

Section 10
Regional Water Plan Adoption
[31 TAC §357.11-12]

10.1 Overview

Facilitation and Public Participation played an integral part in the development of the 2001 Regional Water Plan. The discussion of the contributions of facilitation and public participation in the development of the 2001 Regional Water Plan remain in the 2006 Regional Water Plan because the current plan is a revision of the 2001 RWP and the summary of prior activities is necessary to provide the background and documentation of the process used to create the 2001 RWP. The facilitation process is presented in Section 10.1.1 and the public participation process is presented in Section 10.2, with responses to comments received on the Initially Prepared Plan (IPP) presented in Section 10.2.2.

10.1.1 Facilitation

From the outset of the planning process, the South Central Texas Regional Water Planning Group decided to emphasize a consensus approach to decision-making. That process has been facilitated first by the members' awareness of the need for cooperative and open attitudes when dealing with controversial issues. The group used an independent facilitator to assist with special meetings and workshops devoted to building consensus on specific elements of the planning process. This process has also drawn extensively on the public involvement effort that has kept the RWPG members informed at critical times of the full range of ideas, values and concerns of constituencies throughout the region. This is an on-going process that will continue through adoption of the final Regional Water Plan. The following is a brief summary of the key procedural steps undertaken by the Facilitation Team in helping the Chair and Members of the RWPG manage the process of developing the Initially Prepared Plan. In addition, the Technical Consultant supported the process of building consensus by providing the necessary tools and technical means for testing alternative approaches.

10.1.2 Facilitation Process for the 2001 Regional Water Plan

The RWPG held an initial workshop in January 1999, where planning group members begin discussions on substantive issues, revised the goal statement, initially adopted the

evaluation criteria and began the process of identifying the water options and strategies they wished to have technically evaluated. Regarding the options and strategies, the RWPG had an original list of over 100 technical options for meeting water needs in the region which were reviewed and a limited number were selected for evaluation by the Technical Consultant.

In addition to structured discussions during the workshops, the Facilitation Team conducted individual interviews to identify the issues and concerns most important to members of the RWPG. The interviews brought out numerous issues, later summarized in a report, that needed to be addressed if consensus was to be achieved. The Facilitation Team consulted closely with the Chair and Administrator regarding the handling of issues in each of the monthly meetings, which were presided over by the Chair. Special workshops, small group meetings and individual interviews were used by the Facilitator to make additional progress to ensure movement toward the development of a consensus plan.

The Facilitation Team became especially active in the development of a series of alternative plans. A workshop was held for the purpose of identifying up to six major plan approaches. During the discussions, the Planning Group members coalesced their thinking about alternatives under four of the Evaluation Criteria they had previously adopted. The Group decided to structure alternatives around: 1) Economic – Cost-Effectiveness, 2) Environment, 3) Compatibility – Local Plans and 4) Compatibility – Other Regions. Following the workshop, small working groups developed a procedure for identifying water management strategies that could be applied by the Technical Consultant. They prepared descriptions of each approach, and the RWGP as a whole reviewed and approved each of the four approaches. The RWGP then assigned the Technical Consultant the task of developing each alternative approach into a regional plan capable of meeting the needs of the water user groups. Each of the four alternatives emphasized the Evaluation Criteria as follows:

- The Planning Unit Approach Alternative gave highest emphasis to the criterion of compatibility with local water plans.
- The Environment and Conservation Alternative emphasized nine elements, each of which was used to evaluate the list of available options and strategies. The nine elements, which differed from the sub-headings under the Environment Criteria previously adopted, were as follows:
 - Endangered Species
 - Unique Stream Segments
 - Bays & Estuaries
 - Instream Flows

- Riparian Forests
- Cultural Resources
- Size of Habitat Disturbance
- Water Quality
- Sustainability (Level of Groundwater Decline)
- The EREPA Alternative (the acronym stood for Economic, Reliability, Environmental and Public Acceptance – four of the Evaluation Criteria) came to emphasize cost per acre-foot of water produced by the options.
- The Inter-Regional Cooperation Alternative emphasized compatibility with other regions by developing a set of water supply options that necessitated joint planning with Corpus Christi and the Coastal Bend Region.

The Evaluation Criteria thus played an important role in shaping, and later evaluating, the alternatives, but were not applied to component management strategies. The purpose of the Evaluation Criteria was to guide the RWPG members in their assessment of each alternative as a whole. These Criteria were not expected to be applied by the Technical Consultant in the same way as the criteria detailed in the TWDB rules for preparation of regional water plans (though there is some overlap of the two sets of criteria). Rather the Technical Consultant responded to specific direction from the RWPG to apply those Evaluation Criteria that were relevant to each alternative. The RWPG members themselves applied the Evaluation Criteria during their deliberations in a subjective manner and recorded their rating of each alternative under each of these criteria by using a rating scale developed for this purpose, as noted below.

Following development of these alternatives, another approach, known as the Edwards Aquifer Recharge and Recirculation Alternative, was added, based on the ideas submitted by a member of the public.

Planning Group members suggested many additional ideas as the basis for alternatives, but it was the five listed above that moved on to the next stage of technical evaluation. When it became clear that some of the alternatives did not provide sufficient water from options and strategies chosen solely according to the rules and priorities of each plan, the RWPG authorized the Technical Consultant to add further options to meet water user group requirements. Thus, the alternatives departed, to some extent, from the original concept underlying each one.

In addition to reviewing the technical evaluations, the RWPG members individually used the Evaluation Criteria to assess the five alternative plans and also considered numerous public comments, RWPG member concerns and technical issues to create a ‘hybrid alternative’ water plan.

The Evaluation Criteria of economic impact relating to cost-effectiveness, environment, water quality, reliability, efficiency and flexibility all played a role in defining the "hybrid alternative." The key Evaluation Criteria at this stage, however, seemed to be *economic impact* (relating to minimizing negative socio-economic impacts), *efficiency* (relating to promoting conservation and conjunctive use), *fairness* (relating to efficient use in a water-importing area and distribution of costs and benefits), *feasibility* (relating to public acceptance and political feasibility, in particular) and *compatibility* (with local and regional plans as well as with property rights).

At a special workshop, the Planning Group members began with a list of water supply options and strategies that had appeared in each of the five alternatives reviewed up to that point. They then added options that had either generated near unanimous support or which had little in the way of opposition or technical obstacles. In addition, they included strategies that were promising for the long-term but which needed further study. The RWPG built consensus on this alternative relatively quickly because of the extensive technical evaluations and comparative discussions that had preceded this phase of the process. The group did not require or pursue step-by-step documentation of the detailed basis for agreement on the part of each member or the specific way in which each arrived at the decision that he or she decided that the hybrid alternative was acceptable. While the RWPG was considering and refining this alternative, two river authorities in adjoining planning regions proposed new options, one of which was added to the emerging regional water plan. The Technical Consultant reviewed the new plan, and the RWPG made a number of changes, culminating in acceptance of the Initially Prepared Regional Water Plan on August 17, 2000. This was the plan that was reviewed by the public and adopted with revisions after comment as the 2001 Regional Water Plan.

10.1.3 Facilitation Process for the 2006 Regional Water Plan

The facilitation process focused mainly on the transition from the 2006 Initially Prepared Plan to the adopted 2006 Regional Water Plan. During the comment period on the IPP, sixteen issues were identified that would require facilitation with the goal of reaching consensus among planning group members. John Folk-Williams, a professional facilitator with the Center for Collaborative Studies in Sacramento California, was contracted as part of the public participation scope of work to conduct three workshops and interviews of stakeholders. Mr. Folk-Williams

facilitated the discussions and decision making process that provided the responses to the issues as presented in section 10.2.3.2.

10.2 Public Participation

Moorhouse Associates, Inc. was contracted by the SCTRWPG to provide Public Participation professional services. The public participation process for the SCTRWPG was designed to facilitate information out to the public about the work of the planning group, and to provide feedback from the public at key decision points. A summary of the extensive public participation effort involved in the development of the 2001 Regional Water Plan is presented in section 10.2.1 and a summary of the public participation process implemented as the 2001 Regional Water Plan was revised to create the 2006 Regional Water Plan is presented in section 10.2.2.

10.2.1 Public Participation - 2001 Regional Water Plan

Public participation for the 2001 Regional Water Plan was conducted in three phases including phase I project planning, phase II surveys, and phase III development of public involvement into the planning process. The project planning phase involved working with the planning group members, technical contractor, and the facilitator to define public participation roles and objectives. The planning phase also involved identifying the major planning components and issues for the region, as well as reviewing past public participation efforts. The Phase I Public Participation Report analyzes past public participation efforts and provides baseline information for performing the public participation process for the south Central Texas Regional Water Planning Group.

At the SCTRWPG workshop held in San Antonio on January 29-30, 1999, the planning group adopted a principle of public participation that was the guiding principle for the public participation process. Also at the workshop the group adopted the initial criteria for evaluation of water supply options.

Principle of Public Participation

The role of the Regional Water Planning Group is to create and implement a public participation plan that provides for meaningful participation in the development of an acceptable regional water plan. The public participation efforts should foster a relationship of mutual trust, honesty, respect, and interaction between the Planning Group and the public.

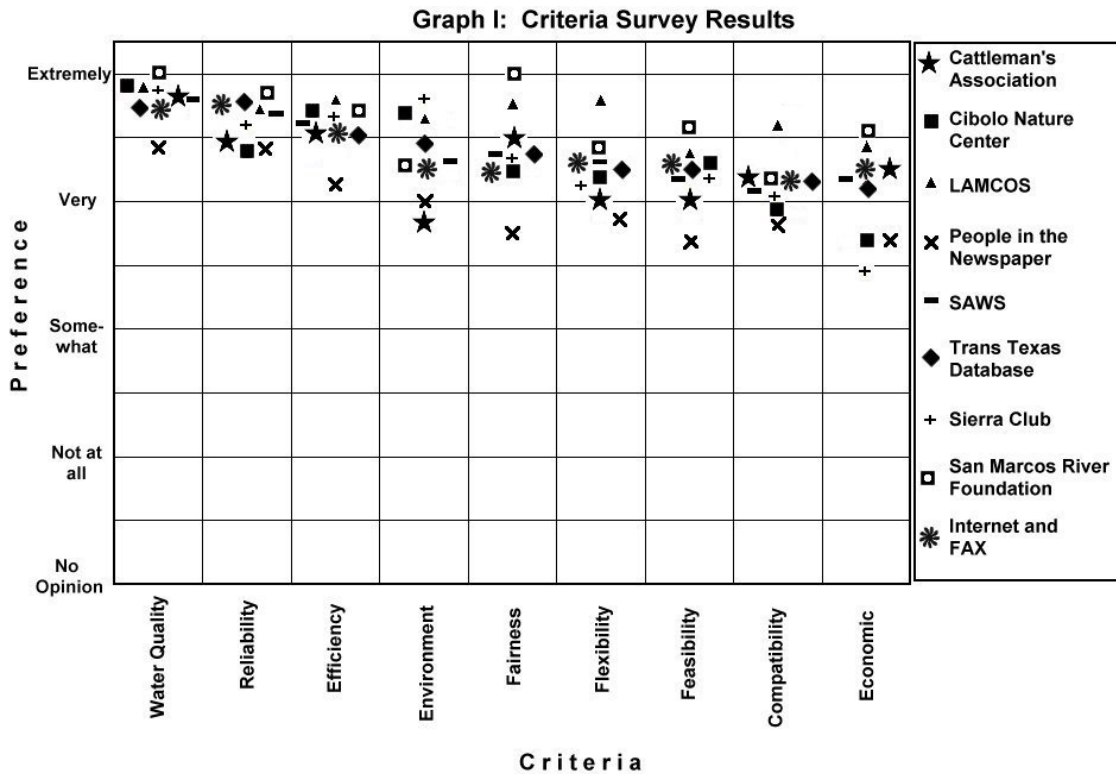
As part of the second phase of the public participation process, Moorhouse Associates, Inc. conducted two surveys for the SCTRWPG. The first survey asked the RWPG members to give their input regarding the public participation process and communication with the stakeholders in the process. Survey result highlights are presented in the Phase II Public Participation RWPG Survey and Targeted Audience Survey Results Report (May 6, 1999).

A second survey was conducted to receive input from the public during the early planning stages of water option review and criteria development. The target audience for the survey was persons or groups that were already familiar with water issues in the region and therefore, the survey is not a statistically valid random representation of the general public in the region. It is a targeted or focused survey of persons or groups active with water issues in the region.

The goal of the survey was to gather public input for guidance in three areas:

1. Rate water supply options.
2. Further develop evaluation criteria for water supply options.
3. Identify new water supply options.

The targeted audience public survey was sent to nine thousand four hundred twenty six (9,426) persons and seven hundred twenty (720) or eight percent (7.64%) of the surveys were returned. The responses indicated that all the evaluation criteria used by the planning group were considered to be extremely or very important by respondents. The water supply options were rated from extremely to somewhat important with conservation widely supported by all groups. The Phase II Public Participation RWPG Survey and Targeted Audience Survey Results Report (May 6, 1999) is available for viewing on the website.



The Phase III plan for public participation was developed with the goals of maximizing public involvement throughout the development of the regional water plan, and facilitating broad-based public understanding and support of the final plan. Public Information was provided throughout the region in the form of Public Information Dialogue (PID) meetings. A presentation about the regional water planning process was made at a total of seventy-one meetings. Approximately 3,634 persons attended these meetings, and 938 feedback cards were received from persons attending the meetings.

SCTRWPG meetings were well attended by the public and information was also gathered from input cards at the planning group meetings. A total of 286 input cards were collected from the SCTRWPG meetings. Questions from the public were collected and distributed with answers at the monthly meetings. The individuals submitting the questions received a written mailed response to their inquiry. A total of 196 questions and answers were generated from July 1999 to July of 2000.

Focus groups were used during key decision points. The focus groups were established by contacting the County Judges in each of the 21 counties of the region. Each Judge was offered an individual briefing by a planning group member and a representative from Moorhouse

Associates, Inc. The briefing provided an overview of the planning process, a discussion of the issues and a review of the upcoming schedule. The judges were asked to provide a list of persons from their county using the list of eleven interest categories represented on the planning groups. These persons were then invited to participate in a focus group that provided feedback on the criteria to the RWPG. Four hundred and one persons were invited to participate and two hundred thirty six were able to participate. The input is presented in the Phase III Public Participation Twenty-One County Focus Group Report.

A second group of Focus Groups was conducted in July of 2000. The original focus group participant lists provided by the County Judges were updated and supplemented by suggestions from area legislators. The legislators were provided the opportunity of a briefing and update on the plan process. They were then asked to suggest any additional names for focus group participation. Nine additional Focus Groups were included in the second round. Eight of these were Bexar County specific, one was for Trinity Aquifer representatives, and one was for the Bays and Estuaries or downstream interests. This second round of focus groups reviewed the 'Hybrid Draft Alternative Plan' as of July 2000. Three hundred and ninety nine persons participated in the second round of Focus Groups. A presentation of the results for the second round of focus groups is available in the Public Participation Focus Group II Report, Hybrid Draft Plan as of July 2000.

The Phase III plan included the development of a general brochure for use during the public process. The brochure was an introductory piece that explained the region, the process, the schedule, and provided information on how to participate in the process. A region specific website was developed that provided access to the technical documents, the calendar of events, meeting minutes, and several interactive map activities relative to the options under consideration. A newspaper insert detailing the water planning process and the draft water plan was also developed for distribution to a mass audience. The insert was for area papers and included a circulation of about 550,000. The insert was also designed for use during the public hearing process in September 2000.

The 2001 Initially Prepared Plan (IPP) was available for public review on August 25, 2000. Public hearings to receive comments on the IPP were scheduled in Victoria, Uvalde and San Antonio with approximately 650 persons attending the hearings. During the comment period

the planning group received 270 written comments and heard 97 oral presentations at the public hearings.

10.2.2 Public Participation – 2006 Regional Water Plan

The 2006 Regional Water Plan is a revision of the 2001 Regional Water Plan and the process and principles used to develop the 2001 RWP were continued during the revision process. The website and general information brochure were revised to reflect the 2006 regional water planning process and calendar. Public input was gathered at each RWPG meeting and through direct communication with the public. The criteria used in the creation of the 2001 plan were informally applied by each planning group member during the revision process to develop the 2006 RWP.

The 2006 Initially Prepared Plan (IPP) was available for public review on May 26, 2005 and public comment closed on September 20, 2005. Public hearings to receive comments on the IPP were scheduled in Victoria, Seguin, Uvalde and San Antonio on July 18, 19, 20 and 21 respectively. At the public hearings an eight-page brochure summarizing the IPP was available to attendees. The sign-in sheets for all of the hearings indicate a total of 552 attendees, but the total attendance is more closely estimated to have been 675 because the hearing in Victoria had a surge of attendees that bypassed the sign-in table. Oral comments were recorded by court reporters that provided certified transcripts of the comments. During the comment period the planning group received 1101 written comments and heard 83 oral presentations at the public hearings. Several organizations submitted detailed written comments in report format including Sierra Club, D.M. O'Connor Interests, Wilson County Taxpayer Association, San Marcos River Foundation, Goliad County Groundwater Conservation District and Texas Wildlife Association.

Written comments were entered into a database, assigned a number and reviewed individually. The transcripts from the public hearing were provided on computer disk and these oral comments were also integrated into the database, assigned a number, and reviewed individually. During the review process, twenty five common comment categories were identified. The list of categories is presented in Table 10-1, however, the categories are not presented in any particular order. Whenever a commenter addressed one of the issue categories it was indicated in the database entry for that comment. Many of the comments covered more than one category; so multiple issue categories may have been assigned to one document or comment.

Table 10-1.
Public Comment Categories

1. The 340,000 acre-feet placeholder amount in the Edwards Aquifer. *
2. Potential for Carrizo Aquifer allowance. *
3. Demand/drought management as a water supply strategy. *
4. Management supply amount and distribution. *
5. The SCCS and TWDB GAM for Carrizo groundwater modeling. *
6. The Carrizo Aquifer in Gonzales County. *
7. The Carrizo Aquifer in Wilson County. *
8. Move Seawater Desalination for implementation earlier in RWP. *
9. The Wilcox brackish desalination project amount and location. *
10. Recharge and Recirculation and adding the SCTN 6a strategy to RWP. *
11. SAWS request to include the MESA project in RWP. *
12. Status of the Lower Guadalupe River Diversion Project. *
13. Status of Simsboro ALCOA project. *
14. The level and location of Edwards Aquifer transfers in the RWP. *
15. Continuation of the Environmental Studies for Lower Guadalupe project. *
16. The Canyon Regional Water projects and Amendment to 2001 SCTRWP. *
17. Water Policy Issues in the RWP.
18. Consideration of rural versus urban water needs.
19. Population and Water Demand Projection questions.
20. Spring Flow protection.
21. Downstream and Bay and Estuary concerns.
22. Groundwater general comments.
23. Growth Management.
24. Conservation comments.
25. Other Issues.
* Topic addressed through facilitated process

The planning group decided to develop responses to the comments by category groups. A notebook of public comment documents sorted by category was provided to each planning group member for review. Based on the public comment, the planning group developed a list of sixteen issues that would benefit from a facilitated process. A professional facilitator worked with the planning group to discuss these issues. The facilitator interviewed planning group members and several stakeholders in a process that resulted in three workshop sessions. At the workshops, the planning group developed responses by category for each of the sixteen issues needing facilitation. These facilitated responses are presented in Section 10.2.2.3.

The planning group developed responses for the remaining comments received through the regular staff work group review and planning group meeting process. The public comment responses developed through this process are presented in Section 10.2.2.4. HDR Engineering reviewed specific technical questions discussed in the comments and prepared draft responses for review by the planning group. The planning group responses to the technical comments are presented in Section 10.2.2.5. Changes were made to the IPP in response to the public comments. Many communities, agencies and interest groups had a decisive role in shaping the development and revision of the South Central Texas Regional Water Plan.

10.2.2.1 TWDB Comments on Initially Prepared 2006 South Central Texas Regional Water Plan and SCTRWPG Responses

TWDB Preliminary Staff Comments, Letter 1, Letter of October 12, 2005: Attachment -- South Central Texas Regional Water Plan – Region L

LEVEL 1. Comments and questions must be satisfactorily addressed in order to meet statutory, agency rule, and/or contract requirements.

General Comment

1. Population and demand figures in many tables are slightly different than the amounts in the planning database (DB07). These differences may be due to rounding or reallocation between river basins. Please revise or coordinate with TWDB staff to ensure that data in the plan is consistent with DB07. *[Title 31, TAC §357.5(d)(1)&(2)]*

Response: The population values contained in DB07 have been checked against Table 2-3 and no differences were found. The demand projections contained in DB07 have been checked against Table 2-12 with most differences attributable to rounding (< 2 acft at the river basin/county level). No change was made to the report. There was a 44 acft difference in the river basin split for Livestock use in Gonzales County. The TWDB has agreed to revise DB07 to eliminate this difference.

Executive Summary

2. Include a summary of key findings and recommendations. *[Title 31, Texas Administrative Code(TAC) §357.10(a)(2)]*

Response: The Executive Summary, includes summary statements of projected total needs (shortages), total quantities to be supplied by water management strategies included in the plan, total costs of strategies in the plan, unit costs, and range of unit

costs of strategies in the plan. For ease of reference, many of the key findings are presented in graphical format or bolded text. Summary information has been qualified to explain that all strategies included in the plan may not necessarily be implemented.

- Page ES-20; Table ES-4, Ch 2.10.4 Page 2-49, 1st paragraph; Ch 2.10.4 Page 2-50, Table 2-16; Ch 4A.2, Page 4A-19, Table 4A-3: The water demand projections for a WWP, the Guadalupe-Blanco River Authority, are different than the amounts in the on-line planning database (DB07) as shown below. Reconcile the demand projections in the plan matches and DB07. [Title 31, TAC §357.5(d)(1)&(2)]

WWP	Source	2000	2010	2020	2030	2040	2050	2060
GBRA	IPP	134,460	225,126	233,904	233,283	215,736	230,819	216,548
	DB07	68,772	221,866	230,645	230,024	212,478	227,561	213,290

Response: The values contained in the IPP were correct until the SCTRWPG decided to eliminate the original LGWSP from the plan. The water demand projections for GBRA contained in the IPP include the projected demands for the Cities of Blanco and Buda (Region K). At the time of this response, Region K had not entered the demands for these entities. Also included are limited amounts of irrigation demand projected to occur in Region K. Additional changes have been made pursuant to the SCTRWPG decisions to eliminate the LGWSP and add the LGWSP for GBRA Needs.

- Page ES-5, Figure ES-2: In this figure, the municipal demand and the total demand in 2060 are displayed as 673,235 ac-ft and 1,309,003 ac-ft. Revise to reflect the TWDB approved demands of 637,235 ac-ft and 1,273,003 ac-ft. [Title 31, TAC §357.5(d)(1)&(2)]

Response: This has been corrected.

- Page ES-6, 1st Paragraph, Ch 2-7, Page 2-22, 1st paragraph, Ch 2-7, Page 2-23, Table 2-9: The livestock water use estimate for the region in 2000 is cited as 25,557 ac-ft, and the projected livestock demands for the region are cited as 25,851 ac-ft for the year 2010 through 2060 in the IPP. Please revise to reflect the approved demands of 25,660 ac-ft in 2000 and 25,954 ac-ft in 2010 through 2060. [Title 31, TAC §357.5(d)(1)&(2)]

Response: This has been corrected.

- Page ES-20, Table ES-4: The demand projections for several water user groups shown in this summary table are different than the approved projections. Please revise to reflect the TWDB approved projections as listed below: [Title 31, TAC §357.5(d)(1)&(2)]

• **Table ES-4 Regional Water Supply Plan Summary (Demand)**

WUG	Source	2010	2030	2060
Bexar County				
Industrial	IPP	2,591	32,775	42,110
	TWDB	25,951	32,775	42,110
Steam-Electric	IPP	17,309	20,196	33,090
	TWDB	17,309	20,196	33,390
CALDWELL COUNTY				
Creedmoor-Maha WSC	IPP	234	431	560
	TWDB	234	367	560
GOLIAD COUNTY				
Mining	IPP	395	205	46
	TWDB	398	205	46
KARNES COUNTY				
El Oso WSC	IPP	495	561	6,017
	TWDB	503	570	626
REFUGIO COUNTY				
Rural	IPP	362	270	232
	TWDB	321	270	232

Response: This has been corrected.

Chapter 1

7. Provide information on the impacts of the plan on navigation. [Title 31, TAC §357.5(e)(8)]

Response: Neither the regional water plan nor any of the recommended water management strategies of the plan have any identifiable effect on navigation.

