GROUNDWATER
MANAGEMENT PLAN

GUADALUPE COUNTY GROUNDWATER
CONSERVATION DISTRICT

Date Management Plan Adopted _____

TABLE OF CONTENTS

APPENDICES

G. TWDB GAM Run 10-012 MAG; Modeled Available Groundwater for the Carrizo-Wilcox, Queen City, and Sparta Aquifers in Groundwater Management Area 13

H. District Rules

GUADALUPE COUNTY GROUNDWATER CONSERVATION DISTRICT

GROUNDWATER MANAGEMENT PLAN

1. District Mission

The mission of the Guadalupe County Groundwater Conservation District (GCGCD) is to conserve, preserve, protect, and prevent waste of groundwater resources. It shall be the policy of the Board of Directors that the most efficient use of groundwater in the District is to provide for the needs of the citizens and ensure growth for future generations. The Board of Directors, with the cooperation of the citizens of the District, shall implement this management plan (Plan) and its accompanying rules to achieve this goal. GCGCD shall also establish, as part of this Plan, the policies of water conservation, public information and technical research by cooperation and coordination with the citizens of the District and equitable enforcement of this Plan and its accompanying rules.

2. Time Period of this Plan

This Plan will become effective, after notice and hearing, and upon adoption by the GCGCD Board of Directors, and approval as administratively complete by the Texas Water Development Board. The Plan will remain in effect for five (5) years after the date of approval or until a revised Plan is adopted and certified.

3. Statement of Guiding Principles

The GCGCD recognizes that the ground-water resources of the region are of vital importance to the continued economic well being of landowners, agriculture, citizens, economy, environment and long-term use of the resource within the District. This Plan addresses the following management goals: a) providing the most efficient use of ground water; b) controlling and preventing waste of ground water; c) controlling and preventing subsidence; d) addressing conjunctive surface water management issues; e) addressing natural resource issues; f) addressing drought conditions; g) addressing conservation, recharge enhancement, rainwater, precipitation enhancement, or brush control, where appropriate and cost effective; and h) addressing the desired future conditions of ground-water resources. This Plan is intended as a guide or blueprint for action of those individuals charged with the responsibility for the execution of District activities.

4. Background

The GCGCD was first created in 1997, in Chapter 1066, Acts of the 75th Legislature and was then amended in 1999 by House Bill 3817 which created the District with seven directors elected from seven single member districts and limited the District to only a portion of Guadalupe County outside of the Edwards Aquifer Authority boundaries in Guadalupe County. The District does not have the power to tax and receives all of its income from fees imposed on municipal/commercial pampers of ground water. A confirmation election was held on November 2, 1999 which confirmed the District and elected seven initial directors from single member districts. The District's Board has adopted rules and held public hearings in accordance with Texas Water Code Ann Section 36.001 et. Seq.

5. Ground-Water Resources

The GCGCD has the Carrizo and Wilcox aquifers, and Leona Gravels within its boundaries. Only the Carrizo and Wilcox aquifers have sufficient capacity for municipal, commercial, or irrigation type production. The Carrizo and Wilcox aquifers are recharged in Guadalupe County and both water-table

and artesian conditions are found within the boundaries of the District. A substantial amount of recharge to the Carrizo and Wilcox aquifers located in Gonzales County originates in Guadalupe County. For additional information regarding the aquifers in Guadalupe County See Texas Water Development Board reports 19 and 380. Additional information can be found on the District's Web Site (GCGCD.Org.)

6. Modeled Available Ground Water

The 2060 modeled available ground water in the District based on the 2060 desired future condition is approximately the following: a) 9,500 acre-feet/year (Carrizo); b) 2,994 acre-feet/year (Middle Wilcox); and c) 1,547 acre-feet/year (Lower Wilcox). The 2060 total is 14,041 acre-feet/year (scenario 4 from TWDB GAM Run 10-012 MAG), Appendix G.

7. Amount of Ground Water being Used (acre-feet/year)
The following is from: Estimated Historical Groundwater Use and 2012 State Water Plan Datasets (Appendix E, page 3).

year	2003	2004	2005	2006	2007	2008
Municipal	7,697	6,934	---	6,602	5,093	6,013
Manufacturing	138	147	---	58	86	46
Steam Electric	0	0	---	0	0	0
Irrigation	142	167	---	365	44	164
Mining	86	86	---	0	0	0
Livestock	41	43	---	314	359	295
Total	8,104	7,377	---	7,339	5,582	6,518

8. Preliminary Water Budget
The following is from: GAM Run 11-017: Guadalupe County Groundwater Conservation District Management Plan (pages 7 & 9). The complete report is found in Appendix F.

Estimated annual volume of recharge from precipitation to the District
Aquifer: Queen City Results (acre-feet/yr); 39
Aquifer: Carrizo-Wilcox Results (acre-feet/yr): 17,610

Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers
Aquifer: Queen City Results (acre-feet/yr): 0
Aquifer: Carrizo-Wilcox Results (acre-feet/yr): 4,854

Estimated annual volume of flow into the District within each aquifer in the District
Aquifer: Queen City Results (acre-feet/yr) 3
Aquifer: Carrizo-Wilcox Results (acre-feet/yr) 1,259

Estimated annual volume of flow out of the District within each aquifer in the District

Aquifer: Queen City Results (acre-feet/yr) 2

Aquifer: Carrizo-Wilcox Results (acre-feet/yr) 15,967

Estimated annual volume of flow between each aquifer in the District

Aquifer: Queen City into underlying Reklaw Formation confining unit

Results (acre-feet/yr) 3

Aquifer: From the Reklaw Formation confining unit into the Carrizo-Wilcox Aquifer

Results (acre-feet/yr) 382

9. Estimate of the Projected Surface Water Supply

The estimated surface water supply was taken from TWDB 2012 State Water Plan Data (Appendix E, page 5).

Total Projected Surface Water Supplies (acre-feet/yr)

2010	2020	2030	2040	2050	2060
14,450	14,450	14,450	14,450	14,450	14,450

10. Estimate of the Projected Total Demand for Water

The estimated projected total demand for water was taken from TWDB 2012 State Water Plan Data (Appendix E, page 6).

Total Projected Water Demands (acre-feet/yr)

2010	2020	2030	2040	2050	2060
13,534	13,823	14,965	17,262	18,934	21,744

11. Estimate of the Water Supply Needs

The estimated water supply needs was taken from TWDB 2012State Water Plan Data (Appendix E, page 7).

Sum of Projected Water Needs (acre-feet/yr)

2010	2020	2030	2040	2050	2060
-118	-401	-1,162	-2,043	-3,694	-6,967

12. Water Management Strategies

The State's 2012 Water Plan Data (Appendix D) identifies projected water needs for Guadalupe County. The Appendix D also identifies water management strategies to meet those needs. To meet the ground-water needs of the water user groups (WUGs), the Carrizo-Wilcox and Edwards aquifers; and surface water will be utilized. General strategies include the following: a) continued use and future development

of the above aquifers, both fresh and brackish water; b) water from Canyon Lake Reservoir; c) ground-water conservation; and d) drought management. Ground-water conservation will be achieved through public information.

13. Actions, Procedures, and Avoidance for District Implementation of Management Plan

The District is currently operating pursuant to rules effective November 10, 2010/January 1, 2011 as set forth in the Resolution of the Board of Directors adopted November 10, 2010. These rules were adopted under the authority of Sections 36.101 and 36.1071(f), Texas Water Code, and the District Act for the purpose of conserving, preserving, and protecting groundwater in the District in order to prevent degradation of water quality, prevent waste of groundwater, and to carry out the powers and duties of Chapter 36, Texas Water Code, and the District Act. The District's Rules are found in Appendix H and at the District's Link (GCGCD.ORG).

These rules are used by the District in the exercise of the powers conferred on the District by law and in the accomplishment of the purposes of the law creating the District. These rules may be used as guides in the exercise of discretion, where discretion is vested. However, under no circumstances and in no particular case will they or any part therein, be construed as a limitation or restriction upon the District to exercise powers, duties and jurisdiction conferred by law. These rules create no rights or privileges in any person or water well, and shall not be construed to bind the Board in any manner in its promulgation of the District Management Plan, or amendments to these rules.

The District may amend the District rules as necessary to comply with changes to Chapter 36 of the Texas Water Code and to insure the best management of the groundwater within the District. The development and enforcement of the rules of the District has been and will continue to be based on the best scientific and technical evidence available to the District.

The District has encouraged and will continue to encourage public cooperation and coordination in the implementation of the management plan for the District, as it is amended. All operations and activities of the District have been and will be performed in a manner that best encourages cooperation with the appropriate state, regional or local water entity. The meetings of the Board of the District are noticed and conducted at all times in accordance with the Texas Open Meetings Law. The District has also made available for public inspection all official documents, reports, records and minutes of the District pursuant with the Texas Public Information Act and will continue to do so in the future.

14. Methodology to Track District Progress in Achieving Management Goals

An annual report ("Annual Report") will be created by the general manager and provided to the members of the Board of the District. The annual Report will cover the activities of the District including information on the District's performance in regards to achieving the District's management goals and objectives. The Annual Report will be will be delivered to the Board in March of each year. A copy of the Annual Report will be kept on file and will be available for public inspection at the District's office upon adoption. The District's Link (GCGCD.ORG) will provide current information regarding the above.

15. Plan Elements: Management Goals, Objectives & Performance Standards

15.1 Providing the Most Efficient Use of Ground water

Management Objective 1: The District will gather water production data from the public ground-water suppliers annually and will compile 100 percent of these figures into a data-base report of ground-water

usage within 45 days in order to better project the needs of the District.

Performance: Record the ground-water production data from public suppliers which will be collected annually and placed into a dated report to the District's Board at the GCGCD's Board meeting and attending audience.

15.2 Controlling and Preventing waste of Groundwater

Management Objective 1: The District will discuss and report on the problems of controlling and preventing waste of ground water once each year. Focus will be on municipal water providers within the District with regard to the following topics: a) leakage from large water transmission lines; b) leakage from domestic supply lines before and after the meters; c) unnecessary and over watering of lawns during drought periods; and d) any other important topic related to waste of ground water.

Performance: Record the date of the discussion to the District's Board at the GCGCD's Board meeting and attending audience.

15.3 Controlling and Preventing Subsidence

Due to a well compacted and rigid geologic framework, subsidence is not an issue within GCGCD. Therefore, the management goal is not applicable.

15.4 Conjunctive Surface Water Management

Management Objective 1: The District will meet with the staff of the Guadalupe Blanco River Authority (GBRA), at least once a year, to share information updates about conjunctive use potential.

Performance: Record the date and number of meeting(s) with GBRA. The results of the meeting(s) will be discussed with the District's Board and attending audience at the GCGCD Board meeting.

15.5 Consistency with Region "L" Planning_

Management Objective 1: The District will, at least once a year, attend the Region L Meetings to share information and participate in planning.

Performance: Record the date, of Region L meeting(s), and discuss results with District's Board of Directors and attending audience at the GCGCD Board meeting(s).

15.6 Natural Resource Issues

Management Objective 1: The District will meet with the Natural Resources Conservation Service (NRCS) representatives, in February of each year, to exchange information regarding ground-water availability, water quality, irrigation demands, and changes in NRCS programs relating to ground-water.

Performance: Record the date of the meeting(s) with the NRCS, and discuss results with the Board of Directors at the GCGCD Board meeting.

Management Objective 2: The District will meet with the Texas Rail Road Commission's (RRC) San Antonio Office, at least once a year, to discuss abandoned oil/gas wells, plugging of such wells, and locations and construction details of proposed salt-water injection wells.

Performance: Record the date of the meeting(s) with the RRC, and discuss results with the District's Board and attending audience at the GCGCD Board meeting

15.7 Drought Conditions

Management Objective 1: The District's Manager, at least once each year in June, shall discuss the following: a) District's current Drought Management Plan, U.S. Drought Monitor (Texas), rainfall, and water-level changes in the Carrizo and Wilcox aquifers. Additional drought information may be found at the Texas Water Development Board's Link (http://www.twdb.state.tx.us/data/drought/)

Performance: The dated discussion shall be to the District's Board, municipal ground-water suppliers, and attending audience. Each of the above items will be identified in the meeting agenda.

Management Objective 2: The District shall collect monthly rainfall data from at least 5 stations within the District.

Performance: Rainfall data will be discussed at the District's Board meeting(s) and shall be identified in the agenda.

15.8 Addressing

a) Conservation; Management Objective 1: The District shall search conservation data bases for information. Also, obtain conservation information from state and federal agencies, and plumbing supply companies suitable for presentation to the GCGCD Board. The following is a link to conservation publications (http://www.twdb.texas.gov/publications/brochures/conservation/)

Performance: A discussion and/or a dated report, at least once a year, shall be made to the District's Board and attending audience.

b) Recharge Enhancement; Management Objective 2: The District shall review published reports and contact state agencies and ground-water districts to obtain information relating to ground-water recharge enhancement. This information will be presented to the District's Board.

Performance: A discussion and/or a dated report, at least once a year, shall be made to the District's Board and attending audience.

c) Rainwater Harvesting: This goal is not applicable to the District because of limited value, and does not pertain to the management of the aquifers within the District.

d) Precipitation Enhancement: This goal is not applicable to the District because the science is not proven, is of limited value, and does not pertain to the management of the aquifers within the District.

e) Brush Control: This goal is not applicable to the District because its value is very limited and does not pertain to the management of the aquifers within the District.

15.9 Desired Future Conditions (DFC)

Management Objective 1: The District's Manager shall attend and participate in the GMA 13 meetings, at least once a year, to obtain updates, results of water-level measurements within the GMA, and information relating to the GMA's DFC. A summary of the updates and information will be made available to the District's Board.

Performance: A discussion, at least once a year, shall be made to the District's Board and attending audience at the GCGCD Board meeting.

Management Objective 2: The District will measure water levels in 11 wells two (2) times a year in the District and within a 45 day period compile 100 percent of the water-level data and results into a data base report.

Performance: Record the dates, measurements, results, and number of wells measured into a dated report. The report will be provided to the District's Board and attending audience at the GCGCD's Board meeting. Also, the report will discuss measured water-level changes with regard to the District's DFC.

16. Actions

The following actions were taken by the District's Board; 1) the District's resolution adopting the Management Plan is found in Appendix A; 2) The District's Management Plan was adopted after notice and hearing, and is found in Appendix B; and 3) that the District coordinated the development of the Management Plan with the Guadalupe Blanco River Authority (GBRA) and is found in Appendix D.

APPENDIX A

GUADALUPE COUNTY GROUNDWATER CONSERVATION DISTRICT (GCGCD)

Resolution Adopting Amended Management Plan of GCGCD

Dated November 08, 2012

WHERE AS, Chapter 36 of the Texas Water Code requires a confirmed District to formulate a management plan for the purpose of conservation, preservation, protection and regulation of the use and withdrawal of groundwater within the District for the purposes and benefits specified in the legislation in order to protect the best interest of the landowners and the long term sustainable yield of the aquifer as a continuing source of groundwater; and

WHERE AS; Texas Water Code 36.1072 requires each groundwater district to adopt its management plan no less the every five years; and

WHERE AS; The Management Plan for the **GCGCD** needs to be submitted to the Texas Water Development Board for certification as administratively Completer; and

WHERE AS; after due consideration, and following notice of hearing, the elected board has determined that the submitted plan is a proper guideline and blueprint for the rules and management activities of the District;

NOW THEREFORE BE IT RESOLVED that the Board of Directors of the **GCGCD,** following notice and hearing, hereby adopt this Management Plan; to become effective immediately upon adoption and authorizes it officers, agents and representatives to file same with the Texas Water Development Board for their certification as administratively complete.

ADOPTED this 8th day of November, 2012 upon motion of Hilmar Starcke and second by Hilmar Blumberg and a vote five (5)for; zero (0) against by the Board of Directors of the **GCGCD** to approve said plan.

Ronald A. Naumann, President

Guadalupe County Ground Water Conservation District

Hilmar D. Blumberg, Secretary

APPENDIX B

GUADALUPE COUNTY GROUNDWATER CONSERVATION DISTRICT
MINUTES OF PUBLIC HEARING TO ADOPT NEW MANAGEMENT PLAN 2012
SEPTEMBER 13, 2012

The Public Hearing for the adoption of the GCGCD Management Plan 2012 was held at the Guadalupe County AG Building, 210 East Live Oak Street, Seguin, Texas, hearing started at 4:30 P.M.

GCGCD Board Members in attendance were Ronald Naumann, Hilmar Blumberg, William E. Jones, Gary Rainwater, Hilmar Starcke and Jeff Schuehle

Persons in attendance were Robert Wyly, Alan Cockerell, Graig Hines, Jeanne Schnuriger, Bill Klemt and Tom Koch

It was explained to those in attendance that the posting and publication of the public hearing was done in accordance with the State of Texas rules and all was done on the time table set up by the Texas Water Development Board. A Board Resolution will be on the regular board agenda of the GCGCD held on November 8, 2012, approving the management plan. There were no comments from those in attendance and the hearing was closed at 4:20 P.M.

Approved at the November 8, 2012 meeting

Ronald A. Naumann, President

Hilmar D. Blumberg, Secretary

Guadalupe County Ground Water Conservation District

APPENDIX C

NOTICE OF PUBLIC HEARING

Guadalupe County Groundwater Conservation District (GCGCD)

P. O. Box 1221
Seguin, Texas 78156-1221
860-379-5969

NOTICE OF PUBLIC HEARING to consider and take action on the adoption of an updated Management Plan for the Guadalupe County Groundwater Conservation District as required by Chapter 36 of the Texas Water Code.

THE HEARING WILL BE HELD AT 4:30 P. M., THE 13TH DAY OF SEPEMBER, 2012 IM MEETING ROOM #101 OF THE AG BUILDING, LOCATED AT 210 EAST LIVE OAK STREET, SEGUIN, GUADALUPE COUNTY, TEXAS.

APPENDIX D

December 3, 2012

RECEIVED
DEC - 6 2012

Ronald A. Naumann, President
Guadalupe County Groundwater Conservation District
P.O. Box 1221
Seguin, Texas 78156-1221

RE: Guadalupe County Groundwater Conservation District (GCGCD) Management Plan

Dear Mr. Naumann:

Thank you for providing GBRA the opportunity to review the GCGCD Five Year Management Plan, which was adopted by the GCGCD Board of Directors on November 8, 2012. GBRA has reviewed the Management Plan and is of the opinion that the document adequately covers the items necessary for approval and adoption thereof.

I note that Section 9 of the Management Plan, found on page 3, references the "Total Projected Surface Water Supplies" from the Texas Water Development Board (TWDB) 2012 State Water Plan. Consideration should be given to incorporating the water supply numbers developed by the Modeled Available Groundwater (MAG) analysis published on August 2, 2012, as provided in your Appendix G. It is our understanding the Region L water planning group intends to incorporate the MAG numbers in the TWDB 2016 State Water Plan.

Thank you for allowing GBRA to review the GCGCD Five Year Management Plan.

Sincerely,

W.E. West, Jr.
General Manager

Main Office: 933 East Court Street ~ Seguin, Texas 78155
830-379-5822 ~ 800-413-4130 ~ 830-379-9718 fax ~ www.gbra.org

GBRA Guadalupe-Blanco River Authority
flowing solutions

APPENDIX E

Estimated Historical Water Use And 2012 State Water Plan Datasets:

Guadalupe County Groundwater Conservation District

by Stephen Allen
Texas Water Development Board
Groundwater Resources Division
Groundwater Technical Assistance Section
stephen.allen@twdb.texas.gov
(512) 463-7317
May 22, 2012

GROUNDWATER MANAGEMENT PLAN DATA:

This package of water data reports (part 1 of a 2-part package of information) is being provided to groundwater conservation districts to help them meet the requirements for approval of their five-year groundwater management plan. Each report in the package addresses a specific numbered requirement in the Texas Water Development Board's groundwater management plan checklist. The checklist can be viewed and downloaded from this web address:

http://www.twdb.texas.gov/groundwater/docs/GCD/GMPchecklist0911.pdf

The five reports included in part 1 are:

1. Estimated Historical Water Use (checklist Item 2)

   from the TWDB Historical Water Use Survey (WUS)
2. Projected Surface Water Supplies (checklist Item 6)
3. Projected Water Demands (checklist Item 7)
4. Projected Water Supply Needs (checklist Item 8)
5. Projected Water Management Strategies (checklist Item 9)

   reports 2-5 are from the 2012 State Water Plan (SWP)

Part 2 of the 2-part package is the groundwater availability model (GAM) report. The District should have received this report from the Groundwater Availability Modeling Section. Questions about the GAM can be directed to Dr. Shirley Wade, shirley.wade@twdb.texas.gov, or (512) 463-0749 (to contact the Administrative Assistant).

DISCLAIMER:

The data presented in this report represents the most updated Historical Water Use and 2012 State Water Planning data available as of 5/22/2012. Although it does not happen frequently, neither of these datasets are static and are subject to change pending the availability of more accurate data (Historical Water Use data) or an amendment to the 2012 State Water Plan (2012 State Water Planning data). District personnel must review these datasets and correct any discrepancies in order to ensure approval of their groundwater management plan.

The Historical Water Use dataset can be verified at this web address:

http://www.twdb.texas.gov/wrpi/wus/summary.asp

The 2012 State Water Planning dataset can be verified by contacting Wendy Barron (wendy.barron@twdb.texas.gov or 512-936-0886).

The data values provided in the tables of this report are county-based. But, because some groundwater conservation districts cover only a portion of one or more counties, those county values were modified using an apportioning multiplier to create new values that more accurately represent district conditions. The multiplier used within the following formula is a land area ratio:

(county data value * (land area of district in county / land area of county))

Only the county-wide water user group (WUG) data values (county other, manufacturing, steam electric power, irrigation, mining and livestock) were modified using the multiplier. WUG values for municipalities, water supply corporations, and utility districts were not apportioned if they were located within the district (as reported to us by each district). The three tables that were apportioned include Estimated Historical Water Use, Projected Surface Water Supplies, and Projected Water Demands. The two tables that were not apportioned are Projected Water Supply Needs and Projected Water Management Strategies; these district-specific data values are not required to be calculated.

