

City of Duncan's Water Development Plan

REGIONAL WATER SUMMIT

MAY 18, 2016

A History Lesson

WHEN DROUGHT BECAME A PROBLEM FOR DUNCAN

Water Rationing Increases

- Stage 3 implemented in March 2013 limiting outdoor water to two days per week
- Stage 3 remained in effect until October 2013 when Stage 4 was implemented
- Stage 4 , in previous years, would have completely restricted outdoor water, but, the City Council voted to make the restriction less severe and limited outdoor water to one day per week
- Stage 4 remained in effect until January 2015 when Stage 5 was implemented
- Stage 5 remained in effect until May 2015

Focused Attention Required

- Duncan City Council and Duncan Area Economic Development Foundation met February 5, 2015
- The special meeting was a workshop/summit between the two groups with no input from the public
- The outcome of the meeting was an agreement to create an independent committee to research long term water solutions for the City of Duncan
- Mayor Gene Brown and DAEDF Board Chairman Terry Snider were tasked with finding potential members for this committee
- DAEDF voluntarily committed to make \$100,000 available to the committee to aid them in whatever was needed to fulfill the assigned mission

A Committee Is Formed

- After several weeks of gathering names and vetting potential committee candidates, a final nine member list was presented to and approved by Duncan City Council on February 25, 2015
- The nine member committee is diverse
 - Consists of eight men and one woman
 - All four wards of the City of Duncan are represented
 - Highest level of completed education ranges from a high school diploma to Juris Doctorate
 - Career/Industry experience ranges from local government to biology to small business owner



Top Row:
Jacob Bachelor
Lisa Thomas
Mike Kiester



Middle Row:
John Galloway
Phil Leonard, Chairman
Roger Calger, Vice Chairman



Bottom Row:
Kelly Kirkland
Todd Clark
Clay Cole

The Real Work Begins

WHAT TO DO WHEN THERE IS NO RAIN IN SIGHT

Beginning with the knowns



DWAC's list of area water experts included:

- City of Duncan Public Works Director, Scott Vaughn
- Waurika Lake Master Conservancy District Director, Dave Taylor
- Arbuckle Simpson Landowner Group represented by Bill Clark
- Wichita Falls Public Works Director, Russell Schreiber

Identifying an expert

- 13 firms/organizations initially identified
- 8 firms were invited to interview
- Interviews were conducted in Duncan
- Each firm was scored by the committee using a scoring matrix designed by the committee
- The top three firms were selected based on scores AND committee member nomination
- The winning firm was selected based on interview score AND committee member vote



A New Partner



- Professional Engineering Consultants (PEC) was introduced to Duncan City Council on May 7, 2015
- PEC, DAEDF, and DWAC entered into a contract later that evening
- PEC spent the next few months working with the City of Duncan and researching all viable options

Easing the Pressure

- Duncan received 17 inches of rain in May 2015
- Waurika Lake levels exceeded 100% by the end of May 2015 due to excessive rainfall
- One month of good rain resolved the need for short term solutions
- With PEC focused on the scientific aspects of water, DWAC focused on the community aspects of water



A Plan Is Formed

PEC DELIVERS ON A LONG TERM WATER SOLUTION



November 12,
2015

DWAC presents
PEC's
recommended
long term water
plan to Duncan
City Council

PEC Final Report – Scope of Services

Safe Yield Analysis of Surface Water Reservoirs

Evaluation of Water Transfer Between Surface Water Sources

Water Treatment Plant and Wastewater Treatment Plant Assessments

Groundwater and New Water Sources

Conservation

Funding

The following considerations have been determined from the safe yield analysis:

- Secure remaining available water rights for Lake Fuqua.
- Pursue reallocation of Lake Duncan permitted water use.
- Conduct in-depth analysis on field survey, topography and lake level monitoring necessary to develop fully calibrated models for Lake Duncan and Clear Creek Lake.
- Establish precipitation gauges within the watersheds of Lake Duncan, Clear Creek Lake, Lake Humphrey, and Fuqua Lake.
- Evaluate establishing water related ordinances that are based on projected precipitation and reservoir levels.
- Consider the elimination of the Lake Humphreys low level spillway to increase the capacity of the existing impoundment.
- Consider the elimination of the Fuqua Lake low level spillway to increase the capacity of the existing impoundment.

In summary, the safe yield analysis provided the following information:

- The lakes will never completely fill, as the design precipitation levels were overestimated, and design evaporation rates were underestimated.
- The City of Duncan should determine the primary purpose of each impoundment (i.e. drinking water supply or recreational), and acceptable lake levels.

Safe Yield Analysis Results

Water Treatment Plant Results

The North and South WTPs are in good condition. The facility is very well operated and within compliance for most parameters. Onsite investigations were conducted with City of Duncan staff to determine items in need of repair or improvement. These items include:

- Replace receiving piping with chemically resistant material at sulfuric acid injection point.
- Remove solids from clearwell.
- Remove solids from backwash lagoons and develop solids minimization plan.
- Repair centerwells and weirs on solids contact clarifiers.
- Improve and update plant wide SCADA system.
- Add sodium hydroxide injection point downstream of rapid gravity sand filters.

There is also a need to develop strategies to minimize the formation of disinfection byproducts and removal of manganese.

Some of the components within the water treatment facilities are nearing their useful life expectancy. Due to the age of the North and South WTPs (40 and 70 years old respectfully), assessments of all critical underground basins and buried piping should be conducted.

Groundwater & Surface Water Blending

- Groundwater treatment results indicate that water from public water supply systems is of “relatively good quality” and in compliance with all standards
- Water reuse standards have not been developed by ODEQ or OWRB at this point which makes it difficult to calculate what water treatment or upgrades to the water treatment plant would cost – currently not a viable option for Duncan

Transfer of Surface Water

- Transfer of water can occur between three of the five water reservoirs at this time
- Recommendations include:
 - Conduct a complete condition assessment of all existing transfer stations and conveyance waterlines
 - Design and construct a transfer station from Lake Duncan to the water treatment plant
 - Provide full pumping redundancy and back-up power to the Lake Humphreys pumping station

Groundwater

- Objective:
 - identify sources that are close by and have potential to see initial development within 24 – 36 months (near-term options)
 - identify other groundwater resource options which had the potential to be developed in the next 5 to 10 years (long-term options)
- Groundwater options that offered the greatest potential for near-term were identified as follows:
 - The source(s) should be located near the City of Duncan
 - Wells should be capable of yielding a minimum of more than 100 gpm
 - Existing knowledge and information of aquifer conditions should be sufficient to indicate that the groundwater resource is capable of sustained delivery of 3 mgd (million gallons per day)*

Conservation

- The City of Duncan has “aggressive and proactive water conservation ordinances in place”
- Recommendations include:
 - Implement a water conservation surcharge structure
 - Continue the proactive water conservation ordinances

Public Education Funding

- Water rates should be increased based on a number of factors
- There are several funding options for the city to consider once the 2013 – 14 audit is complete

Where Are We Going?

CURRENT AND FUTURE PROJECTS

- Current Projects:

- PEC completing a water rate study
- Water Rate Increase: \$2 per account approved by City Council and put into effect on April 26
- Clear Creek Lake: Pump Station Rehab
- Lake Humphreys: Pipeline Project
- Additional Info: City of Duncan water usage under zero restrictions at present
- Lake Humphreys and Lake Fuqua are at 106% and 111% as of last Friday

- Future Projects:

- Re-evaluate funding options for identified water projects once all City of Duncan audits are up to date

Q & A

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