

Agenda Item 6.9
Update of Selected Water
Management Strategies

November 12, 2009



Strategy Evaluation Considerations

- ✓ **Hydrology**
 - **Supply Availability – WAMs & GAMs**
- ✓ **Environmental Impacts**
 - **Flow Changes**
 - **Habitat / Species Impacts**
- ✓ **Cost - September 2008 Dollars**
 - **Structural**
 - **Non-Structural**
 - ✓ **Land Acquisition**
 - ✓ **Relocations**
 - ✓ **Mitigation**
 - ✓ **Engineering**
 - **Annual**
 - ✓ **Power Costs \$0.09/kW-hr**
 - ✓ **Debt Service – 6% for 20 years (40 years for reservoirs)**
 - ✓ **Operation and Maintenance**

WMS Draft Write-Ups

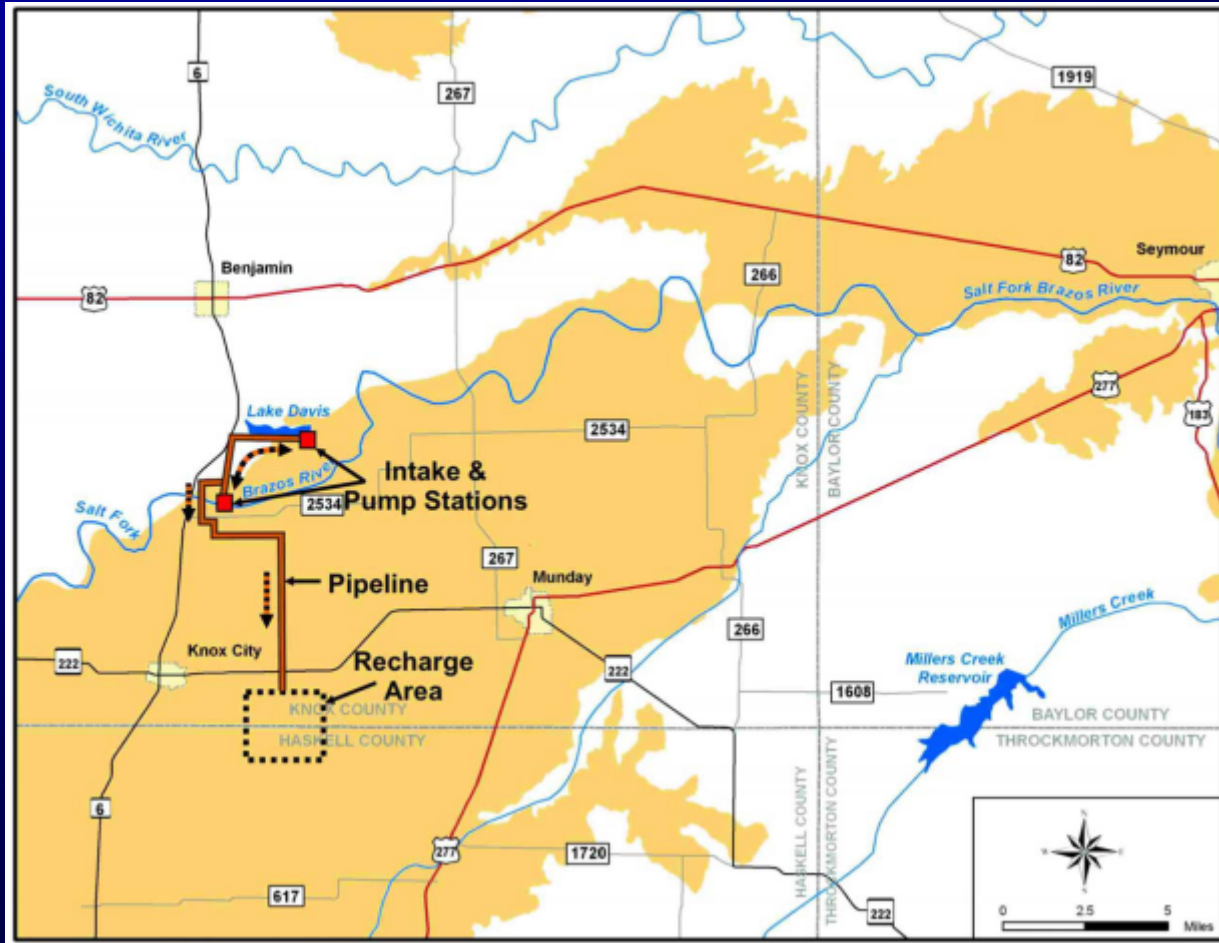
<http://www.BrazosGwater.org>

**Posted WMS Write-Ups ready
for review**

Conservation

- ✓ Presented in August
- ✓ Applied to WUGs with
 - Total Supply less than 105% of Demand when
 - Per Capita Use > 140 gpcd
 - Technical Document on Website

