

Briefing on TWDB Desalination Activities for the South Central Desalting Association-July 2005



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Texas Water Development Board



Texas Water Development Board



- Collect, disseminate water-related data
- Assist in regional water planning
- Prepare State Water Plan
- Finance water infrastructure projects

Press Release - April 29, 2002

OFFICE OF THE GOVERNOR

- SAN ANTONIO - Gov. Rick Perry today called for the construction of the state's first large-scale ocean water desalination plant as one step toward securing an abundant water supply to meet Texas' future needs.....

TWDB's Role

The board shall undertake or participate in research, feasibility and facility planning studies, investigations, and surveys as it considers necessary to further the development of cost-effective water supplies from seawater desalination in the state. [HB 1370 ~ TWC §16.060]

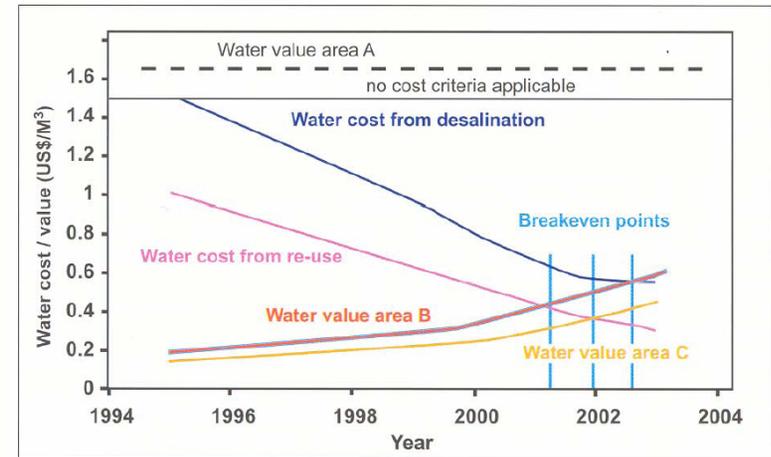
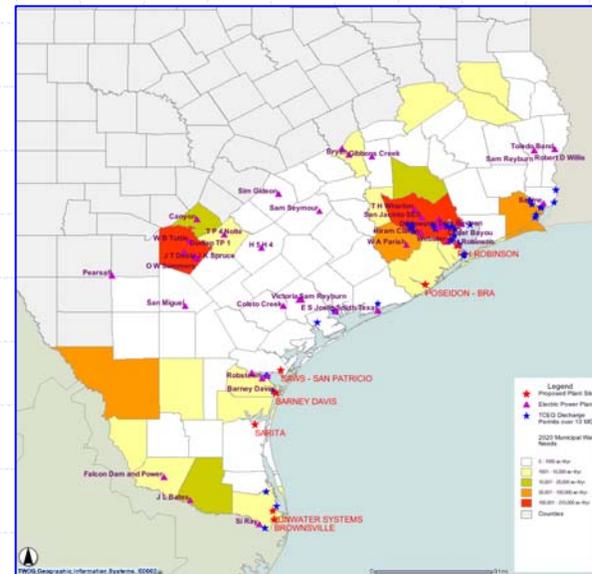
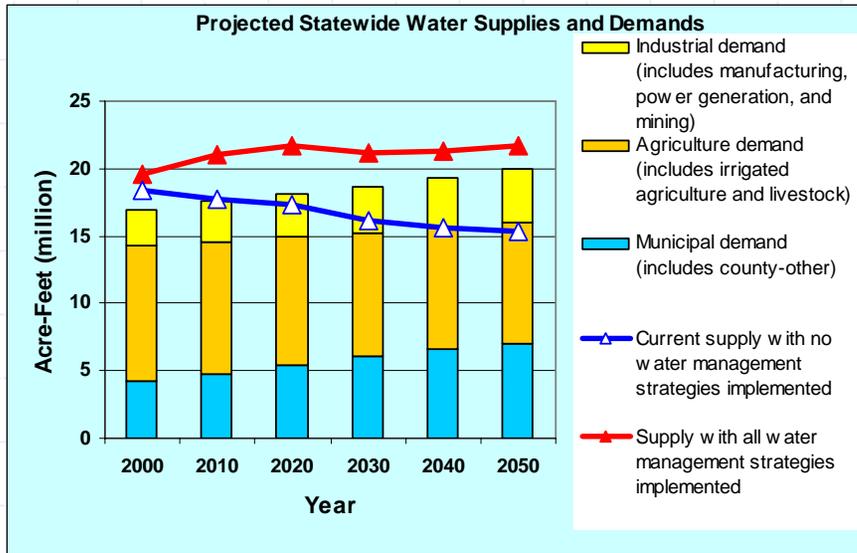