8. Page 1-30: Include the Yegua-Jackson aquifer as a water source, if applicable. [Title 31, TAC §357.7(a)(1)(D)]

Response: Although it is understood that the Yegua-Jackson aquifer is considered a minor aquifer by the TWDB, limited documentation is available to quantify the amount of water supplied from this aquifer to entities in Region L. It appears that very limited amounts from the aquifer may be used for livestock purposes; however, no change will be made to the plan.

Chapter 2

9. Page 2-23, Table 2-9: In the table, the projected livestock water demand totals for Bexar County in 2000 though 2060 shown as 1,216 ac-ft/yr. Revise to reflect the TWDB-approved demands of 1,319 in 2000 through 2060. [Title 31, TAC §357.5(d)(1)&(2)]

Response: This has been corrected.

10. Page 2-24, 1st paragraph: In the first paragraph, the total water demand projections for the region are cited as 896,250 ac-ft/yr in 2000, 1,101,655 ac-ft/yr in 2030 and 1,272,901 ac-

ft/yr in 2060. Revise the plan using the TWDB approved projections of 896,353 ac-ft/yr in 2000; 1,101,758 ac-ft/yr in 2030; and 1,273,003 ac-ft/yr in 2060. [Title 31, TAC §357.5(d)(1)&(2)]

Response: This has been corrected.

Chapter 3

11. Page 3-6, Table 3-2: Include groundwater supplies for all counties by river basin and category of use. [Title 31, TAC §357.7(a)(3)(A)(iv)]

Response: This information is included in the detailed supply/demand analysis contained in Appendix C. This information is also included in the TWDB database (DB07).

12. Page 3-2, Section 3.1.1: Include an availability number for the Yegua-Jackson aquifer. Also, the availability number shown for the Edwards (BFZ) aquifer is ~4,000 acre-ft/yr less than the number in DB07. Revise to ensure consistency between the plan and DB07. [Contract Exhibit "B," Section 3.1]

Response: Although it is understood that the Yegua-Jackson aquifer is considered a minor aquifer by the TWDB, limited documentation is available to quantify the amount of water supplied from this aquifer to entities in Region L, or the amount of water available from this source. It appears that very limited amounts from the aquifer may be used for livestock purposes; however, no change will be made to the plan.

The availability value of 340,000 acft for the Edwards Aquifer contained in the plan is for the Balcones Fault Zone portion of the aquifer only. The values contained in DB07 for the "Edwards Aquifer" also include limited availability from the Barton Springs portion of the aquifer for use by entities in Caldwell and Hays Counties, and are included in Tables C-3 (795 acft/yr) and C-12 (2,363 acft/yr)(Total of 3,158 acft/yr). A footnote has been added to Table 3-2 explaining that these quantities have been included in Tables C-3 and C-12, but are not included in the totals shown in Table 3-2.

13. Report surface water supply by categories of water use for each county or portion of county in the region and by river basin, if the county is in more than one basin. Report surface water supply by categories of water use for Wholesale Water Providers by river basins. [Title 31, TAC §357.7(a)(3)(A)(iv) and TAC §357.7(a)(3)(B)]

Response: For each WUG this information is included in the detailed supply/demand analysis contained in Appendix C. This information is also included in the TWDB database (DB07).

14. Report the Wholesale Water Providers' current contractual obligations to supply water in addition to any demands projected for the Wholesale Water Provider. [Title 31, TAC §357.7(a)(3)(B)]

Response: This information is reported in Section 2.10.

Chapter 4

15. Describe the process used by the regional water planning group to identify all potentially feasible water management strategies. [Title 31, TAC §357.5(e)(4)]

Response: A written description of the process used by the SCTRWPG has been added to the Plan in Section 4B on Page 4B.1-2.

16. Pages 4B.2-5 through 4B.2-204, tables 4B.1-4B.21: Identify the volume of groundwater supplies, by aquifer, for cities and retail public utilities and indicate whether shortages are predicted or not. [Title 31, TAC §357.7(a)(3)(A)(i)].

Response: This information is included in the detailed supply/demand analysis contained in Appendix C.

17. Provide documentation that the plan protects existing water rights, water contracts, and option agreements. [Title 31, TAC §357.5(e)(3)]

Response: The following was added to the first paragraph of Section 4B.1.1, "The plan does not propose any changes to existing water contracts or option agreements. Further, the plan was created in close cooperation with each Wholesale Water Provider in the region, and no strategy contained in the plan would adversely affect any existing water contracts, option agreements, or special water resources."

18. Provide information on contractual or non-contractual obligations for wholesale water providers. [Contract Exhibit "B," Section 5.1]

Response: See response to Number 17, above.

19. Pages 4B.2-115 through 4B.2-190, tables 4B.2.11-4 through 4B.2.19-7: Please verify if municipal conservation was considered as a water management strategy for each water user group with a need. [Title 31, TAC §357.5(k)(2)(A), §357.5(k)(2)(B), and 357.5(k)(2)(C)]

Response: For each WUG with a projected need, water conservation has been included as a recommended water management strategy, with the exception of Irrigation in Kendall County (Table 4B.2.14-60), Livestock in Hays (Table 4B.2.12-28) and Kendall (4B.2.14-7) Counties, and Industrial in Victoria County (4B.2.19-7). In the case of Irrigation needs in Kendall County, irrigation water conservation was considered, but would not meet the projected needs (See table 4C.1-17). There is no clearly defined

water conservation strategy for livestock or industrial uses, thus no water conservation strategy could be considered to meet these needs. However, Industrial BMPs are listed in the plan in Section 4C.1.3) and are recommended for industrial water users. At the beginning of Section 4B.2 (Water User Group Plans by County), it is explained that the proposed plan to meet the projected needs of municipal, industrial, steam-electric power, and mining water user groups located within the region is to consider water conservation programs to meet water demands to the extent possible, and then develop additional groundwater and surface water supplies located as near as possible to each respective water user to the extent that supplies are available.

20. Ensure and reference that discounted present value costs were utilized for evaluation of the water management strategies. [*Contract Exhibit "B," Section 4.2.9*]

Response: For each Water Management Strategy (WMS) included in the plan for each WUG having projected needs (shortages), total, annual, and unit costs were calculated. These costs, together with the projected implementation dates of WMSs were entered into the TWDB's DB07, which then calculated the discounted values on the web-based database application forms and are a part of the Region L Plan (See Region L; DB07).

21. Page 4C.21-12: The Wilcox aquifer (WW White) brackish groundwater desalination project shows a cost for the well field at \$7.58 million and the Engineering & Legal Costs and Contingencies at \$7 million. These costs appear to be high. Please review these project costs and revise as appropriate. [*Title 31, TAC §357.7(a)(8)(A(i))*]

Response: The well field cost is consistent with the cost estimating methodology used for all strategies. The well field cost of \$7.58 million for a well field with total firm capacity of 3,900 gpm (5.6 mgd) may appear high if compared to a well field in a more productive aquifer. However, the preliminary groundwater modeling of the Wilcox Aquifer in the target area indicates that, in order to keep the drawdown less than 100 feet in the vicinity of well field, the wells should be about 300 gpm each with about 4,000 feet of separation between wells. The cost of the wells and interconnecting piping yielded a well field cost of \$7.58 million using standard pipe and well unit costs. The Engineering & Legal Costs and Contingencies (ELC&C) cost is consistent with the cost estimating methodology used for all strategies. The cost was calculated using the standard procedure based on 30% of capital cost for pipelines and 35% of capital cost for all other facilities. The total capital costs for the project are \$20,986,000 and the ELC&C of \$7 million is 33% of the total capital costs.

22. Page 4C.21-13: The Wilcox aquifer (Twin Oaks) brackish groundwater desalination project shows a unit cost of water at \$685 per ac-ft. per year, which appears high for a brackish groundwater desalination plant. Please review these project costs and revise as appropriate. [*Title 31, TAC §357.7(a)(8)(A(i))*]

Response: The Wilcox Aquifer brackish groundwater desalination project cost estimate is consistent with the cost estimating methodology used for all strategies. The

majority of the costs for this brackish groundwater desalination water supply are for the standard non-desalination components to produce the groundwater and transport the finished water to San Antonio. These standard components consist of the well field, pump station, transmission pipeline, and integration of the additional supply into San Antonio (\$18.3 million of the total project capital costs of \$25.2 million). The well field costs are consistent with the cost estimating methodology as detailed in the response to Question 21. The brackish groundwater desalination plant components consisting of the desalination plant (\$4.7 million) and deep well injection of the concentrate (\$2 million) contribute a total of \$6.7 million to the capital costs. The capital and O&M costs for the desalination components are about \$250 per ac-ft. per year (\$0.77 per 1,000 gallons) of the total unit cost of water. These costs are consistent with the anticipated costs for a brackish groundwater desalination water supply based on the assumptions developed from the limited information available on the productivity and water quality of the Wilcox Aquifer in the project area.

23. Page 4C.21-23: The total capital cost for a 4.2 MGD brackish groundwater desalination project in the Gulf Coast aquifer is shown at \$1.1 billion, resulting in a final cost \$1,012 per ac. ft. of water. These costs appear high. Please review these project costs and revise as appropriate. *[Title 31, TAC §357.7(a)(8)(A(i))]*

Response: The referenced project cost and annual unit cost are based on the entire Lower Guadalupe Water Supply Project (Section 4C.7) and a supplemental brackish groundwater component from the Gulf Coast Aquifer. The brackish groundwater component provides an additional firm yield of 10,176 acft/yr at an annual unit cost of \$796/acft/yr.

Chapter 6

24. Include model conservation and drought contingency plans for industrial and irrigation water user groups. *[Title 31, TAC §357.7(d)]*

Response: There are no readily available model water conservation plans for irrigation and industry. However, in Section 6.1 of the regional water plan, web links are given to the TCEQ water conservation planning forms for irrigation and industry/mining water conservation plan development.

Chapter 8

25. Verify that the regional water planning group considered recommendations for designation of Unique Stream Segments or Unique Reservoir Sites. *[Title 31, TAC §357.8 and §357.9]*

Response: See Section 8.7, Environmental: Ecologically Unique Stream Segments and Unique Reservoir Sites, in which the SCTRWPG explains that, until the Legislature provides further clarification regarding the consequences of designating ecologically unique stream segments and unique reservoir sites, the SCTRWPG recommends that

there be no such designation in this round of planning. However, the SCTRWPG recognizes the great importance of protecting sites of “high ecological value.”

Appendix C

26. Table C-3, C-10 & C-16: Demand figures for river basins are slightly different than the amounts in the planning database (DB07). These differences may be due to rounding or reallocation between river basins. Please revise or coordinate with TWDB staff to ensure that data in the plan is consistent with DB07. *[Title 31, TAC §357.5(d)(1)&(2)]*

Response: These differences are due to rounding. No change has been made.

LEVEL 2. Comments and suggestions that might be considered to clarify or help enhance the plan.

Chapter 1

27. Page 1-30, Sec. 1.7.1: Consider mentioning the nitrate and gross alpha above maximum concentration levels in the Winter Garden District and the radon levels in the Catahoula and Goliad formations of the Gulf Coast aquifer near Bruni.

Response: A sentence regarding nitrate and gross alpha concentration in the Winter Garden District has been integrated in Section 1.7.1.2. Bruni is located in southeastern Webb County, which is within Region M.

Chapter 2

28. Consider a consistent presentation of the water user group variously labeled Port O’Connor, Rural (Port O’ Connor), or County-Other (Rural).

Response: Comment is noted; however, the water user group is consistently labeled in Chapter 2. No change has been made.

29. Page 5-5, first paragraph, last sentence: IPP states that thirteen water management strategies did not receive any water quality impact scores. Consider clarifying whether no scoring was performed or if they all scored zero.

Response: Sentence has been modified to read as follows: “Twelve of the recommended water management strategies received a score of zero (no impacts expected) and 23 received a score greater than zero in three or less of the key water quality parameters.”

10.2.2.2 TPWD Comments on Initially Prepared 2006 South Central Texas Regional Water Plan and SCTRWPG Responses

Letter of September 19, 2005 -- South Central Texas Regional Water Plan Review

Thank you for the opportunity to review and comment on the 2005 Initially Prepared Regional Water Plan (IPP) for the South Central Texas Region. L. Texas Parks and Wildlife Department (TPWD) acknowledges the time, money and effort required to produce the regional water plan as mandated by Senate Bill 1 of the 75th Legislature. A number of positive steps have been taken since the first planning cycle to advance the issue of environmental protection. For example, the regional water planning groups were faced with a new requirement under 31 TAG §357.7(a) (8) (A), to perform a "quantitative reporting of environmental factors including effects on environmental water needs, wildlife habitat, cultural resources, and effect of upstream development on bays, estuaries, and arms of the Gulf of Mexico" when evaluating water management strategies. TPWD recognizes that each region's unique natural resources, water management strategies and funding limitations dictated the level of quantitative analysis for each regional plan. Nonetheless, TPWD feels strongly that quantification of environmental impacts is a critical step in planning for our state's future water needs while also protecting environmental resources.

TPWD staff has reviewed the IPP to determine if the following questions were addressed:

- Does the plan include a quantitative reporting of environmental factors including the effects on environmental water needs, habitat?
- Does the plan include a description of natural resources and threats to natural resources due to water quantity or quality problems?
- Does the plan discuss how these threats will be addressed?
- Does the plan describe how it is consistent with long-term protection of natural resources?
- Does the plan include water conservation as a water management strategy? Reuse?
- Does the plan recommend any stream segments be nominated as ecologically unique?
- If the plan includes strategies identified in the 2000 regional water plan, does address concerns raised by TPWD at that time?

The Region L IPP includes a quantitative reporting of environmental factors. Volume II of the IPP discusses technical evaluations of strategies and presents Water Management Strategy Summary sheets that include numbers of acres impacted by each strategy. Where applicable, changes in environmental flows are predicted using Water Availability Models. Consensus Environmental Planning Criteria are used to approximate environmental flow needs except where site-specific information is available, as in the case of freshwater inflow needs to the Guadalupe Estuary. While the Region L IPP acknowledges environmental flow needs, it does not necessarily plan for future environmental flow needs.

Chapter 1.2.4 of the Region L IPP briefly describes natural resources including fish and wildlife resources. A detailed table listing threatened and endangered species by county with

notations concerning their habitat preferences and protected status is presented in Appendix H. Major springs are described in Chapter 1.7.3.

Chapter 7.2 presents an environmental assessment for proposed water management strategies not only for the 2006 draft IPP but also for the 1984, 1990, 1997 and 2002 Water Plans. In general, potential cumulative environmental impacts have decreased with each new water plan but the 2006 IPP has the greatest potential for impact to threatened and endangered species. The IPP attributes this to proposed recharge sites that could impact karst cave communities.

The Region L IPP recommends water conservation for all water user groups. Region L is to be commended for including advanced water conservation as a water management strategy. According to the IPP, per capita water use in Region L is projected to decline over the planning period from 148 gallons per person per day in year 2000 to 132 gallons per person per day in 2060. The IPP also recommends the expansion of water recycling, or use of reclaimed wastewater, for non-potable purposes such as parkland irrigation and instream flow augmentation.

It is disappointing that the plan does not recommend nomination of any stream segments as ecologically unique, citing the need for further legislative clarification. Although the IPP states '...the SCTRWPG recognizes the great importance of the issue for the protection of sites of high ecological value.' I would encourage considering such action in future plans recommending stream segments as ecologically unique would give the regional water planning group.

The 2005 Region L IPP is a well written report that provides sufficient detail. Positive aspects include advanced conservation, aquifer recharge, aquifer storage and recovery, brush management, and seawater desalination. No major on-channel reservoirs are proposed at this time. While TPWD is pleased to see many of our earlier comments have been addressed, concerns remain regarding potential impacts associated with several strategies. New appropriations from the Guadalupe River and/or increased use of previously unused water rights from the Guadalupe River will impact freshwater inflows to San Antonio Bay. Inter-basin transfers from the Guadalupe and Colorado Rivers both pose potential impacts to fish and wildlife. The inter-basin transfer from the lower Colorado River could also potentially negatively impact the Matagorda Bay ecosystem. Increased reliance on groundwater may result in reduction or loss of spring habitats and instream flows. The reliance on the Guadalupe River and Edwards Aquifer will likely reduce the long-term inflows which will increase bay-water salinities. This will invoke a host of complex estuarine community changes. At this time seawater desalination offers a potentially low-impact long-term solution. Continued consultation with TPWD staff will help to assure that fish and wildlife impacts can be avoided or minimized.

Thank you for your consideration of these comments. It is clear that the region is looking for opportunities to address environmental issues. Please be assured that TPWD will continue to work with the region to explore all possibilities to meet future water supply needs and assure the ecological health of the region's aquatic resources. Please contact Cindy Loeffler at (512) 912-7015 or Norman Boyd at (361) 983-4425.

Response: The SCTRWPG acknowledges the comments of Texas Parks and Wildlife Department on the 2006 South Central Texas Regional Water Plan, and appreciates the offer to assist the SCTRWPG in its water planning efforts to meet future water needs of the region. With regard to the designation of ecologically unique stream segments and unique reservoir sites, in Section 8.7 of the plan, the SCTRWPG has explained that, until the Legislature provides further clarification regarding the consequences of designating ecologically unique stream segments and unique reservoir sites, the SCTRWPG recommends that there be no such designation in this round of planning. However, the SCTRWPG recognizes the great importance of protecting sites of “high ecological value.”

10.2.2.3 *Public Comments and South Central Texas Regional Water Planning Group Responses Developed through Facilitation*

Sixteen issues raised during the Initially Prepared Plan Comment period were determined to be issues that would benefit from a facilitated process for the SCTRWPG to develop a consensus response. This list of sixteen issues and the responses developed through a series of facilitated meetings is presented below.

Issue 1. The 340,000 acre feet place holder amount for the Edward Aquifer needs to be reaffirmed. How much of an allowance do we need in case the number changes?

Response: The 340,000 acre-feet place holder amount was discussed at November 17, 2005 meeting and reaffirmed as a valid place holder amount for the Edwards Aquifer.

Issue 2. Do we need to have an allowance for the Carrizo aquifer as well until the managed available groundwater amounts are determined by the groundwater districts?

Response: Texas Water Code, Section 36.108 (b) requires that if two or more groundwater conservation districts are located within the boundaries of the same groundwater management area, each district shall prepare a comprehensive management plan as required by Section 36.1071 covering that district’s respective territory. Upon completion and approval of the plan, each district shall forward a copy of the new or revised management plan to the other districts in the management area.

H.B. 1763 enacted by the Texas Legislature in 2005, requires groundwater conservation districts within the same groundwater management area to meet at least annually to conduct joint planning with the other districts in the management area (Section 36.108(c)). “Not later than September 1, 2010, and every five years thereafter, the districts shall consider groundwater availability models and other data or information for the management area and shall establish desired future conditions for the relevant aquifers within the management area” (Section 36.108.(d)). H.B. 1763, Section 32.108 (f)(2) further directs that, “Each district in the management area shall ensure that its management plan contains goals and objectives consistent with achieving the desired future conditions for the relevant aquifers as adopted during the joint planning process.”

Given these new requirements for determining desired future conditions for the relevant aquifers, and that individual groundwater conservation district management plans shall be consistent with achieving the desired future conditions of the relevant aquifers, the quantity of groundwater available for use by water users located within the respective parts of water planning regions is uncertain, and quite likely will change from the quantities now being used in regional planning. Therefore, water planning for water user groups whose future supplies are from groundwater should carefully consider broadening their strategies both in terms of quantities and sources to take this uncertainty into account.

Issue 3. Potential recommendation of demand/drought management as a water management strategy to meet projected needs (and associated revision of current policy). This policy is of particular interest to the Sierra Club and is discussed further in their publication, “Alternative Water Management Strategies for the 2006 South Central Texas Regional Water Plan”.

Response: Drought Management/Drought Contingency Planning (DM/DCP) is not yet incorporated as a recommended water management strategy in the 2006 South Central Texas Regional Water Plan. Water user groups (specifically municipal water suppliers) are, however, required to articulate DM/DCP within their TWDB management plans.

Calculations for the 2006 plan, using the TWDB socioeconomic impact analysis of unmet water needs in the region – and assuming that none of these needs would otherwise be met – resulted in unacceptable high projections of business, personal income, and tax revenue losses. There are predictions of even greater costs outside these clearly defined categories, though they are acknowledged as being more difficult to measure. Experience does not, however, support this conclusion to the extent that it would either preclude the viability of DM/DCP as a strategy or dictate its exclusion from the plan.

Among principal impacts of DM/DCP’s being incorporated as a water management strategy are the following:

- that economic ramifications of stages one and two DM measures are considered to be minimal and should not be overstated in the analysis, i.e., each stage’s impacts – one through four – should be evaluated independently; and
- that DM/DCP, in concert with anticipated user conservation responses to severe drought conditions, may obviate the necessity for developing water resources/supplies that carry very high unit costs.

The SCTRWP recommends that a more thorough analysis of DM/DCP as a water management strategy be conducted during the planning interim. The experience of water suppliers who have planned and implemented DM/DCP should prove of benefit in this analysis and lead to a practical DM strategy.

Issue 4. The Management Supply in the Regional Water Plan seems excessive.

Response: The SCTRWPG reviewed the Management Supply Policy and revised the policy as presented in Section 8 of the Regional Water Plan. *(The planning group also discussed the idea of providing a management supply for counties other than Bexar.)*

System management water supplies, i.e. supplies over and above those apparently needed to meet projected demands, may be included in the plan for the following reasons: 1) to recognize both the long lead times and the uncertainty associated with risk factors that may prevent implementation of water management strategies and necessitate replacement strategies; 2) to preserve flexibility for water user groups or wholesale water suppliers to select the most feasible projects among several consistent with the Regional Plan and therefore potentially eligible for permitting and funding; 3) to serve as additional supplies in the event rules, regulations or other restrictions limit use of any planned strategies, and 4) to ensure adequate supplies in the event of a drought more severe than that which occurred historically. The plan should specify those factors affecting reliability of the recommended options and strategies and indicate what alternatives are available as possible replacements.

The amount of the management supply should be limited by consideration of the following factors: 1) potential disruptive impacts of planning for projects that have low probability of implementation; and 2) citing of specific reasons for management supplies that exceed the projected needs of the region.

Issue 5. Using the SAWS SCCS model rather than the TWDB GAM for the Carrizo Aquifer modeling is a concern.

Response: Two groundwater models of the Carrizo Aquifer have been used by the South Central Texas Regional Water Planning Group in the development of the 2006 South Central Texas Regional Water Plan. These models are identified as the Southern Carrizo-Wilcox/ Queen City-Sparta Groundwater Availability Model (GAM) and the South Central Carrizo System (SCCS) model. Both of these models have been applied in the technical evaluation of water management strategies identified as Regional Carrizo for Bexar County Supply (Section 4C.16), and Hays/Caldwell Carrizo Project (Section 4C.17). For these parallel model applications, pumpage stresses are based on amounts provided by the sponsor of each water management strategy during and subsequent to a public meeting held October 13, 2004 in Seguin.

In the technical evaluation of the potential cumulative effects of implementation of the 2006 South Central Texas Regional Water Plan (Sections 4C.18 and 7.1), only the SCCS model has been applied and pumpage stresses are based on projected demands (which are generally less than the amounts provided by the various sponsors). During its meeting of April 7, 2005, the SCTRWPG chose to proceed with use of only the SCCS model in the assessment of cumulative effects because the SCCS model was developed specifically for simulation of potential groundwater development projects in the Carrizo Aquifer in Gonzales and Wilson Counties and show substantially better calibration to historical water levels in wells within the model area (particularly those near the outcrop) than does the GAM. TWDB staff performed independent applications of each model, evaluated and compared results, presented their comparison to the SCTRWPG and approved use of either model for regional water planning purposes by letter of September 7, 2005.

Concerns have been raised by members of the SCTRWPG and others regarding use of the SCCS model in regional water planning when it is the expressed intent of the Gonzales and Evergreen Underground Water Conservation Districts to use the GAM for such technical analysis as deemed necessary by the districts and/or required by state law for the determination of groundwater availability. The general manager of each district has stated that the SCCS model is a “good model”, but cites concern that the SCCS model does not, while the GAM does, include the entire multi-county groundwater management area.

