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CHAPTER 1
APPENDICES

APPENDIX 1A
WATER SUPPLY MANAGEMENT AND DROUGHT CONTINGENCY PLANS

El Paso Water Resource Management Plan

The El Paso Water Resource Management Plan was commissioned in October 1989, by the El Paso Water Utilities (EPWU) and the El Paso County Water Improvement District No. 1 (EPCWID). As the major water users in the area, their goal is to establish a long-range plan for the management of this resource. The plan was completed in three phases. Phase I consists of the evaluation of basic data and results of previous studies, development of population projections for the El Paso area to the year 2040, and the estimation of future water demands for the area over the planning horizon. Phase II consists of the evaluation of sources of surface water, groundwater, and other alternatives, which might supply water for El Paso in the future; assessment of the potential constraints on their development; and formulation of three alternative management plans by combining selected sources of water supplies. The final phase describes the process used to select the preferred alternative and documents this alternative. The selection process includes estimating the cost of the three alternative plans formulated in Phase II, evaluating and ranking the three plans, and selecting the preferred plan. The principal elements of the selected plan are as follows:

- Immediate implementation of an aggressive water conservation program.
- Development of a twenty-fold increase in wastewater reuse.
- Immediate implementation of an accelerated program of acquiring Rio Grande Project surface water supplies.
- Development of agreements with EPCWID to obtain additional Rio Grande Project surface water in exchange for treated wastewater and by means of drought contingency contracts in water-short years.
- Construction of a 3,000 acre-ft regulating reservoir in the vicinity of Rio Bosque Park by 1993.
- Perfection of an agreement with the EPCWID and the U. S. Bureau of Reclamation (USBR) by 1992 enabling the Public Service Board (PSB) to store its Project surface water supplies in Elephant Butte Reservoir and to make deliveries of surface water from storage during the non-irrigation season.
- Expansion of the groundwater production from the Mesilla Bolson in Texas at an average increase of 1500 acre feet per year starting immediately and continuing through the year 2010.
- Acquisition of additional groundwater and/or surface water from New Mexico at an average incremental increase of 2,300 acre feet per year commencing in 2009.
- Production of groundwater from the Hueco Bolson will be gradually curtailed to those periods when the water supplies from all other sources are insufficient to meet

demands. Reclamation of wastewater at the Fred Hervey Plant will increase to capacity, with continued re-injection into the Hueco Bolson.

The *Feasibility Report on Wastewater Reuse Opportunities*, prepared in 1992, was developed from the recommendations proposed by the Water Resources Management Plan. It outlines the reclaimed water facility needs to 2002. It identifies the need to maximize the amount of reclaimed water used. It provides criteria for identifying potential reclaimed customers within the four proposed service areas around the existing wastewater treatment plants. Preliminary layouts of these distribution systems are also presented. At press time, most all of the recommendations found in the wastewater reuse feasibility report had been implemented, and storage and distribution systems are either in operation, construction, or in a design phase.

El Paso County has prepared a plan to provide water and wastewater service to residents outside the City of El Paso by 2010. *The Water and Wastewater Management Plan for El Paso County*, prepared in 1988, recommends feasible methods for providing these services; describes the facilities that would be required; provides schedules for the phased implementation; provides cost estimates for developing these services; and develops methods for the managing and financing these systems.

City of El Paso Drought Contingency Plan

The El Paso Water Utilities (EPWU) has taken a comprehensive approach to conservation and drought contingency planning efforts. In compliance with 30 T.A.C. § 288 Drought Contingency Plan Requirements, it has developed a plan to manage emergency conditions. The purpose of the plan is to assist in implementing the Water Resources Management Plan, which identifies the need to plan for periods of critical water shortages as a result of either a drought or emergency interruption to available water supplies. The plan is also intended to identify successful public information strategies that will motivate the community to reduce normal consumption to drought tolerances, to evaluate plans around the county to recommend best practices for City use, and to identify critical points of change that would result in an outage. The objective is to continue to deliver a cost-effective, adequate, safe and reliable supply of high quality water.

The City's conservation efforts include initiating a water rate structure based on use, low water use plumbing fixtures, water wasting prohibition, water audits and leak detection, and an ongoing public awareness and education campaign. Other elements of the water conservation program that are still in the process of being implemented are xeriscaping and increasing water audit and leak detection programs. Response to drought or emergency situations consists of the EPWU's ability to foresee points where water allotments or water availability would be affected. The severity of the emergency is classified by one of the following three stages:

Stage I: A surface water allotment of less than or equal to 3.0 acre feet per acre; or when demand is projected to exceed 90% (but less than 95%) of available capacity.

Stage II: A surface water allotment of less than or equal to 2.5 acre feet per acre; or when demand is projected to exceed 95% (but less than 100%) of available capacity.

Stage III: A surface water allotment of less than or equal to 2.0 acre feet per acre; or when demand is projected to exceed 100% of available capacity.

Once any stage is declared, the General Manager of the EPWU can implement a variety of measures designed to conserve water. These range from use restrictions to citations for noncompliance.

Other entities in the area that have developed conservation and drought contingency plans are the El Paso County Water Authority M.U.D. (EPCWA) and the Lower Valley Water District (LVWD). The LVWD Plan went into effect on September 1, 1999, and closely follows the outline for the Plan developed by EPWU. Guidelines and recommendations are similar to those mandated by the EPWU's Plan. The EPCWA developed their Water Conservation and Drought Contingency Plan in an effort to better utilize the area's resources. EPCWA water conservation plan consists of a comprehensive education and information program, a water conservation oriented rate structure, a landscape conservation program, watering restrictions, and a plumbing code and inspection program. As part of this plan, a detailed drought contingency plan was developed to guide the Board in initiating drought contingency measures. Different

levels of water usage would be curtailed in response to the severity of the emergency. Again, this plan is similar in content to the EPWU's Plan.

Town of Van Horn Water Conservation Plan

The Town of Van Horn adopted a water conservation plan in July 1996 (Ordinance No. 97-07-181). The Town is entirely dependent on ground water produced from city-owned wells completed in the Wild Horse Flat aquifer. The Water Conservation Plan adopted by the Town of Van Horn consists of the following key elements:

1. An education program designed to provide customers with information on methods of water conservation.

2. Water service agreements that require all customers to accept the terms of the Water Conservation and Drought Contingency Plan. The service agreements require customers to limit lawn watering to the hours between 6 p.m. and 10 p.m.; and to reduce the unnecessary usage of water by eliminating runoff from private and corporate properties onto public rights-of-way.

3. A retrofit program to encourage customers to install water-saving plumbing fixtures whenever repairs are made or whenever new structures are built.

4. An increasing water rate structure to promote water conservation practices. The Town will not adopt declining rate charges, as such rates discourage water conservation. Rate charges will be reviewed and annual adjustments made in necessary, such as an excess use fee or an increasing block rate.

5. Metering of all connections in town, except fire hydrants. The metering program will involve regular testing and maintenance of meters.

6. Landscaping and irrigation procedures designed to save water and money.

7. A leak-detection and repair program. The leak detection program will include:

    a. Checking by the billing department to identify areas of high water use and to notify customers of potential water leaks.
    b. Comparison of monthly water sales and water production.
    c. Visual inspection by meter readers and city employees for abnormal conditions indicating leaks.
    d. Prompt repair of water system leaks and water main breaks.

8. Recycling and reuse of wastewater to irrigate the municipal golf course.

9. An annual report on the progress and effectiveness of the water conservation program. The report will include:
    a. Public information disseminated during the year.
    b. An assessment of public response.

c. A discussion of the effectiveness of the water conservation plan in reducing water use.
d. As assessment of the progress of the plan and the status of the Town's water conservation program.

Town of Van Horn Drought Contingency Plan

Van Horn's Drought Contingency Plan was adopted along with the Water Conservation Plan as part of Ordinance No. 96-07-181 on July 2, 1996. The plan provides response measures to disruptions in supply caused by drought, contamination or drastic temporary or long-term failure of the local water distribution system.

The plan is to be enacted based on a declaration of emergency. An emergency is considered to exist when:

- System demand exceeds production or storage capacity measured over a twenty-four (24) hour period, and refilling the storage facilities is rendered impossible, or
- When the Town is experiencing a period of extreme drought such that normal patterns of use will deplete the water level, or
- When the town experiences a power outage or power failure from the electric supplier for a period longer than 30 minutes.

A declaration of emergency must be followed immediately by efforts to notify residents of the emergency and to inform them of the steps to be taken to address the problem.

The plan includes provisions for different levels of water rationing when certain "trigger conditions" are reached. Although the factors that may initiate a given response are not specified, the stages of water rationing described by the plan are the following:

Stage I (Mild Rationing Conditions): The public is informed through the news media of the need to reduce water usage. Specific steps may be spelled out by the news media. Lawn watering and other outdoor uses may be restricted to alternate days, based on the last number of the street address, and watering will be allowed only between the hours of 9 p.m. and 9 a.m.

Stage 1-A (Limited Water Usage): In Stage 1-A, all relevant limitations associated with Stage I apply. The Town may, however, prohibit washing of automobiles, window washing and pavement washing. Furthermore, the Town may limit water usage to the volume determined by the water plant's capability to provide continuous service in direct proportion to the loss of production/refill capability at a plant where no back-up facilities are available to remedy the shortage.

Stage II (Moderate Rationing Conditions): All outdoor water usage is prohibited. Usage for livestock is exempt.

Stage III (Severe Rationing Conditions): All outdoor water usage is prohibited. Livestock may be exempt by the Town. Customers will be limited either to a fixed percentage of average daily use in the preceding month, or to a maximum number of gallons per meter per week. The volume of water use allowed under Stage III conditions must not exceed 80 percent of the system's current production/refill capability.

Stage IV (Critical Emergency Conditions): All uses of the public water supply will be banned except in cases of emergency.

The plan also provides for penalties to be assessed for violations of the emergency rationing conditions.

First violation: The Town may install a flow restrictor in the line to limit the amount of water that will pass through the meter in a 24-hour period. The cost, to be charged to the customer's account, will not exceed $50.

Subsequent violations: The Town may terminate service at the meter for a period of 7 days, or until the end of the calendar month, whichever is less. The normal service trip fee of the Town shall apply for restoration of service.

Any violations**:** In addition to the above, the Town may file a complaint against violators of the ordinance in municipal court.

Town of Sanderson / Terrell County WCID No.1 Water Management Plan

The Terrell County WCID No.1 is located in the unincorporated community of Sanderson. A petition for the creation of the district was submitted to the Terrell County Commissioners Court on April 23, 1958. On May 19, 1958, the Commissioners Court approved the creation of the District under the provisions of Chapter 3A of Title 128, V.A.T.C.S.

The district obtains its water from the Edward-Trinity aquifer. Water is supplied from six well fields owned and operated by the District. The well fields can produce a combined 408.5 gpm. Ground storage facilities total 253,000 gallons, and elevated storage facilities total 200,000 gallons. The district also maintains a 100,000-gallon fire protection and reserve storage tank. The district provides water to approximately 585 customers in the community of Sanderson. The system is operated by a Board of Directors, elected by the residents of Sanderson.

The water management plan for the Terrell County WCID No.1 is designed to encourage reduced water consumption for each specified use by implementing efficient water use practices. The plan includes the following key elements.

1. An education and information program to disseminate educational materials on water conservation practices to customers.

2. The District will adopt plumbing codes as en effective method of conserving water. The codes will seek to set following standards for plumbing fixtures:

Fixture	**Standard**
Shower Heads	No more than 2.75 gpm
Lavatory and kitchen faucets	No more than 2.75 gpm
Flush valve toilets	No more than 2.00 gpm
All other toilets	No more than 1.6 gpm
Urinals	No more than 1.00 gpm
All hot water lines	Must be insulated
Swimming pools	New pools must have recirculating filtration equipment
Drinking water fountains	Must be self closing

3. The District will encourage its customers who do not have water-saving devices installed at homes and in businesses to utilize water conservation fixtures and appliances.

4. The District will adopt and implement a water rate structure that will encourage water conservation. The rate structure will include a step rate to increase with increased water usage or a flat rate.

5. The District will meter all connections, and will implement a regular program of testing and maintenance.

6. The District will establish a leak detection and repair program, which will include:
   a. Constant monitoring and inspection of the system by meter readers and/or the District's employees.
   b. Comparison of monthly water sales and water production.
   c. Immediate repair of system leaks and water main breaks.
   d. An annual water audit.

7. The District will implement and enforce the water conservation program by adopting a resolution that endorses procedures and policies outlined in the plan.

8. The District will perform periodic evaluations and modifications to assure effectiveness of the water conservation plan on an annual basis. The District will also submit to the TWDB an annual report until financial obligations have been discharged by the state. The annual report to the TWDB will include information on the following:
   a. Progress on the implementation of the program.
   b. The status of the program.
   c. The effectiveness of the program.

Terrell County WCID No.1 Drought Contingency Plan

The drought contingency plan (Emergency Water Demand and Management Plan) adopted by the Terrell County WCID No.1 includes the following elements:

Trigger conditions are identified which will justify the implementation of the plan. The following conditions are defined in the plan:

a. "mild conditions" exist when demand on the District's water supply reaches or exceeds 80 percent of the production capacity of such facilities for 5 days.

b. "moderate conditions" exist when demand on the District's water supply reaches or exceeds 90 percent of the production capacity of such facilities for 5 days.

c. "severe conditions" exist when water demand reaches or exceeds 100 percent of the system's capacity for 2 consecutive days.

The emergency plan may also be implemented in case of:

a. failure or a malfunction of a major component of the water system which may threaten the health of the District's customers; or

b. contamination of the water supply and/or system.

1. The District will implement emergency demand and response measures once the trigger conditions are reached and identified. The responses are:

Mild Conditions

a. Inform the public by mail and advise customers of factual conditions. Update customers about the declining water supply.
b. Advise customers of measures that should be taken to conserve water.
c. Notify major water users of the situation and request voluntary reductions.

Moderate Conditions

a. Continue implementation of actions set accordingly in the preceding phase.
b. Advise major water consumers and customers to restrict water from outdoor sprinkling, watering of lawns and shrubs, and washing of vehicles.
c. Restrict public water use not essential to the health and safety of the community.

Severe Conditions

a. Continue implementation of actions set under mild/moderate conditions.
b. Inform and advise daily through local newspaper or posting of public notices of the situation.
c. Notify all customers of existing severe conditions and request voluntary reduction of all nonessential use of water.

d. Prohibit and enforce outside water use. Take immediate action if customers do not comply.

2. Once trigger conditions and potential emergency measures are identified, the public will be informed and notified of existing conditions.

3. When one of the trigger conditions has been reached, the District will order the initiation of public notification. This will include:

   a. Monitoring of water usage as well as performance of the system.
   b. Initiation of the Emergency Water Demand Management Plan.
   c. Inform all customers of the initiation of the plan.

5. Once the emergency situation remains below the trigger conditions for at least five days, the emergency plan may be terminated. The public will be informed by posting notices, by mail and/or by delivery of notices to customers.

Fort Davis Water Supply Corporation Drought Contingency Plan

This plan was developed by the Fort Davis Water Supply Corporation (FDWSC) using initiation criteria that are based upon known system capacity limits. The plan is aimed at conserving and protecting the water supply and facilities with an emphasis on public health and fire safety. The FDWSC will involve, notify, and educate the public as needed, and will coordinate with the Regional Water Planning Group. Non-compliance with these regulations will be enforced with fines and interupted water service. The Manager of FDWSC can allow variances from these restrictions if public health, sanitation, or fire protection would be adversely affected otherwise.

Stage 1 Normal and Mild Water Shortage Conditions

This stage is initiated annually between May 1 and August 31. Increased public awareness is the primary goal. Customers are requested to conserve and minimize non-essential use. Non-essential uses include but are not limited to: landscape irrigation, washing of vehicles, buildings or pavement, filling of pools and fountains, flushing gutters, and water flowing into street.

Stage 2 Moderate Water Shortage Conditions

This stage is initiated when total daily water demand ranges from 60-70% of the system's production capability. The goal is to reduce daily usage to less than 60% of the system's production capacity for 3 consecutive days. Voluntary water reductions are requested by limiting non-essential uses. Water mains are not flushed. Water is not sold for road maintenance. This stage is terminated after the trigger conditions cease to exist for three days. Stage one is then in effect.

Stage 3 Severe Water Shortage Conditions

This stage is invoked when total daily water demands exceed 75% of the system's production capacity. The goal is to reduce daily usage to less than 75% of the system's production capacity for 3 consecutive days. Water mains are not flushed. Water is not sold for road maintenance. Mandatory restrictions occur in 2 steps. If step one does not reduce use to less than 75% after 3 days, step two is enacted.

Step one: Residential landscape and other outdoor watering is limited to 8 to 10 AM and 8 to 10PM on Monday, Tuesdays, Thursday, and Friday, depending on numeric address (odd or even). Commercial, industrial, and institutional users are limited to the same time windows on Wednesday and Sunday.

Step two: Same restriction as step one, but on one day of the week only. Residential users can water on Tuesday or Thursday; all others can water on Sunday only.

This stage is terminated after the trigger conditions cease to exist for three days. Stage two is then in effect.

Stage 4 Emergency Water Shortage Conditions

This stage is invoked if total daily water demands exceed 75% of the system's production capacity for a period of more than 5 days, or if the system experiences a major line break or pump failure, or if contamination of the supply occurs. The goal is to reduce daily usage to less than 75% of the sytem's production capacity for 3 consecutive days, or repair the system, or remediate the contamination. Water mains are not flushed. Water is not sold for road maintenance. This stage is terminated after the trigger conditions have been corected or cease to exist for three days.

El Paso County Water Improvement District No. 1 Water Management Plan

Mission, and General Description:

The El Paso County Water Improvement District No. 1 (EPCWID No.1) was organized in 1917 as part of the U.S. Bureau of Reclamation's Rio Grande Project. A five-member elected board governs the district. The EPCWID No.1 has ownership of all project works, easements, ditches, laterals, canals, drains, and rights-of-way associated with the project.

The Rio Grande Project provides full irrigation service to water-rights lands in the Elephant Butte Irrigation District and in the EPCWID No.1. The EPCWID No.1 has 69,010 water-rights acres, all located in the bottomlands of the river. Although the district does not provide wholesale public water supply, it supplies water to the City of El Paso for municipal and industrial purposes.

The principal focus of the EPCWID No.1 is to furnish high-quality irrigation water to El Paso County producers in amounts that allow for management flexibility and enhanced opportunity for increased farm revenue.

Water Resources and Supply:

The sources of water for the EPCWID No.1 are the headwaters and tributaries of the Rio Grande and the Elephant Butte and Caballo reservoirs. The amount of water available to Texas is specified by the Rio Grande Compact and is a percentage of the water in the Rio Grande passing the gauging station at Otowi, New Mexico. Since 1990, the annual allotment to the EPCWID No.1 has been 376,862 acre-ft. The district's board determines the individual allotments, which translates to 4 acre-ft per acre since 1990. The bulk of the water is available for use from March through September.

Water Use:

The principal use of surface water in the EPCWID No.1 is for field and vegetable crops and commercial orchard irrigation. Field crops are cotton (mostly Pima), alfalfa, corn, sorghum for silage, and wheat. The principal vegetable crops are peppers and onions. There are over 8,000 acres of commercial pecans in the valley. In addition to commercial agriculture production, irrigation water is distributed to numerous small tracts (less than 2 acres in size) that have the appropriate water rights.

Although the EPCWID No.1 is not a provider of potable water, the district furnishes water to the City of El Paso and to the Lower Valley Water District for subsequent treatment and municipal and industrial use.

Management of Water Supplies:

The EPCWID No.1 has little ability to manage the over-all supply of water to the district. This is determined largely by the Rio Grande Compact and various other contracts with the U.S. Bureau of Reclamation. However, once water reaches the first diversion structure for the district, the efficiency of use of the water is largely the responsibility of the district and individual water users. Loss of water during transport can represent a significant loss of water for agricultural producers. Since the district has ownership of all project works, ditches, laterals, canals, and drains, a loss minimization

program is in effect. The district has a flow telemetry system in place to monitor major canals.

Actions, Procedures, Performance, and Goals:

Agricultural producers can order water, so as to be able to time water applications. The producer works with a dispatcher and a ditchrider to prevent unnecessary water losses. Water is metered to an individual producer, and producers are charged for water used. A new water allotment schedule is now in effect, such that:

- Allotment 1 represents the base allotment (currently 2 acre-ft) which producers are charged, whether or not the water is used.
- Allotment 2 represents an additional amount of water (currently 2 acre-ft, such that allotments 1+2 represent the total allotment) available to producers. Charges are based on the amount of water used.
- Allotment 3 represents water available from October through February. Producers are charged only for water that they use.
- Allotment 4 represents water that producers can use from a pool set aside by the district. This allotment is for emergency purposes to finish a crop, and will be charged accordingly at a higher rate.

The EPCWID No.1 monitors water levels in Elephant Butte Reservoir and snow pack levels of the headwaters of the Rio Grande. Reductions in potential allotments are forecast based on the amount of storage in Elephant Butte Reservoir. The district is prepared to issue warning forecasts to help agricultural producers plan cropping systems, back-up water supply systems, and arrange financing for potential water shortfalls.

The EPCWID No.1 recognizes that agricultural demand for water, along with increasing demands by the City of El Paso and the Lower Valley Water District, exceeds the available water supply to the district. As such, the district has developed a public/clientele information program that focuses on water conservation and irrigation and saline soil management through a newsletter and public meetings. The district cooperates with the Texas Agricultural Extension Service, Natural Resource Conservation Service, and other state agencies to educate clientele in improved water management practices.

Drought Contingency:

Drought conditions that impact the EPCWID No.1 are those that affect the headwaters of the Rio Grande and its tributaries, such that Rio Grande Compact water delivery requirements into Elephant Butte Reservoir are reduced. The district's board of directors determines when a drought exists. Generally, when water storage in Elephant Butte Reservoir is less than 0.9 million acre-ft during the irrigation season (March through September), drought conditions are declared.

During times of drought, the district will allot water to all water users on a pro rata basis. The extent of the water allotments will be dependent on the severity of the drought conditions, and will remain in effect until the conditions that triggered the drought contingency no longer exist. Under Section 11.083 of the Texas Water Code,

noncompliance with the drought contingency plan is punishable by fine and/or incarceration.

(Source: "Operations Guide" of EPCWID No.1 dated July 9, 1998, U.S. Department of the Interior Bureau of Reclamation's "Legal and Institutional Framework for Rio Grande Project Water Supply and Use" dated October 1995, EPCWID No.1's Drought Contingency Plan (recent), and personal communication.)

Hudspeth County Conservation and Reclamation District No. 1 Water Management Plan

Mission, and General Description:

The irrigation district plan for the Hudspeth County Conservation and Reclamation District No. 1 (HCCRD No.1) was developed in November of 1991. The district occupies approximately 18,300 acres of Rio Grande River bottomlands from the El Paso/Hudspeth County line downstream to Fort Quitman. The district was created to provide adequate irrigation to those lands.

The HCCRD No.1 was organized in 1924 to consolidate water diversions from the Rio Grande. Under a Warren Act contract, the district has taken a direct diversion of the river since 1925. A board of directors governs the district, with headquarters in Fort Hancock, Texas.

Water Resources and Supply:

The district's primary source of water includes untreated water obtained from permitted Rio Grande diversions; drainage waters; return flows from farming operations; operational waste associated with the U.S. Bureau of Reclamation's Rio Grande Project; and return flows from El Paso water and sewage treatment plants. The district's operations are primarily recycling and reuse that further the use of the waters in the Rio Grande Basin. Because the water supply to the HCCRD No.1 is totally dependent on the water supply to the EPCWID No.1, the supply is erratic, and the optimal utilization of available water is difficult.

Water Use:

All water used in the district is for irrigation. The HCCRD No.1 does not supply potable water. When ample water is available, lands in the district are quite productive. Cotton, small grains, forages, and irrigated pasture represent the principal crops.

Management of Water Supplies:

The HCCRD No.1 has constructed a system of canals, drains, and regulating reservoirs to distribute irrigation water through the district. Over the last several years, the volume of the regulating reservoirs has been expanded by 3,200 acre-ft. A program to reduce canal losses is in place.

The HCCRD No.1 taxes water-use customers on a per acre basis of irrigable land. Additional assessments are made on acres watered under percentage water conditions, in order to equate the taxes with benefits delivered. The district meters water delivered to customers. When the supply of water exceeds customer demands, the district may sell water to out-of-district purchasers.

Actions, Procedures, Performance, and Goals:

The goal of the HCCRD No. 1 is to conserve the waters of the Rio Grande to the maximum extent possible. As such the district seeks the cooperation of all users. The district also holds regular public meetings. The public may have direct input during the meetings or through private contact with a district board member.

Currently, the district has an annual evaluation of the conservation program, and may make revisions to the program. If changes have been made to the plan, an annual report will be generated.

Between 1991 and 1995, the HCCRD No.1 in cooperation with the TWDB, Natural Resource Conservation Service, and the Texas Agricultural Extension Service provided water conservation brochures, conducted irrigation management workshops and field days, implemented a water metering program, and studied canal water losses.

Drought Contingency:

The HCCRD No.1 bases drought contingency planning on evaluation of the water supply projected and received by the EPCWID No.1, since all waters received by HCCRD No.1 are recyclable water from El Paso County. Since conditions, to a degree, can be predicted prior to a crop season, the drought mitigation plan largely affects agricultural producers cropping plan. When a mild or moderate predicted shortage occurs, the HCCRD No.1 will notify its clientele of the amount of the expected shortage. For a severe shortage, where the water supply will provide less than 50 percent of the expected demand, agricultural producers will be asked to prioritize their water requests based upon crop needs.

APPENDIX 1B
DROUGHT CONTINGENCY PLANNING GUIDANCE DOCUMENT

An important distinction to understand, within the context of this discussion, is the difference between a water conservation plan and a drought contingency plan. A water conservation plan includes a set of measures that an entity follows on a regular basis. A conservation plan can be a crucial tool if drought is foreseen as a possibility and measures are taken to increase the amount of water on reserve against such a possibility. A water conservation plan may include:

- provisions for the recycling (reuse) of effluent,
- restrictions on the use of water for irrigation of lawns, and public and private facilities,
- installation of low-use plumbing fixtures in private and public buildings, and
- pricing strategies that discourage excessive water use,
- provisions for an unexpected increase in public demand that stresses the delivery capability of a water provider.

A drought contingency plan, by contrast, includes more stringent procedures than those associated with water-conservation plans. The procedures may be implemented, either entirely or in stages, when certain operational early indicators of drought are identified. These may include one or more of the following:

- a specified period of recorded below-normal rainfall,
- decreasing flow in streams that normally flow because of the discharge of ground water,
- decreasing water levels in surface reservoirs,
- declining water levels in municipal supply and/or observation wells, and
- specified increasing levels of stress in plant and animal communities that are considered to be indicators of “normal” semi-arid conditions.

Senate Bill 1 of the 75th Legislature established statutory requirements for all public water suppliers to develop and implement drought contingency plans (Title 30, Texas Administrative Code, Chapter 288, Subchapter B). The law also provides that plans are to be submitted to the TNRCC in support of applications for new or amended permits to use surface waters of the state. The TWDB also requires water conservation and drought contingency plans when applying for state financial assistance. Upon adoption of the plan, there are certain submittal requirements as shown below that are specified in TNRCC rule.

- Retail public water suppliers serving 3,300 or more connections are required to submit their adopted plan to the TNRCC by September 1, 1999. Thereafter, any revisions to the plan are to be submitted to TNRCC within 90 days of adoption.

- Any new retail water supplier serving 3,300 or more connections are required to prepare and adopt a plan within 180 days of beginning operations and are to submit the plan to TNRCC within 90 days of adoption.

- Retail public water suppliers serving fewer than 3,300 connections are to prepare and adopt plans by September 1, 2000. Such plans do not have to be submitted to TNRCC but must be available for inspection by TNRCC staff.

- All public water suppliers are to provide a copy of their adopted plan to the appropriate Regional Water Planning Group(s) for the region(s) within which the water supplier operates.

Key Steps in Preparing a Drought Contingency Plan

A drought contingency plan should be tailored to the unique conditions and circumstances of each individual water supplier. With few exceptions, no two water systems face identical circumstances or conditions with respect to water supply availability, water demand, or the capacity and limitations of the water system. Even water suppliers that rely on a common source may have a different risk of shortage due to differences in water rights or the quantity of water available under contract from a wholesale supplier. Despite the many differences among water suppliers, a standard step-wise process can be followed to develop an effective drought contingency plan to satisfy state requirements. Following are six basis steps offered in the TNRCC Handbook for Drought Contingency Planning to guide public water and wholesale suppliers through the process of preparing a drought contingency plan:

Step 1: Involve the public in the development of the plan. To a large degree, the successful implementation of a drought contingency plan depends upon how well the public understands the need for and goals of the plan, as well as the degree to which the public complies with the drought response measures called for by the plan. It is important to give the public a say in how the plan is designed and how and under what conditions it will be implemented.

Step 2: Assess the water system's vulnerability to drought and define criteria for initiating or terminating drought response measures. Most drought contingency plans achieve this by defining three to five drought response stages, along with "triggering" criteria both for initiating and terminating each stage. This measured or gradual approach allows for timely and appropriate action as a water shortage or other condition develops, thereby minimizing the possibility of over- or under-reacting.

Step 3: Determine drought response goals and measures. TNRCC rules require drought contingency plans to specify the response measures or actions that will be implemented when predetermined triggering criteria are met. Generally, the type of response measures employed for each stage should be related to the severity of

the water supply or demand conditions and on specific goals for each stage. For drought contingency plans that are designed to address water shortage conditions, goals are typically expressed in terms of targets for reduced withdrawals from the supply source. For plans that are designed to address system capacity constraints, goals are usually expressed as targets for reducing water demand. In either situation, the assessments performed in the previous step should provide insights into the amount of withdrawal needed to be reduced for each stage of the plan.

Step 4: Design a multistage plan. Once triggering criteria, goals and drought response measures have been identified; the next step is to develop the basic structure of the drought contingency plan. As previously noted, drought contingency plans typically provide for the implementation of drought response measures in successive stages. The idea is to implement response measures that are geared to the severity of the situation with the hope that actions taken in one stage will be sufficient to stabilize supply and/or demand conditions and avoid the need to progress to another response stage with more stringent measures. Drought response measures are often cumulative whereby implementation of measures prescribed in one stage may continue in subsequent stages.

Step 5: Formally adopt the plan along with any ordinances or rules required for implementation and enforcement of the plan by the governing body of the entity. For municipal water systems, adoption would be by the city council as an ordinance. For other types of publicly owned water systems (e.g., utility districts), plan adoption would be by resolution of the entity's board of directors adopting the plan as administrative rules. For private investor-owned utilities, the drought contingency plan is to be incorporated into the utility's TNRCC-approved rate tariff.

Step 6: Periodically review and update the drought contingency plan to reflect changed conditions and lessons learned from implementing the plan. This review should focus on any required modifications in triggering criteria to reflect changed conditions. For example, barring any increase in available water supply, population growth and increasing water demand may increase a water supplier's vulnerability to drought. Triggering criteria might therefore be adjusted to initiate drought response measures at a higher water supply threshold for triggering drought response measures. TNRCC's rules require that each supplier drought contingency plan be updated at least once every five years.

APPENDIX 1C
LOCAL AND INTERNATIONAL WATER ISSUE SURVEY

Economic Development Strategy for the Sustainable Use of Water:

In April of 1996, the Center for Environmental Resource Management (CERM) undertook a comprehensive effort to identify the critical water issues in order to create an economic development strategy for the region. This strategy is based on a sustainable approach to the region's water resources. A stakeholder taskforce was formed that included researchers and individuals representing a cross section of interests throughout the region. The concerns of this collective group were compiled and the results presented in *An Economic Development Strategy for the Sustainable Use of Water in the Paso del Norte Region* report and a series of technical papers written addressing these issues. The following discussion is based on and taken from this report.

The regional nature of the area and, more critically its water resources, dictates that the different entities in the area work together. Regional attempts to address water issues in the past have been constrained by jurisdictional disputes, competing needs, conflicting and competing laws, the large number of entities involved, a lack of reliable data, and the unwillingness of the parties to meet in a nonconfrontational manner. The stakeholder taskforce developed a list of priority issues that need to be resolved. The issues are as follows:

- Inventory the Extent of Regional Aquifers: Political jurisdictions have defined the extent to which some of the aquifers in the region have been examined. This also holds true for brackish and saline fractions of aquifers. Determining the quantity and quality of all ground water resources was deemed the single most important factor in guiding economic planning.

- Promote the Use of Treated Effluent: Treated effluent is a viable water source for non-potable applications. Utilities should analyze the potential for utilizing treated effluent and use incentives to promote its use. Future land use planning efforts should take into consideration this reuse potential and site water-using industries in the vicinity of wastewater treatment plants.

- Resolve Disputes over Ownership of Water Rights: The ownership of water rights should be unequivocally established. This will facilitate the transfer of water between uses. A proactive resolution process that is equitable to all parties needs to be developed for settling all disputes.

- Mandate Water Conservation: Water conservation measures that are clearly explained and consistently enforced should be mandatory for all entities.

- Drought Management Planning: Drought management planning should be undertaken on a regional basis due to the nature of El Paso's surface water. The drought plan should take into account the needs of municipal, industrial, and agricultural users.

- Public Education: Educate the public about the importance of water conservation through all means. The goal of the education effort is to deepen the public's understanding for the need for conservation and to highlight actions that individuals can take to be part of the solution.

- "Borrow" Irrigation Water: Surface water can be provided for industrial and municipal use by utilizing irrigation water, and then returned as treated wastewater effluent for irrigation.

- Regional Binational Planning: Communication methods between the two countries along the border need to be enhanced to provide for better planning and management of the region's water resources. The responsibilities of existing agencies need to be augmented or new agencies need to be created to address issues on a binational level.

- Biological Inventory: This assessment would serve as the baseline for all proposed development along the river. The river ecosystem should be preserved, and this comprehensive look at the biological inhabitants can help protect sensitive areas.

- Sale of Agricultural Water: Legislation regulating the transfer of water allotments needs to be modified. Farmers need to be able to sell off unused portions of the water allotments without losing the right to that allotment. This will allow for a more efficient reallocation of water for municipal use.

- Extend Water to Unserved Areas: All inhabitants of the area have the right to sufficient quality water for consumption. These people should be served by extending water lines or by any other means. Future development should occur in an orderly fashion to ensure they are provided with water.

- Rate Structures: Rate structures need to be developed on a long-term sustainable use. The "real cost" of water needs to be reflected in the rates. The cost for finding, developing, and delivering water needs to be included.

- Regional Planning and Management: This issue is critical for the continued growth and development of the entire region. A unified, region-wide water planning and management effort needs to be developed to coordinate and develop the policies that are going to govern water use in the region. Input from all interested parties needs to be coordinated to ensure planning takes into account the concerns of the region.

- Analyze the Impact of New Development: The ability of a utility to supply water can be greatly impacted by development trends. Planning agencies and utilities need to work together to ensure the utility can meet the changing needs.

- Coordinate Water Service Providers: The region is rather complex due to the numerous water providers. These water providers need to work together in order to solve the many shared problems facing them. Sharing information and the

development of joint ventures would be facilitated if a medium for working together were developed.

- Promote Xeriscaping: A mechanism to promote the use of drought tolerant plant needs to be developed.

The report acknowledged that while there are numerous other issues that specific groups would like to see addressed, these are the prevailing issues that impact everyone in the region. This above list was not intended to provide the order in which the issues should be resolved, but rather it was intended to be a beginning for the entities within the region to begin to work together towards a common goal.

APPENDIX 1D
PROJECTS AND STUDIES OF THE EL PASO WATER UTILITIES AND THE TEXAS WATER DEVELOPMENT BOARD

Study Report: Aquifer Storage and Recovery Investigation – Final Report:

Prepared in September 1995, this report presents findings and conclusions of a study which investigated the conceptual feasibility of using aquifers to store surface water supplies for later withdrawal. The study evaluated the concept of ASR as an alternative to surface storage of excess river flow. The sites selected for evaluation were:

- Northeast El Paso, Texas
- Las Cruces Well Field, New Mexico
- West Mesa area, New Mexico
- Canutillo Well Field, Texas

Each site was evaluated for a range of water supply conditions to make a preliminary assessment of site feasibility and to obtain preliminary estimates of facility sizing and costs. The Northeast El Paso site was identified as the most favorable of the four sites for implementing ASR. The study found that the Northeast El Paso site is only site of the four listed above with sufficient underground storage capacity for a large-scale ASR project, and a reasonably high assurance of long term recovery of stored water. The West Mesa site was identified as having suitable long-term storage capacity of relatively large volumes of water, but the existence of a large cone of depression indicated that an ASR project might result in relatively low recovery efficiency. The costs of water storage at the Northeast El Paso and West Mesa sites were estimated to range from $300 to $400 per acre-ft of storage for Intermediate and High Year flow conditions to $800 to $1,000 per acre-ft for Low Year flow conditions. The costs of implementing ASR at the Las Cruces and Canutillo sites were estimated to be significantly low – but both of these sites were determined to have lower storage capacity. The lower storage costs at the Las Cruces and Canutillo sites were related to existing infrastructure which would reduce development costs.

El Paso - Las Cruces Regional Sustainable Water Project - Concept Design of ASR Wellfield and Collection Facilities:

Prepared in July 1999, this report provides a conceptual level design and estimates for an Aquifer Storage & Recovery (ASR) plan. The intent is to provide terminal storage for seasonal surplus flows of up to 40 mgd produced by the proposed Upper Valley Water Treatment Plant in Northwest El Paso.

Earlier investigations point to Northeast El Paso as the favorable site due to the hydrogeologic conditions, which will provide sufficient underground storage for large scale ASR and high assurance of long-term recovery. Five (5) ASR areas in Northeast El Paso are identified in the report.

Wells will be designed as recharge & recovery wells. Seventy-one wells, drilled to an average depth of 700 feet, will recharge 40 mgd at a rate of 500 gpm/well. Thirty-

four of these wells will recover 40 mgd at a rate of 1000 gpm/well. Blow-off ponds with a capacity of 180,000 gallons of storage will be required at each well with the possibility of combining storage for multiple wells. Locations will be selected on a preferred spacing of 2000 feet, forecasted demand distribution, location of existing wells, boundaries of the aquifer, the quality of water within aquifer, and land uses.

El Paso – Las Cruces Regional Sustainable Water Project – Hydrologic Modeling Final Report:

This report, published in 1999, presents the results of studies to define the El Paso-Las Cruces Regional Sustainable Water Project as the first step toward satisfying the goals of preserving the region's aquifers and increasing the efficiency of surface water use. The conveyance and treatment project involves conveying Rio Grande Project Water from Caballo Reservoir for year-round delivery to the Las Cruces and El Paso Areas. A numerical model is used to assess the implications of operational changes to evaluate the effectiveness of operational and structural alternatives. The Boyle Engineering Stream Simulation Model (BESTSM) was constructed and linked with an existing Modular Three-Dimensional Finite-Difference Ground-Water Flow Model (MODFLOW) of the Mesilla Basin.

The BESTSM model was applied to represent the surface water system of the Rio Grande from the San Marcial gage above Elephant Butte Reservoir to Riverside Diversion Dam. The MODFLOW model was linked with the BESTSM to evaluate the groundwater aspects of the Mesilla Basin. Estimates were made of ungaged surface and ground water inflows and outflows and impacts on water quality from the interaction of waters of different hydrochemical composition.

El Paso – Las Cruces Regional Sustainable Water Project Draft Environmental Impact Statement - Volumes I & II:

Published in April 2000, this report is a comprehensive presentation of the objectives of the El Paso – Las Cruces Regional Sustainable Water Project, the Preferred Alternative and other action alternatives. The report compares the major impact differences for key resources between the Preferred Alternative and the other action alternatives; and provides an overall comparison among alternatives.

Brackish Water Reverse Osmosis Pilot Plant Report:

This report, published in 1995, determined applicability of reverse osmosis (RO) membrane treatment. The study used a 15 gpm Brackish Water Reverse Osmosis (BWRO) Plant. EPWU staff collected sample data, including samples of raw water, feed water, permeate (potable water), concentrate (brine) flow, streams and water quality.

Study results indicate that recovery of 80% is the effective maximum rate and should be used as the design point. Water quality from test permeate indicated that the blending of permeate and raw water is feasible (61% permeate / 39% raw water). Blend water indicated a TDS count of less than 500 mg/l and an increase of recovery to 83%. Concentrate stream has TDS of 10,000 mg/l. Disposal of brine from a full-scale plant is the challenge.

El Paso/Las Cruces Regional Sustainable Water Project - Anthony/Canutillo Membrane Treatment Pilot Plant:

This report was finalized in July 1999, and was prepared to support design of a membrane filtration system for the proposed 80 mgd Upper Valley Water Treatment Plant. Major objectives for this project included:

- Provide TNRCC data confirming the ability of membrane filtration technology to meet the requirements of the Interim Enhanced Surface Water Treatment Rule.
- Provide an equal opportunity for vendors to evaluate the performance of their membranes while treating Rio Grande River water.
- Evaluate the performance of Granular Activated Carbon (GAC) and RO for removal of Total Organic Carbon (TOC) from filtered water.

Five membrane filtration systems were installed to treat Rio Grande River water. In general, the filters provided excellent turbidity & particle removal. However, none of the membrane filters showed significant removal of dissolved organics. All of the Filters experienced fouling and required chemical cleaning during the test. This was successful in returning the filters to near-new performance.

RO, nanofiltration, and GAC adsorption were tested to determine their effectiveness in removing dissolved organic substances, which when chlorinated, may produce disinfection by-products. Overall, the data obtained from this pilot project enabled the system manufacturer to determine the best method of treatment, and New Mexico/Texas Water Commission to obtain a viable filtration system.

Desalination Feasibility Study – Phase I Report:

Prepared in July 1994, the report outlines the potential benefits of desalination of brackish water. Such benefits include:

- Supplemental potable water supply
- Facilitation of groundwater storage & conjunctive use programs
- Improved water resources management
- Management of mineral degradation
- Public demonstration of potential for desalination to provide high quality water

This report states that there exists a significant amount of water with high mineral content in the EPWU service area. Significant drawdowns in fresh water areas are causing infiltration of brackish water from the periphery of the Hueco Bolson into producing wells. The most challenging issue is that of brine disposal. Many alternatives have been considered, but the one that currently seems the most feasible is deep well injection.

Even though these studies and pilot projects have been conducted, efforts continue to improve and develop new alternatives to provide for the most efficient use of groundwater resources. Long term pumping in the Hueco Bolson has lowered the water levels creating a substantial depression into which recharge can be placed. Controlling the movement of recharge water and providing a greater efficiency in recovery are two important aspects of a groundwater management regime.

Numerous other studies are continually undertaken as part of the Sustainable project.

