



Desalination in Texas

Jorge A. Arroyo

Texas Water Development Board

San Angelo, February 2004

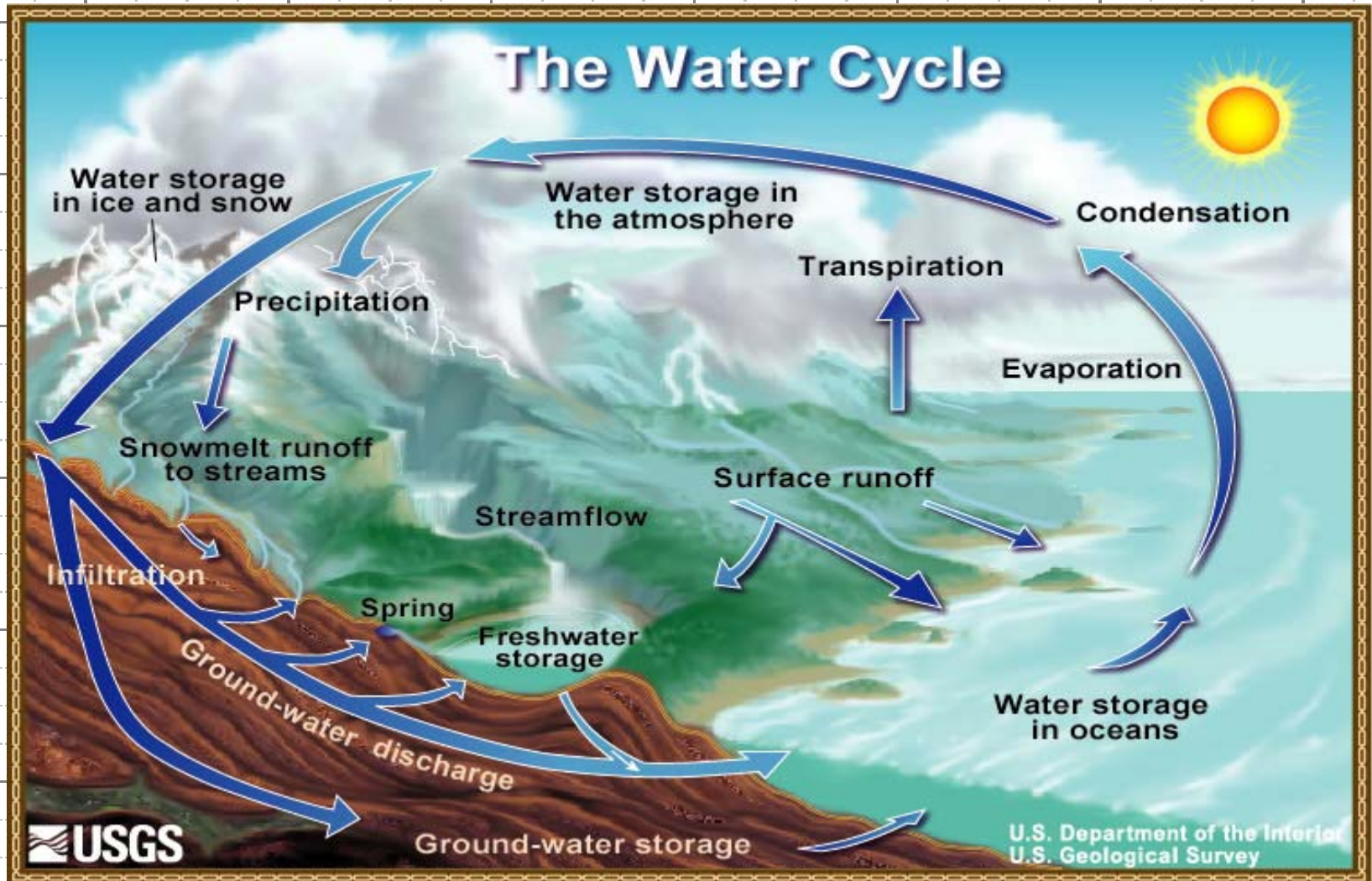
Why desalination?

