

Section 4B
Water Supply Plans
[31 TAC §357.7(a)(5-7)]

The South Central Texas Regional Water Planning Group (SCTRWPG) has used a planning process (Figure 4B-1) focused on the development of a Regional Water Plan to meet the needs of every water user group in the region for a planning period extending through the year 2060. Given the history of sharp and divisive conflict concerning water planning in this region, the planning process has provided extraordinary opportunities for participation by water user groups in providing input to achieve the goal of a plan that will “provide for the orderly development, management, and conservation of water resources...” 31 TAC §357.5(a). In order to build consensus among the constituencies represented by the members of the SCTRWP, the planning process has emphasized the coordination and careful integration of technical information with information provided through public participation.

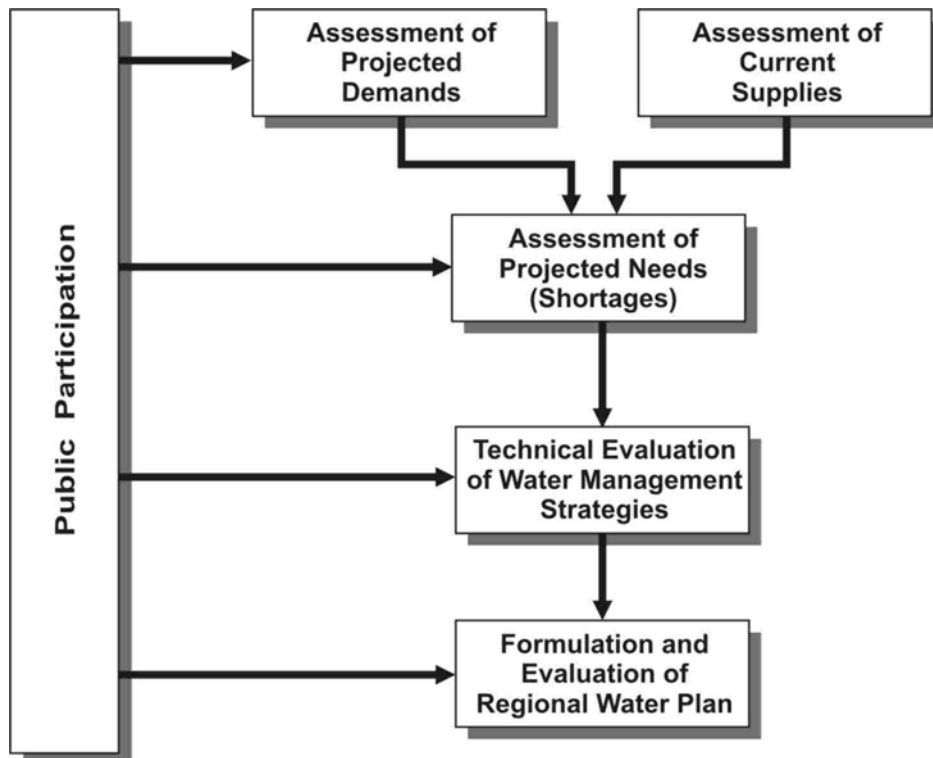


Figure 4B.1-1. Planning Process

Conflict over the past several decades in this region has focused on how to manage the Edwards Aquifer so as to meet the needs of many water user groups. Central to progress in resolving this conflict, and thus in achieving the formulation of a water plan acceptable to all constituencies represented in the SCTRWPG, is the assurance that all of the different, competing strategies for meeting water needs are given consideration. It has thus been central to the viability of the planning process itself that the evaluation of diverse water management strategies as a cohesive regional plan receive extraordinary attention.

To this end, the SCTRWPG adopted a planning process that ensures evaluation of virtually all the water management strategies that have been proposed or discussed in the past, together with new ones that had been subject to only limited technical evaluation. To achieve confidence by all constituencies in the planning process, it was necessary in the development of the 2001 South Central Texas Regional Water Plan to evaluate water management strategies both on a stand-alone basis and in various combinations in the context of five alternative plans. In keeping with logical and acceptable planning methods, the SCTRWPG was able to recommend the best components of these alternative plans and adopt the 2001 South Central Texas Regional Water Plan, which then became a part of the 2002 State Water Plan.

In the development of the 2006 Regional Water Plan, the following process for Identification of Potentially Feasible Water Management Strategies was used:¹

- 1) Developed draft scope of work including necessary updates to recommended water management strategies included in the 2001 Regional Water Plan, with technical evaluation of several specific water management strategies that are potentially feasible for meeting needs in the region. Draft scope of work also included identification and evaluation of unspecified water management strategies to meet needs for new retail utility water user groups previously aggregated in County-Other (Rural Area Residential & Commercial).
- 2) Presented scope of work at a series of public meetings (January 29–31, 2002) and received comments.
- 3) Refined scope of work and obtained TWDB approval in August 2002.
- 4) Solicited current water planning information, including specific water management strategies of interest, from water user groups.
- 5) Compared water demand projections and available supplies to obtain projections of water needs (shortages) by water user group.

¹ Pursuant to 357.5(e)(4) of the Regional Water Planning Guidelines which states: “Before a regional water planning group begins the process of identifying potentially feasible water management strategies, it shall document the process by which it will list all possible water management strategies and identify the water management strategies that are potentially feasible for meeting a need in the region.”

- 6) Prepared a draft list of water management strategies that were potentially feasible to meet projected needs of water user groups subject to changed conditions and of new retail utility water user groups that were aggregated in County-Other in the 2001 Regional Water Plan. Draft list included the recommended water management strategies in the 2001 Regional Water Plan, and specific water management strategies submitted in response to the solicitation for current water planning information.
- 7) Presented draft list of potentially feasible water management strategies during public meetings of the RWPG and received comments.
- 8) Refined list of potentially feasible water management strategies for water user groups subject to changed conditions and new retail utility water user groups for RWPG consideration and approval.
- 9) Performed technical evaluations of water management strategies approved by RWPG.

Development of the 2006 South Central Texas Regional Water Plan has focused on refinement of the 2001 Regional Water Plan as a result of significant changes in population and water demand projections and the need to integrate water supply planning for numerous small municipal water supply utilities previously grouped in the unincorporated “County-Other.” In addition, the availability of new Groundwater Availability Models (GAMs) has provided the tools for more detailed technical assessment of the potential effects of water management strategies including withdrawals from the Carrizo-Wilcox and Gulf Coast Aquifers. In addition, the GAMs have provided a basis for discussions regarding the consistency of groundwater conservation district management plans and the Regional Water Plan.

4B.1 Water Management Strategies

4B.1.1 Regional Summary

The South Central Texas Regional Water Plan includes recommended water management strategies that emphasize water conservation; maximize utilization of available resources, water rights, and reservoirs; engage the efficiency of conjunctive use of surface and groundwater, avoid development of large new reservoirs; and limit depletion of storage in aquifers. There are additional strategies that have significant support within the region, yet require further study regarding quantity of dependable water supply made available during severe drought, feasibility, and/or cost of implementation, that are also included in the Plan. Water management strategies recommended to meet projected needs in the South Central Texas Region could produce new supplies in excess of 738,000 acft/yr in 2060 and may be categorized by source as shown in Figure 4B.1-2. 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 or option agreements.