Transboundary Aquifer Study:

The Texas Water Development Board, in conjunction with the New Mexico Water Resources Research Institute, the International Boundary and Water Commission, the Comision Nacional del Agua, the Junta Municipal de Agua y Saneamiento de Ciudad Juarez, and the Comision International de Limites y Aguas, conducted an intensive study of the common aquifers of the El Paso, Ciudad Juarez, and Las Cruces Region. The study, which involved nearly three years of work, was published by the TWDB in 1997 under the title *Transboundary Aquifers of the El Paso/Ciudad Juarez/Las Cruces Region* (Hibbs, et al., 1997).

The objectives of the study were (1) to provide as comprehensive a characterization as possible of aquifers that lie beneath both the United States and Mexico, (2) to identify water quality issues related to natural processes and development in the region, and (3) to make recommendations for further studies to address specific issues of concern. Assessments were made of the Mesilla Basin aquifer, the Rio Grande Alluvium (between Leasburg Dam to Indian Hot Springs), the Hueco-Tularosa Aquifer, and the Diablo Plateau. A complete discussion of the findings of the Transboundary study is found in Section 3.4. Significant observations and recommendations of the Transboundary study are summarized below:

- Recharge to, and the contamination susceptibility of, an aquifer is significantly influenced by the geology of an area. The geology of the Texas portion of the project is reasonably well known as a result of studies by the departments of geological sciences at The University of Texas at Austin and The University of Texas at El Paso, and The University of Texas at Austin – Bureau of Economic Geology. All existing geological maps, however, should be digitized as replacements for the existing geology coverage. The geology of the adjoining areas of Mexico should be more accurately delineated and the data converted to digital format to provide for full integration with the Texas and New Mexico maps.

- The proliferation of colonias on the Rio Grande alluvial floodplain may have intensified contamination of the shallow aquifer by infiltration of untreated or poorly treated sewerage. The effects of development on water quality should be monitored and evaluated for potential problems.

- The reasons why water salinity has increased in the heavily developed parts of the Hueco Bolson aquifer are not fully understood. The process may involve several factors, such as upconing of brackish water, leakage along the annual spaces of wells, lateral migration, leakage from low-permeability interbeds, and depletion of fresh water. Studies of the mechanisms of salinzation would help both the City of El Paso and Ciudad Juarez develop pumping schemes to reduce salinity.

- Wells in Mexico should be accurately located with global position system equipment. Wellhead elevations should be estimated within accuracy at least equal to those in the U.S. This will allow for better regional mapping of ground-water movement.

- All well data from Mexico should be converted to electronic files.

- Potentiometric surface maps and hydrographs for the Mexican portion of the Rio Grande Alluvium should be prepared by an appropriate agency in Mexico, and integrated with maps of the aquifer prepared by the TWDB. The absence of well elevations in Mexico precluded the preparation of binational maps for the Rio Grande Alluvium.

- The thickness of the basin fill and the quantities of fresh and slightly saline ground water in the Mexican part of the Hueco Bolson are not well known and are impossible to estimate based on the available data. Additional studies should be conducted to derive better stratigraphic data and better estimates of recoverable ground water in Mexico.

- The development of computer ground-water flow models developed by Mexico and the U.S. should be supported.

- More studies should be conducted to provide a better delineation of recharge areas and a more detailed understanding of recharge pathways, mechanisms, and volumes.

- More radioisotope data are needed to determine ground-water ages and residence times, and to delineate recharge areas and areas of cross-formational flow. This will provide important data that will improve the quality of ground-water flow models being developed by the U.S. Geological Survey and the Mexican government.

- A formal procedure and timetable for the exchange of ground-water data between the U.S. and Mexican governments should be established. The data should be in an electronic format adaptable for geographic information system applications.

- A cooperative water level and water-quality monitoring network should be established between U.S. and Mexican agencies. Monitoring frequency should be agreed upon and all data is to be shared.

CHAPTER 3
APPENDICES

TABLE 3A
SURFACE WATER USE REPORTED TO TNRCC WATERMASTER

			River Order				Amount in		Res Cap	
COA/Permit	Type	County	Number	Name	Stream	Use	Ac-Ft/Yr	Acerage	in Ac-Ft	Remarks
Rights located on tributaries to the Rio Grande										
5451-000	6	Culberson	7120300000	MISSOURI PACIFIC RAILROAD	ADOBE DRAW	IRR				IMPOUNDMENT ONLY
5451-000	6	Culberson	7120300000	MISSOURI PACIFIC RAILROAD	ADOBE DRAW	IRRG				IMPOUNDMENT ONLY
5451-000	6	Culberson	7120300000	BANKY STOCKS	ADOBE DRAW	IRRG	223	112	597	DIVERSION AND IRRIGATION
0969-000	6	Presidio	9251500000	JOHN T. MACGUIRE, ET UX	ALAMITO CRK	REC	18700		327	SAN ESTEBAN DAM & LAKE
0970-000	6	Presidio	9251400000	HAYES MITCHELL JR	ALAMITO CRK	IRRG	41	20		
0971-000	6	Presidio	9251300000	MINING HARD ROCK INC	ALAMITO CRK	IRRG	35	50	18700	
0972-000	6	Presidio	9251200000	LUCIA H RUSSELL ESTATE	ALAMITO CRK	IRRG	80	40	35	80-AC TR
3217-000	2	Hudspeth	9710000000	HUDSPETH CO CONS & REC DIST 1	ALAMO ARROYO	IRRG	200	1800		
3404-000	1	Brewster	8729600000	J FRANK WOODWARD JR	ASH CRK	IRRG	13	20		
5439-000	6	Jeff Davis	7845000000	CITY OF BALMORHEA	BIG AGUJA CANY	MUNC	644		200	
5440-000	6	Jeff Davis	7844000000	H C ESPY ESTATE	BOB MANNING	IRRG	45	12		
3369-000	1	Brewster	8729260000	NEVILLE RANCH	CALAMITY CRK	IRRG	18	9	109	AMEND 10/01/92
3369-000	1	Brewster	8729260000	ELINOR FRANCES GREEN	CALAMITY CRK	IRRG	162	60	2	AMEND 10/01/92
3219-000	2	Hudspeth	9700000000	HUDSPETH CO CONS & REC DIST 1	CAMP RICE ARROYO	IRRG	200	600		
5463-000	6	Terrell	5545000000	W F RODEN	CAROLINE SPRING	IRRG	530	137	9	
5406-000	1	Hudspeth	9999990300	HUDSPETH CO COMMISSIONERS CT	CORNUDAS DRAW	RECRG	1002		200	
5467-000	6	Hudspeth	9999990219	C L RANCH PARTNERSHIP	CORNUDAS DRAW	IRRG	2200	1600	192	JOINTLY OWNS 2200 AF TO IRR 1600 AC
5467-000	6	Hudspeth	9999990219	CONNECTICUT MUTUAL LIFE INS CO	CORNUDAS DRAW	IRRG				JOINTLY OWNS 2200 AF TO IRR 1600 AC
5467-000	6	Hudspeth	9999990219	JAMES & MARY LYNCH JR	CORNUDAS DRAW	IRRG			775	JOINTLY OWNS 2200 AF TO IRR 1600 AC
3218-000	2	Hudspeth	9690000000	HUDSPETH CO CONS & REC DIST 1	DIABLO ARROYO	IRRG	1032	1432		
5468-000	6	Hudspeth	9999990069	C L MACHINERY CO ET AL	HITSON DRAW	IRRG	2400	1800		JOINTLY OWNS 2400 AF TO IRR 1800 AC
5468-000	6	Hudspeth	9999990069	CONNECTICUT MUTUAL LIFE INS CO	HITSON DRAW	IRRG			200	JOINTLY OWNS 2400 AF TO IRR 1800 AC
5462-000	6	Terrell	5540000000	JOE B CHANDLER ET AL ESTATE OF	INDEPENDENCE CRK	IRRG	140	76	458	
1172-000	6	Jeff Davis	7117600000	DONALD D MCIVOR	LIMPIA CANYON	IRRG	15	10		RES FOR LIVESTOCK & REC
1173-000	6	Jeff Davis	7117010000	RUTH JOHNSON	LIMPIA CANYON	IRRG	69	69	14	
1174-000	6	Jeff Davis	7117000000	H E SPROUL	LIMPIA CANYON	IRRG	224	112	20	& REC
1175-000	6	Jeff Davis	7116200000	ISABEL CECILIA THOMPSON	LIMPIA CANYON	IRRG	5	20		
1176-000	6	Jeff Davis	7116000000	JIMMY G & BESSIE J HIGGINS	LIMPIA CANYON	IRRG	4	2	3	
1177-000	6	Jeff Davis	7115800000	GEORGE A HOFFMAN MD ET AL	LIMPIA CANYON	IRRG	50	25		
1178-000	6	Jeff Davis	7115700000	SHARP FAMILY TRUST	LIMPIA CANYON	IRRG	15	14		
3215-000	2	Hudspeth	9670000000	HUDSPETH CO CONS & REC DIST 1	MACHO ARROYO	IRRG	200	600		
3216-000	2	Hudspeth	9680000000	HUDSPETH CO CONS & REC DIST 1	MADDEN ARROYO	IRRG	200	600		
0990-000	6	Brewster	8740000000	SUSAN COMBS ET AL	MARAVILLAS CRK	IRRG	1520	507	200	SC-PT OF D IN COMMON W/991
0991-000	6	Brewster	8739500000	EDGAR A BASSE JR	MARAVILLAS CRK	IRRG	7600	2533	200	SC-PT OF D IN COMMON W/990
3295-000	1	Brewster	8739010000	BILL POPE	MARAVILLAS CRK	IRRG	1260	1182		
3402-000	1	Brewster	8700010000	HALLIE, GUY & ROY STILLWELL	MARAVILLAS CRK	IRRG	200	100		

TABLE 3A (continued)
SURFACE WATER USE REPORTED TO TNRCC WATERMASTER

			River Order				Amount in		Res Cap	
COA/Permit	Type	County	Number	Name	Stream	Use	Ac-Ft/Yr	Acerage	in Ac-Ft	Remarks
3405-000	1	Brewster	8736000000	JACKSON B LOVE JR	MARAVILLAS CRK	IRRG	400	200		
2926-000	2	Brewster	6421000000	LEONCITA LAND COMPANY	MUSQUIZ	IRRG		1500		
0121-000	1	Jeff Davis	6485000000	CLAYTON W WILLIAMS ET AL	MUSQUIZ	MUNC	124	0		& BREWSTER CO - 2 RES
5452-000	6	Jeff Davis	6510000000	BARRY A BEAL	MUSQUIZ CRK	IRRG	50	50	900	
5375-000	1	Brewster	8790000000	BREWSTER COUNTY	PENA (COLO) CRK	REC			16	
3326-000	1	Brewster	8770000000	SUSAN COMBS ET AL	PENA CRK	IRRG	80	40	2	OR ALL 100 AF IRR. AMEND 8/28/91
3326-000	1	Brewster	8770000000	SUSAN COMBS ET AL	PENA CRK	REC	20		7	AMEND 8/28/91
0375-000	3	Jeff Davis	7850000000	UNITED STATES DEPT OF INTERIOR	PHANTOM	IRRG	900	300	10	& 195
1491-000	1	Jeff Davis	7855000000	U S BUREAU OF RECLAM	PHANTOM	IRRG	18000	0		SUPPLEMENTS A60-REEVES CO WID 1
3327-000	1	Brewster	8761010000	SUSAN COMBS ET AL	REYNOLDS CRK	IRRG	450	400		
5464-000	6	Terrell	5534500000	CY BANNER	RICHLAND SPRING	IRRG	150	104		AMEND 10/29/90
5464-000	6	Terrell	5534500000	WILSON HARDIN "CY" BANNER	RICHLAND SPRING	IRRG	150	49.85		AMEND 10/29/90, 9/7/94
5465-000	6	Terrell	5534000000	JOHN EDWARD ROBBINS	RICHLAND SPRING	IRRG	8	12		JOINTLY OWNS 8 AF TO IRR 12 AC
5465-000	6	Terrell	5534000000	JOHN CLARK	RICHLAND SPRING	IRRG			2	JOINTLY OWNS 8 AF TO IRR 12 AC
5469-000	6	Hudspeth	9999990019	C L RANCH A PARTNERSHIP	UNNAMED TRIB HITSON DRAW	IRRG	2100	898		SCS NO 1
5466-000	6	Terrell	5532000000	CY BANNER	UNNAMED TRIB PECOS RIVER	IRRG	44.4	16.94		
5466-000	6	Terrell	5532000000	MATTIE BANNER BELL	UNNAMED TRIB PECOS RIVER	IRRG	0.6	0.23	588	
3392-000	1	Presidio	9251100000	LUCIA H RUSSELL ESTATE	VILLAGE CRK	IRRG	100	100	15	
Rights located on the Rio Grande										
0915-000	6	Presidio	9565000000	JOHN B MEADOWS TRUSTEE	RIO GRANDE	IRRG	1944	648		
0916-000	6	Presidio	9555000000	TEXAS PARKS & WILDLIFE DEPT	RIO GRANDE	IRRG	714	476		
0917-000	6	Presidio	9540000000	BILL SHANNON	RIO GRANDE	IRRG	405	135		
0918-000	6	Presidio	9528000000	BILLY O WALKER ET UX	RIO GRANDE	IRRG	29.19	9.73		
0918-000	6	Presidio	9528000000	B J BISHOP	RIO GRANDE	IRRG	18.81	6.27		
0919-000	6	Presidio	9480010000	JAMES S LIVINGSTON JR	RIO GRANDE	IRRG	243	81		
0920-000	6	Presidio	9460000000	FERNWOOD ENTERPRISES	RIO GRANDE	IRRG	495	165		
0921-000	6	Presidio	9440000000	AC&L ARMENDARIZ PARTNERSHIP	RIO GRANDE	IRRG	270	90		AMEND 1/22/90
0922-000	6	Presidio	9421500000	MERCED O GARCIA ET AL	RIO GRANDE	IRRG	90	30		
0923-000	6	Presidio	9421000000	ROBERT L SOZA ET AL	RIO GRANDE	IRRG	120	40		
0924-000	6	Presidio	9420950000	WILLIAM SOZA	RIO GRANDE	IRRG	54	18		
0925-000	6	Presidio	9420850000	ERNESTINE CHAVEZ ET AL	RIO GRANDE	IRRG	42	14		
0926-000	6	Presidio	9420800000	ROBERT L SOZA	RIO GRANDE	IRRG	66	22		SC-PT & RATE SAME AS 926-927-928-929-930
0927-000	6	Presidio	9420750000	RICHARD MONROE LINN JR.	RIO GRANDE	IRRG	72	24		SC-PT & RATE SAME AS 925-927-928-929-930
0928-000	6	Presidio	9420700000	MAXIMO S VALENZUELA	RIO GRANDE	IRRG	57	19		SC-PT & RATE SAME AS 925-926-928-929-930
0929-000	6	Presidio	9420650000	ALFREDO S BAEZA	RIO GRANDE	IRRG	48	16		SC-PT & RATE SAME AS 925-926-927-929-930
0930-000	6	Presidio	9420600000	SOZA & COMPANY	RIO GRANDE	IRRG	114	38		SC-PT & RATE SAME AS 925-926-927-928-930
0931-000	6	Presidio	9420550000	ASUNCION V SPENCER ESTATE	RIO GRANDE	IRRG	111	37		SC-PT & RATE SAME AS 925-926-927-928-929
0932-000	6	Presidio	9420000000	FRANK ARMENDARIZ ET UX	RIO GRANDE	IRRG	606	203		139.62-AC TR

TABLE 3A (continued)
SURFACE WATER USE REPORTED TO TNRCC WATERMASTER

			River Order				Amount in		Res Cap	
COA/Permit	Type	County	Number	Name	Stream	Use	Ac-Ft/Yr	Acerage	in Ac-Ft	Remarks
0933-000	6	Presidio	9410000000	LUZ S ARMENDARIZ	RIO GRANDE	IRRG	321	107		160.16-AC TR, AMEND 6/13/91
0936-000	6	Presidio	9369000000	LORENZO V RODRIGUEZ	RIO GRANDE	IRRG	225	75		
0936-000	6	Presidio	9369000000	LORENZO V RODRIGUEZ	RIO GRANDE	IRRG	67			PART OWNER OF 292 AF TO IRR 75 ACRES
0936-000	6	Presidio	9369000000	JOSE NATIVIDAD RODRIGUEZ	RIO GRANDE	IRRG				PART OWNER OF 292 AF TO IRR 75 ACRES
0936-000	6	Presidio	9369000000	JOSE NATIVIDAD RODRIGUEZ	RIO GRANDE	IRRG				PART OWNER OF 292 AF TO IRR 75 ACRES
0939-000	6	Presidio	9366000000	LORENZO HERNANDEZ	RIO GRANDE	IRRG	45	15		PART OWNER OF 292 AF TO IRR 75 ACRES
0937-000	6	Presidio	9364900000	JOSE A RODRIGUEZ	RIO GRANDE	IRRG	114	38		17.05-AC TR
0938-000	6	Presidio	9364850000	JOSE A RODRIGUEZ	RIO GRANDE	IRRG	120	30		SC-PT & RATE IN COMMON W/938
0940-000	6	Presidio	9340000000	LORENZO V RODRIGUEZ	RIO GRANDE	IRRG	135	45		SC-PT & RATE IN COMMON W/937
0940-000	6	Presidio	9340000000	LORENZO V RODRIGUEZ	RIO GRANDE	IRRG	45			SC-PT SAME AS 934-935-936
0941-000	6	Presidio	9332000000	RICHARD C SLACK	RIO GRANDE	IRRG	164	41		
0942-000	6	Presidio	9331500000	PAULINE JUAREZ CROSSON	RIO GRANDE	IRRG	200	50		AMEND 9/26/89
0943-000	6	Presidio	9331000000	CLAY SLACK ESTATE	RIO GRANDE	IRRG	420	105		
0944-000	6	Presidio	9330100000	SANTA CRUZ LAND & CATTLE INC	RIO GRANDE	IRRG	743	231.428		
0888-000	6	Presidio	9330080000	PRESIDIO VALLEY FARMS INC	RIO GRANDE	IRRG	43	17		2/12/25 461 AF,3/20/30 76 AF, 2/4/88
0946-000	6	Presidio	9270100000	CLAY SLACK ESTATE	RIO GRANDE	IRRG	61	16		2/1/83 DESIGNATE PL USE, AUTH POFD
0947-000	6	Presidio	9270000000	R C SLACK ET AL	RIO GRANDE	IRRG	800	202		SC-PT & RATE IN COMMON W/947
0893-000	6	Presidio	9257600000	PRESIDIO VALLEY FARMS INC	RIO GRANDE	IRRG	444	148		SC-PT & RATE IN COMMON W/946
0895-000	6	Presidio	9257500000	PRESIDIO VALLEY FARMS INC	RIO GRANDE	IRRG	291	97		
0899-000	6	Presidio	9257400000	C & L COMPANY	RIO GRANDE	IRRG	60	20		
0948-000	6	Presidio	9257100000	C & L COMPANY	RIO GRANDE	IRRG	880	220		SC SAME PT & RATE AS 23-948 & 949
0949-000	6	Presidio	9257000000	C & L COMPANY	RIO GRANDE	IRRG	267	89		SC-PT & RATE IN COMMON W/899 & 949
0952-000	6	Presidio	9253200000	PRESIDIO VALLEY FARMS INC	RIO GRANDE	IRRG	6813			SC-PT & RATE IN COMMON W/899 & 948
0950-000	6	Presidio	9253170000	OSCAR SPENCER	RIO GRANDE	IRRG	39	13		AMEND 4/25/88, 8/11/95 (COMBINATIONS)
0953-000	6	Presidio	9253160000	CF&L ENTERPRISES	RIO GRANDE	IRRG	407	136		SC NO DESIGNATED PT OF D
0896-000	6	Presidio	9253130000	PRESIDIO VALLEY FARMS INC	RIO GRANDE	IRRG	468	156		
0954-000	6	Presidio	9253110000	CF&L ENTERPRISES	RIO GRANDE	IRRG	684	171		SUBJECT TO AMENDMENT
0955-000	6	Presidio	9253100000	CF&L ENTERPRISES	RIO GRANDE	IRRG	172	43		SC-PT & RATE IN COMMON W/955
0956-000	6	Presidio	9253030000	MANUEL M RUBIO ET AL	RIO GRANDE	IRRG	84	21		SC-PT & RATE IN COMMON W/954
0957-000	6	Presidio	9253000000	EVA MARIA NIETO ET AL	RIO GRANDE	IRRG	536	134		
0958-000	6	Presidio	9252500000	DOLORES MOLINAR	RIO GRANDE	IRRG	48.28	12.07		
0958-000	6	Presidio	9252500000	MANUEL COVOS ET UX	RIO GRANDE	IRRG	43.72	10.93		
0960-000	6	Presidio	9251000000	LAURENCIO BRITO	RIO GRANDE	IRRG	140	35		
0961-000	6	Presidio	9250980000	LAURENCIO BRITO	RIO GRANDE	IRRG	72	18		
0962-000	6	Presidio	9250900000	REYNALDO HERNANDEZ	RIO GRANDE	IRRG	96	24		SC-PT & RATE IN COMMON W/962
0963-000	6	Presidio	9250700000	R C SLACK ET AL	RIO GRANDE	IRRG	160	40		SC-PT & RATE IN COMMON W/961
0964-000	6	Presidio	9250680000	CLAY SLACK ESTATE	RIO GRANDE	IRRG	376	94		

TABLE 3A (continued)
SURFACE WATER USE REPORTED TO TNRCC WATERMASTER

			River Order				Amount in		Res Cap	
COA/Permit	Type	County	Number	Name	Stream	Use	Ac-Ft/Yr	Acerage	in Ac-Ft	Remarks
0965-000	6	Presidio	9250650000	GEORGE & CONSUELO HERNANDEZ	RIO GRANDE	IRRG	60	15		SC-PT & RATE IN COMMON W/965
0966-000	6	Presidio	9250510000	HECTOR A HERNANDEZ	RIO GRANDE	IRRG	80	20		SC-PT & RATE IN COMMON W/694
0967-000	6	Presidio	9250000000	ARTHUR T MCCALL	RIO GRANDE	IRRG	260	65		
0973-000	6	Presidio	8990000000	JOSE A HERNANDEZ	RIO GRANDE	IRRG	96	24		AMEND 6/22/88
3255-000	1	Presidio	8988010000	DANIEL T ESTRADA	RIO GRANDE	IRRG	108	27		
0974-000	6	Presidio	8987200000	PRESIDIO CO WID 1	RIO GRANDE	IRRG	2780	700		
3256-000	1	Presidio	8987010000	TRINIDAD JACKSON ET AL	RIO GRANDE	IRRG	132	33		
0975-000	6	Presidio	8987000000	TRINIDAD JACKSON ET AL	RIO GRANDE	IRRG	380	95		
0976-000	6	Presidio	8979780000	RUBEN H MADRID	RIO GRANDE	IRRG	56	14		
0977-000	6	Presidio	8979750000	LYDIA MADRID	RIO GRANDE	IRRG	40	10		
0978-000	6	Presidio	8979550000	E. H. MADRID	RIO GRANDE	IRRG	32	8		
0978-000	6	Presidio	8979550000	E. H. MADRID	RIO GRANDE	IRRG	304	76		SC-PT & RATE IN COMMON W/979 & 980
0979-000	6	Presidio	8979500000	JESUS ALONZO HERNANDEZ ET AL	RIO GRANDE	IRRG	52	13		AMENDED 10/31/94
0980-000	6	Presidio	8979400000	ALVARO PENA ET UX	RIO GRANDE	IRRG	52	13		SC-PT & RATE IN COMMON W/978 & 980
0981-000	6	Presidio	8979200000	F PINEDA JR	RIO GRANDE	IRRG	168	42		SC-PT & RATE IN COMMON W/978 & 979
0982-000	6	Presidio	8979100000	JAIME REDE MADRID ET AL	RIO GRANDE	IRRG	80	20		SC-PT & RATE IN COMMON W/982 & 983
0983-000	6	Presidio	8979000000	THOMAS A MALLAN	RIO GRANDE	IRRG	84	21		SC-PT & RATE IN COMMON W/981 & 983
0985-000	6	Presidio	8978740000	A G RIMER ET UX	RIO GRANDE	IRRG	20	12		RATE W/981 & 982, AMEND 8/20/90
3393-000	1	Presidio	8961000000	DAVID SLEEPER	RIO GRANDE	IRRG	156	39		AMEND 7/16/91
0986-000	6	Brewster	8957000000	ARROW INVESTMENT CO INC	RIO GRANDE	IRRG	225	72		
0986-000	6	Brewster	8957000000	ARROW INVESTMENT CO INC	RIO GRANDE	MUNC	144			AMEND 5/31/79, 1/22/90
0987-000	6	Brewster	8840000000	U S NATL PARK SERVICE	RIO GRANDE	MUNC	530			OF USE FOR 1, REDEFINE LAND TO BE IRR
0987-000	6	Brewster	8840000000	U S NATL PARK SERVICE	RIO GRANDE	IRRG	1000	227		AMEND 7/5/89
0988-000	6	Brewster	8810000000	DAVID ADAMS	RIO GRANDE	IRRG	20	5		
0989-000	6	Brewster	8800000000	DAVID ADAMS	RIO GRANDE	IRRG	180	45		
0992-000	6	Terrell	8640000000	BYRON HODGE ET AL	RIO GRANDE	IRRG	152	38		

TABLE 3B
AUTHORIZED SURFACE WATER RIGHTS

			River Order				Amount in		Res Cap	
COA/Permit	Type	County	Number	Name	Stream	Use	Ac-Ft/Yr	Acerage	in Ac-Ft	Remarks
Rights located on tributaries to the Rio Grande										
5451-000	6	Culberson	7120300000	MISSOURI PACIFIC RAILROAD	ADOBE DRAW	IRRG				IMPOUNDMENT ONLY
5451-000	6	Culberson	7120300000	MISSOURI PACIFIC RAILROAD	ADOBE DRAW	IRRG				IMPOUNDMENT ONLY
5451-000	6	Culberson	7120300000	BANKY STOCKS	ADOBE DRAW	IRRG	223	112	597	DIVERSION AND IRRIGATION
0969-000	6	Presidio	9251500000	JOHN T. MACGUIRE, ET UX	ALAMITO CRK	REC	18700		327	SAN ESTEBAN DAM & LAKE
0970-000	6	Presidio	9251400000	HAYES MITCHELL JR	ALAMITO CRK	IRRG	41	20		
0971-000	6	Presidio	9251300000	MINING HARD ROCK INC	ALAMITO CRK	IRRG	35	50	18700	
0972-000	6	Presidio	9251200000	LUCIA H RUSSELL ESTATE	ALAMITO CRK	IRRG	80	40	35	80-AC TR
3217-000	2	Hudspeth	9710000000	HUDSPETH CO CONS & REC DIST 1	ALAMO ARROYO	IRRG	200	1800		
3404-000	1	Brewster	8729600000	J FRANK WOODWARD JR	ASH CRK	IRRG	13	20		
5439-000	6	Jeff Davis	7845000000	CITY OF BALMORHEA	BIG AGUJA CANY	MUNC	644		200	
5440-000	6	Jeff Davis	7844000000	H C ESPY ESTATE	BOB MANNING	IRRG	45	12		
3369-000	1	Brewster	8729260000	NEVILLE RANCH	CALAMITY CRK	IRRG	18	9	109	AMEND 10/01/92
3369-000	1	Brewster	8729260000	ELINOR FRANCES GREEN	CALAMITY CRK	IRRG	162	60	2	AMEND 10/01/92
3219-000	2	Hudspeth	9700000000	HUDSPETH CO CONS & REC DIST 1	CAMP RICE ARROYO	IRRG	200	600		
5463-000	6	Terrell	5545000000	W F RODEN	CAROLINE SPRING	IRRG	530	137	9	
5406-000	1	Hudspeth	9999990300	HUDSPETH CO COMMISSIONERS CT	CORNUDAS DRAW	RECRG	1002		200	
5467-000	6	Hudspeth	9999990219	C L RANCH PARTNERSHIP	CORNUDAS DRAW	IRRG	2200	1600	192	JOINTLY OWNS 2200 AF TO IRR 1600 AC
5467-000	6	Hudspeth	9999990219	CONNECTICUT MUTUAL LIFE INS CO	CORNUDAS DRAW	IRRG				JOINTLY OWNS 2200 AF TO IRR 1600 AC
5467-000	6	Hudspeth	9999990219	JAMES & MARY LYNCH JR	CORNUDAS DRAW	IRRG			775	JOINTLY OWNS 2200 AF TO IRR 1600 AC
3218-000	2	Hudspeth	9690000000	HUDSPETH CO CONS & REC DIST 1	DIABLO ARROYO	IRRG	1032	1432		
5468-000	6	Hudspeth	9999990069	C L MACHINERY CO ET AL	HITSON DRAW	IRRG	2400	1800		JOINTLY OWNS 2400 AF TO IRR 1800 AC
5468-000	6	Hudspeth	9999990069	CONNECTICUT MUTUAL LIFE INS CO	HITSON DRAW	IRRG			200	JOINTLY OWNS 2400 AF TO IRR 1800 AC
5462-000	6	Terrell	5540000000	JOE B CHANDLER ET AL ESTATE OF	INDEPENDENCE CRK	IRRG	140	76	458	
1172-000	6	Jeff Davis	7117600000	DONALD D MCIVOR	LIMPIA CANYON	IRRG	15	10		RES FOR LIVESTOCK & REC
1173-000	6	Jeff Davis	7117010000	RUTH JOHNSON	LIMPIA CANYON	IRRG	69	69	14	
1174-000	6	Jeff Davis	7117000000	H E SPROUL	LIMPIA CANYON	IRRG	224	112	20	& REC
1175-000	6	Jeff Davis	7116200000	ISABEL CECILIA THOMPSON	LIMPIA CANYON	IRRG	5	20		
1176-000	6	Jeff Davis	7116000000	JIMMY G & BESSIE J HIGGINS	LIMPIA CANYON	IRRG	4	2	3	
1177-000	6	Jeff Davis	7115800000	GEORGE A HOFFMAN MD ET AL	LIMPIA CANYON	IRRG	50	25		
1178-000	6	Jeff Davis	7115700000	SHARP FAMILY TRUST	LIMPIA CANYON	IRRG	15	14		
3215-000	2	Hudspeth	9670000000	HUDSPETH CO CONS & REC DIST 1	MACHO ARROYO	IRRG	200	600		
3216-000	2	Hudspeth	9680000000	HUDSPETH CO CONS & REC DIST 1	MADDEN ARROYO	IRRG	200	600		
0990-000	6	Brewster	8740000000	SUSAN COMBS ET AL	MARAVILLAS CRK	IRRG	1520	507	200	SC-PT OF D IN COMMON W/991
0991-000	6	Brewster	8739500000	EDGAR A BASSE JR	MARAVILLAS CRK	IRRG	7600	2533	200	SC-PT OF D IN COMMON W/990
3295-000	1	Brewster	8739010000	BILL POPE	MARAVILLAS CRK	IRRG	1260	1182		
3402-000	1	Brewster	8700010000	HALLIE, GUY & ROY STILLWELL	MARAVILLAS CRK	IRRG	200	100		
3405-000	1	Brewster	8736000000	JACKSON B LOVE JR	MARAVILLAS CRK	IRRG	400	200		
2926-000	2	Brewster	6421000000	LEONCITA LAND COMPANY	MUSQUIZ	IRRG		1500		
0121-000	1	Jeff Davis	6485000000	CLAYTON W WILLIAMS ET AL	MUSQUIZ	MUNC	124	0		& BREWSTER CO - 2 RES
5452-000	6	Jeff Davis	6510000000	BARRY A BEAL	MUSQUIZ CRK	IRRG	50	50	900	

TABLE 3B (continued)
AUTHORIZED SURFACE WATER RIGHTS

			River Order				Amount in		Res Cap	
COA/Permit	Type	County	Number	Name	Stream	Use	Ac-Ft/Yr	Acerage	in Ac-Ft	Remarks
5375-000	1	Brewster	8790000000	BREWSTER COUNTY	PENA (COLO) CRK	REC			16	
3326-000	1	Brewster	8770000000	SUSAN COMBS ET AL	PENA CRK	IRRG	80	40	2	OR ALL 100 AF IRR. AMEND 8/28/91
3326-000	1	Brewster	8770000000	SUSAN COMBS ET AL	PENA CRK	REC	20		7	AMEND 8/28/91
0375-000	3	Jeff Davis	7850000000	UNITED STATES DEPT OF INTERIOR	PHANTOM	IRRG	900	300	10	& 195
1491-000	1	Jeff Davis	7855000000	U S BUREAU OF RECLAM	PHANTOM	IRRG	18000	0		SUPPLEMENTS A60-REEVES CO WID 1
3327-000	1	Brewster	8761010000	SUSAN COMBS ET AL	REYNOLDS CRK	IRRG	450	400		
5464-000	6	Terrell	5534500000	CY BANNER	RICHLAND SPRING	IRRG	150	104		AMEND 10/29/90
5464-000	6	Terrell	5534500000	WILSON HARDIN "CY" BANNER	RICHLAND SPRING	IRRG	150	49.85		AMEND 10/29/90, 9/7/94
5465-000	6	Terrell	5534000000	JOHN EDWARD ROBBINS	RICHLAND SPRING	IRRG	8	12		JOINTLY OWNS 8 AF TO IRR 12 AC
5465-000	6	Terrell	5534000000	JOHN CLARK	RICHLAND SPRING	IRRG			2	JOINTLY OWNS 8 AF TO IRR 12 AC
5469-000	6	Hudspeth	9999990019	C L RANCH A PARTNERSHIP	UNNAMED TRIB HITSON DRAW	IRRG	2100	898		SCS NO 1
5466-000	6	Terrell	5532000000	CY BANNER	UNNAMED TRIB PECOS RIVER	IRRG	44.4	16.94		
5466-000	6	Terrell	5532000000	MATTIE BANNER BELL	UNNAMED TRIB PECOS RIVER	IRRG	0.6	0.23	588	
3392-000	1	Presidio	9251100000	LUCIA H RUSSELL ESTATE	VILLAGE CRK	IRRG	100	100	15	
Rights located on the Rio Grande										
0915-000	6	Presidio	9565000000	JOHN B MEADOWS TRUSTEE	RIO GRANDE	IRRG	1944	648		
0916-000	6	Presidio	9555000000	TEXAS PARKS & WILDLIFE DEPT	RIO GRANDE	IRRG	714	476		
0917-000	6	Presidio	9540000000	BILL SHANNON	RIO GRANDE	IRRG	405	135		
0918-000	6	Presidio	9528000000	BILLY O WALKER ET UX	RIO GRANDE	IRRG	29.19	9.73		
0918-000	6	Presidio	9528000000	B J BISHOP	RIO GRANDE	IRRG	18.81	6.27		
0919-000	6	Presidio	9480010000	JAMES S LIVINGSTON JR	RIO GRANDE	IRRG	243	81		
0920-000	6	Presidio	9460000000	FERNWOOD ENTERPRISES	RIO GRANDE	IRRG	495	165		
0921-000	6	Presidio	9440000000	AC&L ARMENDARIZ PARTNERSHIP	RIO GRANDE	IRRG	270	90		AMEND 1/22/90
0922-000	6	Presidio	9421500000	MERCED O GARCIA ET AL	RIO GRANDE	IRRG	90	30		
0923-000	6	Presidio	9421000000	ROBERT L SOZA ET AL	RIO GRANDE	IRRG	120	40		
0924-000	6	Presidio	9420950000	WILLIAM SOZA	RIO GRANDE	IRRG	54	18		
0925-000	6	Presidio	9420850000	ERNESTINE CHAVEZ ET AL	RIO GRANDE	IRRG	42	14		
0926-000	6	Presidio	9420800000	ROBERT L SOZA	RIO GRANDE	IRRG	66	22		SC-PT & RATE SAME AS 926-927-928-929-930
0927-000	6	Presidio	9420750000	RICHARD MONROE LINN JR.	RIO GRANDE	IRRG	72	24		SC-PT & RATE SAME AS 925-927-928-929-930
0928-000	6	Presidio	9420700000	MAXIMO S VALENZUELA	RIO GRANDE	IRRG	57	19		SC-PT & RATE SAME AS 925-926-928-929-930
0929-000	6	Presidio	9420650000	ALFREDO S BAEZA	RIO GRANDE	IRRG	48	16		SC-PT & RATE SAME AS 925-926-927-929-930
0930-000	6	Presidio	9420600000	SOZA & COMPANY	RIO GRANDE	IRRG	114	38		SC-PT & RATE SAME AS 925-926-927-928-930
0931-000	6	Presidio	9420550000	ASUNCION V SPENCER ESTATE	RIO GRANDE	IRRG	111	37		SC-PT & RATE SAME AS 925-926-927-928-929
0932-000	6	Presidio	9420000000	FRANK ARMENDARIZ ET UX	RIO GRANDE	IRRG	606	203		139.62-AC TR
0933-000	6	Presidio	9410000000	LUZ S ARMENDARIZ	RIO GRANDE	IRRG	321	107		160.16-AC TR, AMEND 6/13/91
0936-000	6	Presidio	9369000000	LORENZO V RODRIGUEZ	RIO GRANDE	IRRG	225	75		
0936-000	6	Presidio	9369000000	LORENZO V RODRIGUEZ	RIO GRANDE	IRRG	67			PART OWNER OF 292 AF TO IRR 75 ACRES
0936-000	6	Presidio	9369000000	JOSE NATIVIDAD RODRIGUEZ	RIO GRANDE	IRRG				PART OWNER OF 292 AF TO IRR 75 ACRES
0936-000	6	Presidio	9369000000	JOSE NATIVIDAD RODRIGUEZ	RIO GRANDE	IRRG				PART OWNER OF 292 AF TO IRR 75 ACRES
0939-000	6	Presidio	9366000000	LORENZO HERNANDEZ	RIO GRANDE	IRRG	45	15		PART OWNER OF 292 AF TO IRR 75 ACRES
0937-000	6	Presidio	9364900000	JOSE A RODRIGUEZ	RIO GRANDE	IRRG	114	38		17.05-AC TR
0938-000	6	Presidio	9364850000	JOSE A RODRIGUEZ	RIO GRANDE	IRRG	120	30		SC-PT & RATE IN COMMON W/938

TABLE 3B (continued)
AUTHORIZED SURFACE WATER RIGHTS

			River Order				Amount in		Res Cap	
COA/Permit	Type	County	Number	Name	Stream	Use	Ac-Ft/Yr	Acerage	in Ac-Ft	Remarks
0940-000	6	Presidio	9340000000	LORENZO V RODRIGUEZ	RIO GRANDE	IRRG	135	45		SC-PT & RATE IN COMMON W/937
0940-000	6	Presidio	9340000000	LORENZO V RODRIGUEZ	RIO GRANDE	IRRG	45			SC-PT SAME AS 934-935-936
0941-000	6	Presidio	9332000000	RICHARD C SLACK	RIO GRANDE	IRRG	164	41		
0942-000	6	Presidio	9331500000	PAULINE JUAREZ CROSSON	RIO GRANDE	IRRG	200	50		AMEND 9/26/89
0943-000	6	Presidio	9331000000	CLAY SLACK ESTATE	RIO GRANDE	IRRG	420	105		
0944-000	6	Presidio	9330100000	SANTA CRUZ LAND & CATTLE INC	RIO GRANDE	IRRG	743	231.428		
0888-000	6	Presidio	9330080000	PRESIDIO VALLEY FARMS INC	RIO GRANDE	IRRG	43	17		2/12/25 461 AF,3/20/30 76 AF, 2/4/88
0946-000	6	Presidio	9270100000	CLAY SLACK ESTATE	RIO GRANDE	IRRG	61	16		2/1/83 DESIGNATE PL USE, AUTH POFD
0947-000	6	Presidio	9270000000	R C SLACK ET AL	RIO GRANDE	IRRG	800	202		SC-PT & RATE IN COMMON W/947
0893-000	6	Presidio	9257600000	PRESIDIO VALLEY FARMS INC	RIO GRANDE	IRRG	444	148		SC-PT & RATE IN COMMON W/946
0895-000	6	Presidio	9257500000	PRESIDIO VALLEY FARMS INC	RIO GRANDE	IRRG	291	97		
0899-000	6	Presidio	9257400000	C & L COMPANY	RIO GRANDE	IRRG	60	20		
0948-000	6	Presidio	9257100000	C & L COMPANY	RIO GRANDE	IRRG	880	220		SC SAME PT & RATE AS 23-948 & 949
0949-000	6	Presidio	9257000000	C & L COMPANY	RIO GRANDE	IRRG	267	89		SC-PT & RATE IN COMMON W/899 & 949
0952-000	6	Presidio	9253200000	PRESIDIO VALLEY FARMS INC	RIO GRANDE	IRRG	6813			SC-PT & RATE IN COMMON W/899 & 948
0950-000	6	Presidio	9253170000	OSCAR SPENCER	RIO GRANDE	IRRG	39	13		AMEND 4/25/88, 8/11/95 (COMBINATIONS)
0953-000	6	Presidio	9253160000	CF&L ENTERPRISES	RIO GRANDE	IRRG	407	136		SC NO DESIGNATED PT OF D
0896-000	6	Presidio	9253130000	PRESIDIO VALLEY FARMS INC	RIO GRANDE	IRRG	468	156		
0954-000	6	Presidio	9253110000	CF&L ENTERPRISES	RIO GRANDE	IRRG	684	171		SUBJECT TO AMENDMENT
0955-000	6	Presidio	9253100000	CF&L ENTERPRISES	RIO GRANDE	IRRG	172	43		SC-PT & RATE IN COMMON W/955
0956-000	6	Presidio	9253030000	MANUEL M RUBIO ET AL	RIO GRANDE	IRRG	84	21		SC-PT & RATE IN COMMON W/954
0957-000	6	Presidio	9253000000	EVA MARIA NIETO ET AL	RIO GRANDE	IRRG	536	134		
0958-000	6	Presidio	9252500000	DOLORES MOLINAR	RIO GRANDE	IRRG	48.28	12.07		
0958-000	6	Presidio	9252500000	MANUEL COVOS ET UX	RIO GRANDE	IRRG	43.72	10.93		
0960-000	6	Presidio	9251000000	LAURENCIO BRITO	RIO GRANDE	IRRG	140	35		
0961-000	6	Presidio	9250980000	LAURENCIO BRITO	RIO GRANDE	IRRG	72	18		
0962-000	6	Presidio	9250900000	REYNALDO HERNANDEZ	RIO GRANDE	IRRG	96	24		SC-PT & RATE IN COMMON W/962
0963-000	6	Presidio	9250700000	R C SLACK ET AL	RIO GRANDE	IRRG	160	40		SC-PT & RATE IN COMMON W/961
0964-000	6	Presidio	9250680000	CLAY SLACK ESTATE	RIO GRANDE	IRRG	376	94		
0965-000	6	Presidio	9250650000	GEORGE & CONSUELO HERNANDEZ	RIO GRANDE	IRRG	60	15		SC-PT & RATE IN COMMON W/965
0966-000	6	Presidio	9250510000	HECTOR A HERNANDEZ	RIO GRANDE	IRRG	80	20		SC-PT & RATE IN COMMON W/694
0967-000	6	Presidio	9250000000	ARTHUR T MCCALL	RIO GRANDE	IRRG	260	65		
0973-000	6	Presidio	8990000000	JOSE A HERNANDEZ	RIO GRANDE	IRRG	96	24		AMEND 6/22/88
3255-000	1	Presidio	8988010000	DANIEL T ESTRADA	RIO GRANDE	IRRG	108	27		
0974-000	6	Presidio	8987200000	PRESIDIO CO WID 1	RIO GRANDE	IRRG	2780	700		
3256-000	1	Presidio	8987010000	TRINIDAD JACKSON ET AL	RIO GRANDE	IRRG	132	33		
0975-000	6	Presidio	8987000000	TRINIDAD JACKSON ET AL	RIO GRANDE	IRRG	380	95		
0976-000	6	Presidio	8979780000	RUBEN H MADRID	RIO GRANDE	IRRG	56	14		
0977-000	6	Presidio	8979750000	LYDIA MADRID	RIO GRANDE	IRRG	40	10		
0978-000	6	Presidio	8979550000	E. H. MADRID	RIO GRANDE	IRRG	32	8		
0978-000	6	Presidio	8979550000	E. H. MADRID	RIO GRANDE	IRRG	304	76		SC-PT & RATE IN COMMON W/979 & 980
0979-000	6	Presidio	8979500000	JESUS ALONZO HERNANDEZ ET AL	RIO GRANDE	IRRG	52	13		AMENDED 10/31/94

TABLE 3B (continued)
AUTHORIZED SURFACE WATER RIGHTS

			River Order				Amount in		Res Cap	
COA/Permit	Type	County	Number	Name	Stream	Use	Ac-Ft/Yr	Acerage	in Ac-Ft	Remarks
0980-000	6	Presidio	8979400000	ALVARO PENA ET UX	RIO GRANDE	IRRG	52	13		SC-PT & RATE IN COMMON W/978 & 980
0981-000	6	Presidio	8979200000	F PINEDA JR	RIO GRANDE	IRRG	168	42		SC-PT & RATE IN COMMON W/978 & 979
0982-000	6	Presidio	8979100000	JAIME REDE MADRID ET AL	RIO GRANDE	IRRG	80	20		SC-PT & RATE IN COMMON W/982 & 983
0983-000	6	Presidio	8979000000	THOMAS A MALLAN	RIO GRANDE	IRRG	84	21		SC-PT & RATE IN COMMON W/981 & 983
0985-000	6	Presidio	8978740000	A G RIMER ET UX	RIO GRANDE	IRRG	20	12		RATE W/981 & 982, AMEND 8/20/90
3393-000	1	Presidio	8961000000	DAVID SLEEPER	RIO GRANDE	IRRG	156	39		AMEND 7/16/91
0986-000	6	Brewster	8957000000	ARROW INVESTMENT CO INC	RIO GRANDE	IRRG	225	72		
0986-000	6	Brewster	8957000000	ARROW INVESTMENT CO INC	RIO GRANDE	MUNC	144			AMEND 5/31/79, 1/22/90
0987-000	6	Brewster	8840000000	U S NATL PARK SERVICE	RIO GRANDE	MUNC	530			OF USE FOR 1, REDEFINE LAND TO BE IRR
0987-000	6	Brewster	8840000000	U S NATL PARK SERVICE	RIO GRANDE	IRRG	1000	227		AMEND 7/5/89
0988-000	6	Brewster	8810000000	DAVID ADAMS	RIO GRANDE	IRRG	20	5		
0989-000	6	Brewster	8800000000	DAVID ADAMS	RIO GRANDE	IRRG	180	45		
0992-000	6	Terrell	8640000000	BYRON HODGE ET AL	RIO GRANDE	IRRG	152	38		

CHAPTER 5
APPENDIX

APPENDIX 5A
EMERGENCY TRANSFER OF WATER RIGHTS

Under TWC 11.139, TNRCC may grant an emergency permit, order, or amendment to an existing water right after notice to the governor and for no more than 120 days. In order for the permit, order, or amendment to be authorized, TNRCC must find that emergency conditions - those that present an imminent threat to public health and safety – exist. The emergency action may be renewed only once for no longer than 60 days.

