

HEADWATERS GROUNDWATER CONSERVATION DISTRICT



DISTRICT GROUNDWATER MANAGEMENT PLAN

REVISED NOVEMBER 2008

BOARD OF DIRECTORS

President, John Elliott
Vice President, Diane McMahon
Secretary/Treasurer, Mary Ellen Summerlin
Director, Jim Hayes
Director, Gordon Morgan

GENERAL MANAGER

Gene Williams

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Acronyms

ASR	Aquifer Storage and Recovery Well
CFS	Cubic Feet per Second
COK	City of Kerrville
GAM	Groundwater Availability Model
HB	House Bill
MOU	Memorandum of Understanding
MSL	Mean Sea Level
RWPG	Regional Water Planning Group
USDA - ARS	United States Department of Agriculture , Agriculture Research Service
WUG	Water User Group

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1. District Mission

The purpose of this District is to provide for the conservation, preservation, protection, recharging and prevention of waste of the groundwater reservoirs or their subdivisions within the defined boundary of the District.

2. Time period for this plan

This plan will become effective upon adoption by the Headwaters Groundwater Conservation District Board of Directors and approved 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 approved.

3. Statement of Guiding Principles

The Headwaters Groundwater Conservation District recognizes that the groundwater resources of the region are of vital importance to the continued well being of the landowners, agriculture, citizens, economy, environment, and long-term use of the resource within the District. This management plan is intended as a tool to focus the thoughts and actions of those given the responsibility for the execution of District activities. The District Board of Directors will review the status of all performance standards in this plan annually.

4. District Creation and History

Under Article XVI, Section 59, of the Texas Constitution, the District was created by the 72nd Legislature House Bill (HB) No. 1463 and approved by the Governor of Texas on June 16, 1991. The 77th Legislature HB 3543 amended the enabling legislation and was approved by the Secretary of State on May 23, 2001. The District Board of Directors is composed of five members who serve four-year rotating terms, with two members and three members elected in November of even years. The current District Board of Directors are:

John Elliott President,

Diane McMahon Vice-President, **Mary Ellen Summerlin**, Secretary-Treasurer **James F. Hayes**, Director, **Gordon Morgan**, Director.

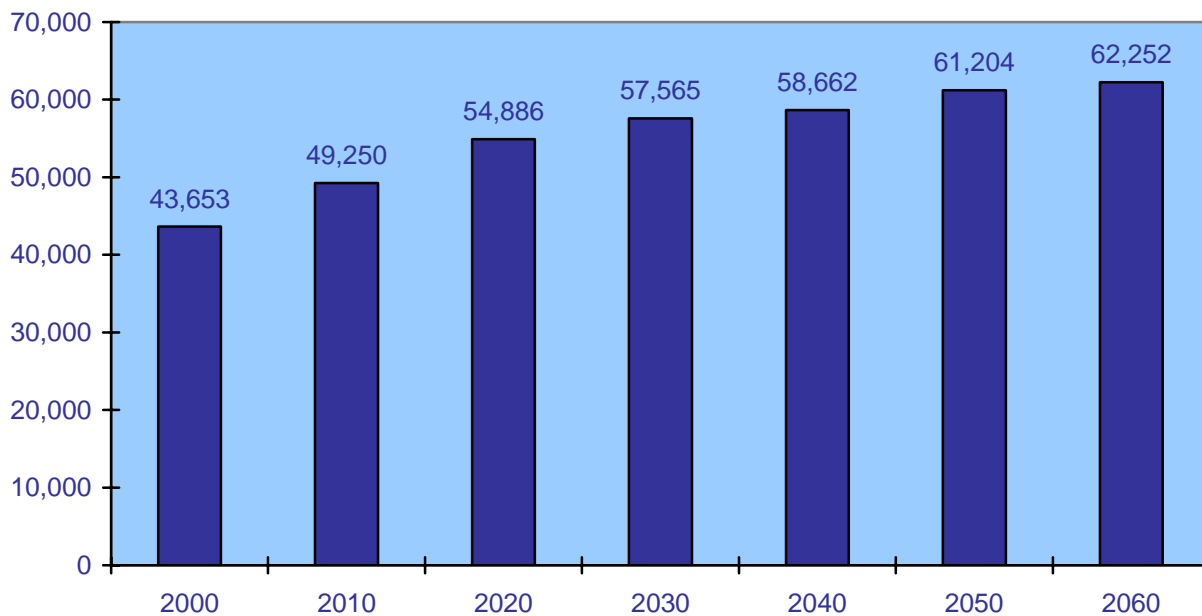
5. Demographics

The District Boundaries are contiguous with that of Kerr County, Texas. Kerr County encompasses 1,106 square miles and is located in the hill country of southwest central Texas. The county is bounded on the north by Kimble and Gillespie counties, on the east by Kendall County, on the west by Edwards and Real counties and on the south by Bandera and Real counties. Kerrville, the largest city in the county, is also the county seat for Kerr County.

The Kerr County population is displayed in the table below according to population estimates prepared by data developed and submitted by the Regional Water Planning Group (RWPG) Region J. The growth is largely due to the influx of retirees and people moving from more urbanized locations.

Retirement living, private camps, resorts, hunting, medical services, and private higher education dominate the economy in Kerr County. Agriculture, light industry and manufacturing contribute to the economy to a lesser extent.

2007 State Water Plan Population Projection



5. Topography and Climatic Conditions

The predominantly rough and rolling topography of Kerr County is characteristic of the Edwards Plateau or Hill Country region. In the western part of Kerr County the land surface is gently rolling, interrupted by steep slopes and narrow valleys caused by the erosion of resistant limestone beds. Extensive dissection of the plateau in the eastern part of the county has formed wide valleys separated by high hills of generally uniform altitude. The altitude of the land surface ranges from about 1,400 ft. above mean sea level (MSL) at the southeastern edge of the county to about 2,400 feet in the western part (Reeves, 1969). Historically, the vegetative cover was considered to be an oak and juniper savannah. Presently, second and third growth juniper is increasing in density to the point of being dominant.

Most of Kerr County is drained by the upper Guadalupe River (approximately 75%), which rises in the western part of the county and flows eastward for approximately 40 miles before exiting the county. The Llano and Pedernales Rivers to the north and the Medina River to the south drain small peripheral areas of the county amounting to less than 25 percent of the total area (Reeves, 1969).

