NOV 20 1987

WATER AND WASTEWATER MANAGEMENT PLAN

EL PASO COUNTY

TECHNICAL MEMORANDUM NO. 1

EXISTING CONDITIONS

Prepared for

El Paso County
City-County Health District

Parkhill, Smith and Cooper, Inc.

CH2M Hill

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EXECUTIVE SUMMARY

This technical memo presents the data developed in the first task of the El Paso County Water and Sewer Plan. Efforts in this task were directed toward assessing the existing situation in the study area. The four areas studied included (1) an inventory of surface and groundwater resources; (2) an inventory of existing water and wastewater facilities; (3) identifying the existing water and wastewater wastewater management agencies; and (4) analyzing future water and wastewater demands.

Water Resources

Groundwater from aquifers in and around El Paso County and surface water from the Rio Grande River are the likely sources of supply available to the study area.

The sources of water that are identified are as follows:

Source	Quality	Potential Water Production Rate (gpd)
WITHIN TEXAS		
Hueco Bolson (El Paso Co.)	Slightly Saline	47,000,000
Rio Grande Alluvium (El Paso Co.)	Slightly Saline	25,000,000
Jeff Davis & Presidio Counties	Good	77,000,000
WITHIN NEW MEXICO		
Mesilla & Hueco Bolsons	Good	over 100,000,000
Mesilla Bolson	Saline	4,000,000

New Mexico sources are not currently available to the area but may be during the next twenty years.

A total of about 13,000 acre feet of surface water per year are potentially available from the Rio Grande during years of normal flow. Only about 1,400 acre feet would be available in years of minimum recorded flow. These quantities represent supplies of about 18,100,000 gallons per day and 2,000,000 gallons per day, respectively, during the 230 days per year where river water is normally available.

Existing Facilities

Water and/or wastewater facilities have been installed by 55 public and private entities in the study area. All of these entities use groundwater as their source of supply, and ten of them have wastewater treatment facilities.

Facilities of El Paso Water Utilities, including wells, treatment plants, reservoirs, booster stations, and mains adjoin much of the study area. Currently, about 40,000 persons receive water service in the planning area. Approximately 24,200 of these are served by the El Paso Public Service Board. Sewer service is provided to about 15,000 persons in the study area by several agencies. Most of the remaining population is located on tracts of land unsuitable for on-site systems.

Management Agencies

A total of 55 water and wastewater management agencies were identified within the study area. Data relative to those agencies, such as types of ownership, assessed value of property within system boundaries and tax rates, are shown in this memorandum.

Demand Analysis

The study area was estimated to have a total population of about 68,000 based upon house counts from aerial photos prepared as a part of this task. Populations per house varied from 3.4 to 5.6 depending upon location in the study area. A population of about 125,000 persons is forecasted to occur in the year 2010. The water demand of that population would be 8,300,000 gallons per day at the present time and 15,400,000 gallons per day in 2010. The daily wastewater contribution would be approximately one half the daily water demand.

WATER AND WASTEWATER MANAGEMENT PLAN
FOR
EL PASO COUNTY, TEXAS

Technical Memorandum No. 1

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Water and Wastewater Management Plan
for
El Paso County, Texas

Technical Memorandum No. 1

I. Introduction

Technical Memorandum No. 1 has been prepared to set forth the findings of Task No. 1 in the development of a Water and Wastewater Management Plan for El Paso County, Texas.

The purpose of Task No. 1 was to gather all preliminary information needed to develop the Water and Wastewater Management Plan. In performing this task, the available water resources, the existing water supply and wastewater facilities and management agencies of the study area were identified and described; the present and probable future population was determined; and the present and probable future water and wastewater demands of the area were estimated. In those areas and for those systems where wastewater is disposed of on-site, the characteristics of the soil and the depths to groundwater were determined.

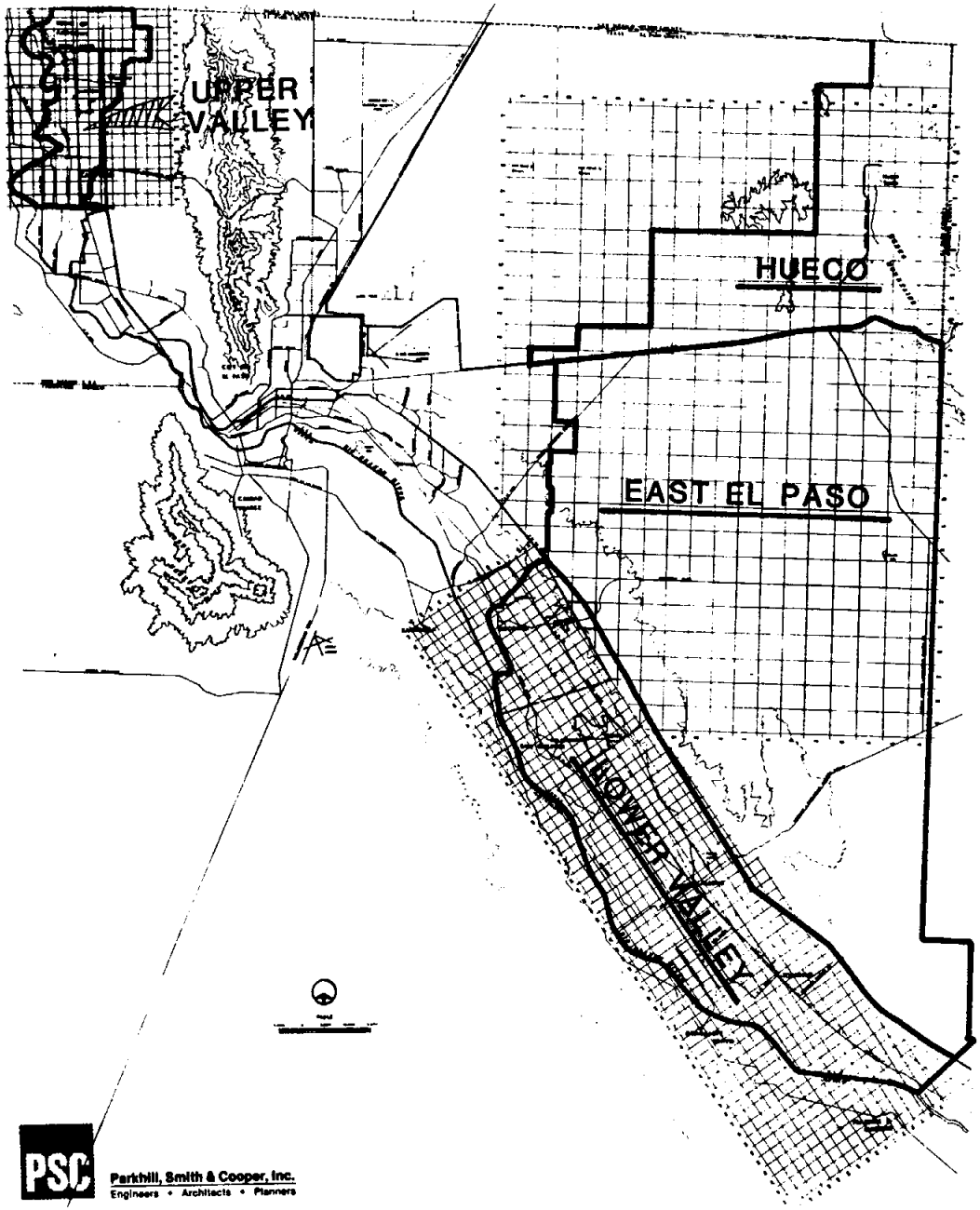
The information used in performing this task was obtained from the Texas Water Commission, the Texas Water Development Board, the Texas Department of Health, the El Paso City-County Health District, the United States Soil Conservation Service, the Department of Planning, Research and Development of the City of El Paso, the Public Service Board of the City of El Paso, Raba-Kistner Constultants, Inc., the various water and wastewater management agencies in the Counyt, recent aerial photographs of the population portions of the study area, and the previous experience of Parkhill, Smith and Cooper, Inc.

The results of this work were described in narrative and tabular form and indicated on a set of sixteen 7.5 minute series United States Geological Survey topographic maps. The U.S.G.S. maps have not been included in Technical Memorandum No. 1 because of their size.

Four other maps have been included in this memorandum, however. These maps, which are designated as Figures No. 1, No. 2, No. 3 and No. 4, indicate the locations of the study areas and the grid systems which were established to control population counts and readily locate concentrations of population, as well as the water and wastewater systems in the County.

Figure No. 1 shows all of El Paso County, the sub-areas into which the County was divided and the density of population within those areas.

Figure No. 2 shows the Upper Valley Study Area, together with the boundaries of incorporated communities and the grid system established for that area.



PSC Parkhill, Smith & Cooper, Inc.
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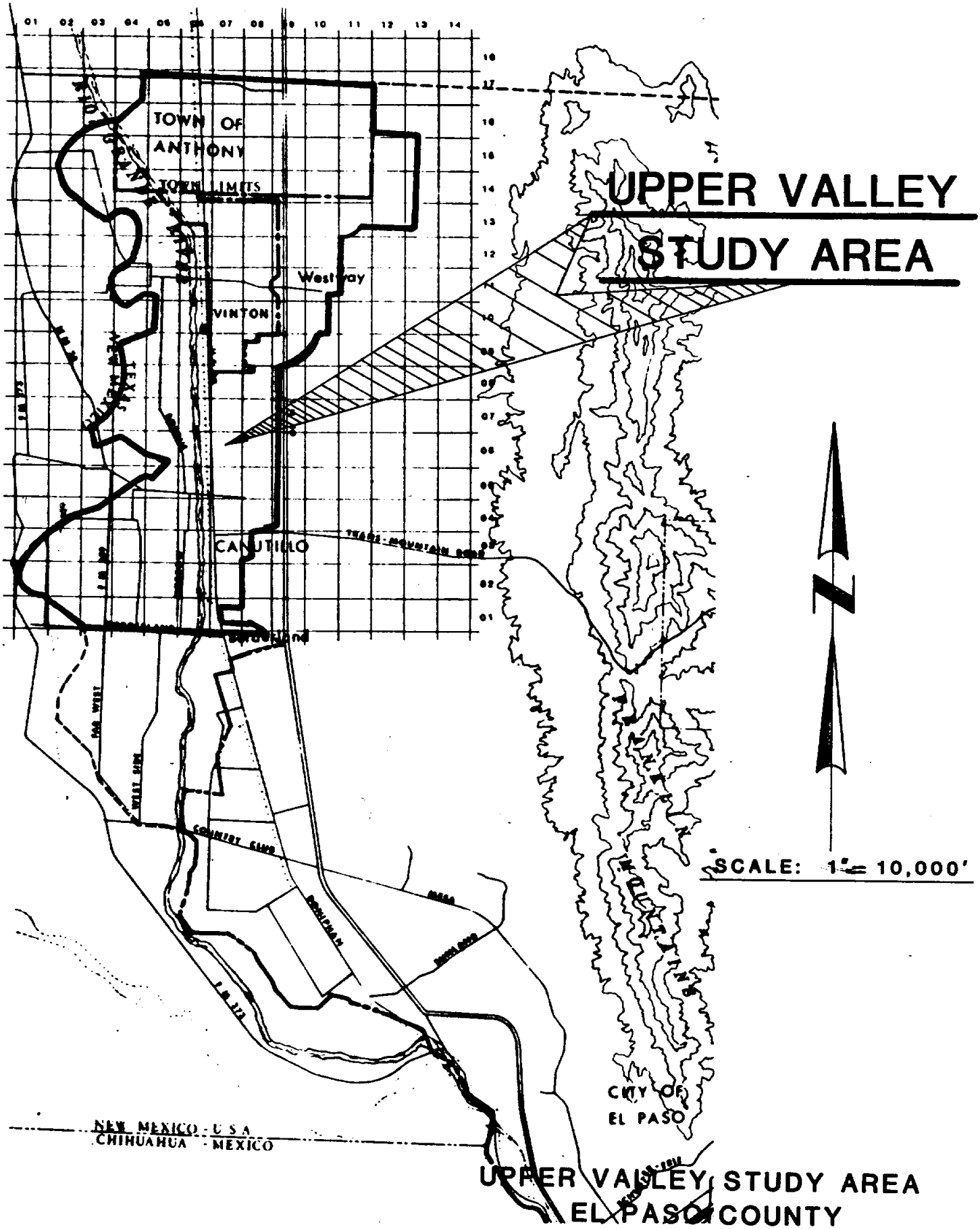
STUDY AREAS
EL PASO COUNTY WATER
&
WASTEWATER MANAGEMENT PLAN

FIGURE No. 1



UPPER VALLEY STUDY AREA

UPPER VALLEY STUDY AREA
EL PASO COUNTY
WATER & WASTEWATER
MANAGEMENT PLAN
FIGURE No. 2

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Figure No. 3 shows the Lower Valley Study Area, together with the boundaries of incorporated communities and the grid system established for that area.

Figure No. 4 shows the East El Paso and Hueco Tank Study Areas, together with the boundaries of incorporated communities and the grid system established for those areas.

Geological Survey.

II. Water Resources

A. General

The water resources of El Paso County were examined in order to determine sources of supply for the necessary water. The examination indicated that the most feasible of those sources would be the surface water of the Rio Grande River and the groundwater of the underground aquifers in and near El Paso County.

The two potential sources of supply were studied to determine the quantity and quality of water which could be expected from each source; to determine the procedures and costs involved in obtaining that water; and to set forth any particular difficulties related to the use of these sources of supply.

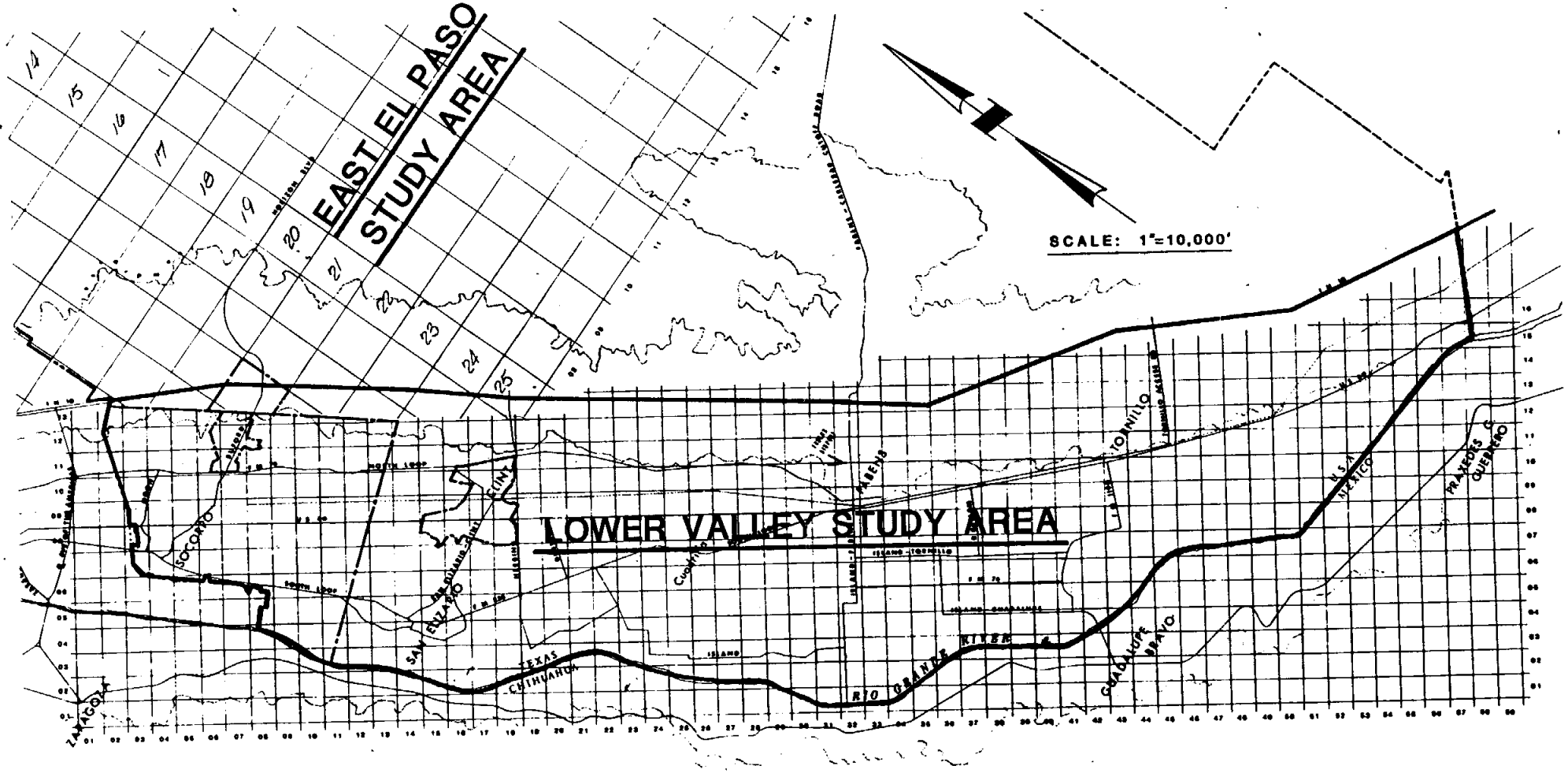
B. Groundwater Resources

1. Source of Supply

a. General

Groundwater availability and quality for potable use in El Paso County depends primarily on location. Generally, groundwater is available, but much of it is of poor quality. The County is underlain by three principal groundwater resources: (1) the Mesilla Bolson, along the Rio Grande upper valley, (2) the Rio Grande Alluvium, along the Rio Grande throughout the County, and (3) the Hueco Bolson, in the rest of the County. Quality and quantity of grounwater vary dramatically both within and between these aquifers.

Fresh groundwater supplies in adjacent counties in Texas are far from El Paso County. Near Dell City, 75 miles east of El Paso, in Hudspeth County, groundwater is pumped for irrigation. Most of this water is slightly to moderately saline. Near Valentine, 135 miles southeast of El Paso, in Jeff Davis and Presidio Counties, is the Ryan Flat area, but the limited geologic information indicates that a significant pool of fresh water is available.



LOWER VALLEY STUDY AREA
EL PASO COUNTY
WATER & WASTEWATER
MANAGEMENT PLAN

FIGURE No.3

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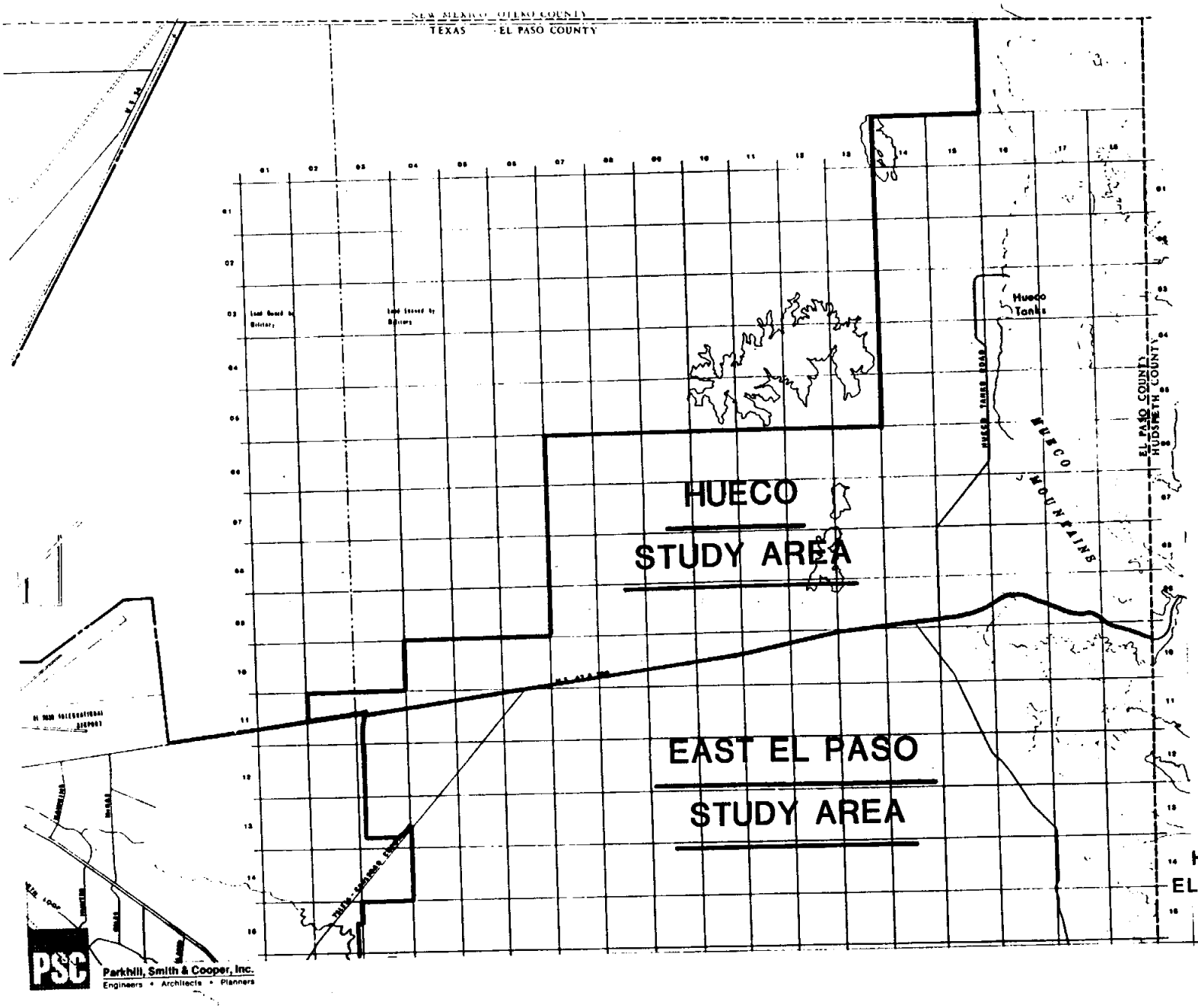

SCALE: 1"= 10,000'

EAST EL PASO
&
HUECO STUDY AREAS
EL PASO COUNTY WATER
& WASTEWATER
MANAGEMENT PLAN
FIGURE No. 4

b. Quantity of Supply

(1) Mesilla Bolson

The Mesilla Bolson extends over a wide area of New Mexico, Texas, and Mexico; from Las Cruces, New Mexico, on the north to 50 miles south of the Mexico border. The west boundary is the Potrillo Mountains, and the east boundary is the Franklin Mountains. Most of the pumping in the aquifer is by the City of El Paso, which operates a large well field between Canutillo and Anthony. Geologically, the aquifer is divided into two units, the upper and lower Santa Fe group.

Mesilla Bolson wells typically yield between 500 and 1,500 gallons per minute (gpm) between Canutillo and Anthony. El Paso's Canutillo wells are typically 1,200 feet deep, though the Town of Anthony pumps from a 600 foot-deep well. Small to moderate quantities of fresh water have been obtained from the Bolson in the upland east of the Rio Grande, where the saturated aquifer thickness is much less (Leggat, 1962).

Recharge to the Mesilla Bolson occurs from infiltration of runoff around its margins. In and adjacent to the Mesilla Valley part of the bolson, recharge also occurs from flow in the channels of ephemeral streams tributary to the valley and as seepage from the Rio Grande, canals, and infiltration of excess irrigation water (Gates, 1980). Leggat estimated the recharge to the lower Mesilla valley of the Mesilla Bolson to be 18,000 acre-feet-per year. Of that, 6,000 acre-feet crosses the state line into Texas near Anthony.

Table 1 presents the published reserves for each potentially available groundwater resource in the Mesilla Bolson, as well as the Hueco Bolson and Rio Grande Alluvium, an estimate of recoverable reserves, and typical well yields and depths. An estimate of the recoverable reserves was made based on a reference (Knowles, 1956) plus past experience. It was estimated that 50 percent of the available resource could be recovered. The actual percent recovery would depend on the demand, well field configuration, depths of wells, operation of the well field, geology of the area, and impacts of surrounding groundwater quality. As a result, this opinion of recovery should only be used for planning purposes. A more detailed definition would be required if any of these resources were to be used.

Table 2 presents the potential future availability of groundwater resources based on the existing recoverable resource quantity, published, recharge data, and a projection of future demands. This table also includes data for the Mesilla Bolson and Rio Grande Alluvium. Future demands were projected using a two percent per year demand increase. This is the same increase as the population projections for the County. Many factors may change

Table 1
POTENTIALLY AVAILABLE GROUNDWATER RESOURCES

GROUNDWATER RESOURCE OR AQUIFER	Estimated Reserves[1] (ac-ft)	Potentially Recoverable Reserves[2] (ac-ft)	Typical Well Yield (gpm)	Typical Well Depth (ft)
Mesilla Bolson				
- Canutillo-Anthony Rio Grande Valley between towns of Canutillo and Anthony	820,000[a]	410,000	500-1,500[b]	300-1,000[c]
- State of New Mexico	54,000,000[e]	27,000,000	N/A	N/A
- Slightly Saline Water	300,000[d]	300,000	N/A	N/A
Hueco Bolson				
- East of Franklin Mountains from State Line South to City of El Paso	10,000,000[f]	5,000,000	500-1,800[b]	600-1,200[c]
- North of State Line State of New Mexico	6,200,000[g]	3,100,000	N/A	N/A
- Fabens Fabens Water Company	40,000[h]	20,000	150[b]	300[c]
- Fabens Tornillo Area Mesa land between Fabens and Tornillo	30,000[h]	15,000	100-1,000[b]	300[c]
- Montana Road East of FM 659	70,000[i]	35,000	100-1,000[b]	500[c]
- Slightly saline water In entire Hueco Bolson	4,000,000	4,000,000	100-1,000[b]	600-1,200[c]
Rio Grande Alluvium	1,800,000[j]	1,800,000	500-1,000[b]	50-200[c]
Dell City Area	N/A	N/A	N/A	N/A
Ryan Flat	3,100,000[k]	1,600,000	300-2,000[l]	N/A

[a] Gates, 1980, p. 100.
[b] Alvarez, 1980, Table 5.
[c] Alvarez, 1980, Table 7.
[d] White, 1983, p. 71.
[e] Wilson, 1981, p. 84, reported in White, 1983, p. 29. 34,000,000 ac-ft west of the state line and 20,000,000 north of the state line.
[f] White, 1983, p. 68.
[g] Knowles, 1956, p. 43.
[h] Extrapolation of data received in personal communication with CONDE, Inc., October 20, 1987.
[i] Order-of-magnitude estimate calculated using areal extent given in White, 1983, Figure 18, thickness given in conversation with D. E. White, October 29, 1987, and a specific yield given in White 1983, p. 68.
[j] Alvarez, 1980, p. 49.
[k] Gates, 1980, p. 63.
[l] Gates, 1980, p. 58.

N/A: Indicates data not available.

Notes: 1. The volumes of groundwater estimated are theoretically recoverable volumes. The estimates are of recoverable water and not of total water in storage because specific yields were used in making the estimates, not total porosity. The volumes are termed "theoretically" recoverable because it is not known if all of the recoverable water can be removed without some deterioration in quality or without some other undesirable effect resulting from nearly complete withdrawal. Rate and extent of saline contamination has not been predicted, but it will be probably gradual.

2. With proper well field planning, at least 50 percent of the freshwater in storage could be recovered before it became so contaminated as to be unusable for public supply (Knowles, 1956, p. 43). Slightly saline water in both the Mesilla and Hueco Bolsons, and the Rio Grande Alluvium were assumed at 100 percent because they are not specific areas of high quality water, like the other areas presented.

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Table 2
POTENTIAL FUTURE AVAILABILITY OF GROUNDWATER RESOURCES

GROUNDWATER RESOURCE OR AQUIFER	Potentially Recoverable Reserves (ac-ft)	Annual[1] Recharge (ac-ft)	Existing Annual Demand (ac-ft)	Projected Future Cummulative[2] Demand (ac-ft) 5 Years	10 Years	15 Years	20 Years	Projected Potential Quantity Available[3] of Recoverable Reserve (ac-ft) 5 Years	10 Years	15 Years	20 Years
Mesilla Bolson											
- Canutillo-Anthony Rio Grande Valley between towns of Canutillo and Anthony	410,000	0-12,000[b]	30,000[b]	160,000	330,000	520,000	730,000	250,000 to 310,000	80,000 to 200,000	(110,000) to 70,000	(320,000) to (80,000)
- State of New Mexico	27,000,000	0-18,000[a]	4,100[b]	20,000	40,000	70,000	100,000	27,000,000	27,000,000	27,000,000	27,000,000
- Slightly Saline Water	300,000	N/A (assumed negligible)	N/A (assumed negligible)	N/A (assumed negligible)	N/A (assumed negligible)	N/A (assumed negligible)	N/A (assumed negligible)	300,000	300,000	300,000	300,000
Hueco Bolson											
- East of Franklin Mountains from State Line South to City of El Paso	5,000,000	6,000[c]	129,000[b]	700,000	1,400,000	2,200,000	3,100,000	4,400,000	3,600,000	2,900,000	2,000,000
- North of State Line State of New Mexico	3,100,000	N/A (assumed negligible)	1,300[b]	7,000	14,000	22,000	32,000	3,100,000	3,100,000	3,100,000	3,100,000
- Fabens Fabens Water Company	20,000	N/A (assumed negligible)	700[e]	4,000	8,000	12,000	17,000	16,000	12,000	8,000	3,000
- Fabens Tornillo Area Mesa land between Fabens and Tornillo	15,000	N/A (assumed negligible)	800[e]	4,000	9,000	14,000	19,000	11,000	6,000	1,000	(4,000)
- Montana Road East of FM 659	35,000	N/A (assumed negligible)	500[e]	3,000	5,000	9,000	12,000	32,000	30,000	26,000	23,000
- Slightly saline water In entire Hueco Bolson	4,000,000	N/A (assumed negligible)	N/A (assumed negligible)	N/A (assumed negligible)	N/A (assumed negligible)	N/A (assumed negligible)	N/A (assumed negligible)	4,000,000	4,000,000	4,000,000	4,000,000
Rio Grande Alluvium	1,800,000	20,000[d]	3,800	20,000	42,000	66,000	92,000	1,900,000	2,000,000	2,000,000	2,100,000
Dell City Area	N/A	N/A	100,000[f]	520,000	1,100,000	1,700,000	2,400,000	N/A	N/A	N/A	N/A
Ryan Flat	1,600,000	5,800[g]	1,000[h]	5,200	11,000	17,000	24,000	1,600,000	1,600,000	1,700,000	1,700,000

[a] Leggat, 1963.
[b] White, 1983, Table 1.
[c] Alvarez, 1980, p. 6.
[d] Gates, 1980, p. 94.
[e] Conversation with D. E. White, October 22, 1987.
[f] Gates, 1980, p. 33.
[g] Gates, 1980, p. 58.
[h] Gates, 1980, p. 63.