Anyone desiring to obtain emergency authorization must submit an application to the TNRCC. The application must include a description of the emergency condition, facts to support the emergency condition, estimated time when the authorization will begin and end, a description of the action being sought and the activity proposed to be allowed, and any other information required by the TNRCC.

If the TNRCC finds the applicant's statement to be valid, emergency authorization may be granted without notice and hearing. However, if emergency authorization is granted without a hearing, a time and place will be fixed for a hearing. The hearing may be held as soon as the emergency authorization is granted but no later than 20 days after the emergency authorization was granted.

The TNRCC may grant an emergency authorization to a retail or wholesale water supplier for the temporary transfer or use for all or part of water right(s) for other than domestic or municipal use. Emergency authorization, under Subsection (h) of TWC 11.139, may not be granted if the authorization would cause a violation of a federal regulation. The person or entity granted an emergency authorization is liable to the owner from whom the use is transferred for the fair market value of water transferred as well as any damages caused by the transfer.

The TNRCC provided some guidelines as to points of law contained within this statute: (1) the requesting entity has the burden of identifying the specific water right(s) that it wants transferred, and (2) in transferring the amount of water requested, TNRCC shall allocate the requested amount among two or more water rights for other than domestic or municipal use. Other than this statement, there is no distinction made between types of water uses – TNRCC will allocate "equitably."

The TNRCC provided further clarification of the emergency transfers issue in an email letter from Todd Chenoweth, Water Rights and Uses Section Chief, addressed to Glynda Mercier of Freese and Nichols and dated April 11,2000. Mr. Chenoweth stated that TNRCC's Rules provide some guidance as to how the Commission will select water rights for transfer, citing § 297.17(k) which says, in part, that: ". . . In determining the water rights from which the water will be transferred, the commission shall be guided by the applicable approved regional water plan and statutory preferences of use provided by Texas Water Code, §11.024, and shall also look first to water rights that are unperfected or are not otherwise being used and for which the transfer would not jeopardize existing financial commitments made for the water to be transferred". Mr. Chenoweth also stated that TNRCC will make a case-by-case determination for each application.

Mr. Chenoweth also pointed out that Texas Water Code Water Code §16.053(e)(4)(I) provides that regional water plans are to identify what water rights may

be targeted in case there is a need for an emergency transfer, and that TNRCC rules in §297.17(k) indicates that the commission will be guided by this information.

As of July 2000, the Texas Water Development Board Rules (31 Texas Administrative Code Chapter 357) have relaxed regional water planning groups' responsibility to identify specific water rights that may be transferred under TWC 11.139. According to the new TWDB Rules, the regional water planning groups now will consider emergency transfers but do not have to recommend specific emergency transfers.

During the planning process, the Regional Water Planning Group recognized that emergency transfers of surface water rights is NOT to be considered a water management strategy. The power to invoke such emergency transfers – if they were to occur – is to be used during emergencies only. Texas Water Code 11.139 does not define "emergency"; presumably this could be a severe drought as well as a hazardous waste spill contaminating a water source.

In accordance with Texas Water Development Board Rules 31 Texas Administrative Code Chapter 357, and with Texas Water Code Water Code §16.053(e)(4)(I), the Regional Water Planning Group has considered the issue of emergency transfers and identifies larger or more reliable water rights (i.e., where the water right holder has been able to divert a substantial part of his authorized amount for a number of years) as the water rights which may be targeted in case there is a need for an emergency transfer. These rights would be likely transferred to municipalities or other entities serving municipal users in the case of an emergency and if the requesting entities followed proper procedure outlined in Texas Water Code 11.139

CHAPTER 7
APPENDICES

APPENDIX 7A
RESPONSES TO ORAL PUBLIC HEARING COMMENTS

EL PASO, TEXAS SEPTEMBER 28, 2000

Frank Wood
President of the Haciendas del Norte Water Improvement District (HDNWID)

Summarized a joint resolution between the HDNWID and the Homestead Municipal Utility District (MUD) to cooperatively develop long-term water management strategies within their water supply districts. He stated that the districts took this step because the regional water plan only provides one strategy for meeting future water needs in their districts: purchase water from El Paso. Mr. Wood noted that both districts have addressed their concerns about their ability to provide adequate future water supplies within their respective service areas to the EPWU-PSB, and have sought to work with the EPWU-PSB to plan for and meet these anticipated future needs. The EPWU-PSB, however, has not made a commitment to supply these projected water needs. Mr. Wood submitted to the WPG the text of the joint resolution between the water supply districts.

Response: *Recognition of the resolution will be noted in Chapter 5 Section 5.4.3 under the discussion of both entities. A copy of the resolution is provided in the written comments of this section. Five additional strategies similar to the El Paso County Other strategies were added to Homestead MUD.*

Ellis Richard
Superintendent of Guadalupe Mountains National Park

1. Thanked the Planning Group for their work in the preparation of the plan.

2. He read the text of the written comments which GMNP submitted to the Planning Group. Superintendent Richard noted that the park is concerned with strategy 71-6b (groundwater transfer – Dell Valley) because of the negative impact which the strategy will have on Dell Valley agriculture and on Park operations. He stated that pumping 100,000 acre-feet of water to get 50,000 acre-feet of potable water through desalination is an inefficient use of a very limited resource in the Chihuahuan Desert. Also there is great concern about the impact of the proposed strategy on the Salt Basin or Salt Flats and on private wells in the Dell Valley, including those within the park. Superintendent Richard also stated that McKittrick Creek should be mentioned in the plan as an ecologically unique stream segment, regardless of the confusion surrounding such designation. The creek is of special ecological significance to the park. GMNP is requesting to see a full assessment of the environmental impacts of the groundwater transfer

proposal, prior to its implementation. The concern for Dell Valley is that it will negatively impact the agricultural industry and the rural lifestyle of the community.

Response to Mr. Richard's comments is presented following his written comments.

Ignacio Chavez
Dallas (Considers El Paso his hometown because he was raised here.)

1. He said he is very concerned with the future of El Paso.

2. Mr. Chavez stated that the region's draft plan is generally shortsighted and does not solve the long-range problem of adequate water supply over the planning horizon, unless new sources of fresh water from outside the region are found.

3. He added that the water crisis in this region has international ramifications, which fall outside the scope and purview of Texas Senate Bill 1, and that it invites the aggressive participation of the federal governments of both U.S. and Mexico.

4. He said his recommendation would be to bring desalinated seawater from the Gulf of Mexico to El Paso and he added that it could be made economically feasible in the long term.

Response: The Regional Planning Group will consider import of desalinated seawater during the next planning period.

Bill Addington
West Texas Water Protection Fund and
Sierra Blanca Legal Defense Fund

1. Said that he would have liked to have seen the meeting scheduled for 7:00 pm instead of 1:00 pm in an effort to meet the general public's demand.

2. Mr. Addington said that he doesn't think, other than the sustainable water project, that the plan has addressed the impacts of taking so much water from the river. He said that the El Paso - Las Cruces sustainable water project is not sustainable.

Response: The sustainable water project is not a single strategy in the plan. However, some of the plan strategies are incorporated into the sustainable water project. It is not the responsibility of the Regional Planning Group to assess the validity of the sustainable water project, but rather to recognize its existence.

3. He also added that regarding strategy 71-6a and 71-6b (groundwater transfers via long distance pipeline from Antelope Valley Ranch and Dell Valley), he agrees with Superintendent Richard of Guadalupe Mountains National Park, local ranchers and farmers, that groundwater mining has resulted in draw downs of the aquifer (requiring residents to drill deeper wells) and degradation of water quality. Mr. Addington said that there is no one representing the Dell Valley area on the Planning Group, and the area's concerns have not been adequately addressed.

Response: *The strategy evaluations for 71-6A and 6B state that further studies on strategy impacts are to be performed. The Regional Planning Group has repeatedly asked for public input from the entire region including Dell Valley. Dell Valley representation as a voting or non-voting member will be considered during the next planning period. Members represent interests listed in the regulations.*

4. Mr. Addington said that in El Paso water is not currently a limiting factor for development and growth and that water pricing in El Paso needs to be restructured, and more emphasis must be placed on conservation.

Response: *Additional El Paso strategies will be addressed during the next planning period.*

5. He concluded by saying that El Paso needs to consider controlling its demand before considering additional water supplies.

Response: *Demand conservation is discussed in strategy 71-7.*

John Meetze
President of the Hudspeth County Underground Water Conservation District #1 (HCUWCD#1)

1. Said that he along with the district, feel that they should have a representative from their water district on the Regional Planning Group.

Response: *Dell Valley/District representation as a voting or non-voting member will be considered during the next planning period. Members represent interests listed in the regulations.*

2. He also said they feel that Mr. Jim Ed Miller's position on the Planning Group
(representing water districts) is a potential conflict of interest because he represents the Hudspeth County Reclamation District and the Lower Valley Water District as well as the HCUWCD#1. The districts could face

future conflicting interests, so each district should have its own representative on the Planning Group.

Response: *The Regional Planning Group does not believe there is a conflict of interest because each member represents an interest and not a region. Dell Valley/District representation as a voting or non-voting member will be considered during the next planning period. Members represent interests listed in the regulations.*

3. Mr. Meetze also said that observations of the Dell Valley water supply from 1990 to 2000 have shown drops of over 1 foot per year in wells. Because there has been an increase in agricultural acreage, he fears that they will soon run out of water.

Response: *This observation will be included in the continued evaluation and consideration of strategy 71-6B.*

Cyrus Reed
Texas Center for Policy Studies in Austin

1. Asked if it was possible to extend the comment period.

Response: *Mr. Reed was told that the current public hearing comment deadline could not be extended because of timing constraints, but that public input is welcomed and encouraged at any time.*

2. Mr. Reed also said that the plan could have done a better job of quantifying the ecological river needs.

Response: *The Regional Planning Group will take this comment under advisement. Policy recommendations are presented in Sections 6.3 and 6.4 of Chapter 6.*

Loren Timmerman
General Manager of the Homestead MUD

1. Said that when the water plan first was started, Homestead MUD thought that it was in their best interest to rely solely on the Public Service Board for the purchase of additional water to meet the district's needs. However, he said that recent discussions have made it apparent that additional water will be required in El Paso for future needs. Homestead MUD would like to have the same strategies listed as "County Other". He also referred to the joint agreement between Homestead MUD and HDNWID, which Mr. Wood submitted into the record.

Response: *Recognition of the resolution will be noted in Chapter 5 Section 5.4.3 under the discussion of both entities. Five additional strategies similar to the El Paso County Other strategies were added to Homestead MUD.*

ALPINE, TEXAS SEPTEMBER 29, 2000

Mr. Talley
Alpine

1. Thanked everyone and asked that the following suggestions, which he also submitted in writing, be added to the plan.

Response: *All comment responses are included in this document.*

2. Inter-basin transfer of underground water sources should be limited to a last resort option; after all other contingencies have been exhausted, and then only for emergency use, i.e. drinking water or medical use.

Response: *All viable strategies, including transfer of ground water, are being considered for their practicality.*

3. El Paso should list as a viable and necessary water management strategy the control and subduing of population, industrial and commercial growth.

Response: *Growth management is considered in strategy 71-7.*

4. Comprehensive environmental assessments should be conducted at all levels of the plan, including, the federal and state requirements under the National Environmental Policy Act (NEPA).

Response: *Time and budget restrictions of this first planning period did not allow for complete environmental assessments of strategies. However, environmental impact was considered for each strategy. NEPA will be considered by the entity affected as appropriate when each strategy is implemented. The proponent of the project is responsible for the initiation of NEPA.*

5. That public input be given far more importance than this planning cycle allowed for, including funds to adequately publicize meeting dates in local media and post meeting materials on the website and make them available at local access points in a timely manner.

Response: *The Regional Planning Group tried to include the public as well as possible but will strive to do better.*

6. He added that he thought water rates should reflect the obvious high value that it holds and he would like to see more funding for public forums.

Response: *Additional El Paso strategies will be addressed during the next planning period.*

7. Mr. Talley stated that the WPG should make greater utilization of Sul Ross and UTEP data and capabilities.

Response: *The Regional Planning Group agrees.*

8. He also recommended that the state or the WPG should set standards for representatives on the Planning Group.

Response: *The Regional Planning Group is striving to follow guidelines as set forth by the Texas Water Development Board.*

Mr. Schmidt
Alpine

1. Said he agreed with Mr. Talley's comments.

2. Also stated that he is unclear about the Planning Group's ability or inability to prioritize or to make recommendations on certain strategies. He stated that the Group should prioritize the strategies, and use their influence to shape or recommend policy at local level in a diplomatic way.

Response: *Although the strategies are not prioritized, their evaluations are intended to establish their feasibility and practicality. The Regional Planning Group has no authority to implement or enforce strategies.*

Mr. Tweedy
Alpine

1. Asked what recommendations would the Group make to the state concerning the drought?

Response: *All strategies represent recommendations based on drought-of-record conditions.*

2. He also added that he is very supportive of what the Group is doing and wants to know what recommendations are going to be made to the state when the plan is ready.

Response: *Recommendations to the state are presented in Chapter 6. The Regional Planning Group has no authority to implement or enforce strategies*

Bill Addington
West Texas Water Protection Fund
Sierra Blanca Legal Defense Fund

1. Said that El Paso's policy for the past ten years has been "growth at any cost" and that policy now comes at the expense of the rural areas. He added that El Paso needs to apply growth management controls. He stated that the legislature needs to address the "Rule of Capture" and also close the loophole in the colonias law that exempts rural areas with less than 10,000 people.

Response: *The Regional Planning Group will consider if additional legislative recommendations are needed in the next planning cycle. Demand conservation and growth management are considered in strategy 71-7.*

2. Mr. Addington also said the Regional Planning Group approved the Sustainable Water Project as a strategy, but the project is not sustainable and is hydrologically unsound.

Response: *The sustainable water project is not a single strategy in the plan. However, some of the plan strategies are incorporated into the sustainable water project. It is not the responsibility of the Regional Planning Group to assess the validity of the sustainable water project, but rather to recognize its existence.*

3. He stated that El Paso wants to take more water than they can even use. Mr. Addington said that the Hudspeth County UWCD started in 1956, the fourth one started in the state of Texas. The City of El Paso or Hunt Building Corporation must apply to the HCUWCD for a permit to remove water from the district. If only one water user is found to be negatively impacted by the removal of water from the district, then HCUWCD must deny the permit. Mr. Addington stressed that El Paso needs to control its population growth, conserve more and discourage new development. In his opinion, they also need to have a 10-year phase-out of all existing turf grass. He stated that El Paso needs to enforce its existing conservation ordinances and focus on demand management before looking for additional supply sources.

Response: *Recognition of the HCUWCD's authority is made in strategy 71-6B. El Paso's focus on water conservation can be viewed in Chapter 5 Section 5.4.3 and strategy 71-1. Additional El Paso strategies will be addressed during the next planning cycle.*

4. Mr. Addington also submitted his comments in writing.

Mr. O'Steen
Marfa

1. Echoed Mr. Addington's comments in addition to submitting his written comments.

2. He said that El Paso's growth and financial enlargement should not happen at the expense of the rural region. He would like to see this concept embodied into the recommendations in the Plan.

Response: *El Paso strategy evaluations (as well as all other strategies) included consideration for impacts on several categories.*

3. He also said he was troubled that it seems the plan is not willing to state an acceptable level of aquifer draw down, and asked if it is acceptable to deplete the Ryan Flats West Texas Bolson aquifer.

Response: *El Paso strategy 71-6A evaluation states that "… hydrological studies of the aquifer … are necessary to assess the impact of this strategy.*

4. Regarding Senate Bill 1 and the consensus process, he added that everyone should be proud of the hard work and the time that was devoted to the regional planning process and the draft plan. He stressed, however, that there is no equitable way to reach consensus in a planning process where one group of people with about the lowest per capita income in the state, and which has water, must deal with a second group that has a relatively high per capita income, and which is lacking water. Mr. O'Steen added that he has heard consensus described as a situation where no one is happy, so maybe this would be a way to evaluate the plan.

Response: *Throughout the process, the Far West Texas Water Planning Group has been committed to maintaining a balance between urban and rural interests in our vast and diverse region. This commitment is evidenced by the balanced urban/rural composition of the water planning group itself as well as by the dual track system (urban and rural) implemented for analysis and modification of the water plan chapters and strategies. This*

commitment is clearly stated on page 3 of the executive summary of the water plan. The Planning Group followed the legislative mandate and did reach consensus where feasible and possible.

5. He added that the rural region would welcome the overflow of industries from El Paso if there isn't adequate water to supply those industries from existing sources.

No response necessary.

6. He also stated that El Paso's water pricing structure is out of line; the price of water does not reflect its value. He stated that the market place can solve the problem in El Paso: price the water high enough so that people leave, penalize excessive consumption with high price, and reward conservation.

Response: *Additional El Paso strategies will be addressed during the next planning cycle.*

Mr. Robinson
Fort Davis

Thanked the Water Planning Group for all their work.

Response: *You're welcome.*

APPENDIX 7B
RESPONSES TO WRITTEN PUBLIC HEARING COMMENTS

The following responses are made to written comments that are included in their entirety.

Bill G. Addington – Sierra Blanca (*two comment submittals*)

See responses to oral comments made at Alpine and El Paso hearings.

Lupe Anchondo – Sierra Blanca

The City of El Paso's water management strategy is explained in Chapter 5 Section 5.4.3 and in strategies 71-1 (demand conservation), 71-2 (supply conservation), and 71-7 (growth management).

Seth B. Burgess – Alpine

Consideration of expanding the rainfall harvesting strategy to both the rural and urban areas will be considered during the next planning period. The regional Planning Group concurs that the Regional Plan should support easy access to water information and conservation education. The group intends to improve on this aspect of the planning process.

Ignacio E. Chavez – Irving, Texas

The Regional Planning Group will consider the import of desalinated seawater during the next planning period.

Susan Combs – Texas Department of Agriculture

The Regional Planning Group will consider the addition of a legislative recommendation of a request for more state-funded participation in the areas of irrigation conservation and technology, canal lining, brush control, and weather modification.

Susan Curry – Alpine

The City of El Paso water management strategy is explained in Chapter 5 Section 5.4.3 and in strategies 71-1 (demand conservation), 71-2 (supply conservation), and 71-7 (growth management). Additional El Paso strategies will be addressed during the next planning period.

Eddy D. Edmondson – Texas Nursery & Landscape Association

The Regional Planning Group will consider the inclusion of "floriculture and horticulture products" in the definition of agriculture.

Jane W. Elioseff – Marfa

(1) El Paso conservation and growth management strategies are included as 71-1, 71-2 and 71-7.

(2) The plan contains several unprioritized strategies; there is no suggestion that the import of ground water is intended to be the most feasible strategy.

(3) There is no consideration in the plan of creating a regional water district that would include Marfa and El Paso.

(4) Recognition that the Rio Grande is an American Heritage river is made in Chapter 3 Section 3.2.2. Additional wording to this section will be considered during the next planning period.

John Elsbury – Alpine

The City of El Paso water management strategy is explained in Chapter 5 Section 5.4.3 and in strategies 71-1 (demand conservation), 71-2 (supply conservation), and 71-7 (growth management). Additional El Paso strategies will be addressed during the next planning period.

Vaughn Grisham – Alpine

The strategy evaluations for 71-6A and 6B state that further studies on strategy impacts are to be performed.

Myron J. Hess – National Wildlife Federation

The NWF identifies numerous deficiencies in the plan concerning natural resource protection and environmental water needs and provides suggested corrections. Many of the criticisms relate to lack of detail. The Planning Group recognizes that the data regarding the Region's aquifers is inadequate. Accordingly, Chapter 6 addresses this need with specific recommendations for additional data generation, collection, and analysis.

Other criticisms are directed at the failure to designate stream segments as unique, to emphasize environmental water needs as equally important with other water uses, and to provide for the protection of the Region's natural resources. The Planning Group agrees with the importance of these issues and is aware of the need for further emphasis. The Planning Group will supply emphasis and detail as the Legislature provides additional guidance.

Some of the commentator's criticisms, such as those directed at the lack of discussion about springs, relate to property rights issues. The Planning Group believes

that it is counter-productive to regional water planning, as well as inappropriate, to include in a public document private information about private property.

John D. Meetze – Hudspeth County Underground Water Conservation District #1

Dell Valley/District representation as a voting or non-voting member will be considered during the next planning period. Members represent interests listed in the regulations.

James D. O'Steen, Jr. – Marfa

See responses to oral comments made at the Alpine hearing.

Judith Brueske-Plimmer and P.M. Plimmer – Alpine

The City of El Paso water management strategy is explained in Chapter 5 Section 5.4.3 and in strategies 71-1 (demand conservation), 71-2 (supply conservation), and 71-7 (growth management). Additional El Paso strategies will be addressed during the next planning period.

Ellis Richard – U.S. Dept. of the Interior, Guadalupe Mountains National Park

The Water Planning Group recognizes the ecological significance of Guadalupe Mountains National Park, and recognizes that the ecological and environmental impacts of the strategies as cited would certainly need to be considered prior to implementation. If applicable, environmental assessments will be triggered as strategies move closer toward implementation, and the Planning Group will stay informed and modify strategies as necessary to reflect the most current information.

<u>Paragraph 6 and 7</u>

When desalinating brackish water, current reverse osmosis technologies produce a brine stream equivalent to about 20 percent of the total feed (raw) water, not 100% as stated in the comment. Thus, to produce 50,000 acre feet of product water only about 120% of this amount, or 62,500 acre feet, of feed water is required.

As stated in Strategy 71-6B, the initial pumping level would be set at about 15,000 acre-feet per year of product water, requiring about 18,000 acre-feet of feed water. Sufficient land and/or groundwater leases would be acquired to retire an equivalent amount of agricultural pumping.

<u>Paragraphs 8 - 11</u>

Most of the concerns related to impacts from water level declines raised in these paragraphs are addressed in the Section entitled "Quantity of Water" of Strategy 71-6B. To summarize, pumping levels for desalination and exportation would be limited such that the total consumptive use (including irrigation) would not exceed the sustainable yield from the Bone-Creek Victorio Peak Aquifer,

which is generally accepted to be equal to the estimated recharge of 45,000 to 60,000 acre-feet per year. This would insure against a permanent decline in water level elevations, because recharge and consumptive use levels would be roughly in balance.

If desalination pumping were temporarily ceased, the elevation of the water table within the cone(s) of depression would be expected to rebound to pre-pumping conditions, after allowing for a suitable recovery period. Also, sufficient land purchases or ground-water leases would be acquired to allow for a buffer zone such that the temporary cone(s) of depression produced by the desalination pumping would not significantly effect neighboring farm wells. Again, because total recharge and pumping would be balanced, such cones of depression would be expected to remain in a steady state and not decline significantly over time. Although it's possible that sink holes would develop within the deepest areas of the cones of the depression, the potential for development of sinkholes would likely be no greater than experienced under current agricultural pumping practices.

In reference to the wells serving Guadalupe Park facilities at Pine Springs, these wells tap into a totally different local ground-water source which is located approximately 22 miles southeast of Dell City and fed by run-off from the eastern side of the Guadalupe Mountains. This ground-water source is therefore geographically isolated from the Bone Springs-Victoria Peak aquifer and not in the least affected by the cone(s) of depression resulting from desalination pumping.

The effect of desalination pumping on the existing salt balance of the aquifer system is briefly analyzed in the Section entitled "Environmental Issues" of Strategy 71-6B. The preliminary determination reached in this section is that the total salt loading would remain the same and no significant environmental effects would be expected. In fact, an interesting finding is that desalination may produce beneficial effects on the aquifer during periods of overdraft. Given that no significant water level and water quality impacts are anticipated, the environmental effects mentioned in paragraph 8 related to such impacts are not foreseen. Of course, more detailed studies would be needed to verify this determination.

Paragraph 12

The Planning Group made the decision to defer any recommendations for designation of Ecologically Unique River and Stream Segments because the impact such designation would have on private property rights was not specified. As McKittrick Creek (as it runs within the Guadalupe Mountains National Park) is on federal land, private property rights would not be impacted, and therefore, the Water Planning Group will consider making this recommendation in the next planning cycle.

Paragraph 13

As previously stated, a more detailed analysis of environmental impacts resulting from a desalination project in Dell Valley would be done as part of the

Ground Water Conservation District export permit application for the project. Such an environmental study would most likely address such issues as impacts to migrant species, brine disposal impacts on the desert ecosystems and climate, and potential loss of a salt source due to possible reductions in transpiration. At this point in time it is unclear if an Environmental Assessment would be required.

Jeanette Scott – Alpine (*two comment submittals*)

The City of El Paso water management strategy is explained in Chapter 5 Section 5.4.3 and in strategies 71-1 (demand conservation), 71-2 (supply conservation), and 71-7 (growth management). Additional El Paso strategies will be addressed during the next planning period.

Ian Talley – Alpine

See responses to oral comments made at the Alpine hearing.

Pilar West – Sierra Blanca

The City of El Paso water management strategy is explained in Chapter 5 Section 5.4.3 and in strategies 71-1 (demand conservation), 71-2 (supply conservation), and 71-7 (growth management). Additional El Paso strategies will be addressed during the next planning period.

Haciendas del Norte Water Improvement District and Homestead Municipal Utility District – Joint Resolution

Recognition of the resolution will be noted in Chapter 5 Section 5.4.3 under the discussion of both entities. Additional "County Other" strategies have been added as requested.

Norman Gaume – New Mexico Interstate Stream Commission

The Far West Texas Water Planning Group appreciates the involvement and written comments of the New Mexico Interstate Stream Commission. The written comments pertain to the validity of the process resulting in the April 2000 Draft Environmental Impact Statement (CEIS) for the El Paso-Las Cruces Regional Sustainable Water Project. Our water plan includes one strategy that encompasses this project, Strategy 71-4 (surface water treatment). Because the strategy itself made extensive reference to the DEIS for a more complete discussion of potential environmental impacts, the Water Planning Group is in no way endorsing or adopting the findings of the DEIS, as that is well beyond the scope of our statutory mandate. Your objections to the DEIS process in this case, which you allege to have resulted in the premature elimination of alternatives, is hereby noted for the record.

APPENDIX 7C
RESPONSES TO TWDB COMMENTS

TWDB Staff CommentsOctober 10, 2000

1. The required Executive Summary was not found in the draft IPP submitted. Please note that this should be 30 pages or less. Please provide.

Response: Executive Summary is completed and contained in final plan.

2. According to TWDB contract Exhibit B, Part 1, Section 1.2 Initially Prepared and Adopted Regional Water Plan Outline, a task chapter entitled Plan Adoption (§357.11-12) needs to be included. This chapter outlines the description of the public participation, facilitation, and plan implementation issues. Please provide.

Response: Chapter 7 - Plan Adoption is completed and contained in final plan.

3. The summary tables required by Exhibit B, Section 1.7.5, TWDB Contract No. 99-483-293, could not be located in the draft IPP. Please provide.

Response: TWDB Summary Table is completed and provided with final plan.

4. The draft IPP does not identify threats to natural resources as required by TWDB rules [§357.7(a)(1)]. Please provide.

Response: See response to Nov. 17 comment #2 below.

5. TWDB rules [§357.7(a)(5-7)] require water management strategies to be developed to meet needs of water users during drought-of-record conditions. In presenting water availability estimates for the Rio Grande, the region decided that, "An insufficient amount of flow occurs in the channel at this release level to meet the needs of water users in the El Paso area." (See Chapter 3 of the draft IPP and see Note 2 of Table 3-1 in the draft IPP.) Although the draft IPP indicates that zero supply is available from the Rio Grande during drought-of-record, some of the selected water management strategies show a quantity of water that would be available out of the Rio Grande during a drought-of-record. This is inconsistent with the region's decision to assume zero water available from this source during a drought-of-record. Please resolve these inconsistencies between water management strategies and water availability estimates.

Response: All strategies utilizing Upper Rio Grande water are corrected to indicate insufficiency of supply.

6. The draft IPP does not identify needs for which no water management strategy is feasible as required by rules [§357.7(a)(5)]. Please identify whether there are any

needs which will not be met and provide an explanation of why no water management strategies are feasible.

Response: The following language has been added to Chapter 5 Section 5.10.

The strategies discussed in this chapter are intended to identify projects or processes that can be employed to offset water-supply shortages during drought-of-record conditions. In Chapter 3, available water-supply sources were quantified based on drought-of-record conditions. Within the Far West Texas Water Planning Region it is apparent that most recognized temporary water-supply shortages in the rural counties can be met primarily by increased withdrawals of local ground-water resources. However, in El Paso County a more severe supply problem could exist. Municipal, industrial and power generation needs in the county are currently met by water withdrawn from the Rio Grande and local ground-water sources. During drought-of-record conditions the Rio Grande is expected to not have sufficient flow for withdrawals, and the resulting reliance on local ground water will cause the Hueco and Mesilla Bolson aquifers to become depleted of fresh water by 2030. Desalination of brackish local ground water and importation of ground water from eastern counties is not sufficient to meet the total expected deficit. Based on drought-of-record conditions and strategies developed in this plan, the following communities, facilities and other water use categories will be unable to meet expected water supply needs by the year 2030.

- ***City of El Paso***
- ***Town of Anthony***
- ***Community of Canutillo***
- ***Town of Clint***
- ***Community of Fabens***
- ***Community of San Elizario***
- ***City of Socorro***
- ***Village of Vinton***
- ***Community of Westway***
- ***County Other (El Paso County)***
- ***Fort Bliss***
- ***Manufacturing (El Paso County)***
- ***Steam Electric Power (El Paso County)***

Likewise, irrigation along the Rio Grande corridor in El Paso and Hudspeth Counties will also be unable to meet expected water demands. Local brackish ground-water supplies from the Rio Grande Alluvium aquifer would only provide temporary benefit.

7. Water management strategies must be evaluated based on an equitable comparison and consistent application of all water management strategies determined to be potentially feasible [§357.7(a)(7)(F)]. Please indicate in the plan how this requirement was met.

Response: The following language was added to Chapter 5 Section 5.9.2.

Total capital cost, cost by decade, and available supply by decade were recorded in TWDB Table 11. The Regional Planning Group members then equitably compared each evaluation criteria, along with the cost and volume comparison in TWDB Table 11 to determine the feasibility of each strategy in relation to other strategies proposed for each shortage. Where appropriate, the Group specifically considered cost-effective water-management strategies that are environmentally sensitive. The Planning Group chose not to prioritize the strategies because many are too preliminary for a realistic determination of economic and environmental feasibility; rather than prioritizing among strategies of different maturities, the Group chose to retain all feasible strategies. Planning decisions are intended to be made locally whenever possible.

TWDB Staff Comments October 19,2000

1. TWDB rules [§357.5(d)] require regional water planning groups to use population and water demand projections contained in the state water plan or to use revisions approved and adopted by TWDB. In chapter 1 of the draft IPP (page 1-7), the population of Alpine and Van Horn is listed as 10,330 and 3,813, respectively. The TWDB approved numbers are 6,479 for Alpine and 3,296 for Van Horn. Please correct the population numbers on page 1-7 to reflect the approved revisions.

Response: **The Far West Texas Regional Planning Group formally requested population changes and provided required documentation for Alpine and Van Horn. The TWDB granted these changes. The population numbers have been changed in Chapter 1 to correspond to the correct numbers listed in Table 2-1 of Chapter 2.**

TWDB Staff Comments October 26, 2000

1. Table 3, Water Demand by Major Provider of Municipal and Manufacturing Water.

    a. Please address the comments contained in the TWDB file RegE_QA_Table3_IPP.xls, under the column heading entitled, "TWDB Review Comments."

Response: Required corrections are made to TWDB Table 3.

2. Table 4, Current Water Supply Sources.

    a. Please address the comments contained in the TWDB file RegE_QA_Table4_IPP.xls, under the column heading entitled, "TWDB Review Comments."

Response: Required corrections are made to TWDB Table 4.

3. Table 5, Current Water Supplies Available to the RWPG by City and Category.

    a. Please address the comments contained in the TWDB file RegE_QA_Table5_IPP.xls, under the column heading entitled, "TWDB Review Comments."

    b. For consistency between tables, some source names have been adjusted in Table 5 to match the name used in Table 4. Please attempt to use the same source names and Water User Group names in all Exhibit B tables. Some source names have not been adjusted. For example, Table 4 lists source ID 07101, county 71, basin 23 as: Hueco Bolson (Fresh), Hueco Bolson (Brackish), and Mesilla Bolson. Table 5 lists source ID 07101, county 71, basin 23 as: Hueco-Mesilla (Fresh), Mesilla, Hueco-Mesilla (Brackish), Hueco (Fresh), Hueco (Brackish), and Hueco-Mesilla. Highlighted source names indicate an inconsistency between tables 4 and 5. Please adjust.

Response: Required corrections are made to TWDB Table 5.

4. Table 6, Current Water Supplies Available to the RWPG by Major Provider of Municipal and Manufacturing Water.

    a. Please address the comments contained in the TWDB file RegE_QA_Table6_IPP.xls, under the column heading entitled, "TWDB Review Comments."

Response: Required corrections are made to TWDB Table 6.

5. Table 7, Comparison of Water Demands with Current Water Supplies by City and Category.

    a. Please address the comments contained in the TWDB file RegE_QA_Table7_IPP.xls, under the column heading entitled, "TWDB Review Comments."

Response: Required corrections are made to TWDB Table 7.

6. Table 8, Comparison of Water Demands with Current Water Supplies by Major Provider of Municipal and Manufacturing Water.

    a. Please address the comments contained in the TWDB file RegE_QA_Table8_IPP.xls, under the column heading entitled, "TWDB Review Comments."

Response: Required corrections are made to TWDB Table 8.

7. Table 11, Potentially Feasible Water Management Strategies.

    a. Please address the comments contained in the TWDB file RegE_QA_Table11_IPP.xls, under the column heading entitled, "TWDB Review Comments."

    b. TWDB was unable to correlate components of strategies to verify all required fields completed. The "Total Capital Cost" should only be listed one time per project. This will allow a regional cost assessment of implementation of strategies to be attained by summing Field P. A suggestion outlined in TWDB Technical Memorandum 5, dated July 20, 2000, is to add a "strategy number" to the end of Field J (strategy type) to correlate all components sharing the same Total Capital Cost.

Response: Required corrections are made to TWDB Table 11.

8. Table 12, Recommended Management Strategies by City and Category.

    a. Please address the comments contained in the TWDB file RegE_QA_Table12_IPP.xls, under the column heading entitled, "TWDB Review Comments."

Response: Required corrections are made to TWDB Table 11.

b. Please note the following Water User Group is listed with a need in Table 7 but it does not have a strategy listed in Table 12. Please review and adjust as necessary.

WUG Name	WUG ID	RWPG	Seq. No.	City No.	County No.	Basin No.	S2000	S2010	S2020	S2030	S2040	S2050
Mining	51003055	E	1003	1003	55	23	17	47	12	-52	-115	-184

Response: Strategies 55-2 and 55-3 are developed to address the Culberson County Mining supply shortage.

c. TWDB was unable to correlate components of strategies to verify all required fields completed. The "Total Capital Cost" should only be listed one time per project. This will allow a regional cost assessment of implementation of strategies to be attained by summing Field P. A suggestion outlined in TWDB Technical Memorandum 5, dated July 20, 2000, is to add a "strategy number" to the end of Field I (strategy type) to correlate all components sharing the same Total Capital Cost.

Response: Required corrections are made to TWDB Table 12.

9. Table 13, Recommended Management Strategies by Major Provider of Municipal and Manufacturing Water.

a. Please address the comments contained in the TWDB file RegE_QA_Table13_IPP.xls, under the column heading entitled, "TWDB Review Comments."

Response: Required corrections are made to TWDB Table 13.

b. Table 8 indicates that El Paso County WID #1 (MWP alpha 740) has the following needs: -216,236 (year 2000), -207,843 (year 2010), -212,181 (year 2020), -322,678 (year 2030), -334,415 (year 2040), and –351,111 (year 2050). Table 13 does not reference El Paso County WID #1. Please update Table 13 to address these needs or indicate in the plan that these needs will not be met with a reason why they will not be met.

Response: Three EPC WID#1 strategies from Table 12 are added to Table 13. Entities and water-use category demands that are not met by strategies are discussed in the last paragraph of Chapter 5 Section 5.10.

c. TWDB was unable to correlate components of strategies to verify all required fields completed. The "Total Capital Cost" should only be listed one time per project. This will allow a regional assessment of MWP's cost to be attained by summing Field K. A suggestion outlined in TWDB

Technical Memorandum 5, dated July 20, 2000, is to add a “strategy number” to the end of Field J (strategy type) to correlate all components sharing the same Total Capital Cost.

Response: **Required corrections are made to the appropriate TWDB Tables.**

TWDB Staff Comments November 17, 2000

1. Senate Bill 1 requires future projects to be consistent with the approved regional water plans to be eligible for Texas Water Development Board (TWDB) funding and Texas Natural Resource Conservation Commission (TNRCC) permitting.

   The provision related to TNRCC is found in Texas Water Code §11.134. It provides that the Commission shall grant an application to appropriate surface water, including amendments, only if the proposed appropriation address a water supply need in a manner that is consistent with an approved regional water plan. TNRCC may waive this requirement if conditions warrant.

   For TWDB funding, Texas Water Code §16.053(j) states that "after January 5, 2002, TWDB may provide financial assistance to a water supply project only after the Board determines that the needs to be addressed by the project will be addressed in a manner that is consistent with that appropriate regional water plan." The TWDB may waive this provision if conditions warrant.

   Before finalizing the regional water plans, the Regional Water Planning Groups (RWPG) should consider the scope of their plan against the variety of proposals that could be brought before TNRCC and TWDB and ensure the group's intentions are clear to these agencies. For example, TNRCC considers water right applications for irrigation, hydroelectric power, and industrial purposes, in addition to water right applications for municipal purposes. It also considers other miscellaneous types of applications, such as navigation or recreation uses. Many of these applications are for small amounts of water, often less than 1,000 acre-feet per year. Some are temporary. To ensure that small applications are consistent with the regional water plan, the RWPGs should consider adding specific language to their plans indicating that surface water uses that will not have a significant impact on the region's water supply are consistent with the regional water plan even though not specifically recommended in the plan.

   TWDB receives applications for financial assistance for many types of water supply projects. Some involve repairing plants and pipelines and constructing new water towers. The RWPGs should consider adding specific language to their regional water plans to indicate that the water supply projects that do not involve the development of or connection to a new water source are consistent with the regional water plan even though not specifically recommended in the plan.

Response: The following language was added to Chapter 5 Section 5.10.

