Maximizing Southwest Oklahoma’s Water Supply Reliability

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Altus/SW Area Economic Development Corp.

2015 Governor’s Water Conference
Southwest Oklahoma
(Major Water Supplies & Suppliers)
About Altus:

- The economic hub of SW Oklahoma
- Altus Air Force Base:
  - Primary employer at 4,250 jobs
  - $350 million/year economic impact
- Agriculture Industry:
  - $200+ million/year in cotton production
  - Altus-area production facilities
SW Oklahoma Water Supply

Mountain Park Master Conservancy District
Southwest Oklahoma’s Primary Public Water Supplier

Altus
Snyder
Frederick
SW Oklahoma Water Supply

Lugert-Altus Irrigation District
Fuels Southwest Oklahoma’s Chief Economic Sector

47,000 Acres of Irrigated Agriculture (Hundreds of Members)
The 2010-15 Drought

- More than 5 years of progressively worsening precipitation deficits
- Severe impacts to all economic sectors
- Drastic lake level reductions decimated municipal/agricultural water supplies:
  - Tom Steed
  - Lugert-Altus Reservoir
Tom Steed Drought Conditions & Lake Level
2010 - 2015

Drought Category
0 - None 1 - Abnormally Dry
2 - Moderate 3 - Severe
4 - Extreme 5 - Exceptional

Lake Level (Feet)

Tom Steed Drought Category
Tom Steed Lake Level
Three recent decades of unprecedented moisture had led to a false sense of water security.
The 2010-15 Drought: What we learned...

- Drought has the power to devastate SW OK’s economy.
- We must minimize our vulnerability to drought.
- Water managers should assume that dryness is the “new normal” and plan accordingly in cooperation with all regional stakeholders.
The 2010-15 Drought: Our response...

- Improve southwest Oklahoma’s water supply reliability.
- Unify stakeholders & leverage common water supply and economic development goals:
  - SW OK Water Supply Task Force (2013>):
    - City of Altus
    - Mountain Park Master Conservancy District
    - Lugert-Altus Irrigation District
    - Altus Air Force Base
    - Agriculture, Industry, and Business
SW Oklahoma Water Supply Task Force

- Initiated regular meetings in 2013 to develop a long-term plan with phased Action Strategies
- Permanent organization
Southwest Oklahoma Water Supply Action Plan (SWAP)

- Completed May 2014
- Updated July 2015

FACILITATION & ENGINEERING SUPPORT
Southwest Oklahoma Water Supply Action Plan

Key Findings

• Region is over-reliant on limited surface water supplies
• More reliable groundwater supplies are available
Southwest Oklahoma Water Supply Action Plan

Primary Goals for Altus

- Balance water supply
- Increase reliability of Tom Steed
- Decrease the pressure on Tom Steed
- Expand the city’s groundwater supply
- Mitigate THMs
SWAP Strategies:
Maximizing Water Reliability

**Near-Term**
- Groundwater Supplies
- Water Conservation
- Unified Drought Response
- SWAP Advisory Committee

**Mid-Term**
- Divert Flows to Storage
- Interconnection of Systems
- Non-Potable Reuse
- Altus Lake Rehabilitation

**Long-Term**
- Reservoir Development
- Potable Reuse
- Transbasin Sources
Ongoing Implementation

• Develop additional wells and infrastructure to bring up to 2 MGD of groundwater into Altus municipal system:
  • Reactivate Round Timber and Holloway well fields (Texas)
  • Provide supply redundancy
  • Blending to reduce THMs
  • February 2016

Additional Groundwater Supplies

- $2.3 million OWRB loan
- $575,000 OWRB Drought Grant
Ongoing Implementation

Additional Groundwater Supplies (Augmentation)

- New wells downstream of Tom Steed dam will increase Mountain Park delivery capacity (>20%):
  - Blending (THMs)
  - Supply distributed to Altus and/or Snyder through direct transmission via existing raw water lines
  - 2016

Funded by City of Altus ($1.2 million)
Ongoing Implementation

• Bring Altus RO plant back online to enhance treatment of Lugert-Altus Reservoir water, address THM concerns and provide for future GW supply treatment:
  • redesign and retrofit plant to accommodate conventional pretreatment
  • January/February 2016

Funded by City of Altus
Ongoing Implementation

Divert Additional Flows to Existing Storage (Tom Steed)

- Investigation by Bureau of Reclamation
- Supplement supply at Tom Steed Reservoir
- Widen existing Bretch Diversion Canal and divert more flows from Elk Creek
- 2016/2017
<table>
<thead>
<tr>
<th>Location</th>
<th>Efficiencies</th>
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<tbody>
<tr>
<td>City of Altus</td>
<td>• New restrictions/Ordinance</td>
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<tr>
<td></td>
<td>• Restructure water/utility rates</td>
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<td></td>
<td>• Investigating leak detection study</td>
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<td></td>
<td>• Smart meters</td>
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<tr>
<td>Mountain Park</td>
<td>• Customers have reduced use by 40%</td>
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<tr>
<td>Altus AFB</td>
<td>• Exemplary water use habits</td>
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<tr>
<td></td>
<td>• THM Monitoring</td>
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<tr>
<td>LAID Efficiencies</td>
<td>• Drip irrigation systems</td>
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<tr>
<td></td>
<td>• Tailwater pits catch and retain runoff</td>
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<td>• Reuse</td>
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Ongoing Implementation

• Downstream of Lugert-Altus on North Fork
• Estimated yield 100,000-120,000 AFY
• $300 million (estimated)
• Augment LAID supply through pumping plant, pipeline and canal
• Companion chloride control project will improve quality
• Potential regional water supply source (OK/TX cities and military installations)
• Reclamation will fund engineering study; previously studied by COE

Cable Mountain Reservoir Project
Ongoing Implementation

Altus Lake Rehabilitation

- 140-acre municipal supply constructed in 1940
- Largely unused due to sedimentation
- Dredging and dam rehab to create redundant water source
- Alleviate pressure on other regional surface sources
- Recreational opportunities
Future Implementation

Other Initiatives

 Unified Drought Response Plan:
  • Early stages of development

 Interconnection of Water Systems:
  • Investigating opportunities

 Non-Potable Reuse:
  • Potential at City of Altus, AFB & LAID

 Potable Reuse:
  • Possibly augment Tom Steed/LAID supply with reclaimed wastewater

 Other Reservoir Development:
  • Trico Project on North Fork upstream of Lugert-Altus

 Transbasin Sources
Questions?