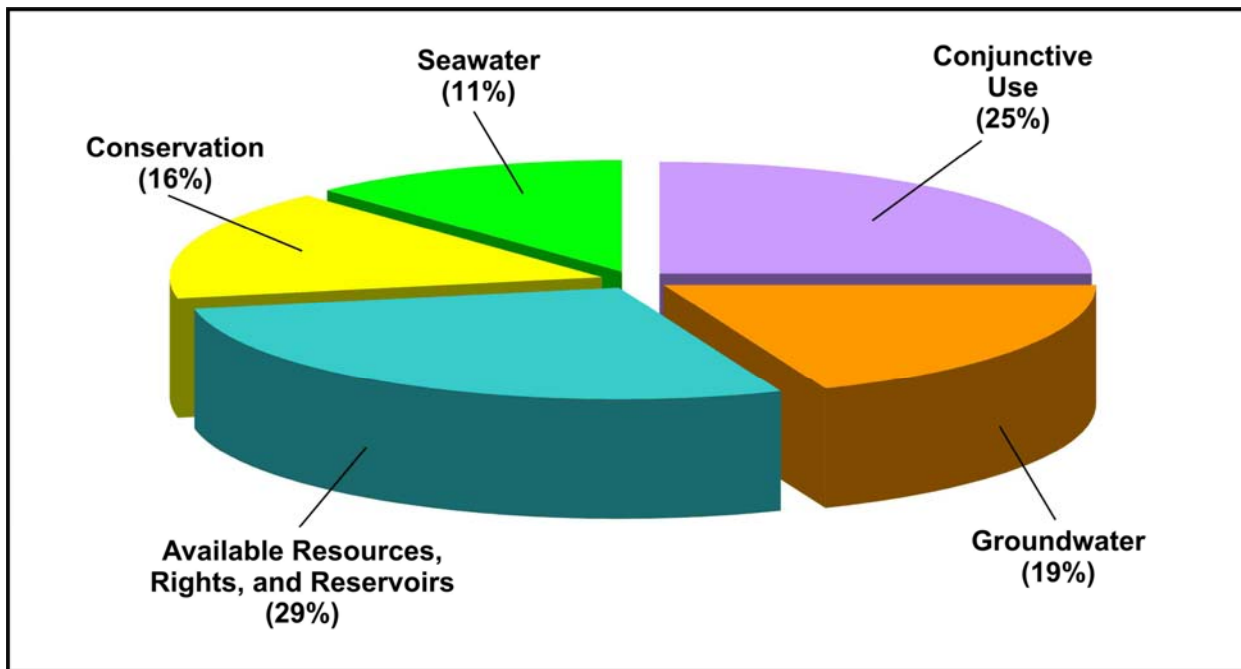


Figure 4B.1-2. Sources of New Supply in 2060

Specific recommended water management strategies in the Plan are summarized by approximate timing of potential implementation in Figure 4B.1-3 and Appendix D, and by geographic location in Figure 4B.1-4. Water management strategies emphasizing conservation comprise about 16 percent of recommended new supplies and include:

- Municipal Water Conservation (72,570 acft/yr);
- Steam-Electric Water Conservation (28,459 acft/yr);
- Irrigation Water Conservation (14,089 acft/yr); and
- Mining Water Conservation (1,425 acft/yr).

Water management strategies maximizing use of available resources, water rights, and reservoirs comprise about 29 percent of recommended new supplies and include:

- Edwards Transfers (71,335 acft/yr);
- SAWS Recycled Water Program Expansion and other Recycled Water (46,634 acft/yr);
- Canyon Reservoir (27,150 acft/yr);
- Wimberley & Woodcreek Water Supply from Canyon Reservoir (4,636 acft/yr);

- Purchase from Wholesale Water Provider (LNRA) (489 acft/yr);
- Surface Water Rights (2,867+ acft/yr); and
- Increased LGWSP Capacity for GBRA Needs (63,072 acft/yr).

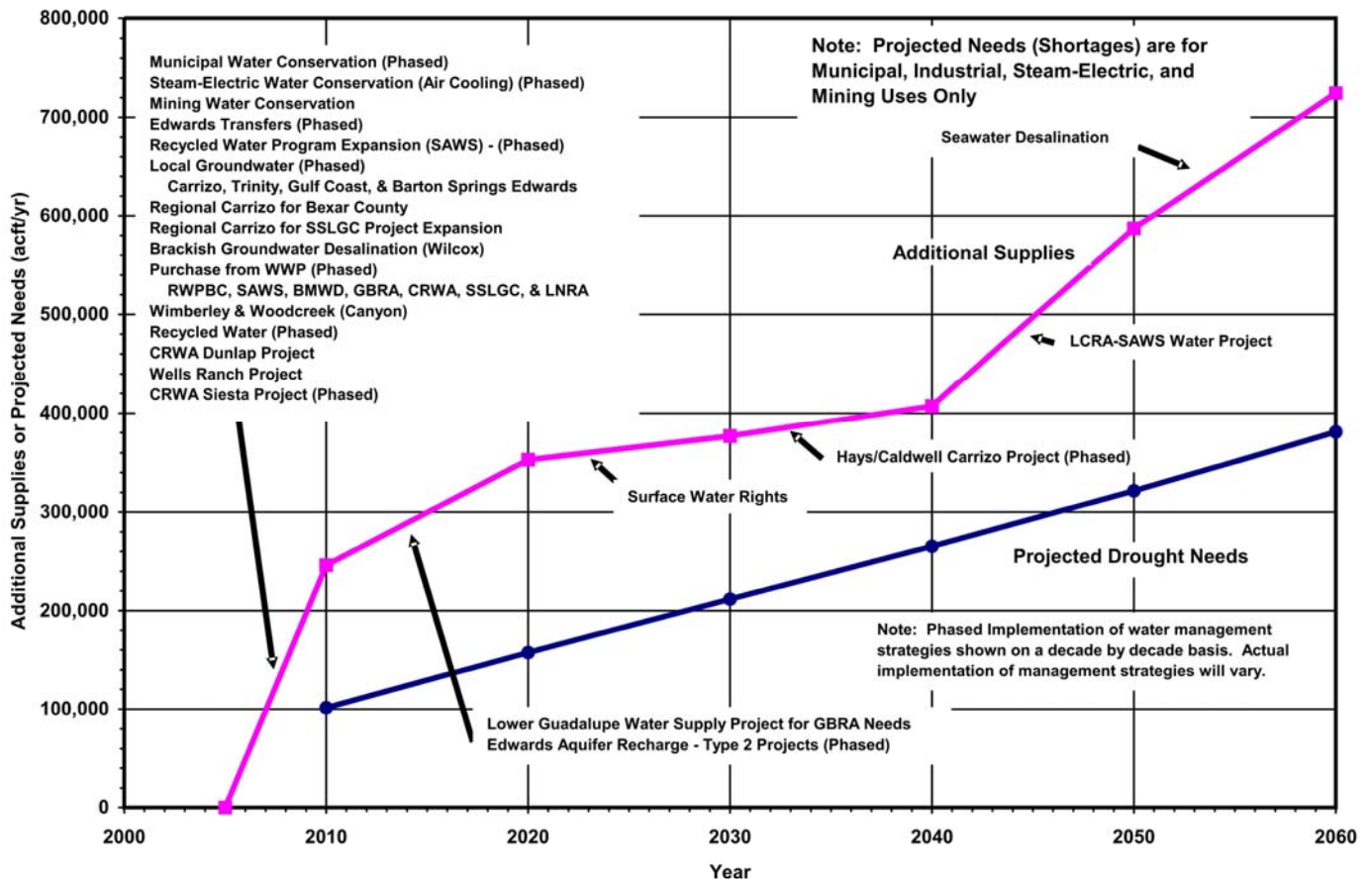


Figure 4B.1-3. Phased Implementation of Water Management Strategies

Water management strategies that simultaneously develop groundwater supplies and limit depletion of storage in regional aquifers comprise about 19 percent of recommended new supplies and include:

- Local Carrizo, Gulf Coast, Trinity, and Barton Springs Edwards (46,917 acft/yr);
- Regional Carrizo for Bexar County Supply (56,188+ acft/yr);
- Regional Carrizo for SSLGC Project Expansion (12,800 acft/yr);
- Hays/Caldwell Carrizo Project (15,000 acft/yr);
- Wells Ranch Project (3,400 acft/yr); and
- Brackish Groundwater Desalination – Wilcox Aquifer (5,662 acft/yr).