Upon due consideration of available information, it is the consensus of the SCTRWPG to affirm its previous decision to use the SCCS model for the evaluation of cumulative effects of regional water plan implementation and present the results of such evaluation in the 2006 South Central Texas Regional Water Plan. It is explicitly recognized by the SCTRWPG that this decision is in no way binding upon groundwater conservation districts and/or the TWDB as to their selection of appropriate modeling tools for assessment of groundwater availability pursuant to HB 1763 as enacted by the 89th Texas Legislature, signed by the Governor, and effective September 1, 2005. Similarly, it is explicitly recognized by the SCTRWPG that this decision is in no way binding upon groundwater conservation districts as to their selection of appropriate modeling tools for technical evaluation of applications for groundwater production permits.

Issue 6. The Carrizo Pumping amounts from Gonzales County do not seem to comply with the Gonzales Groundwater District’s Management Plan numbers.

The public comment process received letters from the Gonzales County Commissioners Court and the City of Smiley requesting that the 45,200 acre feet of Carrizo ground water in Gonzales County be removed from the Plan and three hundred and twenty one written comments with the following message:

“The Gonzales County Underground Water District Management Plan states the amount of Carrizo water available for use. All of this water in western Gonzales County is now committed to various users. This is also stated in a footnote to the present Region L Plan. There is no Carrizo water available for SAWS in western Gonzales County. The SAWS Water Resource Plan 2005 update also clearly indicates that this water is in excess of the stated needs.

Please Remove the SAWS Regional Carrizo Plan from the Region L Plan. This request is backed by many citizens of western Gonzales County and supported by the Nixon and Smiley City Councils as well as the Gonzales County Commissioner Court.”

Response: At the December 1, 2005 planning group meeting, the SCTRWPG agreed to the following conditions for continued inclusion of the Gonzales County Carrizo Projects in the Regional Water Plan, subject to changing yields to meet needs when the desired future condition of the aquifer has been determined. The request from the Gonzales County Underground Water Conservation District Board to add language recommending a delay in filing permit applications until the desired future condition had been determined was

regarded as problematic by the group, and members indicated that the Board could use its own powers to manage the permit process.

Procedural Steps

- 1) Utilize the groundwater conservation district (GCD) estimates of availability as included in the GCD management plan. Estimates of availability may change and are subject to permitting by the GCD.
- 2) Reference model simulations included in the initially prepared regional water plan to illustrate that presently some of the recommended water management strategies (WMSs), in their presently recommended amounts, are potentially feasible and that the associated simulation is for regional planning purposes only. Implementation of these WMSs must be in compliance with GCD rules.
- 3) The SCTRWPG recognizes that modeling assumptions with respect to geographic distribution of pumpage among counties and/or GCDs is for regional water planning purposes only and is subject to future decisions by either the sponsor of the WMS of the GCD.
- 4) Develop language appropriately qualifying SCTRWPG recommendation of WMSs, acknowledging uncertainty in the availability estimate in the GCD management plan pursuant to the process defined under new law (HB 1763), and explicitly recognizing that only the local GCD has authority to issue the necessary groundwater production permits for implementation of WMSs. It is noted that a substantial portion of the language explaining this concept was agreed upon by technical representatives of the GCDs and water suppliers most directly affected and that such language is present at numerous locations throughout the initially prepared regional water plan.
- 5) Recommended WMSs in amounts exceeding GCD management plan estimate of availability introduces an added element of uncertainty to reliance upon these WMSs and, therefore, additional management supplies may be needed.

Advantages of Concept

- 1) Recognizes that only the local GCD has the authority to issue groundwater production permits and in no way constrains the GCD from granting or denying such permits in accordance with GCD rules.
- 2) In no way discourages willing buyers and willing sellers from negotiating water supply agreements and seeking production permits in accordance with local GCD rules.
- 3) Ensures that the regional water plan recognizes the plans of many water user groups (WUGs) and wholesale water providers (WWPs) to develop and beneficially use limited supplies from the Carrizo Aquifer.
- 4) SCTRWPG need neither choose which specific WMSs to recommend and reject, nor prorate supplies associated with all WMSs to recommend and reject, nor prorate supplies associated with all WMSs, in order to comply with a GCD management plan availability number that will almost certainly be changing in the next few years.
- 5) SCTRWPG need not necessarily go through the process of identifying and recommending “replacement” WMSs to meet projected needs for WUGs and

WWPs who have very clearly expressed a preference for seeking Carrizo Aquifer supplies.

- 6) Allows for timely completion and adoption of the regional water plan.**

Issue 7. Request to remove the 11,000 acre-feet of Carrizo groundwater to be pumped out of Wilson County from the plan.

The public comment process received letters from the Wilson County Commissioners Court, the Evergreen Underground Water Conservation District, the City of Stockdale, the City of LaVernia, and the City of Floresville requesting that the 11,000 acre feet of Carrizo ground water in Wilson County be removed from the Plan. The group received seven hundred and twenty seven oral and written comments requesting that the 11,000 acre feet be removed from the plan, including six hundred and eighty written comments with the following message:

“Please remove the 11,000 acre feet of Carrizo Aquifer Groundwater in Wilson County from the Water Plan.”

Response: The Wilson County well-field is one of four in the water management strategy known as Regional Carrizo to Bexar County in the Regional Water Plan, a strategy designed to meet near-term needs of SAWS. The group could not reach consensus in response to the extensive public comment on this project. At the December 1, 2005 meeting a motion was made to remove the 11,000 acre-feet from the plan. The vote was thirteen in favor of the motion to remove the 11,000 acre feet and seven for leaving the amount in the plan. The motion did not receive the required two-thirds majority of the voting members present for a motion to pass and the 11,000 acre-feet of Carrizo groundwater remains in the 2006 Regional Water Plan.

Issue 8. Seawater Desalination seems to be a logical long term solution to the water needs of the region. Please shift the timing of the seawater desalination plant to an earlier time in the regional plan. There were seventeen speakers at the Victoria public hearing that specifically requested Desalination be implemented sooner.

Response: The Initially Prepared 2006 South Central Texas Regional Water Plan includes Seawater Desalination as a recommended water management strategy to meet projected water supply needs for a Wholesale Water Provider (WWP) identified as the Regional Water Provider for Bexar County. Recognizing both the relatively high estimated unit cost of water developed by this strategy (\$1390/acft/yr for 84,000 acft/yr) and the steadily advancing desalination process and treatment technologies that may reduce this unit cost in the future; the SCTRWPG chose to show implementation of this strategy between the years of 2050 and 2060. Review of recent updated cost information for seawater desalination facilities provided by the TWDB, including relevant information regarding the near-operational installation ear Tampa Bay, Florida, indicates that the cost estimates in the regional water plan are reasonably accurate with respect to current technology.

Subsequent to issuance of the Initially Prepared 2006 South Central Texas Regional Water Plan for public review and comment, members of the SCTRWPG and the public have produced written and/or verbal comments suggesting that the SCTRWPG recommend rescheduled implementation of the Seawater Desalination strategy to meet projected water supply needs in the Bexar County area. In mid-June, the San Antonio Water System (SAWS) issued its Water Resource Plan 2005 Update which recommends that SAWS continue evaluations of Coastal Desalination among Other Potential Projects. However, neither SAWS nor any other water user group or WWP serving Bexar County has indicated that it is prepared to establish a more definitive schedule for implementation of a major seawater desalination facility at this time.

Upon consideration of available information, it is the consensus of the SCTRWPG to expand its current statement regarding Desalination in Section 8.6 of the regional water plan as follows:

The SCTRWPG supports the funding of a state and/or federal program for research and potential incentives to make desalination more affordable. This includes both brackish groundwater and seawater desalination. Should such incentives, technical advances, and/or other factors make a seawater desalination strategy similar to that described in Section 4C.22 sufficiently attractive to a water user group or WWP that implementation prior to year 2050 is desired, it is explicitly recognized by the SCTRWPG that such rescheduled implementation is consistent with the 2006 South Central Texas Regional Water Plan.

Issue 9. The Brackish Groundwater Desalination – Wilcox Aquifer supply strategy in the Regional Water Plan does not match the amount and timing in the SAWS plan. What is status of Edwards brackish water evaluation?

Response: The Regional Water Planning Group agreed to a modification of this strategy to allow maximum pumping capacity of 20 MGD, but kept within the limits of an annual yield of 5,662 acre-feet. The planning group also agreed to include the Brackish Groundwater Desalination - Edwards Aquifer project as an option recommended for further research and evaluation.

Issue 10. The Recharge and Recirculation water supply potential is very interesting. Please include water supply option SCTN 6a as identified in the previous round of planning.

Response: Proposed for inclusion in the 2006 Regional Water Plan, this water management strategy was evaluated in 2001. TWDB has indicated that it needs updating, particularly with reference to the new WAM for the Guadalupe system, before it can be included as a strategy for implementation to meet identified water needs in the 2006 Plan. Recharge and Recirculation and option SCTN 6a are included in the 2006 Plan only as an option recommended for further research and evaluation.

Issue 11. The recent SAWS plan included the MESA water supply project and this project is not included in the Regional Water Plan. SAWS has requested that this project be included in the 2006 Regional Water Plan.

Response: The MESA water supply project is included in the 2006 Plan as an option recommended for further research and evaluation.

Issue 12. The Lower Guadalupe Water Supply Project received a great deal of public comment and SAWS has requested that the project be removed from their list of water supply projects. There were other user groups receiving water from the project and these needs will need to be reconsidered relative to the status of this project. This project may need to be reevaluated in a format that reflects the removal of SAWS as a project sponsor.

The public meeting in Victoria was attended by over 500 persons and the general message from the attendees was a request that this project be removed from the RWP in its entirety. The forty-eight written and oral comments relative to this water supply strategy expressed an aversion to a pipeline for ground and surface water, concerns over groundwater availability and modeling results, and concerns over surface water availability as well as the impacts to bay and estuaries.

Response: At the December 1, 2005 meeting, the planning group reviewed a reconfiguration of the Lower Guadalupe Water Supply Project for GBRA needs that removed the groundwater component and delivered water to user groups within the GBRA statutory district. The reconfigured project would utilize existing senior water rights with a new appropriation to deliver approximately 60,000 acre-feet of water to upper Guadalupe basin water user groups. The project would remove the interbasin transfer feature, and the Bexar Met needs would be met by another water option, as is explained below. The group could not reach consensus in response to the extensive public comment on this project. At the December 1, 2005, meeting a motion was made to include the reconfigured Lower Guadalupe Water Supply Project for GBRA needs in the plan. The motion passed by a vote of eighteen in favor and two against. The reconfigured Lower Guadalupe Water Supply Project for GBRA needs is included in the 2006 Regional Water Plan. A second motion was made and passed unanimously to remove the existing Lower Guadalupe Water Supply project as presented in the IPP from the plan

By letter of November 30, 2005 to the SCTRWPG, BexarMet informed the SCTRWPG that, in order to meet the BexarMet needs referenced in the paragraph above, BexarMet, requested the following revisions to BexarMet's recommended water supply plan:

- “Edwards Transfers to be implemented prior to 2010. This strategy can provide an additional 6,000 acft/yr of supply for the years 2010 through 2060;
- Local Carrizo to be implemented prior to 2010. This strategy, which is already in the construction phase, can provide an additional 4,000 acft/yr of supply for the years 2010 through 2060; and
- Purchase from WW (RWPBC) to be implemented prior to 2020. This strategy can provide an additional 4,000 acft/yr from Edwards Aquifer Recharge – Type 2 Projects for the years 2020 through 2060.”

Explanations were given for each of the Water Management Strategies listed above, BexarMet explained that wells had been drilled in 1997 in southern Bexar County to implement the Local Carrizo source, that BexarMet plans to increase permanent transfers

of Edwards Aquifer Permits to 6,000 acft/yr by converting existing leases to permanent acquisitions, and to support the Regional Water Provider for Bexar County in developing Type 2 Edwards Aquifer Recharge Projects. SAWS inquired about the potential effects of the Carrizo wells upon the SAWS ASR project in Southern Bexar County and BexarMet agreed to work cooperatively with SAWS to assess and address potential impacts. BexarMet's proposal was considered by the SCTRWPG and approved for inclusion in the 2006 regional Water Plan by a vote of 18 for and 2 against.

Issue 13. The Simsboro Alcoa project is included in the IPP, and SAWS has dropped it from their list of projects. Is there another sponsor for the project or should it be removed from the Regional Water Plan?

Response: At the December 1, 2005 meeting, the planning group reviewed a reconfigured Simsboro Water Supply Project. The reconfigured strategy required identification of a new well-field location, destination, pipeline route and yield together with revised cost analysis. An additional issue is to determine whether or not there would be a conflict with any other regional plan. The planning group agreed to remove the Simsboro Alcoa project from the Regional Water Plan and include the reconfigured project in the 2006 Plan only as an option recommended for further research and evaluation.

Issue 14. The SAWS plan seems to have a different set of Edwards Aquifer Transfers than what is in the IPP. What demand pattern changes are associated with the anticipated SAWS plan?

Response: At the December 1, 2005 meeting, the planning group agreed to include the additional Edwards transfers subject to the controls and regulations established by the Edwards Aquifer Authority.

Issue 15. Create a policy to allow for the continuation of funding for Environmental Studies, regardless of the Lower Guadalupe project status.

Response: The following policy was adopted by consensus at the December 1, 2005 planning group meeting and is also included in the policy section of the 2006 Regional Water Plan:

Environmental Studies Policy

The SCTRWPG recognizes that significant needs exist in Bexar and the surrounding counties and that new supplies need to be developed in the Guadalupe River and San Antonio River watersheds. There are issues related to environmental impacts that need further study to determine feasibility of reuse of wastewater effluent, Edwards Aquifer recharge dams, the proposed Dunlap and Siesta water supply projects, and the resulting groundwater-surface water interaction from the existing and proposed Carrizo projects. Therefore, the SCTRWPG recommends that additional environmental studies be undertaken to be able to evaluate the effects of such projects on the ecosystems that rely on inflow to San Antonio Bay and flows of the Guadalupe River and San Antonio River watersheds.

Issue 16. The Canyon Regional Water Authority has requested the 2001 Regional Water Plan be amended to include three new water supply strategies and included in the 2006 Regional Water Plan. What was the public input regarding these strategies? What was the outcome of the amendment process?

Response: The public comment period ended November 15, 2005. The amendments were discussed at the December 1, 2005 Regional Water Planning Group meeting. The Wells Ranch project is a Carrizo groundwater project and is considered in the context of the other projects located in Gonzales County. Its yield is subject to change depending on determination of desired future conditions. This amendment was recommended for inclusion in the 2001 and 2006 Regional Water Plans by consensus of the planning group members.

The CRWA Lake Dunlap project would use a new appropriation of water from Lake Dunlap, firmed up with groundwater from the Wells Ranch well-field, to meet needs of CRWA customers. The Siesta project received the most of the public comment with concerns focusing around the use of treated wastewater as a firming supply, the timing of availability of the wastewater and the downstream impact of an increased surface water appropriation. The group could not reach consensus regarding this project. At the December 1, 2005 meeting, a motion was made and passed to include both the Lake Dunlap and Siesta projects in the 2001 and 2006 Regional Water Plans. The vote was sixteen in favor and four against the motion. The summary and public comments regarding the Amendment process is presented in the Amendment to the 2001 South Central Texas Regional Water Plan report by HDR.

10.2.2.4 Public Comments and South Central Texas Regional Water Planning Group Responses

Public comments were received on 15 additional issue areas that did not require facilitation to develop responses. These responses were developed through consensus after review by the staff work group and planning group members. Responses to issues that specifically referenced a technical question were developed by HDR and are presented in the section 10.2.2.5.

Issue 17. Water Policy Issues. Comments on policy issues included concerns over the amount of management supply in the plan and requested that the plan include a management supply for parts of the region other than Bexar County. This topic was covered previously in the facilitated issue section. Using drought management as a water supply strategy is also a policy issue that was covered in the facilitated responses. There were several comments supporting conservation and the efforts of the planning group to include conservation as the first option to implement. A more aggressive approach was suggested by “having San Antonio implement Stage 1 water restrictions year round”. Another policy of concern was “the absence of surface water development projects in the Region continues the practice of over dependence on ground water resources.” The use of the term “recommended” water strategies was also requested to be changed to “potential” water strategies.

Response: The implementation of stage 1 water restrictions as a year round water use amount would essentially be a water conservation strategy that the City of San Antonio has available for implementation. A full discussion of Water Conservation as a Water Supply Strategy is provided in Section 4C.1 of the RWP. As indicted in that section, the Planning Group has established a target goal of water use of 140 gpcd for municipal water user groups. The methods to achieve the target goal are up to the discretion of the water user group. A list of BMPs for water conservation as developed by the Water Conservation Implementation Task Force is available and can help water users determine which methods may best apply to their situation.

SCTRWPG does not have authority to require any level of water restrictions in the region. The apparent over dependence on ground water resources in the current RWP reflects the overwhelming negative response received in regard to several reservoir sites considered during preparation of the 2001 RWP.

The term “recommended” water supply strategy is used because the strategy has been identified by the SCTRWP as an available source to meet the needs of the water user group. Whether the strategy is implemented to meet those needs will ultimately be determined by the water user group, and therefore the SCTRWP only has the authority to “recommend” a strategy to meet needs.

Issue 18. Rural versus Urban needs. This topic relates to the management of groundwater and the ability of Groundwater Districts that were established to manage irrigation and rural water uses to respond to the idea of well fields and pipelines that move water out of the district. The specific policy statement in the RWP regarding the inability of the planning group to identify any “new economically feasible water available for irrigation in the region” is of particular concern when the plan includes water supply strategies that move groundwater from the counties in need of irrigation water. The city water users are viewed as “wasteful” because they are worried about watering lawns, while rural populations are concerned with maintaining their livelihood (cattle and crops). The comments were passionate and often reflected a belief that the water is connected to the land and should be respected as such. One commenter also expressed the frustration of feeling like a “flea versus Goliath” when considering the power and money behind the large metropolitan areas.

Response: It is important to differentiate between a need and a shortage. The needs of the region as presented in Tables 4A-5 and 4A-6 can for the most part be met by existing water

supply strategies. A shortage only occurs when a need exists in an area where existing water supplies are not available to meet the needs. If you are a farmer, you can dig another well to meet your needs, as long as you are complying with the rules of the groundwater district for your area. The planning group has endorsed conservation as the first water management strategy for all water user groups and has adopted an aggressive per capita user goal for municipal water users and recommended conservation strategies for irrigators. The intention of this conservation policy is to provide for the equitable management of the water resources in the region. The planning group has also followed a policy to honor the management plans of the underground water conservation districts. The next round of regional water planning will include the process established through H.B. 1763 which requires groundwater conservation districts of the same groundwater management area to meet at least annually to conduct joint planning with the other districts in the management area. The districts in each management areas will establish management plans that contain goals and objectives consistent with achieving the desired future conditions of the relevant aquifers. It is anticipated that this groundwater management process will provide the rural interests with the ability to manage the use of the aquifers in both rural and urban areas.

Issue 19. Population/Water Demand Projections. There were five comments received that expressed concerns with water demand projections. Two comments expressed the concern that the population projections for Wilson County were too low and two comments expressed a similar concern for Goliad county steam electric and municipal water demand projections. One comment was received regarding the municipal supply in the plan for Uvalde County (2,657 acre feet) not matching the permitted (5,300 acre feet) and peak usage (5,100 acre feet).

Response: Population and water demand projections were revised based on the 2000 census. The Planning Group is required to use TWDB population and water demand data. The data for each county was circulated to county and municipal officials, as well as water user groups for comment on August 2, 2002, and proposed revisions for this region were considered and accepted by the TWDB on March 19, 2002. Similarly, the water demand projections were sent out for review by county and municipal officials as well as water user groups for comment on March 18, 2003 and the proposed revisions for this region were considered and accepted by the TWDB on September 5, 2003.

The Planning Group has adopted a recommendation for earlier and more active involvement of the RWPG's in TWDB's process of developing its population and water demand data, and has urged counties and water user groups to become more active in reviewing the data and requesting modifications. Questions regarding specific numbers are addressed in the Technical Questions section responses.

Issue 20. Wilson County Spring Flow Issues. Eight comments were received relative to the Cibolo Creek and Sutherland Springs in Wilson County. Concerns were expressed that the creek and associated springs would go dry with increased groundwater pumping. Comments described the rich history of the springs, how the area is named for Dr. John Sutherland who was the physician at the Alamo and that in earlier times the springs were used by different Native American groups who considered the springs sacred ground.

Response: The SCTRWPG recognizes that the groundwater models and the surface water models would benefit from some additional conjunctive use analysis. According to the TWDB, this type of analysis could be a focus area to be included in the next round of planning. The Cibolo Creek and the Carrizo Aquifer are recognized as an area that may benefit from additional evaluation to determine the effects of groundwater pumping on spring flows.

Issue 21. Downstream Bays and Estuaries. Several comments mentioned concern about adverse impacts on bays & estuaries that could result from one or more of the proposed management strategies in the RWP. Specific concerns included the whooping cranes, shrimp, crab, and oyster populations that all depend on the fresh water inflows from the Guadalupe River.

Response: Impacts are considered in the RWP according to the State Consensus Environmental Criteria on instream flows and freshwater inflows to bays and estuaries. The State's Consensus Environmental Criteria were developed jointly by the Texas Water Development Board, the TCEQ, and the Texas Parks and Wildlife Department. When the relevant strategies are presented for permitting by TCEQ, they will be subject to further and extensive review with regard to associated impacts. Should any of these projects fail to meet both State and Federal criteria, they will either have to be modified or mitigated or will not be permitted.

Issue 22. Groundwater – General Concerns. Why and how are the Edwards Aquifer water levels determined? Where is the environmental impact statement for “joining the Edwards Aquifer and the Carrizo Aquifer”, because that is essentially what you are doing with the Regional Carrizo pumping project? Suggestions for managing ground water resources include limiting pumping to acres owned, or tie pumping levels to recharge amounts, or establish drawdown limits for aquifers. Comments were expressed in support of Aquifer Storage and Recovery as well as concerns over pumping levels associated with ASR. One speaker requested pilot projects be implemented to test the validity of the GAMS.

Response: The Edwards Aquifer pumping levels are under the jurisdiction of the Edwards Aquifer Authority. A thorough discussion of the permits and pumping levels included in this Plan are described in Section 4C.2 in Volume II of the RWP.

The RWP incorporates a policy of groundwater sustainability and respect for regulatory rules limiting withdrawals under permits issued by groundwater districts. The SCTRWPG has adopted a goal of groundwater sustainability as described in Section 8.3 of Volume I of the RWP.

The groundwater districts have the authority to issue permits and will consider possible restrictions and conditions during the permit review process. Recent legislation has determined that “Each district in the management area shall ensure that its management plan contains goals and objectives consistent with achieving the desired future conditions

for the relevant aquifers as adopted during the joint planning process.” This legislation designates the groundwater districts as the authority to determine the desired future conditions for the aquifers.

Issue 23. Growth Management was expressed by a few speakers as a recommended method for San Antonio to employ to help reduce future demand.

Response: Growth Management as a water supply strategy is evaluated in Section 4C.31 of Volume II of the RWP.

Issue 24. Conservation was identified by several speakers and written comments as a method to efficiently reduce demand. The Sierra Club publication “Alternative Water Management Strategies for the 2006 South Central Texas Regional Water Plan” included a section specific to conservation which recommended that the plumbing retrofits be accelerated, that other cities adopt Conservation Ordinances similar to the City of San Antonio ordinance, implementing water audits, replacing residential turf with non-irrigated landscape materials, use of grey water systems, using more efficient clothes washers and the use of increased price to reduce demand.

Response: The Conservation Water Supply Strategy presented in Section 4C.1 of Volume II, references the Best Management Strategies guidelines prepared by the Water Conservation Task Force as possible methods to achieve higher levels of conservation.

Issue 25. Other Issues presented during the public comment process:

- *A request to include the Environment as a user group.*
- *Concerns over the benefits of Brush Management.*

Response: Environmental needs are currently considered in the RWP through the State Consensus Environmental Criteria on instream flows and freshwater inflows to bays and estuaries. Each Water supply strategy includes an analysis of environmental impacts should the strategy be implemented. In addition, the TCEQ considers environmental flow criteria when evaluating permit applications.

The use of Brush Management as a water supply strategy is included in the RWP in Section 4C.28 of Volume II. In this analysis the strategy is recognized as a water management strategy that may not be cost efficient in some applications.

10.2.2.5 Public Comments with a Technical Question and South Central Texas Regional Water Planning Group Responses

A. Oil & Gas Operations Relating to Groundwater Pumping

One commentor is concerned that potential groundwater projects in Wilson County will cause contamination of developed water supply by oil and gas floating on top of the groundwater being drawn into the production wells.

Response: Wells are designed and constructed such that the piezometric surface of the groundwater does not drop to the screened segments through which water enters the well and is pumped to the surface.

