

MANAGEMENT PLAN

PECAN VALLEY

GROUNDWATER CONSERVATION DISTRICT

*Adopted 2/17/09*

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## **I. DISTRICT MISSION AND GOAL**

The Pecan Valley Groundwater Conservation District (District) provides for the conservation, preservation, protection, recharging, and prevention of waste of the groundwater within the defined boundary of the District, through sound management strategies, while protecting private property rights.

The Pecan Valley Groundwater Conservation District will pursue this goal through the gathering of scientific data regarding the hydrological characteristics of the Chicot, Evangeline and Jasper aquifers that underlie DeWitt County, and the adoption and enforcement of fair and appropriate rules governing well spacing and production and use of the groundwater, and through a monitoring program to manage groundwater withdrawal within the district to a sustainable yield of the aquifer.

## **II. PURPOSE OF THE MANAGEMENT PLAN**

Senate Bill 1 (SB 1), enacted by the 75th Texas Legislature in 1997, and Senate Bill 2 (SB 2), enacted by the 77th Texas Legislature in 2001, established a comprehensive state-wide water resource planning process and the actions necessary for groundwater conservation districts to manage and conserve the groundwater resources of the state of Texas. These bills require all groundwater conservation districts to develop a management plan which defines the groundwater needs and groundwater supplies within each district and the goals each district has set to achieve its mission. In addition, the 79th Texas Legislature enacted HB 1763 in 2005 that requires joint planning among districts that are in the same Groundwater Management Area (GMA). These districts must jointly agree upon and establish the desired future conditions (DFC) of the aquifers within their respective GMAs. Through this process, the districts will submit the DFC conditions to the executive administrator of the Texas Water Development Board (TWDB), who will provide each district in the GMA with the amount of Managed Available Groundwater (MAG) for each district. The MAG will be based on the desired future conditions jointly established for each aquifer within the respective GMA divisions.

Technical information, such as the desired conditions of the aquifers within the District's jurisdiction and the amount of managed available groundwater from such aquifers is required by statute to be included in the District's management plan and will guide the District's regulatory and management policies. This management plan is intended to satisfy the requirements of SB 1, SB 2, HB 1763, the statutory requirements of Texas Water Code (TWC) Chapter 36, and the rules and requirements of the TWDB.

## **III. DISTRICT INFORMATION**

### **III.-A FORMATION AND AUTHORITY**

The District was created by the citizens of DeWitt County through a confirmation election on November 6, 2001, and is charged with the duty of managing these resources with the rights and responsibilities specified in its enabling legislation, through provisions of Chapter 36 Texas Water Code, and the District Rules and Management Plan. The District is governed by a five member board of directors with one director elected from each DeWitt County Commissioners precinct and one at-large position. Director terms are staggered on a two-year election rotation held in odd numbered years. Responsibilities and powers of the District are outlined in Chapter 36 of the Texas Water Code and 31 Texas Administrative Code (TAC) Chapter 356. The District has rule-making authority to implement its policies and procedures to manage the groundwater resources of DeWitt County to meet statutory requirements.

### III.-B LOCATION AND EXTENT

The boundaries of the Pecan Valley Groundwater Conservation District (PVGCD) are coterminous with those of DeWitt County (Figure 1). The District is within the physical confines of DeWitt County and is bounded on the south and southeast by Goliad and Victoria Counties, on the northeast by Lavaca County, on the north by Gonzales County, and on the west by Karnes County.

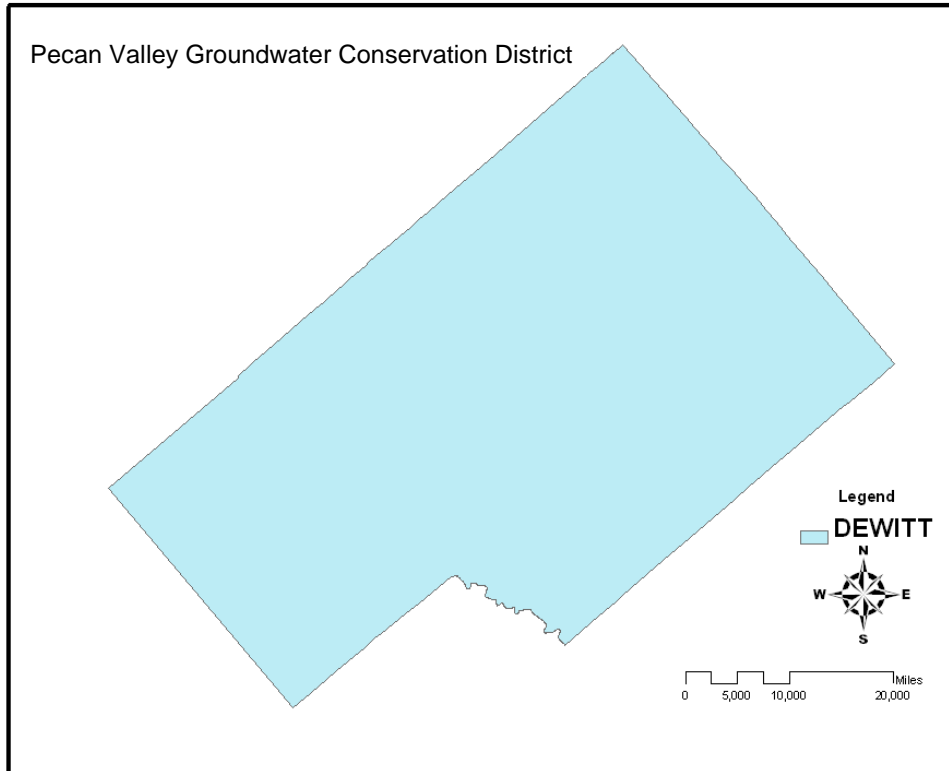
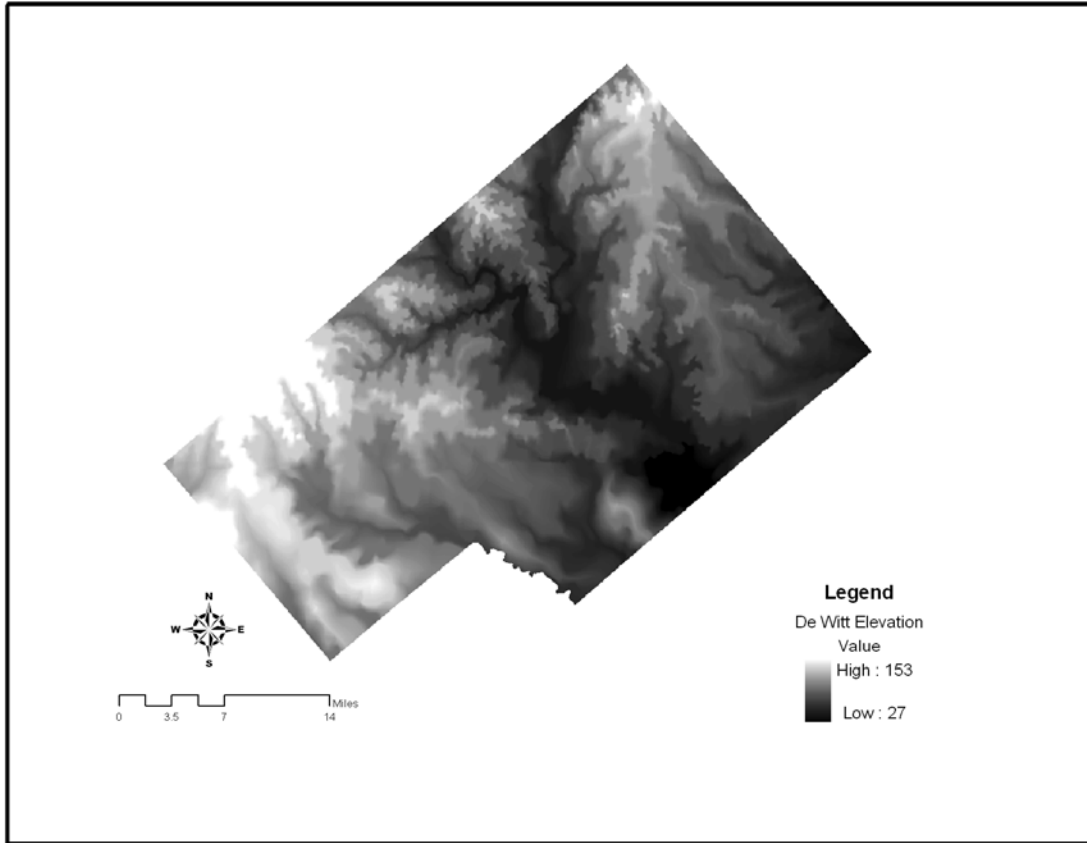


Figure 1: Pecan Valley Groundwater Conservation District Boundaries

The district lies in the West Gulf Coastal Plain of South-Central Texas, spans 910 square miles and is mostly rural. The population of the district according to the most recent census is estimated to be close to 20,500 and is expected to grow due to its proximity to urban centers such as San Antonio (~ 80 miles) and Victoria (~ 30 miles).