TWDB staff recognize that the apportioning formula being used is not perfect but it is the best available process with respect to time and staffing constraints. If the District believes it has data that is more accurate it has the option of including those data in the plan with an explanation of how the data were derived.

The apportioning multiplier used in the calculation is shown next to each county header on the affected tables.

For additional questions regarding this data, please contact Stephen Allen (stephen.allen@twdb.texas.gov or 512-463-7317) or Rima Petrossian (rima.petrossian@twdb.texas.gov or 512-936-2420).

Estimated Historical Water Use
TWDB Historical Water Use Survey (WUS) Data

Groundwater use estimates are currently unavailable for 2005, 2009 and 2010. TWDB staff anticipates the calculation and posting of such estimates during the first half of 2012.

GUADALUPE COUNTY

60.89 % (multiplier)

All values are in acre-feet/year

Year	Source	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
1974	GW	1,516	98	0	658	17	95	2,384
1980	GW	1,947	15	0	761	0	94	2,817
1984	GW	2,752	58	0	2,409	7	61	5,287
1985	GW	2,545	63	0	762	9	52	3,431
1986	GW	2,873	66	0	597	0	61	3,597
1987	GW	3,941	57	0	449	5	59	4,511
1988	GW	3,197	71	0	237	5	63	3,573
1989	GW	3,554	73	0	827	5	61	4,520
1990	GW	3,013	80	0	838	5	62	3,998
1991	GW	3,095	159	0	739	9	64	4,066
1992	GW	3,102	192	0	906	9	69	4,278
1993	GW	3,311	133	0	5	96	69	3,614
1994	GW	3,224	152	0	14	96	70	3,556
1995	GW	3,214	177	0	4	96	68	3,559
1996	GW	3,453	142	0	25	96	111	3,827
1997	GW	3,275	138	0	25	96	62	3,596
1998	GW	3,396	142	0	25	96	61	3,720
1999	GW	4,020	15	0	25	96	66	4,222
2000	GW	3,508	132	0	195	96	65	3,996
2001	GW	4,581	135	0	191	86	40	5,033
2002	GW	4,372	149	0	227	86	40	4,874
2003	GW	7,697	138	0	142	86	41	8,104
2004	GW	6,934	147	0	167	86	43	7,377
2006	GW	6,602	58	0	365	0	314	7,339
2007	GW	5,093	86	0	44	0	359	5,582
2008	GW	6,013	46	0	164	0	295	6,518

Projected Surface Water Supplies
TWDB 2012 State Water Plan Data

GUADALUPE COUNTY

60.89 % (multiplier)

All values are in acre-feet/year

RWPG	WUG	WUG Basin	Source Name	2010	2020	2030	2040	2050	2060
L	CIBOLO	SAN ANTONIO	CANYON LAKE/RESERVOIR	1,350	2,850	2,850	2,850	2,850	2,850
L	COUNTY-OTHER	GUADALUPE	CANYON LAKE/RESERVOIR	6	6	6	6	6	6
L	COUNTY-OTHER	GUADALUPE	GUADALUPE RIVER RUN-OF-RIVER	34	34	34	34	34	34
L	CRYSTAL CLEAR WSC	GUADALUPE	CANYON LAKE/RESERVOIR	1,445	1,445	1,445	1,445	1,445	1,445
L	CRYSTAL CLEAR WSC	GUADALUPE	GUADALUPE RIVER RUN-OF-RIVER	24	24	24	24	24	24
L	CRYSTAL CLEAR WSC	GUADALUPE	GUADALUPE RIVER RUN-OF-RIVER	34	34	34	34	34	34
L	EAST CENTRAL WSC	SAN ANTONIO	CANYON LAKE/RESERVOIR	123	26	26	26	26	26
L	GREEN VALLEY SUD	GUADALUPE	CANYON LAKE/RESERVOIR	1,470	3,646	3,646	3,646	3,646	3,646
L	GREEN VALLEY SUD	SAN ANTONIO	CANYON LAKE/RESERVOIR	527	1,627	1,627	1,627	1,627	1,627
L	IRRIGATION	GUADALUPE	CANYON LAKE/RESERVOIR	208	208	208	208	208	208
L	IRRIGATION	GUADALUPE	GUADALUPE RIVER COMBINED RUN-OF-RIVER IRRIGATION	553	553	553	553	553	553
L	LIVESTOCK	GUADALUPE	LIVESTOCK LOCAL SUPPLY	242	242	242	242	242	242
L	LIVESTOCK	SAN ANTONIO	LIVESTOCK LOCAL SUPPLY	80	80	80	80	80	80
L	MANUFACTURING	GUADALUPE	CANYON LAKE/RESERVOIR	599	599	599	599	599	599
L	MANUFACTURING	GUADALUPE	GUADALUPE RIVER COMBINED RUN-OF-RIVER MANUFACTURING	15	15	15	15	15	15
L	MARION	SAN ANTONIO	CANYON LAKE/RESERVOIR	100	100	100	100	100	100
L	MARTINDALE WSC	GUADALUPE	CANYON LAKE/RESERVOIR	11	11	11	11	11	11
L	MARTINDALE WSC	GUADALUPE	GUADALUPE RIVER RUN-OF-RIVER	23	23	23	23	23	23
L	NEW BRAUNFELS	GUADALUPE	CANYON LAKE/RESERVOIR	186	186	186	186	186	186
L	NEW BRAUNFELS	GUADALUPE	GUADALUPE RIVER RUN-OF-RIVER	259	259	259	259	259	259

Projected Surface Water Supplies
TWDB 2012 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2010	2020	2030	2040	2050	2060
L	SEGUIN	GUADALUPE	CANYON LAKE/RESERVOIR	1,000	1,000	1,000	1,000	1,000	1,000
L	SEGUIN	GUADALUPE	GUADALUPE RIVER RUN-OF-RIVER	3,273	3,273	3,273	3,273	3,273	3,273
L	SPRINGS HILL WSC	GUADALUPE	CANYON LAKE/RESERVOIR	3,634	3,634	3,634	3,634	3,634	3,634
L	SPRINGS HILL WSC	SAN ANTONIO	CANYON LAKE/RESERVOIR	641	641	641	641	641	641
L	STEAM ELECTRIC POWER	GUADALUPE	CANYON LAKE/RESERVOIR	4,165	4,165	4,165	4,165	4,165	4,165
	Sum of Projected Surface Water Supplies (acre-feet/year)			**20,002**	**24,681**	**24,681**	**24,681**	**24,681**	**24,681**

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.

GUADALUPE COUNTY

60.89 % (multiplier)

All values are in acre-feet/year

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
L	NEW BRAUNFELS	GUADALUPE	467	703	960	1,216	1,499	1,810
L	COUNTY-OTHER	GUADALUPE	134	107	79	48	27	7
L	MANUFACTURING	GUADALUPE	1,604	1,798	1,975	2,146	2,293	2,491
L	STEAM ELECTRIC POWER	GUADALUPE	2,915	2,074	2,025	3,127	3,401	4,576
L	MINING	GUADALUPE	177	185	191	195	200	204
L	IRRIGATION	GUADALUPE	567	507	449	393	376	374
L	LIVESTOCK	GUADALUPE	483	483	483	483	483	483
L	SANTA CLARA	GUADALUPE	43	69	97	124	155	188
L	CRYSTAL CLEAR WSC	GUADALUPE	1,316	1,688	2,112	2,498	2,977	3,493
L	GREEN VALLEY SUD	GUADALUPE	1,691	2,136	2,651	3,109	3,695	4,326
L	SPRINGS HILL WSC	GUADALUPE	1,984	2,262	2,581	2,891	3,250	3,656
L	MARTINDALE WSC	GUADALUPE	47	64	84	111	128	150
L	SEGUIN	GUADALUPE	5,018	5,718	6,454	7,203	8,069	9,047
L	SELMA	SAN ANTONIO	59	86	113	131	152	176
L	SPRINGS HILL WSC	SAN ANTONIO	365	417	475	533	599	674
L	CIBOLO	SAN ANTONIO	866	1,190	1,546	1,898	2,298	2,730
L	MARION	SAN ANTONIO	164	179	194	209	229	251
L	SCHERTZ	SAN ANTONIO	3,797	5,089	6,448	7,822	9,399	11,098
L	COUNTY-OTHER	SAN ANTONIO	30	24	16	10	5	1
L	MINING	SAN ANTONIO	10	10	10	11	11	11
L	IRRIGATION	SAN ANTONIO	84	75	66	58	56	55
L	LIVESTOCK	SAN ANTONIO	161	161	161	161	161	161
L	SANTA CLARA	SAN ANTONIO	177	280	395	505	631	766
L	EAST CENTRAL WSC	SAN ANTONIO	128	162	200	237	274	316
L	GREEN VALLEY SUD	SAN ANTONIO	691	873	1,084	1,271	1,510	1,768
L	WATER SERVICES INC	SAN ANTONIO	30	37	45	53	61	71
L	MANUFACTURING	SAN ANTONIO	2	2	3	3	3	4
	Sum of Projected Water Demands (acre-feet/year)		**23,010**	**26,379**	**30,897**	**36,446**	**41,942**	**48,887**

Projected Water Supply Needs
TWDB 2012 State Water Plan Data

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

GUADALUPE COUNTY

All values are in acre-feet/year

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
L	CIBOLO	SAN ANTONIO	484	1,660	1,304	952	552	120
L	COUNTY-OTHER	GUADALUPE	171	216	262	312	346	380
L	COUNTY-OTHER	SAN ANTONIO	8	19	31	41	49	56
L	CRYSTAL CLEAR WSC	GUADALUPE	512	140	-284	-670	-1,149	-1,665
L	EAST CENTRAL WSC	SAN ANTONIO	135	4	-34	-71	-108	-150
L	GREEN VALLEY SUD	GUADALUPE	0	1,731	1,216	758	172	-459
L	GREEN VALLEY SUD	SAN ANTONIO	70	988	777	590	351	93
L	IRRIGATION	GUADALUPE	598	698	793	884	912	916
L	IRRIGATION	SAN ANTONIO	0	15	29	42	46	47
L	LIVESTOCK	GUADALUPE	0	0	0	0	0	0
L	LIVESTOCK	SAN ANTONIO	0	0	0	0	0	0
L	MANUFACTURING	GUADALUPE	1,458	1,139	848	567	326	1
L	MANUFACTURING	SAN ANTONIO	2	2	1	1	1	0
L	MARION	SAN ANTONIO	12	-3	-18	-33	-53	-75
L	MARTINDALE WSC	GUADALUPE	-13	-30	-50	-77	-94	-116
L	MINING	GUADALUPE	45	31	22	15	7	0
L	MINING	SAN ANTONIO	2	1	1	0	0	0
L	NEW BRAUNFELS	GUADALUPE	109	-127	-384	-640	-923	-1,234
L	SANTA CLARA	GUADALUPE	-14	-40	-68	-95	-126	-159
L	SANTA CLARA	SAN ANTONIO	-62	-165	-280	-390	-516	-651
L	SCHERTZ	SAN ANTONIO	4,973	3,681	2,322	948	-629	-2,328
L	SEGUIN	GUADALUPE	4,647	3,947	3,211	2,462	1,596	618
L	SELMA	SAN ANTONIO	57	30	3	-15	-36	-60
L	SPRINGS HILL WSC	GUADALUPE	2,138	1,860	1,541	1,231	872	466
L	SPRINGS HILL WSC	SAN ANTONIO	363	311	253	195	129	54
L	STEAM ELECTRIC POWER	GUADALUPE	4,292	5,674	5,754	3,944	3,495	1,565
L	WATER SERVICES INC	SAN ANTONIO	-29	-36	-44	-52	-60	-70
	Sum of Projected Water Supply Needs (acre-feet/year)		**-118**	**-401**	**-1,162**	**-2,043**	**-3,694**	**-6,967**

Projected Water Management Strategies
TWDB 2012 State Water Plan Data

GUADALUPE COUNTY

WUG, Basin (RWPG)

All values are in acre-feet/year

Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
CIBOLO, SAN ANTONIO (L)							
CRWA SIESTA PROJECT	DIRECT REUSE [BEXAR]	0	0	0	0	326	326
CRWA WELLS RANCH PROJECT PHASE I	CARRIZO-WILCOX AQUIFER [GONZALES]	700	0	0	0	0	0
CRWA WELLS RANCH PROJECT PHASE II (INCL. GONZALES CO.)	CARRIZO-WILCOX AQUIFER [GUADALUPE]	0	980	2,054	1,854	1,854	1,854
GBRA MID BASIN (SURFACE WATER)	GUADALUPE RIVER RUN-OF-RIVER [GONZALES]	0	0	4,126	4,826	5,000	5,000
MEDINA LAKE FIRM-UP (ASR)	MEDINA LAKE/RESERVOIR [RESERVOIR]	500	500	500	500	500	500
MUNICIPAL WATER CONSERVATION	CONSERVATION [GUADALUPE]	65	176	281	374	499	645
COUNTY-OTHER, SAN ANTONIO (L)							
MUNICIPAL WATER CONSERVATION	CONSERVATION [GUADALUPE]	2	0	0	0	0	0
CRYSTAL CLEAR WSC, GUADALUPE (L)							
BRACKISH GROUNDWATER DESALINATION (WILCOX AQUIFER)	CARRIZO-WILCOX AQUIFER- BRACKISH [GUADALUPE]	0	0	130	130	259	259
BRACKISH GROUNDWATER DESALINATION (WILCOX AQUIFER)	CARRIZO-WILCOX AQUIFER- BRACKISH [WILSON]	0	0	0	0	938	938
CRWA WELLS RANCH PROJECT PHASE I	CARRIZO-WILCOX AQUIFER [GONZALES]	433	0	0	0	0	0
GBRA MID BASIN (SURFACE WATER)	GUADALUPE RIVER RUN-OF-RIVER [GONZALES]	0	865	0	0	0	0
HAYS/CALDWELL PUA PROJECT (INCL. GONZALES CO.)	CARRIZO-WILCOX AQUIFER [CALDWELL]	0	0	735	735	531	531
LOCAL GROUNDWATER CARRIZO-WILCOX AQUIFER (INCLUDES OVERDRAFTS)	CARRIZO-WILCOX AQUIFER [GUADALUPE]	0	0	10	10	10	10
MUNICIPAL WATER CONSERVATION	CONSERVATION [GUADALUPE]	0	0	0	0	41	184
REGIONAL CARRIZO FOR SSLGC PROJECT EXPANSION (INCL. GONZALES CO.)	CARRIZO-WILCOX AQUIFER [GONZALES]	0	300	600	900	900	900
EAST CENTRAL WSC, SAN ANTONIO (L)							
EDWARDS TRANSFERS	EDWARDS-BFZ AQUIFER [UVALDE]	224	224	224	224	224	224

Projected Water Management Strategies
TWDB 2012 State Water Plan Data

WUG, Basin (RWPG) All values are in acre-feet/year

Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
HAYS/CALDWELL PUA PROJECT (INCL. GONZALES CO.)	CARRIZO-WILCOX AQUIFER [CALDWELL]	0	0	34	71	108	150
LOCAL GROUNDWATER (TRINITY AQUIFER)	TRINITY AQUIFER [BEXAR]	10	10	10	10	10	10
GREEN VALLEY SUD, GUADALUPE (L)							
BRACKISH GROUNDWATER DESALINATION (WILCOX AQUIFER)	CARRIZO-WILCOX AQUIFER- BRACKISH [GUADALUPE]	0	0	112	112	225	225
BRACKISH GROUNDWATER DESALINATION (WILCOX AQUIFER)	CARRIZO-WILCOX AQUIFER- BRACKISH [WILSON]	0	0	638	638	1,278	1,278
CRWA SIESTA PROJECT	DIRECT REUSE [BEXAR]	0	0	1,000	3,549	2,985	3,223
CRWA SIESTA PROJECT	SAN ANTONIO RIVER RUN -OF-RIVER [WILSON]	0	0	0	1,446	0	262
CRWA WELLS RANCH PROJECT PHASE II (INCL. GONZALES CO.)	CARRIZO-WILCOX AQUIFER [GUADALUPE]	175	0	0	0	0	0
GBRA MID BASIN (SURFACE WATER)	GUADALUPE RIVER RUN-OF-RIVER [GONZALES]	0	450	0	0	0	0
HAYS/CALDWELL PUA PROJECT (INCL. GONZALES CO.)	CARRIZO-WILCOX AQUIFER [CALDWELL]	0	0	3,500	0	0	0
MUNICIPAL WATER CONSERVATION	CONSERVATION [GUADALUPE]	0	0	0	0	0	20
PURCHASE FROM NBU/REDISTRIBUTION OF SUPPLIES	CANYON LAKE/RESERVOIR [RESERVOIR]	552	552	552	552	552	439
GREEN VALLEY SUD, SAN ANTONIO (L)							
BRACKISH GROUNDWATER DESALINATION (WILCOX AQUIFER)	CARRIZO-WILCOX AQUIFER- BRACKISH [GUADALUPE]	0	0	112	112	225	225
BRACKISH GROUNDWATER DESALINATION (WILCOX AQUIFER)	CARRIZO-WILCOX AQUIFER- BRACKISH [WILSON]	0	0	638	638	1,278	1,278
CRWA WELLS RANCH PROJECT PHASE II (INCL. GONZALES CO.)	CARRIZO-WILCOX AQUIFER [GUADALUPE]	175	0	0	0	0	0
GBRA MID BASIN (SURFACE WATER)	GUADALUPE RIVER RUN-OF-RIVER [GONZALES]	0	450	0	0	0	0
MARION, SAN ANTONIO (L)							
CRWA SIESTA PROJECT	SAN ANTONIO RIVER RUN -OF-RIVER [WILSON]	0	0	0	47	400	400
CRWA WELLS RANCH PROJECT PHASE II (INCL. GONZALES CO.)	CARRIZO-WILCOX AQUIFER [GUADALUPE]	100	200	0	0	0	0
GBRA MID BASIN (SURFACE WATER)	GUADALUPE RIVER RUN-OF-RIVER [GONZALES]	0	0	400	174	0	0

Projected Water Management Strategies
TWDB 2012 State Water Plan Data

WUG, Basin (RWPG) All values are in acre-feet/year

Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
HAYS/CALDWELL PUA PROJECT (INCL. GONZALES CO.)	CARRIZO-WILCOX AQUIFER [CALDWELL]	0	0	0	179	0	0
MUNICIPAL WATER CONSERVATION	CONSERVATION [GUADALUPE]	0	0	0	0	3	10
MARTINDALE WSC, GUADALUPE (L)							
CRWA WELLS RANCH PROJECT PHASE II (INCL. GONZALES CO.)	CARRIZO-WILCOX AQUIFER [GUADALUPE]	139	139	252	328	328	328
NEW BRAUNFELS, GUADALUPE (L)							
DROUGHT MANAGEMENT	DROUGHT MANAGEMENT [GUADALUPE]	525	0	0	0	0	0
GBRA SIMSBORO PROJECT (OVERDRAFT)	CARRIZO-WILCOX AQUIFER [LEE]	0	0	0	0	283	594
GBRA SIMSBORO PROJECT (OVERDRAFT)	CARRIZO-WILCOX AQUIFER [BASTROP]	0	127	384	640	640	640
SANTA CLARA, GUADALUPE (L)							
CRWA WELLS RANCH PROJECT PHASE II (INCL. GONZALES CO.)	CARRIZO-WILCOX AQUIFER [GUADALUPE]	20	0	0	0	0	0
DROUGHT MANAGEMENT	DROUGHT MANAGEMENT [GUADALUPE]	11	0	0	0	0	0
GBRA MID BASIN (SURFACE WATER)	GUADALUPE RIVER RUN-OF-RIVER [GONZALES]	0	83	88	0	0	0
HAYS/CALDWELL PUA PROJECT (INCL. GONZALES CO.)	CARRIZO-WILCOX AQUIFER [CALDWELL]	0	0	0	100	140	200
SANTA CLARA, SAN ANTONIO (L)							
CRWA WELLS RANCH PROJECT PHASE II (INCL. GONZALES CO.)	CARRIZO-WILCOX AQUIFER [GUADALUPE]	80	0	0	0	0	0
GBRA MID BASIN (SURFACE WATER)	GUADALUPE RIVER RUN-OF-RIVER [GONZALES]	0	217	312	0	0	0
HAYS/CALDWELL PUA PROJECT (INCL. GONZALES CO.)	CARRIZO-WILCOX AQUIFER [CALDWELL]	0	0	0	400	560	700
MUNICIPAL WATER CONSERVATION	CONSERVATION [GUADALUPE]	0	0	10	23	47	79
SCHERTZ, SAN ANTONIO (L)							
MUNICIPAL WATER CONSERVATION	CONSERVATION [GUADALUPE]	22	87	182	365	676	980
REGIONAL CARRIZO FOR SSLGC PROJECT EXPANSION (INCL. GONZALES CO.)	CARRIZO-WILCOX AQUIFER [GONZALES]	0	0	940	2,425	4,097	5,082
REGIONAL CARRIZO FOR SSLGC PROJECT EXPANSION (INCL. GONZALES CO.)	CARRIZO-WILCOX AQUIFER [GUADALUPE]	0	0	0	0	0	734

Projected Water Management Strategies
TWDB 2012 State Water Plan Data

WUG, Basin (RWPG) All values are in acre-feet/year

Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
SEGUIN, GUADALUPE (L)							
MUNICIPAL WATER CONSERVATION	CONSERVATION [GUADALUPE]	377	853	1,229	1,448	1,744	2,131
SELMA, SAN ANTONIO (L)							
MUNICIPAL WATER CONSERVATION	CONSERVATION [BEXAR]	0	0	0	15	36	60
REGIONAL CARRIZO FOR SSLGC PROJECT EXPANSION (INCL. GONZALES CO.)	CARRIZO-WILCOX AQUIFER [GONZALES]	0	18	47	46	46	46
SPRINGS HILL WSC, GUADALUPE (L)							
FACILITIES EXPANSION	CANYON LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	0
MUNICIPAL WATER CONSERVATION	CONSERVATION [GUADALUPE]	146	320	401	480	589	737
TWA REGIONAL CARRIZO (INCL. GONZALES CO.)	CARRIZO-WILCOX AQUIFER [GONZALES]	0	1,500	3,000	3,000	3,000	3,000
SPRINGS HILL WSC, SAN ANTONIO (L)							
FACILITIES EXPANSION	CANYON LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	0
MUNICIPAL WATER CONSERVATION	CONSERVATION [GUADALUPE]	28	61	76	91	112	140
WATER SERVICES INC, SAN ANTONIO (L)							
EDWARDS TRANSFERS	EDWARDS-BFZ AQUIFER [MEDINA]	29	36	44	52	60	70
Sum of Projected Water Management Strategies (acre-feet/year)		**4,313**	**8,148**	**22,621**	**26,494**	**30,504**	**34,412**

APPENDIX F

GAM Run 11-017: Guadalupe County 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
November 29, 2011

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GAM Run 11-017: Guadalupe County Groundwater Conservation District Management Plan

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Texas Water Development Board
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(512) 463-6641
November 29, 2011

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 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.

