Groundwater Management Plan

Prepared by:

Middle Pecos
Groundwater Conservation District
Pecos County, Texas

, 2015

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District Mission

The Middle Pecos Groundwater Conservation District (the District) is committed to manage and protect the groundwater resources of The District. The District was created to help maintain a sustainable, adequate, reliable, cost effective and high quality source of groundwater to promote the vitality, economy and environment of the District. The District will work with and for the citizens of the District and cooperate with other local, regional and State agencies involved in the study and management of groundwater resources.

Purpose of Management Plan

In 1997 the 75th Texas Legislature established a statewide comprehensive regional water planning initiative with the enactment of Senate Bill 1 (SB1). Among the provisions of SB1 were amendments to Chapter 36 of the Texas Water Code requiring groundwater conservation districts to develop a groundwater management plan that shall be submitted to the Texas Water Development Board (TWDB) for approval. The groundwater management plan was specified to contain estimates on the availability of groundwater in the district, details of how the district would manage groundwater, and management goals for the district. In 2001 the 77th Texas Legislature further clarified the water planning and management provisions of SB1 with the enactment of Senate Bill 2 (SB2).

The requirements of the Chapter 36 Texas Water Code provisions for groundwater management plan development are specified in 31 Texas Administrative Code Chapter 356 of the TWDB Rules. This plan fulfills all requirements for groundwater management plans in SB1, SB2, Chapter 36 Texas Water Code, and TWDB rules.

Time Period of Management Plan

This plan shall be in effect for a period of five years from the date of approval by TWDB, unless a new or amended management plan is adopted by the District Board of Directors and approved by TWDB. The management plan will be readopted with or without changes by the District Board and submitted to TWDB for approval at least every five years.

Middle Pecos Groundwater Conservation District

The District was created in 1999. The creation of the District is recorded in Chapter 1331 of the Acts of the 76th Texas Legislature (SB 1911). This act enabled the District to function in a limited capacity until the creation of the District was fully validated in the 77th Legislature. The validation of the District is recorded in Chapter 1299 of the Acts of the 77th Texas Legislature (HB 1258). The District was confirmed by local election held in Pecos County on November 5, 2002.

The District boundaries are coterminous with the boundaries of Pecos County, Texas. The District is bounded by Reeves, Ward, Crane, Crockett, Terrell, Brewster, and Jeff Davis counties. As of the plan date, groundwater conservation districts (GCDs) that bound the District are in Jeff Davis, Brewster, and Crockett Counties. The GCDs neighboring the District are: Brewster County GCD, Jeff Davis County Underground Water Conservation District (UWCD), and Crockett County GCD. Fig.1

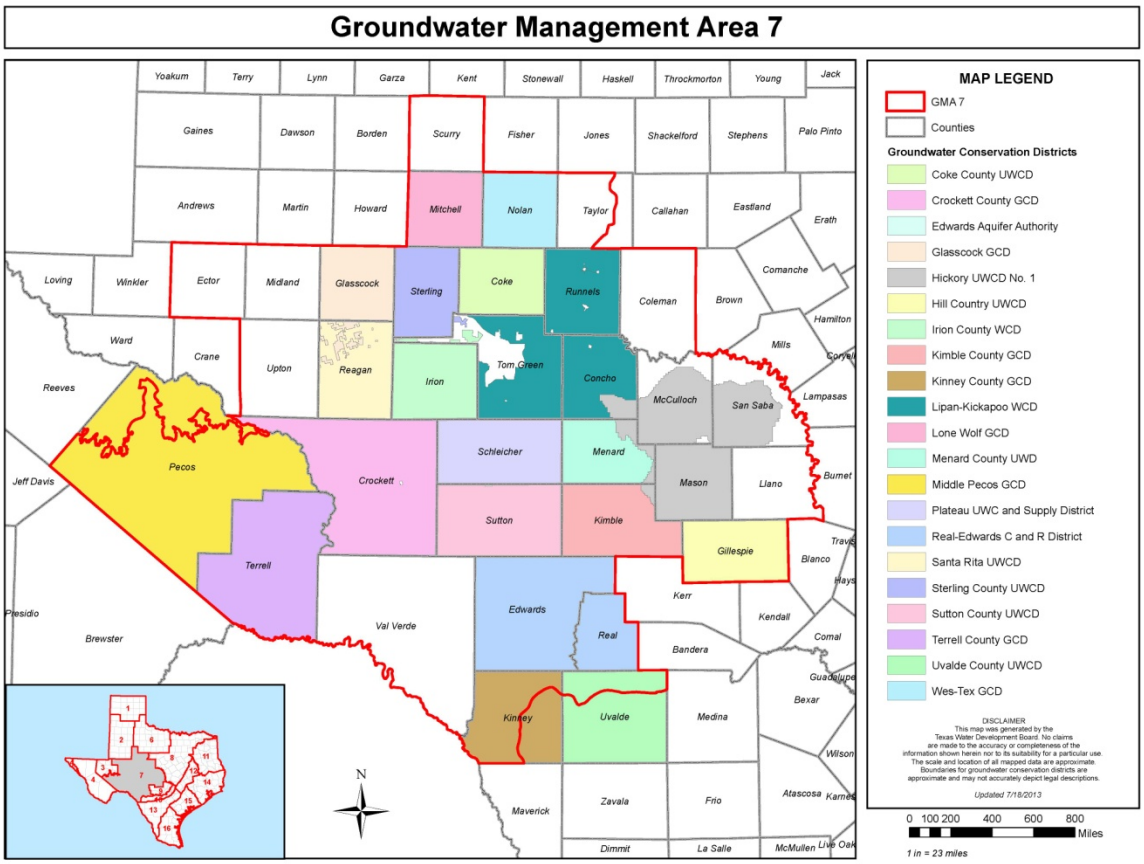

Figure1, Neighboring Districts to Middle Pecos Groundwater Conservation District

Most of the District is in Groundwater Management Area (GMA) 7, with the northern part of the District in GMA 3. Chapter 36 of the Texas Water Code authorizes the District to co-ordinate its management of groundwater with other GCDs in both GMA 7 and GMA 3. The District is currently the only GCD in GMA 3. The other GCDs that are located in GMA 7 are: Crockett County GCD, Santa Rita UWCD (Reagan), Irion County Water Conservation District (WCD), Glasscock GCD, Sterling County UWCD, Lone Wolf GCD (Mitchell), Terrell GCD, Wes-Tex GCD (Nolan), Coke County UWCD, Lipan-Kickapoo WCD (Tom Green, Concho, and Runnels), Hickory UWCD No. 1 (McCulloch, San Saba, and Mason), Menard County UWD, Hill Country UWCD (Gillespie), Kimble County GCD, Plateau Underground Water Conservation and Supply District (Schleicher), Sutton County UWCD, Real-Edwards Conservation and Reclamation District, Uvalde
County UWCD, Edwards Aquifer Authority and Kinney County GCD. Fig. 2

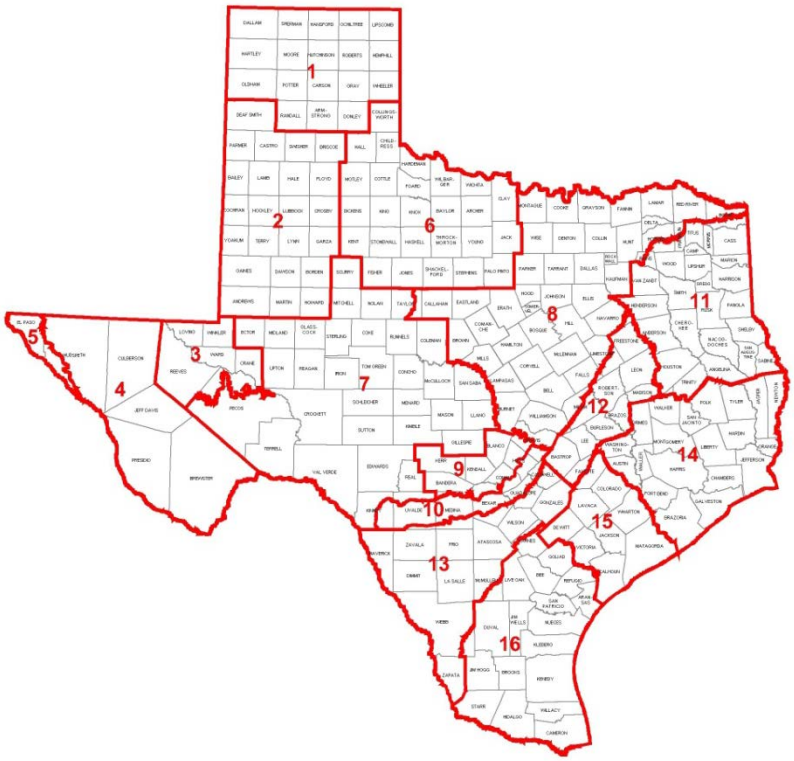

Figure 2, Groundwater Management Areas in Texas

The District Board of Directors is composed of eleven members elected to staggered four-year terms. Two directors are elected from each of the four county precincts, one director is elected at-large, one director is elected from the City of Iraan and one director is elected from the City of Fort Stockton. The Board of Directors holds regular meetings, at least quarterly. Meetings of the Board of Directors are public meetings noticed and held in accordance with public meeting requirements.

Authority of the District

The District derives its authority to manage groundwater use within the District by virtue of the powers granted and authorized in the District enabling act HB 1258 of the 77th Texas Legislature (Appendix A). The District, acting under authority of the enabling legislation, assumes all the rights and responsibilities of a groundwater conservation district specified in Chapter 36 of the Texas Water Code. The District has developed rules specifying the bounds of due process governing District actions. (Appendix C).

Groundwater Resources of the District

There are 5 sources of groundwater recognized by TWDB in the District. Two of these sources; the Edwards-Trinity (Plateau) aquifer and the Pecos Valley aquifer are classified as major aquifers by TWDB. (Fig. 3) The other three sources of groundwater; the Rustler aquifer, the Dockum aquifer and the Capitan Reef Complex aquifer are classified as minor aquifers by TWDB. (Fig. 4)

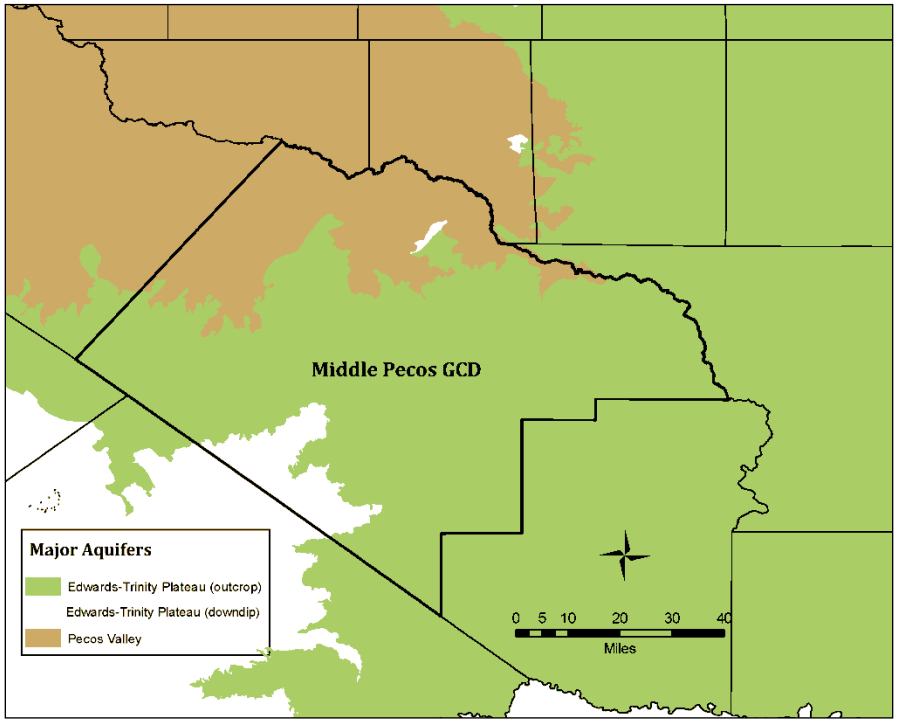

Figure 3, Major Aquifers in Middle Pecos GCD

A major aquifer produce large amounts of water over larger areas and minor aquifers produce minor amounts of water over large areas or large amounts of water over small areas.

The groundwater sources in the District may produce both fresh and moderately saline (brackish) water. The geologic origins of the groundwater sources of the District cover a broad range of geologic time. Listed in ascending order by geologic age, these sources and their ages are: Rustler Formation and Capitan Reef Complex (Permian), Dockum aquifer (Triassic), Edwards-Trinity (Plateau) aquifer (Cretaceous), and Pecos Valley (Cenozoic). The geologic age of the various sources of groundwater in the District and the geologic history of Pecos County have a bearing on the structure of the groundwater sources of the District and their relationships.

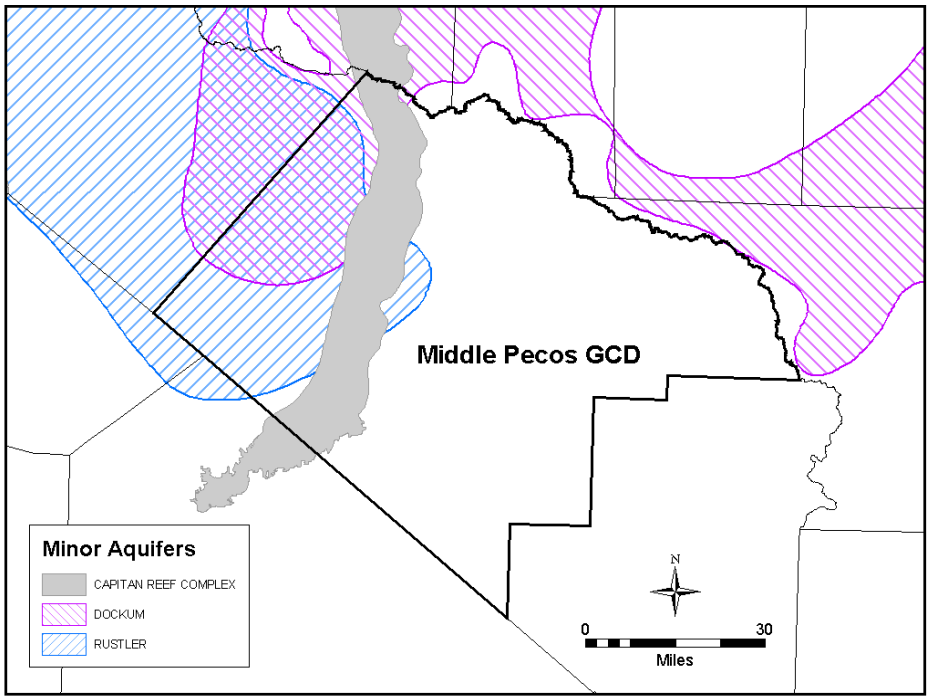

Figure 4, Minor Aquifers in Middle Pecos GCD

Aquifer Relationships in the Western Portion of the District

Parts of the District lie within the Delaware and Val Verde Basins. These basins were centers of sediment deposition at various times in geologic history. Near the end of Permian time, the seas of the Delaware Basin became shallow and restricted. This resulted in high evaporation rates of the sea water and allowed the deposition of very large amounts of evaporite minerals such as Halite (Sodium Chloride - NaCl), Anhydrite (Calcium Sulfate – $CaSO_4$) and Gypsum (Calcium Sulfate – $CaSO_4+H_2O$). (Rees and Buckner, 1980)

In Cretaceous time, seas again advanced and deposited significant amounts of additional sediment that covered the Permian evaporite mineral deposits. When the Cretaceous seas eventually withdrew, fresh groundwater percolated through the Permian evaporite deposits. The groundwater percolation dissolved much of the evaporite minerals beneath the overlying Cretaceous rocks taking away much of their support. The unsupported Cretaceous rocks subsided with extensive faulting and folding. (Fig. 5) The areas where the Cretaceous rocks subsided were filled with erosional material from the nearby volcanic activity associated with the formation of the Davis Mountains. (Rees and Buckner, 1980)

The western portion of the District lies within the Delaware Basin. In the area bounded generally by the Capitan Reef Complex, the Edwards-Trinity (Plateau) aquifer is covered and dissected by the Pecos Valley aquifer. In this area water is commingled between the two aquifers. The water quality in this area is affected mainly by sulfates from water percolating upward from the Rustler aquifer. Water that is recharged by infiltration on the Rustler outcrops in highlands to the west of the District leeches anhydrite and gypsum as it moves down-gradient into the District. The

faulted and collapsed condition of the rocks of the Edwards-Trinity (Plateau) aquifer allows the sulfate laden water to infiltrate relatively easily. In the portion of the District which lies outside of the Delaware Basin, the Edwards-Trinity (Plateau) aquifer is undisturbed. (Rees and Buckner, 1980) (Fig 5)

Aquifer Descriptions

Capitan Reef Complex Aquifer – The Capitan Reef aquifer is a Permian age reef complex on the eastern and western margins of the Delaware Basin. Within the District the aquifer occurs as a generally north-south trending strip approximately 10 to 20 miles wide. This strip is part of a trend which runs from northern Brewster County to the New Mexico state line through Pecos, Ward and Winkler Counties. The aquifer is composed of various cavernous limestone formations that make up the reef complex. The Capitan Reef Complex aquifer outcrops in the Glass Mountains but is deeply buried below the Edwards-Trinity (Plateau) aquifer in other parts of the District. The aquifer may be 1,500 to 2,000 feet thick and up to 3,600 feet deep. Water quality in the Capitan Reef Complex aquifer may be fresh near the mountain outcrop areas but may be moderately saline in other areas. Because of the cavernous nature of the aquifer, well yields may be high with a generally high availability of groundwater. The Capitan Reef Complex aquifer has been little studied in Texas. (Ashworth, 1990) (Guyton, 2003)

Rustler Aquifer – The Rustler aquifer is made up of the Permian age Rustler Formation. The Rustler Formation is approximately 200 to 500 feet thick. It is mostly dolomite and anhydrite but has sand and conglomerate at its base and also contains some shale and limestone. From outcrops in Culberson County the Rustler aquifer dips into the subsurface to the east. It is deformed by folding and may not produce groundwater in all areas. The Rustler is recharged by runoff infiltration in the outcrop areas but age-dating of the water may indicate that more water is recharged by cross-formation flow than from infiltration. The water quality of the Rustler aquifer is moderately saline. Well yields may vary from low to high. The Rustler aquifer is relatively deeply buried in the District and contributes water to the Edwards-Trinity (Plateau) and Pecos Valley aquifers. The principal use of the Rustler aquifer is for irrigation and oil field uses. The Rustler aquifer is not well understood and has been little studied. (Guyton, 2003)

Dockum Aquifer – The Dockum aquifer is composed of the Triassic age formations of the Dockum Group; the Santa Rosa and Tecovas Formations within the District. The aquifer has upper and lower shale sections with a fine grained sand in the middle often referred to as the "Santa Rosa" sand. The Dockum aquifer occurs only under artesian conditions in a limited area of the north western part of the District. It receives recharge from infiltration of runoff in the outcrop areas but may only receive cross-formation recharge within the area of the District. In areas where the Dockum aquifer is hydraulically connected to the Pecos Valley aquifer, the two units have been referred to as the Allurosa aquifer. Water quality in the Dockum aquifer within the District is slightly (3,000 mg/l) to moderately (5,000 mg/l) saline with a generally low productivity of wells. (Rees and Buckner, 1980) (Ashworth, 1990) (Guyton, 2003)

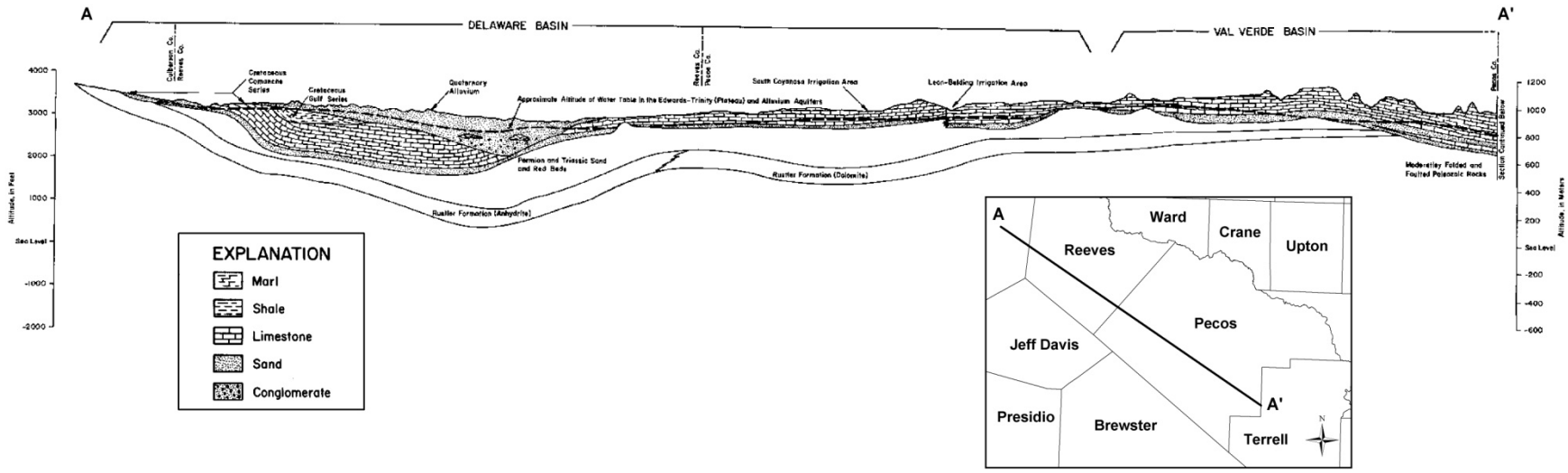

Figure 5, Geologic Cross Section of Reeves and Pecos Counties (Rees and Buckner, 1980)

Edwards-Trinity (Plateau) Aquifer – The Edwards-Trinity (Plateau) aquifer is of Cretaceous age and consists of the Edwards Group limestones and the sands and limestone of the Trinity Group. Within the District the Edwards Group is currently considered to consist of the Segovia and Fort Terrett Formations, but other terminology conventions may be applied to the Edwards Group. (BEG, 1975, 1981, 1982) The Trinity Group consists of the Maxon Sand, the Glen Rose Limestone and may include a basal conglomerate. (Rees and Buckner, 1980) The aquifer may be up to 1,200 feet in thickness and produces small to moderately large quantities of fresh to slightly saline (3,000 mg/l) water. The Edwards-Trinity (Plateau) aquifer is hydraulically connected to the Rustler and Pecos Valley aquifers in the western part of the District. (Ashworth, 1990)

Pecos Valley Aquifer – Consists of up to 1,500 feet of unconsolidated to partially consolidated sand, silt, clay and caliche. The alluvial fill material of the aquifer had two main deposition centers; the Pecos trough and the Monument Draw trough. The aquifer is a principal source of irrigation supply in the northern and western portions of the District. The water quality is fresh to moderately (5,000 mg/l) saline and well yields may be high. The Pecos Valley aquifer is hydraulically connected to the Rustler and Edwards-Trinity (Plateau) aquifers in the western part of the District. (Ashworth, 1990)

System	Geologic Unit	Hydrologic Unit
Quaternary	Alluvial Fill Material	Pecos Valley aquifer
Cretaceous	Edwards Group	Edwards-Trinity (Plateau) aquifer
	Trinity Group	
Triassic	Santa Rosa and Tecovas Formations (may be undifferentiated)	Dockum aquifer
Permian	Rustler Formation	Rustler aquifer
	Capitan Reef Complex	Capitan Reef aquifer

Figure 6, Water-bearing Geologic and Hydrologic Units of Pecos County, Modified from Rees and Buckner, 1980; Ashworth, 1990

Geomorphology of the District

The topography of the District ranges from nearly level to gently undulating in the northern half and hilly to mountainous in the southern half. The eastern and central portions of the District are on the edge of the Edwards Plateau and are marked by mesas of varying sizes with intervening arroyos. Hills become more rounded and valleys more pronounced with generally undulating terrain further west. The northern part of the District slopes generally toward the Pecos River. Elevation ranges from about 2,200 feet above mean sea level (amsl) near the Pecos River to about 5,200 feet amsl in the mountains. All drainages flow to the Pecos River. The Pecos River flows continuously, but other streams in the county flow only after infrequent torrential rains. Springs were at one time an important water source for the area, but many no longer flow. (Rives 1980 and TSHA 2002)

Modeled Available Groundwater in the District

Modeled available groundwater is defined in TWC §36.001 means "the amount of water that the executive administrator determines may be produced on an average annual basis to achieve a desired future condition established under Section 36.108." The desired future condition of the aquifer may only be determined through joint planning with other groundwater conservation districts (GCDs) in the groundwater management area (GMA) or GMAs in which the District is located as required in TWC §36.108. The District is located in GMAs 3 and 7. The GCDs of GMAs 3 and 7 have completed the joint planning process and adopted desired future conditions for the following aquifers in Pecos County:

GMA-3

- Edwards-Trinity(Plateau)/Pecos Valley aquifers
- Dockum aquifer
- Capitan Reef Complex aquifer
- Rustler aquifer

GMA-7

- Edwards-Trinity(Plateau)/Pecos Valley aquifers
- Capitan Reef Complex aquifer
- Rustler aquifer
- Dockum aquifer

The desired future conditions of aquifers as adopted by GMAs 3 and 7 are given below. The Modeled Available Groundwater (MAG) the District developed for use in the GMA-3 and GMA-7 processes are presented below for each aquifer in the District.

For the purposes of managing groundwater within the boundaries of the District and pursuant to Chapter 36 of the Texas Water Code, the District used the desired future conditions of the aquifers as a benchmark. The desired future conditions were identified through the GMA process and deliberations by GMAs 3 and 7.

Edwards-Trinity (Plateau) and Pecos Valley Aquifers

To assess groundwater availability, the District participated in the GMA 3 and 7 requests that TWDB perform a series of simulations using the most recent 1-layer version of the TWDB Groundwater Availability Model (GAM) for the Edwards-Trinity (Plateau) aquifer and Pecos Valley aquifer. The series of GAM simulations iteratively applied varying amounts of groundwater pumping from the aquifer over a predictive period. Pumping was varied, until the amount of pumping that could be sustained by the aquifer without exceeding the desired future conditions was identified.

A. Desired Future Conditions

The desired future conditions for the Edwards-Trinity (Plateau) and Pecos Valley aquifers of Pecos County, as follows:

GMA 7 – Indexed to 2010 conditions, the combined aquifer draw down over 50 years should not exceed 11 feet when averaged over the entire portion of Pecos County where the Edwards-Trinity (Plateau) and Pecos Valley aquifers occur within GMA 7 and 7 feet when averaged over the areas where the aquifers occur in GMA-7 overall.

GMA 3 – Indexed to 2010 conditions, the combined aquifer draw down over 50 years should not exceed 12 feet when averaged over the entire portion of Pecos County where the Edwards-Trinity (Plateau) and Pecos Valley aquifers occur within GMA-3 and 28 feet when averaged over the areas where the aquifers occur in GMA-3 overall.

The District estimates of the selected management conditions related to draw down in the Edwards-Trinity and Pecos Valley Aquifers are based on GAM-run 09-35 of version 3 (single-layer model):

- Scenario 10 for GMA-7 (results presented by TWDB July 29, 2010)
- Scenario 11 for GMA-3 (results presented by TWDB August 9, 2010)

B. Modeled Available Groundwater

The Modeled Available Groundwater for the Edwards-Trinity (Plateau) and Pecos Valley aquifers in MPGCD is **240,120** acre-feet per year which is based on the amounts of groundwater that could be pumped while maintaining the selected management conditions in each aquifer management zone discussed above. In determining the volume of water available for permitting, a total of **4,124** acre-feet per year is allocated for exempt well users. This leaves a total of **235,996 acre-feet per year as the groundwater available for permitting for the Edwards-Trinity (Plateau) and Pecos Valley aquifers.** The Modeled Available Groundwater in GMAs 3 and 7 is given below:

GMA-7 Portion of Pecos County is (GAM RUN 10-043 MAG version 2):

- 117,386 acre-feet per year

GMA-3 Portion of Pecos County (GAM RUN 10-042 MAG):

- 122,734 acre-feet per year

The District estimates of groundwater availability in the Edwards-Trinity (Plateau) and Pecos Valley Aquifers are based on TWDB spatial distribution of simulated pumping in GAM-run 09-35 of version 3 (single-layer model):

- Scenario 10 for GMA-7 (results presented by TWDB July 29, 2010)
- Scenario 11 for GMA-3 (results presented by TWDB August 9, 2010)

C. Management Zones for the Edwards-Trinity (Plateau) and Pecos Valley Aquifers

The District has established groundwater management zones in the principal areas of irrigation (or other groundwater demand) and pertinent surrounding areas of Pecos County, as described below:

1) The Leon-Belding Irrigation Area and the vicinity of the City of Fort Stockton to include the outlets of Comanche Springs. The area is generally bounded by the TWDB Edwards-Trinity (Plateau) / Pecos Valley Aquifer GAM-Grid cells that contain the following sets of latitude and longitude coordinates: (30.90321 N, -102.8566 W); (30.85306 N, -102.8928 W); (30.69796 N, -103.15137 W). The specific GAM-grid cells composing the management zone are given in Appendix G.
2) The Bakersfield Irrigation Area. The area is generally bounded by the TWDB Edwards-Trinity (Plateau) / Pecos Valley Aquifer GAM-Grid cells that contain the following sets of latitude and longitude coordinates (except where cells are truncated by intersection with the Pecos County-line): (31.05667 N, -102.3717 W); (30.8992 N, -102.28911 W); (30.95167 N, -102.1653 W); (30.96833 N, -102.2169 W). The specific GAM-grid cells used to compose the management zone are given in Appendix G.
3) The Coyanosa Irrigation Area. The area is generally bounded by the TWDB Edwards-Trinity (Plateau) / Pecos Valley Aquifer GAM-Grid cells that contain the following sets of latitude and longitude coordinates (except where cells are truncated by intersection with the Pecos County-line): (31.1805 N, 103.0202 W); (31.3169 N, 103.0511 W); (31.2097 N, 103.0026 W); (31.1105 N, 102.9924 W); (31.1025 N, 103.1022 W); (31.1834 N, 103.1347 W). The specific GAM-grid cells used to compose the management zone are given in Appendix G.

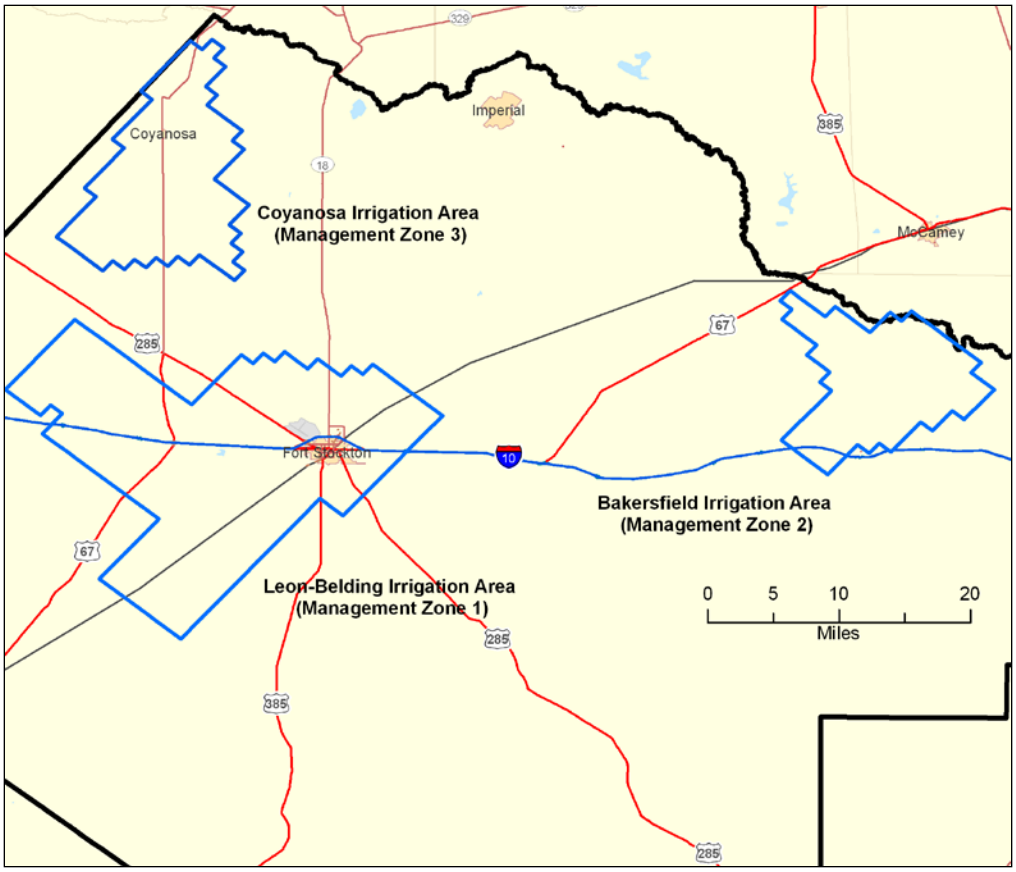

Figure 7, Groundwater Management Zones in MPGCD

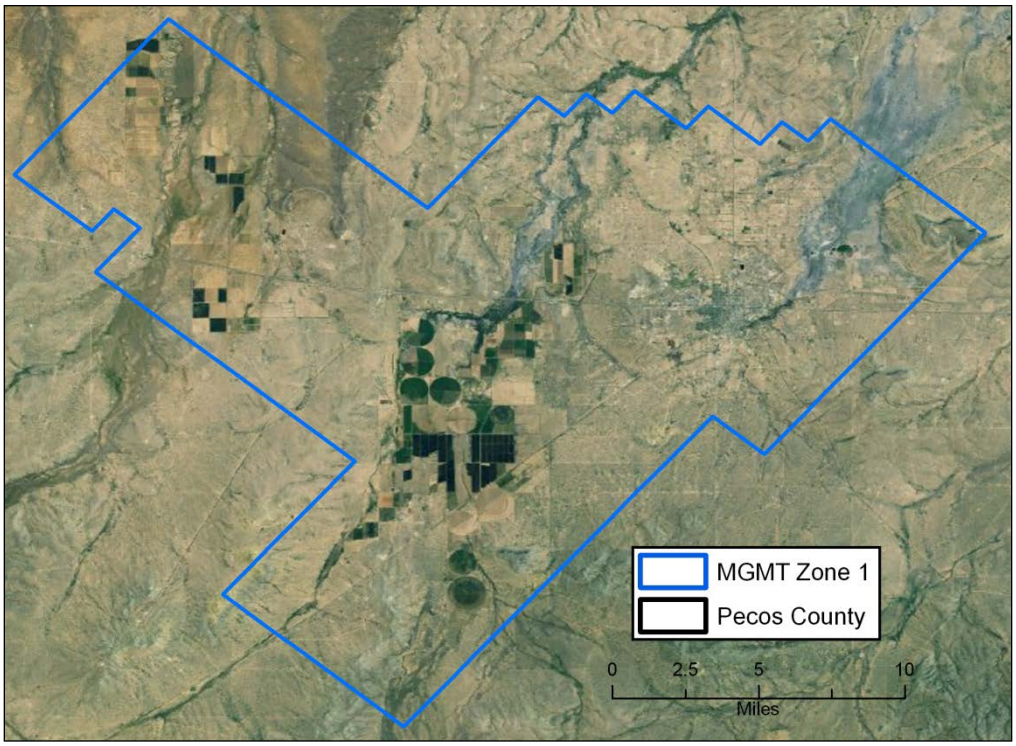

Figure 8, Groundwater Management Zone 1 in MPGCD

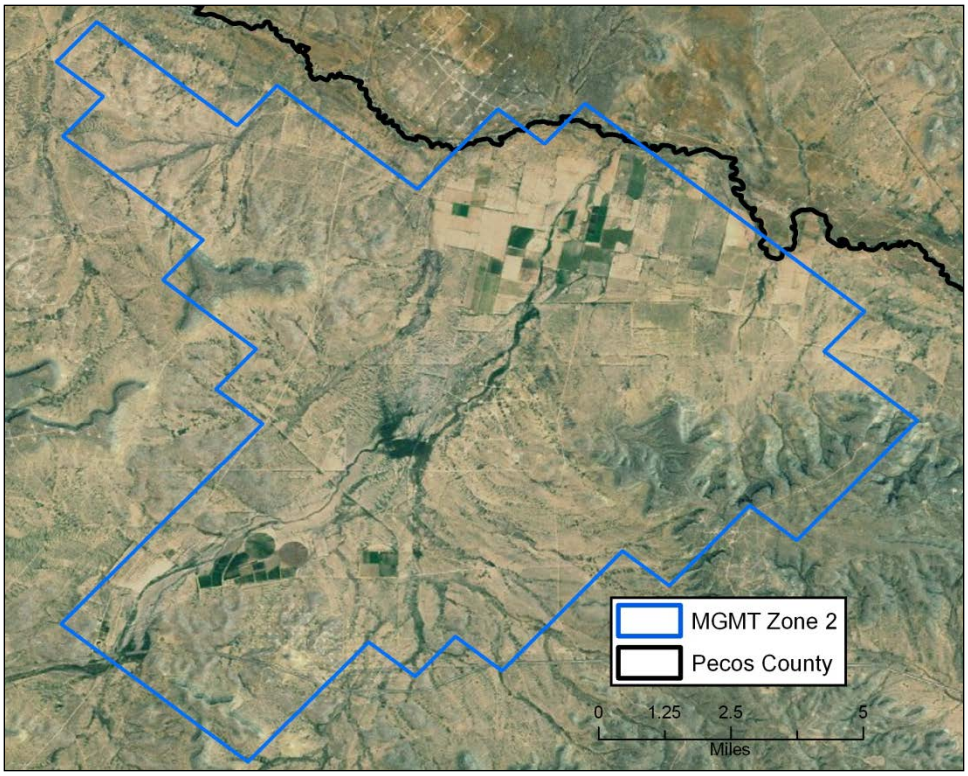

Figure 9, Groundwater Management Zone 2 in MPGCD

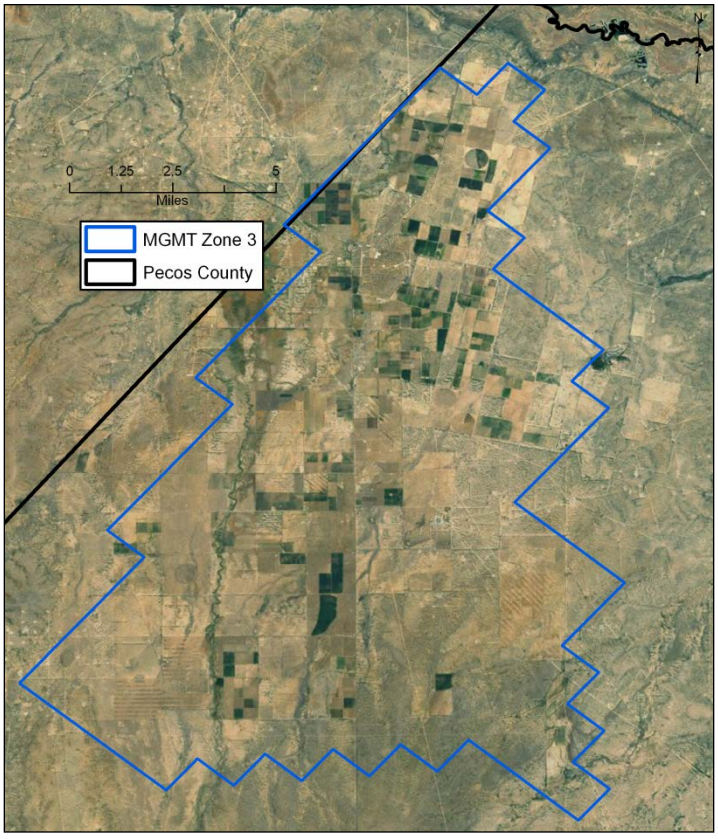

Figure 10, Groundwater Management Zone 3 in MPGCD

The District recognizes that groundwater use in the areas of principal groundwater demand in the District has the potential to result in localized aquifer draw down sufficient to possibly impair the DFCs of the aquifer in District as a whole (within each GMA). In each Management Zone described about a center of groundwater demand, the District seeks to avoid impairment of the adopted DFCs for the District as a whole (within the portions of the District in each of GMAs 3 and 7) by establishing benchmarks of sustainable groundwater use over time in the District Rules. The benchmarks of sustainable groundwater use over time established in the District Rules for each groundwater management zone may be based on the rates of change and the amounts of average aquifer draw-down described by the results of Scenario 10 of GAM-run 09-35 of version 3 (single-layer model) for the GMA-7 portion of MPGCD and Scenario 11 for the GMA 3 portion of MPGCD or other information such as water-level data. The assessment of the change in average draw-down values over time will be indexed to year 2010 water levels to be consistent with the adopted DFCs of the Edwards-Trinity (Plateau) and Pecos Valley aquifers. By managing the change in aquifer water levels over time in the management zones, the District can provide for the sustainability of the aquifers and avoid impairment of the aquifer DFCs established by the GMAs.