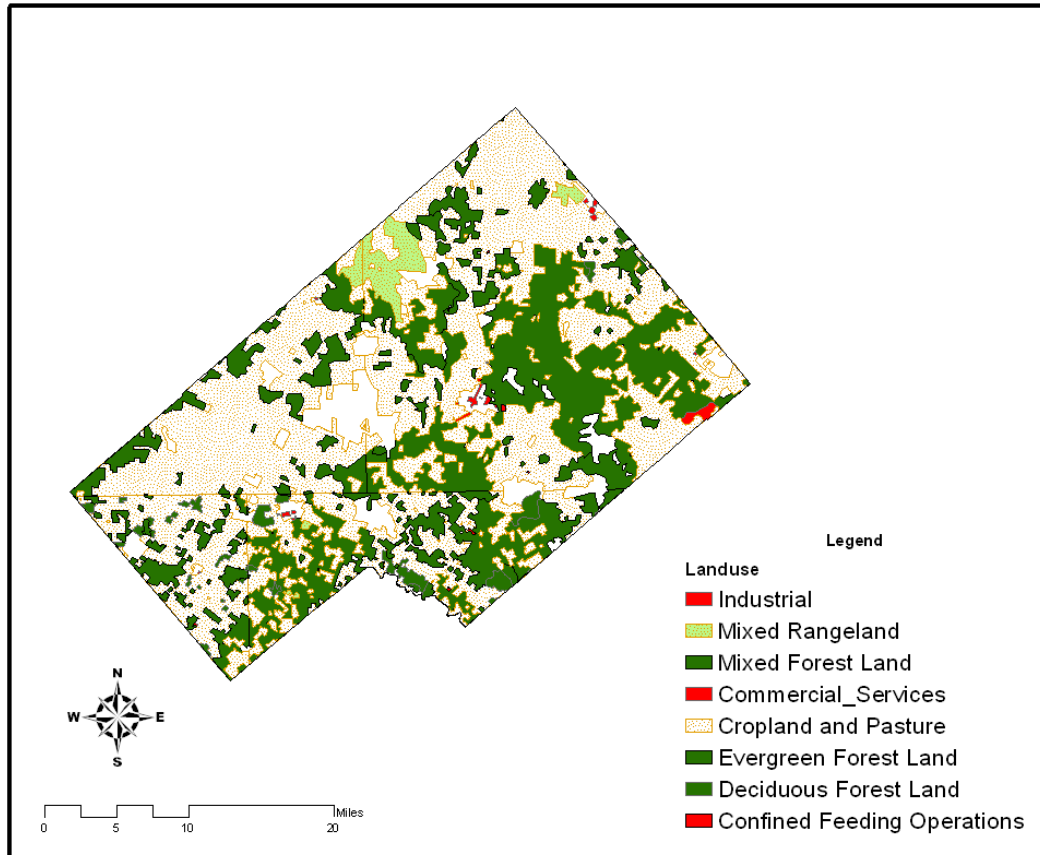
The land surface of the DeWitt County is gently rolling except for some portions in the east which tend to be relatively flat. The elevations range from nearly 130 ft above mean sea level (MSL) to about 27 ft MSL (Figure 2). (Uddameri, 2008)



**Figure 2: Topography of the DeWitt County (Note all dimensions in feet and measured with respect to the mean sea level)**

DeWitt County has a sub-humid climate coupled with mild winters and hot summers. The annual precipitation in Cuero averages around 33 inches. However, rainfall is erratic and is known to range between nearly 13 inches to close to 60 inches. Rainfall patterns show a decreasing trend along the western sections of the county. The average annual temperature is close to 70° F and the average monthly temperatures can range between 50° F to 85° F. However, temperatures close to 110° F and as low as 10° F have been reported.

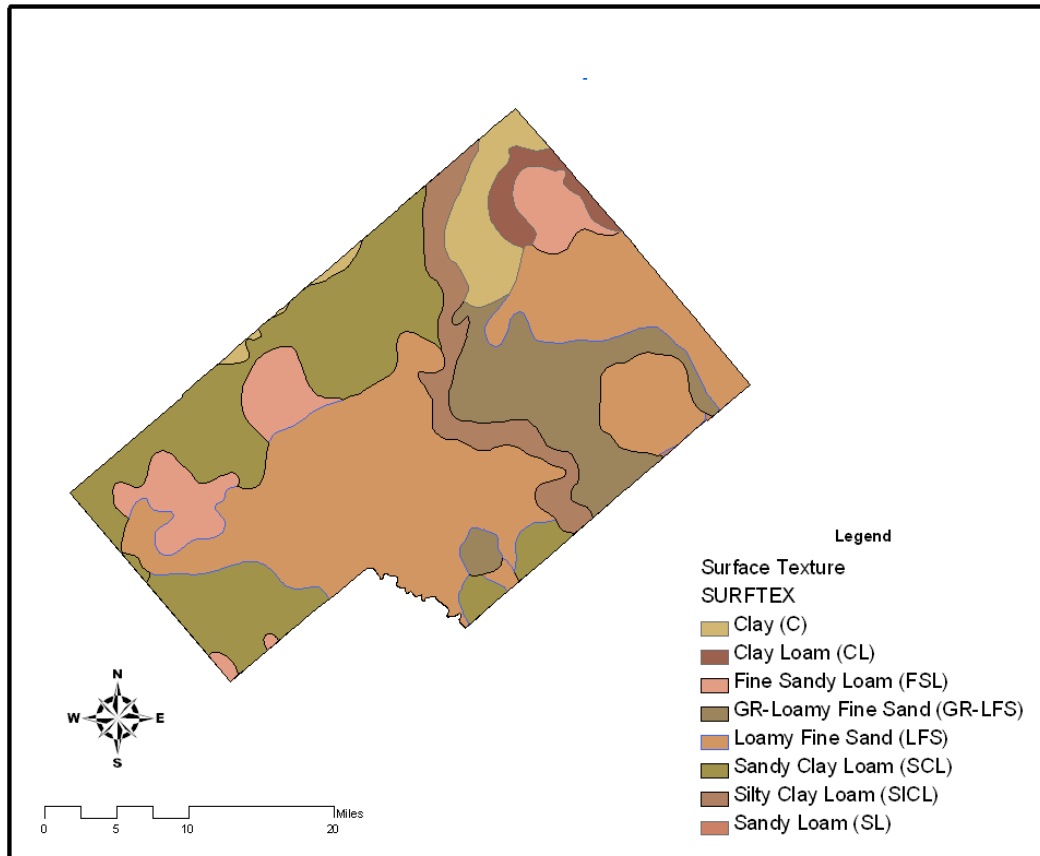
DeWitt county, (and as such PVGCD) is mostly rural and the economy is dominated by agriculture, livestock management, tourism, oil and gas as well as other mining operations. There is also some light industrial activity within the district. (Uddameri, 2008)



**Figure 3: Land Use Characteristics within Pecan Valley Groundwater Conservation District**

As can be seen from Figure 3, croplands and pastures are dominant in the northwestern sections of the county. (Uddameri, 2008)

The surface soils of the district are dominated by sandy loams (see Figure 4)



**Figure 4: Surface Soil Textural Characteristics in PVGCD (Based on USDA STATSGO data)**

The district is overlain by sandy clay loam along the western boundaries and loamy fine sands in the central portions of the district. These surface soil characteristics coupled with scant rainfall indicate that recharge to the underlying aquifers may not be significant. (Uddameri, 2008)