The Far West Texas Regional Planning Group determined that surface water uses that will not have a significant impact on the region's water supply are consistent with the regional water plan even though not specifically recommended in the plan. Also, the Group determined that water supply

projects that do not involve the development of or connection to a new water source are consistent with the regional water plan even though not specifically recommended in the plan.

2. TWDB rules [§357.7(a)(1)] and the scope of work [Phase I, Task 1 (8)] require a description of the identified threats to the natural resources due to water quantity and quality problems. Natural resources are discussed in various sections of chapter 1. However, there is no specific discussion regarding threats to natural resources related to water quantity and quality problems. Please provide the missing information.

Response: **The following language was added to Chapter 3 as Section 3.9:**

Eighteen species of mussels in the Rio Grande and the Pecos River are endangered. A few species of plants in the area have been placed on the "watch list" of the Texas Organization for Endangered Species (TOES), a group of professionals formed in 1972 to study the plight of vanishing plant and animal species in Texas and to educate the public about the conservation of these species. From this watch list, plants that grow in or near the Rio Grande streambed or which require moistness from a stream are listed below. It is not known exactly what the effects of reduced flows of the Rio Grande would have on these plants, if any. The information is presented as extracted from TOES website (www.csdl.tamu.edu/FLORA/toes/toeshome.htm) for those to whom it would be of interest:

Aquilegia longissima Gray - Ranunculaceae - ('longspur columbine') -- populations low or restricted. Known from Brewster, Jeff Davis, and Presidio counties; also Chihuahua, Coahuila, and Nuevo Leon. Typical habitat is cooler, wetter areas near waterfalls, perennial seeps, springs, etc., in humus and leaf litter over alluvium or on limestone or igneous bedrock walls in mountain canyons.

Populus angustifolia James - Salicaceae - ('narrowleaf cottonwood') -- populations low or restricted. Known from Brewster and Culberson counties; widespread in western North America. Typical habitat is well-watered soils along streams, along the Rio Grande and at higher elevations in the Guadalupe Mountains.

Rorippa ramosa Rollins - Brassicaceae - ('canyon watercress') -- populations low or restricted. Known from Brewster and Terrell counties; also Chihuahua, Coahuila, and Durango. Typical habitat is moist, fine textured, alluvial soils on floodplains and in beds of intermittent streams.

3. Phase I, Task 2 (A) (8) in the scope of work requires a summary of feasibility studies, reports and modeling by Boyle/Parsons or their subcontractors related to the El Paso-Las Cruces Regional Sustainable Water Project. The required summary could not be located in the draft IPP. Please provide.

Response: Summaries of the feasibility reports are contained in appendix 1D of Chapter 1.

4. Phase I, Task 2 (A) (10) in the scope of work requires a summary of conservation plans and ordinances. Chapter 1 discusses and summarizes the various conservation plans in the region. However, there is no information provided on conservation ordinances. Please provide this information as required by the scope of work.

Response: The following language has been added to Chapter 1, Section 1.6.2:

County Commissioners' Courts have not enacted water conservation ordinances, nor have they promulgated water availability requirements for new developments.

5. Phase I, Task 2 (A) (11) in the scope of work requires a summary of reports on colonias. Colonias projects are discussed in Section 1.9 of the draft IPP. However, there is no mention or summary of reports on colonias. Please provide this information as required by the scope of work.

Response: The following language has been added to Chapter 1, as Section 1.9.3:

The following is a list of reports on colonias in Far West Texas:

- ***Water and Wastewater Management Plan; by Parkhill, Smith & Cooper, in association with CH2M Hill, May 1988.***
- ***Water and Wastewater Needs of Colonias in Texas; by Texas Water Development Board; October 1992.***
- ***EDAP Phase I Facilities Engineering Community of San Elizario, Texas Water & Wastewater Plan; by Moreno Cardenas, Inc. Consulting Engineers; Jan. 1992.***
- ***EDAP Phase I Facilities Engineering, City of Socorro, Texas Water and Wastewater Plan; by Moreno Cardenas, Inc. Consulting Engineers; Dec. 1992.***
- ***East Montana Area Facility Engineering Plan for the TWDB EDAP; by Parkhill, Smith & Cooper, Inc.; Sept. 1994.***
- ***Final Canutillo Water and Wastewater Facility Plan; by John Carollo Engineers; May 1995.***
- ***Amendment to the Facility Plan for City of Socorro, Texas Water and Wastewater Facilities; by Parkhill, Smith & Cooper, Inc.; July 1995.***
- ***Amendment to the Facility Plan for Community of San Elizario, Texas Water & Wastewater Facilities; by Parkhill, Smith & Cooper, Inc.; July 1995.***

- ***Technical Memorandum No. 2 – Comprehensive Planning Document Socorro EDAP Facilities; by Parkhill, Smith & Cooper, Inc.; July 1995.***
- ***Amendment to the Environmental Information Document for San Elizario, Texas Water & Wastewater Facilities; by Parkhill, Smith & Cooper, Inc.; July 1995.***
- ***Amendment to the Environmental Information Document for City of Socorro, Texas Water & Wastewater Plan; by Parkhill, Smith & Cooper, Inc.; July 1995.***
- ***Colonias Projects in El Paso County; by EPWU/PSB, March 1998; prepared for EPWU/PSB.***
- ***Water Facilities Master Plan for the Lower Valley Water District; prepared by Parkhill, Smith & Cooper, Inc.; August 2000.***

In addition to the above reports, information on colonias in Far West Texas can be found at the following website: http://www.twdb.state.tx.us/colonias/.

6. TWDB rules [§357.5(k)(1)(F)] require consideration of water availability requirements promulgated by a county commissioner's court. A similar, but more detailed, requirement is contained in Phase I, Task 2 (A) (14) of the scope of work, which requires the plan to identify and summarize water availability requirements promulgated by a county commissioner's court. This item could not be found in the draft IPP. Please provide.

Response: **No county commissioner's courts have promulgated water availability requirements in the Far West Texas Region.**

7. Phase I, Task 2 (E) of the scope of work requires the plan to identify "other legal and regulatory constraints". Please indicate in the plan how this scope of work item was addressed.

Response: **The following language has been added to Chapter 5 Section 5.9.**

The evaluation of each individual water management strategy requires an identification of the legal and regulatory issues that will directly impact the feasibility of the strategy. With its northern and western border adjoining other states, and its entire western and southern border adjoining another country, the Far West Texas Region presents one of the most complex interplays of multi-state and international laws and regulations in the entire United States. The fact that natural resources such as rivers and aquifers do not conform to jurisdictional boundaries makes the legal challenges even greater.

Two international treaties, the 1906 International Treaty in the El Paso and Hudspeth County areas, and the 1944 International Treaty below Ft. Quitman govern the primary surface water resource in the Region, the Rio Grande. In the El Paso area, the use of the Rio Grande must also comport with

the Rio Grande Compact among Colorado, New Mexico and Texas, and with Federal Reclamation laws enforced by the Bureau of Reclamation. From the New Mexico/Texas state line south to Ft. Quitman, the status of surface water rights is further complicated by the fact that this area has never been adjudicated by Texas, so no one has "adjudicated rights" to sell. There is also pending two New Mexico federal lawsuits in which the ownership of this Rio Grande surface water in Texas and New Mexico is the central issue.

As to the regulatory restraints on the use of ground water, New Mexico, through its New Mexico State Engineer's office, strongly asserts regulatory power of ground-water pumping in the Mesilla and Hueco Bolsons, the two transboundary ground-water sources available to El Pasoans. The New Mexico State Engineer is currently conducting hydrographic surveys in the southern New Mexico region as part of a pending New Mexico adjudication which will affect Texas as the downstream state. Historically, ground water has not been regulated in Texas except in relatively few areas, but pursuant to Senate Bill 1, groundwater districts are now the legislature's preferred method to regulate ground water. Within the Far West Texas region there are four underground or groundwater conservation districts, each with statutory rule-making and management authority within their respective jurisdictional boundaries. In summary, no management strategy in the Far West Texas Region should be pursued without a careful consideration of the legal issues impacted by that strategy.

8. Phase II, Task 1 (B) (1) in the scope of work indicates that the region will be surveyed to determine desired changes to population and water demand projections. Please indicate in the plan how this scope of work item was addressed.

Response: The following language has been added to Chapter 2, Section 2.3:

The members of the RWPG solicited all entities within the Region to submit desired changes to population and water demand projections. Back-up documentation for changes was evaluated as to whether they qualified under TWDB's Rules. Documentation and revisions were prepared in the report "Far West Texas Region Revisions to Population and Water Demand Projections" dated June 28, 1999. The recommended changes were presented to the public for final comment. This document was then submitted to TWDB and served as the basis for TWDB's approval of revised the population and demand projections.

9. Phase II, Task 1 (B) (3) in the scope of work indicates that documentation of desired population and water demand changes will be presented to the public for comment. Please indicate in the plan how this scope of work item was addressed.

Response: Refer to No. 8 above.

10. Phase I, Task 3 (A) (4) in the scope of work requires impacts of water-quality problems on public health, treatment costs, or agricultural yields to be described. The required description could not be located in the draft IPP. Please provide the missing information in accordance with the scope of work.

Response: The following language has been added to Chapter 3, Section 3.2.6, and as Sections 3.2.7, 3.2.8, and 3.2.9:

3.2.6 Rio Grande Water Quality

TNRCC identifies the levels of pollutants in water bodies by water segment numbers. Some of the tracked pollutants are lead, cadmium, diazinon, nickel and copper. The pollutants are classified based on exceeding the chronic and/or acute criteria for protection of aquatic life (TNRCC, 1996, Vol. 1). These criteria are defined in terms of toxic substances in ambient water. The specific water quality segments within Far West Texas are 2314, 2306, 2308 and 2307 (TNRCC, 1996, Vol. 4). Also, water quality segment 2310 forms the easternmost border of Region E's Terrell County. Segment 2314 includes the Rio Grande from International Dam in El Paso County to the New Mexico State Line in El Paso County. Segment 2306 includes the Rio Grande from a point 1.1 miles downstream of the confluence of Ramsey Canyon in Val Verde County to the confluence of the Rio Conchos (Mexico) in Presidio County. Segment 2308 encompasses the Rio Grande from the Riverside Diversion Dam in El Paso County to International Dam in El Paso County. Segment 2307 includes the Rio Grande from the confluence of the Rio Conchos (Mexico) in Presidio County to Riverside Diversion Dam in El Paso County. Segment 2310 includes the Lower Pecos River from a point 0.4 miles downstream of the confluence of Painted Canyon in Val Verde County to a point immediately upstream of the confluence of Independence Creek in Crockett/Terrell County.

Segment 2314 of the Rio Grande Basin

Elevated fecal coliform levels cause partial support of the contact recreation use. All other water quality standards and uses are supported. Elevated orthophosphorus and total phosphorus are a concern. Manganese in sediment is elevated. High nutrient levels have the potential to cause increased algal growth and subsequent oxygen depletion, especially during warm summer months. An intensive survey conducted in 1992 will provide a basis for developing a waste load evaluation. This segment was included in the multiphase Binational Rio Grande Toxic Substance Study (TNRCC, 1996, Vol. 4).

Segment 2306 of the Rio Grande Basin

Total phosphorus concentrations are elevated. All other water quality standards and uses were supported. Elevated concentrations of selenium in fish tissue is a concern throughout the entire segment. Elevated levels of arsenic, barium, selenium and DDE in sediment are a concern in the area below the Rio

Conchos confluence. This segment was included in the multi phase Binational Rio Grande Toxic Substance Study (TNRCC, 1996, Vol. 4).

Segment 2308 of the Rio Grande Basin

Fecal coliform concentrations exceed the screening level for contact recreation, but the non-contact recreation use is supported throughout the segment. All other uses and water quality standards are supported. Elevated ammonia nitrogen, nitrite plus nitrate nitrogen, total phosphorus, and orthophosphorus levels are elevated above the screening levels. High nutrient levels have the potential to cause increased algal growth and subsequent oxygen depletion, especially during warm summer months. Copper in sediment is elevated. A waste load evaluation completed for this segment recommends secondary treatment for wastewater discharges. An intensive survey for the segment was conducted in 1992 to provide a basis for revisions of the waste load evaluation. This segment was included in the multiphase Binational Rio Grande Toxic Substance Study (TNRCC, 1996, Vol. 4).

Segment 2307 of the Rio Grande Basin

This upper third of the segment is partially supporting the contact recreation use due to elevated fecal coliform levels. Ammonia nitrogen is also a concern in the same area. Total phosphorus, orthophosphorus, and chlorophyll a are a concern in the entire segment. Average chloride, sulfate, and total dissolved solids concentrations exceed the segment criteria. River flow in the segment is reduced due to irrigation withdrawals in the El Paso area and evaporation throughout the segment. Manganese in sediment is a concern. This segment was included in the multiphase Binational Rio Grande Toxic Substance Study (TNRCC, 1996, Vol. 4).

Segment 2310 of the Rio Grande Basin

Average chloride, sulfate, and total dissolved solids levels exceed the segment criteria. Natural contributions of salts from the soil, as well as saline groundwater seeps and springs, contribute to these elevated levels (TNRCC, 1996, Vol. 4).

3.2.7 Health Effects Dissolved Pollutants Identified by TNRCC

Fecal Coliform

The presence of fecal coliform bacteria in aquatic environments indicates that the water has been contaminated with the fecal material of man or other animals. At the time this occurred, the source water may have been contaminated by pathogens or disease producing bacteria or viruses which can also exist in fecal material. Some waterborne pathogenic diseases include typhoid fever, viral and bacterial gastroenteritis and hepatitis A. The presence of fecal contamination is an indicator that a potential health risk exists for individuals exposed to this water. Fecal coliform bacteria may occur in ambient water as a result of the overflow of domestic sewage or nonpoint sources of human and animal waste.

Nitrate and Nitrite

Nitrogen-containing compounds act as nutrients in streams and rivers. Nitrate reactions in fresh water can cause oxygen depletion. Thus, aquatic organisms depending on the supply of oxygen in the stream will die. The major routes of entry of nitrogen into bodies of water are municipal and industrial wastewater, septic tanks, feedlot discharges, animal wastes (including birds and fish) and discharges from car exhausts. Bacteria in water quickly convert nitrites to nitrates.

Nitrites can produce a serious condition in fish called "brown blood disease." Nitrites also react directly with hemoglobin in human blood and other warm-blooded animals to produce methemoglobin. Methemoglobin destroys the ability of red blood cells to transport oxygen. This condition is especially serious in babies under three months of age. It causes a condition known as methemoglobinemia or "blue baby" disease. Water with nitrite levels exceeding 1.0 mg/l should not be used for feeding babies. Nitrite/nitrogen levels below 90 mg/l and nitrate levels below 0.5 mg/l seem to have no effect on warm water fish.

Chlorides

Chlorides in reasonable concentrations are not harmful to humans. At concentrations above 250 mg/l, chlorides impart a salty taste to water. For this reason, chlorides are generally limited to 250 mg/l in supplies intended for public use.

Sulfate

Sulfate in reasonable concentrations is not harmful to humans. At concentrations above 250 mg/l, sulfate affects the taste of water. For this reason, chlorides are generally limited to 250 mg/l in supplies intended for public use.

Phosphates

Phosphates are not toxic to people or animals unless they are present in very high levels. Digestive problems could occur from extremely high levels of phosphate. Rainfall can cause varying amounts of phosphates to wash from farm soils into nearby waterways. Phosphate will stimulate the growth of plankton and aquatic plants that provide food for fish. This increased growth may cause an increase in the fish population and improve the overall water quality. However, if an excess of phosphate enters the waterway, algae and aquatic plants will grow wildly, choke up the waterway and use up large amounts of oxygen. This condition is known as eutrophication or over-fertilization of receiving waters. The rapid growth of aquatic vegetation can cause the death and decay of vegetation and aquatic life because of the decrease in dissolved oxygen levels.

3.2.8 Impact of Water Quality on Water Treatment Costs

The impact of water quality problems on public health varies depending on parameters and levels identified. Treatment costs associated with reducing biochemical parameters may increase, depending on the parameters and levels identified.

3.2.9 Impact of Water Quality on Agriculture

Total dissolved solids (TDS) are a measure of the salinity status of water. Salinity is an issue associated with the Rio Grande River. River flows arriving at El Paso contain a substantial salinity contribution from irrigation return flow and municipal wastewater return in New Mexico. Under current conditions, approximately 25% of the applied irrigation water is needed to move through the project in El Paso County to keep the salt loading at reasonable and manageable levels given average surface flow rates.
Increasing water salinity has a negative impact on agricultural. The amount of impact depends on the amount of salinity and amount of sodium in a given water source. With respect to animal agriculture, increased salinity of drinking water creates additional stress on animals, particularly young or lactating animals. As irrigation water salinity increases, potential crop yield decreases, and salts build up in soils and thus can have a long term effect. Most crop production practices in El Paso County have been modified to deal with the use of saline irrigation water. If salinity levels increase, the mixture of crops grown may change to reflect crops with greater tolerance to soil salinity. Unfortunately, many of those salt tolerant crops are not high value crops.

Elevated concentrations of chloride and sulfate in the Rio Grande should only be considered indicators of elevated irrigation water salinity. Since very little sprinkler irrigation takes place in the valley, chloride should have little impact on agriculture.

11. Phase I, Task 3 (A) (5) in the scope of work requires an identification of potential quantity threats to each river system. This information could not be located in the draft IPP. Please provide the missing information.

Response: The following language has been added to Chapter 3 as Sections 3.5,3.5.1, and 3.5.2:

3.5 WATER QUANTITY THREATS

Water quantity threats are evident within Table 3-1; generally, under drought-of-record conditions, the Upper Rio Grande River and Pecos River are dry or very low. Of special note is the available water supply of Phantom Creek. Phantom Creek's available water supply has been rapidly declining in recent years. Before this rapid decline, Phantom Creek was able to maintain roughly 15,000-18,000 acre-feet of available water.

3.5.1 Long-Term Availability of Surface Water

The long-term availability of water in the Rio Grande and in Phantom Creek may be in question. Factors that might account for the uncertainty of flow in these two streams are discussed below:

Rio Grande

Aside from the legal mechanisms governing allocation of the water from Elephant Butte and the allocation of water between the two nations of Mexico and the United States, the meteorologic and hydrologic reality is that the El Paso area is supplied by the Rio Grande, which has its headwaters in a climatic regime totally disparate from the climatic regime of Far West Texas. If a drought occurs in Colorado, then the El Paso area is essentially thrown into a drought-like scenario. Drought prediction modeling, although attempted by climatologists worldwide, is still in its infancy and therefore the likelihood of a sure knowledge of long-term availability of water in the Rio Grande headwaters is slim.

Phantom Creek

Phantom Creek is supplied by Phantom Creek Spring. Within the last year, the flow of water from the spring has reached its lowest level in more than 40 years, and on several occasions, the spring has ceased flowing. Two sources of water discharging from the spring have been identified: local precipitation over the nearby rocks of the Davis Mountains, and baseflow supplied by what is hypothesized to be a regional ground-water flow system (LaFave, 1987). During times of drought, springflow often drops sharply in response to decreased local rainfall. Despite diminished rainfall during drought, baseflow has been sufficient to sustain flow from the spring. The recent condition of the spring is related to the lack of local rainfall and to other unknown factors that have lowered baseflow. These factors may include the effects of ground-water pumpage or the long-term effects of severe drought in the region.

3.5.2 Surface Water Availability and Recreation Use of the Rio Grande

The Rio Grande is almost a dry riverbed in the stretch between El Paso and Presidio. Stream flow records at the USGS-IBWC gage 08370500 located at Fort Quitman, TX for the time period 1889 through 1975 indicate an average discharge of 289,030 acre-feet per year - or approximately 396 cfs. Stream flow records at USGS 08371500 near Presidio, TX for the same time period indicate an average discharge of 375 cfs. The latter gage is located approximately eight miles upstream of the confluence of the Rio Grande and its Mexican tributary the Rio Concho. The Texas Parks and Wildlife Department has determined that this stretch contains insufficient water for recreational use.

The river becomes a permanent stream again where Rio Concho enters upstream from Presidio, TX. From Presidio to Lajitas, the Rio Grande contains sufficient water levels for recreational use; the large rapids in the vicinity of and below Redford are some of the better rapids on the Rio Grande. In addition, diversions on the Texas side between Presidio and Redford are currently used to irrigate crops.

The segment of the Rio Grande from Lajitas to Castolon (including Santa Elena Canyon) offers recreational use at almost any time, although water levels above five feet are considered hazardous. The segment from Castolon to Talley is an excellent recreational waterway, offering water levels that are adequate and safe at most times for recreational use. In the segment from Talley to Solis (including Mariscal Canyon), the best recreational use has been reported to be three feet.

12. Phase I, Task 3 (A) (6) in the scope of work requires consideration of the significance of the state's Clean River Program and the federal Clean Water Act. Discussion on these items could not be located in the draft IPP. Please provide the missing information.

Response: The following language has been added to Chapter 3 as Section 3.10:

3.10 CLEAN RIVER PROGRAM AND FEDERAL CLEAN WATER ACT

The state's Clean River Program administers federal Clean Water Act directives through TNRCC's Water Quality Inventories. TNRCC is the responsible agency for identifying water quality problems within the Water Quality Inventory. Detailed excerpts from the Water Quality Inventory are included within the Appendix; these excerpts give information on stream segments within the region. However, the Inventory does not identify sources of water quality problems, as in most cases the problems are "non-point source" pollutants. TNRCC, EPA and other agencies have discussed and researched methodologies by which non-point source pollution could be located and quantified through modeling, but thus far modeling efforts have been less than satisfactory.

13. Phase I, Task 3 (B) in the scope of work requires a summary of existing water rights and tabulation of historical water use associated with each water right. The draft IPP described the number of water rights in the rivers, but the required summary and tabulation was not provided. Please provide this information.

Response: The following paragraph has been added to Chapter 3 Section 3.11 and the required data is contained in the Chapter 3 appendices.

The right to use water from the navigable streams and lakes is permitted through the State of Texas. Current permit holders in the region and reported diversions from 1990 through 1999 are listed in the Chapter 3 appendices. No permits are listed as expiring during the 50-year planning period.

14. Phase I, Task 3 (D) (2-6) in the scope of work requires evaluation of the following surface water issues on the Rio Grande and Pecos Rivers: adequacy of flow, recreational use, environmental needs, year-round deliveries, and long-term availability. The required evaluations could not be located in the draft IPP. Please provide the missing information.

Response: See response to No. 11 above.

15. Phase I, Task 3 (E) in the scope of work requires identification of environmental water requirements, including flows needed to maintain riverine ecosystems. In addition, this scope of work item requires an evaluation of the need to re-channel the Rio Grande from Fort Quitman to the mouth of the Rio Conchos and control phreatophytes within this corridor. These required items could not be located in the draft IPP. Please provide the missing information.

Response: The following language has been added to Chapter 3 as Section 3.2.12:

3.2.12 Re-channelization of the Rio Grande and Control of Phreatophytes

Most persons refer to re-channelization of the Rio Grande in general terms; however the term is often misused as an all-inclusive term. Re-channelization must be understood in the context of historical work done on the Rio Grande, the purposes for such work and the work's effect on river channel and geometry.

In 1933 the United States and Mexico signed a Convention entitled, "Rectification of the Rio Grande", in which the two countries agreed to provide flood protection to urban, suburban and agricultural lands and stabilize the international boundary line. Construction work authorized by this Convention addressed channel aggrading due to the flat gradient and low velocities of the Rio Grande and the new channels that tended to form on lower ground during flood flows. The rectified channel between its upper end at Cordova Island, near El Paso, to its lower end reduced the original river channel length from 155.2 miles to 85.6 miles and increased the gradient from about two feet per mile to 3.2 feet per mile. The Rectification Project also included the construction of three toll-free bridges, Caballo Dam and Riverside Dam and Heading. Construction commenced in March 1934 and was completed in 1938.

In June of 1987, Riverside Dam failed. El Paso County Water District constructed a temporary rock cofferdam immediately downstream of Riverside Dam as a temporary means of diverting irrigation water through Riverside Heading, with the stipulation that the temporary dam would be removed once the American Canal Extension, scheduled for completion in February 1999, was constructed.

Recent events include the completion of the American Canal Extension, a currently ongoing Biological Assessment of the Rectification Project (resulting from a Memorandum of Understanding between IBWC and the Southwest Environmental Center), and IBWC's commitment to prepare an Environmental Impact Statement of the Rectification Project in fiscal year 2001.

The other important joint project with Mexico, the Rio Grande Boundary Preservation Project, carries out the provisions of Article IV of the 1970 "Treaty to Resolve Pending Boundary Differences and Maintain the Rio Grande and Colorado River as the International Boundary". The project covers the Rio Grande's 194-mile reach between Fort Quitman, Texas and Haciendita, Texas and addresses sedimentation as well as the phenomenon of salt cedars choking the channel. In some places the channel is nearly obliterated, and lands on both sides of the river are subject to periodic flooding from flash floods of tributary arroyos. The final Environmental Impact Statement for the Boundary Preservation Project was completed in 1978. In the United States, the Boundary Preservation Project was constructed in reaches based on contracts issued and inspected by the IBWC's United States Section.

Construction was completed for Reach I but was interrupted for other reaches by an extended period of flooding in 1981. Subsequent work done by IBWC's United States Section was tied to the Mexican Section's schedule; February of 1986 marked the end of U.S. Section construction work anywhere within the Boundary Preservation Project. Funding to continue maintenance of the completed channel work has not been received since 1985; consequently, sediment plugs on the large tributary arroyos and high flows in the river have caused overtopping of the banks with the result that the channel has deviated from its original alignment. It is this deviation from channel alignment that concerns IBWC and which is properly termed "re-channelization".

IBWC's perspective is that re-channelization of the Rio Grande is a treaty requirement, and that re-channelization offers some water salvage potential when combined with removal of salt cedar (since salt cedar, in addition to choking the channel, is also a known phreatophyte). IBWC has proposed a feasibility study and notes that the Army Corps of Engineers has authority to fund such studies under the federal Water Resources Development Act of 1986.

The Far West Texas Regional Water Planning Group acknowledges the importance of the re-channelization issue and awaits the outcome of the decision regarding federal funding for the feasibility study. Such a study, if funded, will likely be completed during the next regional water planning cycle and the study results will then be incorporated into the Far West Texas Regional Water Plan.

16. Phase I, Task 4 (A) in the scope of work requires an overview of groundwater sources (by specifically identified aquifers) that includes estimates of recharge, discharge, quantity of fresh and brackish water in storage, quality, and past, present, and potential future contamination threats. In addition, this scope of work item indicates that accounting for the groundwater will involve well inventories, well driller's interviews, and obtaining other local knowledge. The following summarizes items that TWDB staff could not locate in the draft IPP:

Aquifer	Recharge Estimate	Discharge Estimate	Quantity of Fresh Water	Quantity of Brackish Water	Water Quality	Past, Present, Future Contamination Threats
Hueco Bolson	ok	missing	ok	ok	ok	missing
Rio Grande Alluvium	missing	missing	missing	missing	ok	missing
Mesilla Bolson	ok	missing	ok	missing	ok	missing
Presidio-Redford Bolson	ok	missing	missing	missing	ok	missing
Ryan Flat	ok	missing	missing	missing	ok	missing
Lobo Flat	ok	missing	missing	missing	ok	missing
Wild Horse Flat	ok	missing	missing	missing	ok	missing
Michigan Flat	ok	missing	missing	missing	ok	missing
Green River Valley	ok	missing	missing	missing	ok	missing
Red Light Draw	ok	missing	missing	missing	ok	missing
Eagle Flat	ok	missing	missing	missing	ok	missing
Bone Spring-Victorio Peak	ok	missing	missing	missing	ok	missing
Igneous	ok	missing	missing	missing	ok	missing
Edwards-Trinity (Plateau)	ok	missing	missing	missing	ok	missing
Capitan Reef	ok	missing	missing	missing	ok	missing
Marathon	ok	missing	missing	missing	ok	missing
Rustler	ok	missing	missing	missing	ok	missing

Please provide the missing information identified above and indicate in the plan how well inventories, interviews, etc. were used in the accounting of groundwater resources.

Response: Additional information has been added to each aquifer description in Chapter 3.

17. Phase I, Task 4 (B) in the scope of work indicates that the direction of regional groundwater movement will be identified in areas of depletion or contamination concern based on existing water level data and supplemented by additional water level measurements. Information related to this scope of work task could be not located in the draft IPP. Please provide the missing information.

Response: Information is contained in the aquifer descriptions in Chapter 3.

18. Phase I, Task 4 (D) in the scope of work requires an evaluation of Hueco Bolson groundwater pumping by Ciudad Juarez and the effects of pumping on aquifer conditions on the U.S. side of the border. The intent of this task (as stated in the scope of work) is "to bring previously published maps and data up to current conditions." Chapter 1 in the draft IPP (Section 1.8.1) discussed pumping and reliance on the Hueco Bolson by Ciudad Juarez. However, there is no evaluation of the effects of pumping on aquifer conditions in the U.S. In addition, TWDB staff did not find that previously published information (maps and data) has been updated by the draft IPP. Please provide the required pumping evaluation and indicate how previously published information has been updated.

Response: The following section has been added to Chapter 1:

1.8.1.1 Transboundary Effects of Ground-Water Pumpage

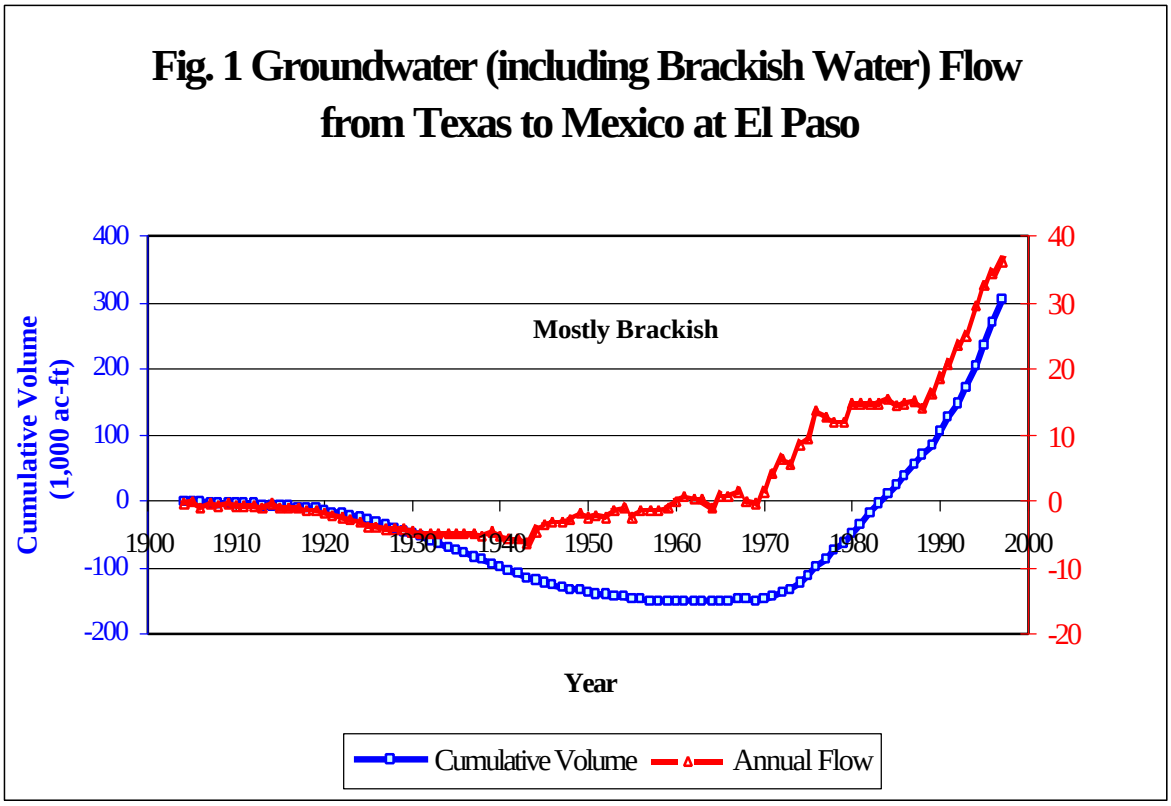
In the shallow portion of the Hueco Bolson aquifer beneath the State of Texas and the adjoining areas of the State of Chihuahua (Mexico), groundwater generally flows away from the river, or toward the center of the established drawdown cones in Ciudad Juarez and in El Paso. In the deeper reaches of the aquifer, the river has little or no influence on the direction of ground-water flow. In these deeper zones, the direction of flow is also toward the center of the established cones of depression caused by the pumping-induced diversions of ground water. Between the years of 1910 to 1960, regional groundwater underflow proceeded from Mexico to the U.S., due to the greater withdrawal rate on the El Paso side. Since 1960, groundwater has generally flowed from the U.S. to Mexico. Figure 1-17 displays this phenomenon graphically. This more recent underflow to Mexico is considered to be brackish, with water quality similar to that of the Lower Valley of El Paso.

With continuous pumping from both Ciudad Juarez and El Paso, both cites have experienced extensive water-level drawdowns and water-quality degradation due to lateral brackish water intrusion into the fresh water zones. Pumping by Ciudad Juarez since 1997 has simply continued this trend. Brackish water intrusion from irrigation return flow drains continues to expand laterally and vertically, and to degrade water quality in the shallow alluvium along the Rio Grande. This situation cannot be rapidly eliminated.

Even totally eliminating pumping leaves behind cones of depression, which draw in the brackish water for many years. Figure 1-18 is a regional potentiometric surface map showing current conditions in the Hueco Bolson for the City of El Paso and Ciudad Juarez. This figure is an update of Figure 3.8 in the October 1997 transboundary aquifer study (Hibbs and others, 1997). This figure is based on data generated by a numerical (finite difference) model of the ground-water conditions in the El Paso/Ciudad Juarez area. The approximate boundaries of cone of depression as modeled for the years 2000 and 2010 are marked on the figure. The cone of depression is projected to expand northward and eastward beyond its present limits. This will place greater stress on both El Paso and Ciudad Juarez, as it will promote the inflow of more saline water.

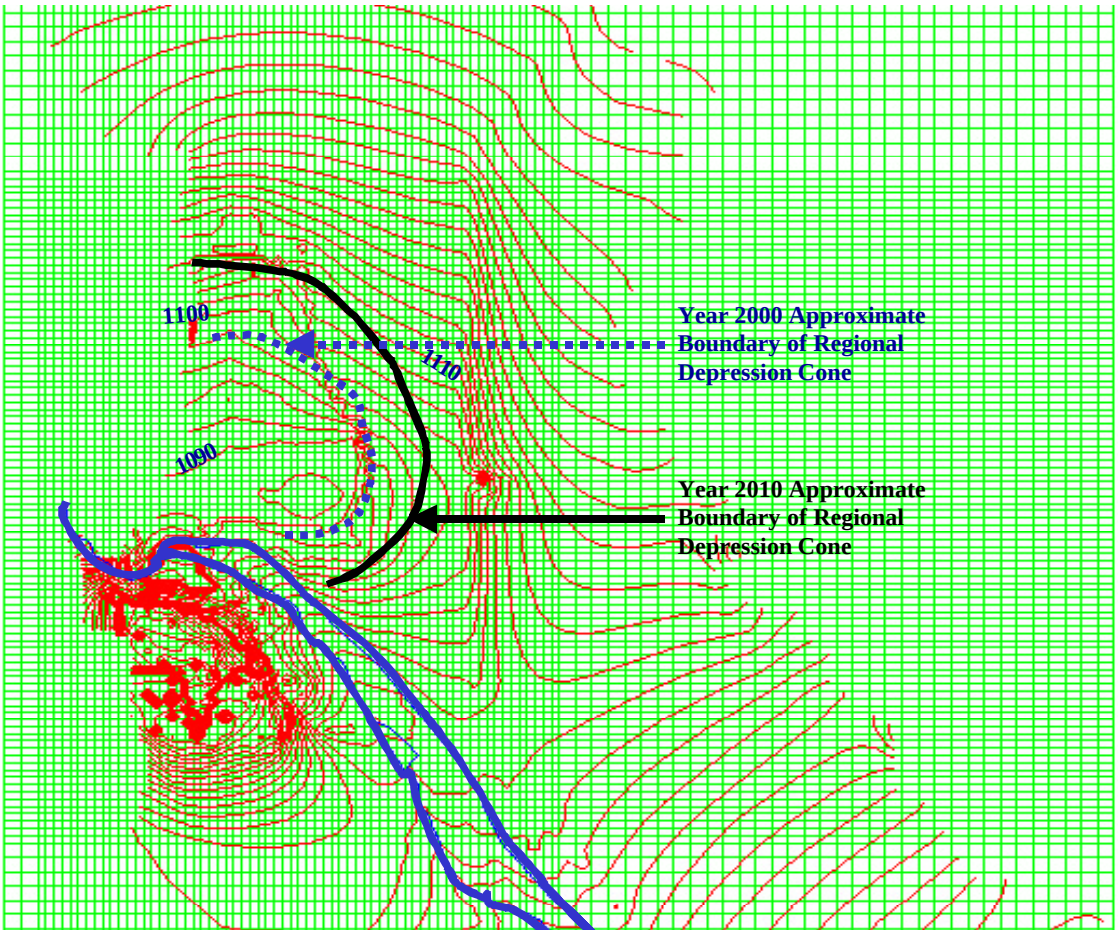
To be included as Figure 1-17

Figure 1-17: Ground-Water Flow (Including Brackish Water) from Texas to Mexico at El Paso.



To be included as Figure 1-18:

Fig. 1-18. Water Level Contours (in meters) For the Year 2000



19. Phase I, Task 4 (E) (1-5) in the scope of work requires an overview evaluation of public-supply groundwater sources, including a number of very specific tasks. In reviewing the draft IPP, the scope of work items could not be located. Please provide the missing information.

Response: **The following section has been added to Chapter 3**

3.6 GROUND-WATER CONDITIONS IN MUNICIPAL WELL FIELDS

Brewster County

City of Alpine

The City of Alpine owns 20 municipal supply wells in two principal well fields (the Musquiz and Sunny Glen well fields). Water levels have remained

relatively stable in the vicinity of the well fields, and there are no reported major water quality problems. The Musquiz field produces approximately 66 percent of the city's municipal water, but the Sunny Glen field is regarded as having greater storage capacity. Recently, several wells within the Sunny Glen field were deepened, and yields are reported to have increased from less than 100 GPM to as much as 500 GPM.

Community of Marathon

The Marathon Water and Sewer Service Corporation provides water to the community from two wells screened in the Marathon aquifer. Water levels have remained stable in the vicinity of the community, and there are no reported major water quality problems. There are no other sources of ground water in the vicinity of the community.

Communities of Terlingua and Study Butte

The Study Butte Water Supply Corporation supplies water to the communities of Terlingua and Study Butte from one well completed in the Cretaceous limestone formations north of the old ghost town. Water levels have remained relatively stable, but the Corporation is interested in drilling a second well in the area. Elevated levels of radiological activity in ground water (probably related to igneous rocks in the subsurface of the Bib Bend region) are a source of concern.

Resort of Lajitas

The Resort of Lajitas owns and operates one well to meet part of its public water-supply needs. The well produces ground water from the Cretaceous limestone formations in the vicinity of Lajitas, and the water level in the well has remained stable. Dissolved constituents are within their respective drinking-water standards, but elevated radiological activity in ground water of the Big Bend region is a potential source of concern to regulatory authorities.

Culberson County

Town of Van Horn

Municipal supply for the Town of Van Horn is derived from five city-owned wells in the Wild Horse Flat aquifer. Water levels in the vicinity of Van Horn have remained stable. Other than fluoride concentrations that have been reported to range from 2.3 to 3.1 mg/l, all other dissolved constituents are within their respective drinking-water standards. The current well field has significant expansion capability if additional production is needed to meet increased demand.

El Paso County

City of El Paso and Vicinity

The production of ground water from well fields in the vicinity of El Paso and in Ciudad Juarez has created a large cone of depression in the potentiometric surface beneath each city. Average declines in wells in the

upper portion of the Lower Valley in El Paso are in excess of 100 ft. These declines, in combination with deteriorating water quality, have prompted the City to discontinue pumping from certain wells. Elsewhere, average water-level declines are generally in the range of 60 to 80 ft. Recent water-level data indicate a slight rise of water levels in the valley. This is probably traceable to lower pumpage in some areas. The total decrease in the potentiometric surface beneath Ciudad Juarez has been significant enough to cause the cone beneath Ciudad Juarez to migrate north of the Rio Grande. The lowering of the potentiometric surface not only has reversed the predevelopment hydraulic gradient in the westernmost regions of the Hueco Bolson, but also is thought to have been a major factor underlying the deterioration of water quality in part of the El Paso area.

The concentrations of chloride and other dissolved ions have increased in many of the municipal wells of both cities. In El Paso County, for example, the TDS in production wells have risen to more than 1,000 mg/l. In recent years, the City of El Paso has taken out of service approximately 30 wells due to elevated levels of chloride and TDS. In many cases, the greatest increases in TDS are associated with wells that have had large, sustained drawdowns, but similar changes have also been observed in some wells from which much less pumping has occurred.

Hudspeth County

Community of Sierra Blanca

The Hudspeth County Water Control and Improvement District #1 purchases water from the Town of Van Horn, located in northwestern Eagle Flat. Production is from two wells in the Wild Horse Flat well field of Culberson County. Water levels in the Wild Horse Flat well field have remained constant, and water quality has not been reported to be a problem for the Community. The Wild Horse well field has substantial room for expansion if an additional well is needed to meet demand. Since 1970, Sierra Blanca has drilled as many as five wells in Hudspeth County in unsuccessful attempts to develop local sources of ground water.

City of Dell City

Dell City relies on three wells completed in the Bone Spring-Victorio Peak aquifer for municipal water. Ground water from the aquifer is brackish and must be desalinated. Water levels in the well field have not decreased in recent years. The Bone Spring-Victorio Peak aquifer is capable of supporting production from additional municipal supply wells.

Communities of Fort Hancock and McNary

Fort Hancock and McNary have relied on ground water provided by one well owned by the Fort Hancock WCID and on 11 wells owned by the Esperanza FWSD#1. All production is from the Rio Grande alluvium. Water levels fall in response to extended drought conditions in the region, but the

owner of the Esperanza FWSD #1 reports that water levels usually recover quickly after periods of rainfall. Water quality is a problem in the area, as TDS ranges from approximately 1,000 mg/l to as much as 2,500 mg/l. Other dissolved solids in excess of drinking water standards are fluoride and manganese. The possibilities for expansion are limited by the occurrence of saline ground water in both the Rio Grande alluvium and the Hueco Bolson aquifer.

Jeff Davis County

<u>Community of Fort Davis</u>

The Fort Davis Water Supply Corporation (FDWSC) provides water to the Community of Fort Davis and the surrounding area from three wells completed in the Tertiary volcanics and associated alluvium of the Igneous aquifer. One of the wells is used only as a backup. Water levels in the vicinity of the wells have remained stable; and other than elevated fluoride, there are no reported problems with water quality. The FDWSC has also looked at other areas in the vicinity of Fort Davis for future well development.