⊕ Different (complementing) views:

- Water development policy
- Regional water planning
- Hydrogeology
- Engineering

⊕ TWDB Desalination Program

The World's Very First Desalination Facility



A more complex [practical] option

Southmost RWA-BGWRO



Drinking Water Standards

TDS Standard [<u>Secondary</u>]	Milligrams/liter
Texas Commission on Environmental Quality	1,000
United States Environmental Protection Agency	500
World Health Organization	500

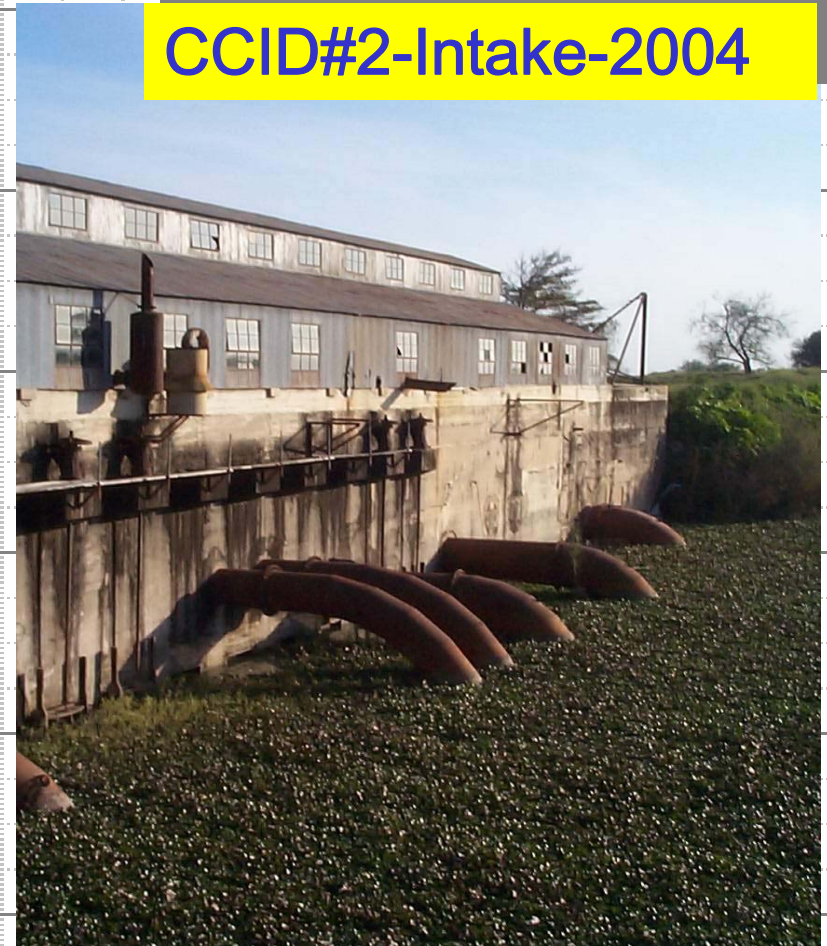
Desalination

An alternative/complement to traditional (stressed) sources

R. Grande 2001



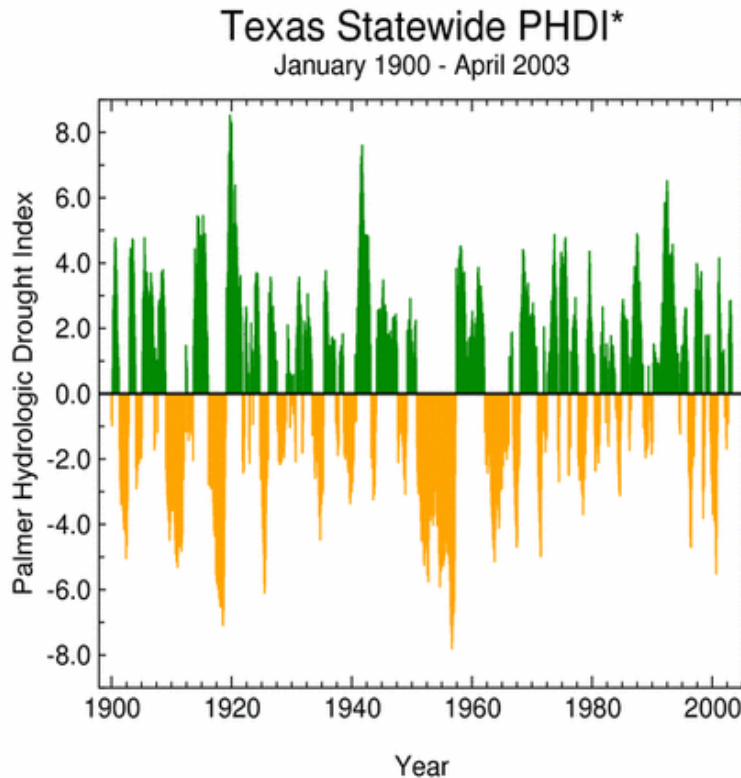
CCID#2-Intake-2004