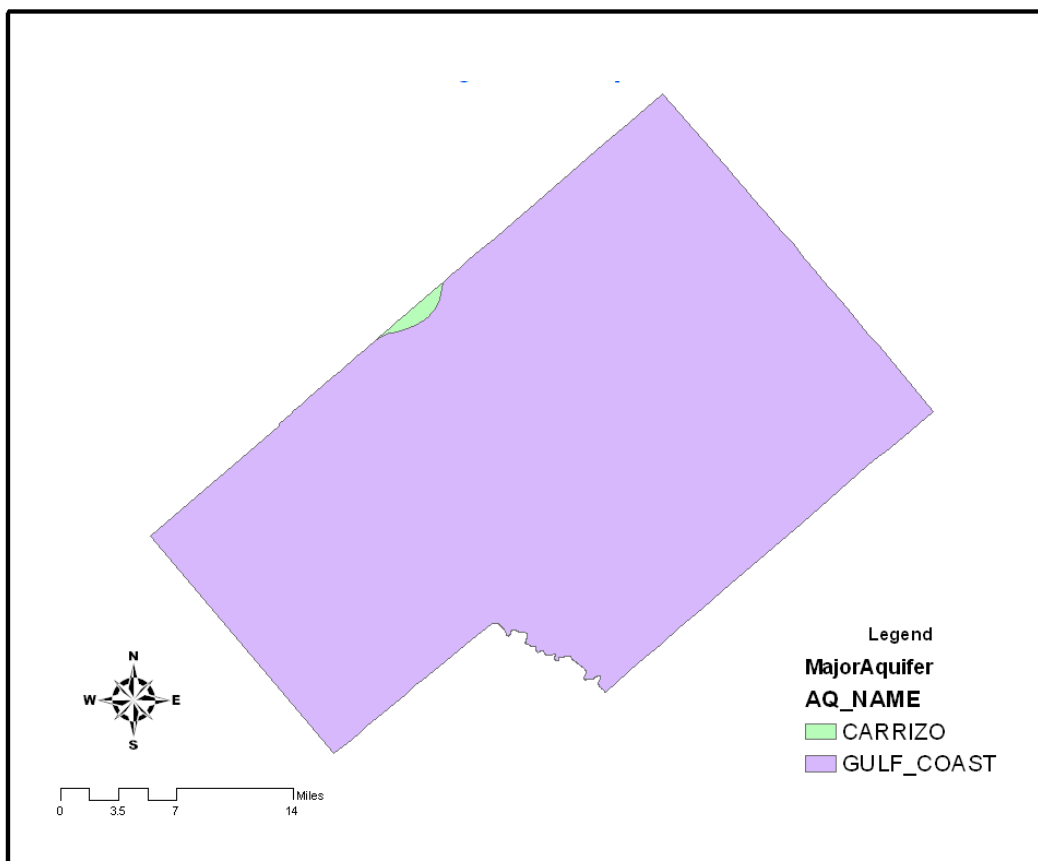
#### **IV. GROUNDWATER RESOURCES**

The deeper aquifer formations within the district are from the Tertiary era while the shallower formations are from the more recent Quaternary age. The major stratigraphic units include the Lissie formation, Goliad sands, Oakville sandstones and the Catahoula tuff. Some sections of the district especially along the Guadalupe River are overlain by alluvium deposits which are known to yield small quantities of water for domestic and livestock use. (Uddameri, 2008)

**TABLE 1**

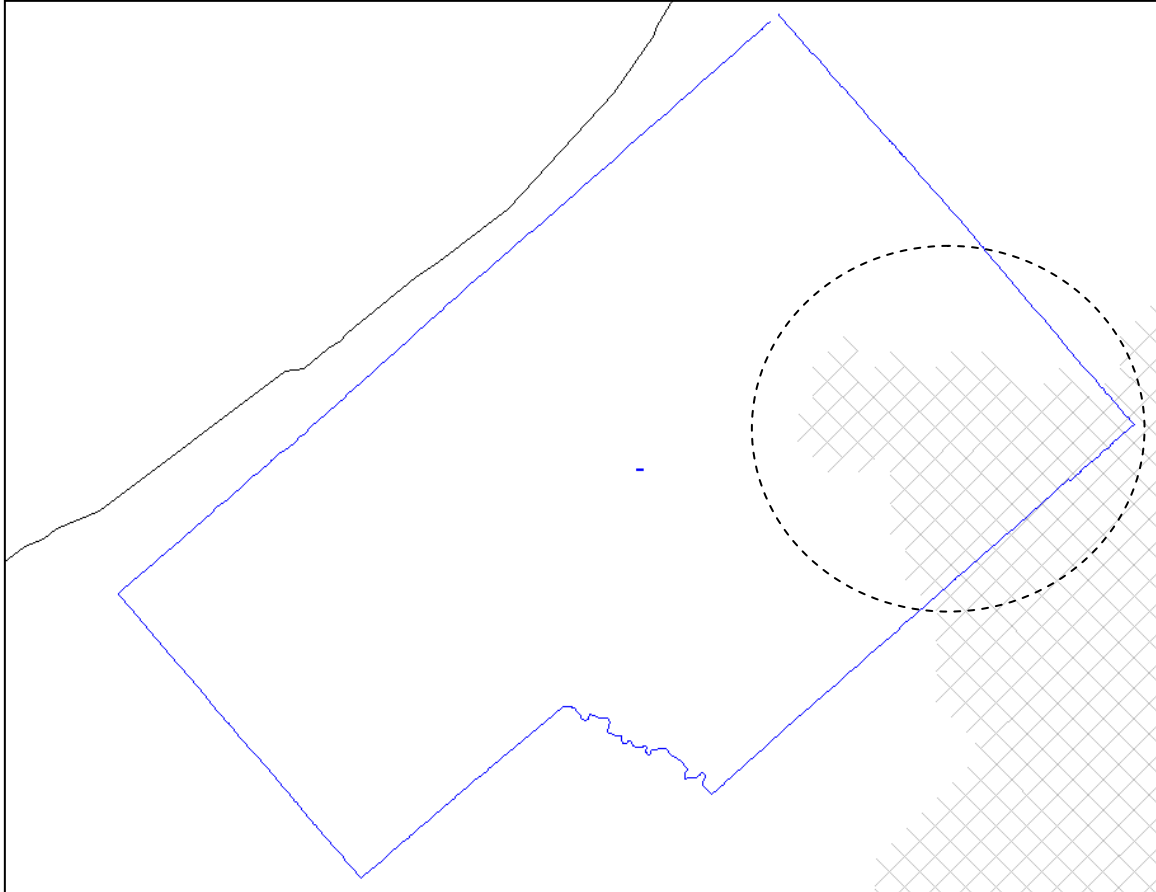
System	Series	Stratigraphic Unit	Average Thickness in feet	Aquifer Formation
Quaternary	Recent	Alluvium	48	Alluvium
	Pleistocene	Lissie Formation	30+	Chicot
Tertiary	Pliocene	Goliad Sand	500	Evangeline
	Miocene	Lagarto Clay	1,500	Burkville/Evangeline
	Miocene	Oakville Sandstone	950+	Jasper
	Miocene	Catahoula Tuff	1,700+	Catahoula
	Oligocene	Frio Clay	200	
	Eocene	Jackson Group	1,700+	

From a regional stratigraphic standpoint, the major aquifers in the district include the Gulf Coast Aquifer and the Carrizo Wilcox Aquifer. While the Carrizo Wilcox aquifer does not outcrop within the district, it is present underneath the Gulf Coast Aquifer. (Uddameri, 2008)