Capitan Reef Complex Aquifer

As of the date of this plan; a TWDB GAM for the Capitan Reef Aquifer has not been released. To assess groundwater availability, a spreadsheet model was developed. The model uses estimates of: the area of the aquifer recharge (unconfined) and the artesian (confined) zones; the annual amount of aquifer use (pumping, where pumping is assumed to be approximately equal to recharge); and the coefficient of storage of the aquifer in the confined and unconfined zones to predict the annual volume of water that could be produced from the aquifer and result in a specified amount of aquifer draw-down after 50 years. Predictions are made for the unconfined and confined zones of the aquifer within MPGCD. Predictions of the estimated annual amount of groundwater that could be produced in the unconfined zone and confined zone of the aquifer are summed for presentation. Aquifer-zone area estimates in Pecos County are from the TWDB GIS shape-files for the Capitan Reef aquifer. Estimates of the annual aquifer use are from estimates developed by MPGCD. The coefficients of storage values are reasonable estimates. Pumping was increased, until the amount of pumping that could be sustained by the aquifer without exceeding the selected management conditions. Details of the groundwater availability estimates for the Capitan Reef aquifer are given in Appendix F.

A. Desired Future Conditions

The Desired Future Condition describes the maintenance of the water levels expressed as an average draw down value for each aquifer zone where they occur in MPGCD over a 50-year horizon (2010-2060) at or above the levels specified below. *The desired future conditions are intended to define sustainable use by establishing management goals for each aquifer.* The District applied the spreadsheet models in 2010. The average draw-down values are indexed to year 2010 water levels. By maintaining the aquifer water levels the District can provide for the sustainability of the aquifer. The following 50-year

criteria (rounded to the nearest foot) were applied to the individual aquifer zones in each county to assess the amounts of sustainable use:

Unconfined Zone (GMA 7):

- Approximately 15 feet average draw down across the area of occurrence of the aquifer zone over 50-years

Confined Zone (GMA 3 and GMA 7):

- Approximately 200 feet average draw down across the area of occurrence of the aquifer zone over 50-years

B. Modeled Available Groundwater

The estimated total groundwater availability for the Capitan Reef aquifer in MPGCD is **11,122** acre-feet per year which is based on the amounts of groundwater that could be pumped while maintaining the selected management conditions in the aquifer subdivisions discussed above. In determining the volume of water available for permitting, **100** acre-feet per year is allocated for exempt well users. This leaves **11,122 acre-feet per year as the groundwater available for permitting for the Capitan Reef aquifer**.

A summary is given by GMA and aquifer zone below:

Unconfined Zone in GMA 7 (AA 10-09 MAG):

- 1,287 acre-feet per year (80 acre-feet per year reserved for exempt use)

Confined Zone in GMA 3 (AA 10-36 MAG):

- 1,361 acre-feet per year (10 acre-feet per year reserved for exempt use)

Confined Zone in GMA 7 (AA 10-09 MAG):

- 8,474 acre-feet per year (10 acre-feet per year reserved for exempt use)

Rustler Aquifer

As of the date of this plan; a TWDB GAM Report for the Rustler Aquifer was released August 2012. Since MPGCD 2016 DFC are not completed a spreadsheet model was developed. The model uses estimates of the area of the artesian (confined) zone in MPGCD; the annual amount of aquifer use (pumping, where pumping is assumed to be approximately equal to aquifer inflow); and the coefficient of storage of the aquifer in the confined zone to predict the annual volume of water that could be produced from the aquifer and result in a specified amount of aquifer draw-down after 50 years. Predictions are made for the confined zone of the aquifer within MPGCD. The predictions of the estimated annual amount of groundwater that could be produced in the confined zone of the aquifer are summed for presentation. Aquifer-zone area estimates in Pecos County are from the TWDB GIS shape-files for the Rustler aquifer. Estimates of the annual aquifer use are from estimates developed by MPGCD. The coefficients of storage values are

reasonable estimates. Pumping was increased, until the amount of pumping that could be sustained by the aquifer without exceeding the selected management conditions. Details of the estimates of groundwater availability for the Rustler aquifer are given in Appendix F.

A. Desired Future Conditions

The Desired Future Condition describes the maintenance of the water levels expressed as an average draw down value for each section of aquifer where they occur in MPGCD over a 50-year horizon (2010-2060) at or above the levels specified below. *The desired future conditions are intended to define sustainable use by establishing management goals for each aquifer.* The District applied the spreadsheet models in 2010. The average draw-down values are indexed to year 2010 water levels. By maintaining the aquifer water levels the District can provide for the sustainability of the aquifer. The following 50-year criteria (rounded to the nearest foot) were applied to the individual aquifer zones in each county to assess the amounts of sustainable use:

Confined Zone in GMA 3 and GMA 7:

- Approximately 300 feet average draw down across the area of occurrence of the aquifer zone over 50-years

B. Modeled Available Groundwater

The Modeled Available Groundwater for the Rustler aquifer in MPGCD is 10,508 acre-feet per year which is based on the amounts of groundwater that could be pumped while maintaining the selected management conditions in the aquifer subdivisions discussed above. In determining the volume of water available for permitting, 100 acre-feet per year is allocated for exempt well users. This leaves **10,408 acre-feet per year as the groundwater available for permitting for the Rustler aquifer**.

A summary is given by GMA and aquifer zone below:

Confined Zone in GMA 3 (AA 10-37 MAG):

- 3,466 acre-feet per year (50 acre-feet per year reserved for exempt use)

Confined Zone in GMA 7 is (AA 10-13 MAG):

- 7,042 acre-feet per year (50 acre-feet per year reserved for exempt use)

Dockum Aquifer

To assess groundwater availability, the District requested through GMAs-3 and 7 that TWDB perform a series of simulations using the TWDB's Groundwater Availability Model (GAM) for the Dockum aquifer. The series of GAM simulations iteratively applied varying amounts of groundwater pumping from the aquifer over a predictive period. Pumping was varied, until the amount of pumping that could be sustained by the aquifer without exceeding the selected management conditions was identified.

A. Desired Future Conditions

The Desired Future Condition describes the maintenance of the water levels expressed as an average draw down value for the aquifer where it occurs in MPGCD over a 50-year horizon (2010-2060) at or above the levels specified below. *The selected management conditions are intended to define sustainable use by establishing management goals for each aquifer.* The average draw-down values are indexed to year 2010 water levels. By maintaining the aquifer water levels the District can provide for the sustainability of the aquifer. The following 50-year criteria (rounded to the nearest foot) were applied to the individual aquifer zones in each county to assess the amounts of sustainable use:

Confined Zone in GMA 3:

- Approximately 47 feet average draw down across the area of occurrence of the aquifer zone over 50-years

Confined Zone in GMA 7:

- Draw down is not to exceed approximately 4 feet on average across the area of occurrence of the aquifer zone by year 2060

B. Modeled Available Groundwater

The estimated total groundwater availability for the Dockum aquifer in MPGCD is 13,965 acre-feet per year which is based on the amounts of groundwater that could be pumped while maintaining the selected management conditions in the aquifer discussed above. In determining the volume of water available for permitting, 100 acre-feet per year is allocated for exempt well users. This leaves 13,865 acre-feet per year as the groundwater available for permitting for the Dockum aquifer. The Dockum Aquifer **MAG report for the confined zone in GMA-3 is GR10-0369 MAG and the confined zone for GMA-7 is GR10-040 MAG version 2.**

GMAs 3 and 7:

- 13,965 acre-feet per year (100 acre-feet per year reserved for exempt use)

Estimate of the Annual Amount of Groundwater Use in the District and 2012 State Water Plan data.
See Appendix D.

Details on the Estimate of Annual Recharge to the Capitan Reef Complex aquifer
See Appendix E.

Details on the Estimates of Annual Groundwater Availability in the Capitan and Rustler Aquifers
See Appendix F.

2010 Baseline Water Levels for Management Zone and GAM Cell Identification for Management Zones
See Appendix G.

GAM Run 14-010: Middle Pecos Groundwater Conservation District (March 26, 2014)

See Appendix H.

Details on How the District Will Manage Groundwater in the District

The District will manage the supply of groundwater within the District in order to conserve the resource while seeking to maintain the economic viability of all resource user groups, public and private. The District seeks to manage the groundwater resources of the District as practicably as possible in a sustainable manner through the development of the Desired Future Conditions of Aquifers within the District. The Texas Legislature established that groundwater conservation districts are the preferred method of groundwater management in Section 36.0015 of the Texas Water Code. The District will cooperate with the other Groundwater Conservation Districts in the Groundwater Management Areas which Pecos County is located. In consideration of the economic and cultural activities occurring within the District, the District will identify and engage in such activities and practices, that if implemented may result in the conservation of groundwater in the District. The District will manage groundwater resources through rules developed and implemented in accordance with Chapter 36 of the Texas Water Code and the provisions of the District Enabling Act recorded in Chapter 1299 of the Acts of the 77th Texas Legislature (HB 1258). The District will require that any well constructed as an exempt well under activities regulated by the Texas Railroad Commission (TRC) and later converted to another use not regulated by the TRC will be required to seek a permit for the use of groundwater in the District if the converted use of the well is otherwise not exempted from permitting under the Texas Water Code or Rules of the District.

An observation well network may be established and maintained in order to monitor changing storage conditions of groundwater supplies within the District. When a monitoring well network has been established the District will make a regular assessment of water supply and groundwater storage conditions and will report those conditions to the District Board of Directors and to the public. The District may undertake, as necessary, investigations of the groundwater resources within the District and will make the results of investigations available to the public upon adoption by the District Board of Directors. The District will co-operate with investigations of the groundwater resources of the District undertaken by other local political subdivisions or agencies of the State of Texas.

In order to better manage groundwater resources the District may establish management zones for all sources of groundwater within the District. In each management zone the District may:

a) Establish Desired Future Conditions and authorize the production of groundwater
b) Determine and implement the proportional reductions of the use of groundwater for all classes of groundwater use that are established by the District in order to maintain the established Desired Future Conditions of the management zone.
c) Allow for the transfer of the permitted right to use groundwater if a process is established in the District rules

Section 36.116 of the Texas Water Code provides that the District may use the management zones to adopt different rules for each:

a) Aquifer
b) Aquifer subdivision
c) Geologic formation
d) Geographic area in which any part of a through c above may occur within the District

For the purpose of managing the use of groundwater within the District, the District may address the use of groundwater in the aquifers in the District as a whole or within any management zone established by the District in order that the Desired Future Condition of the aquifer or aquifer subdivision in which the use occurs is not impaired. In furtherance of the District management of groundwater, the District may also establish any other criteria by Rule, as a threshold of use beyond which withdrawals from the aquifer or aquifer subdivision in excess of the threshold may result in a specified undesirable or injurious condition to the aquifer or aquifer subdivision. If the District determines that the Desired Future Conditions or other criteria established by the District are being or may imminently be impaired with reasonable certainty, the District may take such actions or implement such conservation measures as may be necessary to restore the aquifer or aquifer subdivision to conditions which do not impair the Desired Future Conditions or other criteria established by the District under this section for the aquifer or aquifer subdivision.

The District will use the available estimates of groundwater recharge, movement and Managed Available Groundwater within the District in exercising the statutory responsibility of managing the groundwater in the District. As more information on groundwater conditions in the District becomes available, the District may use that information to refine the specific methodology by which the District will seek to sustainably manage the groundwater in the District.

The annual amount of water used from an aquifer or aquifer subdivision in the District or in a management zone established by the District will be averaged over a period of years specified in the District rules to aid in determining if the Managed Available Groundwater value or the Desired Future Condition has been exceeded. If the Desired Future Condition of an aquifer or aquifer subdivision in the District or a management zone is found to have been exceeded the District may implement proportional reductions in the permitted use of groundwater in the District or management zone to reduce the levels of use in order to maintain the Desired Future Condition. The District will implement proportional reductions in the permitted use of groundwater only to the extent that is required to maintain the Desired Future Condition in an aquifer, aquifer subdivision or a management zone.

The District rules will specify the methodology by which the District will track the usage of groundwater from an aquifer or aquifer subdivision in the District or a management zone to determine whether the sustainable use has been exceeded. The District rules will specify the methodology by which the District will implement any proportional

reductions in the permitted use of groundwater in the District. All District actions with regard to proportional reductions of the permitted use of groundwater will be taken in noticed public meetings and in accord with the District rules.

The District has implemented rules establishing a claims process in which the District required existing or historic users of groundwater to obtain historic use permits. The claims process was intended to protect existing use as provided for in Section 36.113(e) of the Texas Water Code. To the extent practicable while remaining consistent with this plan, the District's existing and historic use permit process and period will preserve historic use as provided in Section 36.116(b) of the Texas Water Code.

The District will protect the existing and historical use of groundwater that occurred in the District prior to the effective date of the rules establishing the claims process. To obtain a historic use permit, an existing or historic user had to prove the maximum annual amount of groundwater that the user put towards a beneficial use during an existing and historic use period established in the District rules. The protection extended to historic use permit holders is achieved by imposing more restrictive permit conditions on new permit applications. In extending this protection to historic use permit holders the District established limitations that:

a) Apply to all subsequent new applications for the permitted use of groundwater and applications for the increased use of groundwater by holders of historic user permits regardless of the type or location of use
b) Bear a reasonable relationship to the District's management plan
c) Are reasonably necessary to protect existing use and maintain established Desired Future Conditions of aquifers, aquifer subdivisions or management established by the District.

The District may adopt rules to regulate groundwater withdrawals by means of spacing and/or production limits. The District may deny a well construction permit or limit groundwater withdrawals in accordance with the guidelines stated in the rules of the District. In making a determination to deny a permit or reduce the amount of groundwater withdrawals authorized in an existing permit, the District will weigh the public benefit in managing the aquifer to be derived from the denial of a groundwater withdrawal permit or the reduction of the amount of authorized groundwater withdrawals against the individual hardship imposed by the permit denial or authorization reduction.

The relevant factors to be considered in making a determination to deny a permit or limit groundwater withdrawals may include:

a) The rules of the District
b) The distribution of groundwater resources in the aquifers or aquifer subdivisions of the District or any management zones established by the District
c) The economic hardship resulting from grant or denial of a permit or the terms prescribed by the permit

In pursuit of the District's mission of protecting the resource, the District may require reduction of groundwater withdrawals. To achieve this purpose, the District may, at the

Boards discretion amend or revoke any permits after notice and hearing. The determination to seek the amendment, reduction or revocation of a permit by the District will be based on aquifer conditions observed by the District. The District will, when necessary, enforce the terms and conditions of permits and the rules of the District by enjoining the permit holder in a court of competent jurisdiction as provided for in Texas Water Code Chapter 36.102.

The District will establish rules for the proportional reduction of the permitted use of groundwater in the District that will recognize the following priorities of use:

1) Exempt users with particular consideration to livestock and domestic use
2) Holders of historic use of groundwater permits
3) Holders of non-historic groundwater use permits

The District may employ technical resources at its disposal, as needed, to evaluate the resources available within the District and to determine the effectiveness of regulatory or conservation measures. In consideration of particular individual, localized or District-wide conditions the District may allow the production in a management zone to exceed the sustainable amount for a period of time considered necessary by the District. The exercise of this discretion by the District shall not be construed as limiting the authority of the District in any other matter. A public or private user may appeal to the Board for discretion in enforcement of the provisions of a reduction in the permitted use of groundwater on grounds of adverse economic hardship or unique local conditions. The exercise of said discretion by the Board shall not be construed as limiting the power of the Board.

Actions, Procedures, Performance and Avoidance Necessary to Effectuate the Plan

The District will implement the provisions of this management plan and will utilize the objectives of the plan as a guide for District actions, operations and decision-making. The District will ensure that planning efforts, activities and operations are consistent with the provisions of this plan.

The District will adopt rules in accordance with Chapter 36 of the Texas Water Code and all rules will be followed and enforced. The development of rules will be based on the scientific information and technical evidence available to the District.

The District will encourage cooperation and coordination in the implementation of this plan. All operations and activities will be performed in a manner that encourages the cooperation of the citizens of the District and with the appropriate water management entities at the state, regional and local level.

Methodology for Tracking the District's Progress in Achieving Management Goals

The General Manager of the District will prepare and submit an annual report (Annual Report) to the District Board of Directors. The Annual Report will include an update on the District's performance in achieving the management goals contained in this plan. The general manager will present the Annual Report to the Board of Directors within one hundred twenty (120) days following the completion of the District's Fiscal Year, currently the District fiscal year ends on September 30 of each calendar year. A copy of the annual audit of District financial records will be included in the Annual Report. The District will maintain a copy of the Annual Report on file for public inspection at the District offices, upon adoption by the Board of Directors. A copy of MPGCD rules can be found here.
http://www.middlepecosgcd.org/pdf/rules/2014/rules_adopted_10-21-2014.pdf

Management Goals

1. Providing for the Most Efficient Use of Groundwater in the District

1.1 Objective – Each year, the District will require all new exempt or permitted wells that are constructed within the boundaries of the District to be registered with the District in accordance with the District rules.

1.1 Performance Standard – Each Year the number of exempt and permitted wells registered by the District for the year will be incorporated into the Annual Report submitted to the Board of Directors of the District.

2. Controlling and Preventing the Waste of Groundwater in the District

2.1 Objective – Each year, the District will make an evaluation of the District Rules to determine whether any amendments are recommended to decrease the amount of waste of groundwater within the District.

2.1 Performance Standard – The District will include a discussion of the annual evaluation of the District Rules and the determination of whether any amendments to the rules are recommended to prevent the waste of groundwater in the Annual Report of the District provided to the Board of Directors.

2.2 Objective – Each year, the District will provide information to the public on eliminating and reducing wasteful practices in the use of groundwater either by a page on groundwater waste reduction or a link to information on groundwater waste reduction on the District's website or by providing an article on eliminating and reducing wasteful practices to a newspaper of general circulation in the District for potential publication.

2.2 Performance Standard – Each year, a copy of the information provided on groundwater waste reduction on the District's website or a copy of the article provided to a newspaper of general circulation in the District will be included in the District's Annual Report to be given to the District Board of Directors.

3. Controlling and Preventing Subsidence

This Management Goal is not Applicable to the District.

4. Conjunctive Surface Water Management Issues

4.1 Objective – Each year, the District will participate in the regional planning process by being represented at the Region F Regional Water Planning Group meetings.

4.1 Performance Standard – The attendance of a District representative to at least 50 percent of the Region F Regional Water Planning Group meetings will be noted in the Annual Report presented to the District Board of Directors.

5. Natural Resource Issues That Affect the Use and Availability of Groundwater or are Affected by the Use of Groundwater

5.1 Objective – Each year the District will monitor the permitting and integrity testing of salt-water or waste-disposal injection wells permitted by the Texas Railroad Commission within the District.

5.1a Performance Standard – Each year, a summary of the salt-water or waste-disposal injection wells permitted by the Texas Railroad Commission within the District will be included in the Annual Report submitted to the District Board of Directors.

5.1b Performance Standard – Each year a summary of the results of the integrity tests performed on the salt-water or waste-disposal injection wells permitted by the Texas Railroad Commission to operate within the District will be included in the Annual Report submitted to the District Board of Directors.

5.2 Objective – Each year the District will monitor the discharge of Comanche and related springs or acquire the monitoring data on spring discharge developed by others.

5.2 Performance Standard – Each year, a summary of the timing of the appearance of the seasonal spring-discharge, an estimate of the annual volume of discharge from Comanche and related springs and a discussion comparing the most recent estimates of spring-discharge to previous estimates will be included in the Annual Report submitted to the District Board of Directors.

5.3 Objective – From year 2010, each third year, the District will assess the changes in the quantity of the discharge of Comanche and related springs and recommend to the Board of Directors whether any conservation measures are necessary to maintain the discharge of Comanche and related springs.

5.3 Performance Standard – From year 2010, each third year, a summary of the assessment of the changes in the quantity of annual seasonal spring-discharge and any recommendations for conservation measures to be considered for implementation will be included in the Annual Report submitted to the District Board of Directors.

6) Addressing Drought Conditions

6.1 Objective – Each month, the District will download available drought information, for the counties in the District, from available websites on the internet..

6.1 Performance Standard – Quarterly, the District will make an assessment of the status of drought in the District and prepare a quarterly briefing for the Board of Directors. The downloaded maps, reports and information will be included with copies of the quarterly briefing in the District Annual Report to the Board of Directors.

7. Addressing

A. Conservation

7A.1 Objective – The District will submit an article annually, regarding water conservation for publication to at least one newspaper of general circulation in Pecos County.

7A.1 Performance Standard – A copy of the article submitted by the District for publication to a newspaper of general circulation in Pecos County regarding water conservation will be included in the Annual Report to the Board of Directors.

B. Recharge Enhancement

This management goal is not applicable to the District.

C. Rainwater Harvesting

7C.1 Objective – The District will post an article or a link to an article annually, regarding rainwater harvesting on the District website www.middlepecosgcd.org

7C.1 Performance Standard – A copy of the article posted on the District website regarding rainwater harvesting will be included in the Annual Report to the Board of Directors.

D. Precipitation Enhancement

This management goal is not applicable to the District.

E. Brush Control

This management goal is not applicable to the District.

8. Addressing the Desired Future Conditions (DFC) of the Groundwater Resources in the District

8.1 Objective – Each year, the District will collect at least 5 water-level measurements from the District monitor wells located in the portion of the District located within GMA-7.

8.1a Performance Standard – Each year, the District will post the water-level measurements collected from the portion of the District within GMA-7 and identify the aquifer from which the measurement is taken, in the Annual Report to the Board of Directors.

8.1b Performance Standard – Each year, the District will include a discussion of the change in water-levels in each aquifer for which a Desired Future Condition is established by GMA-7, in the Annual Report to the Board of Directors.

8.1c Performance Standard – Each five years, the District will include a discussion of the change in water-levels in each aquifer for which a Desired Future Condition is established by GMA-7 comparing the change to the incremental time-appropriate change in water-levels indicated by the established Desired Future Condition of the aquifer, in the Annual Report to the Board of Directors.

8.2 Objective – Each year, the District will collect at least 5 water-level measurements from the District monitor wells located in the portion of the District located within GMA-3.

8.2a Performance Standard – Each year, the District will post the water-level measurements collected from the portion of the District within GMA-3 and identify the aquifer from which the measurement is taken, in the Annual Report to the Board of Directors.

8.2b Performance Standard – Each year, the District will include a discussion of the change in water-levels in each aquifer for which a Desired Future Condition is established by GMA-3, in the Annual Report to the Board of Directors.

8.3c Performance Standard – Each five years, the District will include a discussion of the change in water-levels in each aquifer for which a Desired Future Condition is established by GMA-3 comparing the change to the incremental time-appropriate change in water-levels indicated by the established Desired Future Condition of the aquifer, in the Annual Report to the Board of Directors.

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Appendix A:

District Enabling Act HB 1258 of 77th Texas Legislature Validating Creation of the Middle Pecos Groundwater Conservation District

AN ACT

relating to the ratification of the creation of and to the administration, powers, duties, operation, and financing of the Middle Pecos Groundwater Conservation District.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF TEXAS:

SECTION 1. RATIFICATION OF CREATION. The creation by Chapter 1331, Acts of the 76th Legislature, Regular Session, 1999 (Senate Bill No. 1911), of the Middle Pecos Groundwater Conservation District in Pecos County is ratified as required by Section 15(a) of that Act, subject to approval at a confirmation election under Section 7 of this Act.

SECTION 2. DEFINITION. In this Act, "district" means the Middle Pecos Groundwater Conservation District.

SECTION 3. BOUNDARIES. The boundaries of the district are coextensive with the boundaries of Pecos County, Texas.

SECTION 4. GENERAL POWERS. (a) The district has all of the rights, powers, privileges, authority, functions, and duties provided by the general law of this state, including Chapter 36, Water Code, applicable to groundwater conservation districts created under Section 59, Article XVI, Texas Constitution. This Act prevails over any provision of general law that is in conflict or inconsistent with this Act, including any provision of Chapter 1331, Acts of the 76th Legislature, Regular Session, 1999 (Senate Bill No. 1911).

(b) Notwithstanding Subsection (a) of this section, the following provisions prevail over a conflicting or inconsistent provision of this Act:

(1) Sections 36.1071-36.108, Water Code;

(2) Sections 36.159-36.161, Water Code; and

(3) Subchapter I, Chapter 36, Water Code.

(c) Section 36.121, Water Code, does not apply to the district.

(d) The rights, powers, privileges, authority, functions, and duties of the district are not subject to the continuing right of supervision of the state through the Texas Natural Resource Conservation Commission.

(e) In addition to other fees assessed by the district, the district may assess an additional fee on groundwater transferred out of the district not to exceed 10 percent of the amount of the fee assessed for the production of water for use within the district.

(f) The district may not impose any additional rules or regulations on the production of groundwater for use outside of the district than imposed upon production for in-district use.

SECTION 5. BOARD OF DIRECTORS. (a) The district is governed by a board of 11 directors.

(b) Temporary directors serve until initial directors are elected under Section 7 of this Act.

(c) Initial directors serve until permanent directors are elected under Section 8 of this Act.

(d) Permanent directors serve staggered four-year terms.

(e) Each director must qualify to serve as director in the manner provided by Section 36.055, Water Code.

(f) A director serves until the director's successor has qualified.

(g) If there is a vacancy on the board, the remaining

directors shall appoint a director to serve the remainder of the term. If at any time there are fewer than three qualified directors, the Pecos County Commissioners Court shall appoint the necessary number of persons to fill all the vacancies on the board.

(h) A director may not receive a salary or other compensation for service as a director but may be reimbursed for actual expenses of attending meetings at the rate in effect for employees of Pecos County.

SECTION 6. METHOD OF ELECTING DIRECTORS. (a) The directors of the district shall be elected according to the method provided by this section.

(b) One director shall be elected by the qualified voters of the entire district, two directors shall be elected from each county commissioners precinct by the qualified voters of that precinct, one director shall be elected from the city of Iraan by the qualified voters of that city, and one director shall be elected from the city of Fort Stockton by the qualified voters of that city.

(c) To be qualified to be a candidate for or to serve as a director at large, a person must be a registered voter in the district. To be a candidate for or to serve as director from a county commissioners precinct or a city, a person must be a registered voter of that precinct or city, as applicable.

(d) A person shall indicate on the application for a place on the ballot:

(1) the precinct or city that the person seeks to represent; or

(2) that the person seeks to represent the district at

large.

(e) At the first election after the county commissioners precincts are redrawn under Section 18, Article V, Texas Constitution, eight new directors shall be elected to represent the precincts. The directors elected shall draw lots to determine which four directors serve two-year terms and which four directors serve four-year terms.

SECTION 7. CONFIRMATION AND INITIAL DIRECTORS' ELECTION. (a) The temporary board of directors shall call and hold an election to confirm establishment of the district and to elect initial directors.

(b) At the confirmation and initial directors' election, the temporary board of directors shall have placed on the ballot the name of any candidate filing for an initial director's position and blank spaces to write in the names of other persons. A temporary director who is qualified to be a candidate under Sections 5 and 6 may file for an initial director's position.

(c) Section 41.001(a), Election Code, does not apply to a confirmation and initial directors' election held as provided by this section.

(d) Except as provided by this section, a confirmation and initial directors' election must be conducted as provided by Sections 36.017(b)-(h), Water Code, and the Election Code.

(e) The elected initial directors shall draw lots to determine their terms. One director from each county commissioners precinct and the director from the district at large serve terms that expire on the date of the first election held under Section 8 of this Act. The remaining directors serve terms that expire on the

date of the second election held under Section 8 of this Act.

(f) If the majority of the votes cast at an election held under this section is against the confirmation of the district, the temporary directors may call another election under this section not later than August 31, 2003.

SECTION 8. ELECTION OF DIRECTORS. On the first Saturday in May of the first even-numbered year after the year in which the district is authorized to be created at a confirmation election and on the first Saturday in May of each subsequent second year, an election shall be held in the district to elect the appropriate number of directors.

SECTION 9. FINDINGS RELATED TO PROCEDURAL REQUIREMENTS. (a) The proper and legal notice of the intention to introduce this Act, setting forth the general substance of this Act, has been published as provided by law, and the notice and a copy of this Act have been furnished to all persons, agencies, officials, or entities to which they are required to be furnished by the constitution and other laws of this state, including the governor, who has submitted the notice and Act to the Texas Natural Resource Conservation Commission.

(b) The Texas Natural Resource Conservation Commission has filed its recommendations relating to this Act with the governor, lieutenant governor, and speaker of the house of representatives within the required time.

(c) All requirements of the constitution and laws of this state and the rules and procedures of the legislature with respect to the notice, introduction, and passage of this Act are fulfilled and accomplished.

SECTION 10. EFFECTIVE DATE; EXPIRATION DATE. (a) This Act takes effect September 1, 2001.

(b) If the creation of the district is not confirmed at a confirmation election held under Section 7 of this Act before September 1, 2003, the district is dissolved and this Act expires on that date.

_____ _____

President of the Senate **Speaker of the House**

I certify that H.B. No. 1258 was passed by the House on March 29, 2001, by a non-record vote; and that the House concurred in Senate amendments to H.B. No. 1258 on May 24, 2001, by a non-record vote.

_____

Chief Clerk of the House

I certify that H.B. No. 1258 was passed by the Senate, with amendments, on May 17, 2001, by a viva-voce vote.

_____

Secretary of the Senate

APPROVED: _____

Date

_____

Governor

Appendix B

Evidence of the Administrative Processes Required for the Approval of the Groundwater Management Plan as Administratively Complete

Add the notice and minutes

(e) In exercising the power of eminent domain, if the district requires relocating, raising, lowering, rerouting, changing the grade, or altering the construction of any railroad, highway, pipeline, or electric transmission or distribution, telegraph, or telephone lines, conduits, poles, or facilities, the district must bear the actual cost of relocating, raising, lowering, rerouting, changing the grade, or altering the construction to provide comparable replacement without enhancement of facilities after deducting the net salvage value derived from the old facility.

Added by Acts 1995, 74th Leg., ch. 933, Sec. 2, eff. Sept. 1, 1995. Amended by Acts 2003, 78th Leg., ch. 560, Sec. 3, eff. Sept. 1, 2003.

Sec. 36.106. SURVEYS. A district may make surveys of the groundwater reservoir or subdivision and surveys of the facilities in order to determine the quantity of water available for production and use and to determine the improvements, development, and recharging needed by a reservoir or its subdivision.

Added by Acts 1995, 74th Leg., ch. 933, Sec. 2, eff. Sept. 1, 1995. Amended by Acts 2003, 78th Leg., ch. 560, Sec. 4, eff. Sept. 1, 2003.

Sec. 36.107. RESEARCH. A district may carry out any research projects deemed necessary by the board.

Added by Acts 1995, 74th Leg., ch. 933, Sec. 2, eff. Sept. 1, 1995. Amended by Acts 1997, 75th Leg., ch. 1010, Sec. 4.28, eff. Sept. 1, 1997.

Sec. 36.1071. MANAGEMENT PLAN. (a) Following notice and hearing, the district shall, in coordination with surface water management entities on a regional basis, develop a management plan that addresses the following management goals, as applicable:

(1) providing the most efficient use of groundwater;

(2) controlling and preventing waste of groundwater;

(3) controlling and preventing subsidence;

(4) addressing conjunctive surface water management

issues;

(5) addressing natural resource issues;

(6) addressing drought conditions;

(7) addressing conservation, recharge enhancement, rainwater harvesting, precipitation enhancement, or brush control, where appropriate and cost-effective; and

(8) addressing the desired future conditions adopted by the district under Section 36.108.

(b) The management plan, or any amendments to the plan, shall be developed using the district's best available data and forwarded to the regional water planning group for use in their planning process.

(c) The commission and the Texas Water Development Board shall provide technical assistance to a district in the development of the management plan required under Subsection (a) which may include, if requested by the district, a preliminary review and comment on the plan prior to final approval by the board. If such review and comment by the commission is requested, the commission shall provide comment not later than 30 days from the date the request is received.

(d) The commission shall provide technical assistance to a district during its initial operational phase. If requested by a district, the Texas Water Development Board shall train the district on basic data collection methodology and provide technical assistance to districts.

(e) In the management plan described under Subsection (a), the district shall:

(1) identify the performance standards and management objectives under which the district will operate to achieve the management goals identified under Subsection (a);

(2) specify, in as much detail as possible, the actions, procedures, performance, and avoidance that are or may be necessary to effect the plan, including specifications and proposed rules;

(3) include estimates of the following:

(A) modeled available groundwater in the district based on the desired future condition established under

Section 36.108;

(B) the amount of groundwater being used within the district on an annual basis;

(C) the annual amount of recharge from precipitation, if any, to the groundwater resources within the district;

(D) for each aquifer, the annual volume of water that discharges from the aquifer to springs and any surface water bodies, including lakes, streams, and rivers;

(E) the annual volume of flow into and out of the district within each aquifer and between aquifers in the district, if a groundwater availability model is available;

(F) the projected surface water supply in the district according to the most recently adopted state water plan; and

(G) the projected total demand for water in the district according to the most recently adopted state water plan; and

(4) consider the water supply needs and water management strategies included in the adopted state water plan.

(f) The district shall adopt rules necessary to implement the management plan. Prior to the development of the management plan and its approval under Section 36.1072, the district may not adopt rules other than rules pertaining to the registration and interim permitting of new and existing wells and rules governing spacing and procedure before the district's board; however, the district may not adopt any rules limiting the production of wells, except rules requiring that groundwater produced from a well be put to a nonwasteful, beneficial use. The district may accept applications for permits under Section 36.113, provided the district does not act on any such application until the district's management plan is approved as provided in Section 36.1072.

(g) The district shall adopt amendments to the management plan as necessary. Amendments to the management plan shall be adopted after notice and hearing and shall otherwise comply with the requirements of this section.

(h) In developing its management plan, the district shall

use the groundwater availability modeling information provided by the executive administrator together with any available site-specific information that has been provided by the district to the executive administrator for review and comment before being used in the plan.

Added by Acts 1995, 74th Leg., ch. 933, Sec. 2, eff. Sept. 1, 1995. Redesignated from 36.107(b) and (c) and amended by Acts 1997, 75th Leg., ch. 1010, Sec. 4.28, eff. Sept. 1, 1997. Amended by Acts 2001, 77th Leg., ch. 966, Sec. 2.46, eff. Sept. 1, 2001.

Amended by:

Acts 2005, 79th Leg., Ch. 970 (H.B. 1763), Sec. 5, eff. September 1, 2005.

Acts 2011, 82nd Leg., R.S., Ch. 17 (S.B. 727), Sec. 1, eff. April 29, 2011.

Acts 2011, 82nd Leg., R.S., Ch. 18 (S.B. 737), Sec. 2, eff. September 1, 2011.

Acts 2011, 82nd Leg., R.S., Ch. 1233 (S.B. 660), Sec. 16, eff. September 1, 2011.

Sec. 36.1072. TEXAS WATER DEVELOPMENT BOARD REVIEW AND APPROVAL OF MANAGEMENT PLAN. (a) In this section, "development board" means the Texas Water Development Board.

(a-1) A district shall, not later than three years after the creation of the district or, if the district required confirmation, not later than three years after the election confirming the district's creation, submit the management plan required under Section 36.1071 to the executive administrator for review and approval.

(b) Within 60 days of receipt of a district's management plan adopted under Section 36.1071, readopted under Subsection (e) or (g) of this section, or amended under Section 36.1073, the executive administrator shall approve the district's plan if the plan is administratively complete. A management plan is administratively complete when it contains the information required to be submitted under Section 36.1071(a) and (e). The executive administrator may determine whether conditions justify waiver of the requirements under Section 36.1071(e)(4).

(c) Once the executive administrator has approved a district's management plan:

(1) the executive administrator may not revoke but may require revisions to the approved management plan as provided by Subsection (g); and

(2) the executive administrator may request additional information from the district if the information is necessary to clarify, modify, or supplement previously submitted material, but a request for additional information does not render the management plan unapproved.

(d) A management plan takes effect on approval by the executive administrator or, if appealed, on approval by the development board.

(e) The district may review the plan annually and must review and readopt the plan with or without revisions at least once every five years. The district shall provide the readopted plan to the executive administrator not later than the 60th day after the date on which the plan was readopted. Approval of the preceding management plan remains in effect until:

(1) the district fails to timely readopt a management plan;

(2) the district fails to timely submit the district's readopted management plan to the executive administrator; or

(3) the executive administrator determines that the readopted management plan does not meet the requirements for approval, and the district has exhausted all appeals to the Texas Water Development Board or appropriate court.

(f) If the executive administrator does not approve the district's management plan, the executive administrator shall provide to the district, in writing, the reasons for the action. Not later than the 180th day after the date a district receives notice that its management plan has not been approved, the district may submit a revised management plan for review and approval. The executive administrator's decision may be appealed to the development board. If the development board decides not to approve the district's management plan on appeal, the district may request that the conflict be mediated. The district and the board

may seek the assistance of the Center for Public Policy Dispute Resolution at The University of Texas School of Law or an alternative dispute resolution system established under Chapter 152, Civil Practice and Remedies Code, in obtaining a qualified impartial third party to mediate the conflict. The cost of the mediation services must be specified in the agreement between the parties and the Center for Public Policy Dispute Resolution or the alternative dispute resolution system. If the parties do not resolve the conflict through mediation, the decision of the development board not to approve the district's management plan may be appealed to a district court in Travis County. Costs for the appeal shall be set by the court hearing the appeal. An appeal under this subsection is by trial de novo. The commission shall not take enforcement action against a district under Subchapter I until the latest of the expiration of the 180-day period, the date the development board has taken final action withholding approval of a revised management plan, the date the mediation is completed, or the date a final judgment upholding the board's decision is entered by a district court. An enforcement action may not be taken against a district by the commission or the state auditor under Subchapter I because the district's management plan and the approved regional water plan are in conflict while the parties are attempting to resolve the conflict before the development board, in mediation, or in court. Rules of the district continue in full force and effect until all appeals under this subsection have been exhausted and the final judgment is adverse to the district.

(g) A person with a legally defined interest in groundwater in a district, or the regional water planning group, may file a petition with the development board stating that a conflict requiring resolution may exist between the district's approved management plan developed under Section 36.1071 and the state water plan. If a conflict exists, the development board shall provide technical assistance to and facilitate coordination between the involved person or regional water planning group and the district to resolve the conflict. Not later than the 45th day after the date the person or the regional water planning group files a petition with the development board, if the conflict has not been resolved,

the district and the involved person or regional planning group may mediate the conflict. The district and the involved person or regional planning group may seek the assistance of the Center for Public Policy Dispute Resolution at The University of Texas School of Law or an alternative dispute resolution system established under Chapter 152, Civil Practice and Remedies Code, in obtaining a qualified impartial third party to mediate the conflict. The cost of the mediation services must be specified in the agreement between the parties and the Center for Public Policy Dispute Resolution or the alternative dispute resolution system. If the district and the involved person or regional planning group cannot resolve the conflict through mediation, the development board shall resolve the conflict not later than the 60th day after the date the mediation is completed. The development board action under this provision may be consolidated, at the option of the board, with related action under Section 16.053(p). If the development board determines that resolution of the conflict requires a revision of the approved management plan, the development board shall provide information to the district. The district shall prepare any revisions to the plan based on the information provided by the development board and shall hold, after notice, at least one public hearing at some central location within the district. The district shall consider all public and development board comments, prepare, revise, and adopt its management plan, and submit the revised management plan to the development board for approval. On the request of the district or the regional water planning group, the development board shall include discussion of the conflict and its resolution in the state water plan that the development board provides to the governor, the lieutenant governor, and the speaker of the house of representatives under Section 16.051(e). If the groundwater conservation district disagrees with the decision of the development board under this subsection, the district may appeal the decision to a district court in Travis County. Costs for the appeal shall be set by the court hearing the appeal. An appeal under this subsection is by trial de novo.