<u>Town of Valentine</u>

The Town of Valentine relies on one municipal water supply well completed in the Ryan Flat aquifer. A second well owned by the Valentine Independent School District provides water to the school and to a small number of residences occupied by teachers. Water levels in the vicinity of Valentine have remained stable, and there are no reported problems with water quality. Under consideration is a proposal to drill a second municipal water-supply well. The Ryan Flat aquifer appears to have ample capability to support additional well development for the Town of Valentine.

Presidio County

<u>City of Marfa</u>

The City of Marfa depends on three city-owned wells for all of its municipal water needs. Two of the wells are capable of producing as much as 1,100 GPM, and the third well yields and additional 450 GPM. The Tertiary volcanics of the Igneous aquifer are the source of ground water. Other than fluoride, which has been reported at concentrations ranging from 2.5 to 3 mg/l, all other dissolved solids are below their respective drinking-water standards, and TDS are typically less than 400 mg/l. The well field has significant expansion capability if other wells are needed to meet additional demand.

<u>City of Presidio</u>

The City of Presidio derives all of its municipal water from three wells completed in the thick basin fill deposits of the Presidio Bolson aquifer. Two wells are located within the city limits, and the third well is located approximately 7 miles to the southeast of town. Water levels have remained stable in the vicinity of the wells; and other than fluoride concentrations from2 to 3 mg/l, all other dissolved solids are within their respective drinking-water

standards. There is ample expansion capability in the vicinity of the city, and the city expects that additional wells will be needed to satisfy increased demand.

Terrell County
<u>Community of Sanderson</u>

The Community of Sanderson owns 18 public supply wells that produce ground water from the Edwards-Trinity Plateau aquifer. Ten of the wells provide most of the community's water needs, and the Water Department plans to drill an additional well in the near future to replace the two lowest producing wells. Water levels have remained stable; and water quality is not reported to be a problem for the community.

20. Phase I, Task 4 (F) in the scope of work requires an overview evaluation of public-supply well yield efficiencies based on pump size, saturated thickness, and expected average aquifer transmissivity. In reviewing the draft IPP, TWDB staff could not located this scope of work item. Please provide the missing information.

Response: This task is being eliminated by a contract amendment.

21. Phase I, Task 4 (G) (1-3) in the scope of work requires an evaluation of various activities related to groundwater sources in agricultural areas. These scope of work items could not be located in the draft IPP. Please provide the missing information.

Response: The following Section 1.1.6.3 is added to Chapter 1.

Ground-water use for irrigated farming principally occurs along the Rio Grande, in the Dell City region, and along the various flats that compose the Salt Basin. Principal aquifers from which irrigation water is withdrawn include the Rio Grande Alluvium, Bone Spring-Victorio Peak, and the Wild Horse-Michigan, Lobo, and Ryan Flats of the West Texas Bolson aquifers. Characteristics of these aquifers are described in Chapter 3.

Future availability of water for agricultural use from these aquifers varies. During times of insufficient river flow farmers may use ground water from the Rio Grande Alluvium to sustain crops. However, because of its high mineral content, this water can only be used on a short-term basis. In the Dell City area ground water from the Bone Spring-Victorio Peak aquifer has deteriorated in quality particularly in the central part of the valley as a result of repeated return flow. The aquifer should remain viable in the future if total withdrawals do not exceed approximately 100,000 acre-feet per year. Water levels have declined in the past in the Salt Basin aquifers but have generally recovered due to a decrease in pumpage in recent years. Future availability of water from these Salt Basin aquifers for agricultural use may be influenced in some areas by potential withdrawals for other uses.

22. Phase I, Task 5 (A) in the scope of work requires a review and illustration of the relationship between groundwater and surface water along the Rio Grande below the Jonathan Rogers water treatment plant and the Pecos River. In addition, the scope of work item requires maps showing zones along the rivers where base flow originates as spring flow from underlying aquifers. These items could not be located in the draft IPP. Please provide the missing information.

Response: This task is being eliminated by a contract amendment.

23. Phase I, Task 5 (B) in the scope of work requires a summary of the Rio Grande groundwater/surface water interface modeling conducted for the El Paso-Las Cruces Regional Sustainable Water Project. This summary could not be located in the draft IPP. Please provide.

Response: The following summary is contained in appendix 1D of Chapter 1:

El Paso – Las Cruces Regional Sustainable Water Project – Hydrologic Modeling Final Report: ***This report, published in April 2000, presents the results of studies to define the El Paso – Las Cruces Regional Sustainable Water Project as the first step toward satisfying the goals of preserving the region's aquifers and increasing the efficiency of surface water use. The conveyance and treatment project involves conveying Rio Grande Project Water from Caballo Reservoir for year-round delivery to the Las Cruces and El Paso Areas. A numerical model is used to assess the implications of operational changes to evaluate the effectiveness of operational and structural alternatives. The Boyle Engineering Stream Simulation Model (BESTSM) was constructed and linked with an existing Modular Three-Dimensional Finite-Difference Ground-Water Flow Model (MODFLOW) of the Mesilla Basin.***

The BESTSM model was applied to represent the surface water system of the Rio Grande from the San Marcial gage above Elephant Butte Reservoir to Riverside Diversion Dam. The MODFLOW model was linked with the BESTSM to evaluate the groundwater aspects of the Mesilla Basin. Estimates were made of ungaged surface and ground water inflows and outflows and impacts on water quality from the interaction of waters of different hydrochemical composition.

24. Phase II, Task 3 (C) in the scope of work indicates that interviews will be conducted with entities and industries to obtain local reactions to the socio-economic impacts of not meeting water supply needs. In reviewing the draft IPP, TWDB staff could not determine whether this scope of work item is met. Please indicate in the plan how this scope of work item is addressed.

Response: **The following language has been added to Chapter 4, Section 4.6:**

Assessing the socioeconomic impacts of not meeting water-supply needs required the input of representatives of the different economic sectors of Far West Texas. To elicit comments from representatives of each economic sector, copies of the plan were made available to members of the RWPG and to the public as each chapter was completed. Written comments were requested, and oral comments were recorded at public hearings. A discussion of written and oral comments is found in Chapter 7, and responses to public comments are found in the appendix to Chapter 7.

25. TWDB rules [§357.5(i)] and Phase I, Task 3 (G) in the scope of work requires an evaluation of the potential for emergency transfers of surface water. There is a general discussion regarding the statute (Texas Water Code §11.139) related to emergency transfers in Section 5.6 (page 5-25) of the draft IPP. However, this section of the report does not indicate whether the Far West Texas Water Planning Group considered emergency transfers. Please indicate in the draft IPP what consideration was given by the planning group to this rule and scope of work item and what decision was made.

Response: **The following language has been added to Chapter 5, Section 5.6:**

The Far West Texas RWPG considered the potential for emergency transfers of surface water for communities in the region, but chose not to recommend this strategy for this planning period.

26. Phase II, Task 2 (B) in the scope of work requires a determination of "key water supply reservoirs and water-level monitoring wells to use as indicators of water supply availability." In addition, this scope of work subtask indicates that "this task will be coordinated with Regions J and M for reservoirs relevant" to these regions. Sections 5.8, 5.8.1 and 5.8.2 (pages 5-29 through 5-32) discuss drought response triggers. However, these discussions do not include the items specifically outlined in the scope of work. In addition, TWDB rules [§357.5(e)(7)(A-B)] require identification, for each source of supply "factors specific to each source of water supply to be considered in determining whether to initiate a drought response, and actions to be taken as part of the response." TWDB rules requirements are not addressed by the information contained in the draft IPP. Please provide the missing information.

Response: **Required drought triggers, factors, and responses are added to Chapter 5 Section 5.8 along with text tables 5-3 and 5-4. Coordination with other regions specific to Rio Grande issues is discussed in Chapter7.**

27. TWDB rules [§357.7(a)(5) and §357.7(a)(5)(A)] require the regional water plan to meet all needs unless no water management strategy is feasible. The rules further require that the full evaluation of water management strategies be presented and reasons given for why no water management strategies are feasible. Based on the information contained in the draft IPP, TWDB staff is unable to determine whether all needs in the region will be met by the proposed water management strategy. Please provide this information. If needs will be unmet, please present the full water management strategy evaluations and provide the reasons why the strategies are not feasible.

Response: See Oct. 10th comment #6 above.

28. Phase II, Task 4 (A) in the scope of work indicates that a decision model approach based on a weighted matrix system will be used to evaluate water management strategies. It could not be determined from the content of the draft IPP whether this scope of work item is addressed. Please indicate in the plan whether this item is addressed and provide the decision matrix in the report appendices.

Response: The use of a decision model approach based on a weighted matrix system was intended prior to receiving Exhibit B and noting that all strategies must be evaluated based on an equitable comparison and consistent application of all water management strategies [357.7(a)(7)(F)]. Therefore, the decision intent was to evaluate each strategy based on equal (unweighted) consideration of all evaluation components. Chosen strategies (TWDB Table 12) were based on equal comparisons of the strategy evaluations shown in the Chapter 5 appendices and the cost and volume comparisons in TWDB Table 11. The following language was added to Chapter 5 Section 5.9.2.

The Regional Planning Group members then equitably compared each evaluation criteria, along with the cost and volume comparison in TWDB Table 11 to determine the feasibility of each strategy in relation to other strategies proposed for each shortage. Where appropriate, the Group specifically considered cost-effective water-management strategies that are environmentally sensitive. The Planning Group chose not to prioritize the strategies because many are too preliminary for a realistic determination of economic and environmental feasibility; rather than prioritizing among strategies of different maturities, the Group chose to retain all feasible strategies. Planning decisions are intended to be made locally whenever possible.

29. TWDB rules [§357.5(e)(4)] and Phase II, Task 4 (C) in the scope of work require that water management strategies be selected so that the cost effective water management strategies, which are environmentally sensitive, are considered and pursued, where appropriate. The process for selecting water management strategies is very briefly discussed in the draft IPP in Section 5.9.2 (page 5-32). However, the information provided in this section is not detailed enough for staff

to determine whether this rule requirement is addressed. Please indicate in the plan how this requirement is addressed.

Response: The following language was added to Chapter 5 Section 5.9.2.

Where appropriate, the Group specifically considered cost-effective water-management strategies that are environmentally sensitive.

30. Phase II, Task 4 (E) in the scope of work indicates that identification and evaluation of water management strategies will be coordinated with federal and international agencies, where appropriate. Please indicate in the plan how this scope of work item is addressed.

Response: The following language was added to chapter 5 Section 5.9.1.

Non-voting representatives of the following federal and international agencies also contributed to the development of the plan:

- ***U.S. Section, International Boundary and Water Commission;***
- ***U.S. Bureau of Reclamation;***
- ***CILA Mexico; and***
- ***Municipal Juarez.***

31. TWDB rules [§357.13 and §357.7(a)(8)] require projects proposed to TWDB for funding to be consistent with specific recommendations contained in the approved regional water plan. To facilitate this decision-making process, it is crucial that water management strategy evaluations (and the associated TWDB Tables 5 and 12) included in chapter 5 of the draft IPP be complete with specific details related to source of water and costs for the proposed strategy. TWDB staff has noted that some of the strategy evaluations do not specifically provide this information. Please review all strategy evaluations and provide missing information as appropriate. In addition, staff noted a number of other items within the water management strategies presented that need to be corrected or clarified. The following is provided to assist you:

(a) Strategy 21-1: Specific source not specified.
(b) Strategy 22-3: Specific source not specified; cost estimate not provided.
(c) Strategy 22-4: Quantity of water not specified; cost estimate not provided; reliance on this strategy to meet a need is inconsistent with the planning group's assumption/decision that no water is available from the Rio Grande during drought-of-record conditions.
(d) Strategies 22-5, 71-25, 115-8, 122-6, 189-4, 222-4: cost is based on 1995 dollars; contract requires that all costs be based on 1999 dollars.
(e) Strategy 71-1: Second sentence under "Impact on Other Water Resources" appears to be related to a different strategy.

(f) Strategy 71-2: time intended to implement is not specified; cost estimate is not provided in the strategy sheet however a cost of $25 million is included in TWDB Table 12.

(g) Strategy 71-3: time intended to implement is not specified; cost estimate is not provided in the strategy sheet however a cost of $11.4 million is included in TWDB Table 12; reliance on this strategy to meet a need is inconsistent with the planning group's assumption/decision that no water is available from the Rio Grande during drought-of-record conditions.

(h) Strategy 71-4: cost estimate is based on 2000 dollars; contract requires that all costs be based on 1999 dollars; reliance on this strategy to meet a need is inconsistent with the planning group's assumption/decision that no water is available from the Rio Grande during drought-of-record conditions; Environmental Issues indicates that analysis is not based on the "preferred" alternative and concludes that there will be no significant adverse impacts on aquatic resources. TWDB is aware that the "record of decision" for the draft EIS for this project is pending. This should be reflected in the water management strategy instead of the conclusion that is provided. It also appears that the environmental flow criteria should apply to this proposed project.

(i) Strategy 71-5: Unclear whether Hueco Bolson is only source of brackish water; if other sources will be tapped, they should be identified; unclear whether this strategy relies on Rio Grande water for blending.

(j) Strategy 71-6B: Cost estimates not provided.

(k) Strategy 71-10: Cost estimate provided in strategy sheet ($200,000) is inconsistent with cost estimate provided in TWDB Table 12 ($453,140). In addition, this strategy indicates that public supply wells for the Town of Anthony will be installed in the Rio Grande Alluvium. Section 3.5.3.1.2 in the report indicates this water to be of non-potable quality.

(l) Strategies 71-12, 71-13, 71-14, 71-16, 71-18, 71-19, 71-20, 71-21, 71-22, 71-23, 71-29, 71-30, 71-33, 71-43: Source not identified; cost estimate not provided; reliance on Rio Grande water during drought-of-record conditions would be inconsistent with planning group assumption/decision that no water is available from this source.

(m) Strategy 71-15: Cost estimate provided in strategy sheet is inconsistent with cost estimate provided in TWDB Table 12.

(n) Strategies 71-17, 71-37, 189-3, 222-3: Cost estimate does not include additional energy costs.

(o) Strategy 71-24: Cost estimates not provided.

(p) Strategy 71-26: Reliance on this strategy to meet a need is inconsistent with the planning group's assumption/decision that no water is available from the Rio Grande during drought-of-record conditions.

(q) Strategy 71-28: Specific sources not identified; cost estimate not provided.

(r) Strategy 71-32: Specific source not identified; cost estimate not provided.

(s) Strategy 71-36: Cost estimate not provided.

(t) Strategy 71-40: Inconsistency in number of additional wells needed. Strategy description identifies 30 additional wells – elsewhere, it is stated that 20 additional wells are needed.

(u) Strategy 115-1: Specific source not identified; total cost estimate not provided.

(v) Strategy 115-3: Specific source not identified; cost estimates not provided.

(w) Strategy 115-4: Reliance on this strategy to meet a need is inconsistent with the planning group's assumption/decision that no water is available from the Rio Grande during drought-of-record conditions.

(x) Strategies 122-3, 189-3, 222-3: Cost estimates not provided.

(y) Strategy 122-1 and 189-1: Total cost estimate not provided.

(z) Strategies 71-5, 71-15, 71-24, 115-5: The environmental issues section of these strategies reference numerous uncertainties relative to deep well brine injection and environmentally benign disposal options. These options and uncertainties are not specified. Provide more information.

(aa) Strategies: 71-12, 71-13, 71-14, 71-16, 71-18, 71-19, 71-20, 71-21, 71-22, 71-23, 71-29, 71-30, 71-33: The required evaluation criteria related to environmental factors, impact on other water resources, impact on threats to agriculture, impact on threats to natural resources must be specific to the strategy. In many cases, the strategy evaluation includes the statement (or a similar one), "…issues are the same as those for the City of El Paso strategies." Please provide the specific evaluation for each strategy.

Response: **All of the above strategies have been corrected as applicable.**

32. TWDB rules [§357.5(e)(1)] require water management strategies to be evaluated for environmental water needs using site-specific studies or the state environmental planning criteria. All water management strategies that affect in-stream flows should utilize the environmental planning criteria or site specific studies to determine impacts. Please indicate how this rule requirement has been addressed.

Response: ***Since TNRCC may impose pass-through flows on surface water right applications and amendments for diversions within two hundred river miles from the coast, and Far West Texas Region lies outside this range, bay and estuary flow requirements do not apply within the region. As for instream flows requirements based on site-specific Instream Flow Incremental Methodology studies, no such studies have been performed to date within the region. In the absence of the site-specific studies, the RWPG notes that strategies involving surface water would ordinarily be subject to 1997 Consensus Water Plan Environmental Planning Guidelines. However, the RWPG also notes that the surface water strategy involving a surface water source is that of Lajitas possibly purchasing existing irrigation water right(s) out of the Rio Grande. The type of use would change, but not the amount. The existing diversion lies within the jurisdiction of the TNRCC's Upper Rio Grande***

Watermaster's Office; likely the Watermaster would exercise his discretion on whether the diversion transferred to non-irrigation use would be subject to the Environmental Planning Guidelines criteria.

33. TWDB has received an application from the Lower Valley Water District for a project to be considered for funding and included in the TWDB FY2001 Intended Use Plan. The project proposes (among other things) to "shift the source of water for SEGMUD from Fabens water system to the Lower Valley Water District system…" TWDB rules [§357.13 and §357.7(a)(8)] require projects proposed to TWDB for funding to be consistent with specific recommendations contained in the approved regional water plan. It is difficult to determine, based on the information contained in the regional water plan and specifically in the water management strategies provided for El Paso County other, whether this consistency test can be met. The discussion in Chapter 5 (page 5-16) regarding Fabens indicates that water for this community is supplied via three groundwater wells. The source is not specified. Elsewhere in the same chapter, the plan indicates that all Lower Valley Water District supplies are provided by El Paso Water Utilities. There is no specific water management strategy included for El Paso County other (Lower Valley Water District) that indicates extending service to SEGMUD. These specific items related to source of supply and water management strategies for El Paso County other (Lower Valley Water District) need to be clarified in order for TWDB to determine consistency with the regional water plan.

TWDB is also aware of two other projects that may be proposed for funding by entities within Region E. The Village of Vinton may be interested in pursuing the development of additional groundwater to supply their needs. This potential project is identified in the "Water and Wastewater Facilities Plan" for the Village of Vinton. Currently, the draft IPP only includes one water management strategy for meeting Vinton's needs – purchase water from EPWU. As mentioned above TWDB will make decisions related to funding based on information contained in the approved regional water plan. If the regional water planning group intends to support the Village of Vinton's securing funding to develop its own supply of groundwater, the regional water planning group should consider including this as a strategy in the final adopted plan

Another project that may come before TWDB for state participation funding relates to EPWU's plans to develop additional groundwater from the ~~Hueco~~ *Mesilla* Bolson out of the existing Canutillo wellfield. TWDB staff note that this is currently not included in the draft IPP submitted for review. Again, TWDB will make decisions related to funding of projects based on information contained in the approved regional water plan. If the regional water planning group intends to support EPWU's securing funding from TWDB to expand the wellfield, the regional water planning group should consider including this as a strategy in the final adopted plan.

Response: **The Lower Valley Water District and Village of Vinton have not advised the Regional Planning Group of the projects described above. The expansion of the El Paso Canutillo wellfield is covered in the statement included in Chapter 5 Section 5.10.**

Also, the Group determined that water supply projects that do not involve the development of or connection to a new water source are consistent with the regional water plan even though not specifically recommended in the plan.

34. In Section 6.3 on page 6-10 of the draft IPP, the following is stated: "SB-1 allows for the voluntary designation of 'ecologically unique river and stream segments' in a regional water plan." This statement is not accurate. SB-1 allows the regional water-planning group to recommend a river or stream segment as being of unique ecological value. The statute does not allow the regional water-planning group to designate a river or stream segment. Only the Texas Legislature can designate a river or stream segment. Please correct this statement in the plan. In addition, it would be useful to include the unique stream segment recommendations provided by the Texas Parks and Wildlife Department in the report appendices.

Response: **The following correction is made in Chapter 6 Section 6.3.**

SB-1 allows for the recommendation of "ecologically unique river and stream segments" in a regional water plan. Based on these recommendations, the Texas Legislature can designate a river or stream segment as "unique".

Suggestions offered in Section 2 of the October 19th and November 21st TWDB comment letters were reviewed and acted upon where time allowed and where the Regional Planning Group was in agreement.

TWDB TABLES

TWDB TABLE 1
POPULATION BY CITY AND RURAL COUNTY

WATER USER GROUP	COUNTY	BASIN	WATER USER GROUP	RWPG	SEQ No.	CITY No.	COUNTY No.	BASIN No.	P1996	P2000	P2010	P2020	P2030	P2040	P2050
ALPINE	BREWSTER	RIO GRANDE	50013000	E	13	9	22	23	6029	6479	7521	8981	9916	10942	12074
COUNTY-OTHER	BREWSTER	RIO GRANDE	50996022	E	996	757	22	23	3261	3851	4853	5281	5861	6261	5985
VAN HORN	CULBERSON	RIO GRANDE	50926000	E	926	620	55	23	2828	3296	3607	3814	3847	3840	3833
COUNTY-OTHER	CULBERSON	RIO GRANDE	50996055	E	996	757	55	23	462	517	558	581	575	562	481
ANTHONY	EL PASO	RIO GRANDE	50032000	E	32	21	71	23	3683	4403	5378	6422	7519	8380	9340
CANUTILLO	EL PASO	RIO GRANDE	50144000	E	144	95	71	23	5018	5748	6749	7804	8955	9889	10920
CLINT	EL PASO	RIO GRANDE	50178000	E	178	689	71	23	1126	1299	1555	1824	2151	2405	2689
EL PASO	EL PASO	RIO GRANDE	50275000	E	275	189	71	23	587442	632199	749541	873710	1007928	1115652	1234889
FABENS	EL PASO	RIO GRANDE	50288000	E	288	195	71	23	5928	6158	7113	8110	9224	10141	11150
FORT BLISS	EL PASO	RIO GRANDE	50305000	E	305	208	71	23	14478	13915	13915	13915	13915	13915	13915
HOMESTEAD MEA. (CDP)	EL PASO	RIO GRANDE	50413000	E	413	882	71	23	5756	5821	6120	6312	6718	7181	7643
HORIZON CITY	EL PASO	RIO GRANDE	50417000	E	417	781	71	23	3002	6236	7581	9014	10526	11719	13048
SAN ELIZARIO (CDP)	EL PASO	RIO GRANDE	50793000	E	793	953	71	23	4731	6008	8232	9839	11759	12989	13789
SOCORRO	EL PASO	RIO GRANDE	50838000	E	838	804	71	23	28219	29365	39711	51027	62301	70748	80341
VINTON	EL PASO	RIO GRANDE	50933000	E	933	983	71	23	778	653	698	756	834	899	945
WESTWAY (CDP)	EL PASO	RIO GRANDE	50958000	E	958	990	71	23	2661	2712	2813	2862	2954	3093	3233
COUNTY-OTHER	EL PASO	RIO GRANDE	50996071	E	996	757	71	23	11071	56016	72374	90850	109719	124575	134521
DELL CITY	HUDSPETH	RIO GRANDE	50238000	E	238	856	115	23	721	728	781	809	827	834	840
SIERRA BLANCA	HUDSPETH	RIO GRANDE	50830000	E	830	559	115	23	600	610	653	672	665	650	635
COUNTY-OTHER	HUDSPETH	RIO GRANDE	50996115	E	996	757	115	23	1924	1944	2197	2403	2503	2570	2585
FORT DAVIS	JEFF DAVIS	RIO GRANDE	50306000	E	306	209	122	23	1200	1153	1239	1296	1299	1289	1279
COUNTY-OTHER	JEFF DAVIS	RIO GRANDE	50996122	E	996	757	122	23	861	1035	1116	1177	1188	1190	1210
MARFA	PRESIDIO	RIO GRANDE	50562000	E	562	386	189	23	2559	2612	2986	3428	3790	3668	3550
PRESIDIO	PRESIDIO	RIO GRANDE	50722000	E	722	798	189	23	3526	5157	7127	9390	11861	12846	13912
COUNTY-OTHER	PRESIDIO	RIO GRANDE	50996189	E	996	757	189	23	1200	1460	1785	2190	2617	2719	2749
SANDERSON	TERRELL	RIO GRANDE	50800000	E	800	533	222	23	958	1158	1217	1258	1259	1250	1241
COUNTY-OTHER	TERRELL	RIO GRANDE	50996222	E	996	757	222	23	298	324	365	345	322	311	300

TWDB TABLE 2
WATER DEMAND BY CITY AND WATER USE CATEGORY

WATER USER GROUP	COUNTY	BASIN	DATA CATEGORY	WATER USER GROUP	RWPG	SEQ No.	CITY No.	COUNTY No.	BASIN No.	D1996	D2000	D2010	D2020	D2030	D2040	D2050
ALPINE	BREWSTER	RIO GRANDE	MUN	50013000	E	13	9	22	23	1147	1524	1668	1891	2055	2243	2461
COUNTY-OTHER	BREWSTER	RIO GRANDE	MUN	50996022	E	996	757	22	23	763	1184	1316	1345	1424	1470	1418
MANUFACTURING	BREWSTER	RIO GRANDE	MFG	51001022	E	1001	1001	22	23	3	4	4	5	5	6	7
STEAM ELECTRIC POWER	BREWSTER	RIO GRANDE	PWR	51002022	E	1002	1002	22	23	0	0	0	0	0	0	0
MINING *	BREWSTER	RIO GRANDE	MIN	51003022	E	1003	1003	22	23	696	840	855	983	1068	1196	1339
IRRIGATION	BREWSTER	RIO GRANDE	IRR	51004022	E	1004	1004	22	23	327	296	292	288	284	280	276
LIVESTOCK	BREWSTER	RIO GRANDE	STK	51005022	E	1005	1005	22	23	638	571	571	571	571	571	571
VAN HORN	CULBERSON	RIO GRANDE	MUN	50926000	E	926	620	55	23	624	809	844	854	849	834	829
COUNTY-OTHER	CULBERSON	RIO GRANDE	MUN	50996055	E	996	757	55	23	104	97	98	97	93	89	80
MANUFACTURING	CULBERSON	RIO GRANDE	MFG	51001055	E	1001	1001	55	23	0	1	1	2	2	2	3
STEAM ELECTRIC POWER	CULBERSON	RIO GRANDE	PWR	51002055	E	1002	1002	55	23	0	0	0	0	0	0	0
MINING	CULBERSON	RIO GRANDE	MIN	51003055	E	1003	1003	55	23	2139	2240	2210	2245	2309	2372	2441
IRRIGATION	CULBERSON	RIO GRANDE	IRR	51004055	E	1004	1004	55	23	6196	8947	8756	8569	8386	8206	8031
LIVESTOCK	CULBERSON	RIO GRANDE	STK	51005055	E	1005	1005	55	23	237	320	320	320	320	320	320
ANTHONY	EL PASO	RIO GRANDE	MUN	50032000	E	32	21	71	23	646	745	813	885	1028	1136	1255
CANUTILLO	EL PASO	RIO GRANDE	MUN	50144000	E	144	95	71	23	354	406	393	393	441	465	514
CLINT	EL PASO	RIO GRANDE	MUN	50178000	E	178	689	71	23	310	354	388	421	492	547	608
EL PASO	EL PASO	RIO GRANDE	MUN	50275000	E	275	189	71	23	117222	101928	120846	140865	162505	179873	199097
FABENS	EL PASO	RIO GRANDE	MUN	50288000	E	288	195	71	23	1144	952	980	1008	1137	1227	1349
FORT BLISS	EL PASO	RIO GRANDE	MUN	50305000	E	305	208	71	23	4984	6609	6141	5720	5689	5674	5642
HOMESTEAD MEA. (CDP)	EL PASO	RIO GRANDE	MUN	50413000	E	413	882	71	23	891	874	871	841	865	893	942
HORIZON CITY	EL PASO	RIO GRANDE	MUN	50417000	E	417	781	71	23	928	1488	1562	1605	1851	2048	2265
SAN ELIZARIO (CDP)	EL PASO	RIO GRANDE	MUN	50793000	E	793	953	71	23	734	882	1134	1278	1475	1571	1653
SOCORRO	EL PASO	RIO GRANDE	MUN	50838000	E	838	804	71	23	3294	1480	1423	1315	1535	1664	1800
VINTON	EL PASO	RIO GRANDE	MUN	50933000	E	933	983	71	23	125	97	98	100	106	111	115
WESTWAY (CDP)	EL PASO	RIO GRANDE	MUN	50958000	E	958	990	71	23	283	368	356	340	338	340	351
COUNTY-OTHER	EL PASO	RIO GRANDE	MUN	50996071	E	996	757	71	23	2832	15001	17470	20131	23343	25931	27549
MANUFACTURING	EL PASO	RIO GRANDE	MFG	51001071	E	1001	1001	71	23	9811	14786	16192	17145	17904	19142	20332
STEAM ELECTRIC POWER	EL PASO	RIO GRANDE	PWR	51002071	E	1002	1002	71	23	3481	6000	6000	6000	6000	6000	6000
MINING	EL PASO	RIO GRANDE	MIN	51003071	E	1003	1003	71	23	190	246	110	56	28	10	3
IRRIGATION	EL PASO	RIO GRANDE	IRR	51004071	E	1004	1004	71	23	202685	179842	164338	161470	160173	154542	152014
LIVESTOCK	EL PASO	RIO GRANDE	STK	51005071	E	1005	1005	71	23	1600	1729	1729	1729	1729	1729	1729
DELL CITY	HUDSPETH	RIO GRANDE	MUN	50238000	E	238	856	115	23	44	38	36	33	30	26	25

TWDB TABLE 2 (continued)
WATER DEMAND BY CITY AND WATER USE CATEGORY

WATER USER GROUP	COUNTY	BASIN	DATA CATEGORY	WATER USER GROUP	RWPG	SEQ No.	CITY No.	COUNTY No.	BASIN No.	D1996	D2000	D2010	D2020	D2030	D2040	D2050
SIERRA BLANCA	HUDSPETH	RIO GRANDE	MUN	50830000	E	830	559	115	23	99	113	114	111	107	103	100
COUNTY-OTHER	HUDSPETH	RIO GRANDE	MUN	50996115	E	996	757	115	23	265	207	214	215	216	214	213
MANUFACTURING	HUDSPETH	RIO GRANDE	MFG	51001115	E	1001	1001	115	23	10	2	3	4	4	5	6
STEAM ELECTRIC POWER	HUDSPETH	RIO GRANDE	PWR	51002115	E	1002	1002	115	23	0	0	0	0	0	0	0
MINING	HUDSPETH	RIO GRANDE	MIN	51003115	E	1003	1003	115	23	2	0	0	0	0	0	0
IRRIGATION	HUDSPETH	RIO GRANDE	IRR	51004115	E	1004	1004	115	23	229501	124521	121939	119411	116935	114510	112136
LIVESTOCK	HUDSPETH	RIO GRANDE	STK	51005115	E	1005	1005	115	23	359	422	422	422	422	422	422
FORT DAVIS	JEFF DAVIS	RIO GRANDE	MUN	50306000	E	306	209	122	23	216	236	241	240	236	230	225
COUNTY-OTHER	JEFF DAVIS	RIO GRANDE	MUN	50996122	E	996	757	122	23	208	197	198	196	193	188	189
MANUFACTURING	JEFF DAVIS	RIO GRANDE	MFG	51001122	E	1001	1001	122	23	0	0	0	0	0	0	0
STEAM ELECTRIC POWER	JEFF DAVIS	RIO GRANDE	PWR	51002122	E	1002	1002	122	23	0	0	0	0	0	0	0
MINING	JEFF DAVIS	RIO GRANDE	MIN	51003122	E	1003	1003	122	23	0	0	0	0	0	0	0
IRRIGATION	JEFF DAVIS	RIO GRANDE	IRR	51004122	E	1004	1004	122	23	266	3184	3119	3057	2995	2935	2875
LIVESTOCK	JEFF DAVIS	RIO GRANDE	STK	51005122	E	1005	1005	122	23	396	547	547	547	547	547	547
MARFA	PRESIDIO	RIO GRANDE	MUN	50562000	E	562	386	189	23	722	977	1067	1175	1282	1228	1189
PRESIDIO	PRESIDIO	RIO GRANDE	MUN	50722000	E	722	798	189	23	646	768	966	1167	1435	1540	1652
COUNTY-OTHER	PRESIDIO	RIO GRANDE	MUN	50996189	E	996	757	189	23	172	262	300	346	405	414	416
MANUFACTURING	PRESIDIO	RIO GRANDE	MFG	51001189	E	1001	1001	189	23	0	0	0	0	0	0	0
STEAM ELECTRIC POWER	PRESIDIO	RIO GRANDE	PWR	51002189	E	1002	1002	189	23	0	0	0	0	0	0	0
MINING	PRESIDIO	RIO GRANDE	MIN	51003189	E	1003	1003	189	23	10	13	12	12	13	13	13
IRRIGATION	PRESIDIO	RIO GRANDE	IRR	51004189	E	1004	1004	189	23	23362	25678	25156	24646	24145	23655	23175
LIVESTOCK	PRESIDIO	RIO GRANDE	STK	51005189	E	1005	1005	189	23	380	498	498	498	498	498	498
SANDERSON	TERRELL	RIO GRANDE	MUN	50800000	E	800	533	222	23	227	319	320	318	313	305	302
COUNTY-OTHER	TERRELL	RIO GRANDE	MUN	50996222	E	996	757	222	23	36	41	43	38	34	32	31
MANUFACTURING	TERRELL	RIO GRANDE	MFG	51001222	E	1001	1001	222	23	0	0	0	0	0	0	0
STEAM ELECTRIC POWER	TERRELL	RIO GRANDE	PWR	51002222	E	1002	1002	222	23	0	0	0	0	0	0	0
MINING	TERRELL	RIO GRANDE	MIN	51003222	E	1003	1003	222	23	32	27	21	19	18	17	17
IRRIGATION	TERRELL	RIO GRANDE	IRR	51004222	E	1004	1004	222	23	494	380	372	364	356	348	341
LIVESTOCK	TERRELL	RIO GRANDE	STK	51005222	E	1005	1005	222	23	261	376	376	376	376	376	376

* Later evaluation determined that there is no longer any mining demand in Brewster County; however, for this planning period the mining amounts shown were used.

TWDB TABLE 3
WATER DEMAND BY MAJOR WATER PROVIDER

MAJOR WATER PROVIDER	RECEIVER	CITY	COUNTY	BASIN	CATEGORY	MWP	REC	WUGID	RWPG	SEQ	CITY	COUNTY	BASIN	D1996	D2000	D2010	D2020	D2030	D2040	D2050	REMARKS
* El Paso County WID #1	El Paso WU/PSB	City of El Paso	El Paso	Rio Grande	Mun	740	260300	50275000	E	275	189	71	23	46538	36394	43505	50711	162505	179873	199097	36% of PSB demand for 2000-2020. 100% of PSB demand for 2030-2050.
* El Paso County WID #1	Irrigation	Irrigation	El Paso	Rio Grande	Irr	740		51004071	E	1004	1004	71	23	202685	179842	164338	161470	160173	154542	152014	
El Paso WU/PSB	City of El Paso	City of El Paso	El Paso	Rio Grande	Mun	260300	260300	50275000	E	275	189	71	23	117222	101928	120846	140865	162505	179873	199097	
El Paso WU/PSB	Lower Valley Water Dist.	Socorro	El Paso	Rio Grande	Mun	260300	260330	50838000	E	838	804	71	23		2630	5335	9141	11161	12674	14392	
El Paso WU/PSB	Lower Valley Water Dist.	San Elizario	El Paso	Rio Grande	Mun	260300	767520	50793000	E	793	953	71	23		538	1106	1763	2107	2327	2470	
El Paso WU/PSB	Lower Valley Water Dist.	County Other	El Paso	Rio Grande	Mun	260300	260330	50996071	E	996	757	71	23		415	694	1032	1148	1281	1428	
El Paso WU/PSB	Clint	Clint	El Paso	Rio Grande	Mun	260300	161810	50178000	E	178	689	71	23	310	354	388	421	492	547	608	
El Paso WU/PSB	Canutillo	Canutillo	El Paso	Rio Grande	Mun	260300	132650	50144000	E	144	95	71	23	354	406	393	393	441	465	514	
El Paso WU/PSB	Westway (CDP)	Westway (CDP)	El Paso	Rio Grande	Mun	260300	936900	50968000	E	958	990	71	23	283	368	356	340	338	340	351	
El Paso WU/PSB	Ft. Bliss	Ft. Bliss	El Paso	Rio Grande	Mun	260300	889370	50305000	E	305	208	71	23	2493	2493	2493	2493	2493	2493	2493	
El Paso WU/PSB	Homestead (CDP)	Homestead (CDP)	El Paso	Rio Grande	Mun	260300	392810	50413000	E	413	882	71	23	891	874	871	841	865	893	942	
El Paso WU/PSB	Hacienda del Norte	County Other	El Paso	Rio Grande	Mun	260300	363095	50996071	E	996	757	71	23		59	120	120	120	120	120	
El Paso WU/PSB	County Manufacturing	County Manufacturing	El Paso	Rio Grande	Mfg	260300		51001071	E	1001	1001	71	23		4880	5758	6795	8018	9461	11164	
El Paso WU/PSB	County Steam Electric	County Steam Electric	El Paso	Rio Grande	Pwr	260300		51002071	E	1002	1002	71	23	1302	1302	2802	2802	2802	2802	2802	
El Paso WU/PSB	County Mining	County Mining	El Paso	Rio Grande	Min	260300		51003071	E	1003	1003	71	23	49	49	49	49	49	49	49	
El Paso County WCID#4	Fabens	Fabens	El Paso	Rio Grande	Mun	260500	260500	50288000	E	288	195	71	23	1144	1048	1120	1205	1289	1289	1289	
El Paso County WCID#4	San Elizario	San Elizario	El Paso	Rio Grande	Mun	260500	767520	50793000	E	793	953	71	23	24	40	43	44	44	44	44	
El Paso County WCID#4	Quadrilla MUD	County Other	El Paso	Rio Grande	Mun	260500	197398	50996071	E	996	757	71	23	24	44	81	130	130	130	130	
El Paso County WCID#4	County Other	County Other	El Paso	Rio Grande	Mun	260500		50996071	E	996	757	71	23		10	10	10	10	10	10	

TWDB TABLE 3 (continued)
WATER DEMAND BY MAJOR WATER PROVIDER

MAJOR WATER PROVIDER	RECEIVER	CITY	COUNTY	BASIN	CATEGORY	MWP	REC	WUGID	RWPG	SEQ	CITY	COUNTY	BASIN	D1996	D2000	D2010	D2020	D2030	D2040	D2050	REMARKS
El Paso County Water Auth.	Horizon City	Horizon City	El Paso	Rio Grande	Mun	260340		50417000	E	417	781	71	23	928	1488	1562	1605	1851	2048	2265	
El Paso County Water Auth.	El Paso East	County Other	El Paso	Rio Grande	Mun	260340	248705	50996071	E	996	757	71	23	15	20	25	50	60	60	60	
El Paso County Water Auth.	MUD#1 and #2	County Other	El Paso	Rio Grande	Mun	260340		50996071	E	996	757	71	23	0	202	1882	3752	3752	3752	3752	
Van Horn	Van Horn	Van Horn	Culberson	Rio Grande	Mun	899000	899000	50926000	E	926	620	55	23	624	809	844	854	849	834	829	
Van Horn	Hudspeth WCID#1	Sierra Blanca	Hudspeth	Rio Grande	Mun	899000	795400	50830000	E	830	559	115	23	99	113	114	111	107	103	100	

* Per TAC, EPCWID #1 is not a major water provider.

EPCWID #1 demands are raw diversions from the Rio Grande and include water that is diverted upstream and then returned to the river to be re-diverted.

EPCWID #1 also has use of EPWU/PSB effluent, thus part of EPWU/PSB diversion is returned downstream and re-diverted by EPCWID #1.