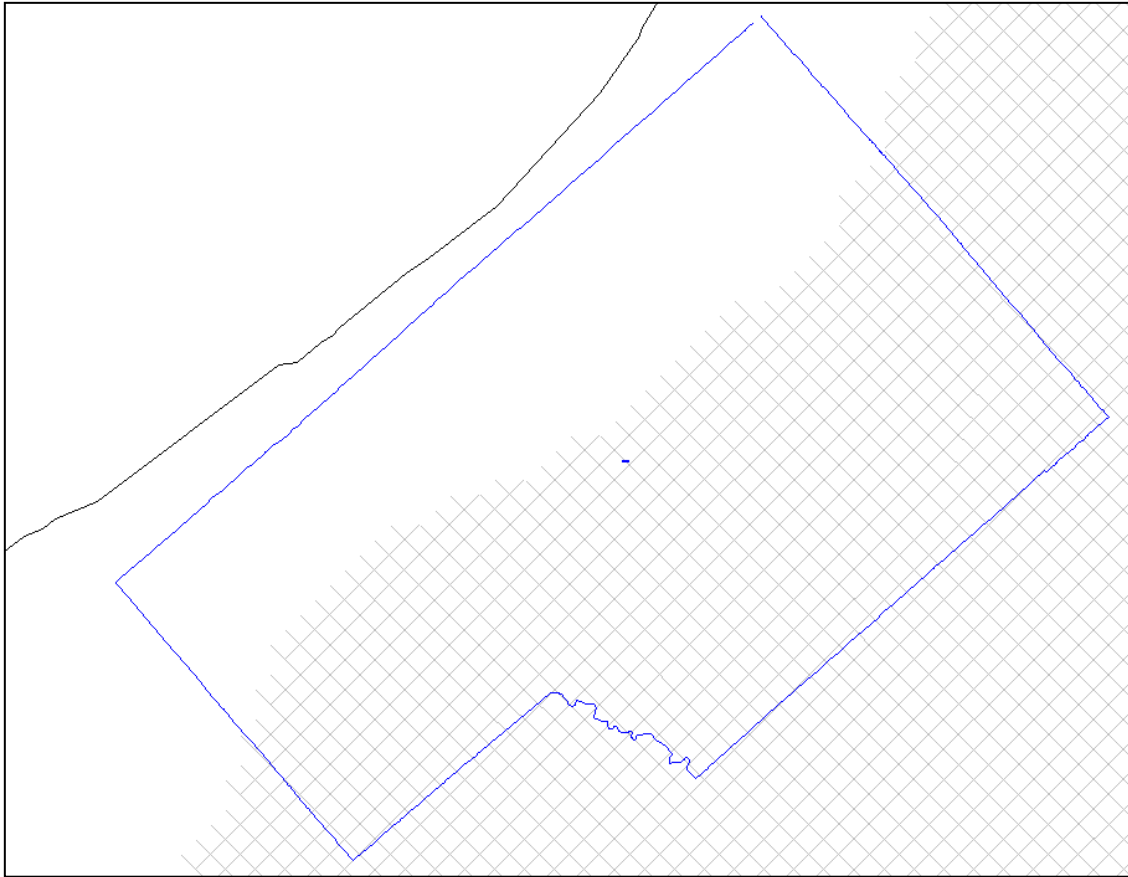
**Figure 5: Major Aquifer Formations within the District**

The Gulf Coast Aquifer is known to comprise four aquifer formations, namely – Chicot, Evangeline, Burkeville confining layer and the Jasper formation. The Gulf Coast aquifer is predominantly used within the district. The geographic locations of these aquifer formations are depicted below: (Uddameri, 2008)



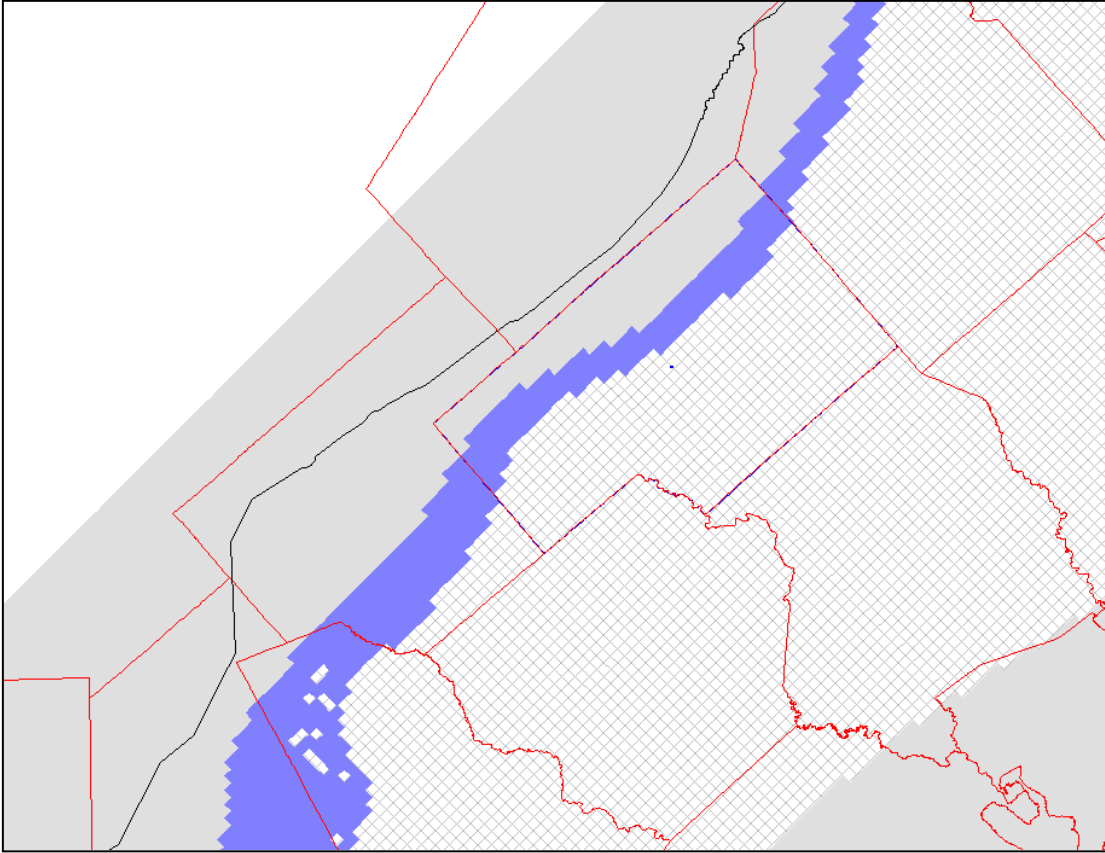
**Figure 6: Chicot Aquifer Formation of the Gulf Coast Aquifer**

The Chicot formation outcrops along the South Eastern sections of the district. It occupies a very small portion of the district and not very prolific as such has limited use. (Uddameri, 2008)



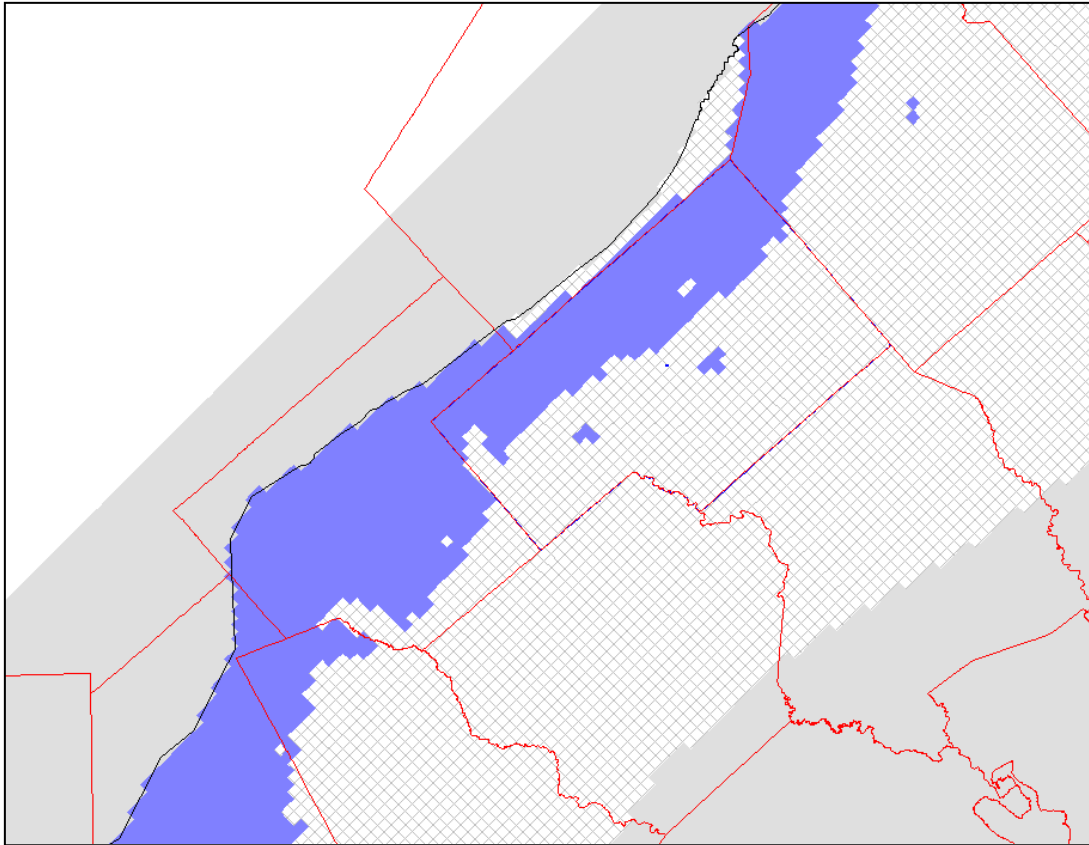
**Figure 7: Evangeline Aquifer Formation of the Gulf Coast Aquifer**