Added by Acts 1997, 75th Leg., ch. 1010, Sec. 4.28, eff. Sept. 1, 1997. Amended by Acts 2001, 77th Leg., ch. 966, Sec. 2.47, eff.

Sept. 1, 2001.

Amended by:

Acts 2005, 79th Leg., Ch. 970 (H.B. 1763), Sec. 6, eff. September 1, 2005.

Acts 2011, 82nd Leg., R.S., Ch. 17 (S.B. 727), Sec. 2, eff. April 29, 2011.

Sec. 36.1073. AMENDMENT TO MANAGEMENT PLAN. Any amendment to the management plan shall be submitted to the executive administrator within 60 days following adoption of the amendment by the district's board. The executive administrator shall review and approve any amendment which substantially affects the management plan in accordance with the procedures established under Section 36.1072.

Added by Acts 1997, 75th Leg., ch. 1010, Sec. 4.28, eff. Sept. 1, 1997.

Amended by:

Acts 2005, 79th Leg., Ch. 970 (H.B. 1763), Sec. 7, eff. September 1, 2005.

Sec. 36.108. JOINT PLANNING IN MANAGEMENT AREA. (a) In this section:

(1) "Development board" means the Texas Water Development Board.

(2) "District representative" means the presiding officer or the presiding officer's designee for any district located wholly or partly in the management area.

(b) If two or more districts are located within the boundaries of the same management area, each district shall forward a copy of that district's new or revised management plan to the other districts in the management area. The boards of the districts shall consider the plans individually and shall compare them to other management plans then in force in the management area.

(c) The district representatives shall meet at least annually to conduct joint planning with the other districts in the management area and to review the management plans, the accomplishments of the management area, and proposals to adopt new

Appendix C

Rules of the Middle Pecos Groundwater Conservation District

MIDDLE PECOS GROUNDWATER CONSERVATION DISTRICT

RULES

Procedural Rules Initial Effective Date: January 7, 2004;
Substantive Rules Initial Effective Date: August 18, 2004

Amended September 20, 2004, October 20, 2004, December 15, 2004, January 19, 2005, May 18, 2005, October 26, 2005, February 20, 2007, August 18, 2009, September 16, 2010, December 21, 2010, February 15, 2011,January 17, 2012, June 19, 2012, October 23, 2012, December 17, 2013, May 20, 2014, and October 21, 2014

PECOS COUNTY, TEXAS

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INTRODUCTION

BACKGROUND AND PURPOSE

Texas faces a difficult challenge to develop water policies that serve county, state, and regional interests. The Texas Constitution authorizes the creation of groundwater conservation districts to plan, develop, and regulate the use of water. A groundwater conservation district is a local unit of government authorized by the Texas Legislature and ratified by local election of the district's constituents to manage and protect groundwater.

The MIDDLE PECOS GROUNDWATER CONSERVATION DISTRICT (the "District") was created in the 76th Legislature, 1999 by Senate Bill 1911, and ratified in the 77th Legislature, 2001 by House Bill 1258. The District was confirmed by qualified voters of Pecos County in November of 2002.

The boundaries of the District are coextensive with the boundaries of Pecos County, Texas. Aquifers underlying Pecos County are the Edwards-Trinity, the Pecos Valley Aquifer, the Dockum, the Capitan Reef Complex, and the Rustler.

The District is governed by a board of eleven directors elected as follows:

(1) One director shall be elected by the qualified voters of the entire district;

(2) Two directors shall be elected from each of the four Pecos CountyCommissioners' precincts by the qualified voters of each respective precinct;

(3) One director shall be elected from the City of Iraan by the qualified voters of that city; and

(4) One director shall be elected from the City of Fort Stockton by the qualified voters of that city.

The District has the rights, powers, privileges, authority, functions, and the duties provided by the general law of the State, Chapter 36 of the Texas Water Code, and the District Act.

The substantive rules of the District were initially adopted by the District's Board of Directors on August 18, 2004, at a duly posted public meeting in compliance with the Texas Open Meetings Act and following notice and hearing in accordance with Section 36.101 of the Texas Water Code. The District's rules are hereby adopted as the rules of this District in accordance with Section 59 of Article XVI of the Texas Constitution, Chapter 36 of the Texas Water Code, and the District Act. The District initially adopted procedural rules, which took effect on January 7, 2004, and subsequently adopted substantive rules, which initially took effect on August 18, 2004. This comprehensive set of procedural and substantive rules was subsequently amended on September 20, 2004, October 20, 2004, December 15, 2004, January 19, 2005, May 18, 2005,

October 26, 2005, February 20, 2007, August 18, 2009, September 16, 2010, December 21, 2010, February 15, 2011, January 17, 2012, and June 19, 2012. The effective date of the Historic and Existing Use Rules isSeptember 1, 2004, for purposes of establishing the District's Historic and Existing Use permitting program.
The District's rules are and have been adopted to simplify procedures, avoid delays, and facilitate the administration of the water laws of the State of Texas. These rules are to be construed to attain those objectives. These rules may be used as guides in the exercise of discretion, where discretion is vested. However, these rules shall not be construed as a limitation or restriction upon the exercise of discretion conferred by law, nor shall they be construed to deprive the District or the District's Board of any powers, duties, or jurisdiction provided by law. These rules will not limit or restrict the amount and accuracy of data or information that may be required for the proper administration of the law.

Nothing in these rules or Chapter 36 of the Texas Water Code shall be construed as granting the authority to deprive or divest a landowner, including a landowner's lessees, heirs, or assigns, of the groundwater ownership and rights described by Section 36.002 of the Texas Water Code, recognizing, however, that Section 36.002 does not prohibit the District from limiting or prohibiting the drilling of a well for failure or inability to comply with minimum well spacing or tract size requirements adopted by the District; affect the ability of the District to regulate groundwater production as authorized under Section 36.113, 36.116, or 36.122 or otherwise under Chapter 36, Texas Water Code, or a special law governing the District; or require that a rule adopted by the District allocate to each landowner a proportionate share of available groundwater for production from the aquifer based on the number of acres owned by the landowner.

PURPOSE OF THE DISTRICT

Groundwater conservation districts provide to a local board of directors the authority and responsibility to develop and implement comprehensive management plans to conserve, protect, and manage groundwater resources. A district's board will strive to maintain a balance between protecting the rights of landowners and the responsibility of protecting the water resources by directing their efforts toward preventing waste, collecting data, educating people about water resources and conservation, and achieving the desired future conditions of the aquifers located within the district. The District accomplishes these goals by performing certain duties set forth in the general law of the State, Chapter 36 of the Texas Water Code, and the District Act, and implemented in accordance with these rules.

MISSION STATEMENT

Develop and implement an efficient, economical and environmentally sound groundwater management program to protect, maintain and enhance the water resources of the District, and to communicate and administer to the needs and concerns of the citizens of Pecos County associated with these water resources.

SECTION 1. DEFINITIONS, PURPOSE, AND CONCEPTS OF THE RULES

RULE 1.1 DEFINITIONS OF TERMS

In the administration of its duties the District defines terms as set forth in Chapter 36 of the Texas Water Code unless otherwise modified or defined herein as necessary to apply to unique attributes of the District. The specific terms hereinafter defined shall have the following meaning in these rules:

"Abandoned Well" means a well that has not been used for a beneficial purpose for at least one year and/or a well not registered with the District. A well is considered to be in use in the following cases:

(a) a non-deteriorated well which contains the casing, pump and pump column in good condition; or
(b) a non-deteriorated well which has been capped.

"Animal Feeding Operation" means a lot or facility (other than an aquatic animal production facility) where animals have been, are, or will be stabled or confined and fed or maintained for a total of 45 (forty-five) calendar days or more in any 12-month period, and the animal confinement areas do not sustain crops, vegetation, forage growth, or postharvest residues in the normal growing season over any portion of the lot or facility.

"Aquifer" means a geologic formation that will yield water to a well in sufficient quantities to make the production of water from this formation feasible for beneficial use. When the term "Aquifer" is used in these rules, it shall also mean the Aquifer's subdivisions.

"Beneficial Use"means "use for a beneficial purpose," which means use for:

(a) agricultural, gardening, domestic, stock raising, municipal, mining, manufacturing, industrial, commercial, recreational, or pleasure purposes;

(b) exploring for, producing, handling, or treating oil, gas, sulphur, or other minerals; or

(c) any other purpose that is useful and beneficial to the user.

"Board" means the Board of Directors of the District.

"Capitan Limestone Aquifer" means the Capitan Reef Complex consists of the Capitan Reef and associated reefs and limestones which were deposited around the perimeter of the Delaware Basin during Permian time. The reef complex is composed of approximately 2,000 feet of massive, vuggy to cavernous limestone and dolomite, bedded limestone, and reef talus. In the

study area, (located in the northern part of the Trans-Pecos region of West Texas, which is in the Great Plains physiographic province, and falls within the Rio Grande basin), the reef occurs in a 6 to 10 mile wide, south-southeast trending belt, extending from New Mexico through western Winkler, central Ward, and western Pecos Counties. Depth to the top of the reef ranges from 2,400 to 3,600 feet (Guyton and Associates, 1958). The Capitan Reef Complex yields small to large quantities of moderately to very saline water to wells in the study area that primarily have been used for secondary recovery of oil in Ward and Winkler Counties(Richey and others, 1985).

"Capping" means equipping a well with a securely affixed, removable device that will prevent the entrance of surface pollutants into the well in compliance with regulations of the Texas Department of Licensing and Regulations.

"Casing" means a tubular structure installed in the excavated or drilled borehole to maintain the well opening.

"Concentrated Animal Feeding Operation" ("CAFO") means any animal feeding operation with the number of animals established in TCEQ's rules, including at least 37,500 chickens (other than laying hens), or that has been designated by the TCEQ's Executive Director as a CAFO because it is a significant contributor of pollutants into or adjacent to water in the state.

"Conservation" refers to those water saving practices, techniques, and technologies that will reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of waste, or increase the recycling and reuse of water so that a water supply is made available for future or alternative uses.

"Desired Future Condition" means a quantitative description, adopted in accordance with Section 36.108, Texas Water Code, of the desired condition of the groundwater resources in a Groundwater Management Area at one or more specified future times.

"Dewatering Well" means a well used to remove groundwater from a construction site or excavation, or to relieve hydrostatic uplift on permanent structures.

"Director" means an elected or appointed member of the Board of Directors of the District.

"Discharge" means the volume of water that passes a given point within a given period of time.

"District" means the Middle Pecos Groundwater Conservation District.

"District Act" means the District's enabling legislation to be codified in Chapter 8851 of the Texas Special District Local Lawseffective on April 1, 2013, and originally enacted by Act of the 76th Legislature, 1999, Regular Session, Chapter 1331 (Senate Bill 1911), as amended by Act of the 77th Legislature, 2001, Regular Session, Chapter 1299 (House Bill 1258), and Act of the 82nd Legislature, 2011, Regular Session, Chapter 199 (Senate Bill 564).

"District Management Plan" or **"Management Plan"** means the plan promulgated and adopted by the District, as may be amended and revised by the Board from time to time, pursuant to Sections 36.1071-36.1073 of the Texas Water Code.

"Dockum Group Aquifer" – The Dockum Group of Triassic age consists of upper and lower shaley units and a middle water-bearing sandstone unit often referred to as the "Santa Rosa." Small to moderate quantities of fresh to moderately saline water are produced from the sandstone in Winkler, Ward, eastern Loving, and eastern Reeves Counties, primarily where the aquifer is relatively shallow. In parts of Pecos, Reeves, Ward, and Winkler Counties, where the sandstone is hydraulically connected to the Pecos Valley Aquifer, the combination has been referred to as the Allurosa aquifer.

"District Office" means the principal office of the District at such location as may be established by the Board.

"Domestic Use" means water used by and connected to a household for personal needs or for household purposes such as drinking, bathing, heating, cooking, sanitation or cleaning, and landscape irrigation. Ancillary use may include watering of domestic animals.

"Domestic Well" means a well providing groundwater for domestic use.

"Drill" means drilling, equipping, completing wells, or modifying the size of wells or well pumps/motors (resulting in an increase in pumpage volume) whereby a drilling or service rig must be on location to perform the activity.

"Edwards-Trinity (Plateau) Aquifer" – The Edwards-Trinity (Plateau) aquifer underlies the Pecos Valley Aquifer in the study area, (located in the northern part of the Trans-Pecos region of West Texas, which is in the Great Plains physiographic province, and falls within the Rio Grande basin), in the southwest half of Reeves County and a portion of the Coyanosa area in northwest Pecos County. The aquifer is composed of water-bearing lower Cretaceous sands and limestones that are hydraulically connected to the overlying alluvium. Wells completed in the aquifer produce small to moderate quantities of fresh to moderately saline water, which is generally similar to that of the overlying alluvium. The poorest quality water is the aquifer, with dissolved solids in excess of 3,000 milligrams per liter (mg/l), occurs in the southwestern part of Reeves County where the aquifer receives recharge from the sulfate-rich Rustler aquifer. Water from the Edwards-Trinity(Plateau) aquifer is mostly used for irrigation, with a lesser amount used for industrial purposes in western Reeves County.

"Evidence of Historic or Existing Use" means evidence that is material and relevant to a determination of the amount of groundwater beneficially used without waste by a permit applicant during the relevant time period set by District rule that regulates groundwater based on historic use. Evidence in the form of oral or written testimony shall be subject to cross-examination. The Texas Rules of Evidence govern the admissibility and introduction of evidence of historic or existing use, except that evidence not admissible under the Texas Rules of Evidence may be admitted if it is of the type commonly relied upon by reasonably prudent persons in the conduct of their affairs.

“Exempt Well” meansa well that is exempt pursuant to District Rule 11.3.

“Existing Well” means any well in the District that was drilled on or before the effective date of these rules.

“Fees” means charges imposed by the District pursuant to these rules.

“Groundwater Management Area” means an area designated and delineated by the Texas Water Development Board as suitable for the management of groundwater resources.

“Groundwater Reservoir” means a specific subsurface water-bearing reservoir having ascertainable boundaries and containing groundwater.

“Historic and Existing Use Period” means the period September 1, 1989, through the effective date of the rules adopting “Historic and Existing Use” rules, September 1, 2004; provided, however, that this period shall extend an additional consecutive 12-month period dating from September 1 – August 30 (“12-month period” or “year”) for each such year during which the applicant demonstrates continued beneficial use of water in that year and demonstrates continued beneficial use in each and every year between September 1, 1989, and September 1, 2004, up to an additional, consecutive fifteen years extending to September 1, 1974.

“Hydrogeological Report” means a report that identifies the availability of groundwater in a particular area and formation, and which also addresses the issues of quantity and quality of that water and the impacts of pumping that water on the surrounding environment including impacts to nearby or adjacent wells.

“Irrigation Use” means the application of water, not associated with agricultural irrigation use, to plants or land in order to promote growth of plants, turf, or trees. Irrigation use includes but is not limited to athletic fields, parks, golf courses, and landscape irrigation not tied to domestic use.

“Irrigation Well” means a well providing groundwater for irrigation use (a nonexempt well).

“Leachate Well” means a well used to remove contamination from soil or groundwater.

“Livestock” means domesticated horses, cattle, goats, sheep, swine, poultry, ostriches, emus, rheas, deer and antelope, and other similar animals involved in farming or ranching operations on land, recorded and taxed in the County as an agricultural land use. Dogs, cats, birds, fish, reptiles, small mammals, potbellied pigs, and other animals typically kept as pets are not considered livestock. Livestock-type animals kept as pets or in a pet-like environment are not considered livestock.

“Managed Available Groundwater” refers to the term used by the Texas Water Development Board in some of its models and associated reports, model runs, and other written documents, and which was defined by statutory law in existence prior to the 2011 legislative session, during

which the 82nd Legislature replaced the concept of Managed Available Groundwater with Modeled Available Groundwater.

"Management Zone" means a geographic area delineated under District Rule 10.5 and in accordance with Section 36.116(d), Texas Water Code, and is sometimes referred to as a "management zone".

"Maximum Historic and Existing Use" means the quantity of water put to beneficial use during the single 12-month period (September 1 – August 30) of maximum beneficial use during the Historic and Existing Use Period.

"Modeled Available Groundwater" means the amount of water that the Executive Administrator of the Texas Water Development Board determines may be produced on an average annual basis to achieve the Desired Future Conditions established for the Aquifers in the District.

"Modify" means to alter the physical or mechanical characteristics of a well, its equipment, or production capabilities. This does not include repair of equipment, well houses or enclosures, or replacement with comparable equipment.

"Monitoring Well" means a well installed exclusively to measure some property of the groundwater or an aquifer that it penetrates, that does not produce more than 5,000 gallons per year.

"New Well" means any well that is not an existing well, or any existing well, which has been modified to increase water production after the effective date of these Rules.

"Pecos Valley Aquifer" – During the Cenozoic Era, a thick sequence of alluvial deposits accumulated in two large slumpage depressions. These depressions are herein referred to as the Monument Draw Trough, which developed along the eastern margin of the Delaware Basin, and the Pecos Trough, which occupies the south-central part of the Basin. The troughs were formed by dissolution and removal of evaporates in the underlying Ochoan Series, which resulted in the collapse of the Rustler Formation and younger rocks into the voids (Maley and Huffington, 1953). Water saturated alluvial fill in these troughs is classified as the Pecos Valley Aquifer.

"Permit Amendment" means a minor or major change in a permit.

"Permittee" means a permit holder or a person who is required to obtain a permit from the District.

"Person" includes a corporation, individual, organization, cooperative, government or governmental subdivision or agency, business trust, estate, trust, partnership, association, or any other legal entity.

"Personal Justiciable Interest" means an interest related to a legal right, duty, privilege, power, or economic interest affected by a permit or permit amendment application. A justiciable interest is an interest beyond that shared by the general public.

"Plugging" means the permanent closure of a well in accordance with approved District standards.

"Pollution" means the alteration of the physical, thermal, chemical, or biological quality of, or the contamination or degradation of, any groundwater within the District that renders the groundwater harmful, detrimental, or injurious to humans, animal life, vegetation, or property or to public health, safety, or impairs the usefulness or the public or private use or enjoyment of the water for any lawful or reasonable purpose.

"Presiding Officer" means the Board President or, in the Board President's absence, a Director delegated authority by the Board to preside over a hearing.

"Retail Water Utility" means any person, corporation, public utility, water supply or sewer service corporation, municipality, political subdivision or agency operating, maintaining, or controlling in this state, facilities (such as a public water supply well) for providing potable water service for compensation.

"Rustler Aquifer" – The Rustler Formation underlies the entire study area, (located in the northern part of the Trans-Pecos region of West Texas, which is in the Great Plains physiographic province, and falls within the Rio Grande basin), and consists of 200 to 500 feet of anhydrite and dolomite with a basal zone of sandstone and shale. Slightly to moderately saline water occurs in the formation in most of Reeves and western Loving, Ward, and Pecos Counties and has mostly been used for irrigation and livestock supply. Elsewhere, the formation produces very saline to brine quality water that is used primarily for secondary oil recovery. Water in the aquifer occurs under artesian conditions, except in the out crop in the Rustler Hills to the west and in collapsed zones in the two troughs.

"Rules" means the standards and regulations promulgated by the District, as they may be amended from time to time, and are often referred to generally as "rules"or the District's rules.

"Seal" means the impermeable material, such as cement grout, bentonite, or puddling clay, placed in the annular space between the borehole wall and the casing to prevent the downhole movement of surface water or the vertical mixing of groundwater.

"SOAH" means the State Office of Administrative Hearings.

"Special Provisions" means the conditions or requirements added to a permit, which may be more or less restrictive than the Rules as a result of circumstances unique to a particular situation.

"Spring" means a point(s) of natural discharge from an aquifer.

“Static Water Level” means the water level in a well that has not been affected by withdrawal of groundwater.

“Stratum” means a layer of rock having a similar composition throughout.

“Subsidence” means the lowering in elevation of the land surface caused by withdrawal of groundwater.

“Surface Completion” means sealing off access of undesirable water, surface material, or other potential sources of contamination to the wellbore by proper casing and/or cementing procedures.

“TCEQ” means the Texas Commission on Environmental Quality, and its predecessor and any successor agencies.

“Transport of Groundwater” means pumping, transferring or exporting groundwater out of the District. The terms “transfer,” “transport,” or “export” of groundwater are used interchangeably within Chapter 36 of the Texas Water Code and these rules.

“User” means a person who produces, distributes, or uses water from any Aquifer within the District.

“Waste” shall have the meaning provided for in District Rule 14.1.

“Water Table” means the upper boundary of the saturated zone in an unconfined aquifer.

“Water Tight Seal” means a seal that prohibits the entrance of liquids or solutions, including water, which may enter through the wellhead and potentially, contaminate the well.

“Water Well” means any drilled or excavated facility, device, or method used to withdraw groundwater from the groundwater supply.

“Well” means any artificial excavation or borehole constructed for the purposes of exploring for or producing groundwater, or for injection, monitoring, or dewatering purposes.

“Well Registration” means the creation of a record of the well by use and a well identification number for purposes of registering the well as to its geographic location and for notification to the well owner in cases of spills or accidents, data collection, recordkeeping and for future planning purposes. (See Section 9 of the District’s rules).

“Well system” means two or more wells owned, operated, or otherwise under the control of the same person and that areheld under the same permit.

“Withdraw or Withdrawal” means the act of extracting groundwater by pumping or any other method other than the discharge of natural springs.

RULE 1.2 PURPOSE OF RULES

The rules of the District are promulgated and adopted under the District's statutory authority to achieve the following purposes and objectives: to provide for conserving, preserving, protecting, and recharging of groundwater or of a groundwater reservoir or its subdivisions, in order to control subsidence, or prevent waste of groundwater. The District's orders rules, requirements, resolutions, policies, guidelines or similar measures have been implemented to fulfill these objectives.

RULE 1.3 USE AND EFFECT OF RULES

These rules are used by the District as guides in the exercise of the powers conferred by law and in the accomplishment of the purposes of the District Act and Chapter 36 of the Texas Water Code. They shall not be construed as a limitation or restriction on the exercise of any discretion, where it exists, nor shall they be construed to deprive the District or Board of the exercise of any powers, duties or jurisdiction conferred by law; nor shall they be construed to limit or restrict the amount and character of data or information that may be required to be collected for the proper administration of the District Act or Chapter 36.

RULE 1.4 AMENDING OF RULES

The Board may, following notice and hearing, amend or repeal these rules or adopt new rules from time to time, following the procedure set forth in the Rulemaking Section of these rules, and applicable law.

RULE 1.5 HEADINGS AND CAPTIONS

The section and other headings and captions contained in these rules are for reference purposes only and do not affect in any way the meaning or interpretation of these rules.

RULE 1.6 CONSTRUCTION

A reference to a title or chapter without further identification is a reference to a title or chapter of the Texas Water Code, unless the context of usage clearly implies otherwise. A reference to a section or rule without further identification is a reference to a section or rule in these rules, unless the context of usage clearly implies otherwise. Construction of words and phrases is governed by the Code Construction Act, Subchapter B, Chapter 311, Texas Government Code.

The singular includes the plural, and the plural includes the singular. The words “and” and “or” are interchangeable and shall be interpreted to mean and/or.

RULE 1.7 SEVERABILITY

In case any one or more of the provisions contained in these rules shall for any reason be held to be invalid, illegal, or unenforceable in any respect, such invalidity, illegality, or unenforceability shall not affect any other rules or provisions hereof, and these rules shall be construed as if such invalid, illegal, or unenforceable rule or provision had never been contained herein.

RULE 1.8 SEVERABILITY CLAUSE

If any section, sentence, paragraph, clause, or part of these rules should be held or declared invalid for any reason by a final judgment of the courts of this state or of the United States, such decision or holding shall not affect the validity of the remaining portions of these rules, and the Board does hereby declare that it would have adopted and promulgated such remaining portions irrespective or the fact that any other sentence, section, paragraph, clause, or part thereof may be declared invalid.

RULE 1.9 COMPLIANCE

All permittees and registrants of the District shall comply with all applicable rules and regulations of other governmental entities. Where the District’s rules and regulations are more stringent than those of other governmental entities, the District’s rules and regulations shall control.

RULE 1.10 VERB USAGE

The verbs may, can, might, should, or could are used when an action is optional or may not apply in every case. The verbs will, shall, or must are used when an action is required. The verb cannot is used when an action is not allowed or is not achievable. Unless otherwise expressly provided for in these rules, the past, present, and future tense shall include each other.

SECTION 2. BOARD AND DISTRICT STAFF

RULE 2.1 MEETINGS

The Board shall meet at least once each quarter and may meet more frequently as the Board may establish from time to time. At the request of the Board President, or by written request of at

least three members, the Board may hold special meetings. All Board meetings will be held and conducted according to the Texas Open Meetings Act, Chapter 551, Texas Government Code. Directors shall not knowingly conspire to meet in numbers less than a quorum for the purpose of secret deliberations.

RULE 2.2 COMMITTEES

The Board President may establish committees for formulation of policy recommendations to the Board, and appoint the chair and membership of the committees. Committee members serve at the pleasure of the Board President.

RULE 2.3 ASSISTANT SECRETARY

A Director or member of the District staff may be appointed by the Board as Assistant Secretary to the Board to assist in meeting the responsibilities of the Board Secretary, if desired by the Board.

RULE 2.4 GENERAL MANAGER

The Board may employ or contract with a person to manage the District, and title this person "General Manager". The General Manager shall have full authority to manage and operate the affairs of the District, subject only to Board orders. The Board will review the compensation and/or contract of the General Manager each year at the beginning of the third quarter of every fiscal year. The General Manager, with approval of the Board, may employ all persons necessary for the proper handling of business and operation of the District, and their compensation will be set by the Board.

SECTION 3. BOARD

RULE 3.1 PURPOSE OF BOARD

The Board was created to determine policy and regulate the withdrawal of groundwater within the boundaries of the District for conserving, preserving, protecting and recharging the groundwater and aquifers within the District, and to exercise its rights, powers, and duties in a way that will effectively and expeditiously accomplish the purposes of the District Act. The Board's responsibilities include, but are not limited to, the adoption, implementation, and enforcement of the District's rules and orders.

RULE 3.2 BOARD STRUCTURE, OFFICERS

The Board may elect officers annually, but must elect officers at the first meeting following the November elections of each even-numbered year. Directors and officers serve until their successors are elected or appointed and sworn in accordance with the District Act and these rules, and qualified under applicable State law. If there is a vacancy on the Board, the remaining Directors shall appoint a Director to serve the remainder of the term. If at any time there are fewer than three qualified Directors, the Pecos County Commissioners Court shall appoint the necessary number of persons to fill all the vacancies on the Board. The appointed Director's term shall end on qualification of the Director elected at that election.

RULE 3.3 EX PARTE COMMUNICATIONS

Directors may not communicate, directly or indirectly, about any issue of fact or law in any contested hearing before the Board, with any agency, person, party or their representatives, except on notice and opportunity for all parties to participate. This rule does not apply to a Director who abstains from voting on any matter in which ex parte communications have occurred or to communications between the Board and the staff, professional, or consultants of the District.

SECTION 4. GENERAL PROCEDURAL PROVISIONS

RULE 4.1 DISTRICT ADDRESS

The District's mailing address is P.O. Box 1644, Fort Stockton, Texas, 79735, and itsphysical address shall be established by the Board and posted on the District's Internet site, if the District has a functioning Internet site.

RULE 4.2 COMPUTING TIME

In computing any period of time specified by these rules, by a Presiding Officer, by the Board, or by law, the period shall begin on the day after the act, event, or default in question, and shall conclude on the last day of that designated period, unless the last day is a Saturday, Sunday, or legal holiday on which the District Office is closed, in which case the period runs until the end of the next day which is neither a Saturday, Sunday, nor legal holiday on which the District Office is closed.

RULE 4.3 FILING OF DOCUMENTS AND TIME LIMIT

Applications, requests, or other papers or documents shall be filed either by hand delivery, mail, or telephonic document transfer to the District Office. The document shall be considered filed as of the date received by the District for a hand delivery; as of the date reflected by the official United States Postal Service postmark if mailed; and, for telephonic document transfers, as of the date on which the telephonic document transfer is complete, except that any transfer occurring after 5:00 p.m. will be deemed complete on the following business day. If a person files a document by facsimile, he or she must file a copy by mail within three (3) calendar days. A document may be filed by electronic mail ("email") only if the Board or Presiding Officer has expressly authorized filing by email for that particular type of document and expressly established the appropriate date and time deadline, email address, and any other appropriate filing instructions.

RULE 4.4 METHODS OF SERVICE UNDER THE RULES

Except as otherwise provided for in these rules, and notice or document required by these rules to be served or delivered may be delivered to the recipient, or the recipient's authorized representative, in person, by agent, by courier-receipted delivery, by certified or registered mail sent to recipient's last known address, by email to the recipient's email address on file with the District if written consent is granted by the recipient, or by facsimile to the recipient's current facsimile number and shall be accomplished by 5:00 o'clock p.m. (as shown by the clock in the recipient's office) of the date on which it is due. Service by mail is complete upon deposit in a post office or other official depository of the United States Postal Service. Service by facsimile is complete upon transfer, except that any transfer commencing after 5:00 o'clock p.m. (as shown by the clock in the recipient's office) shall be deemed complete the following business day. If service or delivery is by mail, and the recipient has the right to perform some act or is required to perform some act within a prescribed period of time after service, three (3) calendar days will be added to the prescribed period. Where service by other methods has proved unsuccessful, the service shall be complete by such other method as may be approved by the Board. The person or person's attorney shall certify compliance with this rule in writing over signature and on the filed document. A certificate by a person or the person's attorney of record, or the return of an officer, or the affidavit of any person showing service of a document, shall be prima facie evidence of the fact of service.

RULE 4.5 USE OF FORMS

The General Manager will furnish forms and instructions for the preparation of any application, declaration, registration or other document that is required to be filed with the District on a form prepared by the District. The use of such forms is mandatory. Supplements may be attached if there is insufficient space on the form. If supplements are used, the data and information entered therein shall be separated into sections that are numbered to correspond with the numbers of the printed form.

RULE 4.6 MINUTES AND RECORDS OF THE DISTRICT

All official documents, reports, records, and minutes of the District will be available for public inspection and copying in accordance with the Texas Public Information Act.

RULE 4.7 APPLICABILITY; PROCEDURES NOT OTHERWISE PROVIDED FOR

This Section 4 shall apply to all types of hearings conducted by the District to the extent this Section is not inconsistent with any othersection of these rules that applies to the type of hearing at issue. If, in connection with any hearing, the Board determines that there are no statutes or other applicable rules resolving particular procedural questions then before the Board, the Board will direct the parties to follow procedures consistent with the purpose of these rules, the District Act, and Chapter 36 of the Texas Water Code.

RULE 4.8 CONTINUANCE

Unless provided otherwise in these Rules, any meeting, workshop, or hearing may be continued from time to time and date to date without published notice after the initial notice, in conformity with the Texas Open Meetings Act.

RULE 4.9 REQUEST FOR REHEARING AND APPEAL

To appeal a decision of the Board concerning any matter, a request for rehearing must be filed with the District within 20 (twenty) calendar days of the date of the Board's decision. Such request for rehearing must be in writing and must state clear and concise grounds for the request. The Board's decision is final if no request for rehearing is timely filed, upon the Board's denial of the request for rehearing, or upon rendering a decision after conducting the rehearing. If the rehearing request is granted by the Board, the rehearing will be conducted within 45 (forty-five) calendar days thereafter. The failure of the Board to grant or deny the request for rehearing within 90 (ninety) calendar days of the date of submission shall constitute a denial of the request. After all administrative remedies are exhausted with the District and the Board's decision is final, suit may be filed in a court of competent jurisdiction in Pecos County to appeal the Board's decision. The deadline for filing this suit is 60 (sixty) calendar days after the Board's decision is final. A suit challenging any decision of the Board is prohibited if a request for rehearing was not timely filed.

SECTION 5. HEARINGS GENERALLY

RULE 5.1 APPLICABILITY

(a) Rulemaking hearings are governed by Section 6 of the District's rules.
(b) Hearings on the District Management Plan are governed by Section 8 of the District's rules.
(c) Permit-related hearings and hearings on applications for well-spacing exceptions are governed by Section 11.
(d) Enforcement hearings are governed by Section 15.
(e) Hearings on the Desired Future Conditions are governed by Section 17.
(f) All other hearings not described in this rule are governed by Rule 5.2.

RULE 5.2 HEARINGS ON OTHER MATTERS

A public hearing may be held on any matter beyond rulemaking, the District Management Plan, enforcement, and permitting, within the jurisdiction of the District, if the Board deems a hearing to be in the public interest or necessary to effectively carry out the duties and responsibilities of the District. Not less than ten (10) calendar days prior to the date of a public hearing, the Board shall publish notice of the subject matter of the hearing, the time, date, and place of the hearing, in a newspaper of general circulation in the District, in addition to posting the notice in the manner provided by the Texas Open Meetings Act.

SECTION 6. RULEMAKING HEARINGS

RULE 6.1 GENERAL

A rulemaking hearing involves matters of general applicability that implement, interpret, or prescribe the law or District's policy, or that describe the procedure or practice requirements of the District. The District will update its rules to implement the Desired Future Conditions before the first anniversary of the date that the Texas Water Development Board approves the District Management Plan that has been updated to reflect the adopted Desired Future Conditions.

RULE 6.2 NOTICE AND SCHEDULING OF HEARINGS

(a) For all rulemaking hearings, the notice shall include a brief explanation of the subject matter of the hearing, the time, date, and place of the hearing, location or Internet site at which a copy of the proposed rules may be reviewed or copied, if the District has a functioning Internet site, and any other information deemed relevant by the General Manager or the Board.

(b) Not less than 20 (twenty) calendar days prior to the date of the hearing, and subject to the notice requirements of the Texas Open Meetings Act the General Manager shall:
   (1) post notice in a place readily accessible to the public at the District Office;
   (2) provide notice to the county clerk of Pecos County;
   (3) publish notice in one or more newspapers of general circulation in the District;
   (4) provide notice by mail, facsimile, or electronic mail to any person who has requested notice under Subsection (c); and
   (5) make available a copy of all proposed rules at a place accessible to the public during normal business hours, and post an electronic copy on the District's Internet site, if the District has a functioning Internet site.

(c) A person may submit to the District a written request for notice of a rulemaking hearing. A request is effective for the remainder of the calendar year in which the request is received by the District. To receive notice of a rulemaking hearing in a later year, a person must submit a new request. An affidavit of an officer or employee of the District establishing attempted service by first class mail, facsimile, or email to the person in accordance with the information provided by the person is proof that notice was provided by the district.

(d) Failure to provide notice under Subsection (c) does not invalidate an action taken by the District at a rulemaking hearing.

(e) Any hearing may or may not be scheduled during the District's regular business hours, Monday through Friday of each week, except District holidays. Any hearing may be continued from time to time and date to date without published notice after the initial published notice in conformity with the Texas Open Meetings Act. The District must conduct at least one hearing prior to adopting amendments to the District's Rules.

RULE 6.3 RULEMAKING HEARINGS PROCEDURES

(a) General Procedures: The Presiding Officer will conduct the rulemaking hearing in the manner the Presiding Officer deems most appropriate to obtain all relevant information pertaining to the subject of the hearing as conveniently, inexpensively, and expeditiously as possible. In conducting a rulemaking hearing, the Presiding Officer may elect to utilize procedures set forth in these Rules for permit hearings to the extent that and in the manner that the Presiding Officer deems most appropriate for the particular rulemaking hearing. The Presiding Officer will prepare and keep a record of the rulemaking hearing in the form of an audio or video recording or a court reporter transcription at his or her discretion.

(b) Submission of Documents: Any interested person may submit written statements, protests, or comments, briefs, affidavits, exhibits, technical reports, or other documents relating to the subject of the hearing. Such documents must be submitted no later than the time of the hearing, as stated in the notice of hearing; provided, however, the Presiding Officer may grant additional time for the submission of documents.

(c) Oral Presentations: Any person desiring to testify on the subject of the hearing must so indicate on the registration form provided at the hearing. The Presiding Officer establishes the order of testimony and may limit the number of times a person may speak, the time period for oral presentations, and the time period for raising questions. In addition, the Presiding Officer may limit or exclude cumulative, irrelevant, or unduly repetitious presentations.

(d) Conclusion of the hearing: At the conclusion of the hearing, the Board may take action on the subject matter of the hearing, take no action, or postpone action until a future meeting or hearing of the Board. When adopting, amending, or repealing any rule, the District shall:

(1) consider all groundwater uses and needs;
(2) develop rules that are fair and impartial;
(3) consider the groundwater ownership and rights described by Section 36.002, Texas Water Code;
(4) consider the public interest in conservation, preservation, protection, recharging, and prevention of waste of groundwater, and of groundwater reservoirs or their subdivisions, and in controlling subsidence caused by withdrawal of groundwater reservoirs or their subdivision, consistent with the objectives of Section 59, Article XVI, Texas Constitution;
(5) consider the goals developed as part of the District Management Plan under Section 36.1071, Texas Water Code; and
(6) not discriminate between land that is irrigated for production and land that was irrigated for production and enrolled or participating in a federal conservation program.

(e) Hearing Registration Form: A person participating in a rulemaking hearing shall complete a hearing registration form stating the person's name, address, and whom the person represents, if applicable.

RULE 6.4 CONDUCT AND DECORUM

Every person, party, representative, witness, and other participant in a proceeding must conform to ethical standards of conduct and must exhibit courtesy and respect for all other participants. No person may engage in any activity during a proceeding that interferes with the orderly conduct of district business. If in the judgment of the Presiding Officer, a person is acting in violation of this provision, the Presiding Officer will first warn the person to refrain from engaging in such conduct. Upon further violation by the same person, the Presiding Officer may exclude that person from the proceeding for such time and under such conditions as the Presiding Officer deems necessary.

SECTION 7. EMERGENCY RULES

The Board may adopt an emergency rule without prior notice and/or hearing if the Board finds that a substantial likelihood of imminent peril to the public health, safety, or welfare, or a requirement of state or federal law, requires adoption of a rule on less than 20 (twenty)calendar days notice. The Board shall prepare a written statement of the reasons for this finding. An emergency rule adopted shall be effective for not more than 90 (ninety) calendar days after its adoption by the Board. The Board may extend the 90-day period for an additional 90 (ninety) calendar days if notice of a hearing on the final rule is given not later than the 90thcalendar day after the date the rules is adopted. An emergency rule adopted without notice and/or a hearing must be adopted at a meeting conducted under Chapter 551, Texas Government Code.

SECTION 8. DISTRICT MANAGEMENT PLAN

RULE 8.1 ADOPTION OF A MANAGEMENT PLAN

The Board shall adopt a Management Plan that specifies the acts, procedures, performance and avoidance necessary to minimize as far as practicable the drawdown of the water table or the reduction of artesian pressure, to prevent interference between wells, to prevent degradation of water quality, to prevent waste, and to avoid impairment of Desired Future Conditions. The District shall use the District's rules to implement the Management Plan.

RULE 8.2 AMENDMENT

The Board will review and readopt or amend the plan at least every fifth year after its last approval by the Texas Water Development Board. The District will amend its plan to address goals and objectives consistent with achieving the Desired Future Conditions within two years of the adoption of the Desired Future Conditions by the Groundwater Management Area.

RULE 8.3 EFFECTIVE DATE

The Management Plan and any amendments thereto take effect on approval by the Texas Water Development Board's Executive Administrator or, if appealed, on approval by the Texas Water Development Board. Approval of the Management Plan remains in effect until the District fails to timely readopt a Management Plan, the District fails to timely submit the District's readopted Management Plan to the Texas Water Development Board's Executive Administrator, or the Texas Water Development Board's Executive Administrator determines that the readopted Management Plan does not meet the requirements for approval, and the District has exhausted all appeals to the Texas Water Development Board or appropriate court.