B. Goliad County Steam-Electric Water Demand Projections

One commentor seeks assurance that supplies are available to meet projected water needs for steam-electric power generation at the Coletto Creek Power facility in Goliad County should an additional generation unit be added sooner than the TWDB demand projections indicate. The commentor further asks for references as to separation of groundwater and surface water supplies and use of surface water rights by Coletto Creek Power.

Response: (1) Sufficient reliable water supplies are available from Coletto Creek Power's own water rights on Coletto Creek and the Guadalupe River, Guadalupe-Blanco River Authority (GBRA) run-of-river water rights on the Guadalupe River, and/or GBRA stored water from Canyon Reservoir to provide any additional water supplies needed by Coletto Creek Power when a second unit is added; (2) Groundwater and surface water supplies are separated in Appendix C of Volume I; and (3) Coletto Creek Power's rights to 20,000 acft/yr from Coletto Creek and the Guadalupe River are included in the Guadalupe – San Antonio River Basin Water Availability Model (GSA WAM) used to assess reliable water supplies and are noted in Table 3-3 in Volume I.

C. Seawater Desalination

Several commentors urge the SCTRWPG to recommend implementation of seawater desalination much sooner than 2050 and in place of other recommended water management strategies.

Response: Commentors are referred to the Policies and Recommendations of the SCTRWPG in Section 8.6.

D. South Texas Regional Groundwater Alliance Model Prepared by TAMU-Kingsville

Commentor suggests SCTRWPG consideration of results of applications of a new groundwater availability model prepared by TAMU-Kingsville, particularly with respect to potential drawdowns in the Chicot Aquifer. On the basis of these results, commentor requests deletion of the Lower Guadalupe Water Supply Project (LGWSP) from the Regional Water Plan.

Response: (1)The SCTRWPG has considered detailed simulation results obtained from versions of the Gulf Coast Aquifer Groundwater Availability Model (GCGAM) approved by the TWDB and required to be used for regional water planning. These simulations include the groundwater components of the LGWSP and a comprehensive summary of

modeling procedures, assumptions, and results is provided in Section 4C.19; and (2) The SCTRWPG has consulted with the sponsors of the LGWSP, considered public comment, and is recommending an alternative formulation of the LGWSP excluding the use of groundwater to firm-up surface water supplies.

E. Economics – Cost for Electricity

Commentor is concerned that lower groundwater levels and increasing energy costs will economically impact people.

Response: Calculations indicate that annual power costs for a typical domestic well owner to pump water an additional 100 ft at \$0.06/kwhr (standard rate for technical evaluation of water management strategies) would be less than \$5/yr.

F. Gulf Coast Aquifer Groundwater Modeling Results

Commentor questions groundwater modeling procedures and tools employed in the technical evaluation of the LGWSP and suggests consideration of simulation results obtained using an alternative model prepared by TAMU-Kingsville.

Response: (1)See responses to technical comment D; and (2)The TAMU-Kingsville GAM has not gone through a formal peer review process and, if the groundwater districts in the area would like for the regional water planning group to consider using the TAMU-Kingsville GAM, then the districts should submit the GAM to the TWDB for peer and public review and request a formal approval for use in the TWDB water planning process.

G. Economics – Consideration of Agricultural Property Value Decline in Cost Estimates

Commentor is concerned that groundwater production poses risks to the value of agricultural property in Goliad County.

Response: Data are not available at this time to quantify effects, if any, of groundwater production in compliance with groundwater conservation district rules and management plans upon the assessed valuation of agricultural property in Goliad County.

H. Economics – Pumping Costs Associated with Long Pipelines

Several commentors noted significance of costs associated with operations of lengthy transmission systems.

Response: Annual costs of pumping are included as part of Operation and Maintenance in the cost estimates for all water management strategies in accordance with TWDB guidelines for regional water planning. For planning purposes, it is assumed that sufficient quantities of energy will be available when needed.

I. Groundwater Pumping and Saltwater Intrusion

Several commentors expressed concerns that groundwater production from the Gulf Coast Aquifer may result in saltwater intrusion into areas from which fresh groundwater is presently withdrawn.

Response: Any significant groundwater production from the Gulf Coast Aquifer is expected to be obtained from the Evangeline formation at depths and in quantities such that saltwater intrusion would be extremely unlikely based on GCGAM simulations and engineering judgment.

J. More Details on Shallow Storage Reservoirs

One or more commentors seek more information regarding shallow storage reservoirs.

Response: For additional information regarding off-channel storage reservoirs associated with the LGWSP or the LCRA / SAWS Water Project, commentor is encouraged to review the following documents: (a) URS & R.J. Brandes Company, "Lower Guadalupe Water Supply Project Conceptual Delivery Study," San Antonio River Authority, October 2004. (b) CH2M HILL, et al., "LCRA-SAWS Water Project 2005 Project Viability Assessment," Lower Colorado River Authority, October 7, 2005.

K. Status of Applewhite Reservoir

Commentor suggests that the Applewhite Reservoir project be revived in order to provide for storage of floods and additional water supplies closer to San Antonio.

Response: (1) Large mainstem reservoirs have not been recommended in either the 2001 or the 2006 South Central Texas Regional Water Plans primarily because of local opposition and environmental concerns; and (2) Water rights permits obtained for Applewhite Reservoir were abandoned by the City of San Antonio in the mid-1990s.

M. Impacts of Groundwater Pumping upon Water Levels of Aquifers

Commentors are concerned that pumping from the well fields associated with recommended water management strategies will lower water tables and adversely affect those who depend upon the Gulf Coast and Carrizo Aquifers through increased costs to lift water from lower levels, and potentially from having to drill new wells to lower depths.

Response: (1) Commentors concerned with the Carrizo Aquifer are encouraged to contact sponsors of the water management strategies in the plan for information regarding mitigation programs; (2) Calculations indicate that annual power costs for a typical domestic well owner to pump water an additional 100 ft at \$0.06/kwhr (standard rate for technical evaluation of water management strategies) would be less than \$5/yr; and (3) Commentor concerned with the Gulf Coast Aquifer is advised that the Lower Guadalupe Water Supply Project for GBRA Needs to be included in the regional plan does not include a groundwater component.

N. Economics

O. Gulf Coast Aquifer Availability

Commentor questions estimates of water available from the Gulf Coast Aquifer used in the regional plan.

Response: Estimates of Gulf Aquifer groundwater availability were obtained from groundwater conservation district management plans, if available, and from the TWDB, if such plans were not available.

P. Mitigation Plan for Agricultural Impacts.

Commentor suggests that Groundwater Conservation Districts be given opportunity to estimate number of shallow wells potentially affected by aquifer drawdown and costs to replace affected wells.

Response: (1)The SCTRWPG encourages groundwater conservation districts to develop such estimates for consideration during the processes of updating their management plans, refining their rules, and evaluating applications for well permits; and (2) In the evaluations of strategies using groundwater, estimates are made of drawdown of water levels. In most cases, where groundwater is pumped for either local or distant uses, water levels decline, and pump lifts increase. In regional water planning, costs of estimated increased pumping lifts and modifications to existing or potential future wells are not made explicitly. Cost estimates for groundwater-based strategies involving export in the regional plan typically include a line item for mitigation reserve.

Q. Gonzales County Groundwater Availability Calculation

R. Status of SSLGC Water Supply Project from the 2001 Regional Water Plan.

Commentors questioned the quantities of water considered to be available from aquifers of Gonzales County in view of the SSLGC project, as included in the 2001 South Central Texas Regional Water Plan.

Response: The South Central Texas Regional Water Plan recognizes the SSLGC project, and has included quantities of existing supply in accordance with TWDB rules, which specify that quantities of existing supply are those available from facilities in place and in operation at the present time. The remainder of the SSLGC project (e.g., additional wells and production capacity) is considered to be a water management strategy to meet projected future needs, and is included in the plan, along with other such water management strategies.

S. Edwards Aquifer Recharge and Recirculation (R&R)

T. Include a Strategy (L23A) Evaluated in the Trans-Texas Water Program

U. Include a Strategy (SCTN-6a) Evaluated in Development of the 2001 Regional Plan

Commentors reference previous studies of Edwards Aquifer Recharge and Recirculation, and request that results of these R&R evaluations be put into proper format and included in the 2006 Region Plan in order for such projects to qualify for surface water permits.

Response: (1) Edwards Aquifer R&R has been recommended in the 2006 Regional Plan for further evaluation; and (2) Previous evaluations specifically referenced above were not performed in accordance with current TWDB rules and/or hydrologic assumptions consistent with those applied to other water management strategies recommended to meet projected needs.

V. Canal Improvements on BMA Irrigation Main Canal

Commentor recommends that the 1997 Natural Resource Conservation Service recommendation to renovate the BMA irrigation canal system be included as a water management strategy in the 2006 Regional Water Plan.

Response: Renovation or lining of the BMA canal system, while a promising conservation measure, does not create a firm yield from the Medina Lake System when it is operated in accordance with its water rights. Pursuant to TWDB rules for regional water planning, the SCTRWPG is focused upon water management strategies that provide firm supplies available during a repeat of the drought of record.

Y. Quantities of Groundwater Available as Expressed in Tables and Figures

Commentor states that data of Page ES8 and Figure ES4 are not in agreement.

Response; Figure ES-4 is not a graphic of the data of Page ES-8. The data in the Initially Prepared Plan on Page ES-8 show quantities of water obtained from aquifers in year 2000, and give projections of quantities of water available from aquifers at future projection dates to 2060. Figure ES-4 shows projected Drought Demand for water in the Region, and current supplies available, and the difference between demand and supply, or the projected shortage (need) for the region. Supply, as shown in Figure ES-4, is the quantity available from existing sources (ground and surface) with existing permits and equipment in place. The groundwater available, as shown on Page ES-8 includes both that which has been developed into existing supply, and that which can potentially be developed through implementation of water management strategies.

Z. Brush Control as a Water Management Strategy

Commentor recommends brush control as a water management strategy to benefit recharge to the Edwards Aquifer.

Response: Brush Management was evaluated as a potential water management strategy to increase recharge to the Edwards Aquifer in the Nueces and Blanco Recharge Basins. The analyses of available data for 284,000 acres in the Nueces Basin, showed a potential

estimated increase in yield of the Edwards Aquifer of 1,728 acft/yr at a cost of \$2,080/acft/yr. In the Blanco Basin, the land area considered was 83,000 acres, with a yield of 540 acft/yr at a cost of \$1,952/acft/yr. The estimates of increased yield are for the Edwards Aquifer, and at the present time cannot be specifically controlled in a manner such that an individual water user can implement the strategy and obtain the water produced, even if the costs were to be considered competitive with other sources of water, which, in this instance does not appear to be the case. Therefore, Brush Management could not be recommended as a specific water management to meet projected water needs (shortages) of individual water user groups. It is recommended for further evaluation.

BB. Access to Groundwater Models

Commentor requests documentation of the Gulf Coast Groundwater model used in evaluating water management strategies included in the Plan.

Response: Gulf Coast Aquifer Groundwater Availability Model (GCGAM), input data files, and supporting documentation was provided to a consult for the D.M. O'Connor Ranches in April 2005 at the request of a member of the SCTRWPG. Modeling assumptions and procedures used by the Technical Consultant to the SCTRWPG are consistent with those employed by TWDB staff. Supplemental information may be requested from the TWDB.

CC. Reconsider the 340,000 acft/yr of Water Available from the Edwards Aquifer

Commentor expresses concern that the Planning Group has accepted 340,000 acft/yr as the quantity of water available from the Edwards Aquifer during times of severe drought without adequately considering the effects of this level of pumping from the Edwards upon downstream water users in the Victoria area.

Response: As described in the Executive Summary and Section 3 of the Regional Plan, 340,000 acft/yr has been adopted as a placeholder number for reliable Edwards Aquifer supply until such time as an Habitat Conservation Plan that more specifically defines requirements for springflow protection is approved. Evaluations of the reliability of downstream water rights subject to alternative assumptions regarding Edwards Aquifer pumpage was not included in the scope of work for development of the 2006 Regional Water Plan.

DD. Water from Air Technology

Commentor suggests that Region L contract for research and pilot studies of developing "water from air."

Response: Background information about the potentials for such an activity are not adequate to allow the Regional Planning Group to give technical consideration to this suggestion. However, the RWPG encourages increased funding to assist water planning regions and local entities in developing demonstration projects for alternative water supply

strategies and technologies, such as, but not limited to, desalination (See Section 8.6 of the Plan).

EE. Carrizo Aquifer Drawdown

Commentor requests that drawdown maps be included for all projects obtaining water from the Carrizo Aquifer.

Response: In Section 7.1, the cumulative effects of regional water plan implementation are presented, using both maps and graphics.

FF. Evaluate Building a Lake in the Hill Country

Commentors recommend that water supplies for San Antonio be obtained from lakes in the Hill Country instead of from groundwater sources in Wilson County.

Response: In development of the 2001 Regional Plan, several potential reservoirs located on tributaries of streams of the region, including in the “Hill Country” were described and evaluated. Based upon cost, lengthy development times, and environmental effects, the SCTRWPG did not recommend any of these in the 2001 Regional Plan. Based upon information obtained from the 2001 planning effort, the SCTRWPG did not consider these potential strategies for the 2006 revision and update of the 2001 Regional Plan.

GG. Alternative Water Management Strategies for City of Elmendorf

The City of Elmendorf request reference in the regional plan to alternative water management strategies including purchase from a wholesale water provider and/or development of its own supplies from the Carrizo Aquifer.

Response: Appropriate text has been added to Section 4B.2.2.10 of the plan.

HH. Misunderstanding of Selma’s water supplies and calculation of needs (shortages) in the IPP.

A representative of the City of Selma explained that the quantities of water supply for the city from the Edwards Aquifer and from the Schertz-Seguin Local Government Corporation (SSLGC), as presented in the water demand, water supply and needs calculations used in Table C-2 are in error, and that in comparison to projected demands, the city does not have a need (shortage) during the planning period.

Response: The City of Selma is located in 3 counties (Bexar, Comal, and Guadalupe)(Tables C-2, C-5, and C-11). A check of the entries for Selma’s supply from the SSLGC shows 800 acft/yr, which equals the quantity reported in the comment letter of August 19, 2005. However, the quantity of EAA supply included in the Tables mentioned is only 110 acft/yr (185.5 adjusted to 59.3 percent of the Edwards Aquifer firm supply of 340,000 acft/yr being used in the plan), and is lower than the 1,000 acft/yr reported by

Selma in the comment letter of August 19, 2005. The quantities of Edwards Aquifer supplies included in the plan for all Edwards Permit holders, including Selma, were obtained from records of the EAA at the time of the analysis, and were the best available information at the time. Subsequent Edwards transfers and/or errors in the original source of data may explain differences, such as those mentioned in the comment. In the case of Selma, language has been included in the Bexar County Water Supply Plan (Section 4B.2.2.21) to explain that current supply for the City of Selma is obtained from the Edwards and Carrizo Aquifers and may be adequate to meet a part or all of the projected needs (shortages) to about 2040, especially if the water conservation water management strategy is implemented, and that only those water management strategies included in the plan that are needed after 2040 need to be considered for implementation by the City. However, it is important for Edwards Permit holders, including the City of Selma, to be aware that the Edwards Initial Regular Permits (IRPs) may not be firm supplies; i.e.; for purposes of the regional water plan IRPs have been included as firm supplies at 59.3 percent of the permit quantity.

II. By letter of September 20, 2005, a representative of the San Antonio Water System (SAWS) requested the changes to the Region L Plan, as presented below.

Increase the yield of brackish groundwater desalination from 5 MGD to 20 MGD.

Response: This request was discussed during the facilitation process and was included in the 2006 Plan, as requested.

Increase total Edwards Aquifer transfers to 48,000 acft/yr for SAWS at the 340,000 acft/yr cap.

Response: This request was discussed during the facilitation process and was included in the 2006 Plan, as requested.

Remove the Simsboro Project.

Response: This request was discussed during the facilitation process and was included in the 2006 Plan, as requested.

Remove the Lower Guadalupe Water Supply Project.

Response: This request was discussed during the facilitation process and was included in the 2006 Plan, as requested.

Include Coastal Desalination, Recharge and Recirculation, and the Mesa Water Supply Project in the plan for further consideration.

Response: This request was discussed during the facilitation process and was included in the 2006 Plan, as requested.

JJ. Concerns were expressed to the Regional Water Planning Group by leaders of organizations of Comal, Kendall, and Kerr Counties regarding increased Edwards irrigation transfers, and the associated increased reliance upon the Edwards and Trinity Aquifers to meet projected municipal needs, and anticipated adverse effects upon streamflow of the Guadalupe River and communities of these counties that depend upon the Edwards and Trinity Aquifers and the Guadalupe River for water supplies.

Response: The issue of increased Edwards irrigation transfers as a water management strategy to meet projected municipal needs within the Edwards Aquifer area was considered by the SCTRWPG in facilitated discussion sessions and the potential effects upon springflows and downstream Guadalupe river flows are reflected in the evaluations of cumulative effects of implementing the plan (Section 7.1). Effects of additional Trinity Aquifer pumpage have not been technically evaluated by the SCTRWPG. The TWDB has recently undertaken studies to better define surface water – groundwater interactions associated with the Trinity Aquifer.

Page-Specific Comments received in joint letter from National Wildlife Federation, Environmental Defense, and Sierra Club, with SCTRWPG Responses

Comments Numbered [1] through [141] from National Wildlife Federation, Environmental Defense, and Sierra Club are presented below, together with SCTRWPG responses. References in the responses to numbered comments are to the numbers of this grouping; i.e.; [1] through [141], and do not refer to other numbering sequences of Section 10.

ES Executive Summary

[1] Figure ES-2, on page ES-5, and the accompanying discussion about demands for steam-electric power generation seem to incorporate an unduly high demand projection. These demands match those projected in "Texas Water Development Board: Power Generation Water Use in Texas for the Years 2000 through 2060 Final Report, prepared for the Texas Water Development Board by Representatives of Investor-Owned Utility Companies of Texas, January 2003." From a review of that document, we understand it to include an assumption of a continuing increase in per-capita electrical power usage through 2060 at a rate of .5% per year. It does assume that new power plant capacity will be more efficient in its use of water. However, we do not believe that it is appropriate to assume that efficiency advances in use of electricity overall will not at least slow the rate of growth in per capita use of electricity. As a result, the projected 2060 demand of 109,776 acre-feet of water for steam-electric power production seems excessive.

Response: It is important to note that all water demand projections were prepared by the TWDB and issued to the Regional Planning Groups for review, and use. In the case of Region L, all projections were released to the public for review and comment early in the regional planning process. In the case of steam-electric power projected water demands, the RWPG received no formal comments regarding the projected demands for steam-electric power generation. Even though some members of the SCTRWPG questioned the geographical locations to which projected increases in water demand for steam-electric power were assigned and the SCTRWPG encourages the TWDB to further consider the technical procedures by which such demands are assigned in the development of future

projections, the TWDB projections were used in the development of the Regional Water Plan.

[2] (Page ES-8, fn.1). General information about levels of springflows anticipated in conjunction with the assumed Edwards Aquifer pumping levels should be provided. It should be noted that according to BIO-WEST (Sept 2003), 340,000 acft/yr per year of pumping results in zero discharge from Comal Springs 6.2% of the time, and Comal Spring discharge below the 60 cubic feet per second (cfs) level 14.0% percent of the time. According to that document, a pumping level of 225,000 acft/yr per year is predicted to maintain some flow in Comal Springs through a recurrence of critical drought conditions and to produce a discharge below 60 cfs 3.7% of the time.

Response: The following text has been appended to the footnote on page ES-8 of the Executive Summary. “Independent studies by the TWDB, HDR Engineering, Inc., and Bio-West indicate that annual Edwards Aquifer pumpage would have to be limited to about 225,000 acft/yr to maintain uninterrupted discharge of at least 60 cfs from Comal Springs during a repeat of the drought of record.”

[3] (Page ES-12). Social and Economic Impacts of Not Meeting Projected Water Needs. Although we understand that this information is provided by the Texas Water Development Board (TWDB), we find the presentation somewhat misleading. These are extreme, worst-case calculations. They represent the impacts projected if no efforts are made to mitigate water shortages. That simply is not a realistic portrayal of reality. If water shortages do develop, available water will be shifted from non-essential uses to the most important uses. In order to present a more balanced message, we urge the planning group to include language acknowledging the potential to mitigate the predicted impacts, even in the absence of water management strategies to augment supplies.

Response: The TWDB analyses of Social and Economic Impacts of Not Meeting Projected Water Needs provides an estimate of the business value, number of jobs, and numbers of school enrollment associated with the quantities of water projected to be needed above the quantities available from existing supplies, as opposed to short term shortages, as the comment seems to imply. As some have commented during public discussion of the Social and Economic Impact Analyses results, the TWDB analyses do not take into account the economic values or losses to property and other capital assets due to not meeting projected water needs. In any event, the regional planning group has included the Social and Economic Impacts of Not Meeting Projected Water Needs, as calculated by the TWDB, and as required by TWDB rules.

[4] (Page ES-13). The initially prepared plan includes strategies that would be expected to provide over 800,000 acre-feet/year. However, the projected 2060 drought need is about 417,000 acre-feet. As explained further below, we believe the plan should recommend specific projects for meeting only the projected need. At minimum, even if the planning group chooses to recommend projects greatly in excess of projected needs, the group should make clear on each page on which the full list appears that the intent is not to suggest that all of the projects actually

should be implemented. The casual reader could be led to believe that the planning group is recommending development of all of the projects included in Figure ES-8.

We do not believe that inclusion of projects significantly in excess of projected need comports with the requirements of SB1 and the TWDB rules governing the planning process. This issue is not unique to the South Central Texas Regional Planning Group. Some other regions developed a list of recommended projects but also included a list of alternative projects that might be added if the recommended projects prove to be unworkable. At least that way, it is clear what specific projects the group is recommending as the preferred approach. One of the key charges of regional water planning, as set out in the TWDB rules, is to “provide specific recommendations of water management strategies based upon identification, analysis, and comparison of all water management strategies the regional water planning group determines to be feasible so that the cost effective water management strategies which are environmentally sensitive are considered and adopted” 31 TAC § 357.5 (e)(4). Simply including the various strategies identified does not accomplish the key task of making specific recommendations to meet established needs using the most cost effective and least environmentally damaging strategies.

Response: This issue has been discussed in detail by the planning group and their policy has been refined accordingly since distribution of the Initially Prepared Plan (IPP) and upon consideration of comments received. The refined policy regarding System Management Supplies is reflected in the Executive Summary and Sections 4B and 8 of the Regional Plan.

[5] (Page ES-16). Expanded use of aquifer storage and recharge is a strategy that is proven and that we believe should be included as a recommended water management strategy.

Response: Aquifer storage and recovery has been included in the 2006 Plan for further study as part of the water management strategy identified as Additional Storage (ASR and/or Surface).

[6] (Page ES-17). Here, the planning group provides its rationale for including water management strategies greatly in excess of needs. Three reasons are listed: identifying strategies to replace any that may fail to develop; serving as additional supplies if any of the strategies are not able to produce the projected amounts; or providing adequate supplies in the event of a drought worse than the drought of record. The very reason that plans are updated every 5 years is to allow for adjustments on an incremental basis. If recommended projects aren't moving forward when a future plan is adopted, recommendation of different strategies may be appropriate at that time. Similarly, if project yields have changed at that point, appropriate adjustments in recommendations should be made. It is important that each region's planning be based upon common planning assumptions to avoid undermining the value of the planning process. If all regions plan consistently, then no one region should end up using state money or permits to develop or implement a plan that calls for laying claim to an undue portion of the state's limited water resources. Water is a limited resource in the state. It must be shared equitably. Using common assumptions for planning across all planning regions is one way to help achieve that equity.

Response: The SCTRWPG has included the concept of System Management Supply as a part of its effort to provide adequate water supplies to meet projected needs during the drought of record and its policy on this issue is found in the Executive Summary and Sections 4B and 8 of the Regional Plan. As a result of SAWS decision to terminate its participation in the Lower Guadalupe Water Supply Project and the Simsboro Aquifer strategy, system management supplies for Bexar County have been substantially reduced since distribution of the IPP.

[7] Nor does a possible future drought worse than the drought of record justify planning for such a large excess supply. In fact, SB1 is quite specific in directing the use of the “drought of record” as the appropriate target for planning. See Tex. Water Code Ann. § 16.053 (e)(4). In addition, the planning group has not chosen to include drought management as a water management strategy. As a result, savings from drought management measures would be fully available in the event of an occurrence of a drought worse than the drought of record.