The Evangeline aquifer formation extends along the eastern sections of the district and can be found until roughly the middle of the district. The formation is unconfined for the most part, except when the Chicot formation is present. Sections of this formation are also referred to as Goliad sands and represent some of the more prolific aquifer formations within the district. (Uddameri, 2008)



**Figure 8: Burkeville Confining Layer (with usage shown in Blue)**

The Burkeville confining layer outcrops in the middle sections of the district. The layer is mostly comprised of clays (sometimes locally referred to as Lagarto clays) and as such not very prolific. (Uddameri, 2008)



**Figure 9: Jasper Aquifer Formation (with usage shown in blue)**

The Jasper aquifer formation outcrops along the western sections of the district, but exists under confining conditions over the entire district. The aquifer is used extensively in the western portions where it is shallower and especially when Evangeline formation is absent. Some of the municipal wells are also located in this formation.

The Carrizo Wilcox aquifer is often envisioned to comprise of Sparta, Weches, Reklaw, Carrizo and Wilcox formations. The Southern portion of the Carrizo Wilcox Groundwater Availability Model (SCW-GAM) further sub-divides the Wilcox formation into upper Wilcox, middle Wilcox and lower Wilcox formations. All of these aquifer formations exist within the DeWitt County but are underlain by the Gulf Coast Aquifer. While the usage of this aquifer is not significant at this stage, there is potential for greater use in the future. (Uddameri, 2008)

## **V. SURFACE WATER RESOURCES**

The only surface water in DeWitt County is the Guadalupe River. According to information from the Guadalupe-Blanco River Authority, there is a supply of surface water available to meet future water demands within the District. That supply could be provided by a combination of existing and proposed run-of-river water rights, firmed up by stored water from Canyon Reservoir during periods of extreme drought. (Uddameri, 2008)

## **VI. STATEMENT OF GUIDING PRINCIPLES**

The District recognizes the vital importance of this valuable resource to all water users. The District considers all landowners to be partners with the District in the effort to protect, preserve and conserve groundwater, and to prevent waste, and recognizes landowners as the primary stewards of the groundwater resources associated with their properties. The District will work with these partners to achieve these goals for the benefit of all water users, the local economy, and the environment.

The purposes of the District are achieved through research and education programs, district-provided services, mutual cooperation of local, state, and federal agencies, mutual cooperation with non-governmental entities, and management as provided by Texas law.

The District has adopted, pursuant to TWC Chapter 36 and the provisions of this plan, rules, programs and procedures to manage groundwater withdrawals while protecting the socio-economic conditions within the District. The District's Board may consider, deliberate and weigh any factor, evidence or testimony before it that it deems necessary in making any findings and revisions to this groundwater management plan, or the District's Rules. In doing so, the District's Board may consider the following criteria:

- (i) any revision based on sound science;
- (ii) any socio-economic impact reasonably expected to occur;
- (iii) any environmental impacts;
- (iv) State policy and legislative directives; and
- (v) any other information relevant to a specific condition.

The District will continue to work in cooperation with the adjacent districts to manage and protect those groundwater resources that are shared by any or all of these counties. The District will provide public awareness and education of groundwater issues, and will stay informed of the activities of the Texas Legislature, Texas Water Planning Groups, along with the rules and orders of state agencies which may affect private ownership, use, and management of groundwater.

## **VII. CRITERIA FOR PLAN APPROVAL**

### **VII-A Planning Horizon**

The Pecan Valley GCD management plan became effective October 22, 2003, and remains in effect for ten (10) years or until a revised plan is approved, whichever ever comes first. This revised plan will become effective upon approval as administratively complete by the Texas Water Development Board, and adoption by the Pecan Valley Groundwater Conservation District Board of Directors. The planning period for this management plan is ten (10) years, but must be updated and approved every five (5) years.

### **VII-B Board Resolution**

An approved copy of the Groundwater Conservation District resolution adopting the plan is located in Appendix A

### **VII-C Plan Adoption**

Public notices documenting that the plan was adopted following appropriate public meetings and hearings are located in Appendix B

### **VII-D Coordination with Surface Water Management Entities**

Letter transmitting a copy of this plan to the Guadalupe Blanco River Authority is located in Appendix C

**VIII ESTIMATES OF TECHNICAL INFORMATION REQUIRED BY TWC §36.1071 / 31 TAC 356.5**

**VIII-A Managed available groundwater in the district based on the Desired Future Condition established under TWC 36.108—TWC § 36.1071(e)(3)(A)**

.Estimates of the managed available groundwater is obtained through the Groundwater Management Area (GMA) joint planning process. Pecan Valley Groundwater Conservation District is part of the GMA 15 which is currently in the process of developing desired future conditions that will lead to the quantitative estimates of managed available groundwater (MAG) that will be developed by the Texas Water Development Board. As such, estimates for MAG for the district are currently unavailable. Estimates previously developed by the Regional Water Planning Group (Region I) and judgments based on regional hydrogeologic characteristics indicate that the available groundwater to be around 10,000 – 15,000 ac-ft/yr (Uddameri, 2008)

**VIII-B Annual Use – 31 TAC 356.5(a)(5)(B) (Implementing TWC §36.1071(e)(3)(B))**

The historical groundwater usage in the district was obtained from Texas Water Development Board Water Use Database and summarized below. As can be seen, the groundwater use within the district is fairly steady at around 3,250 AFY. It can also be seen that groundwater is the dominant source of water within the district. (Uddameri, 2008)

**TABLE 2 – Estimated Historical Groundwater and Surface Water Use in DeWitt County (All values in Acre-Feet/Year) (Source: TWDB Water Use Survey: <http://www.twdb.state.tx.us/wushistorical/>)**

YEAR	GROUNDWATER	SURFACE WATER	TOTAL
2000	3,527	962	4,489
2001	3,100	2,059	5,159
2002	3,106	2,309	5,415
2003	3,565	1,600	5,165
2004	3,019	2,325	5,344
<b>RECENT FIVE YEARS (2000-2004)</b>	3,263	1,851	5,114
<b>HISTORIC</b>	3,713	1,777	5,490

**VIII-C ANNUAL RECHARGE FROM PRECIPITATION TO THE GROUNDWATER RESOURCES WITHIN THE DISTRICT – 31 TAC 356.5 (a)(5)(C); (Implementing TWC §36.1071(e)(3)(C))**

The shallow aquifer formations are recharged due to infiltrating water that eventually seeps below the water table. The Gulf Coast aquifer (and its sub formations) outcrop within the district and are recharged via precipitation. **The average recharge from precipitation is 9,843 Ac-ft/yr** based on water budgets carried out between the years 1981 – 1999 using the Central Gulf Coast Aquifer GAM developed by the Texas Water Development Board. This number is to be used in the management plan per state of Texas statutes. (Uddameri)

