LOWER TRINITY GROUNDWATER CONSERVATION DISTRICT

Groundwater Management Plan

October 11, 2019

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MAG UPDATE: ADOPTED OCT 20, 2023

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Lower Trinity Groundwater Conservation District Groundwater Management Plan – 2019

The Lower Trinity Groundwater Conservation District (the "District") was created by the 78th Texas Legislature under the authority of Section 59, Article XVI, of the Texas Constitution, and in accordance with Chapter 36 of the Texas Water Code ("Water Code"), by the Act of May 21, 2001, 77th Leg., R.S., Ch. 1361, 2001 Tex. Gen. and Spec. Laws, codified May 29, 2009, 81st Leg., R.S., Ch. 1139. sec. 8825 ("the District Act").

The District is a governmental agency and a body politic and corporate. The District was created to serve a public use and benefit and is essential to accomplish the objectives set forth in Section 59, Article XVI, of the Texas Constitution. The District's boundaries are coextensive with the boundaries of Polk and San Jacinto Counties, Texas, and lands and other property within these boundaries will benefit from the works and projects that will be accomplished by the District.

District Mission and Purpose of Management Plan

The 75th Texas Legislature in 1997 enacted Senate Bill 1 ("SB 1") to establish a comprehensive statewide water planning process. In particular, SB 1 contained provisions that required groundwater conservation districts to prepare management plans to identify the water supply resources and water demands that will shape the decisions of each district. SB 1 designed the management plans to include management goals for each district to manage and conserve the groundwater resources within their boundaries. In 2001, the Texas Legislature enacted Senate Bill 2 ("SB 2") to build on the planning requirements of SB 1 and to further clarify the actions necessary for districts to manage and conserve the groundwater resources of the state of Texas.

The Texas Legislature enacted significant changes to the management of groundwater resources in Texas with the passage of House Bill 1763 (HB 1763) in 2005. HB 1763 created a long-term planning process in which groundwater conservation districts (GCDs) in each Groundwater Management Area (GMA) are required to meet and determine the DFCs for the groundwater resources within their boundaries by September 1, 2010. In addition, HB 1763 required GCDs, to share management plans with the other GCDs in the GMA for review by the other GCDs.

The Lower Trinity Groundwater Conservation District's management plan satisfies the requirements of SB 1, SB 2, HB 1763, the statutory requirements of Chapter 36 of the Texas Water Code, and the administrative requirements of the Texas Water Development Board's (TWDB) rules.

Technical District Information Required by Texas Administrative Code

Estimate of Modeled Available Groundwater (MAG) in District Based on DFCs, Texas Water Code § 36.001 defines modeled available groundwater as "the amount of water that the executive administrator determines may be produced on an average annual basis to achieve a desired future condition established under Section 36.108".

The joint planning process set forth in Texas Water Code § 36.108 must be collectively conducted by all groundwater conservation districts within the same GMA. The District is a member of GMA 14. GMA 14 adopted DFCs on April 29, 2016. The adopted DFCs were approved as administratively complete by the TWDB. The submittal package and explanatory report for the DFCs can be found here:

http://www.twdb.texas.gov/groundwater/dfc/docs/summary/GMA14_DFC_2016.pdf
http://www.twdb.texas.gov/groundwater/dfc/docs/GMA14_DFCExpRep.pdf

DFC's and modeled available groundwater values applicable for the District are summarized below (MAG values for the Gulf Coast Aquifer (Chicot, Evangeline, Burkeville, and Jasper) were documented in TWDB GAM Run 16-024 MAG.4 (Wade, December 15, 2016). Please refer to Appendix G.

Estimate of the Annual Amount of Groundwater Being Used within the District on an Annual Basis

Please refer to Appendix A.

Estimate of the Annual Amount of Recharge from Precipitation to the Groundwater Resources within the District

Please refer to Appendix B.

Estimate of the Annual Volume of Water that Discharges from the Aquifer to Springs and Any Surface Water Bodies

Please refer to Appendix B.

Estimate of the Annual Volume of Flow into the District and out of the District Within Each Aquifer, and Between Aquifers in the District

Please refer to Appendix B.

Estimate of the Projected Surface Water Supply within the District

Please refer to Appendix A.

Estimate of the Projected Total Demand for Water within the District

Please refer to Appendix A.

Water Supply Needs

The TWDB 2017 State Water Plan identifies water supply needs for water user groups County-Polk, Manufacturing, Irrigation, Municipality, Livestock, and Mining. County-San Jacinto, Manufacturing, Irrigation, Municipality, Livestock. The District will continue to work with both Region I and H Regional water planning Groups in the identification of projected water supply needs. Please refer to Appendix A.

Water Management Strategies

The District continues to encourage conservation, water loss reduction, and reuse to meet the projected strategies of the TWDB 2017 State Water Plan. (Please refer to Appendix A).

Water management strategies identified for water user groups within Polk and San Jacinto Counties fall into one of the following categories (number of individual strategies):

- Polk-Municipal Conservation (125)
- San Jacinto-Municipal Conservation (29)

These specific water management strategies were considered and included in the overall preparation of this management plan as most of the water user groups are solely dependent on groundwater. The surface water dependent strategies were considered in relation to their expanded use or development of groundwater. These strategies are considered feasible by TWDB and the Regional Water Planning Groups to be included in the TWDB 2017 State Water Plan. The actual feasibility and usefulness of these, and other, strategies will not be realized until, or if, they are implemented by the individual water user group.

42 of 69 (61%) account for less than or equal to 100 acre-feet of water attributable to individual strategies, with an additional 14 strategies falling between 100 acre-feet and 1,000 acre-feet. Water management strategies are considered as part of the desired future condition development criteria in TWC 36.108(d)(2) the District participates in with GMA 14. These considerations contribute to the MAG values exceeding current production to accommodate existing and future groundwater users. The District continues to encourage conservation, water loss reduction, and reuse to meet the projected needs of the TWDB 2018 State Water Plan.

How the District Will Manage Groundwater Supplies

The District's Management Plan is promulgated under the District's statutory authority to protect private property rights, balance the conservation and development of groundwater to meet the needs of this state, use the best available science in the conservation and development of groundwater and to achieve the following objectives; to provide for conserving, preserving, protecting, and recharging of the groundwater or of a groundwater reservoir of its subdivisions in order to control subsidence, prevent degradation of water quality, or prevent waste of groundwater. The District's orders, rules, regulation, requirements, resolutions, policies, guidelines, or similar measures have been implemented to fulfill these objectives to minimize as far as practicable the drawdown of the water table or the reduction of artesian pressure, to prevent or control subsidence, to prevent interference between wells, to prevent degradation of water quality, and to prevent waste.

Permits are reviewed individually and independently. The District reviews and analyzes any potential impacts to existing or future users of groundwater. The District requires the submittal of Phase I and Phase

II hydrogeologic reports for non-exempt wells with an outside casing diameter of eight (8) inches or greater or more than 750,000 GPD as part of the permit application process. In general, the Phase I report in intended to evaluate the impacts of pumping, such as drawdown, well interference, potential for measurable subsidence and other relevant impacts, using existing data and the existing regional groundwater flow model of the area for the aquifer in which the well is to be completed. The Phase II report is intended to be a final report that relies on site specific data, information, test results and analyses. The District-provided guideline document sets standards and expectations for the investigations and reports. The District may exercise discretion in the application of the guidelines on an individual and site-specific basis in order to allow a practicable application of the guidelines while insuring a result yielding the information needed by the District to process the permit application. The data and analyses are used to address production limits, monitoring requirements, and permit conditions.

Production of groundwater in any manner, including volumes, rate, frequency, duration, or within a concentrated area, that causes the potential for measurable subsidence is prohibited. Controlling and preventing measurable subsidence will be addressed during review and processing of new, renewed, and amended permit applications. If numerical modeling, local hydrogeological conditions including subsurface clay content, aquifer testing or other reliable data demonstrate the potential for measurable subsidence, the District will implement actions to address subsidence that may include (a) permit denial, revocation, suspension, cancellation, modification, or amendment, (b) production limits, (c) spacing requirements, (d) permit conditions requiring extensometer installation, subsidence monitoring and reporting, (e) the establishment of threshold limits that trigger reduces production based on monitoring results and (f) any other action reasonably necessary to control and prevent measurable subsidence. If the District has reason to believe that a non-exempt well has the potential to cause measurable subsidence, the District may take all actions it deems necessary to address the potential subsidence.

Methodology for Tracking Progress

An annual report ("Annual Report") will be created by the general manager and staff of the District 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 regard to achieving the District's management goals and objectives. The Annual Report will be delivered to the Board each year coordinating collection of permitted pumping data, downloaded available drought information, and water level monitoring. A copy of the Annual Report will be kept on file and available for public inspection at the District's offices upon adoption.

Actions, Procedures, Performance, and Avoidance for District Implementation of Management Plan

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

The District has adopted rules in accordance with Chapter 36 of the Texas Water Code. The development of rules is based on the scientific information and technical evidence available to the District. Current rules are available in Appendix C: and at http://www.ltgcd.org/rules.html

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

Management Goals

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

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

1.1 Performance Standard – The number of exempt and non-exempt wells registered by the District will be incorporated into the Managers Report submitted to the Board of Directors of the District at each regular meeting.

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

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

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

2.2 Objective – The District will provide information to the public on eliminating and reducing wasteful practices in the use of groundwater.

2.2 Performance Standard – The District will post and maintain and update yearly articles or a link to articles relevant to the public on eliminating and reducing wasteful practices in the use of groundwater at www.waterwells.info.

3. Controlling and Preventing Subsidence

The TWDB subsidence risk report: ***Identification of the Vulnerability of the Major and Minor Aquifers of Texas to Subsidence with Regard to Groundwater Pumping*** – TWDB Contract Number 1648302062, by LRE Water: **http://www.twdb.texas.gov/groundwater/models/research/subsidence/subsidence.asp** and other sources have been reviewed for applicability to the Lower Trinity GCD.

3.1 Objective – Controlling and preventing subsidence will be addressed during the review and processing of new, renewed, and amended permit applications.

3.1 Performance Standard – If review results demonstrate potential subsidence, the District will implement actions ranging from reducing requested permitted pumping to including permit conditions imposing subsidence monitoring requirements and establishment of threshold limits that could result in reduced production based on monitoring results. All actions on permits related to subsidence will be reported to the Board in the Annual Report.

4. Addressing Conjunctive Surface Water Management Issues

4.1 Objective – The District will attend, either in-person or through recordings, 75% of the Region I and Region H Regional water planning Group meetings.

4.1 Performance Standard – The minutes for all attended, either in-person or through recording, Region I and Region H Regional water planning Group meetings will be maintained at the District for a period of three (3) years from their accepted date. A report of all attended meetings will be given to the Board at the regular meetings.

5. Addressing Natural Resource Issues Affecting the Use and Availability of Groundwater or affected by the Use of Groundwater

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

5.1. 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. District Rules require any water wells drilled associated with oil and gas drilling or production be registered with the District and are required to comply with District construction standards and reporting.

6. ***Addressing Drought Conditions***

6.1 Objective – Each month, the District will download available drought information, for the counties in the District, from available websites on the internet, such as https://waterdatafortexas.org/drought.

6.1 Performance Standard – Quarterly, the District will make an assessment of the status of drought in the District and prepare a quarterly briefing for the Board of Directors. The downloaded maps, reports and information will be included with copies of the quarterly briefings and combined with results of groundwater monitoring data and permitted pumping data in the regular meeting of the Board.

7. Addressing Conservation, Recharge Enhancement, Rainwater Harvesting, Precipitation Enhancement, and Brush Control.

a. Conservation

7A.1 Objective – The District will provide information relevant to public education and awareness regarding groundwater conservation.

7A.1 Performance Standard – The District will post and maintain and update yearly articles or a link to articles relevant to the public under water conservation on the District website at www.waterwells.info.

b. Recharge Enhancement

This management goal is not applicable to the District as there is not a recharge enhancement program unique to the District and is cost prohibitive due to budget restraints.

c. Rainwater Harvesting

7C.1 Objective – The District will provide information relevant to public education and awareness regarding rainwater harvesting.

7C.1 Performance Standard – The District will post and maintain and update yearly articles or a link to articles relevant to the public under rainwater harvesting on the District website at www.waterwells.info.

d. Precipitation Enhancement

This management goal is not applicable to the District as there is not a precipitation enhancement program unique to the District and is cost prohibitive due to budget restraints.

e. Brush Control

This management goal is not applicable to the District as there is not a brush control program unique to the District. Brush control initiatives are focused by the Texas State Soil and Water Conservation Board and through the TWDB State Water Plan where applicable.

8. Addressing the DFC's (DFC) of the groundwater resources in the District

8.1 Objective – Objective - The District will monitor groundwater conditions within the District by measuring the static water levels in at least twenty-five (25) monitor wells annually.

8.1 Performance Standard – The recorded static water levels of the twenty-five (25) monitor wells will be included in the District's Annual Report. The data gathered will be compared to historical results each year and presented at a regular meeting in the form of tables and graphs as appropriate. These comparisons will be supplemented by data and information related to drought conditions and permitted pumping data.

Appendices

Appendix A – Estimated Historical Water Use And 2017 State Water Plan Datasets: Lower Trinity Groundwater Conservation District

Texas Water Use Estimates

2017 Summary

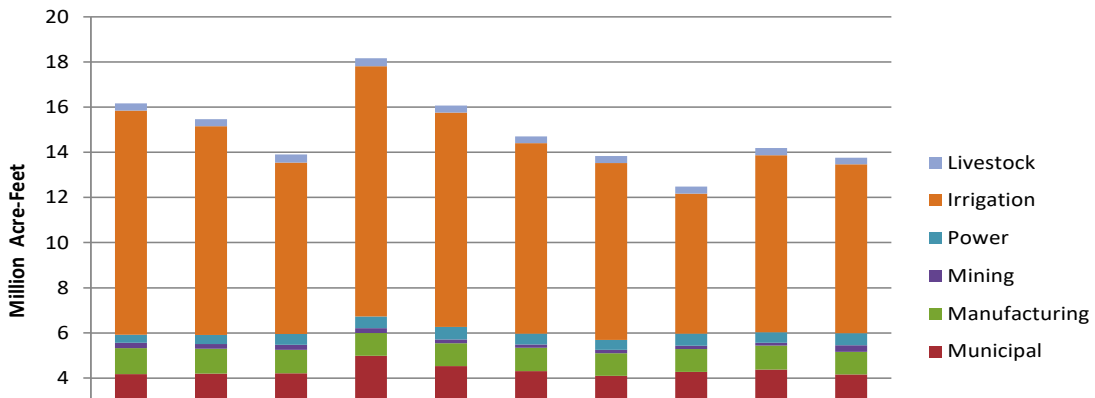
July 9, 2019

The Texas Water Development Board Water Use Survey program conducts an annual survey of about 4,200 public water systems and 2,000 industrial facilities. The water use survey collects the volume of both ground and surface water used, the source of the water, water sales, and other pertinent data from the users. This data provides an important source of information in helping guide water supply studies as well as regional and state water planning that is dependent upon the accuracy and completeness of the information water users provide.

Of the approximately 6,700 systems/facilities surveyed, 80% submitted their water use survey for 2017 water use. This represents about 98% of the total surveyed water use in the state. For those systems/facilities that did not submit their survey, estimates were carried-over from the most current available year. Estimates are also revised as additional or more accurate data becomes available through survey responses.

2017 Estimated Annual Statewide Water Use

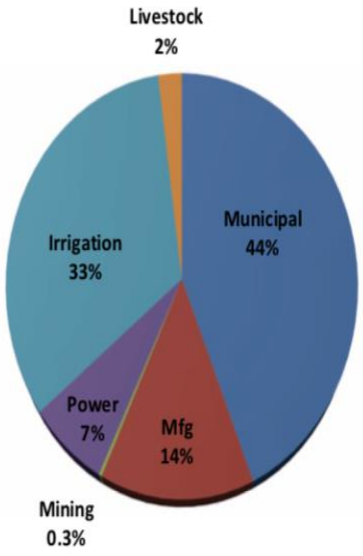
Total estimated water use for 2017 (including reported reuse) was about 13.75 million acre-feet *(1 acre-foot = 325,851 gallons)* and was down from 2016 which was estimated at about 14.23 million acre-feet. The total 2017 estimated municipal water use slightly decreased to 4.17 million acre-feet compared to 4.41 million acre-feet in 2016. Estimated irrigation water use slightly decreased to 7.49 million acre-feet compared to 7.83 million acre-feet in 2016. Below is a breakdown of the categorical estimated uses for 2017. Irrigation water use **(54%)** topped the largest water use category in the State in 2017 with an estimated 7.49 million acre-feet. Municipal water use **(30%)**, same as 2016, was the second largest water use category with an estimated 4.17 million acre-feet. Manufacturing **(7%)**, Power **(3%)**, Livestock **(2%)**, and Mining **(1%)** estimated water use collectively comprised about 2.1 million acre-feet.



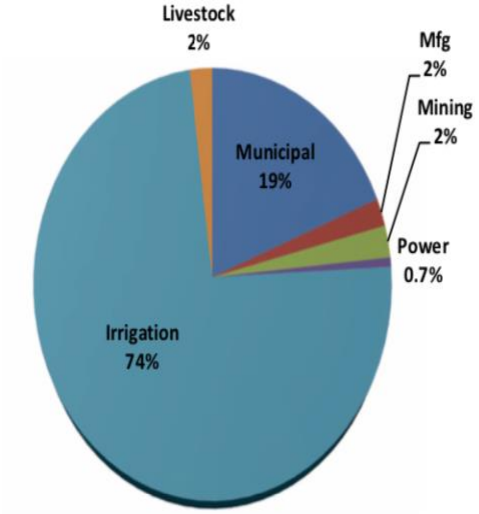
2017 Surface & Groundwater Use Estimates

Approximately **54%** of the 2017 estimated water use in Texas was from **groundwater** sources (about 7.40 million acre-feet) with **43%** from **surface water** sources (about 5.93 million acre-feet) and **3%** from reuse (a little over a quarter million acre-feet). The two graphs below illustrate the categorical differences in use between surface water and groundwater sources.

2017 Surface Water Estimates by Category



2017 Groundwater Estimates by Category



Detailed reports of historical water use estimates and historical groundwater pumpage in Texas can be found at:

http://www.twdb.texas.gov/waterplanning/waterusesurvey/estimates/index.asp

http://www.twdb.texas.gov/waterplanning/waterusesurvey/historical-pumpage.asp

Estimated Historical Water Use And 2017 State Water Plan Datasets:

Lower Trinity Groundwater Conservation District

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May 2, 2019

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/GMPChecklist0113.pdf

The five reports included in this part 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)

   from the 2017 Texas State Water Plan (SWP)

Part 2 of the 2-part package is the groundwater availability model (GAM) report for the District (checklist items 3 through 5). The District should have received, or will receive, this report from the Groundwater Availability Modeling Section. Questions about the GAM can be directed to Dr. Shirley Wade, shirley.wade@twdb.texas.gov, (512) 936-0883.

DISCLAIMER:

The data presented in this report represents the most up-to-date WUS and 2017 SWP data available as of 5/2/2019. Although it does not happen frequently, either of these datasets are subject to change pending the availability of more accurate WUS data or an amendment to the 2017 SWP. District personnel must review these datasets and correct any discrepancies in order to ensure approval of their groundwater management plan.

The WUS dataset can be verified at this web address:

http://www.twdb.texas.gov/waterplanning/waterusesurvey/estimates/

The 2017 SWP dataset can be verified by contacting Sabrina Anderson (sabrina.anderson@twdb.texas.gov or 512-936-0886).

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

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

Groundwater and surface water historical use estimates are currently unavailable for calendar year 2017. TWDB staff anticipates the calculation and posting of these estimates at a later date.

POLK COUNTY

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2016	GW	4,452	311	0	0	143	31	4,937
	SW	2,420	0	0	0	0	276	2,696
2015	GW	4,751	336	0	0	144	30	5,261
	SW	2,081	0	0	0	66	273	2,420
2014	GW	4,796	194	0	0	241	30	5,261
	SW	2,076	0	0	0	40	268	2,384
2013	GW	4,817	255	0	0	257	31	5,360
	SW	2,164	0	0	0	70	276	2,510
2012	GW	4,962	201	0	0	525	29	5,717
	SW	2,161	0	0	0	15	261	2,437
2011	GW	5,404	438	0	0	503	44	6,389
	SW	2,378	0	0	0	200	396	2,974
2010	GW	5,136	238	16	0	595	44	6,029
	SW	2,166	0	2	0	0	396	2,564
2009	GW	5,011	195	20	0	154	32	5,412
	SW	2,170	0	2	0	275	287	2,734
2008	GW	4,956	293	23	0	25	35	5,332
	SW	2,154	0	2	0	300	308	2,764
2007	GW	4,735	333	0	0	342	30	5,440
	SW	1,971	0	0	0	0	263	2,234
2006	GW	5,276	420	0	0	100	41	5,837
	SW	1,361	110	0	0	0	370	1,841
2005	GW	5,152	439	0	0	100	43	5,734
	SW	1,321	110	0	0	0	385	1,816
2004	GW	4,902	273	0	0	100	66	5,341
	SW	1,250	110	0	0	0	266	1,626
2003	GW	4,886	642	0	0	96	67	5,691
	SW	1,266	110	0	0	0	266	1,642
2002	GW	4,808	441	0	0	115	70	5,434
	SW	1,177	113	0	0	14	280	1,584
2001	GW	4,681	441	0	0	115	74	5,311
	SW	1,853	109	0	0	14	296	2,272

SAN JACINTO COUNTY

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2016	GW	2,942	8	0	1	73	69	3,093
	SW	0	0	0	0	0	275	275
2015	GW	2,984	8	0	0	68	68	3,128
	SW	0	0	0	0	0	271	271
2014	GW	3,078	9	30	0	88	66	3,271
	SW	0	0	7	0	0	267	274
2013	GW	3,180	8	9	0	108	62	3,367
	SW	0	0	2	0	0	247	249
2012	GW	3,326	5	0	0	155	56	3,542
	SW	0	0	0	0	0	221	221
2011	GW	3,739	5	0	0	131	116	3,991
	SW	0	0	0	0	0	465	465
2010	GW	2,875	5	4	0	0	113	2,997
	SW	88	0	6	0	148	453	695
2009	GW	2,908	9	0	0	0	67	2,984
	SW	0	0	0	0	0	266	266
2008	GW	3,010	9	0	0	0	68	3,087
	SW	42	0	0	0	259	266	567
2007	GW	2,919	10	0	0	0	83	3,012
	SW	48	0	0	0	135	333	516
2006	GW	3,285	11	0	0	0	87	3,383
	SW	56	0	0	0	0	346	402
2005	GW	3,244	11	0	0	0	83	3,338
	SW	28	0	0	0	0	333	361
2004	GW	4,384	11	0	0	0	71	4,466
	SW	44	0	0	0	0	283	327
2003	GW	2,934	32	0	0	0	71	3,037
	SW	48	0	0	0	0	283	331
2002	GW	2,995	35	0	0	0	57	3,087
	SW	64	0	0	0	667	231	962
2001	GW	2,942	35	0	0	0	61	3,038
	SW	83	0	0	0	667	241	991

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

POLK COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
H	COUNTY-OTHER, POLK	TRINITY	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	30	30	30	30	30	30
H	LAKE LIVINGSTON WATER SUPPLY & SEWER SERVICE COMPANY	TRINITY	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	528	519	512	505	497	488
H	LIVINGSTON	TRINITY	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	5,600	5,600	5,600	5,600	5,600	5,600
H	MINING, POLK	TRINITY	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	32	32	32	32	32	32
I	LIVESTOCK, POLK	NECHES	NECHES LIVESTOCK LOCAL SUPPLY	396	396	396	396	396	396
I	MINING, POLK	NECHES	NECHES OTHER LOCAL SUPPLY	20	20	20	20	20	20
	Sum of Projected Surface Water Supplies (acre-feet)			**6,606**	**6,597**	**6,590**	**6,583**	**6,575**	**6,566**

SAN JACINTO COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
H	COUNTY-OTHER, SAN JACINTO	TRINITY	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	336	336	336	336	336	336
H	IRRIGATION, SAN JACINTO	TRINITY	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	120	120	120	120	120	120
H	LAKE LIVINGSTON WATER SUPPLY & SEWER SERVICE COMPANY	TRINITY	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	134	130	127	127	125	124
H	RIVERSIDE WSC	TRINITY	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	8	8	8	8	8	8
H	SAN JACINTO SUD	SAN JACINTO	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	80	79	79	80	80	80

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
H	SAN JACINTO SUD	TRINITY	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	200	201	201	200	200	200
	Sum of Projected Surface Water Supplies (acre-feet)			**878**	**874**	**871**	**871**	**869**	**868**

Projected Water Demands
TWDB 2017 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.