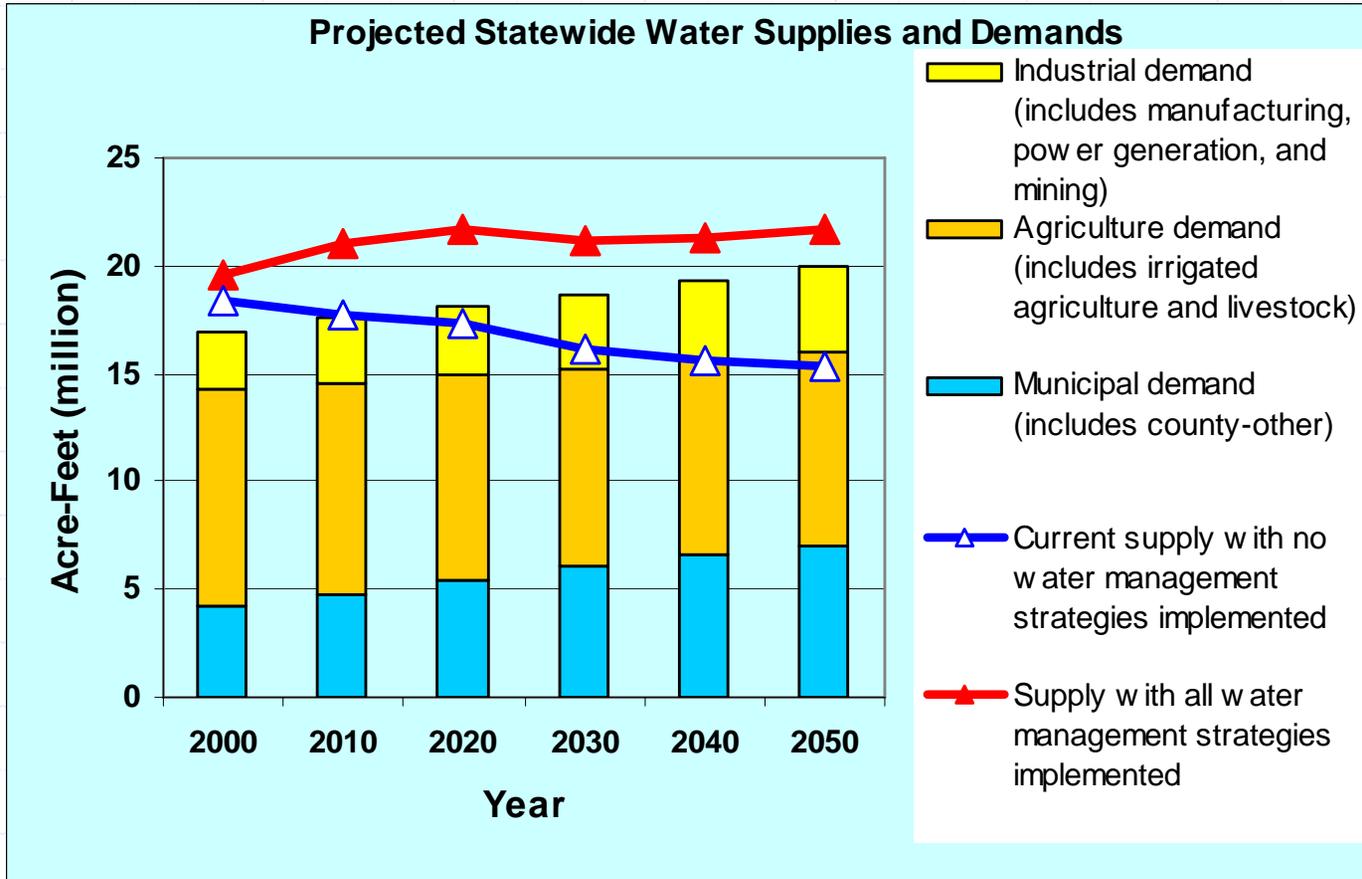
Figure 3.6 Historical trend of fresh water abstraction and desalination market values