N/A: Indicates data not available.

Notes:
1. Annual recharge to the Mesilla Bolson (Leggat, 1963) was reported at 18,000 acre-feet, with 6,000 acre-feet flowing to the State of New Mexico. The amount of recharge occurring between the Canutillo-Anthony and New Mexico portions of the bolson was not available. As a result, a range of possible recharge is given, deducting for the Canutillo-Anthony area the 6,000 acre-feet flowing to New Mexico. For the Hueco Bolson, an annual recharge of 6,000 acre-feet was reported (Alvarez, 1980). Again, data was not available indicating how recharge occurred within the bolson. The total recharge amount was applied to the area east of the Franklin Mountains, presenting a "worst case" scenario.
2. Projected future cummulative demand is calculated for each time period using a 2 percent per year increase in demand, and represents the cummulative quantity over each given time period. Two percent per year increase in demand was used because that is the population increase projected for El Paso County. The actual demand increase will likely be slightly different, and depend on the cost of water to the customer, type of rate scale, degree of water conservation, changes in quality of life in the County, etc.
3. Projected potential availability of groundwater resource is calculated by deducting from the recoverable reserves the projected future cummulative demand, then adding the cummulative recharge quantity for each time period. It is not meant to be an accurate determination of the available reserves at the end of each time period. It is intended solely for planning purposes to attempt to establish whether the resources would be available through the 20-year planning period, and shorter durations within the planning period; and present an order-of-magnitude that may be available.

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this projection, and it should also be used only for planning purposes.

The intent of Table 2 is to establish an order-of magnitude quantity of the potentially available resources over time. It indicates resources which may have excess resources that El Paso County could make use of over the planning period, or for shorter intervals of time.

Many factors complicate actual future availability and life expectancy of each resource, and a true assessment requires a careful review of the lithography, extensive field investigations, along with proper well design and well field operation.

From Table 1 it is seen that significant quantities of groundwater are available from the Mesilla Bolson. However, Table 2 shows that the Canutillo-Anthony area, located in El Paso County, would not be a reliable water resource because existing demands could deplete the water in this area before the end of the planning period.

(2) Rio Grande Alluvium

The Rio Grande Alluvium consists of poorly sorted valley fill material deposited by the Rio Grande. Aquifer thickness may be less than 150 feet. The alluvium in the valley is the major source of groundater for irrigation and industry. Yields as large as 3,000 gpm have been obtained (Leggat, 1962).

Most of the recharge to the alluvium is from canal seepage and irrigation water. When surface water supplies are adequate, the Rio Grande is a gaining stream during most of the year, and serves to drain the aquifer. However, during period of irrigation well pumping, the river becomes a losing stream and recharges the aquifer.

Table 1 previously presented available groundwater resource data for the Rio Grande Alluvium, while Table 2 presented availability characteristics. Since recharge is reported at a much higher rate than demand, this resource should be available, at approximately 2,000,000 acre-feet.

(3) Hueco Bolson

The Hueco Bolson includes that part of the broad intermountain lowland lying between the Quitman, Malone, Hueco, and Finlay Mountains, and the Organ and Franklin Mountains. There is an indefinite northern divide a few miles north of the state boundary, east of the southern Organ Mountains. The bolson consists of layers of clay, sand, and gravel, deposited in random fashion, and little correlation can be found between adjacent wells. The sands and gravels of the Hueco Bolson are thickest and coarsest

near the Franklin and Organ Mountains, with little water bearing sands near the Hueco Mountains (Knowles, 1956).

The yields that can be obtained from wells in the bolson vary widely from place to place depending on the thickness of fresh water bearing sands. The principal groundwater reservoir of this bolson is along the foot of the Franklin and Organ Mountains. Most of the City of El Paso's water production is from this area. A typical well is 800 to 1,000 feet deep and produces in excess of 1,000 gpm.

A portion of the bolson deposits extend under the City of El Paso, in the El Paso Valley, where they are covered by younger alluvial deposits of the Rio Grande. Clay layers separate the bolson waters from the alluvial deposits, which are under artesian head. Since this area is within the El Paso city limits and is currently being produced by the City, it is unlikely it would be available for use by others.

Water yields that can be obtained elsewhere in the bolson vary widely from place to place depending on the fresh water bearing sand thickness.

Recharge to the Hueco Bolson occurs along the Franklin and Organ Mountains. Annual recharge around the bolson perimeter is about 6,000 acre-feet and represents only about 5% of the annual pumpage.

Table 1 previously represented available groundwater resource data for the Hueco Bolson. Generally, groundwater is readily available from the bolson. However, Table 2 indicated that the Fabens-Tornillo area might not be a reliable water resource because existing demands could deplete the water in this area before the end of the planning period.

(4) Summary of Quantity of Supply

Table 2 previously presented availability characteristics for the three potential groundwater resources: (1) the Mesilla Bolson, (2) the Rio Grande Alluvium, and (3) the Hueco Bolson. Most of the areas identified within these potential resources appear as though they could be available to El Paso County through the planning period. The two exceptions are the Canutillo-Anthony and Fabens-Tornillo areas. These areas may not be reliable water resources because existing demands could deplete the resources before the end of the planning period. Figure 5 presents an approximate water supply potential of several sources, assuming a 75 year life of the supply.

c. Quality of Supply

(1) General

In some parts of El Paso County the groundwater is saline and/or brackish, and contains high amounts of sulfates and

chlorides. The State of Texas requires that drinking water have a total dissolved solids (TDS) content less than 1,000 milligrams per liter (mg/l), and sulfates and chlorides each be less than 300 mg/l. These standards are enforced for all new water supplies. As a result, physical and/or chemical treatment would be required where groundwater quality exceeded standards.

For the purpose of this report, groundwater quality data is limited to TDS. Data for other characteristics is not available to the degree that TDS data is available.

(2) Mesilla Bolson

Water quality in the Mesilla Bolson is generally good, commonly containing less than 300 mg/l dissolved solids. High quality water extends to a depth of at least 1,200 feet, though it becomes progressively shallow towards the south and east. In the City of El Paso Canutillo well field, water from below 200 feet is satisfactory. South of Canutillo, the Mesilla Bolson water quality decreases dramatically and contains more than 1,000 mg/l (Leggat, 1962).

Figure 6 illustrates the quality of potential available groundwater in the Mesilla Bolson.

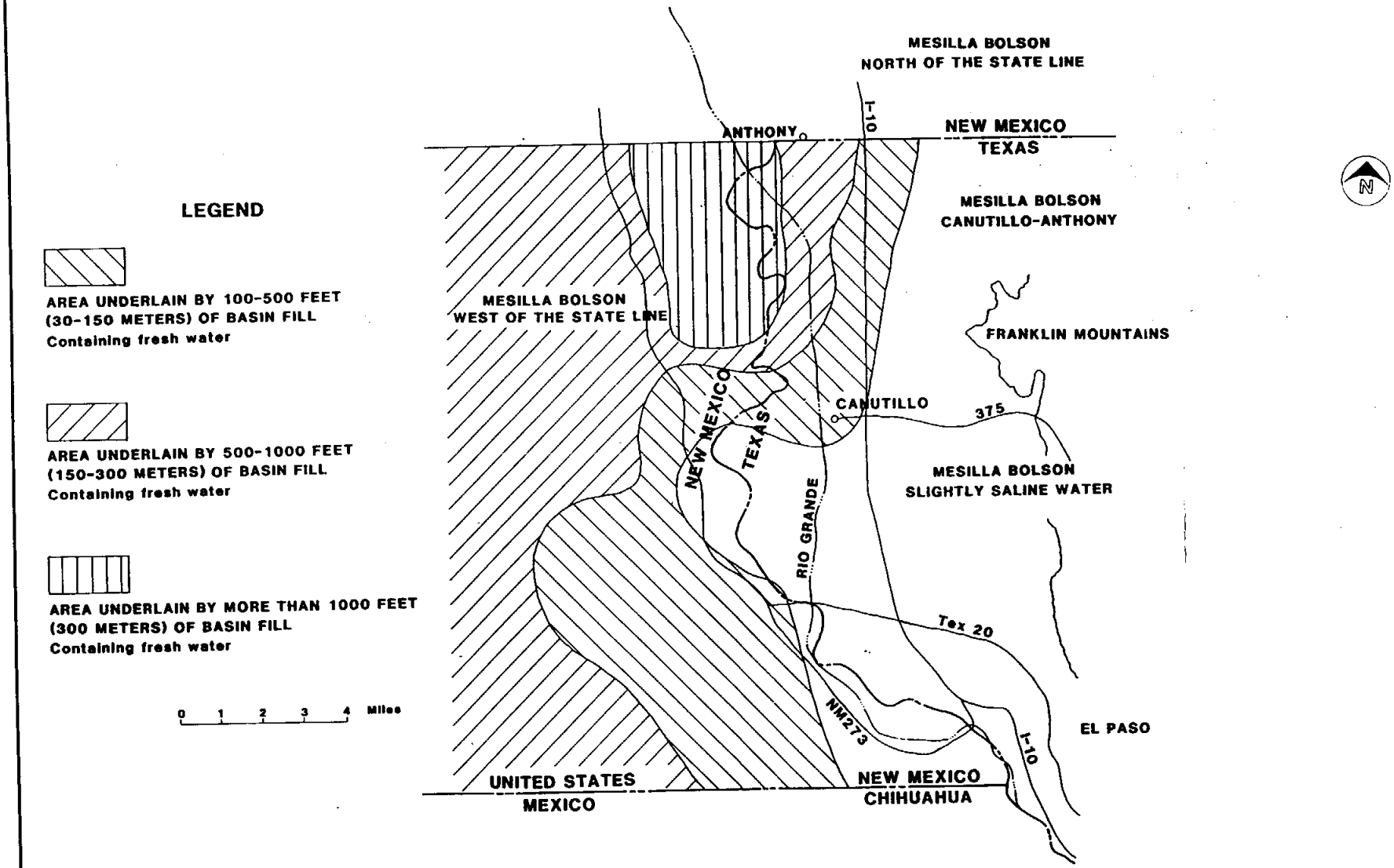
(3) Rio Grande Alluvium

Water quality in the Rio Grande alluvium varies widely throughout. Generally, it is more mineralized than the water in the river or in the underlying Mesilla Bolson. However, south of Canutillo the water in the alluvium is less mineralized than the water in the Mesilla Bolson. Most of the recharge to the alluvium is from infiltration of irrigation water, which is derived in varying proportions from surface water and pumped alluvium groundwater. This recycling of the groundwater has led to an increase in the salinity of the aquifer.

Figures 7 and 8 illustrate the quality of water in the Rio Grande alluvium, in the lower El Paso Valley, for depths of both 0-100 feet and 0-200 feet, respectively.

(4) Hueco Bolson

Quality of the water in the Hueco Bolson also varies. At the foot of the Franklin Mountains, good quality water can be found, some at less than 500 mg/l TDS. The City of El Paso pumps from the Hueco Bolson to provide over 50% of their potable water supply. Gates (95) identified an area of good quality water in the sandhills area between the floodplain and the mesa between Fabens and Tornillo. White (1983) identified an area of good quality water along U.S. 180, east of FM 659.



Source: Summary of Hydrologic Information in the El Paso, Texas Area, with Emphasis on Groundwater Studies, 1903-80, US Geological Survey, 1983.

FIGURE No. 6
Quality of Potential Available Groundwater for the Mesilla Bolson

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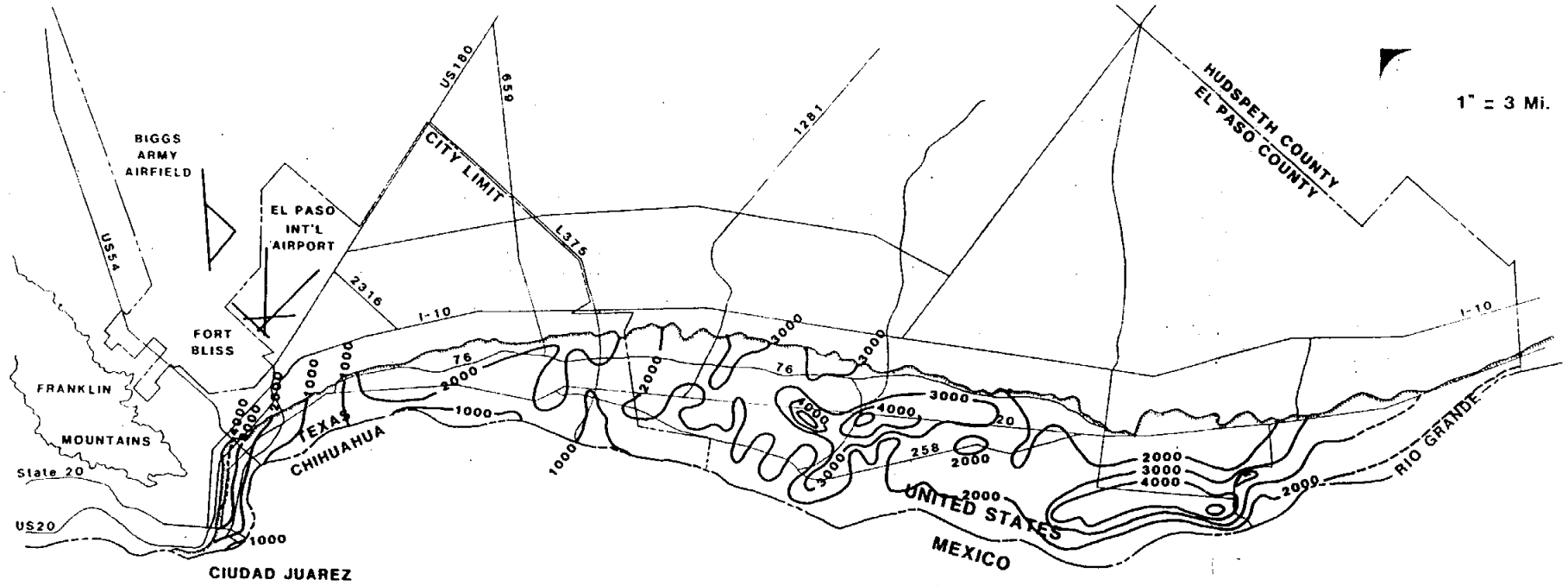


LEGEND

2000

Line showing approximate concentration of disolved solids, in milligrams per liter (interval 1000 milligrams per liter)

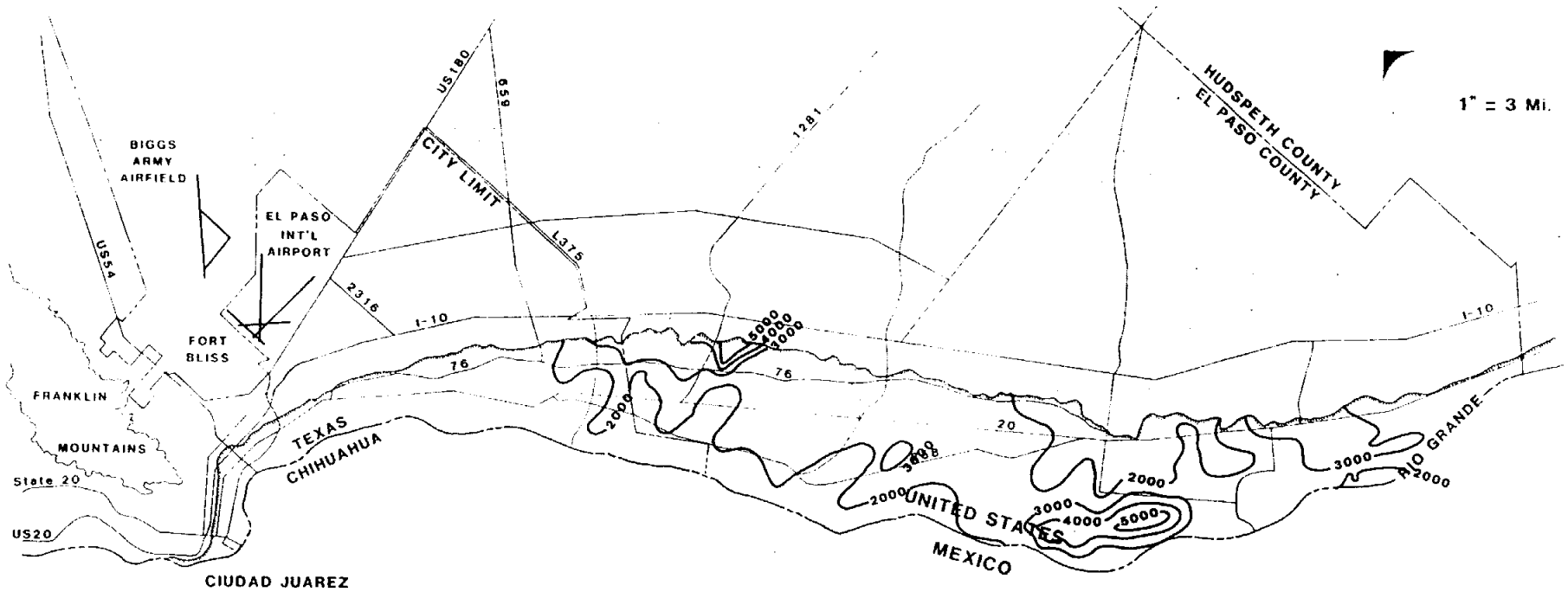
Approximate edge of the Rio Grande alluvium (from Van Horn-El Paso geologic atlas sheet)

Source: Groundwater Development in the El Paso Region, Texas, With Emphasis on the Resources of the Lower El Paso Valley, Texas Department of Water Resources, June, 1980.

FIGURE No. 7

Areal Distribution of Groundwater Quality in the Rio Grande Alluvium, Lower El Paso Valley, Within the Depth Interval 0-100 Feet

CH2MHILL



LEGEND

2000

Line showing approximate concentration of dissolved solids, in milligrams per liter (interval 1000 milligrams per liter)

Approximate edge of the Rio Grande alluvium (from Van Horn-El Paso geologic atlas sheet)

Source: Groundwater Development in the El Paso Region, Texas, With Emphasis on the Resources of the Lower El Paso Valley, Texas Department of Water Resources, June, 1980.

FIGURE No. 8

Areal Distribution of Groundwater Quality in the Rio Grande Alluvium, Lower El Paso Valley, Within the Depth Interval 0-200 Feet

CH2MHILL

This thin lens of good quality water could possibly result from Hueco Mountains drainage. White also identified a small area of good quality water near the Hueco Tanks State Park.

Figure 9 illustrates the quality of water in the Hueco Bolson.

(5) Summary of Quality of Supply

The quality of potential available groundwater to El Paso County varies with location and the specific resource. The data previously presented was taken from available published literature. Table 3 presents a summary of the quality data. Should groundwater be selected as a source of potable water supply, either throughout the County or in isolated locations, additional quality data will be required.

2. Access to Supply, and Cost

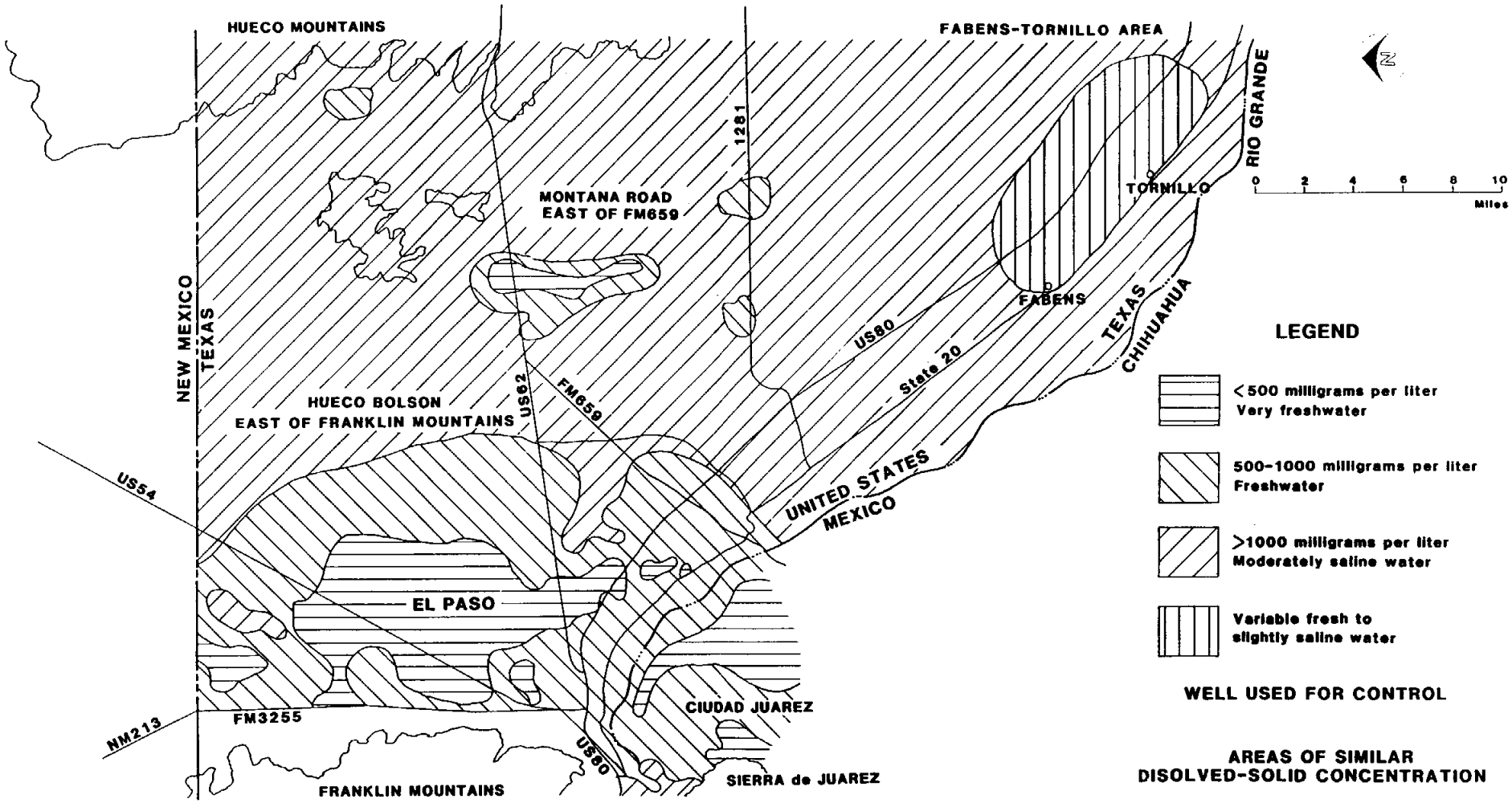
Because groundwater in the State of Texas is recognized as private property, it is subject to use by the overlying landowners. There is no cost associated with groundwater rights in El Paso County. This means that the County could develop groundwater resources after land purchase without acquiring rights from existing users.

Groundwater development costs in El Paso County would be limited to the cost of planning, purchasing the land, and drilling and equipping of wells. The only state requirement is to use a licensed well driller. However, in other portions of the state, water conservation districts control the pumping of water. Although the Texas Water Commission reports that it is investigating water use in the El Paso area, formation of a district could likely be many years away.

Both the Hueco and Mesilla Bolsons in New Mexico could possibly supply the potable water needs of El Paso County, but statutues and administrative procedures of various agencies in New Mexico presently limit the ability to use that water. Groundwater use in the State of New Mexico is recognized as private property, but it is subject to prior appropriation. Prior to 1980, New Mexico prohibited groundwater export. In a lawsuit brought by the City of El Paso, Federal District Court Judge Bratton held that the export prohibition was inconsistent with the commerce clause.

In 1985, in response to the Bratton decision, the New Mexico State Legislature imposed new requirements on new water users. The New Mexico State Engineer must assess the conservation of water and public welfare of the citizens of New Mexico. Neither of these constraints have been tested in court nor have a clear administrative interpretation.

Since the Hueco and Mesilla Bolsons are both declared underground basins in New Mexico, new uses of water must either



Source: Summary of Hydrologic Information in the El Paso, Texas Area, with Emphasis on Groundwater Studies, 1903-80, US Geological Survey, 1983.

FIGURE No. 9
Quality of Potential Available Groundwater
For the Hueco Bolson

CH2M HILL

Table 3
SUMMARY OF QUALITY FOR
POTENTIAL AVAILABLE GROUNDWATER RESOURCES

GROUNDWATER RESOURCE OR AQUIFER	Dissolved Solids Concentration (mg/l)
Mesilla Bolson	
- Canutillo-Anthony Rio Grande Valley between towns of Canutillo and Anthony	<1,000
- State of New Mexico	<1,000
- Slightly Saline Water	1,000-3,000
Hueco Bolson	
- East of Franklin Mountains from State Line South to City of El Paso	500-1,000
- North of State Line State of New Mexico	500-1,000
- Fabens Fabens Water Company	500-1,000
- Fabens Tornillo Area Mesa land between Fabens and Tornillo	500-1,000
- Montana Road East of FM 659	500-1,000
- Slightly saline water In entire Hueco Bolson	1,000-3,000
Rio Grande Alluvium	1,000-3,000
Dell City Area	1,000-3,000
Ryan Flat	500-1,000

ABR5/061

replace an existing right by transfer or prove that the new use will not affect existing users.

Since the Bratton decision, over 100 parties have applied for over 1,000,000 acre-feet of new appropriations in the Mesilla and Hueco Bolsons, in addition to the City of El Paso's applications. Any new application by El Paso County would be junior to these, and the backlog means that resolution would be in the distant future. Transfer may prove to be quicker water source. Since the State Engineer's opinion is that the Mesilla Underground Basin feeds the Rio Grande, surface water uses must be retired to transfer water use rights. There are three surface water suppliers in the region: Elephant Butte Irrigation District (EBID), El Paso County Water Improvement District Number 1 (EPCWID), and the Republic of Mexico. The EBID contends that water use rights cannot be retired from irrigation. This position is contrary to the opinion of the New Mexico State Engineer's Office, which maintains that the ownership is personal. A court decision is required to resolve this issue. However, water could possibly be retired from the EPCWID to satisfy the requirements of New Mexico State Engineer Office.

3. Summary

Generally, a finite volume of groundwater is available in and around El Paso County. However, the Canutillo-Anthony area of the Mesilla Bolson and the Fabens-Tornillo area of the Hueco Bolson may not be reliable resources because existing demands could deplete those resources before the end of the 20 year planning period. In water resource planning, a 20 year planning period is very short, particularly if the resources will be depleted at the end of the period.

Quality of the water in the Mesilla and Hueco Bolsons depend on location; while quality of water in the Rio Grande Alluvium is typically poor. Areas of slightly saline water in both the Mesilla and Hueco Bolsons, and the Rio Grande Alluvium do not meet State drinking water quality. These areas cover much of El Paso County. The remaining areas, which have good quality water available, were illustrated in Figures 6 and 9.

There is no cost of groundwater rights in El Paso County since the State of Texas recognizes it as private property subject to use by overlying property. The only cost would be that of acquiring the land. The cost of potential groundwater resources in New Mexico cannot be accurately defined. Over 100 parties have recently applied for over 1,000,000 acre-feet of new appropriations in the Mesilla Hueco Bolsons, in addition to the City of El Paso's application. As a result, groundwater rights cost are in a state of flux. Table 4 summarizes the possible groundwater resources, their general quality, and comments regarding cost.