Desalination Brings New Water

As a means to increase reliability of water supplies

Increasing vulnerability to droughts



*Palmer Hydrological
Drought Index

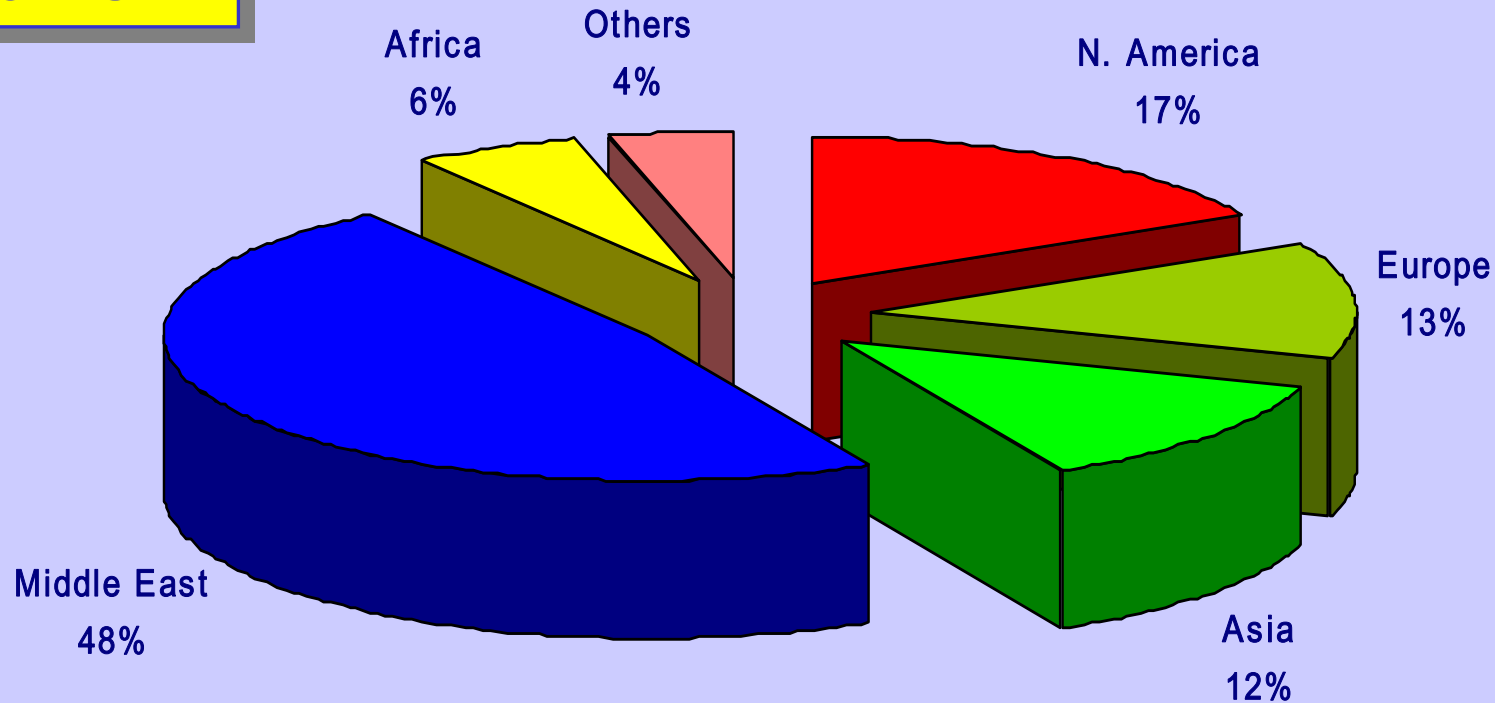


Desalination Around the World

It is not a fad... we just haven't needed it that bad.

Regional Percentages of Global Desalination Capacity(*)

6.8 BGD



(*) International Desalination Association, May 2000

Desalination Costs

The costs of desalination keep decreasing

Plant	Production cost [\$/1,000 gal]
Tampa Bay (USA)-25 MGD	\$2.49
Point Lisas (Trinidad)-26 MGD	\$2.67
Askelon (Israel) – 2X37 MGD	\$1.99
Singspring (Singapore)–36 MGD	\$1.60