TWDB TABLE 3
WATER DEMAND BY MAJOR WATER PROVIDER

Water Supply Source	Type of Water Supply	Regional Planning Group	CountyNo.	Basin No.	Specific Source ID	S2000	S2010	S2020	S2030	S2040	S2050
Upper Rio Grande	00	E	71	23	23500	22,773	22,773	22,773	22,773	22,773	22,773
Upper Rio Grande	00	E	115	23	23500	0	0	0	0	0	0
Lower Rio Grande	00	E	22	23	23550	35,438	35,438	35,438	35,438	35,438	35,438
Lower Rio Grande	00	E	189	23	23550	35,438	35,438	35,438	35,438	35,438	35,438
Lower Rio Grande	00	E	222	23	23550	35,438	35,438	35,438	35,438	35,438	35,438
Pecos River	00	E	222	23	23560	0	0	0	0	0	0
Phantom Creek	00	E	122	23	23160	1,460	1,460	1,460	1,460	1,460	1,460
Direct Reuse	00	E	71	23	36418	115,101	138,860	165,204	0	0	0
Indirect Reuse	00	E	71	23	35231	0	0	0	0	0	0
Hueco Bolson (Fresh)	01	E	71	23	07101	3,000,000	1,947,400	628,000	0	0	0
Hueco Bolson (Brackish)	01	E	71	23	07101	2,500,000	2,300,000	2,100,000	1,900,000	1,700,000	1,500,000
Hueco Bolson	01	E	115	23	11501	500	500	500	500	500	500
Mesilla Bolson	01	E	71	23	07101	500,000	162,044	0	0	0	0
Edwards-Trinity (Plateau)	01	E	22	23	02213	1,123,000	1,123,000	1,123,000	1,123,000	1,123,000	1,123,000
Edwards-Trinity (Plateau)	01	E	55	23	05513	266,000	266,000	266,000	266,000	266,000	266,000
Edwards-Trinity (Plateau)	01	E	122	23	12213	406,000	406,000	406,000	406,000	406,000	406,000
Edwards-Trinity (Plateau)	01	E	222	23	22213	9,020,000	9,020,000	9,020,000	9,020,000	9,020,000	9,020,000
Bone Spring - Victorio Peak	01	E	115	23	11508	141,000	141,000	141,000	141,000	141,000	141,000
Capitan Reef	01	E	22	23	02209	2,000	2,000	2,000	2,000	2,000	2,000
Capitan Reef	01	E	55	23	05509	383,000	383,000	383,000	383,000	383,000	383,000
Capitan Reef	01	E	115	23	11509	5,000	5,000	5,000	5,000	5,000	5,000
Igneous	01	E	22	23	02217	3,122,000	3,122,000	3,122,000	3,122,000	3,122,000	3,122,000
Igneous	01	E	122	23	12217	1,325,000	1,325,000	1,325,000	1,325,000	1,325,000	1,325,000
Igneous	01	E	189	23	18917	4,608,000	4,608,000	4,608,000	4,608,000	4,608,000	4,608,000
Marathon	01	E	22	23	02218	1,498,000	1,498,000	1,498,000	1,498,000	1,498,000	1,498,000
Rustler	01	E	55	23	05525	4,000	4,000	4,000	4,000	4,000	4,000
West Texas Bolson Red Light Draw	01	E	115	23	11502	708,000	708,000	708,000	708,000	708,000	708,000
West Texas Bolson Eagle Flat	01	E	115	23	11502	409,000	409,000	409,000	409,000	409,000	409,000
West Texas Bolson Green River Valley	01	E	115	23	11502	89,000	89,000	89,000	89,000	89,000	89,000
West Texas Bolson Green River Valley	01	E	122	23	12202	89,000	89,000	89,000	89,000	89,000	89,000
West Texas Bolson Green River Valley	01	E	189	23	18902	89,000	89,000	89,000	89,000	89,000	89,000
West Texas Bolson Presidio-Redford	01	E	189	23	18902	6,937,000	6,933,000	6,928,000	6,918,000	6,907,000	6,895,000
West Texas Bolson Wild Horse-Michigan Flats	01	E	55	23	05502	5,751,000	5,699,000	5,646,000	5,596,000	5,548,000	5,501,000
West Texas Bolson Lobo Flat	01	E	55	23	05502	519,000	518,000	518,000	517,000	517,000	517,000
West Texas Bolson Lobo Flat	01	E	122	23	12202	746,000	737,000	728,000	719,000	711,000	703,000
West Texas Bolson Ryan Flat	01	E	122	23	12202	4,397,000	4,386,000	4,377,000	4,368,000	4,359,000	4,351,000
West Texas Bolson Ryan Flat	01	E	189	23	18902	8,926,000	8,900,000	8,876,000	8,852,000	8,829,000	8,808,000
Rio Grande Alluvium	01	E	71	23	07122	1,203,000	1,203,000	1,203,000	1,203,000	1,203,000	1,203,000
Rio Grande Alluvium	01	E	115	23	11522	626,000	626,000	626,000	626,000	626,000	626,000
Other Aquifers	01	E	22	23	02222	10,000	10,000	10,000	10,000	10,000	10,000

TWDB TABLE 4 (continued)
TOTAL WATER SUPPLY AVAILABLE UNDER DROUGHT OF RECORD CONDITIONS

Water Supply Source	Type of Water Supply	Regional Planning Group	CountyNo.	Basin No.	Specific Source ID	S2000	S2010	S2020	S2030	S2040	S2050
Other Aquifers	01	E	55	23	05522	10,000	10,000	10,000	10,000	10,000	10,000
Other Aquifers	01	E	71	23	07122	10,000	10,000	10,000	10,000	10,000	10,000
Other Aquifers	01	E	115	23	11522	10,000	10,000	10,000	10,000	10,000	10,000
Other Aquifers Balmorhea Alluvium	01	E	122	23	12222	96,000	94,000	92,000	90,000	88,000	86,000
Other Aquifers	01	E	189	23	18922	10,000	10,000	10,000	10,000	10,000	10,000
Other Aquifers	01	E	222	23	22222	10,000	10,000	10,000	10,000	10,000	10,000

TWDB TABLE 5
CURRENT WATER SUPPLIES AVAILABLE UNDER DROUGHT OF RECORD CONDITIONS
WITH NO NEW DEVELOPMENT BY CITY AND CATERGORY

Water User Group Name	Water User Group ID	User Regional Planning Group	Seq. No.	City No.	User County No.	Basin No.	Type of Supply Source	Major Water Provider Number	Source Regional Planning Group	Source County No.	Source Basin No.	Specific Source ID	Specific Source Name	S2000	S2010	S2020	S2030	S2040	S2050	Remarks
ALPINE	50013000	E	13	9	22	23	01		E	22	23	02217	Igneous	3,533	3,533	3,533	3,533	3,533	3,533	79% 0f TWDB limit.
ALPINE	50013000	E	13	9	22	23	01		E	122	23	12217	Igneous	958	958	958	958	958	958	21% of TWDB limit. Imported from Jeff Davis County.
COUNTY-OTHER	50996022	E	996	757	22	23	01		E	22	23	02213	Edwards-Trinity (Plateau)	255	255	255	255	255	255	TWDB limit.
COUNTY-OTHER	50996022	E	996	757	22	23	01		E	22	23	02217	Igneous	30	30	30	30	30	30	TWDB limit.
COUNTY-OTHER	50996022	E	996	757	22	23	01		E	22	23	02218	Marathon	100	100	100	100	100	100	TWDB limit. Includes Town of Marathon.
COUNTY-OTHER	50996022	E	996	757	22	23	01		E	22	23	02222	Other Aquifer	50	50	50	50	50	50	
COUNTY-OTHER	50996022	E	996	757	22	23	00		E	22	23	23550	Lower Rio Grande	242	242	242	242	242	242	Town of Lajitas. No permit determined.
MANUFACTURING	51001022	E	1001	1001	22	23	01		E	22	23	02222	Other Aquifer	7	7	7	7	7	7	Use in 1996 + 4.
STEAM ELECTRIC POWER																				
MINING	51003022	E	1003	1003	22	23	01		E	22	23	02217	Igneous	840	855	983	1,068	1,196	1,339	Supply set to equal demand to zero out shortage. See remark in Table 2.
IRRIGATION	51004022	E	1004	1004	22	23	01		E	22	23	02213	Edwards-Trinity (Plateau)	327	327	327	327	327	327	Use in 1994-96.
IRRIGATION	51004022	E	1004	1004	22	23	00		E	22	23	23550	Lower Rio Grande	2,099	2,099	2,099	2,099	2,099	2,099	Permitted water rights.
LIVESTOCK	51005022	E	1005	1005	22	23	01		E	22	23	02213	Edwards-Trinity (Plateau)	398	398	398	398	398	398	Use in 1994.
LIVESTOCK	51005022	E	1005	1005	22	23	01		E	22	23	02217	Igneous	266	266	266	266	266	266	Use in 1994.
LIVESTOCK	51005022	E	1005	1005	22	23	01		E	22	23	02218	Marathon	30	30	30	30	30	30	Use in 1994.
LIVESTOCK	51005022	E	1005	1005	22	23	01		E	22	23	02222	Other Aquifer	105	105	105	105	105	105	Use in 1994.
VAN HORN	50926000	E	926	620	55	23	01		E	55	23	05502	West Texas Bolson Wild Horse-Michigan Flats	1,903	1,903	1,903	1,903	1,903	1,903	TWDB limit.
COUNTY-OTHER	50996055	E	996	757	55	23	01		E	55	23	05502	West Texas Bolson Wild Horse-Michigan Flats	10	10	10	10	10	10	

TWDB TABLE 5 (continued)
CURRENT WATER SUPPLIES AVAILABLE UNDER DROUGHT OF RECORD CONDITIONS
WITH NO NEW DEVELOPMENT BY CITY AND CATERGORY

Water User Group Name	Water User Group ID	User Regional Planning Group	Seq. No.	City No.	User County No.	Basin No.	Type of Supply Source	Major Water Provider Number	Source Regional Planning Group	Source County No.	Source Basin No.	Specific Source ID	Specific Source Name	S2000	S2010	S2020	S2030	S2040	S2050	Remarks
COUNTY-OTHER	50996055	E	996	757	55	23	01		E	55	23	05509	Capitan Reef	9	9	9	9	9	9	TWDB limit.
COUNTY-OTHER	50996055	E	996	757	55	23	01		E	55	23	05513	Edwards-Trinity (Plateau)	4	4	4	4	4	4	TWDB limit.
COUNTY-OTHER	50996055	E	996	757	55	23	01		E	55	23	05522	Other Aquifer	80	80	80	80	80	80	
COUNTY-OTHER	50996055	E	996	757	55	23	01		E	55	23	05525	Rustler	5	5	5	5	5	5	
MANUFACTURING	51001055	E	1001	1001	55	23	01		E	55	23	05522	Other Aquifer	3	3	3	3	3	3	Use in 1990 + 2.
STEAM ELECTRIC POWER																				
MINING	51003055	E	1003	1003	55	23	01		E	55	23	05502	West Texas Bolson Wild Horse-Michigan Flats	1,312	1,312	1,312	1,312	1,312	1,312	Use in 1990.
MINING	51003055	E	1003	1003	55	23	01		E	55	23	05509	Capitan Reef	96	96	96	96	96	96	Use in 1990.
MINING	51003055	E	1003	1003	55	23	01		E	55	23	05522	Other Aquifer	849	849	849	849	849	849	Use in 1990.
IRRIGATION	51004055	E	1004	1004	55	23	01		E	55	23	05502	West Texas Bolson Wild Horse-Michigan Flats	8,832	8,832	8,832	8,832	8,832	8,832	Use in 1992.
IRRIGATION	51004055	E	1004	1004	55	23	01		E	55	23	05509	Capitan Reef	11	11	11	11	11	11	Use in 1992.
IRRIGATION	51004055	E	1004	1004	55	23	01		E	55	23	05513	Edwards-Trinity (Plateau)	3	3	3	3	3	3	Use in 1992.
IRRIGATION	51004055	E	1004	1004	55	23	01		E	55	23	05522	Other Aquifer	1,571	1,571	1,571	1,571	1,571	1,571	Use in 1992.
LIVESTOCK	51005055	E	1005	1005	55	23	01		E	55	23	05502	West Texas Bolson Wild Horse-Michigan Flats	205	205	205	205	205	205	Use in 1991.
LIVESTOCK	51005055	E	1005	1005	55	23	01		E	55	23	05509	Capitan Reef	47	47	47	47	47	47	Use in 1991.
LIVESTOCK	51005055	E	1005	1005	55	23	01		E	55	23	05513	Edwards-Trinity (Plateau)	47	47	47	47	47	47	Use in 1991.
LIVESTOCK	51005055	E	1005	1005	55	23	01		E	55	23	05522	Other Aquifer	120	120	120	120	120	120	Use in 1991.
LIVESTOCK	51005055	E	1005	1005	55	23	01		E	55	23	05525	Rustler	47	47	47	47	47	47	Use in 1991.
ANTHONY	50032000	E	32	21	71	23	01		E	71	23	07101	Mesilla Bolson	1,774	1,774	0	0	0	0	Estimated by El Paso PSB.
VINTON	50933000	E	933	983	71	23	01		E	71	23	07101	Mesilla Bolson	97	97	0	0	0	0	Estimated by El Paso PSB. Will likely enter into contract with PSB soon.
EL PASO	50275000	E	275	189	71	23	03	740	E	71	23	23500	Upper Rio Grande	0	0	0	0	0	0	

TWDB TABLE 5 (continued)
CURRENT WATER SUPPLIES AVAILABLE UNDER DROUGHT OF RECORD CONDITIONS
WITH NO NEW DEVELOPMENT BY CITY AND CATERGORY

Water User Group Name	Water User Group ID	User Regional Planning Group	Seq. No.	City No.	User County No.	Basin No.	Type of Supply Source	Major Water Provider Number	Source Regional Planning Group	Source County No.	Source Basin No.	Specific Source ID	Specific Source Name	S2000	S2010	S2020	S2030	S2040	S2050	Remarks
EL PASO	50275000	E	275	189	71	23	00		E	71	23	36418	Direct Reuse	7,000	7,000	7,000	0	0	0	Estimated by El Paso PSB.
EL PASO	50275000	E	275	189	71	23	01		E	71	23	07101	Hueco Bolson (Fresh) and Mesilla Bolson	101,928	120,846	140,865	0	0	0	Estimated by El Paso PSB.
CANUTILLO	50144000	E	144	95	71	23	03	260300	E	71	23	07101	Mesilla Bolson	406	393	393	0	0	0	Estimated by El Paso PSB.
CLINT	50178000	E	178	689	71	23	03	260300	E	71	23	07101	Hueco Bolson (Fresh) and Mesilla Bolson	354	388	421	0	0	0	Estimated by El Paso PSB.
SOCORRO	50838000	E	838	804	71	23	03	260300	E	71	23	07101	Hueco Bolson (Fresh) and Mesilla Bolson	2,630	5,335	9,141	0	0	0	Estimated by El Paso PSB.
SAN ELIZARIO (CDP)	50793000	E	793	953	71	23	03	260300	E	71	23	07101	Hueco Bolson (Fresh) and Mesilla Bolson	882	1,134	1,278	0	0	0	Estimated by El Paso PSB. Contract moved from WCID#4 to PSB.
WESTWAY (CDP)	50958000	E	958	990	71	23	03	260300	E	71	23	07101	Hueco Bolson (Fresh) and Mesilla Bolson	368	356	340	0	0	0	Estimated by El Paso PSB.
FORT BLISS	50305000	E	305	208	71	23	03	260300	E	71	23	07101	Hueco Bolson (Fresh) and Mesilla Bolson	488	488	488	0	0	0	Maximum purchased from El Paso PSB in 1997.
FORT BLISS	50305000	E	305	208	71	23	01		E	71	23	07101	Hueco Bolson (Fresh) and Mesilla Bolson	5,361	5,361	5,361	0	0	0	Self produced from 14 wells
HOMESTEAD (CDP)	50413000	E	413	882	71	23	03	260300	E	71	23	07101	Hueco Bolson (Fresh) and Mesilla Bolson	874	871	841	0	0	0	Estimated by El Paso PSB.
HACIENDA DEL NORTE	50996071	E	996	757	71	23	03	260300	E	71	23	07101	Hueco Bolson (Fresh) and Mesilla Bolson	59	59	59	0	0	0	Estimated by El Paso PSB.
HACIENDA DEL NORTE	50996071	E	996	757	71	23	03	260300	E	71	23	07101	Hueco Bolson (Fresh) and Hueco Bolson (Brackish)	100	100	100	100	100	100	Estimated by El Paso PSB.
FABENS (EPWCID#4)	50288000	E	288	195	71	23	03	260500	E	71	23	07101	Hueco Bolson (Fresh)	1,048	1,120	1,205	0	0	0	Estimated by El Paso PSB.

TWDB TABLE 5 (continued)
CURRENT WATER SUPPLIES AVAILABLE UNDER DROUGHT OF RECORD CONDITIONS
WITH NO NEW DEVELOPMENT BY CITY AND CATERGORY

Water User Group Name	Water User Group ID	User Regional Planning Group	Seq. No.	City No.	User County No.	Basin No.	Type of Supply Source	Major Water Provider Number	Source Regional Planning Group	Source County No.	Source Basin No.	Specific Source ID	Specific Source Name	S2000	S2010	S2020	S2030	S2040	S2050	Remarks
HORIZON CITY (EPCWA)	50417000	E	417	781	71	23	03	260340	E	71	23	07101	Hueco Bolson (Brackish)	1,710	3,469	5,407	5,663	5,860	6,077	Estimated by El Paso PSB. Includes El Paso East and MUD #1 and #2 and a small amount of County Other.
COUNTY OTHER (EP-PSB)	50996071	E	996	757	71	23	03	260300	E	71	23	07101	Hueco Bolson (Fresh) and Mesilla Bolson	156	500	1,000	0	0	0	Estimated by El Paso PSB. Includes Canutillo School and Rio Valley Estates.
COUNTY OTHER (EPWCID#4)	50996071	E	996	757	71	23	03	260500	E	71	23	07101	Hueco Bolson (Fresh)	54	81	140	0	0	0	Estimated by El Paso PSB. Includes Quadrilla and County Other.
COUNTY OTHER	50996071	E	996	757	71	23	03		E	71	23	07101	Hueco Bolson (Fresh) and Mesilla Bolson	14,791	16,889	18,991	0	0	0	
MANUFACTURING	51001071	E	1001	1001	71	23	03	260300	E	71	23	07101	Hueco Bolson (Fresh) and Mesilla Bolson	14,786	16,192	17,145	0	0	0	Estimated by El Paso PSB.
STEAM ELECTRIC POWER	51002071	E	1002	1002	71	23	03	260300	E	71	23	36418	Direct Reuse	6,000	6,000	6,000	0	0	0	Estimated by El Paso PSB. Includes El Paso Electric and American Elictric.
MINING	51003071	E	1003	1003	71	23	03	260300	E	71	23	07101	Hueco Bolson (Fresh) and Mesilla Bolson	246	110	56	0	0	0	Use in 1993.
IRRIGATION	51004071	E	1004	1004	71	23	01		E	71	23	07122	Rio Grande Alluvium	3,253	3,253	3,253	3,253	3,253	3,253	Use in 1990.
IRRIGATION	51004071	E	1004	1004	71	23	00		E	71	23	36418	Direct Reuse	49,203	59,628	72,800	0	0	0	Estimated by El Paso PSB.
IRRIGATION	51004071	E	1004	1004	71	23	00		E	71	23	23500	Upper Rio Grande	0	0	0	0	0	0	
IRRIGATION	51004071	E	1004	1004	71	23	00		E	71	23	35231	Indirect Reuse	0	0	0	0	0	0	
LIVESTOCK	51005071	E	1005	1005	71	23	01		E	71	23	07101	Hueco Bolson (Fresh), Hueco Bolson (Brackish), and Mesilla Bolson	1,651	1,651	1,651	1,651	1,651	1,651	Use in 1994.
LIVESTOCK	51005071	E	1005	1005	71	23	00		E	71	23	35231	Indirect Reuse	0	0	0	0	0	0	

TWDB TABLE 5 (continued)
CURRENT WATER SUPPLIES AVAILABLE UNDER DROUGHT OF RECORD CONDITIONS
WITH NO NEW DEVELOPMENT BY CITY AND CATERGORY

Water User Group Name	Water User Group ID	User Regional Planning Group	Seq. No.	City No.	User County No.	Basin No.	Type of Supply Source	Major Water Provider Number	Source Regional Planning Group	Source County No.	Source Basin No.	Specific Source ID	Specific Source Name	S2000	S2010	S2020	S2030	S2040	S2050	Remarks
DELL CITY	50238000	E	238	856	115	23	01		E	115	23	11508	Bone Spring-Victorio Peak	50	50	50	50	50	50	Max use in 1996. Formerly County Other.
SIERRA BLANCA	50830000	E	830	559	115	23	03	899000	E	55	23	05502	West Texas Bolson Wild Horse-Michigan Flats	351	351	351	351	351	351	Contracted amount from City of Van Horn.
COUNTY-OTHER	50996115	E	996	757	115	23	01		E	115	23	11501	Hueco Bolson	196	196	196	196	196	196	Use in 1996.
COUNTY-OTHER	50996115	E	996	757	115	23	01		E	115	23	11508	Bone Spring-Victorio Peak	1	1	1	1	1	1	Estimated from approximate rural population.
COUNTY-OTHER	50996115	E	996	757	115	23	01		E	115	23	11522	Other Aquifer	51	51	51	51	51	51	Use in 1996.
MANUFACTURING	51001115	E	1001	1001	115	23	01		E	115	23	11522	Other Aquifer	6	6	6	6	6	6	Use in 1996 + 6.
STEAM ELECTRIC POWER																				
MINING	51003115	E	1003	1003	115	23	01		E	115	23	11522	Other Aquifer	2	2	2	2	2	2	Use in 1995-96.
IRRIGATION	51004115	E	1004	1004	115	23	01		E	115	23	11522	Rio Grande Alluvium	6,556	6,556	6,556	6,556	6,556	6,556	Use in 1993.
IRRIGATION	51004115	E	1004	1004	115	23	01		E	115	23	11508	Bone Spring-Victorio Peak	140,000	140,000	140,000	140,000	140,000	140,000	Estimated maximum aquifer can supply without causing major salt-water encroachment.
IRRIGATION	51004115	E	1004	1004	115	23	01		E	115	23	11509	Capitan Reef	2,797	2,797	2,797	2,797	2,797	2,797	Use in 1994.
IRRIGATION	51004115	E	1004	1004	115	23	00		E	115	23	23500	Upper Rio Grande	0	0	0	0	0	0	
LIVESTOCK	51005115	E	1005	1005	115	23	01		E	115	23	11501	Hueco Bolson	75	75	75	75	75	75	Use in 1994.
LIVESTOCK	51005115	E	1005	1005	115	23	01		E	115	23	11508	Bone Spring-Victorio Peak	26	26	26	26	26	26	Use in 1994.
LIVESTOCK	51005115	E	1005	1005	115	23	01		E	115	23	11522	Other Aquifer	365	365	365	365	365	365	Use in 1994.
LIVESTOCK	51005115	E	1005	1005	115	23	01		E	115	23	11509	Capitan Reef	8	8	8	8	8	8	Use in 1994.
LIVESTOCK	51005115	E	1005	1005	115	23	01		E	115	23	11502	West Texas Bolson Red Light Draw, Eagle Flat, and Green River Valley	45	45	45	45	45	45	Use in 1994.
FORT DAVIS	50306000	E	306	209	122	23	01		E	122	23	12217	Igneous	846	846	846	846	846	846	TWDB limit.

TWDB TABLE 5 (continued)
CURRENT WATER SUPPLIES AVAILABLE UNDER DROUGHT OF RECORD CONDITIONS
WITH NO NEW DEVELOPMENT BY CITY AND CATERGORY

Water User Group Name	Water User Group ID	User Regional Planning Group	Seq. No.	City No.	User County No.	Basin No.	Type of Supply Source	Major Water Provider Number	Source Regional Planning Group	Source County No.	Source Basin No.	Specific Source ID	Specific Source Name	S2000	S2010	S2020	S2030	S2040	S2050	Remarks
COUNTY-OTHER	50996122	E	996	757	122	23	01		E	122	23	12217	Igneous	77	77	77	77	77	77	Estimated from JDCUWCD records. Includes National Park, McDonald Obs., TP&W, and county rural.
COUNTY-OTHER	50996122	E	996	757	122	23	01		E	122	23	12202	West Texas Bolson Lobo Flat	10	10	10	10	10	10	Estimated from approximate population.
COUNTY-OTHER	50996122	E	996	757	122	23	01		E	122	23	12202	West Texas Bolson Ryan Flat	35	35	35	35	35	35	Estimated from JDCUWCD records. Includes Valentine and county rural.
COUNTY-OTHER	50996122	E	996	757	122	23	01		E	122	23	12213	Edwards-Trinity (Plateau)	2	2	2	2	2	2	Estimated from JDCUWCD records.
MANUFACTURING																				
STEAM ELECTRIC POWER																				
MINING																				
IRRIGATION	51004122	E	1004	1004	122	23	01		E	122	23	12217	Igneous	628	628	628	628	628	628	Use in 1990 + JDCUWCD records of greenhouse farms.
IRRIGATION	51004122	E	1004	1004	122	23	01		E	122	23	12202	West Texas Bolson Lobo Flat	1,000	1,000	1,000	1,000	1,000	1,000	Use in 1990.
IRRIGATION	51004122	E	1004	1004	122	23	01		E	122	23	12202	West Texas Bolson Ryan Flat	1,572	1,572	1,572	1,572	1,572	1,572	Use in 1990.
LIVESTOCK	51005122	E	1005	1005	122	23	01		E	122	23	12217	Igneous	78	78	78	78	78	78	Use in 1991.
LIVESTOCK	51005122	E	1005	1005	122	23	01		E	122	23	12202	West Texas Bolson Lobo Flat	31	31	31	31	31	31	Use in 1991.
LIVESTOCK	51005122	E	1005	1005	122	23	01		E	122	23	12202	West Texas Bolson Ryan Flat	50	50	50	50	50	50	Use in 1991.
LIVESTOCK	51005122	E	1005	1005	122	23	01		E	122	23	12213	Edwards-Trinity (Plateau)	130	130	130	130	130	130	Use in 1991.
LIVESTOCK	51005122	E	1005	1005	122	23	01		E	122	23	12222	Other Aquifers Balmorhea Alluvium	234	234	234	234	234	234	Use in 1991.
MARFA	50562000	E	562	386	189	23	01		E	189	23	18917	Igneous	3,273	3,273	3,273	3,273	3,273	3,273	TWDB limit.

TWDB TABLE 5 (continued)
CURRENT WATER SUPPLIES AVAILABLE UNDER DROUGHT OF RECORD CONDITIONS
WITH NO NEW DEVELOPMENT BY CITY AND CATERGORY

Water User Group Name	Water User Group ID	User Regional Planning Group	Seq. No.	City No.	User County No.	Basin No.	Type of Supply Source	Major Water Provider Number	Source Regional Planning Group	Source County No.	Source Basin No.	Specific Source ID	Specific Source Name	S2000	S2010	S2020	S2030	S2040	S2050	Remarks
PRESIDIO	50722000	E	722	798	189	23	01		E	189	23	18902	West Texas Bolson Presidio-Redford	3,048	3,048	3,048	3,048	3,048	3,048	TWDB limit.
COUNTY-OTHER	50996189	E	996	757	189	23	01		E	189	23	18922	Other Aquifer	50	50	50	50	50	50	Estimated from approximate rural population.
COUNTY-OTHER	50996189	E	996	757	189	23	01		E	189	23	18902	West Texas Bolson Presidio-Redford	60	60	60	60	60	60	TWDB limit. Includes Redford and county rural.
COUNTY-OTHER	50996189	E	996	757	189	23	01		E	189	23	18917	Igneous	20	20	20	20	20	20	Estimated from approximate rural population.
MANUFACTURING																				
STEAM ELECTRIC POWER																				
MINING	51003189	E	1003	1003	189	23	01		E	189	23	18902	West Texas Bolson Presidio-Redford	13	13	13	13	13	13	Use in 1991-96 + 3.
IRRIGATION	51004189	E	1004	1004	189	23	01		E	189	23	18917	Igneous	780	780	780	780	780	780	Use in 1990 + new greenhouse farm
IRRIGATION	51004189	E	1004	1004	189	23	01		E	189	23	18902	West Texas Bolson Presidio-Redford	2,000	2,000	2,000	2,000	2,000	2,000	Use in 1990.
IRRIGATION	51004189	E	1004	1004	189	23	01		E	189	23	18902	West Texas Bolson Ryan Flat	2,028	2,028	2,028	2,028	2,028	2,028	Use in 1990.
IRRIGATION	51004189	E	1004	1004	189	23	00		E	189	23	23550	Lower Rio Grande	26,023	26,023	26,023	26,023	26,023	26,023	Permitted water rights.
LIVESTOCK	51005189	E	1005	1005	189	23	01		E	189	23	18917	Igneous	123	123	123	123	123	123	Use in 1994.
LIVESTOCK	51005189	E	1005	1005	189	23	01		E	189	23	18902	West Texas Bolson Presidio-Redford	100	100	100	100	100	100	Use in 1994.
LIVESTOCK	51005189	E	1005	1005	189	23	01		E	189	23	18902	West Texas Bolson Ryan Flat	123	123	123	123	123	123	Use in 1994.
LIVESTOCK	51005189	E	1005	1005	189	23	01		E	189	23	18922	Other Aquifer	223	223	223	223	223	223	Use in 1994.
SANDERSON	50800000	E	800	533	222	23	01		E	222	23	22213	Edwards-Trinity (Plateau)	808	808	808	808	808	808	TWDB limit.

TWDB TABLE 5 (continued)
CURRENT WATER SUPPLIES AVAILABLE UNDER DROUGHT OF RECORD CONDITIONS
WITH NO NEW DEVELOPMENT BY CITY AND CATERGORY

Water User Group Name	Water User Group ID	User Regional Planning Group	Seq. No.	City No.	User County No.	Basin No.	Type of Supply Source	Major Water Provider Number	Source Regional Planning Group	Source County No.	Source Basin No.	Specific Source ID	Specific Source Name	S2000	S2010	S2020	S2030	S2040	S2050	Remarks
COUNTY-OTHER	50996222	E	996	757	222	23	01		E	222	23	22213	Edwards-Trinity (Plateau)	20	20	20	20	20	20	Includes Dryden.
MANUFACTURING																				
STEAM ELECTRIC POWER																				
MINING	51003222	E	1003	1003	222	23	01		E	222	23	22213	Edwards-Trinity (Plateau)	42	42	42	42	42	42	Use in 1990.
IRRIGATION	51004222	E	1004	1004	222	23	01		E	222	23	22213	Edwards-Trinity (Plateau)	494	494	494	494	494	494	Use in 1993-96.
IRRIGATION	51004222	E	1004	1004	222	23	00		E	222	23	23550	Lower Rio Grande	152	152	152	152	152	152	Permitted water rights.
LIVESTOCK	51005222	E	1005	1005	222	23	01		E	222	23	22213	Edwards-Trinity (Plateau)	411	411	411	411	411	411	Use in 1991.

Note 1. Ground-water supplies represent recoverable water from storage, not total storage.
Note 2. It is assumed that no water is available in the "Local SW Supply" source during drought of record conditions.

TWDB TABLE 6
CURRENT WATER SUPPLIES AVAILABLE UNDER DROUGHT OF RECORD CONDITIONS
WITH NO NEW DEVELOPMENT BY MAJOR WATER PROVIDERS

Major Water Provider	Major Water Provider No.	Type of Supply Source	MWP Selling to Entity in A	Regional Planning Group	Source County No.	Source Basin No.	Specific Source ID	Specific Source Name	S2000	S2010	S2020	S2030	S2040	S2050	Remarks
El Paso County WID #1	000740	00		E	71	23	23500	Upper Rio Grande	0	0	0	0	0	0	Rio Grande Project Water
El Paso WU/PSB	260300	03	000740	E	71	23	23500	Upper Rio Grande	0	0	0	0	0	0	Rio Grande Project Water
El Paso WU/PSB	260300	01		E	71	23	07101	Hueco Bolson (Fresh) and Mesilla Bolson	123,177	146,672	172,027	0	0	0	
El Paso WU/PSB	260300	00		E	71	23	36418	Direct Reuse	13,000	13,000	13,000	0	0	0	
El Paso County WCID #4	260500	01		E	71	23	07101	Hueco Bolson (Fresh)	1,102	1,201	1,345	0	0	0	
El Paso County Water Authority	260340	01		E	71	23	07101	Hueco Bolson (Brackish)	1,710	3,469	5,407	5663	5860	6077	
City of Van Horn	899000	01		E	55	23	05502	West Texas Bolson Wild Horse-Michigan Flats	2,254	2,254	2,254	2,254	2,254	2,254	

TWDB TABLE 7
COMPARISON OF WATER DEMAND AND WATER SUPPLY CAPACITIES BY CITY AND CATEGORY

Water User Group Name	Water User Group No.	Regional Water Planning Group	Seq. No.	City No.	County No.	Basin No.	S2000	S2010	S2020	S2030	S2040	S2050
ALPINE	50013000	E	13	9	22	23	2,967	2,823	2,600	2,436	2,248	2,030
COUNTY-OTHER	50996022	E	996	757	22	23	-507	-639	-668	-747	-793	-741
MANUFACTURING	51001022	E	1001	1001	22	23	3	3	2	2	1	0
STEAM ELECTRIC POWER	51002022	E	1002	1002	22	23						
MINING	51003022	E	1003	1003	22	23	0	0	0	0	0	0
IRRIGATION	51004022	E	1004	1004	22	23	2,130	2,134	2,138	2,142	2,146	2,150
LIVESTOCK	51005022	E	1005	1005	22	23	228	228	228	228	228	228
VAN HORN	50926000	E	926	620	55	23	1,094	1,059	1,049	1,054	1,069	1,074
COUNTY-OTHER	50996055	E	996	757	55	23	11	10	11	15	19	28
MANUFACTURING	51001055	E	1001	1001	55	23	2	2	1	1	1	0
STEAM ELECTRIC POWER	51002055	E	1002	1002	55	23						
MINING	51003055	E	1003	1003	55	23	17	47	12	-52	-115	-184
IRRIGATION	51004055	E	1004	1004	55	23	1,470	1,661	1,848	2,031	2,211	2,386
LIVESTOCK	51005055	E	1005	1005	55	23	146	146	146	146	146	146
ANTHONY	50032000	E	32	21	71	23	1,029	961	-885	-1,028	-1,136	-1,255
CANUTILLO	50144000	E	144	95	71	23	0	0	0	-441	-465	-514
CLINT	50178000	E	178	689	71	23	0	0	0	-492	-547	-608
EL PASO	50275000	E	275	189	71	23	7,000	7,000	7,000	-162,505	-179,873	-199,097
FABENS	50288000	E	288	195	71	23	96	140	197	-1,137	-1,227	-1,349
FORT BLISS	50305000	E	305	208	71	23	-760	-292	129	-5,689	-5,674	-5,642
HACIENDA DEL NORTE	50996071	E	996	757	71	23	159	159	159	100	100	100
HOMESTEAD	50413000	E	413	882	71	23	0	0	0	-865	-893	-942
HORIZON CITY	50417000	E	417	781	71	23	222	1,907	3,802	3,812	3,812	3,812
SAN ELIZARIO	50793000	E	793	953	71	23	0	0	0	-1,475	-1,571	-1,653
SOCORRO	50838000	E	838	804	71	23	1,150	3,912	7,826	-1,535	-1,664	-1,800
VINTON	50933000	E	933	983	71	23	0	-1	-100	-106	-111	-115
WESTWAY	50958000	E	958	990	71	23	0	0	0	-338	-340	-351
COUNTY-OTHER	50996071	E	996	757	71	23	0	0	0	-23,343	-25,931	-27,549
MANUFACTURING	51001071	E	1001	1001	71	23	0	0	0	-17,904	-19,142	-20,332
STEAM ELECTRIC POWER	51002071	E	1002	1002	71	23	0	0	0	-6,000	-6,000	-6,000
MINING	51003071	E	1003	1003	71	23	0	0	0	-28	-10	-3
IRRIGATION	51004071	E	1004	1004	71	23	-127,386	-101,457	-85,417	-156,920	-151,289	-148,761
LIVESTOCK	51005071	E	1005	1005	71	23	-78	-78	-78	-78	-78	-78
DELL CITY	50238000	E	238	856	115	23	12	14	17	20	24	25
SIERRA BLANCA	50830000	E	830	559	115	23	238	237	240	244	248	251
COUNTY-OTHER	50996115	E	996	757	115	23	41	34	33	32	34	35
MANUFACTURING	51001115	E	1001	1001	115	23	4	3	2	2	1	0

TWDB TABLE 7 (continued)
COMPARISON OF WATER DEMAND AND WATER SUPPLY CAPACITIES
BY CITY AND CATEGORY

Water User Group Name	Water User Group No.	Regional Water Planning Group	Seq. No.	City No.	County No.	Basin No.	S2000	S2010	S2020	S2030	S2040	S2050
STEAM ELECTRIC POWER	51002115	E	1002	1002	115	23						
MINING	51003115	E	1003	1003	115	23	2	2	2	2	2	2
IRRIGATION	51004115	E	1004	1004	115	23	24,832	27,414	29,942	32,418	34,843	37,217
LIVESTOCK	51005115	E	1005	1005	115	23	97	97	97	97	97	97
FORT DAVIS	50306000	E	306	209	122	23	610	605	606	610	616	621
COUNTY-OTHER	50996122	E	996	757	122	23	-73	-74	-72	-69	-64	-65
MANUFACTURING	51001122	E	1001	1001	122	23						
STEAM ELECTRIC POWER	51002122	E	1002	1002	122	23						
MINING	51003122	E	1003	1003	122	23						
IRRIGATION	51004122	E	1004	1004	122	23	16	81	143	205	265	325
LIVESTOCK	51005122	E	1005	1005	122	23	-24	-24	-24	-24	-24	-24
MARFA	50562000	E	562	386	189	23	2,296	2,206	2,098	1,991	2,045	2,084
PRESIDIO	50722000	E	722	798	189	23	2,280	2,082	1,881	1,613	1,508	1,396
COUNTY-OTHER	50996189	E	996	757	189	23	-132	-170	-216	-275	-284	-286
MANUFACTURING	51001189	E	1001	1001	189	23						
STEAM ELECTRIC POWER	51002189	E	1002	1002	189	23						
MINING	51003189	E	1003	1003	189	23	0	1	1	0	0	0
IRRIGATION	51004189	E	1004	1004	189	23	5,153	5,675	6,185	6,686	7,176	7,656
LIVESTOCK	51005189	E	1005	1005	189	23	71	71	71	71	71	71
SANDERSON	50800000	E	800	533	222	23	489	488	490	495	503	506
COUNTY-OTHER	50996222	E	996	757	222	23	-21	-23	-18	-14	-12	-11
MANUFACTURING	51001222	E	1001	1001	222	23						
STEAM ELECTRIC POWER	51002222	E	1002	1002	222	23						
MINING	51003222	E	1003	1003	222	23	15	21	23	24	25	25
IRRIGATION	51004222	E	1004	1004	222	23	266	274	282	290	298	305
LIVESTOCK	51005222	E	1005	1005	222	23	35	35	35	35	35	35

Note: Shaded water-use categories have no demand.