Kerr County has a sub humid to semiarid climate coupled with mild winters and hot summers. Average annual rainfall recorded by the United States Department of Agriculture – Agriculture Research Service (USDA-ARS) –Knipling-Bushland US Livestock Insects Laboratory, Kerrville, TX. for the previous thirty years is 32.31 inches. Net Lake surface evaporation ranges from approximately 45 inches per year in the eastern part of the county to about 55 inches per year in the western part (Plateau Regional Water Plan, Fig. 1-5).

7. Water Resources of Kerr County

Groundwater Resources of Kerr County

The Trinity Aquifer is the principal source of groundwater in Kerr County. The Trinity Aquifer in the Hill Country is an extension of the lower part of the Edwards-Trinity Aquifer of the Edwards Plateau, with the Edwards group and its equivalents mostly

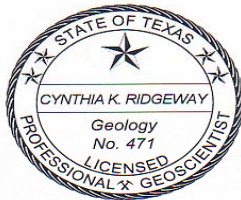
removed. The Trinity Aquifer yields water from Cretaceous limestone and sand of the Trinity Group. The Trinity Aquifer is composed of three permeable zones separated by two relatively impermeable horizontal barriers. The Upper Trinity is made up of the upper member of the Glen Rose Limestone formation. The Middle Trinity is composed of the Lower Glen Rose Limestone, the Hensell Sand, and the Cow Creek Limestone formations. The Lower Trinity consists of the Hosston and Sligo Formations. Relatively impermeable tight sediments within the Glen Rose Limestone separate the Upper and Middle Trinity. The Hammett Shale separates the Middle and Lower Trinity. Recharge of the Trinity Aquifer occurs through lateral flow of water from the Edwards Plateau, infiltration of precipitation on the outcrop area, and surface water leakage from shallow tributary streams in upland areas. Relatively impermeable inner beds in the Upper and Middle Glen Rose Limestone generally impede the downward percolation of precipitation. A second, less reliable, aquifer in Kerr County is the Fort Terrett Formation of the Edwards Group. Erosion caused by stream flow off the edge of the Edwards Plateau trending eastward across Kerr County has removed most of the Fredericksburg and Washita strata. Unconfined conditions prevail over parts of the county, varying greatly in response to diverse geologic conditions and topographic effects. The production of wells in the Fort Terrett Formation is usually confined to domestic and stock use, but the Fort Terrett is essential in maintaining stream flow of the Guadalupe River.

The following table provides water budget information from Groundwater Availability Model (GAM) Run 08-07.

- Precipitation Recharge
- The Amount of Groundwater Discharging to Surface Water Bodies
- The Flow Into the District within each Aquifer
- The Flow Out of the district within each Aquifer, and
- The Flow Between Aquifers in the District

Table 1: Summarized information needed for the Headwaters Groundwater Conservation District's groundwater management plan. All values are reported in acre-feet per year. All numbers are rounded to the nearest 1 acre-foot.

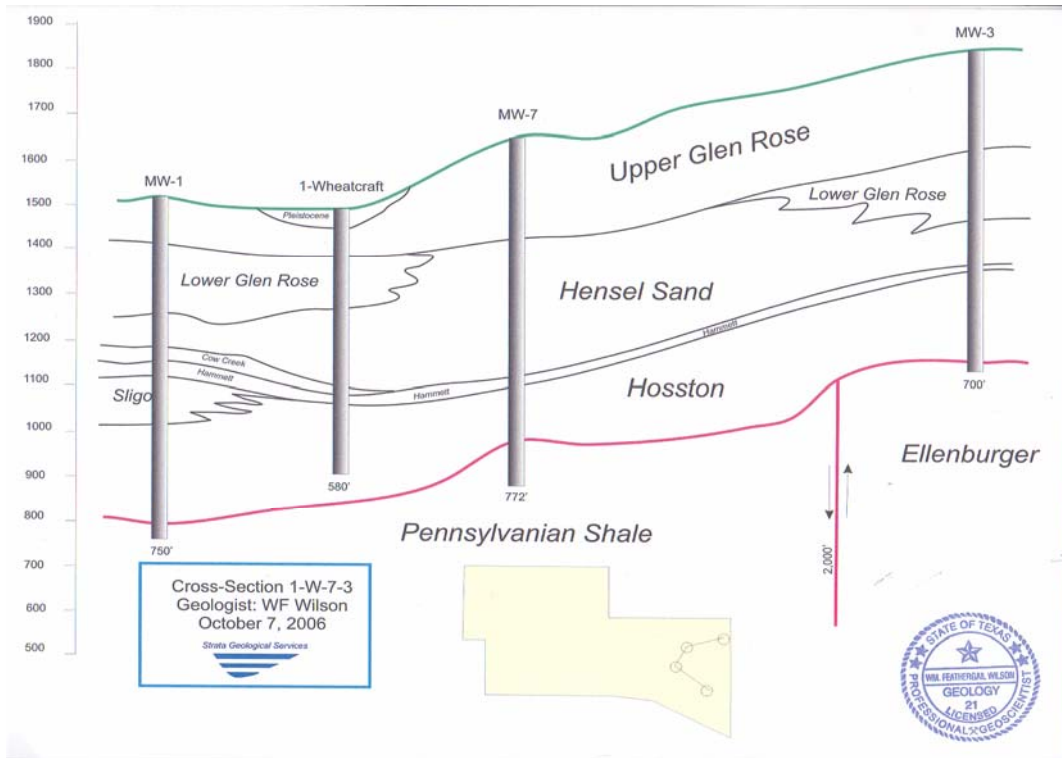
Management Plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Edwards and associated limestones	19,393
	undifferentiated Trinity units	27,829
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Edwards and associated limestones	-16,710
	undifferentiated Trinity units	-19,145
Estimated annual volume of flow into the district within each aquifer in the district	Edwards and associated limestones	3,983
	undifferentiated Trinity units	6,544
Estimated annual volume of flow out of the district within each aquifer in the district	Edwards and associated limestones	-12,399
	undifferentiated Trinity units	1-5,947
Estimated net annual volume of flow between each aquifer in the district	Edwards into Trinity	-1,424



