The Role of Water Reuse in Texas

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The following presentation is based upon professional research and analysis within the scope of the Texas Water Development Board’s statutory responsibilities and priorities but, unless specifically noted, does not necessarily reflect official Board positions or decisions.
Mission

To provide
• Leadership,
• Information,
• Education, and
• Support for planning, financial assistance, and outreach for the conservation and responsible development of water for Texas.
Regional Water Planning Areas
Projected Existing Water Supplies by 2060

Volume (acre-feet per year)

<table>
<thead>
<tr>
<th>Year</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>482,164</td>
</tr>
<tr>
<td>2020</td>
<td>510,692</td>
</tr>
<tr>
<td>2030</td>
<td>549,497</td>
</tr>
<tr>
<td>2040</td>
<td>581,817</td>
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<tr>
<td>2050</td>
<td>593,312</td>
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<tr>
<td>2060</td>
<td>613,701</td>
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</tbody>
</table>

2012 State Water Plan
Recommended Water Management Strategies by 2060

~915,000 acre-feet per year

- Reuse, 10.2%
- Groundwater, 8.9%
- New Major Reservoir, 16.7%
- Irrigation Conservation, 16.7%
- Municipal Conservation, 7.2%
- Groundwater Desalination, 2.0%
- Conjunctive Use, 1.5%
- Seawater Desalination, 1.4%
- Aquifer Storage and Recovery, 0.9%
- Other Conservation*, 0.3%
- Brush Control, 0.2%
- Weather Modification, 0.2%
- Surface Water Desalination, <0.1%
- Other Surface Water, 33.9%
12 regional water planning groups (except A,D, J, and P) have reuse as recommended water management strategy

4 regional water planning groups have reuse as an alternative water management strategy

Region H, largest volume (282,274 acre-feet per year) of reuse planned by 2060
Capital Costs

Total capital costs: $231 billion

Capital costs of water treatment and distribution: $88.9 billion
Capital costs of wastewater treatment and collection: $81.7 billion
Capital costs of flood control: $7.5 billion

$5.15 Billion for Reuse Water Management Strategies

Capital costs of water management strategies recommended in 2012 State Water Plan: $53.1 billion

2012 State Water Plan
Water Use Survey

• Conducted annually by water use survey team
• Two surveys types: Municipal and Industrial
• Survey ~4,500 municipal and 2,500 industrial

2012 Water Usage in Texas

2.0 % Reused
~319,000 acre-feet

5.8 % is Reused
~261,451 acre-feet

16,012,545 acre-feet
Total Water Use

4,470,999 acre-feet
Municipal Water Use

2012 Water Use Survey
Type of System: Industrial and Municipal

2013 Water Use Survey
Type of Reuse: Direct and Indirect

Volume (Million Gallons)

Year


Direct  Indirect

2013 Water Use Survey
Direct Potable Water Reuse
Existing and Proposed Facilities

Raw Water Production Facility
- Operational May 2013

Proposed Facility
- Not Implemented

Temporary Facility*
- Operational June 2014

*Direct Potable Reuse Water Treatment Plant permitted for a period of 6 months
Project Updates
Direct Potable Reuse

• Raw Water Production Facility in Big Spring
  – Operating since May 2013

• Direct Potable Reuse Project in Wichita Falls
  – Operating since July 2014 (emergency project)

• Advanced Purified Water Treatment in El Paso
  – Preparing a piloting protocol

• Direct potable reuse project in Brownwood
  – Awaiting city council approval
Project Updates
Potable reuse

• Laguna Madre Water District
  – Completed feasibility study for direct potable reuse
• San Angelo
  – Conducting a feasibility study for direct potable reuse
• Wichita Falls
  – Obtained permits for Lake Arrowhead indirect project
Mission

To provide
• research,
• develop, and
• disseminate
  information
to advance the
development of innovative
water management
strategies in Texas

http://www.twdb.state.tx.us/iwt/
Water Reuse Research

Evaluating the Potential for Direct Potable Reuse

- Contaminants of Concern
- Water quality performance targets
- Water quality characterization
- Source control
- Treatment technologies
- Environmental buffers
- Quantitative relative risk assessment
- Pilot protocols
- Regulatory summary
- Public awareness and outreach
Testing Water Quality in a Municipal Wastewater Effluent Treated to Drinking Water Standards

- Quarterly sampling
  - Chemicals of Emerging Concern
  - Microbial pathogens
- Develop correlations for surrogates compounds
- Guidance document for monitoring at direct potable reuse facilities
Brazos River Demonstration Wetland

- Engineered wetland constructed in Waco, Texas to evaluate how endocrine disrupting compounds can be reduced from treated wastewater effluent.
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Innovative Water Technologies
http://www.twdb.texas.gov/innovativewater/reuse/index.asp

Texas Water Development Board
www.twdb.texas.gov