C. Sommariva-Desalination Management and Economics

Rio Grande - 2002

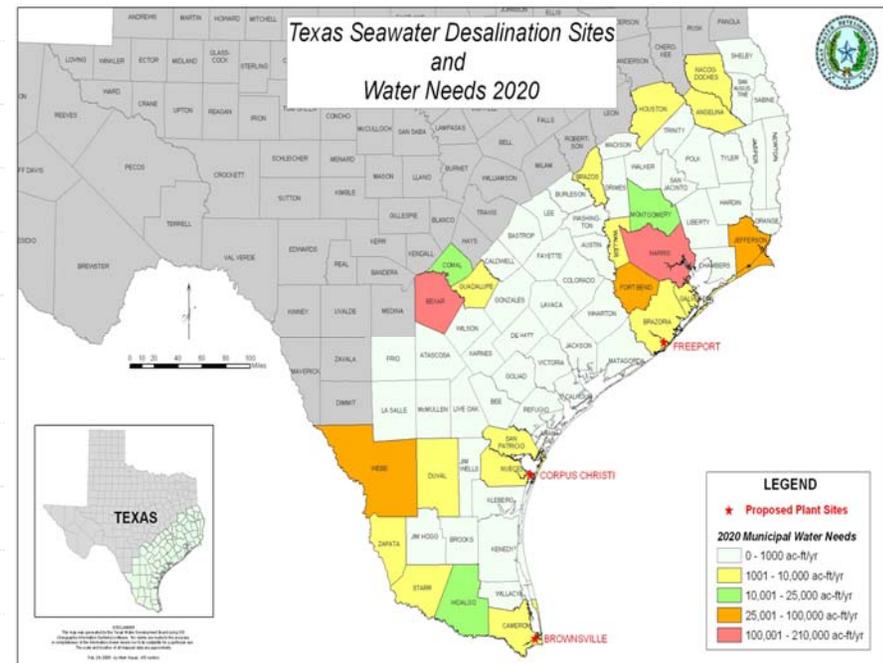


Water For Texas 2002



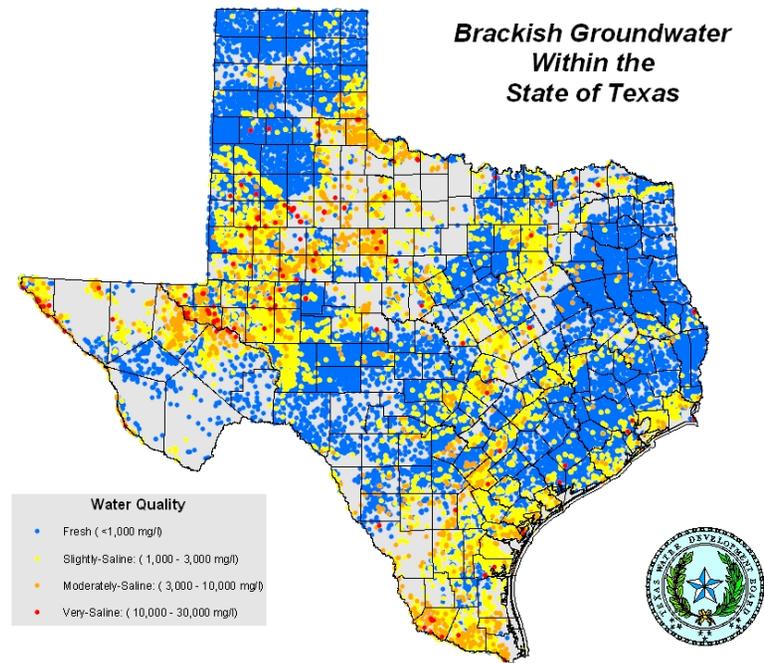
Seawater Availability-Gulf of Mexico

- 367 miles of coastline
- Availability of sites
- Proximity to demand centers

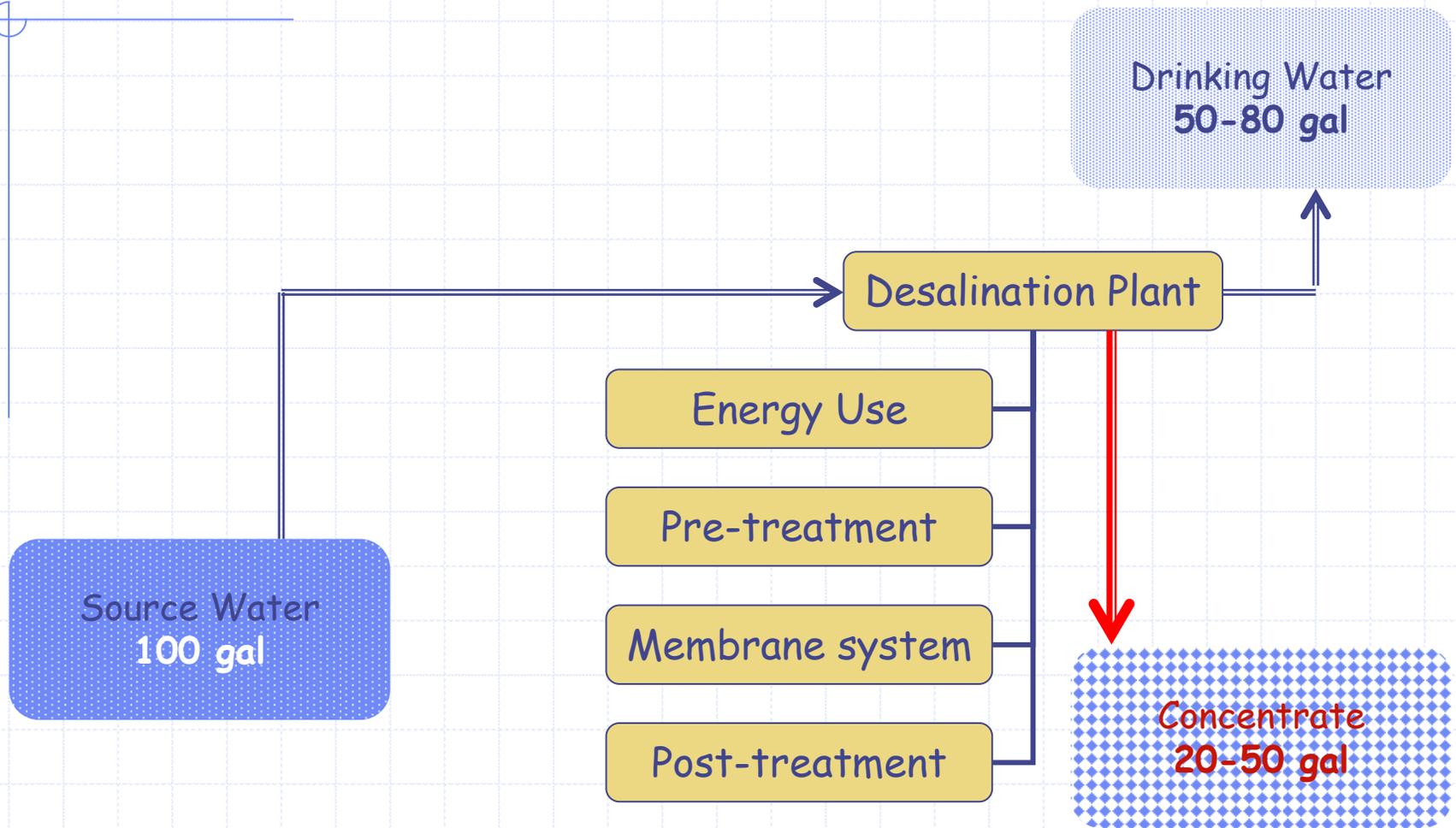


Availability-brackish groundwater

- As much as 2.7 billion acre-feet
- Salinity below 10,000 milligrams per liter



The mechanics of desalination



Cost Trends