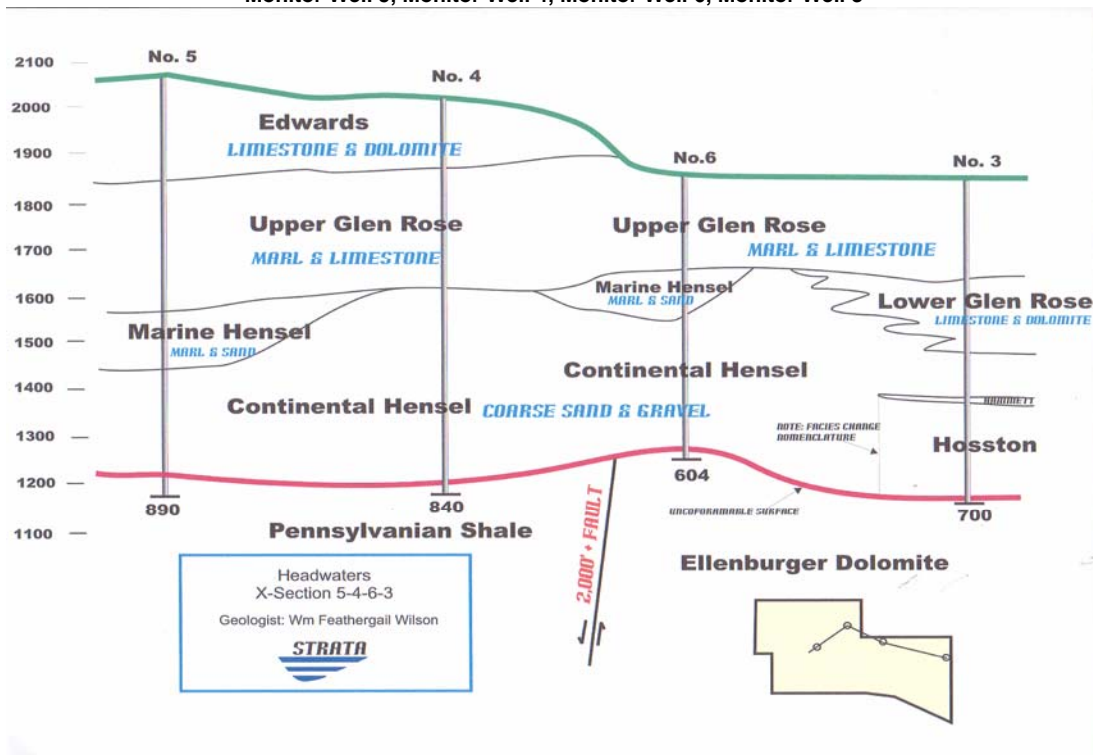
The seal appearing on this document was authorized by Cynthia K. Ridgeway, P.G., on April 29, 2008.

Correction for table above; the estimated annual volume of flow out of the district within each aquifer in the district. Undifferentiated Trinity Units, -15,947 acre feet per year.

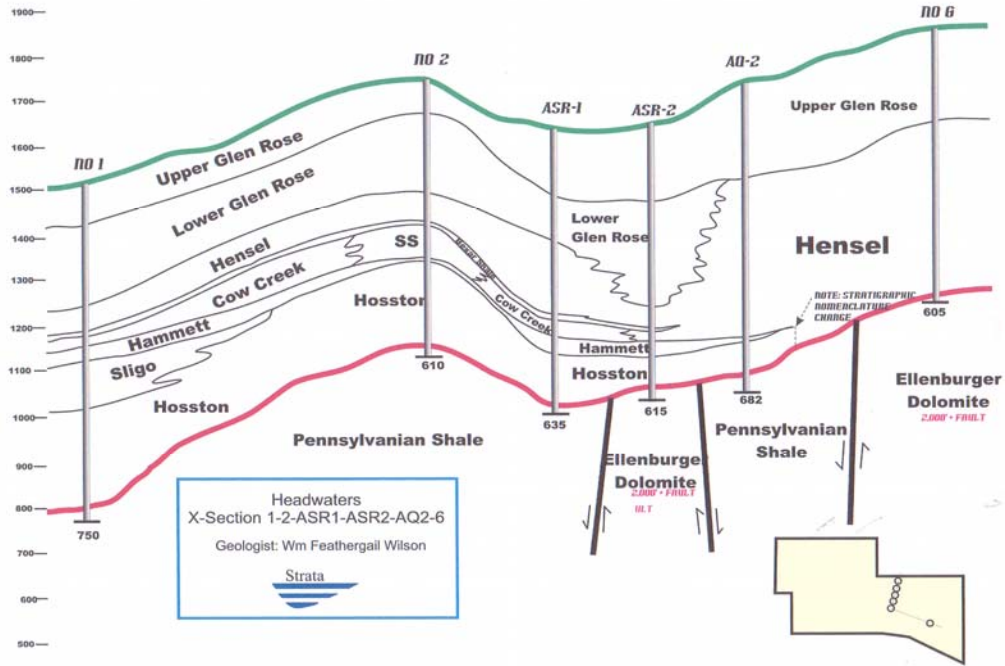
The following cross section maps of the Headwaters GCD monitor well drilling program and the City of Kerrville (COK) Aquifer Storage & Recovery (ASR) wells are provided by Strata Geological Services, Inc. Monitor Well 1, Wheatcraft Well 1, Monitor Well 7, Monitor Well 3



