Municipal Reuse

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Reuse and Conservation by Region in Texas

2007 State Water Plan - 2060 Projections

Acre-Feet/Year

Region

C H K L G E M D O A F I B N J P

Existing Reuse
Planned Reuse
Municipal Conservation
Region C

- Conservation and Reuse: 23%
- Connect Existing Supplies: 25%
- Groundwater Supplies: 3%
- Current Surface Supplies: 33%
- New Reservoirs: 16%
Wilson Creek WWTP (54,000 ac-ft/yr)

Lake Texoma Inflow (93,000 ac-ft/yr)

Lavon Lake Yield (115,000 ac-ft/yr)

Wilson Creek WWTP (54,000 ac-ft/yr)

Chapman Lake Inflow (50,000 ac-ft/yr)

East Fork Water Supply (102,000 ac-ft/yr)

Lake Tawakoni Inflow (50,000 ac-ft/yr)

From constructed wetland
A Key Reuse Project:
The East Fork Raw Water Supply Project for the North Texas Municipal Water District (NTMWD)
NTMWD Service Area

Population
2010 ~ 1.6 million
2060 ~ 3.5 million
Lake Texoma Inflow

Lavon Lake

Chapman Lake Inflow

Wilson Ck

WTP

Muddy Ck

Ray Hubbard

East Fork Trinity River

Rowlett Ck

Duck Ck

South Mesquite Ck

Lake Tawakoni Inflow

○ Major WWTPs

→ Diversion Point

→ Raw Water Transfer

Constructed Wetland
Project Components

- 165 million gallons per day (mgd) peak capacity diversion pump station
- 1,840-acre constructed wetland
- 150-mgd peak capacity conveyance pump station
- Electrical substation to provide power for the conveyance pump station
- 43.5 miles of 84-inch-diameter pipeline transferring water from the wetland to Lake Lavon
- John Bunker Sands Wetland Center to provide educational opportunities
Conveyance Pump Station
Inside Conveyance Pump Station
Conveyance Pipeline
John Bunker Sands Wetland Center
Multiple Benefits of the Wetland

- Development of Wetland Habitat Areas
- Preservation of Green Space
- Water Quality Improvement
- Outreach and Educational Opportunities
- Research Opportunities
Project Facts

- Provides over 102,000 acre-feet of water per year, enough water to serve 500,000 people
- Compared to developing a new reservoir
  - cost of less than 25%
  - in about 20% of the time
Project Facts

- Fast-tracked – 4 years from the beginning of design to project start-up
- Total project cost $264M
- Wetland was hand-planted with 1.8 million plant plugs
- 225 different bird species at the facility from 1/1/07 to 2/21/09
- 27.88 billion gallons of water conveyed through wetlands to Lavon Lake from January 2009 to October 16, 2011
Another Perspective...

Lake Lavon Yield: 104,000 ac-ft/yr
(128,270,000 cu m/yr)

East Fork Water Supply Project: 102,000 ac-ft/yr
(125,800,000 cu m/yr)

Total Yield: 206,000 ac-ft/yr
(254,070,000 cu m/yr)
Chapter 210 Authorizations in Texas

- 213 reuse permits in Texas
- Significant permitees include:
  - City of Dallas
  - City of Denton
  - City of Fort Worth
  - City of Garland
  - North Texas Municipal Water District
  - Trinity River Authority of Texas
Questions?
<table>
<thead>
<tr>
<th>Condition</th>
<th>Projections (municipal gpcd)</th>
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<tbody>
<tr>
<td></td>
<td>2010</td>
</tr>
<tr>
<td>No Conservation or Reuse</td>
<td>210</td>
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<tr>
<td>With Recommended Conservation and Reuse</td>
<td>173</td>
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Region C Municipal GPCD Projections

Conservation Task Force Goal

No Conservation or Reuse

With Recommended Conservation and Reuse (Preliminary recommendations for 2011 Region C Plan)
Region C Expected Water Savings (Preliminary 2011 Region C Plan)

- Municipal GPCD Reduction\(^{(1)}\)
  
<table>
<thead>
<tr>
<th>Year</th>
<th>GPCD</th>
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<td>2010</td>
<td>210</td>
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<tr>
<td>2060</td>
<td>133</td>
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- Reduction of municipal water demand
  Reduction = 30 to 35%

\(^{(1)}\) Based on preliminary recommendations of conservation measures, including reuse, being considered by Region C Regional Planning Group.
* It’s important to recognize the interrelationship between traditional strategies and supplemental strategies.

Source: Texas Water Development Board, *Water for Texas 2007*
Natural Treatment Systems/Wetlands

Project Benefits

- Use of a natural system to supply water to the region served by NTMWD
- Efficient use of resources
- Provides wildlife habitat that is a major environmental benefit
- Agency support
  - Texas Parks and Wildlife
  - Corps of Engineers
- Public acceptance