TWDB TABLE 8
COMPARISON OF WATER DEMAND AND WATER SUPPLY CAPACITIES
BY MAJOR WATER PROVIDER

Major Water Provider	Major Water Provider No.	County No.	Basin No.	S2000	S2010	S2020	S2030	S2040	S2050
El Paso County WID #1	740	71	23	-216,236	-207,843	-212,181	-322,678	-334,415	-351,111
El Paso WU/PSB	260300	71	23	19,881	18,461	17,972	-192,539	-213,325	-236,430
El Paso County WCID #4	260500	71	23	-40	-53	-44	-1,473	-1,473	-1,473
El Paso County Water Authority	260340	71	23	0	0	0	0	0	0
City of Van Horn	899000	55	23	1,332	1,296	1,289	1,298	1,317	1,325

TWDB TABLE 9
SOCIAL AND ECONOMIC IMPACTS OF NOT MEETING NEEDS BY REGION

2000

RWPG Letter, Water User Group Identifier, Name	Value of Need (Acre-Feet)	Impact of Need on Employment	Impact of Need on Gross Business Output in 1999 US Dollars (Millions)	Impactof Need on Population	Impact of Need on School Enrollment	Impact of Need on Income in 1999 US Dollars (Millions)
E 50996022 COUNTY-OTHER	-507	664	43.8	1,574.0	438.0	18.4
E 51003022 MINING	-144	20	2.7	55.0	18.0	0.8
E 50305000 FORT BLISS	-760	1,449	90.4	3,405.0	971.0	40.7
E 50996071 COUNTY-OTHER	-14,791	19,382	1,279.1	45,548.0	12,792.0	536.1
E 51001071 MANUFACTURING	-9,906	16,513	1,923.0	38,806.0	10,899.0	458.2
E 51002071 STEAM ELECTRIC POWER	-4,698	2,261	403.9	5,313.0	1,515.0	110.1
E 51003071 MINING *	-91	12	1.7	33.0	11.0	0.5
E 51004071 IRRIGATION	-127,386	634	36.3	1,503.0	418.0	8.9
E 51005071 LIVESTOCK	-78	4	0.2	11.0	4.0	0.1
E 50996115 COUNTY-OTHER	-155	203	13.4	481.0	134.0	5.6
E 50996122 COUNTY-OTHER	-73	96	6.3	263.0	85.0	2.6
E 51005122 LIVESTOCK	-24	1	0.1	3.0	1.0	0.0
E 50996189 COUNTY-OTHER	-132	173	11.4	410.0	114.0	4.8
E 50996222 COUNTY-OTHER	-21	28	1.8	77.0	25.0	0.8

2010

RWPG Letter, Water User Group Identifier, Name	Value of Need (Acre-Feet)	Impact of Need on Employment	Impact of Need on Gross Business Output in 1999 US Dollars (Millions)	Impact of Need on Population	Impact of Need on School Enrollment	Impact of Need on Income in 1999 US Dollars (Millions)
E 50305000 FORT BLISS	-292	35	34.7	74.0	19.0	15.6
E 50996022 COUNTY-OTHER	-639	837	55.3	1,959.0	552.0	23.2
E 50996071 COUNTY-OTHER	-16,889	22,131	1,460.6	51,787.0	14,385.0	612.2
E 50996115 COUNTY-OTHER	-162	212	14.0	496.0	140.0	5.9
E 50996122 COUNTY-OTHER	-74	97	6.4	204.0	53.0	2.7
E 50996189 COUNTY-OTHER	-170	223	14.7	522.0	147.0	6.2
E 50996222 COUNTY-OTHER	-23	30	2.0	63.0	17.0	0.8
E 51001071 MANUFACTURING	-10,434	17,394	2,025.5	40,702.0	11,306.0	482.6
E 51002071 STEAM ELECTRIC POWER	-3,198	1,539	274.9	3,617.0	1,031.0	74.9
E 51003022 MINING	-159	22	3.0	46.0	12.0	0.9
E 51004071 IRRIGATION	-101,457	505	28.9	1,182.0	333.0	7.1
E 51005071 LIVESTOCK	-78	4	0.2	8.0	2.0	0.1
E 51005122 LIVESTOCK	-24	1	0.1	2.0	1.0	0.0

TWDB TABLE 9 (continued)
SOCIAL AND ECONOMIC IMPACTS OF NOT MEETING NEEDS BY REGION

2020

RWPG Letter, Water User Group Identifier, Name	Value of Need (Acre-Feet)	Impact of Need on Employment	Impact of Need on Gross Business Output in 1999 US Dollars (Millions)	Impactof Need on Population	Impact of Need on School Enrollment	Impact of Need on Income in 1999 US Dollars (Millions)
E 50996022 COUNTY-OTHER	-668	875	57.8	2,109.0	604.0	24.2
E 51003022 MINING	-287	39	5.4	90.0	30.0	1.6
E 50032000 ANTHONY	-885	1,073	71.8	2,554.0	730.0	29.6
E 50933000 VINTON	-100	124	8.3	299.0	86.0	3.4
E 50996071 COUNTY-OTHER	-18,991	24,886	1,642.4	58,482.0	16,425.0	688.4
E 51001071 MANUFACTURING	-10,350	17,254	2,009.2	40,547.0	11,388.0	478.7
E 51002071 STEAM ELECTRIC POWER	-3,198	1,539	274.9	3,663.0	1,047.0	74.9
E 51004071 IRRIGATION	-85,417	425	24.4	1,024.0	293.0	6.0
E 51005071 LIVESTOCK	-78	4	0.2	9.0	3.0	0.1
E 50996115 COUNTY-OTHER	-163	214	14.1	516.0	148.0	5.9
E 50996122 COUNTY-OTHER	-72	94	6.2	217.0	73.0	2.6
E 51005122 LIVESTOCK	-24	1	0.1	2.0	1.0	0.0
E 50996189 COUNTY-OTHER	-216	283	18.7	682.0	195.0	7.8
E 50996222 COUNTY-OTHER	-18	24	1.6	55.0	19.0	0.7

2030

RWPG Letter, Water User Group Identifier, Name	Value of Need (Acre-Feet)	Impact of Need on Employment	Impact of Need on Gross Business Output in 1999 US Dollars (Millions)	Impact of Need on Population	Impact of Need on School Enrollment	Impact of Need on Income in 1999 US Dollars (Millions)
E 50996022 COUNTY-OTHER	-747	979	64.6	2,281.0	636.0	27.1
E 51003022 MINING	-372	51	7.0	106.0	36.0	2.1
E 50032000 ANTHONY	-1,028	1,246	83.4	2,903.0	810.0	34.3
E 50144000 CANUTILLO	-441	534	35.8	1,244.0	347.0	14.7
E 50178000 CLINT	-492	612	40.8	1,426.0	398.0	16.9
E 50275000 EL PASO	-162,505	230,157	14,990.9	501,742.0	142,697.0	6,389.3
E 50288000 FABENS	-1,137	1,378	92.2	3,211.0	896.0	38.0
E 50305000 FORT BLISS	-5,689	10,849	676.8	25,387.0	7,052.0	304.6
E 50413000 HOMESTEAD	-865	1,048	70.2	2,442.0	681.0	28.9
E 50793000 SAN ELIZARIO	-1,475	2,813	175.5	6,554.0	1,828.0	79.0
E 50838000 SOCORRO	-1,535	3,723	226.0	8,675.0	2,420.0	105.3
E 50933000 VINTON	-106	132	8.8	308.0	86.0	3.6
E 50958000 WESTWAY	-338	421	28.0	981.0	274.0	11.6
E 50996071 COUNTY-OTHER	-23,343	30,589	2,018.7	71,578.0	19,883.0	846.1
E 51001071 MANUFACTURING	-17,904	29,846	3,475.6	69,840.0	19,400.0	828.1
E 51002071 STEAM ELECTRIC POWER	-6,000	2,888	515.8	6,729.0	1,877.0	140.6
E 51003071 MINING *	-28	4	0.5	8.0	3.0	0.2
E 51004071 IRRIGATION	-156,920	780	44.7	1,817.0	507.0	11.0
E 51005071 LIVESTOCK	-78	4	0.2	8.0	3.0	0.1
E 50996115 COUNTY-OTHER	-164	215	14.2	501.0	140.0	5.9
E 50996122 COUNTY-OTHER	-69	90	6.0	186.0	64.0	2.5

TWDB TABLE 9 (continued)
SOCIAL AND ECONOMIC IMPACTS OF NOT MEETING NEEDS BY REGION

2040

RWPG Letter, Water User Group Identifier, Name	Value of Need (Acre-Feet)	Impact of Need on Employment	Impact of Need on Gross Business Output in 1999 US Dollars (Millions)	Impact of Need on Population	Impact of Need on School Enrollment	Impact of Need on Income in 1999 US Dollars (Millions)
E 50996022 COUNTY-OTHER	-793	1,039	68.6	2,431.0	686.0	28.7
E 51003022 MINING	-500	68	9.4	168.0	46.0	2.8
E 50032000 ANTHONY	-1,136	1,377	92.2	3,222.0	909.0	37.9
E 50144000 CANUTILLO	-465	564	37.7	1,342.0	378.0	15.5
E 50178000 CLINT	-547	681	45.3	1,621.0	456.0	18.8
E 50275000 EL PASO	-179,873	254,755	16,593.1	552,818.0	157,948.0	7,072.2
E 50288000 FABENS	-1,227	2,340	146.0	5,476.0	1,544.0	65.7
E 50305000 FORT BLISS	-5,674	10,820	675.0	25,319.0	7,033.0	303.8
E 50413000 HOMESTEAD	-893	1,082	72.4	2,532.0	714.0	29.8
E 50793000 SAN ELIZARIO	-1,571	2,996	186.9	7,011.0	1,977.0	84.1
E 50838000 SOCORRO	-1,664	4,036	245.0	9,444.0	2,664.0	114.1
E 50933000 VINTON	-111	138	9.2	328.0	92.0	3.8
E 50958000 WESTWAY	-340	423	28.2	1,007.0	283.0	11.7
E 50996071 COUNTY-OTHER	-25,931	33,980	2,242.6	79,513.0	22,087.0	939.9
E 51001071 MANUFACTURING	-19,142	31,910	3,716.0	74,669.0	20,742.0	885.4
E 51002071 STEAM ELECTRIC POWER	-6,000	2,888	515.8	6,758.0	1,906.0	140.6
E 51003071 MINING *	-10	1	0.2	2.0	1.0	0.1
E 51004071 IRRIGATION	-151,289	752	43.1	1,790.0	504.0	10.6
E 51005071 LIVESTOCK	-78	4	0.2	10.0	3.0	0.1
E 50996115 COUNTY-OTHER	-162	212	14.0	505.0	142.0	5.9
E 50996122 COUNTY-OTHER	-64	84	5.5	207.0	57.0	2.3
E 51005122 LIVESTOCK	-24	1	0.1	2.0	1.0	0.0
E 50996189 COUNTY-OTHER	-284	372	24.6	885.0	249.0	10.3
E 50996222 COUNTY-OTHER	-12	16	1.0	40.0	11.0	0.4

TWDB TABLE 9 (continued)
SOCIAL AND ECONOMIC IMPACTS OF NOT MEETING NEEDS BY REGION

2050

RWPG Letter, Water User Group Identifier, Name	Value of Need (Acre-Feet)	Impact of Need on Employment	Impact of Need on Gross Business Output in 1999 US Dollars (Millions)	Impact of Need on Population	Impact of Need on School Enrollment	Impact of Need on Income in 1999 US Dollars (Millions)
E 50996022 COUNTY-OTHER	-741	971	64.1	2,272.0	641.0	26.9
E 51003022 MINING	-643	88	12.1	202.0	55.0	3.7
E 50032000 ANTHONY	-1,255	1,521	101.8	3,544.0	989.0	41.9
E 50144000 CANUTILLO	-514	980	61.2	2,293.0	647.0	27.5
E 50178000 CLINT	-608	757	50.4	1,771.0	500.0	20.9
E 50275000 EL PASO	-199,097	281,982	18,366.5	614,721.0	174,829.0	7,828.0
E 50288000 FABENS	-1,349	2,573	160.5	5,995.0	1,672.0	72.2
E 50305000 FORT BLISS	-5,642	10,759	671.2	25,176.0	6,993.0	302.1
E 50413000 HOMESTEAD	-942	1,142	76.4	2,661.0	742.0	31.5
E 50793000 SAN ELIZARIO	-1,653	3,152	196.7	7,344.0	2,049.0	88.5
E 50838000 SOCORRO	-1,800	4,366	265.0	10,173.0	2,838.0	123.4
E 50933000 VINTON	-115	143	9.5	335.0	94.0	3.9
E 50958000 WESTWAY	-351	437	29.1	1,023.0	288.0	12.1
E 50996071 COUNTY-OTHER	-27,549	36,100	2,382.5	84,474.0	23,465.0	998.6
E 51001071 MANUFACTURING	-20,332	33,894	3,947.0	79,312.0	22,031.0	940.5
E 51002071 STEAM ELECTRIC POWER	-6,000	2,888	515.8	6,729.0	1,877.0	140.6
E 51004071 IRRIGATION	-148,761	740	42.4	1,732.0	488.0	10.4
E 51005071 LIVESTOCK	-78	4	0.2	9.0	3.0	0.1
E 50996115 COUNTY-OTHER	-161	211	13.9	494.0	139.0	5.8
E 50996122 COUNTY-OTHER	-65	85	5.6	195.0	54.0	2.4
E 51005122 LIVESTOCK	-24	1	0.1	2.0	1.0	0.0
E 50996189 COUNTY-OTHER	-286	375	24.7	878.0	248.0	10.4
E 50996222 COUNTY-OTHER	-11	14	1.0	32.0	9.0	0.4

TWDB TABLE 10
SOCIAL AND ECONOMIC IMPACTS OF NOT MEETING NEEDS BY BASIN

2000

Water User Group Name	Water User Group Identifier	Regional Water Planning Group	Basin	Value of Need (Acre-Feet)	Impact of Need on Employment	Impact of Need on Gross Business Output in 1999 US Dollars (Millions)	Impact of Need on Population	Impact of Need on School Enrollment	Impact of Need on Income in 1999 US Dollars (Millions)
COUNTY-OTHER	50996022	E	23	-507	664	43.8	1,574	438	18.4
MINING	51003022	E	23	-144	20	2.7	55	18	0.8
FORT BLISS	50305000	E	23	-760	1,449	90.4	3,405	971	40.7
COUNTY-OTHER	50996071	E	23	-14,791	19,382	1,279.1	45,548	12,792	536.1
MANUFACTURING	51001071	E	23	-9,906	16,513	1,923.0	38,806	10,899	458.2
STEAM ELECTRIC POWER	51002071	E	23	-4,698	2,261	403.9	5,313	1,515	110.1
MINING *	51003071	E	23	-91	12	1.7	33	11	0.5
IRRIGATION	51004071	E	23	-127,386	634	36.3	1,503	418	8.9
LIVESTOCK	51005071	E	23	-78	4	0.2	11	4	0.1
COUNTY-OTHER	50996115	E	23	-155	203	13.4	481	134	5.6
COUNTY-OTHER	50996122	E	23	-73	96	6.3	263	85	2.6
LIVESTOCK	51005122	E	23	-24	1	0.1	3	1	0.0
COUNTY-OTHER	50996189	E	23	-132	173	11.4	410	114	4.8
COUNTY-OTHER	50996222	E	23	-21	28	1.8	77	25	0.8

2010

Water User Group Name	Water User Group Identifier	Regional Water Planning Group	Basin	Value of Need (Acre-Feet)	Impact of Need on Employment	Impact of Need on Gross Business Output in 1999 US Dollars (Millions)	Impact of Need on Population	Impact of Need on School Enrollment	Impact of Need on Income in 1999 US Dollars (Millions)
FORT BLISS	50305000	E	23	-292	35	34.7	74	19	15.6
COUNTY-OTHER	50996022	E	23	-639	837	55.3	1,959	552	23.2
COUNTY-OTHER	50996071	E	23	-16,889	22,131	1,460.6	51,787	14,385	612.2
COUNTY-OTHER	50996115	E	23	-162	212	14.0	496	140	5.9
COUNTY-OTHER	50996122	E	23	-74	97	6.4	204	53	2.7
COUNTY-OTHER	50996189	E	23	-170	223	14.7	522	147	6.2
COUNTY-OTHER	50996222	E	23	-23	30	2.0	63	17	0.8
MANUFACTURING	51001071	E	23	-10,434	17,394	2,025.5	40,702	11,306	482.6
STEAM ELECTRIC POWER	51002071	E	23	-3,198	1,539	274.9	3,617	1,031	74.9
MINING	51003022	E	23	-159	22	3.0	46	12	0.9
IRRIGATION	51004071	E	23	-101,457	505	28.9	1,182	333	7.1
LIVESTOCK	51005071	E	23	-78	4	0.2	8	2	0.1
LIVESTOCK	51005122	E	23	-24	1	0.1	2	1	0.0

TWDB TABLE 10 (continued)
SOCIAL AND ECONOMIC IMPACTS OF NOT MEETING NEEDS BY BASIN

2020

Water User Group Name	Water User Group Identifier	Regional Water Planning Group	Basin	Value of Need (Acre-Feet)	Impact of Need on Employment	Impact of Need on Gross Business Output in 1999 US Dollars (Millions)	Impact of Need on Population	Impact of Need on School Enrollment	Impact of Need on Income in 1999 US Dollars (Millions)
COUNTY-OTHER	50996022	E	23	-668	875	57.8	2,109	604	24.2
MINING	51003022	E	23	-287	39	5.4	90	30	1.6
ANTHONY	50032000	E	23	-885	1,073	71.8	2,554	730	29.6
VINTON	50933000	E	23	-100	124	8.3	299	86	3.4
COUNTY-OTHER	50996071	E	23	-18,991	24,886	1,642.4	58,482	16,425	688.4
MANUFACTURING	51001071	E	23	-10,350	17,254	2,009.2	40,547	11,388	478.7
STEAM ELECTRIC POWER	51002071	E	23	-3,198	1,539	274.9	3,663	1,047	74.9
IRRIGATION	51004071	E	23	-85,417	425	24.4	1,024	293	6.0
LIVESTOCK	51005071	E	23	-78	4	0.2	9	3	0.1
COUNTY-OTHER	50996115	E	23	-163	214	14.1	516	148	5.9
COUNTY-OTHER	50996122	E	23	-72	94	6.2	217	73	2.6
LIVESTOCK	51005122	E	23	-24	1	0.1	2	1	0.0
COUNTY-OTHER	50996189	E	23	-216	283	18.7	682	195	7.8
COUNTY-OTHER	50996222	E	23	-18	24	1.6	55	19	0.7

TWDB TABLE 10 (continued)
SOCIAL AND ECONOMIC IMPACTS OF NOT MEETING NEEDS BY BASIN

2030

Water User Group Name	Water User Group Identifier	Regional Water Planning Group	Basin	Value of Need (Acre-Feet)	Impact of Need on Employment	Impact of Need on Gross Business Output in 1999 US Dollars (Millions)	Impact of Need on Population	Impact of Need on School Enrollment	Impact of Need on Income in 1999 US Dollars (Millions)
COUNTY-OTHER	50996022	E	23	-747	979	64.6	2,281	636	27.1
MINING	51003022	E	23	-372	51	7.0	106	36	2.1
ANTHONY	50032000	E	23	-1,028	1,246	83.4	2,903	810	34.3
CANUTILLO	50144000	E	23	-441	534	35.8	1,244	347	14.7
CLINT	50178000	E	23	-492	612	40.8	1,426	398	16.9
EL PASO	50275000	E	23	-162,505	230,157	14,990.9	501,742	142,697	6,389.3
FABENS	50288000	E	23	-1,137	1,378	92.2	3,211	896	38.0
FORT BLISS	50305000	E	23	-5,689	10,849	676.8	25,387	7,052	304.6
HOMESTEAD	50413000	E	23	-865	1,048	70.2	2,442	681	28.9
SAN ELIZARIO	50793000	E	23	-1,475	2,813	175.5	6,554	1,828	79.0
SOCORRO	50838000	E	23	-1,535	3,723	226.0	8,675	2,420	105.3
VINTON	50933000	E	23	-106	132	8.8	308	86	3.6
WESTWAY	50958000	E	23	-338	421	28.0	981	274	11.6
COUNTY-OTHER	50996071	E	23	-23,343	30,589	2,018.7	71,578	19,883	846.1
MANUFACTURING	51001071	E	23	-17,904	29,846	3,475.6	69,840	19,400	828.1
STEAM ELECTRIC POWER	51002071	E	23	-6,000	2,888	515.8	6,729	1,877	140.6
MINING *	51003071	E	23	-28	4	0.5	8	3	0.2
IRRIGATION	51004071	E	23	-156,920	780	44.7	1,817	507	11.0
LIVESTOCK	51005071	E	23	-78	4	0.2	8	3	0.1
COUNTY-OTHER	50996115	E	23	-164	215	14.2	501	140	5.9
COUNTY-OTHER	50996122	E	23	-69	90	6.0	186	64	2.5
LIVESTOCK	51005122	E	23	-24	1	0.1	2	1	0.0
COUNTY-OTHER	50996189	E	23	-275	360	23.8	839	234	10.0
COUNTY-OTHER	50996222	E	23	-14	18	1.2	37	13	0.5

TWDB TABLE 10 (continued)
SOCIAL AND ECONOMIC IMPACTS OF NOT MEETING NEEDS BY BASIN

2040

Water User Group Name	Water User Group Identifier	Regional Water Planning Group	Basin	Value of Need (Acre-Feet)	Impact of Need on Employment	Impact of Need on Gross Business Output in 1999 US Dollars (Millions)	Impact of Need on Population	Impact of Need on School Enrollment	Impact of Need on Income in 1999 US Dollars (Millions)
COUNTY-OTHER	50996022	E	23	-793	1,039	68.6	2,431	686	28.7
MINING	51003022	E	23	-500	68	9.4	168	46	2.8
ANTHONY	50032000	E	23	-1,136	1,377	92.2	3,222	909	37.9
CANUTILLO	50144000	E	23	-465	564	37.7	1,342	378	15.5
CLINT	50178000	E	23	-547	681	45.3	1,621	456	18.8
EL PASO	50275000	E	23	-179,873	254,755	16,593.1	552,818	157,948	7,072.2
FABENS	50288000	E	23	-1,227	2,340	146.0	5,476	1,544	65.7
FORT BLISS	50305000	E	23	-5,674	10,820	675.0	25,319	7,033	303.8
HOMESTEAD	50413000	E	23	-893	1,082	72.4	2,532	714	29.8
SAN ELIZARIO	50793000	E	23	-1,571	2,996	186.9	7,011	1,977	84.1
SOCORRO	50838000	E	23	-1,664	4,036	245.0	9,444	2,664	114.1
VINTON	50933000	E	23	-111	138	9.2	328	92	3.8
WESTWAY	50958000	E	23	-340	423	28.2	1,007	283	11.7
COUNTY-OTHER	50996071	E	23	-25,931	33,980	2,242.6	79,513	22,087	939.9
MANUFACTURING	51001071	E	23	-19,142	31,910	3,716.0	74,669	20,742	885.4
STEAM ELECTRIC POWER	51002071	E	23	-6,000	2,888	515.8	6,758	1,906	140.6
MINING *	51003071	E	23	-10	1	0.2	2	1	0.1
IRRIGATION	51004071	E	23	-151,289	752	43.1	1,790	504	10.6
LIVESTOCK	51005071	E	23	-78	4	0.2	10	3	0.1
COUNTY-OTHER	50996115	E	23	-162	212	14.0	505	142	5.9
COUNTY-OTHER	50996122	E	23	-64	84	5.5	207	57	2.3
LIVESTOCK	51005122	E	23	-24	1	0.1	2	1	0.0
COUNTY-OTHER	50996189	E	23	-284	372	24.6	885	249	10.3
COUNTY-OTHER	50996222	E	23	-12	16	1.0	40	11	0.4

TWDB TABLE 10 (continued)
SOCIAL AND ECONOMIC IMPACTS OF NOT MEETING NEEDS BY BASIN

2050

Water User Group Name	Water User Group Identifier	Regional Water Planning Group	Basin	Value of Need (Acre-Feet)	Impact of Need on Employment	Impact of Need on Gross Business Output in 1999 US Dollars (Millions)	Impact of Need on Population	Impact of Need on School Enrollment	Impact of Need on Income in 1999 US Dollars (Millions)
COUNTY-OTHER	50996022	E	23	-741	971	64.1	2,272	641	26.9
MINING	51003022	E	23	-643	88	12.1	202	55	3.7
ANTHONY	50032000	E	23	-1,255	1,521	101.8	3,544	989	41.9
CANUTILLO	50144000	E	23	-514	980	61.2	2,293	647	27.5
CLINT	50178000	E	23	-608	757	50.4	1,771	500	20.9
EL PASO	50275000	E	23	-199,097	281,982	18,366.5	614,721	174,829	7,828.0
FABENS	50288000	E	23	-1,349	2,573	160.5	5,995	1,672	72.2
FORT BLISS	50305000	E	23	-5,642	10,759	671.2	25,176	6,993	302.1
HOMESTEAD	50413000	E	23	-942	1,142	76.4	2,661	742	31.5
SAN ELIZARIO	50793000	E	23	-1,653	3,152	196.7	7,344	2,049	88.5
SOCORRO	50838000	E	23	-1,800	4,366	265.0	10,173	2,838	123.4
VINTON	50933000	E	23	-115	143	9.5	335	94	3.9
WESTWAY	50958000	E	23	-351	437	29.1	1,023	288	12.1
COUNTY-OTHER	50996071	E	23	-27,549	36,100	2,382.5	84,474	23,465	998.6
MANUFACTURING	51001071	E	23	-20,332	33,894	3,947.0	79,312	22,031	940.5
STEAM ELECTRIC POWER	51002071	E	23	-6,000	2,888	515.8	6,729	1,877	140.6
IRRIGATION	51004071	E	23	-148,761	740	42.4	1,732	488	10.4
LIVESTOCK	51005071	E	23	-78	4	0.2	9	3	0.1
COUNTY-OTHER	50996115	E	23	-161	211	13.9	494	139	5.8
COUNTY-OTHER	50996122	E	23	-65	85	5.6	195	54	2.4
LIVESTOCK	51005122	E	23	-24	1	0.1	2	1	0.0
COUNTY-OTHER	50996189	E	23	-286	375	24.7	878	248	10.4
COUNTY-OTHER	50996222	E	23	-11	14	1.0	32	9	0.4

TWDB TABLE 11
POTENTIALLY FEASIBLE WATER MANAGEMENT STRATEGIES

Major Water Provider	Water User Group	MWP	WUG	RPG User	Basin	Supply Type	RPG Source	County Source	Basin Source	Specific Source ID	Specific Source	Total Capital Cost	C 2000	C 2010	C 2020	C 2030	C 2040	C 2050	V 2000	V 2010	V 2020	V 2030	V 2040	V 2050
	Brewster County Other		50996022	E	23	4c /22-1	E	22	23	02222	Other Aquifer	$3,614,350	$288	$288	$288	$288	$288	$288	507	639	668	807	807	807
	Brewster County Other		50996022	E	23	4a /22-2	E	22	23	38022	Conservation	$1,920,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Brewster County Other		50996022	E	23	4c /22-3	E	22	23	02222	Other Aquifer	$0	$263	$263	$263	$263	$263	$263	114	114	114	114	114	114
	Brewster County Other		50996022	E	23	4e /22-4	E	22	23	23550	Lower Rio Grande	$450,000	NA	NA	NA	NA	NA	NA	Na	300	300	300	300	300
	Brewster County Other		50996022	E	23	4l /22-5	E	22	23	37022	Rainfall	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Brewster County Other		50996022	E	23	4a /22-6	E	22	23	38022	Conservation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Culberson / Mining		51003055	E	23	4c /55-2	E	55	23	05522	Other Aquifer	$0	NI	NI	NI	$218	$218	$218	NI	NI	NI	55	75	88
	Culberson / Mining		51003055	E	23	4c /55-3	E	55	23	05522	Other Aquifer	$354,000	NI	NI	NI	$217	$217	$217	NI	NI	NI	50	75	106
El Paso WU/PSB	El Paso	260300	50275000	E	23	4a /71-1	E	71	23	38071	Conservation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
El Paso Co. WID#1	El Paso	740	50275000	E	23	4a /71-2	E	71	23	23500	Upper Rio Grande	$900,000,000	NI	$600	$600	$600	NI	NI	NI	0	0	0	0	0
El Paso WU/PSB	El Paso	260300	50275000	E	23	4b /71-3	E	71	23	36418	Reuse	$72,868,103	$455	$455	$455	$455	$455	$455	15,000	19,000	19,000	0	0	0
El Paso Co. WID#1	El Paso	740	50275000	E	23	4d /71-4	E	71	23	23500	Upper Rio Grande	$273,445,428	$362	$362	$362	$362	$362	$362	0	0	0	0	0	0
El Paso WU/PSB	El Paso	260300	50275000	E	23	4l /71-5	E	71	23	07101	Hueco Bolson (Brackish)	$27,681,705	NI	$285	$285	$285	$285	$285	NI	30,000	30,000	30,000	30,000	30,000
El Paso WU/PSB	El Paso	260300	50275000	E	23	4c /71-6A	E	122	23	12202	West Texas Bolson Ryan Flat	$356,138,169	NI	$782	$782	$782	$782	$782	NI	15,000	20,000	30,000	45,000	45,000
El Paso WU/PSB	El Paso	260300	50275000	E	23	4c /71-6B	E	115	23	11508	Bone Spring-Victorio Peak	$356,138,169	NI	$782	$782	$782	$782	$782	NI	15,000	20,000	30,000	45,000	45,000
El Paso WU/PSB	El Paso	260300	50275000	E	23	4a /71-7	E	71	23	38071	Conservation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Anthony		50032000	E	23	4c /71-10	E	71	23	07101	Mesilla Bolson	$600,000	NI	NI	$873	$873	$873	$873	NI	NI	0	0	0	0
El Paso WU/PSB	Canutillo	260300	50144000	E	23	4e /71-12	E	71	23	23500	Upper Rio Grande	$0	$1,207	$1,207	$1,207	$1,207	$1,207	$1,207	441	441	0	0	0	0
El Paso WU/PSB	Clint	260300	50178000	E	23	4e /71-13	E	71	23	23500	Upper Rio Grande	$0	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	492	492	492	0	0	0
El Paso WU/PSB	Fabens	260300	50288000	E	23	4e /71-14	E	71	23	23500	Upper Rio Grande	$0	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	1,137	1,137	1,137	0	0	0

TWDB TABLE 11 (continued)
POTENTIALLY FEASIBLE WATER MANAGEMENT STRATEGIES

Major Water Provider	Water User Group	MWP	WUG	RPG User	Basin	Supply Type	RPG Source	County Source	Basin Source	Specific Source ID	Specific Source	Total Capital Cost	C 2000	C 2010	C 2020	C 2030	C 2040	C 2050	V 2000	V 2010	V 2020	V 2030	V 2040	V 2050
El Paso Co. WCID#4	Fabens	260500	50288000	E	23	4l /71-15	E	71	23	07101	Hueco Bolson (Brackish)	$5,456,250	NI	$723	$723	$723	$723	$723	NI	1,349	1,349	1,349	1,349	1,349
El Paso WU/PSB	Fort Bliss	260300	50305000	E	23	4e /71-16	E	71	23	23500	Upper Rio Grande	$0	$1,279	$1,279	$1,279	$1,279	$1,279	$1,279	5,700	5,700	5,700	0	0	0
	Fort Bliss		50305000	E	23	4c /71-17	E	71	23	07101	Hueco Bolson (Fresh)	$600,000	$991	$991	$991	$991	$991	$991	200	200	200	0	0	0
	Fort Bliss		50305000	E	23	4l /71-44	E	71	23	07101	Hueco Bolson (Brackish)	$17,355,000	NI	$150	$150	$150	$150	$150	NI	6,000	6,000	6,000	6,000	6,000
	Fort Bliss		50305000	E	23	4b /71-45	E	71	23	36418	Reuse	$6,021,000	NI	$626	$626	$626	$626	$626	NI	800	800	0	0	0
El Paso WU/PSB	Fort Bliss	260300	50305000	E	23	4b /71-46	E	71	23	36418	Reuse	$2,838,000	NI	$501	$501	$501	$501	$501	NI	780	780	0	0	0
	Fort Bliss		50305000	E	23	4a /71-47	E	71	23	38071	Conservation	$0	$596	$596	$596	$596	$596	$596	NA	NA	NA	NA	NA	NA
El Paso WU/PSB	Homestead	260300	50413000	E	23	4e /71-18	E	71	23	23500	Upper Rio Grande	$0	$1,270	$1,270	$1,270	$1,270	$1,270	$1,270	865	865	865	0	0	0
	Homestead		50413000	E	23	4l /71-48	E	71	23	07101	Hueco Bolson (Brackish)	$12,896,675	NI	$2,162	$2,162	$2,162	$2,162	$2,162	NI	1,000	1,000	1,000	1,000	1,000
	Homestead		50413000	E	23	4l /71-49	E	71	23	37071	Rainfall	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Homestead		50413000	E	23	4a /71-51	E	71	23	38071	Conservation	$9,600,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
El Paso WU/PSB	San Elizario	260300	50793000	E	23	4e /71-19	E	71	23	23500	Upper Rio Grande	$0	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	1,475	1,475	1,475	0	0	0
El Paso WU/PSB	Socorro	260300	50838000	E	23	4e /71-20	E	71	23	23500	Upper Rio Grande	$0	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	1,535	1,535	1,535	0	0	0
El Paso WU/PSB	Vinton	260300	50933000	E	23	4e /71-21	E	71	23	23500	Upper Rio Grande	$0	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	106	106	0	0	0	0
El Paso WU/PSB	Westway	260300	50958000	E	23	4e /71-22	E	71	23	23500	Upper Rio Grande	$0	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	338	338	338	0	0	0
El Paso WU/PSB	El Paso County Other	260300	50996071	E	23	4e /71-23	E	71	23	23500	Upper Rio Grande	$0	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	23,342	23,342	23,342	0	0	0
	El Paso County Other		50996071	E	23	4l /71-24	E	71	23	07101	Hueco Bolson (Brackish)	$55,246,500	NI	$246	$246	$246	$246	$246	NI	18,991	18,991	18,991	27,549	27,549
	El Paso County Other		50996071	E	23	4l /71-25	E	71	23	37071	Rainfall	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
El Paso Co. WID#1	El Paso County Other	740	50996071	E	23	4d /71-26	E	71	23	23500	Upper Rio Grande	$40,943,250	NI	$555	$555	$555	$555	$555	NI	24,000	24,000	0	0	0
	El Paso County Other		50996071	E	23	4a /71-27	E	71	23	38071	Conservation	$0	$662	$662	$662	$662	$662	$662	NA	NA	NA	NA	NA	NA

TWDB TABLE 11 (continued)
POTENTIALLY FEASIBLE WATER MANAGEMENT STRATEGIES

Major Water Provider	Water User Group	MWP	WUG	RPG User	Basin	Supply Type	RPG Source	County Source	Basin Source	Specific Source ID	Specific Source	Total Capital Cost	C 2000	C 2010	C 2020	C 2030	C 2040	C 2050	V 2000	V 2010	V 2020	V 2030	V 2040	V 2050
	El Paso County Other		50996071	E	23	4c /71-28	E	115	23	11502	West Texas Bolson Ryan Flat	$356,138,169	NI	$782	$782	$782	$782	$782	NI	220	220	220	220	220
El Paso WU/PSB	El Paso / Manufacturing	260300	51001071	E	23	4e /71-29	E	71	23	23500	Upper Rio Grande	$0	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	17,904	17,904	17,904	0	0	0
El Paso WU/PSB	El Paso / Steam Electric	260300	51002071	E	23	4e /71-30	E	71	23	23500	Upper Rio Grande	$0	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	6,000	6,000	6,000	0	0	0
	El Paso / Steam Electric		51002071	E	23	4a /71-31	E	71	23	38071	Conservation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	El Paso / Steam Electric		51002071	E	23	4c /71-32	E	115	23	11522	Other Aquifer	$600,000	NI	NI	$873	$873	$873	$873	NI	NI	4,000	4,000	4,000	4,000
El Paso WU/PSB	El Paso / Mining	260300	51003071	E	23	4e /71-33	E	71	23	23500	Upper Rio Grande	$0	$1,271	$1,271	$1,271	NI	NI	NI	28	28	28	0	0	0
	El Paso / Irrigation		51004071	E	23	4c /71-34	E	71	23	07122	Rio Grande Alluvium	$4,000,000	$13	$22	$267	$534	$534	$534	24,800	14,400	1,200	1,200	1,200	1,200
	El Paso / Irrigation		51004071	E	23	4c /71-35	E	71	23	07122	Rio Grande Alluvium	$750,000	$13	$22	$267	$534	$534	$534	24,800	14,400	1,200	0	0	0
	El Paso / Irrigation		51004071	E	23	4a /71-36	E	71	23	38071	Conservation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	El Paso / Livestock		51005071	E	23	4c /71-37	E	71	23	07101	Hueco / Mesilla Bolsons	$124,000	$365	$365	$365	$365	$365	$365	75	75	75	75	75	75
	El Paso / Livestock		51005071	E	23	4o /71-38	E	71	23		Herd Reduction	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	El Paso / Livestock		51005071	E	23	4l /71-39	E	71	23	37071	Rainfall	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	El Paso / Livestock		51005071	E	23	4c /71-40	E	71	23	07101	Hueco / Mesilla Bolsons	$132,350	$274	$274	$274	$274	$274	$274	80	80	80	80	80	80
	El Paso / Livestock		51005071	E	23	4a /71-41	E	71	23	38071	Conservation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	El Paso / Livestock		51005071	E	23	4b /71-42	E	71	23	36418	Reuse	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
El Paso WU/PSB	El Paso / Livestock	260300	51005071	E	23	4e /71-43	E	71	23	23500	Upper Rio Grande	$0	$1,271	$1,271	$1,271	$1,271	$1,271	$1,271	70	70	0	0	0	0
	Hudspeth County Other		50996115	E	23	4c /115-1	E	115	23	07101	Hueco Bolson	$84,500	$199	$199	$199	$199	$199	$199	180	180	180	180	180	180
	Hudspeth County Other		50996115	E	23	4a /115-2	E	115	23	38115	Conservation	$1,920,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Hudspeth County Other		50996115	E	23	4c /115-3	E	115	23	07101	Hueco Bolson	$0	$111	$111	$111	$111	$111	$111	27	27	27	27	27	27
	Hudspeth County Other		50996115	E	23	4e /115-4	E	115	23	23500	Upper Rio Grande	$13,085,980	NI	$362	$362	$362	$362	$362	NI	0	0	0	0	0
	Hudspeth County Other		50996115	E	23	4l /115-5	E	115	23	07101	Hueco Bolson (Brackish)	$1,776,900	NI	$285	$285	$285	$285	$285	NI	216	216	216	216	216

TWDB TABLE 11 (continued)
POTENTIALLY FEASIBLE WATER MANAGEMENT STRATEGIES

Major Water Provider	Water User Group	MWP	WUG	RPG User	Basin	Supply Type	RPG Source	County Source	Basin Source	Specific Source ID	Specific Source	Total Capital Cost	C 2000	C 2010	C 2020	C 2030	C 2040	C 2050	V 2000	V 2010	V 2020	V 2030	V 2040	V 2050
	Hudspeth County Other		50996115	E	23	4c /115-6A	E	55	23	05502	West Texas Bolson Wild Horse-Michigan Flats	$5,245,500	NI	$1,932	$1,932	$1,932	$1,932	$1,932	NI	220	220	220	220	220
	Hudspeth County Other		50996115	E	23	4c /115-6B	E	115	23	11502	West Texas Bolson Red Light Draw	$8,534,300	NI	$3,067	$3,067	$3,067	$3,067	$3,067	NI	220	220	220	220	220
	Hudspeth County Other		50996115	E	23	4l /115-8	E	115	23	37115	Rainfall	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Hudspeth Irrigation		51004115	E	23	4a /115-9	E	115	23	38115	Conservation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Hudspeth Irrigation		51004115	E	23	4c /115-10	E	115	23	11522	Rio Grande Alluvium	$50,000	NI	$54	$54	$54	$54	$54	NI	2,610	2,610	2,610	2,610	2,610
	Hudspeth Irrigation		51004115	E	23	4c /115-11	E	115	23	11522	Rio Grande Alluvium	$800,000	NI	$54	$54	$54	$54	$54	NI	8,700	8,700	8,700	8,700	8,700
	Hudspeth Irrigation		51004115	E	23	4j /115-12	E	115	23	23500	Upper Rio Grande	$425,000	NI	$50	$50	$50	$50	$50	NI	0	0	0	0	0
	Jeff Davis County Other		50996122	E	23	4c /122-1	E	122	23	12217	Igneous	$155,350	$45	$45	$45	$45	$45	$45	100	100	100	100	100	100
	Jeff Davis County Other		50996122	E	23	4a /122-2	E	122	23	38122	Conservation	$1,200,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Jeff Davis County Other		50996122	E	23	4c /122-3	E	122	23	12217	Igneous	$0	$125	$125	$125	$125	$125	$125	20	20	20	20	20	20
	Jeff Davis County Other		50996122	E	23	4a /122-4	E	122	23	38122	Conservation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Jeff Davis County Other		50996122	E	23	4e /122-5	E	122	23	12217	Igneous	$310,000	$122	$122	$122	$122	$122	$122	30	30	30	30	30	30
	Jeff Davis County Other		50996122	E	23	4l /122-6	E	122	23	37122	Rainfall	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Jeff Davis / Livestock		51005122	E	23	4c /122-7	E	122	23	12217	Igneous	$247,000	$548	$548	$548	$548	$548	$548	25	25	25	25	25	25
	Jeff Davis / Livestock		51005122	E	23	4c /122-8	E	122	23	12217	Igneous	$450,000	$546	$546	$546	$546	$546	$546	24	24	24	24	24	24
	Jeff Davis / Livestock		51005122	E	23	4o /122-9	E	122	23		Herd Reduction	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Presidio County Other		50996189	E	23	4c /189-1	E	189	23	18902	West Texas Bolson Presidio-Redford	$855,000	$418	$418	$418	$418	$418	$418	278	278	278	278	278	278
	Presidio County Other		50996189	E	23	4a /189-2	E	189	23	38189	Conservation	$1,920,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TWDB TABLE 11 (continued)
POTENTIALLY FEASIBLE WATER MANAGEMENT STRATEGIES

Major Water Provider	Water User Group	MWP	WUG	RPG User	Basin	Supply Type	RPG Source	County Source	Basin Source	Specific Source ID	Specific Source	Total Capital Cost	C 2000	C 2010	C 2020	C 2030	C 2040	C 2050	V 2000	V 2010	V 2020	V 2030	V 2040	V 2050
	Presidio County Other		50996189	E	23	4c /189-3	E	189	23	18902	West Texas Bolson Presidio-Redford	$0	$209	$209	$209	$209	$209	$209	7	7	7	7	7	7
	Presidio County Other		50996189	E	23	4l /189-4	E	189	23	37189	Rainfall	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Presidio County Other		50996189	E	23	4a /189-5	E	189	23	38189	Conservation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Terrell County Other		50996222	E	23	4c /222-1	E	222	23	22213	Edwards-Trinity (Plateau)	$180,000	$557	$557	$557	$557	$557	$557	21	21	21	21	21	21
	Terrell County Other		50996222	E	23	4a /222-2	E	222	23	38222	Conservation	$1,920,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Terrell County Other		50996222	E	23	4c /222-3	E	222	23	22213	Edwards-Trinity (Plateau)	$0	$107	$107	$107	$107	$107	$107	27	27	27	27	27	27
	Terrell County Other		50996222	E	23	4l /222-4	E	222	23	37222	Rainfall	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

0 = Indicates that the supply source is unavailable during drought-of-record conditions.

NA = Indicates that the strategy does not have a specific cost or volume estimate

NI = Indicates that the strategy is not implemented at this time.