Table 4
SUMMARY OF POTENTIAL GROUNDWATER AVAILABILITY, QUALITY, AND COST

GROUNDWATER RESOURCE OR AQUIFER	Potentially Recoverable Reserves (ac-ft)	Projected Potential Quantity Available[1] of Recoverable Reserve (ac-ft) 5 Years	10 Years	15 Years	20 Years	Dissolved Solids Concentration (mg/l)	Cost Comments
Mesilla Bolson							
- Canutillo-Anthony Rio Grande Valley between towns of Canutillo and Anthony	410,000	250,000 to 310,000	80,000 to 200,000	(110,000) to 70,000	(320,000) to (80,000)	<1,000	Cost for groundwater rights included in land costs.
- State of New Mexico	27,000,000	27,000,000	27,000,000	27,000,000	27,000,000	<1,000	Cost unknown. Would have to apply for new appropriation in New Mexico or purchase existing rights.
- Slightly Saline Water	300,000	300,000	300,000	300,000	300,000	1,000-3,000	Cost for groundwater rights included in land costs.
Hueco Bolson							
- East of Franklin Mountains from State Line South to City of El Paso	5,000,000	4,400,000	3,600,000	2,900,000	2,000,000	500-1,000	Cost for groundwater rights included in land costs.
- North of State Line State of New Mexico	3,100,000	3,100,000	3,100,000	3,100,000	3,100,000	500-1,000	Cost unknown. Would have to apply for new appropriation in New Mexico or purchase existing rights.
- Fabens Fabens Water Company	20,000	16,000	12,000	8,000	3,000	500-1,000	Cost for groundwater rights included in land costs.
- Fabens Tornillo Area Mesa land between Fabens and Tornillo	15,000	11,000	6,000	1,000	(4,000)	500-1,000	Cost for groundwater rights included in land costs.
- Montana Road East of FM 659	35,000	32,000	30,000	26,000	23,000	500-1,000	Cost for groundwater rights included in land costs.
- Slightly saline water In entire Hueco Bolson	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	1,000-3,000	Cost for groundwater rights included in land costs.
Rio Grande Alluvium	1,800,000	1,900,000	2,000,000	2,000,000	2,100,000	1,000-3,000	Cost for groundwater rights included in land costs.
Dell City Area	N/A	N/A	N/A	N/A	N/A	1,000-3,000	Cost for groundwater rights included in land costs.
Ryan Flat	1,600,000	1,600,000	1,600,000	1,700,000	1,700,000	500-1,000	Cost for groundwater rights included in land costs.

Notes: 1. Projected potential quantity of recoverable reserve is not meant to be an accurate determination of the available reserves at the end of each time period. It is intended solely for planning purposes to attempt to establish whether the resources would be available through the 20-year planning period, and shorter durations within the planning period; and present an order-of-magnitude that may be available.

C. Surface Water Resources

1. Source of Supply

a. General

The Rio Grande River is the only perennial stream in El Paso County, and its waters, which include all water flowing in the river and in the river's tributaries, constitute the only feasible source of surface water supply in the County. These waters, however, are fully appropriated between Elephant Butte Dam and Fort Quitman, Texas, and all flow in the river is specifically allocated to existing users of that water.

Any access to and use of the waters of the Rio Grande in El Paso County is regulated by the El Paso County Water Improvement District No. 1. This agency maintains records of water rights and the lands to which they pertain; is a party to any transfer of water rights or their use; allocates and delivers water to the various users; and assesses and collects taxes to pay the costs of delivering water.

b. Quantity of Supply

(1) Availability of Supply

Prior to the construction of Elephant Butte and Caballo Dams in New Mexico, the Rio Grande in El Paso County was subject to wide variations in seasonal and annual flow. The runoff water from the upper Rio Grande watershed, as well as the flow in the river itself, is now retained by the dams, however, and that water is released in accordance with water needs downstream.

Although the amount of runoff into the dams from the upper Rio Grande watershed may vary from year to year, the capacities of the dams allow the water to be stored and then released in fairly uniform annual quantities. Since the primary function of the dams is to supply water for irrigation, and since irrigation water for the downstream farm lands is required only during the growing season, water is normally released from the dams only during the period from about February 15 to October 1, and the only water flowing in the river for the rest of the year is made up of dam seepage, sewage effluent discharge, agricultural drainage discharge, and storm water runoff below the dam. In any years in which unused amounts of runoff water fill the dams, as at the present time, water may be released to the Rio Grande throughout the year.

(2) Allotments to United States and Mexico

By the terms of an agreement enacted between the United States and Mexico in January, 1907, the waters of the Rio Grande are

apportioned for use by the two countries. Under the terms of the agreement, the United States receives an annual allotment of 3 acre feet of water per acre of irrigable land, and Mexico receives a total annual allotment of 60,000 acre feet of water.

If reduced runoff flows and storage in Elephant Butte and Caballo Dams should require the annual United States allotment to be reduced to less than the full 3 acre feet per acre, the Mexican allotment would be reduced also in an amount proportionate to the reduction in the United States allotment.

(3) Allocations to Irrigable Lands

The total amount of Rio Grande water which will be available for use in El Paso County is estimated at the start of each irrigation season. This estimate is based upon the amount of water stored in the dams, the expected runoff into the dams, the amount of water allotted to Mexico, and the expected evaporation and absorption losses in transporting the water from the dams to the users.

An initial allocation of water to the users in El Paso County is determined by dividing the estimated total amount of available water, measured in acre feet, by the total number of acres of irrigable land holding water rights. The result is an annual allocation measured in acre feet per acre.

The initial allocation is usually revised upward throughout the irrigation season as additional water becomes available either through increase of runoff into the dams or decreased use of allocated water.

Prior to 1951 there was no allocation of water as described above because there was generally sufficient flow in the Rio Grande and sufficient storage in the dams to supply the full United and Mexican allotments and deliver approximately 3 acre feet of water per acre per year to all users in El Paso County.

In 1951, however, reduced runoff from the Rio Grande watershed and reduced storage in the dams indicated that less than 3 acre feet of water per acre would be available for the users. In consideration of this fact the allocation system was instituted to assure an equitable distribution of the available water.

In 19 of the 37 years between 1951 and 1987 the annual allocation of water in El Paso County has equalled, or exceeded, 3 acre feet per acre. In the years 1954, 1955, 1956, 1964, and

1978, however, the annual allocation was less than 1 acre feet per acre. The annual allocations of water for the years 1951-1987 are indicated in Figure No. 10.

(4) Excess Water

Any portion of the annual allotment of Rio Grande water which is not used by the holders of water rights is considered to be excess water. This excess water may be purchased from El Paso County Water Improvement District No. 1 at the current rate per acre foot charged by that agency

The amount of excess water available varies from year to year and is dependent upon the total flow in the Rio Grande and upon the amount of irrigation water actually used during the year. In years of extremely low flow, such as in 1954, 1955, 1956, 1964 and 1978, there would be little, or no, excess water to be purchased.

c. Quality of Supply

The quality of Rio Grande water was determined from records of chemical and bacteriological analyses performed by El Paso Water Utilities on the river water received at its treatment plant.

The results of these analyses, adjusted to provide average monthly results for the years 1986 and 1987 are included in Appendix A. Figure 11 presents TDS and chloride values by month for 1986 and 1987.

2. Access to Supply

a. General

Water for municipal use could be obtained from the Rio Grande only by means of a contract with El Paso County Water Improvement District No. 1. Such a contract would retire specific areas of farm land from irrigation and transfer delivery of that farm land's annual allocation of water to the point of municipal use.

All negotiations and costs involved in acquiring or transferring water rights would be the responsibility of the person, or persons, acquiring those rights. Since the rights to irrigation water pertain to and run with the land involved, they are normally acquired either by purchasing the land itself or by leasing the rights from the owner of the land.

If the water rights to be acquired pertain to land whose owners are delinquent in their payment of El Paso County Water Improvement District No. 1 taxes, that deliquency constitutes

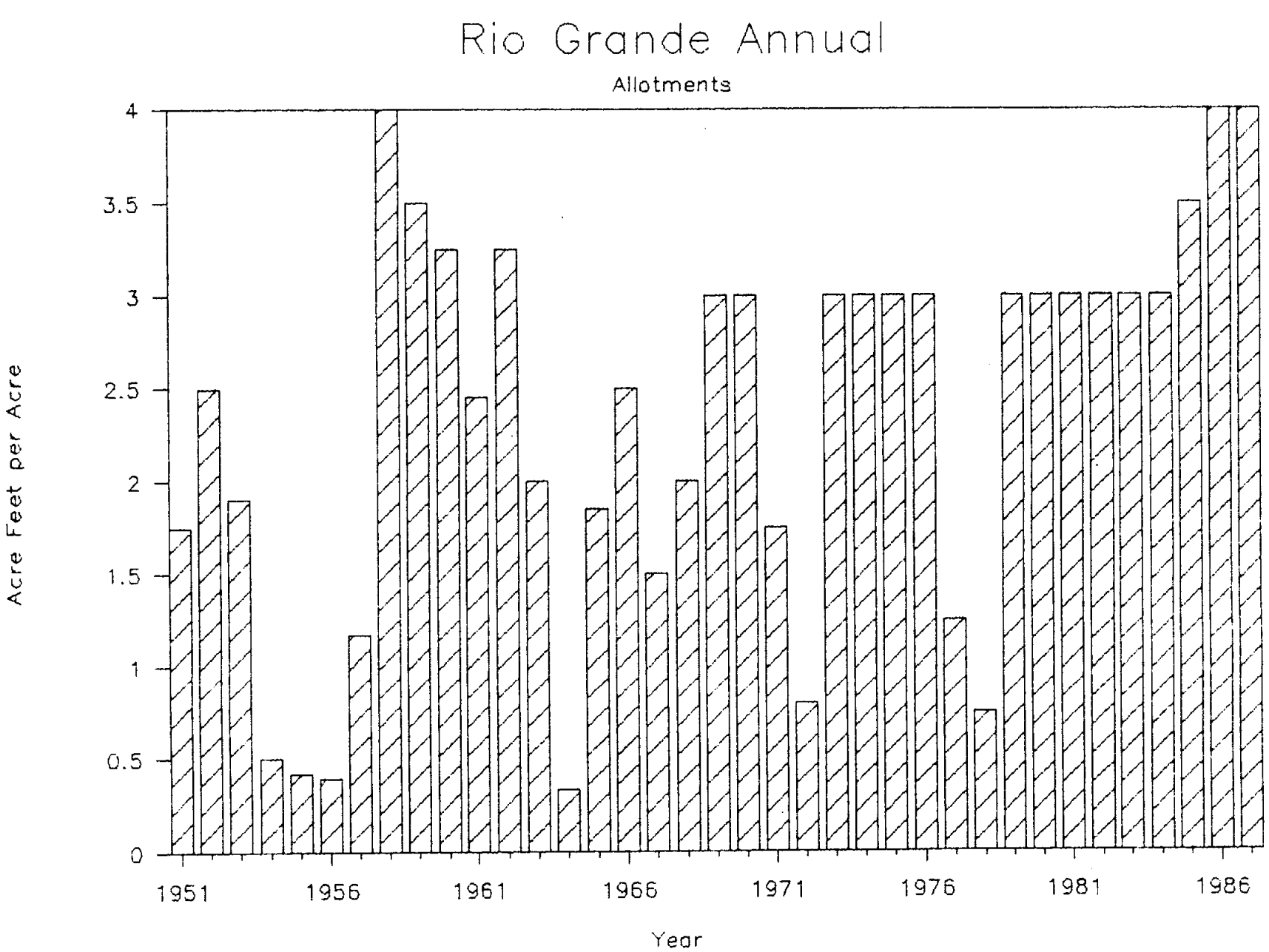

Rio Grande Annual
Allotments
Acre Feet per Acre
4
3.5
3
2.5
2
1.5
1
0.5
0
1951
1956
1961
1966
1971
1976
1981
1986
Year

FIGURE No. 10

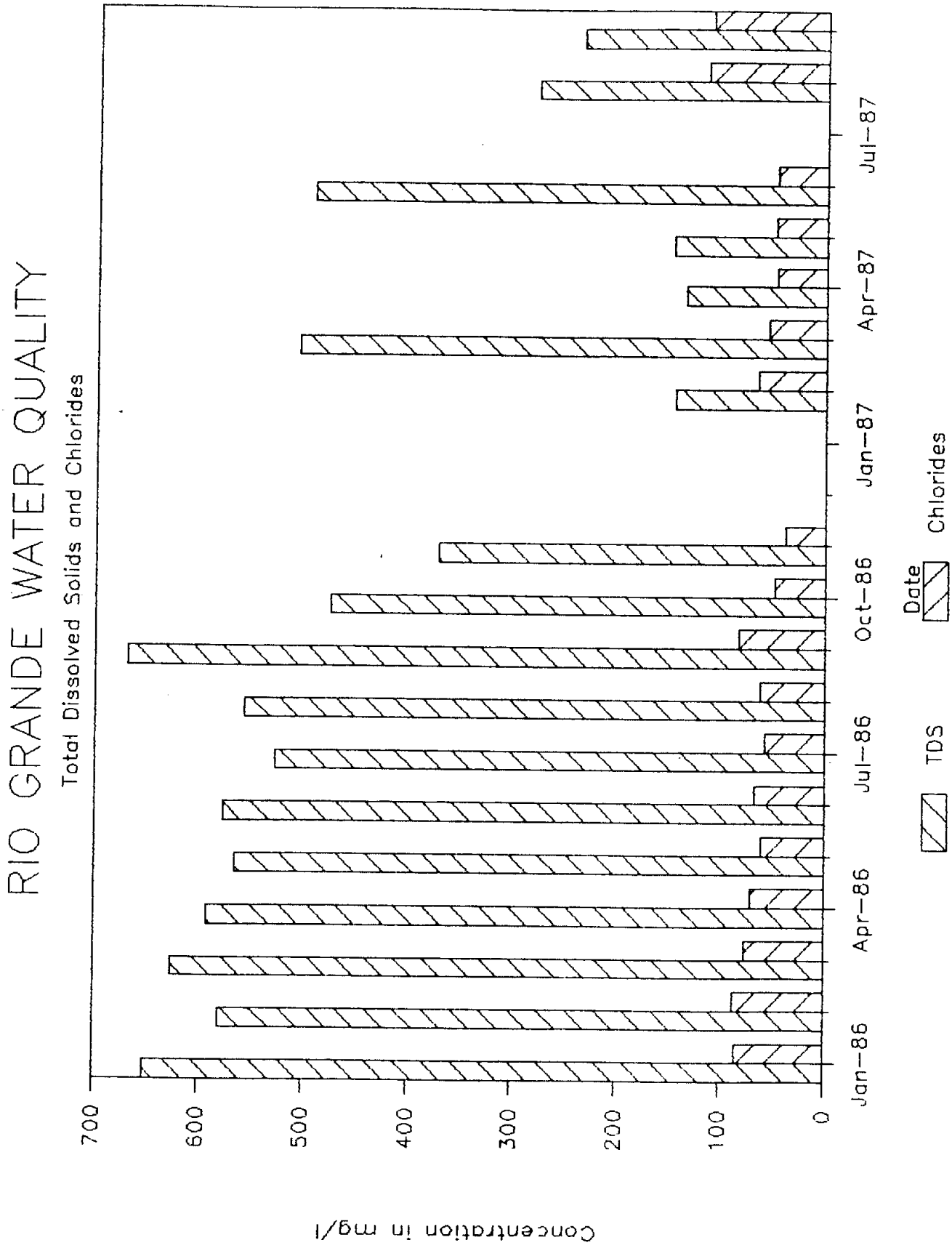

RIO GRANDE WATER QUALITY
Total Dissolved Solids and Chlorides
Concentration in mg/l
700
600
500
400
300
200
100
0
Jan-86
Apr-86
Jul-86
Oct-86
Jan-87
Apr-87
Jul-87
Date
TDS
Chlorides

FIGURE No. 11

a lien against the property, and all back taxes, plus penalties, interest and collection fees must be paid before the particular rights involved would receive any water.

Although El Paso County Water Improvement District No. 1 would not be involved in any negotiations or payments for purchasing or leasing water rights, it would be a party to any contract for the transfer of these rights, and it would be solely responsible for allocating and delivering water and assessing and collecting taxes for the properties involved.

In various areas of El Paso County farm land with water rights has been subdivided into residential lots and public streets. Since many of these lots have no physical access to irrigation water, and since the public streets have no use for the water, the water rights which pertain to the land occupied by those lots and streets make up a pool of unused water rights acreage held by El Paso County Water Improvement District No. 1. The water allocated to this pool of water rights could be acquired for municipal use by entering into a contract with the District and paying the necessary taxes.

b. Availability of Water Rights

(1) El Paso County

In accordance with information provided by El Paso County Water Improvement District No. 1, rights to the use of water from the Rio Grande are held by the owners of 69,427 acres of land in El Paso County. Not all of those rights are being used, however, and the unused rights represent what is probably the most feasible access to Rio Grande water. (See Figure No. 12.

Included in the total water right acreage are 3,592 acres of dedicated public streets and residential lots which lie outside both the present, as well as the most recently proposed, limits of the City of El Paso. The water rights held by those 3,592 acres appear to constitute the most economical and readily available access to the desired surface water.

Within the 3,592 acres described above there are 593 acres of dedicated public streets, 385 acres of residential lots which have no access to irrigation water, and 2,614 acres of residential lots which are not using their water rights, either from lack of the necessary canals, lack of need for the water, or failure to pay the required taxes.

The 593 acres of public streets and 385 acres of lots without access to irrigation water make up a pool of 978 acres of unused water rights which are held by El Paso County Water Improvement District No. 1 and which could be acquired by entering into a contract with El Paso County Water Improvement

POTENTIALLY AVAILABLE SURFACE WATER RIGHTS

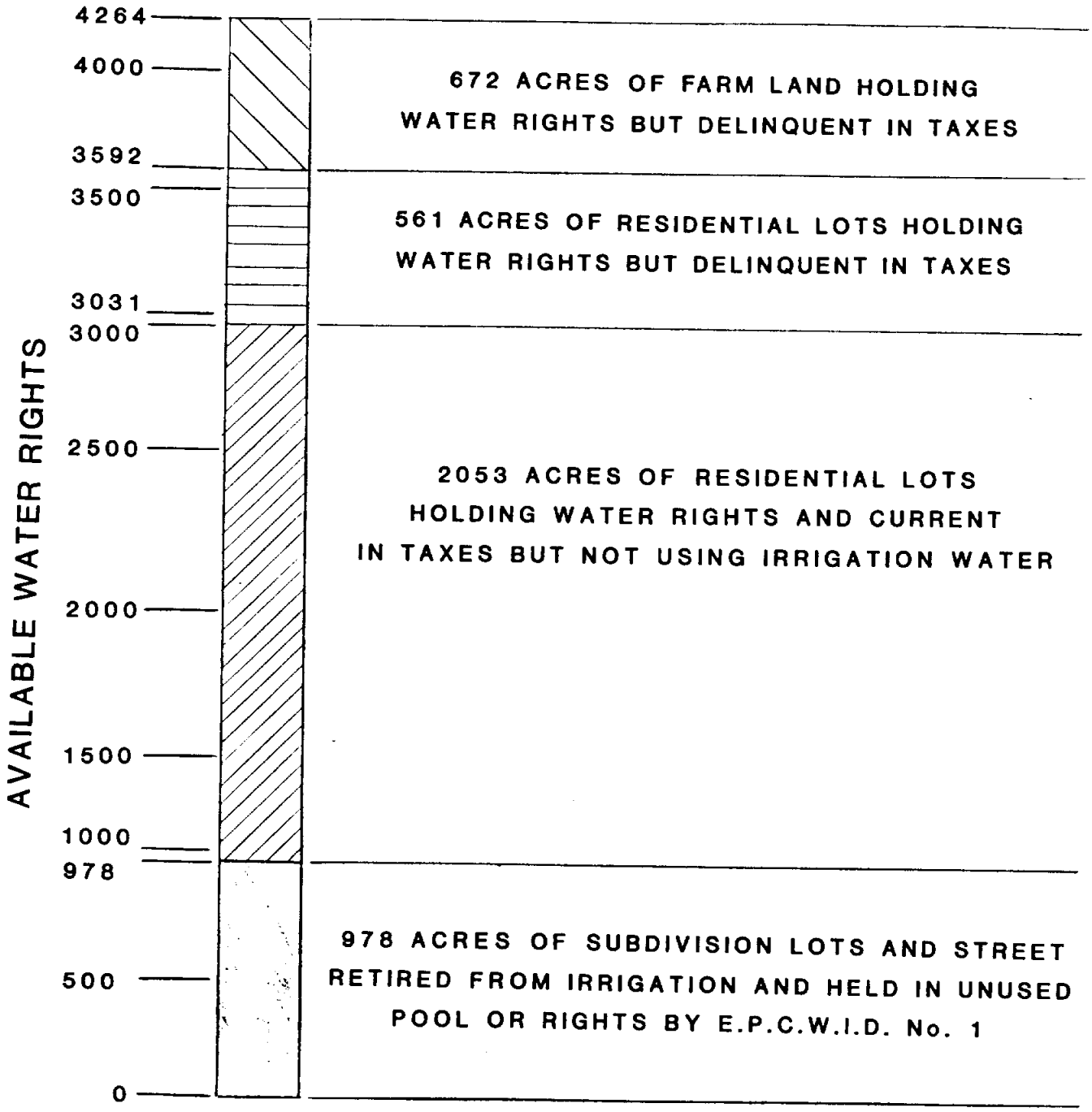


FIGURE No. 12

District No. 1 and by paying the taxes for future water allocations.

The unused water rights of the remaining 2,614 acres of residential land comprised of 4,823 lots should be considered as available for lease, according to information obtained from land developers, land owners, and realtors. The acquisition of those leases would require negotiations with the individual land owners; paying the agreed prices for the leases; paying any delinquent taxes, as well as any penalties and interest due on those taxes; entering into a contract with El Paso County Water Improvement District No. 1; and paying the taxes for future water allocations.

Although taxes are delinquent on 1,665 acres of land in the County, 432 acres of that total lie within the City of El Paso, and 561 acres are contained in the 2,614 acres of residential lots referred to in the preceding paragraph. The remaining 672 acres of tax deliquent land is comprised of relatively large tracts of formerly irrigated, but now uncultivated, land. The water rights of these 672 acres could probably be obtained by leasing the rights or purchasing the land and then paying all delinquent taxes, penalties, and interest due.

(2) Other Areas

The United States allotment of Rio Grande water is apportioned between the El Paso County Water Improvement District No. 1 in Texas and the Elephant Butte Irrigation District in southern New Mexico where approximately 77,000 acres of irrigable land have access to that water.

The Elephant Butte Irrigation District regulates access to the water of the Rio Grande in a manner similar to that employed by El Paso County Water Improvement District No. 1.

Access to Rio Grande water could be acquired by purchasing land or leasing water rights in New Mexico and then entering into a contract with the Elephant Butte Irrigation District to supply that water. The water could not be delivered to El Paso County, however, until various matters are resolved. Those matters, which concern the transfer of water from New Mexico to Texas, are presently at issue in hearings before the State Engineer of New Mexico and were discussed in IIB.2 and correspondence with the New Mexico State Engineer is included as Appendix B.

(3) Total

As shown on Figure 12, a total of 4,264 acres of surface water rights in El Paso County is potentially available for gaining

access to the water of the Rio Grande. This total includes the rights of 978 acres held in the El Paso County Water Improvement District No. 1 pool, the rights pertaining to 2,053 acres of residential land which does use irrigation water, and the rights pertaining to 561 acres of residential land and 672 acres of farm land which are delinquent in tax payments.

No surface water rights in New Mexico are considered to be currently available or usable. These rights may become available during the planning period when water transfer issues are resolved.

c. Quantity of Water Available

The amount of surface water available for municipal use depends upon the number of acres of water rights which can be acquired and upon the annual amount of water allocated to those acres.

As described previously, it should be possible to acquire the water rights of 4,264 acres of land in El Paso County. In any year in which a full allotment of 3 acre feet per acre is supplied, those 4,264 acres would receive 12,792 acre feet of water, or slightly more than 4,168,000,000 gallons, from the Rio Grande. Full annual allotments cannot be supplied every year, however, and in 1964 the total allocation of 0.33 acre feet per acre would have supplied those 4,264 acres with only 1,407.12 acre feet of water, or slightly more than 458,480,000 gallons.

In a normal year, however, Rio Grande water would be supplied only during the seven and one half month growing season which begins about February 15 and ends about October 1. During that period a full annual allotment of 3 acre feet per acre would supply the 4,264 acres of water rights described above with about 56.35 acre feet of water per day, or about 18 million gallons per day and an annual allotment of 0.33 acre feet per acre would supply about 6.20 acre feet of water per day, or about 2 million gallons per day. During the remaining four and one half months of the year the only water available would be return flow from drainage ditches and such other flow as is generated below the dams.

The historic daily average flow delivered to 4,264 acres on a year around basis if sufficient storage were provided is shown on Figure 13. Delivered values vary from about 1 MGD to over 15 MGD.

d. Delivery of Water

The quantities of water allocated for use in El Paso County are diverted from the Rio Grande at Mesilla Dam in New Mexico

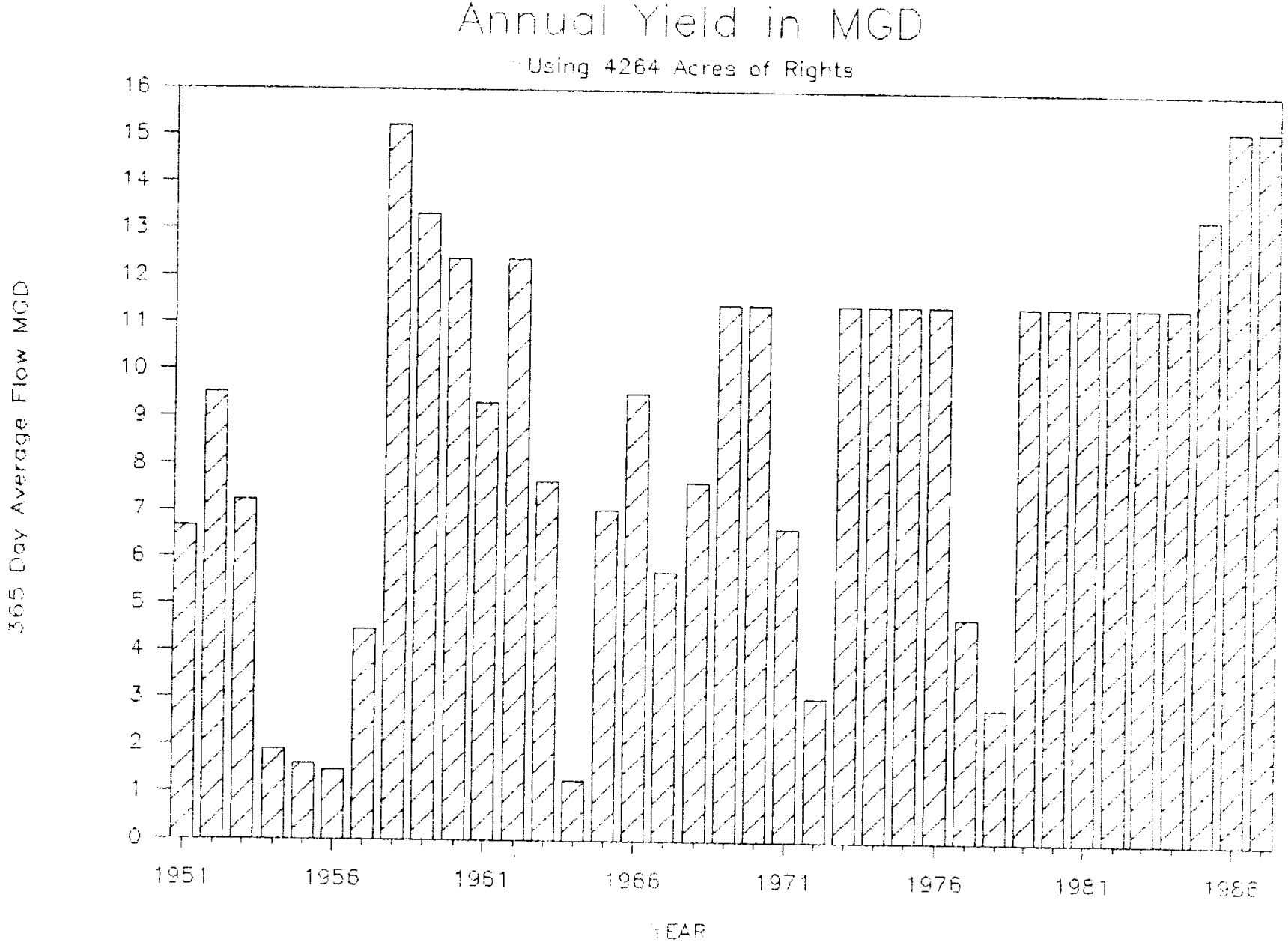

Annual Yield in MGD
Using 4264 Acres of Rights
365 Day Average Flow MGD
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
1951
1956
1961
1966
1971
1976
1981
1986
YEAR

FIGURE No. 13

and at the American and Riverside Dams in El Paso County. From those points of diversion the water is transported to the various water users in open canals. A network of these canals extends throughout the County and allows water to be delivered by gravity flow to all irrigated lands.

The El Paso County Water Improvement District No. 1 is responsible for operating and maintaining the canal system and for delivering the allocated quantities of water. The District delivers water to major users in the quantities and at the times requested by each user, and it delivers water to the smaller users in accordance with an established delivery schedule.

Water right allocations do not necessarily have to be delivered to the land to which those rights pertain. The holders of the water rights may select the points to which their allocations will be delivered, provided that the El Paso County Water Improvement District No. 1 facilities are capable of delivering the required amounts of water to those points.