Response: See responses to comment numbers 4 and 6. As a result of facilitated discussions regarding issues raised through public comment, the SCTRWPG has modified its policy and now recommends that a more thorough analysis of drought management as a water management strategy be conducted during the planning interim. Text in Sections 4B and 8 has been modified accordingly.

[8] (Pages ES-10 and ES-15). The projected drought needs line on Figure ES-8, particularly for 2060, does not appear to match the 2060 needs shown in Figure ES-4.

Response: Figure ES-4 shows projected total needs (including those for irrigation and livestock) and ES-8 shows projected municipal, industrial, steam-electric, and mining needs.

[9] (Page ES-18). One of the claimed environmental benefits is that the regional plan makes greatest use of existing surface water rights thereby minimizing the development of new supply sources “and associated environmental impacts.” The environmental benefits of that approach are not ensured. That statement would be accurate with respect to new reservoir construction, but that issue is addressed in a separate statement of benefits. Depending on the regulatory controls imposed upon the use of existing rights, increased use of rights that were issued without environmental flow protections actually may have significant adverse effects. In some situations those adverse effects could be greater than those from relying on new rights that would be issued with environmental flow protections. Of course, that would not be true if the existing rights were likely to be fully used anyway. Moreover, choosing the less damaging of two options does not really result in a net environmental benefit, but rather only a lessened level of detriment.

Response: It is required that the planning group honor existing water rights in the development of the regional plan. Lawful use of existing water rights to meet projected water needs clearly does minimize the development of new water supply sources and the environmental impacts associated with such new sources.

[10] (Page ES-19). Because it is not clear that the regional plan actually recommends implementation of seawater desalination as a water management strategy to meet projected water needs, it seems inappropriate to claim it as an environmental benefit. Because the draft plan includes strategies providing supplies that are about double the projected needs, it is not possible to determine which strategies actually are being recommended.

Response: Seawater Desalination is a recommended water management strategy in the plan for implementation prior to 2060.

[11] (Page ES-19). Environmental concerns about freshwater inflows relate to changes in overall flow patterns, including the timing, duration, and frequency of various flow levels, not just to changes in absolute flow quantities.

Response: In the technical evaluations of water management strategies that affect stream flows, timing and frequency parameters are presented, including comparisons of monthly medians and flow frequency with and without the water management strategy.

[12] (Page ES-19). We appreciate the acknowledgement of the potential for groundwater development adversely to affect springs. By extension, we would urge acknowledgement of the potential loss of surface flows associated with such springs and with seeps.

Response: The cumulative effects analyses recognize the affects of groundwater development upon surface flows, including effects upon springs and seeps, within the degree of accuracy of the groundwater models. Language has been modified to reflect potential associated effects on streamflows.

[13] (Page ES-19). Large demands for electrical power and the associated adverse environmental impacts should be acknowledged as additional environmental “concerns” for seawater desalination, if the strategy remains in the plan.

Response: The SCTRWPG has expressed concerns with the substantial demands for electrical power associated with seawater desalination, primarily with regard to elevated long-term annual costs for operations as compared to other water management strategies.

[14] (Page ES-19). “Environmental Concerns” suggests a much more qualified nature than “Environmental Benefits.” A more even-handed approach would be to label the two lists as “Beneficial Environmental Impacts” and “Negative Environmental Impacts.”

Response: Noted.

Description of the South Central Texas Region

[15] (Page 1-10). Section 1.2.4.2 Fish and Wildlife Resources. Some discussion of the fish and wildlife resources associated with the region’s bay and estuary systems should be included. Those resources are important both ecologically and economically.

Response: Information has been added to the text of the section mentioned.

[16] (Page 1-18). Section 1.4 Economy – Major Sectors and Industries. Information is lacking about “businesses dependent on natural water resources.” That information is expressly required pursuant to Section 357.7 (a)(1)(G) of TWDB rules. Obvious examples of such businesses include commercial fisheries associated with the San Antonio Bay system, businesses dependent on recreational fishing, and river-based recreational businesses located on the Comal and Guadalupe Rivers. This information is required to respond to a new requirement added to the rules since the first round of planning.

Response: To some degree, data regarding such “businesses dependent on natural water resources” is included in the economic sector identified as Trades and Services (Section 1.4.8), but the source of information does not break such businesses out specifically. Data are not readily available regarding river-based recreation along the Guadalupe River. Limited data are available regarding the statewide economic impacts of bay and estuary related recreational activities and commercial fishing for the Guadalupe Estuary (Jones & Tanyeri-Abur, “Impacts of Recreational and Commercial Fishing and Coastal Resource-Based Tourism on Regional and State Economies,” TR-184, Texas A&M University, May 2001). In approximate 2002 dollars, the 1995 statewide economic output impact of bay and estuary related recreational activities for the Guadalupe Estuary is estimated at \$15.3 million which represents less than 0.8 percent of that for the Texas Gulf Coast. The 1995 statewide economic output impact (also in 2002 dollars) of commercial fishing for the Guadalupe Estuary is estimated at \$27.1 million which represents about 8.3 percent of that for the Texas Gulf Coast. While these two economic sectors are locally significant, they represent less than one-tenth of one percent of the regional economy and only about 16 percent of the smallest regional economic sector presented in Section 1.4 (agricultural production). Hence, the SCTRWPG has not presented “businesses dependent on natural water resources” as a major sector of the regional economy.

[17] (Page 1-18). Agricultural Production. Information is lacking about the estimated number of jobs supported by agricultural production and livestock production. The other categories include such estimates.

Response: There is no readily available information pertaining to the activities listed, and the planning scope and budget do not include tasks or funds with which to collect such information.

[18] (Page 1-22). Section 1.4.6 Trades and Services. It is not clear where the water demands for this sector are represented in subsequent discussions. Clarification of that issue would be helpful.

Response: Trades and services are included in the municipal water demands, and are include in the general reference to “commercial uses” as stated at the beginning of Section 2.2.

[19] (Page 1-25). Water Uses. Environmental uses of water are not acknowledged in this section. A discussion of that issue should be included.

Response: The TWDB does not list Environmental as a specific type of water use for which projected demands, supplies, and needs must be evaluated for regional water planning purposes. Instead, for purposes of evaluating water management strategies, the Consensus Criteria for Environmental Flow Needs have been developed, and are used in the evaluation of water management strategies of the regional plan when appropriate.

[20] (Page 1-32). The last sentence of the first full paragraph refers to “hundreds” of wells in the Edwards. We understand there to be thousands of such wells.

Response: Noted.

[21] (Page 1-32). In the last sentence of the last full paragraph, the discussion of springflow impacts refers to environmental impacts and water rights impacts as being “unacceptable to both environmental and downstream water rights concerns.” That language suggests a very subjective aspect for these issues. Although perhaps not intended, it also suggests that these “concerns” are limited only to small groups and may be less important than other issues. In reality, these are legally protected interests. It would seem preferable simply to substitute language similar to the following: “unacceptable because of adverse impacts to environmental needs and downstream water rights.”

Response: Noted.

[22] (Page 1-33). The first sentence of the second full paragraph on that page states that the severe drought of the 1950s lowered water levels to record lows and caused Comal Springs to go dry for several months. Unquestionably, the drought was a major factor in those impacts. However, it was the combination of increased pumping and low recharge that caused the extreme impacts. Including that information is important so that readers get an accurate impression of that historical event.

Response: In the paragraph preceding the paragraph reference here, aquifer recharge and pumpage are cited as having effects upon streamflows and spring flows, and are not repeated in the discussion mentioned in comment Number 22.

[23] (Page 1-34). The carry-over paragraph from page 1-33 contains the only mention of water quality issues related to the Edwards Aquifer. That mention is limited to discussion of the bad water line. Discussion of additional water quality issues is merited.

Response: Additional information regarding Edwards Aquifer water quality and potential impacts of recommended water management strategies on key parameters of water quality identified by the SCTRWPG may be found in Section 5.

[24] (Page 1-44). Section 1.7.3 Major Springs. The discussion of the listed springs would be more useful if general information were added about the relative frequency with which the various springs flowed. In addition, some general discussion should be added about the ecological resources supported by each of the springs. The rules governing the planning process

have been revised since the first round of planning to acknowledge the need to address the role of springs in natural resource protection. See 31 TAC § 357.7 (a)(1)(D).

Response: Substantial information regarding the major (and many other) springs is available from the documents referenced in Section 1.7.3.

[25] (Page 1-46). In the discussion of threats to natural resources, it would be useful to specifically note the importance of freshwater inflows to estuary systems as a subset of the issue of the quantity and/or quality of fresh water available to fish and wildlife. Given the revisions to the governing statutes and TWDB rules to place increased emphasis on consideration of natural resources in the planning process, more development of this issue is warranted. TWDB may not approve a regional plan unless it is able to make an affirmative finding that the regional plan is consistent with long-term protection of the state's natural resources. See Texas Water Code Section 16.053 (h)(7)(C). Section 7 of the initially prepared plan provides careful analysis of anticipated flow changes, although looking only at comparisons between two hypothetical future scenarios. However, the absence of a listing of significant natural resources here makes it difficult to assess the adequacy of the Section 7 analysis. In addition, as discussed further below, the Section 7 analysis suffers from the failure to include an assessment of the biological significance of the predicted changes in flows. That type of analysis is needed in order to evaluate long-term consistency with protection of natural resources.

Response: The SCTRWPG has met their requirement to identify perceived “threats to natural resources” and is not required to enumerate a virtually endless list of significant natural resources. Further, the SCTRWPG trusts that the TWDB will make an appropriate decision regarding approval of the regional plan on the bases of state law and TWDB rules and guidance for regional water planning. In the evaluation of water management strategies which could potentially affect streamflows, including freshwater inflows to the estuaries of the region, Consensus Criteria for Environmental Flow Needs (CCEFNN) have been applied and the firm yields of such strategies are net of CCEFNN flow requirements. Thus the planning process has appropriately taken into account the needs of water to protect natural resources pursuant to TWDB rules and guidance.

[26] (Page 1-46). We were not able to locate information about significant wetland complexes that might be affected by changes in surface flows, including springs and seeps, or by changes in aquifer water levels. Those types of wetlands would have the greatest potential to be affected by water management decisions. Again, it constitutes information needed to assess the implications of the plan for consistency with long-term protection of natural resources and to provide a meaningful quantitative evaluation of potentially feasible water management strategies.

Response: Compilation and/or development of such site-specific information, while certainly of interest, is beyond the approved scope and budget for the regional planning process.

Population and Water Demand Projections

[27] (Page 2-16). 2.4 Steam-Electric Power Water Demand Projections. We understand that these projections are based on a report: "Texas Water Development Board: Power Generation

Water Use in Texas for the Years 2000 through 2060 Final Report, prepared for the Texas Water Development Board by Representatives of Investor-Owned Utility Companies of Texas, January 2003." As we understand that report, it assumes a continuing .5% increase in per capita electrical usage for each year through 2060. We believe that assumption is highly questionable. As energy costs, both monetary and others, continue to rise, progress in energy efficiency measures will result in reduced per capita usage of electricity and in demands below the projected levels. About a 210 % increase in water demand is projected for this category. By contrast, a projected population increase of around 2,250,000 people, or about 110%, is expected to result in an 87% increase in municipal water demand and about a 79% increase in industrial demand. Thus, the projected increase in water demand for steam-electric power generation seems to be disproportionate to the sectors that are most likely to drive that demand.

Response: See response to Comment Number 1.

[28] (Page 2-24). Environmental water demands are a water use category that should be included. This is a true water demand. Instream flows and bay and estuary inflows provide valuable services. Many jobs are dependent on meeting those water needs. Regardless of how environmental water demands are characterized, SB 1 directs that, in addition to other directives, regional water plans must provide sufficient water to protect the natural resources of the region. Tex. Water Code Ann. § 16.053 (a).

Response: Environmental water demands are not included in TWDB projections. Instead, the Consensus Criteria for Environmental Flow Needs (CCEFN) have been developed to address environmental water needs (for the purposes of regional water planning) in cases where water management strategies involve the use of surface water and groundwater that potentially affects streamflow. In the regional plan, the CCEFN have been applied where appropriate.

Section 3. Water Supply Analyses

[29] (Page 3-3). Section 3.1.1 Groundwater Availability

The text, along with Table 3-1, indicates that the groundwater availability determinations from the 2001 regional plan were carried forward in several instances. It would be very helpful to have a brief description in the current document of the approach used in the 2001 plan in determining overall water availability for those aquifers.

Response: With the exception of the Edwards Aquifer, groundwater availability used in the 2001 regional plan was provided by the TWDB and is identical to that used in Water For Texas, A Consensus-Based Update to the State Water Plan (August 1997). There is limited available documentation of the TWDB's methods used in the early 1990s to estimate quantities of groundwater available, except that the estimates were based upon estimates of recharge and of mining of quantities in storage over the ensuing 50 year period of time.

[30] (Page 3-10). In light of modifications to the dam and floodgates at Medina Lake, and in light of the recent USGS study showing reduced recharge from the Lake, the assumption that firm yield during drought is zero may need to be re-evaluated. At minimum, the existence of a

significant question about the amount of recharge and, by extension, the potential firm yield of the system should be acknowledged.

Response: The recent USGS study (Slattery & Miller, 2004) compares recharge estimates based on its findings for a seven year period (October 1995 – September 2002) only with estimates derived using the traditional method (Lowry, 1953) adopted by the USGS for annual reporting of Edwards Aquifer recharge. This comparison concludes that the average monthly recharge rate is about 47 percent less than that computed by the traditional USGS method. Recharge estimates based on the recent USGS study are not compared with those based on the methodology developed for the Edwards Underground Water District (Espey, Huston & Associates, 1989) and used in the Guadalupe – San Antonio River Basin Water Availability Model (GSA WAM). The GSA WAM methodology results in long-term average historical recharge estimates that are more than 30 percent less than those obtained using the traditional USGS method. In summary, the recharge calculation procedures of the recent USGS study may not result in recharge estimates significantly different from those obtained from the methodology in the GSA WAM. While further comparison and refinement of recharge calculation procedures is warranted, there is no clear indication that the firm yield of the Medina Lake System, operated in accordance with Certificate of Adjudication #19-2130, is likely to be greater than zero. No change has been made to the relevant text of Section 3.

[31] (Page 3-14). Paragraph 8 indicates that the IPP assumes the operation of the Choke Canyon/Lake Corpus Christi system (located in the Coastal Bend Region) at “firm yield.” Our understanding from the Coastal Bend IPP is that for their analysis the system was assumed to be operated on a “safe yield” basis. It would be helpful to note the two different assumptions and address the significance, if any, of the differences in terms of impact on this plan.

Response: The choice of the SCTRWPG to perform surface water availability analyses on the basis of firm, rather than safe, yield operations of the Choke Canyon Reservoir / Lake Corpus Christi (CCR/LCC) System was made in order to avoid potential overestimation of the reliability of junior water rights located upstream and within Region L. It is likely that the Coastal Bend (Region N) RWPG chose to estimate water supply from the CCR/LCC System on a safe yield basis because they have recently experienced a third new drought of record since the 1940s.

Section 4A. Comparison of Supply and Demand Projections to Determine Needs

[32] (Page 4A-23). Social and Economic Impacts of Not Meeting Projected Water Needs.

As noted above, although we recognize that the planning group relied on TWDB to provide this information, we believe the information in this portion of the draft paints an exaggerated picture. These are extreme, worst-case calculations. They represent the impacts projected if no efforts are made to mitigate water shortages. That simply is not a realistic portrayal of reality. If water shortages do develop, water will be devoted to the most important uses. In order to present a more balanced message, we urge the planning group to include language that acknowledges the potential to mitigate the predicted impacts, even in the absence of water management strategies to augment supplies.

Response: See response to comment Number 3.

Section 4B.1 Water Management Strategies

[33] (Page 4B.1-3). As noted above, we believe the regional plan should recommend a specific suite of strategies to meet the actual projected needs. We recognize the desire to identify alternative strategies. However, as drafted, there simply is no way to tell which strategies are actually recommended for meeting projected water supply needs. At minimum, if this extensive list of strategies is retained, language should be added to the list specifically noting that 800,000 acft./yr is far in excess of projected demands and that implementation is being recommended only for water management strategies sufficient to meet projected demands. We believe the better approach (and the one required by TWDB rules) is to identify actual recommended strategies and to note the alternative strategies that are most likely to be recommended if the recommended strategies prove to be inadequate for any one of various reasons.

Response: See response to comment Number 4.

[34] (Page 4B.1-3). Figure 4B.1-2, as drafted, does not really present an accurate picture of how demands would be met because it reflects the full 800,000 acft of supply. As a result, the percentages assigned to the various groupings of strategies do not reflect the actual mix of strategies that would be needed to meet projected needs.

Response: Figure 4B.1-2 presents a summary of the sources of new supply in 2060, and shows a summary of the composition of types of water management strategies included in the plan. Figure 4B.1-2 has been modified to reflect water management strategies ultimately recommended in the 2006 regional plan (e.g., deletion of the SAWS Simsboro Aquifer strategy, changes to the Lower Guadalupe Water Supply Project, addition of the Wells Ranch, Dunlap, and Siesta Projects, etc.)

[35] (Page 4B.1-8). Here the initially prepared plan does note that the implementation of all recommended water management strategies is not likely to be necessary in order to meet projected needs within the planning period. In order to constitute an actual plan, the document should recommend specific strategies to meet projected needs. Alternative strategies also can be listed for future consideration, but they should be listed separately.

Response: After a period of facilitated discussions, the planning group designated several strategies for the category of “further study,” and these strategies are so designated in the plan.

[36] (Page 4B.1-8). The plan lists three reasons for recommending strategies greatly in excess of needs: (1) to have strategies to replace those that fail to develop, (2) to serve as additional supplies if some strategies can't be fully implemented, and (3) to provide additional supplies in the event of a drought worse than the drought of record. The very reason that plans are updated every 5 years is to allow for adjustments on an incremental basis. If recommended projects aren't moving forward or have been down-sized when a future plan is adopted, recommendation of different strategies may be appropriate at that time.

Response: See response to comment Number 4.

[37] Nor does a possible future drought worse than the drought of record justify planning for such a large excess supply. In fact, SB1 is quite specific in directing the use of the “drought of record” as the appropriate target for planning. See Tex. Water Code Ann. § 16.053 (e)(4).

In addition, the Planning Group chose not to consider drought management and emergency response as a way to help meet drought-of-record demands. At minimum, the plan should include language here acknowledging that drought management measures do represent a way to respond to temporary drought conditions, including conditions worse than a drought of record. Indeed, in the Policies and Recommendations Section (page 8-5) the IPP plan indicates that the SCTRWPG “intends to look to ‘drought management’ as a safety net to respond to a drought greater than the drought of record....” The discussion on page 4B.1-8 is inconsistent with that statement.

Response: In keeping with the Planning Group’s Policies and Recommendations mentioned in the comment, in Section 6.2 Drought Management, the SCTRWPG presents general recommendations regarding identification and initiation of drought responses for current water supply sources. In addition, the Planning Group recognizes that local public and private water suppliers and water districts have been required by TCEQ to adopt a Drought Contingency Plan that contains drought triggers and responses unique to each specific entity. Furthermore, these entities have the authority and responsibility to manage their particular water supply within the bounds created by applicable law. Therefore, the SCTRWPG encourages these entities to implement their respective plans with due consideration of the recommendations summarized in Section 6 of the Plan.

Section 4B.1.2 Water Management Strategy Descriptions

[38] (Page 4B.1-12) Recycled Water Programs. The last paragraph of this section purports to find that any expansion of wastewater reuse programs, whether direct or indirect, is consistent with the regional plan. That attempt is impermissibly overbroad. The plan does not include a quantitative assessment, nor could it, that is adequate to evaluate the effects of an unlimited program. Similarly, it is not possible to undertake a meaningful assessment of consistency of the plan with long-term protection of the state’s natural resources without putting some limits on the amount of reuse that would be considered to be included in to the plan. Nor does such an unlimited finding appear necessary. The regional planning process provides for periodic updates of regional water plans. If reuse levels begin to increase in the future, there will be ample time to include an expanded reuse strategy in the plan when it can be meaningfully considered and assessed.

Response: The SCTRWPG supports and encourages the lawful reuse of treated wastewater associated with increased municipal water use (growth), particularly reuse of treated wastewater volumes associated with privately owned groundwater and interbasin transfer of surface water, as each of these represents flows that would not otherwise have been introduced to the streams and rivers of the region. A meaningful assessment of consistency with the long-term protection of natural resources is presented in Section 7. Accounting for increased effluent only from Bexar County (net of planned expansion of

SAWS direct reuse programs) and neglecting any potential future increases in effluent elsewhere, it is clear in Section 7 that instream flows and freshwater inflows to the Guadalupe Estuary are expected to increase with implementation of the regional plan.

[39] (Page 4B.1-16) Simsboro Aquifer (SCTN-3c)

Because SAWS has decided not to pursue this project it should be removed from the regional plan. If not removed, the discussion should be expanded to address issues about consistency with applicable groundwater district management plans.

Response: The Simsboro Aquifer strategy has been removed from the plan.

[40] (Page 4B.1-19 through 1-20). Edwards Recharge-Type 2 Projects

The second-to-last sentence of this section purports to find that any expansion or relocation of recharge projects is consistent with the regional plan. That attempt is impermissibly overbroad. The plan does not include a quantitative assessment, nor could it, that is adequate to evaluate the effects of an unlimited program. Similarly, it is not possible to undertake a meaningful assessment of consistency of the plan with long-term protection of the state's natural resources without putting some limits on the amount and location of recharge projects that would be considered to be included in the plan. Nor does such an unlimited finding appear necessary. The regional planning process provides for periodic updates of regional water plans. If recharge projects begin to increase in the future, there will be ample time to include an expanded strategy in the plan when it can be meaningfully considered and assessed.

Response: The referenced language provides only for expansion in size and storage capacity and does not provide for relocation of the recommended recharge enhancement facilities. Furthermore, the referenced language resulted from extended discussions by the SCTRWPG and is deemed appropriate by the SCTRWPG.

[41] (Page 4B.1-20). Brackish Groundwater Desalination (Gulf Coast)

This project seems to be dependent on inclusion in the Lower Guadalupe Water Supply Plan (LGWSP). Because SAWS has decided not to pursue the LGWSP, this project also should be removed unless it is reconfigured and assessed as a separate project.

Response: The strategy has been removed from the plan.

[42] (Page 4B.1-21) CRWA Lake Dunlap Project

As noted in the text, this project has not yet been adequately evaluated. Accordingly, it should not be included in the plan. If evaluations are completed and the project is proposed for inclusion in the plan, reasonable opportunities for public review and comment on the project should be provided. Without the completed evaluation, it is not possible to comment meaningful on the project.

Response: The strategy has been technically evaluated in the same manner as other strategies, a public hearing was held on October 13, 2005 in New Braunfels, public comment has been received, SCTRWPG responses to public comment have been

considered, and the SCTRWPG acted on December 1, 2005 to include this strategy in both 2001 and 2006 regional plans.

[43] (Page 4B.1-22) CRWA Siesta Project

As noted in the text, this project has not yet been adequately evaluated. Accordingly, it should not be included in the plan. If evaluations are completed and the project is proposed for inclusion in the plan, reasonable opportunities for public review and comment on the project should be provided. Without the completed evaluation, it is not possible to comment meaningful on the project.

Response: The strategy has been technically evaluated in the same manner as other strategies, a public hearing was held on October 13, 2005 in New Braunfels, public comment has been received, SCTRWPG responses to public comment have been considered, and the SCTRWPG acted on December 1, 2005 to include this strategy in both 2001 and 2006 regional plans.

[44] (Page 4B.1-26) Drought Management

The use of the TWDB socioeconomic impact analysis in an attempt to demonstrate that drought management is not an economically feasible strategy is seriously flawed. This analysis produces a very rough estimate of the economic impacts of doing absolutely nothing to meet any water needs. That analysis assumes no attempt to mitigate impacts by directing available supplies from nonessential uses to more critical uses. As a result, the per acre-foot dollar amounts predicted cannot reasonably be represented as reflecting the costs of not meeting a limited amount of non-essential water uses. It simply is not reasonable to assume, for example, that the economic impacts of having water unavailable temporarily to run a manufacturing line are the same as having water temporarily unavailable to fill a fountain, keep a lawn green, or wash a car. The underlying TWDB analysis does not, and does not purport to, reflect the short-term impacts associated with drought management measures aimed at non-essential uses of water. Such a flawed analysis cannot reasonably be relied upon by the SCTRWPG in an attempt to meet the TWDB requirement to document the reason for not selecting drought management strategies for each identified need.