TWDB TABLE 12
RECOMMENDED MANAGEMENT STRATEGIES BY CITY AND CATEGORY

Water User Group	WUG	RPG User	Seg	City	County	Basin	Strategy	Supply Type	MWP	RPG Source	County Source	Basin Source	Specific Source ID	Specific Source	Total Capital Cost	V2000	V2010	V2020	V2030	V2040	V2050
Brewster County Other	50996022	E	996	757	22	23	Additional wells	4c /22-1		E	22	23	02222	Other Aquifer	$3,614,350	507	639	668	807	807	807
Brewster County Other	50996022	E	996	757	22	23	Distribution system maintenance	4a /22-2		E	22	23	38022	Conservation	$1,920,000	NA	NA	NA	NA	NA	NA
Brewster County Other	50996022	E	996	757	22	23	Expanded use of existing wells	4c /22-3		E	22	23	02222	Other Aquifer	$0	114	114	114	114	114	114
Brewster County Other	50996022	E	996	757	22	23	Purchase/transfer of existing water rights	4e /22-4		E	22	23	23550	Lower Rio Grande	$450,000	300	300	300	300	300	300
Brewster County Other	50996022	E	996	757	22	23	Rainfall harvesting	4l /22-5		E	22	23	37022	Rainfall	NA	NA	NA	NA	NA	NA	NA
Brewster County Other	50996022	E	996	757	22	23	Water production management	4a /22-6		E	22	23		Conservation	NA	NA	NA	NA	NA	NA	NA
Culberson Mining	51003055	E	1003	1003	55	23	Expanded use of existing wells	4c /55-2		E	55	23	05522	Other Aquifer	$0	NI	NI	NI	55	75	88
Culberson Mining	51003055	E	1003	1003	55	23	Additional wells	4c /55-3		E	55	23	05522	Other Aquifer	$354,000	NI	NI	NI	50	75	106
El Paso	50275000	E	275	189	71	23	Demand side conservation	4a /71-1	260300	E	71	23	38071	Conservation	NA	NA	NA	NA	NA	NA	NA
El Paso	50275000	E	275	189	71	23	Supply side conservation	4a /71-2	740	E	71	23	23500	Upper Rio Grande	$900,000,000	NI	0	0	0	0	0
El Paso	50275000	E	275	189	71	23	Reclaimed wastewater	4b /71-3	260300	E	71	23	36418	Reuse	$72,868,103	15,000	19,000	19,000	0	0	0
El Paso	50275000	E	275	189	71	23	Conversion of rights to use water	4d /71-4	740	E	71	23	23500	Upper Rio Grande	$273,445,428	0	0	0	0	0	0
El Paso	50275000	E	275	189	71	23	Desalination	4l /71-5	260300	E	71	23	07101	Hueco Bolson (Brackish)	$27,681,705	NI	30,000	30,000	30,000	30,000	30,000
El Paso	50275000	E	275	189	71	23	Groundwater transfer	4c /71-6A	260300	E	122	23	12202	West Texas Bolson Ryan Flat	$356,138,169	NI	15,000	20,000	30,000	45,000	45,000
El Paso	50275000	E	275	189	71	23	Groundwater transfer	4c /71-6B	260300	E	115	23	11508	Bone Spring-Victorio Peak	$356,138,169	NI	15,000	20,000	30,000	45,000	45,000
El Paso	50275000	E	275	189	71	23	Growth management	4a /71-7	260300	E	71	23	38071	Conservation	NA	NA	NA	NA	NA	NA	NA
Anthony	50032000	E	32	21	71	23	Additional wells	4c /71-10		E	71	23	07101	Mesilla Bolson	$600,000	NI	NI	0	0	0	0
Canutillo	50144000	E	144	95	71	23	Purchase water from City of El Paso	4e /71-12	260300	E	71	23	23500	Upper Rio Grande	$0	441	441	0	0	0	0
Clint	50178000	E	178	689	71	23	Purchase water from City of El Paso	4e /71-13	260300	E	71	23	23500	Upper Rio Grande	$0	492	492	492	0	0	0
Fabens	50288000	E	288	195	71	23	Purchase water from City of El Paso	4e /71-14	260300	E	71	23	23500	Upper Rio Grande	$0	1,137	1,137	1,137	0	0	0
Fabens	50288000	E	288	195	71	23	Desalination	4l /71-15	260500	E	71	23	07101	Hueco Bolson (Brackish)	$5,456,250	NI	1,349	1,349	1,349	1,349	1,349
Fort Bliss	50305000	E	305	208	71	23	Purchase water from City of El Paso	4e /71-16	260300	E	71	23	23500	Upper Rio Grande	$0	5,700	5,700	5,700	0	0	0
Fort Bliss	50305000	E	305	208	71	23	Expanded use of existing wells	4c /71-17		E	71	23	07101	Hueco Bolson (Fresh)	$600,000	200	200	200	0	0	0

TWDB TABLE 12 (continued)
RECOMMENDED MANAGEMENT STRATEGIES BY CITY AND CATEGORY

Water User Group	WUG	RPG User	Seg	City	County	Basin	Strategy	Supply Type	MWP	RPG Source	County Source	Basin Source	Specific Source ID	Specific Source	Total Capital Cost	V2000	V2010	V2020	V2030	V2040	V2050
Fort Bliss	50305000	E	305	208	71	23	Desalination	4l /71-44		E	71	23	07101	Hueco Bolson (Fresh)	$17,355,000	NI	6,000	6,000	6,000	6,000	6,000
Fort Bliss	50305000	E	305	208	71	23	Wastewater reclamation	4b /71-45		E	71	23	36418	Reuse	$6,021,000	NI	800	800	0	0	0
Fort Bliss	50305000	E	305	208	71	23	Purchase of El Paso reclamation water	4b /71-46	260300	E	71	23	36418	Reuse	$2,838,000	NI	780	780	0	0	0
Fort Bliss	50305000	E	305	208	71	23	Distribution system maintenance	4a /71-47		E	71	23	38071	Conservation	$0	NA	NA	NA	NA	NA	NA
Homestead	50413000	E	413	882	71	23	Purchase water from City of El Paso	4e /71-18	260300	E	71	23	23500	Upper Rio Grande	$0	865	865	865	0	0	0
Homestead	50413000	E	413	882	71	23	Additional wells and desalination	4l /71-48		E	71	23	07101	Hueco Bolson (Brackish)	$12,896,675	NI	1,000	1,000	1,000	1,000	1,000
Homestead	50413000	E	413	882	71	23	Rainfall harvesting	4l /71-49		E	71	23	37071	Rainfall	NA	NA	NA	NA	NA	NA	NA
Homestead	50413000	E	413	882	71	23	Distribution system maintenance	4a /71-51		E	71	23	38071	Conservation	$9,600,000	NA	NA	NA	NA	NA	NA
San Elizario	50793000	E	793	953	71	23	Purchase water from City of El Paso	4e /71-19	260300	E	71	23	23500	Upper Rio Grande	$0	1,475	1,475	1,475	0	0	0
Socorro	50838000	E	838	804	71	23	Purchase water from City of El Paso	4e /71-20	260300	E	71	23	23500	Upper Rio Grande	$0	1,535	1,535	1,535	0	0	0
Vinton	50933000	E	933	983	71	23	Purchase water from City of El Paso	4e /71-21	260300	E	71	23	23500	Upper Rio Grande	$0	106	106	0	0	0	0
Westway	50958000	E	958	990	71	23	Purchase water from City of El Paso	4e /71-22	260300	E	71	23	23500	Upper Rio Grande	$0	338	338	338	0	0	0
El Paso County Other	50996071	E	996	757	71	23	Purchase water from City of El Paso	4e /71-23	260300	E	71	23	23500	Upper Rio Grande	$0	23,342	23,342	23,342	0	0	0
El Paso County Other	50996071	E	996	757	71	23	Desalination	4l /71-24		E	71	23	07101	Hueco Bolson (Brackish)	$55,246,500	NI	18,991	18,991	18,991	27,549	27,549
El Paso County Other	50996071	E	996	757	71	23	Rainfall harvesting	4l /71-25		E	71	23	37071	Rainfall	NA	NA	NA	NA	NA	NA	NA
El Paso County Other	50996071	E	996	757	71	23	Conversion of rights to use water	4d /71-26	740	E	71	23	23500	Upper Rio Grande	$40,943,250	NI	24,000	24,000	0	0	0
El Paso County Other	50996071	E	996	757	71	23	Distribution system maintenance	4a /71-27		E	71	23	38071	Conservation	$0	NA	NA	NA	NA	NA	NA
El Paso County Other	50996071	E	996	757	71	23	Groundwater transfer	4c /71-28		E	115	23	11502	West Texas Bolson Ryan Flat	$356,138,169	NI	220	220	220	220	220
El Paso / Manufacturing	51001071	E	1001	1001	71	23	Purchase water from City of El Paso	4e /71-29	260300	E	71	23	23500	Upper Rio Grande	$0	17,904	17,904	17,904	0	0	0
El Paso / Steam Electric	51002071	E	1002	1002	71	23	Purchase water from City of El Paso	4e /71-30	260300	E	71	23	23500	Upper Rio Grande	$0	6,000	6,000	6,000	0	0	0
El Paso / Steam Electric	51002071	E	1002	1002	71	23	System improvement	4a /71-31		E	71	23	38071	Conservation	NA	NA	NA	NA	NA	NA	NA
El Paso / Steam Electric	51002071	E	1002	1002	71	23	Additional wells	4c /71-32		E	115	23	11522	Other Aquifer	$600,000	NI	NI	4,000	4,000	4,000	4,000
El Paso / Mining	51003071	E	1003	1003	71	23	Purchase water from City of El Paso	4e /71-33	260300	E	71	23	23500	Upper Rio Grande	$0	28	28	28	0	0	0

TWDB TABLE 12 (continued)
RECOMMENDED MANAGEMENT STRATEGIES BY CITY AND CATEGORY

Water User Group	WUG	RPG User	Seg	City	County	Basin	Strategy	Supply Type	MWP	RPG Source	County Source	Basin Source	Specific Source ID	Specific Source	Total Capital Cost	V2000	V2010	V2020	V2030	V2040	V2050
El Paso / Irrigation	51004071	E	1004	1004	71	23	Additional wells	4c /71-34		E	71	23	07122	Rio Grande Alluvium	$4,000,000	24,800	14,400	1,200	1,200	1,200	1,200
El Paso / Irrigation	51004071	E	1004	1004	71	23	Expanded use of existing wells	4c /71-35		E	71	23	07122	Rio Grande Alluvium	$750,000	24,800	14,400	1,200	0	0	0
El Paso / Irrigation	51004071	E	1004	1004	71	23	Conservation technology	4a /71-36		E	71	23	38071	Conservation	NA	NA	NA	NA	NA	NA	NA
El Paso / Livestock	51005071	E	1005	1005	71	23	Expanded use of existing wells	4c /71-37		E	71	23	07101	Hueco/Mesilla Bolsons	$124,000	75	75	75	75	75	75
El Paso / Livestock	51005071	E	1005	1005	71	23	Herd reduction	4o /71-38		E	71	23		Herd Reduction	NA	NA	NA	NA	NA	NA	NA
El Paso / Livestock	51005071	E	1005	1005	71	23	Rainfall harvesting	4l /71-39		E	71	23	37071	Rainfall	NA	NA	NA	NA	NA	NA	NA
El Paso / Livestock	51005071	E	1005	1005	71	23	Additional wells	4c /71-40		E	71	23	07101	Hueco/Mesilla Bolsons	$132,350	80	80	80	80	80	80
El Paso / Livestock	51005071	E	1005	1005	71	23	Water conservation by dairies	4a /71-41		E	71	23	38071	Conservation	NA	NA	NA	NA	NA	NA	NA
El Paso / Livestock	51005071	E	1005	1005	71	23	Wastewater reuse by dairies	4b /71-42		E	71	23	36418	Reuse	NA	NA	NA	NA	NA	NA	NA
El Paso / Livestock	51005071	E	1005	1005	71	23	Purchase water from City of El Paso	4e /71-43	260300	E	71	23	23500	Upper Rio Grande	$0	70	70	0	0	0	0
Hudspeth County Other	50996115	E	996	757	115	23	Additional wells	4c /115-1		E	115	23	07101	Hueco Bolson	$84,500	180	180	180	180	180	180
Hudspeth County Other	50996115	E	996	757	115	23	Distribution system maintenance	4a /115-2		E	115	23	38115	Conservation	$1,920,000	NA	NA	NA	NA	NA	NA
Hudspeth County Other	50996115	E	996	757	115	23	Expanded use of existing wells	4c /115-3		E	115	23	07101	Hueco Bolson	$0	27	27	27	27	27	27
Hudspeth County Other	50996115	E	996	757	115	23	Conversion of rights to use water	4e /115-4		E	115	23	23500	Upper Rio Grande	$13,085,980	NI	0	0	0	0	0
Hudspeth County Other	50996115	E	996	757	115	23	Desalination	4l /115-5		E	115	23	11501	Hueco Bolson (Brackish)	$1,776,900	NI	216	216	216	216	216
Hudspeth County Other	50996115	E	996	757	115	23	Groundwater transfer	4c /115-6A		E	55	23	05502	West Texas Bolsons Wild Horse Michigan Flats	$5,245,500	NI	220	220	220	220	220
Hudspeth County Other	50996115	E	996	757	115	23	Groundwater transfer	4c /115-6B		E	115	23	11502	West Texas Bolsons Red Light Draw	$8,534,300	NI	220	220	220	220	220
Hudspeth County Other	50996115	E	996	757	115	23	Rainfall harvesting	4l /115-8		E	115	23	37115	Rainfall	NA	NA	NA	NA	NA	NA	NA
Hudspth Irrigation	51004115	E	1004	1004	115	23	Conservation technology	4a /115-9		E	115	23	38115	Conservation	NA	NA	NA	NA	NA	NA	NA
Hudspth Irrigation	51004115	E	1004	1004	115	23	Expanded use of existing wells	4c /115-10		E	115	23	11522	Rio Grande Alluvium	$50,000	NI	2,610	2,610	2,610	2,610	2,610
Hudspth Irrigation	51004115	E	1004	1004	115	23	Additional wells	4c /115-11		E	115	23	11522	Rio Grande Alluvium	$800,000	NI	5,892	5,892	5,892	5,892	5,892
Hudspth Irrigation	51004115	E	1004	1004	115	23	Reservoir storage expansion	4j /115-12		E	115	23	23500	Upper Rio Grande	$425,000	NI	0	0	0	0	0

TWDB TABLE 12 (continued)
RECOMMENDED MANAGEMENT STRATEGIES BY CITY AND CATEGORY

Water User Group	WUG	RPG User	Seg	City	County	Basin	Strategy	Supply Type	MWP	RPG Source	County Source	Basin Source	Specific Source ID	Specific Source	Total Capital Cost	V2000	V2010	V2020	V2030	V2040	V2050
Jeff Davis County Other	50996122	E	996	757	122	23	Additional wells	4c /122-1		E	122	23	12217	Igneous	$155,350	100	100	100	100	100	100
Jeff Davis County Other	50996122	E	996	757	122	23	Distribution system maintenance	4a /122-2		E	122	23	38122	Conservation	$1,200,000	NA	NA	NA	NA	NA	NA
Jeff Davis County Other	50996122	E	996	757	122	23	Expanded use of existing wells	4c /122-3		E	122	23	12217	Igneous	$0	20	20	20	20	20	20
Jeff Davis County Other	50996122	E	996	757	122	23	Water production management	4a /122-4		E	122	23	38122	Conservation	NA	NA	NA	NA	NA	NA	NA
Jeff Davis County Other	50996122	E	996	757	122	23	Purchase water from Fort Davis WSC	4e /122-5		E	122	23	12217	Igneous	$310,000	30	30	30	30	30	30
Jeff Davis County Other	50996122	E	996	757	122	23	Rainfall harvesting	4l /122-6		E	122	23	37122	Rainfall	NA	NA	NA	NA	NA	NA	NA
Jeff Davis / Livestock	51005122	E	1005	1005	122	23	Expanded use of existing wells	4c /122-7		E	122	23	12217	Igneous	$247,000	25	25	25	25	25	25
Jeff Davis / Livestock	51005122	E	1005	1005	122	23	Additional wells	4c /122-8		E	122	23	12217	Igneous	$450,000	24	24	24	24	24	24
Jeff Davis / Livestock	51005122	E	1005	1005	122	23	Herd reduction	4o /122-9		E	122	23		Herd Reduction	NA	NA	NA	NA	NA	NA	NA
Presidio County Other	50996189	E	996	757	189	23	Additional wells	4c /189-1		E	189	23	18902	West Texas Bolson Presidio-Redford	$855,000	278	278	278	278	278	278
Presidio County Other	50996189	E	996	757	189	23	Distribution system maintenance	4a /189-2		E	189	23	38189	Conservation	$1,920,000	NA	NA	NA	NA	NA	NA
Presidio County Other	50996189	E	996	757	189	23	Expanded use of existing wells	4c /189-3		E	189	23	18902	West Texas Bolson Presidio-Redford	$0	7	7	7	7	7	7
Presidio County Other	50996189	E	996	757	189	23	Rainfall harvesting	4l /189-4		E	189	23	37189	Rainfall	NA	NA	NA	NA	NA	NA	NA
Presidio County Other	50996189	E	996	757	189	23	Water production management	4a /189-5		E	189	23	38189	Conservation	NA	NA	NA	NA	NA	NA	NA
Terrell County Other	50996222	E	996	757	222	23	Additional private wells	4c /222-1		E	222	23	22213	Edwards-Trinity (Plateau)	$180,000	21	21	21	21	21	21
Terrell County Other	50996222	E	996	757	222	23	Distribution system maintenance	4a /222-2		E	222	23	38222	Conservation	$1,920,000	NA	NA	NA	NA	NA	NA
Terrell County Other	50996222	E	996	757	222	23	Expanded use of existing wells	4c /222-3		E	222	23	22213	Edwards-Trinity (Plateau)	$0	27	27	27	27	27	27
Terrell County Other	50996222	E	996	757	222	23	Rainfall harvesting	4l /222-4		E	222	23	37222	Rainfall	NA	NA	NA	NA	NA	NA	NA

0 = Indicates that the supply source is unavailable during drought-of-record conditions.
NA = Indicates that the strategy does not have a specific cost or volume estimate. Additional discussion on cost and volume is contained in the strategy evaluation.
NI = Indicates that the strategy is not implemented at this time.

TWDB TABLE 13
RECOMMENDED MANAGEMENT STRATEGIES
BY MAJOR PROVIDER OF MUNICIPAL AND MANUFACTURING WATER

Major Water Provider	MWP	Basin	Supply Type	RPG User	County	Basin Source	Strategy	Specific Source ID	Specific Source	Total Capital Cost	V2000	V2010	V2020	V2030	V2040	V2050
El Paso WU/PSB	260300	23	4a /71-1	E	71	23	Demand side conservation	38071	Conservation	NA	NA	NA	NA	NA	NA	NA
El Paso WU/PSB	260300	23	4b /71-3	E	71	23	Reclaimed wastewater	36418	Reuse	$72,868,103	15,000	19,000	19,000	0	0	0
El Paso WU/PSB	260300	23	4l /71-5	E	71	23	Desalination	07101	Hueco Bolson (Brackish)	$27,681,705	NI	30,000	30,000	30,000	30,000	30,000
El Paso WU/PSB	260300	23	4c /71-6A	E	71	23	Groundwater transfer	12202	West Texas Bolson Ryan Flat	$356,138,169	NI	15,000	20,000	30,000	45,000	45,000
El Paso WU/PSB	260300	23	4c /71-6B	E	71	23	Groundwater transfer	11508	Bone Spring-Victorio Peak	$356,138,169	NI	15,000	20,000	30,000	45,000	45,000
El Paso WU/PSB	260300	23	4a /71-7	E	71	23	Growth management	38071	Conservation	NA	NA	NA	NA	NA	NA	NA
El Paso WU/PSB	260300	23	4e /71-12	E	71	23	Purchase water from City of El Paso	23500	Upper Rio Grande	$0	441	441	0	0	0	0
El Paso WU/PSB	260300	23	4e /71-13	E	71	23	Purchase water from City of El Paso	23500	Upper Rio Grande	$0	492	492	492	0	0	0
El Paso WU/PSB	260300	23	4e /71-14	E	71	23	Purchase water from City of El Paso	23500	Upper Rio Grande	$0	1,137	1,137	1,137	0	0	0
El Paso WU/PSB	260300	23	4e /71-16	E	71	23	Purchase water from City of El Paso	23500	Upper Rio Grande	$0	5,700	5,700	5,700	0	0	0
El Paso WU/PSB	260300	23	4b /71-46	E	71	23	Purchase of El Paso reclamation water	36418	Reuse	$2,838,000	NI	780	780	0	0	0
El Paso WU/PSB	260300	23	4e /71-18	E	71	23	Purchase water from City of El Paso	23500	Upper Rio Grande	$0	865	865	865	0	0	0
El Paso WU/PSB	260300	23	4e /71-19	E	71	23	Purchase water from City of El Paso	23500	Upper Rio Grande	$0	1,475	1,475	1,475	0	0	0
El Paso WU/PSB	260300	23	4e /71-20	E	71	23	Purchase water from City of El Paso	23500	Upper Rio Grande	$0	1,535	1,535	1,535	0	0	0
El Paso WU/PSB	260300	23	4e /71-21	E	71	23	Purchase water from City of El Paso	23500	Upper Rio Grande	$0	106	106	0	0	0	0
El Paso WU/PSB	260300	23	4e /71-22	E	71	23	Purchase water from City of El Paso	23500	Upper Rio Grande	$0	338	338	338	0	0	0
El Paso WU/PSB	260300	23	4e /71-23	E	71	23	Purchase water from City of El Paso	23500	Upper Rio Grande	$0	23,342	23,342	23,342	0	0	0
El Paso WU/PSB	260300	23	4e /71-29	E	71	23	Purchase water from City of El Paso	23500	Upper Rio Grande	$0	17,904	17,904	17,904	0	0	0
El Paso WU/PSB	260300	23	4e /71-30	E	71	23	Purchase water from City of El Paso	23500	Upper Rio Grande	$0	6,000	6,000	6,000	0	0	0
El Paso WU/PSB	260300	23	4e /71-33	E	71	23	Purchase water from City of El Paso	23500	Upper Rio Grande	$0	28	28	28	0	0	0
El Paso WU/PSB	260300	23	4e /71-43	E	71	23	Purchase water from City of El Paso	23500	Upper Rio Grande	$0	70	70	0	0	0	0
El Paso WCID#4	260500	23	4l /71-15	E	71	23	Desalination	07101	Hueco Bolson (Brackish)	$5,456,250	NI	1,349	1,349	1,349	1,349	1,349

TWDB TABLE 13 (continued)
RECOMMENDED MANAGEMENT STRATEGIES
BY MAJOR PROVIDER OF MUNICIPAL AND MANUFACTURING WATER

Major Water Provider	MWP	Basin	Supply Type	RPG User	County	Basin Source	Strategy	Specific Source ID	Specific Source	Total Capital Cost	V2000	V2010	V2020	V2030	V2040	V2050
El Paso Co. WID#1	740	23	4a /71-2	E	71	23	Supply side conservation	23500	Upper Rio Grande	$900,000,000	NI	0	0	0	0	0
El Paso Co. WID#1	740	23	4d /71-4	E	71	23	Conversion of rights to use water	23500	Upper Rio Grande	$273,445,428	0	0	0	0	0	0
El Paso Co. WID#1	740	23	4d /71-26	E	71	23	Conversion of rights to use water	23500	Upper Rio Grande	$40,943,250	NI	24,000	24,000	0	0	0

0 = Indicates that the supply source is unavailable during drought-of-record conditions.

NA = Indicates that the strategy does not have a specific cost or volume estimate. Additional discussion on cost and volume is contained in the strategy evaluation.

NI = Indicates that the strategy is not implemented at this time.

TWDB TABLE 14
SUMMARY TABLE

County and Water Use	Year 2000	2010	2020	2030	2040	2050	Strategy Number
BREWSTER COUNTY							
Alpine							
Population	6479	7521	8981	9916	10942	12074	
Water Demand (ac-ft/yr)	1524	1668	1891	2055	2243	2461	
Current Supply (ac-ft/yr)	4491	4491	4491	4491	4491	4491	
Supply-Demand (ac-ft/yr)	2,967	2,823	2,600	2,436	2,248	2,030	
Short Term Strategy (ac-ft/yr)	NS						
Brewster County Other							
Population	3,851	4,853	5281	5861	6261	5985	
Water Demand (ac-ft/yr)	1184	1316	1345	1424	1470	1418	
Current Supply (ac-ft/yr)	677	677	677	677	677	677	
Supply-Demand (ac-ft/yr)	-507	-639	-668	-747	-793	-741	
Short Term Strategy (ac-ft/yr)	507	639	668	807	807	807	22-1
	NA	NA	NA	NA	NA	NA	22-2
	114	114	114	114	114	114	22-3
	Na	300	300	300	300	300	22-4
	NA	NA	NA	NA	NA	NA	22-5
	NA	NA	NA	NA	NA	NA	22-6
Brewster Irrigation							
Water Demand (ac-ft/yr)	296	292	288	284	280	276	
Current Supply (ac-ft/yr)	2426	2426	2426	2426	2426	2426	
Supply-Demand (ac-ft/yr)	2,130	2,134	2,138	2,142	2,146	2,150	
Short Term Strategy (ac-ft/yr)	NS						
Brewster Livestock							
Water Demand (ac-ft/yr)	571	571	571	571	571	571	
Current Supply (ac-ft/yr)	799	799	799	799	799	799	
Supply-Demand (ac-ft/yr)	228	228	228	228	228	228	
Short Term Strategy (ac-ft/yr)	NS						
Brewster Manufacturing							
Water Demand (ac-ft/yr)	4	4	5	5	6	7	
Current Supply (ac-ft/yr)	7	7	7	7	7	7	
Supply-Demand (ac-ft/yr)	3	3	2	2	1	0	
Short Term Strategy (ac-ft/yr)	NS						
Brewster Mining							
Water Demand (ac-ft/yr)	840	855	983	1068	1196	1339	
Current Supply (ac-ft/yr)	840	855	983	1068	1196	1339	
Supply-Demand (ac-ft/yr)	0	0	0	0	0	0	
Short Term Strategy (ac-ft/yr)	NS						

TWDB TABLE 14 (continued)
SUMMARY TABLE

County and Water Use	Year 2000	2010	2020	2030	2040	2050	Strategy Number
CULBERSON COUNTY							
Van Horn							
Population	3,296	3,607	3814	3847	3840	3833	
Water Demand (ac-ft/yr)	809	844	854	849	834	829	
Current Supply (ac-ft/yr)	1903	1903	1903	1903	1903	1903	
Supply-Demand (ac-ft/yr)	1,094	1,059	1,049	1,054	1,069	1,074	
Short Term Strategy (ac-ft/yr)	NS						
Culberson County Other							
Population	517	558	581	575	562	481	
Water Demand (ac-ft/yr)	97	98	97	93	89	80	
Current Supply (ac-ft/yr)	108	108	108	108	108	108	
Supply-Demand (ac-ft/yr)	11	10	11	15	19	28	
Short Term Strategy (ac-ft/yr)	NS						
Culberson Irrigation							
Water Demand (ac-ft/yr)	8947	8756	8569	8386	8206	8031	
Current Supply (ac-ft/yr)	10417	10417	10417	10417	10417	10417	
Supply-Demand (ac-ft/yr)	1,470	1,661	1,848	2,031	2,211	2,386	
Short Term Strategy (ac-ft/yr)	NS						
Culberson Livestock							
Water Demand (ac-ft/yr)	320	320	320	320	320	320	
Current Supply (ac-ft/yr)	466	466	466	466	466	466	
Supply-Demand (ac-ft/yr)	146	146	146	146	146	146	
Short Term Strategy (ac-ft/yr)	NS						
Culberson Manufacturing							
Water Demand (ac-ft/yr)	1	1	2	2	2	3	
Current Supply (ac-ft/yr)	3	3	3	3	3	3	
Supply-Demand (ac-ft/yr)	2	2	1	1	1	0	
Short Term Strategy (ac-ft/yr)	NS						
Culberson Mining							
Water Demand (ac-ft/yr)	2240	2210	2245	2309	2372	2441	
Current Supply (ac-ft/yr)	2257	2257	2257	2257	2257	2257	
Supply-Demand (ac-ft/yr)	17	47	12	-52	-115	-184	
Short Term Strategy (ac-ft/yr)	NI	NI	NI	55	75	88	55-2
	NI	NI	NI	50	75	106	55-3

TWDB TABLE 14 (continued)
SUMMARY TABLE

County and Water Use	Year 2000	2010	2020	2030	2040	2050	Strategy Number
EL PASO COUNTY							
Anthony							
Population	4,403	5,378	6422	7519	8380	9340	
Water Demand (ac-ft/yr)	745	813	885	1028	1136	1255	
Current Supply (ac-ft/yr)	1774	1774	0	0	0	0	
Supply-Demand (ac-ft/yr)	1,029	961	-885	-1,028	-1,136	-1,255	
Short Term Strategy (ac-ft/yr)	NI	NI	0	0	0	0	71-10
Canutillo							
Population	5748	6749	7804	8955	9889	10920	
Water Demand (ac-ft/yr)	406	393	393	441	465	514	
Current Supply (ac-ft/yr)	406	393	393	0	0	0	
Supply-Demand (ac-ft/yr)	0	0	0	-441	-465	-514	
Short Term Strategy (ac-ft/yr)	441	441	0	0	0	0	71-12
Clint							
Population	1,299	1,555	1824	2151	2405	2689	
Water Demand (ac-ft/yr)	354	388	421	492	547	608	
Current Supply (ac-ft/yr)	354	388	421	0	0	0	
Supply-Demand (ac-ft/yr)	0	0	0	-492	-547	-608	
Short Term Strategy (ac-ft/yr)	492	492	492	0	0	0	71-13
El Paso							
Population	632,199	749,541	873710	1007928	1115652	1234889	
Water Demand (ac-ft/yr)	101928	120846	140865	162505	179873	199097	
Current Supply (ac-ft/yr)	108928	127846	147865	0	0	0	
Supply-Demand (ac-ft/yr)	7,000	7,000	7,000	-162,505	-179,873	-199,097	
Short Term Strategy (ac-ft/yr)	NA	NA	NA	NA	NA	NA	71-1
	NI	0	0	0	0	0	71-2
	15,000	19,000	19,000	0	0	0	71-3
	0	0	0	0	0	0	71-4
	NI	30,000	30,000	30,000	30,000	30,000	71-5
	NI	15,000	20,000	30,000	45,000	45,000	71-6A
	NI	15,000	20,000	30,000	45,000	45,000	71-6B
	NA	NA	NA	NA	NA	NA	71-7
Fabens							
Population	6,158	7,113	8110	9224	10141	11150	
Water Demand (ac-ft/yr)	952	980	1008	1137	1227	1349	
Current Supply (ac-ft/yr)	1,048	1120	1205	0	0	0	
Supply-Demand (ac-ft/yr)	96	140	197	-1,137	-1,227	-1,349	
Short Term Strategy (ac-ft/yr)	1,137	1,137	1,137	0	0	0	71-14
	NI	1,349	1,349	1,349	1,349	1,349	71-15

TWDB TABLE 14 (continued)
SUMMARY TABLE

County and Water Use	Year 2000	2010	2020	2030	2040	2050	Strategy Number
EL PASO COUNTY							
Fort Bliss							
Population	13915	13915	13915	13915	13915	13915	
Water Demand (ac-ft/yr)	6609	6141	5720	5689	5674	5642	
Current Supply (ac-ft/yr)	5,849	5849	5849	0	0	0	
Supply-Demand (ac-ft/yr)	-760	-292	129	-5,689	-5,674	-5,642	
Short Term Strategy (ac-ft/yr)	5,700	5,700	5,700	0	0	0	71-16
	200	200	200	0	0	0	71-17
	NI	6,000	6,000	6,000	6,000	6,000	71-44
	NI	800	800	0	0	0	71-45
	NI	780	780	0	0	0	71-46
	NA	NA	NA	NA	NA	NA	71-47
Homestead							
Population	5,821	6,120	6312	6718	7181	7643	
Water Demand (ac-ft/yr)	874	871	841	865	893	942	
Current Supply (ac-ft/yr)	874	871	841	0	0	0	
Supply-Demand (ac-ft/yr)	0	0	0	-865	-893	-942	
Short Term Strategy (ac-ft/yr)	865	865	865	0	0	0	71-18
	NI	1,000	1,000	1,000	1,000	1,000	71-48
	NA	NA	NA	NA	NA	NA	71-49
	NA	NA	NA	NA	NA	NA	71-51
Horizon City							
Population	6236	7581	9014	10526	11719	13048	
Water Demand (ac-ft/yr)	1488	1562	1605	1851	2048	2265	
Current Supply (ac-ft/yr)	1710	3469	5407	5663	5860	6077	
Supply-Demand (ac-ft/yr)	222	1,907	3,802	3,812	3,812	3,812	
Short Term Strategy (ac-ft/yr)	NS						
San Elizario							
Population	6008	8232	9839	11759	12989	13789	
Water Demand (ac-ft/yr)	882	1134	1278	1475	1571	1653	
Current Supply (ac-ft/yr)	882	1134	1278	0	0	0	
Supply-Demand (ac-ft/yr)	0	0	0	-1,475	-1,571	-1,653	
Short Term Strategy (ac-ft/yr)	1,475	1,475	1,475	0	0	0	71-19
Socorro							
Population	29365	39711	51027	62301	70748	80341	
Water Demand (ac-ft/yr)	1480	1423	1315	1535	1664	1800	
Current Supply (ac-ft/yr)	2630	5335	9141	0	0	0	
Supply-Demand (ac-ft/yr)	1,150	3,912	7,826	-1,535	-1,664	-1,800	
Short Term Strategy (ac-ft/yr)	1,535	1,535	1,535	0	0	0	71-20

TWDB TABLE 14 (continued)
SUMMARY TABLE

County and Water Use	Year 2000	2010	2020	2030	2040	2050	Strategy Number
EL PASO COUNTY							
Vinton							
Population	653	698	756	834	899	945	
Water Demand (ac-ft/yr)	97	98	100	106	111	115	
Current Supply (ac-ft/yr)	97	97	0	0	0	0	
Supply-Demand (ac-ft/yr)	0	-1	-100	-106	-111	-115	
Short Term Strategy (ac-ft/yr)	106	106	0	0	0	0	71-21
Westway							
Population	2712	2813	2862	2954	3093	3233	
Water Demand (ac-ft/yr)	368	356	340	338	340	351	
Current Supply (ac-ft/yr)	368	356	340	0	0	0	
Supply-Demand (ac-ft/yr)	0	0	0	-338	-340	-351	
Short Term Strategy (ac-ft/yr)	338	338	338	0	0	0	71-22
El Paso County Other							
Population	56016	72374	90850	109719	124575	134521	
Water Demand (ac-ft/yr)	15001	17470	20131	23343	25931	27549	
Current Supply (ac-ft/yr)	15001	17470	20131	0	0	0	
Supply-Demand (ac-ft/yr)	0	0	0	-23,343	-25,931	-27,549	
Short Term Strategy (ac-ft/yr)	23,342	23,342	23,342	0	0	0	71-23
	NI	18,991	18,991	18,991	27,549	27,549	71-24
	NA	NA	NA	NA	NA	NA	71-25
	NI	24,000	24,000	0	0	0	71-26
	NA	NA	NA	NA	NA	NA	71-27
	NI	220	220	220	220	220	71-28
El Paso Irrigation							
Water Demand (ac-ft/yr)	179842	164338	161470	160173	154542	152014	
Current Supply (ac-ft/yr)	52456	62881	76053	3253	3253	3253	
Supply-Demand (ac-ft/yr)	-127,386	-101,457	-85,417	-156,920	-151,289	-148,761	
Short Term Strategy (ac-ft/yr)	24,800	14,400	1,200	1,200	1,200	1,200	71-34
	24,800	14,400	1,200	0	0	0	71-35
	NA	NA	NA	NA	NA	NA	71-36

TWDB TABLE 14 (continued)
SUMMARY TABLE

County and Water Use	Year 2000	2010	2020	2030	2040	2050	Strategy Number
EL PASO COUNTY							
El Paso Livestock							
Water Demand (ac-ft/yr)	1729	1729	1729	1729	1729	1729	
Current Supply (ac-ft/yr)	1651	1651	1651	1651	1651	1651	
Supply-Demand (ac-ft/yr)	-78	-78	-78	-78	-78	-78	
Short Term Strategy (ac-ft/yr)	75	75	75	75	75	75	71-37
	NA	NA	NA	NA	NA	NA	71-38
	NA	NA	NA	NA	NA	NA	71-39
	80	80	80	80	80	80	71-40
	NA	NA	NA	NA	NA	NA	71-41
	NA	NA	NA	NA	NA	NA	71-42
	70	70	0	0	0	0	71-43
El Paso Manufacturing							
Water Demand (ac-ft/yr)	14786	16192	17145	17904	19142	20332	
Current Supply (ac-ft/yr)	14786	16192	17145	0	0	0	
Supply-Demand (ac-ft/yr)	0	0	0	-17,904	-19,142	-20,332	
Short Term Strategy (ac-ft/yr)	17,904	17,904	17,904	0	0	0	71-29
El Paso Mining							
Water Demand (ac-ft/yr)	246	110	56	28	10	3	
Current Supply (ac-ft/yr)	246	110	56	0	0	0	
Supply-Demand (ac-ft/yr)	0	0	0	-28	-10	-3	
Short Term Strategy (ac-ft/yr)	28	28	28	0	0	0	71-33
El Paso Steam Electric Power							
Water Demand (ac-ft/yr)	6000	6000	6000	6000	6000	6000	
Current Supply (ac-ft/yr)	6000	6000	6000	0	0	0	
Supply-Demand (ac-ft/yr)	0	0	0	-6,000	-6,000	-6,000	
Short Term Strategy (ac-ft/yr)	6,000	6,000	6,000	0	0	0	71-30
	NA	NA	NA	NA	NA	NA	71-31
	NI	NI	4,000	4,000	4,000	4,000	71-32

TWDB TABLE 14 (continued)
SUMMARY TABLE

County and Water Use	Year 2000	2010	2020	2030	2040	2050	Strategy Number
HUDSPETH COUNTY							
Dell City							
Population	728	781	809	827	834	840	
Water Demand (ac-ft/yr)	38	36	33	30	26	25	
Current Supply (ac-ft/yr)	50	50	50	50	50	50	
Supply-Demand (ac-ft/yr)	12	14	17	20	24	25	
Short Term Strategy (ac-ft/yr)	NS						
Sierra Blanca							
Population	610	653	672	665	650	635	
Water Demand (ac-ft/yr)	113	114	111	107	103	100	
Current Supply (ac-ft/yr)	351	351	351	351	351	351	
Supply-Demand (ac-ft/yr)	238	237	240	244	248	251	
Short Term Strategy (ac-ft/yr)	NS						
Hudspeth County Other							
Population	1944	2197	2403	2503	2570	2585	
Water Demand (ac-ft/yr)	207	214	215	216	214	213	
Current Supply (ac-ft/yr)	248	248	248	248	248	248	
Supply-Demand (ac-ft/yr)	41	34	33	32	34	35	
Short Term Strategy (ac-ft/yr)	180	180	180	180	180	180	115-1
	NA	NA	NA	NA	NA	NA	115-2
	27	27	27	27	27	27	115-3
	NI	0	0	0	0	0	115-4
	NI	216	216	216	216	216	115-5
	NI	220	220	220	220	220	115-6A
	NI	220	220	220	220	220	115-6B
	NA	NA	NA	NA	NA	NA	115-8
Hudspeth Irrigation							
Water Demand (ac-ft/yr)	124521	121939	119411	116935	114510	112136	
Current Supply (ac-ft/yr)	149353	149353	149353	149353	149353	149353	
Supply-Demand (ac-ft/yr)	24,832	27,414	29,942	32,418	34,843	37,217	
Short Term Strategy (ac-ft/yr)	NA	NA	NA	NA	NA	NA	115-9
	NI	2,610	2,610	2,610	2,610	2,610	115-10
	NI	5,892	5,892	5,892	5,892	5,892	115-11
	NI	0	0	0	0	0	115-12
Hudspeth Livestock							
Water Demand (ac-ft/yr)	422	422	422	422	422	422	
Current Supply (ac-ft/yr)	519	519	519	519	519	519	
Supply-Demand (ac-ft/yr)	97	97	97	97	97	97	
Short Term Strategy (ac-ft/yr)	NS						

TWDB TABLE 14 (continued)
SUMMARY TABLE

County and Water Use	Year 2000	2010	2020	2030	2040	2050	Strategy Number
HUDSPETH COUNTY							
Hudspeth Manufacturing							
Water Demand (ac-ft/yr)	2	3	4	4	5	6	
Current Supply (ac-ft/yr)	6	6	6	6	6	6	
Supply-Demand (ac-ft/yr)	4	3	2	2	1	0	
Short Term Strategy (ac-ft/yr)	NS						
Hudspeth Mining							
Water Demand (ac-ft/yr)	0	0	0	0	0	0	
Current Supply (ac-ft/yr)	2	2	2	2	2	2	
Supply-Demand (ac-ft/yr)	2	2	2	2	2	2	
Short Term Strategy (ac-ft/yr)	NS						

TWDB TABLE 14 (continued)
SUMMARY TABLE

County and Water Use	Year 2000	2010	2020	2030	2040	2050	Strategy Number
JEFF DAVIS COUNTY							
Fort Davis							
Population	1153	1239	1296	1299	1289	1279	
Water Demand (ac-ft/yr)	236	241	240	236	230	225	
Current Supply (ac-ft/yr)	846	846	846	846	846	846	
Supply-Demand (ac-ft/yr)	610	605	606	610	616	621	
Short Term Strategy (ac-ft/yr)	NS						
Jeff Davis County Other							
Population	1035	1116	1177	1188	1190	1210	
Water Demand (ac-ft/yr)	197	198	196	193	188	189	
Current Supply (ac-ft/yr)	124	124	124	124	124	124	
Supply-Demand (ac-ft/yr)	-73	-74	-72	-69	-64	-65	
Short Term Strategy (ac-ft/yr)	100	100	100	100	100	100	122-1
	NA	NA	NA	NA	NA	NA	122-2
	20	20	20	20	20	20	122-3
	NA	NA	NA	NA	NA	NA	122-4
	30	30	30	30	30	30	122-5
	NA	NA	NA	NA	NA	NA	122-6
Jeff Davis Irrigation							
Water Demand (ac-ft/yr)	3184	3119	3057	2995	2935	2875	
Current Supply (ac-ft/yr)	3200	3200	3200	3200	3200	3200	
Supply-Demand (ac-ft/yr)	16	81	143	205	265	325	
Short Term Strategy (ac-ft/yr)	NS						
Jeff Davis Livestock							
Water Demand (ac-ft/yr)	547	547	547	547	547	547	
Current Supply (ac-ft/yr)	523	523	523	523	523	523	
Supply-Demand (ac-ft/yr)	-24	-24	-24	-24	-24	-24	
Short Term Strategy (ac-ft/yr)	25	25	25	25	25	25	122-7
	24	24	24	24	24	24	122-8
	NA	NA	NA	NA	NA	NA	122-9

TWDB TABLE 14 (continued)
SUMMARY TABLE

County and Water Use	Year 2000	2010	2020	2030	2040	2050	Strategy Number
PRESIDIO COUNTY							
Marfa							
Population	2612	2986	3428	3790	3668	3550	
Water Demand (ac-ft/yr)	977	1067	1175	1282	1228	1189	
Current Supply (ac-ft/yr)	3273	3273	3273	3273	3273	3273	
Supply-Demand (ac-ft/yr)	2,296	2,206	2,098	1,991	2,045	2,084	
Short Term Strategy (ac-ft/yr)	NS						
Presidio							
Population	5157	7127	9390	11861	12846	13912	
Water Demand (ac-ft/yr)	768	966	1167	1435	1540	1652	
Current Supply (ac-ft/yr)	3048	3048	3048	3048	3048	3048	
Supply-Demand (ac-ft/yr)	2,280	2,082	1,881	1,613	1,508	1,396	
Short Term Strategy (ac-ft/yr)	NS						
Presidio County Other							
Population	1460	1785	2190	2617	2719	2749	
Water Demand (ac-ft/yr)	262	300	346	405	414	416	
Current Supply (ac-ft/yr)	130	130	130	130	130	130	
Supply-Demand (ac-ft/yr)	-132	-170	-216	-275	-284	-286	
Short Term Strategy (ac-ft/yr)	278	278	278	278	278	278	189-1
	NA	NA	NA	NA	NA	NA	189-2
	7	7	7	7	7	7	189-3
	NA	NA	NA	NA	NA	NA	189-4
	NA	NA	NA	NA	NA	NA	189-5
Presidio Irrigation							
Water Demand (ac-ft/yr)	25678	25156	24646	24145	23655	23175	
Current Supply (ac-ft/yr)	30831	30831	30831	30831	30831	30831	
Supply-Demand (ac-ft/yr)	5,153	5,675	6,185	6,686	7,176	7,656	
Short Term Strategy (ac-ft/yr)	NS						
Presidio Livestock							
Water Demand (ac-ft/yr)	498	498	498	498	498	498	
Current Supply (ac-ft/yr)	569	569	569	569	569	569	
Supply-Demand (ac-ft/yr)	71	71	71	71	71	71	
Short Term Strategy (ac-ft/yr)	NS						
Presidio Mining							
Water Demand (ac-ft/yr)	13	12	12	13	13	13	
Current Supply (ac-ft/yr)	13	13	13	13	13	13	
Supply-Demand (ac-ft/yr)	0	1	1	0	0	0	
Short Term Strategy (ac-ft/yr)	NS						

TWDB TABLE 14 (continued)
SUMMARY TABLE

County and Water Use	Year 2000	2010	2020	2030	2040	2050	Strategy Number
TERRELL COUNTY							
Sanderson							
Population	1158	1217	1258	1259	1250	1241	
Water Demand (ac-ft/yr)	319	320	318	313	305	302	
Current Supply (ac-ft/yr)	808	808	808	808	808	808	
Supply-Demand (ac-ft/yr)	489	488	490	495	503	506	
Short Term Strategy (ac-ft/yr)	NS						
Terrell County Other							
Population	324	365	345	322	311	300	
Water Demand (ac-ft/yr)	41	43	38	34	32	31	
Current Supply (ac-ft/yr)	20	20	20	20	20	20	
Supply-Demand (ac-ft/yr)	-21	-23	-18	-14	-12	-11	
Short Term Strategy (ac-ft/yr)	21	21	21	21	21	21	222-1
	NA	NA	NA	NA	NA	NA	222-2
	27	27	27	27	27	27	222-3
	NA	NA	NA	NA	NA	NA	222-4
Terrell Irrigation							
Water Demand (ac-ft/yr)	380	372	364	356	348	341	
Current Supply (ac-ft/yr)	646	646	646	646	646	646	
Supply-Demand (ac-ft/yr)	266	274	282	290	298	305	
Short Term Strategy (ac-ft/yr)	NS						
Terrell Livestock							
Water Demand (ac-ft/yr)	376	376	376	376	376	376	
Current Supply (ac-ft/yr)	411	411	411	411	411	411	
Supply-Demand (ac-ft/yr)	35	35	35	35	35	35	
Short Term Strategy (ac-ft/yr)	NS						
Terrell Mining							
Water Demand (ac-ft/yr)	27	21	19	18	17	17	
Current Supply (ac-ft/yr)	42	42	42	42	42	42	
Supply-Demand (ac-ft/yr)	15	21	23	24	25	25	
Short Term Strategy (ac-ft/yr)	NS						
NS = Indicates that the water user does not have a supply shortage and therefore no strategies were developed.							
NA = Indicates that the strategy does not have a specific cost or volume							
NI = Indicates that the strategy is not implemented at this time.							
0 = Indicates that the supply source is unavailable during drought-of-record conditions.							