RULE 8.4 NOTICE

(a) The notice of a hearing on any adoption or amendment of the Management Plan shall include the time, date, and place of the hearing, location or Internet site at which a copy of the proposed plan may be reviewed or copied, if the District has a functioning Internet site, and any other information deemed relevant by the General Manager or the Board.

(b) Not less than ten (10) calendar days prior to the date of the hearing, and subject to the notice requirements of the Texas Open Meetings Act, the General Manager shall:

(1) post notice in a place readily accessible to the public at the District Office;
(2) provide notice to the county clerk of Pecos County; and
(3) make available a copy of the proposed plan at a place accessible to the public during normal business hours, and post an electronic copy on the District's Internet site, if the District has a functioning Internet site.

(c) Any hearing may or may not be scheduled during the District's regular business hours, Monday through Friday of each week, except District holidays. Any hearing may be continued from time to time and date to date without notice after the initial notice, in compliance with the Texas Open Meetings Act. The District must conduct at least one hearing prior to adopting the plan or any amendments to the plan.

RULE 8.5 HEARING PROCEDURES

(a) General Procedures: The Presiding Officer will conduct the hearing in the manner the Presiding Officer deems most appropriate to obtain all relevant information pertaining to the subject of the hearing as conveniently, inexpensively, and expeditiously as possible. The Presiding Officer will prepare and keep a record of the hearing in the form of an audio or video recording or a court reporter transcription at his or her discretion.

(b) Submission of Documents: Any interested person may submit written statements, protests, or comments, briefs, affidavits, exhibits, technical reports, or other documents relating to the subject of the hearing. Such documents must be submitted no later than the time of the hearing, as stated in the notice of hearing; provided, however, the Presiding Officer may grant additional time for the submission of documents.

(c) Oral Presentations: Any person desiring to testify on the subject of the hearing must so indicate on the registration form provided at the hearing. The Presiding Officer establishes the order of testimony and may limit the number of times a person may speak, the time period for oral presentations, and the time period for raising questions. In addition, the Presiding Officer may limit or exclude cumulative, irrelevant, or unduly repetitious presentations.

(d) Conclusion of the hearing: At the conclusion of the hearing, the Board may take action on the subject matter of the hearing, take no action, or postpone action until a future meeting or hearing of the Board. When adopting, amending, or repealing the Management Plan, the District shall:

(1) use the District's best available data and groundwater availability modeling information provided by the TWDB's Executive Administrator together with any available site-specific information that has been provided by the District to the TWDB's Executive Administrator for review and comment before being used in the plan;
(2) address the management goals set forth in Section 36.1071, Texas Water Code; and
(3) use and address objectives consistent with achieving the Desired Future Conditions as adopted during the joint planning process.

(e) Hearing Registration Form: A person participating in a hearing on the Management Plan shall complete a hearing registration form stating the person's name, address, and whom the person represents, if applicable.

SECTION 9. WATER WELL REGISTRATION

RULE 9.1 REGISTRATION

All water wells, existing and new, exempt and nonexempt, must be registered with the District and are required to comply with the District's registration requirements in these rules.

RULE 9.2 GENERAL REGISTRATION POLICIES AND PROCEDURES

9.2.1 Each person who intends to drill, equip, modify, complete, operate, change type of use, plug, abandon, or alter the size of a well within the District must complete and submit to the District the District's Notice of Intent to Drill a New Well (Notice of Intent), registration or permit application form, as applicable, even though the well may be exempt from the requirement of a permit under District Rule 11.3.

9.2.2 Pre-registration: For all proposed new exempt and nonexempt wells, the owner of the proposed new well, or the well operator or any other person acting on behalf of the owner of the proposed new well must file a Notice of Intent prior to drilling the proposed new well. If it is believed by the person filing the Notice of Intent that the proposed new well will be exempt under District Rule 11.3, then the Notice of Intent must reflect the basis for the exemption, and must be approved by the District prior to drilling the new well. Within 5 (five) calendar days from receipt of a Notice of Intent, the District's General Manager shall (1) determine whether the well is exempt under the District's rules, (2) complete the District Use Only section at the end of the Notice of Intent indicating whether the well is exempt, and (3) return a copy of the completed Notice of Intent by facsimile or mail to the address(es) and facsimile number(s) set forth in the Notice of Intent. If the District's determination is that the well is exempt, drilling may begin immediately upon receiving the approved Notice of Intent. The drilling of a new exempt well is subject to the rules of the District. Upon completion of the new exempt well, a registration form must be completed and filed. If

the District's determination is that the well is nonexempt, a drilling permit application must be filed and approved by the District before drilling may begin.

9.2.3 Registration: All wells must be registered. Existing nonexempt and exempt wells shall be registered immediately. New nonexempt wells shall be registered immediately upon completion pursuant to a drilling permit. New exempt wells shall be registered immediately upon completion pursuant to an approved pre-registration.

9.2.4 Re-registration: If the owner or operator of a registered well plans to change the type of use of the groundwater, increase the withdrawal rate, or substantially alter the size of the well or well pump in a manner that does not require a permit, the well must be re-registered on a new registration form.

9.2.5 In the event of an emergency during the drilling of a new exempt well or with an existing well, as defined by the well driller or well service operator, as applicable, an exempt well may be reworked prior to re-registration. The registration requirement will be waived for a 48-hour period.

9.2.6 Term: A registration certificate is perpetual in nature, subject to cancellation for violation of these Rules.

9.2.7 Ownership Transfer: Written notice of ownership transfer of any water right or water well covered by a registration must be filed with the District, and permit amendment shall be secured, if required by these rules. Any person who becomes the owner of a previously filed registration must, within 45 (forty-five) calendar days from the date of the change in ownership, file a request for transfer of the registration.

SECTION 10. PRODUCTION LIMITATIONS

RULE 10.1 HISTORIC AND EXISTING USE PERMITS

The District shall designate the quantity of groundwater that may be produced on an annual basis in each Historic and Existing Use Permit issued by the District, and each permit shall be subject to the conditions of the District Act, Chapter 36 of the Texas Water Code, and these rules, provided, however, that the quantity that may be withdrawn shall not exceed the Maximum Historic and Existing Use demonstrated by the applicant, and determined by the Board, except as that designated quantity of groundwater may be reduced if the District imposes restrictions under these rules and/or permit conditions, or consistent with a Demand Management Plan developed under Rule 10.3(b).

RULE 10.2 PRODUCTION PERMITS

The District shall designate the quantity of groundwater that may be produced on an annual basis under a Production Permit pursuant to the conditions of the District Act, Chapter 36 of the Texas Water Code, and these rules, provided, however, that the quantity shall not exceed an amount demonstrated by the applicant and determined by the Board to be necessary for beneficial use throughout the permit term, except as may be reduced if the District imposes restrictions under

these rules and/or permit conditions, or consistent with a Demand Management Plan developed under Rule 10.3(b).

RULE 10.3 AQUIFER-BASED PRODUCTION LIMITS

(a) The District may limit the total amount of authorized annual production and maximum annual rate of groundwater withdrawal for any aquifer within the District as the District determines to be necessary based upon the best available hydrogeologic, geographic, and other relevant scientific data, including but not limited to noted changes in the water levels, water quality, groundwater withdrawals, annual recharge, or the loss of stored water in the aquifer, to avoid impairment of any Desired Future Condition. The District may also develop, utilize, and/or adopt groundwater availability models in support of the District's management of the groundwater within its jurisdiction. The District may establish a series of index or monitoring wells to aid in this determination.

(b) The District will continue to study what aquifer conditions may indicate that proportional adjustment reductions to the amount of permitted production of groundwater are necessary to avoid impairment of the Desired Future Conditions of any of the various aquifers within the District. The District will also continue to study what quantity of proportional adjustment reductions to the amount of permitted production of groundwater are necessary to avoid impairment of the Desired Future Conditions of any of the various aquifers within the District. The Board will consider the findings of the District regarding actions necessary to avoid impairment of the Desired Future Conditions of any of the various aquifers within the District, and may adopt, after appropriate rulemaking notice and hearing, an aquifer-specific Demand Management Plan setting forth a schedule of the actions that may be necessary to avoid impairment of the Desired Future Conditions of any of the various aquifers within the District.

(c) The Board has the right to modify a permit if data from monitoring wells within the source aquifer or other evidence reflects conditions such as but not limited to an unacceptable level of decline in water quality of the aquifer, or as may be necessary to prevent waste and achieve water conservation, minimize as far as practicable the drawdown of the water table or the reduction of artesian pressure, lessen interference between wells, or control and prevent subsidence, or to avoid impairment of the Desired Future Conditions of any of the various aquifers within the District. If the Board has an interest in modifying a permit under this rule, it must provide notice and an opportunity for hearing pursuant to Section 11 of the District's rules.

(d) Upon adoption of Desired Future Conditions and setting of the Modeled Available Groundwater numbers for any aquifer or its subdivisions in the District, the District shall,to the extent possible, issue permits up to the point that the total volume of exempt and permitted groundwater production will achieve an applicable Desired Future Conditionfor each such aquifer or its subdivision in the District. If the total amount of production within an aquifer, or its subdivision, as applicable, is less than the total volume of exempt and permitted groundwater production that will achieve an applicable

Desired Future Condition for that aquifer, production amounts authorized under Historic and Existing Use and Production Permits may remain the same or be increased, as set forth under these rules. As determined by the District, if the total amount of production within an aquifer exceeds the Modeled Available Groundwater set for an aquifer, production amounts may be decreased proportionally among all permit holders producing from that aquifer, if necessary to avoid impairment of the Desired Future Condition. Any necessary reductions will first be applied to Production Permits, and, subsequently, if production still exceeds the Modeled Available Groundwater set for an aquifer after reducing Production Permits in their entirety, to Historic and Existing Use Permits, as set forth under Rule 10.4.

RULE 10.4 PROPORTIONAL ADJUSTMENT

(a) When establishing proportional adjustment restrictions, the Board shall first set aside an amount of groundwater equal to an estimate of total exempt use.

(b) After setting aside an amount of groundwater for exempt use, to the extent of remaining groundwater availability, the Board shall allocate groundwater to Historic and Existing Use Permits according to the permitted Maximum Historic and Existing Use in each. If there is insufficient groundwater availability to allow withdrawal under all Historic and Existing Use Permits, the Board shall allocate the groundwater availability first to the Historic and Existing Permits in an amount up to the Eligible Recharge Credit, on a pro rata basis relative to all other Historic and Existing Permits. The Eligible Recharge Credit shall mean 30% of the permitted Maximum Historic and Existing Use that is designated for and previously put to irrigation use in each Historic and Existing Use Permit. The groundwater authorized for withdrawal pursuant to an Eligible Recharge Credit must be withdrawn from the same aquifer that has been recharged with groundwater allocated under the respective permit or application. The remaining groundwater availability shall then be allocated among the Historic and Existing Use Permits up to an amount authorized under each permit on an equal percentage basis until total authorized production equals groundwater availability for a particular aquifer district-wide or within a management zone, if applicable. The Eligible Recharge Credit shall be applied in such a manner that the irrigation user's Existing and Historic Use Permit shall not be proportionally reduced to the extent of the Eligible Recharge Credit. The only basis for proportionately reducing the Eligible Recharge Credit shall be in the event that 100% of the non-recharge credit portion of the Historic and Existing Use Permit allotments has been reduced. If it can be demonstrated and the Board takes official action to determine that the irrigation recharge is more or less than 30%, then the Eligible Recharge Credit may be adjusted by subsequent rulemaking. No groundwater shall be authorized for production under Production Permits if there is insufficient water availability to satisfy all Historic and Existing Use Permits and exempt use, subject to Subsection (e) of this rule. The Eligible Recharge Credit for irrigation use under a Production

Permit shall not be applied where there is equal to or less than enough groundwater to satisfy all Historic and Existing Use Permits and exempt use.

(c) If there is sufficient groundwater to satisfy all Historic and Existing Use Permits and exempt use, the Board shall then allocate remaining water availability first to the existing Production Permit holders in an amount equal to their Eligible Recharge Credit, on a pro rata basis relative to all other Production Permits. The Eligible Recharge Credit shall mean 30% of the groundwater allocated under each Production Permit that is designated for and previously put to irrigation use. The groundwater authorized for withdrawal pursuant to an Eligible Recharge Credit must be withdrawn from the same aquifer that has been recharged with groundwater allocated under the respective Production Permit. The remaining groundwater availability shall then be allocated among the Production Permits up to an amount authorized under each permit on an equal percentage basis until total authorized production equals groundwater availability for a particular aquifer district-wide or within a management zone, if applicable. The recharge credit shall be applied in such a manner that the irrigation user's Production Permit shall not be proportionally reduced to the extent of the recharge credit. The only occasion for proportionately reducing the Eligible Recharge Credit shall be in the event that 100% of the non-recharge credit portion of the Production Permit allotments has been reduced, and there is only sufficient groundwater availability to supply exempt use and Historic and Existing Use. If it can be demonstrated and the Board takes official action to determine that the irrigation recharge is more or less than 30%, then the recharge credit shall be adjusted accordingly. No groundwater may be authorized for production under new Production Permits if there is insufficient groundwater availability to satisfy all existing Production Permits, subject to Subsection (e) of this rule.

(d) If there is sufficient groundwater to satisfy all Historic and Existing Use Permits, exempt use, and existing Production Permits, the Board may then allocate remaining groundwater availability to applications for new or amended Production Permits approved by the District.

(e) When establishing proportional adjustment restrictions that contemplate the reduction of authorized production or a prohibition on authorization for new or increased production, the Board may also choose to proportionately reduce any existing Production Permits on a pro rata basis, excluding the authorized Eligible Recharge Credit, in order to make groundwater available for new applications for Production Permits and may allocate to each surface acre a designated amount of groundwater. In doing so, the Board may elect to allocate more water to surface acreage recognized under existing Production Permits than to surface acreage associated with applications for new Production Permits.

RULE 10.5 MANAGEMENT ZONES

(a) As set forth in the District Management Plan and illustrated in Figures 1 through 4 below, the following management zones are established within the principal areas of irrigation and pertinent surrounding areas of Pecos County:

Management Zone 1 – Leon-Belding Irrigation Area and Vicinity of City of Fort Stockton to include outlets of Comanche Springs:

This management zone area is generally bounded by the TWDB Edwards-Trinity (Plateau) / Pecos Valley Aquifer GAM-Grid cells that contain the following sets of latitude and longitude coordinates: (30.90321N, -102.8566 W); (30.85306N, -102.8928 W); (30.69796 N, -10.15137 W). The specific GAM-grid cells composing Management Zone 1 are provided in Appendix G of the District Management Plan.

Management Zone 2 – Bakersfield Irrigation Area:

This management zone area is generally bounded by the TWDB Edwards-Trinity (Plateau) / Pecos Valley Aquifer GAM-Grid cells that contain the following sets of latitude and longitude coordinates: (except where cells are truncated by intersection with the Pecos County-line): (31.05667 N, -102.3717 W); (30.8992 N, -102.28911 W); (30.95167 N, -102.1653 W); (30.96833 N, -102.2169 W). The specific GAM-Grid cells used to compose Management Zone 2 are provided in Appendix G of the District Management Plan.

Management Zone 3 – Coyanosa Irrigation Area:

This management zone area is generally bounded by the TWDB Edwards-Trinity (Plateau) / Pecos Valley Aquifer GAM-Grid cells that contain the following sets of latitude and longitude coordinates (except where cells are truncated by intersection with the Pecos County-line): (31.1805 N, 103.0202 W); (31.3169 N, 103.0511 W); 31.2097 N, 103.0026 W); (31.1105 N, 102.9924 W); (31.1025 N, 103.1022 W); (31.1834 N, 103.1347 W). The specific GAM-Grid cells used to compose Management Zone 3 are provided in Appendix G of the District Management Plan.

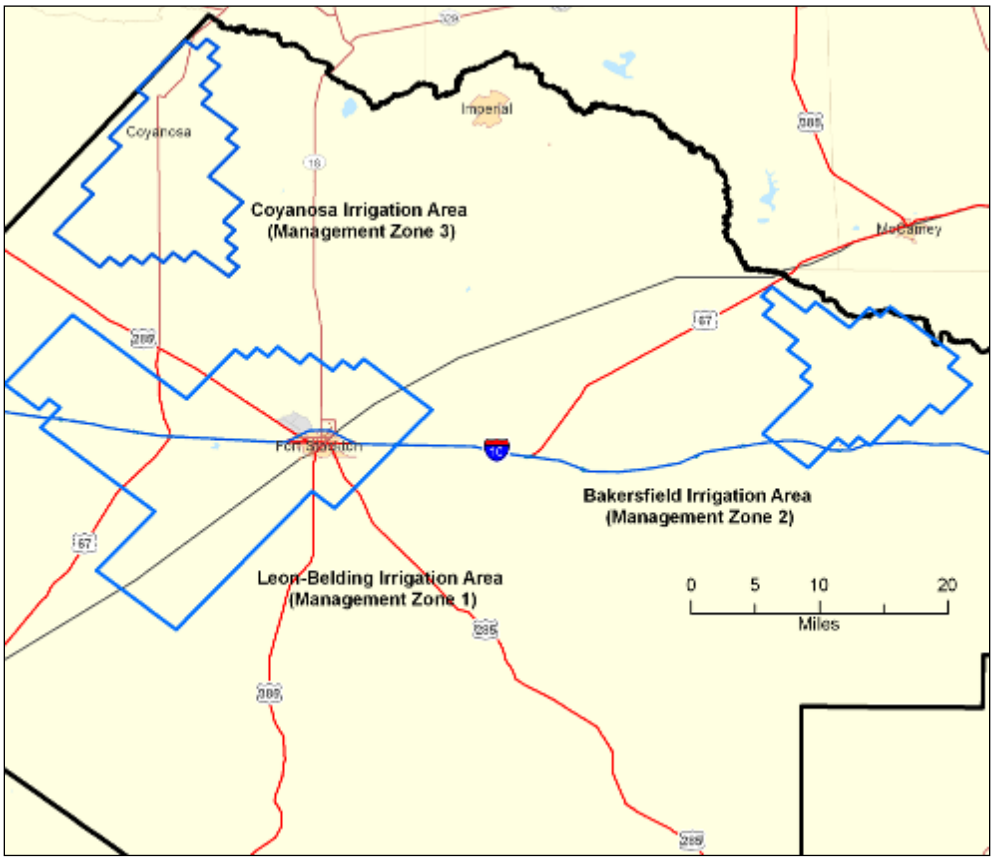

Figure 1, District Designated Management Zones

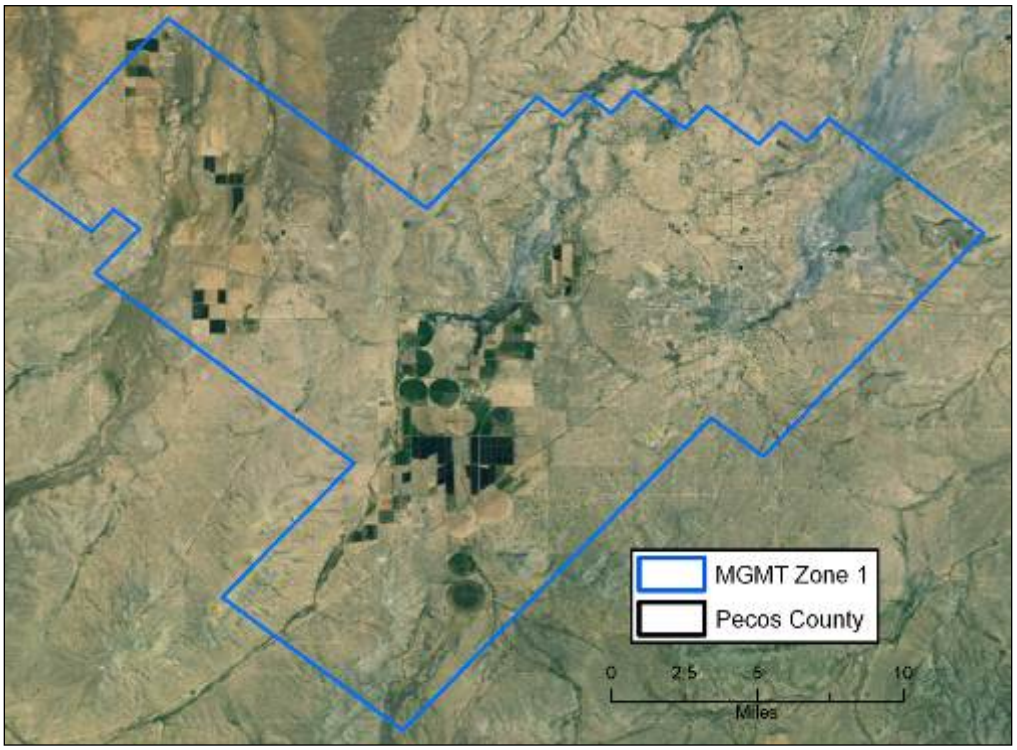

Figure 2, District Management Zone 1

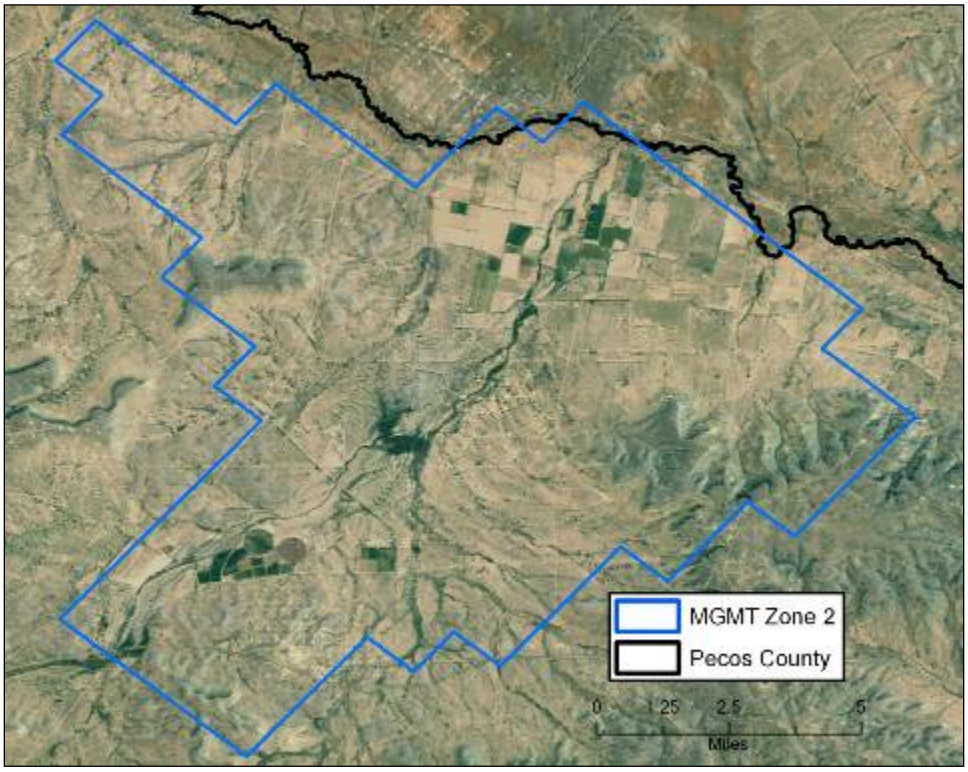

Figure 3, District Management Zone 2

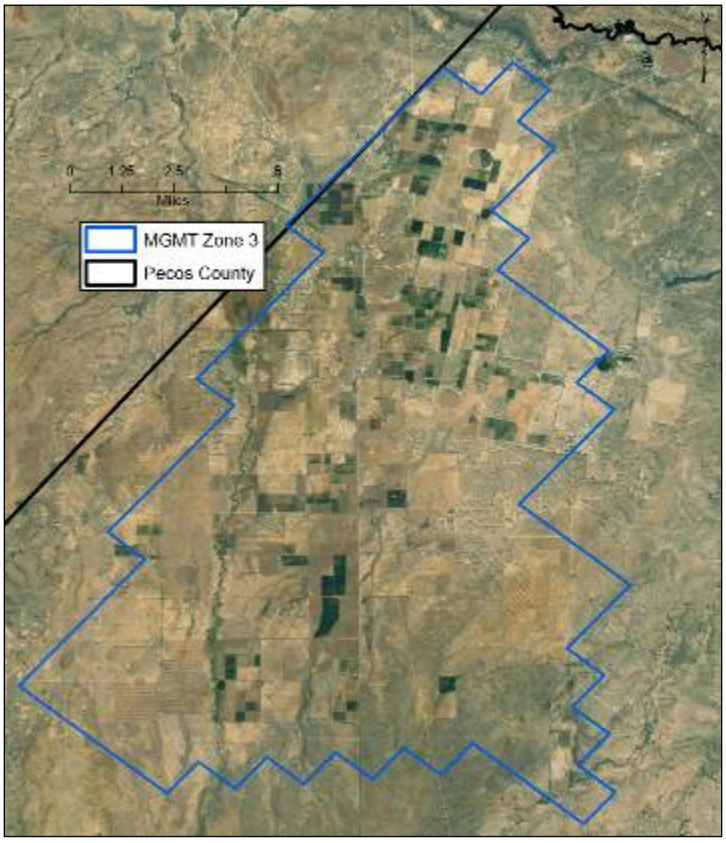

Figure 4, District Management Zone 3

(b) The District shall establish benchmarks of sustainable groundwater use over time to avoid impairment of the Desired Future Condition of each of the aquifers within each management zone, and will re-establish benchmarks from time to time as necessary to be consistent with such Desired Future Conditions. The benchmarks of sustainable groundwater use are threshold amounts of acceptable drawdown over time. The threshold amounts of acceptable drawdown are the average predicted drawdown values over time for each management zone predicted in Scenarios 10 and 11 of TWDB GAM-Run 09-35, Version 2, used to establish the DFCs for the Edwards-Trinity (Plateau) and Pecos Valley aquifers in the District. The predicted drawdown values over time for Management Zones 1 and 2, located in the GMA-7 portion of the District, are from Scenario 10. The predicted drawdown values over time for Management Zone 3, located in the GMA-3 portion of the District, are from Scenario 11. The threshold amounts of acceptable drawdown over time for each management zone are as presented in TWDB GAM Task Report 10-033, which presents more detailed information on Pecos County than otherwise available in but consistent with Scenarios 10 and 11 of TWDB GAM-Run 09-35. The threshold amounts of acceptable drawdown over time for each management zone are as follows:

Year	Management Zone-1 Average Draw-Down (in feet, rounded to nearest foot)	Management Zone-2 Average Draw-Down (in feet, rounded to nearest foot)	Management Zone-3 Average Draw-Down (in feet, rounded to nearest foot)
2015	3	1	2
2020	7	2	4
2025	10	2	5
2030	13	2	7
2035	17	2	8
2040	20	3	9
2045	23	3	11
2050	26	3	12
2055	29	3	13
2060	32	3	15

Table 1, Example Predictive Average Drawdown Values over Time in Edwards-Trinity (Plateau) and Pecos Valley Aquifers for MPGCD Management Zones from TWDB GAM Task Report 10-033.

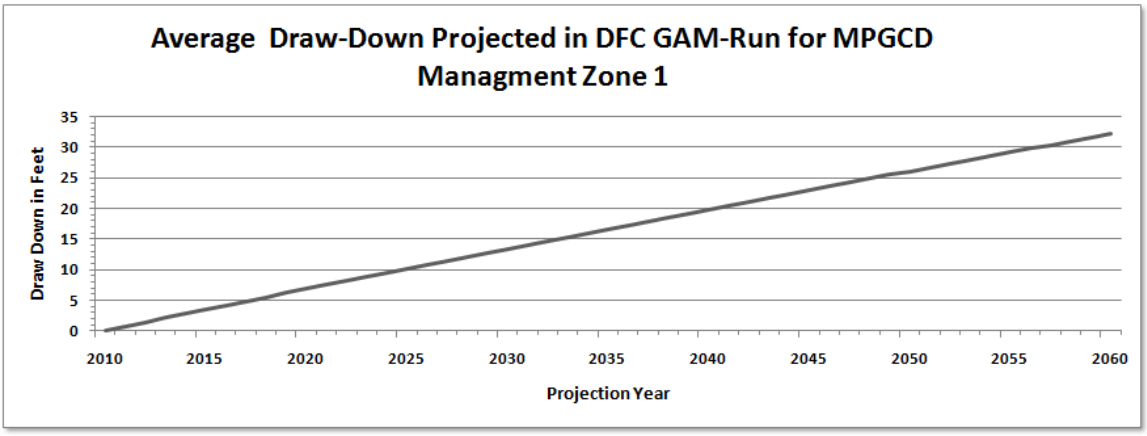

Figure 5, Chart of Predictive Average Drawdown Values over Time in Edwards-Trinity (Plateau) and Pecos Valley Aquifers for MPGCD Management Zone 1 from TWDB GAM Task Report 10-033.

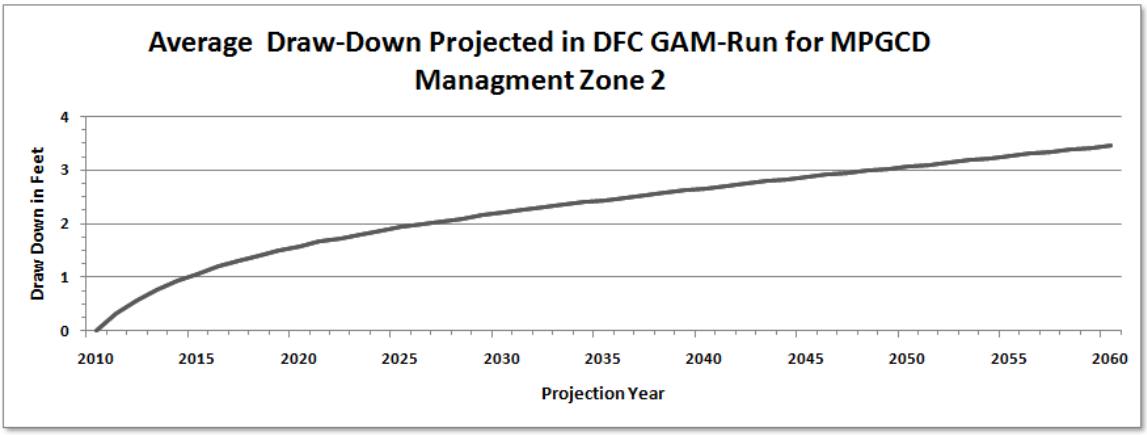

Figure 6, Chart of Predictive Average Drawdown Values over Time in Edwards-Trinity (Plateau) and Pecos Valley Aquifers for MPGCD Management Zone 2 from TWDB GAM Task Report 10-033.

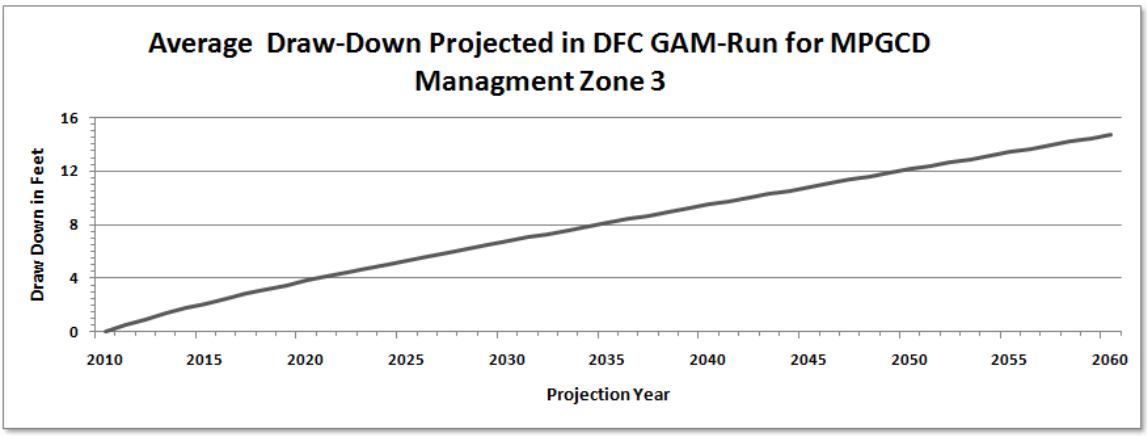

Figure 7, Chart of Predictive Average Drawdown Values over Time in Edwards-Trinity (Plateau) and Pecos Valley Aquifers for MPGCD Management Zone 3 from TWDB GAM Task Report 10-033.

(c) At least every five years, the District will assess the amount of average drawdown realized in each of the management Zones established by the District. The District will compare the amount of realized drawdown in each Management Zone to the time-appropriate threshold of acceptable drawdown in order to determine whether the amount of groundwater use occurring in the Management Zone appears likely to impair the DFC. The District may elect to assess the aquifer drawdown realized in any Management Zone and compare the realized drawdown to the time-appropriate threshold of acceptable drawdown as often as necessary to effectively manage groundwater use and insure the aquifer DFCs are not impaired. The Board may authorize the General Manager to determine whether a comparison of realized drawdown to the threshold of acceptable drawdown is needed for any Management Zone.

(d) The District recognizes that, as of the date of these Rules, the majority of groundwater used the Management Zones is for agricultural irrigation involving widespread intensive seasonal use of groundwater followed by a general cessation of use by the majority of users in the Management Zones. The District further recognizes that after the general cessation of use the aquifer recovers from the effects of the previous intensive seasonal use to reach a point of maximum water-level recovery prior to initiation of the succeeding intensive-use season. The District also recognizes that the threshold of acceptable drawdown values generally represent the year-end maximum recovered waterlevel of the aquifer in the Management Zones for the referenced year. However, the actual date of the maximum recovery of the aquifer waterlevels in the Management Zone may occur anytime from the month of November of a given calendar year through the month of February of the following year.

(e) To facilitate the comparison of realized drawdown to the thresholds of acceptable drawdown over time in the Management Zones the District will use the following procedures or actions:

(1) Establish several monitor wells in and around each Management Zone for the purpose of observing and quantifying the amount of aquifer drawdown realized over time in each Management Zone;
(2) Develop maps of maximum water-level recovery conditions for year 2010 following procedures in this subsection below;
(3) On or before February 25, 2013, adopt after notice and hearing, the maps of 2010 Management Zone water levels as the 2010 benchmarks for future comparisons of water levels under these rules;
(4) Observe the recovery of aquifer water levels as represented by the monitor wells after the intensive-use season to determine the apparent point of maximum water-level recovery in the Management Zone;
(5) In observing the recovering water levels in the monitor wells of a Management Zone, the District may determine that the apparent point of maximum water-level recovery from the season of intensive use in any given year occurs on a date through the month of February of the succeeding year;
(6) Compile the water-level data, of the Management Zone for the year in which the comparison is to be made;
(7) Determine the water-level drawdown from the established year 2010 conditions for the centroid of each grid-cell of the TWDB Edwards-Trinity (Plateau) / Pecos Valley Aquifer GAM located in the Management Zone area from the water-level contour map;
(8) Calculate the average drawdown of aquifer water levels for the year in which the comparison is to be made in each Management Zone using the set of GAM grid-cell centroid drawdown values for that year;
(9) Compare the calculated average water-level drawdown value for the Management Zone to the DFC-based threshold of acceptable drawdown for the year in which the comparison is to be made, taking into consideration how the distribution of monitoring wells and the amount of pumping known or estimated to be occurring within a Management Zone may affect comparison with the results of TWDB

GAM Task Report 10-033 used to establish the thresholds of acceptable drawdown; and

(10) Adopt, after notice and hearing, maps of water levels of all the aquifers, which were not addressed in subsection (3) above, as benchmarks for future comparisons of water levels under these rules.

(f) The Board may, after appropriate rulemaking notice and hearing, establish proportional adjustment reductions based upon the availability of groundwater, benchmarks of sustainable groundwater use over time, and/or degradation of water quality that could result from declining water levels if the Board determines reductions are required to conform with these rules. Upon adoption of a Desired Future Condition and setting of Modeled Available Groundwater for an aquifer within the District, the District shall ensure that the groundwater available for production within a management zone or among management zones designated for that aquifer does not impair the Desired Future Condition and is consistent with the Modeled Available Groundwater for that aquifer within the District. Restrictions within a certain management zone will be uniformly applied within that management zone.

(g) As determined by the District, if the total amount of production within a management zone causes the benchmark of sustainable use within the management zone to be impaired, production amounts authorized under Historic and Existing Use and Production Permits may be decreased within a management zone.

RULE 10.6 LIMIT SPECIFIED IN PERMIT

The maximum annual quantity of groundwater that may be withdrawn under a Historic and Existing Use Permit or Production Permit issued by the District shall be no greater than the amount specified in the permit or the amended permit unless the District makes a determination under Section 10 to increase or decrease the authorized amount of withdrawal. Permits may be issued subject to conditions and restrictions placed on the rate and amount of withdrawal pursuant to the District's rules and permit terms necessary to prevent waste and achieve water conservation, minimize as far as practicable the drawdown of the water table or the reduction of artesian pressure, lessen interference between wells, or control and prevent subsidence. The permittee, by accepting the permit, agrees to abide by any and all groundwater withdrawal regulations established by the District that are currently in place, as well as any and all regulations established by the District in the future. Acceptance of the permit by the person to whom it is issued constitutes acknowledgment of and agreement to comply with all of the terms, provisions, conditions, limitations, and restrictions.

In addition to any special provisions or other requirements incorporated into the permit, each permit is subject to the following standard permit provisions:

a) This permit is granted in accordance with the provisions of the Rules of the District, and acceptance of this permit constitutes an acknowledgment and agreement that the permittee will comply with the Rules of the District.

b) The permit terms may be modified or amended pursuant to the provisions of the District's rules or to comply with statutory requirements.

c) The operation of the well for the authorized withdrawal must be conducted in a non-wasteful manner.

d) Withdrawals from all nonexempt wells must be accurately measured either by meter or District-approved alternative measuring method, in accordance with the District's rules. The owner or operator of all permitted wells must file an annual pumpage report with the District. If the well is metered, the meter readings must be attached to the annual pumpage report filed with the District. Wells that are drilled, completed, or equipped so that they are incapable of producing more than 25,000 gallons per day are not required to have a meter or report annualproduction if used for domestic purposes or for watering livestock or poultry.

e) The well site must be accessible to District representatives for inspection, and the permittee agrees to cooperate fully in any reasonable inspection of the well and well site by the District representatives.

f) The application pursuant to which this permit has been issued is incorporated in the permit, and the permit is granted on the basis of, and contingent upon, the accuracy of the information supplied in that application. A finding that false information has been supplied is grounds for immediate revocation of the permit.

g) Violation of apermit's terms, conditions, requirements, or special provisions is punishable by civil penalties as provided by the District's rules.

h) The permit may also contain provisions relating to the means and methods of transportation outside the District of groundwater produced within the District.

RULE 10.7 MEASURING AND REPORTING GROUNDWATER WITHDRAWALS

(a) Nonexempt wells: Every owner or operator of a nonexempt Water Well is responsible for measuring withdrawals from each Water Well either by a District-approved meter or alternative measuring method. Meters must be selected and installed in accordance with the District General Manager's specifications and approval, at the well owner's cost. Meters are not required to be installed on nonexempt wells that are drilled, completed, or equipped so that they are incapable of producing more than 25,000 gallons per day, as long as an alternative measuring method approved by the District is used to record and report groundwater production from this type of well.

(b) Alternative measuring method: The District may authorize the use of an alternative measuring method in lieu of a meter if it can be demonstrated by the well owner that the alternative measuring method is capable of accurate measurement of groundwater withdrawal. The owner of a nonexempt well must secure the District General Manager's approval of an alternative measuring method of determining the amount of groundwater withdrawn. The District General Manager may authorize the alternative measuring method if the applicant well owner demonstrates that the alternative measuring method

can accurately measure the groundwater withdrawn. Reporting shall still be required by an owner or operator of a well who is using a District-approved alternative measuring method. A report reflecting annual withdrawals, on a calendar-year basis, shall be provided by any means approved by the General Manager, or more frequently, if requested by the General Manager.

(c) Exempt wells:

(1) An entity holding a permit issued by the Railroad Commission of Texas under Chapter 134, Texas Natural Resources Code, that authorizes the drilling of a water well, shall report monthly to the District:

(A) the total amount of water withdrawn during the month;
(B) the quantity of water necessary for mining activities; and
(C) the quantity of water withdrawn for other purposes.