The purpose of this report is to provide Part 2 of a two-part package of information from the Texas Water Development Board to Guadalupe County Groundwater Conservation District for its groundwater management plan. The groundwater management plan for Guadalupe County Groundwater Conservation District is due for approval by the Executive Administrator of the Texas Water Development Board before January 16, 2013.

This report discusses the method, assumptions, and results from model runs using the groundwater availability model for the southern part of the Carrizo-Wilcox and Queen City aquifers. Tables 1 and 2 summarize the groundwater availability model data

required by the statute, and Figures 1 and 2 show the area of each model from which the values in the respective tables were extracted. This model run replaces the results of GAM Run 07-25. GAM Run 11-017 meets current standards set after GAM Run 07-25. Slight differences in the results of the two model runs are due to differences in the method of extracting data from the model. The Guadalupe County Groundwater Conservation District can use either GAM Run 07-25 or GAM Run 11-017 in their groundwater management plan. If after review of the figures, Guadalupe County Groundwater Conservation District determines that the district boundaries used in the assessment do not reflect current conditions, please notify the Texas Water Development Board immediately.

METHODS:

The groundwater availability model for the southern part of the Carrizo-Wilcox and Queen City aquifers (1980 through 1999) was run for this analysis. Water budgets for each year of the transient model period were extracted 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.

PARAMETERS AND ASSUMPTIONS:

Carrizo-Wilcox and Queen City Aquifers

- Version 2.01 of the groundwater availability model for the southern part of the Carrizo-Wilcox, Queen City, and Sparta aquifers was used for this analysis. See Deeds and others (2003) and Kelley and others (2004) for assumptions and limitations of the groundwater availability model for the southern part of the Carrizo-Wilcox, Queen City, and Sparta aquifers.
- This groundwater availability model includes eight layers, which generally correspond to (from top to bottom):
    1. the Sparta Aquifer,
    2. the Weches Confining Unit,
    3. the Queen City Aquifer,

4. the Reklaw Confining Unit,
5. the Carrizo Aquifer,
6. the Upper Wilcox Aquifer,
7. the Middle Wilcox Aquifer, and
8. the Lower Wilcox Aquifer.

- Of the eight layers listed above, individual water budgets for the district were determined for the Queen City Aquifer (Layer 3), and the combined layers of the Carrizo-Wilcox Aquifer (Layers 5 through 8).
- The root mean square error (a measure of the difference between simulated and actual water levels during model calibration) in the groundwater availability model is 23 feet for the Sparta Aquifer, 18 feet for the Queen City Aquifer, and 33 feet for the Carrizo Aquifer for the calibration period (1980 to 1990) and 19, 22, and 48 feet for the same aquifers, respectively, in the verification period (1991 to 1999) (Kelley and others, 2004). These root mean square errors are between seven and ten percent of the range of measured water levels (Kelley and others, 2004).
- Groundwater in the Carrizo-Wilcox, Queen City, and Sparta aquifers ranges from fresh to brackish in composition (Kelley and others, 2004). Groundwater with total dissolved solids of less than 1,000 milligrams per liter are considered fresh and total dissolved solids of 1,000 to 10,000 milligrams per liter are considered brackish.
- Groundwater Vistas Version 5 (Environmental Simulations, Inc. 2007) was used as the interface to process model output.

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 and 2. The components of the modified budget shown in Tables 1 and 2 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 net 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 and 2. 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 a district or county boundary, 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 and 2).

TABLE 1: SUMMARIZED INFORMATION FOR THE QUEEN CITY AQUIFER THAT IS NEEDED FOR GUADALUPE COUNTY GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT. THESE FLOWS INCLUDE BRACKISH WATERS.

Management Plan requirement	*Aquifer or confining unit*	*Results*
Estimated annual amount of recharge from precipitation to the district	Queen City Aquifer	39
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Queen City Aquifer	0
Estimated annual volume of flow into the district within each aquifer in the district	Queen City Aquifer	3
Estimated annual volume of flow out of the district within each aquifer in the district	Queen City Aquifer	2
Estimated net annual volume of flow between each aquifer in the district	From Queen City Aquifer into the underlying Reklaw Formation confining unit	3

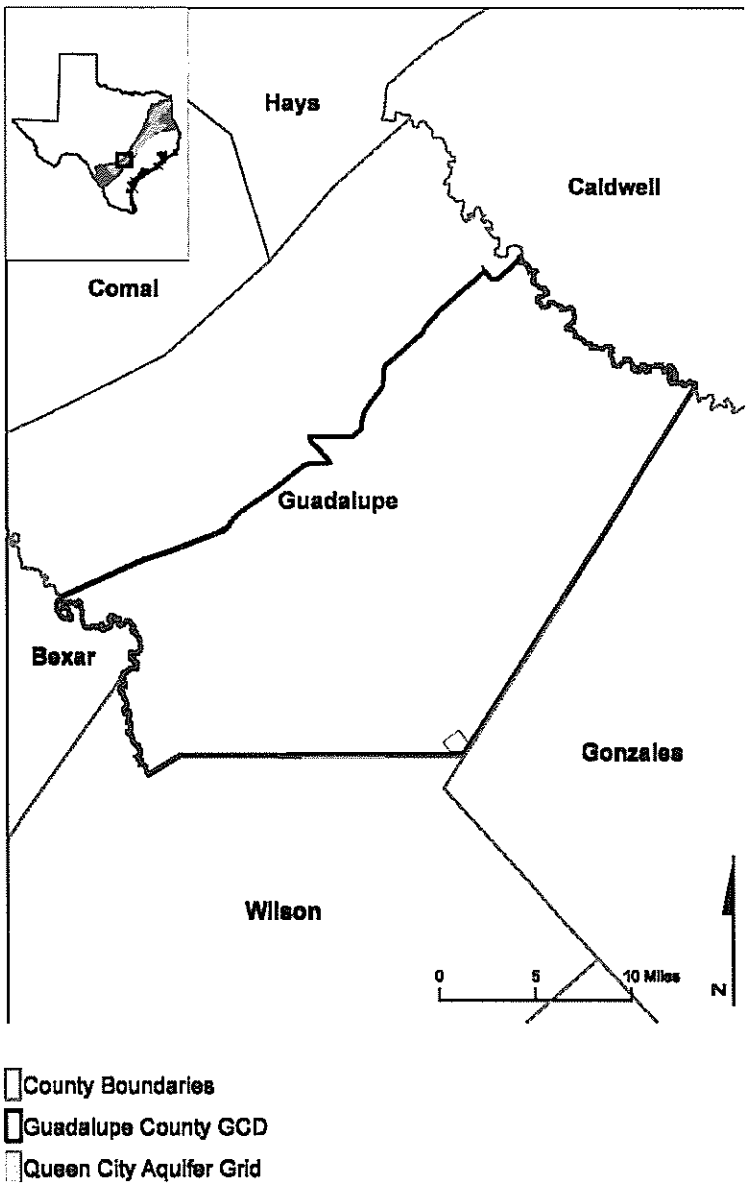

FIGURE 1: AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE SOUTHERN PORTION OF THE QUEEN CITY AQUIFER FROM WHICH THE INFORMATION IN TABLE 1 WAS EXTRACTED (THE AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).

TABLE 2: SUMMARIZED INFORMATION FOR THE CARRIZO-WILCOX AQUIFER THAT IS NEEDED FOR GUADALUPE COUNTY GROUNDWATERCONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT. THESE FLOWS MAY INCLUDE FRESH AND BRACKISH WATERS.

Management Plan requirement	*Aquifer*	*Results*
Estimated annual amount of recharge from precipitation to the district	Carrizo-Wilcox Aquifer	17,610
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Carrizo-Wilcox Aquifer	4,854
Estimated annual volume of flow into the district within each aquifer in the district	Carrizo-Wilcox Aquifer	1,259
Estimated annual volume of flow out of the district within each aquifer in the district	Carrizo-Wilcox Aquifer	15,967
Estimated net annual volume of flow between each aquifer in the district	From the Reklaw Formation confining unit into the Carrizo-Wilcox Aquifer	382

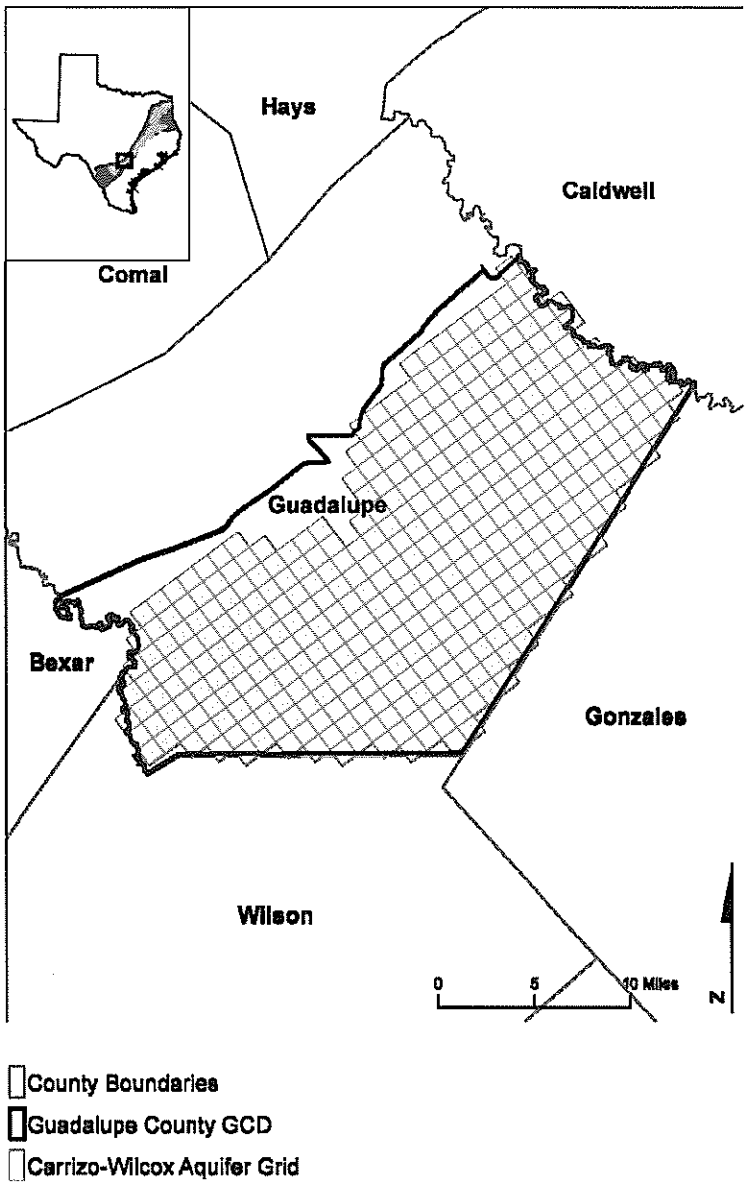

FIGURE 2: AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE SOUTHERN CARRIZO-WILCOX AQUIFER FROM WHICH THE INFORMATION IN TABLE 2 WAS EXTRACTED (THE AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).

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 interaction with streams are specific to particular historic time periods.

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 related 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.

REFERENCES:

Deeds, N., Kelley, V., Fryar, D., Jones, T., Whallon, A.J., and Dean, K.E., 2003, Groundwater Availability Model for the Southern Carrizo-Wilcox Aquifer: Contract report to the Texas Water Development Board, 451 p., http://www.twdb.state.tx.us/gam/czwx_s/CZWX_s_Full_Report.pdf .

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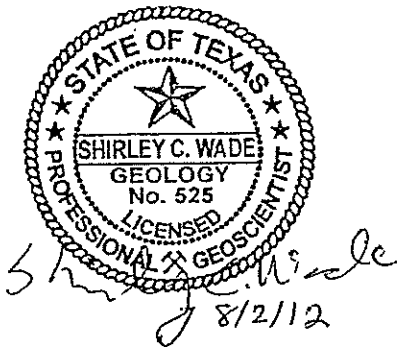
APPENDIX G

GAM RUN 10-012 MAG: MODELED AVAILABLE GROUNDWATER FOR THE CARRIZO-WILCOX, QUEEN CITY, AND SPARTA AQUIFERS IN GROUNDWATER MANAGEMENT AREA 13

by Shirley C. Wade, Ph.D., P.G.
Texas Water Development Board
Groundwater Resources Division
Groundwater Availability Modeling Section
(512) 936-0883
August 2, 2012



The seal appearing on this document was authorized by Shirley C. Wade, P.G. 525, on August 2, 2012.

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GAM Run 10-012 MAG: Modeled Available Groundwater for the Carrizo-Wilcox, Queen City, and Sparta Aquifers in Groundwater Management Area 13

by Shirley C. Wade, Ph.D., P.G.
Texas Water Development Board
Groundwater Resources Division
Groundwater Availability Modeling Section
(512) 936-0883
August 2, 2012

EXECUTIVE SUMMARY:

The modeled available groundwater for Groundwater Management Area 13 for the Carrizo-Wilcox, Queen City, and Sparta aquifers is summarized in Table 1, 2, and 3 for use in the regional water planning process. These values are also listed by decade for each aquifer by county (Table 4), river basin (Table 5), regional water planning group (Table 6), and groundwater conservation district (Table 7). The modeled available groundwater estimates for the Queen City, Sparta, and Carrizo-Wilcox aquifers range from approximately 399,000 acre-feet per year in 2010 to 425,000 acre-feet per year in 2060 (Table 4). The estimates were extracted from results of Groundwater Availability Model Run 09-034, scenario 4, which meets the desired future conditions adopted by members of Groundwater Management Area 13.

This report reflects the official release of the revised groundwater district boundaries by the Texas Commission on Environmental Quality (TCEQ). Specifically, this report reflects the division of modeled available groundwater between the Gonzales County Underground Water Conservation District and Plum Creek Conservation District based on the new groundwater conservation district boundaries.

REQUESTOR:

Mr. Mike Mahoney from the Evergreen Underground Water Conservation District acting on behalf of Groundwater Management Area 13.

DESCRIPTION OF REQUEST:

In a letter dated April 13, 2010 and received by the Texas Water Development Board (TWDB) on April 15, 2010, Mr. Mike Mahoney provided the TWDB with the desired future conditions of the Carrizo-Wilcox, Queen City, and Sparta aquifers adopted by the groundwater conservation districts in Groundwater Management Area 13. The desired future conditions for the Carrizo-Wilcox, Queen City, and Sparta aquifers, as described in Resolution R 2010-01 and adopted April 9, 2010 by the groundwater conservation districts within Groundwater Management Area 13, are described below:

- "In reference to GAM Run 09-034, the committee has considered, the base scenario of an average drawdown of 22 feet, scenario 2 an average drawdown of 22 feet, scenario 3 an average drawdown of 23 feet and scenario 4 an average drawdown of 23 feet;"
- "The district members of Groundwater Management Area 13, adopt scenario 4, and an average drawdown of 23 feet for the Sparta, Weches, Queen City, Reklaw, Carrizo, and the Wilcox Aquifers"

In response to receiving the adopted desired future conditions, TWDB has estimated the modeled available groundwater for the Carrizo-Wilcox, Queen City, and Sparta Aquifers in Groundwater Management Area 13.

METHODS:

Groundwater Management Area 13, located in south central Texas, includes the southern part of the Queen City, Sparta, and Carrizo-Wilcox aquifers (Figure 1). For the previously completed Groundwater Availability Model Run 09-034 (Wade and Jigmond, 2010) average recharge and evapotranspiration rates and initial streamflows based on the historical calibration-verification runs, representing 1981 to 1999 were summarized. These averages were then used for each year of the 61-year predictive simulations along with pumping specified by Groundwater Management Area 13 members in four scenarios. The results of the pumping scenarios were reviewed by members of Groundwater Management Area 13 to develop their desired future conditions. Model scenario 4 resulted in an overall average drawdown of 23 feet for the Queen City, Sparta, and Carrizo-Wilcox aquifers and for the Weches and Reklaw confining units. The pumping for scenario 4 was extracted from the model results and divided by county, river basin, regional water planning area and groundwater conservation district within Groundwater Management Area 13 (Figure 2).

Modeled Available Groundwater and Permitting

As defined in Chapter 36 of the Texas Water Code, "modeled available groundwater" is the estimated average amount of water that may be produced annually to achieve a desired future condition. Groundwater conservation districts are required to consider modeled available groundwater, along with several other factors, when issuing permits in order to manage groundwater production to achieve the desired future condition(s). The other factors districts must consider include annual precipitation and production patterns, the estimated amount of pumping exempt from permitting, existing permits, and a reasonable estimate of actual groundwater production under existing permits. The estimated amount of pumping exempt from permitting, which the Texas Water Development Board is required to develop after soliciting input from applicable groundwater conservation districts, will be provided in a separate report.

PARAMETERS AND ASSUMPTIONS:

The parameters and assumptions for the groundwater availability model for the southern part of the Queen City, Sparta, and Carrizo-Wilcox aquifers are described below:

- Version 2.01 of the groundwater availability model for the southern part of the Queen City, Sparta, and Carrizo-Wilcox aquifers was used for this analysis
- See Deeds and others (2003) and Kelley and others (2004) for assumptions and limitations of the groundwater availability model for the southern part of the Queen City, Sparta, and Carrizo-Wilcox aquifers.
- The model includes eight layers representing:
- the Sparta Aquifer (layer 1),
- the Weches Formation (layer 2),
- the Queen City Aquifer (layer 3),
- the Reklaw Formation (layer 4),
- the Carrizo Aquifer (layer 5),
- the upper and where the upper is missing, the middle Wilcox Aquifer (layer 6),
- the middle Wilcox Aquifer (layer 7), and
- the lower Wilcox Aquifer (layer 8).

- Groundwater in the groundwater availability model for the southern portion of the Queen City, Sparta, and Carrizo-Wilcox aquifers ranges from fresh to saline (Kelley and others, 2004).

- The root mean square error (a measure of the difference between simulated and measured water levels during model calibration) in the entire model for 1999 is 23 feet for the Sparta Aquifer, 18 feet for the Queen City aquifer, and 33 feet for the Carrizo aquifer (Kelley and others, 2004).

- Recharge rates, evapotranspiration rates, and initial streamflows are averages of historic estimates from 1981 to 1999.

RESULTS:

The modeled available groundwater for the Carrizo-Wilcox Aquifer that achieves the desired future conditions adopted by Groundwater Management Area 13 increases from 375,654 to 404,000 acre-feet per year between 2010 and 2060 (Table 1). The modeled available groundwater for the Queen City Aquifer in Groundwater Management Area 13 declines from 16,311 to 14,538 acre-feet per year over the same time period (Table 2). The modeled available groundwater for the Sparta Aquifer in Groundwater Management Area 13 declines from 6,800 to 6,365 acre-feet per year (Table 3). The modeled available groundwater in tables 1, 2, and 3 has been summarized by county, river basin, and regional water planning area for use in the regional water planning process.

The modeled available groundwater is also summarized by county (Table 4), river basin (Table 5), regional water planning area (Table 6), and groundwater conservation district (Table 7). In Table 7, the modeled available groundwater among all districts has been calculated both excluding and including areas outside the jurisdiction of a groundwater conservation district.

LIMITATIONS:

The groundwater model 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.

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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.

REFERENCES:

Deeds, N., Kelley, V., Fryar, D., Jones, T., Whallon, A. J., and Dean, K. E., 2003, Groundwater Availability Model for the Southern Carrizo-Wilcox Aquifer: contract report to the Texas Water Development Board, 452 p.

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Wade S.C. and Jigmond, M., 2010, GAM Run 09-034, Texas Water Development Board GAM Run Report, 146 p.

