Paradigms Lost and Found

A Case Study of Water in Texas

by

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Texas is approximately twice the size of Germany
Paradigms Lost?

• Changing paradigms
  – “Our bays and estuaries can take care of themselves.”
  – “Need more water --- build a reservoir.”
  – “Our aquifers recharge themselves.”
  – “You can’t desalinate seawater, it is too expensive.”
Water Dynamics of Texas

- Population Growth Projections
- Water Supply/Demand Projections
Issues

• Shrinking Aquifers in Drier Areas - Ogallala
• Interbasin Transfers of Water – ‘68 water plan
• Water Rights Differ
• Subsidence
• Instream/Environmental Flows
• Myriad of Water Management Entities
• Continuing Drought in Some Areas
Regional Water Planning Areas

REGIONAL WATER PLANNERS
Laraa Bockout (512) 936 - 9439, Regions G, J & P
Angela Kennedy (512) 463 - 1437, Regions C, N, & O
Temple Hinton (512) 475 - 2057, Regions D & H
David Miestay (512) 936 - 0852, Region K
Mall Nelson (512) 936 - 3550, Region L
Doug Shaw (512) 463 - 1711, Regions A, B, & F
Corinne Townsend (512) 463 - 0260, Regions E, J & M
Texas Watermaster Program

http://www.tceq.texas.gov/permitting/water_rights/wmaster
Legislation in 2001 authorized studies:
To determine water required to maintain the environment in bays & estuaries

Study results & recommendation due to the Legislature by 31 December 2016

Texas has 367 miles of coastline and 21 river basins
Interbasin Transfers of Water

The Coastal Canal & other components
"The 1968 Texas Water Water Plan"
The Mary Rhodes Project for the Corpus Christi Texas Water Supply System

Corpus Christi Mayor Mary Rhodes standing inside 64-inch pipe at project groundbreaking.

64” Mary Rhodes Pipeline Design
Capacity 112,000 Acre-Feet/Year

<table>
<thead>
<tr>
<th>Source</th>
<th>Capacity (acft/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado River Water</td>
<td>35,000</td>
</tr>
<tr>
<td>Lake Texana Water</td>
<td>53,840</td>
</tr>
</tbody>
</table>

Current Lake Texana Water Take:
- 31,440 Permanent Firm Yield
- 10,400 Recalling Firm Yield
- 12,000 Interruptible
The Mary Rhodes Pipeline 101 miles (Phase I)
Colorado River 41-mile Mary Rhodes (Phase 2)
**TOTAL 142 mile pipeline**
Technologies and Solutions

- SWIFT
- Aquifer Storage and Recovery
- Reservoir Management Using Polymer Film
- Using LandSat technology to monitor water usage

- Harris/Galveston Subsidence District
- The Texas State Water Plan and 2 billion dollars
- Desalination
- Interbasin Transfer of Water
- Water Recycling and Reuse
- Infrastructure Upgrades
- Water Conservation Techniques
- Management Changes (Watermaster, Sale of Water Rights)
2015
Texas Legislative Session

• Desalination
• HB 3298
HB 3298 – “Relating to a study to be conducted by the Texas Water Development Board regarding the development of a market and conveyance network for water in this state.”
Paradigms Lost
Reservoir Construction
Ground Water Withdrawal
River Flow
Paradigms Found

• SWIFT Vote
• Desalination
• Aquifer Storage and Recovery
• Additional inter-basin transfers
Paradigms Found (cont’d)

• Policing Catchment Water Use
  (**Water Master**)

• “In Law”
  - Conservation
  - Re-use
TEXAS IS A DROUGHT PRONE STATE!

First record of a drought in Texas ----
Álvar Núñez Cabeza de Vaca (early 1500)
The number of drought years in each of ten geographical areas of Texas **Between 1892 & 1992**

<table>
<thead>
<tr>
<th>Area</th>
<th># of Years of drought</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trans-Pecos</td>
<td>16</td>
</tr>
<tr>
<td>Lower Rio Grande valley</td>
<td>17</td>
</tr>
<tr>
<td>Edwards Plateau</td>
<td>17</td>
</tr>
<tr>
<td>South Central</td>
<td>15</td>
</tr>
<tr>
<td>Southern</td>
<td>15</td>
</tr>
<tr>
<td>North Central</td>
<td>12</td>
</tr>
<tr>
<td>Upper Coast</td>
<td>13</td>
</tr>
<tr>
<td>East Texas</td>
<td>10</td>
</tr>
<tr>
<td>High Plains</td>
<td>10</td>
</tr>
<tr>
<td>Low Rolling Plains</td>
<td>8</td>
</tr>
</tbody>
</table>
Texas is a drought prone state

Texans have had to be resilient & proactive

Drought of the “Fifties”:
Reservoir construction
Present statewide drought:
- SWIFT program
- Inter-basin transfer
- Desalination programs (Required)
- Conservation & Reuse
We know:
- Droughts are cyclical
- Never permanent
AT LEAST
WE HOPE THAT
CONTINUES
TO BE THE CASE!
QUESTIONS?