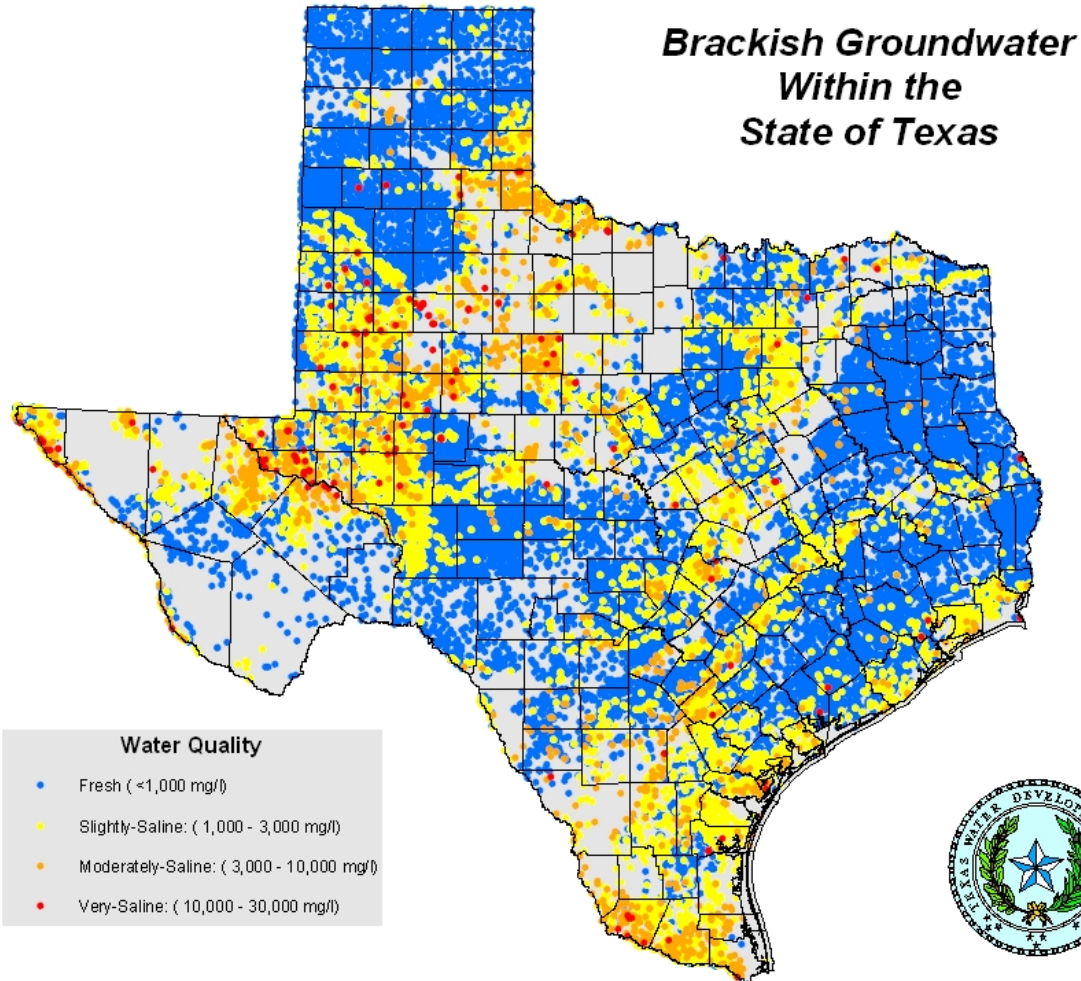
Desalination in Texas

~367 miles of Gulf Coast



