

December 30, 2003

Mr. Tony Jones, Chairman
Brazos G Regional Water Planning Group
3205 Earl Rudder South
College Station, Texas 77845

Re: Justification for Inclusion of Return Flows in Water Availability Analyses

Dear Mr. Jones:

During the November 12, 2003 meeting of the Brazos G Regional Water Planning Group (RWPG), the group discussed the issue of accounting for return flows (effluent discharged from wastewater treatment plants into streams) when determining water available to existing rights and when evaluating water management strategies considered for inclusion in the 2006 Brazos G Regional Water Plan. Pursuant to Texas Water Development Board (TWDB) guidance, these evaluations are to be performed using Run 3 of the Brazos River Basin Water Availability Model (WAM) developed by the Texas Commission on Environmental Quality (TCEQ). The WAM Run 3 does not include return flows.

By adopting the WAM Run 3 without modification for return flows, the TWDB has taken a position that exclusion of return flows in these analyses will be the standard approach to be followed by the RWPGs statewide. The TWDB has addressed this issue with the Brazos G RWPG on two other occasions: first during scope of work development and more recently through a letter to Mr. Phil Ford of the Brazos River Authority (BRA) following an informal meeting between TWDB, BRA and HDR staff. During the Brazos G RWPG meeting on November 12, 2003, the Brazos G RWPG voted to request that the TWDB reconsider its position on this issue in light of some technical points that may have not been addressed previously.

Following is a summary of points justifying inclusion of return flows in the water availability analyses. Each of these points was discussed during the November 12, 2003 Brazos G RWPG meeting.

1. **Exclusion of return flows implies that full consumptive reuse will occur in the future.** This includes not just the final year in our planning horizon, 2060, but also years 2010, 2020, 2030, 2040 and 2050. In developing estimates of water available in year 2010, for example, exclusion of return flows assumes that in the next six years all wastewater in the Brazos River Basin will be reused. It is highly unlikely that full consumptive reuse will be attained by year 2060, let alone year 2010.
2. **Exclusion of return flows presupposes adoption of full consumptive reuse as a water management strategy.** While interest in wastewater reuse projects is growing and several reuse projects have been implemented, no entity in the Brazos River Basin has expressed the intent to reuse 100 percent of its wastewater. It is up to local and regional interests, and the

Brazos G RWPG (as well as the State) to consider whether or not full consumptive reuse as a viable water management strategy will be implemented region-wide.

3. **Exclusion of return flows will result in greater projected needs and more water management strategies in the 2006 regional plan.** Current levels of effluent discharge are approximately 142,000 acre-feet per year in the Brazos River Basin (from both surface and ground water sources). Initial tests of the Brazos WAM indicate that inclusion of current levels of return flows in the model will increase overall water availability to **existing rights** in the Brazos River Basin by over 83,000 acre-feet per year, as calculated using minimum annual diversions. This will provide for a more realistic estimate of water available to existing surface water rights. It will also eliminate or reduce "needs" for which water management strategies will have to be planned. Strategies planned to meet unlikely needs created by exclusion of return flows may be perceived by the public as being included in the plan solely to achieve a "paper balance" of supplies with demands.
4. **Return flows can be incorporated into the permitting process at the TCEQ.** While the WAM Run 3 utilized by the TCEQ staff to evaluate new, perpetual water rights assumes zero return flows, special conditions can be included in new or amended water rights to make new streamflow appropriations contingent upon maintenance of return flows. It is our understanding that the Commission has not formally adopted a policy of granting or denying water rights on the basis of availability estimates ignoring wastewater effluent, although the staff uses WAM Run 3 as part of the initial technical evaluation of applications. Local project sponsors will undertake the permitting process for the projects in the regional water plans. These local sponsors will need to have the most accurate information with which to plan their investments of public funds in water supply projects, and that includes recognition of how much water will most likely be available.
5. **Exclusion of return flows constitutes a commitment of effluent to instream flows without due public consideration.** Return flows are physically in the stream now and a significant component of these flows (if not an even greater volume) will likely enter the streams in the future. By excluding these flows from assessment of water available to current water rights and from evaluation of water management strategies considered in the planning process, return flows will not be considered fully during the open public planning process. Return flows will essentially be taken "off the books" and ignored. Local and regional interests acting through the Brazos G RWPG would not be allowed to explicitly consider where and how this water could be used, except through reuse projects.
6. **Inclusion or exclusion of effluent discharge is an important assumption in the planning process and is best made through open public discourse.** Every step in the regional water planning process is based upon necessary and reasonable assumptions that guide estimates of the future conditions for which the group is planning. These assumptions concern how population is expected to increase or decrease, how per capita water use will change, future sedimentation conditions of reservoirs, and how aquifer systems will be utilized. The assumption as to how effluent will be discharged into streams and made available to current and future water rights is as important as any of these.

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Page 3 of 3

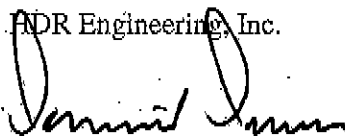
TWDB guidance says "the Executive Administrator shall provide available technical assistance to the Planning Groups, upon request, to assist them in selecting appropriate methods and data to be used to determine water availability (Exhibit B, p. 13)." It is our understanding that the Brazos G RWPG, by means of its November 12, 2003 action, is now requesting such assistance in selecting appropriate methods, with due consideration of the foregoing points. HDR is prepared to work with TWDB staff and the Brazos G RWPG to develop a methodology for determining appropriate levels of effluent to be assumed for purposes of quantifying current and future water availability in the Brazos River Basin. We envision a methodology that would project future levels of effluent on a decadal basis, based upon projected demands and consumptive use rates, and additional assumptions concerning reuse. These projections could possibly treat current effluent discharges differently from those resulting from increased water usage. Several reasonable alternative approaches could be considered to the extent that schedule and funding will allow.

On December 16, I had the opportunity to visit with Bill Mullican and Suzanne Schwartz of the TWDB. During our meeting, they indicated that it might be too late in this planning cycle to revisit the return flows issue. They fully understand the complexities of the issue and are aware of the concerns of the planning group. We discussed the possibility that the TWDB could assemble a work group to investigate this issue and develop recommendations for how to account for current and future effluent during the next round of planning.

Should you need additional information on this important subject, please do not hesitate to call me at (512) 912-5136.

Sincerely,

HDR Engineering, Inc.



David D. Dunn, P.E.
Project Manager

cc: Brazos G RWPG members
Ms. Teresa Clark, BRA
Mr. Bill Mullican, TWDB
Ms. Suzanne Schwartz, TWDB
Mr. David Meesey, TWDB