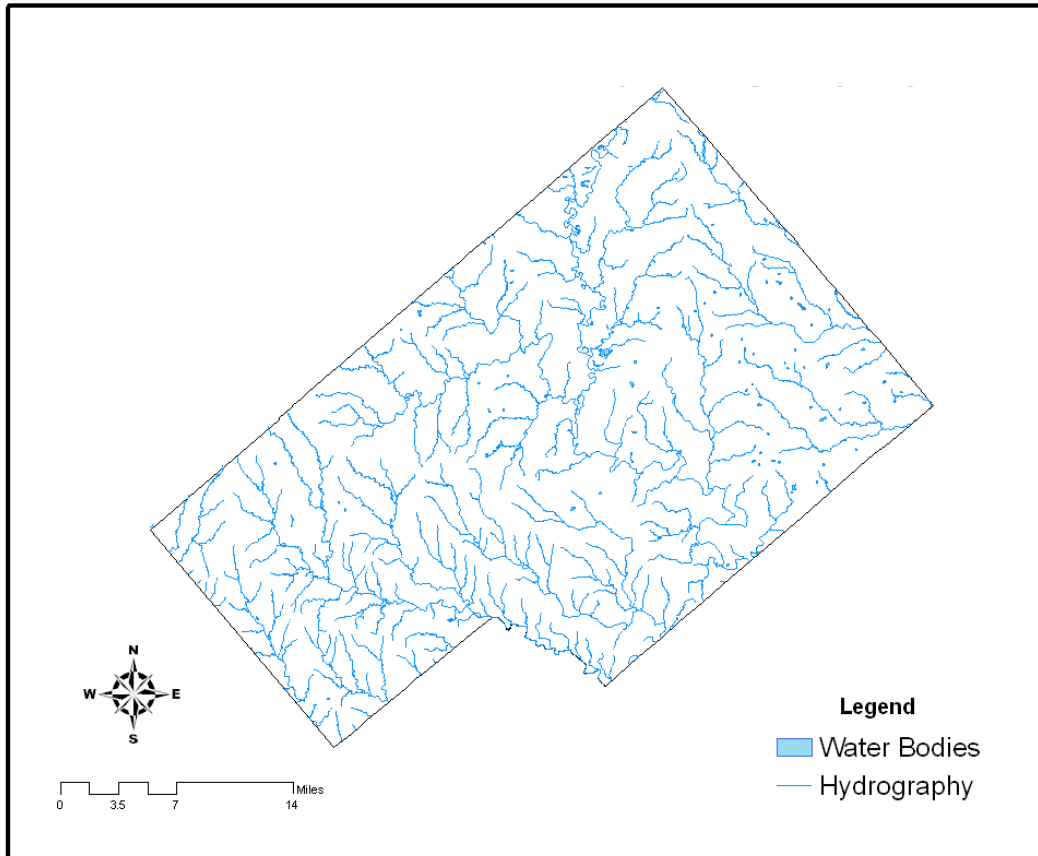
**TABLE 3** – Annual amount of recharge from precipitation to the groundwater resources within the District – (GAM run 08-38; Ridgeway, 2008)

<b>Aquifer or Confining Unit</b>	<b>Average in AF/per year</b>
Chicot	4,246
Evangeline	5,362
Burkeville	10
Jasper	225
Sparta	0
Weches	0
Queen City	0
Reklaw	0
Carrizo	0
Wilcox (upper)	0
Wilcox (middle)	0
Wilcox (lower)	0

Generally speaking, recharge exhibits considerable variability due to a variety of factors including erratic rainfall, soil moisture characteristics and modifications to land use. (Uddameri 2008)

**VIII-D ESTIMATE OF GROUNDWATER DISCHARGE TO SPRINGS AND SURFACE WATER BODIES – TWC §36.1071(e)(3)(D)**

One of the major surface water bodies in the district is the Guadalupe River. Portions of the district along the north drain into the Lavaca river basin and some sections drain into the San Antonio river basin along the south. Most streams and creeks in the district are ephemeral in nature. (Uddameri, 2008)



**Figure 10: Water Bodies and Hydrography in the District (Note: most streams depicted here are ephemeral in nature)**

The discharges from the aquifer to different streams were estimated using the GAM models and the results are summarized below.

**TABLE 4 – Surface Water Groundwater Exchanges in DeWitt County (GAM run 08-38; Ridgeway, 2008)**

Aquifer or Confining Unit	Average in AF/per year
Chicot	1,045
Evangeline	8,671
Burkeville	75
Jasper	1,556
Sparta	0
Weches	0
Queen City	0
Reklaw	0
Carrizo	0
Wilcox (upper)	0
Wilcox (middle)	0
Wilcox (lower)	0

In general, while the aquifer may gain or lose water at different sections of the district, there is a net discharge from the aquifers into the surface water bodies. The interaction with surface water bodies is the highest for the Evangeline formation (which is the dominant outcrop aquifer within the district). (Uddameri, 2008)

**VIII-E ESTIMATE OF ANNUAL VOLUME OF FLOW IN AND OUT OF DISTRICT AQUIFERS §36.1071(e)(3)E)**

The horizontal exchanges (lateral movement of water across the district boundaries) were calculated over time using GAM models and summarized in Table 5. As can be seen, there is net outflow out of the Gulf Coast Aquifer units and there is a net inflow into the district in the Carrizo Wilcox formation. As can be seen from Table 5, Chicot and Evangeline formations have the greatest exchanges in the Gulf Coast aquifer. (Uddameri, 2008)

**TABLE 5 –** Estimates of Inflows to and Outflows (Horizontal Exchanges) from the District – (GAM run 08-38; all values in AFY)

Aquifer	Inflow	Outflow	Net Flow
Chicot	3	1,519	-1,516
Evangeline	987	7,515	-6,528
Burkeville	6	40	-34
Jasper	662	1,151	-489
Sparta	20	13	7
Weches	46	42	4
Queen City	23	3	20
Reklaw	133	6	127
Carrizo	1,477	32	1,445
Wilcox (upper)	110	7	103
Wilcox (middle)	258	33	225
Wilcox (lower)	1,732	2	1,730

Deviations and fluctuations can be expected based on the hydrologic characteristics, groundwater development within the district and adjoining areas, and changing climatic conditions. Movement of water between formations depends on how well they are hydraulically connected. Movement is also affected by the stresses (pumpage) in each formation.

**VIII-F ESTIMATED NET ANNUAL VOLUME OF FLOW BETWEEN EACH AQUIFER IN THE DISTRICT TWC §36.1071(e)(3)E)**

**TABLE 6 –** Cross-formational flows between different Aquifer Formation in DeWitt Co. (all values in AF/yr and averaged over 1981-1999 time-frame) (Source: GAM Run 08-38; Ridgeway, 2008)

Interacting Units			Exchange (AFY)
Chicot	into	Evangeline	3,895
Evangeline	into	Burkeville	597
Burkeville	into	Jasper	823
Weches	into	Sparta	790
Queen City	into	Weches	895

Reklaw	into	Queen City	1,261
Carrizo	into	Reklaw	1,192
Carrizo	into	Wilcox (upper)	194
Wilcox (upper)	into	Wilcox (middle)	51
Wilcox (lower)	into	Wilcox (middle)	112

The flow in the Gulf Coast aquifer is generally downward with flows from Chicot → Evangeline → Burkeville and into Jasper. In the Carrizo Wilcox Formation, the exchange is generally upward except there is flow into middle Wilcox from both upper and lower formations. The interconnection between Chicot and Evangeline is significant. Other than that, the interactions are relatively small. It is important to note that the exchanges for the Gulf Coast and the Carrizo Wilcox are obtained from separate GAM models. As such, the interactions between Weches and Jasper are not modeled. (Uddameri, 2008)

**VIII-G PROJECTED SURFACE WATER SUPPLY ACCORDING TO THE MOST RECENTLY ADOPTED STATE WATER PLAN – TWC §36.1071(e)(3)(F)**

The projected surface water supply information was obtained from the most recent State Water Plan from the Texas Water Development Board (TWDB) DB07 Database (<http://www.twdb.state.tx.us/data/db07/defaultReadOnly.asp>). These results are summarized in the following table.