POLK COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
H	COUNTY-OTHER, POLK	TRINITY	1,942	2,047	2,131	2,218	2,305	2,381
H	LAKE LIVINGSTON WATER SUPPLY & SEWER SERVICE COMPANY	TRINITY	1,066	1,178	1,275	1,357	1,425	1,479
H	LIVESTOCK, POLK	TRINITY	144	144	144	144	144	144
H	LIVINGSTON	TRINITY	2,557	2,823	3,032	3,216	3,374	3,502
H	MINING, POLK	TRINITY	124	98	72	46	21	9
H	ONALASKA	TRINITY	316	390	449	501	544	579
I	CORRIGAN	NECHES	225	241	253	269	281	292
I	COUNTY-OTHER, POLK	NECHES	743	797	840	882	923	957
I	IRRIGATION, POLK	NECHES	428	428	428	428	428	428
I	LIVESTOCK, POLK	NECHES	357	357	357	357	357	357
I	MANUFACTURING, POLK	NECHES	604	687	774	854	924	1,000
I	MINING, POLK	NECHES	123	97	72	46	20	9
	Sum of Projected Water Demands (acre-feet)		**8,629**	**9,287**	**9,827**	**10,318**	**10,746**	**11,137**

SAN JACINTO COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
H	COLDSPRING	SAN JACINTO	40	42	45	47	50	52
H	COLDSPRING	TRINITY	78	84	87	94	98	103
H	COUNTY-OTHER, SAN JACINTO	SAN JACINTO	1,317	1,413	1,490	1,586	1,672	1,752
H	COUNTY-OTHER, SAN JACINTO	TRINITY	758	812	856	912	962	1,008
H	IRRIGATION, SAN JACINTO	SAN JACINTO	130	130	130	130	130	130
H	IRRIGATION, SAN JACINTO	TRINITY	129	129	129	129	129	129
H	LAKE LIVINGSTON WATER SUPPLY & SEWER SERVICE COMPANY	TRINITY	271	295	316	340	359	377
H	LIVESTOCK, SAN JACINTO	SAN JACINTO	193	193	193	193	193	193
H	LIVESTOCK, SAN JACINTO	TRINITY	193	193	193	193	193	193
H	MANUFACTURING, SAN JACINTO	SAN JACINTO	11	12	13	14	15	16
H	MINING, SAN JACINTO	SAN JACINTO	6	6	6	6	6	6
H	MINING, SAN JACINTO	TRINITY	2	2	3	3	3	3

Projected Water Demands
TWDB 2017 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.

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
H	POINT BLANK	TRINITY	89	95	99	105	111	116
H	RIVERSIDE WSC	TRINITY	39	43	46	49	52	54
H	SAN JACINTO SUD	SAN JACINTO	68	70	72	77	81	85
H	SAN JACINTO SUD	TRINITY	169	177	182	192	203	212
H	SHEPHERD	TRINITY	314	334	349	370	390	409
	Sum of Projected Water Demands (acre-feet)		**3,807**	**4,030**	**4,209**	**4,440**	**4,647**	**4,838**

Projected Water Supply Needs
TWDB 2017 State Water Plan Data

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

POLK COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
H	COUNTY-OTHER, POLK	TRINITY	30	30	30	30	30	30
H	LAKE LIVINGSTON WATER SUPPLY & SEWER SERVICE COMPANY	TRINITY	528	519	512	505	497	488
H	LIVESTOCK, POLK	TRINITY	0	0	0	0	0	0
H	LIVINGSTON	TRINITY	3,043	2,777	2,568	2,384	2,226	2,098
H	MINING, POLK	TRINITY	0	26	32	32	32	32
H	ONALASKA	TRINITY	0	0	0	0	0	0
I	CORRIGAN	NECHES	67	51	39	23	11	0
I	COUNTY-OTHER, POLK	NECHES	0	0	0	0	0	0
I	IRRIGATION, POLK	NECHES	341	341	341	341	341	341
I	LIVESTOCK, POLK	NECHES	277	277	277	277	277	277
I	MANUFACTURING, POLK	NECHES	9	9	9	9	9	9
I	MINING, POLK	NECHES	63	89	114	140	166	177
	Sum of Projected Water Supply Needs (acre-feet)		**0**	**0**	**0**	**0**	**0**	**0**

SAN JACINTO COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
H	COLDSPRING	SAN JACINTO	0	0	0	0	0	0
H	COLDSPRING	TRINITY	0	0	0	0	0	0
H	COUNTY-OTHER, SAN JACINTO	SAN JACINTO	0	0	0	0	0	0
H	COUNTY-OTHER, SAN JACINTO	TRINITY	336	336	336	336	336	336
H	IRRIGATION, SAN JACINTO	SAN JACINTO	0	0	0	0	0	0
H	IRRIGATION, SAN JACINTO	TRINITY	56	56	56	56	56	56
H	LAKE LIVINGSTON WATER SUPPLY & SEWER SERVICE COMPANY	TRINITY	134	130	127	127	125	124
H	LIVESTOCK, SAN JACINTO	SAN JACINTO	0	0	0	0	0	0
H	LIVESTOCK, SAN JACINTO	TRINITY	0	0	0	0	0	0
H	MANUFACTURING, SAN JACINTO	SAN JACINTO	0	0	0	0	0	0
H	MINING, SAN JACINTO	SAN JACINTO	0	0	0	0	0	0
H	MINING, SAN JACINTO	TRINITY	0	0	-1	-1	-1	-1

Projected Water Supply Needs
TWDB 2017 State Water Plan Data

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

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
H	POINT BLANK	TRINITY	0	0	0	0	0	0
H	RIVERSIDE WSC	TRINITY	8	8	8	8	8	8
H	SAN JACINTO SUD	SAN JACINTO	80	79	79	80	80	80
H	SAN JACINTO SUD	TRINITY	200	201	201	200	200	200
H	SHEPHERD	TRINITY	0	0	0	0	0	0
	Sum of Projected Water Supply Needs (acre-feet)		**0**	**0**	**-1**	**-1**	**-1**	**-1**

Projected Water Management Strategies
TWDB 2017 State Water Plan Data

POLK COUNTY

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
COUNTY-OTHER, POLK, TRINITY (H)							
WATER LOSS REDUCTION, COUNTY-OTHER - POLK COUNTY	DEMAND REDUCTION [POLK]	73	147	219	290	360	426
		73	**147**	**219**	**290**	**360**	**426**
LAKE LIVINGSTON WATER SUPPLY & SEWER SERVICE COMPANY, TRINITY (H)							
WATER LOSS REDUCTION, LAKE LIVINGSTON WATER SUPPLY & SEWER SERVICE COMPANY	DEMAND REDUCTION [POLK]	42	88	136	184	231	274
		42	**88**	**136**	**184**	**231**	**274**
ONALASKA, TRINITY (H)							
WATER LOSS REDUCTION, ONALASKA	DEMAND REDUCTION [POLK]	10	22	37	52	68	83
		10	**22**	**37**	**52**	**68**	**83**
Sum of Projected Water Management Strategies (acre-feet)		**125**	**257**	**392**	**526**	**659**	**783**

SAN JACINTO COUNTY

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
COLDSPRING, SAN JACINTO (H)							
WATER LOSS REDUCTION, COLDSPRING	DEMAND REDUCTION [SAN JACINTO]	1	1	2	3	3	4
		1	**1**	**2**	**3**	**3**	**4**
COLDSPRING, TRINITY (H)							
WATER LOSS REDUCTION, COLDSPRING	DEMAND REDUCTION [SAN JACINTO]	1	3	4	5	7	8
		1	**3**	**4**	**5**	**7**	**8**
LAKE LIVINGSTON WATER SUPPLY & SEWER SERVICE COMPANY, TRINITY (H)							
WATER LOSS REDUCTION, LAKE LIVINGSTON WATER SUPPLY & SEWER SERVICE COMPANY	DEMAND REDUCTION [SAN JACINTO]	9	19	30	41	51	62
		9	**19**	**30**	**41**	**51**	**62**
MANUFACTURING, SAN JACINTO, SAN JACINTO (H)							
INDUSTRIAL CONSERVATION, SAN JACINTO COUNTY	DEMAND REDUCTION [SAN JACINTO]	0	0	0	1	1	1

Projected Water Management Strategies
TWDB 2017 State Water Plan Data

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
		0	**0**	**0**	**1**	**1**	**1**
MINING, SAN JACINTO, TRINITY (H)							
EXPANDED USE OF GROUNDWATER, SAN JACINTO COUNTY	GULF COAST AQUIFER [SAN JACINTO]	0	0	100	100	100	100
		0	**0**	**100**	**100**	**100**	**100**
SAN JACINTO SUD, SAN JACINTO (H)							
WATER LOSS REDUCTION, SAN JACINTO SUD	DEMAND REDUCTION [SAN JACINTO]	2	4	6	9	11	13
		2	**4**	**6**	**9**	**11**	**13**
SAN JACINTO SUD, TRINITY (H)							
WATER LOSS REDUCTION, SAN JACINTO SUD	DEMAND REDUCTION [SAN JACINTO]	6	11	16	21	26	32
		6	**11**	**16**	**21**	**26**	**32**
SHEPHERD, TRINITY (H)							
WATER LOSS REDUCTION, SHEPHERD	DEMAND REDUCTION [SAN JACINTO]	10	20	30	41	51	62
		10	**20**	**30**	**41**	**51**	**62**
Sum of Projected Water Management Strategies (acre-feet)		**29**	**58**	**188**	**221**	**250**	**282**

Appendix B – GAM Run 19-003: Lower Trinity Groundwater Conservation District Groundwater Management Plan

GAM RUN 19-003: LOWER TRINITY GROUNDWATER CONSERVATION DISTRICT GROUNDWATER MANAGEMENT PLAN

Roberto Anaya, P.G.
Texas Water Development Board
Groundwater Division
Groundwater Availability Modeling Department
512-462-6115
June 24, 2019

6/24/19

GAM RUN 19-003: LOWER TRINITY GROUNDWATER CONSERVATION DISTRICT GROUNDWATER MANAGEMENT PLAN

Roberto Anaya, P.G.
Texas Water Development Board
Groundwater Division
Groundwater Availability Modeling Department
512-462-6115
June 24, 2019

EXECUTIVE SUMMARY:

Texas State Water Code, Section 36.1071, Subsection (h) (Texas Water Code, 2011), states that, in developing its groundwater management plan, a groundwater conservation district shall use groundwater availability modeling information provided by the Executive Administrator of the Texas Water Development Board (TWDB) in conjunction with any available site-specific information provided by the district for review and comment to the Executive Administrator.

The TWDB provides data and information to the Lower Trinity Groundwater Conservation District in two parts. Part 1 is the Estimated Historical Water Use/State Water Plan dataset report, which will be provided to you separately by the TWDB Groundwater Technical Assistance Department. Please direct questions about the water data report to Mr. Stephen Allen at 512-463-7317 or stephen.allen@twdb.texas.gov. Part 2 is the required groundwater availability modeling information and this information includes:

1. the annual amount of recharge from precipitation, if any, to the groundwater resources within the district;
2. 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
3. the annual volume of flow into and out of the district within each aquifer and between aquifers in the district.

The groundwater management plan for the Lower Trinity Groundwater Conservation District should be adopted by the district on or before July 2, 2019 and submitted to the Executive Administrator of the TWDB on or before August 1, 2019. The current management plan for the Lower Trinity Groundwater Conservation District expires on September 30, 2019.

We used two groundwater availability models to estimate the management plan information for the aquifers within the Lower Trinity Groundwater Conservation District. Information for the Yegua-Jackson Aquifer is from version 1.01 of the groundwater availability model for the Yegua-Jackson Aquifer (Deeds and others, 2010). Information for the Gulf Coast Aquifer System is from version 3.01 of the groundwater availability model for the northern portion of the Gulf Coast Aquifer System (Kasmareck, 2013).

This report replaces the results of GAM Run 14-006 (Wade, 2014), as the approach used for analyzing model results has been since refined to more accurately delineate flows for recharge and surface water discharge and between hydraulically connected units. Tables 1 and 2 summarize the groundwater availability model data required by statute and Figures 1 and 2 show the area of the models from which the values in the tables were extracted. If, after review of the figures, the Lower Trinity Groundwater Conservation District determines that the district boundaries used in the assessment do not reflect current conditions, please notify the TWDB at your earliest convenience.

METHODS:

In accordance with the provisions of the Texas State Water Code, Section 36.1071, Subsection (h), the two groundwater availability models mentioned above were used to estimate information for the Lower Trinity Groundwater Conservation District management plan. Water budgets were extracted for the Yegua-Jackson Aquifer (1980 through 1997) and Gulf Coast Aquifer System (1980 through 2009). We used ZONEBUDGET Version 3.01 (Harbaugh, 2009) to extract water budgets from the model results. The average annual water budget values for recharge, surface-water outflow, inflow to the district, and outflow from the district for the aquifers within the district are summarized in this report.

PARAMETERS AND ASSUMPTIONS:

Yegua-Jackson Aquifer

- We used version 1.01 of the groundwater availability model for the Yegua-Jackson Aquifer. See Deeds and others (2010) for assumptions and limitations of the groundwater availability model.
- This groundwater availability model includes five layers that represent the shallow outcrop portion of the Yegua-Jackson Aquifer and the younger overlying Catahoula Formation (Layer 1), the Upper Jackson Group (Layer 2), the Lower Jackson Group (Layer 3), the upper member(s) of the Yegua Formation (Layer 4), and the lower member(s) of the Yegua Formation (Layer 5).
- An overall water budget for the district was determined for the Yegua-Jackson Aquifer (Layer 1 through Layer 5, collectively, for the portions of the model that represent the Yegua-Jackson Aquifer). The net flow between aquifers within the district were determined by separating Layer 1 from the combined Layers of 2 through 5 from portions outside of the Yegua-Jackson Aquifer outcrop areas.
- The model was run with MODFLOW-2000 (Harbaugh and others, 2000).

Gulf Coast Aquifer System

- We used version 3.01 of the groundwater availability model for the northern part of the Gulf Coast Aquifer System for this analysis. See Kasmarek (2013) for assumptions and limitations of the groundwater availability model.
- The model has four layers which represent the Chicot Aquifer (Layer 1), the Evangeline Aquifer (Layer 2), the Burkeville Confining Unit (Layer 3), and the Jasper Aquifer and parts of the Catahoula Formation in direct hydrologic communication with the Jasper Aquifer (Layer 4).
- Water budgets for the district were determined for the Gulf Coast Aquifer System (Layers 1 through 4, collectively).
- The model was run with MODFLOW-2000 (Harbaugh and others, 2000).
- Because this model assumes a no-flow boundary condition at the base of the Gulf Coast Aquifer System, we used version 1.01 of the groundwater availability model for the Yegua-Jackson Aquifer to investigate groundwater flows between parts of the Catahoula Formation in direct hydrologic communication with the Gulf Coast Aquifer System and the Yegua-Jackson Aquifer and its equivalent downdip Yegua-Jackson confined units. See Deeds and others (2010) for assumptions and limitations of the groundwater availability model for the Yegua-Jackson Aquifer.

RESULTS:

A groundwater budget summarizes the amount of water entering and leaving the aquifers according to the groundwater availability model. Selected groundwater budget components listed below were extracted from the groundwater availability model results for the Yegua-Jackson aquifer and the Gulf Coast Aquifer System located within Lower Trinity Groundwater Conservation District and averaged over the historical calibration periods, as shown in Tables 1 and 2.

1. 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.

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

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

4. Flow between aquifers—the net vertical flow between the aquifer and adjacent aquifers or confining units. This flow is controlled by the relative water levels in each aquifer and aquifer properties of each aquifer or confining unit that define the amount of leakage that occurs.

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.

TABLE 1. SUMMARIZED INFORMATION FOR THE YEGUA-JACKSON AQUIFER FOR LOWER TRINITY GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Yegua-Jackson Aquifer	4,114
Estimated annual volume of water that discharges from the aquifer to springs and any surface-water body including lakes, streams, and rivers	Yegua-Jackson Aquifer	3,879
Estimated annual volume of flow into the district within each aquifer in the district	Yegua-Jackson Aquifer	1,950
Estimated annual volume of flow out of the district within each aquifer in the district	Yegua-Jackson Aquifer	2,826
Estimated net annual volume of flow between each aquifer in the district	Into Yegua-Jackson Aquifer from confined Yegua-Jackson units	286
	Into Yegua-Jackson Aquifer from the Catahoula Formation[1] part of Gulf Coast Aquifer System	148

[1] The Catahoula Formation within and near its outcrop is considered part of the Gulf Coast Aquifer System by the TWDB. Flow values from the Catahoula Formation outcrop portion of the Gulf Coast Aquifer System into the Yegua-Jackson Aquifer were extracted from the groundwater availability model for the Yegua-Jackson Aquifer.

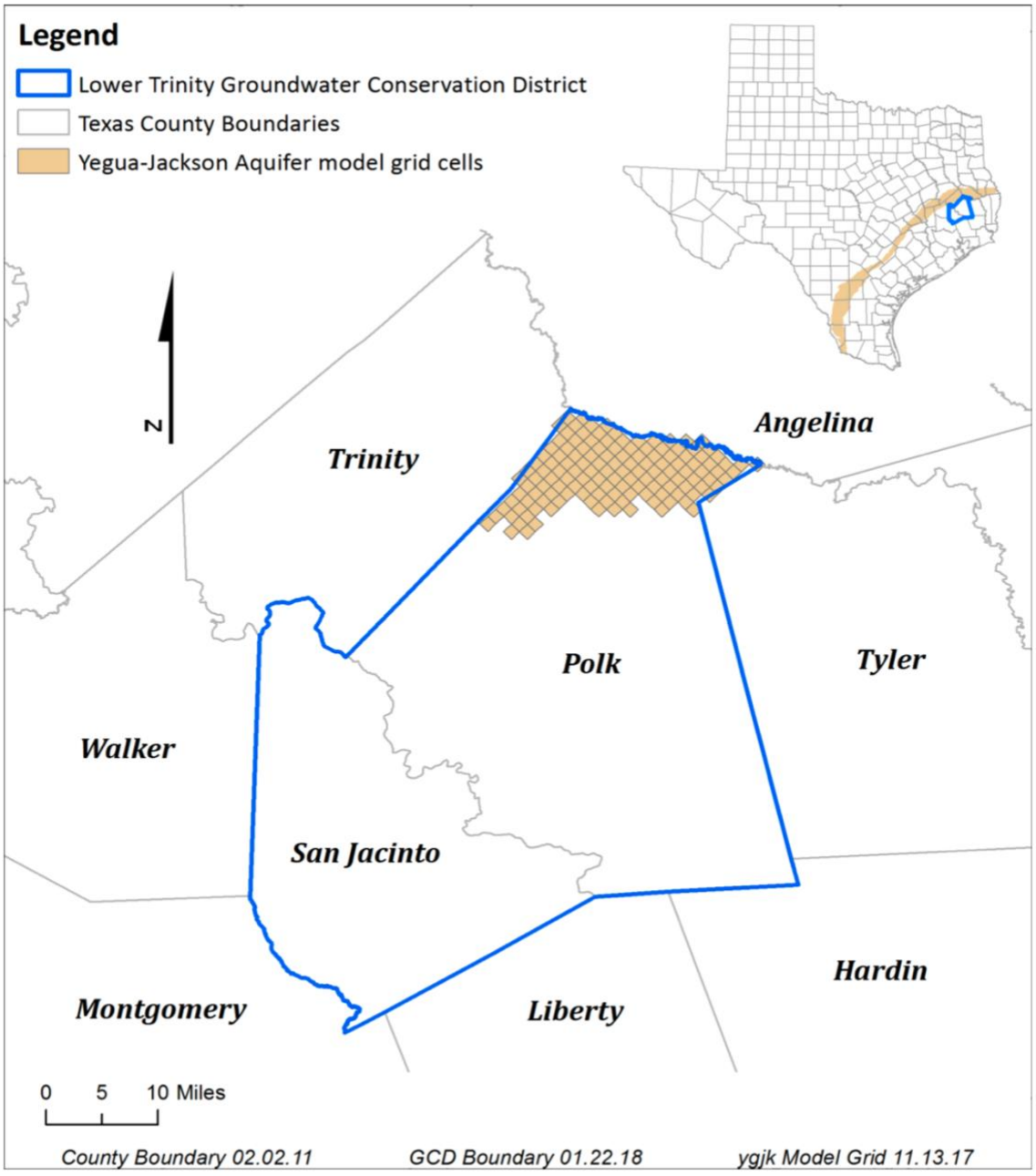

FIGURE 1 AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE YEGUA-JACKSON AQUIFER FROM WHICH THE INFORMATION IN TABLE 1 WAS EXTRACTED (THE AQUIFER SYSTEM EXTENT WITHIN THE DISTRICT BOUNDARY).

TABLE 2. SUMMARIZED INFORMATION FOR THE GULF COAST AQUIFER SYSTEM FOR LOWER TRINITY GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Gulf Coast Aquifer System	17,705
Estimated annual volume of water that discharges from the aquifer to springs and any surface-water body including lakes, streams, and rivers	Gulf Coast Aquifer System	9,698
Estimated annual volume of flow into the district within each aquifer in the district	Gulf Coast Aquifer System	3,618
Estimated annual volume of flow out of the district within each aquifer in the district	Gulf Coast Aquifer System	11,614
Estimated net annual volume of flow between each aquifer in the district	From the Catahoula Formation[2] part of Gulf Coast Aquifer System into Yegua-Jackson Aquifer	148
	Flow through the Catahoula Formation[3] from the Gulf Coast Aquifer System into confined Yegua-Jackson units	227

[2] The Catahoula Formation within and near its outcrop is considered part of the Gulf Coast Aquifer System by the TWDB. Flow values from the Catahoula Formation outcrop portion of the Gulf Coast Aquifer System into the Yegua-Jackson Aquifer were extracted from the groundwater availability model for the Yegua-Jackson Aquifer.

[3] Deeper parts of the Catahoula Formation in direct hydrologic communication with the Gulf Coast Aquifer System provide a semi-confined boundary between the Gulf Coast Aquifer System and the underlying confined Yegua-Jackson units (not considered part of the Yegua-Jackson Aquifer by the TWDB). Flow values from the Catahoula Formation in direct hydrologic communication with the Gulf Coast Aquifer System and into the confined Yegua-Jackson units were extracted from the groundwater availability model for the Yegua-Jackson Aquifer.

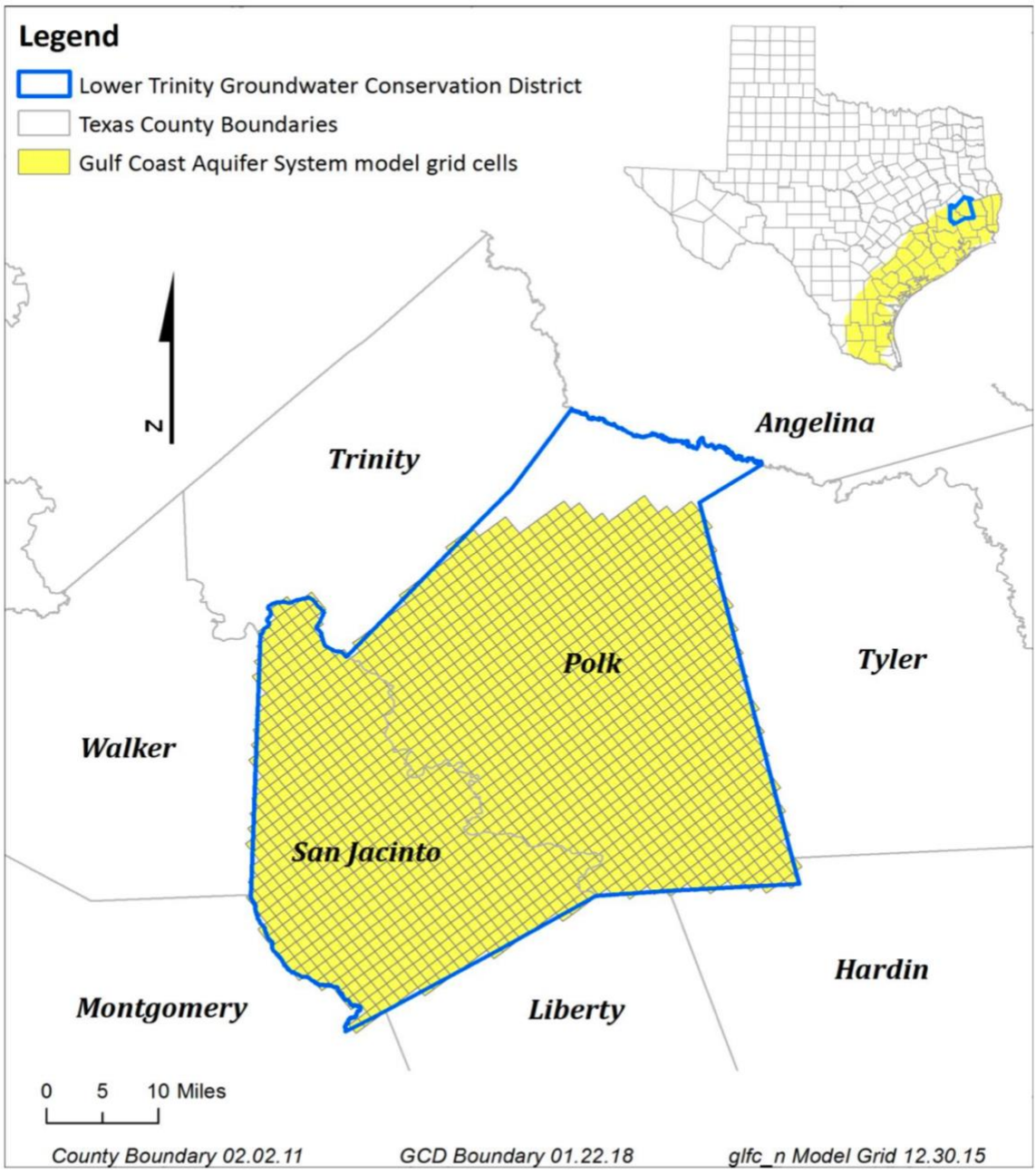

FIGURE 2 AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE GULF COAST AQUIFER SYSTEM FROM WHICH THE INFORMATION IN TABLE 2 WAS EXTRACTED (THE AQUIFER SYSTEM EXTENT WITHIN THE DISTRICT BOUNDARY).