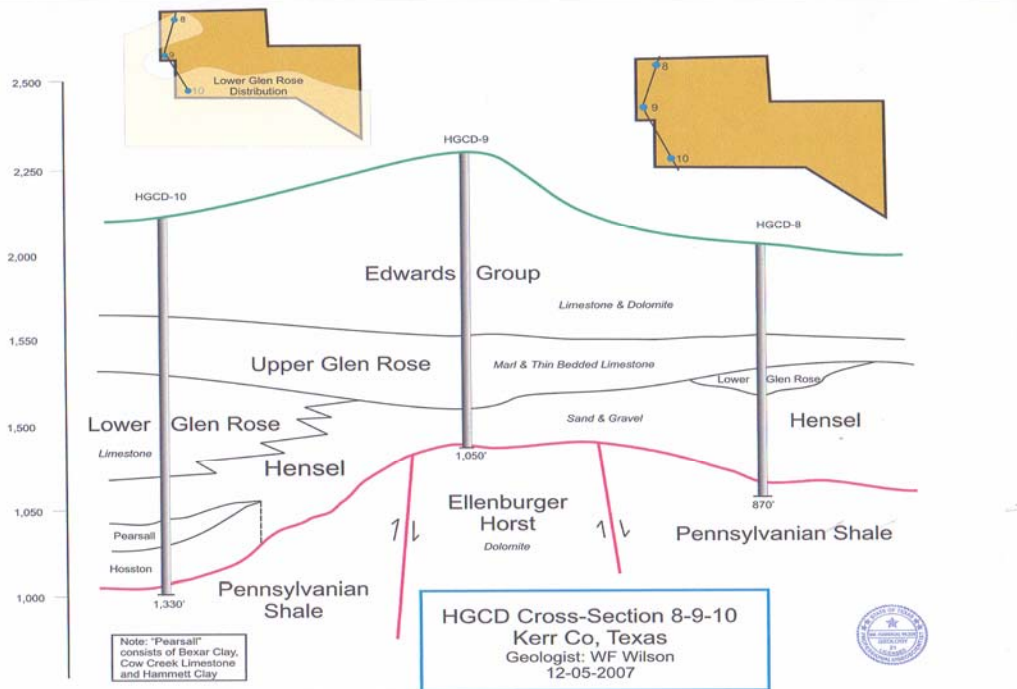
Monitor Well 5, Monitor Well 4, Monitor Well 6, Monitor Well 3



Monitor Well 1, Monitor Well 2, COK ASR-1, COK ASR-2, Aqua-2, Monitor Well 6

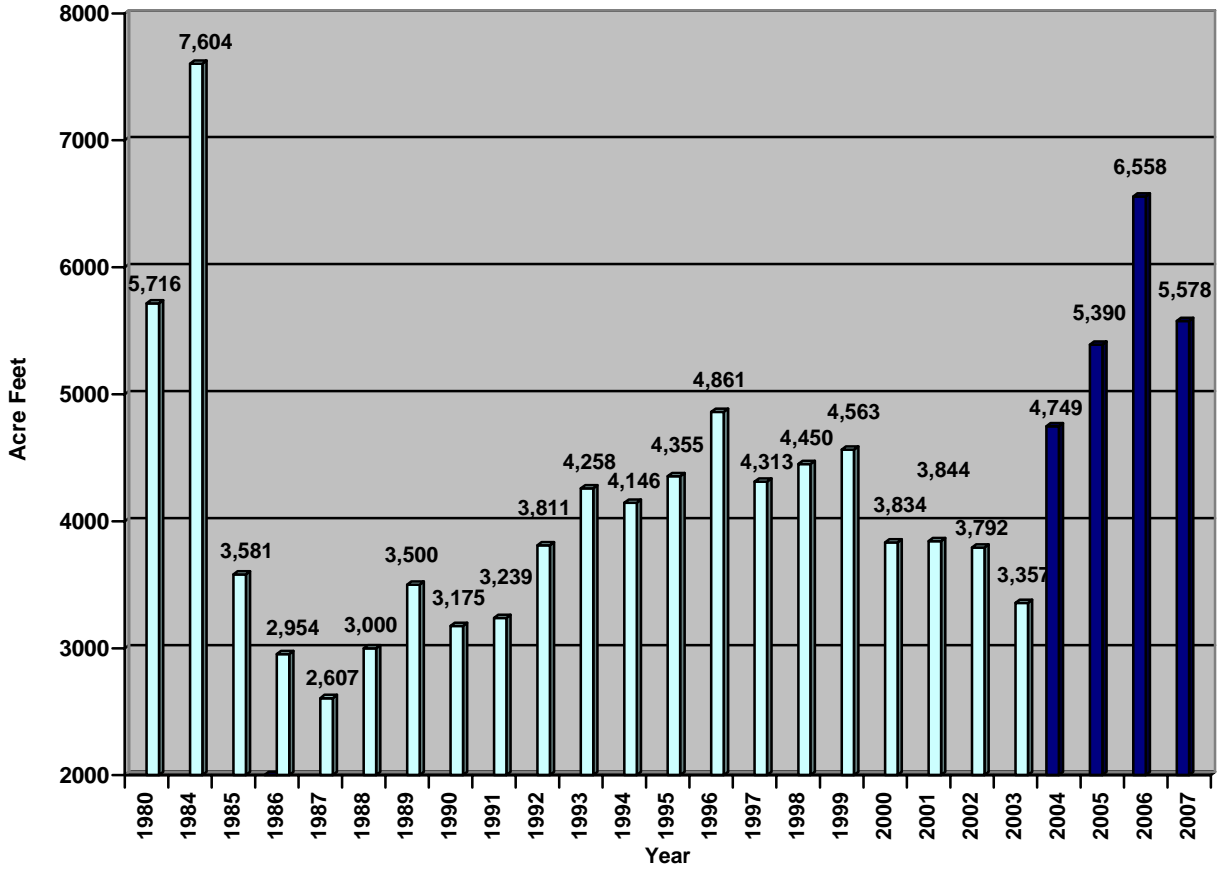


Monitor Well 10, Monitor Well 9, Monitor Well 8



The amount of groundwater being used within the District on an annual basis.

HISTORICAL GROUNDWATER PUMPAGE SUMMARY FOR KERR COUNTY

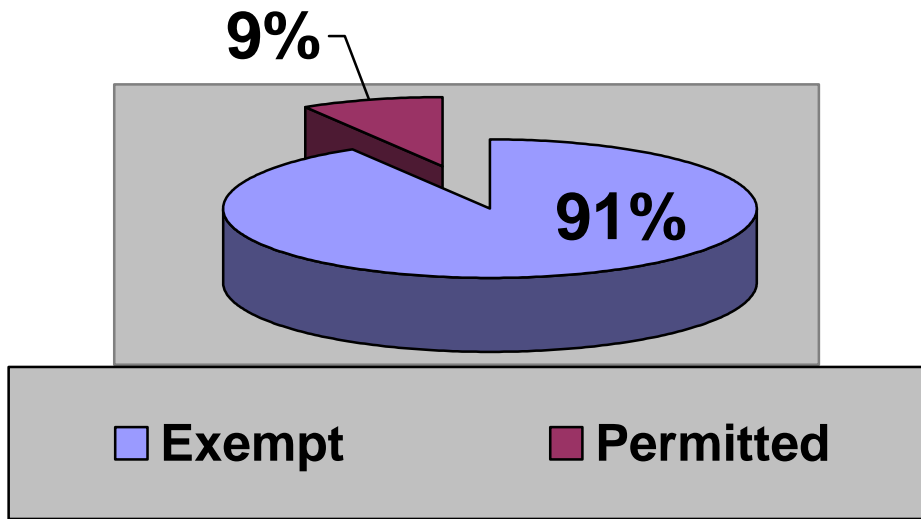


■ 2004 - 2007 HGCD Pumpage With Exempt Estimates □ Pumpage From TWDB Water Use Survey Database