**TABLE – 7** Projected Surface Water Supplies in DeWitt County per State Water Plan 2007; all values in AFY; data from <http://www.twdb.state.tx.us/data/db07/defaultReadOnly.asp/>

RWPG	WUG	County	River Basin	Source Name	2000	2010	2020	2030	2040	2050	2060
L	Irrigation	De Witt	Guadalupe	Guadalupe River Combined Run-of-River Irrigation	0	299	299	299	299	299	299
L	Livestock	De Witt	Lavaca	Livestock Local Supply	271	127	127	127	127	127	127
L	Livestock	De Witt	Lavaca-Guadalupe	Livestock Local Supply	53	17	17	17	17	17	17
L	Livestock	De Witt	Guadalupe	Livestock Local Supply	1,419	634	634	634	634	634	634
L	Livestock	De Witt	San Antonio	Livestock Local Supply	153	68	68	68	68	68	68
L	Gonzales County WSC	De Witt	Guadalupe	Canyon Lake/Reservoir	0	49	49	49	49	49	49
<b>Total Projected Surface Water Supplies (acre-feet per year) =</b>					<b>1,896</b>	<b>1,194</b>	<b>1,194</b>	<b>1,194</b>	<b>1,194</b>	<b>1,194</b>	<b>1,194</b>

The summary of the above table projects that there is approximately 1,194 AF/yr of surface water available for various water user groups in the district.

**VIII-H PROJECTED TOTAL DEMAND FOR WATER IN THE DISTRICT  
ACCORDING TO THE MOST RECENTLY ADOPTED 2007 STATE WATER  
PLAN – TWC §36.1071(e)(3)(G)**

The projected demand was obtained from the most recent state water plan from the Texas Water Development Board (TWBD) DB07 Database (<http://www.twdb.state.tx.us/data/db07/defaultReadOnly.asp>).

These results are summarized below and indicate that it is going to stay steady at roughly 5,000 AFY. However, recently there has been considerable interest in oil and gas exploration as well as mining activities. These activities may increase the water demand within the district. (Uddameri, 2008)

**TABLE 8 – Projected Total Demands Based on 2007 State Water Plan**  
(<http://www.twdb.state.tx.us/wrpi/swp/swp.htm>) (Data from <http://www.twdb.state.tx.us/data/db07/defaultReadOnly.asp>; WUG Total Demand Worksheet (all values in AFY))

Year	Municipal	Irrigation	Livestock	Mfg.	Mining	Steam Elec.	Total
2000	3,065	102	1,689	154	58	0	5,068
2010	3,136	159	1,689	184	64	0	5,232
2020	3,211	132	1,689	199	67	0	5,298
2030	3,257	108	1,689	212	68	0	5,334
2040	3,268	87	1,689	225	68	0	5,337
2050	3,221	69	1,689	236	70	0	5,285
2060	3,161	54	1,689	254	71	0	5,229

**VIII-I CONSIDER THE WATER SUPPLY NEEDS AND WATER MANAGEMENT STRATEGIES INCLUDED IN THE ADOPTED STATE WATER PLAN – TWC**  
**§36.1071(e)(4)**

In the 2007 State Water Plan there are no unmet water needs in the Pecan Valley GCD and no projected water shortages. The 2007 State Water Plan recommended municipal water conservation measures.

Although the implementation time-frame for these strategies fall outside the planning horizons of this management plan, the district strongly encourages the recommended conservation measures and will seek to actively understand the role of surface-water groundwater interactions.

**IX. DISTRICT MANAGEMENT OF GROUNDWATER SUPPLIES**

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 manage the use of groundwater within the District in order to protect, preserve, conserve, and prevent waste of 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 as established in the plan. 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 reasonable and effective protection, preservation, conservation, and waste prevention 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 Act. For the purposes of this management plan, the following definitions are used:

- **Protection of groundwater** is the activity and practice of seeking to prevent harm or injury to a groundwater resource.
- **Preservation of groundwater** is the activity and practice of seeking to extend the useful longevity or life of a groundwater resource.
- **Conservation of groundwater** is the activity and practice of seeking to use a groundwater resource in a manner that appropriately balances the impacts associated with consuming a resource and preserving a resource.
- **Waste prevention of groundwater** is the activity and practices seeking to prevent the use of groundwater in any manner defined as waste in Section 36.001 of the Texas Water Code.

A network of observation wells will be established and maintained in cooperation with private landowners in order to monitor changing water levels and water quality of groundwater supplies within the District. The District will make regular assessments of water supply and will report those conditions to the public. The District will undertake and cooperate with investigations of the groundwater resources within the District and will make the results of investigations available to the public.

For the purpose of managing the use of groundwater within the District, the District may define sustainable use as the use of an amount of groundwater in the District as a whole or any management zone established by the District that does not exceed:

1. The desired future conditions of aquifers in the District established by the District prior to the establishment of the desired future condition of aquifers in a groundwater management area in which the District is located, or
2. The desired future conditions of aquifers within the District established by a groundwater management area in which the District is participating, or
3. The amount of managed available groundwater resulting from the establishment of a desired future aquifer condition established by the District or a groundwater management area in which the District is located, or
4. The amount of annual recharge of the aquifer or aquifer subdivision in which the use occurs as recognized by the District, or
5. Any other criteria established by the District as being a threshold of use beyond which further use of the aquifer or aquifer subdivision may result in a specified undesirable or injurious condition

The District may adopt rules that protect existing or historic use of groundwater in the District to the maximum extent practical consistent with this plan and the goals and objectives set forth herein. The District may impose more restrictive permit conditions on new permit applications and permit amendment applications to increase use by historic users if the limitations:

1. Apply to all subsequent new permit applications and permit amendment applications to increase use by historic users, regardless of the type or location of use;
2. Bear a reasonable relationship to the District's existing management plan; and
3. Are reasonably necessary to protect existing use
4. The District may adopt rules to regulate groundwater withdrawals by means of spacing and/or production limits. The relevant factors to be considered in making a determination to grant or deny a permit or limit groundwater withdrawals shall include those set forth in the District Act, Chapter 36 of the Texas Water Code, and the rules of the District. The District may employ technical resources at its disposal, as needed, to evaluate the groundwater 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, including without limitation climatic conditions, the District may by rule allow an increase or impose a decrease in the total production in a management zone above or below the sustainable amount for a period of time considered necessary by the District in order to accomplish the purposes set forth in Chapter 36 Water Code, or the District Act. The exercise of said discretion by the Board shall not be construed as limiting the power of the Board.

## **X ACTIONS, PROCEDURES, PERFORMANCE AND AVOIDANCE FOR PLAN IMPLEMENTATION**

The District will implement the provisions of this Plan and will utilize the provision of this Plan as guidelines for determining the direction or priority for all District activities. All operations of the District, all agreements entered into by the District, and any additional planning efforts in which the District may participate will be consistent with the provisions of this Plan.

Rules adopted by the District relating to the permitting of wells and the production of groundwater shall comply with TWC Chapter 36, including §36.113, and with the provisions of this management plan. District Rules will be adhered to and enforced. The promulgation and enforcement of the District Rules will be based on the best technical evidence available. Current rules for the Pecan Valley GCD can be viewed on the District web page [www.pvgcd.org](http://www.pvgcd.org).

## **XI METHODOLOGY FOR TRACKING DISTRICT PROGRESS IN ACHIEVING MANAGEMENT GOALS – 31 TAC 356.5(a)(6)**

The General Manager of the District (or, in the absence of a General Manager, the Chairman of the Board) will prepare and present an annual report to the Board of Directors (Annual Report) evaluating the impact of the District's activities on its goals, management objectives, and performance standards (as enumerated below). The Annual Report will be presented 120 days following the completion of the District's fiscal year. The Annual Report will include the number of instances that each activity of the District occurred during the year (such as the monitoring of wells for water quality and levels, permitting, inspecting for permit compliance, securing abandoned wells), together with an estimate of the expenditure of staff time and cost so that the effectiveness and efficiency of each activity may be evaluated.

The annual District Manager's Report will be received by the District Board and upon approval shall be available to the public at the District Office. The Board of Directors will meet at least quarterly to review all considerations by the District to fully comply with all rules and regulations set forth by the Texas Water Development Board.

## **XII GOALS, MANAGEMENT OBJECTIVES, PERFORMANCE STANDARDS**

The goals, management objectives, and performance standards of the District in the areas specified in 31 TAC §356.5 are addressed as follows:

### **GOAL 1: Providing the Most Efficient Use of Groundwater –31 TAC 356.5(a)(1)(A) (Implementing TWC §36.1071(a)(1))**

**1.1 Objective:** Develop and maintain a Water Well Registration Program for tracking well information for wells within the District's boundaries.