Seymour ASR in Knox and Haskell Counties



Potential Supply

- ❑ 6,208 acft/yr

Potential WUGs

- ❑ Knox County Irrigation
- ❑ Knox City
- ❑ City of Munday
- ❑ Haskell County Irrigation
- ❑ Haskell County Steam-Electric
- ❑ City of Haskell

Seymour ASR in Knox and Haskell Counties

Project facilities include:

- ❑ Intake and Pump station at Salt Fork and Lake Davis
- ❑ 36 in dia. transmission pipeline from Salt Fork to Lake Davis
- ❑ 24 in dia. transmission pipeline from Lake Davis to recharge area

ASR Cost Estimate Summary	
Total Capital Costs	\$27,139,000
Total Project Cost	\$38,625,000
Annual Cost	\$4,352,000
Available Project Yield	6,208 acft/yr
Annual Unit Cost of Water	\$701 /acft

Trinity ASR in Johnson County



Potential Supply

- ☐ 2-Phase Project
- ☐ 967 – 1,614 acft/yr

Possible Customers

- ☐ Multiple Johnson County Municipal WUGs
- ☐ Aggregated WUGs in Johnson County

Trinity ASR in Johnson County

Phase 1 (2010) Project facilities include:

- 8 - 250 gpm, 1,200 ft deep wells
- 8 to 12 in dia. well field connector pipelines
- System storage and interconnections

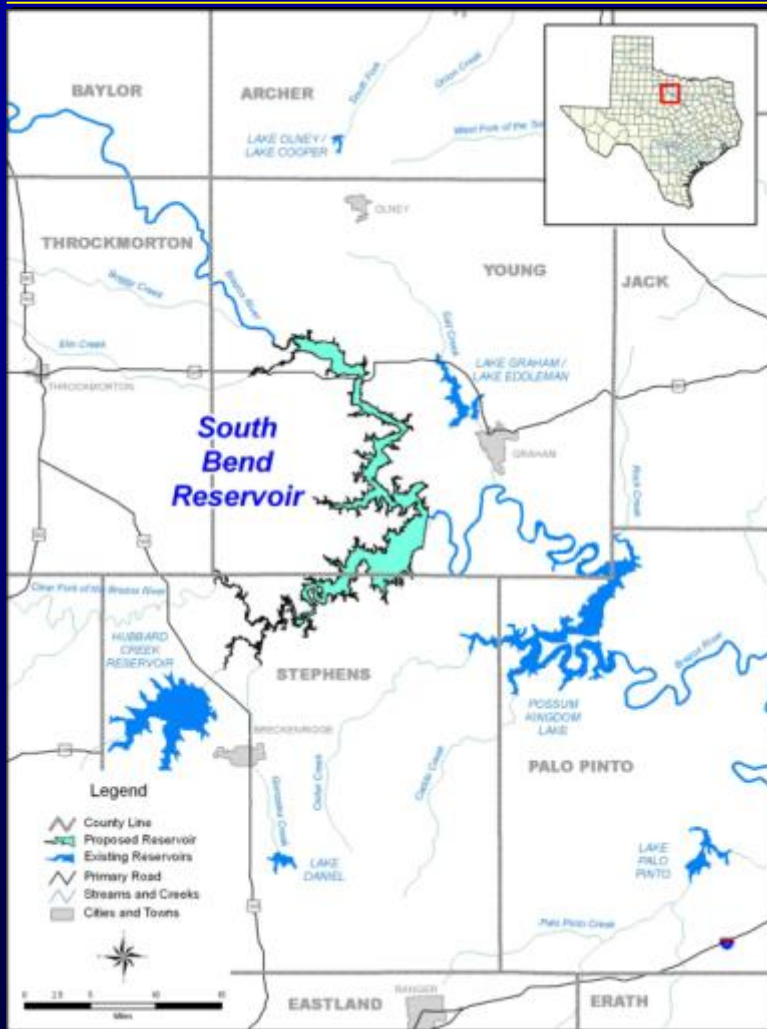
Phase 2 (2020) Project facilities include:

- 12 - 250 gpm, 1,200 ft deep wells
- 8 to 12 in dia. well field connector pipelines
- System storage and interconnections

ASR Cost Estimate Summary

	Phase 1 Project	Phase 2 Project
Total Capital Costs	\$6,883,000	\$11,718,000
Total Project Cost	\$10,353,000	\$17,644,000
Annual Cost	\$1,451,000	\$2,440,750
Available Project Yield	967 acft/yr	1,614 acft/yr
Annual Unit Cost of Water	\$1,500 /acft	\$1,512 /acft

South Bend Reservoir



- ❑ Proposed location in Young and Stephens Counties
- ❑ Capture flows from both main stem Brazos River and Clear Fork stem of the Brazos River
- ❑ Possible entities to supply water: BRA System Contracts, Tolar, Oak Trail Shores Subdivision, Stephens County Mining

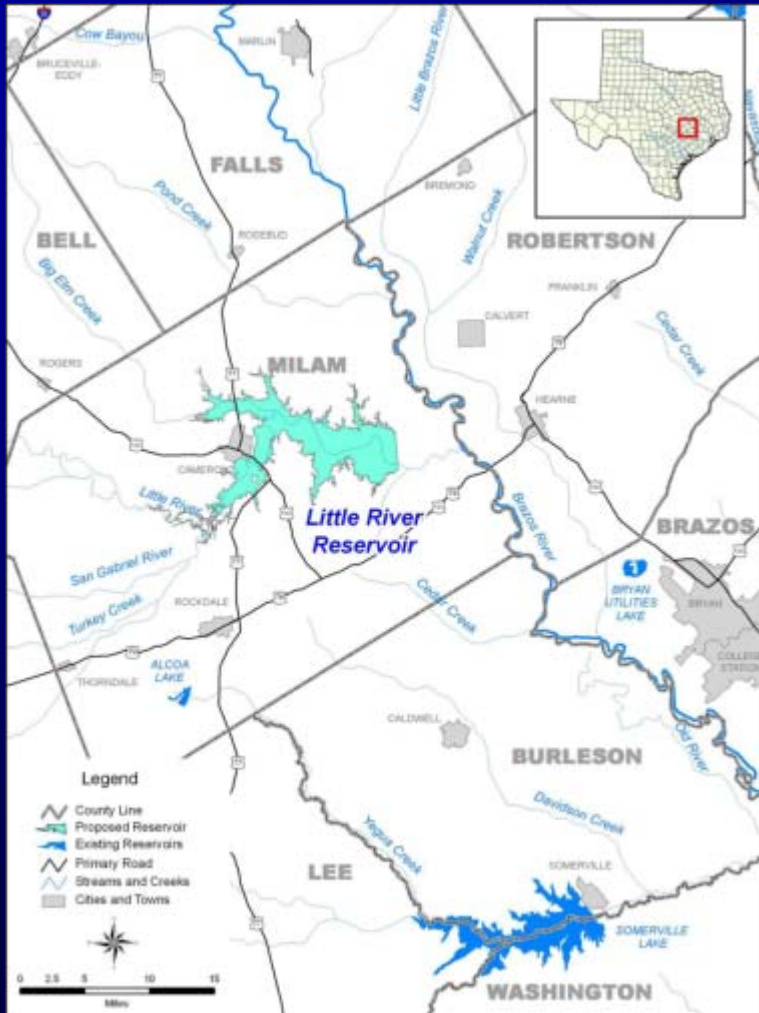
Reservoir Characteristics

Normal Pool WSEL	1,090 ft-msl
Capacity	771,604 acft
Surface Area	29,877 acres
Drainage Area	13,168 sq-mi