(2) A report reflecting the total amount of water withdrawn each month from a well exempt under District Rule 11.3(a)(2) must be submitted to the District by the owner or operator. The owner and the operator of such a well may coordinate to determine the amount of monthly withdrawals and to submit this report. However, both the owner and operator of such a well are responsible for ensuring that the withdrawals are determined and that the report is submitted to the District.

(3) The groundwater production from wells subject to reporting under this Subsection (c) must be measured by meter or alternative measuring method approved under this Rule 10.7.

(d) A meter shall be read and the meter reading monthly recorded to reflect the actual amount of pumpage throughout each calendar year. A report reflecting the annual withdrawals, on a calendar-year basis, shall be provided by any means approved by the General Manager, or more frequently, if requested by the General Manager. The permit holder subject to this reporting requirement shall keep accurate records of the amount of groundwater withdrawn and the purpose of the withdrawal, and such records shall be available for inspection by the District or its representatives. Where wells are permitted in the aggregate, metering and reporting are required on a well-by-well basis.

(e) Immediate written notice shall be given to the District in the event a withdrawal exceeds or is anticipated to exceed the quantity authorized by a permit issued by the District.

(f) Meter accuracy to be tested. The District may require a well owner or operator, at the well owner's or operator's expense, to test the accuracy of the meter and submit a certificate of the test results. The District also has the authority to test a meter. If a test reveals that a meter is not registering within an accuracy of 95%-105% of actual flow, or is not properly recording the total flow of groundwater withdrawn from the well or Well System, the well owner or operator must take appropriate steps to remedy the problem,

and to retest the meter within 90 (ninety) calendar days from the date the problem is discovered.

(g) Violation of Metering and Reporting Requirements: False reporting or logging of meter readings, intentionally tampering with or disabling a meter, or similar actions to avoid accurate reporting of groundwater use and pumpage shall constitute a violation of these rules and shall subject the person performing the action, as well as the well owner, and/or the primary operator who authorizes or allows that action, to such remedies as provided in the District Act and these rules.

(h) Recordkeeping Required until Installation of Meter: In the event that a well owner or operator is not measuring withdrawals by District-approved meter or alternative measuring method, the well owner or operator shall be required to keep an accurate log of dates of operation of each well, the duration of such operation, and the purpose and place of use of the water produced until such time as the well owner or operator installs a District-approved meter or secures an alternate measuring method. Such metering log shall be submitted to the District in writing and sworn to within ten (10) calendar days of the installation of the meter or approval of an alternate measuring method, whichever is earlier. Failure to provide the metering log as required by this rule or the provision of false information therein shall be a violation of these rules and grounds for permit denial or revocation.

(i) Meter Maintenance: Costs of meter maintenance shall be borne by the well owner or operator.

(j) Water Use Reporting: Pursuant to Texas Water Code Sections 36.109 and 36.111, if the Board or General Manager deems it useful or otherwise necessary for the District to secure monthly groundwater use data, the General Manager may notify any user of groundwater that monthly groundwater use must be reported to the District.

SECTION 11. GENERAL PERMITTING POLICIES AND PROCEDURES

RULE 11.1 REQUIREMENT FOR PERMIT TO DRILL, OPERATE, OR ALTER THE SIZE OF A WELL OR WELL PUMP; PERMIT AMENDMENT

(a) Permits Required: No person may drill, operate, equip, complete, or alter the size of a well or well pump without first obtaining a permit or approved pre-registration, as applicable, from the District as provided by statutory law and these rules.

(b) Permit Amendment Required: A permit amendment is required prior to any deviation from the permit terms regarding the maximum amount of groundwater to be produced from a well, ownership of a well or permit, the location of a proposed well, the purpose of use of the groundwater, the location of use of the groundwater, or the drilling and

operation of additional wells, even if aggregate withdrawals remain the same. A Historic and Existing Use Permit may not be amended to modify the purpose of use for which the Historic and Existing Use Permit was originally granted, but may be amended to modify the place of use to a place inside or outside the district. The District may authorize a permit holder to lease or otherwise transfer ownership of a Historic and Existing Use Permit or the amount of groundwater production authorized under such a permit, as long as the purpose of use does not change and as long as the withdrawal is made from the same aquifer and within the same management zone, if applicable, and such transfers are subject to the Rule 11.9.1 and Rule 11.10.10.

(c) Absent an express reservation of rights in the transferor, the transfer of ownership of the well(s) designated by a permit is presumed to transfer ownership of the permit, and the transfer of the land and well site on which the well is located is presumed to transfer ownership of the well. The ownership of a permit may be transferred separately from the ownership of a well or place of use, subject to these Rules and permit conditions. If a transferor retains any interest in the permit, the District may issue a second permit to the transferee that contains the benefits severed and transferred. The District may thereafter amend the permit of the transferor accordingly, along with any appropriate conditions relevant to the transfer imposed by the District. The District shall limit the amount of production authorized in the transfer of a permit to a different location of use to the amount of water produced and beneficially used by the transferor under the original permit.

(d) If the production authorized for two or more wells that have been aggregated to function as part of a Well System under Rule 11.2 and one or more wells under the Well System will be transferred, the District may allocate a pro rata share of the total authorized production to each well transferred unless the conveyance documents transferring the well(s) clearly provides for a different method of allocation.

(e) The District shall schedule a hearing for all activities for which a permit or permit amendment is required.

RULE 11.2 AGGREGATION OF WITHDRAWAL AMONG MULTIPLE WELLS

A drilling permit application must be filed for each well that requires permitting. However, one application shall be filed for a Production Permit, or for renewal thereof, which consolidates two or more wells that will function as part of a Well System.

RULE 11.3 PERMIT EXCLUSIONS & EXEMPTIONS

(a) The District's permit requirements in these rules do not apply to:

(1) drilling or operating a well used solely for domestic use or for providing water for livestock or poultry if the well is located or to be locatedon a tract of land larger than ten (10) acres and drilled, completed, or equipped so that it is incapable of producing more than 25,000 gallons of groundwater a day; provided, however, that this exemption shall also apply after the effective date of this ruleto a well to be drilled, completed, or equipped on a tract of land equal to or less than ten (10) acres in size only if:

(A) the well is to be used solely for domestic use or for providing water for livestock or poultry on the tract;
(B) such tract was equal to or less than ten (10) acres in size prior to the effective date of this rule; and
(C) such tract is not further subdivided into smaller tracts of land after the effective date of this rule and prior to the drilling, completion, or equipping of the well.

A well qualifying for exemption under this subsection must observe a minimum distance of 50 (fifty) feet from the property line and 50 (fifty) feet from other wells.
For purposes of an exemption under this subsection, the terms “livestock use” and “poultry use” do not include livestock or poultry operations that fall under the definition of “Animal Feeding Operation” or “Concentrated Animal Feeding Operation” set forth in District Rule 1.1.

(2) drilling a water well used solely to supply water for a rig that is actively engaged in drilling or exploration operations for an oil or gas well permitted by the Railroad Commission of Texas provided that the person holding the permit is responsible for drilling and operating the water well and the water well is located on the same lease or field associated with the drilling rig.

(3) drilling a water well authorized under a permit issued by the Railroad Commission of Texas under Chapter 134, Texas Natural Resources Code, or for production from the well to the extent the withdrawals are required for mining activities regardless of any subsequent use of the water.

(4) An injection water source well permitted by the Railroad Commission for secondary or enhanced oil or gas recovery.

(b) A well exempted under Subsections (a)(2), (3), and (4) above loses its exemption and must be permitted and comply with all the District’s rules in order to be operated if:

(1) the groundwater withdrawals that wereexempted under Subsection (a)(2) are no longer used solely to supply water for a rig that is actively engaged in drilling or exploration operations for an oil or gas well permitted by the Railroad Commission of Texas;

(2) the groundwater withdrawals that wereexempted under Subsection (a)(3) are no longer necessary for mining activities or are greater than the amount necessary for mining activities specified in the permit issued by the Railroad Commission of Texas under Chapter 134, Texas Natural Resources Code; or

(3) the groundwater withdrawals that were exempted under Subsection (a)(4) are no longer used solely to supply water for secondary or enhanced oil recovery pursuant to the terms of the permit issued by the Railroad Commission of Texas.

(c) A water well exempted under Section (a) above shall:

(1) be pre-registered and registered in accordance with rules promulgated by the District; and

(2) be equipped and maintained so as to conform to the District's rules requiring installation of casing, pipe, and fittings to prevent the escape of groundwater from a groundwater reservoir to any reservoir not containing groundwater and to prevent the pollution of harmful alteration of the character of the water in any groundwater reservoir.

(d) Monitoring wells

(e) Leachate wells

(f) Dewatering wells

(g) Registered wells observe exemptions that were in place at the time of filing the registration.

(h) A well exempt under this section will lose its exempt status if the well is subsequently used for a purpose or in a manner that is not exempt.

RULE 11.4 HISTORIC AND EXISTING USE PERMITS

The District recognizes the validity of Historic and Existing Use Permits granted under the District's rules and will continue to recognize the rules and procedures applicable to a Historic and Existing Use permit existing at the time the permit was granted. The District no longer accepts applications for Historic and Existing Use Permits because the deadline has passed, and the application procedures and the Historic and Existing Use Permit permitting process are now obsolete. Historic and Existing Use Permits are subject to the transfer, renewal, and permit amendment provisions set forth in these rules.

RULE 11.5 PERMITS REQUIRED TO DRILL A NEW WELL

(a) Every person who drills a water well after the initial effective date of these rules must file the Notice of Intent provided for in Rule 9.2. Every person who drills a nonexempt well must file a permit application on a form approved by the District.

(b) Drilling Permit Requirement: The well owner, well operator, or any other person acting on behalf of the well owner must obtain a drilling permit from the District prior to drilling a new water well, perforating an existing well or increasing the size of a well pump therein so that the well could reasonably be expected to produce 25,000 gallons per day or more, unless the well is an exempt well under District Rule 11.3.

RULE 11.6 PERMITS REQUIRED TO OPERATE A NEW WELL OR FOR INCREASED WITHDRAWAL AND BENEFICIAL USE FROM AN EXISTING WELL

Prior to and no later than 21 (twenty-one) calendar days after completion of a new water well, or reworking or re-equipping an existing water well, the well owner or well operator must file a completed Production Permit application on a form approved by the District. A Production Permit may only be issued if the well from which water is proposed to be withdrawn has been drilled or if the Production Permit is subject to the well being drilled in accordance with the terms of a Drilling Permit. If the Drilling Permit expires without a well being drilled, any associated Production Permit shall expire at the same time the Drilling Permit expires.

RULE 11.7 PERMIT TERM

(a) Drilling Permit Term: Unless specified otherwise by the Board or these rules, drilling permits are effective for a term ending 120 (one hundred twenty) calendar days after the date the permit is issued by the District, which may be extended by the General Manager with good cause shown.

(b) Historic and Existing Use Permit and Production Permit Terms: Unless specified otherwise by the Board or these rules, an Historic and Existing Use Permit and Production Permit are effective until the end of the calendar year in which they are issued. If renewed, such permits shall thereafter be effective for one-year terms from the initial expiration date unless specified otherwise by the Board. The permit term will be shown on the permit. A permit applicant requesting a permit term longer than one year must substantiate its reason for the longer term and its need to put groundwater to beneficial use throughout the proposed permit term.

RULE 11.8 PERMIT RENEWAL

(a) Permit Renewal: Renewal applications shall be provided by the District prior to expiration of the permit term, and shall be filed with the District no later than January

15th of the new year for which the permit renewal is requested. Production Permits will not be renewed unless the well has been drilled at the time of the renewal application. On the third annual anniversary of permit renewal and every subsequent annual anniversary of permit renewal, a Production Permit Holder must demonstrate that the water allocated by the permit has been withdrawn and put to beneficial use for the purpose and in the amount described in the permit. The General Manager may rule on any renewal application that seeks renewal with the identical or more restrictive permit terms and conditions in the existing permit without notice, hearing, or further action by the Board, or with such notice and hearing as the General Manager deems practical and necessary under the circumstances. System water loss shall be reported to the District once annually, at the time of submitting documentation in support of annual permit renewal.

Any permit holder seeking renewal may appeal the General Manager's ruling by filing, within ten (10) calendar days of notice of the General Manager's ruling, a written request for a hearing before the Board. The Board will hear the applicant's appeal at the next available regular Board meeting. The General Manager shall inform the Board of any renewal applications granted or denied. On the motion of any Board member, and a majority concurrence in the motion, the Board may overrule the action of the General Manager. The General Manager may authorize an applicant for a permit renewal to continue operating under the conditions of the prior permit, subject to any changes necessary under proportional adjustment regulations or these rules, for any period in which the renewal application is the subject of a hearing.

Permitted wells that are drilled, completed, or equipped so that they are incapable of producing more than 25,000 gallons per day may be renewed by the General Manager, subject to any changes necessary under proportional adjustment regulations, these rules, or the District Management Plan.

(b) Basis for Renewal: While there is no automatic right of renewal, an application for renewal will by fully approved if the General Manager or Board finds that the applicant's continued use of groundwater will remain in compliance with the terms, provisions, and requirements of the applicant's current permit and the District Act and rules, subject to adjustment by the General Manager or Board for any new production limits or proportional adjustment requirements that may be applicable to the renewed permit, and, additionally, with respect to Production Permits, that the applicant demonstrated that the water allocated has been withdrawn and put to beneficial use for the purpose and in the amount described in the permit during at least one calendar year of the initial three years of the permit term.

(c) Basis for Denial: The General Manager or Board may partially or fully deny a renewal application only on grounds that the applicant is in violation of the District's rules, the District Act, or Chapter 36, Texas Water Code; that the applicant has not demonstrated that the water allocated has been withdrawn and put to beneficial use for the purpose and in the amount described in the permit during at least one calendar year of the initial three years of the permit term; or that the applicant has a previous violation on record with the District, which has become a final order of the District's Board and is no longer subject

to a motion for rehearing before the District, that has not been corrected or overturned by a court, including, but not limited to, being current on payment of all fees to the District. The District has the burden of proof regarding establishment of any such violation. This subsection shall not be interpreted in a manner that creates a standard in connection with the renewal of a permit that would preclude the District from lawfully revoking a permit for violation of the permit terms, the District's rules or Act, or Chapter 36, Texas Water Code. The applicant has the burden of proof to demonstrate that the water allocated has been withdrawn and put to beneficial use for the purpose and in the amount described in the permit. During renewal, the General Manager or Board may partially or fully reduce the permit allocation to an amount that the permit holder has demonstrated has been withdrawn and put to beneficial use as described above in this rule.

(d) Renewal Application Requirements: The District will timely provide a form for an application for renewal prior to expiration of the permit term. The renewal application will be a streamlined application and will not include all of the elements required for an original application.

RULE 11.9 PERMIT APPLICATIONS

11.9.1 Requirements for All Permit Applications:

(a) Application forms: Each original application for a water well drilling permit, production permit, and permit amendment requires the filing of a separate application. Application forms will be provided by the District and furnished to the applicant upon request. Each application for a permit shall be in writing and sworn to, and shall include the following information relevant to the appropriate type of application to be filed, as that information is identified and requested on the District's application form:

(1) the name and mailing address of the applicant and the owner of the land on which the well or Well System will be located;
(2) if the applicant is other than the owner of the property, documentation establishing the applicable authority to construct and operate each well for the proposed use;
(3) the location of each well and the estimated rate at which water will be withdrawn;
(4) the date the permit is to expire if the well(s) is/are not drilled or if the existing well(s) is/are not properly completed to meet all statutory and regulatory requirements for the intended purpose of use;
(5) a requirement that the water withdrawn under the permit be put to beneficial use at all times;
(6) the location of the use of the water from the well or Well System;
(7) the conditions and restrictions, if any, placed on the rate and amount of withdrawal;

(8) a declaration that the applicant will comply with the District's rules and all groundwater use permits and plans promulgated pursuant to the District's rules;
(9) a declaration that the applicant will comply with the District Management Plan;
(10) a drought contingency plan;
(11) a declaration that the applicant will comply with all District well plugging and capping guidelines and report closure to the commission;
(12) the duration the permit is proposed to be in effect, if greater than one year;
(13) a written statement addressing each of the applicable criteria in Rules 10.2 and 11.10.10(a), (b), and (c) and substantiating why the applicant believes the Board should consider each of these applicable criteria in a manner favorable to the applicant; and
(14) if groundwater is proposed to be transferred out of the District, the applicant shall describe the following issues and provide documents relevant to these issues:

(A) the availability of water in the District and in the proposed receiving area during the period for which the water supply is requested;
(B) the projected effect of the proposed transfer on aquifer conditions, depletion, subsidence, or effects on existing permit holders or other groundwater users within the District; and
(C) how the proposed transfer is consistent with the approved regional water plan and certified District Management Plan.

(b) The applicant must provide the District with the information contained in Rule 11.9.1(a) and 11.9.2 for the District to declare that the application is administratively complete. If the District provides a written list of application deficiencies, the applicant shall have 60 (sixty) calendar days to fully respond to the General Manager's satisfaction, after which a deficient application expires. The applicant may request an extension of this 60-day period or a ruling on the administrative completeness of its application by filing a written request with the District. The District will set an applicant's request under this rule on its next regularly scheduled Board meeting agenda, with three (3) calendar days notice compliant with the Texas Open Meetings Act. The Board will consider and take action on an applicant's request under this rule at this meeting.

11.9.2 Drilling and Production Permit Applications: In addition to the requirements in Rule 11.9.1, all Drilling and Production Permit Applications and applications for amendment of Production Permits shall include the following information relevant to the appropriate type of application to be filed, as that information is identified and requested on the District's application form:

(a) A location map of all existing wells within a one half (1/2) mile radius of the proposed well or Well System or the existing well or wells to be modified;

(b) A map or other document from the Pecos County Tax Appraisal District indicating the ownership and location of the subject property;

(c) A document indicating the location of each proposed well or each existing well to be modified, the subject property, and adjacent owners' physical and mailing addresses;

(d) Notice of any application to the Texas Commission on Environmental Quality to obtain or modify a Certificate of Convenience and Necessity to provide water or wastewater service with water obtained pursuant to the requested permit;

(e) A statement of the nature and purpose of the proposed use and the amount of water to be used for each purpose; and

(f) A hydrogeological report shall be attached to applications meeting the following conditions:

(1) Requests to operate a nonexempt well or Well System with an annual maximum permitted use of at least 1,000 acre feet; and
(2) Requests to amend and increase by at least 250 acre feet the annual maximum permitted use of a Production Permit for a well or Well System.

(g) An applicant subject to subsection (f) of this section shall agree to conduct a pumping test for each well for which a production permit is being requested, and to submit the results of the pumping test to the District within 30 (thirty) days of the well coming on-line and beginning to produce groundwater for beneficial use.

(h) Hydrogeological reports required under Rule 11.9.2(f) shall address the area of influence of the well or Well System for which a permit is being requested and a description of the aquifer that will supply water to each well, and be complete in a manner that complies with the requirements adopted in Rule 11.9.3.

11.9.3 HYDROGEOLOGICAL REPORT REQUIREMENTS FOR PRODUCTION PERMITS FOR>1,000 OR MORE ACRE-FEET PER YEAR:Planning and implementation of all hydrogeological reports required for a production permit application should be coordinated with the District to minimize technical issues and to expedite the review process of the MPGCD production application. The District may exercise discretion in the application of the guidelines on an individual and site-specific basis in order to allow a practicable application of the guidelines while ensuring a result yielding the information needed by the District to manage groundwater resources.

The hydrogeological report is intended to provide information to the District on:

(1) geologic setting of the Applicant's proposed production well field;
(2) well construction information of production and monitor wells;
(3) local aquifer characterization of aquifer properties by pump tests; and
(4) evaluation of whether the proposed use of water unreasonably affects existing groundwater resources or existing permit holders.

(a) Geologic Setting of Applicant's Proposed Production Well Field: The report shall include a discussion of the surface and subsurface geology of the Applicant's tract of land on which each proposed production well or wells are located and will include:

A brief description of the local geology and the selected aquifer within a two-mile radius of each of Applicant's proposed wells. The description will include:

(1) A table that illustrates the stratigraphic column of geological formations overlying and underlying the Applicant's identified producing aquifer.

(2) The following figures will be required for the hydrogeological report based on available subsurface well data. The aerial extent of the following figures will include the Applicant's proposed production well field and a two-mile buffer zone, reflected by concentric circles with a radius of two miles from each of Applicant's proposed wells.

(A) A figure illustrating the location of Applicant's proposed production and monitor wells and property boundary and including each existing well located within a two-mile radius of each of Applicant's proposed wells. The figure will include the name of each landowner on whose property these existing wells are located, and available names of local streets and/or roads.

(B) A figure illustrating the depth to the top of the producing aquifer.

(C) A figure illustrating the most recent water level measurements of each of Applicant's wells (including existing production wells and potential monitor wells).

(b) Required Well Construction Information: The hydrogeological report will include well construction information for each of the Applicant's proposed groundwater production and monitor well(s). Proposed production wells will need a well construction schematic, based on available information. Well construction information for each production and monitor well should include the following (a well schematic is preferred):

(1) identification of the aquifer to be produced from;
(2) total depths and diameters of each of Applicant's existing and proposed production wells;
(3) most recent water levels and dates;
(4) proposed maximum pumping rate; and
(5) water well driller's report and driller's log (if available).

(c) Local Aquifer Characterization: The District may require a pump test to determine local aquifer characterization of the Applicant's proposed well field and to evaluate the potential impact of the requested production on existing wells and the District's DFCs. The District may exempt the Applicant from conductinga pump test if:

(1) the proposed well field (multiple production wells) is in an unconfined aquifer and each proposed well is more than one mile from all of the Applicant's property lines;
(2) the proposed well field involves a single production well in an unconfined aquifer and is more than one-half mile from all of the Applicant's property lines; or
(3) there are no other landowner's production wells using the Applicant's designated aquifer within two miles of the Applicant's property lines.

If the District grants an exemption to the Applicant for a pump test, local aquifer properties from the USGS or TWDB groundwater models will be used to estimate the potential for unreasonable effects on existing wells by the proposed pumping, including but not limited to identifying water level declines within a two-mile radius from each of Applicant's proposed wells.

<u>The Applicant may appeal the District's General Manager's decision to require pump tests by filing with the District a request for reconsideration identifying all the reasons why the Applicant believes a pump test is unnecessary. The District's General Manager has 30 days to review the appeal and decide whether to support or repeal the pump test requirement. The Applicant may appeal the General Manager Manager's decision on the request for reconsideration by filing with the District a written appeal to the District's Board identifying all the reasons why the Applicant believes a pump test is unnecessary.</u>

<u>A pump test and pump test report guidance document is available from the District to assist the Applicant with the District's requirements for these activities.</u>

(d) Potential of Unreasonable Effects from Proposed Production on Existing Wells and Groundwater Resources: The Applicant is required to estimate the potential water level impacts caused by the proposed pumping to wells located within a two-mile radius of the Applicant's well field applying the assumptions and otherwise meeting the requirements enumerated below in this section. The pumping rateand well field geometry for this analysis must mimic the Applicant's expected full production operations.

(1) The time periods for water level analyses are 30, 180, 365 and 730 days.
(2) The water level impact for the above time periods must be estimated for each well within a two-mile radius from each of Applicant's proposed wells.
(3) In addition, water level impacts must be estimated for the above time periods at distances of one quarter, one half, one and a two-mile radius from each of the Applicant's proposed wells.
(4) Water level information should be summarized in a table and/or figures.

The Applicant has two options on how to evaluate the potential of water level impacts:

Option 1: The Applicant will provide the completed hydrogeological report (sections (a), (b) and (c)) and the pump test results (in an Excel format required by the District's hydrogeologist) to the District's hydrogeologist. If the Applicant's production permit application requests 10,000 acre feet per year or less, then the District's hydrogeologist will use the Applicant's pump test derived aquifer properties and estimate water level declines for all the report required wells using pump test simulation software.

If the Applicant's production permit application requests more than 10,000 acre feet per year, then the USGS groundwater model (Pecos Valley Alluvium, Edwards-Trinity Plateau, Dockum and Rustler aquifers, one quarter mile cells, which covers approximately the western two thirds of Pecos County) or the TWDB groundwater model for the Pecos Valley Alluvium and Edwards-Trinity Plateau, Dockum, Rustler or Capitan Reef Complex (one square mile cells) would be run to estimate the water level declines and potential DFC impacts.

If no pump test was required from the Applicant for the hydrogeological report, the local aquifer properties from the USGS or TWDB groundwater models will be used in this water level impact analyses. After running the pump test simulation software or groundwater models, the District's hydrogeologist will generate all the required well level change text, figures and charts necessary to complete the Applicant's hydrogeological report. <u>The District will charge the Applicant a fee for this service.</u>

Option 2:The Applicant can use their own consultant and/or groundwater model (groundwater model must be reviewed and accepted by the District's hydrogeologist prior to model runs) to complete the water level impact analyses. The Applicant's consultant will provide text, figures and tables to meet the above-stated District requirements for the water level impact analyses.

RULE 11.10 PERMIT HEARINGS

11.10.1 All hearings shall be held before a quorum of the Board,a hearings examiner delegated in writing the responsibility to preside over the hearing, or SOAH in accordance with Rule 11.10.4.

11.10.2 Notice and Scheduling of Hearing: Once the District has received an administratively complete application for a water well drilling permit, production permit, or a permit amendment, or if the Board desires to modify an existing permit, the General Manager will issue a written notice of the hearing on the application in accordance with these rules.

(a) Notices of all hearings of the District shall be prepared by the General Manager and shall, at a minimum, state the following information:

(1) the name and address of the applicant or permit holder;
(2) the name or names of the owner or owners of the land if different from the applicant or permit holder;
(3) the time, date, and location of the hearing;
(4) the address or approximate proposed location of the well or Well System, if different than the address of the applicant or permit holder;
(5) a brief explanation of the proposed permit or permit amendment, including any requested amount of groundwater, the purpose of the proposed use, and any change in use, or if the Board desires to modify an existing permit, a brief explanation of the proposed permit modification and the basis for the proposed modification; and
(6) any other information the Board or General Manager deems appropriate to include in the notice.

(b) Not less than ten (10) calendar days prior to the date of the hearing, notice shall be:

(1) posted by the General Manager at a place readily accessible to the public in the District Office;
(2) provided by the General Manager to the County Clerk of Pecos County, whereupon the County Clerk shall post the notice on a bulletin board at a place convenient to the public in the county courthouse; and
(3) provided to the applicant by regular mail.

Not less than ten (10) calendar days prior to the date of the hearing, notice may be provided by regular mail to landowners who, in the discretion of the General Manager, may be affected by the application.

(c) A person may request notice from the district of a hearing on a permit or a permit

amendment application. The request shall be memorialized in writing and is effective for the remainder of the calendar year in which the request is received by the District. To receive notice of a hearing in a later year, a person must submit a new request. An affidavit of an officer or employee of the District establishing attempted service by first class mail, facsimile, or email to the person in accordance with the information provided by the person is proof that notice was provided by the District.

(d) Failure to provide notice under Subsection (c) does not invalidate an action taken by the District at the hearing.

(e) The Board shall conduct an evidentiary hearing on a permit or permit amendment application if a party appears to protest that application or if the General Manager proposes to deny that application in whole or in part, unless the applicant or other party in a contested hearing requests the District to contract with SOAH to conduct the evidentiary hearing. If no one appears at the initial, preliminary hearing and the General Manager proposes to grant the application, the permit or permit amendment application is considered uncontested, and the General Manager may act on the permit application without conducting anevidentiary hearing on the application. The General Manager may take any uncontested permit or permit amendment application for which the District did not receive a timely filed notice of protest to the Board for anevidentiary hearing, at the General Manager's discretion. Unless one of the parties in a contested hearing requests a continuance and demonstrates good cause for the continuance, the Board may conduct the preliminaryand evidentiary hearings on the same date.

(f) Any hearing may or may not be scheduled during the District's regular business hours, Monday through Friday of each week, except District holidays. All hearings shall be held at the location set forth in the notice.

(g) The General Manager shall set an initial, preliminary hearing date within 60 (sixty) calendar days after the date the administratively complete application is submitted. The initial, preliminary hearing shall be held within 35 (thirty-five) calendar days after the setting of the date. Within this same time frame, the General Manager shall post notice and set a hearing on the application before the District Board. The General Manager may schedule as many applications at one hearing as the General Manager deems necessary.

11.10.3 Authority of Presiding Officer: The Presiding Officer may conduct preliminary and evidentiary hearings or other proceedings in the manner the Presiding Officer deems most appropriate for the particular hearing. The Presiding Officer has the authority to:

(a) set hearing dates, other than the initial, preliminary hearing date for permit matters;
(b) convene the hearing at the time and place specified in the notice for public hearing;
(c) rule on motions;

(d) permit the receipt of and rule on the admissibility of evidence consistent with Subchapter D, Chapter 2001, Texas Government Code;

(e) establish the order for presentation of evidence;

(f) administer oaths to all persons presenting testimony;

(g) examine and allow cross-examination of witnesses;

(h) ensure that information and testimony are introduced as conveniently and expeditiously as possible, without prejudicing the rights of any party to the proceeding;

(i) conduct public hearings in an orderly manner in accordance with theserules;

(j) recess any hearing from time to time and place to place;

(k) issue subpoenas, require depositions, or order other discovery consistent with Subchapter D, Chapter 2001, Texas Government Code; and

(l) exercise any other appropriate powers necessary or convenient to effectively carry out the responsibilities of Presiding Officer.

11.10.4 Appearance; Presentation; Time for Presentation; Ability to Supplement; Conduct and Decorum; Written Testimony; Hearing before SOAH

(a) Appearance: Protestants and non-protestant interested persons may present evidence, exhibits, or testimony, or make an oral presentation as allowed by the Presiding Officer. A person appearing in a representative capacity may be required to prove proper authority. Each person attending and participating in a hearing of the District must submit on a form provided by the District, prior to or at the commencement of the hearing, the following information: the person's name and address, who the person represents if other than himself, whether the person wishes to testify, whether the person is protesting the application, and any other information relevant to the hearing.

(1) Protestants: To protest an application for a permit or permit amendment, a potential party must attend the permit hearing prepared to articulate his or her justiciable interest related to a legal right, duty, privilege, power or economic interest that is within the district's regulatory authority and how that justiciable interest would be adversely affected by the permit proposed by the application. This potential party must attend the hearing and be prepared to address and respond to inquiry and any cross-examination regarding their alleged justiciable interest. A justiciable interest does not include persons who have only an interest common to members of the general public. It is recommended that a person desiring to protest an application for a permit or permit amendment file with the District a notice of protest setting forth the protestant's justiciable interest related to a legal right, duty, privilege, power or economic interest that is within the district's regulatory authority and how that justiciable interest would be adversely affected by the permit proposed by the application. It is recommended that the notice of protest be submitted so that it is received by the District at least two (2) business days before the permit hearing. The Board may take testimony and shall deliberate and take official action at the hearing to determine whether the protestant has sufficiently demonstrated their justiciable interest and how that justiciable interest would be adversely affected by the permit proposed by the

application. If the Board finds that a protestant does not adequately establish that its justiciable interest is affected by the proposed permit, then the protestant shall not be allowed to participate in the hearing.

(2) Non-protestant interested persons: A person may appear at a hearing in person or by representative provided the representative is fully authorized, in writing, to speak and act for the principal. Any person appearing and offering any evidence pursuant to this subsection shall be subject to cross-examination.

(3) Request for SOAH hearing: If an application is contested, any party to the hearing may request that the District contract with SOAH to conduct further proceedings in the hearing. A request for a SOAH hearing under this rule must be made to the Board at the preliminary hearing and is untimely if submitted after the conclusion of the preliminary hearing.

(b) After the Presiding Officer calls a hearing to order, the Presiding Officer shall announce the subject matter of the hearing and the order and procedure for presentations.

(c) The Presiding Officer may prescribe reasonable time limits for the presentation of evidence and oral argument at the preliminary and evidentiary hearings.

(d) If requested with good cause shown and if allowed in the sole discretion of the Presiding Officer, any person who appears at a hearing and makes a presentation before the Board may supplement that presentation by filing additional written evidence with the Board within ten (10) calendar days after the date of conclusion of the hearing. Cumulative, repetitive, and unduly burdensome evidence filed under this subsection will not be considered by the Board. A person who files additional written material with the presiding officer under this subsection must also provide the material, not later than the 10th calendar day after the date of the hearing, to any person who provided comments on an uncontested application or any party to a contested hearing. A person who receives additional written material under this subsection may file a response to the material with the presiding officer not later than the 10th day after the date the material was received.

(e) Every person, party, representative, witness, and other participant in a proceeding must conform to ethical standards of conduct and must exhibit courtesy and respect for all other participants. No person may engage in any activity during a proceeding that interferes with the orderly conduct of District business. If in the judgment of the Presiding Officer, a person is acting in violation of this provision, the Presiding Officer will first warn the person to refrain from engaging in such conduct. Upon further violation by the same person, the Presiding Officer may exclude that person from the proceeding for such time and under such conditions as the Presiding Officer deems necessary.

(f) Written testimony: When the Presiding Officer determines that a proceeding will be expedited and the interest of the parties will not be prejudiced substantially, the Presiding Officer may allow testimony to be received in written form, which testimony shall be

subject to cross-examination. If the Presiding Officer allows written testimony, the written testimony of a witness, either in narrative or question and answer form, may be admitted into evidence upon the witness being sworn and identifying the testimony as a true and accurate record of what the testimony would be if given orally.

(g) SOAH hearing:

(1) Deadline, Location: If timely requested by the applicant or other party to a contested hearing, the District shall contract with SOAH to conduct the hearing on the application. The Board shall determine whether the SOAH hearing will be held in Travis County or at the District Office or other regular meeting place of the Board, after considering the interests and convenience of the parties, and the expense of a SOAH contract.

(2) Costs, Deposit: The party requesting that the hearing be conducted by SOAH shall pay all costs associated with the contract for the hearing and shall make a deposit with the District in an amount that is sufficient to pay the estimated SOAH contract amount before the hearing begins. If the total cost for the contract exceeds the amount deposited by the paying party at the conclusion of the hearing, the party that requested the hearing shall pay the remaining amount due to pay the final price of the contract. If there are unused funds remaining from the deposit at the conclusion of the hearing, the unused funds shall be refunded to the paying party.

(3) Referral: Upon execution of a contract with SOAH and receipt of the deposit from the appropriate party or parties, the District's Presiding Officer shall refer the application to SOAH. The Presiding Officer's referral to SOAH shall be in writing and shall include procedures established by the Presiding Officer under Subsection (g)(4) below; a copy of the permit application, all evidence admitted at the preliminary hearing, the District's rules, the District Management Plan, and the District Act; and guidance regarding the permitting criteria to be addressed in a Proposal for Decision and Findings of Fact and Conclusions of Law to be prepared by SOAH.

(4) Procedure before SOAH: A hearing conducted by SOAH is governed by SOAH's procedural rules; Subchapters C, D, and F, Chapter 2001, Texas Government Code; and, to the extent, not inconsistent with these provisions, any procedures established by the Presiding Officer under District Rule 11.10.3.

(5) District's Receipt of SOAH's Proposal for Decision and Findings of Fact and Conclusions of Law: The District's Board shallconduct a hearing within 45(forty-five) days of receipt of SOAH's Proposal for Decision and Findings of Fact and Conclusions of Law, and shall act on the application at this hearing or no later than 60 (sixty) days after the date that the Board's final hearing on the application is concluded in a manner consistent with Section 2001.058, Texas Government Code. At least ten (10) calendar days prior to this hearing, the Presiding Officer

shall provide written notice to the parties of the time and place of the Board's hearing under this subsection by mail and facsimile, for each party with a facsimile number. The Presiding Officer shall exercise his or her authority under Rule 11.10.3 in conducting this hearing.

11.10.5 Recording

(a) Contested Hearings: Contested Hearings: A record of the hearing in the form of an audio or video recording or a court reporter transcription shall be kept in a contested hearing. The Presiding Officer shall have the hearing transcribed by a court reporter upon a request by a party to a contested hearing. Court reporter transcription costs may be assessed against the party requesting the transcription or among the parties to the hearing. In assessing reporting and transcription costs, the Presiding Officer must consider the following factors:

(1) the party who requested the transcript;
(2) the financial ability of the requesting party to pay the costs;
(3) the extent to which the requesting party participated in the hearing;
(4) the relative benefits to the various parties of having a transcript;
(5) the budgetary constraints of a governmental entity participating in the proceeding; and
(6) any other factor that is relevant to a just and reasonable assessment of costs.

(b) Uncontested Hearings: In an uncontested hearing, the Presiding Officer may substitute meeting minutes or the report required under Rule 11.10.9 for a method of recording the hearing.

11.10.6 Evidence; Broadening the Issues

(a) The Presiding Officer shall admit evidence if it is relevant to an issue at the hearing.

(b) The Presiding Officer may exclude evidence that is irrelevant, immaterial, or unduly repetitious.

(c) No person will be allowed to appear in any hearing whose appearance, in the opinion of the Presiding Officer, is for the sole purpose of unduly broadening the issues to be considered in the hearing.

11.10.7 Continuance: The Presiding Officer may continue hearings or other proceedings from time to time and from place to place without the necessity of publishing, serving, mailing, or otherwise issuing a new notice. If a hearing or other proceeding is continued and a time and place for the hearing or other proceeding to reconvene are not publicly announced at the hearing or other proceeding by the Presiding Officer before it is recessed, a notice of any further setting of the hearing or other proceeding which shall include the date, hour, place and subject of the meeting will be provided by regular mail at a reasonable time to the parties and

any other person the Presiding Officer deems appropriate, but it is not necessary to post or publish a notice of the new setting, except as required by the Texas Open Meetings Act. This rule applies only to permit hearings.

11.10.8 Uncontested Hearings: If no persons timely protest the application and the General Manager proposes to grant the application, the application shall be considered uncontested and the General Manager may act on the application without subjecting the application to a permit hearing before the Board. If, during a contested case hearing, all interested persons contesting the application withdraw their protests or are found by the Board not to have a justiciable interest affected by the application, or the parties reach a negotiated or agreed settlement which, in the judgment of the Board, settles the facts or issues in controversy, the proceeding will be considered an uncontested hearing.

11.10.9 Hearing Report: If the hearing was conducted by a quorum of the Board and if the Presiding Officer prepared a record of the hearing as provided by Rule 11.10.5(a), the Presiding Officer shall determine whether to prepare and submit a report to the Board under this rule. If a report is required, the Presiding Officer shall submit a report to the Board within 30 (thirty) days after the date the hearing is finally concluded. The report must include a summary of the subject matter of the hearing, the evidence or public comments received, and the Presiding Officer's recommendations for Board action on the subject matter of the hearing. A copy of the report shall be provided to the applicant, each designated party, and each person who provided a comment. Any person who receives a copy of the report may submit to the Board written exceptions to the hearing report. The Presiding Officer may direct the General Manager or another District representative to prepare the hearing report and recommendations required by this Rule.

11.10.10 Board Action: Either on the final hearing date and no later than 60 (sixty) calendar days after the final hearing date is concluded, the Board must take action on the subject matter of the hearing.

(a) In deciding whether or not to issue or amend a drilling permit, Production permit, or a Historic and Existing Use permit, and in setting the permitted volume and other terms of a permit, the Board must consider whether:

(1) the application contains accurate information and conforms to the requirements prescribed by Chapter 36, Texas Water Code;
(2) the water well(s) complies with spacing and production limitations identified in these rules;
(3) the proposed use of water does or does not unreasonably affect existing groundwater and surface water resources or existing permit holders;
(4) the proposed use of water is dedicated to a beneficial use;
(5) the proposed use of water is consistent with the District Management Plan;
(6) the applicant agrees to avoid waste and achieve water conservation; and

(7) the applicant has agreed that reasonable diligence will be used to protect groundwater quality and that the applicant will follow well plugging guidelines at the time of well closure; and

(8) for those hearings conducted by SOAH under Rule 11.10.4, the Board shall consider the Proposal for Decision and Findings of Fact and Conclusions of Law issued by SOAH.