LIMITATIONS:

The groundwater models used in completing this analysis are the best available scientific tools that can be used to meet the stated objectives. 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 historical groundwater flow conditions includes the assumptions about the location in the aquifer where historical pumping was placed. Understanding the amount and location of historical 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 historical time periods.

Because the application of the groundwater models 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. Historical 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.

APPENDIX C

Rules of the Lower Trinity Groundwater Conservation District

http://www.ltgcd.org/LTGCD Rules March2017.pdf

LOWER TRINITY GROUNDWATER DISTRICT
DISTRICT RULES

ADOPTED: March 10, 2017

BOARD MEMBERS:

President, Clyde Jordan

Vice-President, Wesley Smith

Secretary/Treasurer, Aidney Reeves

Director, Randall Baker

Director, Charles Whitten

General Manager: Gary Ashmore

Administrative Assistant: Crystal Reddicks

LOWER TRINITY GROUNDWATER CONSERVATION DISTRICT

Table of Contents

"**Board**" means the Board of Directors of the Lower Trinity Groundwater Conservation District, consisting of five (5) Board members.

"**Commission**" means the Texas Commission on Environmental Quality or any successor agency.

"**District**" means the Lower Trinity Groundwater Conservation District.

"**District Act**" means Chapter 8807, Special Districts Local Laws Code and the no conflicting provisions of Chapter 36, Texas Water Code, as same may be amended.

"**District Office or Offices**" means the location or locations as may be established by resolution of the Board.

"Domestic Use" means the use of water at a single-family household to support domestic activities including drinking, washing, and sanitation. Domestic use does not include use for any commercial purpose or at any commercial establishment. Domestic use does not include a use at any commercial establishment with a single-family household.

"**Drilling**" includes drilling, equipping, or completing wells or modifying the size of wells or well pumps to change pumpage volume.

"**Drilling Permit**" means a permit issued by the District allowing a water well to be drilled.

"**Fee or Fees**" means an amount required to be paid for applications or groundwater production in an amount as established by the Board of Directors.

"**Groundwater**" means water percolating below the surface of the earth.

"**Hearing Body**" means the Board, any committee of the Board, or a hearing examiner at any hearing held under the authority of the District Act.

"**Hearing Examiner**" means a person or persons appointed by the Board to conduct a hearing or other proceeding.

"**Hearing Rules and Procedures**" means the rules and procedures for hearings adopted by the Board for hearings and other proceedings of the District, as they may be supplemented or amended from time to time.

"**Monitor Well**" means any well used for the sampling or measurement of any chemical or physical property of subsurface strata or their contained fluids.

"Nursery Grower" means a person who grows more than 50 percent of the products that the person either sells or leases, regardless of the variety sold, leased, or grown. For the purpose of this definition, "grow" means the actual cultivation or propagation of the product beyond the mere holding or maintaining of the item prior to sale or lease and typically includes activities associated with the production or multiplying of stock such as the development of new plants from cuttings, grafts, plugs, or seedlings.

"**Operator**" means the person who operates a well.

"**Operating Permit**" means a permit issued by the District for a water well, allowing groundwater to be withdrawn from a water well for a designated period.

"**Owner**" means and include any person that has the right to produce water from the land either by ownership, contract, lease or easement.

"**Person**" means any individual, partnership, firm, or corporation, limited liability company, or other legal entity.

"**Remediation Well**" means any well used to produce contaminated water from a subsurface strata pursuant to a plan approved by the Commission or other agency with applicable jurisdiction.

"**Rules**" means these Rules of the District and the Hearing Rules and Procedures as they may be supplemented or amended from time to time.

"**SOAH**" means the State Office of Administrative Hearings.

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

(1) 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) Escape of groundwater from a groundwater reservoir to any other reservoir or geologic strata not containing groundwater;
(4) Pollution or harmful alteration of groundwater by saltwater or by other deleterious matter 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 Commission under Chapter 26, Texas Water Code; groundwater released on well startup or well development in order to improve water quality may not constitute waste.
(6) Groundwater pumped for irrigation that escapes as irrigation tail water 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 an artesian well, "waste" has the meaning assigned by Section 11.205, Texas Water Code.

"**Well**" **or** "**Water Well**" means and any artificial excavation constructed for the purpose of exploring for or producing groundwater.

"**Year**" means a calendar year (January 1 through December 31), except where the usage of the term clearly suggests otherwise.

1.2 The definitions contained in Texas Water Code Section 36.001 shall also be included to the extent that they are used in these Rules. In the event there is a conflict between these Rules and 36.001, 36.001 shall control.

1.3 Purpose of Rules. The Rules are the foundation for achieving the goals of the District Act and Management Plan.

1.4 Use and Effect of Rules. The District uses these Rules as guides in the exercise of the powers conferred by law and in the accomplishment of the purposes of the District Act and Management Plan.

1.5 Amendment of Rules. The Board may, following notice and hearing, amend these Rules or adopt new Rules from time to time.

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

Data Definitions*

1. Projected Water Demands*

From the 2012 State Water Plan Glossary: "**WATER DEMAND** Quantity of water projected to meet the overall necessities of a water user group in a specific future year." (See 2012 State Water Plan Chapter 3 for more detail.)

Additional explanation: These are water demand volumes as projected for specific Water User Groups in the 2011 Regional Water Plans. This is NOT groundwater pumpage or demand based on any existing water source. This demand is how much water each Water User Group is projected to require in each decade over the planning horizon.

2. Projected Surface Water Supplies*

From the 2012 State Water Plan Glossary: "**EXISTING *[surface]* WATER SUPPLY -** Maximum amount of *[surface]* water available from existing sources for use during drought of record conditions that is physically and legally available for use." (See 2012 State Water Plan Chapter 5 for more detail.)

Additional explanation: These are the existing surface water supply volumes that, without implementing any recommended WMSs, could be used during a drought (in each planning decade) by Water User Groups located within the specified geographic area.

3. Projected Water Supply Needs*

From the 2012 State Water Plan Glossary: "**NEEDS -**Projected water demands in excess of existing water supplies for a water user group or a wholesale water provider." (See 2012 State Water Plan Chapter 6 for more detail.)

Additional explanation: These are the volumes of water that result from comparing each Water User Group's projected existing water supplies to its projected water demands. If the volume listed is a negative number, then the Water User Group shows a projected need during a drought if they do not implement any water management strategies. If the volume listed is a positive number, then the Water User Group shows a projected surplus. Note that if a Water User Group shows a need in any decade, then they are considered to have a potential need during the planning horizon, even if they show a surplus elsewhere.

4. Projected Water Management Strategies*

From the 2012 State Water Plan Glossary: "**RECOMMENDED WATER MANAGEMENT STRATEGY -** Specific project or action to increase water supply or maximize existing supply to meet a specific need." (See 2012 State Water Plan Chapter 7 for more detail.)

Additional explanation: These are the specific water management strategies (with associated water volumes) that were recommended in the 2011 Regional Water Plans.

**Terminology used by TWDB staff in providing data for 'Estimated Historical Water Use And 2012 State Water Plan Datasets' reports issued by TWDB.*

RULES OF THE LOWER TRINITY GROUNDWATER CONSERVATION DISTRICT

Effective as of February 1, 2008

In accordance with Section 59 of Article 16 of the Texas Constitution, Chapter 36 of the Texas Water Code, and Chapter 8807, Special District Local Laws Code, the Lower Trinity Groundwater Conservation District adopts the following Rules as the Rules of the District. Each rule as worded below herein has been in effect since date of passage and as may be amended.

The Rules, regulations, and modes of procedure contained below are and have been adopted for the purposes of achieving the goals of the District Act and the Management Plan, prevent waste, and in order to protect property rights, balance the conservation and development of groundwater to meet the needs of this state, and use the best available science in the conservation and development of groundwater, while simplifying procedure, avoiding delays, saving expense, and facilitating the administration of the groundwater laws of the State and the Rules of this District. To the end that these objectives be attained, these Rules shall be so construed.

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 shall they, or any of them, be construed as a limitation or restriction upon the exercise of any discretion of the Board, where such exist; nor shall they in any event be construed to deprive the Board of an exercise of powers, duties and jurisdiction conferred by law, nor to limit or restrict the amount and character of data or information that may be required for the proper administration of the law. Any reference to the Texas Water Code includes the section referenced and any subsequent amendments.

RULE 1 — DEFINITIONS AND CONCEPTS

1.1 Unless the context indicates a contrary meaning, the words hereinafter defined shall have the following meaning in these Rules:

"**Acre-foot**" means the amount of water necessary to cover one acre of land to the depth of one foot, or 325,851 U.S. gallons of water.

"**Agriculture or Agricultural**" means:

(1) Cultivating the soil to produce crops for human food, animal feed, or planting seed or for the production of fibers;
(2) The practice of floriculture, viticulture, silviculture, and horticulture, including the cultivation of plants in containers or non-soil media, by a nursery grower;
(3) Raising, feeding, or keeping animals for breeding purposes or for the production of food or fiber, leather, pelts, or other tangible products having a commercial use;
(4) Planting cover crops, including cover crops cultivated for transplantation, or leaving land idle for the purpose of participating in any governmental program or normal crop or livestock rotation procedure;
(5) Wildlife management;
(6) Raising or keeping equine animals.

"**Aquifer**" means the portions of the Gulf Coast, Yegua-Jackson, Chicot, Evangeline, or Jasper Aquifers or any other water bearing geologic formation in the District.

"**Beneficial use**" means:

(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 purposes that is useful and beneficial to the user and approved by the Board.

1.7 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.

1.8 Method of Service under these Rules. Except as otherwise expressly provided in these Rules, any notice or documents 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 facsimile 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. will be deemed complete on 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 time after service, three days will be added to the prescribed period. Where service by one of more methods has been attempted and failed, the service is complete upon notice publication in a generally circulated newspaper in Polk or San Jacinto County.

1.9 Severability. If any one or more of the provisions contained in these Rules are 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 must be construed as if such invalid, illegal or unenforceable Rules or provision had never been contained in these Rules.

1.10 Burden of Proof: In all matters regarding applications for permits, exceptions, and other matters for which District approval is required, the burden shall be upon the applicant or other persons seeking a permit, exception, or other authority to establish that all conditions, criteria, standards, or prerequisites have been met.

RULE 2 — WASTE PROHIBITED

2.1 Groundwater may not be produced within, or used within or without the District, in such a manner or under such conditions as to constitute waste.

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

2.3 No person may pollute or harmfully alter the character of a groundwater reservoir of the District by means of salt water or other deleterious matter admitted from other stratum or strata or from the surface of the ground.

2.4 No person may commit waste.

RULE 3 — PERMIT AND REGISTRATION REQUIRED

3.1 No person may drill, modify, complete, change type of use, plug, abandon, or alter the size of a well within the District without first registering the well with the District, even though the use from the well may be exempt from the requirement of a permit under Texas Water Code Section 36.117.

3.2 The District staff will review the application for registration and make a preliminary determination on whether the well meets the requirements, exclusions, or exemptions, or requires a permit.

3.3 No permit is required for the drilling of wells for uses exempted by Texas Water Code §36.117, or for a well used solely for domestic and livestock purposes and incapable of producing more than 25,000 gallons of groundwater a day. Wells used for agricultural purposes are exempt from the requirements to obtain a

permit or pay production fees provided the well has a casing diameter of 8 inches or less and the well is incapable of producing more than 69 gallons per minute or 100,000 gallons per day.

3.4 Wells for exempt use must be registered with the District on forms provided therefore. All wells for exempt use shall 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.

3.5 A well owner may choose to register, rather than obtain an operating permit, one well with a casing diameter of four inches or less provided all the groundwater withdrawn is used on the property where the well is located. The well registration must be renewed every five years. If a second well is drilled on the property both wells must be permitted. The registrant is responsible for paying a registration fee set by Board action each time the well is registered or the registration is renewed. The General Manager may approve all registration applications without a hearing.

3.6 All existing Non-Exempt wells in the district shall apply for and renew annual operating permits from the district.

3.7 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 Texas Railroad Commission is exempt from District Fees provided the person holding the permit is responsible for drilling and operating the water well and it is located on the same lease or field associated with the drilling rig.

3.8 A permit exemption will be revoked, and the well owner or well operator must obtain a permit and comply with all District Rules if:

(a) the purpose of the well 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

(b) The withdrawals 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.

3.9 All permits are granted subject to these Rules, 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 must contain the following standard permit provisions:

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

(b) This permit confers only the right to operate and its terms may be modified or amended. Within 10 days after the date of sale, the operating permit holder must notify the District in writing the name of the new owner of a permitted well. Any person who becomes the owner of a currently permitted well must, within 20 calendar days from the date of the change in ownership, file an application for a permit amendment to effect a transfer of the permit.

(c) The operation of the well for the authorized withdrawal must be conducted in a manner that does not constitute Waste.

(d) Withdrawals from all wells required to be permitted must be accurately metered and their pumpage reported the total amount of groundwater withdrawn to the District quarterly.

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

(f) Violation of a permit's terms, conditions, requirements, or special provisions is punishable by civil penalties as provided by the District Rules and by law and may also result in permit revocation or cancellation.

(g) The District may combine permits or may process multiple applications for drilling, operating and export permits in a single hearing process.

3.10 Except as provided below, a permit is not required for a Monitor Well or a Remediation Well. A copy of the Driller's Report must be filed with the District within (30) thirty days. If the use of Monitor Well or Remediation Well is changed to produce non-contaminated water, it then becomes subject to the permitting or registration requirements of these Rules depending upon use and volume.

3.11 All Wells must be drilled, equipped, modified, or plugged in accordance with the Well Construction, and Plugging Specifications established and amended by the Texas Department of Licensing and Regulations.

RULE 4 — FEES AND REPORTS

In accordance with the District Act and Section 36.205 of the Texas Water Code, and except as provided below, the Board shall, from time to time, adopt a schedule of fees for water use, production, transport, permits and administrative functions, and any other lawful purpose or business of the District. The fees, rates and charges will be established in a schedule of fees and charges adopted by the Board, and each such schedule of fees and charges shall thereafter be and remain in effect until amended by the Board. The fee is payable on water produced on or after January 1, 2007. Operators of wells required to be permitted shall provide payment to the District each quarter. Payment shall be due within thirty (30) days of the last day of March, June, September, and December with submittal of the quarterly reports. Operators shall provide monthly production records to document and calculate payment amount due. The payment shall be accompanied by the report form specified by the District. A well operator that produces less than 250,000 gallons of groundwater per quarter may apply for a waiver from the quarterly payment requirement. If the General Manager grants the waiver the permittee may submit fee payments annually within thirty (30) days following the end of each calendar year. If the well operator exceeds 250,000 gallons of groundwater withdrawn during any quarter after the waiver is granted the waiver is automatically revoked, and the well owner must, within thirty (30) days following the end of that quarter, submit the fee payment for that quarter and ever prior quarter during that calendar year.

4.1 The production fee is payable on all water produced on or after January 1, 2007. Operators of wells required to be permitted shall provide payment to the District each calendar quarter. Payment shall be due within thirty (30) days of the last day of each March, June, September, and December with submittal of the quarterly reports. Operators shall provide monthly production records to document and calculate the payment amount due. The payment shall be accompanied by the report form specified by the District. A well operator that produces less than 250,000 gallons of groundwater per quarter may apply for a waiver from the quarterly payment requirement. If the General Manager grants the waiver the permittee may submit fee payments annually within thirty (30) days following the end of each calendar year. If the well operator exceeds 250,000 gallons of groundwater withdrawn during any quarter after the waiver is granted the waiver is automatically revoked, and the well owner must, within thirty (30) days following the end of that quarter, submit the fee payment for that quarter and all ever prior quarter during that calendar year.

4.2 The district may impose an export fee or surcharge using one of the following methods:

(1) a fee negotiated between the district and the exporter; or

(2) a 50 percent surcharge, based upon and in addition to the district's production fee rate, for water authorized to be exported from the district.

4.3 Each application for a permit to drill a well shall be accompanied by the Fee or Fees as established herein or by resolution of the Board.

4.4 Each day a payment remains unpaid after it is due shall constitute a separate violation of these Rules. A late payment charge equal to the greater of $50 or one percent per month following the due date shall be assessed on past due production fees.

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

(a) The total amount of water withdrawn during the month;

(b) The quantity of water necessary for mining activities; and
(c) The quantity of water withdrawn for other purposes.

RULE 5 — ISSUANCE OF PERMITS

5.1 Drilling Permit Requirement: The well owner, well operator, or any other person acting on behalf of the well owner must obtain a drilling permit from the District prior to drilling a new water well.

Operating Permit Requirement: The well owner, well operator, or any other person acting on behalf of the well owner must obtain an operating permit from the District prior to operating a water well.

Export Permit Requirement: The well owner, well operator, or any other person acting on behalf of the well owner must obtain an export permit from the District prior to exporting any groundwater outside the boundaries of the District.

5.2 Drilling permits are effective for a term ending 180 calendar days after the date the permit was issued. The permit may be extended for an additional 180 day period by Board action upon showing of good cause. Operating permits are effective for a term of three or five years, as determined by the Board. Prior to expiration, the operating permit must be renewed for a new permit term. Permit renewal applications must be filed on forms provided by the District and will be processed in accordance with these rules.

5.3 Initial permits may be prorated for the number of months left in the year of application. Permits must be renewed prior to the date the current permit expires. The Non-exempt wells must apply for either a 3-year or a 5-year operating permit. Permit fees based on the District's payment schedule are due by December 31st of each year.

5.4 If the well owner or well operator seeks, as part of the renewal application, to increase the amount of authorized withdrawal, or otherwise change any of the permit terms or conditions that would require a permit amendment, the application will be scheduled for a hearing and consideration by the Board. If the requested changes or amendments are denied, the permit shall be renewed under the original permit conditions as it existed before the permit amendment process, unless the district proposes an amendment. During consideration of the permit renewal process, the permit, as it existed before the permit amendment process, remains in effect until the later of: (1) the conclusion of the permit amendment or renewal process, as applicable; or (2) final settlement or adjudication on the matter of whether the change to the permit requires a permit amendment. The General Manager will not approve an Operating Permit renewal application if the applicant:

(a) is delinquent in paying a fee required by the district;
(b) has failed to file quarterly reports;
(c) is subject to a pending enforcement action for a substantive violation of a district permit, order, or rule that has not been settled by agreement with the district or a final adjudication; or
(d) has not paid a civil penalty or has otherwise failed to comply with an order resulting from a final adjudication of a violation of a district permit, order, or rule.

An Operating Permit subject to automatic renewal remains in effect until the final settlement or adjudication on the matter of the substantive violation. If an operating permit is not renewed or the permit term expires, a new permit application and fees may be required to continue operating. The district may initiate an amendment to an Operating Permit, in connection with the renewal of a permit or otherwise, in accordance with these rules. If the district initiates an amendment to an operating permit, the permit as it existed before the permit amendment process shall remain in effect until the conclusion of the permit amendment or renewal process, as applicable.

5.5 Permit Applications: Each original application for a water well drilling permit, operating permit, export permit, and permit amendment requires a separate application and payment of the associated fee.

Application forms will be provided by the District and furnished to the applicant upon request. The application for a permit shall be in writing, and shall include the following:

(a) The name and mailing address of the applicant and the owner of the land on which the well be located;
(b) If the applicant is other than the owner of the property, documentation establishing the applicable authority to construct or operate a well for the proposed use;
(c) A location map of all existing wells within a quarter (1/4) mile radius of the proposed well or the existing well to be modified;
(d) A map from the county appraisal District indicating the location of the proposed well or the existing well to be modified, the subject property, and adjacent owners' physical addresses and mailing addresses;
(e) Copies of any applications to the Texas Commission on Environmental Quality, (TCEQ) to obtain or modify a certificate of convenience and Necessity to provide water or wastewater service with water obtained pursuant to the requested permit;
(f) A statement of the nature and purpose of the proposed use and the amount of water to be used for each purpose.
(g) A declaration that the applicant will comply with the District's Rules and all groundwater use permits and plans promulgated pursuant to the District's Rules.
(h) A water conservation plan or a declaration that the applicant will comply with the Management Plan.
(i) The location of each well latitude and longitude and the estimated rate at which water will be withdrawn;
(j) A water well closure plan or a declaration that the applicant will comply with all District well plugging and capping guidelines and report closure to the Commission.
(k) A hydrogeological report addressing the area of influence, draw down, recovery time, subsidence and other pertinent information required by the District must accompany a drilling permit application for the following:
    (1) Request to drill a well with an inside casing diameter of eight (8) inches or greater, or a maximum capacity of more than 750,000 gallons per day, per site in aggregate.
    (2) Requests to modify a well to increase production or production capacity of a Public Water Supply, Municipal, Commercial, Industrial, Agricultural or Irrigation well with an outside casing diameter greater than 8 inches.

The well must be equipped (or tested at a rate equal to or greater than the rate necessary) for its ultimate planned use and the hydrogeological report must address the impacts of that use. The report must be site specific and include hydrogeological information addressing and specifically related to the proposed water pumpage levels at the proposed pumpage site intended for the proposed well. Applicants may not rely solely on reports previously filed with or prepared by the District.

5.6 Action on Application:

If the application is for a well that is not capable of producing more than 250,000 gallons of water per day and not to exceed 91,250,000 gallons of water per year, the General Manager may issue the permit without Board action if:

(a) There are no adjacent landowners entitled to prior notice of the permit application;
(b) The well will comply with all District Rules including but not limited to those concerning spacing and waste;
(c) The General Manager makes an inspection of the proposed well location and verifies that the well complies with all District Rules and the information in the application is correct; and
(d) The General Manager signs a written report stating the details of the inspection and all other criteria to document the findings under this subsection.

5.7 Automatic Renewal of an Operating Permit: Operating Permit renewals shall be approved by the General Manager without notice or hearing if:

(a) the application is submitted in a timely manner and accompanied by any required fees in accordance with district rules; and
(b) the permit holder is not requesting a change related to the renewal that would require a permit amendment under district rules.

5.8 Effect of Acceptance of Permit: Acceptance of the permit by the person to whom it is issued constitutes acknowledgment of and agreement to comply with all of the terms, provisions, conditions, limitations, and restrictions. Failure to timely file a motion for rehearing constitutes acceptance of the permit.

5.9 Reworking and Replacing a Well:

(a) An existing well may be reworked or re-equipped in a manner that will not increase the well's capacity above the level authorized in the permit. Any increase in the well's capacity above the level authorized in the permit requires an operating permit amendment.

(b) A well drilled to replace an existing, permitted well is not required to meet the spacing requirements if it is drilled within 15 feet of the well to be replaced. The landowner or his/her agent must, within 180 days of the issuance of the permit, declare in writing to the District which one of these two wells he/she desires to produce. If the landowner does not notify the District of his/her choice within this 180 days, then it will be conclusively presumed that the new well is the well he/she desires to retain. Immediately after determining which well is retained for production, the other well shall be closed in accordance with applicable state laws and regulations, specifically Rule 76.104, Texas Department of Licensing and Regulation Rules.