**Performance Standard:** Each year the District will summarize within the annual report the changes related to water well registration including the number of new and existing wells registered.

**1.2 Objective:** Develop and maintain a Water Well Permitting Program for tracking all permits authorizing water well operation and groundwater production.

**Performance Standard:** Each year the District will summarize within the annual report the changes related to water well permitting including the number of new applications and the disposition of the applications.

**GOAL 2: Controlling and Preventing Waste of Groundwater –31 TAC 356.5(a)(1)(B) (Implementing TWC §36.1071(a)(2))**

**2.1 Objective:** Initiate a program to identify the location of abandoned wells that will include a survey of landowners, well drillers, and the Texas Railroad Commission regarding any known abandoned wells, and initiate actions as necessary to enforce the notice, plugging and other requirements of Section 1901.255, Occupations Code.

**Performance Standard:** Include in the annual report the number of water well inspections resulting from these activities.

**2.2 Objective:** Develop and maintain a Water Well Inspection Program for non-exempt wells.

**Performance Standard:** Each year the District will summarize within the annual report the findings of the inspection activities including the number of water wells inspected and information regarding the number of wells that require improvement in order to prevent waste and/or prevent groundwater contamination.

**2.3 Objective:** Develop and maintain a Groundwater Conservation Education Program

**Performance Standard:** Each year the District will summarize within the annual report the educational activities including the number of educational materials developed and/or delivered to local schools, the number of public speaking events and presentations, the number of community events participated in, and the number of educational publications.

**GOAL 3:** Prevent damage or degradation to the aquifers of the District by the export of water from the District.

**3.1 Objective:** Each year, monitor all wells from which water is being exported out of the District, together with adjacent wells.

**Performance Standard:** Report annually to the Board any decline or degradation of water levels or water quality in wells from which water being exported out of the District is produced or in adjacent wells.

**GOAL 4: Addressing Conjunctive Surface Water Management Issues – 31 TAC 356.5 (a)(1)(D) (Implementing TWC §36.1071(a)(4))**

**4.1 Objective:** Participate in the regional water planning process by attending at least two South Central Texas Regional Water Planning Group (Region L) meetings.

**Performance Standard:** Report annually to the Board the attendees, dates and the number of meetings attended.

**4.2 Objective:** Communicate with GBRA concerning conjunctive surface water management issues.

**Performance Standard:** Report annually to the board the number of and nature of communications and meetings attended with the GBRA.

**GOAL 5:** Promote cooperation between water management entities and user groups within the District.

**5.1 Objective:** Meet with the cities of Cuero, Yorktown, Yoakum, and any small communities in the county for input into the future plans of the District and areas of local concern.

**Performance Standard:** Include the results of all meetings and informational updates in the annual report.

**5.2 Objective:** Meet with DeWitt County Commissioners annually to update future plans of mutual concern.

**Performance Standard:** Include the results of all meetings and informational updates in the annual report.

**5.3 Objective:** Meet with any city or development council in the county to give updates or information that will affect future plans or areas of mutual concern.

**Performance Standard:** Include the results of meetings and informational updates in the annual report.

**5.4 Objective:** Meet with any water user, water user group, or water purveyor within DeWitt County and adjacent groundwater districts throughout the year to share information with the public and all interested parties.

**Performance Standard:** Include the results of these meetings in the annual report.

**5.5 Objective:** Coordinate with the South Central Texas Regional Water Planning Group and other Groundwater Conservation Districts in Groundwater Management Area 15 by furnishing a copy of the approved plan and other information and by meeting with these groups.

**Performance Standard:** Include the results of these meetings in the annual report.

**GOAL 6: Addressing Natural Resource Issues which Impact the Use and Availability of Groundwater, and which are Impacted by the Use of Groundwater – 31 TAC 356.5 (a)(1)(E) ((Implementing TWC §36.1071(a)(5))**

**6.1 Objective:** Develop and maintain a Water Level Monitoring Program to adequately monitor the groundwater resources of the County.

**Performance Standard:** Each year the District will summarize within the annual report the monitoring activities including the number of wells monitored and the year to year change of water level.

**6.2 Objective:** Develop and maintain a Water Quality Monitoring Program.

**Performance Standard:** Each year, the District will summarize within the annual report the monitoring activities including the number of wells monitored and the year to year change of water quality.

**GOAL7: Addressing Drought Conditions – 31 TAC 356.5(a)(1)(F) (Implementing TWC §36.1071(a)(6))**

**7.1 Objective:** Compare static levels of wells in the District’s database with historical rainfall to determine a correlation.

**Performance Standard:** Report the correlation to the Board and to water suppliers as often as necessary, but at least annually, to assist water suppliers in implementing their drought management plans.

**7.2. Objective:** Collect and review drought condition information related to DeWitt County and the surrounding region of Texas on a monthly basis.

**Performance Standard:** Each year the District will summarize within the annual report the monthly drought information including Palmer Drought Severity Index (PDSI) maps and the Drought Preparedness Council Situation Report period updates posted on the Texas Water Information Network website (www.txwin.net). Additionally, the number of weeks and/or months that the District experienced drought based on the PDSI will be reported in the annual report.

**GOAL 8: Addressing Conservation, Recharge Enhancement, Rainwater Harvesting, Precipitation Enhancement, or Brush Control, Where Appropriate and Cost-Effective – 31 TAC 356.5(a)(1)(G) (Implementing TWC §36.1071(a)(7))**

**8.1 Conservation**

**Objective:** Promote groundwater conservation within DeWitt County.

**Performance Standard:** Each year the District will summarize within the annual report the number of activities participated in and educational materials disseminated that are directly related to groundwater conservation.

**8.2 Rainwater Harvesting**

**Objective:** Promote rainwater harvesting within DeWitt County.

**Performance Standard:** Each year the District will summarize within the annual report all efforts made in promoting rainwater harvesting including providing educational links to the district website and any other educational avenues. The annual report will include the number of activities participated in and the number of educational materials disseminated each year.

**8.3 Recharge Enhancement**

**Objective:** Promote recharge enhancement within DeWitt County.

**Performance Standard:** Each year the District will summarize within the annual report the activities directly related to promoting recharge enhancement including the dissemination of educational links via the district website and other educational avenues. The annual report will include the number of activities participated in and the number of educational materials disseminated.

#### **8.4 Precipitation Enhancement**

Precipitation enhancement is not an appropriate or cost-effective program for the District, therefore this goal is not applicable to the district at this time.

#### **8.5 Brush Control**

**Objective:** Promote brush control within DeWitt County.

**Performance Standard:** Each year the District will summarize within the annual report the activities directly related to promoting brush control including the dissemination of educational links via the district website and other educational avenues. The annual report will include the number of activities participated in and the number of educational materials disseminated.

### **XIII MANAGEMENT GOALS DETERMINED NOT-APPLICABLE TO THE DISTRICT**

#### **XIII.1 Controlling and Preventing Subsidence – 31 TAC 356.5(a)(1)(C) (Implementing TWC §31.1071(a)(3))**

This category of management goal is not applicable to the District at this time because no significant subsidence has occurred. The District will monitor geological conditions and take appropriate actions should subsidence develop.

#### **XIII.2 Addressing in a Quantitative Manner the Desired Future Conditions of the Groundwater Resources – 31 TAC 356.5(a)(1)(H) (Implementing TWC §36.1071(a)(8))**

This category of management goal is not presently applicable to the District because GMA 15 is currently in the process of developing the desired future condition of the groundwater resources in GMA 15 and the desired future conditions of the groundwater resources have not yet been defined. The District is coordinating with other groundwater conservation districts in GMA 15 to define the desired future conditions of the aquifers, as required by TWC 36.108. The District will review and evaluate the GAM simulation results from the Gulf Coast aquifer GAM and other available data as a participant in the GMA 15 process. The GMA 15 process incorporates a provision to determine if revisions are needed regarding total aquifer storage and groundwater availability. GMA 15 anticipates developing the desired future conditions of the aquifers in the GMA on or before the statutory deadline of September 1, 2010.