Brazoria County Groundwater Conservation District

Groundwater Management Plan

December 13, 2012

This Page Intentionally Left Blank

Contents

This Page Intentionally Left Blank

Brazoria County Groundwater Conservation District

Groundwater Management Plan

December 13, 2012

I. District Mission

The mission of the Brazoria County Groundwater Conservation District (BCGCD) is to maintain the quality and availability of Brazoria County's groundwater resources for current users and future generations.

Groundwater is one of Brazoria County's most precious resources and represents an important contributor to the county's water supply. Because it is such a valuable resource, groundwater must be protected to ensure that it will always be available to residential, agricultural, municipal, and industrial water users.

A groundwater conservation district such as the BCGCD plays a key role in protecting groundwater resources. The BCGD's five-member board will proactively work with groundwater users in the district to address issues such as how to most efficiently use groundwater, control and prevent waste, control and prevent subsidence, and address drought conditions.

II. Purpose of Management Plan

In 1997 the 75th Texas Legislature established a statewide comprehensive regional water planning initiative with the enactment of Senate Bill 1 (SB1). Among the provisions of SB1 were amendments to Chapter 36 of the Texas Water Code requiring groundwater conservation districts to develop a groundwater management plan that is to be submitted to the Texas Water Development Board (TWDB) for approval as administratively complete. The groundwater management plan is specified to contain management goals for each district, estimates on the availability of groundwater in the District, and details of how the District would manage and conserve groundwater resources. In 2001 the 77th Texas Legislature further clarified the water planning and management provisions of SB1 with the enactment of Senate Bill 2 (SB2). Additionally, HB 1763 enacted in 2005 by the 79th Texas Legislature requires joint planning among groundwater districts within a common Groundwater Management Area (GMA). Districts must jointly establish aquifer Desired Future Conditions (DFCs) and submit these conditions to TWDB. TWDB in turn provides to the GMA values of Modeled Available Groundwater (MAG) for each member district of the GMA.

The Brazoria County Groundwater Management Plan fulfills all requirements for groundwater management plans in SB1, SB2, HB 1763, and Chapter 36 Texas Water Code and administrative rules of the TWDB.

III. Time Period of Management Plan

This plan shall be in effect for a period of five years from the date of approval by TWDB, unless a new or amended management plan is adopted by the District Board of Directors and certified by TWDB. In accordance with §356.3 of the Texas Administrative Code, the District Board must readopt, and the TWDB reapprove, the management plan every 5 years.

IV. District Information

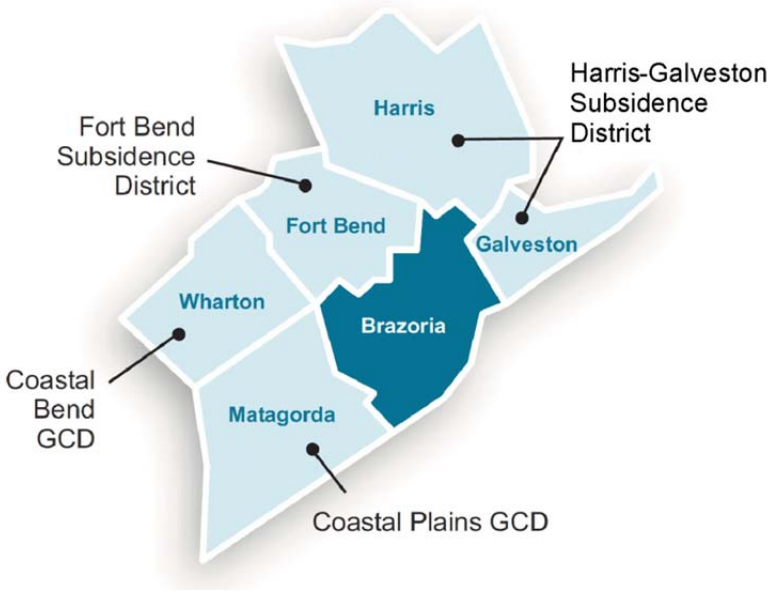
IV.a Creation

The District was created in September 2003 by the 78th Texas Legislature enacting HB 4114 (an amendment to HB 3602). This act is recorded in Section 2, Chapter 772, Acts of the 78th Texas Legislature. The District was confirmed by local election held in Brazoria County on November 8, 2005 with 56.35 percent of the voters in favor of the District.

IV.b Location and Extent

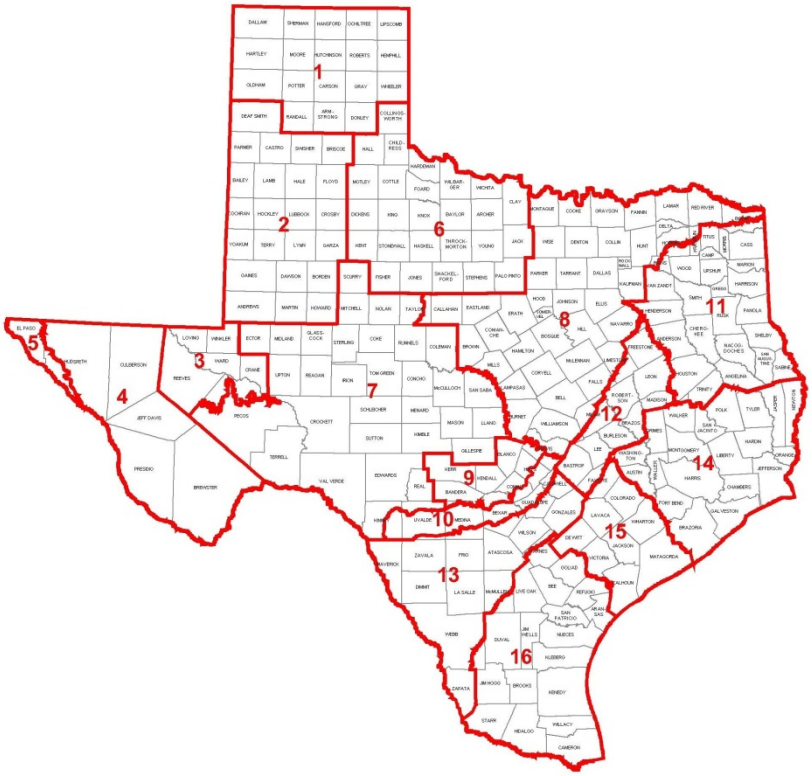
The District is located in Brazoria County, Texas. The District boundaries are the same as the area and extent of Brazoria County, Texas. The District comprises approximately 1,597 square miles. The District is bounded by Matagorda, Wharton, Fort Bend, Harris, and Galveston Counties. As of the plan date, confirmed groundwater conservation districts (GCD) or subsidence districts (SD) exist in all surrounding counties. The conservation or subsidence districts neighboring the District, as shown in *Figure 1*, are: Coastal Plains GCD (Matagorda), Coastal Bend GCD (Wharton), Fort Bend SD (Fort Bend), and Harris-Galveston SD (Harris and Galveston).

Figure 1. Neighboring Districts to the Brazoria Groundwater Conservation District



The District is located in GMA 14. Chapter 36 Texas Water Code authorizes the District to coordinate its management of groundwater with other GCDs in GMA 14. The other counties located in GMA 14 are shown in the following figure (*Figure 2*).

Figure 2. Groundwater Management Areas in Texas. The District is in GMA 14.



IV.c Organization of District

The District Board of Directors is composed of five members elected to staggered four-year terms. Four directors are elected from county precincts and one director is elected at-large. The Board of Directors normally meets at the District offices at 111 E. Locust Street in Angleton, Texas, at 4 P.M. on the second Thursday of each month, unless otherwise posted. All meetings of the Board of Directors are public meetings, subject to public notice, and held in accordance with all public meeting requirements. The Board of Directors meetings are announced on the District website (http://www.bcgroundwater.org) along with information on District rules and fees, meeting minutes, District forms and other items of interest posted by the District.

V. Authority and Regulatory Framework of the District

The District derives its authority to manage groundwater within the District by virtue of the powers granted and authorized in the District's enabling act, HB 4114 of the 78th Texas Legislature, and subsequent amendments. The District exercises the power that it was granted under the authority of the enabling legislation, and with voter approval, and assumes all the rights and responsibilities of a groundwater conservation district specified in Chapter 36 of the Texas Water Code. The authority and procedures to manage the groundwater resources in the District will be governed at all times by the due process specified in the District rules (*Appendix B*).

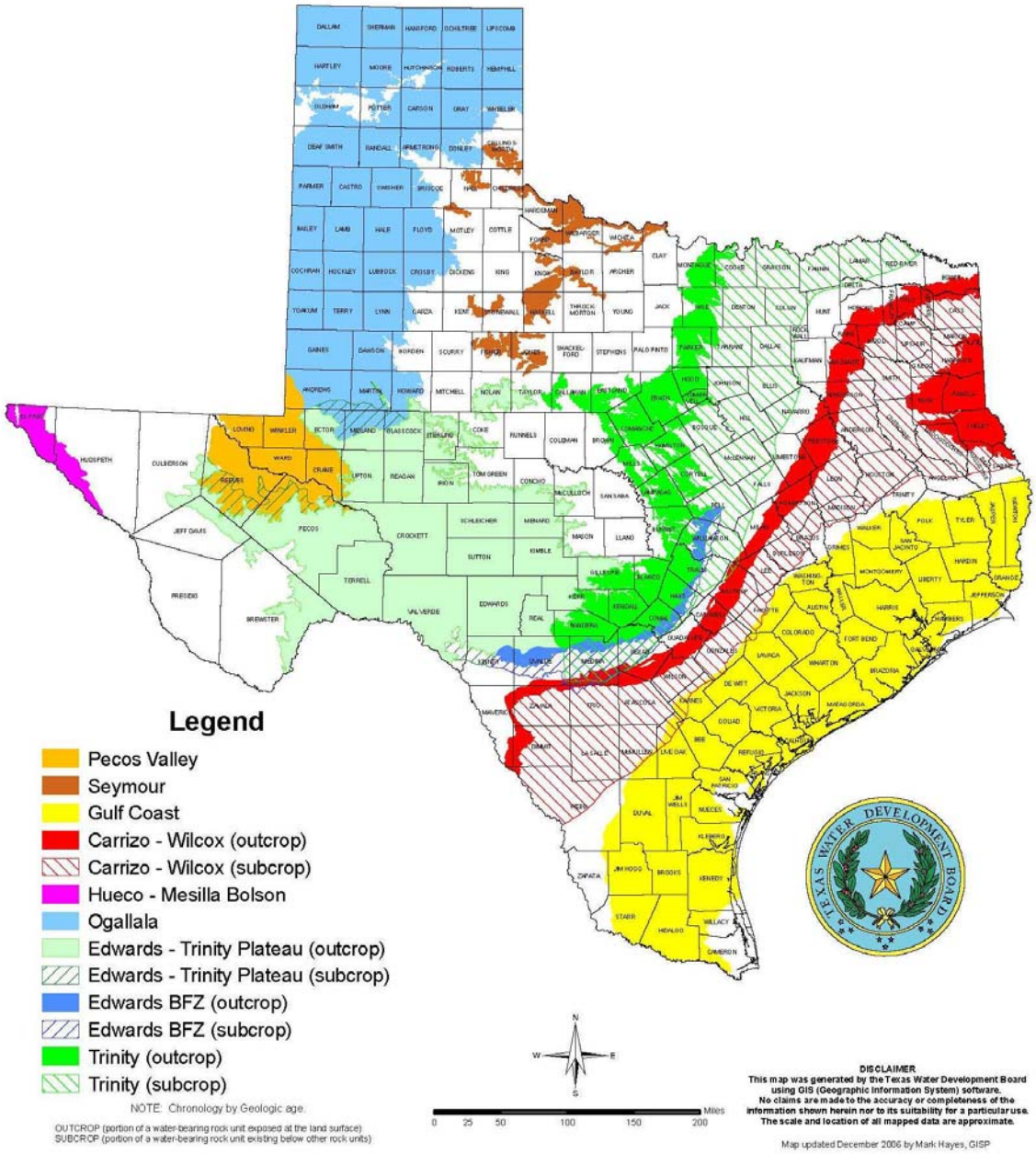
VI. Groundwater Resources of Brazoria County

Brazoria County is located within the Gulf Coast Aquifer system that parallels the Gulf Coast as shown in *Figure 3* (TWDB, 2006). Except for the Quaternary alluvium, the geologic formations crop out in belts nearly parallel to the Gulf of Mexico. The formations dip toward the coast and younger formations crop out closer to the Gulf and older formations crop further inland. Faults are common and some of them have displacements of up to several hundred feet. The displacements tend to decrease upward and may not appear at the surface. Faulting generally does not disrupt regional hydraulic continuity.

Chicot Aquifer

The Chicot aquifer, the main source of groundwater in Brazoria County, is composed of sediments of the Willis Formation, the Lissie Formation, the Beaumont Formation, and the overlying Holocene alluvium. It consists of all sediments from the ground surface down to the top of the Evangeline aquifer. The Chicot typically ranges between 600 feet to 1,200 feet of thickness in Brazoria County and consists of discontinuous layers of sand and clay. Separation of the Chicot from the Evangeline aquifer is based on differences in lithology, permeability, water level, and stratigraphic positions (Sandeen and Wesselman, 1973). The Chicot is subdivided into an upper Chicot unit and a lower Chicot unit typically separated by clay. The Chicot aquifer contains mostly fresh water in Brazoria County, but total dissolved solids (TDS) increases towards the Gulf and becomes unusable near the coast. The transmissivity of the Chicot aquifer ranges from 1,000 ft^2/d to 25,000 ft^2/d (Kasmarek and Strom, 2002).

Figure 3. Major Aquifers of Texas



Evangeline Aquifer

The Evangeline aquifer is composed of a sequence of alternating sands and clays of the Goliad Sand and the underlying Fleming Formation. These sediments thicken to more than 3,500 feet along the coast. Fresh water is typically found in the upper beds of the Evangeline aquifer, with TDS increasing towards the Gulf, as with the Chicot (Baker, 1979 and 1986).

Burkeville Confining Layer

The Burkeville confining system consists of silt and clay. These fine-grained sediments are generally interbedded with sand lenses, which may contain fresh to slightly saline water. The

relatively large percentage of silt and clay of the Burkeville confining system, when compared to the overlying Evangeline aquifer and the underlying Jasper aquifer, acts as a confining unit. The Burkeville ranges from 300 to 500 feet in thickness (Baker, 1979 and 1986).

Figure 4. Geologic and Hydrologic Units of the Gulf Coast Aquifer in Brazoria County Modified from (Baker, 1979 and 1986; Aronow, 2004).