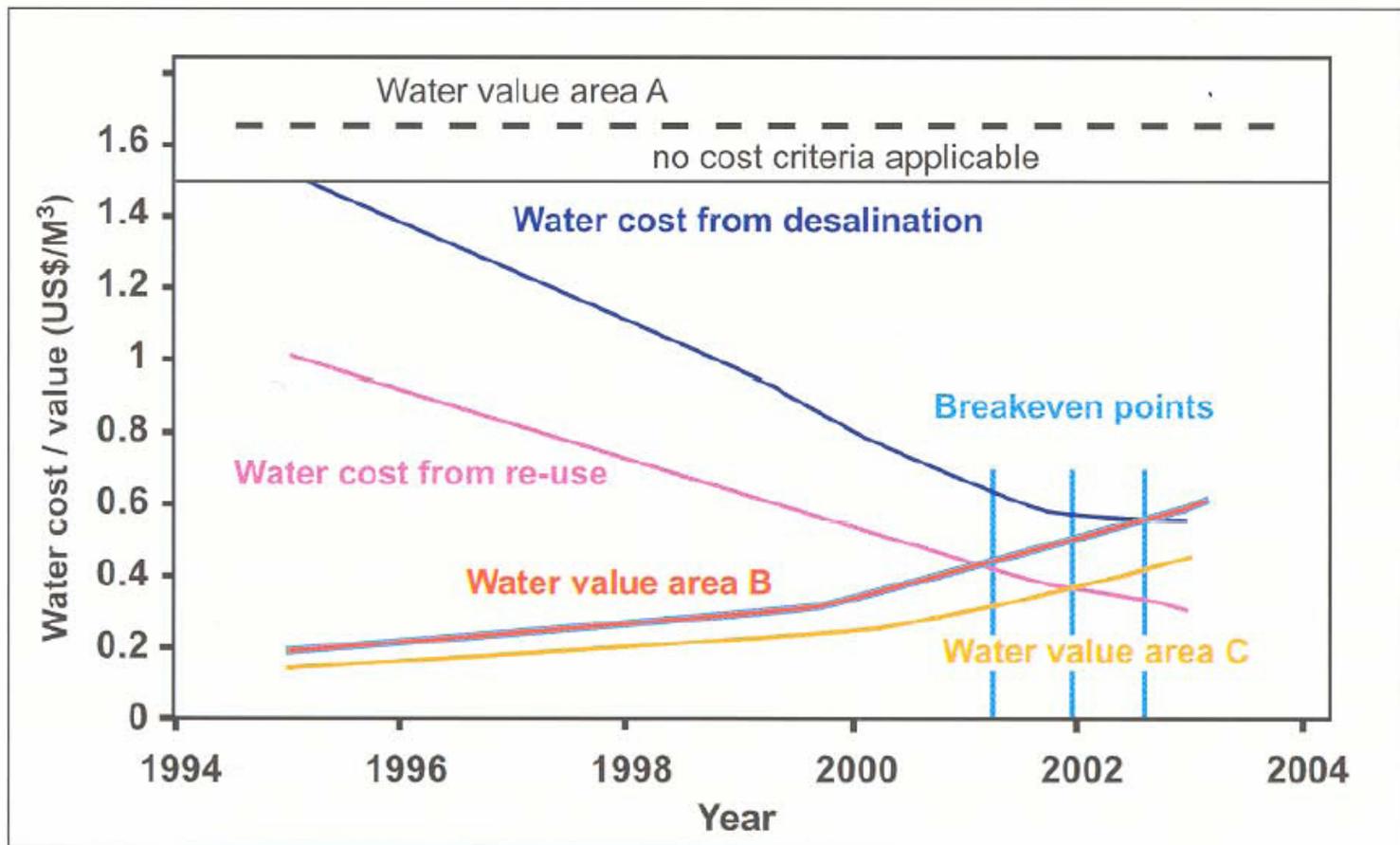


Figure 3.6 Historical trend of fresh water abstraction and desalination market values

With permission of C. Sommariva-Desalination Management and Economics

Seawater Desalination

- Project sites
 - Public solicitation process
 - Three potential demonstration projects
- 78th Texas Legislature
 - HB 1370 (Luna)
 - Seawater feasibility studies
- Research studies and other support activities
- 79th Texas Legislature
 - \$3.3 million for pilot plants, demonstration projects and outreach activities

Water costs

	Brownsville 25 mgd	Corpus Christi 25 mgd	Freeport 10 mgd
Total Project Cost	\$151,388,000	\$196,600,000	\$93,183,000
Cost of desalinated water delivered to the distribution system	\$2.41/1,000 gal	<i>\$3.51/1,000 gal</i>	<i>\$3.37/1,000 gal</i>
	\$784/AF	<i>\$1,133/AF</i>	<i>\$1,088/AF</i>
Projected cost to the system to add desalinated water	\$4.01/1,000 gal	\$4.23/1,000 gal	\$3.58/1,000 gal
	\$1,295/AF	\$1,366/AF	\$1,155/AF