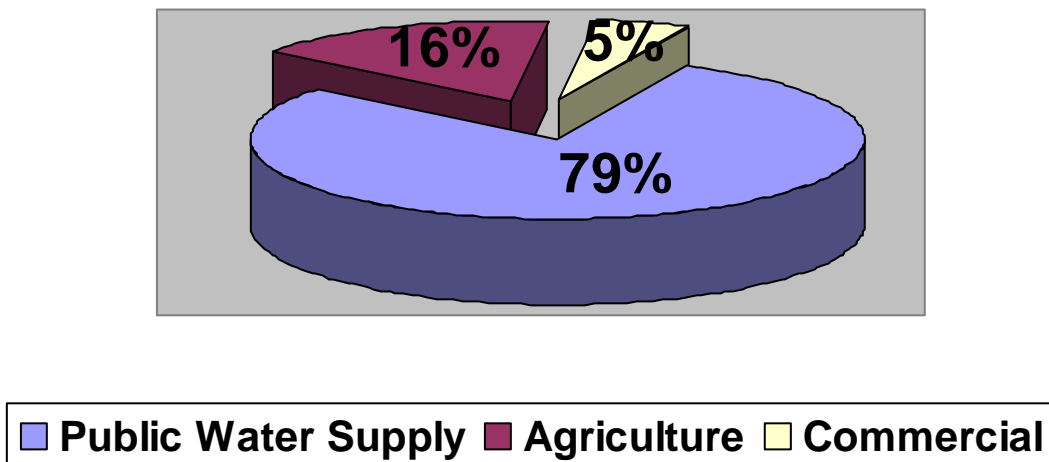
Groundwater Use

Classification for well use

Percentage Chart of All Wells Drilled in Kerr County



Percentage Chart of All Permitted Wells in Kerr County



**2007 State Water Plan Projected Water Needs
Kerr County**

RWPG	Water User Group (WUG)	County	River Basin	2010	2020	2030	2040	2050	2060
J	Ingram	Kerr	Guadalupe	0	0	0	0	0	0
J	Kerrville	Kerr	Guadalupe	-1,322	-1,706	-1,878	-1,897	-2,112	-2,222
J	County Other	Kerr	Colorado	0	0	0	0	0	0
J	County Other	Kerr	Guadalupe	0	0	0	0	0	0
J	County Other	Kerr	San Antonio	0	0	0	0	0	0
J	Manufacturing	Kerr	Guadalupe	0	0	0	0	0	0
J	Mining	Kerr	Colorado	0	0	0	0	0	0
J	Mining	Kerr	Guadalupe	0	0	0	0	0	0
J	Irrigation	Kerr	Guadalupe	-457	-397	-342	-288	-235	-184
J	Livestock	Kerr	Colorado	0	0	0	0	0	0
J	Livestock	Kerr	Guadalupe	0	0	0	0	0	0
J	Livestock	Kerr	San Antonio	0	0	0	0	0	0
J	Livestock	Kerr	Nueces	0	0	0	0	0	0
J	Kerrville South Water Company	Kerr	Guadalupe	0	-17	-28	-4	0	0
Total Projected Water Needs (acre-feet per year) =				-1,779	-2,120	-2,248	-2,189	-2,347	-2,406

Source: Volume 3, 2007 State Water Planning Database 16/2007

Projected Water Management Strategies – Kerr County

RWPG	WUG	WUG County	River Basin	Water Management Strategy	Source Name	Source County	2010	2020	2030	2040	2050	2060
J	Kerrville	Kerr	Guadalupe	Purchase Water From UGRA	Upper Guadalupe River Combined run-of-River	Kerr	0	0	3,840	3,840	3,840	5,450
J	Kerrville	Kerr	Guadalupe	Additional Wells in a Remote Well Field	Edwards Trinity-Plateau aquifer	Kerr	3,000	3,000	3,000	5,500	5,500	5,500
J	Kerrville	Kerr	Guadalupe	Increased Water Treatment and ASR Capacity	Upper Guadalupe River Combined Run-of-River	Kerr	2,240	2,240	2,240	2,240	2,240	2,240
J	Kerrville	Kerr	Guadalupe	Conservation: Water Audit and Loss Audit	Conservation	Kerr	44	47	49	49	52	53
J	Kerrville	Kerr	Guadalupe	Conservation: Public Education	Conservation	Kerr	0	0	0	0	0	0
J	County Other	Kerr	Guadalupe	Purchase Water from UGRA	Trinity Aquifer	Kerr	0	0	0	0	0	0
J	County Other	Kerr	Guadalupe	Purchase Water from UGRA	Upper Guadalupe River Combined Run-of-River	Kerr	0	0	0	0	0	0
J	Irrigation	Kerr	Guadalupe	Irrigation Scheduling	Conservation	Kerr	398	398	398	398	398	398
J	Irrigation	Kerr	Guadalupe	Volumetric Measurement of Water Use	Conservation	Kerr	0	0	0	0	0	0
J	Irrigation	Kerr	Guadalupe	Crop Residue Management and Conservation Tillage	Conservation	Kerr	865	865	865	865	865	865
J	Irrigation	Kerr	Guadalupe	On-Farm Irrigation Audit	Conservation	Kerr	0	0	0	0	0	0
J	Irrigation	Kerr	Guadalupe	Low Pressure Center Pivot Sprinkler Systems	Conservation	Kerr	2	2	2	2	2	2
Total Projected Water Management Strategies (acre-feet per year) =							6,549	6,552	10,394	12,894	12,897	14,508

Source: Volume 3, 2007 State Water Planning Database (<http://www.twdb.state.tx.us./DATA/db07/download.asp>)

Surface Water Resources of Kerr County

The Guadalupe River predominately (70%) originates as spring flow from the Edwards Plateau Aquifer within Kerr County. The larger springs range in flow from 5 -15 cubic feet per second (CFS) and chemically reflect the limestone geology of Kerr County. Originally, streams in Kerr County were characterized by shallow, swift flow over bedrock, but construction of surface water impoundments has restricted this flow.