Desalination in Texas

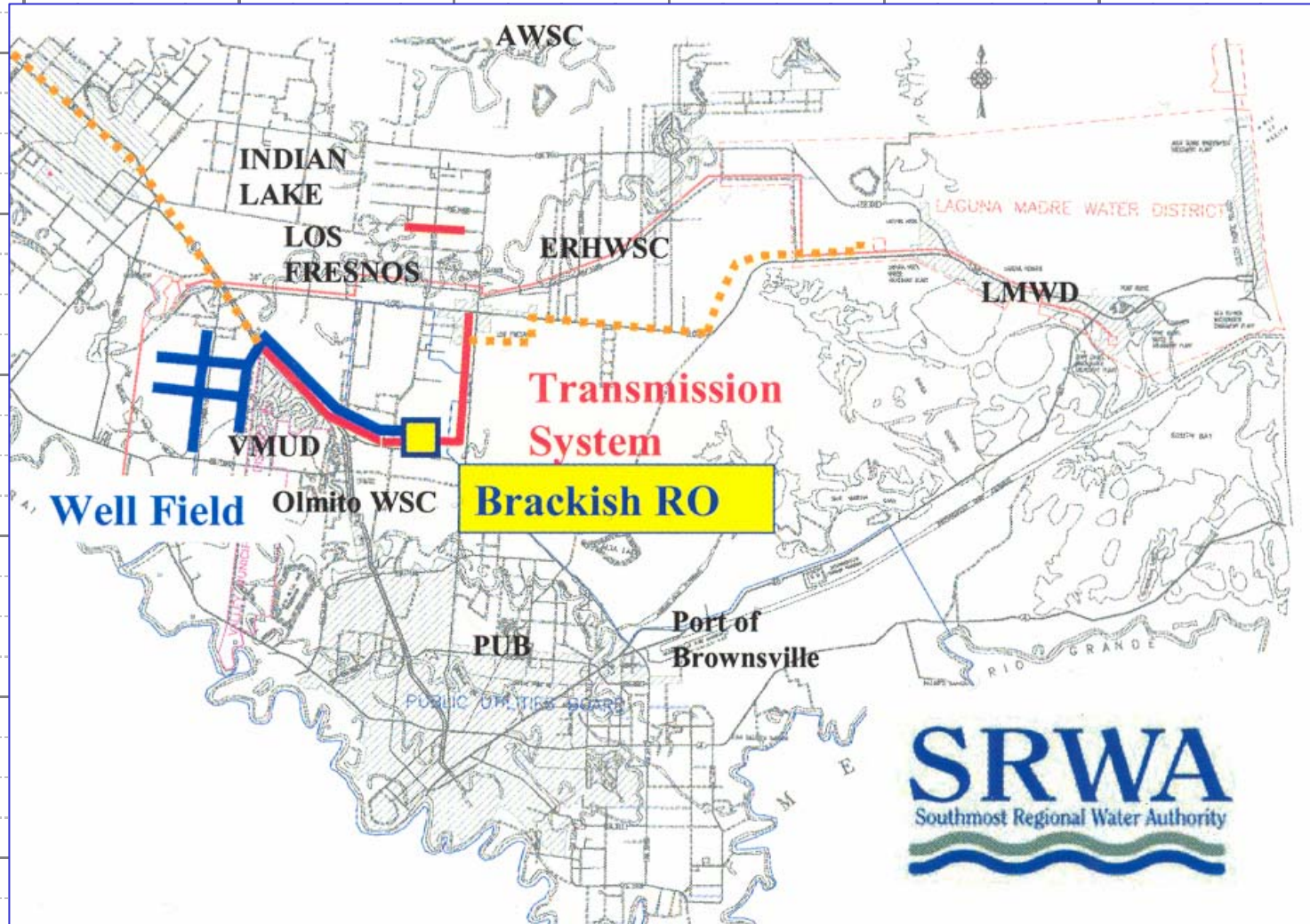
~2.7 Billion ac-ft of brackish groundwater