Response: See response to comment Number 7. The regional planning group considered drought management, and explained that “drought management” was not selected as a water management strategy because by definition drought management is only implemented during times of crisis. The SCTRWPG further explained that the SCTRWPG looks to “drought management” as a safety net to respond to a drought greater than the drought of record and/or to respond to system failures (Section 8.6). In addition, the analyses showed the potential economic impacts of not meeting needs, and concluded that the cost of water to meet projected needs is only a fraction of the potential economic impacts of not providing water to meet the projected needs.

[45] Drought management is a required water management strategy at least for those entities required, pursuant to Section 11.1272 of the Water Code, to develop drought contingency plans. See 31 TAC § 357.7 (a)(7)(B). In addition, more stringent drought management measures must be considered. Thus, water management strategies must be included at least equal to the levels

required pursuant to Section 11.1272. If the planning group chooses not to include additional drought management measures beyond those levels, it must provide a valid reason for doing so. The existing analysis does not provide a valid basis for such a choice.

Response: See responses to comment Numbers 7, 37, and 44. Based on TWDB assessment of the economic impacts of not meeting projected water needs, the SCTRWPG questions the economic feasibility of recommending a water management strategy that, by definition, does not meet projected water needs.

[46] We urge the planning group to give further consideration to drought management as a water management strategy. The regional planning process is focused on water availability during critical drought conditions. Those conditions are extremely rare, but it is only prudent to plan for them. On the other hand, there is a serious question of whether developing new water supplies that would always be available but would be needed only during the recurrence of a critical drought is always the best approach. One alternative is to identify some water needs that are nonessential and not plan to meet those needs during a recurrence of critical drought conditions. Thus, for example, a municipal drought contingency plan might call for cutting back on lawn watering (allowing watering only at a frequency adequate to keep plants alive rather than green and thriving), car washing, or filling of swimming pools. That reduced demand then can be calculated and accounted for as a water management strategy for meeting part of the “need” for water during drought periods.

Response: See responses to comment Numbers 7, 37, 44, and 45.

[47] The “dry-year option” is another type of drought management approach. An irrigator can enter into an agreement not to irrigate during identified drought conditions in exchange for a cash payment. The water not used for irrigation can be applied to another use, such as municipal or industrial, during that period. The money saved by not having to develop a new water supply source to meet both the irrigation need and the municipal need during critical drought years likely would be more than sufficient to compensate the irrigator for lost production.

Response: Noted, but this particular water management strategy has not been explicitly considered in the regional plan. Due consideration must be given to the reliability of the source for such irrigation water. For example, dry year option agreements with irrigators dependent upon junior run-of-river water rights and/or the Medina Lake System may not be at all reliable during a repeat of the drought of record. Commentor is also referred to Section 6.2.2.1 regarding emergency transfers of surface water.

[48] (Page 4B.1-28) Other Relevant Factors per SCTRWPG

The first bullet point seems to suggest that the effect of implementation of the plan would always be an increase in spring flows. From our understanding of Section 7.1, especially Figure 7.1-2, implementation of the plan actually would result in decreased flows at Comal Springs during a recurrence of critical drought conditions. This is an important point that should be expressly acknowledged here.

Response: The bullet point mentioned is a summary overview which pertains to long-term average spring flows with the plan, as compared to the baseline pumpage of 400,000 acft/yr subject to Critical Period Management rules plus domestic and livestock pumpage, and is correctly stated. The exceptions and qualifications for each spring are presented in the text of the plan in Section 7.1.1.

[49] (Page 4B.2-9) Section 4B.2.1.4 City of Lytle

In Table 4B.2.1-8, municipal water conservation is listed as a recommended water management strategy and projected to result in 108 acft/yr of savings by 2060. We commend the planning group for including strong conservation measures. However, by recommending a second strategy (Edwards Transfers) in an amount exactly equal to the total 2060 projected demand, the IPP suggests that water conservation is not a reliable water conservation strategy. This pattern is repeated fairly consistently for municipal demands throughout the listings of supply plans for WUGs. See, for example, Table 4B.2.2-4 (City of Alamo Heights), Table 4B.2.2-12 (City of Castle Hills), Table 4B.2.2-26 (City of Hill Country Village), Table 4B.2.5-6 (City of Garden Ridge), Table 4B.2.11-12 (City of Schertz), Table 4B.2.16-2 (City of Castroville), Table 4B.2.16-14 (Yancey WSC), Table 4B.2.16-16 (Medina County Rural), Table 4B.2.18-2 (City of Sabinal), Table 4B.2.18-4 (City of Uvalde). That is very disappointing, especially coming from this planning group, which has established itself as the leader in the state on water conservation issues. We recognize that the timing of conservation savings is a factor. We also recognize that the plan generally includes some redundancy of supply. However, the pattern of consistently recommending other strategies to supply enough water to meet projected needs without any reliance on conservation seems to suggest water conservation somehow is less than a real water management strategy.

We urge the planning group to reconsider this approach. At minimum, if there is an alternative explanation, besides a reluctance to treat water conservation as a real water management strategy, we urge the planning group clearly to state that explanation in the plan.

Response: The SCTRWPG can only recommend water conservation as a primary water management strategy for water user groups throughout the region and does so quite proactively. Responsibility remains with each water user group to define and enforce conservation measures as they deem appropriate in compliance with state law. Recommendation of additional water management strategies for water user groups with projected needs has been done in accordance with input from the user groups and with the policies of the SCTRWPG.

[50] (Page 4B.2.2.1) Regional Water Provider for Bexar County.

Now that SAWS has decided to drop the Lower Guadalupe Water Supply Project (LGWSP), it doesn't make sense to keep it in the regional plan. The Project, as envisioned in the plan, is not viable. If some new version of the project is developed that might be viable without the participation of SAWS, that new version of the project should be considered for inclusion at that time on its own merits.

Response: The LGWSP has been downsized by eliminating the groundwater components, and has been included at the smaller size to meet projected needs within the GBRA statutory district.

[51] (Page 4B.3-2) Section 4B.3.1 Regional Water Provider for Bexar County
Now that SAWS has decided to drop the Lower Guadalupe Water Supply Project (LGWSP), it doesn't make sense to keep it in the regional plan. The Project, as envisioned in the plan, is not viable. If some new version of the project is developed that might be viable without the participation of SAWS, that new version of the project should be considered for inclusion at that time on its own merits.

Response: See response to comment Number 50.

[52] (Pages 4B.3-3 through 3-15). Water Supply Plans for Wholesale Water Providers (generally)

In considering water conservation, the tables simply note that municipal water conservation is assigned by WUG and no totals are given. However, as a result, the quantities of water supply represented by municipal water conservation, and other categories of water conservation, are not reflected in these totals. Accordingly, the recommended strategies actually exceed projected needs by an amount even greater than the amounts currently reflected in these pages. The totals for water conservation supply should be added to reflect those water management strategies. An appropriate footnote could be added to note where ultimate responsibility lies for achieving the projected levels of water conservation.

Response: The SCTRWPG can only recommend water conservation as a primary water management strategy for water user groups throughout the region and does so quite actively. Responsibility remains with each water user group to define and enforce conservation measures as they deem appropriate in compliance with state law. Recommendation of additional water management strategies for wholesale water providers with projected needs has been done in accordance with input from the wholesale water providers and their customers and with the policies of the SCTRWPG.

[53] (Page 4B.3-6) Section 4B.3.2 San Antonio Water System (SAWS)

Because SAWS has decided not to pursue the Simsboro Aquifer project, that project should be eliminated from the plan. In addition, the proposed purchase of water from the Regional Water Provider Bexar County (RWPBC) will need to be reconfigured to account for the LGWSP not being a viable option, at least in its current configuration.

Response: See response to comment Number 39. Appropriate adjustments have been made in the plan as a result of these changes.

[54] (Page 4B.3-8) Section 4B.3.3 Bexar Metropolitan Water District (BMWD)

The proposed purchase of water from the Regional Water Provider Bexar County (RWPBC) will need to be reconfigured to account for the LGWSP not being a viable option, at least in its current configuration.

Response: Appropriate adjustments have been made in the plan.

Section 4C Technical Evaluations of Water Management Strategies

Section 4C.1.1 Municipal Water Conservation (L-10 Mun)

[55] (Page 4C.1-1). Both the information presented and the method of presentation in this section are very good. The assumptions and goals generally are clearly stated.

Response: The SCTRWPG appreciates your compliment and thanks you.

[56] However, it is not clear if, or how, the calculations consider the effect of recently enacted federal energy efficiency standards for clothes washers, both residential and commercial. We request clarification on this issue. At minimum, those new requirements likely would reduce the cost of water conservation measures through clothes washer retrofit programs because of passive replacement of non-efficient machines.

Response: The data used for evaluation of this strategy relied entirely upon information from the TWDB report entitled “Quantifying the Effectiveness of Various Water Conservation Techniques in Texas,” GDS Associates, Inc. May 2002, Austin, Texas, and is cited and referenced in the documentation of the Municipal Water Conservation Water Management Strategy.

Section 4C.1.2. Irrigation Water Conservation (L-10 Irr)

[57] (Page 4C.1-40). The evaluation of irrigation water conservation addresses the use of low-pressure sprinklers, low-energy precision application systems, and irrigation scheduling. Many additional types of irrigation efficiency measures are noted, but not discussed in any substantive way. Some additional explanation should be provided for the decision to assess only those three irrigation water conservation approaches. The text, at page 4C.1-44, notes that current practices appear to be close to achieving technological limits of those three approaches so that irrigation conservation potential is limited. However, other best management practices recommended by the Water Conservation Implementation Task Force would appear to offer the potential for additional savings.

Response: The statement alluded to above is in Section 4C.1.2, and pertains to irrigation water conservation in general, and does not pertain only to the three methods mentioned. The methods included in the irrigation water conservation water management strategy have been shown to achieve efficiency in irrigation application, and are recommended because of their efficiencies.

(Page 4C.2-1) Section 4C.2 Edwards Transfers (L-15)

[58] Some discussion and explanation is needed about how the amounts identified as being available for transfer (72,795 acft/yr from unrestricted permits and 76,228 acft/yr from restricted permits) translate to the 45,375 acft/yr firm supply noted as being available from this strategy in the summary sheet and in the discussion on page 4B.1-11. The text on page 4C.2-2 indicates that adjustments already have been made to calculate a “drought supply equivalent” in developing the 72,795 and 76,228 figures.

Response: The unrestricted and restricted transfer potentials do not translate to the firm supply noted, as this figure is derived by summing the recommended Edwards Transfers for each water user group and/or wholesale water provider throughout the region. Furthermore, the firm supply figure represents a pro-rata share of the placeholder value of 340,000 acft/yr as the firm supply from the Edwards Aquifer adopted for planning purposes. The unrestricted and restricted transfer potentials simply provide a frame of reference indicative of supplies potentially available. Note that the strategy has been modified to include larger quantities of Edwards transfers to meet SAWS and BMWD needs, given that the LGWSP and Simsboro strategies have been removed from the plan.

[59] (Page 4C.2-8). The following implementation issue is noted: “An additional concern involves potential reductions in discharge at Comal and San Marcos Springs associated with increased pumpage from municipal wells closer to the springs.” This statement needs to be included in the Summary Sheet for this strategy in order to note it as an environmental factor.

Response: This concern is noted under Impacts on Water Resources in the Summary Sheet.

[60] The summary sheet for this strategy seems internally inconsistent. In discussing Impacts on Agriculture and Natural Resources, it indicates that no impacts are anticipated because only quantities in excess of demand are projected for transfer. By contrast, in the discussion of Third-Party Impacts of Voluntary Transfers economic impacts are estimated for each acre-foot proposed for transfer. The calculation of impacts suggests that quantities other than excess quantities would be transferred. Similarly, the economic effects, discussed on page 4C.2-7, focus only on those lands taken out of production through the lease of 50% of the irrigation rights. Again, that suggests a transfer of quantities other than those that are excess to demands. Also, the economic impacts from transfers resulting from the installation of water-conservation equipment would be expected to be much less than for the straight leases and an estimate of those impacts also should be presented in this discussion.

Response: See response to comment Number 58. In addition, it is important to note that the increased Edwards transfers to meet SAWS projected needs results in a transfer of irrigation supplies to municipal and industrial uses, as is explained in the revised Section 4C.2.

(Page 4C.3-1) Section 4C.3 Recycled Water Programs

[61] The Summary Sheet discussion under the Environmental Factors heading is too cryptic in its reference to “similar environmental issues and concerns to those of the existing system.” Some summary information about those issues and concerns should be provided in the plan itself.

Response: Available information is provided in Section 4C.3.3.

[62] (Page 4C.3-5). The consideration of impacts to environmental flows turns largely on assumptions about “increasing water use and development of new water supplies from

downstream, out-of-basin, and/or groundwater sources.” It is far from clear how return flows from increased development of downstream water supplies would result in additional freshwater inflows to the Guadalupe Estuary. Indeed, with an assumed 50 percent return as effluent, the increased development of downstream supplies would decrease those inflows. That decrease could be completely or partially offset by the potential increase of return flows from imports and from non-tributary groundwater supplies, depending on how downstream diversions are operated and on the relative quantities of the water sources. However, because the relative contributions from the various source categories are not provided here, the conclusion is quite uncertain, particularly as it relates to quantities of freshwater inflows. We believe additional analysis is needed. However, if the LGWSP is removed from the plan, the analysis of potential impacts on freshwater inflows may be somewhat simplified because of the reduced downstream diversions. At any rate, revision to this discussion will be needed.

Response: As SAWS has withdrawn from the LGWSP, the largest new sources of supply for SAWS will be non-tributary groundwater supplies and interbasin transfer of surface water. As shown in Section 7, instream flows in the San Antonio River and freshwater inflows to the Guadalupe Estuary are expected to increase above baseline levels with implementation of the regional water plan.

[63] Quantities of projected supply for this strategy are not shown in the Bexar County Summary Table included in Appendix D.

We believe reuse has merit as a potential water supply option but the amount of reuse, if any, appropriate in any particular location requires careful assessment and consideration of the site-specific impacts.

Response: In Appendix D of the IPP, recycle water was included in “Purchase from WWP (SAWS);” Reference Footnote 3, and Table 4B.3.2-1). Quantities of water included in the plan from recycle programs are included in the tables, as appropriate.

(Page 4C.4-6) Section 4C.4.4 Aquifer Storage and Recovery – Expansion of South Bexar County Facility

[64] This project is listed as a project under construction. Therefore, as noted, the quantity of water associated with this project is to be included in the existing supply. However, it is not clear from the discussion on page 4C.4-7 how or why the ASR project is constrained to the 6,400 acft/yr associated with the Regional Carrizo well field.

Response: The ASR project is not constrained to 6,400 acft/yr. Only the production well field is limited to 6,400 acft/yr pursuant to an agreement between SAWS and the Evergreen Underground Water Conservation District. Language has been added in the text to further explain this existing supply.

[65] The ASR project has significantly greater potential as noted in the discussion on pages 4C.4-8 through 4-9. There is also no discussion of ASR in the Regional Carrizo for Bexar County discussion (4C14-1). It seems that the quantity of water supply available from further expansion of ASR is not adequately considered in the Plan.

Response: The purpose of the Water Management Strategy (4C.4.4) is to increase ASR. The potentials of ASR are limited to that included in the Plan for a number of reasons, including potential sources of supply for recharge and costs.

(Page 4C.5-1) Section 4C.5 Canyon Reservoir

[66] (Page 4C.5-3). Discussion of environmental issues regarding this strategy should not be glossed over by saying that the issues have been “sufficiently addressed through the inclusion of special conditions in the certificate.” Those conditions do not eliminate impacts. The purpose of the required discussion is to acknowledge the impacts that can be expected in order to allow for informed decisions. TWDB rules require a quantitative analysis of impacts for all water management strategies, regardless of whether permits have been issued or are still needed. See 31 TAC § 357.7 (a)(8)(ii). Similarly, the summary sheet statement listing the only environmental factors as positive impacts is a bit inaccurate. There would be increased flows in a portion of the river downstream. Those increased flows may, or may not, be beneficial.

As summarized by the Science Advisory Committee to the Study Commission on Water for Environmental Flows: “The principal goal of providing environmental flows is to assure that sufficient quantities of water, reflecting seasonal and yearly fluctuations, as well as the frequency, timing, and volume of high-flow events, are made available to adequately protect the state’s aquatic resources.” Science Advisory Committee Report on Water for Environmental Flows (Oct. 26, 2004) at p. 1-7 (emphasis added). The complete loss of low flow events would adversely affect some species. In addition, as water is removed from storage, there is greater potential for moderately sized high-flow events to be captured. It simply is not accurate to portray the impacts of this strategy on environmental flows as uniformly positive. While the impacts may not be particularly large, they should be characterized accurately.

The discussion notes that Canyon Reservoir is expected to be full (above 909 ft-msl) more than 40% of the time. That is useful to know. However, some information about the percentage of time that the Reservoir would be expected to be below key recreational levels also should be provided. That information is important for understanding the potential impacts on businesses dependent on recreational activities in and around the Reservoir.

Response: The SCTRWPG has chosen to focus efforts and limited available funding for detailed technical evaluations, including evaluations of environmental effects, on water management strategies requiring new permits and/or major regional facility construction, rather than upon the expanded use of existing water rights.

(Page 4C.7-1) Section 4C.7 Lower Guadalupe Water Supply Project

[67] As noted above, it seems that SAWS was a key player in this strategy. Now that SAWS has chosen not to pursue the strategy, it does not seem appropriate to include it in the plan. At minimum, the strategy may not be included as a strategy for providing water to SAWS. See 31 TAC § 357.7 (b). If another version of the project is developed in the future that would be viable without participation by SAWS, it could be considered for inclusion at that time. However, a version of a project that is not viable should not be included.

Response: See responses to comments Numbers 50 and 62.

[68] On the Summary Sheet labeled as “In-basin Use,” the language discussing “Interbasin Transfer Issues” should be revised to present an accurate picture. The issue is one of revision of the current status, not clarification. The text should simply note that in order for the project to be treated as “In-basin use,” the current classification of the two basins as separate must be changed. The Summary Sheet labeled as “Interbasin Transfer” also needs revision. The current text, which reads “TWDB and/or Legislative clarification of the interbasin transfer status of this project is necessary,” is not accurate for this scenario. No “clarification” is needed if the project is treated as an interbasin transfer. It probably should read more like: “Under the current legal classification, use of water from the project in the San Antonio River basin would be treated as an interbasin transfer and subject to additional permitting requirements.” Alternatively, it could be revised to read more consistently with the language under that same heading for the Summary Sheets for the LCRA-SAWS water project. Those Summary Sheets precede page 4C.9-1.

Response: The SCTRWPG has evaluated the LGWSP under both In-Basin Use and Interbasin Transfer assumptions in recognition of the respective facts that: 1) the Guadalupe and San Antonio Rivers confluence above the diversion point thereby allowing the rights forming the basis of the LGWSP to make priority calls up both rivers; and 2) the TWDB has specified basin boundaries indicating that the diversion point is in the Guadalupe River Basin and that Bexar County is in the San Antonio (and Nueces) River Basins. The inconsistency is obvious and the need for clarification would remain if the LGWSP had not been modified, as a result of SAWS withdrawal, to serve only customers within the GBRA statutory district.

[69] (Page 4C.7-9) Figure 4C.7-5. The result depicted on this graphic illustrates the issues inherent in choice of a baseline for comparison. The baseline, or without project, inflow results reflect inflows that would be expected if all existing water rights were fully used. That has not occurred historically. Specifically, much of the surface water for the project would come from previously unused water rights. Thus, this comparison presents an unrealistic under prediction of the actual effects of the project. Without the project, those diversions under the existing rights would not be expected to occur and the difference between the two lines would be greater. Basically, this graphic compares two different future scenarios, neither of which provides any basis for considering the ecological implications of the change in inflows. This general issue is discussed further in our comments on Chapter 7.

Response: The SCTRWPG considered its choice of baseline for quantitative assessment of effects of water management strategy and/or region plan implementation carefully and chose to focus upon the effects of new appropriations rather than presently authorized uses of existing water rights.

[70] More fundamentally, however, Figure 4C.7-5 does not depict a quantitative analysis of the impacts of the full water management strategy as required by Section 357.7 (a)(8)(A)(ii). The strategy is described on page 4C.7-1 as obtaining water from “70,000 acft/yr of presently underutilized surface water rights from the Guadalupe-Blanco River Authority (GBRA), a new surface water right appropriation, and groundwater from the Gulf Coast Aquifer.” Thus, each of

the water sources must be considered in the analysis. Figure 4C.7-5 does not acknowledge, as project impacts, the effect of the use of the 70,000 acft/yr of existing surface water rights. Compare, for example, the quantitative estimate of costs for this project, Table 4C.7-3, which includes a specific line-item listing for the cost of the purchase of the existing water. The goal should be to fully depict the potential impacts of the project, both in terms of environment and cost, so that a fully informed decision can be made. By contrast, the Summary Sheets for this project do acknowledge, under the Impacts on Water Resources Heading, that “greater utilization of existing water rights” would be expected to reduce freshwater inflows.

Response: See response to comment Number 69.

[71] (Page 4C.7-10). The discussion includes the following sentence: “Although bay volumes, inflows, and tidal exchanges with the Gulf of Mexico are so large relative to this alternative that substantial impacts to overall salinity, nutrient, and sediment levels are not likely, an assessment of changes in freshwater inflows to bays and estuaries will be necessary for permitting.” This is a generalization that unfairly trivializes the complex issues surrounding flows and their significance to bay and estuary ecology. It suggests that inflow issues are significant only in the context of “overall salinity, nutrient, and sediment levels” in the entire bay system. The concept of salinity gradients within an estuary system is a fundamental aspect of estuarine ecology and is expressly recognized in the Texas Surface Water Quality Standards. See 30 TAC § 307.4 (g)(3). The quoted statement simply ignores that concept and the value of low salinity areas near river mouths as refugia for salinity-sensitive species during dry conditions. It also suggests that the two project studies regarding freshwater inflows are pointless exercises. It does not reflect an objective consideration of the potential impacts of the project and should be deleted.

Response: Referenced sentence has been modified to read as follows: “An assessment of changes in freshwater inflows to bays and estuaries will be necessary for permitting.”

(Page 4C.9-1) Section 4C.9 LCRA-SAWS Water Project (LSWP)

[72] The initial statement in this section is confusing. It states that the Lower Colorado River Authority (LCRA) has reserved approximately 330,000 acft/yr of water rights in three lower basin counties for development of projects. We are not aware of any such reservation. The 330,000 acft/yr figure is the amount generally used in describing the combined target to be achieved through a combination of agricultural conservation, increased groundwater production, and surface water diversions for the LSWP.

Response: The initial statement has been revised to read as follows: “The Lower Colorado River Authority – San Antonio Water System (LCRA-SAWS) Water Project (LSWP) involves the conservation and development of approximately 330,000 acft/yr in the Lower Colorado River Basin Counties of Matagorda, Wharton, and Colorado.”

[73] No quantitative analysis of impacts on environmental water needs is provided. That analysis is required pursuant to Section 357.7 (a)(8)(A)(ii) of the Board’s rules. Instead of including any analysis, the discussion states that a Project Viability Analysis (PVA) for the Project “concluded that diversion of previously existing surface water from the Lower Colorado River Basin would not significantly alter the existing freshwater inflow regime of Matagorda Bay....” IPP at p.

4C.9-10. First, that statement references only diversions of “previously existing surface water,” which we assume is intended to refer to existing surface water rights, and so apparently doesn’t consider proposed new diversions. Second, the PVA was intended only to identify obvious fatal flaws to the project and was not intended to, nor was it adequate to, characterize the extent of potential impacts. In fact, in its conclusion section regarding Matagorda Bay, the PVA states: “The preliminary analysis indicates that increased flows to the Bay will not prevent delivery of water for the LSWP. Additional studies are necessary to further characterize the relationship between freshwater inflows and bay health and productivity.” PVA at page 10-3. The PVA does not support the characterization included in the IPP about the absence of significance adverse impacts as a result of the alteration of inflows that may result from this project.

The potential for impacts to freshwater inflows is acknowledged in the Summary Sheets under the “Impacts on Water Resources” hearing and, at minimum, should be acknowledged in the discussion.

Response: The following quote from the LSWP 2005 Project Viability Assessment has been added to Section 4C.9.3:

The results of the environmental studies (water quality, river habitat, and bay health) have not revealed any “show stoppers” for the LSWP although the studies are in their early stages. It is expected that the ongoing studies will identify methods for designing and operating the Project to meet environmental needs as determined by legislative requirements, agency guidance, and/or permit conditions.