3. Cost of Supply

a. General

The cost of Rio Grande water at its point of delivery by El Paso County Water Improvement District No. 1 would include the costs of acquiring rights to that water and the costs of taxes assessed by El Paso County Water Improvement District No. 1 to cover its costs of delivery.

The only water rights considered for acquisition would pertain to land in those areas of El Paso County which lie outside the City of El Paso.

b. Cost of Water Rights

(1) Types of Available Rights

The cost of acquiring water rights depends upon the particular circumstances affecting the land to which those rights pertain. In general those circumstances include subdivided farm land without access to irrigation water, subdivided farm land with unused access to irrigation water, and subdivided farm land with delinquent taxes.

(2) Land Without Access to Water

In those areas of El Paso County which lie outside the City of El Paso, there are 978 acres of land with water rights but no access to irrigation water. These unused rights are held by El Paso County Water Improvement District No. 1 and could be

acquired for the initial accounting fee of $6.00 for each contract entered into with the District and the annual cost of the taxes assessed for delivering the water.

The cost of acquiring these water rights, assuming an average of 2 lots per acre would be:

Water Rights in Acres	Initial Cost @ $6.00 per Lot	1987 Annual Tax @ $28.00 per Acre	Total First Year Cost
978	$11,736,000	$27,384.00	$39,120.00

(3) Land with Unused Rights

There are 2,053 acres of residential lots in the County and outside the City of El Paso which have both water rights and access to irrigation water but do not use that water even though current in payment of all taxes.

The water rights pertaining to these lots could be acquired by means of long term leases. The costs of obtaining those leases would vary from tract to tract, and in many cases could be obtained merely by asking for them. At various times, however, the Public Service Board of El Paso has paid $150.00 per acre for a 25 year water right lease, and that figure will be used to estimate the cost of these unused rights.

The cost of these rights would be as follows:

Water Rights in Acres	25 Year Lease @ $150.00/Acre	Initial Cost @ $12.00/Acre	1987 Annual Tax @ $28.00/Acre	Total First Year Cost
2,053	$307,950.00	$24,636.00	$57,484.00	$390,070.00

(4) Land with Delinquent Taxes

In the County and outside the City of El Paso, there are approximately 561 acres of residential land and 672 acres of farm land which have water rights and access to irrigation water but which do not use that water and are delinquent in payment of the water taxes. The residential land is composed of lots approximately 0.5 acres in size, and the farm land is composed of tracts which average about 4 acres in size.

The water rights to this land could be acquired by leasing those rights for about $150.00 per acre for a 25 year lease;

by paying all delinquent taxes, plus any penalties and interest owed to El Paso County Water Improvement District No. 1; by paying the costs of entering into a contract with the District; and by paying the current water taxes.

Although the amount of delinquent taxes, penalties and interest which each property owes to El Paso County Water Improvement District No. 1 varies in accordance with the size of the property and the period of delinquency, information obtained from the District's records indicates that the average amount owed is about $200.00 per acre.

The cost of acquiring these water rights would be as follows:

Water Rights in Acres	25 Year Lease @ $150/Acre	Delinquent Taxes @ $200/Acre	Contract Cost @ $6.00/Tract	1987 Annual Tax @ $28/Acre	Total First Year Cost
561	$ 84,150	$112,200	$6,732	$15,708	$218,790
672	100,800	134,400	1,008	18,816	255,024
Total	$184,950	$246,600	$7,740	$34,524	$473,814

(5) Total Cost

The total cost of acquiring the 4,264 acres of water rights considered to be available would be as follows:

Availability Status	Number of Acres	First Year Cost
No access to Water	978	$ 39,120.00
Unused Rights	2053	390,070.00
Delinquent Taxes	1233	473,814.00
Total	4264	$903,004.00

An annual allotment of 3 acre feet would supply 4,168,000,000 gallons of water to the 4,264 acres. The cost of this water would be the cost of acquiring the water rights plus the annual taxes paid to the Water District. Over a 25 year period the cost of the water rights would be $31,344.48 per year; the annual taxes, assuming a rate of $28.00 per acre, would be $119,392.00; and the total cost of the water delivered would be $150,736.48; or $0.0362 per 1000 gallons. Figure 14 shows the average 25 year cost per acre foot based upon historic allotments since 1951. This cost ranges from $12 to $18 acre foot.

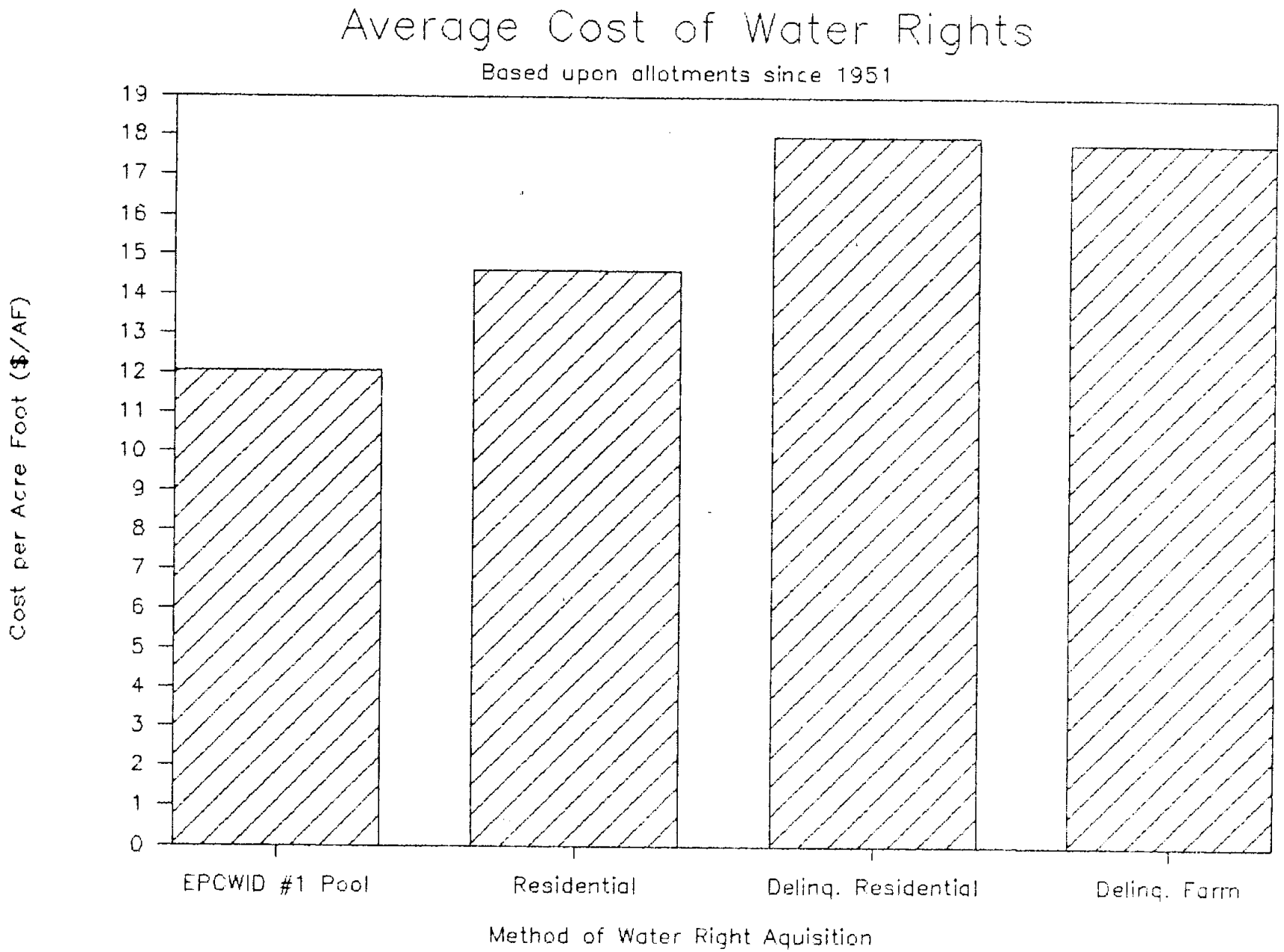

Average Cost of Water Rights
Based upon allotments since 1951
Cost per Acre Foot ($/AF)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
EPCWID #1 Pool
Residential
Delinq. Residential
Delinq. Farm
Method of Water Right Aquisition

FIGURE No. 14

(6) Summary

The Rio Grande River is the only source of surface water in El Paso County. The river can supply only a limited amount of water, however, and all of that amount is specifically allocated to existing water users.

A new entity could obtain water from the Rio Grande only by acquiring existing water allocation rights from the owners of the land to which those rights pertain, and then contracting with El Paso County Water Improvement District No. 1 for delivery of the water. Although there are over 69,000 acres of land with water allocation rights in El Paso County, only about 4,264 acres of those rights appear to be available for acquisition.

The annual allotment of water to the holders of water rights varies in accordance with the amount of water stored in Elephant Butte and Caballo Dams. In a normal year this allotment would be 3 acre feet of water per acre of water right land. The annual allotment has been as little as 0.33 acre feet per acre and as large as 4.00 acre feet per acre; however, for a normal year, the allotments of water are delivered only during the period from February 15 to October 1 when irrigation is required for agriculture. The water right holders may select the point to which their water will be delivered, provided that existing facilities have sufficient capacity for that delivery.

If the 4,264 acres of potentially available water rights are acquired, they would receive 12,792 acre feet, or about 4,168,000,000 gallons, from an annual allotment of 3 acre feet of water per acre. This water would be delivered during the delivery period at an average rate of about 18 million gallons per day. An annual allotment of 0.33 acre feet per acre would aupply 1407.12 acre feet, of 458,480,000 gallons per year at an average rate of about 2 million gallons per day during the delivery period.

Historically, annual average water deliveries to 4,264 acres will range from 1 MGD to 15 MGD on a 365 day per basis, as shown on Figure 13. The costs of acquiring water rights and paying for the water's delivery would be constant, regardless of the amount of water delivered. The cost of raw water delivered to 4,264 acres of water rights at the rate of 3 acre feet per acre per year would be about $0.036 per 1000 gallons. Water delivered at the rate of 0.33 acre feet per acre per year would cost about $0.329 per 1000 gallons. Average costs per acre foot are estimated to range from $12 to $18 per acre foot.

III. Existing Facilities

A. General

The existing water supply and wastewater disposal facilities in the study area were identified using information supplied by the Texas Department of Health, the Texas Water Commission, and the El Paso City-County Health District. Included in this information were the names of the various water and wastewater systems, the populations served, the sources of water supply, the points of wastewater discharge, the capacities of the systems, and the types of treatment employed.

Additional information concerning existing facilities was obtained from the various water and wastewater management agencies. Requests for certain specific information were mailed to 55 agencies in the study area, and full or partial answers were received from 24 of those agencies. The information thus obtained included locations and boundaries of the areas served; locations, sizes, and capacities of major facilities; sources of power; and general plans of the systems.

The information concerning the existing facilities is discussed herein and presented in the accompanying tables. The major facilities of the various systems are also indicated on 7.5 minute topographic maps, together with other pertinent data.

In order to facilitate the review of this data, the study area was divided into the following 4 sub-areas:

1. Upper Valley - the portion of El Paso County bounded on the east and south by the City of El Paso and on the west and north by the State of New Mexico;

2. Lower Valley - the portion of El Paso County bounded on the northwest by the City of El Paso, on the northeast by Interstate Highway No. 10, on the east by Hudspeth County, and on the southwest by the Rio Grande;

3. East El Paso - the portion of El Paso County bounded on the west by the City of El Paso, on the north by Montana Avenue (U.S. Highway 180), on the east by Hudspeth County, and on the southwest by Interstate Highway No. 10;

4. Hueco - the portion of El Paso County bounded on the west by the Fort Bliss Military Reservation; on the north by the State of New Mexico, on the east by Hudspeth County, and on the south by Montana Avenue (U.S. Highway No. 180).

B. Water Supply Facilities

A total of 43 water supply systems were identified in those areas of El Paso County which lie outside the City of El Paso or which affect the study area. These systems included both public and private systems and varied in size from small systems supplied from one well and serving only one family and a few customers to the City of El Paso system supplied from 120 wells and the Rio Grande River and serving 500,000 persons.

Special conditions exist in both the Upper and Lower Valley study areas where the water mains of El Paso Water Utilities supply water outside the City of El Paso. The number of service meters supplied from this source include 1,212 in the Upper Valley, 293 in the Town of Clint, and 3,130 in the Town of Socorro and other areas which lie within the boundaries of the El Paso County Lower Valley Water District Authority.

These water supply systems were identified from data supplied by the Texas Department of Health which listed all public water systems in El Paso County and which also provided such data for each system as the population served, the source of its water, the type of treatment provided, the total production capacity, the ground and elevated storage capacity, and pumping capacity.

Additional information was obtained from the various water management agencies. This information included locations and boundaries of the areas served by each system, the locations and sizes of the major components of each system, and the sources of water supply.

The water supply systems identified and described in Task No. 1 are listed on Table 5 with the population served and other information. In summary, these water systems serve about 40,000 persons.

C. Wastewater Disposal Facilities

A total of 25 wastewater disposal systems were identified in the study area. These systems included both public and private systems and varied in size from small systems utilizing a septic tank and on-site disposal of the wastewater produced by one family and a few customers to the City of El Paso with 5 major sewage treatment plants and serving 500,000 persons.

These wastewater disposal systems were identified from data supplied by the Texas Department of Health, the Texas Water Commission, and the El Paso City-County Health District. This data also provided information as to the population served by each system, the types of treatment provided, the capacities of the systems, and the wastewater disposal methods used.

Additional information obtained from the various wastewater disposal agencies included locations and boundaries of the areas served by each system, the locations and sizes of the major components of the systems, and the points of wastewater discharge.

TABLE 5

El Paso County Water Systems outside of City

ENTITY	1987 Population	1987 Service Connections	Total Production Cap. MGD	Number of Wells	Source Name
UPPER VALLEY					
Baltimore Spice Co.		1	0	1	M-B
Border Steel, Inc.		1	1.78	2	M-B
Canutillo Independent Schools					
Danny Boy Mobile Home Park		14	0.072	1	ALLUVIUM
El Paso County WCID- Westway	1834	352	0.373	2	M-B
El Paso Water Utilities/PSB	5696	1212			
Federal Correction Inst.-La Tuna	1500	100	2.45	3	M-B
Gaslight Square Mobile Home Park	400	170	0	1	ALLUVIUM
Great Southwest Water Irrigation		3	0.202	1	ALLUVIUM
Hall's Lounge and Grill		7	0.04	1	M-B
Hillside Mobile Home Park		65	0.08	1	M-B
Little Diner					
Metal Processing					
Mountain Pass Canning Company		1	2.5	2	M-B
Mowad Water District					
Snug Harbor Motel and Trailer Park		28	0	1	M-B
Town of Anthony, Texas	2618	625	1.76	3	M-B
Town of Vinton, Texas					
Vinton Mobile Home Park		35	0.005	1	M-B
W. Silver Incorporated		5	0	0	ALLUVIAL
Upper Valley Subtotal	12048	2619			
LOWER VALLEY					
Crinco Investments (Truck Stops)					
Cuadrilla Improvement Corporation	106	49	0	0	ALLUVIUM
E P Co. Lower Valley Wtr Dist. Auth					
El Paso Co. WCID #4 - Fabens	5645	1169	2.2664	7	ALLUVIUM
El Paso Water Utilities/PSB	18524	3423			
San Elizario Mun. Util. Dist.		38	0	0	ALLUVIUM
Texas A&M University Research Cnter					
Tornillo Water Supply Corporation	644	150	0.216	1	ALLUVIUM
Town of Clint, Texas					
Town of Socorro, Texas					
Utility Trailer Company					
Zaragosa Bridge Water Supply		1	0.04	1	ALLUVIUM
Lower Valley Subtotal	24919	4830			
HUECO					
Desert Oasis Park	58	73	0.202	1	H-B
Haciendas del Norte Water Imp. Dist	223	43	0.288	1	ALLUVIUM
Monte Vista Mobile Home Park					
Paso View Estates					
Texas Parks and Wildlife - Hueco		1	0.021	1	ALLUVIUM
Hueco Subtotal	281	117			
EAST EL PASO					
Adobe Inn		25	0	1	HUECO
Butterfield Mobile Home Park		29	0.04	1	ALLUVIUM
Deerfield Park Water Supply Systea		39	0.108	2	ALLUVIUM
El Paso County Water Authority	3000	877	3.506	8	ALLUVIUM
El Paso Natural Gas Co.- Hueco Club		5	0.115	1	ALLUVIUM
El Paso Truck Stop					
Fiesta Drive-In		1	0	1	H-B
Homestead Mun. Util. Dist. #1		330	0.281	1	ALLUVIUM
Loves Country Store		2	0.027	1	ALLUVIUM
Montana Vista Elementary School		3	0.04	1	ALLUVIUM
East El Paso Subtotal	3000	1311			
TOTALS	40249	8877			

The wastewater disposal systems identified and described in Task No. 1 are listed with some supplemental information on Table 6. This would indicate sewer service is provided to about 15,000 persons in the study area.

D. Maps

The portions of El Paso County which lie outside the City of El Paso and which constitute the area being studied are indicated on sixteen 7.5 minute series United States Geological Survey topographic maps. Also indicated and suitably identified on these maps are the boundaries of all incorporated communities, the boundaries of the areas served by each water supply and wastewater disposal system, the major facilities of each system, the boundaries of areas of particular population concentration, and areas likely to have sub-standard on-site disposal systems.

These maps are not included in this technical memo due to their bulk. Figures 1, 2, 3 and 4 present the location of the study areas and a grid system which can be cross referenced with tabular information.

E. On-Site Disposal Systems

On-site disposal of wastewater is commonly used throughout the study area, both by water and wastewater management agencies and by private individuals. In certain areas, however, population densities, problem soils, and high groundwater tables have resulted in sub-standard disposal systems.

The areas in which conditions are likely to produce sub-standard on-site systems are indicated on the 7.5 minute series topographic maps and in tabular form in Appendix C Table C-1.

IV. Management Agencies

A. General

The existing water and wastewater management agencies in the study area were identified using information supplied by the Texas Department of Health, the Texas Water Commission, and the El Paso City-County Health District. Included in this information were names of the various systems, the responsible officials of the agencies, the populations served, the number of service connections, connections with other systems, type of ownership, and characteristics of the service area.

Additional information concerning the assessed values, tax rates, and service charges were obtained from the El Paso Central Appraisal District and from the various water and wastewater management agencies. Requests for certain specific information were mailed to all 55 agencies in the study area, and full or partial answers were received from 24 of those agencies.

TABLE 6

El Paso County Sewer Systems outside of City

TWC DISCHARGE PERMIT NO	ENTITY (PERMIT HOLDER)	Stream Segment Code	Discharge Type *	SIC Code	Current Effluent Set Flow (AD) MGD	BOD (AD) mg/l	TSS (AD) mg/l	1987 Population
WQ0002591	Baltimore Spice Company, The	2314	R	20990	0.01			
WQ0011561	Canutillo ISD	2314	D	49520	0.05	20	20	
WQ0001243	Casuco, Inc.	2314	R	20770	0.0025			
WQ0011711	Crinco Investments (Truck Stop)	2307	R	49520	0.035	30		
WQ0010795	El Paso County Water Authority	2307	D	49520	0.5	30	30	3000
WQ0010166	El Paso Co. WCID 004	2307	D	49520	0.35	30	30	5645
WQ0010167	El Paso Co. WCID Westway	2314	R	49520	0.05	30		1834
WQ0011499	El Paso Truck Stop	2307	R	49520	0.025	30	30	
WQ0010408	El Paso Water Util. Haskell Street	2308	D	49520	27.7	20	20	
WQ0010408	El Paso Water Util. Hueco Bolson	2307	R	49520	10	1	1	
WQ0010408	El Paso Water Util. Northwest	2314	D	49520	5	20	20	
WQ0010408	El Paso Water Util. Socorro	2307	D	49520	20	30		
WQ0010408	El Paso Water Util. Southeast	2307	S	49520	39	20	20	
WQ0000516	Fabens Delinting Plant	2307	D	7230	0.038			
WQ0011241	Gaslight Square Mobile Home Estates	2314	R	49520	0.05	20	20	400
WQ0012876	GRD Development Co., Inc.	2307	R	49520	0.109	20		
WQ0013341	La Tuna Federal Correctional Inst.	2314	R	49520	0.135	30		1500
WQ0000821	Mountain Pass Canning Co.	2314	R	20330	1			
WQ0002387	Paso-Pak Chili Company, Inc.	2307	R	20340	0.002			
WQ0002671	Santa Maria Chili, Inc.	2314	R	20990	0.144			
WQ0002063	T and R Chemicals, Inc	2307	R	28610				
WQ0011686	Texas A&M University System	2308	R	49520	0.0015	30		
WQ0010120	Town of Anthony	2314	D	49520	0.35	20	20	2618
WQ0002511	Utility Trailer Company	2307	R	49520	0.01	30	90	
	TOTAL STUDY AREA POPULATION SERVED							14997

* D = Discharged
R = Retained

As described previously under Existing Facilities, the various management agencies were separated into the study sub-areas in which they are located, and the accumulated data concerning those agencies was presented in tabular forms, and as nearly as possible, on the 7.5 minute series topographic maps.

Table 7 presents the identified agencies in the County with the population served, services provided, assessed valuations, and tax rates.

V. Demand Analysis

A. General

An analysis was made to determine the water and wastewater demands of the study area. This analysis required accurate estimates of the present and future population of the area; the locations of that population; the present and future per capita water and wastewater demands of that population, and the total water and wastewater demands of the areas in which the population would be located.

The information used in the analysis was obtained from the City of El Paso Department of Planning, Research and Development, the Texas Water Development Board, the Public Service Board of El Paso, plats of subdivisions as filed with El Paso County Clerk, and from actual counts of houses and from previous studies and relevant experience of Parkhill, Smith & Cooper, Inc.

B. Population

The present population of the study area was determined by dividing all areas of the County outside the City of El Paso into sub-areas of convenient location and size and then taking aerial photographs of the populated portions of those areas. An area of over 220 square miles was photographed, and 24 inch by 36 inch reproducible copies of those photographs were prepared. The final result of this work was 64 photographs, each covering an area of about 3.44 square miles at a nominal scale of 1 inch equals 400 feet.

The grid systems of each study area, as well as the boundaries of incorporated communities, subdivisions, and water and wastewater agencies, were identified on the photographs, and an accurate count was made of all houses appearing within the identified areas. The population residing in those houses was estimated by multiplying the number of houses by the probable number of residents per household.

The probable numder of residents per household was based upon data supplied by the City of El Paso Department of Planning, Research and Development. These numbers varied in accordance with the particular study area involved. The following number of residents per average household were used in each study area.

TABLE 7

El Paso County Water and Sewer Entities

ENTITY	GRID LOCATION EW	GRID LOCATION NS	Water Served	Sewer Served	1987 Population Served	1987 Service Connections	Assessed Evaluation	Tax Rate $/$100
UPPER VALLEY								
Baltimore Spice Co.	9	12	X	X		1		
Border Steel, Inc.	9	13	X			1		
Canutillo Independent Schools	8	4	X	X				
Danny Boy Mobile Home Park	7	10	X			14		
El Paso County WCID- Westway	10	12	X	X	1834	352	$11,404,557	0.621344
El Paso Water Utilities/PSB	8	4	X		5696	1212		
Federal Correction Inst.-La Tuna	7	15	X		1500	100		
Gaslight Square Mobile Home Park	8	3	X	X	400	170		
Great Southwest Water Irrigation	7	13	X			3		
Hall's Lounge and Grill	6	16	X			7		
Hillside Mobile Home Park	7	9	X			65		
Little Diner	7	5	X					
Metal Processing	8	11	X					
Mountain Pass Canning Company	6	15	X	X		1		
Mowad Water District	8	3						
Snug Harbor Motel and Trailer Park	7	3	X			28		
Town of Anthony, Texas	7	17	X	X	2618	625	$56,445,694	0.199925
Town of Vinton, Texas	7	10					$17,679,047	0
Vinton Mobile Home Park	8	10	X			35		
W. Silver Incorporated	6	13	X			5		
Upper Valley Subtotal					12048	2619		
LOWER VALLEY								
Crinco Investments (Truck Stops)	4	21		X				
Cuadrilla Improvement Corporation	7	26	X		106	49	$888,560	0
E P Co. Lower Valley Wtr Dist. Auth	9	7					$307,972,944	0.12
El Paso Co. WCID #4 - Fabens	9	33	X	X	5645	1169	$33,169,841	0
El Paso Water Utilities/PSB	9	7	X		18524	3423		
San Elizario Mun. Util. Dist.	3	14	X			38	$4,632,025	0
Texas A&M University Research Cnter	11	6	X	X				
Tornillo Water Supply Corporation	11	43	X		644	150	$16,861,816	0
Town of Clint, Texas	9	17					$19,355,669	0.244301
Town of Socorro, Texas	9	7					$176,763,194	0.33
Utility Trailer Company	9	10		X				
Zaragosa Bridge Water Supply	1	17	X			1		
Lower Valley Subtotal					24919	4830		
HUECO								
Desert Oasis Park	4	11	X		58	73		
Haciendas del Norte Water Imp. Dist	7	7	X		223	43	$9,205,195	0.193864
Monte Vista Mobile Home Park	7	10						
Paso View Estates	10	7						
Texas Parks and Wildlife - Hueco	16	3	X	X		1		
Hueco Subtotal					281	117		
EAST EL PASO								
Adobe Inn	6	11	X			25		
Butterfield Mobile Home Park	5	10	X			29		
Deerfield Park Water Supply System	9	11	X			39		
El Paso County Water Authority	6	19	X	X	3000	877	$128,496,966	0.5325
El Paso Natural Gas Co.- Hueco Club	4	11	X			5		
El Paso Truck Stop	4	21	X					
Fiesta Drive-In	6	11	X			1		
Homestead Mun. Util. Dist. #1	9	11	X			330	$12,232,498	1.51
Loves Country Store	4	21	X			2		
Montana Vista Elementary School	9	11	X			3		
East El Paso Subtotal					3000	1311		
TOTALS					40249	8877		

Study Area	No. of Residents per Household
Upper Valley	4.7
Lower Valley	5.6
East El Paso	4.4
Hueco	3.6

In those cases where population could not be obtained by examination of the aerial photographs, such as at the Federal Correctional Institution at La Tuna, the number of residents was obtained from data obtained from the particular entity involved.

The present population of the study areas, determined as described above, was tabulated by identifiable areas, subdivisions and grid locations, and the results were compared with present population estimates of the City of El Paso Department of Planning, Research and Development for the same areas. Over 500 of these population groups were identified and are listed in Appendix D.

The number of residences, average number of persons per residence (after adjusting for special cases, such as the Federal Correctional Institute), and the total population of each study area were determined to be as follows:

Study Area	No. of Residences	Average Population per Residence	Total Population
Upper Valley	2,970	5.21	15,459
Lower Valley	7,400	5.51	40,809
East El Paso	2,218	4.09	9,078
Hueco	847	3.60	3,049
Total	13,435	5.09	68,395

After determining that there was essential agreement between the two population estimates, forecasts of future population were made to the year 2010 in ten year increments. These forecasts used the probable annual growth rates for each sub-area which have been predicted by the City of El Paso Department of Planning, Research and Development and by the Texas Water Development Board. These forecasts were shown on Figure 15 and tabulated by study areas and the various entities involved in Appendix D. The locations of population within the study area are shown on Figure 16.

C. Water and Wastewater Demand

After estimating the present and future population of the area, the water and wastewater demands of that population were determined using pertinent per capita demand figures supplied by El Paso Water Utilities; from previous studies made by Parkhill, Smith & Cooper, Inc.; in consideration of the Texas Department of Health requirements concerning minimum capacities of community water systems; and in consideration of the need to conserve water supplies. The values used ranged from 100 to 125 gallons per day per capita for water demand and from 50 to 60 gallons per day per capita for wastewater contribution. These values are shown on Figure 17.