(b) In deciding whether or not to modify a permit, and in setting the modified permitted volume and other terms of a permit, the Board must consider whether the data from monitoring wells within the source aquifer or other evidence reflects:

(1) an unacceptable level of decline in water quality of the aquifer;
(2) that modification of the permit is necessary to prevent waste and achieve water conservation;
(3) that modification of the permit will minimize as far as practicable the drawdown of the water table or the reduction of artesian pressure;
(4) that modification of the permit will lessen interference between wells;
(5) that modification of the permit will control and prevent subsidence; and
(6) that modification of the permit is necessary to avoid impairment of Desired Future Conditions.

(c) The Board shall consider the relevant criteria and observe the relevant restrictions and may exercise the authority set forth in Sections 36.113, 36.1131, and 36.122 of the Texas Water Code. In issuing permits, the District shall manage total groundwater production on a long-term basis to achieve an applicable Desired Future Condition and consider:

(1) the Modeled Available Groundwater;
(2) the Texas Water Development Board Executive Administrator's estimate of the current and projected amount of groundwater produced under exemptions granted by District Rule 11.3 and Section 36.117, Texas Water Code;
(3) the amount of groundwater authorized under permits previously issued by the District;
(4) a reasonable estimate of the amount of groundwater that is actually produced under permits issued by the District; and
(5) yearly precipitation and production patterns.

(d) The District may not impose any restrictions on the production of groundwater for use outside of the District other than imposed upon production for in-district use, and shall be fair, impartial, and nondiscriminatory. The district may periodically review the amount of water that may be transferred out of District and may limit the amount.

11.10.11 Request for Rehearing and Appeal:

(a) An applicant in a contested or uncontested hearing on an application or a party to a contested hearing may administratively appeal a decision of the Board on a permit or permit amendment application by requesting written findings and conclusions or a rehearing before the Board not later than the 20th day after the date of the Board's decision.

(b) On receipt of a timely written request, the Board shall make written findings and conclusions regarding a decision of the board on a permit or permit amendment application. The Board shall provide certified copies of the findings and conclusions to the person who requested them, and to each person who provided comments or each designated party, not later than the 35th day after the date the Board receives the request. A person who receives a certified copy of the findings and conclusions from the board may request a rehearing before the Board not later than the 20th day after the date the Board issues the findings and conclusions.

(c) A request for rehearing must be filed in the District Office and must state clear and concise grounds for the request. If the original hearing was a contested hearing, the person requesting a rehearing must provide copies of the request to all parties to the hearing.

(d) If the Board grants a request for rehearing, the Board shall, after proper notice, schedule the rehearing not later than the 45th day after the date the request is granted.

(e) The failure of the Board to grant or deny a request for rehearing before the 91st day after the date the request is submitted is a denial of the request.

(f) A decision by the Board on a permit or permit amendment application is final:

- **(1) if a request for rehearing is not filed on time, on the expiration of the period for filing a request for rehearing; or**
- **(2) if a request for rehearing is filed on time and the Board denies the request for rehearing, on the datethe Board denies the request for rehearing; or**
- **(3) if a request for rehearing is filed on time and the Board grants the request for rehearing:**
  - **(A) on the final date of the rehearing if the Board does not take further action;**
  - **(B) if the Board takes further action after rehearing, on the expiration of the period for filing a request for rehearing on the Board's modified decision if a request for rehearing is not timely filed; or**
  - **(C) if the Board takes further action after rehearing and another request for rehearing on this Board action is timely filed, then Subsections 3(A) and (C)of this rule shall govern the finality of the Board's**

decision.

(g) The applicant or party to a contested case hearing must exhaust all administrative remedies with the District prior to seeking judicial relief from a District decision on a permit or permit amendment application. An applicant or a party to a contested case hearing dissatisfied with the District's decision must file a written request for a rehearing or for written findings and conclusions within 20 (twenty) calendar days of the Board's decision in order to seek reconsideration of the District's decision. If an applicant or a party timely files a request for written findings and conclusions, the applicant or party must thereafter file a request for a rehearing within 20 (twenty) calendar days of the District's issuance of the written findings and conclusions. Once all administrative remedies are exhausted with the District, an applicant or a party to a contested case hearing must file suit in a court of competent jurisdiction in Pecos County to appeal the District's decision on a permit or permit amendment application within 60 (sixty) calendar days after the date the District's decision is final. An applicant or party to a contested case hearing is prohibited from filing suit to appeal a District's permitting decision if a request for rehearing was not timely filed.

SECTION 12. REWORKING AND REPLACING A WELL

RULE 12.1 REWORKING AND REPLACING A WELL

(a) An existing well may be reworked or re-equipped in a manner that will not change the existing well status.

(b) A permit must be applied for and granted by the Board if a party wishes to replace an existing well with a replacement well.

(c) A replacement well, in order to be considered such, must be drilled within a reasonable distance of the existing well as long as it meets the District's spacing requirements.

(d) In the event the application meets spacing and production requirements, the General Manager may grant such application without further notice.

SECTION 13. WELL LOCATION AND COMPLETION

RULE 13.1 RESPONSIBILITY

(a) After an application for a well drilling permit has been granted, the well or wells, if drilled, must be drilled within a reasonable distance of the location specified in the drilling permit, and not elsewhere, provided, however, that spacing restrictions be met. If

the well or wells are drilled at a different location, the drilling or operation of such well may be enjoined by the Board pursuant to Chapter 36, Texas Water Code.

(b) As described in the Texas Water Well Drillers' Rules, all well drillers and persons having any exempt or nonexempt well drilled, deepened, or otherwise altered shall adhere to the provisions of the rule prescribing the location of wells and proper completion. Each and every exempt and nonexempt well shall be completed in accordance with all statutory and regulatory requirements applicable to the type of well required for the purpose of use authorized under the permit. The driller of any exempt or nonexempt well shall file with the District the well log required by Section 1901.251, Texas Occupations Code, and, if available, the geophysical log and electric log.

RULE 13.2 LOCATION OF DOMESTIC, INDUSTRIAL, INJECTION, IRRIGATION WELLS

Location of wells should be as specified in *16 Texas Administrative Code, Chapter 76.1000*.

RULE 13.3 STANDARDS OF COMPLETION FOR DOMESTIC, INDUSTRIAL, INJECTION, AND IRRIGATION WELLS

Standards of completion shall be as specified in *16 Texas Administrative Code, Chapter 76.1000*.

RULE 13.4 RE-COMPLETIONS

Standards shall be as specified in *16 Texas Administrative Code, Chapter 76.1003*.

RULE 13.5 SPACING REQUIREMENTS

(a) Spacing and Location of Existing Wells: Wells drilled prior to the Effective Date of these rules are not subject to spacing requirements of this rule except that these existing wells shall have been drilled in accordance with state law in effect, if any, on the date such drilling commenced.

(b) Spacing and Location of New Wells: All new permitted wells must comply with the spacing and location requirements set forth under the Texas Water Well Drillers and Pump Installers Administrative Rules, Title 16, Part 4, Chapter 76, Texas Administrative Code, except that wells shall not be located within 50 (fifty) feet from a property line or any existing well. Water well drillers shall indicate the method of completion performed on the Well Report (Texas Department of Licensing and Regulation Form #001 WWD, Section 10, Surface Completion). The District does not impose any additional

requirements, but shall consider evidence submitted at the hearing on the permit application that demonstrates that the proposed new well(s) adversely impact and interfere with neighboring wells.

(c) Exceptions to Spacing Requirements:

(1) The Board may grant exceptions to the spacing requirements of the District if the requirements of this section are met.

(2) If an exception to the spacing requirements of the District is desired, the person seeking the exception shall submit an application to the Board and provide written notice of the application to all owners of adjacent property and owners of registered wells located on adjacent property. In the application, the applicant must explain the circumstances justifying an exception to the spacing requirements of the District. The application must include a plat or sketch, drawn to scale, one inch equaling 200 feet. The application and plat must be certified by some person actually acquainted with the facts who shall state that the facts contained in the application and plat are true and correct, and that notice was sent to each of the appropriate property and well owners.

(3) The Board shall conduct a hearing within 65 (sixty-five) calendar days after the application is administratively complete, and no sooner than 20 (twenty) calendar days after the applicant's notice was sent to each of the appropriate property and well owners. The District shall post notice and conduct the public hearing in accordancewith Section 11 of the District's rules. Provided, however, if all owners of adjacent property and owners of registered wells execute a waiver in writing, stating that they do not object to the granting of the exception, the Board may proceed, upon notice to the applicant only and without hearing, and determine the outcome of the application. The applicant may waive notice or hearing or both.

(4) If the applicant presents waivers signed by all landowners and well owners whose property or permitted wells would be located within the applicable minimum distance established under these Rules from the proposed well site stating that they have no objection to the proposed location of the well site, the Board, upon the General Manager's recommendation, may waive certain spacing requirements for the proposed well location.

SECTION 14. WASTE AND BENEFICIAL USE

RULE 14.1 DEFINITION OF WASTE

"Waste" means any one or more of the following:

(a) withdrawal of groundwater from a groundwater reservoir at a rate and in an amount that causes or threatens to cause intrusion into the reservoir of water unsuitable for municipal, industrial, agricultural, gardening, domestic, or stock raising purposes;

(b) the flowing or producing of wells from a groundwater reservoir if the water produced is not used for a beneficial purpose, or is not used for such purposes with a reasonable degree of efficiency. Includes line losses in excess of those determined to be unavoidable.

(c) escape of groundwater from a groundwater reservoir to any other reservoir or geologic strata that does not contain groundwater;

(d) pollution or harmful alteration of groundwater in a groundwater reservoir by saltwater or by other deleterious matter admitted from another stratum or from the surface of the ground;

(e) willfully or negligently causing, suffering, or allowing groundwater to escape into any river, creek, natural watercourse, depression, lake, reservoir, drain, sewer, street, highway, road, or road ditch, or onto any land other than that of the owner of the well other than the natural flow of natural springs unless such discharge is authorized by permit, rule, or order issued by TCEQ under Chapter 26 of the Texas Water Code, *Water Quality Control*;

(f) groundwater pumped for irrigation that escapes as irrigation tailwater onto land other than that of the owner of the well unless permission has been granted by the occupant of the land receiving the discharge;

(g) groundwater used for heating or cooling that is allowed to drain on the land surface as tailwater and not re-circulated back to the aquifer;

(h) the loss of groundwater in the distribution system and/or storage facilities of the water supply system which should not exceed acceptable “system water losses” as defined by the American Water Works Association standard; or

(i) Pursuant to Section 11.205 of the Texas Water Code, unless the water from an artesian well is used for a purpose and in a manner in which it may be lawfully used on the owner’s land, it is waste and unlawful to willfully cause or knowingly permit the water to run off the owner’s land or to percolate through the stratum above which the water is found.

RULE 14.2 WASTEFUL USE OR PRODUCTION

(a) No person shall intentionally or negligently commit waste.

(b) Underground water shall not be produced within, or used within or without the District in such a manner as to constitute waste.

(c) Any person producing or using groundwater shall use every possible precaution, in accordance with the most approved methods, to stop and prevent waste of water.

RULE 14.3 POLLUTION OR DEGRADATION OF QUALITY OF GROUNDWATER

(a) No person shall cause pollution or harmfully alter the character of the underground water of the District by means of salt water or other deleterious matter admitted from another stratum or strata or from the surface of the ground, or from the operation of a well.

(b) No person shall cause pollution or harmfully alter the character of the underground water of the District by activities on the surface of the ground which cause or allow pollutants to enter the groundwater through recharge features, whether natural or manmade.

(c) No person shall cause degradation of the quality of groundwater.

RULE 14.4 ORDERS TO PREVENT WASTE, POLLUTION, OR DEGRADATION OF QUALITY OF GROUNDWATER

After providing 15 (fifteen) calendar days notice to affected parties and an opportunity for a hearing, the Board may adopt orders to prohibit or prevent waste, pollution, or degradation of the quality of groundwater. If the factual basis for the order is disputed, the Board shall direct that an evidentiary hearing be conducted prior to consideration and decision on the entry of such an order. If the Board President or his or her designee determines that an emergency exists requiring the immediate entry of an order to prohibit waste or pollution and protect the public health, safety, and welfare, he or she may enter a temporary order without notice and hearing provided, however, the temporary order shall continue in effect for the lesser of 15 (fifteen) calendar days or until a hearing can be conducted. In such an emergency, the Board President or his or her designee is also authorized, without notice or hearing to pursue a temporary restraining order, injunctive, and other appropriate relief in a court of competent jurisdiction.

RULE 14.5 REQUIRED EQUIPMENT ON WELLS FOR THE PROTECTION OF GROUNDWATER QUALITY

14.5.1 EQUIPMENT REQUIRED. The following equipment must be installed on all wells having a chemical injection, chemigation or foreign substance unit in the water delivery system: an in-line, automatic quick-closing check valve capable of preventing pollution or harmful alteration of the groundwater. Such equipment must be installed on all new wells at the time of completion. Such equipment shall be installed on all existing wells the next time the wells are serviced.

14.5.2 CHECK VALVES. The type of check valve installed shall meet the following specifications:

(a) Check valves must be equipped with a TCEQ-approved hazardous materials backflow device, and installed in a manner approved by Texas Department of Licensing and Regulation ("TDLR").

(b) A vacuum-relief device shall be installed between the pump discharge and the check valve in such a position and in such a manner that insects, animals, floodwater, or other pollutants cannot enter the well though the vacuum-relief device. The vacuum-relief device may be mounted on the inspection port as long as it does not interfere with the inspection of other anti-pollution devices.

SECTION 15. INVESTIGATIONS AND ENFORCEMENT

RULE 15.1 NOTICE AND ACCESS TO PROPERTY

Board Members and District agents and employees are entitled to access to all property within the District to carry out technical and other investigations necessary to the implementation of the District's rules. Prior to entering upon property for the purpose of conducting an investigation, the person seeking access must give notice in writing or in person or by telephone to the owner, lessee, or operator, agent, or employee of the well owner or lessee, as determined by information contained in the application or other information on file with the District. Notice is not required if prior permission is granted to enter without notice. Inhibiting or prohibiting access to any Board Member or District agents or employees who are attempting to conduct an investigation under the District's rules constitutes a violation and subjects the person who is inhibiting or prohibiting access, as well as any other person who authorizes or allows such action, to the penalties set forth in Texas Water Code Chapter 36.

RULE 15.2 CONDUCT OF INVESTIGATION

Investigations or inspections by the District that require entrance upon property must be conducted at reasonable times, and must be consistent with the establishment's rules and regulations concerning safety, internal security, and fire protection. The District representative or representatives conducting such investigations must identify themselves and present credentials upon request of the owner, lessee, operator, or person in charge of the well or property.

RULE 15.3 RULE ENFORCEMENT; ENFORCEMENT HEARING

15.3.1 If it appears that a person has violated or is violating any provision of the District's rules, the District may employ any of the following means, or a combination thereof, in providing notice of the violation:

(a) Informal Notice: The officers, staff or agents of the District acting on behalf of the District or the Board may inform the person of the violation via telephone by informing, or attempting to inform, the appropriate person to explain the violation and the steps necessary to cure the violation. The information received by the District through this informal notice concerning the violation and the date and time of the telephone call will be documented and will remain in the District's files. Nothing in this subsection shall limit the authority of the District to take action, including emergency actions or any other appropriate enforcement action, without prior notice provided under this subsection.

(b) Written Notice of Violation: The District may inform the person of the violation through written notice of violation. Each notice of violation issued herein shall explain the basis of the violation, identify the rule or order that has been violated or is currently being violated, and list specific required actions that must be satisfactorily completed to cure a past or present violation to address each violation raised, and may include the payment of applicable civil penalties. Notice of a violation issued herein shall be provided through a delivery method in compliance with these Rules. Nothing in this Subsection shall limit the authority of the District to take action, including emergency actions or any other appropriate enforcement action, without prior notice provided under this subsection.

(c) Compliance Meeting: The District may hold a meeting with any person whom the District believes to have violated, or to be violating, a District rule or order to discuss each such violation and the steps necessary to satisfactorily remedy each such violation. The General Manager may conduct a compliance meeting without the Board, unless otherwise determined by the Board or General Manager. The information received in any meeting conducted pursuant to this subsection concerning the violation will be documented, along with the date and time of the meeting, and will be kept on file with the District. Nothing in this subsection shall limit the authority of the District to take action, including emergency actions or any other appropriate enforcement action, without prior notice provided under this subsection.

15.3.2 Show Cause Hearing.

(a) Upon recommendation of the General Manager to the Board or upon the Board's own motion, the Board may order any person that it believes has violated or is violating any provision of the District's rules a District order to appear before the Board at a public meeting, held in accordance with the Texas Open Meetings Act, and called for such purpose and to show cause of the reasons an enforcement action, including the assessment of civil penalties and initiation of a suit in a court of competent jurisdiction in Pecos County, should not be pursued against the person made the subject of the show cause hearing. The Presiding Officer may employ the procedural rules in Section 11 of the District's rules.

(b) No show cause hearing under subsection (a) of this Rule may be conducted unless the District serves, on each person made the subject of the show cause hearing, a written notice 10 (ten) calendar days prior to the date of the hearing. Such notice shall include all of the following information:

(1) the time, date, and place for the hearing; and
(2) the basis of each asserted violation; and
(3) the rule or order that the District believes has been violated or is currently being violated; and
(4) a request that the person duly appear and show cause of the reasons an enforcement action should not be pursued.

(c) The District may pursue immediate enforcement action against the person cited to appear in any show cause order issued by the District where the person cited fails to appear and show cause of the reasons an enforcement action should not be pursued.

(d) Nothing in this rule shall constrain the authority of the District to take action, including emergency actions or any other enforcement action, against a person at any time, regardless of whether the District decides to hold a hearing under this Section.

15.3.3 Remedies

(a) The Board shall consider the appropriate remedies to pursue against an alleged violator during the show cause hearing, including assessment of a civil penalty, injunctive relief, or assessment of a civil penalty and injunctive relief. In assessing civil penalties, the Board may determine that each day that a violation continues shall be considered a separate violation. The civil penalty for a violation of any District rule is hereby set at the lower of $10,000.00 per violation or a lesser amount determined after consideration, during the enforcement hearing, of the criteria in subsection (b) of this rule.

(b) In determining the amount of a civil penalty, the Board of Directors shall consider the following factors:

(1) compliance history;
(2) efforts to correct the violation and whether the violator makes a good faith effort to cooperate with the District;
(3) the penalty amount necessary to ensure future compliance and deter future noncompliance;
(4) any enforcement costs related to the violation; and
(5) any other matters deemed necessary by the Board.

15.3.4 The District shall collect all past due fees and civil penalties accrued that the District is entitled to collect under the District's rules. The District shall provide written notice of the alleged violation and show cause hearing by certified mail, return receipt requested, hand delivery, first class mail, facsimile, email, FedEx, UPS, or any other type of public or private courier or delivery service. If the District is unable to provide notice to the

alleged violator by any of these forms of notice, the District may tape the notice on the door of the alleged violator's office or home, or post notice in the newspaper of general circulation in the District and within the county in which the alleged violator resides or in which the alleged violator's office is located. Any person or entity in violation of these rules is subject to all past due fees and civil penalties along with all fees and penalties occurring as a result of any violations that ensue after the District provides written notice of a violation. Failure to pay required fees will result in a violation of the District's rules and such failure is subject to civil penalties.

15.3.5 The District may afford an opportunity to the alleged violator to cure a violation through coordination and negotiation with the District.

15.3.6 After conclusion of the show cause hearing, the District may commence suit. Any suit shall be filed in a court of competent jurisdiction in Pecos County. If the District prevails in a suit brought under this Section, the District may seek and the court shall grant, in the same action, recovery of attorney's fees, costs for expert witnesses, and other costs incurred by the District before the court.

RULE 15.4 SEALING OF WELLS

Following notice to the well owner and operator and upon resolution by the Board, the District mayseal wells that are prohibited from withdrawing groundwater within the District to ensure that such wells arenot operated in violation of the District's rules. A well may be sealed when: (1) no application has been made for a permit to drill a new water well which is not excluded or exempted; or (2) no application has been made for a Production permit to withdraw groundwater from an existing well that is not excluded or exempted from the requirement that a permit be obtained in order to lawfully withdraw groundwater; or (3) the Board has denied, canceled or revoked a drilling permit or a Production permit.

The well may be sealed by physical means, and tagged to indicate that the well has been sealed by the District, and other appropriate action may be taken as necessary to preclude operation of the well or to identify unauthorized operation of the well.

Tampering with, altering, damaging, or removing the seal of a sealed well, or in any other way violating the integrity of the seal, or pumping of groundwater from a well that has been sealed constitutes a violation of these rules and subjects the person performing that action, as well as any well owner or primary operator who authorizes or allows that action, to such penalties as provided by the District's rules.

RULE 15.5 CAPPING AND PLUGGING OF WELLS

(a) The District may require a well to be capped to prevent waste, prevent pollution, or prevent further deterioration of a well casing. The well must remain capped until such

time as the conditions that led to the capping requirement are eliminated. If well pump equipment is removed from a well and the well will be re-equipped at a later date, the well must be capped, provided however that the casing is not in a deteriorated condition that would permit co-mingling of water strata, in which case the well must be plugged. The cap must be capable of sustaining a weight of at least four hundred (400) pounds and must be constructed with a water tight seal to prevent entrance of surface pollutants into the well itself, either through the well bore or well casing.

(b) A deteriorated or abandoned well must be plugged in accordance with the Texas Department of License and Regulation, Water Well Drillers and Pump Installers Rules (16 TAC Chapter 76). It is the responsibility of the landowner to see that such a well is plugged to prevent pollution of the underground water and to prevent injury to persons and animals. Registration of the well is required prior to, or in conjunction with, well plugging.

Any person that plugs a well in the District must submit a copy of the plugging report to the District and the Texas Department of License and Regulation within 30 (thirty) calendar days of plugging completion.

(c) If the owner or lessee fails or refuses to plug or cap the well in compliance with this rule and District standards within 30 (thirty) calendar days after being requested to do so in writing by an officer, agent, or employee of the District, then, upon Board approval, any person, firm, or corporation employed by the District may go on the land and plug or cap the well safely and securely, pursuant to TWC Chapter 36.118.

Reasonable expenses incurred by the District in plugging or capping a well constitutes a lien on the land on which the well is located.

The District shall perfect the lien by filing in the deed records an affidavit, executed by any person conversant with the facts, stating the following:

(1) the existence of the well;
(2) the legal description of the property on which the well is located;
(3) the approximate location of the well on the property;
(4) the failure or refusal of the owner or lessee, after notification, to close the well within 30 (thirty) calendar days after the notification;
(5) the closing of the well by the District, or by an authorized agent, representative, or employee of the District; and
(6) the expense incurred by the District in closing the well.

SECTION 16. FEES

RULE 16.1 GROUNDWATER TRANSPORT FEE

(a) The District may impose a reasonable fee or surcharge, established by Board resolution, for transportation of groundwater out of the District using one of the following methods:

(1) a fee negotiated between the District and the transporter; or

(2) a rate not to exceed the equivalent of the District's tax rate per hundred dollars of valuation for each thousand gallons of water transferred out of the district or 2.5 cents per thousand gallons of water, if the District assesses a tax rate of less than 2.5 cents per hundred dollars of valuation.

If a production fee is assessed, this transport fee shall not exceed 10 percent of the amount of the fee assessed for the production of water for use within the District.

(b) Payment of the Groundwater Transport Fee shall be made at a time negotiated under 16.1(a)(1) or no later than the payment deadline established by the General Manager.

RULE 16.2 RETURNED CHECK FEE

Any person who tenders to the District a check that is returned to the District for insufficient funds, account closed, signature missing, or any other reason shall immediately remit funds to the District in the amount of the check that was returned and reimburse the District for any expenses associated with the returned check that were incurred by the District.

SECTION 17. PROPOSED DESIRED FUTURE CONDITIONS; PUBLIC COMMENT, HEARING, AND BOARD ADOPTION

RULE 17.1 PUBLIC COMMENT

Upon receipt of proposed Desired Future Conditions from the Groundwater Management Area's district representatives, a public comment period of 90 (ninety) calendar days commences, during which the District will receive written public comments and conduct at least one hearing to allow public comment on the proposed Desired Future Conditions relevant to the District. The District will make available at the District Office a copy of the proposed Desired Future Conditions and any supporting materials, such as the documentation of factors considered under Subsection 36.108(d) and groundwater availability model run results.

RULE 17.2 NOTICES OF HEARING AND MEETING

(a) At least ten (10) calendar days before a hearing or meeting under this Section, the Board must post notice that includes:

(1) the proposed Desired Future Conditions and a list of any other agenda items;
(2) the date, time, and location of the hearing;
(3) the name, telephone number, and address of the person to whom questions or requests for additional information may be submitted;
(4) the names of the other districts in the District's management area; and
(5) information on how the public may submit comments.

(b) Except as provided by Subsection (a), the hearing and meeting notice must be provided in the manner prescribed for a rulemaking hearing under Rule 6.2(b) and Subsection 36.101(d), Texas Water Code.

RULE 17.3 HEARING

The District shall hold a public hearing to accept public comments using procedures prescribed in Section 6 of these rules.

RULE 17.4 DISTRICT'S REPORT ON PUBLIC COMMENTS AND SUGGESTED REVISIONS

After the public hearing, the District shall compile for consideration at the next joint planning meeting a summary of relevant comments received, any suggested revisions to the proposed Desired Future Conditions, and the basis for any suggested revisions.

RULE 17.5 BOARD ADOPTION OF DESIRED FUTURE CONDITIONS

As soon as possible after the District receives the Desired Future Conditions resolution and explanatory report from the Groundwater Management Area's district representatives pursuant to Subsection 36.108(d-3), the Board shall adopt the Desired Future Conditions in the resolution and explanatory report that apply to the District. The Board shall issue notice of its meeting at which it will take action on the Desired Future Conditions in accordance with Rule 17.2(a) and (b).

Appendix D
Estimate of the Annual Amount of Groundwater Use in the District and 2012 State Water Plan

	GMA 3				
AQUIFER	DFC (expressed in drawdown)	MAG	Permits-Authorized Amount	Permits-Actual Production	Estimated Exempt Production
Pecos Valley/Edwards Trinity	28' GMA-wide; 12' in Pecos	122,734 a-f	144,971.14 a-f	86,166 a-f	530 a-f
Capitan Reef	200'	1,361 a-f	8,525 a-f	564 a-f	50 a-f
Dockum	27' GMA-wide; 47' in Pecos	13,962 a-f	0 a-f	0 a-f	0 a-f
Rustler	300' in the confined area within Pecos, Reeves, Loving, Ward	3,466 a-f	1,475 a-f	1,475 a-f	50 a-f

	GMA 7				
AQUIFER	DFC (expressed in drawdown)	MAG	Permits-Authorized Amount	Permits-Actual Production	Estimated Exempt Production
Edwards-Trinity	7' GMA-wide; 11' in Pecos	117,426 a-f	119,564.77 a-f	66,693 a-f	3,542 a-f
Pecos Valley	7' GMA-wide; 11' in Pecos	0 a-f	0 a-f	0 a-f	0 a-f
Capitan Reef	15' unconfined; 200' confined	9,761 a-f	3,347 a-f	1,787 a-f	50 a-f
Dockum	4'	3 a-f	0 a-f	0 a-f	0 a-f
Rustler	300'	7,042 a-f	7,291 a-f	6,527 a-f	50 a-f

Exempt Wells: **2,062**

Non-Exempt Wells: **920**

Export Authorized Outside District Boundaries: **18,598 ac-ft per year**

Estimated Historical Water Use

TWDB Historical Water Use Survey (WUS) Data

Groundwater and surface water historical use estimates are currently unavailable for calendar year 2013. TWDB staff anticipates the calculation and posting of these estimates at a later date.

PECOS COUNTY

All values are in acre-fee/year

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2012	GW	4,161	252	121	0	110,247	619	115,400
	SW	0	0	0	0	0	33	33
2011	GW	6,421	244	260	0	125,090	694	132,709
	SW	0	0	81	0	55,000	37	55,118
2010	GW	4,771	247	182	0	122,675	703	128,578
	SW	0	0	57	0	3,358	37	3,452
2009	GW	4,902	211	263	0	90,845	714	96,935
	SW	0	0	81	0	1,345	38	1,464
2008	GW	5,229	239	342	0	56,914	774	63,498
	SW	0	0	105	0	0	41	146
2007	GW	4,565	231	5	0	54,562	688	60,051
	SW	0	0	0	0	3,348	37	3,385
2006	GW	4,649	184	5	0	61,906	886	67,630
	SW	0	0	0	0	7,150	47	7,197
2005	GW	4,406	195	5	0	41,404	792	46,802
	SW	0	0	0	0	5,199	42	5,241
2004	GW	4,361	178	5	0	42,478	746	47,768
	SW	0	0	0	0	191	39	230
2003	GW	4,818	142	6	0	37,644	743	43,353
	SW	0	0	0	0	0	39	39
2002	GW	4,334	142	7	0	61,255	867	66,605
	SW	0	0	0	0	1,250	46	1,296
2001	GW	4,478	235	11	0	64,255	982	69,961
	SW	0	0	0	0	2,384	52	2,436
2000	GW	4,768	353	15	0	72,412	932	78,480
	SW	0	0	0	0	1,824	49	1,873

Projected Surface Water Supplies
TWDB 2012 State Water Plan Data

PECOS COUNTY

All values are in acre-feet/year

RWPG	WUG	WUG Basin	Source Name	2010	2020	2030	2040	2050	2060
F	IRRIGATION	RIO GRANDE	PECOS RIVER COMBINED RUN-OF-RIVER IRRIGATION	4,444	4,444	4,444	4,444	4,444	4,444
F	IRRIGATION	RIO GRANDE	RED BLUFF LAKE/RESERVOIR	1,558	1,558	1,558	1,558	1,558	1,558
F	LIVESTOCK	RIO GRANDE	LIVESTOCK LOCAL SUPPLY	52	52	52	52	52	52
	Sum of Projected Surface Water Supplies (acre-feet/year)			**6,054**	**6,054**	**6,054**	**6,054**	**6,054**	**6,054**

Projected Water Demands
TWDB 2012 State Water Plan Data

Please note that the demand numbers presented here include the plumbing code savings found in the Regional and State Water Plans.

PECOS COUNTY

All values are in acre-feet/year

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
F	LIVESTOCK	RIO GRANDE	1,239	1,239	1,239	1,239	1,239	1,239
F	IRRIGATION	RIO GRANDE	79,681	78,436	77,191	75,945	74,700	73,475
F	MINING	RIO GRANDE	159	158	158	158	158	158
F	MANUFACTURING	RIO GRANDE	2	2	2	2	2	2
F	COUNTY-OTHER	RIO GRANDE	702	722	731	730	726	712
F	FORT STOCKTON	RIO GRANDE	3,267	3,397	3,461	3,481	3,479	3,411
F	IRAAN	RIO GRANDE	452	469	478	480	479	470
F	PECOS COUNTY WCID #1	RIO GRANDE	395	403	401	399	395	387
	Sum of Projected Water Demands (acre-feet/year)		**85,897**	**84,826**	**83,661**	**82,434**	**81,178**	**79,854**

Projected Water Supply Needs
TWDB 2012 State Water Plan Data

Negative values (in red) reflect a projected water supply need, positive values a surplus.

PECOS COUNTY

All values are in acre-feet/year

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
F	COUNTY-OTHER	RIO GRANDE	0	0	0	0	0	0
F	FORT STOCKTON	RIO GRANDE	2,646	2,516	2,452	2,432	2,434	2,502
F	IRAAN	RIO GRANDE	115	98	89	87	88	97
F	IRRIGATION	RIO GRANDE	2,902	4,147	5,392	6,638	7,883	9,108
F	LIVESTOCK	RIO GRANDE	1	1	1	1	1	1
F	MANUFACTURING	RIO GRANDE	1	1	1	1	1	1
F	MINING	RIO GRANDE	127	128	128	128	128	128
F	PECOS COUNTY WCID #1	RIO GRANDE	83	75	77	79	83	91
	Sum of Projected Water Supply Needs (acre-feet/year)		**0**	**0**	**0**	**0**	**0**	**0**

Projected Water Management Strategies
TWDB 2012 State Water Plan Data

PECOS COUNTY

WUG, Basin (RWPG)

All values are in acre-feet/year

Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
IRRIGATION, RIO GRANDE (F)							
IRRIGATION CONSERVATION	CONSERVATION [PECOS]	0	6,300	12,600	12,600	12,600	12,600
Sum of Projected Water Management Strategies (acre-feet/year)		**0**	**6,300**	**12,600**	**12,600**	**12,600**	**12,600**

Appendix E

Details on the Development of the Estimate of Annual Recharge to the Capitan Reef Complex Aquifer in Pecos County

Discussion

As mentioned in the plan text, as of the date of the plan no publish estimates on the amount or rates of annual recharge to the Capitan Reef Complex aquifer have been identified. In order to meet the TWDB requirement that groundwater management plans include an estimate of the annual recharge rates used by other researchers for the Edwards-Trinity (Plateau) aquifer near the outcrop area of the Capitan reef aquifer in Pecos County may be applicable. The preliminary rate of recharge used in the development of the TWDB Edwards-Trinity (Plateau) aquifer groundwater availability model (GAM) is 4 percent of annual precipitation. (Anaya 2002) The Edwards-Trinity (Plateau) aquifer GAM includes the area of Pecos County adjacent to the Capitan Reef Complex aquifer outcrop area. A rate of 1.6 percent of annual precipitation was estimated for the Edwards-Trinity (Plateau) aquifer for Crockett County. (Inglehart 1967) In order to develop a preliminary estimate of the annual recharge to the Capitan Reef aquifer in Pecos County the District used a median value of 2.8 percent of annual precipitation as an assumptive recharge rate to meet TWDB groundwater management plan requirements.

The area of the outcrop of the Capitan Limestone was estimated using a GIS to calculate the area from a scanned image of the Fort Stockton Sheet of the Geologic Atlas of Texas. (BEG, 1994) The 1961-1990 annual average precipitation for the portion of Pecos County where the Capitan Limestone outcrops is given as 16-18 inches in the USDA-NRCS map of Texas Annual Precipitation. (USDA-NRCS 1999) The District used the lower value of 16 inches per year to develop the estimate of annual recharge. The estimate of annual recharge to the Capitan Reef Complex aquifer was calculated in the following manner:

2.8 percent of 16 inches annual precipitation = 0.448 inches per year

0.448 inches per year / 12inches (1 foot) = 0.037333 feet per year

0.037333 feet per year rounded to 0.037 feet per year

Estimated Area of the Capitan Limestone in Pecos County = 22,279 acres

0.037 feet per year x 22,279 acres = 824.323 ac-ft per year

Rounded to **824 ac-ft per year**

Appendix F

Details on the Development of the Estimates of Annual Groundwater Availability in the Capitan Reef Complex aquifer and Rustler Aquifers in Pecos County

Calculation Methodology for Capitan and Rustler Aquifers

Assumptions: aquifer has both unconfined and confined zones

Q(t) = R(t) – D(t) + dS/dt

Where:
Q(t) = the total rate of groundwater withdrawal (ac-ft/yr)
R(t) = the total rate of groundwater recharge to the basin (aquifer) (ac-ft/yr)
D(t) = the total rate of groundwater discharge from the basin (aquifer) (ac-ft/yr)
dS/dt = change in aquifer storage of groundwater over time (draw down in feet)
(Freeze and Cherry, 1979)

If annual pumping is approximately equal to annual recharge; the factors for recharge and discharge in the aquifer will cancel each other and the relationship may be simplified to:

Q(t) = dS/dt

If it is assumed that the annual amount of recharge to the aquifer is approximately equal to groundwater use from the aquifer in where it occurs in MPGCD; the step-by-step description of the process to project the effects of use in each county is as follows:

1. The total area occupied by the aquifer in each county is subdivided by aquifer zone (unconfined, confined).
2. The area of each aquifer zone is divided by the total area occupied by the aquifer in the County to give the percentage of the total aquifer area in the County represented by each zone.
3. The estimate of annual recharge (assumed to be equal to the estimate annual aquifer pumping) is divided by the percentage value of the total aquifer area in the County represented by each aquifer sub-zone in the County to give an estimate of recharge to each aquifer sub-zone (in acre-feet per year).
4. The area (in acres) of each aquifer sub-zone is multiplied by an estimated amount of aquifer draw-down (in feet) [1] and then multiplied by the storage coefficient of the aquifer zone (expressed as a decimal fraction) [2] to give an estimate of the amount of water (in acre-feet) that could be removed from the aquifer if the estimated amount of aquifer draw-down occurred.
5. The estimated volume of water that could be produced from each aquifer zone with the specified estimate of aquifer draw-down is divided by 50 (years) to estimate the amount of water that could be produced each year from the aquifer zone over a 50-year period to result in the estimated amount of aquifer draw-down at the end to the 50-year time period.
6. The estimated annual amount of water that could be produced from each aquifer zone (in acre-feet per year) is added to the estimate of annual recharge for the zone (in acre-feet per year) to give the estimated availability value for the aquifer zone (in acre-feet per year).

7. The estimated availability values (in acre-feet per year) of the several aquifer zones are summed to give a total estimated availability value for the aquifer.

Notes:

1. The estimated average aquifer draw-down values were kept constant for the two sub-zones of the confined zone and for the unconfined zone of the aquifer.
2. The storage coefficient values for the confined and unconfined zones were kept constant in the aquifer zone in all sub-zones.

County	Aquifer	Aquifer zone	Sub-divsion Area (acres)	Total Aquifer Area in County (acres)	Sub-division Percent of Total Area	Estimated Total County Pumping (ac-ft per year)	Assigned Annual Recharge Volume (ac-ft)	Estimated Average Aquifer Draw-down (ft)	Storage Co-efficient (dimen-sionless)	Total With-drawal Volume (ac-ft)	Annual With-drawal Volume (ac-ft)	MAG Estimate (ac-ft)
Pecos	Rustler	Confined GMA 3	241,707	741,398	33%	10,063	3321	300	0.0001	7251	145	3466
Pecos	Rustler	Confined GMA 7	499,691	741,398	67%	10,063	6742	300	0.0001	14991	300	7042
Totals			**741,398**				**10,063**			**22,242**	**445**	**10,508**

Table F-1, Groundwater Availability Estimates for the Rustler Aquifer in MPGCD

County	Aquifer	Aquifer zone	Sub-divsion Area (acres)	Total Aquifer Area in County (acres)	Sub-division Percent of Total Area	Estimated Total County Pumping (ac-ft per year)	Assigned Annual Recharge Volume (ac-ft)	Estimated Average Aquifer Draw-down (ft)	Storage Co-efficient (dimen-sionless)	Total With-drawal Volume (ac-ft)	Annual With-drawal Volume (ac-ft)	MAG Estimate (ac-ft)
Pecos	Capitan	Recharge un-confined	22,279	369,708	6%	10,315	619	15	0.1	33419	668	1287
Pecos	Capitan	Confined GMA 7	298,622	369,708	81%	10,315	8355	200	0.0001	5972	119	8474
Pecos	Capitan	Confined GMA 3	48,807	369,708	13%	10,315	1341	200	0.0001	976	20	1361
Totals			**369,708**				**10,315**			**40,367**	**807**	**11,122**

Table F-2, Groundwater Availability Estimates for the Capitan Reef aquifer in MPGCD

Appendix G

2010 Baseline Water Levels for Management and Identification of Edwards-Trinity (Plateau) / Pecos Valley Aquifer GAM Grid Cells Defining Groundwater Management Zones in MPGCD

2013

Allan R. Standen LLC

Middle Pecos Groundwater Conservation District (MPGCD)

2010 BASELINE WATER LEVEL ELEVATIONS FOR DISTRICTS MANAGEMENT ZONES

Zones

Allan R. Standen LLC

Memorandum

To: Paul Weatherby, MiddlePecos Groundwater Conservation District (MPGCD) General Manager

From: Allan R. Standen LLC, P. G. 1227

Date: January 11, 2013

Re: 2010 Water-Level Conditions in MPGCD Management Zones

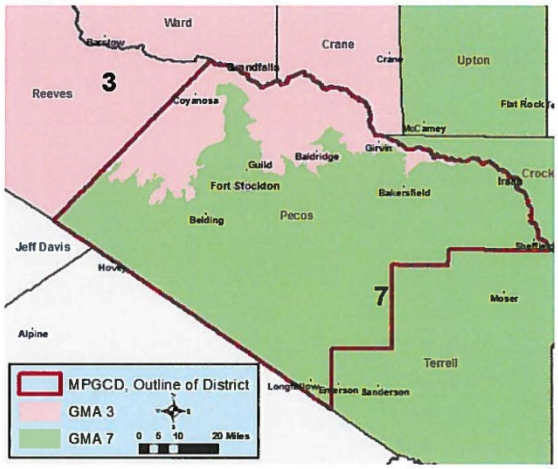

Figure 1. MPGCD GMA 3 and 7

Purpose

At the request of the MPGCD, Allan R. Standen LLC (ARS LLC) revised maps and text from the draft report submitted to the District by Bar-W Groundwater Exploration LLC dated July 23, 2012. The MPGCD is subdivided into Groundwater Management Areas (GMAs) 3 and 7 as is illustrated in Figure 1. The Pecos Valley Alluvium Aquifer (PVA) lie within the GMA 3's areal extent and the Edwards-Trinity Plateau (ETP) Aquifer lies within the GMA 7's areal extent within the District.