<table>
<tr><th>System</th><th>Series</th><th colspan="2">Stratigraphic Unit</th><th>Hydrologic Unit</th></tr>
<tr><td rowspan="5">Quaternary</td><td>Holocene</td><td colspan="2">Alluvium</td><td rowspan="5">Chicot aquifer</td></tr>
<tr><td rowspan="4">Pleistocene</td><td colspan="2">Beaumont Clay</td></tr>
<tr><td>Montgomery Formation</td><td rowspan="2">Lissie Formation</td></tr>
<tr><td>Bentley Formation</td></tr>
<tr><td colspan="2">Willis Sand</td></tr>
<tr><td rowspan="2">Tertiary</td><td>Pliocene</td><td colspan="2">Goliad Sand</td><td>Evangeline aquifer</td></tr>
<tr><td>Miocene</td><td colspan="2">Fleming Formation</td><td>Burkeville Confining Zone</td></tr>
</table>

VII. Geography of the District

The District is located within the Gulf Coastal Plains region of Texas. Its highest altitude, Damon Mound, is 146 feet above sea level. The center of the county lies at approximately 29°10’ north latitude and 95°26’ west longitude, near the county seat of Angleton. Other principal towns include Alvin, Amsterdam, Brazoria, Damon, Pearland, Rosharon, West Columbia, Holiday Lake, Old Ocean, Bailey's Prairie, Iowa Colony, Bonney, Hillcrest Village, Brookside Village, Danbury, Liverpool, Manvel, and Sweeny; the towns that constitute Brazosport include Clute, Freeport, Quintana, Oyster Creek, Jones Creek, Lake Jackson, Richwood, and Surfside Beach. Key county roads include State Highways 6, 35, 36, and 288. The county population in 2010 was 313,166 as reported by the 2010 US Census (http://www.census.gov/). The population is approximately 71% urban and 29% rural (from: http://www.city-data.com/county/Brazoria_County-TX.html).

The annual rainfall is 52 inches, and the mean annual temperature is 69° F. Soils in the county are chiefly alluvial loams and clays, and are highly agriculturally productive when well drained. The principal streams flowing through Brazoria County into the Gulf of Mexico include the Brazos and San Bernard Rivers, Oyster Creek, Bastrop Bayou, and Chocolate Bayou. The Gulf Intracoastal Waterway crosses Brazoria County near the coast. The Brazos River divides the county into two sections; the western one-third is covered by hardwoods, and the rest is generally prairieland (Texas State Historical Association, 2012).

The petrochemical industry and mineral resources including oil, gas, sulfur, salt, lime, sand, and gravel, concentrated in the Damon Mound-West Columbia-Freeport area, dominate the county economy. Additionally, agriculture is of primary economic importance in the District, and one of the main users of groundwater. Brazoria County produces rice, grain sorghum, soybeans, cotton, and other agricultural products (Texas State Historical Association, 2012).

VIII. Estimate of the Amount of Groundwater Annually Used in the District - 31 TAC §356.5(a)(5)(B)

The annual groundwater use within the District is estimated to be approximately 45,700 acre-feet per year based on a 2006-2010 average of the TWDB estimate for groundwater use as shown in *Table 1* for the years 1980 and 1984 to 2010. The amount of groundwater use in the District has decreased for much of the last decade but increased in recent years; this increase may be driven largely by limitations on data available for estimating agricultural groundwater usage. Draft estimates for 2011, which are not included in the table, suggest a drastically reduced proportion of irrigation demand from groundwater. At the same time, the use of surface water is currently on an increase (see *Appendix C*).

Table 1. Amount of Groundwater Used by Year (acre-feet/year)

Year	Aquifer	Municipal	Mfg.[1]	Steam Electric	Irrigation[2]	Mining	Livestock	Total
1980	Gulf Coast	20,254	5,088	0	22,498	1,101	730	49,671
1984	Gulf Coast	23,920	2,790	0	13,306	0	697	40,713
1985	Gulf Coast	24,824	3,239	0	13,587	157	715	42,522
1986	Gulf Coast	24,029	3,540	0	6,213	328	605	34,715
1987	Gulf Coast	24,554	3,523	0	5,207	315	665	34,264
1988	Gulf Coast	22,990	2,821	0	7,213	272	737	34,033
1989	Gulf Coast	17,836	2,616	0	6,109	218	767	27,546
1990	Gulf Coast	18,477	3,406	0	4,979	218	757	27,837
1991	Gulf Coast	18,304	3,900	0	4,756	220	773	27,953
1992	Gulf Coast	20,812	3,690	0	5,088	707	639	30,936
1993	Gulf Coast	20,161	1,947	0	10,352	701	618	33,779
1994	Gulf Coast	21,022	2,267	0	6,070	700	774	30,833
1995	Gulf Coast	19,135	2,154	0	10,902	699	662	33,552
1996	Gulf Coast	22,636	2,756	0	7,430	699	1,102	34,623
1997	Gulf Coast	21,105	1,760	0	7,192	824	721	31,602
1998	Gulf Coast	23,494	597	0	8,711	680	888	34,370
1999	Gulf Coast	24,349	2,331	0	7,230	857	959	35,726
2000	Gulf Coast	23,636	522	0	7,022	794	968	32,942
2001	Gulf Coast	26,210	976	0	3,915	789	968	32,858
2002	Gulf Coast	25,857	1,313	0	3,625	368	875	32,038
2003	Gulf Coast	26,491	1,202	0	2,706	318	1,270	31,987
2004	Gulf Coast	27,748	2,301	0	3,677	1	447	34,174
2005	Gulf Coast	28,351	2,386	0	3,652	1	1,341	35,731
2006	Gulf Coast	29,113	2,551	0	2,821	257	1,165	35,907
2007	Gulf Coast	26,575	1,236	0	8,995	1	1,241	38,048
2008	Gulf Coast	31,550	1,410	0	20,829	1	1,210	55,000
2009	Gulf Coast	30,089	1,521	0	14,508	168	1,231	47,517
2010	Gulf Coast	34,531	1,409	0	14,889	190	1,126	52,145

1. The 1992 “Manufact.” (Manufacturing) and total values were reported as 36,905 and 64,151 acre-feet, respectively. The Manufacturing value, which is suspected to be in error, was amended by a factor of ten to better approximate historical usage. The revised total for 1992 of 30,936 acre-feet is therefore an estimate. Similarly, the 2008 entry has been adjusted to correct for a suspected erroneous entry of surface water demand as groundwater based on detailed TWDB usage records. The original 2008 manufacturing demand estimate was 26,024 acre-feet.

2. Due to limitations on measured usage data, TWDB irrigation demand values are typically estimated from available crop acreage data and other sources. The division of this estimated demand between groundwater and surface water, which plays a significant role in the table above, is based on the limited available data and annual irrigation practice assumptions.

The estimate presented above was developed by the TWDB (http://www.twdb.state.tx.us/waterplanning/waterusesurvey/estimates/index.asp).

IX. Estimate of the Amount of Recharge, Discharge, and Groundwater Flow in the District - 31 TAC §356.5(a)(5)(C) & (D) & (E)

The groundwater availability model (GAM) for the northern part of the Gulf Coast Aquifer was run by the TWDB (Chowdhury, 2008) to estimate recharge, inflow and outflow of groundwater to the district, and inter-aquifer flow. The GAM uses MODFLOW's General Head Boundary Package to simulate groundwater recharge and groundwater to surface water interaction. The general head boundary was assigned over the outcrop areas of the Chicot, Evangeline, and the Jasper aquifers and the Burkeville Confining System. The results of the GAM Run 08-31 modeling (Chowdhury, 2008) are presented below.

Estimated Annual Amount of Recharge from Precipitation to the District (Chowdhury, 2008) - (31 TAC § 356(a)(5)(C)):

Chicot Aquifer	16,182 ac-ft
Evangeline Aquifer	0 ac-ft
Burkeville Confining System	0 ac-ft
Jasper Aquifer	0 ac-ft

Estimated Annual Amount of Water that Discharges from the Aquifer to Any Surface Water Including Lakes, Streams, and Rivers (Chowdhury, 2008) - (31 TAC § 356(a)(5)(D)):

Chicot Aquifer	0 ac-ft
Evangeline Aquifer	0 ac-ft
Burkeville Confining System	0 ac-ft
Jasper Aquifer	0 ac-ft

Estimated Annual Volume of Groundwater Flow into the District within each Aquifer Unit (Chowdhury, 2008) - (31 TAC § 356(a)(5)(E)):

Chicot Aquifer	45,567 ac-ft
Evangeline Aquifer	34,235 ac-ft
Burkeville Confining System	0 ac-ft
Jasper Aquifer	0 ac-ft

Estimated Annual Volume of Groundwater Flow out of the District within each Aquifer Unit (Chowdhury, 2008) - (31 TAC § 356(a)(5)(E)):

Chicot Aquifer	39,586 ac-ft
Evangeline Aquifer	35,598 ac-ft
Burkeville Confining System	0 ac-ft
Jasper Aquifer	0 ac-ft

Estimated Net Annual Volume of Groundwater Flow Between each Aquifer Unit (Chowdhury, 2008) - (31 TAC § 356(a)(5)(E)):

Evangeline to Chicot Aquifer	3,959 ac-ft
Evangeline Aquifer to Burkeville Confining System	0 ac-ft
Burkeville Confining System to Jasper Aquifer	0 ac-ft

X. Estimate of the Projected Surface Water Supply of the District - 31 TAC § 356(a)(5)(F)

The estimate of projected surface water and groundwater supplies within the District in the year 2010 was approximately 263,798 acre-feet/year based on the data available in the 2012 State Water Plan database. This number is expected to increase to 264,150 acre-feet/year by 2060 (see *Table 2* below). As the District has been in operation for a limited period of time, these numbers will have to be refined as more data is gathered and evaluated in coming years.

Table 2. Projected Surface Water Supplies for Brazoria County (acre-feet/year)

Water User Group	River Basin	Source Name[1]	2010	2020	2030	2040	2050	2060
Angleton	San Jacinto-Brazos	Brazos River ROR	1,815	1,815	1,815	1,815	1,815	1,815
Brazoria	Brazos	Brazos River ROR	82	82	82	82	82	82
Brazoria	Brazos-Colorado	Brazos River ROR	254	254	254	254	254	254
Clute	San Jacinto-Brazos	Brazos River ROR	1,120	1,120	1,120	1,120	1,120	1,120
Freeport	Brazos	Brazos River ROR	141	117	101	90	80	72
Freeport	San Jacinto-Brazos	Brazos River ROR	1,763	1,787	1,803	1,814	1,824	1,832
Lake Jackson	San Jacinto-Brazos	Brazos River ROR	2,240	2,240	2,240	2,240	2,240	2,240
Oyster Creek	San Jacinto-Brazos	Brazos River ROR	106	106	106	106	106	106
Pearland	San Jacinto-Brazos	Brazos River ROR	15,112	15,155	15,174	15,184	15,195	15,205
Pearland	San Jacinto-Brazos	Livingston-Wallisville	540	541	542	542	543	543
Richwood	San Jacinto-Brazos	Brazos River ROR	263	263	263	263	263	263
County Other	Brazos-Colorado	Brazos River ROR	224	224	224	224	224	224
County Other	San Jacinto-Brazos	Brazos River ROR	196	196	196	196	196	196
Manufacturing	Brazos	BRA Main Stem System	16,000	16,000	16,000	16,000	16,000	16,000
Manufacturing	Brazos	Brazos River ROR	137,763	137,763	137,763	137,762	137,742	137,762
Manufacturing	Brazos-Colorado	San Bernard River ROR	11,354	11,422	11,422	11,422	11,422	11,422
Manufacturing	San Jacinto-Brazos	Brazos River ROR	31,719	31,719	31,719	31,720	31,740	31,720
Manufacturing	San Jacinto-Brazos	San Jacinto-Brazos ROR	13,541	13,541	13,541	13,541	13,541	13,541
Mining	Brazos	Other Local Supply	190	190	190	190	190	190
Mining	Brazos-Colorado	Other Local Supply	1,124	1,124	1,124	1,124	1,124	1,124
Mining	San Jacinto-Brazos	Other Local Supply	305	305	305	305	305	305
Irrigation	Brazos	BRA Main Stem System	50	50	50	50	50	50
Irrigation	Brazos	Brazos River ROR	1,800	1,800	1,800	1,800	1,800	1,800
Irrigation	San Jacinto-Brazos	Brazos River ROR	13,644	13,644	13,644	13,644	13,644	13,644
Irrigation	San Jacinto-Brazos	San Jacinto-Brazos ROR	11,487	11,487	11,487	11,487	11,487	11,487
Livestock	Brazos	Livestock Local Supply	220	228	232	235	236	238
Livestock	Brazos-Colorado	Livestock Local Supply	200	202	206	210	217	225
Livestock	San Jacinto-Brazos	Livestock Local Supply	545	505	547	591	643	690
Total Projected Surface Water Supplies (ac-ft per year):			**263,798**	**263,880**	**263,950**	**264,011**	**264,083**	**264,150**

1. ROR indicates a run-of-river surface water supply.

XI. Estimate of the Total Projected Water Demand within the District - 31 TAC § 356(a)(5)(G)

Estimates of projected water demands within the District as projected by the 2012 State Water Plan are presented below. Region H estimates of overall county population are close to the 2010 Census value of 313,166 (U.S. Census Bureau). Growth in certain locations, particularly in the Pearland area, is faster than anticipated. However, it is expected based on overall similarities in population estimates that the values below are reasonable projections of long-term county demands.

Table 3. 2012 Water Plan Projected Surface Water and Groundwater Demand for Brazoria County (acre-feet/year)

Water User Group	River Basin	2010	2020	2030	2040	2050	2060
Alvin	San Jacinto-Brazos	3,227	3,490	3,741	3,973	4,219	4,476
Angleton	San Jacinto-Brazos	2,285	2,388	2,487	2,577	2,674	2,774
Bailey's Prairie	Brazos	15	16	17	18	19	20
Bailey's Prairie	San Jacinto-Brazos	77	83	88	93	98	103
Brazoria	Brazos	77	78	80	81	83	85
Brazoria	Brazos-Colorado	239	244	249	253	258	263
Brookside Village	San Jacinto-Brazos	279	320	359	395	433	473
Clute	San Jacinto-Brazos	1,219	1,309	1,394	1,474	1,558	1,645
Danbury	San Jacinto-Brazos	219	237	254	269	286	303
Freeport	Brazos	147	147	147	147	147	147
Freeport	San Jacinto-Brazos	1,834	2,237	2,623	2,979	3,356	3,749
Hillcrest	San Jacinto-Brazos	128	131	135	139	143	147
Holiday Lakes	San Jacinto-Brazos	97	101	105	109	113	117
Iowa Colony	San Jacinto-Brazos	113	127	140	153	165	179
Jones Creek	Brazos-Colorado	105	105	105	105	105	105
Lake Jackson	San Jacinto-Brazos	4,180	4,624	5,048	5,440	5,855	6,289
Manvel	San Jacinto-Brazos	541	541	541	541	541	541
Oyster Creek	San Jacinto-Brazos	174	203	232	258	285	314
Pearland	San Jacinto-Brazos	12,429	15,747	18,768	21,558	24,509	27,583
Richwood	San Jacinto-Brazos	356	383	408	432	456	482
Surfside Beach	Brazos	172	198	222	245	268	293
Sweeny	Brazos-Colorado	624	669	712	752	794	839
West Columbia	Brazos	497	485	473	463	451	439
West Columbia	Brazos-Colorado	95	93	91	89	86	84
Brazoria County MUD #1	San Jacinto-Brazos	876	1,289	1,684	2,049	2,435	2,839
Brazoria County MUD #2	Brazos	1,137	1,629	2,100	2,534	2,995	3,475
Brazoria County MUD #3	San Jacinto-Brazos	631	929	1,214	1,477	1,756	2,046
Brazoria County MUD #4	San Jacinto-Brazos	593	593	593	593	593	593
Brazoria County MUD #5	San Jacinto-Brazos	707	707	707	707	707	707
Orbit Systems Inc	Brazos-Colorado	50	61	71	81	91	102
Orbit Systems Inc	San Jacinto-Brazos	409	497	581	659	741	826
Southwest Utilities	San Jacinto-Brazos	74	79	83	86	90	95
Varner Creek UD	Brazos	372	454	531	603	679	759
County Other	Brazos	128	135	143	151	160	169
County Other	Brazos-Colorado	4,313	4,637	4,948	5,235	5,539	5,857
County Other	San Jacinto-Brazos	10,256	11,394	12,744	13,978	15,294	16,682
Manufacturing	Brazos	216,824	238,749	258,151	277,737	295,021	315,974
Manufacturing	Brazos-Colorado	1,184	1,304	1,410	1,517	1,611	1,726
Manufacturing	San Jacinto-Brazos	42,231	46,501	50,280	54,094	57,461	61,541
Mining	Brazos	307	337	354	372	389	405
Mining	Brazos-Colorado	2,852	3,128	3,292	3,452	3,614	3,766
Mining	San Jacinto-Brazos	945	1,037	1,091	1,145	1,198	1,248
Irrigation	Brazos	4,186	3,816	3,675	3,589	3,589	3,589
Irrigation	Brazos-Colorado	5,536	5,048	4,860	4,747	4,747	4,747
Irrigation	San Jacinto-Brazos	125,311	114,251	110,009	107,452	107,452	107,452
Livestock	Brazos	242	242	242	242	242	242
Livestock	Brazos-Colorado	404	404	404	404	404	404
Livestock	San Jacinto-Brazos	968	968	968	968	968	968
Total Projected Water Demands (ac-ft per year):		**449,665**	**472,145**	**498,554**	**526,415**	**554,678**	**587,662**

XII. Estimate of the Water Supply Needs within the District - 31 TAC § 356.5(a)(7)

Estimates of projected water needs within the District as projected by the 2012 State Water Plan are presented below. Note that "needs" are projected water demands in excess of existing supplies that would be available during a repeat of the drought of record.