[74] Bastrop to Hays County Summary Sheet: This aspect of the project is no longer discussed in the PVA for the LCRA-SAWS Project. Our understanding is that the strategy, if pursued, would be separate from the LCRA-SAWS Project.

Response: Noted.

[75] Page 4C.9-11: The discussion appears to be somewhat internally inconsistent. In attempting to support the conclusion that freshwater inflows would not be significantly altered, the IPP states: “Unappropriated water and existing irrigation rights that have been historically unused (about 200,000 acft/yr) are run-of-river rights that are not available except during periods of high flow when diversion rates are small compared with total streamflow.” IPP at p. 4C.9-10 (emphasis added). However, in discussing project operation of the intakes for off-channel storage and for the pipeline diversion, the IPP states: “The diversion facilities for the off-channel reservoirs would allow average flows to pass to the transmission intake and [sic] while withdrawing excess flows for storage.” IPP at p. 4C.9-11¹. Average flows cannot both be unavailable to the project and be diverted for the project at the pipeline intake.

Response: The referenced sentence on IPP page 4C.9-10 has been deleted. The referenced sentence on IPP page 4C.9-11 has been corrected by removal of the word “and.” The

¹ The project often is characterized by project proponents as an excess flows or flood flows project. Such a project likely could be operated to avoid major impacts to the Matagorda Bay system. However, particularly because of cost impacts, it is not clear that the project would be operated solely in that way.

following sentence has been added to the second paragraph of Section 4C.9.4: “Additional information regarding operations of facilities may be found in the PVA.”

[76] (Page 4C.9-13). There does not appear to be an entry for annual costs for agricultural conservation in Table 4C.9-2. At least some of the conservation measures, such as canal improvements, likely would require ongoing maintenance.

Response: A line item for annual operations and maintenance associated with agricultural conservation has been added to the cost estimate.

[77] Summary Sheet: Depending on impacts to freshwater inflows, there could be third-party impacts to businesses related to commercial and recreational fishing and tourism in the Matagorda Bay system.

Response: The summary sheet states that there would be reductions in freshwater inflows to Matagorda Bay associated with greater utilization of existing water rights and new appropriation, and further states that, “Potential effects of these reductions are being studied by LCRA & SAWS.”

(Page 4C.11-1) Section 4C.11 Surface Water Rights

[78] Generally, we support the development of existing water rights as opposed to new water supply projects. However, the impacts of the use of existing rights can vary dramatically depending on the size and location of the underlying right and on whether the right has been used historically. For example, the transfer, by sale or lease, of an existing right that has historically been fully used for irrigation to another user for downstream diversion and municipal use likely would have positive environmental impacts. On the other hand, a transfer of a historically unused right to an upstream location in a river segment that is fully appropriated could have significant adverse impacts. We do not believe that such a broad array of potential transfers can properly be grouped and evaluated.

Response: Noted.

[79] While we understand the desire of the planning group to ensure that the failure to include projects in the regional plan does not create an inappropriate obstacle for minor sales or leases of water rights, we believe the proposed scope of this “project” is much too broad. There are no limits on the size of a transfer. There are no limits on locations. Even sales that would constitute an interbasin transfer could be argued as fitting with this description. As a result of the unduly broad categorization, it simply is not possible meaningfully to perform the assessments required by TWDB rules for this “water management strategy.”

Response: Noted.

[80] The discussion of environmental impacts apparently seeks to avoid this problem by noting the extent of TCEQ review of water rights permit amendments. However, the scope of that review, which is currently under litigation, is not a reflection of the potential for actual adverse

impacts. Nor is the scope of review required by TWDB rules coequal with the scope of TCEQ review. The purpose of review in planning is to ensure an informed decision, regardless of legal constraints on TCEQ review.

Response: Noted.

[81] Similar problems exist in attempting to assess the potential for third-party impacts, impacts on agricultural resources, and impacts on water quality. We urge the planning group to narrow the scope of potential sales or leases covered by this strategy so that a quantitative evaluation can be performed in compliance with TWDB requirements and so that the potential for unanticipated consequences is minimized.

Response: The planning group has characterized and specified the strategy to the extent possible.

(Page 4C.12-1) Section 4C.12 Local Groundwater Supplies

This section deals with a collection of different groundwater strategies involving different aquifers and vastly different project sizes.

[82] (Page 4C.12-8). Section 4C.12.3 Trinity Aquifer. Although up to 15,000 acre-feet/yr of withdrawals are noted, there is no substantive information about the potential impacts of those withdrawals on existing users, agricultural interests, springs, or on aquifer levels. Given the potential size of the withdrawals, more information is needed.

Response: Planned withdrawals from the Trinity Aquifer in Bexar County are in conformance with the Groundwater Management Plan of the Trinity – Glen Rose Groundwater Conservation District. Additional information is not available to the planning group at this time.

[83] (Page 4C.12-8). Section 4C.12.4 Barton Springs Edwards Aquifer. Various endangered species are associated with pumping from this Aquifer. Although the total proposed pumping is small, some information is needed about consistency with groundwater district rules and about location of pumping and potential impact on aquifer levels and springflows.

Response: The SCTRWPG is of the opinion that rights to pump 150 to 200 acft/yr from the Barton Springs Edwards Aquifer can be obtained under the rules of the Barton Springs / Edwards Aquifer Conservation District.

[84] (Page 4C.12-9). 4C.12.6 Environmental Issues. Most of this discussion is not linked to any particular project. Generally, it simply is not sufficient to allow informed decisions about the potential impacts of the proposed pumping.

Response: This discussion of environmental issues pertains to local use (small sized public suppliers and individual households and business establishments) of groundwater from the region's aquifers. It is intended to indicate the nature of the trends of the water levels of the aquifers, and since the Local Groundwater Strategy is widespread through out the

region, involving literally thousands of wells, a more specific project type of analysis is simply not possible.

(Page 4C.13-1) Section 4C.13 Simsboro Aquifer

[85] Because SAWS has decided not to pursue this project it should be removed from the regional plan. If not removed, the discussion should be expanded to address issues about consistency with applicable groundwater district management plans.

Response: The strategy has been removed from the plan (See response to comment Number 39).

(Page 4C.14-1) Section 4C.14 Regional Carrizo-Wilcox Aquifer for Bexar County Supply

[86] As the planning group is very aware, this is a highly controversial strategy. That controversy should be acknowledged along with a summary of the issues raised and the region's response to those issues. We recognize that the comment process provides an opportunity to acknowledge those concerns and respond to the issues. However, given the level of participation throughout the planning process, particularly by folks from Wilson County, discussion of those issues within the project-specific portions of the document would be appropriate.

Response: The issue was discussed at length during facilitated workshops, the results of which are expressed and explained in the regional plan.

[87] (Page 4C.14-14). The analysis of overall groundwater level declines and potential impacts of these on surface water flows is very helpful. However, it is difficult to appreciate the significance of the predicted flow impacts without information about key flow levels of the affected surface streams. In particular, flow data for those streams during low flow periods should be provided so that the significance of the impacts can be considered.

Response: The referenced changes in flux from the aquifer to the streams may be considered in the context of streamflow frequency curves presented in Section 7.

[88] (Page 4C.14-15). Environmental Impacts. This section is written more as an evaluation of potential impediments to permitting and required approvals than as an evaluation of the actual environmental impacts of the project. For example, no discussion of potential impacts to springs or the environmental implications of reduced contributions to flow in surface streams is provided.

Response: The effects upon surface flows are presented and discussed in the preceding section (Section 4C.14-2) and are not repeated in Section 4C.14-3, Environmental Issues.

[89] (Page 4C.14-25). Additional information should be provided regarding the extent to which the project exceeds the amount of available water identified in the current Gonzales County UWCD management plan. As we understand the initially prepared plan, the project would not be pursued to the extent of exceeding availability under the Gonzales County UWCD management plan. However, the extent of the reduction in supply is not discussed. That information is needed for a reasonable understanding of the project's yield and unit cost.

Response: This issue has been discussed at length in facilitated workshops, and has been addressed as described in Section 10.

[90] (Page 4C.14-27). Mitigation reserves for possible impacts to local wells are estimated at \$12 million. We commend the consideration of economic mitigation for impacts to existing wells. It would be useful to have a brief summary of the methodology used to determine this estimate. Information about the assumptions used in preparing the mitigation estimate also would be useful in providing an understanding of the predicted impacts on rural areas and agricultural users if mitigation turns out not to be available.

Response: The value included in the Cost Estimate is listed as “Mitigation Reserve” and is an estimate based upon experience in a neighboring area where such mitigation has been in practice over the past several years.

(Page 4C.15-1) Section 4C.15 Regional Carrizo for SSLGC Project Expansion

[91] Summary Sheet. Additional information should be provided regarding the extent to which the project exceeds the amount of available water identified in the current Gonzales County UWCD management plan. As we understand the initially prepared plan, the project would not be pursued to the extent of exceeding availability under the Gonzales County UWCD management plan. However, the extent of the reduction in supply is not discussed. That information is needed for a reasonable understanding of the project’s yield and unit cost.

Response: See response to comment Number 89.

[92] (Page 4C15-2). According to our understanding of projected demands listed in Chapter 4, the amounts to be supplied this project are Shertz, 5,621 ac-ft; Selma, 700 ac-ft; Green Valley, 500 ac-ft; Crystal Clear, 900 ac-ft; and Garden Ridge, 644 ac-ft. The sum of these projected uses is 8,365 ac-ft. However, the project is described as providing 12,800 ac-ft/yr. Where is the rest of the additional water to be used?

Response: Seguin; the Schertz partner.

[93] (Page 4C15-6). The use of the USFWS National Wetlands Inventory as a starting point to identify potentially affected wetlands is appreciated. Indeed, we believe it would be a good resource for use in all project evaluations

Response: Noted.

[94] (Page 4C15-11). Mitigation reserves for possible impacts to local wells are estimated at \$2,734,000. We commend the consideration of economic mitigation for impacts to existing wells. It would be useful to have a brief summary of the methodology used to determine this estimate. Information about the assumptions used in preparing the mitigation estimate also would be useful in providing an understanding of the predicted impacts on rural areas and agricultural users if mitigation turns out not to be available.

Response: See response to comment Number 90.

(Page 4C.16-1) Section 4C.16 Wells Ranch Project

[95] As noted in the text, this project has not yet been adequately evaluated. Accordingly, it should not be included in the plan. If evaluations are completed and the project is proposed for inclusion in the plan, reasonable opportunities for public review and comment on the project should be provided. Without the completed evaluation, it is not possible to comment meaningful on the project.

Response: The project was evaluated, a public hearing was held, and the SCTRWPG approved an amendment to include the project in the 2001 plan and approved the inclusion of the project in the 2006 plan.

(Page 4C.17-1) Section 4C.17 Hays/Caldwell Carrizo Project

[96] (Page 4C.17-1) The quantity of water developed by this project is 15,000 ac-ft/yr, scheduled to come on-line in 2030. However, according to the Water Supply Plans in Chapter 4 of this plan, the total demands on this WMS by the listed participants in 2030 is 0 ac-ft. The projected demands do not reach 15,000 ac-ft until 2060. It is unclear why this strategy needs to be implemented in 2030.

Response: Supplies from this strategy are recommended to meet needs in 2040, hence it is assumed that the project will become operational between 2030 and 2040, as indicated on the Summary Sheet.

[97] (Page 4C.17-10) Mitigation reserves for possible impacts to local wells are estimated at \$3.2 million. We commend the consideration of economic mitigation for impacts to existing wells. It would be useful to have a brief summary of the methodology used to determine this estimate. Information about the assumptions used in preparing the mitigation estimate also would be useful in providing an understanding of the predicted impacts on rural areas and agricultural users if mitigation turns out not to be available.

Response: See responses to comments Numbers 90 and 94.

[98] (Page 4C.17-11) Additional information should be provided regarding the extent to which the project exceeds the amount of available water identified in the current Gonzales County UWCD management plan. As we understand the initially prepared plan, the project would not be pursued to the extent of exceeding availability under the Gonzales County UWCD management plan. However, the extent of the reduction in supply is not discussed. That information is needed for a reasonable understanding of the project's yield and unit cost.

Response: See responses to comments Numbers 89 and 91.

(Page 4C.18-1) Section 4C.18 Cumulative Effects of Carrizo Aquifer Development Strategies

[99] We commend the planning group for undertaking this review.

Response: Noted.

[100] The SCTRWPG uses the South Central Carrizo system model (SCCS) to evaluate the impacts of water management strategies in the Carrizo. Although the use of this model, rather the TWDB GAM, has been approved by TWDB, TWDB has expressed some concern. A discussion about the selection of the SCCS model over the GAM would be beneficial.

Response: During its meeting of April 7, 2005, the SCTRWPG chose to proceed with use of only the SCCS model in the assessment of cumulative effects because the SCCS model was developed specifically for simulation of potential groundwater development projects in the Carrizo Aquifer in Gonzales and Wilson Counties and shows substantially better calibration to historical water levels in wells within the model area (particularly those near the outcrop) than does the GAM. In accordance with TWDB rules and guidance for regional water planning, the SCTRWPG solicited approval from the TWDB for use of the SCCS model as an alternative or supplement to the GAM. TWDB staff performed independent applications of each model, evaluated and compared results, presented their comparison to the SCTRWPG, and approved use of either model for regional water planning purposes by letter of September 7, 2005. The regional planning group takes exception to the statement that, "TWDB has expressed some concern."

[101] (Page 4C.18-1). We support the decision of the planning group to model projected pumping based on projected needs.

Response: Noted.

[102] (Page 4C.18-5) We appreciate the discussion of changes in streamflow associated with this pumping. While it is understood that these results represent changes over the entire length of the stream channel, a graphic showing the location of each modeled stream segment would be helpful.

Response: Noted.

[103] Particularly for smaller streams, some information about flow magnitudes would be helpful in interpreting the potential significance of the predicted impacts. The numbers presented in Table 4C.18-1 are more meaningful when they are compared to the flow conditions of the rivers during the drought of record and other low-flow periods. For example, during 1954, a reduction of 11.7 cfs in the San Antonio River would have resulted in a 40% reduction in low-flow discharge at the Falls City gage and a reduction of 8.5 cfs in the San Marcos River would have resulted in a 13% reduction (15% in 1984) in low-flow discharge at the Luling gage. For 1984, a 4.9 cfs reduction in the Guadalupe River would have resulted in a 10% reduction in low-flow discharge at the Cuero gage. Low-flow discharge, as used in this example, is the lowest 7-day moving average during the year.

Response: The referenced changes in flux from the aquifer to the streams may be considered in the context of streamflow frequency curves presented in Section 7.

(Page 4C.19-1) Section 4C.19 Cumulative Effects of Gulf Coast Aquifer Development Strategies

[104] We commend the planning group for undertaking this review.

Response: Noted.

[105] (Page 4C.19-8) It is impossible to know when the next drought of record will occur. As a result multiple portrayals are needed to assess the potential effects of pumping during such a drought period, unless the effects of the drought will be the same regardless of when it is assumed to occur. For this project, it does not seem plausible to assume that the effects would be the same regardless of when drought conditions occurred. Pumping is predicted to result in increasing groundwater declines over time. When assessing the transient effects of water level declines associated with temporary drought conditions, the assumed period when those maximum pumping levels occur is critical in predicting the extent of the water level declines.

Response: The simulations are intended to include approximations of “worst case conditions,” as opposed to predictions of when such conditions will occur.

[106] (Page 4C.19-45) The analysis of overall groundwater level declines and potential impacts of these on surface water flows is very helpful. However, it is difficult to appreciate the significance of the predicted flow impacts without information about key flow levels of the affected surface streams. In particular, flow data for those streams during low flow periods should be provided so that the significance of the impacts can be considered.

Response: See response to comment Numbers 87 and 103.

(Page 4C.20-1) Section 4C.20 Edwards Aquifer Recharge

[107] (Page 4C.20-5) Table 4C.20-1 provides useful information about potential impacts. However, the potential significance of the indicated changes in estuary inflow could be better appreciated if information were provided in the table about the magnitude of the overall inflows being affected. We do acknowledge that some limited information about percentage reductions is provided on page 4C.20-7. Is information about drought inflow impacts to the Nueces Estuary available? We also would appreciate seeing information about the amount of reduction during the year with lowest projected inflow.

Response: Effects of Edwards Aquifer recharge enhancement projects (with the possible exception of the Indian Creek Project planned at year 2060) on Nueces Estuary inflow during the driest years are essentially non-existent. In the driest of years, these projects contribute almost no recharge enhancement to the Edwards Aquifer because of limited (if any) inflow. Note also that more than 75 percent of any flows passing the downstream edge of the Edwards outcrop are lost in natural transit to the Nueces Estuary.

[108] (Page 4C.20-5) At the top of this page it is noted “...in which case impacts were not mitigated by releases, but were assumed to be mitigated by remuneration and/or development of additional water supply for the Corpus Christi service area.” Some information about the calculation of the assumed mitigation costs, as presented in Table 4C.20-9, would be helpful. In

particular, some explanation is needed regarding if, or how, impacts to freshwater inflows are included in the mitigation calculation.

Response: Actual mitigation costs would be subject to negotiations with the owners of the CCR/LCC System and others. Mitigation costs have been estimated based on replacement cost for reductions to the firm yield of the CCR/LCC System and an “interruptible” water cost (about five percent of that for firm water) for reductions in freshwater inflow to the Nueces Estuary.

[109] (Page 4C.20-7). It would be beneficial to have some explanation of how increased recharge was calculated in order to better understand how adjustments were made to account for the loss of naturally occurring (or baseline) Edwards recharge that otherwise would have been expected downstream of the recharge dam.

Response: Detailed presentations of methods used for the calculation of enhanced recharge are included in the documents referenced on page 4C.20-1.

[110] (Page 4C.20-9). Table 4C.20-4 is difficult to interpret. Additional explanation of the footnote is needed. In addition, it would be helpful to have more explanation of how the Sustained Pumpage Increase and Increase in Springflow columns relate to average versus drought conditions.

Response: The Sustained Yield Pumpage Increase is, by definition, a fixed annual amount available under both average and drought conditions. For additional information, refer to Appendix C in Volume II. Section 7 provides information regarding the effects regional plan implementation on Edwards springflow.

[111] (Page 4C.20-14). The Environmental Issues section should address the issue impacts on estuary inflows.

Response: Section 7 provides information regarding the effects regional plan implementation on estuarine inflow.

[112] (Page 4C.20-16). The last sentence on the page, which carries over to the next page notes, “[E]ffects on downstream aquatic communities will be mediated through the extent to which perennial aquatic habitats (pools and flowing reaches) persist in the stream reaches immediately below the recharge zone.” Without information about the prevalence of pools or the likelihood of the persistence of pools or flowing reaches, this statement is not particularly meaningful.

Response: Noted.

(Page 4C.21-1) Section 4C.21.1 Brackish Groundwater Desalination-Wilcox Aquifer

[113] (Page 4C.21-4). A diagram of the geologic cross section associated with this project would be helpful to show the thickness of the aquifer and its relationship to other freshwater and brackish aquifers in the area. The discussion assumes that pumpage from the Wilcox will not

have any effect on other aquifers. The text states the area is not overlain by the Carrizo Aquifer. However, Figure 4C.21.1-3 appears to show the area of predicted drawdowns extended into the area overlain by the Carrizo Aquifer. That would seem to suggest that supplies in the Carrizo could be affected. At any rate, some discussion of that issue would be appropriate.

Response: Wilcox Aquifer pumpage associated with this strategy is included in the groundwater simulations of cumulative effects of regional plan implementation presented in Section 7. Studies from which more detailed information could be obtained have not been done, but the regional planning group has been informed by SAWS that such studies will be initiated in early 2006.

[114] (Page 4C.21-10) The disposal of concentrate is a central issue to desalination projects. Some discussion of issues regarding the depth, location, and other characteristics of the proposed disposal is needed in this discussion.

Response: Technical evaluation of this water management strategy for planning purposes is necessarily conceptual. It is believed that sufficient costs have been included to provide for deep well injection of concentrate.

(Page 4C.21-14 Section 4C.21.2 Brackish Groundwater Desalination-Gulf Coast

[115] (Page 4C.21-14). Now that SAWS has decided to drop the Lower Guadalupe Water Supply Project (LGWSP), it seems unlikely that this project has independent viability. Accordingly, it should not be retained in the plan. If some new version of the project is developed that might be viable without the participation of SAWS, that new version of the project should be considered for inclusion at that time on its own merits.

Response: Brackish Groundwater Desalination-Gulf Coast Aquifer has been removed from the plan.

[116] (Page 4C.21-16): The discussion of impacts of desalination concentrate is overly simplified. The greatest potential for adverse impacts would be expected during dry conditions. Accordingly, the discussion should address that situation rather than just noting impacts during average conditions. In addition, the potential for impacts may well depend on the location of the proposed outfall because salinity conditions in the Bay are not uniform. In addition, the potential for imbalances in ion concentrations in the concentrate discharge versus the receiving water should be acknowledged and considered regarding potential adverse impacts.

Response: Noted, but will not be modified in the plan. See response to comment Number 115.

(Page 4C.22-1) Section 4C.22 Seawater Desalination

[117] Seawater desalinization certainly is worthy of consideration as a potential water supply strategy for the state of Texas. However, there are many environmental and energy implications that need to be carefully considered. The sensitivity of this option to issues of the cost and availability of large quantities of electrical power, although acknowledged, is not discussed in any detail. That is a very significant issue for a large-scale desalination plant, particularly given

recent trends in fossil fuel prices. In addition, the complications of constructing a concentrate disposal pipeline are not adequately discussed. The issue is acknowledged at page 4C.22-9, but without any elaboration on potential environmental impacts, especially in regard to routing the concentrate pipeline through Matagorda Island State Park and Wildlife Management Area.

Response: Noted. The issues listed, among many others, are extremely important, but could not be more comprehensively addressed within the scope and budgets for regional planning. The TWDB is conducting special investigations and funding pilot desalination projects.

[118] (Page 4C.22-9) The discussion includes the following sentence: “Bay volumes, inflows, and tidal exchanges with the Gulf of Mexico are so large relative to this alternative that substantial impacts to overall salinity gradients, or to the delivery of nutrients and sediment are not realistic.” Without careful consideration of circulation patterns in the bay, this statement seems to be an over-generalization, particularly during periods of low inflows.

Response: Noted, however, the statement speaks for itself.

(Page 4C.23-1) Section 4C.23 Inter-Regional Seawater Desalination

[119] Seawater desalination certainly is worthy of consideration as a potential water supply strategy for the state of Texas. However, there are many environmental and energy implications that need to be carefully considered. The sensitivity of this option to issues of the cost and availability of large quantities of electrical power, although acknowledged, is not discussed in any detail. That is a very significant issue for a large-scale desalination plant, particularly given recent trends in fossil fuel prices. In addition, the complications of constructing a concentrate disposal pipeline are not adequately discussed.

Response: See response to comment Number 117.

[120] The absence of any discussion regarding potential impacts on instream flows in the Nueces River downstream of Choke Canyon Reservoir and on freshwater inflows to the Nueces Estuary is a serious shortcoming. Without that information, the required quantitative evaluation of impacts on environmental flows is lacking.

Response: The environmental issues discussion pertains to the terrestrial environment of the facilities to move water from Choke Canyon Reservoir to the South Central Texas Region and the desalination plant and facilities located in south Corpus Christi to supply water to replace that from Choke Canyon Reservoir. It is implicitly assumed and seems to go without saying, that such an exchange involving Choke Canyon Reservoir and the Lake Corpus Christi System would appropriately consider and be operated under existing freshwater inflow requirements, as contained in the permits for the CCR/LCC System.

(Page 4C.24-1) Section 4C.24 CRWA Dunlap

[121] This project has not yet been adequately evaluated. Accordingly, it should not be included in the plan. If evaluations are completed and the project is proposed for inclusion in the plan,

reasonable opportunities for public review and comment on the project should be provided. Without the completed evaluation, it is not possible to comment meaningful on the project.

Response: The project was evaluated, a public hearing was held, and the SCTRWPG approved an amendment to include the project in the 2001 plan and approved the inclusion of the project in the 2006 plan.

(Page 4C.25-1) Section 4C.25 CRWA Siesta

[122] This project has not yet been adequately evaluated. Accordingly, it should not be included in the plan. If evaluations are completed and the project is proposed for inclusion in the plan, reasonable opportunities for public review and comment on the project should be provided. Without the completed evaluation, it is not possible to comment meaningful on the project.