Recommended water management strategies that engage the efficiency of conjunctive use of surface and groundwater as well as maximize the use of available resources and water rights comprise approximately 25 percent of recommended new supplies and include:

- Edwards Recharge – Type 2 Projects (L-18a) (21,577 acft/yr);
- CRWA Dunlap Project (5,600 acft/yr);
- CRWA Siesta Project (5,042 acft/yr); and
- LCRA-SAWS Water Project (150,000 acft/yr).

Finally, the Regional Water Plan includes the development of a Seawater Desalination water management strategy which could represent approximately 11 percent of the recommended new supplies in 2060.

The Regional Water Plan includes several water management strategies that require further study and funding prior to implementation. Several of these strategies rely upon technologies that have been used previously, but further research is necessary to determine the cost of implementation, optimal scale and location, and quantity of dependable water supply that would be available in severe drought. These strategies are:

- Brush Management;
- Weather Modification;
- Rainwater Harvesting;
- Small Aquifer Recharge Dams;
- Simsboro Aquifer Project (GBRA);
- Brackish Groundwater Desalination – Edwards Aquifer (SAWS);
- Mesa Water Supply Project (SAWS);
- Cooperation with Corpus Christi for New Water Sources;
- Drought Management; and
- Additional Storage (ASR and/or Surface).

Although specific quantities of new, dependable supply during drought have not been determined for these strategies, it is understood that their implementation will contribute positively to storage and system management of many diverse strategies in the Regional Water Plan. The SCTRWPG recommends that State funding be made available to cooperatively support the refinement and implementation of these strategies.

The 2006 South Central Texas Regional Water Plan also recognizes Edwards Aquifer Recharge and Recirculation Systems (R&R) as a water management strategy requiring further

evaluation. As it did in the 2001 Regional Water Plan, the SCTRWPG recommends State and local funding for research at a level that ensures due consideration of this strategy.

In early 2005, the SCTRWPG received a request from Canyon Regional Water Authority (in cooperation with Bexar Metropolitan Water District) to amend the 2001 South Central Texas Regional Water Plan to include water management strategies identified as the Dunlap, Siesta, and Wells Ranch Projects. Technical evaluations of these three potentially feasible water management strategies were completed in accordance with TWDB guidance for regional water planning. Pursuant to an October 13, 2005 public hearing and consideration of public comment, the SCTRWPG amended the 2001 Plan and modified the 2006 Plan to include recommendation of these three strategies to meet projected needs.

There are significant quantities of projected water supply needs or shortages in the region for municipal, industrial, steam-electric, and mining uses. As indicated in Figure 4B.1-3, implementation of a number of water management strategies on an expedited basis will be necessary to avoid significant hardship, water rationing, and/or cessation of discharge from Comal Springs in the event of severe drought during the next decade. Substantial water supply needs or shortages are also projected for irrigation use in the South Central Texas Region. The Irrigation water Conservation Water Management Strategy is projected to meet approximately 42 percent of projected irrigation needs (shortages) in 2010, and 66 percent in 2060, including all of the projected shortages in Atascosa, Bexar, and Medina Counties. However, based upon present economic conditions for agriculture and the fact that there are no really low-cost water supplies to be developed, the SCTRWPG has determined that it is not economically feasible to meet all projected irrigation needs in Kendall and Zavala Counties at this time, since the net farm income to pay for water is less than the costs of water at the potential sources, to say nothing of the cost delivered to farms where water is needed.

Implementation of the 2006 South Central Texas Regional Water Plan will result in the development of new water supplies that will be reliable in the event of a repeat of the most severe drought on record. However, it is evident in Figure 4B.1-3 that implementation of all recommended water management strategies is not likely to be necessary in order to meet projected needs within the planning period. The SCTRWPG explicitly recognizes the difference between additional supplies and projected needs as System Management Supplies and has

recommended the associated water management strategies in the Regional Water Plan for the following reasons:

- 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;
- 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 ensure that such projects are potentially eligible for permitting and funding;
- To serve as additional supplies in the event that rules, regulations, or other restrictions limit use of any planned strategies; and/or
- To ensure adequate supplies in the event of a drought more severe than that which occurred historically.

Costs associated with the implementation and long-term operations and maintenance of water management strategies have been estimated in accordance with TWDB rules and general guidelines and reflect regional water treatment capacity and balancing storage facilities sufficient to meet peak daily and seasonal water demands in the larger urban areas. Total estimated project cost (in 2002 dollars) for the recommended water management strategies for municipal supply that will likely require long-term financing for implementation is about \$5.034 billion. Annual unit costs for recommended water management strategies for municipal supply in the 2006 South Central Texas Regional Water Plan (in 2002 dollars) are estimated to range from a low of about \$135/acft/yr (\$0.41 per 1,000 gallons) for Edwards Transfers to a high of about \$1,502/acft/yr (\$4.61 per 1,000 gallons) for Brackish Groundwater Desalination – Wilcox Aquifer and average about \$870/acft/yr (\$2.67 per 1,000 gallons). No costs have been included for projects that are presently under construction and potentially feasible water management strategies requiring further study.

4B.1.2 Water Management Strategy Descriptions

A brief description of each of the water management strategies included in the 2006 South Central Texas Regional Water Plan is included in the following text. Descriptions include the dependable (firm) water supply during drought and an estimated annual unit cost (in Second Quarter 2002 dollars) for water at full operating capacity during the debt service period (if applicable).

Municipal Water Conservation (L-10 Mun.)

The Municipal Water Conservation water management strategy includes conservation practices and programs to reduce per capita water use in cities by amounts in addition to reductions already incorporated into the TWDB water demand projections. The SCTRWPG established municipal water conservation goals as follows:

- For municipal WUGs with water use of 140 gpcd and greater, the goal is to reduce per capita water use by one percent per year until the level of 140 gpcd is reached, after which, the goal is to reduce per capita water use by one-fourth percent per year for the remainder of the planning period; and
- For municipal WUGs having year 2000 water use of less than 140 gpcd, the goal is to reduce per capita water use by one-fourth percent per year (0.25% per year).

Best Management Practices (BMPs) for water conservation, as identified by the Water Conservation Implementation Task Force², are recommended as means of achieving these municipal water conservation goals. The objective of municipal water conservation programs is to reduce the per capita water use parameter without adversely affecting the quality of life of the people involved. Planned municipal water conservation focuses on the following specific BMPs:

- Use of low flow plumbing fixtures (e.g., toilets, shower heads, and faucets that are designed for low quantities of flow per unit of use);
- The selection and use of more efficient water-using appliances (e.g., clothes washers and dishwashers);
- Modifying and/or installing lawn and landscaping systems to use grass and plants that require less water;
- Repair of plumbing and water-using appliances to reduce leaks; and
- Modification of personal behavior that controls the use of plumbing fixtures, appliances, and lawn watering methods.

The SCTRWPG recognizes that meeting the water conservation goals through implementation of these, or other, BMPs represents the highest practicable level of water conservation pursuant to 31 TAC 357.7(a)(7)(A)(iii). Planned additional municipal water conservation focused on these BMPs could effectively increase supply through demand reduction in the South Central Texas Region by about 72,570 acft/yr in the year 2060 at unit costs ranging from \$432 per acft/yr to \$494 per acft/yr. Volume II, Section 4C.1 includes a detailed discussion of this water management strategy.

²Water Conservation Implementation Task Force, Report to the 79th Legislature, Texas Water Development Board, Special Report, Austin, Texas, November 2004.

Industrial Water Conservation

The Industrial Water Conservation strategy can achieve water conservation through the use of BMPs such as water audits, waste reduction submetering, cooling towers, reuse of process water, landscape water conservation, and specific water conservation plans designed for individual manufacturing plants (See Section 4C.1.3). The SCTRWPG recommends that water conservation be considered by individual industries, as a means to meet a part of the projected water needs.