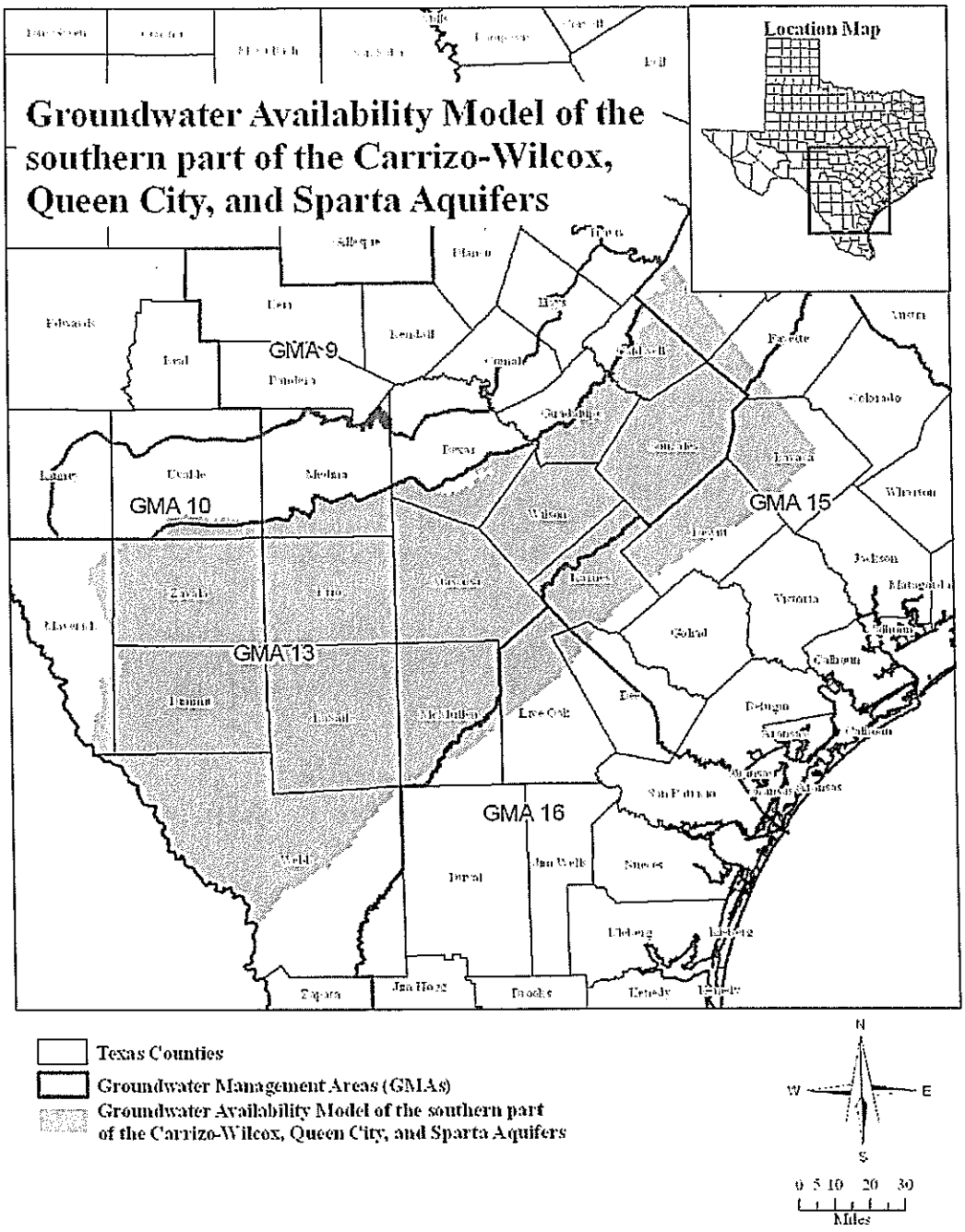


FIGURE 1.MAP SHOWING THE AREAS COVERED BY THE GROUNDWATER AVAILABILITY MODEL FOR THE SOUTHERN PART OF THE CARRIZO-WILCOX, QUEEN CITY, AND SPARTA AQUIFERS.

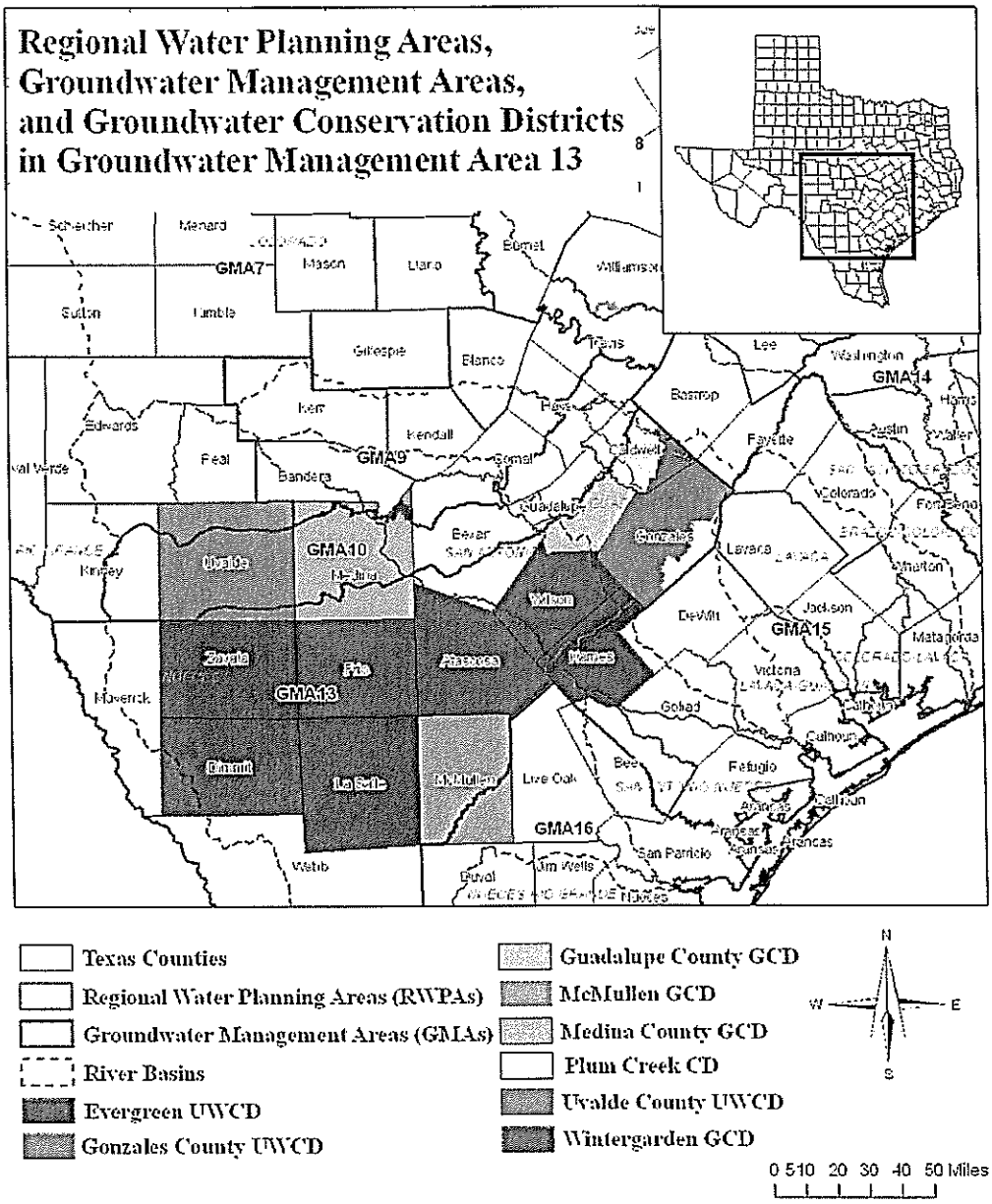


FIGURE 2. MAP SHOWING REGIONAL WATER PLANNING AREAS, GROUNDWATER MANAGEMENT AREAS, GROUNDWATER CONSERVATION DISTRICTS (GCDS), COUNTIES, AND RIVER BASINS IN AND NEIGHBORING GROUNDWATER MANAGEMENT AREA 13. UWCD REFERS TO UNDERGROUND WATER CONSERVATION DISTRICT.

TABLE 1. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE CARRIZO-WILCOX AQUIFER IN GROUNDWATER MANAGEMENT AREA 13. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE DIVIDED BY COUNTY, RIVER BASIN, AND REGIONAL WATER PLANNING AREA.

County	Regional Water Planning Area	Basin	Year					
			2010	2020	2030	2040	2050	2060
Atascosa	L	Nueces	67,829	68,656	70,249	71,827	73,666	75,688
		San Antonio	120	120	120	120	120	120
Bexar	L	Nueces	14,198	14,198	14,198	14,198	14,198	14,198
		San Antonio	12,080	12,080	12,080	12,080	12,080	11,909
Caldwell	L	Colorado	593	593	593	593	593	593
		Guadalupe	43,951	43,951	43,543	43,543	42,967	42,967
Dimmit	L	Nueces	3,253	3,253	3,253	3,253	3,253	3,253
		Rio Grande	106	106	106	106	106	106
Frio	L	Nueces	81,551	79,089	76,734	74,439	72,222	70,030
Gonzales	L	Guadalupe	52,268	62,101	70,102	75,576	75,755	75,755
		Lavaca	215	215	215	215	215	215
Guadalupe	L	Guadalupe	8,868	9,460	9,910	11,648	12,168	12,668
		San Antonio	1,373	1,373	1,373	1,373	1,373	1,373
Karnes	L	Guadalupe	185	195	207	215	220	224
		Nueces	87	92	97	101	103	105
		San Antonio	787	830	878	915	936	951
La Salle	L	Nueces	6,454	6,454	6,454	6,454	6,454	6,454
Maverick	M	Nueces	777	777	777	472	472	472
		Rio Grande	1,266	1,266	1,247	1,205	1,098	1,060
McMullen	N	Nueces	1,819	1,819	1,819	1,819	1,819	1,819
Medina	L	Nueces	2,542	2,519	2,507	2,507	2,507	2,507
		San Antonio	26	26	26	26	26	26
Uvalde	L	Nueces	2,971	1,230	828	828	828	828
Webb	M	Nueces	92	92	92	92	92	92
		Rio Grande	824	824	824	824	824	824
Wilson	L	Guadalupe	624	672	731	791	861	938
		Nueces	7,151	7,311	7,505	7,703	7,932	8,185
		San Antonio	27,785	29,003	30,481	31,992	33,738	35,671
Zavala	L	Nueces	35,859	35,859	35,521	35,388	35,288	34,969
Total			**375,654**	**384,164**	**392,470**	**400,303**	**401,914**	**404,000**

TABLE 2. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE QUEEN CITY AQUIFER IN GROUNDWATER MANAGEMENT AREA 13. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE DIVIDED BY COUNTY, RIVER BASIN, AND REGIONAL WATER PLANNING AREA.

County	Regional Water Planning Area	Basin	Year					
			2010	2020	2030	2040	2050	2060
Atascosa	L	Nueces	4,546	4,546	4,513	4,405	4,300	4,202
Caldwell	L	Guadalupe	306	306	306	306	306	306
Dimmit	L	Nueces	0	0	0	0	0	0
		Rio Grande	0	0	0	0	0	0
Frio	L	Nueces	4,748	4,582	4,422	4,270	4,124	3,983
Gonzales	L	Guadalupe	5,030	5,030	5,030	5,030	5,030	5,030
		Lavaca	35	35	35	35	35	35
Guadalupe	L	Guadalupe	0	0	0	0	0	0
Karnes	L	Guadalupe	0	0	0	0	0	0
		Nueces	0	0	0	0	0	0
		San Antonio	0	0	0	0	0	0
La Salle	L	Nueces	1	1	1	1	1	1
McMullen	N	Nueces	136	136	136	136	136	136
Webb	M	Nueces	0	0	0	0	0	0
		Rio Grande	0	0	0	0	0	0
Wilson	L	Guadalupe	128	114	101	90	80	72
		Nueces	148	132	117	104	93	83
		San Antonio	1,233	1,094	973	866	772	690
Zavala	L	Nueces	0	0	0	0	0	0
Total			**16,311**	**15,976**	**15,634**	**15,243**	**14,877**	**14,538**

TABLE 3. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE SPARTA AQUIFER IN GROUNDWATER MANAGEMENT AREA 13. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE DIVIDED BY COUNTY, RIVER BASIN, AND REGIONAL WATER PLANNING AREA.

County	Regional Water Planning Area	Basin	Year					
			2010	2020	2030	2040	2050	2060
Atascosa	L	Nueces	1,191	1,130	1,082	1,042	1,013	994
Dimmit	L	Nueces	0	0	0	0	0	0
Frio	L	Nueces	729	698	674	650	624	601
Gonzales	L	Guadalupe	3,529	3,529	3,529	3,529	3,529	3,529
		Lavaca	23	23	23	23	23	23
Karnes	L	Guadalupe	0	0	0	0	0	0
		Nueces	0	0	0	0	0	0
		San Antonio	0	0	0	0	0	0
La Salle	L	Nueces	987	987	987	987	987	987
McMullen	N	Nueces	90	90	90	90	90	90
Webb	M	Nueces	0	0	0	0	0	0
		Rio Grande	0	0	0	0	0	0
Wilson	L	Guadalupe	23	20	18	16	14	13
		Nueces	55	49	44	39	34	31
		San Antonio	173	154	137	121	108	97
Zavala	L	Nueces	0	0	0	0	0	0
Total			**6,800**	**6,680**	**6,584**	**6,497**	**6,422**	**6,365**

TABLE 4. MODELED AVAILABLE GROUNDWATER FOR THE CARRIZO-WILCOX, QUEEN CITY, AND SPARTA AQUIFERS SUMMARIZED BY COUNTY IN GROUNDWATER MANAGEMENT AREA 13 FOR EACH DECADE BETWEEN 2010 AND 2060. RESULTS ARE IN ACRE-FEET PER YEAR.

County	Year					
	2010	2020	2030	2040	2050	2060
Atascosa	73,686	74,452	75,964	77,394	79,099	81,004
Bexar	26,278	26,278	26,278	26,278	26,278	26,107
Caldwell	44,850	44,850	44,442	44,442	43,866	43,866
Dimmit	3,359	3,359	3,359	3,359	3,359	3,359
Frio	87,028	84,369	81,830	79,359	76,970	74,614
Gonzales	61,100	70,933	78,934	84,408	84,587	84,587
Guadalup	10,241	10,833	11,283	13,021	13,541	14,041
Karnes	1,059	1,117	1,182	1,231	1,259	1,280
La Salle	7,442	7,442	7,442	7,442	7,442	7,442
Maverick	2,043	2,043	2,024	1,677	1,570	1,532
McMullen	2,045	2,045	2,045	2,045	2,045	2,045
Medina	2,568	2,545	2,533	2,533	2,533	2,533
Uvalde	2,971	1,230	828	828	828	828
Webb	916	916	916	916	916	916
Wilson	37,320	38,549	40,107	41,722	43,632	45,780
Zavala	35,859	35,859	35,521	35,388	35,288	34,969
Total	**398,765**	**406,820**	**414,688**	**422,043**	**423,213**	**424,903**

TABLE 5. MODELED AVAILABLE GROUNDWATER FOR THE CARRIZO-WILCOX, QUEEN CITY, AND SPARTA AQUIFERS SUMMARIZED BY RIVER BASIN IN GROUNDWATER MANAGEMENT AREA 13 FOR EACH DECADE BETWEEN 2010 AND 2060. RESULTS ARE IN ACRE-FEET PER YEAR.

Basin	Year					
	2010	2020	2030	2040	2050	2060
Colorado	593	593	593	593	593	593
Guadalupe	114,912	125,378	133,477	140,744	140,930	141,502
Lavaca	273	273	273	273	273	273
Nueces	237,214	233,700	232,100	230,805	230,236	229,708
Rio Grande	2,196	2,196	2,177	2,135	2,028	1,990
San Antonio	43,577	44,680	46,068	47,493	49,153	50,837
Total	**398,765**	**406,820**	**414,688**	**422,043**	**423,213**	**424,903**

TABLE 6. MODELED AVAILABLE GROUNDWATER FOR THE CARRIZO-WILCOX, QUEEN CITY, AND SPARTA AQUIFERS SUMMARIZED BY REGIONAL WATER PLANNING AREA IN GROUNDWATER MANAGEMENT AREA 13 FOR EACH DECADE BETWEEN 2010 AND 2060. RESULTS ARE IN ACRE-FEET PER YEAR.

Regional Water	Year					
	2010	2020	2030	2040	2050	2060
L	393,761	401,816	409,703	417,405	418,682	420,410
M	2,959	2,959	2,940	2,593	2,486	2,448
N	2,045	2,045	2,045	2,045	2,045	2,045
Total	**398,765**	**406,820**	**414,688**	**422,043**	**423,213**	**424,903**

TABLE 7. MODELED AVAILABLE GROUNDWATER FOR THE CARRIZO-WILCOX, QUEEN CITY, AND SPARTA AQUIFERS SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) IN GROUNDWATER MANAGEMENT AREA 13 FOR EACH DECADE BETWEEN 2010 AND 2060. RESULTS ARE IN ACRE-FEET PER YEAR. UWCD REFERS TO UNDERGROUND WATER CONSERVATION DISTRICT.

Groundwater Conservation District	Year					
	2010	2020	2030	2040	2050	2060
Evergreen UWCD	199,093	198,487	199,083	199,706	200,960	202,678
Gonzales County UWCD*	86,846	96,679	104,680	110,154	110,333	110,333
Guadalupe County	10,241	10,833	11,283	13,021	13,541	14,041
McMullen	2,045	2,045	2,045	2,045	2,045	2,045
Medina County	2,568	2,545	2,533	2,533	2,533	2,533
Plum Creek	18,122	18,122	17,714	17,714	17,138	17,138
Uvalde County UWCD	2,971	1,230	828	828	828	828
Wintergarden	46,660	46,660	46,322	46,189	46,089	45,770
Total (excluding non-district areas)	**368,546**	**376,601**	**384,488**	**392,190**	**393,467**	**395,366**
No District	30,219	30,219	30,200	29,853	29,746	29,537
Total (including non-district areas)	**398,765**	**406,820**	**414,688**	**422,043**	**423,213**	**424,903**

*Note: Gonzales County UWCD includes area in Caldwell County

Appendix A

Estimates of total pumping split by aquifer layers for Groundwater Conservation Districts

Evergreen Underground Water Conservation District		Year					
	Unit or Layer	**2010**	**2020**	**2030**	**2040**	**2050**	**2060**
Pumping	Sparta	2,171	2,051	1,955	1,868	1,793	1,736
	Queen City	10,803	10,468	10,126	9,735	9,369	9,030
	Carrizo	151,373	151,222	152,256	153,357	155,052	157,166
	Wilcox (Layer 6)	375	375	375	375	375	375
	Wilcox (Layer 7)	371	371	371	371	371	371
	Wilcox (Layer 8)	34,000	34,000	34,000	34,000	34,000	34,000
	Total	**199,093**	**198,487**	**199,083**	**199,706**	**200,960**	**202,678**

Gonzales County Underground Water Conservation District		Year					
	Unit or Layer	**2010**	**2020**	**2030**	**2040**	**2050**	**2060**
Pumping	Sparta	3,552	3,552	3,552	3,552	3,552	3,552
	Queen City	5,349	5,349	5,349	5,349	5,349	5,349
	Carrizo	45,884	55,717	63,718	69,192	69,371	69,371
	Wilcox (Layer 6)	0	0	0	0	0	0
	Wilcox (Layer 7)	12,159	12,159	12,159	12,159	12,159	12,159
	Wilcox (Layer 8)	19,902	19,902	19,902	19,902	19,902	19,902
	Total	**86,846**	**96,679**	**104,680**	**110,154**	**110,333**	**110,333**

Guadalupe County Groundwater Conservation District		Year					
	Unit or Layer	**2010**	**2020**	**2030**	**2040**	**2050**	**2060**
Pumping	Carrizo	5,500	6,239	6,689	8,427	9,000	9,500
	Wilcox (Layer 6)	0	0	0	0	0	0
	Wilcox (Layer 7)	3,194	3,047	3,047	3,047	2,994	2,994
	Wilcox (Layer 8)	1,547	1,547	1,547	1,547	1,547	1,547
	Total	**10,241**	**10,833**	**11,283**	**13,021**	**13,541**	**14,041**

McMullen Groundwater Conservation District		Year					
	Unit or Layer	**2010**	**2020**	**2030**	**2040**	**2050**	**2060**
Pumping	Sparta	90	90	90	90	90	90
	Queen City	136	136	136	136	136	136
	Carrizo	1,819	1,819	1,819	1,819	1,819	1,819
	Total	**2,045**	**2,045**	**2,045**	**2,045**	**2,045**	**2,045**

Medina County Groundwater Conservation District		Year					
	Unit or Layer	**2010**	**2020**	**2030**	**2040**	**2050**	**2060**
Pumping	Carrizo	400	400	400	400	400	400
	Wilcox (Layer 6)	0	0	0	0	0	0
	Wilcox (Layer 7)	1,248	1,248	1,248	1,248	1,248	1,248
	Wilcox (Layer 8)	920	897	885	885	885	885
	Total	**2,568**	**2,545**	**2,533**	**2,533**	**2,533**	**2,533**

Plum Creek Conservation District		Year					
	Unit or Layer	**2010**	**2020**	**2030**	**2040**	**2050**	**2060**
Pumping	Queen City	22	22	22	22	22	22
	Carrizo	3,498	3,498	3,498	3,498	3,498	3,498
	Wilcox (Layer 6)	0	0	0	0	0	0
	Wilcox (Layer 7)	4,869	4,869	4,869	4,869	4,293	4,293
	Wilcox (Layer 8)	9,733	9,733	9,325	9,325	9,325	9,325
	Total	**18,122**	**18,122**	**17,714**	**17,714**	**17,138**	**17,138**

Uvalde County Underground Water Conservation District		Year					
	Unit or Layer	**2010**	**2020**	**2030**	**2040**	**2050**	**2060**
Pumping	Carrizo	828	828	828	828	828	828
	Wilcox (Layer 6)	2,143	402	0	0	0	0
	Total	**2,971**	**1,230**	**828**	**828**	**828**	**828**

Wintergarden Groundwater Conservation District		Year					
	Unit or Layer	**2010**	**2020**	**2030**	**2040**	**2050**	**2060**
Pumping	Sparta	987	987	987	987	987	987
	Queen City	1	1	1	1	1	1
	Carrizo	31,990	31,990	31,652	31,519	31,419	31,100
	Wilcox (Layer 6)	9,259	9,259	9,259	9,259	9,259	9,259
	Wilcox (Layer 7)	4,007	4,007	4,007	4,007	4,007	4,007
	Wilcox (Layer 8)	416	416	416	416	416	416
	Total	**46,660**	**46,660**	**46,322**	**46,189**	**46,089**	**45,770**

APPENDIX H

RULES OF THE

GUADALUPE COUNTY GROUNDWATER CONSERVATION DISTRICT

Effective November 10, 2010 / January 1, 2011
as set forth in the Resolution of the Board of Directors
adopted November 10, 2010

210 East Live Oak Street, Suite 213
P. O. Box 1221, Seguin Texas 78156
(830) 379-5969

TABLE OF CONTENTS

SECTION 1. DEFINITIONS AND CONCEPTS

RULE 1.1 DEFINITIONS OF TERMS:

In the administration of its duties, the Guadalupe County Groundwater Conservation District follows the definitions of terms set forth in Chapter 36, Water Code, and other definitions as follows:

a. "Affected person" means, for any application, a person who has a personal justiciable interest related to a legal right, duty, privilege, power, or economic interest affected by the application. An interest common to members of the general public does not qualify as a personal justiciable interest.

b. "Aquifer" or "Groundwater Reservoir" shall mean a specific subsurface water-bearing reservoir having ascertainable boundaries containing groundwater.

c. "Artesian Well" shall mean a water well completed in the confined portion of an aquifer such that, when properly cased, water will rise in the well, by natural pressure, above an overlying impermeable stratum.

d. "Beneficial Use" or "Use for a Beneficial Purpose" shall mean use for:

   1. agricultural, gardening, domestic, stock raising, municipal, mining, manufacturing, industrial, commercial, recreational or pleasure purposes;
   2. exploring for, producing, handling, or treating oil, gas, sulfur, or other minerals; or
   3. any other purpose that is useful and beneficial to the user that does not commit waste as defined in this rule.