Table 4. 2012 State Water Plan Projected Water Supply Needs for Brazoria County (acre-feet/year)

Water User Group	River Basin	2010	2020	2030	2040	2050	2060
Alvin	San Jacinto-Brazos	-	170	317	434	620	847
Angleton	San Jacinto-Brazos	278	285	303	309	367	454
Bailey's Prairie	Brazos	-	-	-	1	2	2
Bailey's Prairie	San Jacinto-Brazos	-	3	5	7	10	15
Brazoria	Brazos	-	-	-	-	-	-
Brazoria	Brazos-Colorado	-	-	-	-	-	-
Brookside Village	San Jacinto-Brazos	-	30	57	82	112	147
Clute	San Jacinto-Brazos	34	67	118	144	202	278
Danbury	San Jacinto-Brazos	-	11	20	27	39	54
Freeport	Brazos	-	18	31	40	49	57
Freeport	San Jacinto-Brazos	-	270	563	819	1,112	1,449
Hillcrest	San Jacinto-Brazos	-	1	1	2	5	8
Holiday Lakes	San Jacinto-Brazos	-	-	-	-	-	2
Iowa Colony	San Jacinto-Brazos	-	10	18	27	37	48
Jones Creek	Brazos-Colorado	-	-	-	-	-	-
Lake Jackson	San Jacinto-Brazos	999	1,316	1,595	1,867	2,194	2,579
Manvel	San Jacinto-Brazos	-	102	99	96	94	94
Oyster Creek	San Jacinto-Brazos	34	56	78	97	119	145
Pearland	San Jacinto-Brazos	-	-	1,792	4,223	6,943	9,777
Richwood	San Jacinto-Brazos	56	69	78	85	101	123
Surfside Beach	Brazos	-	21	41	60	80	103
Sweeny	Brazos-Colorado	-	30	57	78	111	151
West Columbia	Brazos	-	-	-	-	-	-
West Columbia	Brazos-Colorado	-	-	-	-	-	-
Brazoria County MUD #1	San Jacinto-Brazos	-	372	745	1,069	1,429	1,806
Brazoria County MUD #2	Brazos	-	475	935	1,347	1,794	2,261
Brazoria County MUD #3	San Jacinto-Brazos	-	269	536	769	1,028	1,299
Brazoria County MUD #4	San Jacinto-Brazos	-	-	-	-	-	-
Brazoria County MUD #5	San Jacinto-Brazos	-	-	-	-	-	-
Orbit Systems Inc	Brazos-Colorado	-	8	16	24	32	41
Orbit Systems Inc	San Jacinto-Brazos	-	65	128	189	252	326
Southwest Utilities	San Jacinto-Brazos	-	2	4	6	8	12
Varner Creek UD	Brazos	-	69	135	197	263	335
County Other	Brazos	7	123	132	138	147	157
County Other	Brazos-Colorado	1,987	2,242	2,499	2,705	2,968	3,267
County Other	San Jacinto-Brazos	5,289	6,254	7,449	8,446	9,623	10,931
Manufacturing	Brazos	38,936	80,493	100,362	120,378	138,163	159,612
Manufacturing	Brazos-Colorado	-	-	-	-	-	-
Manufacturing	San Jacinto-Brazos	-	1,241	5,020	8,833	12,180	16,280
Mining	Brazos	-	119	136	154	171	187
Mining	Brazos-Colorado	-	564	728	888	1,050	1,202
Mining	San Jacinto-Brazos	-	108	162	216	269	319
Irrigation	Brazos	2,336	1,966	1,825	1,739	1,739	1,739
Irrigation	Brazos-Colorado	771	771	771	771	771	771
Irrigation	San Jacinto-Brazos	100,180	89,120	84,878	82,321	82,321	82,321
Livestock	Brazos	-	-	-	-	-	-
Livestock	Brazos-Colorado	-	-	-	-	-	-
Livestock	San Jacinto-Brazos	-	40	-	-	-	-
Total Projected Water Needs (ac-ft per year):		**150,907**	**186,760**	**211,634**	**238,588**	**266,405**	**299,199**

XIII. Water Management Strategies to Meet Needs of Water User Groups - 31TAC § 356.5(a)(7)

The projected water supplies and demand totals for the District given in *Tables 2* and *3* above indicate projected demands exceed existing supplies. To meet the needs of water user groups in the District, recommended water management strategies were included in the State Water Plan to develop additional supplies. A detailed listing of recommended water management strategies from the 2012 Water Plan is included in *Table 5*.

Table 5. Region H Recommended Water Management Strategies for Brazoria County (acre-feet/year)

Water User Group	Water Management Strategy[1]	Source Name[2]	2010	2020	2030	2040	2050	2060
Alvin	GCWA to WUG Contract	Allens Creek Res.	-	-	99	208	383	595
Alvin	Municipal Conservation	Conservation	-	170	218	226	237	252
Angleton	BWA to WUG Contract	Brazos River ROR	137	98	103	112	160	231
Angleton	Expanded use of Groundwater	Gulf Coast Aquifer	-	46	58	54	61	71
Angleton	Municipal Conservation	Conservation	141	141	142	143	146	152
Bailey's Prairie	Expanded use of Groundwater	Gulf Coast Aquifer	-	3	5	7	11	16
Bailey's Prairie	Municipal Conservation	Conservation	-	-	-	1	1	1
Brookside Village	Expanded use of Groundwater	Gulf Coast Aquifer	-	14	39	63	91	124
Brookside Village	Municipal Conservation	Conservation	-	16	18	19	21	23
Clute	BWA to WUG Contract	Brazos River ROR	-	-	24	42	84	144
Clute	Expanded use of Groundwater	Gulf Coast Aquifer	-	-	14	20	32	44
Clute	Municipal Conservation	Conservation	34	67	80	82	86	90
Danbury	Expanded use of Groundwater	Gulf Coast Aquifer	-	-	7	14	25	39
Danbury	Municipal Conservation	Conservation	-	11	13	13	14	15
Freeport	BWA to WUG Contract	Brazos River ROR	-	95	263	439	670	950
Freeport	Expanded use of Groundwater	Gulf Coast Aquifer	-	54	173	245	297	340
Freeport	Municipal Conservation	Conservation	-	139	158	175	194	216
Hillcrest	Expanded use of Groundwater	Gulf Coast Aquifer	-	-	-	-	-	1
Hillcrest	Municipal Conservation	Conservation	-	1	1	2	5	7
Holiday Lakes	Expanded use of Groundwater	Gulf Coast Aquifer	-	-	-	-	-	1
Holiday Lakes	Municipal Conservation	Conservation	-	-	-	-	-	1
Iowa Colony	Expanded use of Groundwater	Gulf Coast Aquifer	-	3	11	20	29	39
Iowa Colony	Municipal Conservation	Conservation	-	7	7	7	8	9
Lake Jackson	BWA to WUG Contract	Brazos River ROR	744	708	830	1,049	1,349	1,703
Lake Jackson	Expanded use of Groundwater	Gulf Coast Aquifer	-	333	473	508	515	521
Lake Jackson	Municipal Conservation	Conservation	255	275	292	310	330	355
Manvel	Expanded use of Groundwater	Gulf Coast Aquifer	-	23	25	22	18	15
Manvel	GCWA to WUG Contract	Allens Creek Res.	-	49	44	45	48	51
Manvel	Municipal Conservation	Conservation	-	30	30	29	28	28
Oyster Creek	BWA to WUG Contract	Brazos River ROR	25	31	42	57	76	100
Oyster Creek	Expanded use of Groundwater	Gulf Coast Aquifer	-	15	24	27	29	30
Oyster Creek	Municipal Conservation	Conservation	9	10	12	13	14	15
Pearland	Expanded use of Groundwater	Gulf Coast Aquifer	-	-	421	1,142	1,692	2,074
Pearland	GCWA to WUG Contract	Allens Creek Res.	-	-	539	2,068	4,109	6,783
Pearland	Municipal Conservation	Conservation	216	538	631	719	817	920
Pearland	Pearland SWTP	Allens Creek Res.	N/A	N/A	N/A	N/A	N/A	N/A
Pearland	Pearland SWTP	Brazos River ROR	N/A	N/A	N/A	N/A	N/A	N/A
Pearland	Reallocate Existing Supplies	Livingston-Wallisville	-	-	201	294	325	-
Richwood	BWA to WUG Contract	Brazos River ROR	36	33	36	42	56	76
Richwood	Expanded use of Groundwater	Gulf Coast Aquifer	-	15	20	21	22	23
Richwood	Municipal Conservation	Conservation	20	21	22	22	23	24
Surfside Beach	Expanded use of Groundwater	Gulf Coast Aquifer	-	11	29	47	66	88
Surfside Beach	Municipal Conservation	Conservation	-	10	12	13	14	15
Sweeny	Expanded use of Groundwater	Gulf Coast Aquifer	-	-	17	37	68	106
Sweeny	Municipal Conservation	Conservation	-	30	40	41	43	45

Water User Group	Water Management Strategy[1]	Source Name[2]	2010	2020	2030	2040	2050	2060
Brazoria County MUD #1	Expanded use of Groundwater	Gulf Coast Aquifer	-	300	650	955	1,294	1,648
Brazoria County MUD #1	Municipal Conservation	Conservation	-	72	95	114	135	158
Brazoria County MUD #2	Expanded use of Groundwater	Gulf Coast Aquifer	-	380	813	1,200	1,621	2,060
Brazoria County MUD #2	Municipal Conservation	Conservation	-	95	122	147	173	201
Brazoria County MUD #3	Expanded use of Groundwater	Gulf Coast Aquifer	-	217	468	687	931	1,186
Brazoria County MUD #3	Municipal Conservation	Conservation	-	52	68	82	97	113
Orbit Systems Inc	Expanded use of Groundwater	Gulf Coast Aquifer	-	67	136	205	274	357
Orbit Systems Inc	Municipal Conservation	Conservation	-	30	35	38	43	47
Southwest Utilities	Expanded use of Groundwater	Gulf Coast Aquifer	-	-	-	1	3	7
Southwest Utilities	Municipal Conservation	Conservation	-	2	4	5	5	5
Varner Creek UD	Expanded use of Groundwater	Gulf Coast Aquifer	-	45	108	166	228	296
Varner Creek UD	Municipal Conservation	Conservation	-	24	27	31	35	39
County Other	BWA to WUG Contract	Allens Creek Res.	-	116	124	1,557	3,183	5,435
County Other	BWA to WUG Contract	Brazos River ROR	6,482	5,689	6,318	5,879	5,355	4,546
County Other	Expanded use of Groundwater	Gulf Coast Aquifer	-	1,945	2,687	2,793	2,758	2,722
County Other	Municipal Conservation	Conservation	801	869	951	1,017	1,098	1,187
County Other	WW Reclamation for Mun. Irr.	Direct Reuse	-	-	116	227	344	465
Manufacturing	BRA to WUG Contract	Allens Creek Res.	-	44,720	26,791	48,428	35,606	36,711
Manufacturing	BRA to WUG Contract	Brazoria OCR	-	-	-	-	-	24,000
Manufacturing	BRA to WUG Contract	BRA Main Stem System	-	2,779	2,779	2,779	2,779	2,779
Manufacturing	BRA to WUG Contract	Gulf of Mexico	-	-	-	-	33,600	33,600
Manufacturing	BWA to WUG Contract	Brazos River ROR	326	1,096	134	130	-	-
Manufacturing	Dow to WUG Contract	Brazos River ROR	-	21,800	21,800	21,800	21,800	21,800
Manufacturing	Expanded use of Groundwater	Gulf Coast Aquifer	-	397	1,821	2,880	3,364	3,812
Manufacturing	GCWA to WUG Contract	GCWA OCR	-	-	39,500	39,500	39,500	39,500
Manufacturing	Temporary Overdraft	Gulf Coast Aquifer	24,916	-	-	-	-	-
Manufacturing	Reallocate Existing Supplies	BRA Main Stem System	50	50	50	50	50	50
Manufacturing	Reallocate Existing Supplies	Brazos River ROR	13,644	13,644	13,644	13,644	13,644	13,644
Mining	BRA to WUG Contract	Allens Creek Res.	-	392	554	731	942	1,156
Mining	BRA to WUG Contract	BRA Main Stem System	-	231	231	231	231	231
Mining	Expanded use of Groundwater	Gulf Coast Aquifer	-	168	241	296	317	321
Irrigation	Brazoria Co. Interruptible Irr.	Brazos River ROR	79,378	73,222	47,498	47,498	47,498	47,498
Irrigation	Brazoria Co. Interruptible Irr.	San Jacinto-Brazos ROR	18,811	13,537	16,502	16,502	16,502	16,502
Irrigation	Expanded use of Groundwater	Gulf Coast Aquifer	-	-	4,748	2,105	1,912	268
Irrigation	GCWA to WUG Contract	Allens Creek Res.	-	-	13,628	13,628	13,821	15,465
Irrigation	Irrigation Conservation	Conservation	18,792	18,792	18,792	18,792	18,792	18,792
Irrigation	Reallocate Existing Supplies	BRA Main Stem Sys.	-50	-50	-50	-50	-50	-50
Irrigation	Reallocate Existing Supplies	Brazos River ROR	-13,644	-13,644	-13,644	-13,644	-13,644	-13,644
Livestock	Expanded use of Groundwater	Gulf Coast Aquifer	-	13	-	-	-	-
Livestock	New Wells for Livestock	Gulf Coast Aquifer	-	27	27	27	27	27
Total Projected Water Management Strategy (ac-ft per year):			**151,123**	**190,074**	**212,941**	**238,829**	**266,465**	**299,267**

1. The Pearland SWTP project utilizes water from other management strategies and thus no volume is listed in association with the project.
2. OCR denotes an off-channel reservoir.