Steam-Electric Water Conservation

The Steam-Electric Water Conservation strategy achieves water conservation through the use of BMPs such as air-cooling or other cooling systems that can significantly reduce existing and projected water demands for steam-electric power generation. Volume II, Section 4C.1 includes a listing of other potential BMPs. It is recommended that implementation of this strategy would reduce projected demands assigned to Guadalupe and Hays Counties by 28,459 acft/yr in 2060. Costs for this strategy have not been estimated due to lack of available data. The SCTRWPG recognizes that it may not be economically feasible to satisfy all projected water needs for steam-electric power generation in Guadalupe and Hays Counties.

Irrigation Water Conservation (L-10 Irr.)

The Irrigation Water Conservation strategy achieves water conservation through the installation of Low Energy Precision Application (LEPA) irrigation systems and furrow dikes. Recommended implementation of these conservation measures in Atascosa, Bexar, Medina, and Zavala Counties could effectively increase supply for irrigation through demand reduction by up to 23,074 acft/yr at a unit cost of \$113 per acft/yr. Volume II, Section 4C.1 includes a detailed discussion of this water management strategy.

Mining Water Conservation (L-10 Min.)

The Mining Water Conservation strategy achieves water conservation through the use of recommended BMPs such as onsite collection and use of precipitation runoff and onsite reuse of process water. Volume II, Section 4C.1 includes a listing of other potential BMPs. It is recommended that implementation of this strategy could reduce projected demands assigned to

Bexar Comal Counties by 1,425 acft/yr in 2060. Costs for this strategy have not been estimated due to lack of available data.

Edwards Transfers (L-15)

The Edwards Transfers water management strategy is based upon the provisions of Senate Bill 1477, as amended, which provides for the creation of the Edwards Aquifer Authority, establishes a withdrawal permit system, and potentially allows a permit holder to sell or lease up to 50 percent of his irrigation rights. In the 2006 Regional Water Plan, irrigation transfers are included to meet projected needs of 23 municipal water user groups, in 2010 of 64,312 acft/yr, increasing to 67,834 acft/yr in 2030, and to 71,335 acft/yr in 2060 (quantities are part of the 340,000 acft/yr of firm yield used in the development of the 2006 plan). Initial Regular Permit (IRP) value of permits needed to obtain these quantities of firm yield increase from 108,618 acft/yr in 2010 to 114,566 acft/yr in 2030, and 120,479 acft/yr in 2060. Based on available data for transactions to date, typical unit costs are \$135 per acft/yr for lease of withdrawal rights and \$209 per acft/yr for permanent acquisition. Volume II, Section 4C.2 includes a detailed discussion of this management strategy.

Recycled Water Programs

The Recycled Water Use water management strategy involves expansion of programs that reclaim municipal wastewater for non-potable uses such as irrigation of golf courses, parks, and open spaces of cities, landscape watering of large office and business complexes, cooling of large office and business complexes, steam-electric power plant cooling, process or wash water for mining operations, irrigation of farms that produce livestock feed and forage, irrigation of farms that produce sod, ornamentals, and landscape plants, and for instream uses such as riverwalks and waterways. This strategy is being used within the region by entities including SAWS, SARA, New Braunfels Utilities, the City of Seguin and the City of San Marcos and can be expanded as the quantities of municipal wastewater increase with population growth. An advantage of this strategy is that the water has already been developed and brought to the locations of many of the uses listed above.

One specific example of this water management strategy involves the phased expansion of SAWS Recycled Water Program to provide dependable water supplies for non-potable uses and meet about 20 about percent of SAWS projected municipal and industrial water demands.

The existing SAWS recycled water system is capable of delivering about 35,000 acft/yr and consumptive reuse of about 25,000 acft/yr is included in the 2006 Regional Water Plan as current supply. Planned phased implementation of this water management strategy will provide additional dependable annual supplies of about 18,700 acft in 2010 and about 36,250 acft in 2060 at an estimated unit cost of \$434 per acft/yr. Facilities for future expansion are expected to include a southern interconnection between the Leon Creek and Dos Rios Water Recycling Centers and a northern interconnection linking the Leon Creek and Salado Creek transmission lines.

The SCTRWPG recognizes that SAWS and other water suppliers throughout the region may choose to reuse or reclaim the increased treated wastewater volumes associated with increased municipal water use, especially such wastewater volumes that are derived from privately owned groundwater and interbasin transfer of surface water. The SCTRWPG further recognizes that this reuse may be accomplished directly (“flange-to-flange”) or indirectly through bed and banks delivery to downstream diversion and/or storage sites subject to applicable law. Such lawful reuse of treated wastewater is consistent with the 2006 South Central Texas Regional Water Plan. Volume II, Section 4C.3 includes a detailed discussion of this water management strategy.

Canyon Reservoir

The Canyon Reservoir water management strategy involves the purchase of Canyon Reservoir stored water from the Guadalupe-Blanco River Authority (GBRA), transmission and treatment facilities, and integration of additional supply. Planned implementation of this strategy includes diversions directly from Canyon Reservoir and diversions from the Guadalupe River at various locations downstream of Canyon Dam. Presently uncontracted supplies of firm stored water from Canyon Reservoir are between 20,000 acft/yr and 25,000 acft/yr. This water management strategy is more generally identified as “Purchase from Wholesale Water Provider (GBRA)” and is recommended for entities with projected water needs in Caldwell, Comal, Guadalupe, Hays, Kendall, and Victoria Counties. Unit costs for this water supply are dependent upon location and appurtenant transmission and treatment facilities unique for each customer. Volume II, Section 4C.5 includes a detailed discussion of this water management strategy.

Wimberley & Woodcreek Water Supply from Canyon Reservoir

The Wimberley & Woodcreek Water Supply water management strategy involves the purchase of Canyon Reservoir stored water from GBRA, direct diversion from Canyon Reservoir, transmission and treatment facilities, and integration of an additional dependable supply of 4,636 acft/yr for Wimberley, Woodcreek, and Woodcreek Utilities in rural Hays County at an estimated unit cost of \$989 per acft/yr. Volume II, Section 4C.6 includes a detailed discussion of this strategy.

Lower Guadalupe Water Supply Project (LGWSP) for GBRA Needs

The Lower Guadalupe Water Supply Project (LGWSP) for GBRA Needs water management strategy involves the diversion of water from the Guadalupe River at the Saltwater Barrier located 3.5 miles north of Tivoli, transmission to approximately 50,000 acft of off-channel storage reservoirs, transmission to water treatment plants near Lake Dunlap and/or San Marcos, and near Boerne, and integration into municipal water supply systems. Specific sources of water for this strategy include presently underutilized surface water rights from the Guadalupe-Blanco River Authority (GBRA) and a new surface water appropriation. As other sources of water become available near the end of the current planning horizon (e.g., seawater desalination), they could be used to supplement or replace supplies from GBRA surface water rights. This water management strategy differs from the LGWSP described in Section 4C.7 in that it excludes groundwater as a source of supply and is intended to be used solely by customers located within the GBRA statutory district. This water management strategy serves to ensure that long-term, reliable, and renewable surface water supplies will be available throughout the GBRA statutory district including Calhoun, Refugio, and Victoria Counties.

Planned implementation of the LGWSP will provide a dependable supply of 63,072 acft/yr beginning in 2020 at an estimated unit cost of \$1,344 per acft/yr. Based on long-term averages derived from monthly simulations over a 56 year historical period, surface water diversions for this strategy are comprised of about 95 percent water available under existing water rights and about 5 percent water available under a new appropriation (subject to Consensus Criteria for Environmental Flow Needs). Volume II, Section 4C.32 includes a detailed discussion of this water management strategy.