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

f. "Casing" means a tubular watertight structure installed in the excavated or drilled hole to maintain the well opening and, along with cementing, to confine the groundwaters to their zones of origin and prevent the entrance of surface pollutants.

g. "Cement" means a neat Portland or construction cement mixture of not more than seven gallons of water per ninety-four (94) pound sack of dry cement, or a cement slurry which contains cement along with bentonite, gypsum, or other additives. All manufacturers' recommendations regarding water content for the mix must be strictly adhered to.

h. "Deteriorated Well" means a well, the condition of which will cause, or is likely to cause, pollution of any water in the District.

i. "Desired Future Condition(s)" means the desired, quantified condition(s) of groundwater resources, including water levels, water quality, spring flows, or volumes, for a specified aquifer within a management area at a specified time or times in the future. Desired Future Conditions are defined by the District in conjunction with other districts within the same groundwater management area as part of the joint planning process required by the Texas Water Development Board.

j. "District" means the Guadalupe County Groundwater Conservation District.

k. "District Act" means the Guadalupe County Groundwater Conservation District enabling legislation, Act of May 29, 1997, 75th Legislature, Regular Session, Chapter 1066, as amended by Act of May 26, 1999, 76th Legislature, Regular Session, Ch. 1141.

l. "District office" means the office and headquarters of the District. The location of the District office may be changed from time to time by resolution of the Board.

m. "District Potable Water Purveyor" means any Municipality, City, or Water Supply Corporation, investor owned or non-profit, whose sole purpose is to supply potable water to a customer base with no less than 95% of its service area within the boundaries of the District.

n. "Emergency Multiple Systems Interconnects" means that a District Potable Water Purveyor whose lines interconnected with a system or systems outside of the District for the sole purpose of *temporary* assistance during an emergency situation. All interconnects shall be valved and metered at the District boundary lines. The District shall be provided with written notification immediately as to the nature of the emergency, the estimated time of assistance required and the current meter reading. Emergency assistance to an entity with more than 5% of its service area outside of the District is subject to District transportation Permitting Requirements and Fees.

o. "Groundwater" means water percolating beneath the earth's surface within the District.

p. "Hearings Examiner" means a person whom the Board has delegated in writing the responsibility to preside over a hearing or matters related to the hearing, and who has the authority vested in a presiding officer under Chapter 36 of the Texas Water Code and these rules.

q. "Historic Use Period" is defined as November 5, 1977 through August 11, 2004.

r. "Historic Use" is an amount of groundwater produced and beneficially used during any consecutive 12-month period during the Historic Use Period, for a nonexempt purpose or in a nonexempt amount.

s. "Drilling Permit" means a permit for a water well to be drilled, or an existing well that is to be reworked, re-drilled, or re-equipped to increase production.

t. "Managed Available Groundwater" means the amount of water that may be permitted by the District for beneficial use in accordance with the Desired Future Condition of a particular aquifer.

u. "New well application" means an application for a permit for a well that has not been drilled.

v. "Texas Open Meetings Act" means Chapter 551, Government Code.

w. "Texas Public Information Act" means Chapter 552, Government Code.

x. "Production Permit" means a permit for a water well issued or to be issued by the District allowing the withdrawal of a specified amount of groundwater for a beneficial use for a designated period.

y. "Production" means groundwater actually pumped from percolating waters or aquifer and put to a proven beneficial use authorized by Texas law.

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

aa. "Pollution" means the alteration of the physical, thermal, chemical, or biological qualify of, or the contamination of, any water in the District, that renders the water harmful, detrimental, or injurious to humans, animal life, vegetation, or property or to public health, safety, or welfare, or impairs the usefulness or public enjoyment of the water for any lawful or reasonable purpose.

bb. "Presiding officer" means the President, Vice President, Secretary, or other Board member presiding at any hearing, meeting, workshop, or other proceeding, or a Hearings Examiner conducting any hearing or other proceeding related to the hearing.

cc. "Pumper" means a person authorized to produce groundwater as provided in these Rules.

dd. "Rules" means the rules of the District compiled in this document as it may be supplemented, repealed or otherwise amended from time to time.

ee. "Subdivision of a groundwater reservoir" means a definable part of a groundwater reservoir in which the groundwater supply will not be appreciably affected by withdrawing water from any other part of the reservoir, as indicated by known geological and hydrological conditions and relationships and on foreseeable economic development at the time the subdivision is designated or altered.

ff. "Mud" means a relatively homogeneous, relatively viscous fluid produced by the suspension of clay-size particles in water.

gg. "Texas Rules of Civil Procedure" and "Texas Rules of Evidence" mean the procedural and evidentiary rules in effect at the time of the District's action, hearing, or proceeding.

hh. "Transportation Facility" means any facility constructed for the purpose of transporting groundwater beyond the District's boundaries.

ii. "Waste" as used herein shall mean any one or more of the following:

1. The 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 agricultural, gardening, domestic, or stock raising purposes;

2. The flowing or producing of wells from a groundwater reservoir if the water produced is not used for a beneficial purpose;

3. The escape of groundwater from a groundwater reservoir to any other reservoir or geologic strata that does not contain groundwater;

4. The pollution or harmful alteration of groundwater in a groundwater reservoir by saltwater, other deleterious matter admitted from another stratum or from the surface of the ground;

5. 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 unless such discharge is authorized by permit, Rule or order issued by the Texas Commission on Environmental Quality under Chapter 26 of the Texas Water Code;

6. 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; or

7. For water produced from artesian well, "waste" has the meaning assigned by Section 11.025 of the Texas Water Code.

jj. "Well" means any facility, device, or method used to withdraw groundwater from within the District.

kk. "Well owner" means the person who holds a possessory interest in: (1) the land upon which a well is located or to be located, and who has authority to and who may lawfully produce groundwater from this land and/or (2) the well itself as long as this person has the authority to produce groundwater from the land on which the well is located, as evidenced by written documentation that establishes the consent of the landowner to this person's ownership and operation of the well.

ll. "Well operator" means the person who operates a well or a water distribution system supplied by a well.

mm. "Withdraw" means the act of extracting or producing groundwater by pumping or some other method.

RULE 1.2 PURPOSE OF RULES:

These Rules are adopted pursuant to Section 36.101 of the Texas Water Code and Section 5 of the District Act for the purpose of conserving, preserving, protecting and recharging the groundwater in the District, and these rules are adopted under the District's statutory authority to prevent waste of groundwater, protect rights of owners of interests in groundwater, prevent degradation of water quality, and to carry out the powers and duties of Chapter 36, Texas Water Code. The District's orders, resolutions, policies, guidelines, and other actions have been enacted and implemented to fulfill these objectives.

RULE 1.3 USE AND EFFECT OF RULES:

These Rules are used by the District as a guide in the exercise of the powers conferred by law and in the accomplishment of the purposes of the District Act. They may not be construed as a limitation or restriction on the exercise of any discretion nor may they be construed to deprive the District or Board of the exercise of any powers, duties or jurisdiction conferred by law, nor may 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.

RULE 1.4 AMENDING OF RULES:

The Board may, following notice and hearing as provided in these rules and Chapter 36 of the Texas Water Code, amend these Rules or adopt new Rules from time to time.

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, chapter or section without further identification is a reference to a title, chapter or section of the Water Code. Construction of words and phrases are governed by the Code Construction Act, Subchapter B, Chapter 311, Government Code.

RULE 1.7 METHODS OF SERVICE UNDER THE RULES:

Except as otherwise expressly provided in these Rules, any 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 mail sent to the recipient's last known address, or by telephonic document transfer to the recipient's current telecopier number. Service by mail is complete upon deposit in a post office or other official depository of the United States Postal Service. Service by telephonic document transfer is complete upon transfer, except that any transfer occurring after 5:00 p.m. shall be deemed complete the following business day. If service or delivery is by mail, and the recipient has the right, or is required, to do some act within a prescribed period of time after service, three days will be added to the prescribed period. Where service by other methods has proved impossible, the service may be complete upon publication of the notice in a newspaper with general circulation in the District, or by such other method as may be approved by the Board. The person or person's attorney or authorized representative 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 1.8 SEVERABILITY:

If any one or more of the provisions contained in these Rules is for any reason held to be invalid, illegal, or unenforceable in any respect, the invalidity, illegality, or unenforceability may not affect any other Rules or provisions of these Rules and these Rules will be construed as if such invalid, illegal or unenforceable rule or provision had never been contained in these Rules.

RULE 1.9 COMPUTING TIME:

In computing any period of time prescribed or allowed by these Rules, order of the Board, provided by a Presiding Officer, or any applicable statute, the day of the act, event, or default from which the designated period of time begins to run is not included, but the last day of the period so computed is included, unless it is a Saturday, Sunday, or legal holiday, in which event the period runs until the end of the next day which is neither a Saturday, Sunday, or legal holiday.

RULE 1.10 TIME LIMITS:

Applications, requests, or other papers or documents required or permitted to be filed under these Rules or by law must be received for filing in the District office within the time limit for filing, if any. The date of receipt, not the date of posting, is determinative of the time of filing. Time periods set forth in these rules shall be measured by calendar days, unless otherwise specified.

SECTIONS 2 AND 3 HAVE BEEN REPEALED. SOME OF THE PROVISIONS IN THESE FORMER SECTIONS HAVE BEEN RELOCATED WITHIN THE CURRENT RULES.

SECTION 4. DISTRICT

RULE 4.1 MINUTES AND RECORDS OF THE DISTRICT:

All documents, reports, records, and minutes of the District will be available for public inspection and copying in accordance with the Texas Public Information Act (the "TPIA"). Upon written request of any person, the District will furnish copies of its public records in accordance with the TPIA. Persons who are furnished copies may be assessed a copying charge, pursuant to policies established by the Board and consistent with the TPIA and regulations of the Office of the Attorney General of the State of Texas.

RULE 4.2 CERTIFIED COPIES:

Requests for certified copies must be in writing. Certified copies will be made under the direction of the General Manager and will be affixed with the seal of the District. Persons furnished certified copies may be assessed a certification charge, in addition to the copying charge, pursuant to policies established by the Board.

RULE 4.3 OFFICE HOURS:

The District will maintain business hours as designated from time to time by the Board of Directors.

RULE 4.4 MEETINGS:

The Board will hold a regular meeting at least once each quarter and may meet more frequently as the Board may establish from time to time. At the request of the President, or by written request of at least two members, the Board may hold special meetings. All Board meetings will be held in accordance with the Texas Open Meetings Act.

SECTION 5. PERMITS

RULE 5.1 STANDARD PERMIT PROVISIONS:

All permits are granted subject to the District Act, these Rules, the District Management Plan, Drought Management Plan, orders of the Board, and the laws of the State of Texas. In addition to any special provisions or other requirements incorporated into the permit, each permit issued shall contain the following standard permit provisions:

a. This permit is granted in accordance with the provisions of the District Act, Water Code, and the Rules, Management Plan, Drought Management Plan and orders of the District, and acceptance of this permit constitutes an acknowledgment and agreement that the permittee will comply with the Texas Water Code, the District Act, the District Rules, Management Plan, Drought Management Plan, orders of the District Board, and all the terms, provisions, conditions, requirements, limitations and restrictions embodied in this permit.

b. This permit confers no vested rights in the holder, and it may be revoked or suspended, or its terms may be modified or amended pursuant to the provisions of the District Act.

c. The operation of the well for the authorized withdrawal must be conducted in a non-wasteful manner. In the event that groundwater is to be transported a distance greater than one-half (1/2) mile from the well, it must be transported by a pipeline or truck to prevent waste caused by evaporation and percolation.

d. To insure regular production monitoring, all permitted wells shall be equipped with approved metering devices accessible to District employees at any time during normal business hours. The District may require the permit holder, at the permit holder's expense, to test the accuracy of the meter and submit a certificate of the test results. This requirement is in addition to the requirement for meter calibration in District Rule 5.10. If the tests reveal 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 permit holder

must take appropriate steps to remedy the problem, and to retest the meter within 90 calendar days from the date the problem is discovered.

e. In addition, the permittee must keep records of the amount of groundwater produced and the purpose of the production and agrees to make those records available for District inspection, if requested by the District. Immediate written notice must be given to the District by the permittee in the event the well is either polluted or causing pollution of the aquifer.

f. 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 District representatives.

g. The application pursuant to which this permit has been issued is incorporated in this permit, and this permit is granted on the basis of and contingent upon the accuracy of the information supplied in that application and in any amendments to the application. A finding that false information has been supplied is grounds for immediate revocation of the permit. In the event of conflict between the provisions of this permit and the contents of the application, the provisions of this permit shall control.

h. Violation of this permit's terms, conditions, requirements, or special provisions shall subject the permit holder to civil penalties, injunction from further well operation and production, and other legal action as provided by the District Rules.

i. Wherever special provisions are inconsistent with other provisions or District Rules, the special provisions prevail.

RULE 5.2 WELL PERMIT EXEMPTIONS:

a. Well drilling and operating permits are not required for:

1. a well used solely for domestic use or for providing water for livestock or poultry that is either drilled, completed, or equipped so that it is incapable of producing more than 25,000 gallons of groundwater a day;

2. the drilling of 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 well is located on the same lease or field associated with the drilling rig; or

3. the drilling of a water well authorized under a permit issued by the Railroad Commission of Texas under Chapter 134, Natural

Resources Code, or for production from such a well to the extent the withdrawals are required for mining activities regardless of any subsequent use of the water.

b. Notwithstanding Subsection (a), a district may require a well to be permitted by the district and to comply with all district rules if:

1. the purpose of a well exempted under Subsection (b)(2) is no longer 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; or

2. the withdrawals from a well exempted under Subsection (b)(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, Natural Resources Code.

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

1. the total amount of water withdrawn during the month;

2. the quantity of water necessary for mining activities; and

3. the quantity of water withdrawn for other purposes.

d. A water well exempt under this rule shall be registered in accordance with rules promulgated by the district; and 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 or harmful alteration of the character of the water in any groundwater reservoir. The driller of a well exempted under Subsection (a) or (b) shall file the drilling log with the district.

e. A well to supply water for a subdivision of land for which a plat approval is required by Chapter 232, Local Government Code, is not exempted under Subsection (b).

RULE 5.3 WELL DRILLING AND PRODUCTION PERMIT:

a. **Permits Required:**

1. Every person, unless exempted by Rule 5.2, must obtain a permit from the District for the drilling of a water well and production of water.

2. The requirement for a permit under this Rule shall also apply to any well currently in operation located within the District prior to the effective date of this rule, before the well may be altered or re-equipped to increase production, and prior to a change in the intended use of the water that is to be produced from the well.

b. **Permit Application:**

1. The permit application provided for herein must be filed with the District in the form or forms promulgated by the District and such permit must be obtained from the District prior to the drilling of water wells and proposed production of water, all in accordance with the provisions of this rule.

2. Before submitting an application for a well permit, prospective applicants may meet with District representatives to have District rules and application procedures explained in complete detail.

3. The applicant shall identify the depth of the water-bearing formation which the applicant proposes to drill, complete, and produce the well.

4. An application for the production of water for which a permit is required under this Rule shall:
   (i) be in writing and sworn to;
   (ii) contain the name, post-office address and place of residence or principal office of the applicant;
   (iii) identify the actual or anticipated location, pump size, and production capacity of the well from which the water is to be produced;
   (iv) identify the location and description of the well site, the property on which the well is to be situated, the pump size, the production capacity of the well, and the aquifer from which the water is to be produced;
   (v) the number of contiguous acres of land that the well is to be constructed upon.
   (vi) include the number and location of the enabling water rights contractually committed to the well.
   (vii) state the nature and purpose of the proposed use and the anticipated amount of water to be used;
   (viii) state the anticipated time within which the proposed construction or alteration is to begin;
   (ix) state the presently anticipated duration required for the proposed use of the water;

(x) provide information showing the anticipated effect of the proposed production on the quantity and quality of water available for future use both inside and outside the District;

(xi) provide information showing the anticipated effect of the proposed production on the quantity and quality of water available for future use within the affected area; if the proposed production is to exceed 200 ac.-ft./yr., then the producer must, at a minimum, provide information showing the anticipated effects after twenty-five (25) and fifty (50) years; if there is any existing water production, or any planned production of which the applicant is aware, of more than 200 ac.-ft./yr. within five (5) miles of the proposed well which may affect, or be affected by, the applicant's proposed production, such effects must be included in the applicant's required studies;

(xii) identify any other presently owned sources of water, the availability of which is both technically feasible and economically reasonable for the permittee, that could be reasonably used for the stated purposes, including quality and quantity of such alternate sources;

(xiii) identify any other liquids, the availability of which is both technically feasible and economically reasonable for the permittee, that could be reasonably substituted for the fresh ground water and possible sources of such liquid including quantity and quality;

(xiv) provide information showing what water conservation measures permittee has adopted, what water conservation goals permittee has established, and what measures and time frames are necessary to achieve the permittee's established water conservation goals;

(xv) if the water is to be resold to others, provide a description of the permittee's service area, permittee's metering and leak detection and repair program for its water storage, delivery and distribution system, permittee's drought or emergency water management plan, and information on each customer's water demands, including population and customer data, water use data, water supply system data, wastewater data, water conservation measures and goals, and the means for implementation and enforcement; and

(xvi) identify well(s) producing from the same formation within the proposed well's applicable "area of influence", as well as the owner(s) of said well(s).

5. The application must be accompanied by a map or plat drawn on a scale that adequately details the proposed project, showing;

(i) the location of the existing or proposed well(s);

(ii) the location of the existing or proposed production monitoring device(s) for compliance to section (j) of this Rule;
(iii) the location of the existing or proposed water use facilities; and
(iv) the location of the proposed or increased use or uses.

6. The Rule 5.3 permit application must be accompanied by an application fee as required by District Rule 10.2. This application fee shall be used to cover the cost of considering and processing the application.

7. The District shall determine whether the application, maps, and other materials comply with the requirements of this rule. The District may require amendment of the application, maps, or other materials to achieve necessary compliance.

8. Before construction of any wells associated with a Production project may be commenced, a Rule 5.3 applicant or permittee must apply for and obtain a drilling permit for each proposed well as required by Rules 5.1 and this rule. An application or application for drilling permit(s) must be submitted concurrently with a Rule 5.3 application for Production. Applications submitted concurrently will be considered together by the Board according to the standards and rules applicable to each.

9. Applicants who intend to produce more than 200 ac.-ft./yr. must submit a drought management plan with its application. Final issue of a production permit by the District to the applicant is contingent upon District approval of the submitted drought management plan.

10. Notice of filing of an application: All permit applicants must provide notice by publication in a newspaper of general circulation in the District, and by mailing notice by certified mail, return receipt requested, to all property owners within the "area of influence" as described in these rules.

(i) All public notices covered by this section must include the following information and be approved by the District prior to issuance:

(A) name and address of the applicant;
(B) date the application was filed;
(C) location and a description of the well that is the subject of the application;

(D) a brief summary of the information in the application; and

(E) a brief statement provided by the District setting forth generally that:

(I) a hearing will be set on the application;

(II) notice of the hearing will be published and posted at a future date, and such notice will include information on the location, date, and time of the hearing and the method by which a person can contest the application;

(III) the notice described in paragraph (II) will not be mailed to the person unless requested under these rules and that it will be the individual responsibility of the person to review the District's postings and publications of notices of hearings if the person wishes to contest the application or otherwise participate in the hearing; and

(IV) any other information deemed relevant by the District.

(ii) The applicant must include in the notices mailed to property owners within the "area of influence" a statement recommending that any such owner immediately register with the District any unregulated well within the proposed well's applicable "area of influence"; and

(iii) The applicant must provide the District with the following information for the District to declare that the application is administratively complete:

(A) Information contained in this rule;

(B) proof of publication of public notice;

(C) proof by certified mail receipt that notice was sent by certified mail to the property owners and well owners to whom notice is required under this Subsection (proof of actual receipt by the owner is not required of the applicant); and

(D) a list of the names and addresses of the property owners notified by certified mail.

c. **Permit Hearing**:

1. Notice of Hearing: Once the District has received an administratively complete application for a water well permit or production permit, a major permit amendment, or a minor permit amendment for which the Board President and General Manager decides that a hearing is required, and associated fees, the General

Manager, with the Board President's approval, will issue written notice of hearing on the application in accordance with these rules.