(c) A permit to rework, re-equip, re-drill or replace an existing well may be granted by the Board without notice or hearing so long as the production capacity of the new well does not exceed the capacity of the existing well.

5.10 Emergency Authorization:

An existing retail water utility, as defined in Texas Water Code Chapter 13, or the owner of a well used for Agriculture, which has a Permit or Certificate of Registration from the District to operate a well, may apply to the District for emergency authorization to drill and operate a well as set forth below. The authorization does not constitute a Permit as required above and does not relieve the utility or Agricultural User from applying for and obtaining one. The emergency authorization can be made by any two of the following: the General Manager and any Board officer.

Before granting the authorization, the following conditions must be met:

(a) An Application on the form prescribed by the Board and all Fees must be submitted to the District;

(b) Persons owning property adjoining the proposed well site must be given written notice of the proposed well;

(c) The Applicant must have received authorization from the Commission to drill and operate the well, if applicable;

(d) The "emergency," which must present an imminent threat to the public health and safety or to an Agricultural activity, must be explained to the satisfaction of the District and any requested documentation submitted;

(e) The Application must not have been previously denied; and,

(f) Such other information as may be requested has been received by the District.

After the emergency authorization is granted, the Board shall hold a hearing on the application at which it may issue or deny the requested Permit. If the Permit is denied, the applicant shall immediately cease drilling or production operations.

5.11 All Drilling Permits are issued on the condition that the well is drilled in strict compliance with these Rules and the rules and regulations of the Commission and the Texas Department of Licensing and Regulation.

RULE 6 — REQUIREMENT OF DRILLERS LOG, CASING AND PUMP DATA

6.1 Complete records shall be kept and reports thereof made to the District concerning the drilling, maximum production potential, equipping and completion of all wells drilled. Such records shall include an accurate log, any electric log that may have been made, and such additional data concerning the description of the well, its potential, hereinafter referred to as "maximum rate of production" and its actual equipment and rate of production permitted by said equipment as may be required by the Board. Such records shall be filed with the District Board within 60 days after completion of the well.

6.2 The well driller shall deliver either in person, by fax, email, or send by first- class mail, a photocopy of the State Well Report to the District within 60 days from the completion or cessation of drilling, deepening, or otherwise altering a well.

6.3 No person shall produce water from any well hereafter drilled and equipped within the District, except that necessary to the drilling and testing of such well and equipment, unless or until the District has been furnished an accurate driller's log, any electric 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. In the case the well has been drilled after Emergency Authorization has been given under Rule 5.9, the foregoing information must be submitted within ten (10) days from the date the well is completed.

RULE 7 — MINIMUM SPACING OF WELLS

7.1 Distance Requirements:

(a) A well for exempt uses that is pressure cemented may be drilled no closer than five (5) feet from the property line; if not pressure cemented a well for exempt uses may be drilled no closer than one hundred (100) feet from the property line. A well for non-exempt uses must be pressure cemented and drilled no closer than fifty (50) feet from the property line. Wells drilled closer than these distances from the property line will be in violation of the Rules of the Texas Water Well Drillers Board.

(b) In the interest of protecting life and for the purpose of preventing waste, preventing overlapping cones of depression resulting from production rates, and preventing confiscation of property, the Board reserves the right to limit the number of wells that may be drilled or operated on a tract of land or require a minimum distance between wells.

(c) Subdivision of property:

(1) In applying this rule and applying every special rule with relation to spacing in all of the subterranean water zones or reservoirs underlying the confines of this District, no subdivision of property made subsequent to the adoption of these spacing rules will be considered in determining whether or not any property is being confiscated within the terms of such spacing rule, and no subdivision of property will be regarded in applying such spacing rule or in determining the matter of confiscation if such subdivision took place subsequent to the promulgation and adoption of the original spacing rule.

(2) Any subdivision of property creating a tract of such size and shape that it is necessary to obtain an exception to the spacing rule before a well can be drilled thereon is a voluntary subdivision and not entitled to a permit to prevent confiscation of property if it

(3) Were either, (a) segregated from a larger tract in contemplation of water resource development, or (b) segregated by fee title conveyance from a larger tract after the spacing rule became effective and the voluntary subdivision rule attached.

7.2 Change in Use of Well:

Any well existing at the date of enactment of this Rule must comply with the provisions of this rule if after the date of enactment of this rule the ultimate use of the water produced from the well in changed in whole or in part such that the water produced from the well annually is increased.

RULE 8 — EXCEPTION TO SPACING RULE

8.1 In order to protect vested property rights, to prevent waste, to prevent confiscation of property, or to protect correlative rights, the Board may grant exception to the above spacing regulations. This rule may 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. The Board may consider whether a well located on adjoining property is draining the Applicant's properly.

8.2 If an exception to such spacing regulations is desired, application therefore shall be submitted by the applicant in writing to the Board at its District office on forms furnished by the District. The application shall be accompanied by a plat or sketch, drawn to scale of one (1) inch equaling one thousand (1000) feet. The plat or sketch shall show thereon the property lines in the immediate area and shall show accurately to scale all wells within a quarter mile of the proposed well site. The application shall also contain the names of all property owners adjoining the tract on which the well is to be located and the ownership of the wells within a quarter mile of the proposed location. Such application and plat shall be certified by some person actually acquainted with the facts who shall state that all the facts therein are true and correct.

8.3 Such exception may be granted ten (10) days after written notice has been given to the applicant and all adjoining owners and all well owners within a quarter mile of the proposed location, and after a public hearing at which all interested parties may appear and be heard, and after the Board has decided that an exception should be granted. Provided, however, that if all such owners execute a waiver in writing stating that they do not object to the granting of such exception, the Board may thereupon proceed to decide upon the granting or refusing of such application without notice of hearing except to the applicant. The applicant may also waive notice or hearing or both.

RULE 9 — PLACE OF DRILLING WELL

After an application for a well permit has been granted, the well, if drilled, must be drilled within fifty feet of the location specified in the permit so long as that location does not violate any spacing requirements in these rules. If the well should be commenced or drilled at a different location, the drilling or operation of such well may be enjoined by the Board pursuant to Chapter 36, Texas Water Code, as amended. The District shall have the right to confirm reported distances and inspect the wells or well locations.

RULE 10 — RIGHT TO INSPECT AND TEST WELLS

10.1 The directors, engineers, attorneys, agents, operators and employees of a district or water supply corporation may go on any land to inspect, make surveys, or perform tests to determine the condition, value, and usability of the property, with reference to the proposed location of works, improvements, plants, facilities, equipment, or appliances. The cost of restoration shall be borne by the district or the water supply corporation.

10.2 District employees and agents are entitled to enter any public or private property within the boundaries of the district or adjacent to any reservoir or other property owned by the district at any reasonable time for the purpose of inspecting and investigating conditions relating to the quality of water in the state or the compliance with any Rule, regulations, permit, or other order of the District. District employees or agents acting under this authority who enters private property shall observe the establishment's rules and regulations concerning safety, internal security, and fire protection and shall notify any occupant or management of their presence and shall exhibit proper credentials.

RULE 11 — OPEN WELLS TO BE CAPPED

Every owner or operator of any land within the District upon which is located any open or uncovered well is, and shall be, required to close or cap the same permanently with a covering capable of sustaining weight of not less than four hundred (400) pounds, except when said well is in actual use by the owner or operator thereof; and no such owner or operator shall permit or allow any open or uncovered well to exist in violation of this requirement. Officers, agents and employees of the District are authorized to serve or cause to be served written notice upon any owner or operator of a well in violation of this Rule, thereby requesting such owner or operator to close or cap such well permanently with a covering in compliance herewith. In the event any owner or operator fails to comply with this Rule, the District may go on the land and close the well safely and securely. Closure may be by the District or an entity under contract with the

District, all expenditures thereby incurred shall constitute a lien upon the land where such well is located, provided, however, no such lien shall exceed the actual cost for any single closing. Any officer, agent, or employee of the District, is authorized to perfect said lien by the filing of the affidavit authorized by Section 36.118 of the Texas Water Code.

All of the powers and authority granted in such section are hereby adopted by the District, and its officers, agents, and employees are hereby bestowed with all of such powers and authority.

RULE 12 — GENERAL RULES OF PROCEDURE FOR HEARING

All hearings whether conducted by the Board or before a Hearings Examiner shall be conducted in accordance with the Hearing Rules and Procedures as adopted by the Board and as they may be amended from time to time.

12.1 Applicability

Contested case hearings may be requested in connection with the following applications:

(a) Drilling permits;
(b) Operating permits;
(c) Export permits; and
(d) Amendment to any existing permit.

12.2 Processing Applications; Determination of Administrative Completeness

(a) Completeness of an Application. An application shall be considered administratively complete if it includes all required information; is signed; is accompanied by payment of all applicable fees, including any penalties or past due fees; and includes any maps, documents, or supplementary information requested by the Rules, Board or staff. A determination of administrative completeness will be made by the General Manager.

(b) Action on Incomplete Applications. The District will not take action on an application that is not administratively complete or has not proceeded in a manner consistent with District Rules. An application may be rejected as not administratively complete if the District finds that substantive information required by the application or District staff is missing, false, or incorrect. Incomplete applications will be returned to the applicant with a list of deficiencies and may be reconsidered once the deficiencies are corrected.

(c) Action on Administratively Complete Applications. The General Manager will schedule administratively complete applications for a public hearing, and shall publish notice of the public hearing in accordance with these rules, including the General Manager's proposed action on the permit.

12.3 Procedural Options Available to Applicants

(a) Applicants filing applications subject to a contested case hearing may respond to the proposed action of the general manager in the following manner:
  (1) not file a notice of request for contested case hearing and:
    (i) if the applicant agrees with the proposed action, and no other affected person requests a contested case hearing, and the matter will be taken directly to the Board for final action as an uncontested matter.
    (ii) if the applicant disagrees with the proposed action, and no other affected person requests a contested case hearing, the applicant may offer to settle the matter. If the matter is settled, the application may be taken directly to the Board for final action. If the matter is unable to be settled, the application may be taken directly to the Board for final action as a contested matter, although one not referred to contested case hearing; or
  (2) file a notice of request for contested case hearing.

(b) Applicants choosing not to file a request for a contested case hearing and instead pursue settlement thereby waive any right to a contested case hearing upon the expiration of the filing deadline.

(c) The applicant, general manager, and other affected persons may present their respective positions to the Board and allow the Board to take final action at the Board meeting without a contested case hearing.

(d) The Board is not bound by a settlement agreed to by the parties.

12.4 Requests for Contested Case Hearing

(a) A request for a contested case hearing or a protest against an application must be in writing and be filed before the end of the public hearing on that application for which notice was properly provided. The Board will process a protest against an application by first determining if the protestant is entitled to a contested case hearing. In the event a protest is filed and approved, any settlement requires the consent of the protestant. A person has a personal justiciable interest in the application and is entitled to a contested case hearing if that person owns a registered or permitted well that may be adversely impacted if the protested application is granted. Only persons who file protests may participate in any contested case hearing on that application.

(b) A contested case hearing request must substantially comply with the following:

(1) Give the name, address, daytime telephone number, and fax number, of the person filing the request. If the request is made by a corporation, partnership, or other business entity, the request must identify the entity and one person by name who shall be responsible for receiving all official communications and documents for the entity;

(2) State the basis upon which the person is entitled to a contested case hearing;

(3) State the issues the requestor or protestant wishes to contest;

(4) State whether the person requesting the contested case hearing is the applicant for that permit or an applicant for or holder of another groundwater withdrawal permit.

(5) Request a contested case hearing;

(6) Provide any other information requested in the notice of proposed action and technical summary; and

(7) Be verified by an affidavit.

(c) Where a request for a contested case hearing is filed by a person other than the applicant, a copy of that request must be served on the applicant at or before the time the request is filed. The request shall include a certificate indicating the date and manner of service and the name and address of all persons served.

(d) If a person is requesting a contested case hearing on more than one application, a separate request must be filed in correction with each application.

12.5 Processing of Hearing Requests

(a) After a hearing request is timely filed the District staff will schedule a preliminary hearing to consider the request.

(b) At least 20 days prior to the preliminary hearing the District staff will provide notice to the applicant, general manager and any persons who timely filed a hearing request.

(c) Affected persons may submit a written response to the hearing request no later than 10 days before a Board meeting at which the Board will evaluate that request. Responses must be filed with the District and served on the general manager, the applicant and any other persons who timely filed a hearing request in correction with that matter.

(d) The person requesting a hearing may submit a written reply to a response no later than 5 days before the scheduled Board meeting at which the Board will evaluate the hearing request. All replies shall be filed with the District and served on the same day on the general manager, the applicant, and any other person who timely filed a hearing request.

(e) The Board may refer the hearing request to SOAH instead of scheduling the hearing before the Board. Following the hearing, SOAH will provide a proposal for decision to the Board of Directors for action by the Board.

12.6 Action by Board

(a) The determination of whether a hearing request should be granted is not a contested case hearing.

(b) The Board will evaluate the hearing request at a scheduled Board meeting and may determine that the person requesting the hearing:

(1) Does not have a personal justiciable interest related to the application and deny the hearing request; or

(2) Has a personal justiciable interest relating to the application and schedule the application to a contested case hearing.

(c) If the Board grants the request for a contested case hearing, the Board shall assign a Hearings examiner or delegate the matter to SOAH. Any party to a contested case may demand the hearing be conducted by SOAH by filing the demand at least 14 days before the scheduled evidentiary hearing. The Hearings examiner shall:
   (1) Schedule a preliminary hearing;
   (2) At least 21 days after the preliminary hearing, schedule an evidentiary hearing; and following the evidentiary hearing, prepare a proposal for decision including proposed findings of fact and conclusions of law, and transmit that proposal to the Board.

(d) The Board shall schedule a final hearing where it will consider the evidence and testimony presented during the evidentiary hearing and the hearings examiner's proposal for decision.

(e) Following the final hearing, the Board may:
   (1) Grant the application;
   (2) Grant the application with conditions; or
   (3) Deny the application.

(f) If the Board grants the application with conditions that were not included in the action proposed by the General Manager or grants a withdrawal amount less than the amount requested, the applicant may request a contested case hearing by filing the request no later than the 20th day following the Board action.

12.7 Delegation to SOAH

(a) By order, the Board may delegate to SOAH the authority to conduct hearings designated by the Board.

(b) If the Board refers a contested case hearing to SOAH, then the applicable rules of practice and procedure of SOAH (1 Tex. Admin. Code Ch. 155) govern any contested case hearing of the District, as supplemented by this subchapter.

(c) If the Board refers a contested case hearing to SOAH, the administrative law judge who conducts the contested case hearing shall serve as the hearings examiner and consider applicable District rules and policies in conducting the hearing.

12.8 Conducting a Contested Case Hearing by SOAH

(a) When an application is referred to contested case hearing by the Board, the District will file all applicable documents to have the matter referred to SOAH.

(b) In referring the case to contested case hearing, the District will:
   (1) Notify the administrative law judge of the applicable burden of proof for the applicant to establish all of the prima facie elements;
   (2) Identify for the administrative law judge any additional issues that have been raised in the request(s) for contested case hearing; and
   (3) Provide the administrative law judge with a written statement of applicable rules and policies of the District.

(c) If the Board refers a contested case hearing to SOAH, the District may not attempt to influence the findings of facts or the administrative law judge's application of the law in a contested case hearing except by proper evidence and legal argument. If requested by the applicant or other party to a contested case, a district shall contract with the State Office of Administrative Hearings to conduct the hearing. The party must file such a request not later than the 14th day before the date the evidentiary hearing is scheduled to begin. The Board order granting the contested case hearing may designate a location for the hearing inside the boundaries of the District or in Travis County at a location designated by SOAH. The party demanding the hearing before the SOAH shall pay all costs associated with the contract for the hearing and shall, before the hearing begins, deposit with the district an amount sufficient to pay the contract amount. At the conclusion of the hearing, the district shall refund any excess money to the paying party. The hearings examiner may also determine how the costs of the hearing procedure shall be apportioned among the parties,

12.9 Service of Documents

(a) For any document filed with the District or the hearings examiner in a contested case, the person filing that document must serve a copy on all parties at or before the time that the request is filed.

(b) A document presented for filing must contain a certificate of service indicating the date and manner of service and the name and address of each person served. The District may authorize a document to be filed without a certificate of service but will require the certificate be served within three days thereafter.

12.10 Continuances

(a) The Board may continue a hearing related to a contested case under the jurisdiction of the Board from time to time and from place to place.
(b) The notice of the hearing must indicate the times and places at which the hearing may be continued.
(c) If a hearing is not concluded on the day it begins, the Board shall, to the extent possible, proceed with the hearing on each subsequent working day until the hearing is concluded.

12.11 Designation of Parties

The following are parties in all contested cases:

(a) The general manager;
(b) The applicant; and
(c) A person who is granted a contested case hearing by Board action.

12.12 Discovery

Discovery in contested case proceedings will be governed by Chapter 2001, Subchapter D, Tex. Gov't Code and Title 1, Section 155.31, Tex. Admin. Code, as supplemented by this subchapter. Depositions in a contested case shall be governed by Tex. Gov't Code §§ 2001.096-2001.102.

12.13 Expenses of Witness or Deponent

(a) A witness or deponent in a contested case who is not a party and who is subpoenaed or otherwise compelled to attend a hearing or a proceeding to give a deposition or to produce books, records, papers, or other objects that may be necessary or proper for the purposes of the contested case, is entitled to receive compensation in accordance with the provisions of Sec. 2001.103, Government Code.
(b) Amounts required to be reimbursed or paid shall be reimbursed or paid by the party at whose request the witness appears or the deposition is taken.

12.14 Evidentiary Matters

(a) Evidence that is irrelevant, immaterial, or unduly repetitious shall be excluded.
(b) The rules of privilege recognized by law shall be given effect.
(c) An objection to an evidentiary offer may be made and shall be noted in the record.
(d) Evidence may be received in writing if:
    (1) It will expedited the hearing; and
    (2) The interests of the parties will not be substantially prejudiced.
(e) A copy or excerpt of documentary evidence may be received if an original document is not readily available. On request, a party shall be given an opportunity to compare the copy or excerpt with the original document.
(f) A party may conduct cross-examination required for a full and true disclosure of the facts.
(g) Witnesses may be sworn and their testimony taken under oath.
(h) Official notice may be taken of:
    (1) All facts that are judicially cognizable; and
    (2) Generally recognized facts within the area of the District's specialized knowledge. Each party shall be notified either before or during the hearing, or by reference in a preliminary report or otherwise, of the material officially noticed, including staff memoranda or information. Each party is entitled to an opportunity to contest material that is officially noticed. The special skills or knowledge of District staff may be used in evaluating the evidence.

12.15 Depositions and Subpoenas

(a) On its own motion, or on the written request of a party, and on deposit of an amount that will reasonably ensure payment of the estimated total amount, the Board will issue a commission, addressed to the officers authorized by statute to take a deposition, requiring that the deposition of a

witness be taken for a contested matter pending before it. Requests for issuance of commissions requiring deposition or subpoenas in a contested case will be in writing and directed to the Board.

(b) A party requesting the issuance of a commission requiring deposition or a subpoena will file an original of the request with the District. District staff will arrange for the request to be presented to the Board at its next meeting.

(c) In the case of a deposition, the Board will issue a commission addressed to the officer authorized by statute to take a deposition, requiring that the deposition of a witness be taken. The commission shall authorize the issuance of any subpoena necessary to require that the witness appear and produce, at the time the deposition is taken, books, records, papers or other objects that may be necessary and proper for the purpose of the proceeding. Additionally, the commission will require the officer to whom it is addressed to examine the witness before the officer on the date and at the place named in the commission; and take answers under oath to questions asked the witness by a party to the proceeding, the District, or an attorney for a party or the District. The commission will require the witness to remain in attendance from day to day until the deposition is begun and completed.

(d) In the case of a hearing, if good cause is shown for the issuance of a subpoena, and if an amount is deposited that will reasonably ensure payment of the amounts estimated to accrue, the District will issue a subpoena addressed to the sheriff or to a constable to require the attendance of a witness or the production of books, records, papers or other objects that may be necessary or proper for the purpose of the proceeding.

12.16 Ex Partee Communications

(a) For applications for which there is a right to a contested case hearing, a member of the Board may not, at any time after the application has been filed and before the Board has taken final action, communicate, directly or indirectly, about any issue of fact or law with any representative of the District or other designated party to the application, except on notice and opportunity for all parties to participate.

(b) Subsection (a) does not apply if:

(1) The Board member abstains from voting on a matter in which he or she engaged in ex parte communications;

(2) The communications are by and between members of the Board consistent with the Texas Open Meetings Act;

(3) The communications are with District staff who have not participated in any hearing in the contested case for the purpose of using the special skills or knowledge of the staff in evaluating the evidence; or

(4) The communications are with legal counsel representing the Board of Directors.

12.17 Remand to Board

(a) A hearings examiner may remand an application to the Board as follows:

(1) All timely hearing requests have been withdrawn;

(2) All parties to a contested case reach a settlement so that no facts or issues remain controverted; or

(3) The party or parties requesting the hearing defaults.

(b) After remand, the application will be uncontested, and the applicant will either be deemed to have agreed to the action proposed by the general manager or, if the parties have reached a settlement agreement, the agreement will be presented to the Board for its consideration. District staff will set the application for consideration at a Board meeting.

12.18 Informal Dispositions and Alternative Dispute Resolution

(a) An informal disposition of a contested case may be made by:

(1) Stipulation;

(2) Agreed settlement;

(3) Consent order; or

(4) Default.

(b) The hearings examiner may require the parties enter into mediation or other alternative dispute resolution process. The hearings examiner may also determine how the costs of the alternative dispute procedure shall be apportioned among the parties, appoint an impartial third party as provided by Section 2009.053, Government Code, to facilitate that procedure.

12.19 Certified Questions

(a) At any time during a contested case proceeding, on a motion by a party or on the hearings examiner's own motion, the hearings examiner may certify a question to the Board.

(b) Issues regarding District policy, jurisdiction, or the imposition of any sanction by the hearings examiner that would substantially impair a party's ability to present its case are appropriate for certification. Policy questions for certification purposes include, but are not limited to:
   (1) The District's interpretation of its rules and applicable statutes;
   (2) The portion of the Act, the District rules, or other statutes that are applicable to a proceeding; and
   (3) Whether District policy should be established or clarified as to a substantive or procedural issue of significance to the proceeding.

(c) If a question is certified, the hearings examiner shall submit the certified issue to the District. District staff will place the certified issue on the agenda of a meeting of the Board. The District will give the hearings examiner and parties 30-day notice of the meeting at which the certified question will be considered. Within ten days after the certified question is filed with the District, parties to the proceeding may file briefs. Within ten days of the filing of such briefs, parties may file responses. Briefs and responses shall be filed with the District with copies served on the hearings examiner. The District will provide copies of the certified questions and any briefs and responses to the Board. The hearings examiner may abate the hearing until the District answers the certified question, or continue with the hearing if the hearings examiner determines that no party will be substantially harmed.

(d) The Board will take action and issue a written decision on the certified issue and provide copies to the parties and the hearings examiner. A decision on a certified issue is not subject to a motion for rehearing, appeal or judicial review prior to the issuance of the District's final decision in the proceeding.

12.20 Scheduling of a Meeting of the Board

(a) After receiving the proposal for decision or other disposition from the hearings examiner, District staff shall schedule the presentation of the proposal to the Board. The District shall provide 10 day notice to the parties of the date of the final hearing before the Board at which the proposal will be presented and considered. The Board may reschedule the presentation of the proposal. The District will send notice of the rescheduled meeting date to the parties no later than 10 days before the rescheduled meeting.

(b) Any party to the contested case hearing may make an oral presentation at the Board meeting in which the proposal for decision in that case is presented to the Board.

(c) On the written request of a party to a contested case, the oral proceedings before the Board at which the proposal for decision is presented and oral presentations are made, may be transcribed by a court reporter. A party that desires a transcript of the proceedings shall bear the cost, or the costs will be equally divided between all parties requesting a transcript. If the District desires a transcript it will bear the costs.

12.21 Reopening the Record

The Board, on the motion of any party to a contested case or on its own motion, may order the hearings examiner to reopen the record for further proceedings on specific issues in dispute. The order shall include instructions as to the subject matter of further proceedings and the hearings examiner's duties in preparing supplemental materials or revised proposals based upon those proceedings for the Board's adoption.

12.22 Decision

(a) The decision, if adverse to any party, must be in writing or stated in the record and will include findings of fact and conclusions of law separately stated.