The primary surface water source available in Kerr County is the Upper Guadalupe River Basin. Considering the complexity of the diversion rights system and variations in the flows of the river, the river alone is not a sustainable long-term source for municipal, industrial and irrigation use when drought conditions or conservation plans are considered. However, prudent use of available supplies in the Guadalupe River should be made in order to protect and extend the capabilities of the groundwater system.

Headwaters Groundwater Conservation District has agreed to and signed a Memorandum of Understanding (MOU) with Kerr County, the City of Kerrville, the City of Ingram, and the Upper Guadalupe River Authority to cooperate regarding the development of regional surface water supply, treatment, storage and transmission facilities.

Municipal Water Rights for Kerrville and UGRA

Water Rights Permit	Authorized Diversion (ac-ft/yr)	Permit Holder	Priority Date	Storage (ac-ft)	Restrictions
1996 (amended 4/10/98)	150 (mun) 75 (irr)	Kerrville	April 4, 1914		
3505	3,603	Kerrville	May 23, 1977	840	Max diversion rate = 9.7 cfs divert only when reservoir is above 1908 ft msl
5394 (amended 4/10/98)	2,169	Kerrville (Kerrville Municipal Use)	January 6, 1992	Utilizes the storage authorized for Permit 3505	Max combined diversion rate for water rights # 3505 and # 5394 = 15.5 cfs. Minimum instream flow requirements vary from 30 to 50 cfs during year.
	2,000	UGRA (County Municipal use)			

Source: Plateau Region Water Plan 2006

2007 State Water Plan Projected Surface Water Supplies

RWPG	Water User Group	County	River Basin	Source Name	2000	2010	2020	2030	2040	2050	2060
J	Kerrville	Kerr	Guadalupe	Upper Guadalupe River Combined Run-of-River	0	150	150	150	150	150	150
J	County Other	Kerr	Guadalupe	Upper Guadalupe River Combined Run-of-River	0	15	15	15	15	15	15
J	Manufacturing	Kerr	Guadalupe	Upper Guadalupe River Combined Run-of-River	0	9	9	9	9	9	9
J	Mining	Kerr	Guadalupe	Upper Guadalupe River Combined Run-of-River	0	89	89	89	89	89	89
J	Irrigation	Kerr	Guadalupe	Upper Guadalupe River Combined Run-of-River	0	958	958	958	958	958	958
J	Livestock	Kerr	Colorado	Other Local Supply	0	20	20	20	20	20	20
J	Livestock	Kerr	Guadalupe	Other Local Supply	0	73	73	73	73	73	73
J	Livestock	Kerr	San Antonio	Other Local Supply	0	12	12	12	12	12	12
Total Projected Surface Water Supplies (acre-feet per year) =					0	1,326	1,326	1,326	1,326	1,326	1,326

Source: Volume 3, 2007 State Water Planning Database 3/29/2007

Kerr County Projected Water Demands

RWPG	Water User Group	County	River Basin	2000	2010	2020	2030	2040	2050	2060
J	Ingram	Kerr	Guadalupe	203	229	255	267	259	242	229
J	Kerrville	Kerr	Guadalupe	3,958	4,466	4,977	5,219	5,338	5,605	5,725
J	Kerrville So	Kerr	Guadalupe	370	417	465	487	471	442	417
J	County Other	Kerr	Colorado	53	60	67	70	68	64	60
J	County Other	Kerr	Guadalupe	2,070	2,335	2,602	2,729	2,816	3,005	3,100
J	County Other	Kerr	San Antonio	16	18	20	21	21	19	18
J	Manufacturing	Kerr	Guadalupe	25	30	33	36	39	41	44
J	Mining	Kerr	Colorado	13	13	12	12	12	12	12
J	Mining	Kerr	Guadalupe	160	154	153	152	151	150	149
J	Irrigation	Kerr	Guadalupe	1,880	1,821	1,761	1,706	1,652	1,599	1,548
J	Livestock	Kerr	Colorado	125	125	125	125	125	125	125
J	Livestock	Kerr	Guadalupe	324	324	324	324	324	324	324
J	Livestock	Kerr	San Antonio	34	34	34	34	34	34	34
J	Livestock	Kerr	Nueces	4	4	4	4	4	4	4
Total Projected Water Demands (acre-feet per year) =				9,235	10,030	10,832	11,186	11,314	11,666	11,789

Source: Volume 3, 2007 State Water Planning Database

(<http://www.twdb.state.tx.us/DATA/db07/defaultReadOnly.asp>)

8. Public Information

The District will take the necessary steps to ensure the public is informed and will cooperate with the media and all interested parties. Dissemination of information is vital to create awareness of the District Mission and the public support that is necessary to control and reduce production of groundwater.

9. Management of Groundwater Supplies

Managed available groundwater is defined in TWC 36.001 as “the amount of water that may be permitted by a District for beneficial use in accordance with the desired future condition of the aquifer.” The desired future condition of the aquifer may only be determined through joint planning with other groundwater conservation districts (GCDs) in the same groundwater management area (GMA) as required by the 79th Legislature with passage of HB 1763 into law. The District is located in GMA 9; the GCDs of GMA 9 have not completed the joint planning process to determine the desired future condition of the aquifers in the GMA. Therefore, because GMA 9 has not completed the joint planning process, the District is unable to present a final value for the desired future condition. Since the desired future condition of the aquifer has not been established, the value of managed available groundwater is not available at this time.

