

REGION C WATER PLANNING GROUP

Senate Bill One Second Round of Regional Water Planning - Texas Water Development Board

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March 24, 2004

Mr. Bill Mullican
Deputy Executive Administrator
Office of Planning
Texas Water Development Board
P.O. Box 13231
Austin, Texas 78711-3231

Dear Mr. Mullican:

I am writing to express the concerns that the Region C Water Planning Group has about return flows of treated wastewater and how they are to be considered in the current round of regional water planning. This letter deals with two topics:

- Texas Water Development Board's proposed methodology for the analysis of the impact of regional water plans on stream flows.
- The use of return flows in the analysis of water management strategies.

TWDB's Proposed Methodology for the Analysis of the Impact of Regional Water Plans on Stream Flows

It is our understanding that the TWDB proposes to analyze the impact of the regional water plans on stream flows as follows:

- With the assistance of the regional water planning groups, select key locations for the analysis of the impact of the regional water plans on stream flows.
- Determine naturalized monthly flows at those key locations.
- Analyze stream flows under current conditions using Water Availability Model (WAM) Run 8 (current diversions and return flows) and WAM Run 3 (full diversion of water rights and no return flows).
- Analyze the impact of the regional plan on stream flows using WAM Run 3, modified to include projects proposed in the regional water plans.

We believe that this approach will not accurately reflect the impacts of the proposed regional water plans on stream flows:

- WAM Run 3 is based on the assumption that there are no return flows unless required by the water right. That assumption is contrary to fact and inconsistent with the regional water plans in many regions.

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- The diversions assumed in WAM Run 3 are inconsistent with the regional water plan for many water rights
- The results of the proposed analysis will be invalid because they do not show the impact of the regional water plans.

The Assumption of No Return Flows Is Contrary to Fact and to the Regional Water Plans

It is a fact that there are currently substantial return flows of treated wastewater effluent in Region C. There are significant return flows upstream from Region C reservoirs that supplement the yield that those projects get from natural inflows. There are significant return flows in the Trinity River downstream from the Dallas-Fort Worth Metroplex that supplement natural flows, provide enhanced habitat for fish and wildlife, and provide water for downstream water rights, some of which, like Lake Livingston, are located in the Region H water planning area.

It is also true that there are currently no proposals to reuse all of the wastewater effluent originating in Region C. The 2001 *Region C Water Plan* proposed direct and indirect reuse of 430,000 acre-feet per year. The projected year 2050 combined municipal and manufacturing demand in the 2001 *Region C Water Plan* was 2,333,000 acre-feet per year. Assuming a 60 percent return flow rate (typical for Region C in drought conditions), this would lead to return flows of 1,400,000 acre-feet per year in a drought (more in a normal year). With reuse of 430,000 feet per year in the plan, there would be 970,000 acre-feet of return flows not being reused left to flow downstream. The proposed assumption that there are no return flows is inconsistent with the 2001 *Region C Water Plan* and will probably be inconsistent with the 2006 regional water plan currently under development.

The Diversions Assumed in WAM Run 3 Are Inconsistent with the Regional Water Plan

WAM Run 3 is based on the assumption that all water rights divert their full permitted amount in each year if water is available. This is an appropriate assumption for permitting, which is the primary purpose of the WAM. However, it is not appropriate for water supply planning and is in fact inconsistent with the 2001 *Region C Water Plan*. There are several reservoirs in Region C with water rights greatly in excess of their firm yields. Since regional water planning uses the firm yield, the yields should be used to determine the impacts of the regional plans on stream flows.

The Invalid Assumptions Will Invalidate the Stream Flow Study

As discussed above, the 2001 *Region C Water Plan* has reuse of 430,000 acre-feet per year and about 970,000 acre-feet of return flows left in the streams without being reused. The methodology that the Texas Water Development Board has developed for their stream flow studies would assume that the 970,000 acre-feet per year of non-reused

return flows does not exist. The stream flow studies will also assume full diversions of all existing water rights, which is inconsistent with the 2001 *Region C Water Plan* and will probably be inconsistent with the plan currently being developed.

Thus, the proposed stream flow study would not analyze the impact of the regional water plan and would in fact be totally inconsistent with the regional water plan. The study results will be invalid and will increase confusion over stream flows and the impact of the regional water plans on stream flows. We suggest that TWDB adopt a revised methodology that includes return flows and diversions that are consistent with the regional water plans. If it is not possible to model return flows and diversions that are consistent with the regional plans, we suggest that the proposed study be abandoned.

The Use of Return Flows in the Analysis of Water Management Strategies

The TWDB guidelines for regional water planning contained in Attachment B to the regional water planning contracts indicate that WAM Run 3 is to be the basis for the analysis of proposed water management strategies in regional planning. The guidelines clearly indicate that return flows can be added to WAM Run 3 for the analysis of currently permitted reuse projects. Based on conversations between Dr. Ernest Rebeck of your staff and Tom Gooch of Freese and Nichols, Inc., we understand that the TWDB intends to allow the inclusion of return flows in WAM Run 3 for the analysis of proposed water management strategies that depend on reuse.

The direct and indirect reuse of treated wastewater effluent is of vital importance to future water supply for Region C and for the State. In the 2001 *Region C Water Plan*, the reuse of treated wastewater effluent provided water for the region in several ways:

- Return flows increased the yield of existing projects for which permitted diversions exceed the yield from natural inflows.
- Direct reuse projects were proposed for landscape irrigation and power plant cooling.
- Indirect reuse projects (in which water is returned to a stream or reservoir before reuse) were proposed for municipal use and other purposes.

The 2001 *Region C Water Plan* includes a total supply from reuse of 430,000 acre-feet per year in 2050. This is a substantial portion of the water supply for the region. Most of the proposed reuse is indirect reuse, in which treated wastewater effluent is returned to streams and lakes and then rediverted for municipal or other use. The 2006 *Region C Water Plan* will probably include even more reuse than did the 2001 plan. The water needs in Region C are projected to be higher than in the last round of planning, and other sources of supply are increasingly difficult to develop.

It is essential that the Texas Water Development Board allow regional water planning groups the flexibility to plan for needed reuse projects, including direct and indirect reuse

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projects. Properly conducted analysis including return flows with WAM Run 3 or using tools other than WAM Run 3 must be accepted, so that direct and indirect reuse can be included in the plans.

We appreciate the opportunity to express our concerns to you, and I would be glad to meet with you and your staff. Please contact me at your convenience if you wish to discuss this important issue further.

Sincerely,

JAMES M. PARKS

Chairman

cc: Region C Water Planning Group
Regional Water Planning Group Chairs
Kevin Ward, TWDB
Virginia Towles, TWDB