Desalination in Texas

Plant	Capacity MGD
Existing TCEQ permitted capacity (100)	173 [40]
Corpus Christi-North Padre Island	1-5
El Paso/Ft. Bliss [BGW-RO]	25
Southmost RWA [BGW-RO]	7.5
Wichita Falls [BSW-RO]	15
Brownsville PUB/Corpus Christi/Freeport	25+ ea

Southmost Regional Water Authority Brackish Desalination Plant



The Reverse Osmosis Process

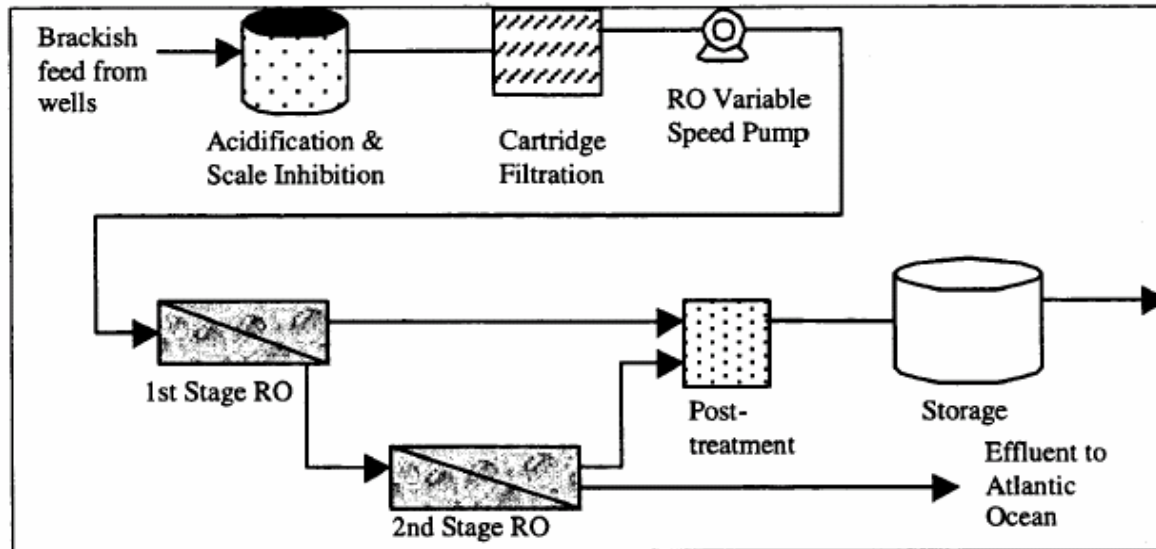
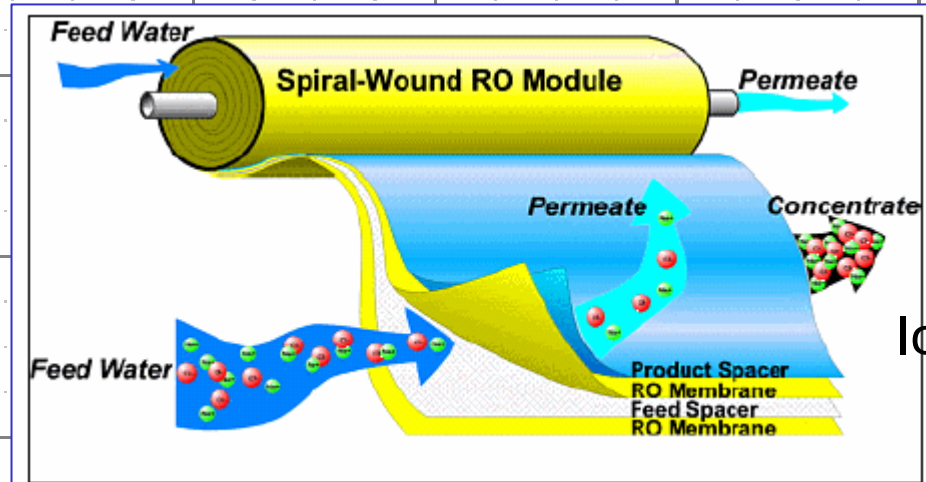
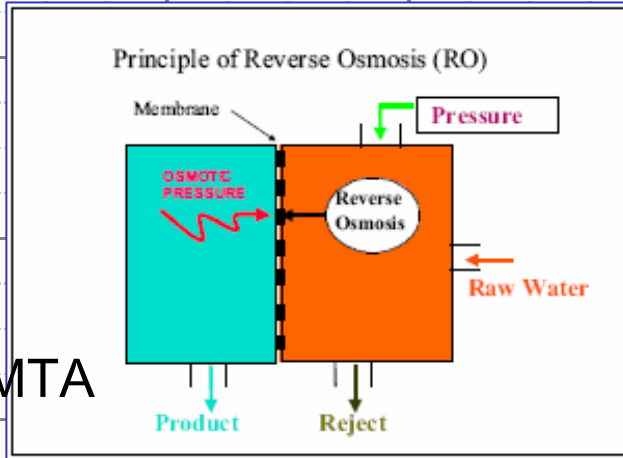