(b) Findings of fact may be based only on the evidence and on matters that are officially noticed. If set forth in statutory language, findings of fact must be accompanied by a concise and explicit statement of the underlying facts supporting the findings.

(c) If a party submits proposed findings of fact, the decision will include a ruling on each proposed finding.

(d) If a contested case is presided over by a majority of the Board, then the Board's decision shall be rendered not later than the 60th day after the date on which the hearing is finally closed. If the Board

refers a contested case to SOAH, then the Board's decision will be rendered no more than 120 days after the date that the proposal for decision is presented at a final hearing, unless the Board determines that there is good cause for extending the deadline.

12.23 Notification of Decisions

(a) District staff will notify all parties in a contested case of any decision or order.
(b) District staff will send a copy of the decision in a contested case to attorneys of record, or the parties.
(c) A party or attorney of record notified by mail is presumed to have been notified on the third day after the date on which the notice is mailed.

12.24 Motion for Rehearing

(a) For any matter considered during a contested case hearing, only a party to the contested case proceeding may file a motion for rehearing. The motion shall be filed with the District by no later than the 20th day after the date of the Board's decision. On or before the date of filing of a motion for rehearing, the party filing the motion shall mail or deliver a copy of the motion to all parties with certification of service furnished to the District. The motion shall contain:
    (1) The name and representative capacity of the person filing the motion
    (2) The style and official docket number assigned by the hearings examiner;
    (3) The date of the decision or order; and
    (4) The grounds for the motion, including a concise statement of each allegation of error.
(b) Only a party to the contested case proceeding may reply to a motion for rehearing. A reply must be filed with the District within 20 days after the date the motion for rehearing is filed.
(c) The motion for rehearing will be scheduled for consideration during a Board meeting. A motion for rehearing may be granted in whole or in part. When a motion for rehearing is granted, the decision or order is nullified. The Board may reopen the hearing to the extent it deems necessary. If the Board grants a motion for rehearing, District staff shall schedule the rehearing not later than the 45th day after the date the motion is granted. Thereafter, the Board shall render a decision or order.
(d) The failure of the Board to grant or deny a motion for rehearing before the 91st day after the date the motion is submitted constitutes a denial of the motion by operation of law.

12.25 Agreement to Modify Time Limits

The parties to a contested case hearing, with the approval of the hearing examiner, may agree to modify any time limit prescribed by these rules related to conducting contested case hearings.

12.26 Decision Final and Appealable

In the absence of a timely motion for rehearing, a decision or order of the Board is final on the expiration of the period for filing a motion for rehearing. If a party files a timely motion for rehearing, a decision or order of the Board is final and appealable on the date:

(a) The Board denies the motion for rehearing, including a denial by operation of law; or
(b) The Board renders a written decision after rehearing.

12.27 Appeal of Final Decision

(a) Not later than the 60th day after the date on which the decision became final and appealable, parties affected by the final decision of the Board in a contested case may file suit under Tex. Water Code § 36.251, to appeal the decision. A party may not file suit if a motion for rehearing was not timely filed.
(b) The record in a contested case hearing shall include the following:
    (1) All pleadings, motions and intermediate rulings;
    (2) Evidence received or considered;
    (3) A statement of matters officially noticed;
    (4) Questions and offers of proof, objections and rulings on them;
    (5) Summaries of the results of any conferences held before or during the hearing;
    (6) Proposed findings, exceptions and briefs;
    (7) Any decision, opinion or report issued by the hearings examiner;
    (8) Pre-filed testimony;
    (9) All memoranda or data submitted to or considered by the hearings examiner; and
    (10) The final order and all interlocutory orders.

12.28 Costs of Record on Appeal

A party who appeals a final decision in a contested case shall pay all costs of preparation of the record of the proceeding that is required to be transmitted to the reviewing court. A charge imposed is considered to be a court cost and may be assessed by the court in accordance with the Texas Rules of Civil Procedure.

RULE 13 — REPEALED (legacy "grandfathered" public wells before District formed).

RULE 14 — TRANSFER OF GROUNDWATER OUT OF THE DISTRICT

14.1 Purpose.

An export permit is required to produce groundwater from within the District's boundaries and to transfer such groundwater for use outside the District. The well owner, well operator, or a person acting on behalf of the well owner, must obtain an export permit prior to transferring any groundwater produced from within the District outside the District's boundaries.

14.2 Scope.

A groundwater export permit is required for production of any water from a well within the District, all or part of which is regularly transported for use outside the District. A groundwater export permit shall be obtained prior to commencing construction of wells or other facilities utilized to transfer groundwater from the District. Water wells to be used for the export of water outside of the District shall be subject to all other requirements of the District.

14.3 Exceptions.

A groundwater export permit is not required for transfers of groundwater from the District in the following cases:

(a) Transfers of groundwater from the District that were occurring on or before the effective date of these Rules to the extent the production or transportation capacity of facilities used to produce or transfer groundwater from the District are not increased over the capacity of such facilities that were existing or permitted by the District on or before the effective date of these Rules.

(b) Transfers of groundwater from the District that are incidental to beneficial use within the District. A groundwater export permit is not required for transferring groundwater that is part of a product manufactured in the District, or if the groundwater is to be used on property that straddles the District boundary line. Water that is bottled is not considered to be a product manufactured for this exclusion.

14.4 Application.

An application for groundwater export permit shall be filed in the District office by the owner of the groundwater rights or owner or operator of the production facilities. The following information shall be provided;

(a) The name and mailing address of the applicant and the owner of the land on which the well is or will be located;

(b) If the applicant is other than the owner of the property, documentation establishing the applicable authority to construct and operate a well for the proposed use;

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

(d) A water conservation plan;

(e) A declaration that the applicant will comply with the District's management plan;

(f) The location of each well and the estimated rate at which water will be withdrawn;

(g) A water well closure plan or a declaration that the applicant will comply with well plugging guidelines and report closure to the Board.

(h) A drought contingency plan;

(i) Data showing the availability of water in the District and in the proposed receiving area during the period for which water supply is requested;
(j) Alternate sources of supply that might be utilized by the applicant, and the feasibility and the practicability of utilizing such supplies;
(k) The amount and purposes of use in the proposed receiving area for which water is intended;
(l) The projected effect of the proposed transfer on aquifer conditions, depletion, subsidence, or existing permit holders or other groundwater users within the District;
(m) The indirect costs and economic and social impacts associated with the proposed transfer of water from the District.
(n) Proposed plan of the applicant to mitigate adverse hydrogeological, social or economic impacts of the proposed transfer of water from the District;
(o) How the proposed transfer is addressed in the approved regional water plan and certified District management plan;
(p) The names and addresses of the property owners within one-half (1/2) mile of the location of the well(s) from which water to be transported is to be produced, and the location of any wells on those properties.
(q) The time schedule for construction or operation of the well,
(r) Construction and operation plans for the proposed facility, including, but not limited to:
  (1) A technical description of the proposed well(s) and production facility, including depth of the well, the casing diameter, type and setting, the perforated interval, and the size of pump.
  (2) A technical description of the facilities to be used for transportation of water
(s) If the water is to be used by someone other than the applicant, a signed contract between the applicant and the end user or users.
(t) Additional information that may be required by the District.

14.5 Application Processing Fee.

An application-processing fee, sufficient to cover all reasonable and necessary costs to the District of processing the application, will be charged. The Fee must accompany the application. If the fee is determined by the General Manager or the Board to be insufficient to cover anticipated costs of processing the application, the applicant may be required to post a deposit in an amount determined by the General Manager or the Board's representative to be sufficient to cover anticipated processing cost. As costs are incurred by the District in processing the application, those costs may be reimbursed from funds deposited by the applicant. The applicant shall be provided a monthly accounting of billings against the application processing deposit. Any funds remaining on deposit after the conclusion of application processing shall be returned to the applicant. If initially deposited funds are determined by the General Manager to be insufficient to cover costs incurred by the District in processing the application, an additional deposit may be required. If the applicant fails to deposit funds as required by the, the application may be returned without processing.

14.6 Notice.

Within 30 days following a determination by the District that the application is administratively complete, notice of the application shall be published in a newspaper of general circulation within the District. The District will provide the notice to the applicant for mailing and publication. Notice shall include at least the following information:
(a) The name and address of the applicant;
(b) The date the application was filed;
(c) The time and place of the hearing;
(d) The location of the proposed well(s) from which water to be transported is to be produced;
(e) A description of the production facility; and
(f) A brief summary of the information in the application.

14.7 Hearing.

If requested by the applicant, any affected person opposed to the application having a personal, justiciable interest, or the General Manager, a contested case hearing shall be conducted in accordance with Rule 12.

14.8 Permit:

(a) The permit to transfer groundwater out of the District may be issued as a consolidated permit authorizing drilling, production, and transfer of water from the District. Whether issued as a consolidated permit or separately, the requirements for a permit to transfer groundwater out of the District are cumulative with all other permits or other requirements of the District.

(b) In determining whether to issue a permit to transfer groundwater out of the District, Board shall consider, in addition to all other factors applicable to issuance of a permit from the District:
   (1) The availability of water in the District and in the proposed receiving area during the period for which the water supply is requested;
   (2) The availability of feasible and practicable alternative supplies to the applicant;
   (3) The amount and purposes of use for which water is needed in the proposed receiving area;
   (4) The projected effect of the proposed transfer on aquifer conditions, depletion, subsidence, or effects on existing per holders or other groundwater users within the District;
   (5) The indirect cost and economic and social impacts associated with the proposed receiving area;
   (6) The approved regional water plan and certified District management plan; and,
   (7) Other facts and considerations necessary by the Board for protection of the public health and welfare and conservation and management of natural resources in the District.

(c) If it determines to issue a permit to transfer groundwater out of the District, the Board may limit the permit as warranted by consideration of those factors identified above. In addition to conditions identified by Section 36.1131, Texas Water Code, the permit to transfer water out of the District shall specify:
   (1) The amount of water that may be transferred out of the District;
   (2) The period for which the water may be transferred
   (3) Any monitoring or reporting requirements determined to be appropriate; and,
   (4) That it may be cancelled if the required production and transfer fees are not paid when due.

(d) Export Permit terms: Export permits are effective for three (3) years if construction of a conveyance system has not been initiated prior to the issuance of the permit, or thirty (30) years if construction of a conveyance system has been initiated prior to the issuance of the permit.

RULE 15 — ENFORCEMENT

15.1 In accordance with the Texas Water Code, 36.102, the District may enforce Chapter 36 of the Texas Water Code and its Rules by injunction, mandatory injunction or other appropriate remedy in a court of competent jurisdiction. The Board adopts civil penalties for breach of Chapter 36 of the Texas Water Code and any rule of the District. Civil penalties may not exceed $10,000 per day per violation, and each day of a continuing violation shall constitute a separate violation of the Rules. The Board must authorize any enforcement action prior to it being filed in a court. The Board may adopt a schedule of penalties as a means of encouraging settlement of any violation, but if it becomes necessary to file an enforcement suit, the Board shall seek civil penalties up to $10,000 per day per violation for all rules violations.

15.2 The following acts and omissions each separately constitute a violation of the District Rules:

(a) drilling a well without first obtaining the required authorization from the District;

(b) failure to timely register a non-exempt well as required by the District's Rules;

(c) producing any amount of groundwater from a non-exempt well without first having obtained a valid operating permit or permit amendment issued by the District;

(d) substantially altering a well without first amending the operating permit or otherwise receiving from the District the required express authorization for the alterations;

(e) failure to maintain at all times a properly functioning and calibrated meter installed and on a well required to be permitted;

(f) tampering with any meter installed, or required to be installed, on any well in the District;

(g) tampering with, removing, or in any other way violating the integrity of the seal on a well sealed by the District;

(h) failure to limit or suspend groundwater production in accordance with any applicable Rules or Orders of the District;
(i) the failure to remit all water use fees owed to the District within 30 days after the date any such fees are due pursuant to the District Rules and Schedule of Fees;
(j) falsification of any documents or records submitted to the District in response to requirements of the District or in support of any application or other submittal to the District;
(k) failure to plug or cap an abandoned or deteriorated well in a manner and within the time limits prescribed;
(l) failure to close or cap an open or uncovered well in accordance with District Rules and all other applicable standards;
(m) causing or substantially contributing to the unreasonable delay, obstruction or interference of any District effort to exercise its duties under District Rules;
(n) engaging in any conduct that constitutes waste;
(o) the failure to timely file all well reports, water production reports or any other report required by these rules;
(p) drilling a well at any location on the property identified in the registration or permit other than where authorized by these Rules or by the terms of the applicable drilling permit; and
(q) any other act or omission not listed in this subsection that is determined by order or resolution of the Board to constitute a violation.

End of District Rules

APPENDIX D

Resolution adopting the Management Plan

Lower Trinity Groundwater Conservation District

Groundwater Management Plan

Resolution 2019-1

WHERE AS, the Board of Directors of the District have considered the adoption of the District Groundwater Management plan; and

WHERE AS, the District is required by Texas Water Code, Chapter 36 to a Groundwater Management Plan; and

WHERE AS, the District desires to be in compliance with Texas Laws and District policy;

NOW, THEREFORE BE IT RESOLVED that the Board of Directors of the Lower Trinity Groundwater Conservation District adopt the Groundwater Management Plan for the District.

PASSED AND APPROVED ON THIS 11th DAY OF October 2019.

LOWER TRINTY GROUNDWATER CONSERVATION DISTRICT

Wesley Smith-President

Aidney Reeves-Secretary/Treasurer

Appendix E – Evidence the Management Plan was adopted after notice and hearing

APPENDIX E

Evidence the Management Plan was adopted after notice and hearing

Polk County Publishing Company, Inc
P. O. Box 1276, Livingston, Tx 77351
Phone 936-327-4357 Fax 936-327-7156

Invoice

Date	Invoice #
8/29/2019	19328

Polk County Publishing Company
Affiliated Newspapers

Lower Trinity Groundwater Conservation
602 East Church St., Ste 141
Livingston, TX 77351

PCE - Polk County Enterprise
PS - Pennysaver
SJNT - San Jacinto News Times
TCNS - Trinity County News Standard
TCB - Tyler County Booster
HCC - Houston County Courier

P.O. Number	Terms	Rep
491	Net 30	LD

Description	Class	Quantity	Rate	Amount
PCE Legal Notice - Notice of Public Hearing on Oct 11, 2019 regarding Proposed Management Plan 8/25	Enterprise	1	39.30	39.30
SJNT Legal Notice - Notice of Public Hearing on Oct 11, 2019 8/29	San Jac	1	39.30	39.30

RECEIVED
SEP - 4 2019
Lower Trinity Groundwater Conservation District

Thank you for your business. If you have any questions regarding this billing, please call 936.327.4357. Please visit us at easttexasnews.com. Our fax # is 936.327.7156.

Total $78.60

Official Receipt for Recording in:

San Jacinto County Clerk

Issued To:
LOWER TRINITY GROUNDWATER

Recording Fees

Document Description	Number	Recording Amount
PE JS	00000217	.00
PE JS	00000218	.00
		.00

Collected Amounts

Payment Type	Amount
Cash	.00

Total Received :	.00
Less Total Recordings:	.00
Change Due :	.00

Thank You
DAWN WRIGHT - County Clerk

By - Marna Gearhart

Receipt#	Date	Time
0033538	08/09/2019	12:29p

Public Hearing - Lower Trinity Groundwater Conservation District

AFFIDAVIT OF PUBLICATION

STATE OF TEXAS
COUNTY OF Polk
(Insert County)

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED Kelli Barnes (Publisher's Representative) WHO BEING BY ME DULY SWORN, DEPOSES AND SAYS THAT HE/SHE IS THE PUBLISHER REPRESENTATIVE OF THE Polk County Enterprise (Insert Newspapers Name), THAT SAID NEWSPAPER IS REGULARLY PUBLISHED IN Polk (Insert County/Counties Name) COUNTY (COUNTIES), TEXAS, AND GENERALLY CIRCULATED IN Polk (Insert ALL Counties of General Distribution) _____ COUNTY (COUNTIES), TEXAS; AND THAT THE NOTICE, A COPY OF WHICH IS HERETO ATTACHED, WAS PUBLISHED IN SAID NEWSPAPER ON THE FOLLOWING DAYS: August 25 2019 (Insert Date(s)).

RECEIVED
SEP - 4 2019
Lower Trinity Groundwater Conservation District

SCANNED

Kelli Barnes
Publishers Representative

Sworn and Subscribed to me on this the 26 day of August, 2019

to certify which witness my hand and seal of office.

Georgia S Bailey
Notary Public in and for the State of Texas

GEORGIA BAILEY
NOTARY PUBLIC
STATE OF TEXAS
Notary ID # 3958925
Expires: 10-31-2020

Georgia S. Bailey
Print or Type Name of Notary Public

My commission Expires 10/31/2020

(Affix Notary Seal Above)

Public Hearing - Lower Trinity Groundwater Conservation District

PUBLISHER'S AFFIDAVIT

STATE OF TEXAS
COUNTY OF San Jacinto
(Insert County)

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED Kelli Barnes WHO BEING BY ME DULY
(Insert Publisher's Name/Publisher's Representative)

SWORN, DEPOSES AND SAYS THAT HE/SHE IS THE PUBLISHER OF THE San Jacinto News Times, THAT SAID NEWSPAPER IS
(Insert Newspaper's Name)

REGULARLY PUBLISHED IN San Jacinto COUNTY
(Insert County/Counties Name)

(COUNTIES), TEXAS, AND GENERALLY CIRCULATED IN San Jacinto
(Insert **ALL** Counties of **General Distribution**)

COUNTY (COUNTIES), TEXAS; AND THAT THE NOTICE, A COPY OF WHICH IS HERETO ATTACHED, WAS PUBLISHED IN SAID NEWSPAPER ON THE FOLLOWING DAYS: August 29 2019
(Insert Date(s))

RECEIVED
SEP - 4 2019
Lower Trinity Groundwater Conservation District

SCANNED

Kelli Barnes
PUBLISHER/PUBLISHER'S REPRESENTATIVE

SWORN AND SUBSCRIBED TO ME ON THIS THE 30 DAY OF August, 2019 TO CERTIFY WHICH WITNESS MY HAND AND SEAL OF OFFICE.

Georgia S Bailey
NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

Georgia S. Bailey
PRINT OR TYPE NAME OF NOTARY PUBLIC

MY COMMISSION EXPIRES 10/31/2020.

GEORGIA BAILEY
NOTARY PUBLIC
STATE OF TEXAS
Notary ID # 3958925
Expires: 10-31-2020

(Affix Notary Seal Above)

Public Hearing - Lower Trinity

LTGCD sets public hearing

NOTICE IS HEREBY GIVEN to all interested persons within San Jacinto County and Polk County, Texas: The Lower Trinity Groundwater Conservation District will hold a Public Hearing on October 11, 2019 at 2:00 P.M. at 602 E. Church Street #175 in Livingston, Texas 77351. The Public Hearing will be held to take comments on the re-adoption of its Management Plan with proposed revisions and acceptance at its regular board meeting. A copy of the proposed Management Plan is available for inspection at the District office: 602 E. Church St. #141, Livingston, TX 77351.

AFFIDAVIT OF PUBLICATION

STATE OF TEXAS
COUNTY OF Polk
(Insert County)

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED Kelli Barnes (Publisher's Representative) WHO BEING BY ME DULY SWORN, DEPOSES AND SAYS THAT HE/SHE IS THE PUBLISHER REPRESENTATIVE OF THE Polk County Enterprise (Insert Newspapers Name), THAT SAID NEWSPAPER IS REGULARLY PUBLISHED IN Polk (Insert County/Counties Name) COUNTY (COUNTIES), TEXAS, AND GENERALLY CIRCULATED IN Polk (Insert ALL Counties of General Distribution) COUNTY (COUNTIES), TEXAS; AND THAT THE NOTICE, A COPY OF WHICH IS HERETO ATTACHED, WAS PUBLISHED IN SAID NEWSPAPER ON THE FOLLOWING DAYS: August 25 2019 (Insert Date(s)).

RECEIVED
SEP - 4 2019
Lower Trinity Groundwater Conservation District

SCANNED

Kelli Barnes
Publishers Representative

Sworn and Subscribed to me on this the 26 day of August, 2019

to certify which witness my hand and seal of office.

Georgia S Bailey
Notary Public in and for the State of Texas

GEORGIA BAILEY
NOTARY PUBLIC
STATE OF TEXAS
Notary ID # 3958925
Expires: 10-31-2020

Georgia S. Bailey
Print or Type Name of Notary Public

My commission Expires 10/31/2020

(Affix Notary Seal Above)

Public Hearing - Lower Trinity Groundwat District

PUBLISHER'S AFFIDAVIT

STATE OF TEXAS
COUNTY OF San Jacinto
(Insert County)

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS

APPEARED Kelli Barnes WH
Insert Publisher's Name/Publisher's Representative)

SWORN, DEPOSES AND SAYS THAT HE/SHE IS THE PUB

San Jacinto News Times, THAT SAI
(Insert Newspaper's Name)

REGULARLY PUBLISHED IN San Jacint
(Insert County/Counties Name)

(COUNTIES), TEXAS, AND GENERALLY CIRCULATED

San Jacinto
(Insert **ALL** Counties of **General Distribution**)

COUNTY (COUNTIES), TEXAS; AND THAT THE NOTICE, A COPY OF WHICH IS

HERETO ATTACHED, WAS PUBLISHED IN SAID NEWSPAPER ON THE FOLLOWING

DAYS: August 29 2019
(Insert Date(s))

Public Notice

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RECEIVED
SEP - 4 2019
Lower Trinity Groundwater Conservation District
SCANNED

Kelli Barnes
PUBLISHER/PUBLISHER'S REPRESENTATIVE

SWORN AND SUBSCRIBED TO ME ON THIS THE 30 DAY OF

August, 2019 TO CERTIFY WHICH WITNESS MY HAND

AND SEAL OF OFFICE.

Georgia S Bailey
NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

Georgia S. Bailey
PRINT OR TYPE NAME OF NOTARY PUBLIC

MY COMMISSION EXPIRES 10/31/2020.

GEORGIA BAILEY
NOTARY PUBLIC
STATE OF TEXAS
Notary ID # 3958925
Expires: 10-31-2020

(Affix Notary Seal Above)

2019-079

Lower Trinity Groundwater Conservation District

Office: (936) 327-9531 Fax: (936) 327-9532
602 E. Church #141 Livingston, TX 77351
Email: Groundwater@Livingston.net

NOTICE OF PUBLIC HEARING MEETING FOR
THE LOWER TRINITY GROUNDWATER CONSERVATION DISTRICT
OCTOBER 11, 2019

NOTICE IS HEREBY GIVEN to all interested persons within Polk and San Jacinto Counties, Texas: The Lower Trinity Groundwater Conservation District will hold a Public Hearing on Friday, October 11, 2019 at 2:00 p.m. at the Polk County Office Annex, Room 175, located at 602 E. Church Street in Livingston, Texas.

The Public Hearing will be held to take comments on the re-adoption of its Management Plan with proposed revisions and acceptance at its regular board meeting. A copy of the proposed Management Plan is available for inspection at the District office: 602 E. Church St. #141, Livingston, TX 77351.

The agenda items of business may be considered, discussed and/or acted upon in a different order than the order set forth below. Public comment is limited to 5 minutes per speaker and/or 30 minutes total for all speakers.

COPY

AGENDA:

1. Call to order:
2. Welcome and introductions:
3. Public Comments on proposed Management Plan:
4. Public Hearing ends.

FILED FOR RECORD
2019 AUG -9 PM 1:04
Shelana Hobbs
POLK COUNTY CLERK

00000217

Lower Trinity Groundwater Conservation District

Office: (936) 327-9531 Fax: (936) 327-9532
602 E. Church #141 Livingston, TX 77351
Email: Groundwater@Livingston.net

NOTICE OF PUBLIC HEARING MEETING FOR
THE LOWER TRINITY GROUNDWATER CONSERVATION DISTRICT
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AGENDA:

1. Call to order:
2. Welcome and introductions:
3. Public Comments on proposed Management Plan:
4. Public Hearing ends.

Accepted for Filing in:
San Jacinto County
On: Aug 09,2019 at 12:29P
By Marna Gearhart

602 E. Church Street
P.O. Box 1879 - Livingston Texas 77351
(pho) 936.327.9531 (fax) 936.327.9532

LOWER TRINITY GROUNDWATER CONSERVATION DISTRICT
TEXAS

PROVIDING FOR THE EDUCATION, CONSERVATION, PRESERVATION. PROTECTION, RECHARGING and PREVENTION of GROUNDWATER WASTE.