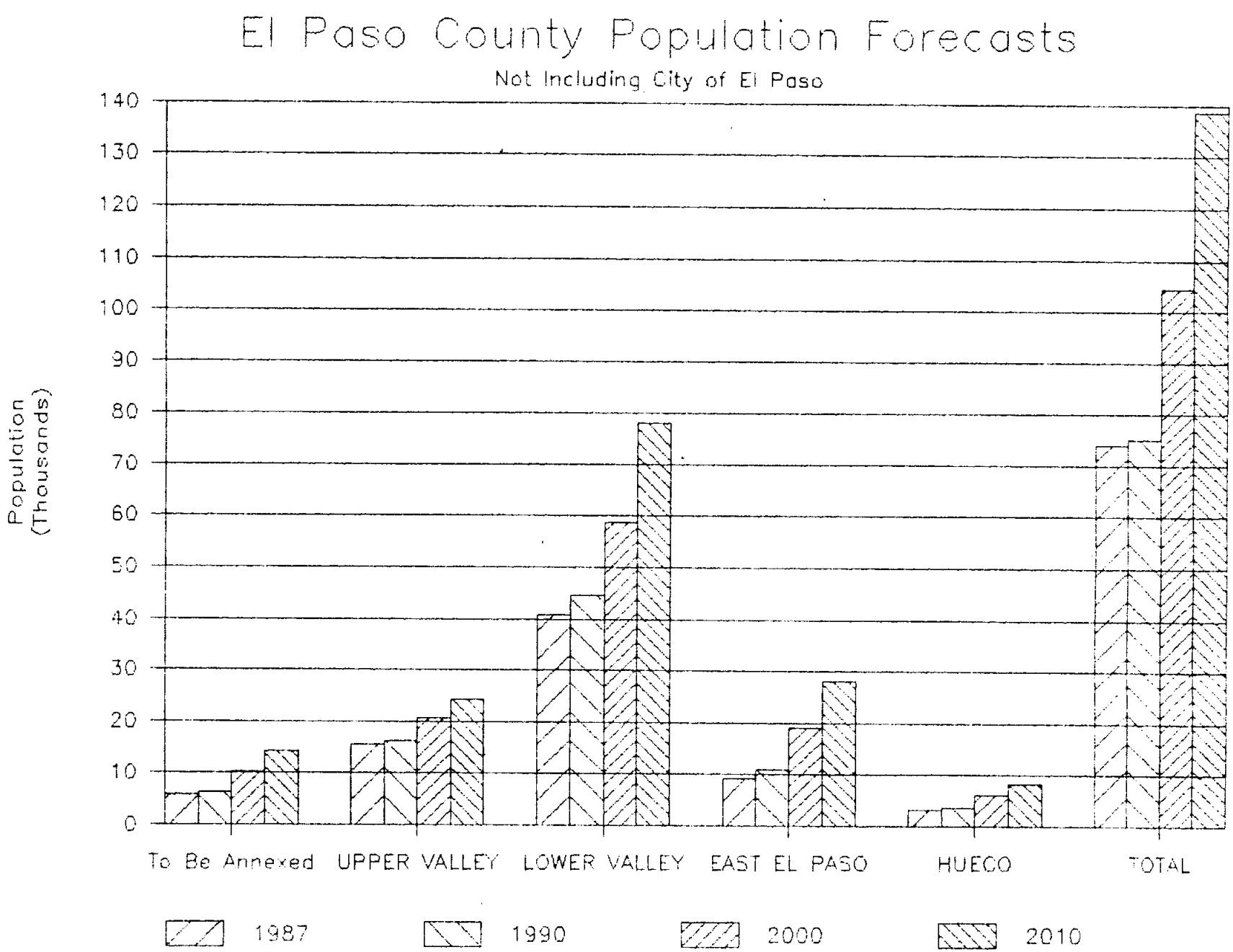
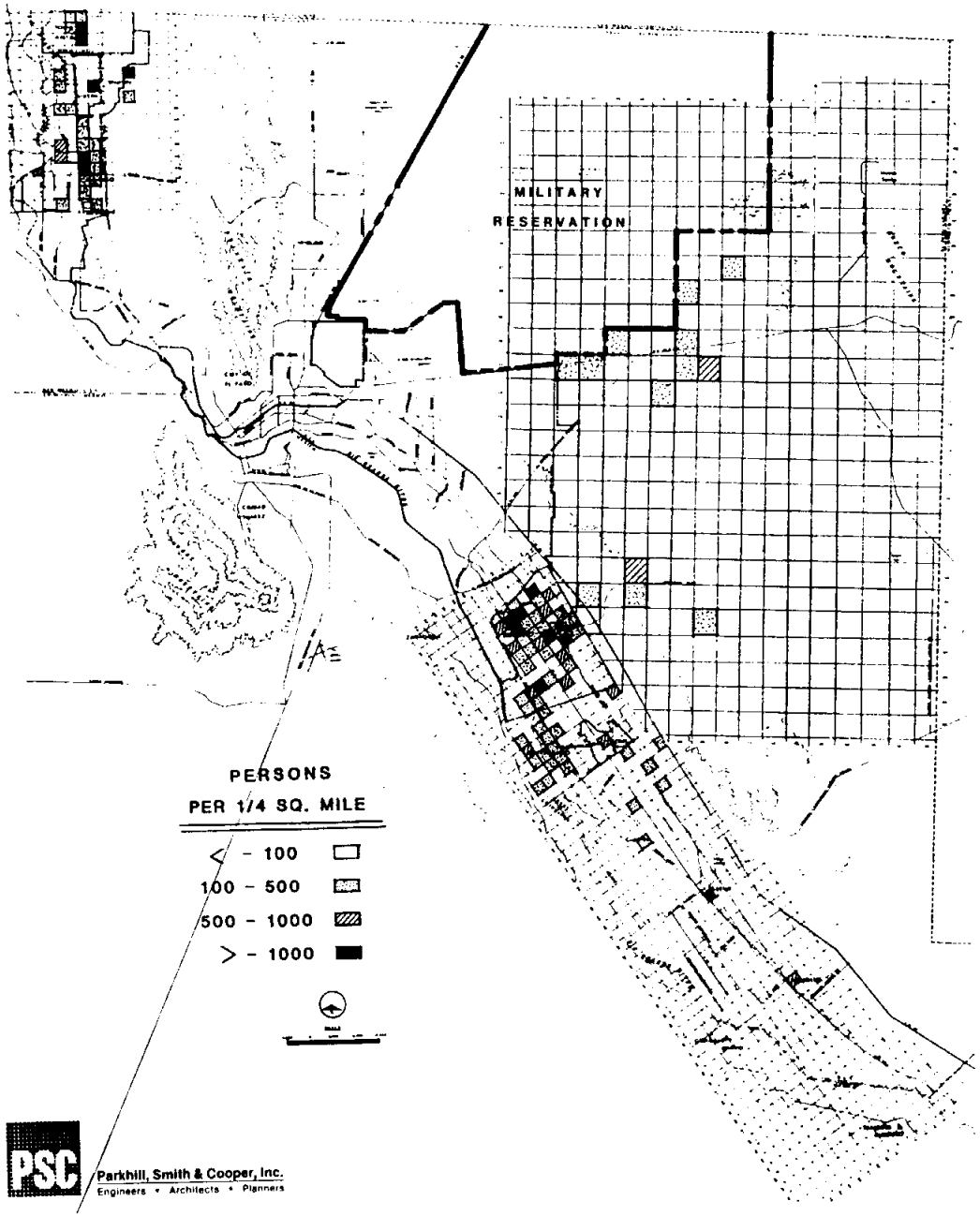

El Paso County Population Forecasts
Not Including City of El Paso
Population (Thousands)
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
To Be Annexed
UPPER VALLEY
LOWER VALLEY
EAST EL PASO
HUECO
TOTAL
1987
1990
2000
2010

FIGURE No. 15



Parkhill, Smith & Cooper, Inc.
Engineers • Architects • Planners

1987
EL PASO COUNTY
POPULATION DENSITY
FIGURE No. 16

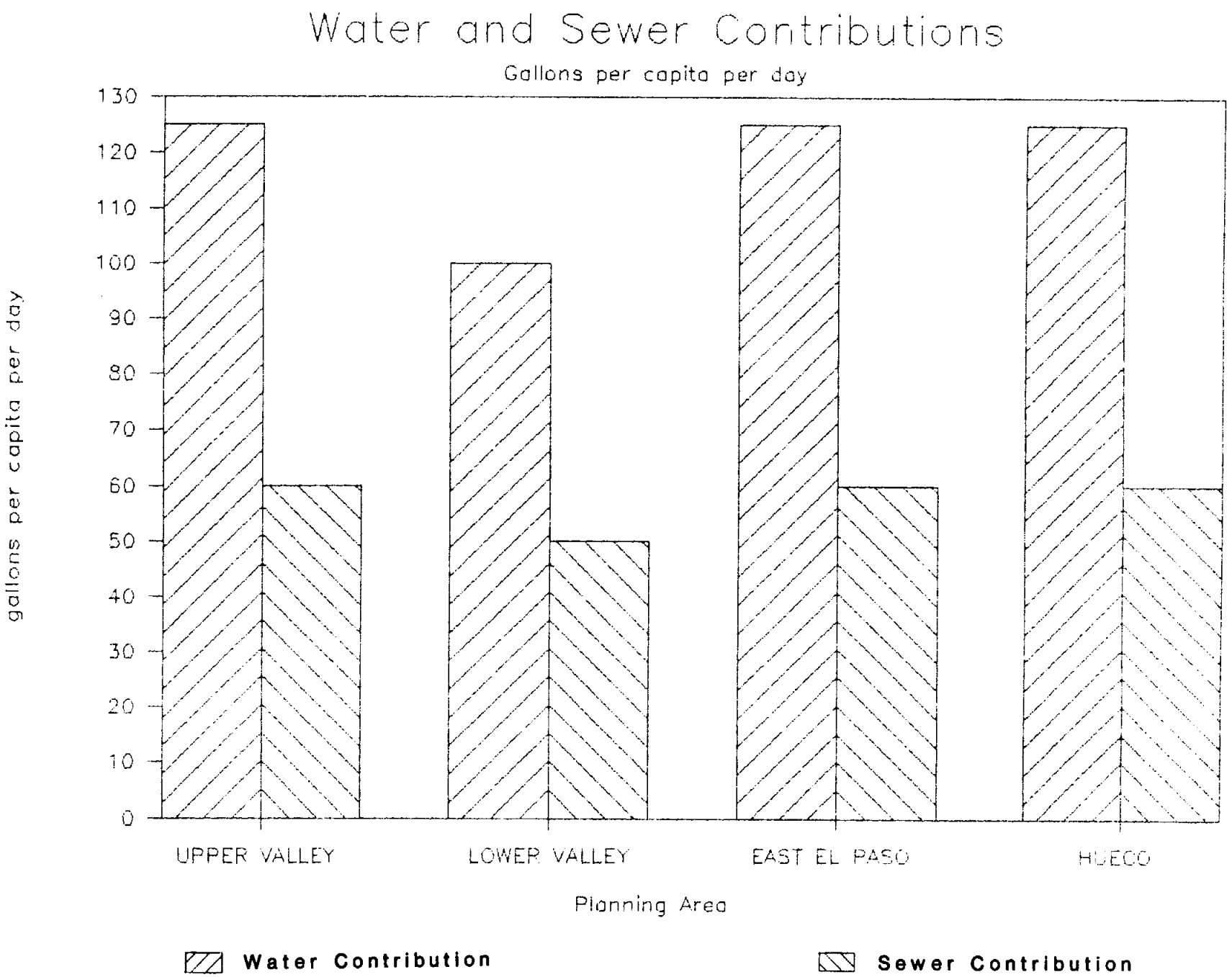

Water and Sewer Contributions
Gallons per capita per day
gallons per capita per day
130
120
110
100
90
80
70
60
50
40
30
20
10
0
UPPER VALLEY
LOWER VALLEY
EAST EL PASO
HUECO
Planning Area
Water Contribution
Sewer Contribution

FIGURE No. 17

The water demand and wastewater contribution quantities were determined for the previously discussed population and listed in Appendix D. The total potential water demand of the planning area, as shown on Figure 18, increases from about 8,000,000 gallons per day in 1990 to over 15,000,000 gallons per day in 2010. The water demands of the sub-areas are shown on Figure 19. The wastewater contributions by sub-areas are shown on Figure 20.

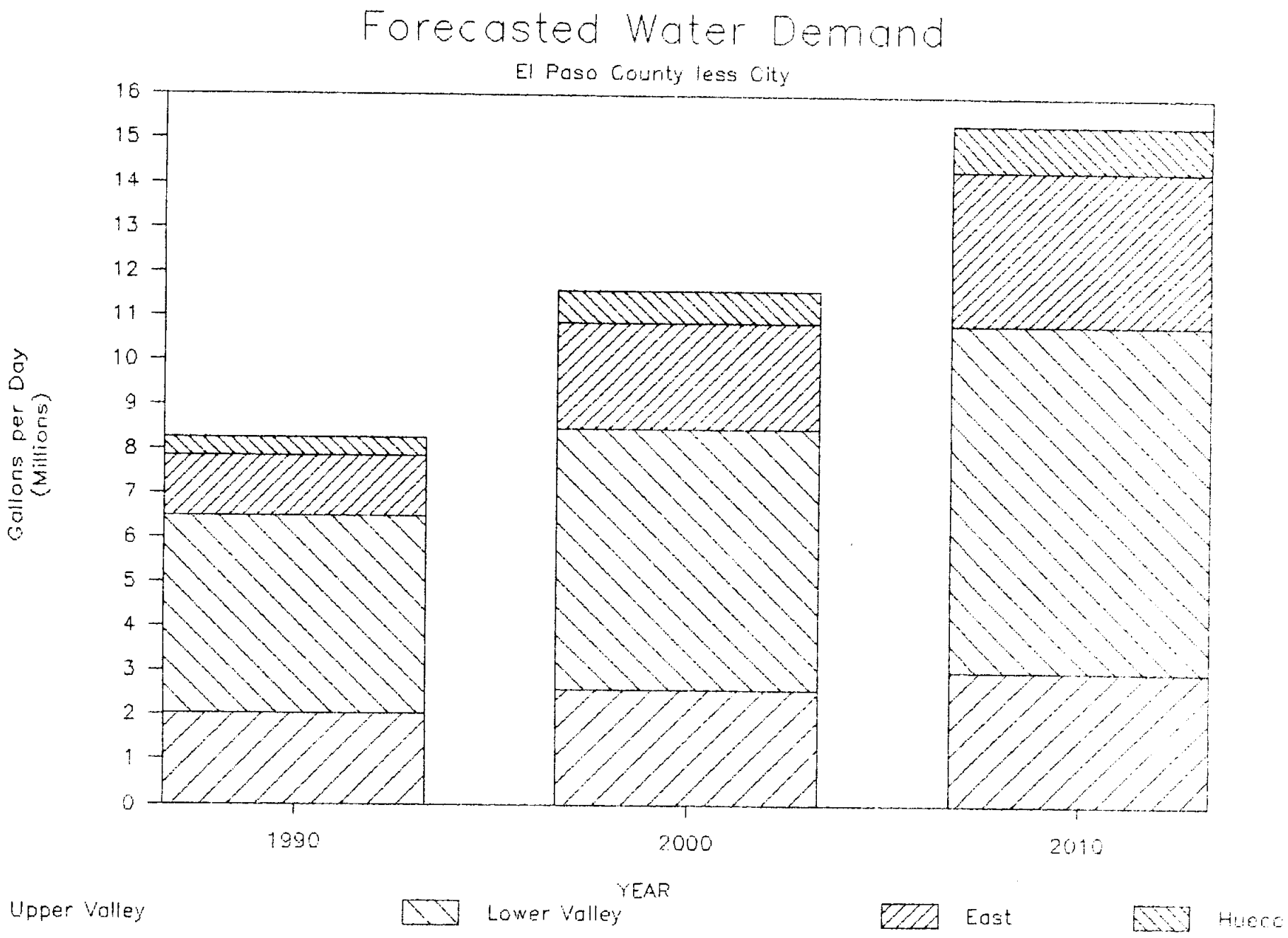

Forecasted Water Demand
El Paso County less City
Gallons per Day (Millions)
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1990
2000
2010
YEAR
Upper Valley
Lower Valley
East
Hueco

FIGURE No. 18

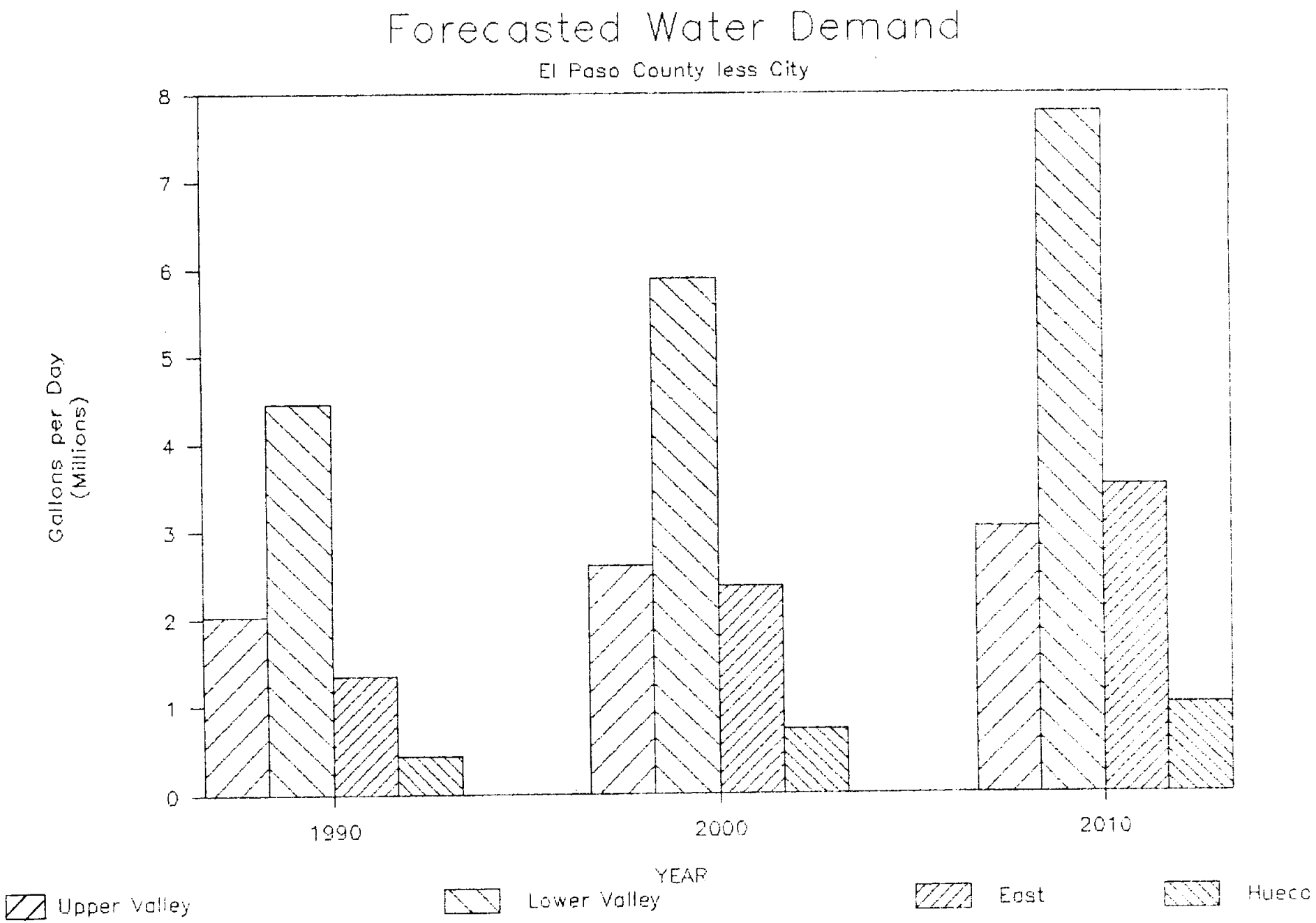

Forecasted Water Demand
El Paso County less City
Gallons per Day
(Millions)
8
7
6
5
4
3
2
1
0
1990
2000
2010
YEAR
Upper Valley
Lower Valley
East
Hueco

FIGURE No. 19

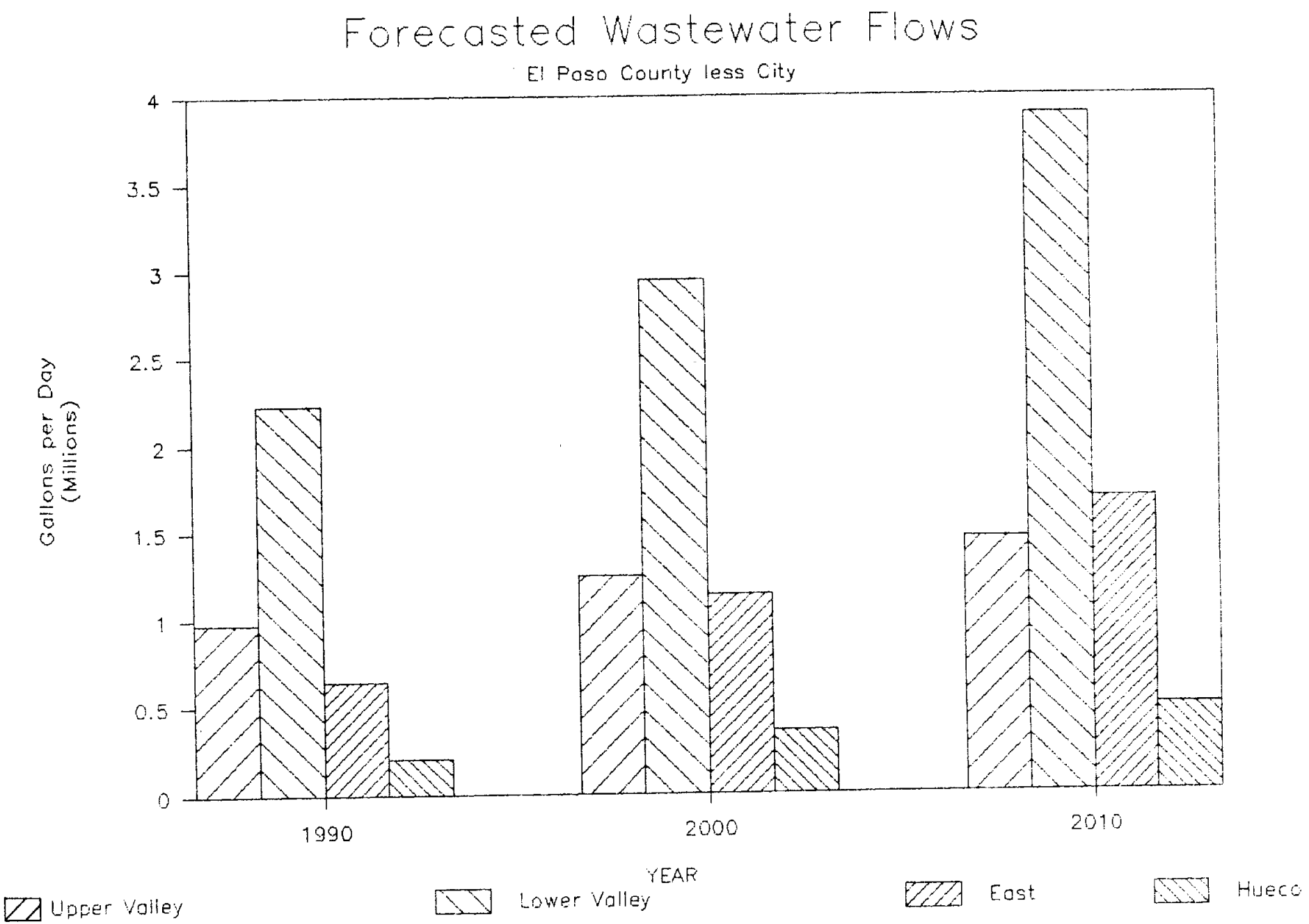

Forecasted Wastewater Flows
El Paso County less City
Gallons per Day (Millions)
4
3.5
3
2.5
2
1.5
1
0.5
0
1990
2000
2010
YEAR
Upper Valley
Lower Valley
East
Hueco

FIGURE No. 20

APPENDIX A

RIVER WATER QUALITY DATA

RESULTS OF SURFACE WATER ANALYSIS

Anions in mg/l	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Jan-87	Feb-87	Mar-87	Apr-87	May-87	Jun-87	Jul-87	Aug-87	Sep-87
Phenol Alkalinity as CaCo3	5	5	6	7	9	5	5	4	8	3	1.5		3	4	3	3	1.8			4.5	5
Total Alkalinity as CaCo3	151	140	157	153	154	150	142	138	161	124	103		135	143	137	140	136			19.7	161
Carbonates as Co3	6	6	7.2	8.4	10.8	6	6	5	10	4	2		3.6	4.8	3.8	3.6	2.16			5.4	6
Bicarbonates as HCO3	172	159	177	170	166	171	161	159	177	144	122		157	165	160	163	162			229	184
Chlorides as Cl	85	87	75	70	60	66	57	61	82	48	37		65	54	46	47	46			115	110
Sufates as SO4	193	154	178	166	157	165	147	161	198	135	100		121	133	120	130	133			272	217
Fluorides as F	0.6	0.55	0.5	0.48	0.47	0.49	0.46	0.47	0.52	0.49	0.38		0.45	0.54	0.57	0.49	0.56			0.73	0.68
Nitrates as NO3	< 4.43	< 4.43	< 4.43	0	0	0	0	0	0	0	0		0	0	0	0.53	1.54			2.85	1.76
Total Phosphates as PO4	< 0.19	< 0.19	0.34	0.15	0.18	0.11	0.16	0.3	0.21	0.18	0.28		0.14	0.21	0	0.27	0.25			0.46	0.21
Cations in MG/l																					
Total Hardness as CaCo3	224	222	214	219	218	214	187	206	226	176	138		182	194	184	188	181			304	250
Calcium as Ca	70	60	74	70	67	66	61	66	73	54	43		57	60	52	59	57			96	78
Magnesium as Mg	12	18	6.8	10	12	12	8.3	9.7	11	9.7	7.4		9.59	10.68	13.11	9.83	9.35			15.54	13.36
Sodium as Na	108	91	101	92	86	84	80	89	111	74	55		73	72	65	73	72			158	138
Potassium as K	5.8	5.2	5.8	5.6	6.1	6.4	6	4.9	6.3	4.9	4.2		5	5	5	5	6.99			8.68	6.9
Total Dissolved Solids	652	580	626	592	565	577	527	556	669	474	371		145	505	135	147	490			278	236
Turbidity (avg) in NTU	450	143	89	58	65	203.1	269	237	107.33	215.58	112.8		40.94	23.12	35.73	46.71	87.87	68.1	189.74		65.37
pH	8.3	8.45	8.39	8.44	8.42	8.28	8.38	8.36	8.45	8.35	8.25		8.44	8.35	8.39	8.37	8.33	8.38	8.34		8.32
Bacteriological Results																					
In Col/100ml (max)		11000	11000	9400	11000	24000	24000	11000	9400	5500	24000		6200	16000	11000	6200	11000	3600	70000		38000
In Col/100ml (min)		1100	3300	1100	2300	3600	6200	3600	3600	2300	13000		2300	2300	2100	3600	2300	1600	2100		11000

APPENDIX B

CORRESPONDENCE WITH NEW MEXICO STATE ENGINEER

August 31, 1987

Mr. Steve Reynolds, P.E.
State Engineer
State of New Mexico
Bataan Memorial Building
State Capitol
Santa Fe, New Mexico 87503

Dear Sir:

Parkhill, Smith and Cooper is preparing a water supply and wastewater disposal plan to serve the residents of El Paso County, Texas who live outside the City of El Paso.

Among the possible sources of water being considered to supply those residents are the surface waters of the Rio Grande and the ground waters of the Mesilla and Hueco Bolsons.

It is our understanding, however, that (1) all waters of the Rio Grande in this area are fully appropriated and can be accessed only by contracts with either the Elephant Butte Irrigation District or the El Paso County Water Improvement District No. 1; and (2) ground water can be produced from Dona Ana County wells only under permits issued by the New Mexico State Engineer office.

In consideration of the above, we would appreciate receiving your opinions and thoughts relating to the following questions:

1. Can contracts with the Elephant Butte Irrigation District for access to Rio Grande water in Dona Ana County be sold, or otherwise transferred, so as to permit access to that Rio Grande water in El Paso County, Texas for municipal uses?

2. Can Rio Grande water received in Dona Ana County by contract with the Elephant Butte Water District be transported by pipeline to El Paso County, Texas for municipal uses?

Parkhill, Smith & Cooper, Inc.

Engineers • Architects • Planners
810 E. Yandell, El Paso, Texas 79902 915-533-6811

3. Can ground water produced from duly licensed wells in Dona Ana County be transported by pipeline to El Paso County, Texas for municipal consumption?

Thank you for your assistance in this matter.

Sincerely,

PARKHILL, SMITH & COOPER, INC.

By _____
Daniel B. Knorr, P.E.
Project Manager

DBK/jd

STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

September 10, 1987

BATAAN MEMORIAL BUILDING
STATE CAPITOL
SANTA FE, NEW MEXICO 87503

Mr. Daniel Knorr, P.E.
Project Manager
PARKHILL, SMITH & COOPER, INC.
810 E. Yandell
El Paso, Texas 79902

Dear Mr. Knorr:

Your August 31, 1987, letter requests my opinion and thoughts on three questions. Each of those questions involves matters at issue in the ongoing administrative hearings before the State Engineer on the City of El Paso's applications to appropriate water from wells in the Mesilla and Hueco Bolsons in New Mexico. My opinions and thoughts on the issues would be premature, at best; however, I am pleased to invite your attention to Section 72-1-9, NMSA 1978 and Chapter 72, Article 12 of NMSA 1978. Your consideration of these New Mexico statutes may provide helpful guidance for consultation with your attorneys, which I recommend.