Response: The project was evaluated, a public hearing was held, and the SCTRWPG approved an amendment to include the project in the 2001 plan and approved the inclusion of the project in the 2006 plan.

(Page 4C.27-1) Section 4C.27 Lockhart Reservoir

[123] The inclusion of the Lockhart Reservoir in the Plan, even as a future option, is troubling particularly because it appears to be more of an economic development project than a water supply project. Page 4B.1-26 notes, “The reservoir is considered by local public officials to be an important economic development project to create growth opportunities for the area.”

Response: Noted.

[124] (Page 4C.27-3) Table 4C.27-1 probably should be titled “Monthly Naturalized Streamflow Statistics” rather than Daily Naturalized Streamflows

Response: The table title is correct. Values shown are daily median and 25th percentile flows for the months listed.

[125] (Page 4C.27-7) This discussion notes that “flows at the Saltwater Barrier are relatively unaffected by the project, with an expected reduction in the mean annual flow of about 2 percent.” Again, a simple evaluation of average conditions can fail to identify significant impacts. Different statistics present different results. For example, at page 4C.27-3, the discussion states that “[m]onthly median streamflows at the Saltwater Barrier would be reduced about 1 percent.” The potential effects may not be great, but it would be better at least to include some information about potential drought period impacts. Particularly given the potential for cumulative impacts from a variety of water development projects, careful consideration is appropriate.

Response: Figure 4C.27-3 includes a comparison of streamflow frequency with and without Lockhart Reservoir based on the entire simulation period, including drought periods. Cumulative effects of water management strategies recommended for

implementation in the regional plan are presented in Section 7. Lockhart Reservoir has only been recommended by the SCTRWPG for further study, not implementation.

(Page 4C.28-1) Section 4C.28 Brush Management

[126] Land stewardship is a broader term that includes brush management as one of its components. Land stewardship is a concept that has been strongly championed by the Texas Wildlife Association. We encourage the group to examine that broader concept as a strategy worthy of consideration.

Water savings from “brush management” could be greatly enhanced if the strategy also involved proper riparian habitat management. Improving range conditions by clearing brush and planting grasses ‘capture’ some of the water that now runs off because of sparse vegetative cover. This ‘captured’ water is more likely to recharge the water table and increase the amount of water that is released to baseflow. The full benefits of this ‘captured’ water are lost, however, if the baseflow discharges to a scoured river channel. Properly managed riparian zones can greatly increase the storage potential of water saved from brush management. This increased storage potential results in increased baseflows and higher water tables that supply needs during times of drought. Increased baseflows also decrease the need for water from other sources to meet drought demands.

Response: Noted. Language has been added on page 4C.28-2 which further explains brush management and its relationship to voluntary land stewardship.

[127] (Page 4C.28-24) It is unclear in the discussion about Engineering and Cost of Brush Control if the uniform annual cost incorporates the on-going management practices necessary for successful brush management.

Response: In the discussion, both initial and periodic costs are mentioned. The periodic costs are the “on-going management costs necessary to maintain the strategy. Thus, the uniform annual cost, as presented, incorporates the on-going management practices costs. The uniform annual cost for a 30 year brush management project includes an initial cost, year 4 cost, and recurring cost each 7 years for maintaining brush management program (see Table 4C.28-17). The text has been edited to explain these costs.

(Page 4C.29-1) Section 4C.29 Weather Modification

[128] (Page 4C.29-15) In the discussion of Baseline + Weather Modification Conditions, it is noted in the last paragraph of page 15 that a 6.5% increase in precipitation was assumed for all days (April-September) when daily precipitation was between 0 and 3 inches. This does not appear to be a valid assumption. Assuming a 6.5% increase for all days when daily precipitation was between 0 and 3 inches assumes that every seeding attempt was successful and every possible precipitation event was available for seeding. It is not clear from the discussion if the SE/PREC ratio discussed previously was incorporated into this calculation.

Response: Earlier in the paragraph mentioned, the rate for the Nueces Basin analysis was stated at 5%. The 6.5% mentioned in the comment is the rate used for the Blanco Basin. These coefficients were selected on May 27, 2005 at a meeting of the Region L Staff

workgroup after review of the information obtained from the EAA, STWA, and SWTREA weather modification programs. The 6.5% is the SE/PREC ratio for the Blanco Basin area of analysis.

[129] (Page 4C.29-16) It is not clear from the discussion of Recharge Enhancements that the increased precipitation values for the Nueces and the Blanco during the drought of record were adjusted to reflect only those precipitation events that could have been seeded/enhanced. There would certainly have been fewer opportunities for successful cloud seeding during the drought. It is not appropriate to calculate increased precipitation due to modification by simply adjusting annual precipitation data. In addition, there is a considerable margin of error associated with assigning precipitation gage data to large areas. This needs to be incorporated into the discussion and assumptions.

Response: Increased precipitation associated with weather modification was only applied to days with noticeable precipitation (greater than 0 and less than 2.5 inches (Nueces Basin) or 3 inches (Blanco Basin)), as described on page 4C.29-15.

[130] (Page 4C.29-20) Weather modification may result in increased recharge to the Edwards, but the amounts of increased available water for pumpage due to these increases must be carefully evaluated. As the Edwards is a very porous aquifer, the recharged water may not remain in the aquifer long enough to allow for increases in pumpage. In addition, pumpage demands may not coincide with the increased yields reportedly available from enhanced recharge.

Response: The analyses present estimates of increase in sustained yield of the Edwards Aquifer that is estimated to result from increase recharge to the aquifer through the effects weather modification. The regional water planning effort is at a reconnaissance level. Additional studies regarding the relationship of pumping schedules to yield increases is beyond the scope of these planning activities and may be considered during future project-specific studies or water planning efforts.

[131] (Page 4C.29-20) The discussion on environmental effects assumes that increases in rainfall in seeded areas do not result in decreases in rainfall elsewhere. Some documentation and discussion of this assumption would be appropriate.

Response: In the information available to the planning group, there has been no mention of the effects mentioned in this comment.

(Page 4C.30-1) Section 4C.30 Rainwater Harvesting

[132] Rainwater harvesting as a water supply option is becoming increasingly popular throughout the Texas, especially in areas where reliable groundwater sources are not available. We commend the RWPG for evaluating Rainwater Harvesting as a strategy.

Due to its popularity in the area, there is much local experience regarding this strategy. One of the members of the planning group is a regionally recognized expert on the topic. In February of this year, the Sierra Club made a Rainwater Harvesting presentation to the RWPG that included

new information available in TWDB's revised Texas Manual on Rainwater Harvesting. We urge the planning group to consider updating this discussion, which appears, with the exception of cost estimates, not to have been updated since 2001.

Response: The information in the plan is up to date.

(Page 5-1). Section 5. Impacts of Water Management Strategies on Key Parameters of Water Quality and Moving Water from Rural and Agricultural Areas

[133] As part of our active participation in the regional water planning process, Myron Hess raised the issue at a planning group meeting of including an assessment of impacts to salinity gradients in estuaries. Maintenance of acceptable salinity gradients is addressed by Section 307.4 (g)(3) of the Texas Surface Water Quality Standards. Mr. Hess had understood from that meeting that the consultant had agreed to include such an assessment as part of the review of impacts on water quality. Unfortunately, no information or discussion of that issue appears in the plan.

At least for those strategies which are recognized as having the potential for water quality impacts, some discussion is needed about the water bodies and areas expected to experience those impacts. Also, significant water quality impacts may be hidden in the "baseline" assumptions. The discussion here indicates that "baseline" is the same as that assumed in Section 7, which means that full use of existing water rights is assumed as the "baseline" condition. In reality, that is much different than the actual current condition that is being experienced. For example, conditions in Canyon Lake likely would be much different under "baseline" conditions than they are today because of changed water levels in the reservoir. Similarly, flows in some portions of the Guadalupe River would be significantly different than they are currently if full use of water rights were assumed. Those changed flows would be expected to result in different water quality conditions. Section 357.7 (a)(12) of the Board's rules specifically calls for "comparing conditions with the recommended water management strategies to current conditions using best available data." Further examination and analysis is needed to provide the required consideration of water quality impacts.

In addition, the discussion of the LGWSP suggests that impacts on water quality resulting from changed flows downstream of the proposed diversion point may not have been considered. Such reduced flows likely would have the potential to affect dissolved oxygen levels downstream of the diversion. That potential should be considered.

Response: The SCTRWPG consultant agreed to consider potential effects of recommended water management strategies on estuarine salinity gradients to the extent that the regional water planning budget would allow. Analyses of estuarine salinity gradients are data intensive, involve application of complex models, necessitate substantial commitment of staff resources, and, once completed, interpretation of results with respect to maintenance of a healthy estuarine system is considered by some to be highly subjective. While it recognizes the importance of estuarine salinity gradients, the SCTRWPG has chosen to allocate its limited funding to other matters. By way of a cursory assessment, Seawater Desalination and the LSWP are the only planned water management strategies that could be perceived to have significant negative impacts on salinity gradients relative to the

baseline conditions selected by the SCTRWPG. With regard to baseline conditions, see response to comment Number 69.

Finally, with regard to dissolved oxygen levels downstream of diversions for the LGWSP, water quality modeling performed as part of the Trans-Texas Water Program indicates full recovery from the dissolved oxygen sag associated with effluent loadings downstream of Victoria at the San Antonio River confluence. As there are no additional effluent loadings below the San Antonio River confluence and above the LGWSP point of diversion, no significant impacts on dissolved oxygen levels are expected as a result of the LGWSP for GBRA Needs.

(Page 5-7) Discussion Related to Rural and Agricultural Areas

[134] The areas around San Antonio Bay and Matagorda Bay are rural areas. Many businesses in those areas rely on natural resources supported by environmental flows. Examples include commercial fisherman, seafood wholesalers, fishing and birding guides, restaurants, hotels, and retailers. Those businesses could be harmed if reduced inflows adversely affect the natural resources that directly or indirectly support their operations. Those potential impacts should be acknowledged.

Response: Studies are ongoing with regard to the sensitivity of commercial, recreational, and other species of interest to freshwater inflows entering San Antonio and Matagorda Bay. See response to comment Number 16.

[135] (Page 5-7 through 5-8) Costs are discussed for increased pumping costs that would be associated with drops in water levels. Lowered levels also might result in significant expenses associated with the need to deepen existing wells.

Response: Within the context of the discussion referenced, in which operating wells have been established, it is not expected that it would be necessary to deepen wells. However, the point is well taken, and has been included in the text.

(Page 7-1) Section 7 Consistency with Long-Term Protection of the State's Water, Agricultural, and Natural Resources

[136] TWDB may not approve a regional plan unless it is able to make an affirmative finding that the regional plan is consistent with long-term protection of the state's water resources, agricultural resources, and natural resources. See Texas Water Code Section 16.053 (h)(7)(C). We believe the initially prepared plan contains a good start towards analyzing the issue of consistency with long-term protection of natural resources. As we have previously noted, we do think that some improvements are needed in that analysis and we acknowledge the commitment of the planning group and its consultants to work with the National Wildlife Federation in incorporating additional analyses into the plan. We believe those additional analyses also would help demonstrate compliance with 31 TAC §§ 357.5(1) and 357.7(a)(1)(L), TWDB rules that direct planning groups to "consider environmental water needs including instream flows and bay and estuary inflows" and to identify threats to natural resources due to water quantity problems. In addition, this information also will assist in ensuring compliance with 31 TAC § 357.7 (a)(8)(A)(ii) by providing addition information for the required quantitative reporting of environmental factors, including effects on environmental water needs.

We have two primary concerns with the existing analyses in the initially prepared plan. Those analyses do provide information about flow changes, but only by looking at changes from some future condition. First, we believe it is essential to evaluate changes from current conditions or some other identifiable baseline. It is difficult to appreciate the significance of a change from one potential future condition to some other potential future condition because none of us have experienced either. Second, we believe the future conditions should be assessed against some established biological criteria.

An additional complication that arises with respect to the analysis of overall impacts is the inclusion in the plan of projects supplying far more water than the region is projected to need. This complicates the potential to present an accurate view of likely impacts. The inclusion of some additional projects, which involve the movement of water supplies into the area from other areas of the state, may serve to increase return flows that would partially offset the impacts of downstream diversion projects. However, if only some of the projects actually are needed, including all of them in the analysis may paint an unduly rosy picture. Conversely, including other projects that are not likely to be built may result in an over-prediction of adverse impacts in another area.

In October of 2004, the National Wildlife Federation released a report called *Bays in Peril: A Forecast for Freshwater Inflows to Texas Estuaries*. It is, as the title suggests, a forecast of future conditions. The report used a standard TCEQ water availability model (WAM) run for the Guadalupe and San Antonio Rivers to forecast inflows to the estuary if all the existing water permits were fully used and if reuse of wastewater were increased to 50%. The report then evaluated the predicted inflows against each of two ecologically significant criteria: a drought criterion and a freshwater pulse (or higher flows) productivity criterion based on the results of the state's freshwater inflows studies.

NWF has proposed to work cooperatively with the Region and its consultants to devise an alternative representation of future inflows that reflects anticipated levels of water use and reuse and wastewater discharge with the regional water plan implemented. We understand that the planning group has agreed to participate in that effort. The expectation is that, instead of the standard analysis used in *Bays in Peril* that assumes full use of existing permits and 50% reuse of wastewater, NWF and representatives of the planning group would jointly produce an analysis that looks at the water usage levels, including potential wastewater reuse or other new projects, the planning group considers most likely for 2060 conditions. Our belief is that the inclusion of such an analysis in the regional plan would provide critical information for helping to satisfy new requirements in this round of planning for "... quantitative assessments of environmental factors" as they relate to consideration of impacts to freshwater inflows and would provide information needed for a meaningful assessment of consistency of the regional plan with long-term protection of the state's natural resources.

Response: Noted.

**(Page 8-1) Section 8 Policies and Recommendations
8.2 Rural Water**

[137] We support the call for adequately equipping groundwater districts with the information and capacity to respond to groundwater export proposals and for ensuring that adequate technical information is available to analyze such proposals.

Response: Noted.

8.3 Groundwater Groundwater Sustainability

[138] We strongly support the goal of groundwater sustainability. However, we believe a clear definition of “sustainability” is necessary because it appears to mean different things to different people. In our terminology, groundwater sustainability means that in the long-term (well beyond the current planning horizon) withdrawals must be balanced with recharge while also maintaining adequate natural discharges such as seeps and springs.

Response: Noted.

8.6 Innovative Strategies Drought Contingency Plan

[139] The SCTRWPG policy regarding drought management states, “it does not select drought management as a water management strategy because by definition, drought management is only implemented during times of crisis.” We do agree that times of serious drought are times of crisis. However, the SB1 process is driven by planning to meet water needs during just such times of crisis. If measures are in-place to reduce water demands during drought periods, why should those measures be ignored in the process of planning to meet the water demands?

Response: TWDB Rules, pursuant to SB1 and SB2 require development of water plans to meet projected needs (shortages) during drought of record conditions. The SCTRWPG considered and decided not to use “drought management” as a water management strategy to meet projected needs for the reasons cited in the plan and repeated in comment 139. As a result of facilitated discussions regarding issues raised through public comment, the SCTRWPG has modified its policy and now recommends that a more thorough analysis of drought management as a water management strategy be conducted during the planning interim. Text in Sections 4B and 8 has been modified accordingly.

8.7 Environmental

[140] We acknowledge and commend the planning group for its strong overall recognition of the importance of protecting environmental flows and natural resources.

Response: Noted.

Protection of Edwards Aquifer Springflow and Downstream Water Rights

[141] This discussion suggests that any decrease in pumping amounts from the Edwards Aquifer during drought periods would require the development of additional water management strategies over those in the current version of the plan. However, as acknowledged elsewhere in the initially prepared plan, the recommended water management strategies included in the plan

would provide in excess of 800,000 acre-feet/year of new supplies. By contrast, projected 2060 demands are about 417,000 acre-feet/year.

Response: The discussion addresses the need for the water management strategies included in the plan, and is predicated upon the assumption that pumpage from the Edwards aquifer will not be reduced below 340,000 acft/yr. It further states, that if pumpage is reduce below 340,000 acft/yr, then additional water management strategies to those of the plan will be needed. Incidentally, the concluding statement in comment number 141 is not accurate. The projected total water needs (shortages) in 2060 are about 417,000 acft/yr. Projected total demand in 2060 is about 1,273,000 acft/yr.

Ecologically Unique Stream Segments and Unique Reservoir Sites

[142] We are disappointed that the planning group has again chosen not to recommend any river or stream segments for designation as ecologically unique.

Response: Noted.

Responses to September 19, 2005 Comments Submitted by D.M. O'Connor Interests

Comment: It was arbitrary and capricious to include the LGWSP in the Initially Prepared 2006 Regional Water Plan (IPP) because SAWS decided to withdraw its support of the project and concerns regarding feasibility and lack of local support.

Response: The LGWSP, as included in the IPP and documented in Section 4C.7, is not a recommended water management strategy in the 2006 regional water plan pursuant to a unanimous vote of the SCTRWPG during their meeting of December 1, 2005. In response to public comment and the withdrawal of SAWS support, the LGWSP presented in Section 4C.7 has been modified to exclude the groundwater components and provide service only to customers within the GBRA statutory district. This modified water management strategy, identified as LGWSP for GBRA Needs, has been technically evaluated in accordance with TWDB rules (Section 4C.32), considered by the SCTRWPG, and included as a strategy recommended to meet projected needs in the 2006 regional water plan.

Comment: The IPP lacks a sound science basis relative to the LGWSP and, in particular, the associated groundwater analyses. Commentor expresses concerns including: 1) amendment of the Refugio Groundwater Conservation District management plan; 2) modeling methodology; 3) consideration of site-specific information; and 4) leakage between the Chicot and Evangeline formations.

Response:

1) Long-term average groundwater production associated with the LGWSP, as documented in Sections 4C.7 and 4C.19, was in substantial compliance with the management plans of both the Refugio and Goliad County groundwater conservation districts at the time the IPP was adopted and would appear to be in compliance with the

quoted availability estimates in the Refugio district management plan amended after adoption of the IPP.

2) Modeling methodologies used in applications of the TWDB's Central Gulf Coast Groundwater Availability Model (CGC GAM) by the technical consultant to the SCTRWPG were coordinated with and approved by TWDB staff and are documented in Section 4C.19. Pursuant to an April 12, 2005 request from the D.M. O'Connor Interests, the CGC GAM, associated input data files, and a summary presentation of results were transmitted to the groundwater consultant of the D.M. O'Connor interests on April 25, 2005.

3) The site-specific information referenced by the commentor is understood to be a groundwater model developed by Texas A&M University at Kingsville under the sponsorship of the South Texas Regional Groundwater Alliance. The SCTRWPG is not aware of this model being approved by the TWDB for use in regional water planning.

4) Commentor is encouraged to provide any available technical data regarding leakage between the Chicot and Evangeline formations of the Gulf Coast Aquifer to the TWDB for consideration in future refinement of the CGC GAM.

Comment: The IPP lacks a sound science basis relative to the LGWSP and, in particular, the associated surface water analyses. Commentor expresses concerns regarding alternation of: 1) springflow data, 2) return flow data, and 3) Guadalupe – San Antonio River Basin Water Availability Model (GSA WAM) code.

Response:

1) In accordance with Hydrologic Assumptions and Operational Procedures for Assessment of Surface Water Supply (Section 3.2.3.1) considered and approved by both the SCTRWPG and the TWDB, the technical consultant to the SCTRWPG applied the GWSIM-IV model of the Edwards Aquifer in order to obtain appropriate springflows for use in the GSA WAM. The springflows used by the SCTRWPG reflect current critical period rules enacted by the Edwards Aquifer Authority, which include pumpage reductions of up to 15 percent for municipal, industrial, and irrigation users. The springflows used in the TCEQ GSA WAM are less because they are based on outdated critical period rules which did not effectively limit pumpage during drought. More specifically, Comal and San Marcos springflows used by the SCTRWPG average about 23,000 acft/yr more and Edwards pumpage averages about 27,000 acft/yr less than the corresponding figures used by in the TCEQ GSA WAM. The balance of about 4,000 acft/yr is likely attributable to other springs and/or differences in Edwards storage.

2) Consideration of treated effluent (return flows) in the evaluation of surface water availability for existing supply and water management strategies is consistent with hydrologic assumptions and operational procedures considered and approved by both the SCTRWPG and the TWDB.

3) Modifications to the GSA WAM code (originally used in the development of the 2001 regional water plan) by the SCTRWPG technical consultant in development of the 2006 regional water plan are included in the approved Scope of Work and primarily associated with daily accounting procedures for Canyon Reservoir in accordance with Certificate of Adjudication No. 18-2074E. The decision to use a "basin-specific" version of the GSA WAM for planning purposes in Region L was made in consultation with the SCTRWPG

and TWDB and TCEQ staff. This decision was made in order to most accurately model major water rights (e.g., Canyon Reservoir, Medina Lake System) and correctly apply Consensus Criteria for Environmental Flow Needs as required for regional water planning.

Comment: There are impacts of the LGWSP that have not been adequately evaluated in the regional planning process associated with sedimentation and flooding in the Guadalupe delta, maintenance of a sound ecological environment in the Guadalupe Estuary, and protection of the endangered whooping crane.

Response: It is the understanding of the SCTRWPG that these areas of concern are the subjects of more comprehensive studies by the U.S. Army Corps of Engineers, University of Texas Center for Research in Water Resources, and Texas A&M University. The SCTRWPG has added a policy recommendation to Section 8 to encourage the continuation of such studies. In addition, the SCTRWPG has cooperated with the National Wildlife Federation in the performance of Supplemental Evaluations of Potential Long-Term Changes in Freshwater Inflows to the Guadalupe Estuary, the results of which are presented in Section 7 of the 2006 Regional Water Plan.

10.3 Coordination with Other Regions

Members of the SCTRWPG (Region L) have attended neighboring RWPG meetings and/or maintained contact with neighboring RWPGs for purposes of communicating content, status, and progress of planning work of the respective RWPGs. Joint meetings were held with Regions K and N, to pursue water management strategies of mutual interest, communicate current project status, and discuss issues of mutual interest.

10.4 Final Plan Adoption

As explained in Section 10.2.2, the RWGP held public hearings in Victoria, Seguin, Uvalde and San Antonio and also gathered written comments submitted by various individuals and organizations as well as public agencies. The TWDB reviewed the IPP and sent comments and questions. The TWDB comments, together with RWPG responses are included in Section 10.2.2.1. A summary of public comments and RWPG responses are presented in Section 10.2.2.2, Section 10.2.2.3 and Section 10.2.2.4.

In addition to the regular monthly meetings, the RWPG held several workshops to complete the review and approval of responses to the comments.

The SCTRWPG met on January 4, 2006 to consider adoption of the 2006 South Central Texas Regional Water Plan as revised pursuant to comments on the Initially Prepared Plan and December 1, 2005 decisions of the SCTRWPG regarding outstanding issues. There was not a

consensus to adopt the Regional Water Plan. A motion was made to vote on adoption of the plan and the resulting vote recorded 9 in favor of adoption and 8 against. Since the motion did not receive the required two-thirds majority of the voting members present to adopt a plan, the plan was not adopted. A discussion that followed resulted in the identification of seven subjects of concern to planning group members. The seven topics that the planning group wanted to discuss further are:

1. Public comment consideration;
2. Vote on an 11,000 acft/yr groundwater export from Wilson County;
3. Time to consider documents posted on website;
4. Cumulative effects discrepancies/clarifications;
5. Desired consensus;
6. Public vetting of Lower Guadalupe Water Supply Project for GBRA Needs; and
7. Consistency with current Groundwater Conservation District Rules.

The SCTRWPG decided to request from the TWDB an extension of time to deliver a plan, and to meet on January 19, 2006 by which time planning group members would have had time to review revised Regional Water Plan documents in more detail.

The SCTRWPG met on January 19, 2006 and, after some discussion relevant to the topics listed above, considered a motion including the following provisions: (1) The 2006 regional water plan for Region L is adopted with the changes approved at the January 4, 2006 meeting; (2) The minutes and the letter transmitting the approved plan to TWDB will reflect that the planning group's adoption of the plan does not mean that each planning group member agrees to everything in the plan or that the interests of every member in the plan have been satisfied to the fullest extent, and in fact they have not; (3) That a list of planning members concerns be provided to TWDB for guidance in its consideration; and (4) That during the update of the 2006 plan, particular attention will be given to resolving divisive aspects of the 2006 plan to the maximum extent allowed by the scope of work and budget. This motion passed by a vote of 18 for and 1 against. The Executive Committee was authorized to prepare and send the letter transmitting the approved plan to the TWDB.

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