LTGCD

Contact LTGCD Here

News

OCTOBER 11, 2019 - Next Board of Directors Meeting and a Public Hearing for adoption of Management Plan. 11:30 AM in room 175, in the Polk County Annex Building.

2019 PROPOSED MANAGEMENT PLAN

Lower Trinity Groundwater Conservation District

602 E. Church St. Livingston, TX 77351
Email: Groundwater@Livingston.net
Office: (936) 327-9531 Fax: (936) 327-9532

LOWER TRINITY GROUNDWATER CONSERVATION DISTRICT
PUBLIC HEARING MEETING MINUTES
October 11, 2019

Present: Board of Directors Wesley Smith, Randy Baker, Aidney Reeves, John Sexton. Also, in attendance was Gary Ashmore.

Board President, Wesley Smith called the meeting to order at 2:00 P.M.

The meeting was opened up for consideration of public comments on the new District Groundwater Management Plan.

The public comment period was closed as no persons were present to speak.

Randy Baker made a motion to adjourn the public hearing, John Sexton seconded and all those present agreed.

*Aidney Reeves – Secretary

10-21-19
Date

(approval is of draft version of minutes, will update with official approval asap).

Lower Trinity Groundwater Conservation District

602 E. Church St #141 Livingston, TX 77351
Office: (936) 327-9531 Fax: (936) 327-9532
Email: Groundwater@Livingston.net

LOWER TRINITY GROUNDWATER CONSERVATION DISTRICT
BOARD OF DIRECTORS MEETING MINUTES
October 11, 2019

Present: Board of Directors Wesley Smith, Randy Baker, Aidney Reeves, John Sexton, and Dallas Hatton. Also, in attendance was Gary Ashmore.

Board President, Wesley Smith called the meeting to order at 2:00 P.M.

The meeting was opened for regular board meeting business and public comments. The public comment period was closed as no persons were present to speak.

The board reviewed the minutes from the July 12, 2019 Board of Directors meeting. John Sexton made a motion to accept the meeting minutes, Randy Baker seconded the motion and all present board members approved.

A review of the new Groundwater Management Plan was completed and discussed. Aidney Reeves made a motion to adopt Resolution 20191 that approves the new Groundwater Management Plan and submit it to the TWDB, Randy Baker seconded the motion and all present board members approved.

Gary Ashmore presented the General Managers report on the District third quarter results to include financial details, drought conditions, District water usage, association meetings, and GMA14 status.

Aidney Reeves made a motion to adopt Resolution 20192 "that the Board of Directors of the Lower Trinity GCD does hereby declare its general support of the current Texas Farm Bureau Legislative Policy Manual used during the 86th Session of the Texas Legislature and encourages its re-adoption. That the Board of Directors of the Lower Trinity GCD encourages the Texas Farm Bureau to avoid the issue of "common rules" in any revisions of the Texas Farm Bureau Legislative Policy Manual and allow the regional planning processes in the various Groundwater Management Areas to properly address any perceived or actual need for "common rules." Randy Baker seconded the motion and all present board members approved.

Aidney Reeves reported the District financial and investment status. Randy Baker made a motion to pay all the districts bills. John Sexton seconded, and all present board members approved.

The Board meeting adjourned for an executive session discussion at 2:29pm. The board reconvened the regular Board meeting at 2:47pm.

Randy Baker made a motion that the District engage attorney Greg Ellis to pursue legal actions against a SJC business property owner and a water well driller that installed a commercial water well without applying for a drilling permit or an operating permit from the District. John Sexton seconded, and all present board members approved.

Randy Baker motioned that the meeting be adjourn with John Sexton seconding the motion, all board members approved.

*Aidney Reeves – Secretary

10-21-19
Date

(approval is of draft version of minutes, will update with official approval asap).

APPENDIX F

Evidence the District coordinated development of the Management Plan with Surface Water Entities

Lower Trinity Groundwater Conservation District

Office: (936) 327-9531 Fax: (936) 327-9532
602 E. Church #141 Livingston, TX 77351
Email: Groundwater@Livingston.net

mailed 7-31-19

July 30, 2019

COPY

RE: Groundwater Management Plan

Waterwood MUD 1
C/O Anita Treadway
2 Waterwood
Huntsville, Texas 77320

Dear Mrs. Treadway,

The Lower Trinity Groundwater Conservation District is currently updating its Management plan as required by Chapter 36 of the Texas Water Code. One of the specific objectives contained in the plan addresses conjunctive use of surface water assets.

We have uploaded a copy of the plan to our website for easier viewing of the large file at: www.ltgcd.org with a link on the frontpage. Please take the time to review and make any suggestions or comments to the District office by September 15, 2019. The adoption of the draft will be an action item on the October 11, 2019 Regular Board Meeting.

If you have any questions concerning the plan, please feel free to contact me at your convenience.

Best Regards,

Gary Ashmore

Gary Ashmore
GM, Lower Trinity GCD
Office: (936)-327-9531
Mobile: (936)-252-0911

Lower Trinity Groundwater Conservation District

Office: (936) 327-9531 Fax: (936) 327-9532
602 E. Church #141 Livingston, TX 77351
Email: Groundwater@Livingston.net

Mailed 7-31-19

COPY

July 30, 2019

RE: Groundwater Management Plan

Trinity River Authority
C/O Mark Waters
P.O. Box 360
Livingston, Texas 77351

Dear Mr. Waters,

The Lower Trinity Groundwater Conservation District is currently updating its Management plan as required by Chapter 36 of the Texas Water Code. One of the specific objectives contained in the plan addresses conjunctive use of surface water assets.

We have uploaded a copy of the plan to our website for easier viewing of the large file at: www.ltgcd.org with a link on the frontpage. Please take the time to review and make any suggestions or comments to the District office by September 15, 2019. The adoption of the draft will be an action item on the October 11, 2019 Regular Board Meeting.

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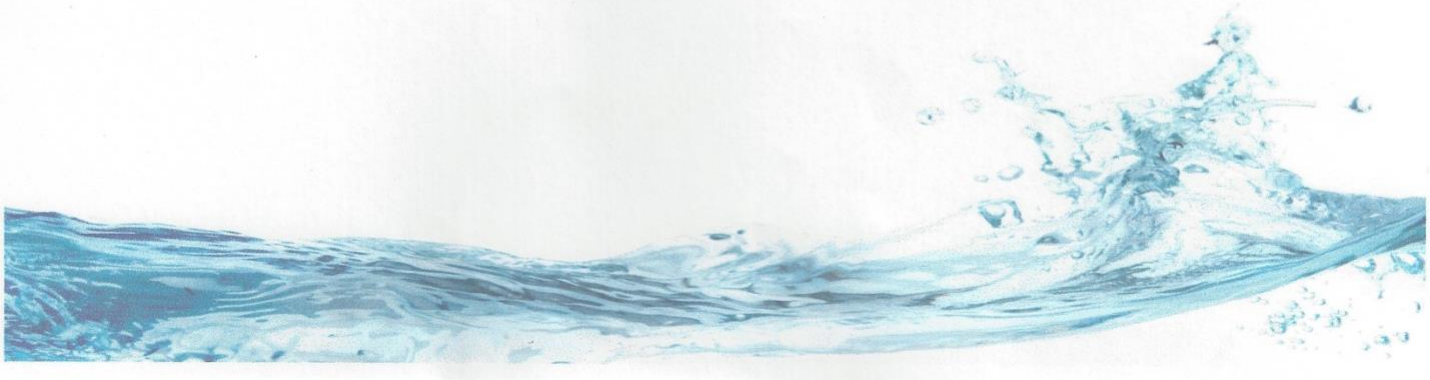
Best Regards,

Gary Ashmore

Gary Ashmore
GM, Lower Trinity GCD
Office: (936)-327-9531
Mobile: (936)-252-0911



Lower Trinity Groundwater Conservation District

Office: (936) 327-9531 Fax: (936) 327-9532
602 E. Church #141 Livingston, TX 77351
Email: Groundwater@Livingston.net

Mailed 7-31-19

COPY

July 30, 2019

RE: Groundwater Management Plan

San Jacinto River Authority
C/O Jace Houston
P.O. Box 329
Conroe, Texas 77305

Dear Mr. Houston,

The Lower Trinity Groundwater Conservation District is currently updating its Management plan as required by Chapter 36 of the Texas Water Code. One of the specific objectives contained in the plan addresses conjunctive use of surface water assets.

We have uploaded a copy of the plan to our website for easier viewing of the large file at: www.ltgcd.org with a link on the frontpage. Please take the time to review and make any suggestions or comments to the District office by September 15, 2019. The adoption of the draft will be an action item on the October 11, 2019 Regular Board Meeting.

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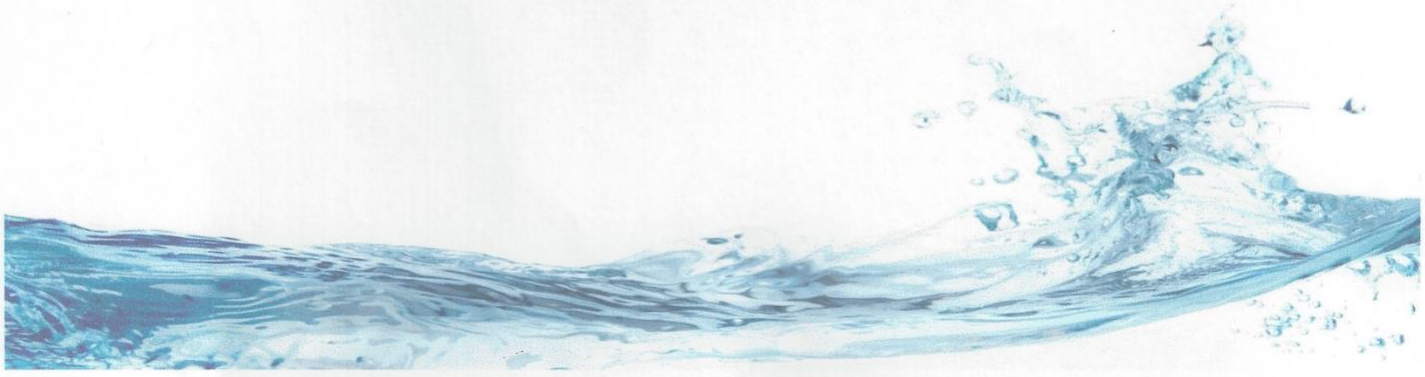
Best Regards,

Gary Ashmore

Gary Ashmore
GM, Lower Trinity GCD
Office: (936)-327-9531
Mobile: (936)-252-0911



Lower Trinity Groundwater Conservation District

Office: (936) 327-9531 Fax: (936) 327-9532
602 E. Church #141 Livingston, TX 77351
Email: Groundwater@Livingston.net

mailed 7-31-19

COPY

July 30, 2019

RE: Groundwater Management Plan

City of Livingston
Livingston Regional Water Supply
C/O James Wright
200 W. Church Street
Livingston, TX 77351

Dear Mr. Wright,

The Lower Trinity Groundwater Conservation District is currently updating its Management plan as required by Chapter 36 of the Texas Water Code. One of the specific objectives contained in the plan addresses conjunctive use of surface water assets.

We have uploaded a copy of the plan to our website for easier viewing of the large file at: www.ltgcd.org with a link on the frontpage. Please take the time to review and make any suggestions or comments to the District office by September 15, 2019. The adoption of the draft will be an action item on the October 11, 2019 Regular Board Meeting.

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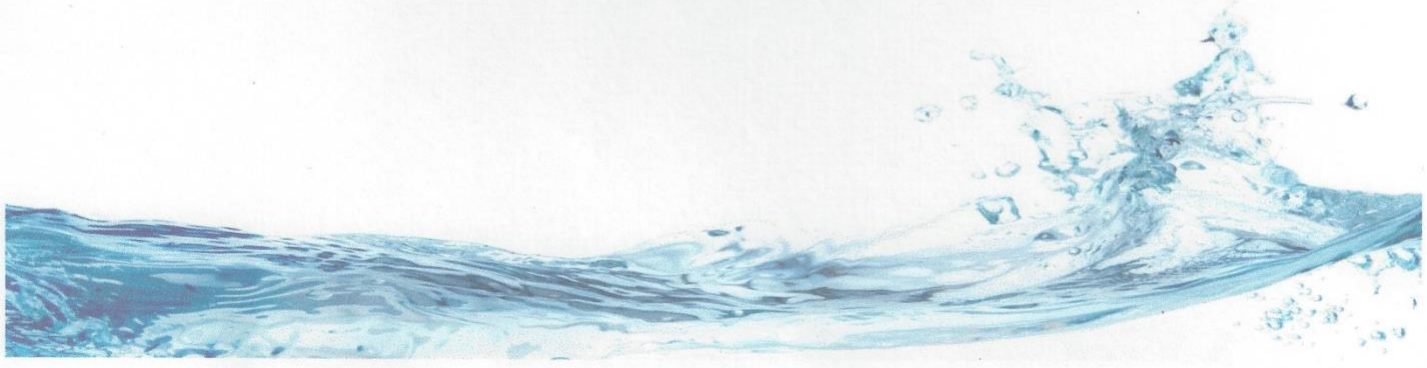
Best Regards,

Gary Ashmore

Gary Ashmore
GM, Lower Trinity GCD
Office: (936)-327-9531
Mobile: (936)-252-0911



Lower Trinity Groundwater Conservation District

Office: (936) 327-9531 Fax: (936) 327-9532
602 E. Church #141 Livingston, TX 77351
Email: Groundwater@Livingston.net

Mailed 7-31-19

COPY

July 30, 2019

RE: Groundwater Management Plan

Angelina & Neches River Authority
C/O Kelley Holcomb
2901 N John Redditt Drive
Lufkin, Texas 75904
(936) 632-7795

Dear Mr. Holcomb,

The Lower Trinity Groundwater Conservation District is currently updating its Management plan as required by Chapter 36 of the Texas Water Code. One of the specific objectives contained in the plan addresses conjunctive use of surface water assets.

We have uploaded a copy of the plan to our website for easier viewing of the large file at: www.ltgcd.org with a link on the frontpage. Please take the time to review and make any suggestions or comments to the District office by September 15, 2019. The adoption of the draft will be an action item on the October 11, 2019 Regular Board Meeting.

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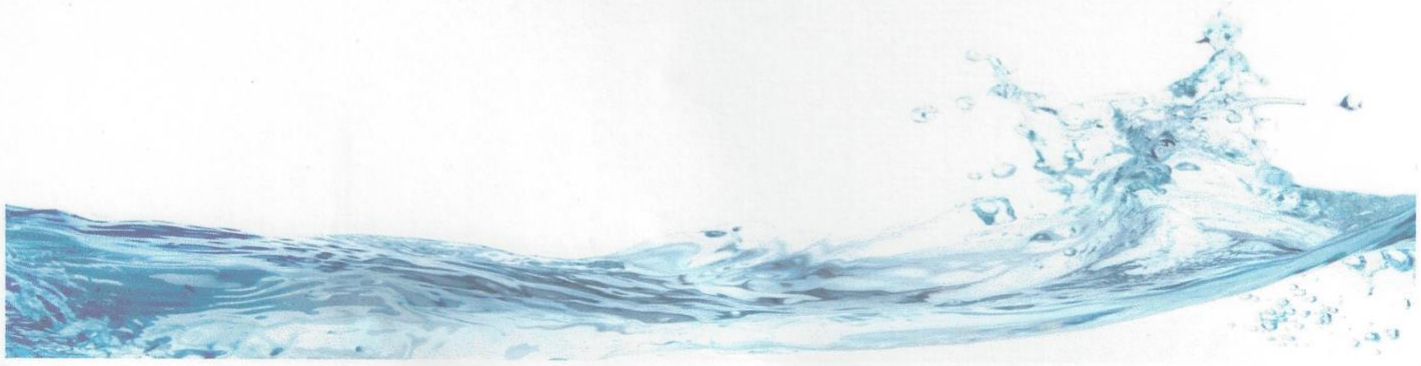
Best Regards,

Gary Ashmore

Gary Ashmore
GM, Lower Trinity GCD
Office: (936)-327-9531
Mobile: (936)-252-0911



~~*Appendix G – GAM Run 16-024 MAG: Modeled available groundwater for the Gulf Coast Aquifer System in Groundwater Management Area 14*~~

Appendix G – GAM Run 21-019 MAG: Modeled available groundwater for the Gulf Coast Aquifer System in Groundwater Management Area 14

GAM RUN 21-019 MAG: MODELED AVAILABLE GROUNDWATER FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14

Shirley C. Wade, Ph.D., P.G.
Texas Water Development Board
Groundwater Division
Groundwater Modeling Department
512-936-0883 September 8, 2022

Shirley C. Wade
10/6/2022

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GAM RUN 21-019 MAG: MODELED AVAILABLE GROUNDWATER FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14

Shirley C. Wade, Ph.D., P.G.
Texas Water Development Board
Groundwater Division
Groundwater Modeling Department
512-936-0883 September 8, 2022

EXECUTIVE SUMMARY:

The combined value of modeled available groundwater in Groundwater Management Area 14 and the projected groundwater pumpage in subsidence districts in Groundwater Management Area 14 for the Gulf Coast Aquifer System ranges from a maximum of 1,327,135 acre-feet per year in 2020 to a minimum of 1,107,263 acre-feet per year in 2040 (Tables 1 and 2). Table 1 presents the modeled available groundwater summarized by decade from 2020 to 2080 for groundwater conservation districts. Table 2 presents the projected groundwater pumpage in regulatory plans adopted by subsidence districts and factored into the development of desired future conditions adopted by groundwater conservation districts. Table 3 summarizes the modeled available groundwater (for groundwater conservation district and non-district counties) and the projected groundwater pumpage (for subsidence district counties) by decade from 2030 to 2080 and by county, regional water planning area, and river basin for use in the regional water planning process. The estimates are based on the desired future conditions for the Gulf Coast Aquifer System adopted by groundwater conservation districts in Groundwater Management Area 14 on January 5, 2022. The explanatory report and other materials submitted to the Texas Water Development Board (TWDB) were determined to be administratively complete on June 15, 2022.

REQUESTOR:

Mr. John Martin, chair and technical coordinator of Groundwater Management Area 14.

DESCRIPTION OF REQUEST:

Mr. John Martin provided the TWDB with the desired future conditions of the Gulf Coast Aquifer System on behalf of Groundwater Management Area (GMA) 14. These desired future conditions were adopted by the groundwater conservation districts in Groundwater

Management Area 14 on January 5, 2022. The desired future conditions, as described in Resolution 2021-10-5 (GMA 14 and Oliver, 2022; Appendix G) are:

- "In each county in GMA 14, no less than 70 percent median available drawdown remaining in 2080 or no more than an average of 1.0 additional foot of subsidence between 2009 and 2080."

The Carrizo-Wilcox, Queen City, Sparta, Yegua-Jackson, and Brazos River Alluvium aquifers were declared not relevant for purposes of joint planning by Groundwater Management Area 14 in Resolution 2021-10-5 (GMA 14 and Oliver, 2022; Appendix G).

On March 4, 2022, Mr. John Martin, technical coordinator of Groundwater Management Area 14, submitted the desired future conditions packet for Groundwater Management Area 14. TWDB staff reviewed the model files associated with the desired future conditions and received clarification on assumptions from the Groundwater Management Area 14 technical coordinator on March 23, 2022. In Resolution 2021-10-5, the desired future condition is defined for "each county in GMA 14"; however, Groundwater Management Area 14 clarified that it is their intent per pages 15 and 38 of the explanatory report that the subsidence district counties are not to be included in the county-specific desired future condition definition. For this reason, the TWDB did not consider subsidence district counties during the desired future conditions evaluation. An additional clarification from Groundwater Management Area 14 was a request that the modeled available groundwater values and modeled pumping values be provided by model aquifer layer in addition to the total values for the entire Gulf Coast Aquifer System. These additional splits are included in the current report in Appendix A.

Harris, Galveston, and Fort Bend counties (Subsidence Districts)

Harris-Galveston Subsidence District and Fort Bend Subsidence District are not subject to the provisions of Section 36.108 of the Texas Water Code and, therefore, have not specified desired future conditions. Because desired future conditions were not adopted for the counties in the subsidence districts, the TWDB does not provide "modeled available groundwater" values for those counties. However, the districts in Groundwater Management Area 14 incorporated the groundwater pumpage projections made by the subsidence districts in their regulatory plans so that all known regional groundwater pumping was factored into the joint planning process. Therefore, the subsidence district "groundwater pumpage projections" are still provided in this report (Table 2 and Table 3) even though these values are not official "modeled available groundwater" values.

METHODS:

The TWDB ran the groundwater availability model (version 3.01; Kasmarek, 2013) for the northern part of the Gulf Coast Aquifer System (Figure 1) using the predictive model files submitted with the explanatory report (GMA 14 and Oliver, 2022; Appendix R) on March 4, 2022. The modeled available groundwater values were determined by extracting pumping rates by decade from the model results using ZONEBUDGET Version 3.01 (Harbaugh, 2009).

Annual pumping rates were divided by county, river basin, regional water planning area, and groundwater conservation district within Groundwater Management Area 14 (Figures 1 and 2; Tables 1 through 3).

As part of the process to calculate modeled available groundwater, the TWDB checked the model files submitted by Groundwater Management Area 14 to determine if the groundwater pumping scenario was compatible with the adopted desired future conditions. The TWDB used these model files to extract model-calculated water levels for 2009 (stress period 78) and 2080 (stress period 149), and to calculate the available drawdown according to the methodology described in the explanatory report (GMA 14 and Oliver, 2022; Appendix R). The TWDB applied this methodology to a dataset submitted as part of the explanatory report, which contained well locations and well depths for 61,880 wells. The ratio of available drawdown in 2080 to available drawdown in 2009 was calculated for each well and the median was determined for each county. As specified in the explanatory report (GMA 14 and Oliver, 2022; Appendix R), if the water level in a model cell dropped below the base of the cell the available drawdown for wells located in that model cell was set to zero.

The subsidence values were also extracted from the model results for 2009 (stress period 78) and 2080 (stress period 149) and average change in subsidence was calculated for each county. The median percent available drawdown and average change in subsidence for each county were compared to the desired future conditions to confirm that the model scenario was compatible with the desired future conditions.

Modeled Available Groundwater and Permitting

As defined in Chapter 36 of the Texas Water Code (2011), "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.

PARAMETERS AND ASSUMPTIONS:

The parameters and assumptions for the modeled available groundwater estimates are described below:

- Version 3.01 of the groundwater availability model for the northern portion of the Gulf Coast Aquifer System was used for this analysis. See Kasmarek (2013) for assumptions and limitations of the model.
- The model has four layers which represent the Chicot aquifer (Layer 1), the Evangeline aquifer (Layer 2), the Burkeville Confining Unit (Layer 3), and the Jasper aquifer and parts of the Catahoula Formation in direct hydrologic communication with the Jasper aquifer (Layer 4).

- The model was run with MODFLOW-2000 (Harbaugh and others, 2000).
- Available drawdown for cells with water levels below the base elevation of the cell ("dry" cells) was set to zero for the analysis.
- Cells with water levels below the base are "dry" in terms of water level. However, the transmissivity of those cells remains constant and pumping from those cells continues. Therefore, pumping is included in the modeled available groundwater values for those cells.
- The subsidence district counties (Harris, Galveston, and Fort Bend) were not included in the evaluation of the desired future condition.
- The evaluation of the desired future condition for available drawdown was based on the 61,880 observation well locations and the MODFLOW pumping file submitted by Groundwater Management Area 14.
- The evaluation of the desired future condition for subsidence was based on the extent of the official TWDB boundary for the Gulf Coast Aquifer System within the groundwater model and the MODFLOW pumping file submitted by Groundwater Management Area 14.
- The calculation of modeled available groundwater values was based on the extent of the official TWDB boundary for the Gulf Coast Aquifer System within the groundwater model and the MODFLOW pumping file submitted by Groundwater Management Area 14.
- The most recent TWDB model grid file dated June 10, 2020 (glfc_n_01062020.csv), was used to determine model cell entity assignment (county, groundwater management area, groundwater conservation district, river basin, regional water planning area).

- Estimates of modeled available groundwater from the model simulation were rounded to the nearest whole number.

RESULTS:

The modeled available groundwater for the Gulf Coast Aquifer System that achieves the desired future conditions adopted by Groundwater Management Area 14 ranges from 781,781 to 781,753 acre-feet per year between 2020 and 2080 (Table 1). Projected Gulf Coast Aquifer System groundwater pumpage from the three counties in the Harris Galveston Subsidence District and Fort Bend Subsidence District ranges between 545,354 and 325,510 acre-feet per year during the period 2020 to 2080 (Table 2). The combination of modeled available groundwater and projected groundwater pumpage values in the Gulf Coast Aquifer System has also been summarized by county, river basin, and regional water planning area in order to be consistent with the format used in the regional water planning process. (Table 3). The modeled available groundwater values and projected groundwater pumpage values are also tabulated by model aquifer layer in Appendix A.