Sincerely,

S. E. Reynolds
State Engineer

SER:pt

APPENDIX C

ONSITE SYSTEMS

El Paso County Onsite System Data

ID NO.	ENTITY	GRID LOCATION EW	GRID LOCATION NS	Average Lot Size sq. ft.	1987 Residences	Soil Type	Perc. Rate in./hr. Minimum	Perc. Rate in./hr. Maximum	Depth to Grnd Wtr Min.	Depth to Grnd Wtr Max.	On-site System Suitable?
	UPPER VALLEY										
24	Adelante Estates	3	4	42,000	10	Gs	0.06	0.2	6	8.5	No
15	Aztec Acres	11	13	44,300	0	DCB DCD	2	6.3	15	50	Yes
27	Canutillo	7	4	3,000	510	PAA BPC AGB	0.63	20	6	8.5	No
16	Colonia Vista Unit 1	12	15	220,000	0	DCB DCD	2	6.3	15	50	Yes
17	Colonia Vista Unit 2	12	15	205,000	0	DCB DCD	2	6.3	15	50	Yes
18	Colonia Vista Unit 3	12	15	218,000	0	DCB DCD	2	6.3	15	50	Yes
19	Colonia Vista Unit 4	12	15	253,000	0	DCB DCD	2	6.3	15	50	Yes
20	Colonia Vista Unit 5	12	15	272,000	0	DCB DCD	2	6.3	15	50	Yes
21	Colonia Vista Unit 6	12	15	218,000	0	DCB DCD	2	6.3	15	50	Yes
22	Colonia Vista Unit 7	12	15	219,000	0	DCB DCD	2	6.3	15	50	Yes
23	Colonia Vista Unit 8	12	15	208,000	0	DCB DCD	2	6.3	15	50	Yes
1	Edmundo Kauffmann Estates	6	1	19,500	1	Ha Sa	0.06	0.63	6	8.5	No
28	Gaslight Square Water Distribution	8	3		85	DCB BPC	2	20	15	50	No
25	Greenbriar	2	3	41,800	0	Ha Hk	0.06	0.63	6	8.5	No
47	Grid 0102	1	2		2		2		6	8.5	No
58	Grid 0103	1	3		2		0.06		6	8.5	No
37	Grid 0201	2	1		5		0.06		6	8.5	No
48	Grid 0202	2	3		5		2		6	8.5	No
59	Grid 0203	2	3		9		0.06		6	8.5	No
70	Grid 0204	2	4		2		0.06		6	8.5	No
182	Grid 0214	2	14		1		0.2		6	15	No
195	Grid 0215	2	15		3		0.06		6	16	No
208	Grid 0216	2	16		1		0.2		6	15	No
38	Grid 0301	3	1		4		0.06		6	8.5	No
49	Grid 0302	3	2		1		2		6	8.5	No
60	Grid 0303	3	3		4		0.06		6	8.5	No
71	Grid 0304	3	4		13		0.06		6	8.5	No
93	Grid 0306	3	6		2		0.63		6	8.5	No
104	Grid 0307	3	7		2		0.06		6	8.5	No
170	Grid 0313	3	13		5		0.06		6	8.5	No
183	Grid 0314	3	14		2		0.06		6	15	No
196	Grid 0315	3	15		1		0.06		6	16	No
39	Grid 0401	4	1		2		0.06		6	8.5	No
50	Grid 0402	4	2		16		0.06		6	8.5	No
61	Grid 0403	4	3		8		0.06		6	8.5	No
72	Grid 0404	4	4		10		0.06		6	8.5	No
83	Grid 0405	4	5		3		0.06		6	8.5	No
94	Grid 0406	4	6		5		0.63		6	8.5	No
105	Grid 0407	4	7		8		0.06		6	8.5	No
116	Grid 0408	4	8		8		0.63		6	15	No
127	Grid 0409	4	9		3		0.06		6	8.5	No
149	Grid 0411	4	11		3		0.06		6	8.5	No
160	Grid 0412	4	12		3		0.06		6	8.5	No
184	Grid 0414	4	14		2		0.06		6	15	No
197	Grid 0415	4	15		2		0.2		6	16	No
210	Grid 0416	4	16		1		0.2		6	15	No
51	Grid 0502	5	2		13		0.06		6	8.5	No
62	Grid 0503	5	3		2		0.06		6	8.5	No
73	Grid 0504	5	4		2		0.06		6	8.5	No
84	Grid 0505	5	5		5		0.63		6	8.5	No
117	Grid 0508	5	8		9		0.63		6	15	No

El Paso County Onsite System Data

ID NO.	ENTITY	GRID LOCATION EW	GRID LOCATION NS	Average Lot Size sq. ft.	1987 Residences	Soil Type	Perc. Rate in./hr. Minimum	Perc. Rate in./hr. Maximum	Depth to Grnd Wtr Min.	Depth to Grnd Wtr Max.	On-site System Suitable?
128	Grid 0509	5	9		34		0.06		6	8.5	No
139	Grid 0510	5	10		2		0.63		6	8.5	No
150	Grid 0511	5	11		33		0.06		6	8.5	No
161	Grid 0512	5	12		33		0.06		6	8.5	No
172	Grid 0513	5	13		2		0.06		6	8.5	No
198	Grid 0515	5	15		1		0.06		6	16	No
211	Grid 0516	5	16		2		0.06		6	15	No
41	Grid 0601	6.	1		4		6.3		6	8.5	No
52	Grid 0602	6	2		2		6.3		6	8.5	No
63	Grid 0603	6	3		5		0.63		6	8.5	No
74	Grid 0604	6	4		5		0.63		6	8.5	No
85	Grid 0605	6	5		11		0.63		6	8.5	No
96	Grid 0606	6	6		12		0.63		6	8.5	No
107	Grid 0607	6	7		3		0.63		6	8.5	No
118	Grid 0608	6	8		13		0.63		6	15	No
129	Grid 0609	6	9		35		0.06		6	8.5	No
140	Grid 0610	6	10		6		0.2		6	8.5	No
151	Grid 0611	6	11		10		0.06		6	8.5	No
162	Grid 0612	6	12		10		0.06		6	8.5	No
186	Grid 0614	6	14		1		0.06		6	15	No
42	Grid 0701	7	1		2		0.2		6	8.5	No
53	Grid 0702	7	2		7		6.3		6	8.5	No
64	Grid 0703	7	3		33		6.3		6	8.5	No
75	Grid 0704	7	4		6		0.63		6	8.5	No
97	Grid 0706	7	6		43		0.63		6	8.5	No
108	Grid 0707	7	7		24		0.63		6	8.5	No
119	Grid 0708	7	8		76		0.63		6	15	No
200	Grid 0715 La Tuna	7	15				0.63		6	16	No
43	Grid 0801	8	1		72		6.3		15	50	No
76	Grid 0804	8	4		3		2		15	50	No
87	Grid 0805	8	5		23		0.63		15	50	No
98	Grid 0806	8	6		28		0.63		15	50	No
120	Grid 0808	8	8		9		2		15	50	No
131	Grid 0809	8	9		4		0.63		15	50	No
44	Grid 0901	9	1		0		2		15	50	No
88	Grid 0905	9	5		1		2		15	50	No
45	Grid 1001	10	1		0		2		15	50	No
177	Grid 1013	10	13		1		2		15	50	No
190	Grid 1014	10	14		1		2		15	50	No
46	Grid 1101	11	1		0		2		15	50	No
4	La Union Estates	6	5	43,600	20	Gc Ha	0.2	2	6	8.5	No
10	Mayfair #1	7	8	7,000	0	Paa A6b	0.63	2	15	50	No
11	Mayfair #2	7	8	5,000	0	Paa A6b	0.63	2	15	50	No
12	Mayfair #3	7	8	21,500	0	Paa A6b	0.63	2	15	50	No
13	Mayfair #4	7	8	21,000	0	Paa A6b	0.63	2	15	50	No
14	Mobile Haven Estates	10	10	5,500	63	DCB	2	6.3	15	50	No
7	Mountain Valley Unit 1	4	7	82,200	5	Sa	0.06	-	6	8.5	No
26	Mowad Water Distribution	7	2	11,200	34	Mg	<.06	-	6	8.5	No
9	Nu-way Addition	7	7	7,400		Paa A6b	0.63	2	6	8.5	No
6	Ponderosa Mobile Homes	5	6	12,500	122	Hk	0.06	0.2	6	8.5	No
2	Prado Verde #1,#2,#3	5	1	31,531	50	Tg Hk	0.06	0.2	6	8.5	No
5	Schuman Estates	5	5	20,400	3	Ha Ga Hk Sa	0.06	2	6	8.5	No

El Paso County Onsite System Data

ID NO.	ENTITY	GRID LOCATION EW	GRID LOCATION NS	Average Lot Size sq. ft.	1987 Residences	Soil Type	Perc. Rate in./hr. Minimum	Perc. Rate in./hr. Maximum	Depth to Grnd Wtr Min.	Depth to Grnd Wtr Max.	On-site System Suitable?
3	Serene Acres	6	5	37,153	5	Ha	0.02	0.63	6	8.5	No
29	Subdivision N. of Gaslight Square	8	4		19	DCB BPC	2	20	15	20	No
232	Town of Anthony	7	16		557	PAA BPC AGB	0.63	20	6	15	No
231	Town of Vinton	8	11		236	PAA AGB BPC	0.63	20	15	50	No
233	Unnamed Trailer Park	5	5		132		0.06		6	8.5	No
8	Valley Acres Unit 1	4	7	90,300	2	Ha	0.2	0.63	6	8.5	No
30	Westway	10	12	6,600	101	DCB DCD	2	6.3	15	20	No
31	Westway Unit #2	10	12	16,800		DCB DCD	2	6.3	15	20	No
32	Westway Unit #3	10	12	6,500	229	DCB DCD	2	6.3	15	20	No
33	Westway Unit #4	10	12	6,600	28	DCB DCD	2	6.3	15	20	No
34	Westway Unit #6	10	12	11,900	28	DCB DCD	2	6.3	15	20	No
35	Westway Unit #7	10	12	24,400	4	DCB DCD	2	6.3	15	20	Yes
	LOWER VALLEY										
409	Adobe	7	4	145,273	3	Ga	0.63	2	10	13	Yes
428	Alameda Estates	8	5	11,200	149	Tg Hk	0.06	0.2	10	13	No
427	Aldama Estates	9	8	37,800	37	Gs Hk An	0.06	20	8.5	10	No
407	Algodon	8	4	5,500	15	Tg	0.06	-	10	13	No
413	Aljo Estates	9	11	15,000	99	Gs Hk Tg Sc	0.06	0.2	8.5	10	No
443	Angie	6	10	14,973	13	Tg	0.06	-	8.5	10	No
713	Athena West	12	14	161,172	84	Gs Hk An Ha	0.06	20	8.5	10	No
435	Baggie Estates	11	3	6,300	67	Hk Vn	0.06	6.3	10	13	No
415	Bauman Estates	10	9	20,000	106	An Sc Ga Sa	0.06	20	8.5	10	No
416	Bauman Estates #2	10	9	20,500		Sc Hk Sa	0.06	0.2	8.5	10	No
449	Belen Plaza	10	7	21,960	31		0.06		8.5	10	No
615	Bosque Bonita	2	17	19,800	18		0.06		8.5	10	No
602	Brinkman Addition	6	13	19,500	26	Hk	0.06	0.2	8.5	10	No
425	Buford View Estates	8	5	15,000	11	An	6.3	20	10	13	No
709	Burbridge Acres	9	14	43,560	34	Gs Sa	0.06	0.2	8.5	10	No
437	Calcutta Subdivision	11	4	10,100	8	Hk Sc	0.06	0.2	10	13	No
710	Campo Bello Estates	7	15	21,000	0	Hk	0.06	0.052	8.5	10	No
606	Colonia de Las Azales #1	3	13	21,000	54	Vn An Ha	0.06	20	8.5	10	No
607	Colonia de Las Azales #2	3	13	20,000		Ha An Hk	0.06	20	8.5	10	No
611	Colonia de Las Dalias #1	3	15	13,000	31	Ge Tg Hk	0.06	0.2	8.5	10	No
612	Colonia de Las Dalias #2	3	16	21,000	0	Ha Sa Gd	0.06	0.63	8.5	10	No
705	Colonia Del Rio #1	5	17	21,770	51	Vn Ha	0.2	6.3	8.5	10	No
706	Colonia Del Rio #2	5	17	76,000		Vn Ha	0.2	6.3	8.5	10	No
707	Colonia Del Rio #3	5	17	79,500		Vn Ha Gc	0.2	0.3	8.5	10	No
616	Community of San Elizario	3	14		157	Ge Ha	0.06	0.63	8.5	10	No
702	Connington	19	20	23,086	21	Hk Tg Vn	0.06	6.3	8.5	10	No
411	Country Green Addition	11	8	9,758	180	Tg Sc Hk	0.06	0.2	8.5	10	No
436	Delipp Subdivision	11	3	7,500	195	Hk Sc	0.06	0.2	10	13	No
442	El Campestre	6	10	10,082	133	Hk Ha Gs Ga Gd S	0.06	2	8.5	10	No
421	Ellen Park	10	6	9,100	59	Sc Hk	0.06	0.2	10	13	No
715	Fabens Area (WCID #4)	9	33		1008	Hk An PAA	0.06	20	8.5	10	No
400	Frank	7	3	6,300	13	Tg	0.06	-	10	13	No
440	Friedman Estates #1	7	10	6,877	328	Gs Tg	0.06	0.2	8.5	10	No
441	Friedman Estates #2	7	10	10,750		Gs Tg An Ha Ga V	0.06	20	8.5	10	No
613	Gloria Elena	4	16	20,000	36		0.06		8.5	10	No
600	Glorieta Addition	5	12	22,880	16	Ge Hk Gc	0.06	2	8.5	10	No
601	Gonzales Subdivision	6	13	21,500	3	Ge Gs Hk	0.06	0.2	8.5	10	No
631	Grid 0313	3	13	9,500	34		0.06		8.5	10	No
638	Grid 0318	3	18	22,500	2		0.06		8.5	10	No

El Paso County Onsite System Data

ID NO.	ENTITY	GRID LOCATION EW	GRID LOCATION NS	Average Lot Size sq. ft.	1987 Residences	Soil Type	Perc. Rate in./hr. Minimum	Perc. Rate in./hr. Maximum	Depth to Grnd Wtr Min.	Depth to Grnd Wtr Max.	On-site System Suitable?
640	Grid 0319	3	19	80,000	1		0.06		8.5	10	No
508	Grid 0409	4	9	97,500	1		0.06		8.5	10	No
513	Grid 0410	4	10	18,000	2		0.06		8.5	10	No
519	Grid 0411	4	11	30,000	3		0.06		8.5	10	No
642	Grid 0415	4	15	10,000	32		0.06		8.5	10	No
634	Grid 0416	4	16	16,500	6		0.06		8.5	10	No
635	Grid 0417	4	17	10,000	2		0.06		8.5	10	No
639	Grid 0419	4	19	60,000	1		0.06		8.5	10	No
761	Grid 0420	4	20	40000	2		0.06		8.5	10	No
762	Grid 0421	4	21	35000	2		0.06		8.5	10	No
512	Grid 0510	5	10	18,000	23		0.06		8.5	10	No
518	Grid 0511	5	11	30,000	18		0.06		8.5	10	No
620	Grid 0513	5	13	15,000	10		0.06		8.5	10	No
623	Grid 0514	5	14	10,000	38		0.2		8.5	10	No
627	Grid 0516	5	16	10,000	30		0.06		8.5	10	No
628	Grid 0517	5	17	30,000	5		0.06		8.5	10	No
629	Grid 0518	5	18	45,000	1		0.06		8.5	10	No
734	Grid 0519	5	19	25,000	2		0.06		8.5	10	No
780	Grid 0523	5	23	22,500	1		0.06		8.5	10	No
1003	Grid 0532	5	32	22,500	3		0.06		8.5	10	No
1007	Grid 0533	5	33	26,000	3		0.06		8.5	10	No
1013	Grid 0534	5	34	29,400	6		0.06		8.5	10	No
1037	Grid 0538	5	38	35,000	1		0.06		8.5	10	No
1041	Grid 0539	5	39	30,000	1		0.06		8.5	10	No
1045	Grid 0540	5	40	100,000	1		0.06		8.5	10	No
1048	Grid 0541	5	41	15,000	4		0.06		8.5	10	No
455	Grid 0604	6	4	19,500	3		0.06		10	13	No
459	Grid 0605	6	5	40,000	2		0.06		10	13	Yes
463	Grid 0606	6	6	14,000	17		0.63		10	13	No
467	Grid 0607	6	7	20,000	3		0.06		8.5	10	No
471	Grid 0608	6	8	135,000	5		0.06		8.5	10	No
506	Grid 0609	6	9	60,000	4		0.06		8.5	10	No
511	Grid 0610	6	10	32,400	2		0.06		8.5	10	No
517	Grid 0611	6	11	13,000	61		0.06		8.5	10	No
619	Grid 0613	6	13	22,000	7		0.06		8.5	10	No
622	Grid 0614	6	14	60,000	1		0.2		8.5	10	No
625	Grid 0615	6	15	33,000	5		0.06		8.5	10	No
626	Grid 0616	6	16	15,000	6		0.06		8.5	10	No
724	Grid 0617	6	17	22,500	1		0.2		8.5	10	No
733	Grid 0619	6	19	22,500	4		0.06		8.5	10	No
872	Grid 0620	6	20	50,000	3		0.06		8.5	10	No
767	Grid 0621	6	21	32,400	1		0.06		8.5	10	No
773	Grid 0622	6	22	50,000	2		0.06		8.5	10	No
779	Grid 0623	6	23	7,000	1		0.06		8.5	10	No
825	Grid 0631	6	31	19,500	2		0.06		8.5	10	No
1002	Grid 0632	6	32	37,500	3		0.06		8.5	10	No
1006	Grid 0633	6	33	22,500	2		0.06		8.5	10	No
1012	Grid 0634	6	34	50,000	1		0.06		8.5	10	No
1018	Grid 0635	6	35	14,000	1		0.06		8.5	10	No
1036	Grid 0638	6	38	20,400	2		0.06		8.5	10	No
1132	Grid 0643	6	43	50,000	1		0.06		8.5	10	No
452	Grid 0703	7	3	17,000	65		0.06		10	13	No

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454	Grid 0704	7	4	6,500	69		0.06		10	13	No
458	Grid 0705	7	5	9,000	84		6.3		10	13	No
462	Grid 0706	7	6	14,400	143		0.63		10	13	No
466	Grid 0707	7	7	10,200	18		0.06		8.5	10	No
470	Grid 0708	7	8	18,000	13		0.06		8.5	10	No
505	Grid 0709	7	9	52,800	10		0.06		8.5	10	No
522	Grid 0712	7	12	10,000	5		0.06		8.5	10	No
618	Grid 0713	7	13	25,000	5		0.06		8.5	10	No
624	Grid 0715	7	15	19,500	2		0.06		8.5	10	No
721	Grid 0716	7	16	18,200	17		0.06		8.5	10	No
723	Grid 0717	7	17	37,000	5		0.2		8.5	10	No
737	Grid 0720	7	20	20,000	3		0.06		8.5	10	No
766	Grid 0721	7	21	12,800	1		0.06		8.5	10	No
902	Grid 0722	7	22	130,000	1		0.06		8.5	10	No
905	Grid 0723	7	23	28,600	7		0.06		8.5	10	No
778	Grid 0723	7	23	51,000	1		0.06		8.5	10	No
908	Grid 0724	7	24	42,500	2		0.06		8.5	10	No
788	Grid 0725	7	25	18,000	4		0.06		8.5	10	No
794	Grid 0726	7	26	20,400	6		0.06		8.5	10	No
800	Grid 0727	7	27	14,400	2		0.06		8.5	10	No
806	Grid 0728	7	28	14,400	2		0.06		8.5	10	No
824	Grid 0731	7	31	13,000	3		0.06		8.5	10	No
1001	Grid 0732	7	32	82,000	2		0.06		8.5	10	No
1005	Grid 0733	7	33	40,000	2		0.06		8.5	10	No
1011	Grid 0734	7	34	39,000	3		0.06		8.5	10	No
1017	Grid 0735	7	35	40,000	3		0.06		8.5	10	No
1023	Grid 0736	7	36	30,000	3		0.06		8.5	10	No
1029	Grid 0737	7	37	44,000	1		0.06		8.5	10	No
1035	Grid 0738	7	38	50,000	9		0.06		8.5	10	No
1039	Grid 0739	7	39	62,500	1		0.06		8.5	10	No
1043	Grid 0740	7	40	20,000	3		0.06		8.5	10	No
1127	Grid 0742	7	42	37,500	1		0.06		8.5	10	No
1131	Grid 0743	7	43	40,000	4		0.06		8.5	10	No
1141	Grid 0745	7	45	60,000	1		0.06		8.5	10	No
451	Grid 0803	8	3	12,000	41		2		10	13	No
453	Grid 0804	8	4	8,400	60		0.06		10	13	No
457	Grid 0805	8	5	8,000	58		0.06		10	13	No
461	Grid 0806	8	6	16,000	4		0.63		10	13	No
465	Grid 0807	8	7	10,400	9		0.06		8.5	10	No
469	Grid 0808	8	8	20,000	8		0.06		8.5	10	No
472	Grid 0809	8	9	37,500	1		0.06		8.5	10	No
509	Grid 0810	8	10	19,500	33		0.06		8.5	10	No
515	Grid 0811	8	11	18,000	12		0.06		8.5	10	No
617	Grid 0813	8	13	30,000	6		0.06		8.5	10	No
621	Grid 0814	8	14	15,000	5		0.2		8.5	10	No
718	Grid 0815	8	15	43,000	6		0.06		8.5	10	No
720	Grid 0816	8	16	25,000	11		0.06		8.5	10	No
722	Grid 0817	8	17	12,000	4		0.2		8.5	10	No
726	Grid 0818	8	18	15,000	2		0.06		8.5	10	No
731	Grid 0819	8	19	18,000	4		0.06		8.5	10	No
736	Grid 0820	8	20	20,000	5		0.06		8.5	10	No
765	Grid 0821	8	21	35,000	3		0.06		8.5	10	No

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771	Grid 0822	8	22	20,000	2		0.06		8.5	10	No
901	Grid 0822	8	22	27,000	2		0.06		8.5	10	No
904	Grid 0823	8	23	14,400	31		0.06		8.5	10	No
907	Grid 0824	8	24	42,500	2		0.06		8.5	10	No
910	Grid 0825	8	25	32,000	2		0.06		8.5	10	No
913	Grid 0826	8	26	24,000	2		0.06		8.5	10	No
793	Grid 0826	8	26	44,000	1		0.06		8.5	10	No
915	Grid 0827	8	27	20,000	3		0.06		8.5	10	No
917	Grid 0828	8	28	32,000	1		0.06		8.5	10	No
805	Grid 0828	8	28	18,000	4		0.06		8.5	10	No
811	Grid 0829	8	29	22,500	1		0.06		8.5	10	No
817	Grid 0830	8	30	22,500	3		0.06		8.5	10	No
919	Grid 0830	8	30	30,000	1		0.06		8.5	10	No
823	Grid 0831	8	31	17,000	2		0.06		8.5	10	No
828	Grid 0832	8	32	16,500	11		0.06		8.5	10	No
1004	Grid 0833	8	33	22,500	3		0.06		8.5	10	No
1010	Grid 0834	8	34	34,000	3		0.06		8.5	10	No
1028	Grid 0837	8	37	16,900	1		0.06		8.5	10	No
1034	Grid 0838	8	38	20,400	7		0.06		8.5	10	No
1130	Grid 0843	8	43	25,000	3		0.06		8.5	10	No
1145	Grid 0846	8	46	20,000	2		0.06		8.5	10	No
450	Grid 0903	9	3	5,000	72		2		10	13	No
456	Grid 0905	9	5	12,000	10		0.06		10	13	No
460	Grid 0906	9	6	5,000	29		0.63		10	13	No
464	Grid 0907	9	7	15,600	39		0.06		8.5	10	No
468	Grid 0908	9	8	40,000	2		0.06		8.5	10	No
473	Grid 0910	9	10	5,000	17		0.06		8.5	10	No
520	Grid 0912	9	12	36,000	2		0.06		8.5	10	No
874	Grid 0914	9	14	22,500	2		0.06		8.5	10	No
725	Grid 0918	9	18	30,000	3		0.06		8.5	10	No
730	Grid 0919	9	19	20,000	2		0.06		8.5	10	No
763	Grid 0921	9	21	45,000	1		0.06		8.5	10	No
769	Grid 0922	9	22	27,000	3		0.06		8.5	10	No
900	Grid 0922	9	22	13,000	2		0.06		8.5	10	No
903	Grid 0923	9	23	14,300	4		0.06		8.5	10	No
906	Grid 0924	9	24	27,000	6		0.06		8.5	10	No
909	Grid 0925	9	25	24,000	3		0.06		8.5	10	No
912	Grid 0926	9	26	15,000	12		0.06		8.5	10	No
914	Grid 0927	9	27	34,500	2		0.06		8.5	10	No
916	Grid 0928	9	28	40,000	3		0.06		8.5	10	No
918	Grid 0929	9	29	22,500	1		0.06		8.5	10	No
821	Grid 0931	9	31	35,000	1		0.06		8.5	10	No
1008	Grid 0934	9	34	15,000	14		0.06		8.5	10	No
1014	Grid 0935	9	35	16,000	6		0.06		8.5	10	No
1020	Grid 0936	9	36	12,000	3		0.06		8.5	10	No
1026	Grid 0937	9	37	16,000	4		0.06		8.5	10	No
1033	Grid 0938	9	38	44,000	1		0.06		8.5	10	No
1117	Grid 0939	9	39	17,000	6		0.06		8.5	10	No
1121	Grid 0941	9	41	20,000	2		0.06		8.5	10	No
1124	Grid 0942	9	42	20,000	2		0.06		8.5	10	No
1128	Grid 0943	9	43	18,000	13		0.06		8.5	10	No
1133	Grid 0944	9	44	36,000	4		0.06		8.5	10	No

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1138	Grid 0945	9	45	72,000	3		0.06		8.5	10	No
1143	Grid 0946	9	46	22,500	5		0.06		8.5	10	No
474	Grid 1002	10	2	140,000	2		0.06		10	13	Yes
478	Grid 1003	10	3	20,000	4		0.06		10	13	No
482	Grid 1004	10	4	23,000	5		0.06		10	13	Yes
486	Grid 1005	10	5	30,000	4		0.06		10	13	Yes
490	Grid 1006	10	6	10,000	2		0.06		10	13	No
494	Grid 1007	10.	7	10,800	15		0.06		8.5	10	No
497	Grid 1008	10	8	30,000	3		0.06		8.5	10	No
501	Grid 1009	10	9	20,400	4		0.06		8.5	10	No
504	Grid 1010	10	10	45,000	4		0.06		8.5	10	No
524	Grid 1011	10	11	30000	15		0.06		8.5	10	No
525	Grid 1012	10	12	105000	1		0.06		6.6	9	No
738	Grid 1014	10	14	45000	3		0.06		8.5	10	No
740	Grid 1015	10	15	42000	2		0.06		8.5	10	No
743	Grid 1016	10	16	55000	1		0.06		8.5	10	No
729	Grid 1019	10	19	13,000	7		0.06		8.5	10	No
752	Grid 1019	10	19	30000	11		0.06		8.5	10	No
735	Grid 1020	10	20	30,000	3		0.06		8.5	10	No
755	Grid 1020	10	20	40000	1		0.06		8.5	10	No
770	Grid 1022	10	22	125,000	2		0.06		8.5	10	No
776	Grid 1023	10	23	28,000	9		0.06		8.5	10	No
782	Grid 1024	10	24	26,000	3		0.06		8.5	10	No
786	Grid 1025	10	25	36,000	3		0.06		8.5	10	No
792	Grid 1026	10	26	24,000	2		0.06		8.5	10	No
810	Grid 1029	10	29	14,000	8		0.06		8.5	10	No
816	Grid 1030	10	30	22,000	8		0.06		8.5	10	No
822	Grid 1031	10	31	9,800	4		0.06		8.5	10	No
827	Grid 1032	10	32	25,000	6		0.06		8.5	10	No
1118	Grid 1039	10	39	8,000	1		0.06		8.5	10	No
1120	Grid 1040	10	40	40,000	3		0.06		8.5	10	No
1122	Grid 1041	10	41	15,000	7		0.06		8.5	10	No
1125	Grid 1042	10	42	20,400	1		0.06		8.5	10	No
1129	Grid 1043	10	43	21,600	9		0.06		8.5	10	No
1139	Grid 1045	10	45	24,000	2		0.06		8.5	10	No
475	Grid 1102	11	2	30,000			0.06		10	13	Yes
479	Grid 1103	11	3	14,000	12		0.06		10	13	No
483	Grid 1104	11	4	15,000	10		0.06		10	13	No
487	Grid 1105	11	5	20,000	1		0.06		10	13	No
491	Grid 1106	11	6	24,000	17		0.06		10	13	Yes
307	Grid 1107	11	7	10,000	7		0.06				No
306	Grid 1107	11	7	21,000	46		0.06				No
498	Grid 1108	11	8	17,000	9		0.06		8.5	10	No
502	Grid 1109	11	9	19,500	9		0.06		8.5	10	No
532	Grid 1110	11	10	15,000	5		0.06		8.5	10	No
530	Grid 1111	11	11	15,000	8		0.06		8.5	10	No
526	Grid 1112	11	12	40000	15		0.06		8.5	10	No
528	Grid 1113	11	13	50000	8		0.06		8.5	10	No
739	Grid 1114	11	14	40000	2		0.06		8.5	10	No
741	Grid 1115	11	15	32000	2		0.06		8.5	10	No
744	Grid 1116	11	16	30000	2		0.06		8.5	10	No
747	Grid 1117	11	17	35000	2		0.06		8.5	10	No