LCRA-SAWS Water Project (LSWP)

The LCRA-SAWS Water Project (LSWP) is based on a 2002 Definitive Agreement between the San Antonio Water System (SAWS) and the Lower Colorado River Authority (LCRA) for the purchase and use of water from the Colorado River. The point of diversion is the subject of ongoing studies; however the Bay City diversion point used in the 2001 Regional Water Plan has been assumed for cost estimation purposes. Sources of water include presently under-utilized surface water rights, stored water from the Highland Lakes System, new appropriations, and groundwater from the Gulf Coast Aquifer. Facilities include approximately 250,000 acft of off-channel storage, transmission pump stations and pipeline to a terminal storage reservoir, water treatment in southern Bexar County, and facilities for integration of the new supply. Planned implementation of this strategy will provide a dependable supply of 150,000 acft/yr to SAWS by 2050 at an estimated unit cost of \$1,326/acft/yr. Allocation of the full projected dependable supply of 150,000 acft/yr to this potential diversion location does not preclude development of an upstream alternative or additional diversion location. Volume II, Section 4C.9 includes a more detailed discussion of this water management strategy.

Surface Water Rights

The Surface Water Rights water management strategy is included to explicitly recognize that use of water supplies made available under existing water rights by lease or purchase agreements between willing buyers and willing sellers is consistent with the 2006 Regional Water Plan. The addition of diversion points or types and places of use for existing surface water rights is also consistent with the 2006 Regional Water Plan if necessary authorizations are obtained pursuant to TCEQ rules and applicable law. Volume II, Section 4C.11 includes a more detailed discussion and specific examples of this water management strategy.

Local Trinity

The local Trinity water management strategy involves the development of 21,208 acft/yr of water supply from the Trinity Aquifer in northern Bexar and western Caldwell Counties for SAWS, BMWD, County Line WSC, and Goforth WSC. Estimated unit costs range from \$329 per acft/yr to \$365 per acft/yr. Volume II, Section 4C.12.1 includes a detailed discussion of this management strategy.

Local Carrizo

The local Carrizo water management strategy involves the phased development or expansion of well fields in the Carrizo-Wilcox Aquifer for the purposes of meeting local municipal and steam-electric needs in Atascosa, Caldwell, Gonzales, Guadalupe, and Wilson Counties. Planned implementation of this strategy provides new dependable supplies totaling about 24,729 acft/yr for the South Central Texas Region in 2060 at estimated unit costs ranging from \$114 per acft/yr to \$443 per acft/yr. Volume II, Section 4C.12.2 includes a detailed discussion of this management strategy.

Local Gulf Coast

The local Gulf Coast water management strategy involves development of 780 acft/yr from two new local supply wells in the Gulf Coast Aquifer near Kenedy in Karnes County. Estimated unit cost for the new supply is \$904 per acft/yr. Volume II, Section 4C.12.3 includes a detailed discussion of this management strategy. Simulated long-term cumulative effects of this water management strategy, along with other recommended strategies drawing from the Gulf Coast Aquifer, are presented in terms of projected drawdown in water levels in Section 7.1 and Volume II, Section 4C.19.

Local Barton Springs Edwards

The Local Barton Springs Edwards water management strategy involves the phased development of new groundwater supplies from the Barton Springs Edwards Aquifer through construction of new wells and/or acquisition of rights to pump from existing wells. Planned new supplies total 150 acft/yr by 2010 and 200 acft/yr by 2050 at an estimated cost of \$135/acft/yr. Volume II, Section 4C.12.4 includes a detailed discussion of this management strategy.

Regional Carrizo for Bexar County

The Regional Carrizo for Bexar County water management strategy involves development of well fields in the Carrizo Aquifer in Bexar, Gonzales, and Wilson Counties, a collection system, transmission to a regional water treatment facility, and integration of the new supply in Bexar County. Planned implementation of this strategy includes annual production of 62,588 acft/yr throughout the planning period with 6,400 acft/yr from south Bexar County (included as existing supply for SAWS), 11,000 acft/yr from Wilson County, and the balance

from Gonzales County. The estimated unit cost for this strategy is \$862/acft/yr. This project was evaluated in conformance with the existing rules of the Gonzales County UWCD. Part of the supply developed by this project exceeds the amount of available water identified in the current Gonzales County UWCD management plan. The amount of water needed by the project that exceeds the available water in the management plan cannot be implemented unless and until permits are received from the Gonzales County UWCD. This project does not cause the Gonzales UWCD management plan to be in conflict with the South Central Texas Regional Water Plan. For additional pertinent information regarding consideration of water management strategies reliant upon the Carrizo Aquifer, please refer to Issues 2, 5, 6, and 7 in Section 10.2.2.3. The 11,000 acft/yr from Wilson County is consistent with the current management plan of the Evergreen Underground Water Conservation District (EUWCD), though the EUWCD has recently adopted rules that could affect the estimated cost of this strategy. Volume II, Section 4C.14 includes a detailed discussion of this water management strategy. Simulated long-term cumulative effects of this water management strategy, along with other recommended strategies drawing from the Carrizo-Wilcox Aquifer, are presented in terms of projected drawdown in water levels in Section 7.1 and Volume II, Section 4C.18.

Regional Carrizo for Schertz-Seguin Local Government Corporations (SSLGC) Project Expansion

The Regional Carrizo for Schertz-Seguin Local Government Corporation (SSLGC) Project Expansion water management strategy involves the expansion of well fields located in southern Gonzales and Guadalupe Counties by the SSLGC. The SSLGC was created to develop and operate a wholesale water supply system to serve the long-term needs of several communities located in Guadalupe and Bexar Counties. This strategy focuses on the development of additional well fields and associated collection and treatment systems as primary transmission facilities for delivery of water to customers are operating at this time. Planned implementation of this strategy will provide an additional dependable annual supply of approximately 12,800 acft at an estimated cost of \$411 per acft/yr. This project was evaluated in conformance with the existing rules of the Gonzales County UWCD. Part of the supply developed by this project exceeds the amount of available water identified in the current Gonzales County UWCD management plan. The amount of water needed by the project that exceeds the available water in the management plan cannot be implemented unless and until permits are received from the Gonzales County UWCD. This project does not cause the

Gonzales UWCD management plan to be in conflict with the South Central Texas Regional Water Plan. For additional pertinent information regarding consideration of water management strategies reliant upon the Carrizo Aquifer, please refer to Issues 2, 5, 6, and 7 in Section 10.2.2.3. Volume II, Section 4C.15 includes a detailed discussion of this management strategy. Simulated long-term cumulative effects of this water management strategy, along with other recommended strategies drawing from the Carrizo-Wilcox Aquifer, are presented in terms of projected drawdown in water levels in Section 7.1 and Volume II, Section 4C.18.

Wells Ranch Project

The Wells Ranch Project is a water management strategy proposed by Bexar Metropolitan Water District (BMWD) and Canyon Regional Water Authority (CRWA) that would involve development of 9,000 acft/yr of groundwater from the Carrizo Aquifer in Gonzales and Guadalupe Counties. Some 5,600 acft/yr of the 9,000 acft/yr may be committed to the CRWA Dunlap Project pursuant to an agreement between CRWA and BMWD, with the balance of 3,400 acft/yr being delivered directly to BMWD. Planned implementation of this strategy will provide an additional dependable annual supply of approximately 3,400 acft at an estimated cost of \$690 per acft/yr. In early 2005, the SCTRWPG received a request from CRWA (in cooperation with BMWD) to amend the 2001 South Central Texas Regional Water Plan to include water management strategies identified as the Dunlap, Siesta, and Wells Ranch Projects. Technical evaluations of these three potentially feasible water management strategies were completed in accordance with TWDB guidance for regional water planning. Pursuant to an October 13, 2005 public hearing and consideration of public comment, the SCTRWPG amended the 2001 Plan and modified the 2006 Plan to include recommendation of these three strategies to meet projected needs.

Simulated long-term cumulative effects of this water management strategy, along with other recommended strategies drawing from the Carrizo-Wilcox Aquifer, are presented in terms of projected drawdown in water levels in Section 7.1 and Volume II, Section 4C.18. This project was evaluated in conformance with the existing rules of the Gonzales County UWCD. Part of the supply developed by this project exceeds the amount of available water identified in the current Gonzales County UWCD management plan. The amount of water needed by the project that exceeds the available water in the management plan cannot be implemented unless and until permits are received from the Gonzales County UWCD. This project does not cause the

Gonzales UWCD management plan to be in conflict with the South Central Texas Regional Water Plan. For additional pertinent information regarding consideration of water management strategies reliant upon the Carrizo Aquifer, please refer to Issues 2, 5, 6, and 7 in Section 10.2.2.3.