2004 Biennial Report on Desalination

- **Volume 1**- Biennial Report on Seawater Desalination, recommends that:
 - Continue advancing toward implementation of a large-scale demonstration seawater desalination facility in Texas
 - Fund pilot plants at each of the 3 proposed sites
- **Volume 2** – Technical Papers, Case Studies and Desalination Technology Resources

2004 The Future of Desalination in Texas-Volume 2

- Chapter 1: Availability and Development of Saline Water Sources in Texas
- Chapter 2: Desalination Technology
- Chapter 3: Desalination Projects Funding and Implementation
- Chapter 4: Desalination Resources

Seawater Desalination

2010-2012
New drought-proof
water supply

Design, construction,
commissioning

EIR, Discharge Permits
& Others

Pilot Plant Studies

79th Session

Dec 2004
Completed feasibility Studies

78th Session

Dec 2002
Statement of Interest
Selected Sites

Seawater Desalination Pilot Plant Studies

What is a pilot plant study?

Risk & Procurement Strategies

Lessons from other projects

Deliverables

Who owns the projects?

How does the fact that these are demonstration projects factor in?

Cost of a pilot plant study

Role of the Design Engineer

TWDB's Role?

Time Line
FY 2006-2007

Role of equipment manufacturers

Ad-hoc expertise

Seawater Desalination Pilot Plant Studies

What is a pilot plant study?

Seawater desalination plants consist of **multiple unit processes** connected together to form a treatment process train.

These unit processes typically include one or more pretreatment processes, the primary desalination process, and a polishing desalination process.

Pilot studies are configured to simulate the complete proposed treatment process train.

Testing is conducted using the source water under consideration.

Reiss, Robert-The importance of pilot studies in the development of large-scale seawater desalination plants-The Future of Desalination in Texas, Volume 2, 2004

Seawater Desalination Pilot Plant Studies

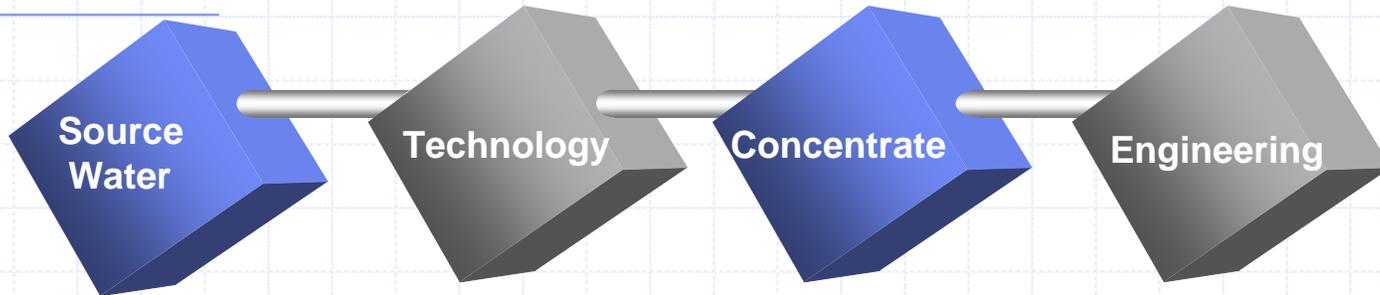
Outcomes

- ➡ Address 30 Texas Administrative Code §290
- ➡ Test/fine-tune recommended treatment strategy
 - Assess source water at recommended site
 - Test recommended pretreatment system
 - Test recommended desalination treatment
 - Assess water blending issues
 - Coordinate with equipment manufacturers
- ➡ Provide data for discharge permitting
- ➡ Develop more accurate project costs
- ➡ Provide a tangible demonstration of the technology for the public and government officials

Rider #26 – Brackish Groundwater Desalination

- **26. Appropriation: Desalination.** Included in amounts appropriated above out of the General Revenue Fund in Strategy A.2.2., Water Resources Planning, is \$3,200,000 in fiscal year 2006 and \$100,000 in fiscal year 2007 to be transferred to the Water Assistance Fund No. 480. Of the amounts, \$3,100,000 in fiscal year 2006 shall be used
 - **for grants for the development of up to three pilot seawater desalination projects** and
 - **for grants for the planning, permitting, design, and development of brackish groundwater desalination demonstration projects at sites to be determined,**
 - and \$100,000 in each year of the biennium shall be used for staff costs to oversee the projects, monitor the development of desalination technology, and provide educational outreach and technology transfer.
- Any unexpended balances remaining in this appropriation on August 31, 2006 are hereby appropriated for the fiscal year beginning September 1, 2006.