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753	Grid 1119	11	19	30000	7		0.06		8.5	10	No
756	Grid 1120	11	20	40000	8		0.06		8.5	10	No
830	Grid 1121	11	21	14,000	15		0.06		8.5	10	No
759	Grid 1121	11	21	30000	6		0.06		8.5	10	No
833	Grid 1122	11	22	36,000	10		0.06		8.5	10	No
836	Grid 1123	11	23	30,000	27		0.06		8.5	10	No
839	Grid 1124	11	24	22,500	6		0.06		8.5	10	No
842	Grid 1125	11	25	18,000	1		0.06		8.5	10	No
845	Grid 1126	11	26	13,000	1		0.06		8.5	10	No
851	Grid 1128	11	28	12,500	3		0.06		8.5	10	No
854	Grid 1129	11	29	22,000	3		0.06		8.5	10	No
480	Grid 1203	12	3	45,000	2		0.2		10	13	Yes
488	Grid 1205	12	5	10,000	1		0.2		10	13	No
492	Grid 1206	12	6	21,000	31		0.06		10	13	No
304	Grid 1207	12	7	12,000	70		0.06				No
308	Grid 1208	12	8	15,600	19		0.06				No
499	Grid 1208	12	8	15,000	1		0.06		8.5	10	No
503	Grid 1209	12	9	75,000	1		0.06		8.5	10	No
531	Grid 1211	12	11	30,000	9		0.06		8.5	10	No
1180	Grid 1212	12	12	30,000	28		0.06		8.5	10	No
529	Grid 1213	12	13	30000	7		0.06		8.5	10	No
754	Grid 1219	12	19	28000	3		0.06		8.5	10	No
757	Grid 1220	12	20	32000	5		0.06		8.5	10	No
760	Grid 1221	12	21	42000	3		0.06		8.5	10	No
831	Grid 1221	12	21	22,500	3		0.06		8.5	10	No
864	Grid 1232	12	32	12,000	1		0.06		8.5	10	No
481	Grid 1303	13	3	20,000	2		0.06		10	13	No
303	Grid 1306	13	6	15,000	4		0.06				No
493	Grid 1306	13	6	15,000	4		0.06		10	13	No
305	Grid 1307	13	7	25,500	48		0.06				No
309	Grid 1308	13	8	3,500	22		0.06				No
865	Grid 1332	13	32	15,000	1		0.06		8.5	10	No
868	Grid 1333	13	33	10,000	2		0.06		8.5	10	No
1175	Grid 1335	13	35	0			0.06		8.5	10	No
871	Grid 1920	19	20	9,600	4		0.06		8.5	10	No
438	Grijalva Garden	12	4	10,125	136	Ha An	0.2	20	10	13	No
300	Gurdev Subdivision	11	5	6,000	128	Hk An	0.06	20	10	13	No
703	Hacienda Real	11	19	55,981	9	Ha Hk	0.06	0.63	8.5	10	No
301	Hillcrest Manor	11	7	10,000	20	An Hk	0.06	20	8.5	10	No
424	La Fuente	10	5	21,000	15	Ha Gs	0.06	0.63	10	13	No
430	La Jolle	8	6	20,100	47	Gc	0.63	2	10	13	No
406	La Junta	8	4	9,300	46	Gs	0.06	0.2	10	13	No
605	Las Aves	6	15	15,900	28	Hk Ge Sa	0.06	0.2	8.5	10	No
431	Las Milpas #1	8	7	9,060	37	An	6.3	20	8.5	10	No
432	Las Milpas #2	8	7	19,700		Gs	0.06	0.2	8.5	10	No
614	Las Pampas #1,#2,#3,#4	3	17	21,400	56		0.06		8.5	10	No
444	Lewis	6	10	20,000	9	Tg	0.06	-	8.5	10	No
708	Lordsville	8	14	43,560	18	Hk Gs Sa	0.06	0.2	8.5	10	No
420	Lynn Park	10	7	10,700	127	Gs Hk	0.06	0.2	8.5	10	No
610	Madrilena	4	15	20,600	11	Sa Tg	0.06	-	8.5	10	No
410	Mary Lou Park	11	7	9,600	86	Tg Hk	0.06	0.2	8.5	10	No
412	Mc Adoo Acres	11	9	21,000	2	Hk Gs	0.06	0.2	8.5	10	No

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439	Melton Place	8	12	20,473	2	Gs Ha	0.06	0.63	8.5	10	No
423	Monterosales	9	5	11,000	61	Gs Gc	0.06	2	10	13	No
401	Moon #1	9	4	11,700	205	Hk Tg Ha Ga	0.06	2	10	13	No
402	Moon #2	9	4	10,000		Hk Gs	0.06	0.2	10	13	No
403	Moon #3	9	4	6,900		Gc An	0.63	20	10	13	No
404	Moon #4	9	4	9,200		Vn Br	2	20	10	13	No
700	Morning Glory Manor	19	20	21,000	7	Ge Gs Gc	0.06	2	8.5	10	No
434	North Loop Acres	11	3	13,900	36	Vn Br	2	20	10	13	No
608	Plaza Bernal	5	15	11,000	46	Ge	0.06	0.2	8.5	10	No
418	Poole Subdivision	9	7	21,780	66	An Tg Vn	0.06	20	8.5	10	No
643	Quadrilla (Improvement Corp.)	7	26	13,200	19	Hk Sa Tg	0.06	0.2	8.5	10	No
448	Quail Mesa	12	14	67,015	7	Ha Gc	0.2	2	8.5	10	No
712	Rancho Miraval Estates	11	13	22,500	32	Gs Hk	0.06	0.2	8.5	10	No
447	Rio Rancho Estates	11	5	20,000	20	Br Vn	2	6.3	10	13	No
426	Rio Vista Addition	8	5	8,700	66	Hk Sa	0.06	0.2	10	13	No
414	Roseville Subdivision	10	10	21,000	74	Hk An	0.06	20	8.5	10	No
446	San Augustin Subdivision	11	5	21,000	21	An Gs Hk	0.06	20	10	13	No
711	San Paulo	8	14	39,204	27	Hk Gs	0.06	0.2	8.5	10	No
408	Socorro Village	7	4	9,000	24	Gs	0.06	0.2	10	13	No
405	Spanish Trail	8	4	9,500	81	Tg Gs	0.06	0.2	10	13	No
417	Sunhaven Farms	10	9	21,000	3	Gs	0.06	0.2	8.5	10	No
302	Sunshine	9	3	7,400	12	Sa Ha	0.06	0.63	10	13	No
701	Sunshine Acres	19	20	21,780	7	Ge	0.06	0.2	8.5	10	No
714	Town of Clint	9	17		287	Hk Ge Gs	0.06	0.2	8.5	10	No
1147	Town of Tornillo (Est. boundary)	11	43		115		0.06		8.5	10	No
445	Valle Real	6	11	20,205	23	Hk Ge	0.06	0.2	8.5	10	No
603	Valle Villa #1	5	13	11,050	65	Ge Hk Gs	0.06	0.2	8.5	10	No
604	Valle Villa #2	5	13	20,000		Ge An	0.06	20	8.5	10	No
429	Villa Espana	8	5	13,900	40	Gc Hk An	0.06	20	10	13	No
433	Vinedo Acres	7	8	35,900	39	Gs Ga Tg	0.06	2	8.5	10	No
609	Wilbourn	5	15	9,400	1	Gs	0.06	0.2	8.5	10	No
704	Wildhorse Valley	11	18	20,000	17	Ha Hk	0.06	0.63	8.5	10	No
419	Wilton Acres	10	7	13,000	22	Gs	0.06	0.2	8.5	10	No
422	Wiseman Estates	9	6	20,000	32	Gs Hk	0.06	0.2	10	13	No
	HUECO										
1205	Acacia Grove					Hw	<0.06				No
1206	Acacia Grove #2					Hw	<0.06				No
1214	Butterfield City	13	9		13	Hw	<0.06		50		No
1208	Butterfield Trail	5	10		144	Hw	<0.06		50		No
1207	East Wind Estates	8	10		42	Hw	<0.06		50		No
1204	Flamingo Addition	7	10	44,090	16	Hw	<0.06		50		No
1200	Haciendas del Norte #1	7	6	252,000	34	Hw	<0.06		50		No
1201	Haciendas del Norte #2	7	7	124,000	25	Hw	<0.06		50		No
1202	Haciendas del Norte #3	7	8	89,120	3	Hw	<0.06		50		No
1203	Homestead Meadows Unit 2,3,4,5,6	8	8	101,500	108	Hw	<0.06		50		No
1213	Hueco Tanks	16	3		0	Hw	<0.06		50		No
1210	Las Casitas Unit 2	8	10		12	Hw	<0.06		50		No
1220	Section 0709	7	9		1	Hw	<0.06		50		No
1222	Section 0710	7	10		22	Hw	<0.06		50		No
1221	Section 0710 (Trailer Court)	7	10		16	Hw	<0.06		50		No
1224	Section 0810	8	10		1	Hw	<0.06		50		No
1226	Section 0907 (Subdivision?)	9	7		24	Hw	<0.06		50		No

El Paso County Onsite System Data

ID NO.	ENTITY	GRID LOCATION EW	GRID LOCATION NS	Average Lot Size sq. ft.	1987 Residences	Soil Type	Perc. Rate in./hr. Minimum	Perc. Rate in./hr. Maximum	Depth to Grnd Wtr Min.	Depth to Grnd Wtr Max.	On-site System Suitable?
1264	Section 0909	9	9		24	Hw	<0.06		50		No
1215	Section 0909 (Subdivision?)	9	9		53	Hw	<0.06		50		No
1266	Section 0910	9	10		0	Hw	<0.06		50		No
1265	Section 0910 (Subdivision?)	9	10		15	Hw	<0.06		50		No
1229	Section 1006	10	6		15	Hw	<0.06		50		No
1231	Section 1007	10	7		2	Hw	<0.06		50		No
1230	Section 1007 (Subdivision?)	10	7		129	Hw	<0.06		50		No
1232	Section 1008	10	8		7	Hw	<0.06		50		No
1234	Section 1009	10	9		2	Hw	<0.06		50		No
1233	Section 1009 (Subdivision?)	10	9		35	Hw	<0.06		50		No
1235	Section 1010	10	10		23	Hw	<0.06		50		No
1237	Section 1107	11	7		3	Hw	<0.06		50		No
1241	Section 1304	13	4		4	Hw	<0.06		50		No
1246	Section 1403	14	3		3	Hw	<0.06		50		No
1247	Section 1404	14	4		10	Hw	<0.06		50		No
1250	Section 1407	14	7		8	Hw	<0.06		50		No
1251	Section 1408	14	8		1	Hw	<0.06		50		No
1252	Section 1409	14	9		1	Hw	<0.06		50		No
1216	Section 1503	15	3		4	Hw	<0.06		50		No
1253	Section 1504	15	4		7	Hw	<0.06		50		No
1258	Section 1509	15	9		2	Hw	<0.06		50		No
1261	Section 1606	16	6		1	Hw	<0.06		50		No
1209	Vista del Este	7	11	15,100	34	Hw	<0.06		50		No
1212	Wilco Unit 1	14	2		2	Hw	<0.06		50		No
1211	Wilco Unit 5	13	3		1	Hw	<0.06		50		No
	EAST EL PASO										
1329	Agua Dulce	19	21		110				50		No
1320	Cowlitz Estates	8	11	18,121	8	Hw	<0.06		50		No
1315	Deerfield Park	9	11	16,552	84	Hw	<0.06		50		No
1316	Desert Glen	8	11	10,019	16	Hw	<0.06		50		No
1364	Desert Mesa Estates	7	19		57				50		No
1363	Golf View Estates	6	19		229						No
1309	Hillcrest Estates	6	11		28	Hw	<0.06		50		No
1312	Homestead Homes #1,#2,#3	8	11	15,246	73	Hw	<0.06		50		No
1300	Homestead Meadows	8	6	219,700	32	Hw	<0.06		50		No
1301	Homestead Meadows South Unit 1	8	11		11	Hw	<0.06		50		No
1302	Homestead Meadows South Unit 2	8	11		1	Hw	<0.06		50		No
1303	Homestead Meadows South Unit 3	8	10	21,800	51	Hw	<0.06		50		No
1304	Homestead Meadows South Unit 4	8	10	15,000	3	Hw	<0.06		50		No
1305	Homestead Meadows South Unit 5	9	11		147	Hw	<0.06		50		No
1306	Homestead Meadows South Unit 6	8	10	17,400	1	Hw	<0.06		50		No
1361	Horizon Country Club Estates	6	19		229						No
1362	Horizon Heights	6	19		229						No
1360	Horizon Hills	5	20								No
1365	Horizon Manor	7	20		114				50		No
1317	Jason Estates	8	11	31,944	0	Hw	<0.06		50		No
1318	Knott Acres	8	11	31,944	2	Hw	<0.06		50		No
1331	Lanes Dairy	10	23		6				50		No
1313	Las Casitas #1,#3	8	11		43	Hw	<0.06		50		No
1314	Las Quintas #1,#2	8	11	23,090	54	Hw	<0.06		50		No
1319	Meadows South					Hw	<0.06		50		No
1324	Mesa View Estates	8	11	15,246	9	Hw	<0.06		50		No

El Paso County Onsite System Data

ID NO.	ENTITY	GRID LOCATION EW	GRID LOCATION NS	Average Lot Size sq. ft.	1987 Resid-ences	Soil Type	Perc. Rate in./hr. Minimum	Perc. Rate in./hr. Maximum	Depth to Grnd Wtr Min.	Depth to Grnd Wtr Max.	On-site System Suitable?
1323	Mesquite Meadows	8	11	15,246	4	Hw	<0.06		50		No
1322	Satiacum Estates	8	11	18,121	4	Hw	<0.06		50		No
1346	Section 0311	3	11		1				50		No
1349	Section 0411	4	11		30				50		No
1348	Section 0411 (Trailer Park)	4	11		60				50		No
1334	Section 0421	4	21		53				10	50	No
1352	Section 0511	5	11		7				50		No
1338	Section 0923	9	23		14				50		No
1339	Section 0924	9	24		1				50		No
1340	Section 0925	9	25		12				50		No
1358	Section 1110	11	10		2				50		No
1333	Section #293 (0321)	3	21		27				10	13	No
1311	Southwest Estates	8	10	40,965	17	Hw	<0.06		50		No
1325	Sparks Addition #1	4	20	56,700	303	BPC	6.3	20	10	20	Yes
1326	Sparks Addition #2	4	20	14,560		BPC	6.3	20	10	20	No
1327	Sparks Addition #3	4	20	9,900		BPC	6.3	20	10	20	No
1328	Sparks Addition #4	4	20	8,400		BPC	6.3	20	10	20	No
1310	Tierra de Oro	4	13		0	Hw	<0.06		50		No
1321	Tillicum Estates	8	11	15,246	5	Hw	<0.06		50		No
1307	Turf Estates	3	11		90	Hw	<0.06		50		No
1308	Turf Estates (Unplatted)	3	11		52				50		No

Onsite System Suitability Criteria: Lot size > 22,000 sq. ft. Percolation rate > 0.06 min/in Depth to Groundwater > 10 ft.

APPENDIX D

POPULATION DATA

El Paso County Existing Population

Gp No.	ID NO.	ENTITY	GRID LOCATION EW	GRID LOCATION NS	Total Area Acres	Total Lots	Average Lot Size sq. ft.	1987 Residences	Population per Residence	Estimated 1987 Population
		UPPER VALLEY								
1	24	Adelante Estates	3	4	26.798	24	42,000	10	4.7	47
1	15	Aztec Acres	11	13	210.07	164	44,300	0	4.7	0
1	27	Canutillo	7	4	67.287	815	3,000	510	4.7	2397
1	16	Colonia Vista Unit 1	12	15	64.693	10	220,000	0	4.7	0
1	17	Colonia Vista Unit 2	12	15	82.21	14	205,000	0	4.7	0
1	18	Colonia Vista Unit 3	12	15	61.75	11	218,000	0	4.7	0
1	19	Colonia Vista Unit 4	12	15	65.893	10	253,000	0	4.7	0
1	20	Colonia Vista Unit 5	12	15	42.211	6	272,000	0	4.7	0
1	21	Colonia Vista Unit 6	12	15	47.952	8	218,000	0	4.7	0
1	22	Colonia Vista Unit 7	12	15	48.474	8	219,000	0	4.7	0
1	23	Colonia Vista Unit 8	12	15	49.56	9	208,000	0	4.7	0
1	1	Edmundo Kauffmann Estates	6	1	13.285	25	19,500	1	4.7	5
1	28	Gaslight Square Water Distribution	8	3	29.75	208		85	4.7	400
1	25	Greenbriar	2	3	10.343	10	41,800	0	4.7	0
1	47	Grid 0102	1	2	50.1			2	4.7	9
1	5B	Grid 0103	1	3	12.98			2	4.7	9
1	37	Grid 0201	2	1	27.27			5	4.7	24
1	4B	Grid 0202	2	3	143.48			5	4.7	24
1	59	Grid 0203	2	3	128.22			9	4.7	42
1	70	Grid 0204	2	4	14.4			2	4.7	9
1	182	Grid 0214	2	14	84.93			1	4.7	5
1	195	Grid 0215	2	15	62.72			3	4.7	14
1	208	Grid 0216	2	16	0.55			1	4.7	5
1	3B	Grid 0301	3	1	124.16			4	4.7	19
1	49	Grid 0302	3	2	143.48			1	4.7	5
1	60	Grid 0303	3	3	135.69			4	4.7	19
1	71	Grid 0304	3	4	70.35			13	4.7	61
1	93	Grid 0306	3	6	19.28			2	4.7	9
1	104	Grid 0307	3	7	7.6			2	4.7	9
1	170	Grid 0313	3	13	54.01			5	4.7	24
1	183	Grid 0314	3	14	143.48			2	4.7	9
1	196	Grid 0315	3	15	143.48			1	4.7	5
1	39	Grid 0401	4	1	143.48			2	4.7	9
1	50	Grid 0402	4	2	143.48			16	4.7	75
1	61	Grid 0403	4	3	143.48			8	4.7	38
1	72	Grid 0404	4	4	140.22			10	4.7	47
1	83	Grid 0405	4	5	34.93			3	4.7	14
1	94	Grid 0406	4	6	49.32			5	4.7	24
1	105	Grid 0407	4	7	117.54			8	4.7	38
1	116	Grid 0408	4	8	73.81			8	4.7	38
1	127	Grid 0409	4	9	63.14			3	4.7	14
1	149	Grid 0411	4	11	44.35			3	4.7	14
1	160	Grid 0412	4	12	44.35			3	4.7	14
1	184	Grid 0414	4	14	143.48			2	4.7	9
1	197	Grid 0415	4	15	143.48			2	4.7	9
1	210	Grid 0416	4	16	108.58			1	4.7	5
1	51	Grid 0502	5	2	121.01			13	4.7	61
1	62	Grid 0503	5	3	143.48			2	4.7	9
1	73	Grid 0504	5	4	143.48			2	4.7	9
1	84	Grid 0505	5	5	73.12			5	4.7	24
1	117	Grid 0508	5	8	143.48			9	4.7	42

El Paso County Existing Population

Gp No.	ID NO.	ENTITY	GRID LOCATION EW	GRID LOCATION NS	Total Area Acres	Total Lots	Average Lot Size sq. ft.	1987 Residences	Population per Residence	Estimated 1987 Population
1	128	Grid 0509	5	9	142.71			34	4.7	160
1	139	Grid 0510	5	10	82.59			2	4.7	9
1	150	Grid 0511	5	11	143.48			33	4.7	155
1	161	Grid 0512	5	12	143.48			33	4.7	155
1	172	Grid 0513	5	13	143.48			2	4.7	9
1	198	Grid 0515	5	15	143.48			1	4.7	5
1	211	Grid 0516	5	16	143.48			2	4.7	9
1	41	Grid 0601	6	1	133.49			4	4.7	19
1	52	Grid 0602	6	2	143.48			2	4.7	9
1	63	Grid 0603	6	3	143.48			5	4.7	24
1	74	Grid 0604	6	4	143.48			5	4.7	24
1	85	Grid 0605	6	5	97.08			11	4.7	52
1	96	Grid 0606	6	6	143.48			12	4.7	56
1	107	Grid 0607	6	7	143.48			3	4.7	14
1	118	Grid 0608	6	8	143.48			13	4.7	61
1	129	Grid 0609	6	9	143.48			35	4.7	165
1	140	Grid 0610	6	10	143.48			6	4.7	28
1	151	Grid 0611	6	11	143.48			10	4.7	47
1	162	Grid 0612	6	12	143.48			10	4.7	47
1	186	Grid 0614	6	14	105.72			1	4.7	5
1	42	Grid 0701	7	1	113.39			2	4.7	9
1	53	Grid 0702	7	2	128.48			7	4.7	33
1	64	Grid 0703	7	3	112.41			33	4.7	155
1	75	Grid 0704	7	4	42.15			6	4.7	28
1	97	Grid 0706	7	6	143.48			43	4.7	202
1	108	Grid 0707	7	7	143.48			24	4.7	113
1	119	Grid 0708	7	8	143.48			76	4.7	357
1	200	Grid 0715 La Tuna	7	15						1500
1	43	Grid 0801	8	1	56.07			72	4.7	338
1	76	Grid 0804	8	4	98.9			3	4.7	14
1	87	Grid 0805	8	5	143.48			23	4.7	108
1	98	Grid 0806	8	6	143.48			28	4.7	132
1	120	Grid 0808	8	8	143.48			9	4.7	42
1	131	Grid 0809	8	9	143.48			4	4.7	19
1	44	Grid 0901	9	1	0.06			0	4.7	0
1	88	Grid 0905	9	5	25.25			1	4.7	5
1	45	Grid 1001	10	1	0			0	4.7	0
1	177	Grid 1013	10	13	143.48			1	4.7	5
1	190	Grid 1014	10	14	143.48			1	4.7	5
1	46	Grid 1101	11	1	0			0	4.7	0
1	4	La Union Estates	6	5	18.934	15	43,600	20	4.7	94
1	10	Mayfair #1	7	8	9.34	44	7,000	0	4.7	0
1	11	Mayfair #2	7	8	24.82	22	5,000	0	4.7	0
1	12	Mayfair #3	7	8	4.076	6	21,500	0	4.7	0
1	13	Mayfair #4	7	8	11.3323	16	21,000	0	4.7	0
1	14	Mobile Haven Estates	10	10	31.06	66	5,500	63	4.7	296
1	7	Mountain Valley Unit 1	4	7	10.74	5	82,200	5	4.7	24
1	26	Mowad Water Distribution	7	2	15.339	39	11,200	34	4.7	160
1	9	Nu-way Addition	7	7	19.01	95	7,400		4.7	0
1	6	Ponderosa Mobile Homes	5	6	53.475	141	12,500	122	4.7	573
1	2	Prado Verde #1.#2,#3	5	1	90.2697	106	31,531	50	4.7	235
1	5	Schuman Estates	5	5	34.223	52	20,400	3	4.7	14

Bp No.	ID NO.	ENTITY	GRID LOCATION EW	GRID LOCATION NS	Total Area Acres	Total Lots	Average Lot Size sq. ft.	1987 Residences	Population per Residence	Estimated 1987 Population
1	3	Serene Acres	6	5	7.925	8	37,153	5	4.7	24
1	29	Subdivision N. of Gaslight Square	8	4	11.57	49		19	4.7	89
1	232	Town of Anthony	7	16	3943			557	4.7	2618
1	231	Town of Vinton	8	11	1579			236	4.7	1109
1	233	Unnamed Trailer Park	5	5	47.4			132	4.7	620
1	8	Valley Acres Unit 1	4	7	5.15	2	90,300	2	4.7	9
1	30	Westway	10	12	77.39	348	6,600	101	4.7	475
1	31	Westway Unit #2	10	12	37.22	102	16,800		4.7	0
1	32	Westway Unit #3	10	12	84.68	394	6,500	229	4.7	1076
1	33	Westway Unit #4	10	12	51.308	202	6,600	28	4.7	132
1	34	Westway Unit #6	10	12	42.2642	103	11,900	28	4.7	132
1	35	Westway Unit #7	10	12	2.756	4	24,400	4	4.7	19
		Upper Valley Subtotal						2970		15,459
		LOWER VALLEY								
3	409	Adobe	7	4	6.67	2	145,273	3	5.6	17
3	428	Alameda Estates	8	5	63.519	173	11,200	149	5.6	834
3	427	Aldama Estates	9	8	44.256	46	37,800	37	5.6	207
3	407	Algodon	8	4	4.27	21	5,500	15	5.6	84
3	413	Aljo Estates	9	11	50.708	115	15,000	99	5.6	554
3	443	Angie	6	10	7.141	14	14,973	13	5.6	73
5	713	Athena West	12	14	296.49	97	161,172	84	5.6	470
3	435	Baggie Estates	11	3	28.5006	118	6,300	67	5.6	375
3	415	Bauman Estates	10	9	33.619	56	20,000	106	5.6	594
3	416	Bauman Estates #2	10	9	92.052	122	20,500		5.6	0
3	449	Belen Plaza	10	7	37.5539	56	21,960	31	5.6	174
4	615	Bosque Bonita	2	17	71.69	125	19,800	18	5.6	101
4	602	Brinkman Addition	6	13	22.4244	39	19,500	26	5.6	146
3	425	Buford View Estates	8	5	4.9087	11	15,000	11	5.6	62
5	709	Burbridge Acres	9	14	97.174	36	43,560	34	5.6	190
3	437	Calcutta Subdivision	11	4	2.7827	8	10,100	8	5.6	45
5	710	Campo Bello Estates	7	15	29.6	42	21,000	0	5.6	0
4	606	Colonia de Las Azales #1	3	13	49.7407	87	21,000	54	5.6	302
4	607	Colonia de Las Azales #2	3	13	102.25	168	20,000		5.6	0
4	611	Colonia de Las Dalias #1	3	15	38.041	59	13,000	31	5.6	174
4	612	Colonia de Las Dalias #2	3	16	141.107	233	21,000	0	5.6	0
5	705	Colonia Del Rio #1	5	17	34.5769	60	21,770	51	5.6	286
5	706	Colonia Del Rio #2	5	17	30.716	18	76,000		5.6	0
5	707	Colonia Del Rio #3	5	17	62.939	35	79,500		5.6	0
4	616	Community of San Elizario	3	14	509	157		157	5.6	879
5	702	Connington	19	20	21.368	35	23,086	21	5.6	118
3	411	Country Green Addition	11	8	78.94	251	9,758	180	5.6	1008
3	436	Delipp Subdivision	11	3	79.6497	364	7,500	195	5.6	1092
3	442	El Campestre	6	10	72.96	232	10,082	133	5.6	745
3	421	Ellen Park	10	6	19.761	71	9,100	59	5.6	330
5	715	Fabens Area (WCID #4)	9	33	804.5			1008	5.6	5645
3	400	Frank	7	3	3.5	16	6,300	13	5.6	73
3	440	Friedman Estates #1	7	10	62.17	277	6,877	328	5.6	1837
3	441	Friedman Estates #2	7	10	96.413	297	10,750		5.6	0
4	613	Gloria Elena	4	16	21.2838	34	20,000	36	5.6	202
4	600	Glorieta Addition	5	12	19.366	31	22,880	16	5.6	90
4	601	Gonzales Subdivision	6	13	20.6836	34	21,500	3	5.6	17
4	631	Grid 0313	3	13	114	34	9,500	34	5.6	190

5,392

El Paso County Existing Population

Gp No.	ID NO.	ENTITY	GRID LOCATION EW	GRID LOCATION NS	Total Area Acres	Total Lots	Average Lot Size sq. ft.	1987 Residences	Population per Residence	Estimated 1987 Population
4	638	Grid 0318	3	18	136	2	22,500	2	5.6	11
4	640	Grid 0319	3	19	144	1	80,000	1	5.6	6
3	508	Grid 0409	4	9	144	1	97,500	1	5.6	6
3	513	Grid 0410	4	10	144	2	18,000	2	5.6	11
3	519	Grid 0411	4	11	144	3	30,000	3	5.6	17
4	642	Grid 0415	4	15	124	32	10,000	32	5.6	179
4	634	Grid 0416	4	16	37	6	16,500	6	5.6	34
4	635	Grid 0417	4	17	94	2	10,000	2	5.6	11
4	639	Grid 0419	4	19	144	1	60,000	1	5.6	6
5	761	Grid 0420	4	20	144	2	40000	2	5.6	11
5	762	Grid 0421	4	21	144	2	35000	2	5.6	11
3	512	Grid 0510	5	10	88	23	18,000	23	5.6	129
3	518	Grid 0511	5	11	144	18	30,000	18	5.6	101
4	620	Grid 0513	5	13	106	10	15,000	10	5.6	56
4	623	Grid 0514	5	14	137	38	10,000	38	5.6	213
4	627	Grid 0516	5	16	144	30	10,000	30	5.6	168
4	628	Grid 0517	5	17	99	5	30,000	5	5.6	28
4	629	Grid 0518	5	18	122	1	45,000	1	5.6	6
5	734	Grid 0519	5	19	144	2	25,000	2	5.6	11
5	780	Grid 0523	5	23	144	1	22,500	1	5.6	6
7	1003	Grid 0532	5	32	144	3	22,500	3	5.6	17
7	1007	Grid 0533	5	33	144	3	26,000	3	5.6	17
7	1013	Grid 0534	5	34	144	6	29,400	6	5.6	34
7	1037	Grid 0538	5	38	144	1	35,000	1	5.6	6
7	1041	Grid 0539	5	39	144	1	30,000	1	5.6	6
7	1045	Grid 0540	5	40	144	1	100,000	1	5.6	6
7	1048	Grid 0541	5	41	144	4	15,000	4	5.6	22
3	455	Grid 0604	6	4	144	3	19,500	3	5.6	17
3	459	Grid 0605	6	5	144	2	40,000	2	5.6	11
3	463	Grid 0606	6	6	144	17	14,000	17	5.6	95
3	467	Grid 0607	6	7	144	3	20,000	3	5.6	17
3	471	Grid 0608	6	8	133	5	135,000	5	5.6	28
3	506	Grid 0609	6	9	144	4	60,000	4	5.6	22
3	511	Grid 0610	6	10	20	2	32,400	2	5.6	11
3	517	Grid 0611	6	11	108	61	13,000	61	5.6	342
4	619	Grid 0613	6	13	71	7	22,000	7	5.6	39
4	622	Grid 0614	6	14	119	1	60,000	1	5.6	6
4	625	Grid 0615	6	15	128	5	33,000	5	5.6	28
4	626	Grid 0616	6	16	144	6	15,000	6	5.6	34
5	724	Grid 0617	6	17	119	1	22,500	1	5.6	6
5	733	Grid 0619	6	19	144	4	22,500	4	5.6	22
5	872	Grid 0620	6	20	144	3	50,000	3	5.6	17
5	767	Grid 0621	6	21	144	1	32,400	1	5.6	6
5	773	Grid 0622	6	22	144	2	50,000	2	5.6	11
5	779	Grid 0623	6	23	144	1	7,000	1	5.6	6
5	825	Grid 0631	6	31	144	2	19,500	2	5.6	11
7	1002	Grid 0632	6	32	144	3	37,500	3	5.6	17
7	1006	Grid 0633	6	33	144	2	22,500	2	5.6	11
7	1012	Grid 0634	6	34	144	1	50,000	1	5.6	6
7	1018	Grid 0635	6	35	144	1	14,000	1	5.6	6
7	1036	Grid 0638	6	38	144	2	20,400	2	5.6	11
8	1132	Grid 0643	6	43	144	1	50,000	1	5.6	6