XIV. Details on How the District Might Increase the Natural or Artificial Recharge in the District

Increasing the recharge of groundwater within the District may be difficult. A high percentage of the total amount of recharge is rejected by the aquifer (due to near-surface clays) and supports the base flow of streams. The natural or artificial recharge to the groundwater within the District might be feasibly increased by the construction of rainfall runoff retention structures on ephemeral streams.

XV. How the District Has Addressed Water Supply Needs in a Manner Not in Conflict with the Approved Regional Water Plans

In order to address water supply needs in a manner not in conflict with the TWDB approved regional water plan from Region H Regional Water, the District has adopted Region H water supply needs. The District will supplement the Region H numbers at such a time that it obtains site-specific data for the District.

XVI. Management of Groundwater Supplies within the District - 31 TAC § 356.5(a)(6)

The District derives its authority to manage groundwater within the District by virtue of the powers granted and authorized in the District's enabling act, HB 4114 of the 78th Texas Legislature, and subsequent amendments, and Chapter 36 of the Texas Water Code. The authority and procedures to management the groundwater resources in the District will be governed at all times by the due process specified in the District rules (Appendix B).

The District will manage the supply of groundwater within the District in order to conserve the resource while maintaining the economic viability of all groundwater user groups. The District will identify and engage in such activities and practices, that if implemented would result in more efficient use of groundwater and preserve groundwater quality and availability for future generations. The District will make a regular assessment of water supply and groundwater storage conditions and will report those conditions to the Board and to the public. An observation network shall be established and maintained in order to monitor water levels and quality of groundwater within the District, if needed. The District will undertake and co-operate with investigations of the groundwater resources within the District and will make the results of investigations available to the public upon adoption by the Board, as needed and as District resources allow.

All new wells must comply with the spacing and location requirements promulgated by the Texas Department of Licensing and Regulation and set forth under Title 16, Texas Administrative Code Chapter 76, Water Well Drillers and Pump Installers Rules. The District may adopt rules to regulate groundwater withdrawals by means of spacing and production limits. In making a determination to deny a permit or limit groundwater withdrawals, the District will consider the public benefit against individual hardship after considering all appropriate testimony.

The District is committed to maintaining a sustainable, adequate, reliable, cost effective and high quality source of groundwater to promote the vitality, economy and environment of the District. In pursuit of the District's mission of protecting the resource, the District may regulate the spacing of water wells and the production of groundwater in order to minimize the drawdown of the water table or the reduction of artesian pressure, to control subsidence, to prevent interference between wells, to prevent degradation of water quality, or to prevent waste. The determination to seek action will be based on aquifer conditions observed by the District.

The District will enforce the terms and conditions of permits and the rules of the District by enjoining the permit holder in a court of competent jurisdiction as provided for in Texas Water Code Chapter 36.102.

The District will employ technical resources at its disposal to evaluate the resources available within the District and to determine the effectiveness of regulatory or conservation measures. A public or private user may appeal to the Board for discretion in enforcement of the provisions of the water supply deficit contingency plan on grounds of adverse economic hardship or unique local conditions. The exercise of said discretion by the Board shall not be construed as limiting the power of the Board.

XVII. Estimate of Modeled Available Groundwater - 31 TAC § 356.5(a)(5)(A)

As noted above, HB 1763 requires joint planning among groundwater districts within a common GMA. In compliance with this requirement, the member districts of GMA 14 developed DFCs for underlying aquifer formations. The approach taken by the GMA was primarily aquifer water-level based. Although Harris-Galveston SD and Fort Bend SD are subsidence districts rather than GCDs and thus were officially "unrepresented", both districts coordinated closely with GMA 14 to facilitate establishment of DFCs that would allow for effective management of both groundwater resources and subsidence. The DFC statement for the groundwater formations in these counties was based on prevention of future subsidence. DFCs were adopted by Resolution No. 2010-01 of GMA 14 and submitted to TWDB on August 25, 2010.

The DFC for the Gulf Coast Aquifer within Brazoria County is such that:

- From estimated year 2008 conditions, the average draw down of the Chicot aquifer should not exceed approximately 45 feet after 52 years.

- From estimated year 2008 conditions, the average draw down of the Evangeline aquifer should not exceed approximately 40 feet after 52 years.

In accordance with Texas Water Code, §36.1084, Subsection (b), the TWDB Executive Administrator developed and provided to the District a value of Modeled Available Groundwater based on the adopted DFCs. Texas Water Code, Section 36.001, Subsection (25), 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." These results were developed using the TWDB GAMs, with relevant MAG values for the Gulf Coast Aquifer in GMA 14 produced by GAM Run 10-038 MAG and submitted to member districts of GMA 14 on November 21, 2011.

The Gulf Coast Aquifer MAG for Brazoria County is shown in *Tables 6* and *7* below. The county-wide MAG is estimated as 50,396 acre-feet per year with a level estimate for years 2010 through 2060. Distributed across the County's land area, this is equivalent to approximately 0.058 acre-feet per acre.

Table 6. Gulf Coast Aquifer Modeled Available Groundwater for Brazoria County GCD by Aquifer Formation (acre-feet/year)

Formation	2010	2020	2030	2040	2050	2060
Chicot Aquifer	48,125	48,125	48,125	48,125	48,125	48,125
Evangeline Aquifer	2,271	2,271	2,271	2,271	2,271	2,271
Burkeville Confining Unit	0	0	0	0	0	0
Jasper Aquifer	0	0	0	0	0	0
Total	**50,396**	**50,396**	**50,396**	**50,396**	**50,396**	**50,396**

Table 7. Gulf Coast Aquifer Modeled Available Groundwater for Brazoria County GCD by River Basin (acre-feet/year)

River Basin	2010	2020	2030	2040	2050	2060
Brazos	6,658	6,658	6,658	6,658	6,658	6,658
Brazos-Colorado	11,648	11,648	11,648	11,648	11,648	11,648
San Jacinto-Brazos	32,090	32,090	32,090	32,090	32,090	32,090
Total	**50,396**	**50,396**	**50,396**	**50,396**	**50,396**	**50,396**

XVIII. Actions, Procedures, Performance and Avoidance Necessary to Effectuate the Plan - 31 TAC § 356.5(a)(4)

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 its 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 and all rules will be followed and enforced. The development of rules was based on the best scientific information and technical evidence available to the District.

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

The most recent available TWDB data reflects considerable year-to-year variability in estimated groundwater usage within the District, although five year average usage is within the value of the MAG. However, the District acknowledges that groundwater demands in Brazoria County have generally increased in recent years and may in the future reach the MAG. The District will closely monitor groundwater usage in order to achieve the goals of this plan and maintain consistency with the DFCs.

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

The general manager of the District will prepare and submit an annual report (Annual Report) to the District Board of Directors. The Annual Report will include an update on the District's performance in achieving the management goals contained in this plan. The general manager will present the Annual Report to the Board of Directors Within ninety (90) days following the completion of the District's Fiscal Year. A copy of the annual audit of District financial records will be included in the Annual Report. The District will maintain a copy of the Annual Report on file for public inspection at the District offices, upon adoption by the Board of Directors.

XX. Management Goals

A. Providing the Most Efficient Use of Groundwater - 31 TAC § 356.5(a)(1)(A)

A.1. **Objective** - Each year, the District will require registration or permitting of all new wells within the boundaries of the District.

A.1. **Performance Standard** - The number of exempt and permitted wells registered or permitted by the District for the year will be incorporated into the Annual Report submitted to the Board of Directors of the District.

A.2. **Objective** - Each year, the District will regulate the production of groundwater by maintaining a system of permitting the use and production of groundwater within the boundaries of the District in accordance with the District Rules.

A.2. **Performance Standard** - Each year, the number and type of applications made for the permitted use of groundwater in the District, and the number and type of permits issued by the District, will be included in the Annual Report given to the Board of Directors.

B. Controlling and Preventing Waste of Groundwater - 31 TAC § 356.5(a)(1)(B)

B.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.

B.1. **Performance Standard** - The District will include a discussion of the annual evaluation of the District Rules and the determination of whether any amendments to the rules are recommended to prevent the waste of groundwater in the Annual Report of the District provided to the Board of Directors.

B.2. **Objective** - Each year, the District will provide information to the public on eliminating and reducing wasteful practices in the use of groundwater by including information on groundwater waste reduction on the District's website.

B.2. **Performance Standard** - Each year, a copy of the information provided on the groundwater waste reduction page of District's website will be included in the District's Annual Report to be given to the District's Board of Directors.

C. Controlling and Preventing Subsidence - 31 TAC § 356.5(a)(1)(C)

C.1. **Objective** - Each year, the District may participate in a joint conference with the neighboring Groundwater Conservation or Subsidence Districts focused on sharing information regarding subsidence and the control and prevention of subsidence through the regulation of groundwater.

C.1. **Performance Standard** – If a joint conference is held with neighboring Groundwater Conservation or Subsidence Districts, a summary of the joint conference on subsidence issues will be included in the Annual Report submitted to the Board of Directors of the District.

C.2. **Objective** - Each year, the District will provide one article on the District's website to educate the public on the subject of subsidence.

C.2. **Performance Standard** - The Annual Report submitted to the Board of Directors will include a copy of the article posted on the District's website.

D. Conjunctive Surface Water Management Issues - 31 TAC § 356.5(a)(1)(D)

D.1. **Objective** - Each year, the District will participate in the regional planning process by attending, as able, the Region H - Regional Water Planning Group meetings to encourage the development of surface water supplies to meet the needs of water user groups in the District.

D.1. **Performance Standard** - The attendance of a District representative in at least one Region H Regional Water Planning Group meeting will be noted in the Annual Report presented to the District Board of Directors.

E. Drought Conditions - 31 TAC § 356.5(a)(1)(F)

E.1. **Objective** - Each month, the District will check for the periodic updates to the Drought Monitor (http://droughtmonitor.unl.edu/).

E.1. **Performance Standard** -Copies of the monthly Drought Monitor will be included in the District Annual Report to the Board of Directors.

F. Conservation, Recharge Enhancement, Rainwater Harvesting, Precipitation Enhancement, or Brush Control Where Appropriate and Cost Effective - 31 TAC § 356.5(a)(1)(G)

Recharge enhancement, precipitation enhancement, and brush control are not appropriate or cost-effective programs for the District at this time because there is not an existing precipitation enhancement program operating in nearby counties in which the District could participate and share costs. The cost of operating a single-county precipitation enhancement program is prohibitive and would require the District to gather substantial capital in order to fund such a project. The District has determined that addressing recharge enhancement, precipitation enhancement, and brush control is not applicable to the District at this time.

F.1. **Objective** - Each year, the District will provide one article or a link to an article on the District's website regarding water conservation.

F.1. **Performance Standard** - The Annual Report submitted to the Board of Directors will include a copy of the article posted on the District's website.

F.2. **Objective** - Each year, the District will provide one article or a link to an article on the District's website regarding rainwater harvesting.

F.2. **Performance Standard** - The Annual Report submitted to the Board of Directors will include a copy of the article posted on the District's website.

G. Natural Resource Issues That Affect the Use and Availability of Groundwater or are affected by the Use of Groundwater - 31 TAC § 356.5(a)(1)(E)

G.1 **Objective** - Each year the District will query the Texas Railroad Commission database to determine if any new salt water or waste disposal injection wells have been permitted by the Texas Railroad Commission to operate within the District.

G.1 **Performance Standard** - Each year a summary of any salt water or waste disposal injection wells in the District permitted by the Texas Railroad Commission will be included in the Annual Report submitted to the Board of Directors of the District.

G.2 **Objective** – Each year, the District will evaluate available data regarding the aquifers of the District and the quality of groundwater within the District.

G.2 **Performance Standard** - A progress report on the work of the District regarding monitoring water quality within the District will be included in the Annual Report submitted to the Board of Directors of the District.

H. Addressing in a Quantitative Manner the Desired Future Condition of the Groundwater Resources - 31 TAC § 356.5(a)(1)(H)

H.1 **Objective** – The District may undertake development of a more comprehensive well record database to facilitate District operations and achievement of management goals.

H.1 **Performance Standard** – If the District undertakes development of a more comprehensive well record database, progress in developing the system will be reported in the Annual Report to the Board of Directors.

H.2 **Objective** – Each year, the District will evaluate available data regarding the aquifers of the District and the production of groundwater within the District, including consistency of aquifer levels with DFCs.

H.2 **Performance Standard** - A progress report on the work of the District regarding monitoring water levels within the District will be included in the Annual Report submitted to the Board of Directors of the District.

XXI. References

Aronow, Saul, "Geomorphology and Surface Geology of Harris County, and Adjacent Parts of Brazoria, Fort Bend, Liberty, Montgomery, and Waller Counties, Texas." www.armandbayou.org/watersheds/pdf/ Aronow_Harris_geomorph.pdf, 2004.

Baker, E. T. "Stratigraphic and Hydrogeologic Framework of Part of the Coastal Plain of Texas." Texas Department of Water Resources, Report 236, 1979.

Baker, E. T. "Hydrology of the Jasper Aquifer in the Southeast Texas Coastal Plain." Texas Water Development Board, Report 295, 1986.

Chowdhury, Ali H. 2008. GAM Run 08-31. Texas Water Development Board, Groundwater Availability Modeling Section. July 22, 2008.

Hassan, M.H. 2011. GAM Run 10-038 MAG. Texas Water Development Board. November 18, 2011.

Sandeen, W. M., and Wesselman, J. B. 1973. Ground-Water Resources of Brazoria County, Texas. Texas Water Development Board Report 163. February 1973.

Kasmarek, M. C. and Robinson, J. L. 2004. Hydrogeology and Simulation of Ground-Water Flow and Land-Surface Subsidence in the Northern Part of the Gulf Coast Aquifer System Texas. U.S. Geological Survey Scientific Investigation Report 2004-5102.

Kasmarek, M.C., and Strom, E.W. 2002. “Hydrogeology and simulation of ground-water flow and land-surface subsidence in the Chicot and Evangeline aquifers, Houston area, Texas”. U.S. Geological Survey Water-Resources Investigations Report 02–402

Texas State Historical Association. Handbook of Texas Online. http://www.tshaonline.org/handbook/online. Last accessed September 27, 2012.

TWDB. 2006. Major Aquifers of Texas. Texas Water Development Board. December 2006.

TWDB. 2012. 2012 State Water Planning Database. https://www.twdb.state.tx.us/apps/db12/default.asp. Last accessed September 27, 2012.