Hays/Caldwell Carrizo Project

The Hays/Caldwell Carrizo Project involves the development of about 15,000 acft/yr of dependable supply from the Carrizo Aquifer in Bastrop, Caldwell, Fayette, and Gonzales Counties. Planned facilities include well field(s) and transmission and treatment systems for delivery to water users in Caldwell and Hays Counties at an estimated unit cost of \$694/acft/yr. This project was evaluated in conformance with the existing rules of the Gonzales County UWCD. Part of the supply developed by this project exceeds the amount of available water identified in the current Gonzales County UWCD management plan. The amount of water needed by the project that exceeds the available water in the management plan cannot be implemented unless and until permits are received from the Gonzales County UWCD. This project does not cause the Gonzales UWCD management plan to be in conflict with the South Central Texas Regional Water Plan. For additional pertinent information regarding consideration of water management strategies reliant upon the Carrizo Aquifer, please refer to Issues 2, 5, 6, and 7 in Section 10.2.2.3. Volume II, Section 4C.17 includes a detailed discussion of this water management strategy. Simulated long-term cumulative effects of this water management strategy, along with other recommended strategies drawing from the Carrizo-Wilcox Aquifer, are presented in terms of projected drawdown in water levels in Section 7.1 and Volume II, Section 4C.18.

Edwards Recharge – Type 2 Projects

The Edwards Recharge – Type 2 Projects involves the construction of recharge enhancement structures located atop the Edwards Aquifer recharge zone (Type 2 Projects) on streams that are often dry. These structures impound water only for a few days or weeks following storm events and recharge water very quickly to the aquifer, typically draining at a rate of 2 to 3 feet per day. Planned projects include Indian Creek, Lower Frio, Lower Sabinal, Lower Hondo, Lower Verde, San Geronimo, Northern Bexar / Medina County Projects (Limekiln, Culebra, Government Canyon, Deep Creek, Salado Dam No. 3), Salado Creek FRS, Cibolo Dam

No. 1, Dry Comal, and Lower Blanco. Consensus Criteria for Environmental Flow Needs were applied in the technical evaluations of projects comprising this management strategy located on streams which typically flow. Implementation of these projects could enhance spring discharge and increase dependable municipal water supply for Bexar County by about 21,600 acft/yr. It is specifically recognized by the SCTRWPG that alternative projects at these locations that may be larger in size and storage capacity are consistent with the 2006 Regional Water Plan. Volume II, Section 4C.20 includes a detailed discussion of this management strategy.

Brackish Groundwater Desalination (Wilcox)

The Brackish Groundwater Desalination (Wilcox) water management strategy involves the development of 5,662 acft/yr of groundwater from the brackish area of the Wilcox Aquifer in southeastern Bexar County. The facilities for the peak 20 MGD (5 MGD yearly average) alternatives include a well field with production capacity of 25,163 acft/yr (54 wells at 300 gpm, including 4 back-up wells), brackish groundwater desalination plant with finished water capacity of 10,065 acft/yr, deep well injection of desalination concentrate, finished water tank, finished water pump station, and 33-inch transmission pipeline. Desalination treatment facilities would likely be located adjacent to the well field and are sized to treat half the brackish water to produce a finished blended water supply that meets all potable water regulatory requirements including concentrations of the dissolved constituents TDS, chloride, and sulfate. Assuming delivery to the W.W. White tank, the estimated unit cost of this strategy is \$1,502 per acft/yr. Delivery to the Twin Oaks WTP has a unit cost estimate of \$1,533 per acft/yr. Volume II, Section 4C.21.1 includes a detailed discussion of this management strategy.

Seawater Desalination

The Seawater Desalination water management strategy involves the long-term development of intake and treatment facilities on the north shore of San Antonio Bay near Seadrift and transmission of treated water for integration and use in Bexar County. This water management strategy utilizes a source of water that is essentially unlimited; however, costs of treatment and location for brine discharge (as may affect marine habitat and species) remain concerns. Planned implementation of this strategy will provide a dependable annual supply of approximately 84,000 acft by 2060 at an estimated unit cost of \$1,390 per acft/yr. Volume II, Section 4C.22 includes a detailed discussion of this management strategy.

CRWA Dunlap Project

The Canyon Regional Water Authority (CRWA) Dunlap Project is envisioned as a conjunctive use project using interruptible diversions from the Guadalupe River at Lake Dunlap along with groundwater from a well field in to be located in Gonzales and Guadalupe Counties (the Wells Ranch Project). These raw water sources would be treated and distributed as a new municipal water supply for CRWA members. The surface water component of the Dunlap Project involves the amendment of a surface water right held by CRWA in order to increase authorized diversions from the Guadalupe River at Lake Dunlap from 18.52 acft/yr to 5,600 acft/yr and to obtain authorization for interbasin transfer of this water. The groundwater component of this project was evaluated in conformance with the existing rules of the Gonzales County UWCD. Part of the supply developed by this project exceeds the amount of available water identified in the current Gonzales County UWCD management plan. The amount of water needed by the project that exceeds the available water in the management plan cannot be implemented unless and until permits are received from the Gonzales County UWCD. This project does not cause the Gonzales UWCD management plan to be in conflict with the South Central Texas Regional Water Plan. For additional pertinent information regarding consideration of water management strategies reliant upon the Carrizo Aquifer, please refer to Issues 2, 5, 6, and 7 in Section 10.2.2.3. Volume II, Section 4C.24 includes a detailed discussion of this water management strategy. Simulated long-term cumulative effects of this water management strategy, along with other recommended strategies drawing from the Carrizo-Wilcox Aquifer, are presented in terms of projected drawdown in water levels in Section 7.1 and Volume II, Section 4C.18. Planned implementation of this strategy will provide an additional dependable annual supply of approximately 5,600 acft at an estimated cost of \$956 per acft/yr.

In early 2005, the SCTRWPG received a request from CRWA (in cooperation with Bexar Metropolitan Water District) to amend the 2001 South Central Texas Regional Water Plan to include water management strategies identified as the Dunlap, Siesta, and Wells Ranch Projects. Technical evaluations of these three potentially feasible water management strategies were completed in accordance with TWDB guidance for regional water planning. Pursuant to an October 13, 2005 public hearing and consideration of public comment, the SCTRWPG amended the 2001 Plan and modified the 2006 Plan to include recommendation of these three strategies to meet projected needs.

CRWA Siesta Project

The Canyon Regional Water Authority (CRWA) Siesta Project is envisioned as a conjunctive use project using interruptible diversions from Cibolo Creek in Wilson County along with treated effluent from wastewater treatment facilities operated by San Antonio River Authority (SARA) as raw water sources for treatment and distribution as a new municipal water supply for CRWA members. The Siesta Project involves the acquisition/lease of additional water rights and amendment of a surface water right presently held by CRWA in order to increase authorized diversions from Cibolo Creek by CRWA from 42 acft/yr to 5,042 acft/yr. Planned implementation of this strategy will provide an additional dependable annual supply of approximately 5,042 acft at an estimated cost of \$853 per acft/yr. Volume II, Section 4C.25 includes a detailed discussion of this water management strategy.

In early 2005, the SCTRWPG received a request from CRWA (in cooperation with Bexar Metropolitan Water District) to amend the 2001 South Central Texas Regional Water Plan to include water management strategies identified as the Dunlap, Siesta, and Wells Ranch Projects. Technical evaluations of these three potentially feasible water management strategies were completed in accordance with TWDB guidance for regional water planning. Pursuant to an October 13, 2005 public hearing and consideration of public comment, the SCTRWPG amended the 2001 Plan and modified the 2006 Plan to include recommendation of these three strategies to meet projected needs.