(i) Notices of all hearings of the District shall be prepared by the General Manager, with the Board President's approval, and shall, at a minimum, state the following information:
  (A) the name and address of the applicant;
  (B) the name or names of the owner or owners of the land if different from the applicant;
  (C) the time, date, and location of the hearing;
  (D) the address or approximate proposed location of the well, if different than the address of the applicant; and
  (E) 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;
  (F) a general explanation of the manner by which a person may contest the application, including information regarding the need to appear at the hearing or submit a motion for continuance on good cause under these rules; and
  (G) any other information the Board or General Manager deems relevant and appropriate to include in the notice.

(ii) Not later than the tenth day prior to the date of the hearing, notice shall be:
  (A) posted by the General Manager, with the Board President's approval, at a place readily accessible to the public in the District Office;
  (B) provided by the General Manager, with the Board President's approval, to the County Clerk of Guadalupe County, whereupon the County Clerk shall post the notice on a bulletin board at a place convenient to the public in the county courthouse annex;
  (C) provided to the applicant by regular mail;
  (D) provided to any person who has requested notice under subsection (iii) of this rule by regular mail, facsimile, or electronic mail; and
  (E) provided to property owners within the "area of influence" by regular mail, facsimile, or electronic mail.

(iii) A person may request notice from the district of a hearing on a permit or a permit amendment application. The request must be 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 e-mail to the person in accordance with the information provided by the person is proof that notice was provided by the district.

(iv) Failure to provide notice under subsection (iii) does not invalidate an action taken by the district at the hearing.

(v) All hearings shall be held at the location set forth in the notice.

(vi) The General Manager, with the Board President's approval, shall set a permit hearing date within 60 calendar days after the date the administratively complete application is submitted. The permit hearing shall be held within 35 calendar days after the setting of the date. Within this same time frame, the General Manager, with the Board President's approval, 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, with the Board President's approval.

2. Registration of Unregulated Wells for Remediation: Notwithstanding the presence of unregulated wells of record in a proposed well's applicable "area of influence", the District may grant a requested permit if, among other things, all setback and production rules are complied with. However, remediation of all unregulated Carrizo wells of record within the proposed well's applicable "area of influence" when the production permit is issued remains the responsibility of the producer, and the producer must submit with its application a written guarantee to the District that the applicant will fulfill that responsibility. Furthermore, retention of the production permit is contingent upon timely fulfillment of the producer's commitment to remediate all such pre-qualified unregulated wells, as necessary. Every notified owner of property within the applicable "area of influence" of the applicant's proposed well who wishes to register an unregulated well with the District so as to be eligible for future well remediation must do so on or before the date of issue of the applicant's production permit. Well registration material to be submitted to the District should include, but not necessarily be limited to, all well completion records (including driller's log and any electric logs), aquifer(s) produced, type of casing, year completed, water chemistry (conductivity), pump capacity, average amount of water produced, and average static water level above mean sea level.

d. **Permit Evaluation:**

In deciding whether or not to issue a permit, and in setting the terms of the permit, the Board will consider the purpose of the District Act and all other relevant factors, including, but not limited to, (1) the District Management Plan and Drought Management Plan; (2) the quality, quantity, and availability of alternative water supplies; (3) the impact on other landowners' rights in groundwater and on the equitable distribution of the resource resulting from a grant or denial of the permit; and (4) the Desired Future Condition(s) and Managed Available Groundwater of the aquifer at issue, as soon as each is final and any respective challenges and appeals have been exhausted. In evaluating whether an application shall be approved, the Board of Directors shall consider whether the proposed use will either constitute waste or that such use will constitute a "use for a beneficial purpose" as those terms are defined under Chapter 36 of the Texas Water Code, as amended, whether the use is otherwise inconsistent with the statutory purposes of the District, and the other considerations in this section. The Board, before issuing a permit, must also find and determine that all other presently owned sources of water, the availability of which are both technically feasible and economically reasonable to the permittee, have been considered and that no other liquid, the availability of which is both technically feasible and economically reasonable for the permittee, could be reasonably substituted for the use of fresh groundwater. In evaluating the application, the District shall consider the quantity of water proposed to be produced; the term for which production is requested; the safety of the proposed production with respect to the contamination of the aquifer; the actual or anticipated number, location, pump size and production capacity of the wells from which water is to be produced; the nature of the proposed use; the effect of the proposed use of the water on municipal, agricultural, industrial, recreational and other categories of use, and such other factors expressly set forth in Texas Water Code Section 36.113 and as are consistent with the purposes of the District.

e. **Permit Limitations:**

On approval of an application, the District shall issue a Production Permit to the applicant. The permittee's right to produce shall be limited to the extent and purposes stated in the permit. The permit shall be valid for a period not to exceed five (5) years, at which time the permit may be renewed. A permit shall not be transferable except as provided in Rule 5.7.

f. **Permit Information:**

The permit shall be in writing and attested by the seal of the District and it shall contain substantially the following information:

The permit is issued subject to the rules of the District and to the continuing right of the District to manage the aquifers within the District's boundaries as authorized by Chapter 36, Texas Water Code, as amended. The permit shall be in writing and attested by the seal of the District and it shall contain substantially the following information:

1. the name of the person to whom the permit is issued;

2. the date the permit is issued;

3. the term for which the permit is issued;

4. the date the original application was filed;

5. the aquifer to be produced, and the actual or anticipated number, location, pump size and production capacity of the wells from which water is to be produced;

6. the legal description of the land that the well is to be constructed upon;

7. the maximum quantity of water to be produced annually and the destination and use or purpose for which the water is to be produced;

8. The permit is issued subject to the rules of the District and to the continuing right of the District to manage the aquifer within the District's boundaries as authorized by Chapter 36, Texas Water Code, as amended;

9. a list of sufficient contractual commitments of water rights within each aquifer to be produced for the well to be produced; and

10. any other information the District prescribes.

g. **Reporting:**

A permittee authorized to produce water for an agricultural or livestock use shall file with the District annual reports describing the amount of water produced and used for the permitted purpose. Such report shall be filed on the appropriate form or forms provided by the district within fifteen (15) days of December 31 next following commencement of production and annually thereafter. Permittees authorized to produce water for other purposes of use shall file with the District monthly reports describing the amount of water produced and used for the permitted purpose. Such report shall be filed on the appropriate from or forms provided by the district within fifteen (15) days of the first of each month.

h. **Fees:**

See Section 10 below.

RULE 5.4 SPACING AND PRODUCTION REQUIREMENTS:

a. Carrizo Well Spacing: The dip of the Carrizo beds is defined as having an orientation of 140° true. The strike, being perpendicular to the dip, is defined as having an orientation of 050° true. Around every regulated Carrizo well, existing or proposed, an ellipse (see depiction #1) whose major and minor radii are correlated to the average projected g.p.m. productive capacity of the well is defined as the well's Carrizo formation "area of influence". The major axis of the ellipse is parallel to the dip of the Carrizo beds, while the minor axis of the ellipse is parallel to the strike of the Carrizo beds (see depiction #2). The major radius of the ellipse (the radius along the major axis) is three (3) lateral feet times the average projected g.p.m. productive capacity of the well. The minor radius of the ellipse (the radius along the minor axis) is two (2) lateral feet times the average projected g.p.m. productive capacity of the well. The "areas of influence" of adjacent Carrizo wells, unless they are both existing wells when these rules are approved, may touch, but not overlap (see depiction #2).

b. Wilcox Wells Spacing: Around any proposed or existing Wilcox well, a circle with a radius of four (4) lateral feet times the average projected productive g.p.m. capacity of the proposed well is defined as the well's Wilcox formation "area of influence". The "areas of influence" of adjacent Wilcox wells, unless they are both existing wells when these rules are approved, may touch, but not overlap.

c. Well Setbacks: Every well must be set back from any adjacent property line no less than one quarter (1/4) foot per g.p.m. of the well's average projected g.p.m. productive rate, but no less than one hundred feet (100 ft.), in any case, unless the owner of the affected adjacent property gives written permission to the producer to do otherwise. A copy of this written permission, if it is necessary, must be submitted to the District with the producer's application. Example: a proposed 1000 g.p.m. well must be set back a minimum of 250 feet from any adjacent property line. A proposed 1000 g.p.m. well must be set back a minimum of 100 ft. from any adjacent property line.

d. Carrizo Aquifer Water Rights: The District is responsible for calculating, and regularly updating, by employing a computer program manipulating reliable hydrological data, the approximate total volume of saturated Carrizo sand within the District. The District is also responsible for calculating and regularly updating, by employing a computer program

manipulating reliable hydrological data, the relative percentage of the total volume of the Carrizo sand within the District beneath every individual property in the District. The District has the responsibility to set, and continually adjust to changing conditions, the total amount of water that may be annually withdrawn from the Carrizo aquifer within the District ("the annual production cap"). The relative percentage of the total amount of saturated Carrizo sand within the District which is attributed to any individual property times the annual production cap equals that individual property's annual Carrizo water right. All water rights transferred within the District to regulated wells shall be scaled to the property saturation index (the average thickness of the saturated Carrizo sand under a specific piece of property) of the acreage around the well or to the saturation index of the point of origin of said water rights, whichever is less.

e. All existing Carrizo production within the District that requires it by the stipulations of the production sunsetting provisions in these rules, as well as all proposed new Carrizo production within the District, must be supported by a sufficient amount of water rights as defined above. Proof of contractual commitments from the owners of water rights to producers verifying this sufficiency must be submitted to the District for its consideration and approval with any applications for new, renewed, or augmented production permits. Furthermore, this sufficiency must be reconfirmed on a regular basis to the District for production permits to remain in force.

f. Wilcox Aquifer Water Rights: Wilcox water rights are linearly correlated to the surface acreage above the Wilcox aquifer, up to a maximum of one-half (1/2) ac.-ft./yr. A producer may be permitted to produce a Wilcox well for which a person may show possession of adequate water rights. Cumulative annual production shall be computed and confirmed by District personnel according to the number and location of acres of groundwater rights attached to the specific well by the applicant at the time the application is filed. All Wilcox water rights within four (4) lateral feet times the average projected g.p.m. productive capacity of the proposed well must be contractually committed to that well. Furthermore, at least 60% of all Wilcox water rights within R lateral feet of the proposed well but not within four (4) lateral feet times the average projected g.p.m. productive capacity of the proposed well must be contractually committed to that well, where R = the square root of the difference between 74550.6 times the average projected g.p.m. capacity of the proposed well and 10.6667 times the square of the average projected g.p.m. capacity of the proposed well (see depiction #3). Please note formula below, where X = average projected g.p.m. productive capacity of the proposed well,

$$R = 74550.6\,X - 10.6667\,X^2$$

g. All existing Wilcox production that requires it by the stipulations of the sunsetting provision in these rules, as well as all proposed new Wilcox production within the District, must be supported by a sufficient amount of attached water rights as defined above. Proof of contractual commitments from the owners of water rights to producers verifying this sufficiency must be submitted to the District for its consideration and approval with any applications for new, renewed, or augmented production permits. Furthermore, this sufficiency must be reconfirmed on a regular basis to the District for production permits to remain in force.

h. Sunsetting of Historic Use Permits: "Historic use" permits are to be sunsetted (phased out) according to the following schedule. The approved production amount shall be permitted to the producer without the requirements for attached water rights until January 1, 2025. For every year thereafter, the producer must possess a production permit obtained from the District for any water produced. In order to obtain a production permit for such a well, the producer must submit to the District a sufficient amount of attached water rights and must also meet every other rule requirement of this District concerning well production, except for rules concerning spacing and setbacks.

i. Permitted wells, regardless of the formation produced or of the stipulations of the relevant permit, shall never, in any case, be produced at instantaneous rates of more than 1200 g.p.m. or at average rates of more than 1000 g.p.m.

j. No well may produce from both the Carrizo and the Wilcox aquifers simultaneously, and all necessary preventative measures must also be taken by the producer to prevent any aquifer-to aquifer transmission or leakage.

k. Only wells with permits in force retain the protection from new well encroachment afforded by the applicable "area of influence" that is granted to that well by the production permit. If a producer loses all or part of the water rights attached to a producing well, the producer is given a grace period of twelve (12) months from the date of loss to re-acquire sufficient water rights, before having to forfeit due to that insufficiency the production permit and all of the well protections afforded thereof. Notwithstanding, if a producer loses water rights attached to a permitted well, the producer must immediately cease any water production based on those lost rights until such time that sufficient replacement water rights are required.

l. For the purpose of preventing waste or confiscation of property, the Board reserves the right in particular subterranean water zones and/or reservoirs to enter special orders increasing or decreasing distances provided by this requirement

m. In applying this requirement, no subdivision of property made subsequent to the adoption of the original spacing requirement will be considered in determining whether or not any property is being confiscated within the terms of such spacing requirement.

n. Requirements for spacing between wells under this rule shall not apply as between wells that are drilled and completed in different aquifers, except that any such wells shall be separated from one another by a distance of at least 100 (one hundred) linear feet, on-center.

RULE 5.5 EXCEPTION TO SPACING AND PRODUCTION RULE:

a. In order to protect property rights, to prevent waste, or confiscation of property, the Board may grant exception to the above spacing and production rules. This rule shall not be construed so as to limit the power of the Board, and the powers stated are cumulative only of all other powers possessed by the Board.

b. If an exception to the spacing or production rules is desired, the application shall be submitted by the applicant in writing to the District office on forms furnished by the District. The application accompanied by a plat or sketch, drawn to the scale of 1:24,000, which shows accurately the property lines in the immediate area and the location of all existing wells within the applicant's wells applicable "area of influence". The application shall also contain the names and addresses of the owners of all such wells. Such application and plat shall be certified by some person acquainted with the facts who shall state that all the facts therein are true and correct.

c. Hearing notices shall state that the application does not meet the spacing requirements of the District, and an exception is requested by the applicant.

RULE 5.6 REWORKING OR REPLACING EXISTING WELLS:

a. No person shall rework, re-drill, or re-equip a well in a manner that would increase the maximum rate of production of water from such well beyond any previous rate of production of such well, or change the intended use of a well, if the production from the well will be greater than 25,000 gallons per day or 17.5 gallons per minute, without first having made an application to the District and having been granted a permit by the District to do so. Any proposed augmentation of a well's capacity requires the applicant to apply for new completion and production permits in the normal way. This process includes, among other things, all necessary notifications, hearings, attachments of sufficient water rights, and commitments of remediation to any additional unregulated well owners of

record within the new enlarged applicable "area of influence" of the well proposed to be augmented. If a proposed modified well of augmented capacity would not comply with spacing, setback, or production rules for a new well of the identical capacity, such an application for well modification may be granted only after those rules are completely complied with by the applicant.

b. Replacement Wells:
No person shall replace a well without a permit unless the well is exempted as provided for in Rule 5.2. A replacement well, in order to be considered as such, must be used for the same purpose, watering the same acreage as the well it is replacing. A replacement well must be completed in the same aquifer as the well it replaces, and shall not be drilled, completed, or equipped so as to increase the rate of production of water from the well it replaces. A replacement well must not be located toward any other well or authorized well site unless the new location compiles with the minimum spacing and production rules set out in Rule 5.5 herein; otherwise the replacement well shall be considered to be a new well for which an application must be made under Rule 5.4 herein. The District may grant a permit for a replacement well without notice or hearing if the well meets the spacing and production requirements of Rule 5.5, and the applicant agrees to the terms of Rule 5.4.

c. The location of the well being replaced shall be protected in accordance with the spacing and production rules of the District until the replacement well is drilled and tested. The owner must, within sixty (60) days of the issuance of the permit, indicate in writing to the District which one of these two wells he desires to produce and must submit a completed registration form and driller's log, and any mechanical log which may have been made, on the replacement well. Immediately after determining which well will be retained for production, the other well shall be:

1. plugged according to Rule 6.4 herein;

2. if the well is not deteriorated, as defined in Rule 1.1 herein, the well maybe capped according to Rule 6.4 herein; or

3. properly equipped in such a manner that it cannot produce more than 25,000 gallons per day, or 17.5 gallons per minute.

RULE 5.7 PERMIT AMENDMENTS:

a. 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 water, the location of use of the

groundwater, or the drilling and operation of additional wells, even if aggregate withdrawals under an existing permit remain the same.

b. An application for a permit amendment must be made on a form provided by the District. Permit amendment application fees shall be established by the Board.

c. A major permit amendment includes, but is not limited to, a change that would substantially alter the size or capacity of a well, a request to increase the annual quantity of groundwater authorized to be withdrawn, a change in the purpose of use of the water, a change in the location of groundwater withdrawal, except for a replacement well authorized under Rule 5.6b, and a change in the ownership of the well or permit. A major permit amendment may not be made prior to notice and hearing.

d. Amendments that are not major, as determined by the General Manager and these Rules, including an amendment sought by a permittee for a decrease in the quantity of groundwater authorized for withdrawal, are minor amendments and may be made by the General Manager with the approval of the Board President. The General Manager, with approval from the Board President, is authorized to deny or grant in full or in part a minor permit amendment and may grant minor amendments without public notice and hearing. Such decision by the General Manager may be appealed to the Board. This appeal is a prerequisite to filing suit against the District to overturn the General Manager's decision. Any minor amendment sent to the Board for consideration shall be set on the Board's agenda and shall comply with the notice requirements of the Texas Open Meetings Act.

RULE 5.8 TEMPORARY OR EMERGENCY PERMITS:

a. **Basis for Temporary or Emergency Permit**: Upon application, the General Manager, with the Board President's approval, may grant a Temporary or Emergency Permit that authorizes the withdrawal of water from a well not currently drilled or permitted.

1. An application for a Temporary Permit must present sufficient evidence that:
   (i) no suitable alternative water supply is immediately available to the applicant; and
   (ii) the well usage will not impair the rights of any other owner of interest in groundwater.

2. An applicant for an Emergency Permit must present sufficient evidence that:
   (i) no suitable alternative water supply is immediately available to the applicant; and

(ii) an emergency need for the groundwater exists.

b. **Action on Requests**: The General Manager, with the Board President's approval, may grant any application for a Temporary or Emergency Permit without notice, hearing, or further action by the Board. The General Manager may deny an application for a Temporary or Emergency Permit on any reasonable ground including, but not limited to, a determination that the applicant is currently in violation of the District Act or these rules, or that the applicant has a previous unresolved violation on record with the District. Notice of the General Manager's action will be served upon the applicant. Any affected party may appeal the General Manager's action by filing, within twenty business days of that action, 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 must inform the Board of any Temporary or Emergency Permits granted. On the motion of any Board member, and a majority concurrence in the motion, the Board may overrule the action of the General Manager.

c. **Term of Temporary or Emergency Permit**: No Temporary or Emergency Permit may be issued unless an application for a permit issued under Rule 5.1 has been filed with the District. The term of any Temporary or Emergency Permit granted by the General Manager under this Rule extends only until the Board makes a final decision on the application for the permit under Rule 5.3. Emergency permits for replacement wells may not require a hearing if there is substantial proof that the replacement well will have a reduced impact upon the aquifer than the well it is to replace.

RULE 5.9 HISTORIC USE PRODUCTION:

a. Production of groundwater within the boundaries of the District shall be authorized in an amount determined by the District Board after consideration of the evidence of historic use presented by a well owner who has timely filed a notice and application for a historic use permit as provided in Subsection (b) of this Rule, subject to the sunsetting provisions of District Rule 5.4h.

b. Any person or entity may make a historic use claim by filing a notice and application for a historic use permit with the District stating the date the use began, the amount of groundwater that was put to a beneficial use during any consecutive 12-month period during the Historic Use Period ending on August 11, 2004, the purpose for which the groundwater was used, the method(s) used to produce and use the groundwater, and the method(s) of determining or measuring the historic use claim. A person or entity that files a notice and application of historic use with the District may produce evidence of the maximum annual production during any

consecutive 12-month period prior to August 11, 2004. Proof of production prior to November 6, 1978 shall be too remote to be considered for a claim of historic use. The notice and application for a historic use claim shall be filed with the District no later than September 30, 2011 or a claim to such historic use shall be waived, in which case the permitting requirements under Rule 5.3 shall apply.

RULE 5.10 METER CALIBRATION:

a. Recognizing that the Texas Commission on Environmental Quality's (TCEQ's) regulations impose a mandatory obligation on some well owners within the District to test their water meters at least once every three years to confirm meter accuracy, these well owners subject to TCEQ's regulations, as well as all other well owners within the District, shall report to the District at least once every three years the result of testing the accuracy of their meters.

b. The verification required by Subsection (a) of this Rule shall be made by submitting to the District a notarized affidavit certifying that the meter has been tested, providing the results of the meter test, disclosing the accuracy of the meter calibration, and providing any additional information that the General Manager determines is required to verify that the meter is satisfactorily calibrated and otherwise properly functioning.

c. All meters required by District rules must be calibrated to measure water withdrawals with an accuracy deviation of not more than five percent (+/- 5%).

d. Except as otherwise provided by Subsection (f) of this Rule, each verification, including all necessary testing and calibrating, is to be conducted at the expense of the permit holder.

e. At its expense, the District may at any time test any meter required by District rules for purposes of verifying whether a meter is calibrated in a manner that satisfies this rule and is otherwise properly functioning.

f. If the verification conducted by the District demonstrates that the meter is not measuring groundwater withdrawals with an accuracy deviation of not more than five percent (+/- 5%), the permit holder:

    1. must reimburse the District for the costs it incurred in undertaking the verification, including staff time;

    2. must immediately repair the meter so that it complies with this rule or immediately replace the device with a meter that complies with this rule; and

3. may be subject to a civil penalty for violation of this rule.