TWDB. 2012. Historical Water Use Estimates. http://www.twdb.state.tx.us/waterplanning/waterusesurvey/estimates/index.asp. Last accessed September 27, 2012

USGS. 2002. Hydrogeology of the Texas Gulf Coast Aquifer Systems. United States Geological Survey Professional Paper 1416-E. August 2001.

Appendix A

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

This Page Intentionally Left Blank.

BC Groundwater

THE STATE OF TEXAS
COUNTY OF BRAZORIA

Before me, the undersigned authority, on this day personally appeared

Glenn Blount

who, after being duly sworn, did depose and say:

My name is Glenn Blount

General Manager of The Facts, a daily newspaper as that term is defined by Art. 28 a R.C.S. of Texas 1925, as amended, having a general circulation in Brazoria County and published in the City of Clute, County of Brazoria, State of Texas.

The attached printed matter is a true and correct copy of the publication of

Notice of Public Hearing

which was published and appeared in said newspaper, with publication being on the following date(s): November 21, 2012

My fee is 42.90

Glenn Blount

Given under my hand and seal of office on this 21 day of November, 2012 A.D.

Alexi Meredith Self

Notary Public in and for
Brazoria County, Texas.
My commission expires 08/24/15.

ALEXI MEREDITH SELF
NOTARY PUBLIC
STATE OF TEXAS
EXPIRES
08-24-2015

Public Notices

AMSTATE SELF Storage wishing to prevail themselves of the provisions of Chapter 59 of the Texas Property Code (Chapter 576 Acts of the 68th Legislature, Regular Session, 1983), as recodified by the Texas legislature and effective January 1, 1984 and thereafter, hereby gives Notice of Sale under said Act, to wit:

On Saturday, December 8, 2012, at Amstate Self Storage, 212 Abner Jackson Pkwy, Lake Jackson, Texas at the hour of 10:00 a.m. of that day. Amstate Self Storage will conduct an Oral Open-Bid Auction to the highest bidder of the contents of:

Unit 198 rented by Frank Fuller consisting of an oven, tool box, vacuums and misc. other household items.

Unit 388 rented by Melvin Robinson consisting of furniture, golf clubs and misc. other household items.

Unit 466 rented by Randy Benoit consisting of an RV, water damage to the inside, flat tires and hasn't run in years.

NOTICE OF PUBLIC HEARING

BRAZORIA COUNTY GROUNDWATER CONSERVATION DISTRICT GROUNDWATER MANAGEMENT PLAN

Notice is hereby given that a public hearing before the Board of Directors for the Brazoria County Groundwater Conservation District is set for Thursday, December 13, 2012 at 2:00 p.m. at the District office located at 451 N. Velasco, Suite 140, (Courthouse West Annex), Angleton, Texas, at which time the BOard will deliberate, discuss, consider and / or take final action on the Brazoria County Groundwater Management Plan.

A draft of the Brazoria County Groundwater Management Plan may be viewed at www.begroundwater.org or at the District office.

NOTICE OF RECEIPT OF APPLICATION AND INTENT TO OBTAIN AIR PERMIT RENEWAL

PERMIT NUMBER 20687

APPLICATION The Dow Chemical Company, has applied to the Texas Commission on Environmental Quality (TCEQ) for renewal of Air Quality Permit Number 20687, which would authorize continued operation of a Chemical Manufacturing Facility located at 2301 North Brazosport Boulevard, Freeport, Brazoria County, Texas 77541. This link to an electronic map of the site or facility's general location is provided as a public courtesy and not part of the application or notice. For exact location, refer to application. http://www.tceq.texas.gov/assets/public/hb610/index.html?lat=28.983611&lng=-95.396388&zoom=13&type=r
The existing facility and/or related facilities are authorized to emit the following air contaminants: organic compounds, acetone, and methylene chloride.

This application was submitted to the TCEQ on October 29, 2012. The application will be available for viewing and copying at the TCEQ central office, TCEQ Houston regional office, and the Freeport Public Library, 410 Brazosport Boulevard, Freeport, Brazoria County, Texas, beginning the first day of publication of this notice. The facility's compliance file, if any exists, is available for public review in the Houston regional office of the TCEQ.

The executive director has determined the application is administratively complete and will conduct a technical review of the application. An amendment application that is not subject to public notice or an opportunity for a contested case hearing is also being reviewed. The reasons for any changes or incorporations, to the extent they are included in the renewed permit, may include the enhancement of operational control at the plant or enforceability of the permit. For more information about this permit application or the permitting process, please call the Public Education Program toll free at 1-800-687-4040. **The TCEQ may act on this application without seeking further public comment or providing an opportunity for a contested case hearing if certain criteria are met.**

PUBLIC COMMENT You may submit public comments, or a request for a contested case hearing to the Office of the Chief Clerk at the address below. The TCEQ will consider all public comments in developing a final decision on the application. **The deadline to submit public comments is 15 days after newspaper notice is published.** After the deadline for public comments, the executive director will prepare a response to all relevant and material, or significant public comments. Issues such as property values, noise, traffic safety, and zoning are outside of the TCEQ's jurisdiction to address in the permit process.

After the technical review is complete the executive director will consider the comments and prepare a response to all relevant and material, or significant public comments. If only comments are received, the response to comments, along with the executive director's decision on the application, will then be mailed to everyone who submitted public comments or who is on the mailing list for this application, unless the application is directly referred to a contested case hearing.

OPPORTUNITY FOR A CONTESTED CASE HEARING You may request a contested case hearing. The applicant or the executive director may also request that the application be directly referred to a contested case hearing after technical review of the application. A contested case hearing is a legal proceeding similar to a civil trial in state district court. Unless a written request for a contested case hearing is filed within 15 days from this notice, the executive director may act on the application. **If no hearing request is received within this 15 day period, no further opportunity for hearing will be provided.** According to the Texas Clean Air Act § 382.056(o) a contested case hearing may only be granted if the applicant's compliance history is in the lowest classification under applicable compliance history requirements and if the hearing request is based on disputed issues of fact that are relevant and material to the Commission's decision on the application. Further, the Commission may only grant a hearing on those issues raised during the public comment period and not withdrawn.

A person who may be affected by emissions of air contaminants from the facility is entitled to request a hearing. If requesting a contested case hearing, you must submit the following: (1) your name (or for a group or association, an official representative), mailing address, daytime phone number, and fax number, if any; (2) applicant's name and permit number; (3) the statement "[I/we] request a contested case hearing;" (4) a specific description of how you would be adversely affected by the application and air emissions from the facility in a way not common to the general public; (5) the location and distance of your property relative to the facility; and (6) a descrip-
tion of how you use the property which may be impacted by the facility. If the request is made by a group or association, the one or more members who have standing to request a hearing and the interests the group or association seeks to protect must also be identified. You may also submit your proposed adjustments to the application/permit which would satisfy your concerns. Requests for a contested case hearing must be submitted in writing within 15 days following this notice to the Office of the Chief Clerk at the address below.

If any requests for a contested case hearing are timely filed, the executive director will forward the application and any requests for a contested case hearing to the Commissioners for their consideration at a scheduled Commission meeting. Unless the application is directly referred to a contested case hearing, the executive director will mail the response to comments along with notification of Commission meeting to everyone who submitted comments or is on the mailing list for this application. **If a hearing is granted, the subject of a hearing will be limited to disputed issues of fact relating to relevant and material air quality concerns raised during the comment period.** Issues such as property values, noise, traffic safety, and zoning are outside of the Commission's jurisdiction to address in this proceeding.

MAILING LIST In addition to submitting public comments, you may ask to be placed on a mailing list for this application by sending a request to the Office of the Chief Clerk at the address below. Those on the mailing list will receive copies of future public notices (if any) mailed by the Office of the Chief Clerk for this application.

AGENCY CONTACTS AND INFORMATION Public comments and requests must be submitted either electronically at www.tceq.texas.gov/about/comments.html, or in writing to the Texas Commission on Environmental Quality, Office of the Chief Clerk, MC-105, P.O. Box 13087, Austin, Texas 78711-3087. If you communicate with the TCEQ electronically, please be aware that your email address, like your physical mailing address, will become part of the agency's public record. For more information about this permit application or the permitting process, please call the Public Education Program toll free at 1-800-687-4040. Si desea información en Español, puede llamar al 1-800-687-4040.

Further information may also be obtained from The Dow Chemical Company, 2301 North Brazosport Boulevard, APB Building, Freeport, Texas 77541-3203 or by calling Ms. Amy Cross, Environmental, Health, and Safety, Leveraged Delivery at (979) 238-3514.

–

Notice Issuance Date: November 2, 2012

Filed: 12/07/2012 11:29:50 AM
Joyce Hudman
Joyce Hudman
County Clerk
Brazoria County, Texas

NOTICE OF MEETING OF THE
BRAZORIA COUNTY GROUNDWATER CONSERVATION DISTRICT
BOARD OF DIRECTORS

Notice is hereby given that the Board of Directors of the Brazoria County Groundwater Conservation District will meet at 2:00 p.m. on Thursday, December 13, 2012 in the District Office, Courthouse West Annex, 451 N. Velasco Street, Suite 140, Angleton, Texas. At said meeting the Board will deliberate, discuss, consider and / or take final action on any or all of the following matters:

AGENDA

I. CALL TO ORDER

II. ROLL CALL

III. APPROVE MINUTES OF THE MEETING OF: November 8, 2012

IV. PUBLIC APPEARANCES:

Members of the public may request permission to address the Board of Directors. Specific factual information or a recitation of existing policy may be furnished in response to an inquiry made by a member of the general public, but any deliberation, discussion, or decision with respect to ay subject about which the inquiry was made shall be limited to a proposal to place such subject on the agenda for a subsequent meeting for which notice is provided in compliance with the Texas Open Meetings Act unless said notice appears herein. The public is reminded that there is a five (5) minute time limit as outlined in Brazoria County Groundwater Conservation District Order #07-06-05 dated June 14, 2007.

V. NEW BUSINESS:

A. Fiscal:

1. **Financial Report**

2. **Approve invoices for payment**

B. Administrative:

1. **Conduct public hearing and take action regarding Brazoria County Groundwater Conservation District Groundwater Management Plan**

2. **Conduct public hearing and consider action regarding permit applications:**

1. ALVIN INDEPENDENT SCHOOL DISTRICT
2. ASCEND PERFORMANCE MATERIALS OPERATIONS
3. BAG A BAG
4. BASF FREEPORT
5. BRAZOSPORT COLLEGE DISTRICT
6. BULLARD, GARY
7. CHEVRON PHILLIPS CHEMICAL CO.
8. CHEVRON PHILLIPS REC CENTER
9. CITY OF RICHWOOD
10. DOW CHEMICAL COMPANY PLANT A
11. ENTERPRISE PRODUCTS
12. GE OIL & GAS LOGGING SERVICES
13. HIGH FIVE
14. MALLARD LAKE CLUB
15. NEW LIFE MISSIONARY BAPTIST CHURCH
16. OAKRIDGE RV RESORT
17. OYSTER CREEK ESTATES
18. RIVER'S END VOLUNTEER FIRE DEPT.
19. ROESSLER, DAVID
20. RONNIE GOOLSBY WATER WELL SERVICE
21. RPM SERVICES, INC.
22. SAVANNAH PLANTATION
23. SER CONSTRUCTION
24. SILVERLAKE COMMUNITY CHURCH
25. SOUTHWYK C.A.
26. TEMPLO CHRISTO PARA TODOS
27. TEXFLOW OIL FIELD SPECIALTY
28. TWIN LAKES CLUB
29. UNICAT CATALYST TECHNOLOGIES, INC
30. VILLAS AT SHADOW CREEK

3. **Consider Compromise and Settlement Agreement with Twin Lakes Club**

4. **Exempt Well Registration Report**

5. **Review current drought monitor report**

6. **Schedule public hearing on Thursday, January 10, 2013 at 2:00 p.m. in the District Office to consider permit and renewal applications**

7. **Review and possible action regarding draft amendments to District Rules as presented by Greg Ellis, attorney for District**

VI. POSSIBLE FUTURE AGENDA ITEMS:

VII. ADJOURN

Sheridan Plant

Administrator for District

NOTE: Items will not necessarily be presented in the order they are posted
The Brazoria County Groundwater Conservation District is committed to compliance with the Americans with Disabilities Act (ADA). Reasonable accommodations and equal opportunity for effective communications will be provided upon request. Please contact the Brazoria County Groundwater Conservation District Office at (979) 864-1078 at least 24 hours in advance if accommodation is needed.

This Page Intentionally Left Blank.

MINUTES OF THE MEETING OF THE BOARD OF DIRECTORS OF THE BRAZORIA COUNTY GROUNDWATER CONSERVATION DISTRICT

The Board of Directors of the Brazoria County Groundwater Conservation District met Thursday, the 13th day of December, 2012, at 2:00 p.m. in the Brazoria County Groundwater Conservation District Office, 451 N. Velasco Street, 1st Floor, Suite 140, Angleton, Texas.

The meeting was called to order by Director Pyburn at 2:01 p.m.

The roll was called of the duly constituted members of the Board, to wit:

John Pyburn	President
Patrick O'Day	Vice President
Raymond Felder	Secretary
Alan Mueller	Assistant Secretary
Ronnie Goolsby	Director

All of said Directors were present except Director O'Day, thus constituting a quorum.

Also present for all or part of the meeting was the following: Kent Burkett, General Manager, Sherry Plentl, Administrative Assistant, Greg Ellis, Attorney for the District, Philip Taucer of Freese and Nichols, Mike Turco of U.S.G.S., Cheri Jackson representing BASF Corporation and Frank Hickl with Brazosport College.

APPROVE MINUTES:

Motion by Director Felder; Seconded by Director Goolsby that the Minutes from the meeting on November 8, 2012 be approved as presented. Motion approved with all present voting aye.

PUBLIC APPEARANCE:

Mike Turco with U.S.G.S. presented the Water Level Altitudes 2012 and Water Level Changes in the Chicot, Evangeline and Jasper Aquifers and Compaction 1973 – 2011 in the Chicot and Evangeline Aquifers maps and presented the proposed U.S.G.S. Joint Funding Agreement for 2013.

FINANCIAL REPORT AND BUDGET SUMMARY:

A current financial status report was presented for review. No action was taken.

APPROVE INVOICES FOR PAYMENT:

Motion by Director Felder; Seconded by Director Mueller that the invoices presented be approved for payment. Motion approved with all present voting aye.

OPEN PUBLIC HEARING REGARDING BRAZORIA COUNTY GROUNDWATER MANAGEMENT PLAN

Motion by Director Pyburn, Seconded by Director Felder that a public hearing be opened regarding the revised Brazoria County Groundwater Management Plan. Motion approved with all present voting aye.

CLOSE PUBLIC HEARING REGARDING BRAZORIA COUNTY GROUNDWATER MANAGEMENT PLAN

Motion by Director Felder, Seconded by Director Pyburn that the public hearing regarding the revised Brazoria County Groundwater Management Plan be closed. Motion approved with all present voting aye.

APPROVE THE BRAZORIA COUNTY GROUNDWATER MANAGEMENT PLAN

Motion by Director Felder, Seconded by Director Mueller, to approve the Brazoria County Groundwater Management Plan as revised to include changes made pursuant to language discussed in the public hearing. Motion approved with all present voting aye.