South Bend Reservoir

Reservoir Cost Estimate Summary	
Total Capital Costs	\$157,755,000
Total Project Cost	\$422,715,000
Annual Cost	\$31,314,000
Available Project Yield	64,500 acft/yr
Annual Unit Cost of Water	\$485 /acft

Little River Reservoir



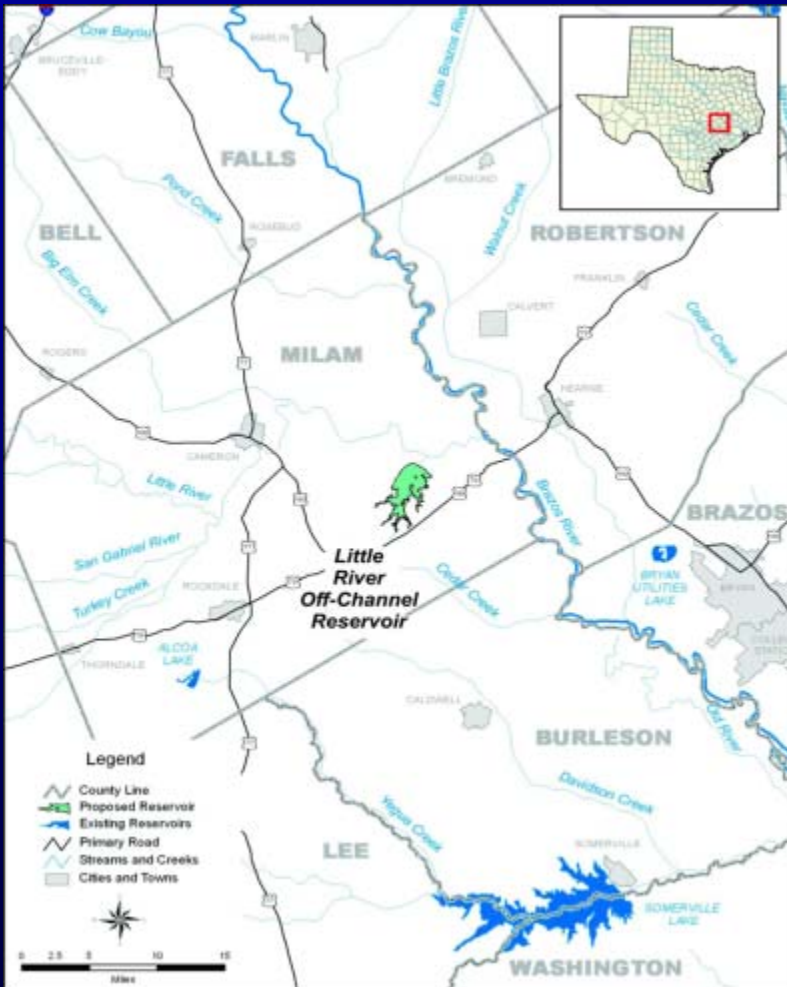
- ❑ Proposed location in Milam County
- ❑ Capture flows from Little River, Big Elm Creek, San Gabriel River, and Turkey Creek
- ❑ Possible entities to supply water: BRA System Contracts, Region H, Brazos County

Reservoir Characteristics		
Normal Pool WSEL	310 ft-msl	330 ft-msl
Capacity	321,000 acft	930,460 acft
Surface Area	20,687 acres	35,464 acres
Drainage Area	7,584 sq-mi	7,584 sq-mi

Little River Reservoir

Reservoir Cost Estimate Summary		
	310 ft-msl Normal Pool Elev	330 ft-msl Normal Pool Elev
Total Capital Costs	\$86,953,000	\$153,812,000
Total Project Cost	\$331,705,000	\$556,520,000
Annual Cost	\$23,349,000	\$39,293,000
Available Project Yield	71,275 acft/yr	119,940 acft/yr
Annual Unit Cost of Water	\$ 328/acft	\$ 328/acft

