Freese and Nichols

DRAFT MEMORANDUM

TO: File

FROM: Jon S. Albright

SUBJECT: Proposed Modifications to the Brazos G Model for Joint BRA-TXU Modeling (Tasks 3b and 3c)

DATE: March 5, 2007
Revised March 8, 2007
Revised March 14, 2007

DRAFT

With a few modifications, the Brazos G model of the System Operation Permit appears to be adequate for use in the BRA-TXU modeling. These modifications include:

1. Update contract information used in the Brazos G model to reflect current BRA contracts. Table 1 is a summary of the contract information. Attachment 1 is a detailed list of contracts. Note that the sources used in Table 1 and Attachment 1 represent the actual diversion location of the demand, which may not correspond to the assigned source for the individual contract. For example, BRA may assign the source of a contract to Lake Stillhouse Hollow, although the actual diversion location is at Lake Georgetown, which is connected by pipeline to Lake Stillhouse Hollow.
2. Add the Lyons instream flow requirements at Glen Rose, Highbank, Cameron, Somerville and Easterly.
3. Return the 3,600 ac-ft per year diversion from Possum Kingdom Lake associated with the FERC bypass at the beginning of the next time step so all water rights will have access to those flows, not just water rights with priority dates after Possum Kingdom.
4. Move the 14,000 ac-ft per year diversion associated with the TXU contract from Possum Kingdom Lake to Lake Granbury backed up by releases from Possum Kingdom Lake.

Freese and Nichols, Inc. ◆ Engineers ◆ Environmental Scientists ◆ Architects
4055 International Plaza ◆ Suite 200 ◆ Fort Worth, Texas 76109-4895
(817) 735-7300 ◆ Metro (817) 429-1900 ◆ Fax (817) 735-7491

Table 1
Summary of BRA Current Contracts by Source
(Values in Acre-Feet per Year)

Source [a]	Municipal	Industrial	Irrigation	Mining	Other	TXU	Total
Possum Kingdom	5,859	120	3,050	8,254	3,600		20,883
Granbury 35,505		10,000	5,800	1,000		82,447	134,752
Whitney 5,450		3,500	280				9,230
Aquilla 11,403							11,403
Mid-Basin System [b] 2,300						15,000	17,300
Proctor 6,437			6,652				13,089
Belton 113,615			200				113,815
Stillhouse 29,155			108				29,263
Georgetown 74,561			0				74,561
Granger 13,000		5,000	15				18,015
Somerville 3,535							3,535
Limestone 4,200		21,600	0			25,000	50,800
Lower Basin [c] 12,435		99,000	29,158				140,593
Total 317,455		*139,220*	*45,263*	*9,254*	*3,600*	*122,447*	*637,239*

a The actual diversion location of the contract. The contract may actually be assigned to another reservoir in the BRA system.
b The Mid-Basin System represents supplies from the Main Stem below Lakes Whitney and Aquilla and above the Brazos River near Bryan gauge.
c The Lower Basin represents supplies from the Main Stem below the Brazos River near Bryan Gauge

5. Adjust the distribution of TXU contract amounts in the upper basin to correspond to the information by TXU at the kickoff meeting in January 2007.
6. Add an additional diversion representing the new TXU demand at Lake Granbury backed up by releases from Possum Kingdom Lake.
7. Combine individual contracts at Lake Proctor, Lake Belton and Lake Stillhouse Hollow to reduce output.
8. Back up all existing contracts with every upstream reservoir whenever possible.
9. In order to minimize losses charged against BRA sources, move downstream contracts that do not have access to intervening flows either to lakeside or to a point as close to the reservoir as possible (the case for some contracts below Lake Whitney).
10. Add 16,000 ac-ft per year of additional demand from Lake Limestone at the System Operation priority date. This demand will be backed up by diversions from the main

DRAFT

stem of the Brazos and releases from Possum Kingdom.

11. Add 5,066 ac-ft per year of additional demand at LRLR53 at the System Operation priority date, backed up by Stillhouse and Belton.
12. Add 14,698 ac-ft per year (5,075 ac-ft municipal and 9,623 ac-ft industrial) of additional demand at Lake Whitney, backed up by Possum Kingdom and Granbury.
13. Add 4,500 ac-ft per year of additional demand at CON147, the confluence of the Brazos and Navasota Rivers at the System Operation priority date, backed up by Possum Kingdom, Granbury and Limestone.
14. Add 1,337 ac-ft per year of additional demand at Lake Granbury at the System Operation priority date, backed up by Possum Kingdom.
15. Add 199 ac-ft per year at BRHE68, backed up by Possum Kingdom and Lake Somerville.
16. Add 1,800 ac-ft per year at Lake Granger, backed up by Lake Georgetown.
17. Replace the unassigned System Operation diversion at the Gulf of Mexico and direct diversions from Allens Creek Reservoir with 143,471 ac-ft per year of municipal and 101,084 ac-ft per year of industrial demand at Richmond with the System Operation priority date. It may be necessary to only use reservoirs that are not fully committed through existing contracts. It is likely that the only sources available for this diversion will be Lake Somerville, Allens Creek Reservoir and Possum Kingdom.
18. Use the BRA 2060 area-capacity relationship for Lake Aquilla. Recent investigations by BRA indicate that sedimentation rates in this watershed may be less than assumed in the Brazos G model.
19. Use the BRA 2060 area-capacity relationship for Possum Kingdom Lake. Recent investigations by BRA indicate that there may be more capacity loss by 2060 than assumed in the Brazos G model.

DRAFT