OPEN PUBLIC HEARING REGARDING PERMIT AND RENEWAL APPLICATIONS:

Motion by Director Felder; Seconded by Director Goolsby that the Board **OPEN** a public hearing regarding applications for permits/renewals received. Motion approved with all present voting aye.

CLOSE PUBLIC HEARING REGARDING PERMIT AND RENEWAL APPLICATIONS:

Motion by Director Pyburn; Seconded by Director Goolsby that the public hearing regarding applications for permits/renewals received be **CLOSED**. Motion approved with all present voting aye.

APPROVE PERMIT AND RENEWAL APPLICATIONS:

Motion by Director Pyburn; Seconded by Director Felder that Items 1 - 30 be approved with the following exceptions:

Item 28- Twin Lakes Club: Approve the renewal of the public water system permit and pass on the two existing un-permitted lake wells pending receipt of additional information with regard to the well sizes.

Motion approved with all present voting aye.

SUMMARY OF PERMITS/RENEWALS APPROVED 10/11/12	
Total Wells:	**45**
Renewals:	**38**
New Wells:	**4**
Existing:	**3**

PWS	**16**
C/D	**24**
Industrial	**2**
Other	**3**

EXEMPT WELL REGISTRATION REPORT:

The Exempt Well Registration Report for the current period was reviewed. No action was taken.

DROUGHT MONITOR REPORT:

The current U. S. Drought Monitor Report was reviewed. No action was taken.

SET HEARING DATE FOR PERMIT APPLICATIONS:

Motion by Director Felder; Seconded by Director Mueller that a public hearing to consider approval of permit and renewal applications be set for the next meeting of the Board of Directors on **Thursday, January 10, 2013 at 2:00 p.m.** in the District Office and that the applicants be duly notified. Motion approved with all present voting aye.

REVIEW AND DISCUSS PROPOSED DRAFT AMENDMENTS TO THE DISTRICT RULES:

The Board entered into a discussion and review of proposed amendments to the District Rules, led by Greg Ellis, attorney for the District. No action was taken at this time.

FUTURE AGENDA ITEMS:

The Board will consider the Proposed 2013 Joint Funding Agreement with U.S.G.S. at the next meeting.

The Board will continue discussion of proposed amendments at the next meeting.

ADJOURN:

As there were no further matters to be had, the motion to adjourn was made by Director Goolsby and seconded by Director Pyburn. All present voting aye. The meeting was adjourned at 5:05 p.m.

Approved this 10th day of January, 2013

Raymond D. Felder

Raymond D. Felder, Secretary
Board of Directors

BRAZORIA COUNTY GROUNDWATER CONSERVATION DISTRICT

451 N. Velasco Street, Suite 140, Angleton, Texas 77515

Mailing Address: 111 E. Locust, Bldg. A-29, Suite 140, Angleton, Texas 77515

January 14, 2013

Mr. Ivan Langford
General Manager
Gulf Coast Water Authority
3630 Highway 1765
Texas City, TX 77591

Re: Brazoria County Groundwater Conservation District Groundwater Management Plan

Dear Mr. Langford:

In 1997 the 75th Texas Legislature established a statewide comprehensive regional water planning initiative with the enactment of Senate Bill 1 (SB1). Among the provisions of SB1 were amendments to Chapter 36 of the Texas Water Code requiring groundwater conservation districts to develop a groundwater management plan that is to be submitted to the Texas Water Development Board (TWDB). The groundwater management plan is specified to contain management goals for each district, estimates on the availability of groundwater in the District, and details of how the District would manage and conserve groundwater resources. Groundwater management plans must periodically be readopted in accordance with statutory requirements.

The Brazoria County Groundwater Conservation District ("District") has revised and readopted its Groundwater Management Plan, which will be submitted for approval to the TWDB. Historically, the District has coordinated with all surface water management entities within its boundaries. Therefore, attached you will find the District Groundwater Management Plan for your records. Should you have any questions, please contact me at (979) 864-1078.

Sincerely,

Kent Burkett
General Manager
Brazoria County Groundwater Conservation District

BRAZORIA COUNTY GROUNDWATER CONSERVATION DISTRICT

451 N. Velasco Street, Suite 140, Angleton, Texas 77515

Mailing Address: 111 E. Locust, Bldg. A-29, Suite 140, Angleton, Texas 77515

January 14, 2013

Mr. Ronald Woodruff
General Manager
Brazosport Water Authority
1251 FM 2004
Lake Jackson, TX 77566

Re: Brazoria County Groundwater Conservation District Groundwater Management Plan

Dear Mr. Woodruff:

In 1997 the 75th Texas Legislature established a statewide comprehensive regional water planning initiative with the enactment of Senate Bill 1 (SB1). Among the provisions of SB1 were amendments to Chapter 36 of the Texas Water Code requiring groundwater conservation districts to develop a groundwater management plan that is to be submitted to the Texas Water Development Board (TWDB). The groundwater management plan is specified to contain management goals for each district, estimates on the availability of groundwater in the District, and details of how the District would manage and conserve groundwater resources. Groundwater management plans must periodically be readopted in accordance with statutory requirements.

The Brazoria County Groundwater Conservation District ("District") has revised and readopted its Groundwater Management Plan, which will be submitted for approval to the TWDB. Historically, the District has coordinated with all surface water management entities within its boundaries. Therefore, attached you will find the District Groundwater Management Plan for your records. Should you have any questions, please contact me at (979) 864-1078.

Sincerely,

Kent Burkett
General Manager
Brazoria County Groundwater Conservation District

BRAZORIA COUNTY GROUNDWATER CONSERVATION DISTRICT

451 N. Velasco Street, Suite 140, Angleton, Texas 77515

Mailing Address: 111 E. Locust, Bldg. A-29, Suite 140, Angleton, Texas 77515

January 14, 2013

Mr. Phil Ford
General Manager/CEO
Brazos River Authority
P. O. Box 7555
Waco, TX 76714

Re: Brazoria County Groundwater Conservation District Groundwater Management Plan

Dear Mr. Ford:

In 1997 the 75th Texas Legislature established a statewide comprehensive regional water planning initiative with the enactment of Senate Bill 1 (SB1). Among the provisions of SB1 were amendments to Chapter 36 of the Texas Water Code requiring groundwater conservation districts to develop a groundwater management plan that is to be submitted to the Texas Water Development Board (TWDB). The groundwater management plan is specified to contain management goals for each district, estimates on the availability of groundwater in the District, and details of how the District would manage and conserve groundwater resources. Groundwater management plans must periodically be readopted in accordance with statutory requirements.

The Brazoria County Groundwater Conservation District ("District") has revised and readopted its Groundwater Management Plan, which will be submitted for approval to the TWDB. Historically, the District has coordinated with all surface water management entities within its boundaries. Therefore, attached you will find the District Groundwater Management Plan for your records. Should you have any questions, please contact me at (979) 864-1078.

Sincerely,

Kent Burkett
General Manager
Brazoria County Groundwater Conservation District

This Page Intentionally Left Blank

Appendix B

Rules of the District

This Page Intentionally Left Blank.

RULES OF THE

BRAZORIA COUNTY
GROUNDWATER CONSERVATION DISTRICT

ADOPTED ON:
May 8, 2008

RULES OF THE

BRAZORIA COUNTY
GROUNDWATER CONSERVATION DISTRICT

Board of Directors

Dennis Ferguson – President

John Pyburn – Vice President

Raymond Felder – Secretary

Donald Mudd – Asst. Secretary

Dr. Glenn Garrison - Director

TABLE OF CONTENTS

CHAPTER 1. GENERAL PROVISIONS

SUBCHAPTER A: GENERAL

§1.1 PURPOSE OF RULES.

The purpose of the District Rules of the Brazoria County Groundwater Conservation District (the ñDistrict Rulesò) is to implement the powers and duties of the District under its enabling Act as amended, Texas Water Code Chapter 36, and other applicable laws and to establish the general policies and procedures of the District.

§1.2 USE AND EFFECT OF RULES.

(a) The District Rules shall not be construed as a limitation or restriction on the exercise of any discretion, where it exists; nor shall they be construed to deprive the District or Board of the exercise of any powers, duties or jurisdiction conferred by law; nor shall they be construed to limit or restrict the amount and character of data or information that may be required to be collected for the proper administration of the Act as amended.

(b) Except as otherwise specified, the District Rules are effective on the date of adoption by the Board of Directors. References to Texas Water Code Chapter 36 include subsequent revisions and are effective upon the effective date of the District Rules or upon the effective date of subsequent amendments to Texas Water Code Chapter 36.

§1.3 AMENDING RULES.

The Board may, following notice and hearing, amend the District Rules or adopt new rules from time to time.

§1.4 HEADINGS AND CAPTIONS.

The section and other headings and captions contained in the District Rules are for reference purposes only and shall not affect in any way the meaning or interpretation of the District Rules.

§1.5 CONSTRUCTION OF RULES.

(a) Unless otherwise expressly provided for in the District Rules, the past, present and future tense shall each include the other; the masculine, feminine and neuter gender shall each include the other; and the singular and plural number shall each include the other.

(b) The verbs ñmay,ò ñcan,ò ñmight,ò ñshould,ò or ñcouldò are used when an action is optional or may not apply in every case. The verbs ñwill,ò ñshall,ò or ñmustò are used when an action is required. The verb ñcannotò is used when an action is not allowed or is unachievable.

§1.6 SEVERABILITY.

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

§1.7 SAVINGS CLAUSE.

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

§1.8 COMPUTING TIME.

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

§1.9 TIME LIMITS.

Applications, requests, or other papers or documents required or permitted to be filed under the District Rules must be received for filing at the District, within the time limit, if any, for such filing. The date of receipt and not the date of posting is determinative.

§1.10 REGULATORY COMPLIANCE.

Where District Rules and regulations are more stringent than those of other governmental entities, the District Rules and regulations shall control, provided the rules and regulations are within the scope of the Districtôs statutory authority and are not otherwise preempted by state or federal law.

SUBCHAPTER B: RULEMAKING PROCEDURES

§1.20 PUBLIC HEARINGS ON PROPOSED RULES.

The Board shall hold at least one public hearing on proposed rules prior to adoption of the proposed rules as final rules.

§1.21 NOTICE OF PUBLIC HEARINGS ON PROPOSED RULES.

(a) The Board will set a time and place for any public hearing on proposed rules of the District.

(b) The Board shall give prior notice of the public hearing at least twenty (20) days before the public hearing by all of the following:

(1) posting the notice in the location where notices of the Districtôs Board meetings are posted;

(2) providing notice to the Brazoria County Clerk;

(3) publishing notice in one or more newspapers of general circulation in Brazoria County; and

(4) providing notice by mail, facsimile, or electronic mail to any person who has requested notice.

(c) The notice shall advise the public of the following:

(1) the time, date, and location of the rulemaking hearing;

(2) a brief explanation of the subject of the rulemaking hearing; and

(3) a location or Internet site at which a copy of the proposed rules may be reviewed or copied.

CHAPTER 2. DEFINITIONS

§2.1 APPLICABILITY.

(a) The District employs two types of definitions. General definitions apply to all Rules of the District. Specific definitions apply only to the chapter in which they are located. Specific definitions applying only to a particular chapter are set out in that chapter.

(b) The District follows the definitions of terms set forth in Texas Water Code Chapter 36 and other definitions as set forth herein.

§2.2 DEFINITIONS.

Unless the context clearly indicates a contrary meaning, the following words and terms shall have the following meanings in the District Rules:

(1) ñ**Abandoned Well**ò - a well that has not been used for six consecutive months. A well is considered to be in use in the following cases: (a) a non-deteriorated well which contains the casing, pump, and pump column in good condition; (b) a non-deteriorated relief well; or (c) a non-deteriorated well which has been capped.

(2) ñ**Acre Foot**ò - the volume of water necessary to cover one acre of land one foot deep or 325,851 gallons.

(3) **"Act"** - the District's enabling legislation H.B. No. 3602 of the 78th Texas Legislature, as amended by H.B. No. 4114 of the 80th Texas Legislature, in conjunction with Texas Water Code Chapter 36, as amended.

(4) **"Agricultural Use**ò - any use or activity involving agriculture, including irrigation, as defined in Texas Water Code Section 36.001(2). including but not limited to aquaculture; irrigation to cultivate the soil to produce crops; the practice of floriculture, viticulture, silviculture, and horticulture, including nursery grower operations; raising, feeding, or keeping animals for breeding or production of food or fiber or other products with a tangible commercial value; planting cover crops, wildlife management; or raising or keeping equine animals.

(5) ñ**Agriculture"** - cultivating the soil to produce crops for human food, animal feed, or planting seed or for the production of fibers; the practice of floriculture, viticulture, silviculture, and horticulture, the cultivation of plants in containers or non-soil media, by a nursery grower; raising, feeding, or keeping animals for breeding or production of food or fiber or other products with a tangible commercial value; planting cover crops; wildlife management; or raising or keeping equine animals, as defined in Texas Water Code Section 36.001(19).

(6) **"Annular Space**ò - the space between two cylindrical objects, one of which surrounds the other, such as the space between the walls of a drilled hole and the installed casing.

(7) ñ**AWWA**ò - American Water Works Association.

(8) ñ**Board**ò - the Board of Directors of the Brazoria County Groundwater Conservation District.

(9) ñ**Capped**ò ï with respect to a water well, means a well that is closed or capped with a covering capable of preventing surface pollutants from entering the well and sustaining weight of at least 400 pounds and constructed in such a way that the covering cannot be easily removed by hand.

(10) ñ**Casing**ò ï a watertight pipe which is installed in an excavated or drilled hole, temporarily or permanently, to maintain the hole sidewalls against caving, advance the borehole, and in conjunction with cementing and/or bentonite grouting, to confine the groundwaters to their respective zones or origin, or to prevent surface contaminant infiltration.

(11) ñ**Cement Grout**ò - a mixture of water and cement, which may also include a bentonite clay component.

(12) **"Commission" -** means the Texas Commission on Environmental Quality or its successor agency.

(13) ñ**Dewatering Well**ò ï a well used to produce groundwater to lower or control the level of the water table in the area of the well.

(14) ñ**Director**ò - an elected or appointed member of the Board of Directors of the Brazoria County Groundwater Conservation District.

(15) ñ**Discharge**ò - the volume of water that passes a given point within a given period of time.

(16) ñ**District**ò - the Brazoria County Groundwater Conservation District.

(17) ñ**District Rules**ò - standards and regulations promulgated by the District.

(18) **"Domestic Use"** - the use of water by an individual, or a single family unit. or household for drinking, cooking, laundering, sanitation, and other personal comforts and necessities; obtained directly by an individual or single family unit, not supplied by a water company, water district, or municipality.

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

(20) **"Existing Well"** ï any well in the District that was drilled and completed prior to the adoption of the District Rules.

(21) **"Export"** ï the transfer of groundwater out of the District.

(22) ñ**Fees**ò - charges imposed by the District pursuant to rule, order, or the Act.

(23) ñ**Groundwater"** - water located beneath the earth's surface but does not include water produced with oil and gas production or water that is discharged from a relief well or associated piezometer.

(24) ñ**Groundwater Reservoir**ò - a specific subsurface water-bearing reservoir having ascertainable boundaries and containing groundwater.