Little River Off-Channel Reservoir



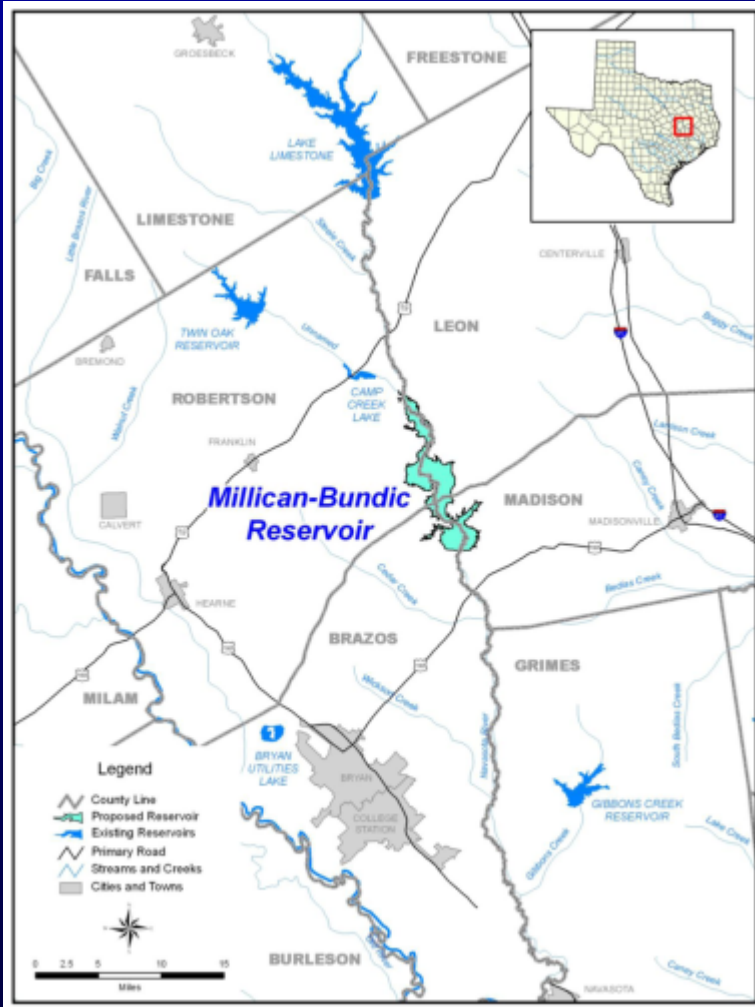
- ❑ Proposed location in Milam County
- ❑ Impound water from Beaver Creek watershed
- ❑ Divert water from Little River in periods of high flow
 - ❑ 1 mi. 108-in. pipeline
 - ❑ 11,221 HP pump station
- ❑ Potential WUGs to receive water:
 - ❑ Region H, BRA System Contracts, Brazos County

Reservoir Characteristics	
Normal Pool WSEL	400 ft-msl
Capacity	155,812 acft
Surface Area	4,343 acres

Little River Off-Channel Reservoir

Reservoir Cost Estimate Summary	
Total Capital Costs	\$60,796,000
Total Project Cost	\$137,356,000
Annual Cost	\$11,875,000
Available Project Yield	27,225 acft/yr
Annual Unit Cost of Water	\$436 /acft