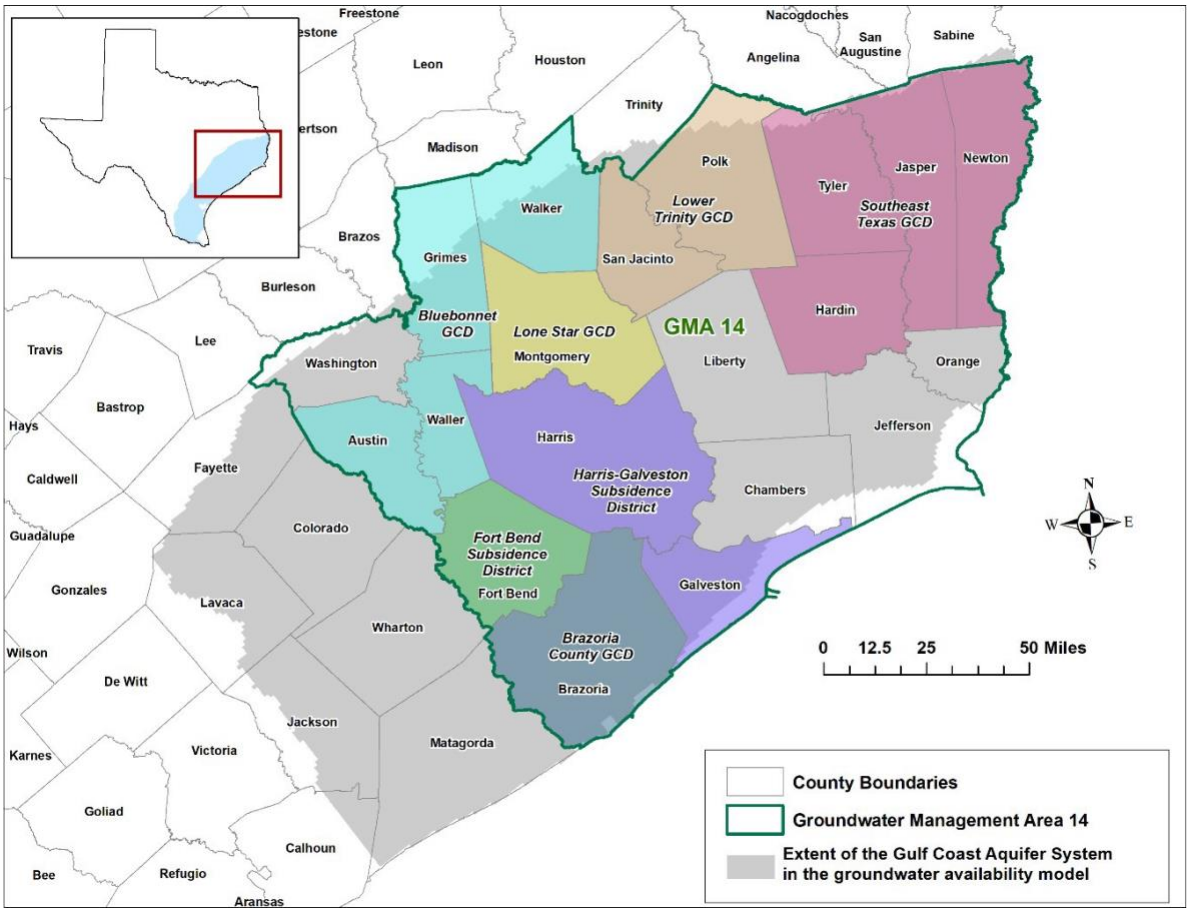
Freestone
Leon
Houston
Nacogdoches
San Augustine
Sabine
Angelina
Trinity
Madison
Polk
Tyler
Jasper
Newton
Walker
Lower Trinity GCD
Southeast Texas GCD
Brazos
Grimes
San Jacinto
Burleson
Bluebonnet GCD
Lone Star GCD
GMA 14
Hardin
Travis
Lee
Washington
Montgomery
Liberty
Orange
Bastrop
Hays
Waller
Harris
Jefferson
Austin
Fayette
Harris-Galveston Subsidence District
Chambers
Caldwell
Colorado
Guadalupe
Fort Bend Subsidence District
Fort Bend
Galveston
Gonzales
Lavaca
Wharton
Brazoria County GCD
Wilson
De Witt
Brazoria
Jackson
Matagorda
Karnes
Victoria
Goliad
Calhoun
Bee
Refugio
Aransas
N
W
E
S
0 12.5 25 50 Miles
County Boundaries
Groundwater Management Area 14
Extent of the Gulf Coast Aquifer System in the groundwater availability model

FIGURE 1. THE EXTENT OF THE GULF COAST AQUIFER SHOWN WITH GROUNDWATER CONSERVATION DISTRICTS AND SUBSIDENCE DISTRICTS IN GROUNDWATER MANAGEMENT AREA 14.

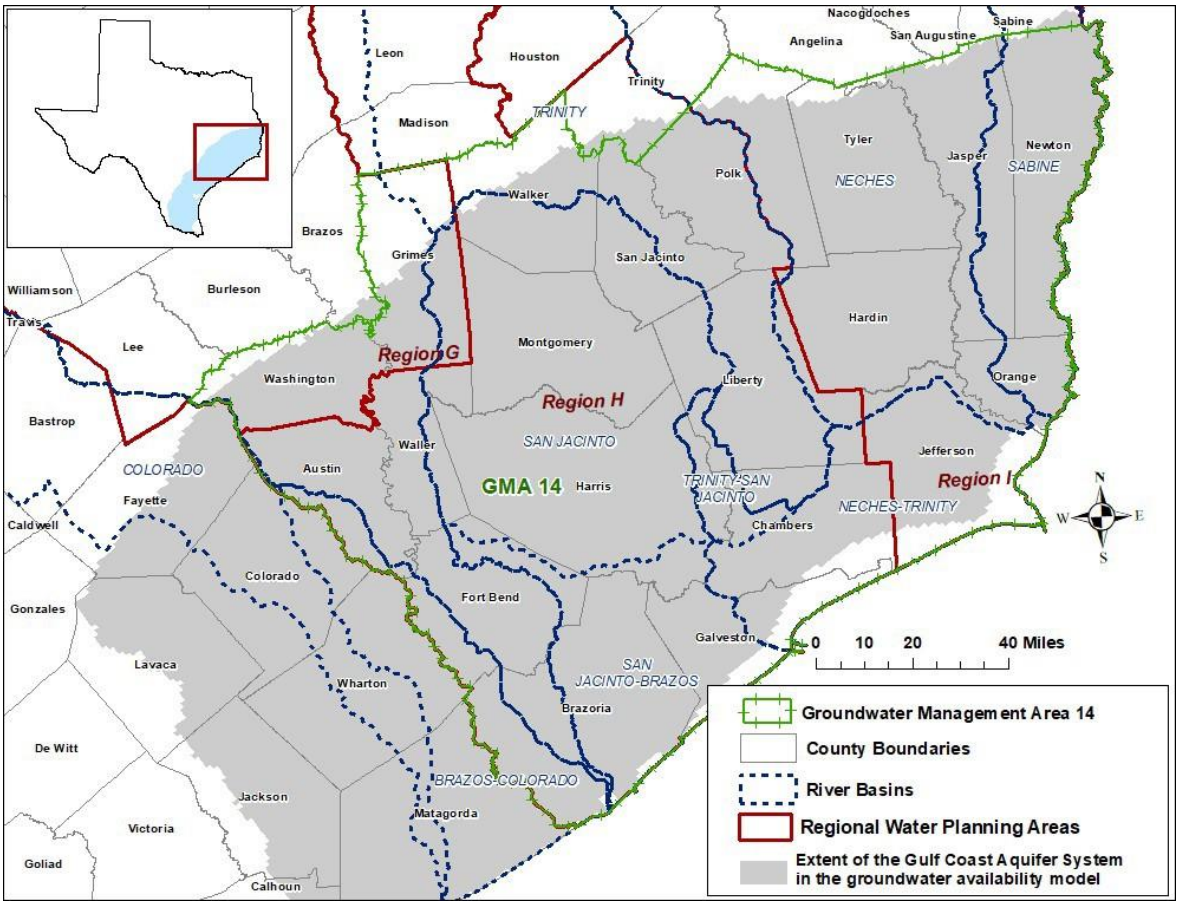

FIGURE 2. LOCATION OF REGIONAL WATER PLANNING AREAS AND RIVER BASINS IN GROUNDWATER MANAGEMENT AREA 14.

TABLE 1. MODELED AVAILABLE GROUNDWATER FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES EXCLUDE SUBSIDENCE DISTRICTS. VALUES ARE IN ACRE-FEET PER YEAR.

Groundwater Conservation District	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Bluebonnet GCD	Austin	Gulf Coast Aquifer	46,560	46,560	46,560	46,560	46,560	46,560	46,560
Bluebonnet GCD	Grimes	Gulf Coast Aquifer	51,487	51,487	51,487	51,487	51,487	51,487	51,487
Bluebonnet GCD	Walker	Gulf Coast Aquifer	42,504	42,504	42,504	42,504	42,504	42,504	42,504
Bluebonnet GCD	Waller	Gulf Coast Aquifer	55,533	55,533	55,533	55,533	55,533	55,533	55,533
Bluebonnet GCD Total		**Gulf Coast Aquifer System**	**196,084**	**196,084**	**196,084**	**196,084**	**196,084**	**196,084**	**196,084**
Brazoria County	Brazoria	Gulf Coast Aquifer	54,955	54,930	54,908	54,895	54,888	54,886	54,886
Brazoria County GCD Total		**Gulf Coast Aquifer System**	**54,955**	**54,930**	**54,908**	**54,895**	**54,888**	**54,886**	**54,886**
Lone Star GCD	Montgomery	Gulf Coast Aquifer	96,965	96,954	96,945	96,930	96,916	96,873	96,873
Lone Star GCD Total		**Gulf Coast Aquifer System**	**96,965**	**96,954**	**96,945**	**96,930**	**96,916**	**96,873**	**96,873**
Lower Trinity GCD	Polk	Gulf Coast Aquifer	40,746	40,746	40,746	40,746	40,746	40,746	40,746
Lower Trinity GCD	San Jacinto	Gulf Coast Aquifer	35,037	35,048	35,057	35,071	35,086	35,128	35,128
Lower Trinity GCD Total		**Gulf Coast Aquifer System**	**75,783**	**75,794**	**75,803**	**75,817**	**75,832**	**75,874**	**75,874**

TABLE 1 (CONTINUED). MODELED AVAILABLE GROUNDWATER FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES EXCLUDE SUBSIDENCE DISTRICTS. VALUES ARE IN ACRE-FEET PER YEAR.

Groundwater Conservation District	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Southeast Texas	Hardin	Gulf Coast Aquifer System	37,721	37,721	37,721	37,721	37,721	37,721	37,721
Southeast Texas	Jasper	Gulf Coast Aquifer System	73,365	73,365	73,365	73,365	73,365	73,365	73,365
Southeast Texas	Newton	Gulf Coast Aquifer System	37,508	37,508	37,508	37,508	37,508	37,508	37,508
Southeast Texas	Tyler	Gulf Coast Aquifer System	34,390	34,390	34,390	34,390	34,390	34,390	34,390
Southeast Texas GCD Total		**Gulf Coast Aquifer System**	**182,984**	**182,984**	**182,984**	**182,984**	**182,984**	**182,984**	**182,984**
All District Total		**Gulf Coast Aquifer System**	**606,771**	**606,746**	**606,724**	**606,710**	**606,704**	**606,701**	**606,701**
No District-County	Chambers	Gulf Coast Aquifer System	22,321	22,332	22,343	22,352	22,353	22,355	22,355
No District-County	Jefferson	Gulf Coast Aquifer System	15,425	15,425	15,425	15,425	15,425	15,425	15,425
No District-County	Liberty	Gulf Coast Aquifer System	71,661	71,660	71,658	71,659	71,660	71,660	71,660
No District-County	Orange	Gulf Coast Aquifer System	25,205	25,205	25,205	25,205	25,205	25,205	25,205
No District-County	Washington	Gulf Coast Aquifer System	40,398	40,398	40,398	40,398	40,398	40,398	40,398
No District Total		**Gulf Coast Aquifer System**	**175,010**	**175,020**	**175,029**	**175,039**	**175,041**	**175,043**	**175,043**
GMA 14	**Total**	**Gulf Coast Aquifer System**	**781,781**	**781,766**	**781,753**	**781,749**	**781,745**	**781,744**	**781,744**

TABLE 2. GROUNDWATER PUMPAGE PROJECTIONS FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14 FOR SUBSIDENCE DISTRICT COUNTIES FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

Subsidence District	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Fort Bend	Fort Bend	Gulf Coast Aquifer System	129,845	103,942	119,557	135,158	151,334	169,347	169,347

Fort Bend Subsidence District Total		**Gulf Coast Aquifer System**	**129,845**	**103,942**	**119,557**	**135,158**	**151,334**	**169,347**	**169,347**
Harris-Galveston	Galveston	Gulf Coast Aquifer System	6,032	6,788	7,435	8,060	8,646	9,181	9,181
Harris-Galveston	Harris	Gulf Coast Aquifer System	409,477	290,583	198,518	211,370	220,049	228,828	228,828
Harris-Galveston Subsidence District Total		**Gulf Coast Aquifer System**	**415,509**	**297,371**	**205,953**	**219,430**	**228,695**	**238,009**	**238,009**
GMA 14	**Total**	**Gulf Coast Aquifer System**	**545,354**	**401,313**	**325,510**	**354,588**	**380,029**	**407,356**	**407,356**

TABLE 3. MODELED AVAILABLE GROUNDWATER AND PROJECTED GROUNDWATER PUMPAGE VALUES (*IN ITALICS*) BY DECADE FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Austin	H	Brazos-Colorado	Gulf Coast	20,652	20,652	20,652	20,652	20,652	20,652
Austin	H	Brazos	Gulf Coast	25,243	25,243	25,243	25,243	25,243	25,243
Austin	H	Colorado	Gulf Coast	665	665	665	665	665	665
Brazoria	H	Brazos-Colorado	Gulf Coast	10,049	9,846	9,582	9,324	9,072	9,072
Brazoria	H	Brazos	Gulf Coast	3,641	3,578	3,510	3,454	3,407	3,407
Brazoria	H	San Jacinto-Brazos	Gulf Coast	41,240	41,483	41,803	42,110	42,408	42,408
Chambers	H	Neches-Trinity	Gulf Coast	9,968	9,968	9,968	9,968	9,968	9,968
Chambers	H	Trinity-San Jacinto	Gulf Coast	2,142	2,152	2,161	2,163	2,164	2,164
Chambers	H	Trinity	Gulf Coast	10,222	10,222	10,222	10,222	10,222	10,222
Fort Bend	*H*	*Brazos-Colorado*	*Gulf Coast*	*7,891*	*9,586*	*12,056*	*15,660*	*20,927*	*20,927*
Fort Bend	*H*	*Brazos*	*Gulf Coast*	*37,845*	*46,525*	*55,134*	*64,011*	*73,732*	*73,732*

Fort Bend	*H*	*San Jacinto-Brazos*	*Gulf Coast*	*40,844*	*45,913*	*50,471*	*54,218*	*57,258*	*57,258*
Fort Bend	*H*	*San Jacinto*	*Gulf Coast*	*17,362*	*17,532*	*17,497*	*17,445*	*17,430*	*17,430*
Galveston	*H*	*Neches-Trinity*	*Gulf Coast*	*0*[1]	*0*	*0*	*0*	*0*	*0*
Galveston	*H*	*San Jacinto-Brazos*	*Gulf Coast*	*6,788*	*7,435*	*8,060*	*8,646*	*9,181*	*9,181*
Grimes	G	Brazos	Gulf Coast	31,117	31,117	31,117	31,117	31,117	31,117
Grimes	G	San Jacinto	Gulf Coast	19,087	19,087	19,087	19,087	19,087	19,087
Grimes	G	Trinity	Gulf Coast	1,283	1,283	1,283	1,283	1,283	1,283
Hardin	I	Neches	Gulf Coast	37,571	37,571	37,571	37,571	37,571	37,571
Hardin	I	Trinity	Gulf Coast	150	150	150	150	150	150
Harris	*H*	*San Jacinto-Brazos*	*Gulf Coast*	*6,956*	*7,617*	*8,282*	*8,819*	*9,463*	*9,463*
Harris	*H*	*San Jacinto*	*Gulf Coast*	*280,676*	*187,992*	*199,990*	*208,033*	*216,067*	*216,067*

TABLE 3 (CONTINUED). MODELED AVAILABLE GROUNDWATER AND PROJECTED GROUNDWATER PUMPAGE VALUES (*IN ITALICS*) BY DECADE FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Harris	*H*	*Trinity-San Jacinto*	*Gulf Coast*	*2,952*	*2,909*	*3,097*	*3,198*	*3,297*	*3,297*
Jasper	I	Neches	Gulf Coast	40,821	40,821	40,821	40,821	40,821	40,821
Jasper	I	Sabine	Gulf Coast	32,544	32,544	32,544	32,544	32,544	32,544
Jefferson	I	Neches-Trinity	Gulf Coast	13,571	13,571	13,571	13,571	13,571	13,571
Jefferson	I	Neches	Gulf Coast	1,853	1,853	1,853	1,853	1,853	1,853

[1] A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

Liberty	H	Neches-Trinity	Gulf Coast	2,053	2,053	2,053	2,053	2,053	2,053
Liberty	H	Neches	Gulf Coast	8,732	8,732	8,732	8,732	8,732	8,732
Liberty	H	San Jacinto	Gulf Coast	11,299	11,299	11,299	11,299	11,299	11,299
Liberty	H	Trinity-San Jacinto	Gulf Coast	10,544	10,543	10,543	10,544	10,544	10,544
Liberty	H	Trinity	Gulf Coast	39,032	39,031	39,032	39,032	39,032	39,032
Montgomery	H	San Jacinto	Gulf Coast	96,954	96,945	96,930	96,916	96,873	96,873
Newton	I	Neches	Gulf Coast	199	199	199	199	199	199
Newton	I	Sabine	Gulf Coast	37,309	37,309	37,309	37,309	37,309	37,309
Orange	I	Neches-Trinity	Gulf Coast	280	280	280	280	280	280
Orange	I	Neches	Gulf Coast	6,266	6,266	6,266	6,266	6,266	6,266
Orange	I	Sabine	Gulf Coast	18,659	18,659	18,659	18,659	18,659	18,659
Polk	I	Neches	Gulf Coast	16,765	16,765	16,765	16,765	16,765	16,765
Polk	H	Trinity	Gulf Coast	23,981	23,981	23,981	23,981	23,981	23,981
San Jacinto	H	San Jacinto	Gulf Coast	18,443	18,452	18,467	18,482	18,524	18,524
San Jacinto	H	Trinity	Gulf Coast	16,604	16,604	16,604	16,604	16,604	16,604
Tyler	I	Neches	Gulf Coast	34,390	34,390	34,390	34,390	34,390	34,390
Walker	H	San Jacinto	Gulf Coast	26,622	26,622	26,622	26,622	26,622	26,622
Walker	H	Trinity	Gulf Coast	15,881	15,881	15,881	15,881	15,881	15,881

TABLE 3 (CONTINUED). MODELED AVAILABLE GROUNDWATER AND PROJECTED GROUNDWATER PUMPAGE VALUES (*IN ITALICS*) BY DECADE FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Waller	H	Brazos	Gulf Coast	23,397	23,397	23,397	23,397	23,397	23,397
Waller	H	San Jacinto	Gulf Coast	32,136	32,136	32,136	32,136	32,136	32,136
Washington	G	Brazos	Gulf Coast	40,164	40,164	40,164	40,164	40,164	40,164
Washington	G	Colorado	Gulf Coast	233	233	233	233	233	233
GMA 14 Total			**Gulf Coast Aquifer System**	**1,183,076**	**1,107,256**	**1,136,332**	**1,161,772**	**1,189,096**	**1,189,096**

LIMITATIONS:

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

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

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

Because the application of the groundwater model was designed to address regional scale questions, the results are most effective on a regional scale. The TWDB makes no warranties or representations relating to the actual conditions of any aquifer at a particular location or at a particular time.

It is important for groundwater conservation districts to monitor groundwater pumping and groundwater levels in the aquifer. Because of the limitations of the groundwater model and the assumptions in this analysis, it is important that the groundwater conservation districts work with the TWDB to refine this analysis in the future given the reality of how the aquifer responds to the actual amount and location of pumping now and in the future. Historic precipitation patterns also need to be placed in context as future climatic conditions, such as dry and wet year precipitation patterns, may differ and affect groundwater flow conditions.

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APPENDIX A

Total Pumping Associated with Modeled Available Groundwater Run for the Gulf Coast Aquifer System Split by Model Layers for Groundwater Management Area 14

TABLE A.1. MODELED AVAILABLE GROUNDWATER FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14 SPLIT BY MODEL LAYER AND SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080

A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE

Bluebonnet GCD	Austin	Chicot aquifer	2,894	2,894	2,894	2,894	2,894	2,894	2,894
Bluebonnet GCD	Austin	Evangeline aquifer	41,695	41,695	41,695	41,695	41,695	41,695	41,695
Bluebonnet GCD	Austin	Burkeville confining	0[2]	0	0	0	0	0	0
Bluebonnet GCD	Austin	Jasper aquifer	1,972	1,972	1,972	1,972	1,972	1,972	1,972
Bluebonnet GCD	Grimes	Chicot aquifer	0	0	0	0	0	0	0
Bluebonnet GCD	Grimes	Evangeline aquifer	15,917	15,917	15,917	15,917	15,917	15,917	15,917
Bluebonnet GCD	Grimes	Burkeville confining	0	0	0	0	0	0	0
Bluebonnet GCD	Grimes	Jasper aquifer	35,570	35,570	35,570	35,570	35,570	35,570	35,570
Bluebonnet GCD	Walker	Chicot aquifer	0	0	0	0	0	0	0
Bluebonnet GCD	Walker	Evangeline aquifer	3,143	3,143	3,143	3,143	3,143	3,143	3,143
Bluebonnet GCD	Walker	Burkeville confining	0	0	0	0	0	0	0
Bluebonnet GCD	Walker	Jasper aquifer	39,361	39,361	39,361	39,361	39,361	39,361	39,361
Bluebonnet GCD	Waller	Chicot aquifer	791	791	791	791	791	791	791
Bluebonnet GCD	Waller	Evangeline aquifer	54,413	54,413	54,413	54,413	54,413	54,413	54,413
Bluebonnet GCD	Waller	Burkeville confining	0	0	0	0	0	0	0
Bluebonnet GCD	Waller	Jasper aquifer	329	329	329	329	329	329	329
Bluebonnet GCD Total		**Gulf Coast Aquifer System**	**196,085**	**196,085**	**196,085**	**196,085**	**196,085**	**196,085**	**196,085**
Brazoria County	Brazoria	Chicot aquifer	43,086	43,060	43,040	43,027	43,021	43,018	43,018
Brazoria County	Brazoria	Evangeline aquifer	11,869	11,870	11,868	11,868	11,868	11,868	11,868

A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE
[2]
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TABLE A.1. (CONTINUED)

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Brazoria County GCD Total		**Gulf Coast Aquifer System**	**54,955**	**54,930**	**54,908**	**54,895**	**54,889**	**54,886**	**54,886**
Lone Star GCD	Montgomery	Chicot aquifer	20,868	22,117	22,136	23,202	22,878	21,030	21,030
Lone Star GCD	Montgomery	Evangeline aquifer	41,172	41,160	41,397	40,200	40,269	39,815	39,815
Lone Star GCD	Montgomery	Burkeville confining	0[2]	0	0	0	0	0	0
Lone Star GCD	Montgomery	Jasper aquifer	34,925	33,676	33,412	33,527	33,769	36,028	36,028
Lone Star GCD Total		**Gulf Coast Aquifer System**	**96,965**	**96,953**	**96,945**	**96,929**	**96,916**	**96,873**	**96,873**
Lower Trinity GCD	Polk	Chicot aquifer	0	0	0	0	0	0	0
Lower Trinity GCD	Polk	Evangeline aquifer	9,486	9,486	9,486	9,486	9,486	9,486	9,486
Lower Trinity GCD	Polk	Burkeville confining	828	828	828	828	828	828	828
Lower Trinity GCD	Polk	Jasper aquifer	30,432	30,432	30,432	30,432	30,432	30,432	30,432
Lower Trinity GCD	San Jacinto	Chicot aquifer	0	0	0	0	0	0	0
Lower Trinity GCD	San Jacinto	Evangeline aquifer	15,110	15,116	15,120	15,127	15,135	15,156	15,156
Lower Trinity GCD	San Jacinto	Burkeville confining	2,762	2,762	2,762	2,762	2,762	2,762	2,762
Lower Trinity GCD	San Jacinto	Jasper aquifer	17,164	17,170	17,174	17,182	17,189	17,210	17,210