(25) **"Incidental Use"** - a beneficial use of water which is of a minor nature. Transport of water outside the District by a permittee which totals 5% or less, but in no case more than 5,000,000 gallons, of the permitteeôs annual estimated pumpage is considered incidental use (15.34 acre foot).

(26) ñ**Industrial Use**ò ï including, but not limited to, the use of water integral to the production of primary goods and/or services provided by industrial, manufacturing or commercial facilities and used primarily in the building, production, manufacturing, or alteration of a product or goods, or a well used to wash, cleanse, cool, or heat such goods or products; does not include agricultural use.

(27) **"Meter"** ï a water flow measurement device which meets AWWA standards for the applicable line size, pressures and flows and which is properly installed according to the manufacturerôs specifications.

(28) ñ**Modify**ò - to alter the physical or mechanical characteristics of a well, its equipment, or production capabilities. This does not include repair of equipment, well houses or enclosures, or replacement with comparable equipment.

(29) ñ**Monitoring Well" -** a well constructed to measure or monitor water quality and/or quantity and movement. Included within this definition are environmental soil borings, piezometer wells, observation wells, and recovery wells.

(30) **"Municipal Use" -** the use of water for a public water system for residential, commercial, or public and institutional uses, including the application of potable water for irrigation of golf courses, parks and recreational uses; it does not include water for industrial uses even when industrial users are receiving potable water.

(31) **"New Well"** ï any well that is not an existing well as defined in the District Rules.

(32) ñ**Open or Uncovered Well**ò - an artificial excavation at least 10 feet deep and not more than six feet in diameter, that is dug or drilled for the purpose of producing the groundwater, or for injection, monitoring, or de-watering purposes, and is not capped or covered as required by the District.

(33) ñ**Operate or Operations**ò - to produce or cause to produce water from a well or to use a well for injection or closed loop heat exchange purposes.

(34) ñ**Person**ò - includes a corporation, individual, organization, cooperative, government or governmental subdivision or agency, business trust, estate, trust, partnership, association, or any other legal entity.

(35) ñ**Plug**ò - to close a well permanently in accordance with approved District standards.

(36) **"Potable Water"** ï water which is safe for human consumption in that it is free from impurities in amounts sufficient to cause disease or harmful physiological effects.

(37) ñ**Public Water System**: - As defined by Texas Administrative Code, Title 30, Chapter 290, a system for the provision to the public of water for human consumption through pipes or other constructed conveyances.. Such a system must have at least 15 service connections or serve at least 25 individuals at least 60 days out of the year. This term includes; any collection, treatment, storage, and distribution facilities under the control of the operator of such system and used primarily in connection with such system, and any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. Two or more systems with each having a potential to serve less than 15 connections or less than 25 individuals but owned by the same person, firm, or corporation and located on adjacent land will be considered a public water system when the total potential service connections in the combined systems are 15 or greater or if the total number of individuals served by the combined systems total 25 or greater at least 60 days out of the year. Without excluding other meanings of the terms "individual" or "served," an individual shall be deemed to be served by a water system if he lives in, uses as his place of employment, or works in a place to which drinking water is supplied from the system.

(38) ñ**Pumpage**ò - all groundwater withdrawn from the ground, measured at the wellhead.

(39) ñ**Permit**ò - an authorization issued by the District allowing the withdrawal of groundwater from a nonexempt well for a designated period of time and/or a specific amount of groundwater from a nonexempt well for a designated period of time, generally in the form of gallons or acre-feet per year.

(40) ñ**Permit Amendment**ò - a minor or major change in the permit.

(41) **"Recreational Use**ò ï the use of water for fishing, swimming, water skiing, boating, hunting, and other forms of water recreation, including aquatic and wildlife enjoyment, and aesthetic land enhancement of a subdivision, golf course or similar development.

(42) ñ**Red Tag**ò - an official seal, tag, or label placed on a well or its equipment, or the act of placing the tag or label, to indicate that further pumping of groundwater, or operation of the well, or continuing with other District regulated activities is not permitted by the District, will be in violation of District Rules, and may subject the well owner and operator to civil suit and/or penalties.

(43) **"Relief Well" –** an artesian well and associated piezometers used to maintain the structural integrity of a reservoir embankment system or other similar structures.

(44) **"Remediation Well**ò- means a well used to clean up, treat, or prevent contamination of underground sources of water.

(45) **"Salt Dome"** - geologic structure resulting from the upward movement of a salt mass caused by gravitational instability of a low density salt layer overlain by a high density layer.

(46) ñ**Seal**ò - the impermeable material, such as cement grout, bentonite, or puddling clay, placed in the annular space between the borehole wall and the casing to prevent the downhole movement of surface water or the vertical mixing of groundwater.

(47) ñ**Special Provisions**ò - conditions or requirements added to a permit which may be more or less restrictive than the District Rules as a result of circumstances unique to a particular situation.

(48) ñ**Spring**ò - a point(s) of natural discharge from an aquifer.

(49) ñ**Stratum**ò - a layer of rock having a similar composition throughout.

(50) ñ**Subsidence**ò ï sinking of a portion of the land surface resulting from removal of fluids from subsurface reservoirs such as oil and gas deposits, groundwater, or salt domes.

(51) ñ**User**ò - a person who produces, distributes, or uses water from the aquifer(s).

(52) ñ**Water Table**ò - the upper boundary of the saturated zone in an unconfined aquifer.

(53) ñ**Well**ò - any artificial excavation or borehole constructed for the purposes of exploring for or producing groundwater, or for injection, monitoring, or de-watering purposes.

(54) ñ**Well Log**ò - an accurately kept record made during the process of drilling on forms prescribed by the Texas Department of Licensing and Registration (TDLR), showing the depth of the well bore, thickness of the formations, character of casing installed, together with any other data or information required by the Water Well Drillers Team; or any other special purpose well log that may be available for a given well, such as a gamma ray log, a temperature log, an electric log, or a caliper log.

(55) ñ**Well Pumps and Equipment**ò - devices and materials used to obtain water from a well, including the seals and safeguards necessary to protect the water from contamination.

(56) ñ**Well Registration**ò - the creation of a record of the well by use and a well identification number for purposes of registering the well as to its geographic location and for notification to the well owner in cases of spills or accidents, data collection, record keeping and for future planning purposes.

(57) ñ**Withdraw or Withdrawal**ò - the act of extracting groundwater by pumping or any other method, other than the discharge of natural springs.

CHAPTER 3. REGISTRATION, PERMITS, FEES, AND OTHER REQUIREMENTS

SUBCHAPTER A: SCOPE AND APPLICABILITY

§3.1 REGISTRATION REQUIRED.

(a) The Board has determined that registration of wells within the District benefits the public and supports the preservation and protection of groundwater within the District by providing detailed information regarding the size and location of wells located within the District.

(b) Except as provided herein, all permanent production wells within the District, whether exempt or non-exempt from permitting, are required to be registered with the District and a State Well Report must be submitted to the District within sixty (60) days of the drilling of a well. If the State Well Report is not submitted to the District within sixty (60) days of the drilling of a well, the continued operation of the well is a violation of District Rules and is subject to fines and fees in accordance with Section 10.9 of the Rules.

(c) The following types of wells are not required to be registered with the District:

(1) Non-production monitoring wells; and

(2) Temporary dewatering wells; and

(3) Remediation wells.

§3.2 REGISTRATION OF WELLS.

(a) Except as provided in Section 3.1, all new wells must be registered by the well owner, the well driller, or other authorized agent of the well owner prior to the well being drilled, equipped or completed.

(b) Registration of existing wells that are exempt from permitting by the District:

All existing exempt wells having an inside diameter measuring greater than 4.5 inches must be registered by the well owner or the agent of the well owner by December 31, 2006. All existing exempt wells having an inside diameter measuring between 3.5 inches and 4.5 inches must be registered by the well owner or the agent of the well owner by December 31, 2007. All existing exempt wells having an inside diameter measuring less than 3.5 inches may be registered by the well owner or the agent of the well owner on a voluntary basis.

(c) Registration of existing wells that are non-exempt from permitting by the District:

All existing non-exempt wells must be fully compliant with the registration requirements of this section prior to December 31, 2007.

(d) The well owner, the well driller or the authorized agent of the well owner shall register the well by completing a District registration form and submitting the form to the District.

(e) It is a violation of the Districtôs Rules to drill, equip, complete, or produce groundwater from a new well, or to operate an existing well after December 31, 2006, without submitting a complete District registration form to the District. A violation begins on the first day of such drilling, equipping, completion, production of groundwater or operation and continues each day thereafter until a complete District registration form is submitted to the District.

(f) A registration for a new well will expire and be considered null and void by the District if the well is not drilled within one year of the date the complete District registration form is submitted to the District. The registrant must submit a new and complete District registration form to the District before drilling may commence on the new well.

NO FEE, TAX OR OTHER ASSESSMENT WILL BE COLLECTED FOR WELL REGISTRATION.

§3.3 PERMIT REQUIREMENTS.

(a) Except as otherwise provided herein, a permit from the District is required prior to drilling, equipping, completing, operating, or producing groundwater from any non-exempt well within the District. It is a violation of the District Rules for a well owner, well operator, well driller, or any other person acting on behalf of the well owner to drill, equip, complete, operate, or produce groundwater from a non-exempt well within the District without first obtaining the proper permit or permit amendment.

(b) A well must remain properly permitted unless and until the power source is disconnected or the well casing or discharge pipe is capped or plugged.

(c) An application for a permit, permit amendment, or permit renewal shall be submitted in accordance with Subchapter B of this Chapter.

(d) The owner or operator of an existing well must be fully compliant with the permitting requirements of this section by prior to December 31, 2006. An applicant for a new well must be fully compliant with the permitting requirements of this section prior to drilling, equipping, completing, operating, or producing groundwater from the well.

§3.4 EXEMPTIONS FROM PERMITTING.

(a) The following wells are not required to have a permit from the District:

(1) a well that is exempt from registration under Section 3.1(c):

(a) Non-production monitoring wells; and

(b) Temporary dewatering wells; and

(c) Remediation wells; and

(2) **A NEW OR EXISTING WATER WELL ON PRIVATE PROPERTY THAT SERVES ONLY A SINGLE-FAMILY DWELLING USED ONLY FOR DOMESTIC PURPOSES; AND**

(3) **A NEW OR EXISTING WATER WELL USED ONLY FOR AGRICULTURE; AND**

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

(g) a water well authorized under a permit issued by the Railroad Commission of Texas under Natural Resources Code Chapter 134, provided the withdrawals are no greater than the amount necessary for mining activities specified in the Railroad Commission permit; and

(b) A well exempt under Subsection (a) will lose its exempt status and must be permitted if the well is subsequently used for a purpose or in a manner that is not exempt under Subsection (a).

SUBCHAPTER B: APPLICATION REQUIREMENTS AND PROCESSING

§3.10 PREPARATION OF AN APPLICATION.

(a) Form of Application. Application for a well registration, permit, permit amendment, or permit renewal shall be made on District forms. Applications shall be in writing and sworn to.

(b) Proper Registrant, Applicant, or Declarant. The application must be submitted and signed by the well owner or a Water Well Driller licensed by the State of Texas or an authorized agent of the owner. The authorized agent may be required to provide the District with a notarized authorization from the landowner.

(c) Completeness of an Application. An application shall be considered administratively complete if it includes all information required to be included in the application; is signed and includes any maps, documents, or supplementary information requested by the Board or staff. A determination of administrative completeness will be made by the Districtôs designee.

(d) Action on Incomplete Applications. The District will not take action on an application which is not administratively complete or which 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. Applicants submitting incomplete applications will be notified by the District in writing.

§3.11 REQUIREMENTS FOR APPLICATIONS.

(a) A separate application is required for each well.

(b) Content Requirements. An application must contain the following information in sufficient detail to be acceptable to the District:

(1) Minimum Requirements. All applications shall include the following:

(A) the name, mailing address, and phone number of the applicant and the owner of the property on which the well is or will be located; and

(B) if the applicant is other than the owner of the property, or a Water Well Driller licensed by the State of Texas, or an authorized agent for the owner of the property, documentation establishing the applicable authority to construct and operate a well for the proposed use; and

(C) a detailed statement of the nature and purpose of the proposed groundwater usage and the amount of groundwater proposed to be used for each purpose; and

(D) the location of the well and the estimated rate at which water will be withdrawn from the well; and

(E) the proposed location(s) of use of the water from the well; and

(F) the proposed casing size and pump capacity; and

(G) a statement by the applicant that the water withdrawn under the permit will be put to a beneficial, non-wasteful use at all times and that the applicant will comply with all District Rules, orders, and permit provisions; and

(H) a water well closure plan or a declaration that the applicant will comply with well plugging and capping guidelines set forth in the District Rules and will report well closures to the District; and

(I) any other information deemed necessary for the evaluation of the application by the Board or the Districtôs designee.

§3.12 SCHEDULING AND NOTICE OF HEARING ON AN APPLICATION.

(a) Scheduling of Hearing. Unless the District Rules specifically provide that a hearing is not required for an application, once an application has been declared administratively complete by the Districtôs designee, the Board will schedule the application for a hearing at a regular or special meeting of the Board.

(b) Notice of Hearings. Not later than the 10th day before the date of the hearing, the Board shall give notice of all hearings involving permit applications in the following manner:

(1) post notice in a place readily accessible to the public at the District office; and

(2) provide notice to the Brazoria County Clerk; and

(3) provide notice by regular mail to the applicant or an authorized agent.

(c) Contents of Notice. The notice shall include:

(1) the name of the applicant; and

(2) the date, time, and location of the hearing; and

(3) the address or approximate location of the well or proposed well; and

(4) a brief explanation of the proposed permit or permit amendment, and

(5) the purpose of the proposed use, and any change in use; and

(6) any other information Board deems relevant or appropriate.

§3.13 HEARING PROCEDURES.

(a) General Provisions. Hearings on permit matters will be conducted by a quorum of the Board or an individual to whom the Board has delegated the responsibility to preside as a hearings examiner. The Board president, or another Board member

designated by the president, or the hearings examiner shall serve as the presiding officer for the hearing.

(b) Hearing Registration. The District may require each person who attends a hearing to submit a hearing registration form stating the person's name, address, whom the person represents, and whether the person wishes to testify.

(c) Conduct of Hearings. The presiding officer may:

(1) convene the hearing at the time and place specified in the notice; and

(2) set any necessary additional hearing dates; and

(3) establish the order for presentation of evidence; and

(4) administer oaths to all persons presenting testimony; and

(5) examine persons presenting testimony; and

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

(7) prescribe reasonable time limits for testimony and the presentation of evidence.

(d) Continuance. The presiding officer may continue a hearing from time to time and from place to place without providing notice under the District Rules by announcing at the hearing the time, date, and location of the continued hearing.

(e) Recording. The District shall prepare and keep a record of each hearing in the form of either minutes, or audio or video recording, or court reporter transcription, or the report described by Subsection (f) of this section. If a hearing is transcribed at the request of a party to the hearing, the presiding officer may assess the costs associated with producing the transcript to one or more parties. If a hearing involves a contested application, then the District shall keep a record of the hearing in the form of audio or video recording or a court reporter transcription.