Figure 2-3 Process flow diagram for the Dare County, North Carolina, North RO plant

Southmost Regional Water Authority Brackish Desalination Plant



Southmost Regional Water Authority Brackish Desalination Plant



Southmost Regional Water Authority Brackish Desalination Plant



A Hardware Technology



MAY/JUNE 2003 • VOL 13/1

D&WR

The International
Desalination & Water Reuse
Quarterly A Fairweather House Group Publication IDA International Desalination Association

Blowing energy costs away – windpower and desalination

In this issue...

Advanced reuse –
Windhoek to NEWater and beyond

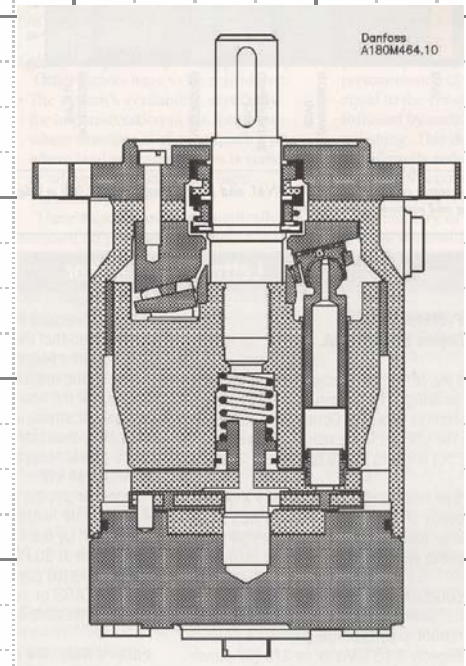
Plus

- Checking brine discharges to help tomorrow's plants
- UF versus conventional pretreatment for RO
- **MANUFACTURER'S CASE STUDY**
Newest pumps use only 2.7kW/m³ for SWRO