SECTION 6. OTHER DISTRICT ACTIONS AND DUTIES

RULE 6.1 DISTRICT MANAGEMENT PLAN:

The District Plan specifies the acts, procedures, and performance necessary to prevent waste and protect rights of owners or interest in groundwater, and forms the basis of permitting decisions and permit requirements imposed by the Board. The Board will review the plan as necessary and no later than the fifth anniversary from the Texas Water Development Board's (TWDB's) approval of any amended plan, and when the Board considers a new plan necessary or desirable, a new plan will be adopted and submitted to TWDB to meet the statutory deadline for amendment. A plan, once adopted, remains in effect until the adoption of a new plan.

RULE 6.2 REGISTRATION OF NEW WELLS:

All new wells must be registered by the well owner, well operator, or water well driller. Registration may be by mail or telephonic document transfer, using a form provided by the District. Registration may also accompany the District-required Well Log. There will not be a fee for well registration other than a Well Log Deposit.

RULE 6.3 LOCATION OF WELLS:

a. After an application for a well permit has been granted, the well, if drilled, must be drilled within five percent (5%) of the distance used to determine the location of the well in the permit or thirty (30) feet of the location specified in the permit, whichever is greater.

b. Location of ALL wells including those exempt under Rule 5.2, must meet specifications defined in Chapters 32 and 33 of the Texas Water Code, Administrative Rules of the Texas Department of Licensing Regulation 16, Texas Administrative Code Chapter 76, and the TCEQ.

RULE 6.4 MINIMUM STANDARDS OF WELL COMPLETION:

The minimum standards for well completion are to be those determined and defined by the State of Texas in Chapters 32 and 33 of the Texas Water Code, the Administrative Rules of the Texas Department of Licensing and Regulation 16, Texas Administrative Code Chapter 76, and the TCEQ.

RULE 6.5 MINIMUM STANDARDS FOR SEALING, CAPPING, AND PLUGGING OF WELLS:

The minimum standards for sealing, capping, and plugging of wells are to be those determined by the State of Texas in Chapters 32 and 33 of the Texas Water Code, the Administrative Rules of the Texas Department of Licensing and Regulation 16, Texas Administrative Code Chapter 76, and the TCEQ.

RULE 6.6 DRILLER'S LOG, CASING AND PUMP DATA:

Complete records must be kept and reports thereof made to the District concerning the drilling, maximum production potential, equipping and completion of all wells drilled in the District. Such records must include an accurate Driller's log, any mechanical log that may have been made and a registration of the well correctly furnishing all available information required on the forms furnished by the District or on forms furnished by the Texas Department of Licensing and Regulation. Such reports must be filed within sixty (60) calendar days after completion of the well.

RULE 6.7 WELL MONITORING:

The district will place or lease a strategic number of monitoring / test wells throughout the district in order to monitor water levels of the aquifers within the district. The district may from time to time use information from the monitoring wells to conserve water for pumping limits. These monitoring wells will be used when making determinations on permits submitted for approval or during times of drought.

SECTION 7. HEARINGS

RULE 7.1 TYPES OF HEARINGS:

The District conducts two general types of hearings: hearings involving permit matters, in which the rights, duties, or privileges of a party are determined after an opportunity for an adjudicative hearing, and rulemaking hearings involving matters of general applicability that implement, interpret, or prescribe the law or District policy, or that describe the procedure or practice requirements of the District. Any matter designated for hearing before the Board may be conducted by a Presiding Officer and quorum of the Board or referred by the Board for hearing before a Hearings Examiner.

Permit Hearings: **Permit Applications, Amendments and Revocations**: The District may hold hearings on original permit applications, applications for permit renewals or amendments and permit revocations or suspensions. Notice of permit hearings will be given in accordance with Rule 5.3(c). Hearings involving permit matters or any other proceeding may be scheduled before a Hearings Examiner or Presiding Officer.

RULE 7.2 NOTICE AND SCHEDULING OF RULEMAKING HEARINGS:

The General Manager, with the Board President's approval, is responsible for giving notice of all hearings in the following manner:

a. Not less than twenty days prior to the date of the hearing, the General Manager shall issue written notice of a hearing. The notice shall include a brief explanation of the subject of the hearing; the time, date, and location of the hearing; the location or Internet site at which a copy of the proposed rules may be reviewed or copied; and any other information deemed relevant by the General Manager or the Board. The notice shall be posted and distributed as follows:

1. notice posted in a place readily accessible to the public at the district office;
2. notice provided to the county clerk of Guadalupe County with instructions to post at the county courthouse;
3. notice published in one or more newspapers of general circulation in the District;
4. notice provided by mail, facsimile, or electronic mail to any person who has requested notice under Subsection (b) of this rule; and
5. notice provided by mail, facsimile, or electronic mail to the County and each water supply corporation, municipality, and all other retail public utilities within the District.

A copy of all proposed rules shall be made at a place accessible to the public during normal business hours, with an electronic copy posted on the District's Internet site.

b. 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 e-mail to the person in accordance with the information provided by the person is proof that notice was provided by the District.

RULE 7.3 GENERAL PROCEDURES:

a. **Authority of Presiding Officer**: The presiding officer may conduct the hearing or other proceeding in the manner the presiding officer deems most appropriate for that particular proceeding. The presiding officer has the authority to:

1. set hearing dates, other than the initial hearing date for permit matters set by the General Manager in accordance with Rule 7.1;

2. convene the hearing at the time and place specified in the notice for public hearing;

3. establish the jurisdiction of the District concerning the subject matter under consideration;

4. rule on motions and on the admissibility of evidence and amendments to pleadings;

5. designate and align parties and establish reasonable time limits and the order for testimony and presentation of evidence;

6. administer oaths to all persons presenting testimony;

7. examine witnesses;

8. issue subpoenas when required to compel the attendance of witnesses or the production of papers and documents;

9. require the taking of depositions and compel other forms of discovery under these Rules;

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

11. conduct public hearings in an orderly manner in accordance with these Rules;

12. recess any hearing from time to time and place to place;

13. reopen the record of a hearing for additional evidence when necessary to make the record more complete; and

14. exercise any other appropriate powers necessary or convenient to effectively carry out the responsibilities of presiding officer.

b. **Registration Forms**: Each individual attending a hearing or other proceeding of the District must submit a form providing the person's name and address, whether the person plans to testify; and any other information relevant to the hearing or other proceeding.

c. **Appearance; Representative Capacity**: Only parties designated under Subsection (d) of this rule may formally participate in a hearing, although the Presiding Officer may allow sworn testimony or evidence to be submitted by a nonparty if the Presiding Officer determines that the

testimony or evidence is relevant, noncumulative, and useful to the Presiding Officer's and Board's review and decision on the application. A party may appear in person or may be represented by counsel, engineer, or other representative, provided the representative is fully authorized to speak and act for the party. A duly authorized partner may appear on behalf of the partnership. A duly authorized officer or agent of a public or private corporation, political subdivision, governmental agency, municipality, association, firm, or other entity may appear for the entity. A fiduciary may appear for a ward, trust, or estate. A person appearing in a representative capacity may be required to prove proper authority.

d. **Determination of Party Status; Alignment of Parties; Number of Representatives Heard**: A person desiring to protest a permit application shall appear before the District at the permit hearing and offer sworn testimony to demonstrate that person's justiciable interest and how that justiciable interest would be adversely affected by the permit requested in the application. 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 as a protestant. Participants in a proceeding may be aligned according to the nature of the proceeding and their relationship to it. The presiding officer may require the participants of an aligned class to select one or more persons to represent them in the proceeding or on any particular matter or ruling and may limit the number of representatives heard, but must allow at least one representative of an aligned class to be heard in the proceeding or on any particular matter or ruling.

e. **Appearance by Applicant or Movant**: The applicant, movant or party requesting the hearing or other proceeding or a representative should be present at the hearing or other proceeding. Failure to so appear may be grounds for withholding consideration of a matter and dismissal without prejudice or may require the rescheduling or continuance of the hearing or other proceeding if the presiding officer deems it necessary in order to fully develop the record.

f. **Reporting**: Hearings and other proceedings will be recorded on audio cassette tape or, at the discretion of the presiding officer, may be recorded by a certified shorthand reporter. The District does not prepare transcriptions for the public of hearings or other proceedings recorded on audio cassette tape on District equipment, but will arrange for a party in interest to have access to the recording. Subject to availability of space, any party at interest may, at its own expense, arrange for a reporter to report the hearing or other proceeding or for recording of the hearing or

other proceeding. The cost of reporting or transcribing a permit hearing may be assessed in accordance with Rule 7.5(b). If a proceeding other than a permit hearing is recorded by a reporter, and a copy of the transcript of testimony is ordered by any person, the testimony will be transcribed and the original transcript filed with the papers of the proceeding at the expense of the person requesting the transcript of testimony. Copies of the transcript of testimony of any hearing or other proceeding thus reported may be purchased from the reporter. On the request of a party to a contested hearing, the Presiding Officer shall have the hearing transcribed by a court reporter. The Presiding Officer may assess any court reporter transcription costs against the party that requested the transcription or among the parties to the hearing. Except as provided by this subsection, the presiding officer may exclude a party from further participation in a hearing for failure to pay in a timely manner costs assessed against that party under this subsection. The Presiding Officer may not exclude a party from further participation in a hearing as provided by this subsection if the parties have agreed that the costs assessed against that party will be paid by another party. If a hearing is uncontested, the Presiding Officer may substitute minutes or the hearing report required under these rules and Section 36.410 of the Texas Water Code for a method of recording the hearing provided by Subsection 36.410(a).

g. **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 (other than the District Office) 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 must be delivered at a reasonable time to all parties, persons who have requested notice of the hearing pursuant to Rule 7.1, and any other person the presiding officer deems appropriate, but it is not necessary to post at the county courthouses or publish a newspaper notice of the new setting.

h. **Filing of Documents; Time Limit**: Applications, motions, exceptions, communications, requests, briefs or other papers and documents required to be filed under these Rules or by law must be received in hand at the District's Office within the time limit, if any, set by these Rules or by the presiding officer for filing. Mailing within the time period is insufficient if the submissions are not actually received by the District within the time limit.

i. **Affidavit**: Whenever the making of an affidavit by a party to a hearing or other proceeding is necessary, it may be made by the party or the party's representative or counsel. This Rule does not dispense with the necessity of an affidavit being made by a party when expressly required by statute.

j. **Broadening the Issues**: No person will be allowed to appear in any hearing or other proceeding that in the opinion of the presiding officer is for the sole purpose of unduly broadening the issues to be considered in the hearing or other proceeding.

k. **Conduct and Decorum**: Every person, party, representative, witness, and other participant in a proceeding must conform to ethical standards of conduct and will 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.

RULE 7.4 UNCONTESTED PERMIT HEARINGS PROCEDURES:

a. **Informal Hearings**: Permit hearings may be conducted informally when, in the judgment of the Hearings Examiner or Presiding Officer, the conduct of a proceeding under informal procedures will result in a savings of time or cost to the parties, lead to a negotiated or agreed settlement of facts or issues in controversy, and not prejudice the rights of any party.

b. **Agreement of Parties**: If all parties reach a negotiated or agreed settlement that settles the facts or issues in controversy, the proceeding will be considered an uncontested case and the General Manager will summarize the evidence, including findings of fact and conclusions of law based on the existing record and any other evidence submitted by the parties at the hearing.

c. **Decision to Proceed as Uncontested or Contested Case**: If the parties do not reach a negotiated or agreed settlement of the facts and issues in controversy or if any party contests a staff recommendation, and the Hearings Examiner or Presiding Officer determines these issues will require extensive discovery proceedings, the Hearings Examiner or Presiding Officer may declare the case to be contested and convene a pre-hearing conference as set forth in Rule 7.5. The Hearings Examiner or Presiding Officer may also recommend issuance of a temporary permit for a period not to exceed 4 months, with any special provisions the Hearings Examiner or Presiding Officer deems necessary, for the purpose of completing the contested case process. Any case not declared a contested case under this provision will be an uncontested case.

RULE 7.5 CONTESTED PERMIT HEARINGS PROCEDURES:

a. **Pre-hearing Conference**: A pre-hearing conference may be held to consider any matter that may expedite the hearing or otherwise facilitate the hearing process.

1. **Matters Considered**: Matters that may be considered at a pre-hearing conference include, but are not limited to, (1) designation of parties; (2) formulation and simplification of issues; (3) necessity or desirability of amending applications or other pleadings; (4) possibility of making admissions or stipulations; (5) scheduling discovery; (6) identification of and specification of the number of witnesses; (7) filing and exchange of prepared testimony and exhibits; and (8) procedure at the hearing.

2. **Notice**: A pre-hearing conference may be held at a date, time, and place stated in a separate notice given in accordance with Rule 7.1, or at the date, time, and place for hearing stated in the notice of public hearing, and may be continued from time to time and place to place, at the discretion of the Hearings Examiner or Presiding Officer.

3. **Conference Action**: Action taken at a pre-hearing conference may be reduced to writing and made a part of the record or may be stated on the record at the close of the conference.

b. **Assessing Reporting and Transcription Costs**: Upon the timely request of any party, or at the discretion of the Hearings Examiner or Presiding Officer, the Hearings Examiner or Presiding Officer may assess reporting and transcription costs to one or more of the parties. The Hearings Examiner or Presiding Officer will consider the following factors in assessing reporting and transcription costs:

l. the party who requested the transcript;

2. the financial ability of the party to pay the costs;

3. the extent to which the 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.

In any proceeding where the assessment of reporting or transcription costs is an issue, the Hearings Examiner or Presiding Officer will provide the parties an opportunity to present evidence and argument on the issue. A recommendation regarding the assessment of costs will be included in the Hearings Examiner's or Presiding Officer's report to the Board.

c. **Designation of Parties**: Parties to a hearing may be designated on the first day of hearing or at such other time as the Hearings Examiner or Presiding Officer determines. The General Manager and any person specifically named in a matter are automatically designated parties. Persons other than the General Manager or a person specifically named must, in order to be admitted as a party, appear at the proceeding in person or by representative and seek to be designated. After parties are designated, no other person may be admitted as a party unless, in the judgment of the Hearings Examiner or Presiding Officer, there exists good cause and the hearing will not be unreasonably delayed.

d. **Rights of Designated Parties**: Subject to the direction and orders of the Hearings Examiner or Presiding Officer, parties have the right to conduct discovery, present a direct case, cross-examine witnesses, make oral and written arguments, obtain copies of all documents filed in the proceeding, receive copies of all notices issued by the District concerning the proceeding, and otherwise fully participate in the proceeding, subject to the Presiding Officer's limitation of discovery procedures and time limits that will apply equally to all parties.

e. **Persons Not Designated Parties**: At the discretion of the Hearings Examiner or Presiding Officer, persons not designated as parties to a proceeding may submit comments or statements, orally or in writing. Comments or statements submitted by non-parties may be included in the record, but may not be considered by the Hearings Examiner or Presiding Officer as evidence.

f. **Furnishing Copies of Pleadings**: After parties have been designated, a copy of every pleading, request, motion, or reply filed in the proceeding must be provided by the author to every other party or the party's representative. A certification of this fact must accompany the original instrument when filed with the District. Failure to provide copies may be grounds for withholding consideration of the pleading or the matters set forth therein.

g. **Interpreters for Deaf Parties and Witnesses**: If a party or subpoenaed witness in a contested case is deaf, the District will provide an interpreter whose qualifications are approved by the State Commission for the Deaf and Hearing Impaired to interpret the proceedings for that person. "Deaf person" means a person who has a hearing impairment, whether or not the

person also has a speech impairment that inhibits the person's comprehension of the proceedings or communication with others.

h. **Agreements to be in Writing**: No agreement between parties or their representatives affecting any pending matter will be considered by the Hearings Examiner or Presiding Officer unless it is in writing, signed, and filed as part of the record, or unless it is announced at the hearing and entered of record.

i. **Discovery**: Discovery will be conducted upon such terms and conditions, and at such times and places, as directed by the Hearings Examiner or Presiding Officer. Unless specifically modified by these Rules or by order of the Hearings Examiner or Presiding Officer, discovery will be governed by, and subject to the limitations set forth in, the Texas Rules of Civil Procedure. In addition to the forms of discovery authorized under the Texas Rules of Civil Procedure, the parties may exchange informal requests for information, either by agreement or by order of the Hearings Examiner or Presiding Officer.

j. **Discovery Sanctions**: If the Hearings Examiner or Presiding Officer finds a party is abusing the discovery process in seeking, responding to, or resisting discovery, the Hearings Examiner or Presiding Officer may:

1. suspend processing of the application for a permit if the applicant is the offending party;

2. disallow any further discovery of any kind or a particular kind by the offending party;

3. rule that particular facts be regarded as established against the offending party for the purposes of the proceeding, in accordance with the claim of the party obtaining the discovery ruling;

4. limit the offending party's participation in the proceeding;

5. disallow the offending party's presentation of evidence on issues that were the subject of the discovery request; and

6. recommend to the Board that the hearing be dismissed with or without prejudice.

k. **Ex Parte Communications**: The Hearings Examiner or Presiding Officer may not communicate, directly or indirectly, in connection with any issue of fact or law with any agency, person, party, or their representatives, except on notice and opportunity for all parties to participate. This provision does not prevent communications with staff not directly

involved in the hearing in order to utilize the special skills and knowledge of the District in evaluating the evidence.

l. **Compelling Testimony; and Swearing Witnesses**: The Hearings Examiner or Presiding Officer may compel any person to testify who is necessary, helpful, or appropriate to the hearing. The Hearings Examiner or Presiding Officer shall administer the oath in a manner calculated to impress the witness with the importance and solemnity of the promise to adhere to the truth.

m. **Evidence**: Except as modified by these Rules and to the extent consistent with these Rules and Chapter 36 of the Texas Water Code and the District Act, the Texas Rules of Evidence govern the admissibility and introduction of evidence; however, 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. In addition, evidence may be stipulated by agreement of all parties.

n. **Written Testimony**: When a proceeding will be expedited and the interests of the parties not substantially prejudiced, testimony may be received in written form. 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. The witness will be subject to clarifying questions and to cross-examination, and the prepared testimony will be subject to objection.

o. **Requirements for Exhibits**: Exhibits of a documentary character must be of a size that will not unduly encumber the files and records of the District. All exhibits must be numbered and, except for maps and drawings, may not exceed 8-1/2 by 11 inches in size.

p. **Abstracts of Documents**: When documents are numerous, the Hearings Examiner or Presiding Officer may receive in evidence only those that are representative and may require the abstracting of relevant data from the documents and the presentation of the abstracts in the form of an exhibit. Parties have the right to examine the documents from which the abstracts are made.

q. **Introduction and Copies of Exhibits**: Each exhibit offered shall be tendered for identification and placed in the record. Copies must be furnished to the Hearings Examiner or Presiding Officer and to each of the parties, unless the Hearings Examiner or Presiding Officer rules otherwise.

r. **Excluding Exhibits**: In the event an exhibit has been identified, objected to, and excluded, it may be withdrawn by the offering party. If withdrawn, the exhibit will be returned and the offering party waives all objections to

the exclusion of the exhibit. If not withdrawn, the exhibit shall be included in the record for the purpose of preserving the objection to excluding the exhibit.

s. **Official Notice**: The Hearings Examiner or Presiding Officer may take official notice of all facts judicially cognizable. In addition, official notice may be taken of generally recognized facts within the area of the District's specialized knowledge.

t. **Documents in District Files**: Extrinsic evidence of authenticity is not required as a condition precedent to admissibility of documents maintained in the files and records of the District.

u. **Oral Argument**: At the discretion of the Hearings Examiner or Presiding Officer, oral arguments may be heard at the conclusion of the presentation of evidence. Reasonable time limits may be prescribed. The Hearings Examiner or Presiding Officer may require or accept written briefs in lieu of, or in addition to, oral arguments. When the matter is presented to the Board for final decision, further oral arguments may be heard by the Board.

RULE 7.6 CONCLUSION OF THE HEARING; HEARING REPORT:

a. **Closing the Record; Final Report**: At the conclusion of the presentation of evidence and any oral argument, the Hearings Examiner or Presiding Officer may either close the record or keep it open and allow the submission of additional evidence, exhibits, briefs, or proposed findings and conclusions from one or more of the parties. No additional evidence, exhibits, briefs, or proposed findings and conclusions may be filed unless permitted or requested by the Hearings Examiner or Presiding Officer. After the record is closed, the Hearings Examiner or Presiding Officer shall prepare and submit a report to the Board, applicant, and each person who provided comments or each designated party not later than the 30th day after the date a hearing is concluded. The report will include a summary of the evidence, together with the Hearings Examiner's or Presiding Officer's findings and conclusions and recommendations for action. Upon completion and issuance of the Hearings Examiner's or Presiding Officer's report, a copy will be submitted to the Board and delivered to each party to the proceeding. In a contested case, delivery to the parties will be by certified mail. 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 Texas Water Code Section 36.408(a), the presiding officer shall determine whether to prepare and submit a report under this section, but shall not be required to prepare a report.

b. **Exceptions to the Hearings Examiner's or Presiding Officer's Report; Reopening the Record**: Prior to Board action any party in a contested

case may file written exceptions to the Hearings Examiner's or Presiding Officer's report, and any party in an uncontested case may request an opportunity to make an oral presentation of exceptions to the Board. Upon review of the report and exceptions, the Hearings Examiner or Presiding Officer may reopen the record for the purpose of developing additional evidence, or may deny the exceptions and submit the report and exceptions to the Board. The Board may, at any time and in any case, remand the matter to the Hearings Examiner or Presiding Officer for further proceedings.

c. **Time for Board Action on Certain Permit Matters**: In the case of hearings involving original permit applications, or applications for permit renewals or amendments, the Hearings Examiner's or Presiding Officer's report should be submitted, and the Board should act, within sixty (60) calendar days after the close of the hearing record.

RULE 7.7 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. The presiding officer shall prepare and keep a record of each rulemaking hearing in the form of an audio or video recording or a court reporter transcription.

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 given in accordance with Rule 7.2; provided, however, that 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 will establish 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; Closing the Record**: At the conclusion of the testimony, and after the receipt of all documents, the presiding officer may either close the record, or keep it open to allow the submission of additional information.