El Paso County Existing Population

Sp No.	ID NO.	ENTITY	GRID LOCATION EW	GRID LOCATION NS	Total Area Acres	Total Lots	Average Lot Size sq. ft.	1987 Residences	Population per Residence	Estimated 1987 Population
3	452	Grid 0703	7	3	140.5	65	17,000	65	5.6	364
3	454	Grid 0704	7	4	118	69	6,500	69	5.6	386
3	458	Grid 0705	7	5	109	84	9,000	84	5.6	470
3	462	Grid 0706	7	6	143	27	14,400	143	5.6	801
3	466	Grid 0707	7	7	144	18	10,200	18	5.6	101
3	470	Grid 0708	7	8	43	13	18,000	13	5.6	73
3	505	Grid 0709	7	9	127	10	52,800	10	5.6	56
3	522	Grid 0712	7	12	72	5	10,000	5	5.6	28
4	618	Grid 0713	7	13	115	5	25,000	5	5.6	28
4	624	Grid 0715	7	15	114	2	19,500	2	5.6	11
5	721	Grid 0716	7	16	112	17	18,200	17	5.6	95
5	723	Grid 0717	7	17	144	5	37,000	5	5.6	28
5	737	Grid 0720	7	20	144	3	20,000	3	5.6	17
5	766	Grid 0721	7	21	144	1	12,800	1	5.6	6
6	902	Grid 0722	7	22	3	1	130,000	1	5.6	6
6	905	Grid 0723	7	23	50	7	28,600	7	5.6	39
5	778	Grid 0723	7	23	94	1	51,000	1	5.6	6
6	908	Grid 0724	7	24	27	2	42,500	2	5.6	11
5	788	Grid 0725	7	25	141	4	18,000	4	5.6	22
5	794	Grid 0726	7	26	120	6	20,400	6	5.6	34
5	800	Grid 0727	7	27	144	2	14,400	2	5.6	11
5	806	Grid 0728	7	28	144	2	14,400	2	5.6	11
5	824	Grid 0731	7	31	144	3	13,000	3	5.6	17
7	1001	Grid 0732	7	32	144	2	82,000	2	5.6	11
7	1005	Grid 0733	7	33	144	2	40,000	2	5.6	11
7	1011	Grid 0734	7	34	144	3	39,000	3	5.6	17
7	1017	Grid 0735	7	35	144	3	40,000	3	5.6	17
7	1023	Grid 0736	7	36	144	3	30,000	3	5.6	17
7	1029	Grid 0737	7	37	144	1	44,000	1	5.6	6
7	1035	Grid 0738	7	38	144	9	50,000	9	5.6	50
7	1039	Grid 0739	7	39	144	1	62,500	1	5.6	6
7	1043	Grid 0740	7	40	144	3	20,000	3	5.6	17
8	1127	Grid 0742	7	42	144	1	37,500	1	5.6	6
8	1131	Grid 0743	7	43	144	4	40,000	4	5.6	22
8	1141	Grid 0745	7	45	144	1	60,000	1	5.6	6
3	451	Grid 0803	8	3	144	41	12,000	41	5.6	230
3	453	Grid 0804	8	4	77	60	8,400	60	5.6	336
3	457	Grid 0805	8	5	98	58	8,000	58	5.6	325
3	461	Grid 0806	8	6	44	4	16,000	4	5.6	22
3	465	Grid 0807	8	7	130	9	10,400	9	5.6	50
3	469	Grid 0808	8	8	144	8	20,000	8	5.6	45
3	472	Grid 0809	8	9	144	1	37,500	1	5.6	6
3	509	Grid 0810	8	10	144	33	19,500	33	5.6	185
3	515	Grid 0811	8	11	131	12	18,000	12	5.6	67
4	617	Grid 0813	8	13	138	6	30,000	6	5.6	34
4	621	Grid 0814	8	14	72	5	15,000	5	5.6	28
5	718	Grid 0815	8	15	61	6	43,000	6	5.6	34
5	720	Grid 0816	8	16	49	11	25,000	11	5.6	62
5	722	Grid 0817	8	17	43	4	12,000	4	5.6	22
5	726	Grid 0818	8	18	26	2	15,000	2	5.6	11
5	731	Grid 0819	8	19	144	4	18,000	4	5.6	22
5	736	Grid 0820	8	20	144	5	20,000	5	5.6	28

El Paso County Existing Population

Gp No.	ID NO.	ENTITY	GRID LOCATION EW	GRID LOCATION NS	Total Area Acres	Total Lots	Average Lot Size sq. ft.	1987 Residences	Population per Residence	Estimated 1987 Population
5	765	Grid 0821	8	21	144	3	35,000	3	5.6	17
5	771	Grid 0822	8	22	67	2	20,000	2	5.6	11
6	901	Grid 0822	8	22	77	2	27,000	2	5.6	11
6	904	Grid 0823	8	23	125	31	14,400	31	5.6	174
6	907	Grid 0824	8	24	144	2	42,500	2	5.6	11
6	910	Grid 0825	8	25	139	2	32,000	2	5.6	11
6	913	Grid 0826	8	26	111	2	24,000	2	5.6	11
5	793	Grid 0826	8	26	33	1	44,000	1	5.6	6
6	915	Grid 0827	8	27	80	3	20,000	3	5.6	17
6	917	Grid 0828	8	28	6	1	32,000	1	5.6	6
5	805	Grid 0828	8	28	143	4	18,000	4	5.6	22
5	811	Grid 0829	8	29	144	1	22,500	1	5.6	6
5	817	Grid 0830	8	30	144	3	22,500	3	5.6	17
6	919	Grid 0830	8	30	51	1	30,000	1	5.6	6
5	823	Grid 0831	8	31	121	2	17,000	2	5.6	11
5	828	Grid 0832	8	32	135	11	16,500	11	5.6	62
7	1004	Grid 0833	8	33	124	3	22,500	3	5.6	17
7	1010	Grid 0834	8	34	142	3	34,000	3	5.6	17
7	1028	Grid 0837	8	37	144	1	16,900	1	5.6	6
7	1034	Grid 0838	8	38	144	7	20,400	7	5.6	39
8	1130	Grid 0843	8	43	144	3	25,000	3	5.6	17
8	1145	Grid 0846	8	46	144	2	20,000	2	5.6	11
3	450	Grid 0903	9	3	144	72	5,000	72	5.6	403
3	456	Grid 0905	9	5	128	10	12,000	10	5.6	56
3	460	Grid 0906	9	6	99	29	5,000	29	5.6	162
3	464	Grid 0907	9	7	67	39	15,600	39	5.6	218
3	468	Grid 0908	9	8	78	2	40,000	2	5.6	11
3	473	Grid 0910	9	10	62	17	5,000	17	5.6	95
3	520	Grid 0912	9	12	144	2	36,000	2	5.6	11
5	874	Grid 0914	9	14	79	2	22,500	2	5.6	11
5	725	Grid 0918	9	18	21	3	30,000	3	5.6	17
5	730	Grid 0919	9	19	144	2	20,000	2	5.6	11
5	763	Grid 0921	9	21	124	1	45,000	1	5.6	6
5	769	Grid 0922	9	22	97	3	27,000	3	5.6	17
6	900	Grid 0922	9	22	47	2	13,000	2	5.6	11
6	903	Grid 0923	9	23	133	4	14,300	4	5.6	22
6	906	Grid 0924	9	24	139	6	27,000	6	5.6	34
6	909	Grid 0925	9	25	140	3	24,000	3	5.6	17
6	912	Grid 0926	9	26	140	12	15,000	12	5.6	67
6	914	Grid 0927	9	27	138	2	34,500	2	5.6	11
6	916	Grid 0928	9	28	115	3	40,000	3	5.6	17
6	918	Grid 0929	9	29	98	1	22,500	1	5.6	6
5	821	Grid 0931	9	31	81	1	35,000	1	5.6	6
7	1008	Grid 0934	9	34	72	14	15,000	14	5.6	78
7	1014	Grid 0935	9	35	144	6	16,000	6	5.6	34
7	1020	Grid 0936	9	36	144	3	12,000	3	5.6	17
7	1026	Grid 0937	9	37	144	4	16,000	4	5.6	22
7	1033	Grid 0938	9	38	144	1	44,000	1	5.6	6
8	1117	Grid 0939	9	39	144	6	17,000	6	5.6	34
8	1121	Grid 0941	9	41	144	2	20,000	2	5.6	11
8	1124	Grid 0942	9	42	144	2	20,000	2	5.6	11
8	1128	Grid 0943	9	43	144	13	18,000	13	5.6	73

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Gp No.	ID NO.	ENTITY	GRID LOCATION EW	GRID LOCATION NS	Total Area Acres	Total Lots	Average Lot Size sq. ft.	1987 Residences	Population per Residence	Estimated 1987 Population
8	1133	Grid 0944	9	44	144	4	36,000	4	5.6	22
8	1138	Grid 0945	9	45	144	3	72,000	3	5.6	17
8	1143	Grid 0946	9	46	144	5	22,500	5	5.6	28
3	474	Grid 1002	10	2	48	2	140,000	2	5.6	11
3	478	Grid 1003	10	3	138	4	20,000	4	5.6	22
3	482	Grid 1004	10	4	110	5	23,000	5	5.6	28
3	486	Grid 1005	10	5	138	4	30,000	4	5.6	22
3	490	Grid 1006	10	6	106	2	10,000	2	5.6	11
3	494	Grid 1007	10	7	72	15	10,800	15	5.6	84
3	497	Grid 1008	10	8	126	3	30,000	3	5.6	17
3	501	Grid 1009	10	9	21	4	20,400	4	5.6	22
3	504	Grid 1010	10	10	67	4	45,000	4	5.6	22
3	524	Grid 1011	10	11	91	15	30000	15	5.6	84
3	525	Grid 1012	10	12	69	1	105000	1	5.6	6
5	738	Grid 1014	10	14	144	3	45000	3	5.6	17
5	740	Grid 1015	10	15	144	2	42000	2	5.6	11
5	743	Grid 1016	10	16	101	1	55000	1	5.6	6
5	729	Grid 1019	10	19	144	7	13,000	7	5.6	39
5	752	Grid 1019	10	19	144	11	30000	11	5.6	62
5	735	Grid 1020	10	20	144	3	30,000	3	5.6	17
5	755	Grid 1020	10	20	144	1	40000	1	5.6	6
5	770	Grid 1022	10	22	144	2	125,000	2	5.6	11
5	776	Grid 1023	10	23	144	9	28,000	9	5.6	50
5	782	Grid 1024	10	24	144	3	26,000	3	5.6	17
5	786	Grid 1025	10	25	144	3	36,000	3	5.6	17
5	792	Grid 1026	10	26	144	2	24,000	2	5.6	11
5	810	Grid 1029	10	29	144	8	14,000	8	5.6	45
5	816	Grid 1030	10	30	144	8	22,000	8	5.6	45
5	822	Grid 1031	10	31	144	4	9,800	4	5.6	22
5	827	Grid 1032	10	32	83	6	25,000	6	5.6	34
8	1118	Grid 1039	10	39	144	1	8,000	1	5.6	6
8	1120	Grid 1040	10	40	144	3	40,000	3	5.6	17
8	1122	Grid 1041	10	41	144	7	15,000	7	5.6	39
8	1125	Grid 1042	10	42	144	1	20,400	1	5.6	6
8	1129	Grid 1043	10	43	144	9	21,600	9	5.6	50
8	1139	Grid 1045	10	45	128	2	24,000	2	5.6	11
3	475	Grid 1102	11	2	93	3	30,000		5.6	0
3	479	Grid 1103	11	3	88	12	14,000	12	5.6	67
3	483	Grid 1104	11	4	30	10	15,000	10	5.6	56
3	487	Grid 1105	11	5	60	1	20,000	1	5.6	6
3	491	Grid 1106	11	6	144	17	24,000	17	5.6	95
2	307	Grid 1107	11	7	7	7	10,000	7	5.6	39
2	306	Grid 1107	11	7	111	46	21,000	46	5.6	258
3	498	Grid 1108	11	8	63	9	17,000	9	5.6	50
3	502	Grid 1109	11	9	112	9	19,500	9	5.6	50
3	532	Grid 1110	11	10	63	5	15,000	5	5.6	28
3	530	Grid 1111	11	11	144	8	15,000	8	5.6	45
3	526	Grid 1112	11	12	144	15	40000	15	5.6	84
3	528	Grid 1113	11	13	5	8	50000	8	5.6	45
5	739	Grid 1114	11	14	115	2	40000	2	5.6	11
5	741	Grid 1115	11	15	60	2	32000	2	5.6	11
5	744	Grid 1116	11	16	134	2	30000	2	5.6	11

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Gp No.	ID NO.	ENTITY	GRID LOCATION EW	GRID LOCATION NS	Total Area Acres	Total Lots	Average Lot Size sq. ft.	1987 Residences	Population per Residence	Estimated 1987 Population
5	747	Grid 1117	11	17	103	2	35000	2	5.6	11
5	753	Grid 1119	11	19	144	7	30000	7	5.6	39
5	756	Grid 1120	11	20	144	8	40000	8	5.6	45
5	830	Grid 1121	11	21	144	15	14,000	15	5.6	84
5	759	Grid 1121	11	21	144	6	30000	6	5.6	34
5	833	Grid 1122	11	22	144	10	36,000	10	5.6	56
5	836	Grid 1123	11	23	144	27	30,000	27	5.6	151
5	839	Grid 1124	11	24	144	6	22,500	6	5.6	34
5	842	Grid 1125	11	25	144	1	18,000	1	5.6	6
5	845	Grid 1126	11	26	144	1	13,000	1	5.6	6
5	851	Grid 1128	11	28	144	3	12,500	3	5.6	17
5	854	Grid 1129	11	29	144	3	22,000	3	5.6	17
3	480	Grid 1203	12	3	144	2	45,000	2	5.6	11
3	488	Grid 1205	12	5	132	1	10,000	1	5.6	6
3	492	Grid 1206	12	6	144	31	21,000	31	5.6	174
2	304	Grid 1207	12	7	141	70	12,000	70	5.6	392
2	308	Grid 1208	12	8	22	19	15,600	19	5.6	106
3	499	Grid 1208	12	8	122	1	15,000	1	5.6	6
3	503	Grid 1209	12	9	144	1	75,000	1	5.6	6
3	531	Grid 1211	12	11	144	9	30,000	9	5.6	50
10	1180	Grid 1212	12	12	144	28	30,000	28	5.6	157
3	529	Grid 1213	12	13	134	7	30000	7	5.6	39
5	754	Grid 1219	12	19	144	3	28000	3	5.6	17
5	757	Grid 1220	12	20	144	5	32000	5	5.6	28
5	760	Grid 1221	12	21	144	3	42000	3	5.6	17
5	831	Grid 1221	12	21	144	3	22,500	3	5.6	17
5	864	Grid 1232	12	32	144	1	12,000	1	5.6	6
3	481	Grid 1303	13	3	92	2	20,000	2	5.6	11
2	303	Grid 1306	13	6	103	4	15,000	4	5.6	22
3	493	Grid 1306	13	6	144	4	15,000	4	5.6	22
2	305	Grid 1307	13	7	144	48	25,500	48	5.6	269
2	309	Grid 1308	13	8	81	22	3,500	22	5.6	123
5	865	Grid 1332	13	32	144	1	15,000	1	5.6	6
5	868	Grid 1333	13	33	144	2	10,000	2	5.6	11
9	1175	Grid 1335	13	35	144	0	0		5.6	0
5	871	Grid 1920	19	20	68	4	9,600	4	5.6	22
3	438	Grijalva Garden	12	4	51	159	10,125	136	5.6	762
2	300	Gurdev Subdivision	11	5	47	222	6,000	128	5.6	717
5	703	Hacienda Real	11	19	31.691	24	55,981	9	5.6	50
2	301	Hillcrest Manor	11	7	20.008	58	10,000	20	5.6	112
3	424	La Fuente	10	5	20.9988	37	21,000	15	5.6	84
3	430	La Jolle	8	6	69.09	119	20,100	47	5.6	263
3	406	La Junta	8	4	18.36	59	9,300	46	5.6	258
4	605	Las Aves	6	15	20.63	50	15,900	28	5.6	157
3	431	Las Milpas #1	8	7	13.57	45	9,060	37	5.6	207
3	432	Las Milpas #2	8	7	8.714	15	19,700		5.6	0
4	614	Las Pampas #1,#2,#3,#4	3	17	146.6268	248	21,400	56	5.6	314
3	444	Lewis	6	10	6.9098	12	20,000	9	5.6	50
5	708	Lordsville	8	14	31.241	27	43,560	18	5.6	101
3	420	Lynn Park	10	7	51.981	174	10,700	127	5.6	711
4	610	Madrilena	4	15	9.735	17	20,600	11	5.6	62
3	410	Mary Lou Park	11	7	37.916	120	9,600	86	5.6	482

Gp No.	ID NO.	ENTITY	GRID LOCATION EW	GRID LOCATION NS	Total Area Acres	Total Lots	Average Lot Size sq. ft.	1987 Residences	Population per Residence	Estimated 1987 Population
3	412	Mc Adoo Acres	11	9	74.382	116	21,000	2	5.6	11
3	439	Melton Place	8	12	14.528	26	20,473	2	5.6	11
3	423	Monterosales	9	5	30	90	11,000	61	5.6	342
3	401	Moon #1	9	4	45.54	77	11,700	205	5.6	1148
3	402	Moon #2	9	4	14.08	39	10,000		5.6	0
3	403	Moon #3	9	4	22.78	92	6,900		5.6	0
3	404	Moon #4	9	4	14.482	42	9,200		5.6	0
5	700	Morning Glory Manor	19	20	73.262	117	21,000	7	5.6	39
3	434	North Loop Acres	11	3	19.3148	47	13,900	36	5.6	202
4	608	Plaza Bernal	5	15	23.943	71	11,000	46	5.6	258
3	418	Poole Subdivision	9	7	88.9511	147	21,780	66	5.6	370
4	643	Quadrilla (Improvement Corp.)	7	26	24	19	13,200	19	5.6	106
3	448	Quail Mesa	12	14	22.4951	14	67,015	7	5.6	39
5	712	Rancho Miraval Estates	11	13	69.172	52	22,500	32	5.6	179
3	447	Rio Rancho Estates	11	5	27.062	48	20,000	20	5.6	112
3	426	Rio Vista Addition	8	5	25.017	83	8,700	66	5.6	370
3	414	Roseville Subdivision	10	10	86.145	139	21,000	74	5.6	414
3	446	San Augustin Subdivision	11	5	32.715	54	21,000	21	5.6	118
5	711	San Paulo	8	14	36.607	37	39,204	27	5.6	151
3	408	Socorro Village	7	4	10.381	37	9,000	24	5.6	134
3	405	Spanish Trail	8	4	35.91	118	9,500	81	5.6	454
3	417	Sunhaven Farms	10	9	50.1435	77	21,000	3	5.6	17
2	302	Sunshine	9	3	4.473	17	7,400	12	5.6	67
5	701	Sunshine Acres	19	20	21.372	35	21,780	7	5.6	39
5	714	Town of Clint	9	17	1236.914			287	3.4	976
8	1147	Town of Tornillo (Est. boundary)	11	43	117			115	5.6	644
3	445	Valle Real	6	11	29.44	51	20,205	23	5.6	129
4	603	Valle Villa #1	5	13	34.05	95	11,050	65	5.6	364
4	604	Valle Villa #2	5	13	5.7329	10	20,000		5.6	0
3	429	Villa Espana	8	5	21.5257	56	13,900	40	5.6	224
3	433	Vinedo Acres	7	8	58.31	58	35,900	39	5.6	218
4	609	Wilbourn	5	15	7.979	27	9,400	1	5.6	6
5	704	Wildhorse Valley	11	18	14.113	28	20,000	17	5.6	95
3	419	Wilton Acres	10	7	8.3545	23	13,000	22	5.6	123
3	422	Wiseman Estates	9	6	29.6701	51	20,000	32	5.6	179
		Lower Valley Subtotal						7400		40,809
		HUECO								
11	1205	Acacia Grove			160	20			3.6	0
11	1206	Acacia Grove #2			600	8			3.6	0
11	1214	Butterfield City	13	9				13	3.6	47
11	1208	Butterfield Trail	5	10	640			144	3.6	518
11	1207	East Wind Estates	8	10	37.2			42	3.6	151
11	1204	Flamingo Addition	7	10	162.42	123	44,090	16	3.6	58
11	1200	Haciendas del Norte #1	7	6	583.5889	97	252,000	34	3.6	122
11	1201	Haciendas del Norte #2	7	7	571.1079	170	124,000	25	3.6	90
11	1202	Haciendas del Norte #3	7	8	629.0108	257	89,120	3	3.6	11
11	1203	Homestead Meadows Unit 2,3,4,5,6	8	8	1825.494	296	101,500	108	3.6	389
11	1213	Hueco Tanks	16	3				0	3.6	0
11	1210	Las Casitas Unit 2	8	10	27.3			12	3.6	43
11	1220	Section 0709	7	9	640			1	3.6	4
11	1222	Section 0710	7	10	470			22	3.6	79
11	1221	Section 0710 (Trailer Court)	7	10	7.58			16	3.6	58

Gp No.	ID NO.	ENTITY	GRID LOCATION EW	GRID LOCATION NS	Total Area Acres	Total Lots	Average Lot Size sq. ft.	1987 Residences	Population per Residence	Estimated 1987 Population
11	1224	Section 0810	8	10	378.03			1	3.6	4
11	1226	Section 0907 (Subdivision?)	9	7	103			24	3.6	86
11	1264	Section 0909	9	9	502			24	3.6	86
11	1215	Section 0909 (Subdivision?)	9	9	138			53	3.6	191
11	1266	Section 0910	9	10	504			0	3.6	0
11	1265	Section 0910 (Subdivision?)	9	10	136			15	3.6	54
11	1229	Section 1006	10	6	640			15	3.6	54
11	1231	Section 1007	10	7	400			2	3.6	7
11	1230	Section 1007 (Subdivision?)	10	7	240			129	3.6	464
11	1232	Section 1008	10	8	640			7	3.6	25
11	1234	Section 1009	10	9	586			2	3.6	7
11	1233	Section 1009 (Subdivision?)	10	9	54			35	3.6	126
11	1235	Section 1010	10	10	640			23	3.6	83
11	1237	Section 1107	11	7	640			3	3.6	11
11	1241	Section 1304	13	4	640			4	3.6	14
11	1246	Section 1403	14	3	640			3	3.6	11
11	1247	Section 1404	14	4	640			10	3.6	36
11	1250	Section 1407	14	7	640			8	3.6	29
11	1251	Section 1408	14	8	640			1	3.6	4
11	1252	Section 1409	14	9	640			1	3.6	4
11	1216	Section 1503	15	3	640			4	3.6	14
11	1253	Section 1504	15	4	640			7	3.6	25
11	1258	Section 1509	15	9	640			2	3.6	7
11	1261	Section 1606	16	6	640			1	3.6	4
11	1209	Vista del Este	7	11	176.32	365	15,100	34	3.6	122
11	1212	Wilco Unit 1	14	2				2	3.6	7
11	1211	Wilco Unit 5	13	3				1	3.6	4
		Hueco Subtotal						847		3,049
		EAST EL PASO								
12	1329	Agua Dulce	19	21	320			110	4.4	484
12	1320	Cowlitz Estates	8	11	10.02	20	18,121	8	4.4	35
12	1315	Deerfield Park	9	11	147.71	130	16,552	84	4.4	370
12	1316	Desert Glen	8	11	17.328	35	10,019	16	4.4	70
12	1364	Desert Mesa Estates	7	19	20120	96		57	3.5	200
12	1363	Golf View Estates	6	19	4669	26		229	3.5	800
12	1309	Hillcrest Estates	6	11	634.9	493		28	4.4	123
12	1312	Homestead Homes #1,#2,#3	8	11	48.111	112	15,246	73	4.4	321
12	1300	Homestead Meadows	8	6	637.2	114	219,700	32	4.4	141
12	1301	Homestead Meadows South Unit 1	8	11	143.232	28		11	4.4	48
12	1302	Homestead Meadows South Unit 2	8	11	260.575	54		1	4.4	4
12	1303	Homestead Meadows South Unit 3	8	10	152.543	61	21,800	51	4.4	224
12	1304	Homestead Meadows South Unit 4	8	10	2.77	8	15,000	3	4.4	13
12	1305	Homestead Meadows South Unit 5	9	11	162.72	368		147	4.4	647
12	1306	Homestead Meadows South Unit 6	8	10	4.361	8	17,400	1	4.4	4
12	1361	Horizon Country Club Estates	6	19	90239	336		229	3.5	800
12	1362	Horizon Heights	6	19	296	696		229	3.5	800
12	1360	Horizon Hills	5	20	254618	84				0
12	1365	Horizon Manor	7	20	442	1142		114	3.5	400
12	1317	Jason Estates	8	11	5.189	6	31,944	0	4.4	0
12	1318	Knott Acres	8	11	5.01	6	31,944	2	4.4	9
12	1331	Lanes Dairy	10	23	640			6	4.4	26
12	1313	Las Casitas #1,#3	8	11	78			43	4.4	189

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El Paso County Existing Population

Sp No.	ID NO.	ENTITY	GRID LOCATION EW	GRID LOCATION NS	Total Area Acres	Total Lots	Average Lot Size sq. ft.	1987 Residences	Population per Residence	Estimated 1987 Population
12	1314	Las Quintas #1,#2	8	11	64.579	116	23,090	54	4.4	238
12	1319	Meadows South							4.4	0
12	1324	Mesa View Estates	8	11	5.01	12	15,246	9	4.4	40
12	1323	Mesquite Meadows	8	11	5.01	12	15,246	4	4.4	18
12	1322	Satiacum Estates	8	11	5.01	10	18,121	4	4.4	18
12	1346	Section 0311	3	11	555.52			1	4.4	4
12	1349	Section 0411	4	11	580			30	4.4	132
12	1348	Section 0411 (Trailer Park)	4	11	11.36			60	4.4	264
12	1334	Section 0421	4	21	633			53	4.4	233
12	1352	Section 0511	5	11	640			7	4.4	31
12	1338	Section 0923	9	23	640			14	4.4	62
12	1339	Section 0924	9	24	640			1	4.4	4
12	1340	Section 0925	9	25	640			12	4.4	53
12	1358	Section 1110	11	10	640			2	4.4	9
12	1333	Section #293 (0321)	3	21	122.4			27	4.4	119
12	1311	Southwest Estates	8	10	37.8	37	40,965	17	4.4	75
12	1325	Sparks Addition #1	4	20	144.22	70	56,700	303	5.28	1600
12	1326	Sparks Addition #2	4	20	244.89	494	14,560		4.4	0
12	1327	Sparks Addition #3	4	20	162.5	625	9,900		4.4	0
12	1328	Sparks Addition #4	4	20	96.8	377	8,400		4.4	0
12	1310	Tierra de Oro	4	13	108.618	91		0	4.4	0
12	1321	Tillicum Estates	8	11	5.01	12	15,246	5	4.4	22
12	1307	Turf Estates	3	11	45.976	21		90	4.4	396
12	1308	Turf Estates (Unplatted)	3	11	38.5			52	4.4	52
		Subtotal East El Paso						2218		9,078
		GRAND TOTAL						13,435		68,395

3,026