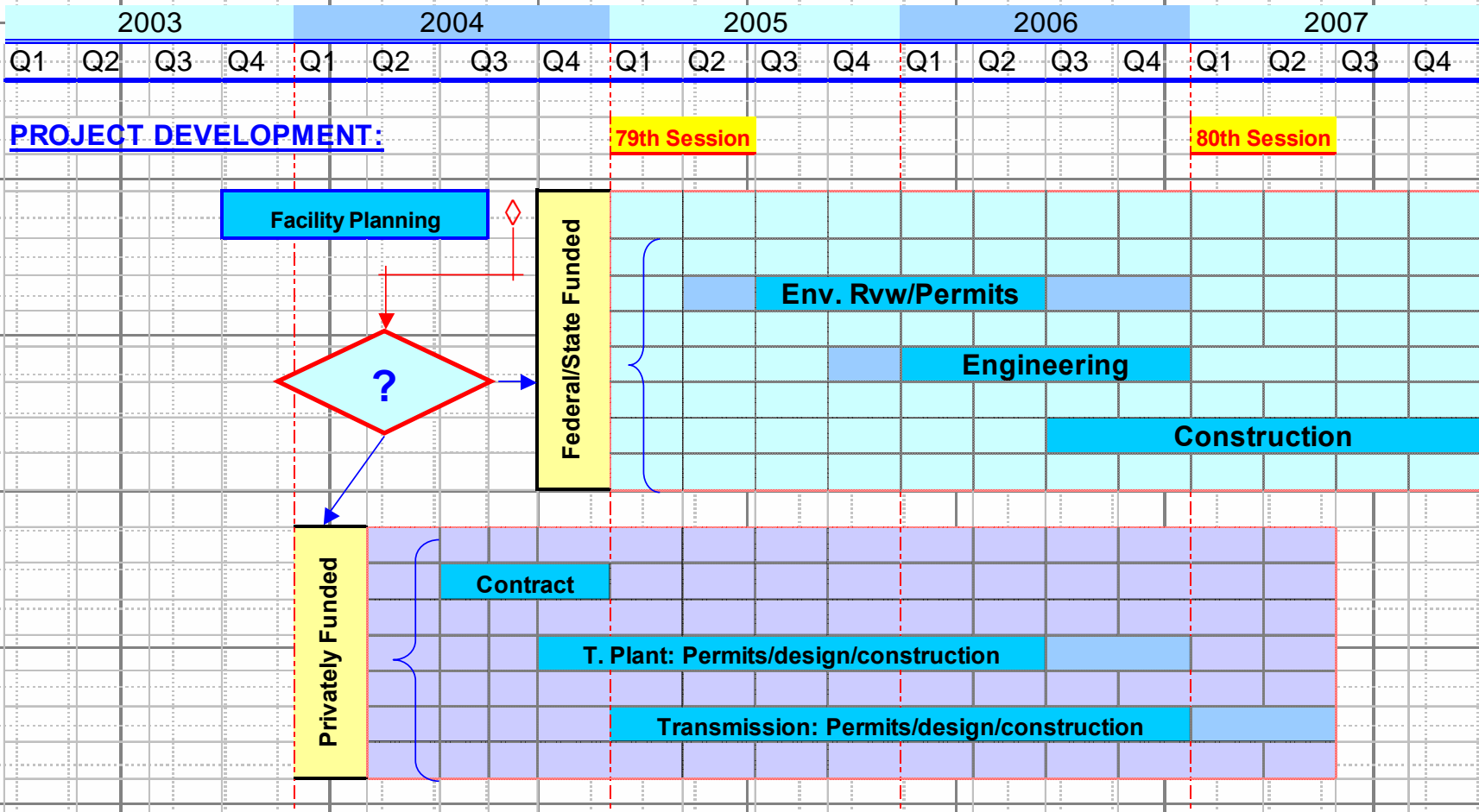
Manufacturer's Case Study

Newest pump technology uses only 2.7kW/m³ for SWRO

Freddy Ludvigsen, HOH Canarias, Canary Is, and Anders Valbjorn, Danfoss A/S, Denmark



Regional Water Facility Plans



TWDB Research Activities