RULE 7.8 FINAL DECISION; APPEAL:

a. **Board Action**: After the record is closed and the matter is submitted to the Board, the Board may then take the matter under advisement, continue it from day to day, reopen or rest the matter, refuse the action sought or grant the same in whole or part, or take any other appropriate action. The Board action takes effect at the conclusion of the meeting and is not affected by a motion for rehearing.

1. Rulemaking hearings: During the rulemaking process the board shall consider all groundwater uses and needs and shall develop rules which are fair and impartial and that do 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.

2. Permit hearings: The Board shall evaluate each application for a permit and permit amendment under the criteria in Rule 5.3(d).

b. **Requests for Rehearing**: Any decision of the Board on a matter may be appealed by requesting a rehearing before the Board within twenty (20) calendar days of the Board's decision. Such a rehearing request must be filed at the District Office in writing and must state clear and concise grounds for the request. Such a rehearing request is mandatory with respect to any decision or action of the Board before any appeal to State District Court. The Board's decision is final if no request for rehearing is made within the specified time, or upon the Board's denial of the request for rehearing, or upon rendering a decision after rehearing. If the rehearing request is granted by the Board, the date of the rehearing will be within forty-five (45) calendar days thereafter, unless otherwise agreed to by the parties to the proceeding. The failure of the Board to grant or deny the request for rehearing within ninety (90) calendar days of submission will be deemed to be a denial of the request.

SECTION 8. GROUNDWATER QUALITY

RULE 8.1 SOLID, HAZARDOUS OR RADIOACTIVE WASTE:

All persons generating, transporting, disposing, applying, or otherwise managing substances defined under state or federal law as solid, hazardous, or radioactive waste, or as sludge, must follow any and all applicable federal, state, and local environmental statues, requirements, and regulations, including, but not limited to those imposed under the Solid Waste Disposal Act (RCRA), the Public Health Service Act (the Safe Drinking Water Act), the Federal Water Pollution Control Act (the Clean Water Act), the National Environmental Policy Act, the Atomic Energy Act and the Low-Level Radioactive Waste

Policy Act, as those statues, requirements or regulations are administered by the appropriate agency, including but not limited to the Texas Railroad Commission, the Texas Commission on Environmental Quality , the Texas Department of Health, or their successors, and the Environmental Protection Agency. In the event that applicable statutes, requirements, or regulations require that the person generating, transporting, applying, disposing or otherwise managing a waste or a sludge obtain a permit from an agency, and where those activities occur within the boundaries of the District, notice of the application must be provided to the District by the applicant within ten days of the date of application. In no event may waste or sludge be permitted to be applied in any manner in any outcrop area of any aquifer within the Guadalupe County Groundwater Conservation District.

RULE 8.2 RECHARGE FACILITIES:

A permit must be obtained before installing or operating a recharge facility. The following information must be provided on, or submitted with, the application:

a. The name and address of the applicant.

b. The name and address of the fee owner(s) of the land upon which the recharge facility will be located.

c. The legal description of the exact proposed location of the recharge facility.

d. The time schedule for construction and/or operation of the facility.

e. The names and addresses of the property owners within one-half (1/2) mile of the proposed recharge facility location, and the location of any wells on those properties.

f. A complete construction and operations plan that will include, but is not limited to, information as to:
   (i) a technical description of the facility to be used for recharge.
   (ii) the source of the water to be recharged.
   (iii) the quality of the water to be recharged.
   (iv) the volume of water to be recharged.
   (v) the rate at which the water will be recharged.
   (vi) the formation into which waters will be recharged.

g. Scientific evidence showing that the proposed operation will not:
   (i) endanger the structural characteristics of the formation receiving the recharged water.
   (ii) cause pollution, as defined in Rule 1, of underground water.
   (iii) cause waste, as defined in Rule 1.

h. Any additional information that may be required by the Board.

SECTION 9. INVESTIGATIONS AND ENFORCEMENT

RULE 9.1 NOTICE AND ACCESS TO PROPERTY:

Board Members, the General Manager, 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 Act and these Rules. Prior to entering upon property for the purpose of conducting an investigation, the person seeking access shall 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 has been granted to enter without notice. Inhibiting or prohibiting access to any Board Member, the General Manager, or District agents or employees who are attempting to conduct an investigation under the District Act or these Rules shall constitute a violation and shall subject 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 the District Act.

RULE 9.2 LIMITATIONS OF DISTRICT EMPLOYEE ACTIVITIES:

District employees may not gather information not specifically related to the purposes of the District, the District Act, these Rules, or District policy.

RULE 9.3 CONDUCT OF INVESTIGATION:

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

RULE 9.4 REQUEST FOR INJUNCTIVE RELIEF AND ASSESSMENT OF PENALTIES:

If it appears that a person has violated, is violating, or is threatening to violate any provision of the District Act or any Board order, rule or permit, the Board may authorize the General Manager to institute and conduct a suit in the name of the District for injunctive relief, or to recover a civil penalty in an amount set by the Board in accordance with this Section of the Rules, or for both injunctive relief and civil penalties. Any suit shall be filed in a court of competent jurisdiction in Guadalupe County. If the District prevails in any suit to enforce its Rules, the District may seek, in the same action, recovery for attorney's fees, costs for expert witnesses, and other costs incurred by the District before the court.

RULE 9.5 RULES VIOLATIONS:

a. Major Violations: The following acts and omissions each separately constitute a major violation of the District Rules:

1. for each well operating pursuant to a valid permit issued by the District, the withdrawal of groundwater from a validly permitted, non-exempt well in an amount that exceeds the authorized permitted amount by 10% or greater;

2. failure to timely register and permit a non-exempt well as required by these Rules;

3. engaging in any activity that constitutes waste;

4. substantially altering a well without first receiving from the District the required express authorization for the alterations made;

5. falsification of any documents or records submitted to the District in response to the requirements of the District Rules;

6. failure to timely remit all water use and other fees owed to the District pursuant to the terms of these Rules;

b. Minor Violations: A minor violation shall include all other acts or omissions that constitute violations of the District Rules and do not qualify as major violations.

RULE 9.6 ASSESSMENT OF PENALTIES:

a. If it appears to the Board that a person or entity has violated any provision of the Rules or any term of a District permit, the Board may assess a penalty against that person or entity that does not exceed the penalty amounts listed below.

b. Except as otherwise provided for in these Rules, penalties for violations of these Rules are set pursuant to the following schedule after the Board's consideration of the factors in Subsection (c) of this Rule:

Major Violation: $200 - $500 per violation

Minor Violation: $25 - $100 per violation

Each day of a continuing violation constitutes a separate violation.

c. In determining the amount of a civil penalty within the penalty range set in the schedule provided in Subsection (b) of this Rule, the Board 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.

d. The District shall collect all past due fees and civil penalties accrued that the District is entitled to collect under the Rules. The District shall provide written notice by certified mail, return receipt requested, of a violation of the Rules and the civil penalties assessed against the person or entity in violation of the District Rules. 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 Rules and such failure is subject to civil penalties. The Board delegates to the General Manager authority to implement this Subsection, and delegates to the General Manager the authority to cure a minor violation through coordination, negotiation, and execution of a compliance agreement with the party in violation of the Rules, in lieu of the Board setting a penalty. Provided, however, the General Manager may in his or her discretion, refer any enforcement matter to the Board.

e. The District may afford an opportunity to cure a violation through coordination and negotiation with the District. Upon written notification and after fifteen (15) calendar days have passed since the date of the certified mailing of the notice of violation without a response or effort to correct a violation and cooperate with the District, the District may bring suit for injunctive relief to stop the violation and for fees and civil penalties owed to the District.

SECTION 10. FEES AND PAYMENT OF FEES

RULE 10.1 PERMIT FEES:

The District shall assess fees for the annual authorized withdrawal under a permit issued by the District of one dollar ($1.00) per acre foot for water permitted for agricultural use, and three and one-half cents ($0.035) per thousand (1,000) gallons for all other uses for a beneficial purpose.

RULE 10.2 APPLICATION AND OTHER FEES:

A fee of five hundred dollars ($500.00) shall be paid by an applicant for a permit at the time the application is submitted to the District. These fees shall cover administrative acts of the District, including the District's cost of reviewing and processing permit and permit amendment applications and the cost of hearings on applications, and shall not unreasonably exceed the cost to the District for performing such administrative acts. If the costs described in this rule exceed $500.00, the District may invoice the applicant for these additional costs, and the applicant shall pay the invoiced amount.

RULE 10.3 FEES FOR EXPORT / TRANSPORT / TRANSFER OF GROUNDWATER OUT OF THE DISTRICT:

The District may impose a reasonable fee or surcharge for the transfer of groundwater out of the District using one of the following methods:

a. a fee negotiated between the District and the transporter; or

b. a fifty percent export surcharge, in addition to the District's production fee, for water transferred out of the District.

RULE 10.4 RETURNED CHECK FEE:

A fee in the amount of $25 shall be paid to the District for checks returned to the District for insufficient funds, account closed, signature missing, or any other reason causing a check to be returned by the District's depository.

RULE 10.5 WELL LOG DEPOSIT:

A well log deposit of $50 shall be paid to the District. The District shall return the deposit to the depositor if all relevant well logs are submitted to the District within six months of the date of the registration or permit approval. In the event the District does not receive all relevant well logs or rights granted within the registration or permit are not used within six months after the date of approval of the registration or permit, the deposit shall become the property of the District.

RULE 10.6 FEE PAYMENTS:

Payments are due on the 15th day of each calendar month. In the event that the 15th calendar day is a weekend or holiday, the payment deadline will fall on the immediately following business day. Payments for fees not received by the last business day of each calendar month shall be subject to a late payment penalty of the greater of the following:

a. $25.00; or

b. ten percent (10%) of the total amount of annual water use fees due and owing to the District.

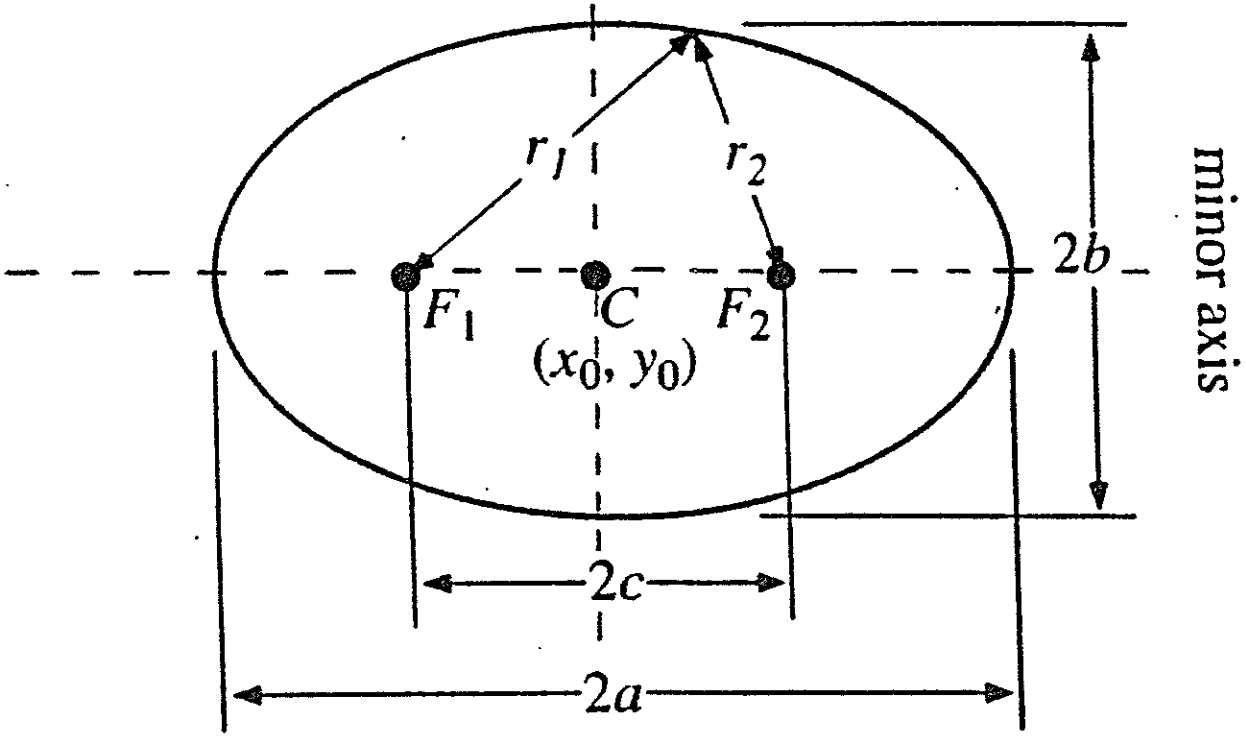
Permit fees shall be due monthly in equal monthly amounts based upon the effective rate set forth in Rule 10.1. Export fees shall be due on a monthly basis in an amount based on application of the fifty percent surcharge assessed on actual withdrawals or the amount negotiated.

The District will distribute invoices seeking payment for fees as provided in this rule.

* * * * *

#1

Ellipse



major axis

$$r_1 + r_2 = 2a$$

OR

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

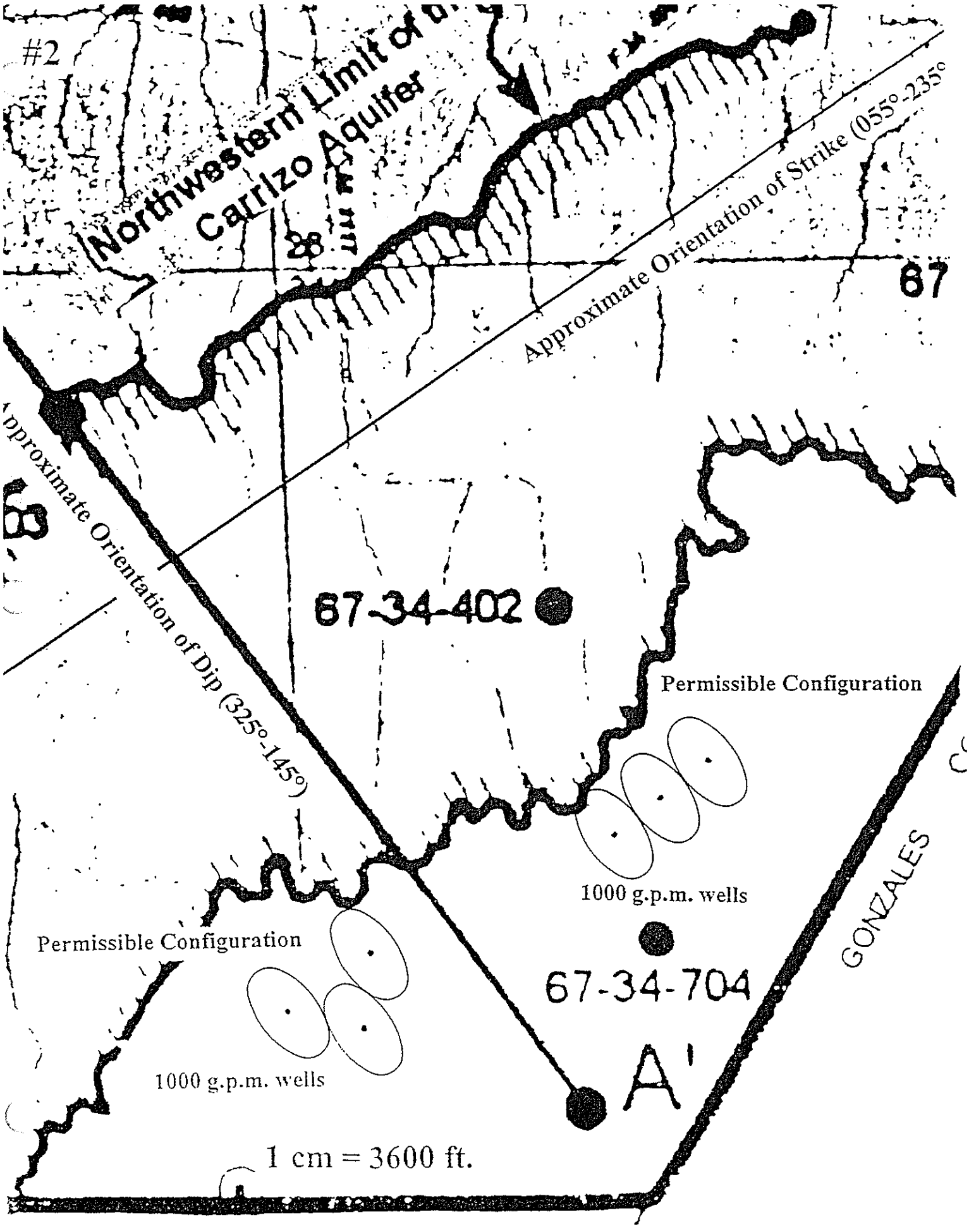
Example: 1000 g.p.m. well located at C

a = 3000 ft., b = 2000 ft.

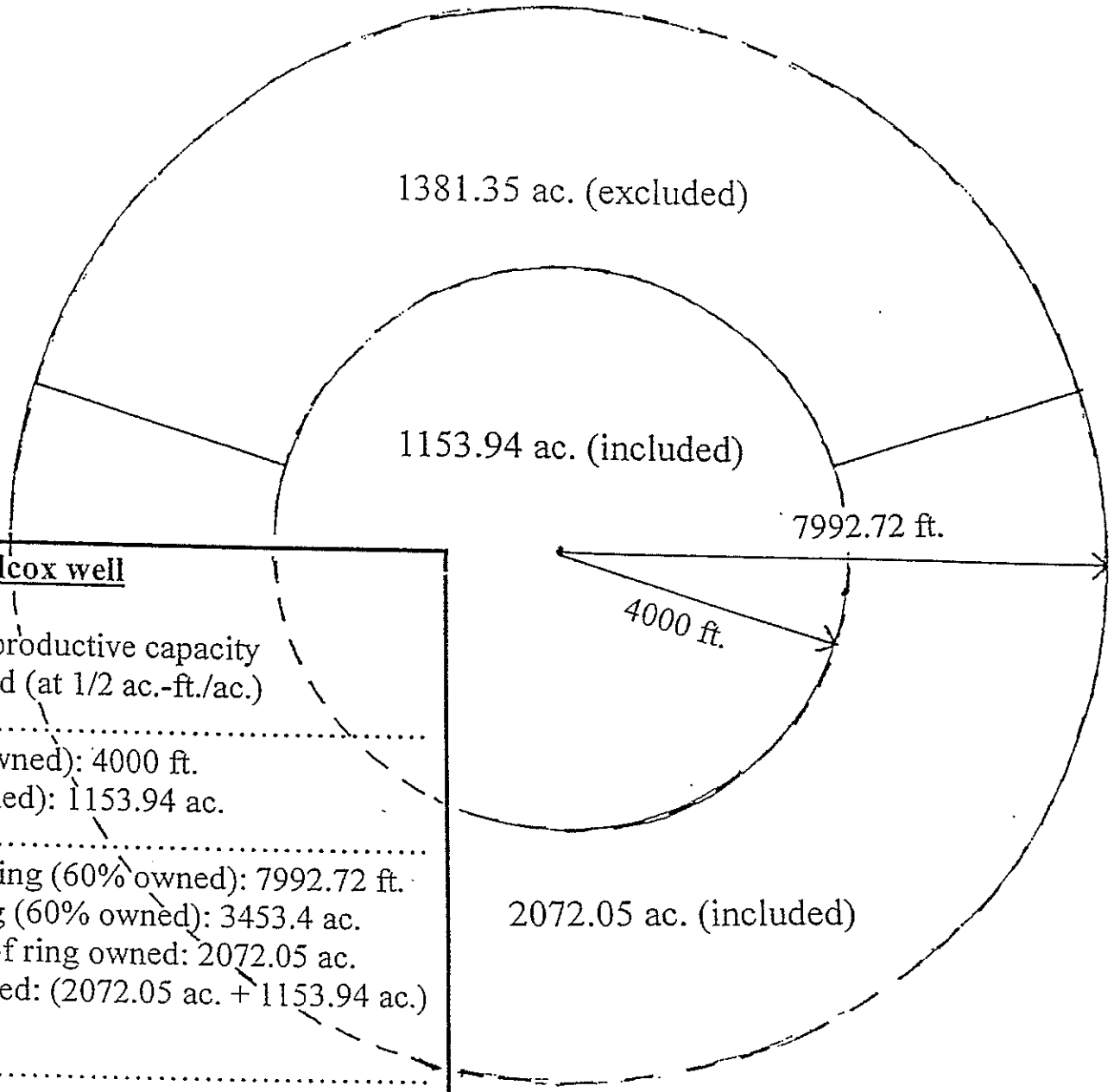
$r_1 + r_2 = 2a = 6000$ ft.

c = 2236 ft., 2c = 4472 ft.

The ratio of these numbers will hold for any size well. The major (long) axis of the ellipse is oriented along the dip, the minor (short) axis is oriented along the strike.


#2
Northwestern Limit of
Carrizo Aquifer
Approximate Orientation of Strike (055°-235°
67
Approximate Orientation of Dip (325°-145°)
67-34-402
Permissible Configuration
1000 g.p.m. wells
67-34-704
Permissible Configuration
1000 g.p.m. wells
A'
GONZALES
1 cm = 3600 ft.

#3



1000 g.p.m. Wilcox well

3613 ac.-ft./yr. productive capacity
7226 ac. required (at 1/2 ac.-ft./ac.)

.....

Radius (100% owned): 4000 ft.
Area (100% owned): 1153.94 ac.

.....

Outer radius of ring (60% owned): 7992.72 ft.
Total area of ring (60% owned): 3453.4 ac.
Minimum area of ring owned: 2072.05 ac.
Total area included: (2072.05 ac. + 1153.94 ac.)
3226 ac.

.....

Formula for R: $74550.6\ X - 10.6667\ X^2$
(where X = 1000 g.p.m.)