In October 2010, the MPGCD established three Management Zones (1, 2 and 3) (MPGCD Management Plan, 2010). These management zones are based on areas of intensive irrigation use of groundwater and the recognition that these identified zones have the greatest potential to impair DFC's adopted for the PVA and the ETP aquifers in Pecos County (Williams, 2012). The Management Zone extents are comprised of specific Groundwater Availability Model (GAM) grid cells which are 5,280 by 5,280 feet (one square mile) and the GAM grid is rotated 42 degrees east of North (Williams, 2012 and Anaya and Jones, 2009). Figure 2 illustrates the location and extent of MPGCD's present three management zones.

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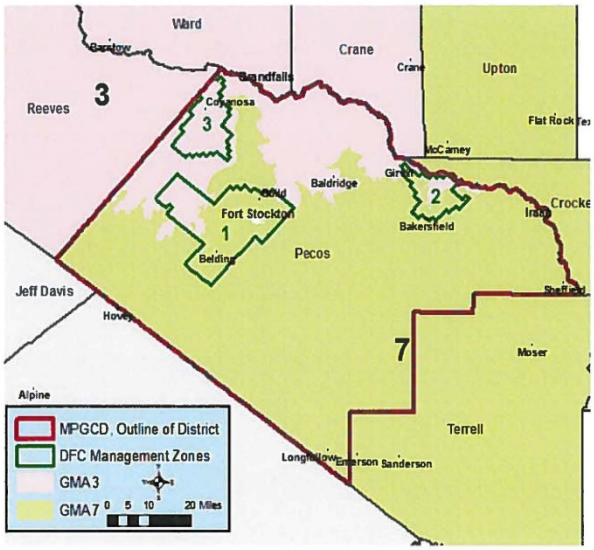

The purpose of this report is to establish baseline water level elevation (relative to sea level) surfaces and maps, according to MPGCD Rule 10.5 for each of the three management zones established by the MPGCD for the ETPand the PVA aquifers. The ETP and PVA aquifers are assumed to be unconfined and hydro-geologically connected (Hutchison, 2010). These 2010 water level elevation maps would be used as baseline water-level references for the monitoring of water level fluctuations during the 50-year Desired Future Conditions (DFC) planning period within the management zones.

Figure 2. MPGCD GMA's and Groundwater Management Zones

Monitor Wells in MPGCD

Presently, there are approximately 100 water wells being monitored for water levels by the MPGCD in Pecos and surrounding counties, including Rustler and Capitan Reef Complex water wells. Water level data has been collected by the MPGCD staff, Texas Water Development Board (TWDB) staff and/or various consultants. The majority of the MPGCD monitoring wells are equipped with some form of automated data collection, with 25 wells in cooperation with the TWDB (Williams, 2012). Location coordinates (latitude and longitude) of the selected Management Zone monitor wells were confirmed and/or revised by recent GPS measurements collected by the MPGCD staff. DFC water levels are collected at the end of the irrigation season (October), usually between January and February, when water levels have fully recovered from the previous season's irrigation activities.

Methodology

Upon review of all available historical water well and well construction information, monitor wells from the ETP and PVA aquifers were selected for each management zone that had reasonable geospatial distribution and are considered to be representative of the aquifers. Water wells with the greatest aquifer recovery (least depth below land surface) were preferred during the selection process (Williams, 2012).

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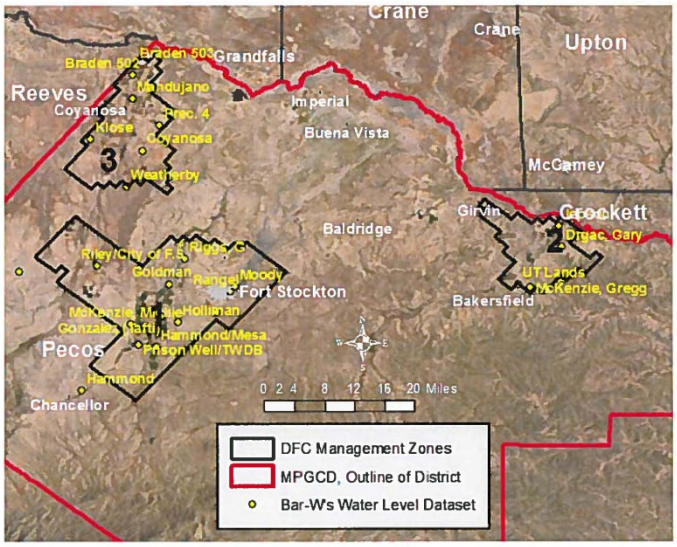
A USGS 30 meter Digital Elevation Model (DEM) using ArcGIS 10.2 software was used to calculate land surface elevations for all water-level monitoring well locations.



The draft report submitted by Bar-W Groundwater Exploration LLC dated July 23, 2012 selected a total of 25 monitor wells (14 wells Management Zone 1, 4 wells for Management Zone 2 and 7 wells for Management Zone 3). All of the water levels were collected between December 9, 2010 and February 20, 2011 (Table 1). Figure 3 illustrates the locations for Bar-W's initially proposed water level monitoring wells.

Figure 3. Bar-W's original water level dataset

Grids or raster files of the water level elevation contours for the figures in this report were created using measured depth to water from land surface and the subtracting the water depth from DEM surface elevations to determine the water level elevation surface data points. ArcGIS 10.2 Spatial Analyst "Spline with Barriers" interpolation method was used to create the water level surface elevation contour grid from the data points. The contour grid cell size is approximately 2,700 feet.

Water Level Elevation Contour Maps

Water level elevation contours from Bar-W's water level dataset of Management Zones 1 and 3 are illustrated in Figure 4. Management Zones 1 and 3 were combined in Figure 4 because of the relative close proximity (5 to 10 miles) of the two management zones. Colored intervals are 50 foot variations in water level elevation and the water level elevations are highest in the south and become lower approaching the Pecos River in Figure 4.

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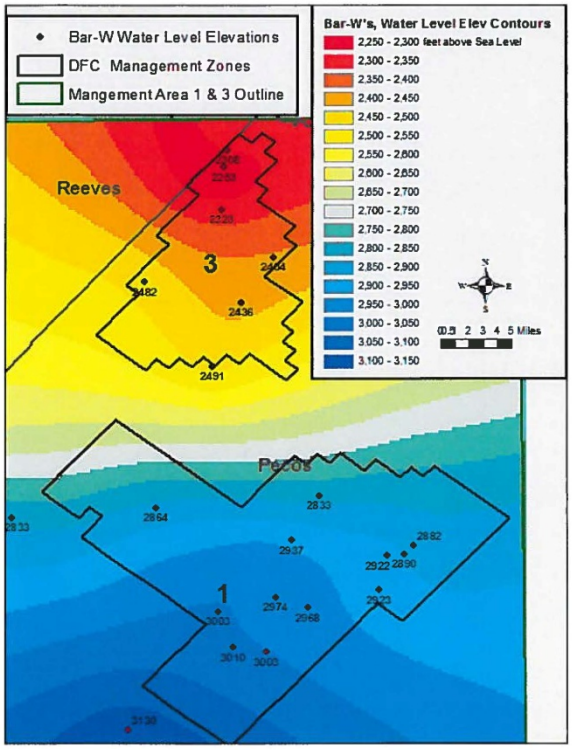

A review of the monitor well locations in Figure 4 using Bar-W's water level dataset indicates poor well control along the northern edge of Management Zone 1 with no monitor wells present between Management Zones 1 and 3. A decision was made to supplement the existing dataset.

The MPGCD staff researched the District's database and initially identified ten additional wellsto supplement Bar-W's well dataset which were later reduced to seven wells after recommendations from Thornhill Group Inc. (Thornhill, 2013). The water level measurements for the seven additional wells were collected between 2/2/2011 and 2/27/2011. Well Temp 259 was removed from the original Bar-W dataset because of a 12/9/2010 water level measurement date to make the final water level dataset more synoptic.

Figure 4, Bar-W's 2010,50 foot, water level elevation contoursfor Zones 1 and 3

The District's revised final water level dataset consists of 32 wells to monitor the ETP and PVA aquifers within the three management zones. The locations of the additional seven wells are illustrated in Figure 5. MPGCD's Management Zone 2 final 2010 water level elevation contours are illustrated in Figure 6. MPGCD's Management Zone's 1 and 3 final 2010 level elevation contours using the additional seven wells wasre-contoured and is illustrated in Figure 7. When comparing Figure 4 with Figure 7, note that with additional well data, the contouring interval shapes shifted. A specific example is the gray interval (2,700 to 2,750 feet).

GAM-Run 10-033 groundwater modeling by Hutchison in 2011 established the modeled aquifer drawdowns. MPGCD rule 10.5 (b) Table 1 (MPGCD District Rules, 2011) defines average drawdown for the management zones. The GIS water level surface elevation grids created for this report can be used to interpolate one foot contour intervals, however additional well control is recommended to increase the accuracy of these interpolations.

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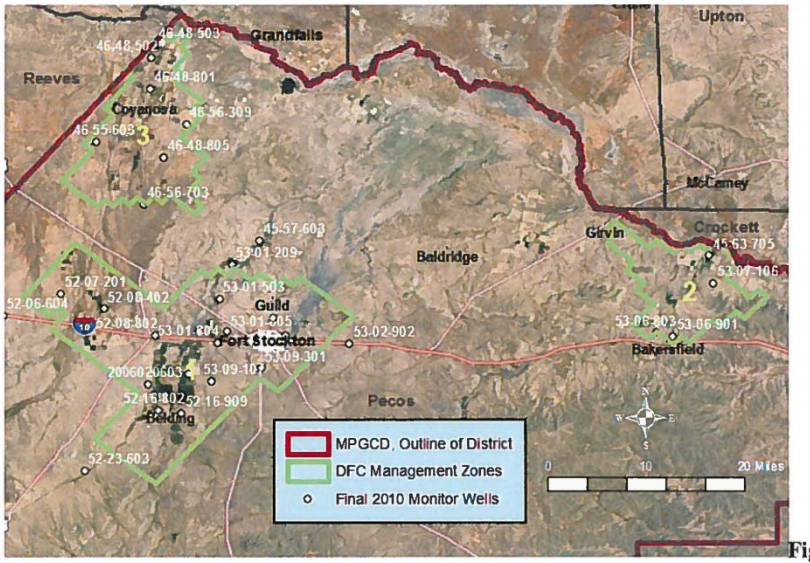

Figure 5.MPGCD's 2010 water level dataset

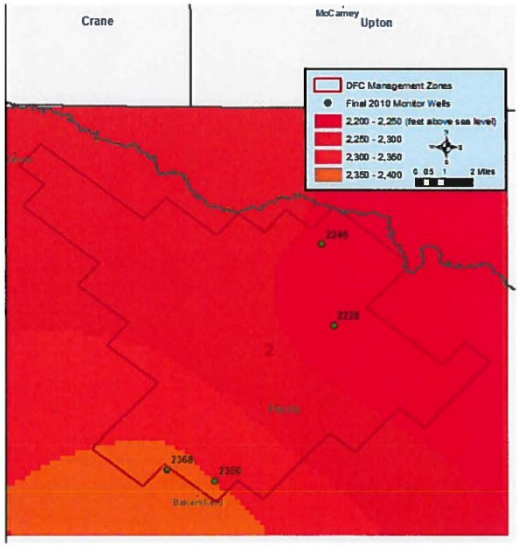

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Figure 6, MPGCD's, 50 foot water level elevation contours for Management Zone 2

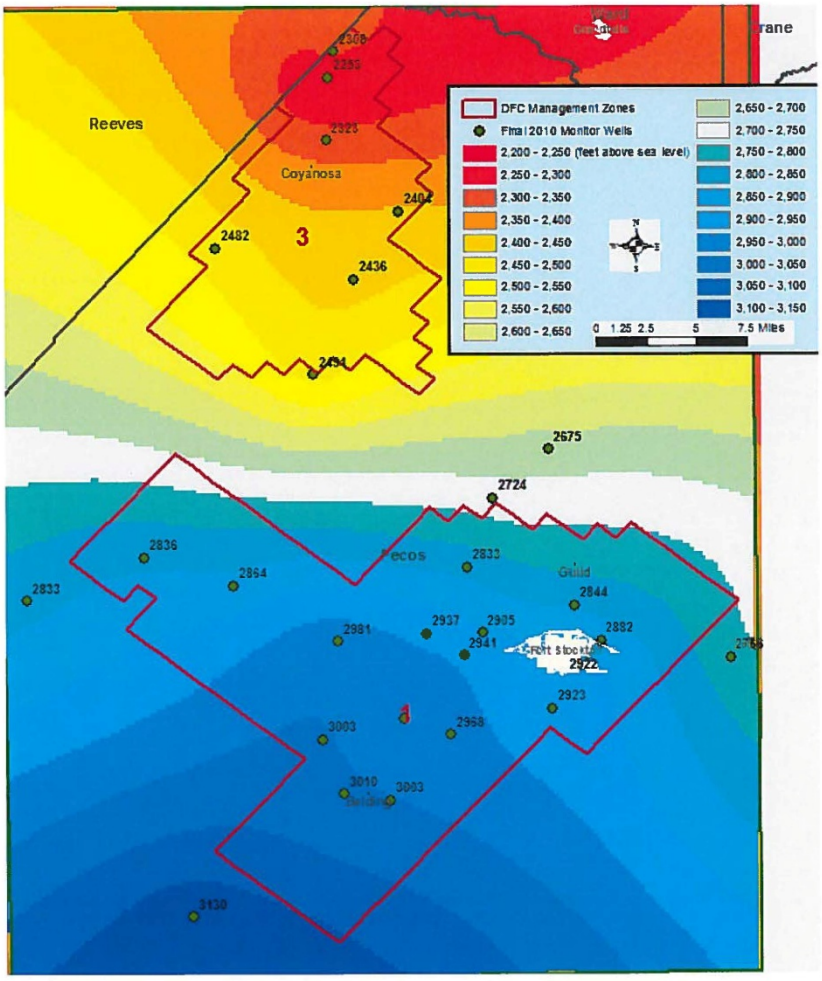

Figure 7, MPGCD's, 50 foot, water level elevation contours forManagement Zones 1 and 3

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The MPGCD's Assessment Process

The development of the 2010 baseline water level elevation maps for each Management Zone "is the first step in an on-going process of the MPGCD monitoring aquifer conditions and determining if the adopted DFCs are or may be impaired. At least every 5 years and at other intervals as considered necessary, the MPGCD will develop maps and pertinent gridding values of conditions in each Management Zone. Over time, the differences in the values contained in the map-grids for each Management Zone will be compiled and averaged. The averaged values for the difference in water-levels over time (drawdown) will be compared to the schedule of acceptable average drawdown values over time, which will not impair the adopted DFCs given in the MPGCD Rules. In making this comparison of average drawdown values, the MPGCD may determine if conservation measures are warranted to avoid impairment of the DFCs or if the aquifer conditions in the Management Zones are not likely to result in DFC impairment at the levels of groundwater use existing at the time of the assessment" (modified after Williams, 2012). The selection of additional monitoring wells is encouraged to improve resolution.

Conclusions and Recommendations

Overall, the 2010 baseline water level elevation surface for Management Zones 1, 2 and 3 for the Edwards-Trinity Plateau and the Pecos Valley Alluvium aquifers has been established. The District should consider increasing the number of water level monitoring wells within and adjacent to the existing MPGCD's management zones. If the District added two or three additional, strategically placed wells within each management zone, it would establish an effective groundwater level monitoring system for the determination of annual DFC water level fluctuations.

Note: The observations and assessments in this report were based on data supplied by the MPGCD or available from referenced published sources available at the time of the report. The conclusions drawn in the report are based on the available and reasonable methods of assessment. If new or different data is made available, the conclusions of this report may change.

References

Anaya, Roberto and Jones, Ian; 2009; Groundwater Availability Model of the Edwards-Trinity (Plateau) and Pecos Valley Aquifers of Texas – Texas Water Development Board Report 373

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Hutchinson, William, 2011, Texas Water Development Board report, GAM-Run 10-033

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William, Charles, R. 2012, Draft 2010 Year-End Water-level Conditions in MPGCD Management Zones, submitted draft report, 14 p.

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Management Zone 1 – Cell Identification

ROW	COL	CELL_ID	CentroidX	CentroidY
190	123	1190123	4034257.10000000000	19604086.00000000000
190	124	1190124	4038180.99999999000	19600553.00000000000
190	125	1190125	4042104.85000000000	19597020.00000000000
190	126	1190126	4046028.60000000000	19593487.00000000000
190	127	1190127	4049952.35000000000	19589954.00000000000
190	128	1190128	4053876.20000000000	19586421.00000000000
190	129	1190129	4057800.10000000000	19582888.00000000000
190	130	1190130	4061723.85000000000	19579355.00000000000
191	122	1191122	4026800.35000000000	19603695.00000000000
191	123	1191123	4030724.10000000000	19600162.00000000000
191	124	1191124	4034647.99999999000	19596629.00000000000
191	125	1191125	4038571.85000000000	19593096.00000000000
191	126	1191126	4042495.60000000000	19589563.00000000000
191	127	1191127	4046419.35000000000	19586030.00000000000
191	128	1191128	4050343.20000000000	19582497.00000000000
191	129	1191129	4054267.10000000000	19578964.00000000000
191	130	1191130	4058190.85000000000	19575431.00000000000
192	120	1192120	4015419.83258082000	19606837.66580000000
192	121	1192121	4019343.61742362000	19603304.33420000000
192	122	1192122	4023267.33258082000	19599771.66580000000
192	123	1192123	4027191.11742362000	19596238.33420000000
192	124	1192124	4031114.98256748000	19592705.66580000000
192	125	1192125	4035038.86741917000	19589172.33420000000
192	126	1192126	4038962.58257637000	19585639.66580000000
192	127	1192127	4042886.36741917000	19582106.33420000000
192	128	1192128	4046810.14915191000	19578573.66750000000
192	129	1192129	4050734.05084808000	19575040.33250000000
192	130	1192130	4054657.83258082000	19571507.66580000000
193	118	1193118	4004039.10000000000	19609980.00000000000
193	119	1193119	4007962.94986338000	19606447.00260000000
193	120	1193120	4011886.75013735000	19602913.99740000000
193	121	1193121	4015810.60000000000	19599381.00000000000
193	122	1193122	4019734.35000000000	19595848.00000000000
193	123	1193123	4023658.10000000000	19592315.00000000000
193	124	1193124	4027581.99999999000	19588782.00000000000
193	125	1193125	4031505.85000000000	19585249.00000000000
193	126	1193126	4035429.60000000000	19581716.00000000000
193	127	1193127	4039353.35000000000	19578183.00000000000
193	128	1193128	4043277.10000000000	19574650.00000000000
193	129	1193129	4047200.99999999000	19571117.00000000000
193	130	1193130	4051124.85000000000	19567584.00000000000
194	117	1194117	3996582.35000000000	19609589.00000000000
194	118	1194118	4000506.10000000000	19606056.00000000000
194	119	1194119	4004429.85000000000	19602523.00000000000
194	120	1194120	4008353.70000000000	19598990.00000000000
194	121	1194121	4012277.60000000000	19595457.00000000000

Management Zone 1 – Cell Identification Continued

ROW	COL	CELL_ID	CentroidX	CentroidY
194	122	1194122	4016201.35000000000	19591924.00000000000
194	123	1194123	4020125.10000000000	19588391.00000000000
194	124	1194124	4024048.99999999000	19584858.00000000000
194	125	1194125	4027972.85000000000	19581325.00000000000
194	126	1194126	4031896.60000000000	19577792.00000000000
194	127	1194127	4035820.35000000000	19574259.00000000000
194	128	1194128	4039744.10000000000	19570726.00000000000
194	129	1194129	4043667.99999999000	19567193.00000000000
194	130	1194130	4047591.85000000000	19563660.00000000000
196	116	1196116	3985592.51743251000	19605274.33420000000
196	117	1196117	3989516.33258082000	19601741.66580000000
196	118	1196118	3993440.11742362000	19598208.33420000000
196	119	1196119	3997363.83258082000	19594675.66580000000
196	120	1196120	4001287.71743252000	19591142.33420000000
196	121	1196121	4005211.60000000000	19587609.00000000000
196	122	1196122	4009135.35000000000	19584076.00000000000
196	123	1196123	4013059.10000000000	19580543.00000000000
196	124	1196124	4016982.85000000000	19577010.00000000000
196	125	1196125	4020906.70000000000	19573477.00000000000
196	126	1196126	4024830.60000000000	19569944.00000000000
196	127	1196127	4028754.35000000000	19566411.00000000000
196	128	1196128	4032678.10000000000	19562878.00000000000
196	129	1196129	4036601.99999999000	19559345.00000000000
196	130	1196130	4040525.85000000000	19555812.00000000000
209	110	1209110	3916120.60000000000	19575463.00000000000
209	111	1209111	3920044.35000000000	19571930.00000000000
209	112	1209112	3923968.10000000000	19568397.00000000000
209	113	1209113	3927891.99999999000	19564864.00000000000
209	114	1209114	3931815.85000000000	19561331.00000000000
209	115	1209115	3935739.60000000000	19557798.00000000000
209	116	1209116	3939663.35000000000	19554265.00000000000
209	117	1209117	3943587.10000000000	19550732.00000000000
209	118	1209118	3947510.99999999000	19547199.00000000000
209	119	1209119	3951434.85000000000	19543666.00000000000
209	120	1209120	3955358.60000000000	19540133.00000000000
209	121	1209121	3959282.35000000000	19536600.00000000000
209	122	1209122	3963206.16657556000	19533067.00170000000
195	116	1195116	3989125.53342492000	19609197.99830000000
195	117	1195117	3993049.35000000000	19605665.00000000000
195	118	1195118	3996973.10000000000	19602132.00000000000
195	119	1195119	4000896.85000000000	19598599.00000000000
195	120	1195120	4004820.70000000000	19595066.00000000000
195	121	1195121	4008744.60000000000	19591533.00000000000
195	122	1195122	4012668.35000000000	19588000.00000000000
195	123	1195123	4016592.10000000000	19584467.00000000000
195	124	1195124	4020515.94986264000	19580934.00260000000

Management Zone 1 – Cell Identification Continued

ROW	COL	CELL_ID	CentroidX	CentroidY
195	125	1195125	4024439.75013661000	19577400.99740000000
195	126	1195126	4028363.60000000000	19573868.00000000000
195	127	1195127	4032287.35000000000	19570335.00000000000
195	128	1195128	4036211.10000000000	19566802.00000000000
195	129	1195129	4040134.99999999000	19563269.00000000000
195	130	1195130	4044058.85000000000	19559736.00000000000
197	116	1197116	3982059.49999999000	19601351.00000000000
197	117	1197117	3985983.35000000000	19597818.00000000000
197	118	1197118	3989907.10000000000	19594285.00000000000
197	119	1197119	3993830.85000000000	19590752.00000000000
197	120	1197120	3997754.70000000000	19587219.00000000000
197	121	1197121	4001678.58257637000	19583685.66580000000
197	122	1197122	4005602.36741917000	19580152.33420000000
197	123	1197123	4009526.08257637000	19576619.66580000000
197	124	1197124	4013449.86741917000	19573086.33420000000
197	125	1197125	4017373.68256748000	19569553.66580000000
197	126	1197126	4021297.61742362000	19566020.33420000000
197	127	1197127	4025221.33258082000	19562487.66580000000
197	128	1197128	4029145.11742362000	19558954.33420000000
197	129	1197129	4033068.98256748000	19555421.66580000000
197	130	1197130	4036992.86741917000	19551888.33420000000
198	116	1198116	3978526.49999999000	19597427.00000000000
198	117	1198117	3982450.35000000000	19593894.00000000000
198	118	1198118	3986374.10000000000	19590361.00000000000
198	119	1198119	3990297.85000000000	19586828.00000000000
198	120	1198120	3994221.66657556000	19583295.00170000000
198	121	1198121	3998145.53342492000	19579761.99830000000
198	122	1198122	4002069.35000000000	19576229.00000000000
198	123	1198123	4005993.10000000000	19572696.00000000000
198	124	1198124	4009916.85000000000	19569163.00000000000
198	125	1198125	4013840.70000000000	19565630.00000000000
198	126	1198126	4017764.60000000000	19562097.00000000000
198	127	1198127	4021688.35000000000	19558564.00000000000
198	128	1198128	4025612.10000000000	19555031.00000000000
198	129	1198129	4029535.94986264000	19551498.00260000000
198	130	1198130	4033459.75013661000	19547964.99740000000
199	116	1199116	3974993.49999999000	19593503.00000000000
199	117	1199117	3978917.35000000000	19589970.00000000000
199	118	1199118	3982841.10000000000	19586437.00000000000
199	119	1199119	3986764.85000000000	19582904.00000000000
199	120	1199120	3990688.60000000000	19579371.00000000000
199	121	1199121	3994612.49999999000	19575838.00000000000
199	122	1199122	3998536.35000000000	19572305.00000000000
199	123	1199123	4002460.10000000000	19568772.00000000000
199	124	1199124	4006383.85000000000	19565239.00000000000
199	125	1199125	4010307.70000000000	19561706.00000000000

Management Zone 1 – Cell Identification Continued

ROW	COL	CELL_ID	CentroidX	CentroidY
199	126	1199126	4014231.60000000000	19558173.00000000000
199	127	1199127	4018155.35000000000	19554640.00000000000
199	128	1199128	4022079.10000000000	19551107.00000000000
199	129	1199129	4026002.85000000000	19547574.00000000000
199	130	1199130	4029926.70000000000	19544041.00000000000
200	106	1200106	3932222.35000000000	19624909.00000000000
200	107	1200107	3936146.20000000000	19621376.00000000000
200	108	1200108	3940070.10000000000	19617843.00000000000
200	109	1200109	3943993.85000000000	19614310.00000000000
200	110	1200110	3947917.60000000000	19610777.00000000000
200	111	1200111	3951841.35000000000	19607244.00000000000
200	112	1200112	3955765.20000000000	19603711.00000000000
200	113	1200113	3959689.10000000000	19600178.00000000000
200	114	1200114	3963612.85000000000	19596645.00000000000
200	115	1200115	3967536.60000000000	19593112.00000000000
200	116	1200116	3971460.49999999000	19589579.00000000000
200	117	1200117	3975384.35000000000	19586046.00000000000
200	118	1200118	3979308.10000000000	19582513.00000000000
200	119	1200119	3983231.85000000000	19578980.00000000000
200	120	1200120	3987155.60000000000	19575447.00000000000
200	121	1200121	3991079.49999999000	19571914.00000000000
200	122	1200122	3995003.35000000000	19568381.00000000000
200	123	1200123	3998927.10000000000	19564848.00000000000
200	124	1200124	4002850.85000000000	19561315.00000000000
200	125	1200125	4006774.66657507000	19557782.00170000000
200	126	1200126	4010698.53342443000	19554248.99830000000
200	127	1200127	4014622.35000000000	19550716.00000000000
200	128	1200128	4018546.10000000000	19547183.00000000000
200	129	1200129	4022469.85000000000	19543650.00000000000
200	130	1200130	4026393.70000000000	19540117.00000000000
201	106	1201106	3928689.33258082000	19620985.66580000000
201	107	1201107	3932613.18399916000	19617452.33600000000
201	108	1201108	3936537.01600083000	19613919.66400000000
201	109	1201109	3940460.86741917000	19610386.33420000000
201	110	1201110	3944384.58257637000	19606853.66580000000
201	111	1201111	3948308.36741917000	19603320.33420000000
201	112	1201112	3952232.18256748000	19599787.66580000000
201	113	1201113	3956156.11742362000	19596254.33420000000
201	114	1201114	3960079.83258082000	19592721.66580000000
201	115	1201115	3964003.61742362000	19589188.33420000000
201	116	1201116	3967927.43244416000	19585655.66840000000
201	117	1201117	3971851.26755583000	19582122.33160000000
201	118	1201118	3975775.08257637000	19578589.66580000000
201	119	1201119	3979698.86741917000	19575056.33420000000
201	120	1201120	3983622.58257637000	19571523.66580000000
201	121	1201121	3987546.51743251000	19567990.33420000000

Management Zone 1 – Cell Identification Continued

ROW	COL	CELL_ID	CentroidX	CentroidY
201	122	1201122	3991470.35000000000	19564457.00000000000
201	123	1201123	3995394.10000000000	19560924.00000000000
201	124	1201124	3999317.85000000000	19557391.00000000000
201	125	1201125	4003241.60000000000	19553858.00000000000
201	126	1201126	4007165.49999999000	19550325.00000000000
201	127	1201127	4011089.35000000000	19546792.00000000000
201	128	1201128	4015013.10000000000	19543259.00000000000
201	129	1201129	4018936.85000000000	19539726.00000000000
201	130	1201130	4022860.70000000000	19536193.00000000000
202	106	1202106	3925156.35000000000	19617062.00000000000
202	107	1202107	3929080.10000000000	19613529.00000000000
202	108	1202108	3933003.99999999000	19609996.00000000000
202	109	1202109	3936927.85000000000	19606463.00000000000
202	110	1202110	3940851.60000000000	19602930.00000000000
202	111	1202111	3944775.35000000000	19599397.00000000000
202	112	1202112	3948699.20000000000	19595864.00000000000
202	113	1202113	3952623.10000000000	19592331.00000000000
202	114	1202114	3956546.85000000000	19588798.00000000000
202	115	1202115	3960470.60000000000	19585265.00000000000
202	116	1202116	3964394.35000000000	19581732.00000000000
202	117	1202117	3968318.20000000000	19578199.00000000000
202	118	1202118	3972242.10000000000	19574666.00000000000
202	119	1202119	3976165.85000000000	19571133.00000000000
202	120	1202120	3980089.60000000000	19567600.00000000000
202	121	1202121	3984013.49999999000	19564067.00000000000
202	122	1202122	3987937.33258082000	19560533.66580000000
202	123	1202123	3991861.11742362000	19557000.33420000000
202	124	1202124	3995784.83258082000	19553467.66580000000
202	125	1202125	3999708.61742362000	19549934.33420000000
202	126	1202126	4003632.48256748000	19546401.66580000000
202	127	1202127	4007556.36741917000	19542868.33420000000
202	128	1202128	4011480.08257637000	19539335.66580000000
203	106	1203106	3921623.35000000000	19613138.00000000000
203	107	1203107	3925547.10000000000	19609605.00000000000
203	108	1203108	3929470.99999999000	19606072.00000000000
203	109	1203109	3933394.85000000000	19602539.00000000000
203	110	1203110	3937318.60000000000	19599006.00000000000
203	111	1203111	3941242.35000000000	19595473.00000000000
203	112	1203112	3945166.20000000000	19591940.00000000000
203	113	1203113	3949090.10000000000	19588407.00000000000
203	114	1203114	3953013.85000000000	19584874.00000000000
203	115	1203115	3956937.60000000000	19581341.00000000000
203	116	1203116	3960861.35000000000	19577808.00000000000
203	117	1203117	3964785.20000000000	19574275.00000000000
203	118	1203118	3968709.10000000000	19570742.00000000000
203	119	1203119	3972632.85000000000	19567209.00000000000

Management Zone 1 – Cell Identification Continued

ROW	COL	CELL_ID	CentroidX	CentroidY
203	120	1203120	3976556.60000000000	19563676.00000000000
203	121	1203121	3980480.49999999000	19560143.00000000000
203	122	1203122	3984404.35000000000	19556610.00000000000
203	123	1203123	3988328.10000000000	19553077.00000000000
203	124	1203124	3992251.85000000000	19549544.00000000000
203	125	1203125	3996175.60000000000	19546011.00000000000
203	126	1203126	4000099.49999999000	19542478.00000000000
203	127	1203127	4004023.35000000000	19538945.00000000000
203	128	1203128	4007947.10000000000	19535412.00000000000
204	106	1204106	3918090.35000000000	19609214.00000000000
204	107	1204107	3922014.10000000000	19605681.00000000000
204	108	1204108	3925937.99999999000	19602148.00000000000
204	109	1204109	3929861.85000000000	19598615.00000000000
204	110	1204110	3933785.60000000000	19595082.00000000000
204	111	1204111	3937709.35000000000	19591549.00000000000
204	112	1204112	3941633.16657507000	19588016.00170000000
204	113	1204113	3945557.03342443000	19584482.99830000000
204	114	1204114	3949480.85000000000	19580950.00000000000
204	115	1204115	3953404.60000000000	19577417.00000000000
204	116	1204116	3957328.35000000000	19573884.00000000000
204	117	1204117	3961252.20000000000	19570351.00000000000
204	118	1204118	3965176.10000000000	19566818.00000000000
204	119	1204119	3969099.85000000000	19563285.00000000000
204	120	1204120	3973023.60000000000	19559752.00000000000
204	121	1204121	3976947.44986338000	19556219.00260000000
204	122	1204122	3980871.25013735000	19552685.99740000000
204	123	1204123	3984795.10000000000	19549153.00000000000
204	124	1204124	3988718.85000000000	19545620.00000000000
204	125	1204125	3992642.60000000000	19542087.00000000000
204	126	1204126	3996566.49999999000	19538554.00000000000
204	127	1204127	4000490.35000000000	19535021.00000000000
204	128	1204128	4004414.10000000000	19531488.00000000000
205	106	1205106	3914557.35000000000	19605290.00000000000
205	107	1205107	3918481.10000000000	19601757.00000000000
205	108	1205108	3922404.99999999000	19598224.00000000000
205	109	1205109	3926328.85000000000	19594691.00000000000
205	110	1205110	3930252.60000000000	19591158.00000000000
205	111	1205111	3934176.35000000000	19587625.00000000000
205	112	1205112	3938100.10000000000	19584092.00000000000
205	113	1205113	3942023.99999999000	19580559.00000000000
205	114	1205114	3945947.85000000000	19577026.00000000000
205	115	1205115	3949871.60000000000	19573493.00000000000
205	116	1205116	3953795.35000000000	19569960.00000000000
205	117	1205117	3957719.20000000000	19566427.00000000000
205	118	1205118	3961643.10000000000	19562894.00000000000
205	119	1205119	3965566.85000000000	19559361.00000000000

Management Zone 1 – Cell Identification Continued

ROW	COL	CELL_ID	CentroidX	CentroidY
205	120	1205120	3969490.60000000000	19555828.00000000000
205	121	1205121	3973414.35000000000	19552295.00000000000
205	122	1205122	3977338.20000000000	19548762.00000000000
205	123	1205123	3981262.10000000000	19545229.00000000000
205	124	1205124	3985185.85000000000	19541696.00000000000
205	125	1205125	3989109.60000000000	19538163.00000000000
205	126	1205126	3993033.49999999000	19534630.00000000000
205	127	1205127	3996957.35000000000	19531097.00000000000
205	128	1205128	4000881.10000000000	19527564.00000000000
206	106	1206106	3911024.36741917000	19601366.33420000000
206	107	1206107	3914948.08257637000	19597833.66580000000
206	108	1206108	3918872.01743251000	19594300.33420000000
206	109	1206109	3922795.83258082000	19590767.66580000000
206	110	1206110	3926719.61742362000	19587234.33420000000
206	111	1206111	3930643.33258082000	19583701.66580000000
206	112	1206112	3934567.11742362000	19580168.33420000000
206	113	1206113	3938490.98256748000	19576635.66580000000
206	114	1206114	3942414.86741917000	19573102.33420000000
206	115	1206115	3946338.58257637000	19569569.66580000000
206	116	1206116	3950262.36741917000	19566036.33420000000
206	117	1206117	3954186.14915191000	19562503.66750000000
206	118	1206118	3958110.05084808000	19558970.33250000000
206	119	1206119	3962033.83258082000	19555437.66580000000
206	120	1206120	3965957.61742362000	19551904.33420000000
206	121	1206121	3969881.35000000000	19548371.00000000000
206	122	1206122	3973805.20000000000	19544838.00000000000
206	123	1206123	3977729.10000000000	19541305.00000000000
206	124	1206124	3981652.85000000000	19537772.00000000000
206	125	1206125	3985576.60000000000	19534239.00000000000
206	126	1206126	3989500.44986264000	19530706.00260000000
206	127	1206127	3993424.25013661000	19527172.99740000000
206	128	1206128	3997348.10000000000	19523640.00000000000
207	106	1207106	3907491.35000000000	19597443.00000000000
207	107	1207107	3911415.10000000000	19593910.00000000000
207	108	1207108	3915338.94986338000	19590377.00260000000
207	109	1207109	3919262.75013735000	19586843.99740000000
207	110	1207110	3923186.60000000000	19583311.00000000000
207	111	1207111	3927110.35000000000	19579778.00000000000
207	112	1207112	3931034.10000000000	19576245.00000000000
207	113	1207113	3934957.99999999000	19572712.00000000000
207	114	1207114	3938881.85000000000	19569179.00000000000
207	115	1207115	3942805.60000000000	19565646.00000000000
207	116	1207116	3946729.35000000000	19562113.00000000000
207	117	1207117	3950653.10000000000	19558580.00000000000
207	118	1207118	3954576.99999999000	19555047.00000000000
207	119	1207119	3958500.85000000000	19551514.00000000000

Management Zone 1 – Cell Identification Continued

ROW	COL	CELL_ID	CentroidX	CentroidY
207	120	1207120	3962424.60000000000	19547981.00000000000
207	121	1207121	3966348.33258082000	19544447.66580000000
207	122	1207122	3970272.21743252000	19540914.33420000000
207	123	1207123	3974196.08257637000	19537381.66580000000
207	124	1207124	3978119.86741917000	19533848.33420000000
207	125	1207125	3982043.58257637000	19530315.66580000000
207	126	1207126	3985967.36741917000	19526782.33420000000
207	127	1207127	3989891.18256748000	19523249.66580000000
207	128	1207128	3993815.11742362000	19519716.33420000000
208	106	1208106	3903958.35000000000	19593519.00000000000
208	107	1208107	3907882.10000000000	19589986.00000000000
208	108	1208108	3911805.85000000000	19586453.00000000000
208	109	1208109	3915729.70000000000	19582920.00000000000
208	110	1208110	3919653.60000000000	19579387.00000000000
208	111	1208111	3923577.35000000000	19575854.00000000000
208	112	1208112	3927501.10000000000	19572321.00000000000
208	113	1208113	3931424.99999999000	19568788.00000000000
208	114	1208114	3935348.85000000000	19565255.00000000000
208	115	1208115	3939272.60000000000	19561722.00000000000
208	116	1208116	3943196.35000000000	19558189.00000000000
208	117	1208117	3947120.10000000000	19554656.00000000000
208	118	1208118	3951043.99999999000	19551123.00000000000
208	119	1208119	3954967.85000000000	19547590.00000000000
208	120	1208120	3958891.60000000000	19544057.00000000000
208	121	1208121	3962815.35000000000	19540524.00000000000
208	122	1208122	3966739.20000000000	19536991.00000000000
208	123	1208123	3970663.10000000000	19533458.00000000000
208	124	1208124	3974586.85000000000	19529925.00000000000
208	125	1208125	3978510.60000000000	19526392.00000000000
208	126	1208126	3982434.35000000000	19522859.00000000000
208	127	1208127	3986358.20000000000	19519326.00000000000
208	128	1208128	3990282.10000000000	19515793.00000000000
209	123	1209123	3967130.03342492000	19529533.99830000000
209	124	1209124	3971053.85000000000	19526001.00000000000
209	125	1209125	3974977.60000000000	19522468.00000000000
209	126	1209126	3978901.35000000000	19518935.00000000000
209	127	1209127	3982825.20000000000	19515402.00000000000
209	128	1209128	3986749.10000000000	19511869.00000000000
210	120	1210120	3951825.60000000000	19536209.00000000000
210	121	1210121	3955749.35000000000	19532676.00000000000
210	122	1210122	3959673.10000000000	19529143.00000000000
210	123	1210123	3963596.99999999000	19525610.00000000000
210	124	1210124	3967520.85000000000	19522077.00000000000
210	125	1210125	3971444.60000000000	19518544.00000000000
210	126	1210126	3975368.35000000000	19515011.00000000000
210	127	1210127	3979292.20000000000	19511478.00000000000