Purchase from Wholesale Water Provider

The Purchase from Wholesale Water Provider water management strategy involves the purchase of water supplies from, or participation in the development of new water supplies with, an identified Wholesale Water Provider. Wholesale water providers include the San Antonio Water System (SAWS), Bexar Metropolitan Water District (BMWD), Guadalupe-Blanco River Authority (GBRA), Canyon Regional Water Authority (CRWA), Schertz-Seguin Local Government Corporation (SSLGC), Springs Hill Water Supply Corporation (SHWSC), and Lavaca-Navidad River Authority (LNRA). This strategy may also involve the purchase of water supplies from, or participation in the development of new water supplies with the Regional Water Provider for Bexar County (RWPBC). Costs for this management strategy include those for purchase, treatment, transmission, and distribution of water, and are specific to each project

or source of water. For example, purchase by a WUG from a Wholesale Water Provider would be at the unit cost of water from the source and would vary from water source to water source.

Small Aquifer Recharge Dams

The Small Aquifer Recharge Dams management strategy is the construction of small dams on ephemeral waterways to capture runoff and hold it for seepage into aquifers of the planning region. The strategy is needed and appears to be applicable in the northern parts of the northern counties of the South Central Texas Water Planning Region overlying the Trinity Group of Aquifers that are being heavily stressed by a rapidly growing population. This strategy can be implemented by individual landowners of the area, but would probably need cost sharing by organized groups who obtain and depend upon the aquifers to be recharged, and to the extent that such structures reduce soil erosion, may qualify for technical and financial assistance from state and federal agencies.

Local Storage

The Local Storage water management strategy involves implementing large, regional scale Aquifer Storage and Recovery (ASR) and/or surface storage facilities adequate in size to store surplus flows of surface water during periods of high streamflows, including flood flows, to be available during extended periods of drought. Present management strategies of the South Central Texas Regional Water Plan are sized and scheduled to meet seasonal and daily variations of demand, but some current supplies may not be fully reliable during extended or multi-year droughts. Thus the need for surface reservoirs, large scale ASR Systems, or multipurpose reservoirs. If the water management question or problem is a supply for emergencies or drought, water could be stored in the Carrizo or Gulf Coast Aquifers for several years before it is recovered. Water treatment capacity necessary to meet peak day demands may be available at non-peak times (fall, winter, and spring) to treat water for aquifer storage and subsequent recovery.

Brush Management

The Brush Management water management strategy involves the selective removal of brush from rangeland watersheds in counties of the South Central Texas Region located in the Edwards Plateau Vegetational Area that have significant projected shortages. In other counties, it is assumed that the quantities of brush are not large enough to produce water supply benefits.

There are 1.1 million acres of brush infested land in the 12.8 million acre planning region. The practice has been studied, some watersheds have been treated, and others are presently being selectively cleared. The Texas State Soil and Water Conservation Board, and agencies of the U.S. Department of Agriculture have landowner cost sharing and technical assistance programs for well-planned wildlife habitat compatible brush management/clearing programs. Although it is not possible to estimate the quantities of water that this strategy would contribute during drought, the strategy could contribute to increased streamflows and increased aquifer recharge during non-drought periods. To the extent that such additions to these water resources are stored for use later, the strategy could contribute to supplies available during drought. The water from this strategy would be available for development or recovery by individual water user groups and by water suppliers that serve several different water user groups. Volume II, Section 4C.28 includes a detailed discussion of this management strategy.

Weather Modification

The Weather Modification water management strategy involves the seeding of clouds with silver iodide by licensed professionals to increase precipitation within the planning region. This management strategy has been studied and was being practiced in year 2005 in 15 counties of the region's 21 county area. Although it is not possible to estimate the quantities of water that this strategy would contribute during drought, the strategy could contribute to increased precipitation on rangeland and cropland, as well as increasing stream flows and aquifer recharge during non-drought periods. Increased precipitation on range and cropland would contribute directly to crop, livestock, and wildlife production, and in the case of irrigated crop production would reduce the need to apply irrigation water. To the extent that such additions to these water resources are stored for use later, the strategy could contribute to supplies available during drought. The water from this strategy would be available for development or recovery by individual water user groups and by water suppliers that serve several different water user groups. Volume II, Section 4C.29 includes a detailed discussion of this management strategy.

Rainwater Harvesting

The Rainwater Harvesting water management strategy is the catching and storing of rainwater from roofs of homes and other buildings largely for use at or very near the sites from which the water is caught. The strategy is being used in parts of the South Central Texas

Planning Region for household water supplies for both potable and non-potable uses. Although this strategy is limited due to rainfall levels, time of rainfall events, and capacities of storage facilities, the strategy can supply a part, or in some cases all, of the water needed by individual households and business establishments in areas that are too distant or too sparsely settled to be served efficiently by public systems. Rainwater harvesting in the Trinity Aquifer area of the region (Northern Bexar, Comal, Hays, Medina, and Uvalde Counties) can supplement supplies from wells completed in this aquifer, and thereby extend the capabilities of this aquifer to support the demands that are projected to be placed upon it. Volume II, Section 4C.30 includes a detailed discussion of this management strategy.

Recharge and Recirculation Studies

The Recharge and Recirculation water management strategy involves artificial recharge of the Edwards Aquifer, capture of the resulting increased springflows, and returning these quantities of water to further recharge the aquifer. Artificial recharge could be done using runoff from the Edwards Plateau, water imported from other watersheds, the subsequent increment of springflow resulting from artificial recharge, and/or a combination of these sources. The purpose of this strategy is to maintain springflows at satisfactory levels to protect the habitats of endangered species that exist in the springs and specified reaches of spring fed streams, while at the same time increasing the quantity of water that can be withdrawn from the aquifer to meet the needs of water user groups. The quantities of water that could be withdrawn from the aquifer depend upon the quantities of recharge, the location(s) at which the recharge is made to the aquifer, levels of the aquifer at the time of recharge, residence time of recharged water in the aquifer, and perhaps other factors that are not known or well understood. The major reason for the Recharge and Recirculation strategy is to use the aquifer to store and distribute water to water user groups that have already established themselves in proximity to the aquifer.

Cooperation with Corpus Christi for New Water Sources

This water management strategy involves cooperation and partnership with Corpus Christi of the Coastal Bend Water Planning Region (Region N) in the development of additional or “New Water Sources.” The potentials include desalination, surface water from the Lower Colorado River that might be conveyed via Corpus Christi’s Mary Rhodes Pipeline from Lake Texana to the City of Corpus Christi in exchange for water to recharge the Edwards Aquifer that

is now included in Corpus Christi's permit for Choke Canyon Reservoir, groundwater along and near the Mary Rhodes Pipeline, surface water from the Brazos River Basin via the Mary Rhodes Pipeline, and perhaps other sources in or adjacent to the coastal areas of Regions L and N. In any case, the objective of this option is to benefit both regions by improving efficiency and lowering costs of developing New Sources of water for both regions. One of the ways to accomplish parts of this objective is to increase the usage of already existing facilities and sources of water. Volume II, Section 4C.10 includes a detailed discussion of this management strategy.

Simsboro Aquifer Project (GBRA)

The Guadalupe-Blanco River Authority (GBRA) and Sustainable Water Resources LLC have executed a November 16, 2005 Letter of Interest regarding a water supply project involving the development of groundwater from the Simsboro Aquifer and conveyance of such water for use within GBRA's statutory district. The SCTRWPG recognizes this as a potential water management strategy requiring further evaluation and study prior to implementation.

Brackish Groundwater Desalination – Edwards Aquifer (SAWS)

The San Antonio Water System (SAWS) is studying desalination of brackish groundwater from the Edwards Aquifer outside of the Edwards Aquifer Authority district as a potential source of municipal and industrial water supply. The SCTRWPG recognizes this as a potential water management strategy requiring further evaluation and study prior to implementation.