The District has:

- A. Implemented a program to Register and Monitor the construction of all new water wells in the District.
- B. Implemented a program to acquire and archive well drilling and completion records, including driller logs for wells drilled in the District.
- C. Adopted District water well construction and completion requirements to protect water quality and prevent the commingling of certain aquifers.
- D. Initiated a program to identify and properly cap/plug abandoned wells.
- E. A goal of providing information to the public to create awareness of water issues on the topics of water conservation, drought contingencies, and waste of groundwater.

- F. Established a Monitoring Well Program that currently includes 12 Monitor Wells drilled by the District and 20 private wells across Kerr County that are monitored on a monthly basis.
- G. Adopted District Rules that support Kerr County Subdivision and Water Availability standards. Headwaters GCD is located in a Priority Groundwater Management Area. State Water Code Chapter 35 states “the Commissioners Court of a county in a Priority Groundwater Management Area may adopt water availability requirements in an area where platting is required if the court determines that the requirements are necessary to prevent current or projected water use in the county from exceeding the safe sustainable yield of the county’s water supply”.
- H. Adopted District Rules in 1994 with subsequent revision in 1996, and amended in 1997, 1998, 2002, 2006, and 2008. These rules include regulation of groundwater withdrawals by means of well-spacing and production limits. The District may deny a well construction permit or limit groundwater withdrawals in accordance with the guidelines stated in the District rules and policies. In making a determination to deny a permit or limit groundwater withdrawals, the District will consider the public benefit against individual hardship after considering all appropriate testimony. The relevant factors to be considered in making a determination to deny a construction permit or limit groundwater withdrawals will include:
 - 1) the purpose of the rules of the District;
 - 2) the equitable distribution of the resource; and
 - 3) the economic hardship resulting from the granting or denial of a permit or the terms prescribed by the permit.
- I. The District established a Permitting Policy to allow historic use for beneficial purposes as well as service needs of a Public Water Supply system.
- J. In pursuit of the District's mission of protecting groundwater resources, the District may require a reduction of groundwater withdrawals to amounts that will prevent harm to the aquifer. To achieve this purpose, at the District Board's discretion permits may be amended or revoked after notice and

hearing. The determination to seek the amendment or revocation of a permit by the District will be based on aquifer conditions observed by the District. The District will enforce the terms and conditions of permits and the rules of the District by enjoining the permit holder in a court of competent jurisdiction as provided for in Texas Water Code Chapter 36.102.

- K. The District employs all technical resources at its disposal to evaluate the groundwater resources available within the District, and to determine the effectiveness of regulatory or conservation measures.
- L. Adopted a Drought Contingency Plan to cope with the effects of water supply deficits due to climatic or other conditions. A public or private user may appeal to the District Board for discretion in enforcement of the provisions of the drought contingency plan on grounds of adverse economic hardship or unique local conditions. The exercise of said discretion shall not be construed as limiting the power of the District Board.

10. Action, Procedures, Performance and Avoidance for Plan Implementation

The District has adopted rules dated June 12, 1996 relating to the permitting of wells and the production of groundwater. The rules adopted by the District are pursuant to Texas Water Code Chapter 36 and the provisions of this plan, based on the best technical evidence available. All rules will be adhered to and enforced, and may be viewed at www.hgcd.org rules & policies/ Headwaters District Rules.

The District shall treat all citizens with equality. Citizens may apply to the District for discretion in enforcement of the rules on grounds of adverse economic effect or unique local conditions. In granting of discretion to any rule the District Board shall consider the potential for adverse effect on adjacent landowners.

The exercise of said discretion shall not be construed as limiting the power of the District Board.

The District will utilize the provisions of this management plan to determine the direction or priority for all District activities. All operations of the District, all

agreements entered into by the District and any additional planning efforts in which the District may participate will be consistent with the provisions of this plan. In the implementation of this plan and the management of groundwater supplies all activities of the District will be undertaken in cooperation and coordination with the appropriate state, regional or local water management entity and in compliance with State and Regional Water Plans.

11. Methodology For Tracking District Progress In Achieving Management Goals

The District will prepare and present an Annual Report to the Board of Directors on the District's performance in achieving management goals and objectives for the fiscal year. Upon formal adoption by the District Board at a regularly scheduled meeting, the report will be on file and available for public inspection at the District's office.

12. Management Goals

12.1 Goal 1 - Provide the most efficient use of groundwater

Management Objective 1: Implement a program to improve understanding of usable groundwater supplies in Kerr County.

Performance Standard:

- The District Manager may contract with a Consulting Geologist on an as-need basis to assist the District in gathering data from Kerr County aquifers and supervise the drilling, logging, and completion of monitor wells. The General Manager will provide a report to the District Board on an annual basis of all data gathering and drilling activity.

Management Objective 2: Establish an aquifer monitoring program.

Performance Standard:

- The District has a Monitoring Well drilling program; to date HGCD has drilled 12 Monitoring Wells and has plans for three additional Monitoring Wells to be drilled in 2008 and 2009 if sites can be secured.
- Aquifer levels are monitored in 12 District Monitoring Wells and approximately 20 private wells are monitored monthly. A table and hydrograph of each individual monitor well as well as the number of wells measured will be reported to the District Board monthly.

Management Objective 3: Regulate and account for groundwater withdrawal in Kerr County.

Performance Standard:

- Register all new wells drilled. Provide an annual report to the District Board which includes the number of new wells drilled in the District during the past year.

- Perform well site inspections before, during, and after the drilling of each new well in the District.
- Require State Well Logs, certified statements of completion from water well Drillers and Pump Installers within 60 days of completion.
- Require wells to be metered and the production reported annually to the District.

12.2 Goal 2 - Controlling and Preventing Waste of Groundwater

Management Objective: Enact policies and educational programs to ensure that groundwater is used solely for beneficial purposes and prohibit activities that contribute to waste of groundwater.

Performance Standard:

- Review all well applications for intended use and production capacities (gallons per minute). The number of wells and a list of intended uses and production capacities for the previous calendar year will be included in the annual report to the District Board.
- Monitor Public Water Supply Systems for water losses. An estimate of the volume of municipal water loss in the annual report to the District Board.
- Promote Public Education in conservation matters. The District will publish one article on the prevention of wasteful water practices in one newspaper within the District annually. A copy of the article will be included in the annual report.
- Identify and document occurrences of waste of groundwater and include in the annual report.

12.3 Goal 3 - Addressing conjunctive surface water management issues.

Management Objective: Assess the availability of surface water resources that may be used as an alternative to groundwater.