[2] A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE

Lower Trinity GCD Total		**Gulf Coast Aquifer System**	**75,782**	**75,794**	**75,802**	**75,817**	**75,832**	**75,874**	**75,874**
Southeast Texas	Hardin	Chicot aquifer	1,492	1,492	1,492	1,492	1,492	1,492	1,492
Southeast Texas	Hardin	Evangeline aquifer	36,229	36,229	36,229	36,229	36,229	36,229	36,229
Southeast Texas	Hardin	Burkeville confining	0	0	0	0	0	0	0
Southeast Texas	Hardin	Jasper aquifer	0	0	0	0	0	0	0
Southeast Texas	Jasper	Chicot aquifer	10,858	10,858	10,858	10,858	10,858	10,858	10,858
Southeast Texas	Jasper	Evangeline aquifer	43,842	43,842	43,842	43,842	43,842	43,842	43,842
Southeast Texas	Jasper	Burkeville confining	8	8	8	8	8	8	8

A.1 (CONTINUED)

GCD	**County**	**Aquifer**	**2020**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**

A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE

Southeast Texas	Jasper	Jasper aquifer	18,657	18,657	18,657	18,657	18,657	18,657	18,657
Southeast Texas	Newton	Chicot aquifer	547	547	547	547	547	547	547
Southeast Texas	Newton	Evangeline aquifer	23,162	23,162	23,162	23,162	23,162	23,162	23,162
Southeast Texas	Newton	Burkeville confining	0[4]	0	0	0	0	0	0
Southeast Texas	Newton	Jasper aquifer	13,800	13,800	13,800	13,800	13,800	13,800	13,800
Southeast Texas	Tyler	Chicot aquifer	0	0	0	0	0	0	0
Southeast Texas	Tyler	Evangeline aquifer	18,519	18,519	18,519	18,519	18,519	18,519	18,519
Southeast Texas	Tyler	Burkeville confining	0	0	0	0	0	0	0
Southeast Texas	Tyler	Jasper aquifer	15,871	15,871	15,871	15,871	15,871	15,871	15,871
Southeast Texas GCD Total		**Gulf Coast Aquifer System**	**182,985**	**182,985**	**182,985**	**182,985**	**182,985**	**182,985**	**182,985**
District Total		**Gulf Coast Aquifer System**	**606,772**	**606,747**	**606,725**	**606,711**	**606,707**	**606,703**	**606,703**
No District-County	Chambers	Chicot aquifer	21,935	21,946	21,957	21,966	21,967	21,968	21,968
No District-County	Chambers	Evangeline aquifer	386	386	386	386	386	386	386
No District-County	Jefferson	Chicot aquifer	15,214	15,214	15,214	15,214	15,214	15,214	15,214
No District-County	Jefferson	Evangeline aquifer	211	211	211	211	211	211	211
No District-County	Liberty	Chicot aquifer	18,594	18,594	18,593	18,594	18,594	18,594	18,594
No District-County	Liberty	Evangeline aquifer	51,924	51,923	51,922	51,922	51,923	51,924	51,924
No District-County	Liberty	Burkeville confining	243	243	243	243	243	243	243
No District-County	Liberty	Jasper aquifer	900	900	900	900	900	900	900
No District-County	Orange	Chicot aquifer	22,854	22,854	22,854	22,854	22,854	22,854	22,854

A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE

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TABLE A.1 (CONTINUED)

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
No District-County	Orange	Evangeline aquifer	2,351	2,351	2,351	2,351	2,351	2,351	2,351
No District-County	Washington	Evangeline aquifer	11,231	11,231	11,231	11,231	11,231	11,231	11,231
No District-County	Washington	Burkeville confining	421	421	421	421	421	421	421
No District-County	Washington	Jasper aquifer	28,746	28,746	28,746	28,746	28,746	28,746	28,746
No District Total		**Gulf Coast Aquifer System**	**175,010**	**175,020**	**175,029**	**175,039**	**175,041**	**175,043**	**175,043**
GMA 14	**Total**	**Gulf Coast Aquifer System**	**781,782**	**781,767**	**781,754**	**781,750**	**781,748**	**781,746**	**781,746**

A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE

A. GROUNDWATER PUMPAGE PROJECTIONS FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14 SPLIT BY MODEL LAYER FOR SUBSIDENCE DISTRICT COUNTIES FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

Subsidence District	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Fort Bend	Fort Bend	Chicot aquifer	58,273	52,870	62,897	73,277	84,381	97,154	97,154
Fort Bend	Fort Bend	Evangeline aquifer	71,572	51,072	56,659	61,881	66,953	72,193	72,193
Fort Bend	Fort Bend	Burkeville confining	0[5]	0	0	0	0	0	0
Fort Bend	Fort Bend	Jasper aquifer	0	0	0	0	0	0	0
Fort Bend Subsidence District Total		**Gulf Coast Aquifer System**	**129,845**	**103,942**	**119,556**	**135,158**	**151,334**	**169,347**	**169,347**
Harris-Galveston	Galveston	Chicot aquifer	5,817	6,535	7,151	7,746	8,301	8,807	8,807
Harris-Galveston	Galveston	Evangeline aquifer	215	254	284	314	346	373	373
Harris-Galveston	Harris	Chicot aquifer	136,644	108,688	80,496	86,816	90,263	93,781	93,781
Harris-Galveston	Harris	Evangeline aquifer	264,622	176,464	114,859	121,185	126,268	131,389	131,389
Harris-Galveston	Harris	Burkeville confining	0	0	0	0	0	0	0
Harris-Galveston	Harris	Jasper aquifer	8,212	5,432	3,164	3,368	3,519	3,658	3,658
Harris-Galveston Subsidence District Total		**Gulf Coast Aquifer System**	**415,510**	**297,373**	**205,954**	**219,429**	**228,697**	**238,008**	**238,008**

[5] A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE

GMA 14	**Total**	**Gulf Coast Aquifer System**	**545,355**	**401,315**	**325,510**	**354,587**	**380,031**	**407,355**	**407,355**

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A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE A.3. MODELED AVAILABLE GROUNDWATER AND PROJECTED GROUNDWATER PUMPAGE VALUES (*IN ITALICS*) BY DECADE FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14 SPLIT BY MODEL LAYER. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), RIVER BASIN, AND AQUIFER.

County	RWPA	River Basin	Gulf Coast Aquifer System	2030	2040	2050	2060	2070	2080
Austin	H	Brazos-Colorado	Chicot aquifer	1,432	1,432	1,432	1,432	1,432	1,432
Austin	H	Brazos-Colorado	Evangeline aquifer	19,027	19,027	19,027	19,027	19,027	19,027
Austin	H	Brazos-Colorado	Burkeville confining unit	0[6]	0	0	0	0	0
Austin	H	Brazos-Colorado	Jasper aquifer	192	192	192	192	192	192
Austin	H	Brazos	Chicot aquifer	1,462	1,462	1,462	1,462	1,462	1,462
Austin	H	Brazos	Evangeline aquifer	22,217	22,217	22,217	22,217	22,217	22,217
Austin	H	Brazos	Burkeville confining unit	0	0	0	0	0	0
Austin	H	Brazos	Jasper aquifer	1,565	1,565	1,565	1,565	1,565	1,565
Austin	H	Colorado	Chicot aquifer	0	0	0	0	0	0
Austin	H	Colorado	Evangeline aquifer	450	450	450	450	450	450
Austin	H	Colorado	Burkeville confining unit	0	0	0	0	0	0
Austin	H	Colorado	Jasper aquifer	214	214	214	214	214	214
Brazoria	H	Brazos-Colorado	Chicot aquifer	10,044	9,842	9,577	9,319	9,066	9,066
Brazoria	H	Brazos-Colorado	Evangeline aquifer	4	5	5	5	5	5
Brazoria	H	Brazos	Chicot aquifer	3,641	3,578	3,510	3,454	3,407	3,407
Brazoria	H	Brazos	Evangeline aquifer	0	0	0	0	0	0
Brazoria	H	San Jacinto-Brazos	Chicot aquifer	29,375	29,620	29,940	30,248	30,545	30,545
Brazoria	H	San Jacinto-Brazos	Evangeline aquifer	11,865	11,863	11,863	11,863	11,863	11,863

[6] A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE A.3 (CONTINUED)

Chambers	H	Neches-Trinity	Chicot aquifer	9,968	9,968	9,968	9,968	9,968	9,968
Chambers	H	Neches-Trinity	Evangeline aquifer	0	0	0	0	0	0
Chambers	H	Trinity-San Jacinto	Chicot aquifer	1,756	1,766	1,775	1,777	1,778	1,778
Chambers	H	Trinity-San Jacinto	Evangeline aquifer	386	386	386	386	386	386
Chambers	H	Trinity	Chicot aquifer	10,222	10,222	10,222	10,222	10,222	10,222

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County	RWPA	River Basin	Gulf Coast Aquifer System	2030	2040	2050	2060	2070	2080
Chambers	H	Trinity	Evangeline aquifer	*0*[7]	*0*	*0*	*0*	*0*	*0*
Fort Bend	*H*	*Brazos-Colorado*	*Chicot aquifer*	*7,162*	*8,504*	*10,466*	*13,339*	*17,547*	*17,547*
Fort Bend	*H*	*Brazos-Colorado*	*Evangeline aquifer*	*729*	*1,082*	*1,590*	*2,321*	*3,380*	*3,380*
Fort Bend	*H*	*Brazos-Colorado*	*Burkeville confining unit*	*0*[i]	*0*	*0*	*0*	*0*	*0*
Fort Bend	*H*	*Brazos-Colorado*	*Jasper aquifer*	*0*	*0*	*0*	*0*	*0*	*0*
Fort Bend	*H*	*Brazos*	*Chicot aquifer*	*24,308*	*30,446*	*36,552*	*42,837*	*49,691*	*49,691*
Fort Bend	*H*	*Brazos*	*Evangeline aquifer*	*13,537*	*16,080*	*18,582*	*21,174*	*24,041*	*24,041*
Fort Bend	*H*	*Brazos*	*Burkeville confining unit*	*0*	*0*	*0*	*0*	*0*	*0*
Fort Bend	*H*	*Brazos*	*Jasper aquifer*	*0*	*0*	*0*	*0*	*0*	*0*
Fort Bend	*H*	*San Jacinto-Brazos*	*Chicot aquifer*	*15,320*	*17,795*	*20,101*	*22,054*	*23,759*	*23,759*
Fort Bend	*H*	*San Jacinto-Brazos*	*Evangeline aquifer*	*25,524*	*28,118*	*30,370*	*32,165*	*33,499*	*33,499*
Fort Bend	*H*	*San Jacinto-Brazos*	*Burkeville confining unit*	*0*	*0*	*0*	*0*	*0*	*0*
Fort Bend	*H*	*San Jacinto-Brazos*	*Jasper aquifer*	*0*	*0*	*0*	*0*	*0*	*0*

A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE A.3 (CONTINUED)

Fort Bend	*H*	*San Jacinto*	*Chicot aquifer*	*6,081*	*6,153*	*6,157*	*6,151*	*6,156*	*6,156*
Fort Bend	*H*	*San Jacinto*	*Evangeline aquifer*	*11,282*	*11,379*	*11,340*	*11,293*	*11,273*	*11,273*
Fort Bend	*H*	*San Jacinto*	*Burkeville confining unit*	*0*	*0*	*0*	*0*	*0*	*0*
Fort Bend	*H*	*San Jacinto*	*Jasper aquifer*	*0*	*0*	*0*	*0*	*0*	*0*
Galveston	*H*	*Neches-Trinity*	*Chicot aquifer*	*0*	*0*	*0*	*0*	*0*	*0*
Galveston	*H*	*Neches-Trinity*	*Evangeline aquifer*	*0*	*0*	*0*	*0*	*0*	*0*
Galveston	*H*	*San Jacinto-Brazos*	*Chicot aquifer*	*6,535*	*7,151*	*7,746*	*8,301*	*8,807*	*8,807*
Galveston	*H*	*San Jacinto-Brazos*	*Evangeline aquifer*	*254*	*284*	*314*	*346*	*373*	*373*
Grimes	G	Brazos	Chicot aquifer	0	0	0	0	0	0
Grimes	G	Brazos	Evangeline aquifer	8,670	8,670	8,670	8,670	8,670	8,670
Grimes	G	Brazos	Burkeville confining unit	0	0	0	0	0	0
Grimes	G	Brazos	Jasper aquifer	22,446	22,446	22,446	22,446	22,446	22,446

[7]

County	RWPA	River Basin	Gulf Coast Aquifer System	2030	2040	2050	2060	2070	2080
Grimes	G	San Jacinto	Chicot aquifer	0[8]	0	0	0	0	0
Grimes	G	San Jacinto	Evangeline aquifer	7,247	7,247	7,247	7,247	7,247	7,247
Grimes	G	San Jacinto	Burkeville confining unit	0	0	0	0	0	0
Grimes	G	San Jacinto	Jasper aquifer	11,840	11,840	11,840	11,840	11,840	11,840
Grimes	G	Trinity	Jasper aquifer	1,283	1,283	1,283	1,283	1,283	1,283
Hardin	I	Neches	Chicot aquifer	1,492	1,492	1,492	1,492	1,492	1,492
Hardin	I	Neches	Evangeline aquifer	36,079	36,079	36,079	36,079	36,079	36,079

A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE A.3 (CONTINUED)

Hardin	I	Neches	Burkeville confining unit	0	0	0	0	0	0
Hardin	I	Neches	Jasper aquifer	0	0	0	0	0	0
Hardin	I	Trinity	Chicot aquifer	0	0	0	0	0	0
Hardin	I	Trinity	Evangeline aquifer	150	150	150	150	150	150
Hardin	I	Trinity	Burkeville confining unit	0	0	0	0	0	0
Hardin	I	Trinity	Jasper aquifer	0	0	0	0	0	0
Harris	*H*	*San Jacinto-Brazos*	*Chicot aquifer*	*4,859*	*5,406*	*5,959*	*6,383*	*6,906*	*6,906*
Harris	*H*	*San Jacinto-Brazos*	*Evangeline aquifer*	*2,097*	*2,212*	*2,323*	*2,436*	*2,557*	*2,557*
Harris	*H*	*San Jacinto*	*Chicot aquifer*	*101,266*	*72,533*	*78,138*	*81,077*	*83,988*	*83,988*
Harris	*H*	*San Jacinto*	*Evangeline aquifer*	*173,978*	*112,296*	*118,483*	*123,437*	*128,422*	*128,422*
Harris	*H*	*San Jacinto*	*Burkeville confining unit*	*0*	*0*	*0*	*0*	*0*	*0*
Harris	*H*	*San Jacinto*	*Jasper aquifer*	*5,432*	*3,164*	*3,368*	*3,519*	*3,658*	*3,658*
Harris	*H*	*Trinity-San Jacinto*	*Chicot aquifer*	*2,563*	*2,557*	*2,718*	*2,803*	*2,887*	*2,887*
Harris	*H*	*Trinity-San Jacinto*	*Evangeline aquifer*	*389*	*351*	*379*	*395*	*410*	*410*
Harris	*H*	*Trinity-San Jacinto*	*B Burkeville confining unit*	*0*	*0*	*0*	*0*	*0*	*0*
Harris	*H*	*Trinity-San Jacinto*	*Jasper aquifer*	*0*	*0*	*0*	*0*	*0*	*0*
Jasper	I	Neches	Chicot aquifer	7,740	7,740	7,740	7,740	7,740	7,740
Jasper	I	Neches	Evangeline aquifer	18,534	18,534	18,534	18,534	18,534	18,534

[8]

County	RWPA	River Basin	Gulf Coast Aquifer System	2030	2040	2050	2060	2070	2080
Jasper	I	Neches	Burkeville confining unit	0[9]	0	0	0	0	0

[9] A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE A.3 (CONTINUED)

Jasper	I	Neches	Jasper aquifer	14,546	14,546	14,546	14,546	14,546	14,546
Jasper	I	Sabine	Chicot aquifer	3,118	3,118	3,118	3,118	3,118	3,118
Jasper	I	Sabine	Evangeline aquifer	25,308	25,308	25,308	25,308	25,308	25,308
Jasper	I	Sabine	Burkeville confining unit	8	8	8	8	8	8
Jasper	I	Sabine	Jasper aquifer	4,111	4,111	4,111	4,111	4,111	4,111
Jefferson	I	Neches-Trinity	Chicot aquifer	13,571	13,571	13,571	13,571	13,571	13,571
Jefferson	I	Neches-Trinity	Evangeline aquifer	0	0	0	0	0	0
Jefferson	I	Neches	Chicot aquifer	1,643	1,643	1,643	1,643	1,643	1,643
Jefferson	I	Neches	Evangeline aquifer	211	211	211	211	211	211
Liberty	H	Neches-Trinity	Chicot aquifer	1,397	1,397	1,397	1,397	1,397	1,397
Liberty	H	Neches-Trinity	Evangeline aquifer	656	656	656	656	656	656
Liberty	H	Neches	Chicot aquifer	2,860	2,860	2,860	2,860	2,860	2,860
Liberty	H	Neches	Evangeline aquifer	5,872	5,872	5,872	5,872	5,872	5,872
Liberty	H	Neches	Burkeville confining unit	0	0	0	0	0	0
Liberty	H	Neches	Jasper aquifer	0	0	0	0	0	0
Liberty	H	San Jacinto	Chicot aquifer	973	973	973	973	973	973
Liberty	H	San Jacinto	Evangeline aquifer	9,183	9,183	9,183	9,183	9,184	9,184
Liberty	H	San Jacinto	Burkeville confining unit	243	243	243	243	243	243
Liberty	H	San Jacinto	Jasper aquifer	900	900	900	900	900	900
Liberty	H	Trinity-San Jacinto	Chicot aquifer	3,330	3,329	3,330	3,330	3,330	3,330

A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE A.3 (CONTINUED)

Liberty	H	Trinity-San Jacinto	Evangeline aquifer	7,214	7,213	7,214	7,214	7,215	7,215
Liberty	H	Trinity-San Jacinto	Burkeville confining unit	0	0	0	0	0	0
Liberty	H	Trinity-San Jacinto	Jasper aquifer	0	0	0	0	0	0
Liberty	H	Trinity	Chicot aquifer	10,034	10,034	10,034	10,034	10,034	10,034

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County	RWPA	River Basin	Gulf Coast Aquifer System	2030	2040	2050	2060	2070	2080
Liberty	H	Trinity	Evangeline aquifer	28,997	28,997	28,997	28,997	28,997	28,997
Liberty	H	Trinity	Burkeville confining unit	0	0	0	0	0	0
Liberty	H	Trinity	Jasper aquifer	0	0	0	0	0	0
Montgomery	H	San Jacinto	Chicot aquifer	22,117	22,136	23,202	22,878	21,030	21,030
Montgomery	H	San Jacinto	Evangeline aquifer	41,160	41,397	40,200	40,269	39,815	39,815
Montgomery	H	San Jacinto	Burkeville confining unit	0	0	0	0	0	0
Montgomery	H	San Jacinto	Jasper aquifer	33,676	33,412	33,527	33,769	36,028	36,028
Newton	I	Neches	Jasper aquifer	199	199	199	199	199	199
Newton	I	Sabine	Chicot aquifer	547	547	547	547	547	547
Newton	I	Sabine	Evangeline aquifer	23,162	23,162	23,162	23,162	23,162	23,162
Newton	I	Sabine	Burkeville confining unit	0	0	0	0	0	0
Newton	I	Sabine	Jasper aquifer	13,600	13,600	13,600	13,600	13,600	13,600
Orange	I	Neches-Trinity	Chicot aquifer	280	280	280	280	280	280
Orange	I	Neches-Trinity	Evangeline aquifer	0[10]	0	0	0	0	0
Orange	I	Neches	Chicot aquifer	4,039	4,039	4,039	4,039	4,039	4,039

A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE A.3 (CONTINUED)

Orange	I	Neches	Evangeline aquifer	2,228	2,228	2,228	2,228	2,228	2,228
Orange	I	Sabine	Chicot aquifer	18,535	18,535	18,535	18,535	18,535	18,535
Orange	I	Sabine	Evangeline aquifer	124	124	124	124	124	124
Polk	I	Neches	Chicot aquifer	0	0	0	0	0	0
Polk	I	Neches	Evangeline aquifer	4,247	4,247	4,247	4,247	4,247	4,247
Polk	I	Neches	Burkeville confining unit	142	142	142	142	142	142
Polk	I	Neches	Jasper aquifer	12,376	12,376	12,376	12,376	12,376	12,376
Polk	H	Trinity	Chicot aquifer	0	0	0	0	0	0
Polk	H	Trinity	Evangeline aquifer	5,239	5,239	5,239	5,239	5,239	5,239
Polk	H	Trinity	Burkeville confining unit	687	687	687	687	687	687

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County	RWPA	River Basin	Gulf Coast Aquifer System	2030	2040	2050	2060	2070	2080
Polk	H	Trinity	Jasper aquifer	18,055	18,055	18,055	18,055	18,055	18,055
San Jacinto	H	San Jacinto	Chicot aquifer	0	0	0	0	0	0
San Jacinto	H	San Jacinto	Evangeline aquifer	10,472	10,476	10,484	10,491	10,512	10,512
San Jacinto	H	San Jacinto	Burkeville confining unit	0	0	0	0	0	0
San Jacinto	H	San Jacinto	Jasper aquifer	7,972	7,976	7,983	7,991	8,012	8,012
San Jacinto	H	Trinity	Chicot aquifer	0	0	0	0	0	0
San Jacinto	H	Trinity	Evangeline aquifer	4,644	4,644	4,644	4,644	4,644	4,644
San Jacinto	H	Trinity	Burkeville confining unit	2,762	2,762	2,762	2,762	2,762	2,762
San Jacinto	H	Trinity	Jasper aquifer	9,198	9,198	9,198	9,198	9,198	9,198

A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE A.3 (CONTINUED)

Tyler	I	Neches	Chicot aquifer	0	0	0	0	0	0
Tyler	I	Neches	Evangeline aquifer	18,519	18,519	18,519	18,519	18,519	18,519
Tyler	I	Neches	Burkeville confining unit	0	0	0	0	0	0
Tyler	I	Neches	Jasper aquifer	15,871	15,871	15,871	15,871	15,871	15,871
Walker	H	San Jacinto	Chicot aquifer	0	0	0	0	0	0
Walker	H	San Jacinto	Evangeline aquifer	3,143	3,143	3,143	3,143	3,143	3,143
Walker	H	San Jacinto	Burkeville confining unit	0[11]	0	0	0	0	0
Walker	H	San Jacinto	Jasper aquifer	23,479	23,479	23,479	23,479	23,479	23,479
Walker	H	Trinity	Jasper aquifer	15,881	15,881	15,881	15,881	15,881	15,881
Waller	H	Brazos	Chicot aquifer	632	632	632	632	632	632
Waller	H	Brazos	Evangeline aquifer	22,437	22,437	22,437	22,437	22,437	22,437
Waller	H	Brazos	Burkeville confining unit	0	0	0	0	0	0
Waller	H	Brazos	Jasper aquifer	329	329	329	329	329	329
Waller	H	San Jacinto	Chicot aquifer	159	159	159	159	159	159

[11] A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

County	RWPA	River Basin	Gulf Coast Aquifer	2030	2040	2050	2060	2070	2080
Waller	H	San Jacinto	Evangeline aquifer	31,976	31,976	31,976	31,976	31,976	31,976
Waller	H	San Jacinto	Burkeville confining unit	0[3]	0	0	0	0	0
Waller	H	San Jacinto	Jasper aquifer	0	0	0	0	0	0
Washington	G	Brazos	Evangeline aquifer	11,231	11,231	11,231	11,231	11,231	11,231
Washington	G	Brazos	Burkeville confining unit	421	421	421	421	421	421
Washington	G	Brazos	Jasper aquifer	28,512	28,512	28,512	28,512	28,512	28,512
Washington	G	Colorado	Jasper aquifer	233	233	233	233	233	233
GMA 14 Total			**Gulf Coast Aquifer System**	**1,183,076**	**1,107,258**	**1,136,330**	**1,161,773**	**1,189,095**	**1,189,095**

[3] A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.