Millican-Bundic Reservoir



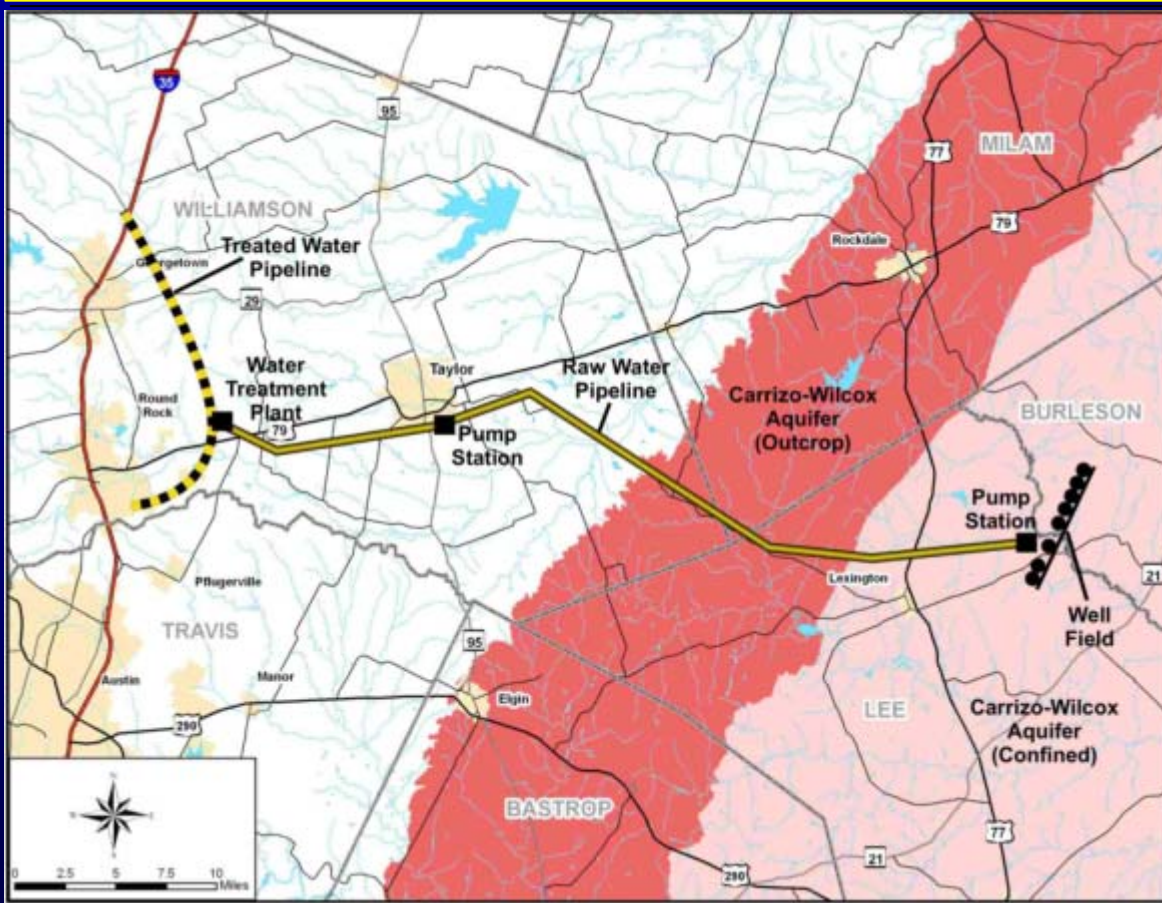
- ❑ Proposed location in Leon, Robertson, Madison, and Brazos Counties
- ❑ Capture flows from the Navasota River
- ❑ Possible entities to supply water: Brazos County, Grimes County, BRA System Contracts and Region H

Reservoir Characteristics	
Normal Pool WSEL	277 ft-msl
Capacity	205,760 acft
Surface Area	14,630 acres
Drainage Area	1,411 sq-mi

Millican-Bundic Reservoir

Reservoir Cost Estimate Summary	
Total Capital Costs	\$338,928,000
Total Project Cost	\$720,224,000
Annual Cost	\$52,951,000
Available Project Yield	36,990 acft/yr
Annual Unit Cost of Water	\$1,431 /acft

Williamson County Carrizo-Wilcox Aquifer Development



Possible Customers

- ☐ **Williamson County WUGs**
 - Georgetown
 - Hutto
 - Round Rock
 - Weir
 - Chisholm Trail
 - Jerrell-Schwertner
 - Jonah
 - Manufacturing
 - County-other

Williamson County Carrizo-Wilcox Aquifer Development

Uniform option (31 MGD) project facilities include:

- 8 well yards
- Level 1 WTP
- Water collection and conveyance systems

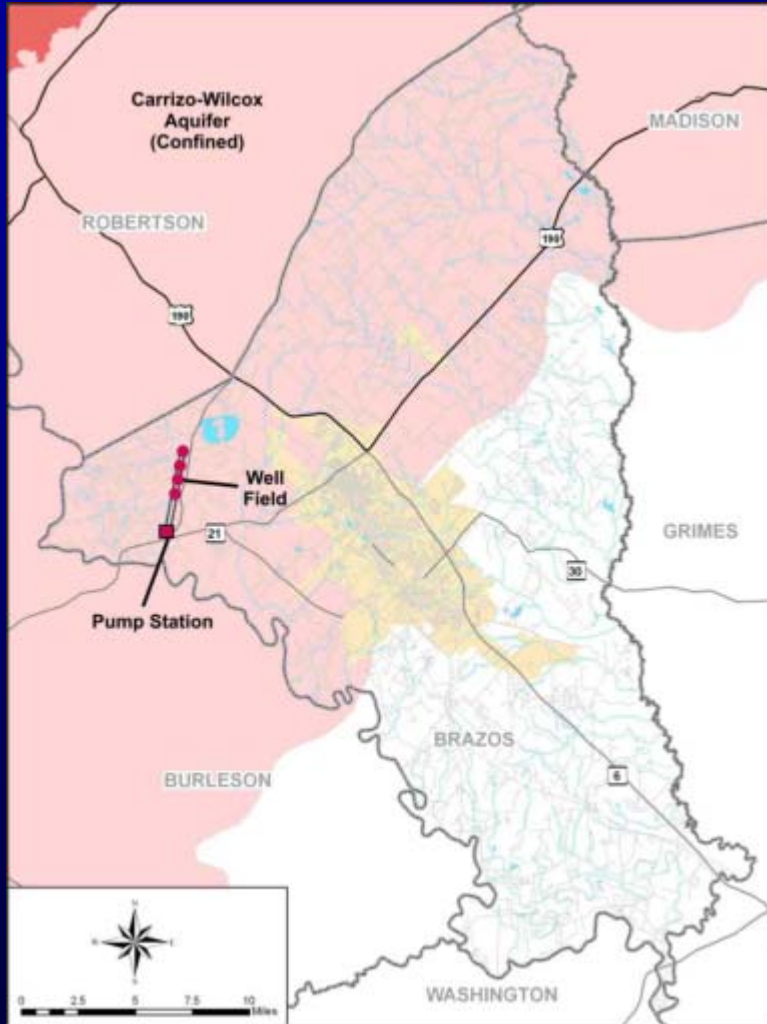
Peaking option (62 MGD) project facilities include:

- 16 well yards
- Level 1 WTP
- Water collection and conveyance systems

Aquifer Development Cost Estimate Summary

	Uniform Option	Peaking Option
Total Capital Costs	\$145,721,000	\$257,884,000
Total Project Cost	\$212,042,000	\$372,042,000
Annual Cost	\$29,475,000	\$46,383,000
Available Project Yield	35,000 acft/yr	35,000 acft/yr
Annual Unit Cost of Water	\$842 /acft	\$1,325 /acft

Brazos County Carrizo-Wilcox Aquifer Development



Possible Customers

- ❑ Brazos County WUGs
 - Bryan
 - College Station
 - Wickson Creek SUD

Brazos County Carrizo-Wilcox Aquifer Development

Uniform option (10 MGD) project facilities include:

- Level 1 WTP
- Water collection and conveyance systems

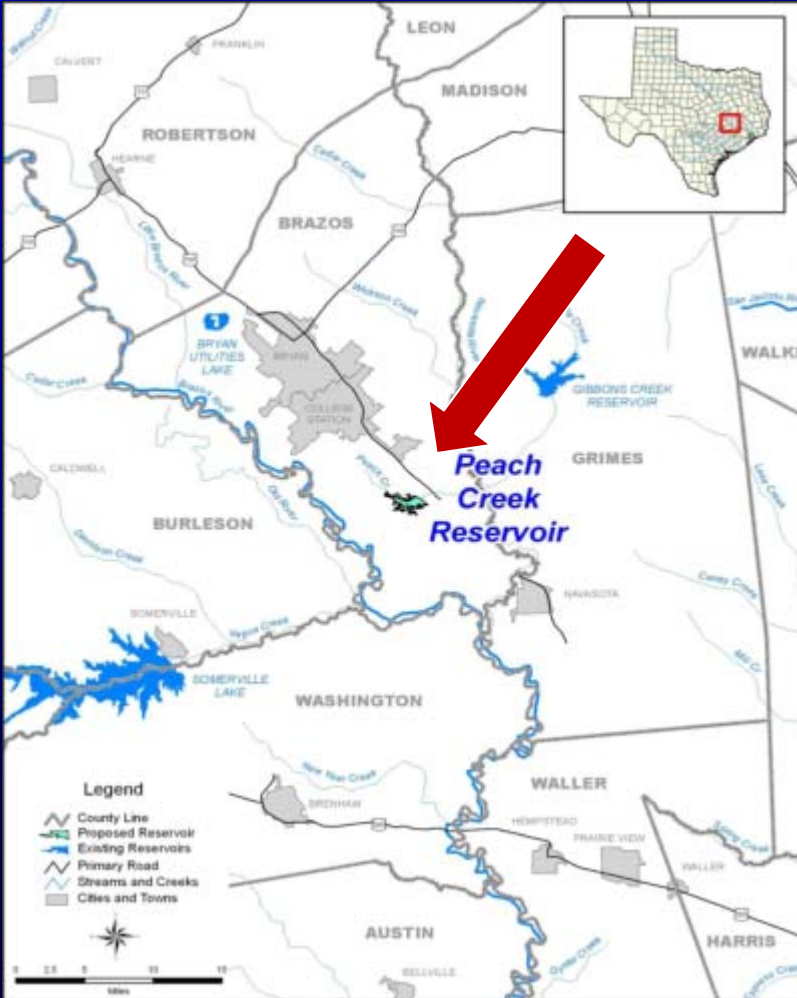
Peaking option (20 MGD) project facilities include:

- Level 1 WTP
- Water collection and conveyance systems

Aquifer Development Cost Estimate Summary

	Uniform Option	Peaking Option
Total Capital Costs	\$19,855,000	\$36,570,000
Total Project Cost	\$28,101,000	\$51,856,000
Annual Cost	\$4,410,000	\$7,270,000
Available Project Yield	11,200 acft/yr	11,200 acft/yr
Annual Unit Cost of Water	\$394 /acft	\$649 /acft

Peach Creek Off-Channel Reservoir



- ❑ Proposed location in Brazos County
- ❑ Supplemental flow from the Navasota River
 - ❑ 4.2 mi. 60-in. pipeline
 - ❑ 1,400 HP pump station
- ❑ Potential WUGs to receive water:
 - ❑ Wickson Creek SUD
 - ❑ Grimes County Steam-Electric

Reservoir Characteristics	
Normal Pool WSEL	240 ft-msl
Capacity	14,641 acft
Surface Area	1,045 acres
Drainage Area	17 sq-mi

Peach Creek Off-Channel Reservoir

Reservoir Cost Estimate Summary	
Total Capital Costs	\$25,190,000
Total Project Cost	\$40,643,000
Annual Cost	\$3,727,000
Available Project Yield	4,240 acft/yr
Annual Unit Cost of Water	\$879 /acft

Coryell County Off-Channel Reservoir



- ❑ Proposed location in western Coryell County near South Purmela
- ❑ Streamflows diverted from Cowhouse Creek
- ❑ Minimal contributing drainage area
- ❑ Possible entities to supply water: Coryell County
 - ❑ Potentially: Bell, Lampasas, Williamson, Hamilton

Off-Channel Reservoir Characteristics	
Normal Pool WSEL	1,075 ft-msl
Capacity	15,380 acft
Surface Area	445 acres
Contributing Drainage Area	0 sq-mi

Coryell County Off-Channel Reservoir

Project facilities include:

- ❑ Intake and pump station at Cowhouse Creek diversion point (32 MGD)
- ❑ 36 in dia., 675 ft transmission pipeline from Cowhouse Creek diversion point to OCR

Reservoir Cost Estimate Summary	
Total Capital Costs	\$24,220,000
Total Project Cost	\$37,489,000
Annual Cost	\$3,389,000
Available Project Yield	3,365 acft/yr
Annual Unit Cost of Water	\$1,007 /acft

Next Time

- ✓ **Double Mountain Fork Reservoirs**
- ✓ **Millers Creek Augmentation**
- ✓ **Cedar Ridge Reservoir**
- ✓ **Turkey Peak Reservoir**
- ✓ **City of Groesbeck OCR**
- ✓ **Strategies to Deal with Salinity**
 - **Upper Basin Salinity Control**
 - **Johnson County Desalination**
- ✓ **Reuse**
- ✓ **Abilene Water Supply from Possum Kingdom**
- ✓ **Misc. Small Strategies**
- ✓ **Lake Granger Augmentation**
- ✓ **Storage Reallocation in Federal Reservoirs**
- ✓ **Brushy Creek Reservoir**
- ✓ **Main Stem Supplies to Tributary Areas**