Feasibility Study
 - Identify Project
 - Determine schedule for project
 - TCEQ approval
 - Fund
 - Design
 - Construct

Conclusion

- Tasks to accomplish
 - Emergency (Temporary) Purification Project
 - TCEQ approval
 - Working through details to ensure all requirements can be met
 - Preliminary Engineering Report
 - Establish verification protocol
 - Fund
 - Design
 - Construct
 - Full Scale Verification Process (must pass before water can be used)

Questions / Discussion