Performance Standard:

- Participate in the 2007-2011 cycle Plateau Regional Planning group scope of work projects to promote strategies for increasing surface water use in Kerr County.
- Meet once a year with the City of Kerrville to enhance continued Surface Water use and ASR projects. The District will include the number of meetings that transpired in the previous year in the annual report to the District Board.
- The District has signed an MOU with the cities of Kerrville and Ingram, the Kerr County Commissioners, and the UGRA, to maximize surface water use in the District. Activities associated with this MOU will be included in the annual report to the District Board.

12.4 Goal 4 - Address Natural Resource Issues

Management Objective: Prevent contamination/pollution of the aquifers from other natural resources being produced within the District.

Performance Standard:

- Monitor any oil and gas drilling or mining operations for potential sources of pollution of the aquifers in the District. Make annual reports to the District Board on use of groundwater for commercial purposes. The annual report will include the number of currently existing oil and gas wells, the number of new oil and gas wells drilled, and an estimate of the total amount of groundwater being used by these operations.

12.5 Goal 5 - Addressing Drought Conditions

Management Objective: Monitor Drought Conditions

Performance Standard:

- Review aquifer data monthly and declare drought stages based on the District's defined drought triggers. When drought stages are initiated report to the District Board monthly.
- In May of each year inform and educate the public and permitted well owners about declared drought stages, appropriate non-essential water use restrictions and recommended restrictions during drought.
- Publish information when drought stages are triggered by way of the HGCD website, local newspaper notices, and mail-outs to Permitted well owners. The number of website, newspaper notices, and mail-outs will be included in the annual report to the District Board.

12.6 Goal 6- Addressing Conservation

Management Objective: Conservation

Performance Standard:

- By January 2010 compose a comprehensive conservation plan for all groundwater user groups in Kerr County.
- Prepare material quarterly for use by Kerr County citizens to encourage water conservation. Distribute material by newspaper articles and the HGCD website. The District will publish a minimum of one article on conservation practices in one newspaper within the District annually.

12.7 Goal 7- Addressing Rainwater Harvesting

Management Objective: Rainwater Harvesting

Performance Standard:

- Provide Rainwater Harvesting material to the public on the HGCD website and handouts. Publish at least one newspaper article annually discussing the benefits of rainwater harvesting.

12.8 Goal 8 - Addressing in a Quantitative Manner the Desired Future Conditions of the Groundwater Resources.

The desired future conditions of the groundwater within the District have not yet been established in accordance with Chapter 36.108 of the Texas Water Code. The District is actively participating in the joint planning process and the development of a desired future condition for the portion of the aquifer within the District and the GMA area. Therefore, this goal is not applicable to the District at this time.

13. Management Goals Not Applicable to the District

13.1 Controlling and Preventing Subsidence

This goal is not applicable to the District due to a rigid geologic framework. Accordingly, the District's plan does not contain a "Management Objective" or "Performance Standard" to address this issue.

13.2 Recharge Enhancement is not within the Districts ability to be cost effective. This goal is not applicable at this time.

13.3 Precipitation Enhancement is not within the Districts ability to be cost effective. This goal is not applicable at this time.

13.4 Brush Control is not within the Districts ability to be cost effective. This goal is not applicable at this time.

References

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Strata Geological Services, Inc.

**United States Department of Agriculture – Agriculture Research Service,
Knipping-Bushland U S Livestock Insect Laboratory Kerrville, Tx.**

**72nd Texas Legislature House Bill 1463 and 77th Texas Legislature House Bill
3543**

Adopted by District Board Resolution _____, 2008

Adopted by the Texas Water Development Board _____, 2008

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12.8 Goal 8 - Addressing in a Quantitative Manner the Desired Future Conditions of the Groundwater Resources.

The desired future conditions of the groundwater within the District for the Upper, Middle, and Lower Trinity aquifers have not yet been established in accordance with Chapter 36.108 of the Texas Water Code. The District is actively participating in the joint planning process and the development of these desired future conditions.

Management Objective: to achieve the Desired Future Condition adopted by GMA 9 for the Edwards Group of the Edwards Trinity (Plateau) – no net increase in average draw-down*.

Performance Standard:

- Headwaters GCD Policy 2007-4 Section 4 states "Permitted wells are not allowed in the Edwards Aquifer.
- Measure and plot water level draw-down in Kerr Wildlife Management Area Edwards Aquifer monitor well, state well number 56 61 102, on an annual basis to quantify that the District is meeting the Desired Future Condition and report to the District Board.

Management Objective: to achieve the Desired Future Condition adopted by GMA 9 for the Ellenburger Aquifer – allow for an increase in average drawdown of no more than 2 feet*.

Performance Standard: due to no wells being completed in the Ellenburger Aquifer in Kerr County, data will need to be acquired from adjoining districts to measure and plot water level draw-down in at least one well on an annual basis.

Management Objective: to achieve the Desired Future Condition adopted by GMA 9 for the Hickory Aquifer – allow for an increase in average drawdown of no more than 5 feet*.

Performance Standard: due to no wells being completed in the Hickory Aquifer in Kerr County, data will need to be acquired from adjoining districts to measure and plot water level draw-down in at least one well on an annual basis.

*Desired Future Condition Numbers as mandated by GMA 9.

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9. Management of Groundwater Supplies

Managed available groundwater is defined in TWC 36.001 as “the amount of water that may be permitted by a District for beneficial use in accordance with the desired future condition of the aquifer” through the year 2060. The Desired Future Condition of the aquifer may only be determined through joint planning with other groundwater conservation districts (GCDs) in the same groundwater management area (GMA 9) as required by the 79th Legislature with passage of HB 1763 into law. GMA 9 has set the Desired Future Condition for the Edwards Aquifer to allow for no net increase in average drawdown. The Desired Future Condition for the Ellenburger Aquifer to allow for an increase in average drawdown of no more than 2 feet. The Desired Future Condition for the Hickory Aquifer to allow for an increase in average drawdown of no more than 5 feet. At this time the Texas Water Development has not returned a Managed Available Groundwater number for these aquifers. The GCDs of GMA 9 have not completed the joint planning process to determine the desired future condition of the Upper, Middle, and Lower Trinity aquifers in the GMA.