Management Zone 1 – Cell Identification Continued

ROW	COL	CELL_ID	CentroidX	CentroidY
210	128	1210128	3983216.10000000000	19507945.00000000000
211	120	1211120	3948292.60000000000	19532285.00000000000
211	121	1211121	3952216.35000000000	19528752.00000000000
211	122	1211122	3956140.10000000000	19525219.00000000000
211	123	1211123	3960063.99999999000	19521686.00000000000
211	124	1211124	3963987.85000000000	19518153.00000000000
211	125	1211125	3967911.60000000000	19514620.00000000000
211	126	1211126	3971835.35000000000	19511087.00000000000
211	127	1211127	3975759.16657507000	19507554.00170000000
211	128	1211128	3979683.03342443000	19504020.99830000000
212	120	1212120	3944759.58257637000	19528361.66580000000
212	121	1212121	3948683.36741917000	19524828.33420000000
212	122	1212122	3952607.08257637000	19521295.66580000000
212	123	1212123	3956531.01743251000	19517762.33420000000
212	124	1212124	3960454.83258082000	19514229.66580000000
212	125	1212125	3964378.61742362000	19510696.33420000000
212	126	1212126	3968302.33258082000	19507163.66580000000
212	127	1212127	3972226.11742362000	19503630.33420000000
212	128	1212128	3976149.98256748000	19500097.66580000000
213	120	1213120	3941226.60000000000	19524438.00000000000
213	121	1213121	3945150.35000000000	19520905.00000000000
213	122	1213122	3949074.10000000000	19517372.00000000000
213	123	1213123	3952997.99999999000	19513839.00000000000
213	124	1213124	3956921.85000000000	19510306.00000000000
213	125	1213125	3960845.60000000000	19506773.00000000000
213	126	1213126	3964769.35000000000	19503240.00000000000
213	127	1213127	3968693.10000000000	19499707.00000000000
213	128	1213128	3972616.99999999000	19496174.00000000000
214	120	1214120	3937693.60000000000	19520514.00000000000
214	121	1214121	3941617.35000000000	19516981.00000000000
214	122	1214122	3945541.10000000000	19513448.00000000000
214	123	1214123	3949464.99999999000	19509915.00000000000
214	124	1214124	3953388.85000000000	19506382.00000000000
214	125	1214125	3957312.60000000000	19502849.00000000000
214	126	1214126	3961236.35000000000	19499316.00000000000
214	127	1214127	3965160.10000000000	19495783.00000000000
214	128	1214128	3969083.99999999000	19492250.00000000000
215	120	1215120	3934160.60000000000	19516590.00000000000
215	121	1215121	3938084.35000000000	19513057.00000000000
215	122	1215122	3942008.10000000000	19509524.00000000000
215	123	1215123	3945931.94986338000	19505991.00260000000
215	124	1215124	3949855.75013735000	19502457.99740000000
215	125	1215125	3953779.60000000000	19498925.00000000000
215	126	1215126	3957703.35000000000	19495392.00000000000
215	127	1215127	3961627.10000000000	19491859.00000000000
215	128	1215128	3965550.99999999000	19488326.00000000000

Management Zone 2 – Cell Identification

ROW	COL	CELL_ID	CentroidX	CentroidY
164	147	1164147	4220286.74999999000	19621313.00000000000
164	148	1164148	4224210.49999999000	19617780.00000000000
164	149	1164149	4228134.49999999000	19614247.00000000000
164	150	1164150	4232058.24999999000	19610714.00000000000
164	151	1164151	4235981.99999999000	19607181.00000000000
164	152	1164152	4239905.74999999000	19603648.00000000000
164	153	1164153	4243829.49999999000	19600115.00000000000
164	154	1164154	4247753.49999999000	19596582.00000000000
165	146	1165146	4212829.99999999000	19620922.00000000000
165	147	1165147	4216753.74999999000	19617389.00000000000
165	148	1165148	4220677.49999999000	19613856.00000000000
165	149	1165149	4224601.49999999000	19610323.00000000000
165	150	1165150	4228525.24999999000	19606790.00000000000
165	151	1165151	4232448.99999999000	19603257.00000000000
165	152	1165152	4236372.74999999000	19599724.00000000000
165	153	1165153	4240296.49999999000	19596191.00000000000
165	154	1165154	4244220.49999999000	19592658.00000000000
165	155	1165155	4248144.24999999000	19589125.00000000000
165	156	1165156	4252067.99999999000	19585592.00000000000
166	146	1166146	4209296.99999999000	19616998.00000000000
166	147	1166147	4213220.74999999000	19613465.00000000000
166	148	1166148	4217144.49999999000	19609932.00000000000
166	149	1166149	4221068.49999999000	19606399.00000000000
166	150	1166150	4224992.24999999000	19602866.00000000000
166	151	1166151	4228915.99999999000	19599333.00000000000
166	152	1166152	4232839.74999999000	19595800.00000000000
166	153	1166153	4236763.49999999000	19592267.00000000000
166	154	1166154	4240687.49999999000	19588734.00000000000
166	155	1166155	4244611.24999999000	19585201.00000000000
166	156	1166156	4248534.99999999000	19581668.00000000000
167	143	1167143	4193992.60000000000	19623673.00000000000
167	144	1167144	4197916.49999999000	19620140.00000000000
167	145	1167145	4201840.24999999000	19616607.00000000000
167	146	1167146	4205763.99999999000	19613074.00000000000
167	147	1167147	4209687.74999999000	19609541.00000000000
167	148	1167148	4213611.49999999000	19606008.00000000000
167	149	1167149	4217535.49999999000	19602475.00000000000
167	150	1167150	4221459.24999999000	19598942.00000000000
167	151	1167151	4225382.99999999000	19595409.00000000000
167	152	1167152	4229306.74999999000	19591876.00000000000
167	153	1167153	4233230.49999999000	19588343.00000000000
167	154	1167154	4237154.49999999000	19584810.00000000000
167	155	1167155	4241078.24999999000	19581277.00000000000
167	156	1167156	4245001.99999999000	19577744.00000000000
168	140	1168140	4178688.10000000000	19630349.00000000000
168	141	1168141	4182611.83258082000	19626815.66580000000

Management Zone 2 – Cell Identification Continued

ROW	COL	CELL_ID	CentroidX	CentroidY
168	142	1168142	4186535.71743252000	19623282.33420000000
168	143	1168143	4190459.58257637000	19619749.66580000000
168	144	1168144	4194383.43384931000	19616216.33860000000
168	145	1168145	4198307.06615068000	19612683.66140000000
168	146	1168146	4202231.01743251000	19609150.33420000000
168	147	1168147	4206154.73258971000	19605617.66580000000
168	148	1168148	4210078.51743251000	19602084.33420000000
168	149	1168149	4214002.48256748000	19598551.66580000000
168	150	1168150	4217926.26741028000	19595018.33420000000
168	151	1168151	4221849.98256748000	19591485.66580000000
168	152	1168152	4225773.76741028000	19587952.33420000000
168	153	1168153	4229697.48256748000	19584419.66580000000
168	154	1168154	4233621.51743251000	19580886.33420000000
168	155	1168155	4237545.23258971000	19577353.66580000000
168	156	1168156	4241469.01743251000	19573820.33420000000
169	140	1169140	4175155.10000000000	19626425.00000000000
169	141	1169141	4179078.85000000000	19622892.00000000000
169	142	1169142	4183002.66657556000	19619359.00170000000
169	143	1169143	4186926.53342492000	19615825.99830000000
169	144	1169144	4190850.28342441000	19612292.99830000000
169	145	1169145	4194774.06657502000	19608760.00170000000
169	146	1169146	4198697.99999999000	19605227.00000000000
169	147	1169147	4202621.74999999000	19601694.00000000000
169	148	1169148	4206545.49999999000	19598161.00000000000
169	149	1169149	4210469.49999999000	19594628.00000000000
169	150	1169150	4214393.24999999000	19591095.00000000000
169	151	1169151	4218316.99999999000	19587562.00000000000
169	152	1169152	4222240.74999999000	19584029.00000000000
169	153	1169153	4226164.49999999000	19580496.00000000000
169	154	1169154	4230088.49999999000	19576963.00000000000
169	155	1169155	4234012.24999999000	19573430.00000000000
169	156	1169156	4237935.99999999000	19569897.00000000000
170	140	1170140	4171622.10000000000	19622501.00000000000
170	141	1170141	4175545.85000000000	19618968.00000000000
170	142	1170142	4179469.60000000000	19615435.00000000000
170	143	1170143	4183393.49999999000	19611902.00000000000
170	144	1170144	4187317.35000000000	19608369.00000000000
170	145	1170145	4191241.10000000000	19604836.00000000000
170	146	1170146	4195164.99999999000	19601303.00000000000
170	147	1170147	4199088.74999999000	19597770.00000000000
170	148	1170148	4203012.49999999000	19594237.00000000000
170	149	1170149	4206936.41643786000	19590704.00440000000
170	150	1170150	4210860.08356091000	19587170.99570000000
170	151	1170151	4214783.99999999000	19583638.00000000000
170	152	1170152	4218707.74999999000	19580105.00000000000
170	153	1170153	4222631.49999999000	19576572.00000000000

Management Zone 2 – Cell Identification Continued

ROW	COL	CELL_ID	CentroidX	CentroidY
170	154	1170154	4226555.49999999000	19573039.00000000000
170	155	1170155	4230479.24999999000	19569506.00000000000
171	141	1171141	4172012.85000000000	19615044.00000000000
171	142	1171142	4175936.60000000000	19611511.00000000000
171	143	1171143	4179860.49999999000	19607978.00000000000
171	144	1171144	4183784.35000000000	19604445.00000000000
171	145	1171145	4187708.10000000000	19600912.00000000000
171	146	1171146	4191631.94986338000	19597379.00260000000
171	147	1171147	4195555.65013728000	19593845.99740000000
171	148	1171148	4199479.49999999000	19590313.00000000000
171	149	1171149	4203403.24999999000	19586780.00000000000
171	150	1171150	4207326.99999999000	19583247.00000000000
171	151	1171151	4211250.99999999000	19579714.00000000000
171	152	1171152	4215174.74999999000	19576181.00000000000
171	153	1171153	4219098.49999999000	19572648.00000000000
171	154	1171154	4223022.49999999000	19569115.00000000000
171	155	1171155	4226946.24999999000	19565582.00000000000
172	144	1172144	4180251.35000000000	19600521.00000000000
172	145	1172145	4184175.10000000000	19596988.00000000000
172	146	1172146	4188098.85000000000	19593455.00000000000
172	147	1172147	4192022.60000000000	19589922.00000000000
172	148	1172148	4195946.49999999000	19586389.00000000000
172	149	1172149	4199870.24999999000	19582856.00000000000
172	150	1172150	4203793.99999999000	19579323.00000000000
172	151	1172151	4207717.99999999000	19575790.00000000000
172	152	1172152	4211641.74999999000	19572257.00000000000
172	153	1172153	4215565.49999999000	19568724.00000000000
172	154	1172154	4219489.49999999000	19565191.00000000000
173	146	1173146	4184565.83258082000	19589531.66580000000
173	147	1173147	4188489.61742362000	19585998.33420000000
173	148	1173148	4192413.48256748000	19582465.66580000000
173	149	1173149	4196337.26741028000	19578932.33420000000
173	150	1173150	4200260.98256748000	19575399.66580000000
173	151	1173151	4204185.01743251000	19571866.33420000000
173	152	1173152	4208108.73258971000	19568333.66580000000
173	153	1173153	4212032.51743251000	19564800.33420000000
173	154	1173154	4215956.39902873000	19561267.67010000000
174	147	1174147	4184956.60000000000	19582075.00000000000
174	148	1174148	4188880.49999999000	19578542.00000000000
174	149	1174149	4192804.28342441000	19575008.99830000000
174	150	1174150	4196728.06657502000	19571476.00170000000
174	151	1174151	4200651.99999999000	19567943.00000000000
174	152	1174152	4204575.74999999000	19564410.00000000000
174	153	1174153	4208499.49999999000	19560877.00000000000
174	154	1174154	4212423.24999999000	19557344.00000000000
175	147	1175147	4181423.60000000000	19578151.00000000000

Management Zone 2 – Cell Identification Continued

ROW	COL	CELL_ID	CentroidX	CentroidY
175	148	1175148	4185347.49999999000	19574618.00000000000
175	149	1175149	4189271.35000000000	19571085.00000000000
175	150	1175150	4193195.10000000000	19567552.00000000000
175	151	1175151	4197118.99999999000	19564019.00000000000
175	152	1175152	4201042.74999999000	19560486.00000000000
175	153	1175153	4204966.49999999000	19556953.00000000000
176	147	1176147	4177890.60000000000	19574227.00000000000
176	148	1176148	4181814.49999999000	19570694.00000000000
176	149	1176149	4185738.35000000000	19567161.00000000000
176	150	1176150	4189662.10000000000	19563628.00000000000
176	151	1176151	4193585.94986338000	19560095.00260000000
176	152	1176152	4197509.65013728000	19556561.99740000000
177	147	1177147	4174357.60000000000	19570303.00000000000
177	148	1177148	4178281.44986264000	19566770.00260000000
177	149	1177149	4182205.25013661000	19563236.99740000000
177	150	1177150	4186129.10000000000	19559704.00000000000
177	151	1177151	4190052.85000000000	19556171.00000000000
177	152	1177152	4193976.60000000000	19552638.00000000000
178	147	1178147	4170824.58257637000	19566379.66580000000
178	148	1178148	4174748.36741917000	19562846.33420000000
178	149	1178149	4178672.18256748000	19559313.66580000000
178	150	1178150	4182596.11742362000	19555780.33420000000
178	151	1178151	4186519.83258082000	19552247.66580000000
178	152	1178152	4190443.61742362000	19548714.33420000000

Management Zone 3 – Cell Identification

ROW	COL	CELL_ID	CentroidX	CentroidY
186	100	1186100	3958141.70000000000	19701041.00000000000
186	101	1186101	3962065.58257637000	19697507.66580000000
186	102	1186102	3965989.36741917000	19693974.33420000000
186	103	1186103	3969913.08257637000	19690441.66580000000
186	104	1186104	3973836.86741917000	19686908.33420000000
186	105	1186105	3977760.68256748000	19683375.66580000000
186	106	1186106	3981684.61742362000	19679842.33420000000
192	101	1192101	3940867.49999999000	19673965.00000000000
192	102	1192102	3944791.35000000000	19670432.00000000000
192	103	1192103	3948715.10000000000	19666899.00000000000
192	104	1192104	3952638.85000000000	19663366.00000000000
192	105	1192105	3956562.60000000000	19659833.00000000000
192	106	1192106	3960486.49999999000	19656300.00000000000
192	107	1192107	3964410.35000000000	19652767.00000000000
192	108	1192108	3968334.10000000000	19649234.00000000000
192	109	1192109	3972257.85000000000	19645701.00000000000
179	100	1179100	3982872.85000000000	19728507.00000000000
180	99	1180099	3975416.01743251000	19728116.33420000000
180	100	1180100	3979339.83258082000	19724583.66580000000
180	101	1180101	3983263.61742362000	19721050.33420000000
181	99	1181099	3971882.99999999000	19724193.00000000000
181	100	1181100	3975806.85000000000	19720660.00000000000
181	101	1181101	3979730.60000000000	19717127.00000000000
182	99	1182099	3968349.99999999000	19720269.00000000000
182	100	1182100	3972273.85000000000	19716736.00000000000
182	101	1182101	3976197.60000000000	19713203.00000000000
182	102	1182102	3980121.35000000000	19709670.00000000000
183	99	1183099	3964816.94986338000	19716345.00260000000
183	100	1183100	3968740.75013735000	19712811.99740000000
183	101	1183101	3972664.60000000000	19709279.00000000000
183	102	1183102	3976588.35000000000	19705746.00000000000
183	103	1183103	3980512.10000000000	19702213.00000000000
183	104	1183104	3984435.99999999000	19698680.00000000000
183	105	1183105	3988359.85000000000	19695147.00000000000
184	99	1184099	3961283.85000000000	19712421.00000000000
184	100	1184100	3965207.70000000000	19708888.00000000000
184	101	1184101	3969131.60000000000	19705355.00000000000
184	102	1184102	3973055.35000000000	19701822.00000000000
184	103	1184103	3976979.10000000000	19698289.00000000000
184	104	1184104	3980902.99999999000	19694756.00000000000
184	105	1184105	3984826.85000000000	19691223.00000000000
184	106	1184106	3988750.60000000000	19687690.00000000000
185	100	1185100	3961674.71743252000	19704964.33420000000
185	101	1185101	3965598.60000000000	19701431.00000000000
185	102	1185102	3969522.35000000000	19697898.00000000000
185	103	1185103	3973446.10000000000	19694365.00000000000

Management Zone 3 – Cell Identification Continued

ROW	COL	CELL_ID	CentroidX	CentroidY
185	104	1185104	3977369.94986264000	19690832.00260000000
185	105	1185105	3981293.75013661000	19687298.99740000000
185	106	1185106	3985217.60000000000	19683766.00000000000
187	100	1187100	3954608.70000000000	19697117.00000000000
187	101	1187101	3958532.60000000000	19693584.00000000000
187	102	1187102	3962456.35000000000	19690051.00000000000
187	103	1187103	3966380.10000000000	19686518.00000000000
187	104	1187104	3970303.85000000000	19682985.00000000000
187	105	1187105	3974227.70000000000	19679452.00000000000
187	106	1187106	3978151.60000000000	19675919.00000000000
187	107	1187107	3982075.35000000000	19672386.00000000000
187	108	1187108	3985999.10000000000	19668853.00000000000
187	109	1187109	3989922.99999999000	19665320.00000000000
188	100	1188100	3951075.66657556000	19693193.00170000000
188	101	1188101	3954999.53342492000	19689659.99830000000
188	102	1188102	3958923.35000000000	19686127.00000000000
188	103	1188103	3962847.10000000000	19682594.00000000000
188	104	1188104	3966770.85000000000	19679061.00000000000
188	105	1188105	3970694.70000000000	19675528.00000000000
188	106	1188106	3974618.60000000000	19671995.00000000000
188	107	1188107	3978542.35000000000	19668462.00000000000
188	108	1188108	3982466.10000000000	19664929.00000000000
188	109	1188109	3986389.94986264000	19661396.00260000000
189	101	1189101	3951466.49999999000	19685736.00000000000
189	102	1189102	3955390.35000000000	19682203.00000000000
189	103	1189103	3959314.10000000000	19678670.00000000000
189	104	1189104	3963237.85000000000	19675137.00000000000
189	105	1189105	3967161.70000000000	19671604.00000000000
189	106	1189106	3971085.60000000000	19668071.00000000000
189	107	1189107	3975009.35000000000	19664538.00000000000
189	108	1189108	3978933.10000000000	19661005.00000000000
189	109	1189109	3982856.85000000000	19657472.00000000000
189	110	1189110	3986780.70000000000	19653939.00000000000
190	101	1190101	3947933.49999999000	19681812.00000000000
190	102	1190102	3951857.35000000000	19678279.00000000000
190	103	1190103	3955781.10000000000	19674746.00000000000
190	104	1190104	3959704.85000000000	19671213.00000000000
190	105	1190105	3963628.66657507000	19667680.00170000000
190	106	1190106	3967552.53342443000	19664146.99830000000
190	107	1190107	3971476.35000000000	19660614.00000000000
190	108	1190108	3975400.10000000000	19657081.00000000000
190	109	1190109	3979323.85000000000	19653548.00000000000
190	110	1190110	3983247.70000000000	19650015.00000000000
190	111	1190111	3987171.60000000000	19646482.00000000000
191	101	1191101	3944400.51743251000	19677888.33420000000
191	102	1191102	3948324.33258082000	19674355.66580000000

Management Zone 3 – Cell Identification Continued

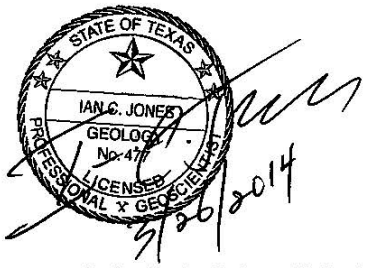
ROW	COL	CELL_ID	CentroidX	CentroidY
191	103	1191103	3952248.11742362000	19670822.33420000000
191	104	1191104	3956171.83258082000	19667289.66580000000
191	105	1191105	3960095.61742362000	19663756.33420000000
191	106	1191106	3964019.48256748000	19660223.66580000000
191	107	1191107	3967943.36741917000	19656690.33420000000
191	108	1191108	3971867.08257637000	19653157.66580000000
191	109	1191109	3975790.86741917000	19649624.33420000000
191	110	1191110	3979714.68256748000	19646091.66580000000
191	111	1191111	3983638.61742362000	19642558.33420000000
191	112	1191112	3987562.33258082000	19639025.66580000000
193	102	1193102	3941258.35000000000	19666508.00000000000
193	103	1193103	3945182.10000000000	19662975.00000000000
193	104	1193104	3949105.85000000000	19659442.00000000000
193	105	1193105	3953029.60000000000	19655909.00000000000
193	106	1193106	3956953.49999999000	19652376.00000000000
193	107	1193107	3960877.35000000000	19648843.00000000000
193	108	1193108	3964801.10000000000	19645310.00000000000
194	102	1194102	3937725.25013735000	19662583.99740000000
194	103	1194103	3941649.10000000000	19659051.00000000000
194	104	1194104	3945572.85000000000	19655518.00000000000
194	105	1194105	3949496.60000000000	19651985.00000000000
194	106	1194106	3953420.49999999000	19648452.00000000000
194	107	1194107	3957344.35000000000	19644919.00000000000
196	102	1196102	3930659.21743252000	19654736.33420000000
196	103	1196103	3934583.08257637000	19651203.66580000000
196	104	1196104	3938506.86741917000	19647670.33420000000
196	105	1196105	3942430.58257637000	19644137.66580000000
195	102	1195102	3934192.20000000000	19658660.00000000000
195	103	1195103	3938116.10000000000	19655127.00000000000
195	104	1195104	3942039.85000000000	19651594.00000000000
195	105	1195105	3945963.60000000000	19648061.00000000000
195	106	1195106	3949887.49999999000	19644528.00000000000

Appendix H

GAM Run 14-010

GAM Run 14-010: Middle Pecos Groundwater Conservation District Management Plan

by Ian C. Jones, Ph.D., P.G.
Texas Water Development Board
Groundwater Resources Division
Groundwater Availability Modeling Section
(512) 463-6641
March 26, 2014



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GAM Run 14-010: Middle Pecos Groundwater Conservation District Management Plan

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EXECUTIVE SUMMARY:

Texas State Water Code, Section 36.1071, Subsection (h), states that, in developing its groundwater management plan, groundwater conservation districts shall use groundwater availability modeling information provided by the executive administrator of the Texas Water Development Board (TWDB) in conjunction with any available site-specific information provided by the district for review and comment to the executive administrator. Information derived from groundwater availability models that shall be included in the groundwater management plan includes:

- the annual amount of recharge from precipitation to the groundwater resources within the district, if any;
- for each aquifer within the district, the annual volume of water that discharges from the aquifer to springs and any surface water bodies, including lakes, streams, and rivers; and
- the annual volume of flow into and out of the district within each aquifer and between aquifers in the district.

This report—Part 2 of a two-part package of information from the TWDB to the Middle Pecos Groundwater Conservation District—fulfills the requirements noted above. Part 1 of the two-part package is the Historical Water Use/State Water Plan data report. The district will receive the Historical Water Use/State Water Plan data report from the TWDB Groundwater Technical Assistance Section. Questions about the data report can be directed to Mr. Stephen Allen, stephen.allen@twdb.texas.gov, (512) 463-7317.

The groundwater management plan for the Middle Pecos Groundwater Conservation District should be adopted by the district on or before September 1, 2015 and submitted to the executive administrator of the TWDB on or before October 1, 2015. The current management plan for the Middle Pecos Groundwater Conservation District expires on November 30, 2015.

This report discusses the methods, assumptions, and results from model runs using the groundwater availability models for the Dockum, Rustler, Edwards-Trinity (Plateau), and Pecos Valley aquifers. This model run replaces the results of GAM Run 08-75 (Oliver, 2009). GAM Run 14-010 meets current standards set after the release of GAM Run 08-75 including use of the official aquifer boundaries within the district rather than the entire active area of the model within the district. This GAM Run also includes results from the recently released groundwater availability model for the Rustler Aquifer (Ewing and others, 2012). Tables 1 through 4 summarize the groundwater availability model data required by statute, and Figures 1 through 3 show the area of the models from which the values in the tables were extracted. If after review of the figures, the Middle Pecos Groundwater Conservation District determines that the district boundaries used in the assessment do not reflect current conditions, please notify the TWDB immediately.

Although the Capitan Reef Complex Aquifer occurs within the Middle Pecos Groundwater Conservation District, a groundwater availability model for this aquifer has not been developed at this time. If the district would like information for the Capitan Reef Complex Aquifer, they may request it from the Groundwater Technical Assistance Section of the TWDB.

METHODS:

Groundwater models for the Pecos Valley and Edwards-Trinity (Plateau) aquifers, the Rustler and the Dockum aquifers were run for this analysis. Water budgets for the transient model period (1980 through 1999) were extracted using ZONEBUDGET version 3.01 (Harbaugh, 1990) and the average annual water budget values for recharge, surface water outflow, inflow to the district, outflow from the district, net inter-aquifer flow (upper), and net inter-aquifer flow (lower) for the portions of the aquifers located within the district are summarized in this report. The estimated net annual volume of flow between the Pecos Valley and Edwards-Trinity (Plateau) aquifers in the district was calculated as the net lateral flow in the Pecos Valley Aquifer of the Middle Pecos Groundwater Conservation District. This estimate is based

on the assumption that all groundwater flow is assigned to the Pecos Valley Aquifer where the Pecos Valley and Edwards-Trinity (Plateau) aquifers overlap.

PARAMETERS AND ASSUMPTIONS:

Edwards-Trinity (Plateau) and Pecos Valley Aquifers

- We used version 1.01 of the groundwater availability model for the Edwards-Trinity (Plateau) and Pecos Valley aquifers. See Anaya and Jones (2009) for assumptions and limitations of this model.
- The Edwards-Trinity (Plateau) and Pecos Valley aquifers model includes two layers representing the Pecos Valley alluvium and Edwards Group and equivalent limestone hydrostratigraphic units (Layer 1) and the undifferentiated Trinity Group hydrostratigraphic units (Layer 2) in the district.
- The model was run with MODFLOW-96 (Harbaugh and McDonald, 1996).

Dockum Aquifer

- We used version 1.01 of the groundwater availability model for the Dockum Aquifer. See Ewing and others (2008) for assumptions and limitations of the groundwater availability model.
- The model includes three layers representing: geologic units overlying the Dockum Aquifer including the Ogallala, Edwards-Trinity (High Plains), Edwards-Trinity (Plateau), Pecos Valley, and Rita Blanca aquifers (Layer 1), the upper portion of the Dockum Aquifer (Layer 2), and the lower portion of the Dockum Aquifer (Layer 3).
- The aquifers represented in Layer 1 of the groundwater availability model are only included in the model for the purpose of more accurately representing flow between these units and the Dockum Aquifer. This model is not intended to explicitly simulate flow in these overlying units (Ewing and others, 2008).
- The model was run with MODFLOW-2000 (Harbaugh and others, 2000).

Rustler Aquifer

- We used version 1.01 of the groundwater availability model for the Rustler Aquifer Groundwater Availability Model (Ewing and Others 2012). See Ewing and others (2012) for assumptions and limitations of the groundwater availability model.
- The model has two active layers representing the Dewey Lake Formation and Dockum Aquifer (Layer 1) and the Rustler Aquifer (Layer 2). Thus, Model Layer 2 was used for the management plan analysis. The model was run with MODFLOW-2000 (Harbaugh and Others, 2000).

RESULTS:

A groundwater budget summarizes the amount of water entering and leaving the aquifer according to the groundwater availability model. Selected components were extracted from the groundwater budget for the aquifers located within the district and averaged over the duration of the calibration and verification portion of the model runs in the district, as shown in tables 1 through 4. The components of the modified budget shown in tables 1 through 4 include:

Precipitation recharge—The areally distributed recharge sourced from precipitation falling on the outcrop areas of the aquifers (where the aquifer is exposed at land surface) within the district.

Surface water outflow—The total water discharging from the aquifer (outflow) to surface water features such as streams, reservoirs, and drains (springs).

Flow into and out of district—The lateral flow within the aquifer between the district and adjacent counties.

Flow between aquifers—The vertical flow between aquifers or confining units. This flow is controlled by the relative water levels in each aquifer or confining unit and aquifer properties of each aquifer or confining unit that define the amount of leakage that occurs. "Inflow" to an aquifer from an overlying or underlying aquifer will always equal the "Outflow" from the other aquifer.

The information needed for the District's management plan is summarized in tables 1 through 4. It is important to note that sub-regional water budgets are not exact. This is due to the size of the model cells and the approach used to extract data from the

model. To avoid double accounting, a model cell that straddles a political boundary, such as district or county boundaries, is assigned to one side of the boundary based on the location of the centroid of the model cell. For example, if a cell contains two counties, the cell is assigned to the county where the centroid of the cell is located (see figures 1 through 3).

TABLE 1: SUMMARIZED INFORMATION FOR THE PECOS VALLEY AQUIFER THAT IS NEEDED FOR THE MIDDLE PECOS GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	*Aquifer or confining unit*	*Results*
Estimated annual amount of recharge from precipitation to the district	Pecos Valley Aquifer	43,954
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Pecos Valley Aquifer	50,141
Estimated annual volume of flow into the district within each aquifer in the district	Pecos Valley Aquifer	10,103
Estimated annual volume of flow out of the district within each aquifer in the district	Pecos Valley Aquifer	15,240
Estimated net annual volume of flow between each aquifer in the district	To the Pecos Valley Aquifer from the Edwards-Trinity (Plateau) Aquifer	55,363
	From the Pecos Valley Aquifer to the Dockum Aquifer	432

TABLE 2: SUMMARIZED INFORMATION FOR THE EDWARD-TRINITY (PLATEAU) AQUIFER THAT IS NEEDED FOR THE MIDDLE PECOS GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	*Aquifer or confining unit*	*Results*
Estimated annual amount of recharge from precipitation to the district	Edwards-Trinity (Plateau) Aquifer	137,688
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Edwards-Trinity (Plateau) Aquifer	142
Estimated annual volume of flow into the district within each aquifer in the district	Edwards-Trinity (Plateau) Aquifer	26,435
Estimated annual volume of flow out of the district within each aquifer in the district	Edwards-Trinity (Plateau) Aquifer	75,989
Estimated net annual volume of flow between each aquifer in the district	From the Edwards-Trinity (Plateau) Aquifer to the Pecos Valley Aquifer	55,363
	From the Edwards-Trinity (Plateau) Aquifer to the Dockum Aquifer	148

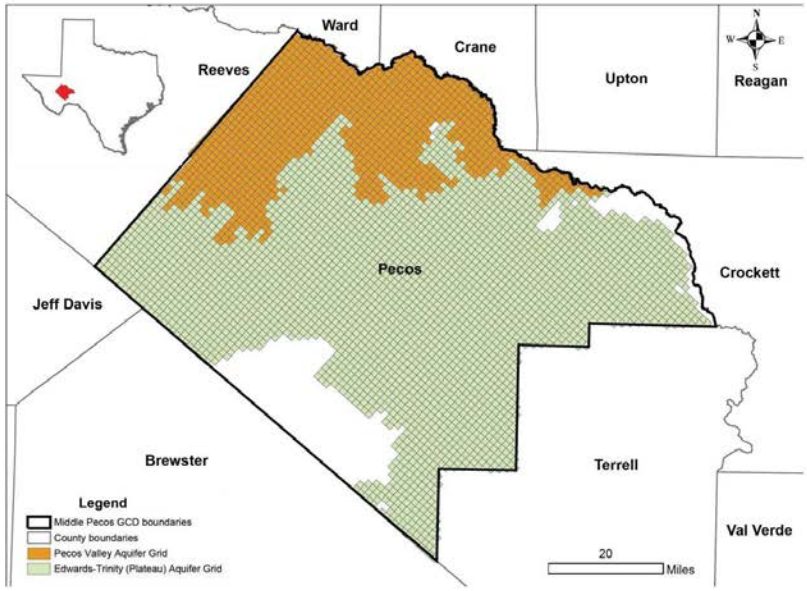

FIGURE 1: AREA OF THE GROUNDWATER MODEL FOR THE EDWARDS-TRINITY (PLATEAU) AND PECOS VALLEY AQUIFERS FROM WHICH THE INFORMATION IN TABLES 1 AND 2 WERE EXTRACTED (THE AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).

TABLE 3: SUMMARIZED INFORMATION FOR THE DOCKUM AQUIFER THAT IS NEEDED FOR THE MIDDLE PECOS GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	*Aquifer or confining unit*	*Results*
Estimated annual amount of recharge from precipitation to the district	Dockum Aquifer	0
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Dockum Aquifer	0
Estimated annual volume of flow into the district within each aquifer in the district	Dockum Aquifer	561
Estimated annual volume of flow out of the district within each aquifer in the district	Dockum Aquifer	299
Estimated net annual volume of flow between each aquifer in the district	To the Dockum Aquifer from the Pecos Valley Aquifer	432
	To the Dockum Aquifer from the Edwards-Trinity (Plateau) Aquifer	148
	To the Dockum Aquifer from the Rustler Aquifer	514

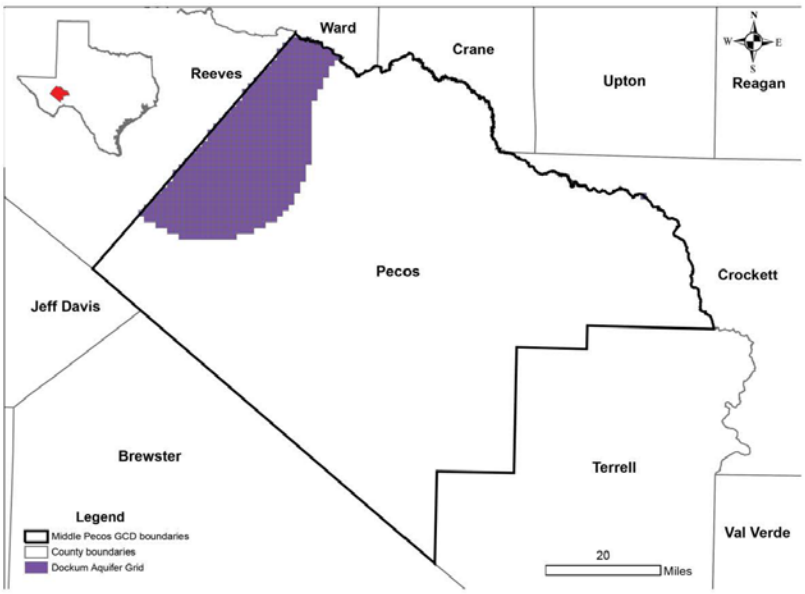

FIGURE 2: AREA OF THE GROUNDWATER MODEL FOR THE DOCKUM AQUIFER FROM WHICH THE INFORMATION IN TABLE 3 WAS EXTRACTED (THE AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).

TABLE 4: SUMMARIZED INFORMATION FOR THE RUSTLER AQUIFER THAT IS NEEDED FOR THE MIDDLE PECOS GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	*Aquifer or confining unit*	*Results*
Estimated annual amount of recharge from precipitation to the district	Rustler Aquifer	0
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Rustler Aquifer	0
Estimated annual volume of flow into the district within each aquifer in the district	Rustler Aquifer	3,013
Estimated annual volume of flow out of the district within each aquifer in the district	Rustler Aquifer	2,361
Estimated net annual volume of flow between each aquifer in the district	From the Rustler Aquifer to the Dockum Aquifer	514

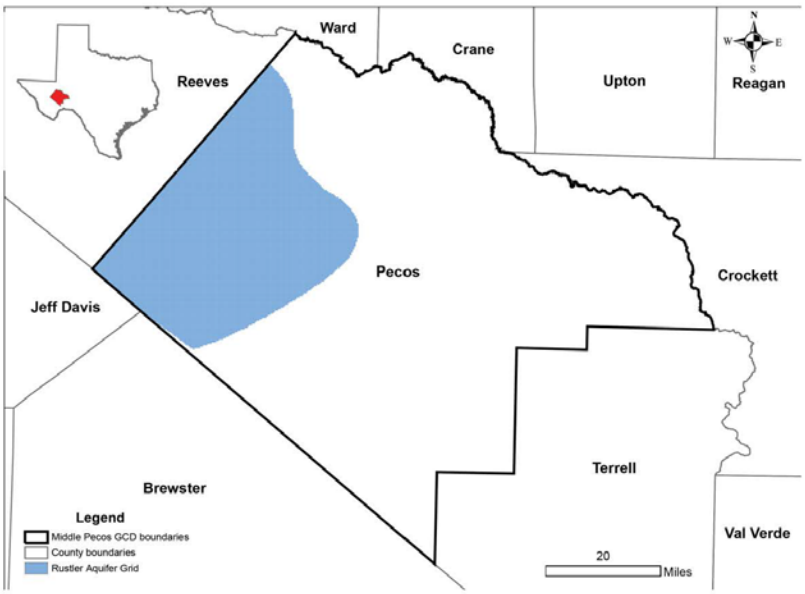

FIGURE 3: AREA OF THE GROUNDWATER MODEL FOR THE RUSTLER AQUIFER FROM WHICH THE INFORMATION IN TABLE 4 WAS EXTRACTED (THE AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).

LIMITATIONS

The groundwater model(s) used in completing this analysis is the best available scientific tool that can be used to meet the stated objective(s). To the extent that this analysis will be used for planning purposes and/or regulatory purposes related to pumping in the past and into the future, it is important to recognize the assumptions and limitations associated with the use of the results. In reviewing the use of models in environmental regulatory decision making, the National Research Council (2007) noted:

> "Models will always be constrained by computational limitations, assumptions, and knowledge gaps. They can best be viewed as tools to help inform decisions rather than as machines to generate truth or make decisions. Scientific advances will never make it possible to build a perfect model that accounts for every aspect of reality or to prove that a given model is correct in all respects for a particular regulatory application. These characteristics make evaluation of a regulatory model more complex than solely a comparison of measurement data with model results."

A key aspect of using the groundwater model to evaluate historic groundwater flow conditions includes the assumptions about the location in the aquifer where historic pumping was placed. Understanding the amount and location of historic pumping is as important as evaluating the volume of groundwater flow into and out of the district, between aquifers within the district (as applicable), interactions with surface water (as applicable), recharge to the aquifer system (as applicable), and other metrics that describe the impacts of that pumping. In addition, assumptions regarding precipitation, recharge, and streamflow are specific to a particular historic time period.

Because the application of the groundwater model was designed to address regional scale questions, the results are most effective on a regional scale. The TWDB makes no warranties or representations relating to the actual conditions of any aquifer at a particular location or at a particular time.

It is important for groundwater conservation districts to monitor groundwater pumping and overall conditions of the aquifer. Because of the limitations of the groundwater model and the assumptions in this analysis, it is important that the groundwater conservation districts work with the TWDB to refine this analysis in the future given the reality of how the aquifer responds to the actual amount and location of pumping now and in the future. Historic precipitation patterns also need

to be placed in context as future climatic conditions, such as dry and wet year precipitation patterns, may differ and affect groundwater flow conditions.

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