Mesa Water Supply Project (SAWS)

In a September 20, 2005 letter to the SCTRWPG, SAWS requested that the Mesa Water Supply Project be included in the 2006 regional water plan for further consideration. This strategy involves the production of groundwater from the Ogallala and Simsboro Aquifers and surface water from the Brazos River and transmission of same via pipelines and the bed and banks of the Brazos River to San Antonio. The SCTRWPG recognizes this as a potential water management strategy requiring further evaluation and study prior to implementation.

Lockhart Reservoir (G-21)

The Lockhart Reservoir, in Caldwell County near the City of Lockhart, is recommended as a potential reservoir site. Although the Regional Water Plan recommends other means of

meeting projected water needs in Caldwell County, the SCTRWPG recognizes the strong interest of the local area in shifting from low-quality groundwater sources to a surface water supply system. The reservoir is considered by local public officials to be an important economic development project to create growth opportunities for the area. At the time of this planning report, there are questions about economic feasibility, but the SCTRWPG recognizes the efforts in Caldwell County and by the Guadalupe Blanco River Authority to find a viable strategy to move the project forward. When that strategy is ready, the RWPG will review the Lockhart Reservoir water management strategy as a possible amendment to the Regional Water Plan. Volume II, Section 4C.27 includes a detailed discussion of this management strategy.

Drought Management

Drought Management is not a recommended water management strategy to meet projected water needs in Region L, in part because it cannot be demonstrated to be an economically feasible strategy. The TWDB socioeconomic impact analysis of unmet water needs in Region L shows business production and sales impacts due to unmet water needs (shortages) of \$5,785 per acft/yr in 2010 increasing to \$25,935 per acft/yr in 2060, personal income losses of \$4,225 per acft/yr in 2010, increasing to \$13,139 per acft/yr in 2060, and tax losses per acft/yr increasing from \$205 in 2010 to \$804 in 2060 (Table 4B.1-1).

Clearly, the cost for water to meet projected water needs is only a fraction of the business, personal income, and tax revenue losses from not having the quantities of water needed. For example, in 2010 business losses are \$5,784 per acft of shortage, income losses are \$4,225 per acft, and tax losses are \$205 per acft, while short-term costs of water for recommended water management strategies in the 2006 Regional Water Plan range from \$135/acft/yr for Edwards Irrigation Transfers (by lease), up to \$1,390/acft/yr for Seawater Desalination.

Table 4B.1-1.
Projected Water Needs (Shortages) and Business, Personal Income,
and Tax Losses from Unmet Water Needs
South Central Texas Region

<i>Year</i>	<i>Projected Water Need (Shortage) (acft/yr)</i>	<i>Business Sales Losses (\$millions/yr)</i>	<i>Personal Income Loss (\$millions/yr)</i>	<i>Taxes Lost (\$ millions/yr)</i>
2010	156,596	910	664	32
2020	207,337	2,066	1,175	62
2030	256,430	4,698	2,258	118
2040	306,175	6,160	2,979	154
2050	360,055	8,707	4,351	258
2060	416,855	10,810	5,477	335
		<i>\$/acft</i>	<i>\$/acft</i>	<i>\$/acft</i>
2010		5,784	4,225	205
2020		9,970	5,668	301
2030		18,322	8,806	460
2040		20,121	9,731	502
2050		24,185	12,086	718
2060		25,935	13,139	804

The Water Conservation water management strategies recommended in the 2006 Regional Water Plan, together with the other water management strategies appear to the SCTRWPG to be superior to the use of Drought Management strategies that are costly to the economy and the people of the region, and unpredictable as to time of occurrence and duration. The uncertainty and the cost associated therewith is not acceptable to the SCTRWPG, thus Drought Management is not included as a recommended water management strategy to meet projected needs. However, the SCTRWPG recommends that a more thorough analysis of Drought Management as a water management strategy be conducted during the planning interim (See Section 8.6 for further discussion).

4B.1.3 Summary of Key Information

Pursuant to 31 TAC§357.7(a)(7), regional water plan development shall include evaluations of water management strategies providing certain key information pursuant to TWDB criteria. Key information regarding the 2006 South Central Texas Regional Water Plan is summarized by subject area below.

Quantity, Reliability, and Cost

- Plan reflects substantial commitment to Water Conservation throughout the South Central Texas Region, thereby encouraging efficient utilization of existing water supplies and reducing quantities of new supply needed.
- Plan includes reliable new water supplies sufficient to meet projected drought needs for municipal, industrial, steam-electric power, and mining uses through the year 2060.
- Plan recognizes that water management strategies such as brush management, weather modification, rainwater harvesting, and small recharge dams contribute positively to storage and system management of diverse sources of supply.
- Unit costs associated with new supplies delivered to each water user group range from \$113 per acft to \$1,502 per acft and average about \$870 per acft/yr or \$2.67 per 1,000 gallons based on second quarter 2002 dollars.

Environmental Factors

- See Section 7.3 for summary of environmental benefits and concerns.

Impact on Water Resources

- Plan implementation results in no unmitigated reductions in water available to existing rights.
- Long-term reductions in water levels in the Carrizo Aquifer.

Impacts on Agricultural and Natural Resources

- Inclusion of water management strategies to meet projected irrigation needs (shortages) in full is estimated to be economically infeasible at this time. Irrigation Water Conservation through the installation of Low Energy Precision Application (LEPA) systems is recommended to offset a portion of projected irrigation needs (shortages) in four counties.
- Plan includes Brush Management and Weather Modification which are expected to contribute positively to storage and system management of diverse water management strategies. Weather Modification assists irrigation and dry-land agriculture (crops and ranching), increases water supply for wildlife habitat, and increases Edwards Aquifer recharge.
- Plan includes about 98 percent of potential maximum of unrestricted voluntary transfer of Edwards Aquifer irrigation permits to municipal use through lease or purchase.

Other Relevant Factors per SCTRWP

- Potential effects of Plan implementation on Edwards Aquifer springflows has been identified as a relevant factor by the SCTRWP. As shown in Section 7.1, implementation of Plan is expected to increase long-term average discharges from both Comal Springs and San Marcos Springs.

- Flexibility in the phasing and order of implementation of management strategies comprising the Plan has been identified as a relevant factor or concern by the SCTRWPG. Wholesale Water Provides and water user groups need the ability to expedite or reschedule implementation of any specific management strategy as necessary and appropriate.

Comparison of Strategies to Meet Needs

- Selection of water management strategies comprising the 2006 Regional Water Plan is based upon guiding principles and assumptions of the SCTRWPG as discussed in Section 6.3 of the 2001 Regional Water Plan.

Interbasin Transfer Issues

- Plan includes two potential interbasin transfers from the Lower Colorado River near Bay City to Bexar County and from the Guadalupe River at Lake Dunlap to Bexar County.
- Projected needs (shortages) in basins of origin are met throughout the planning period.

Third-Party Impacts of Voluntary Transfers

- Positive effects for municipal water user groups associated with Edwards Transfers.
- Payment to farmers for voluntary irrigation water transfer provides capital for farmers to install higher efficiency irrigation systems. In many cases, this allows irrigation to continue at present levels so that the transfer does not adversely affect the regional economy.
- Lower water levels in some portions of the Carrizo Aquifer.

Regional Efficiency

- Edwards Transfers require no new facilities. Transferred water would likely be available at or very near locations having projected municipal and industrial water needs in Uvalde, Medina, Atascosa, and Bexar Counties.
- Regional water treatment and balancing storage facilities in Bexar County increase efficiency, improve reliability, and reduce unit cost.

Water Quality Considerations

- Assuming that wastewater treatment standards and plant performance continue to improve over time, no significant impacts on water quality are expected to result from implementation of the 2006 South Central Texas Regional Water Plan.

Impacts on Navigation

- None of the recommended water management strategies of the plan have any identifiable effect on navigation.

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