Brackish Groundwater Desalination Initiative: Roadmap



TWDB Baseline Study

Availability and sustainability

Impact on fresh water sources

Not a feasibility issue

Educational value of providing working examples

Potential “deal-killer”

Alternatives for small projects

Illustrate permit process

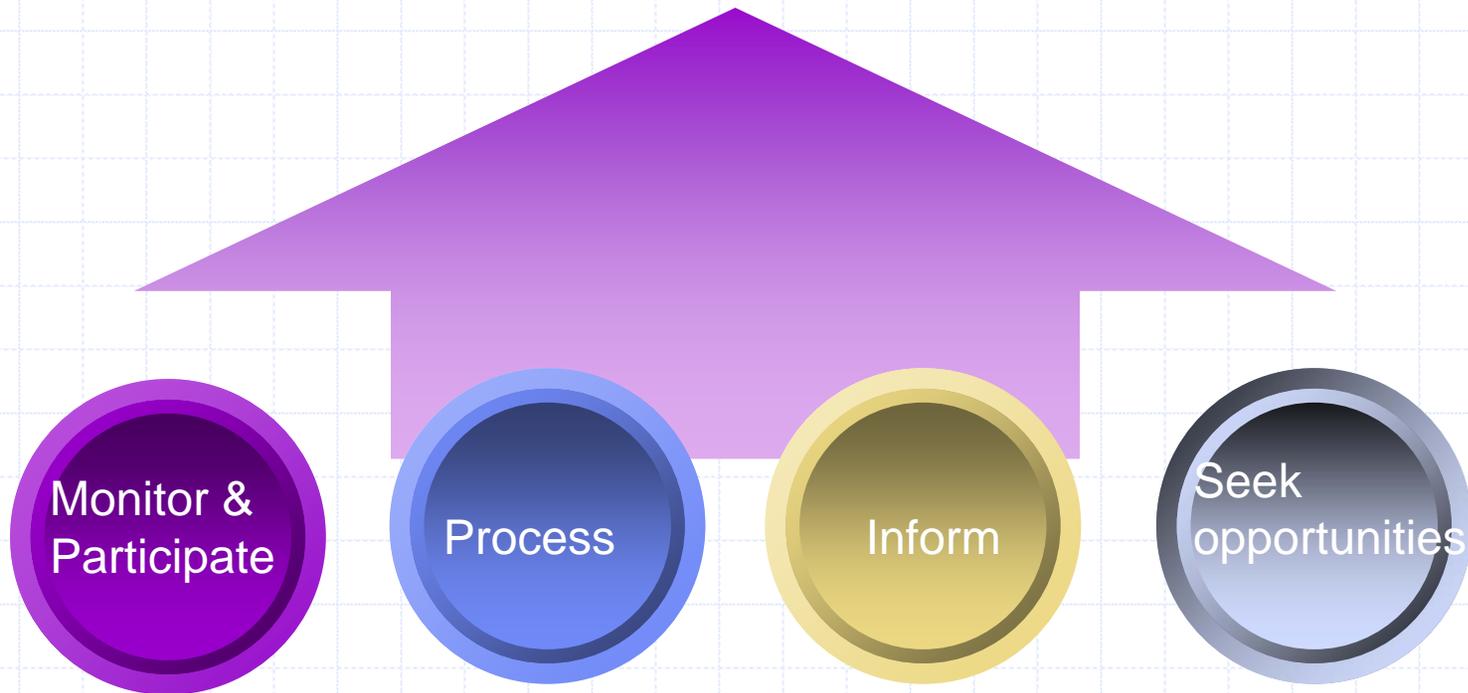
Facility engineering

Design

Construction

Outreach and other activities

Technology Transfer



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