(f) Report. The presiding officer shall submit a report to the Board not later than the 30th day after the date a hearing is concluded, unless the hearing was conducted by a quorum of the Board. If the hearing was conducted by a quorum of the Board, the presiding officer shall determine at the presiding officer's discretion whether to prepare and submit a report to the Board under this section. The report must include:

(1) a summary of the subject matter of the hearing; and

(2) a summary of the evidence or public comments received; and

(3) the presiding officer's recommendations for Board action on the subject matter of the hearing.

§3.14 ACTION ON APPLICATIONS.

The Board shall act on a permit or permit amendment application not later than the 60th day after the date the final hearing on the application is concluded.

§3.15 TERM OF PERMITS.

(a) Each permit shall have an effective term in accordance with the Districtôs Fee Schedule. The permit fee charged by the District shall be in accordance with the Districtôs Fee Schedule.

(b) A permit will be considered null and void by the District if the well is not drilled within twelve (12) months of the date the permit is issued.

§3.16 PERMIT TERMS AND CONDITIONS.

All permits are granted subject to the District 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 shall be subject to the following terms and conditions:

(a) The permit is granted in accordance with the provisions of H.B. No. 3602 of the 78th Texas Legislature, as amended by H.B. 4114 of the 80th Texas Legislature, in conjunction with Texas Water Code Chapter 36, and the rules and orders of the District, and acceptance of the permit constitutes an acknowledgment and agreement that the permittee will comply with all the terms, provisions, conditions, requirements, limitations, and restrictions embodied in the permit and with the rules and orders of the District.

(b) The drilling and operation of the well for the authorized use shall be conducted in such a manner as to avoid waste, pollution, or harm to the aquifer.

(c) The permitee shall maintain records indicating the amount of groundwater withdrawn each month, the purpose of the withdrawal, and the total amount of water exported, if any. The amount of groundwater withdrawn each month shall be recorded on a District form and reported to the District.

(d) The permitee agrees to cooperate fully in any reasonable inspection of the well site and related monitoring or sampling by District representatives.

(e) Driller's logs must be submitted to the District within sixty (60) days of the drilling of a well. Failure to submit a drillerôs log will be grounds for revocation of a permit.

(f) Violation of the permit's terms, conditions, requirements, or special provisions is a violation of the District Rules and shall be punishable by civil penalties as provided by the Act and the District Rules.

§3.17 PERMIT RENEWAL.

Well owners or operators shall make application to renew permits required under the District Rules prior to the expiration of the permit term. The well owner or operator shall indicate on the application form whether any changes to the well, well operations, purpose of use, or special conditions have occurred.

§3.18 PERMIT AMENDMENTS

(a) It is a violation of the District Rules for a permittee to violate any term, provision, or restriction contained in a permit issued by the District. A permittee must apply for and receive an amendment to their permit prior to changing any term, provision, or restriction in the permit.

(b) An application for permit amendment shall be made on District forms and any applicable fee shall be paid in accordance with the Districtôs fee schedule.

§3.19 PERMIT REVOCATION, CANCELLATION, OR MODIFICATION.

(a) A permit is not a vested right of the holder.

(b) After notice and an opportunity for hearing, a permit may be revoked, suspended, terminated, canceled, modified, or amended in whole or in part for cause, including, but not limited to (i) violation of any terms or conditions of the permit, (ii) obtaining the permit by misrepresentation or failure to disclose relevant facts, or (iii) failure to comply with any applicable rules, regulations, fee schedule, special provisions, requirements, or orders of the District. The permittee shall furnish to the District upon request, and within a reasonable time, any information to determine whether cause exists for revoking, suspending, terminating, canceling, modifying, or amending a permit.

§3.20 REQUESTS FOR REHEARING.

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

(b) On receipt of a timely written request, the Board shall make written findings and conclusions regarding a decision of the Board on a permit or permit amendment application. The Board shall provide certified copies of the findings and conclusions

to the person who requested them, and to each person who provided comments or each designated party, not later than the 35th day after the date the Board receives the request. A person who receives a certified copy of the findings and conclusions from the Board may request a rehearing before the Board not later than the 20th day after the date the Board issues the findings and conclusions.

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

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

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

§3.21 DECISION; WHEN FINAL.

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

(1) if a request for rehearing is not filed on time, on the expiration of the period for filing a request for rehearing; or

(2) if a request for rehearing is filed on time, on the date:

(A) the Board denies the request for rehearing; or

(B) the Board renders a written decision after rehearing.

SUBCHAPTER C: REQUIREMENTS OF WELL OWNERS AND OPERATORS

§3.30 REPORTS.

(a) Pumpage and Export Report.

(1) Each permit holder shall maintain records of monthly production from each permitted well as required by the District Rules.

(2) Each permit holder shall submit an ñAnnual Well Production Reportò to the District on forms approved by the District within 30 days of the end of the Districtôs pumpage reporting period. Reports received after the 30-day deadline will be considered late. If it has not already been provided to the District, the report shall include the drillerôs log, a description of the casing and pumping equipment, and the capacity of the well.

(3) A permit holder who transports groundwater for use outside of the District shall submit an ñAnnual Export Reportò to the District on forms approved by the District within 30 days of the end of the Districtôs export reporting period. Reports received after the 30-day deadline will be considered late. If it has not already been provided to the District, the report shall include the total amount of groundwater transported outside of the District from each well during each month of the preceding period and the purposes for which the water was transported.

(b) Water Quality Reports. All community water system permittees required by statute or regulation to conduct water quality analyses (including public water systems) shall, at the time of obtaining results of the analyses, submit to the District a duplicate copy of the report generated by such analysis, including Consumer Confidence Reports.

§3.31 FEES AND PAYMENT OF FEES.

(a) Permit Application, Registration, and other Administrative Fees. The Board shall establish a schedule of administrative fees by resolution in accordance with H.B. No. 3602 of the 78th Texas Legislature, as amended by H.B. No. 4114 of the 80th Texas Legislature. The Board will attempt to set fees at an amount that does not unreasonably exceed the cost to the District of performing the function for which the fees are charged. Such costs may include maintenance of a fund balance for contingencies.

(b) Export Fees. The Board shall establish a schedule of export fees by resolution in accordance with H.B. No. 3602 of the 78th Texas Legislature, as amended by H.B. No. 4114 of the 80th Texas Legislature. Export fees will not be applied to:

(1) the export of groundwater from the District for incidental use as defined in Chapter 2 of the District Rules;

(2) the export of groundwater for an agricultural operation that overlaps or is adjacent to the District boundary; and

(3) the export of groundwater that occurs as a result of the distribution of water within a single, aggregate system of a retail public water system that overlaps the District boundary.

(c) Production Fees. The Board shall establish a schedule of production fees by resolution in accordance with H.B. No. 3602 of the 78th Texas Legislature, as amended by H.B. No. 4114 of the 80th Texas Legislature.

(d) Payment of Fees. All administrative fees, Export fees, and Production fees shall be paid in accordance with the Districtôs fee schedule. The validity of any permit is

contingent upon payment of any applicable administrative fees, export fees, or production fees in accordance with the Districtôs Fee Schedule. The Board, by resolution in accordance with the Districtôs Fee Schedule, may establish procedures for the payment of production fees or export fees in installments and/or quarterly payments.

(e) **EXEMPTIONS. NO FEE OF ANY TYPE SHALL BE ASSESSED OR COLLECTED FROM A NEW OR EXISTING WATER WELL ON PRIVATE PROPERTY THAT SERVES ONLY A SINGLE-FAMILY DWELLING USED ONLY FOR DOMESTIC PURPOSES AND/OR A NEW OR EXISTING WATER WELL USED ONLY FOR AGRICULTURE.**

CHAPTER 4. MEASURING METHODS

§4.1 MEASUREMENT OF WATER USE BY PERMITTED WELLS.

(a) **AN OWNER OR OPERATOR OF A NEW OR EXISTING WATER WELL ON PRIVATE PROPERTY THAT SERVES ONLY A SINGLE-FAMILY DWELLING USED ONLY FOR DOMESTIC PURPOSES AND/OR A NEW OR EXISTING WATER WELL USED ONLY FOR AGRICULTURE, IS EXEMPT FROM THE REQUIREMENTS OF THIS SECTION.**

(b) Except as otherwise provided by the District Rules, each permitted well shall be equipped with a functioning water meter, meeting AWWA standards for line size, pressures, and flows.

(c) Except as otherwise provided by the District Rules, each well owner or operator of each permitted well shall record on a District form and report the amount of groundwater withdrawn each month to the District. In addition, each well owner or operator of each permitted well shall record on a District form and report the following information annually to the District:

(1) the total amount of groundwater withdrawn each month; and

(2) the quantity of water necessary for mining activities; and

(1) the quantity of water withdrawn for other purposes.

§4.2 VIOLATION OF METERING AND REPORTING REQUIREMENTS.

False reporting or logging of water measurements or meter readings, intentionally tampering with or disabling a meter, or similar actions to avoid accurate reporting of groundwater use and pumpage shall constitute a violation of the District Rules and shall subject the person performing the action, as well as the well owner, and/or the operator who authorizes or allows that action, to such penalties as provided in the Act and the District Rules.

CHAPTER 5. GENERAL PROVISIONS AND PROHIBITIONS

§5.1 GENERAL PROHIBITION.

Groundwater produced from within the District shall not be used in such a manner or under such conditions as to constitute waste. No person shall intentionally or negligently commit waste.

§5.2 SUBSURFACE POLLUTION.

No person shall pollute or harmfully alter the character of the groundwater reservoirs of the District by operating any drilling activity and/or other activity in a manner that causes or allows the introduction of salt water pollutants or other deleterious matter from another stratum from the subsurface and/or the surface of the ground, or from the operation of any drilling activity and/or other activity.

§5.3 SURFACE POLLUTION.

No person shall pollute or harmfully alter the character of the groundwater reservoirs of the District by any activities on the surface of the ground which causes or allows pollutants to enter the groundwater reservoirs.

§5.4 ORDERS TO PREVENT WASTE/POLLUTION.

After providing notice to affected parties and opportunity for a hearing, the Board may adopt orders to prohibit or prevent waste or pollution. If the factual basis for the order is disputed, the Board shall direct that an evidentiary hearing be conducted prior to entry of the order. If the Board determines that an emergency exists, requiring the immediate entry of an order to prohibit waste or pollution and protect the public health, safety, and welfare, it may enter a temporary order without notice and hearing provided, however, the temporary order shall continue in effect for the lesser of fifteen (15) days or until a hearing can be conducted.

CHAPTER 6. REGULATION OF WELL SPACING AND PRODUCTION

SUBCHAPTER A: GENERAL PROVISIONS

§6.1 PURPOSE.

The purpose of this chapter is to achieve the Districtôs statutory goals of conserving, preserving, protecting, and recharging the groundwater resources within the District by establishing aquifer management requirements consistent with Texas Water Code Chapter 36, and appropriate to the aquifer system.

§6.2 APPLICABILITY.

All wells are required to meet the well spacing regulations set forth under Title 16, Texas Administrative Code, Chapter 76, Water Well Drillers and Pump Installers Rules.

§6.3 BASIS FOR LIMITATION OF WELL SPACING AND PRODUCTION.

The requirements of this chapter are based on the Districtôs statutory authority to regulate the spacing of water wells and the production of groundwater in order to minimize the drawdown of the water table or the reduction of artesian pressure, to control subsidence, to prevent interference between wells, to prevent degradation of water quality, or to prevent waste.

SUBCHAPTER B: SPACING REQUIREMENTS

§6.10 DRILLING WELLS AT UNAPPROVED LOCATIONS PROHIBITED.

It is a violation of the District Rules for a well owner, well operator, or water well driller to drill a new well that does not comply with the spacing and location requirements of this subchapter.

§6.11 MINIMUM SPACING APPLICABLE TO ALL NEW WELLS.

All new wells must comply with the spacing and location requirements promulgated by the Texas Department of Licensing and Regulation and set forth under Title 16, Texas Administrative Code Chapter 76, Water Well Drillers and Pump Installers Rules. Any variance granted by the Texas Department of Licensing and Regulation shall be submitted with the Well Log.

§6.12 ADDITIONAL STANDARDS.

The Board may adopt additional spacing standards for wells drilled in the District. Approved well spacing standards will be made available to the public.

CHAPTER 7. DRILLING, EQUIPPING AND CONSTRUCTION

§7.1 RECORDS.

(a) Complete records shall be kept and reports thereof made to the District. concerning the drilling, equipping, and completion of all wells drilled in the District. Such records shall include an accurate driller's log, depth to water, any electric log that shall have been made, and such additional data concerning the description of the well, its discharge, and its equipment as may be required by the Board. Such records shall be filed with the District within sixty (60) days after drilling of the well.

(b) No person shall operate any well drilled and equipped within the District, except operations 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 special purpose log or data which have been generated during well development, and a registration of the well correctly furnishing all available information required on the forms

§7.2 DRILLING AND COMPLETION OF WELLS.

(a) Drilling and completion of wells must satisfy all applicable requirements of the Commission and the Texas Department of Licensing and Regulation, and any additional well construction standards adopted by the District.

(b) All wells must be completed in accordance with the well completion standards set forth under the requirements promulgated by the Texas Department of Licensing and Regulation and set forth under Title 16, Texas Administrative Code Chapter 76, Water Well Drillers and Pump Installers Rules.

(c) The Board of Directors may adopt additional well construction standards for wells drilled within the District. Approved well construction standards will be made available to the public.

CHAPTER 8. ABANDONED, OPEN AND UNCOVERED WELLS

§8.1 REGISTRATION AND SEALING.

(a) Except as otherwise provided by the District Rules, any owner or lessee of land, on which an open or uncovered well, or an abandoned well is located, must register the well with the District.

(b) Any well not registered with the District shall be classified as abandoned.

§8.2 MINIMUM STANDARDS.

(a) Capping of Open or Uncovered Wells.

(1) At a minimum, open or uncovered wells must be capped in accordance with the District Rules and in accordance with the standards set forth in the Texas Water Well Drillers and Pump Installers Administrative Rules, Title 16, Chapter 76, Texas Administrative Code.

(2) A copy of any capping report required by the Texas Department of Licensing and Regulation shall be submitted to the District.

(3) The Board may adopt additional well capping standards for open or uncovered wells within the District. Approved well capping standards will be made available to the public.

(b) Plugging of Abandoned Wells.

(1) All abandoned wells must be plugged in accordance with standards set forth in the Texas Water Well Drillers and Pump Installers Administrative Rules, Title 16, Chapter 76, Texas Administrative Code.

(2) A copy of any plugging report required by Texas Department of Licensing and Regulation shall be submitted to the District.

(3) The Board of Directors may adopt additional well plugging standards for abandoned wells within the District. Approved well capping standards will be made available to the public.

§8.3 ENFORCEMENT.

If the owner, lessee or operator of a well fails or refuses to cap or plug a well in compliance with this rule and District standards after being requested to do so in writing by an officer, agent, or employee of the District, then, upon Board approval, any person, firm or corporation employed by the District may go onto the land (pursuant to Texas Water Code Section 36.118) and plug or cap the well safely and securely. Reasonable expenses incurred by the District in plugging or capping a well will be assessed to the landowner and shall constitute a lien on the land on which the well is located.

§8.4 PENALTIES.

Pursuant to the District Rules, penalties shall be applicable in cases of failure or refusal to plug abandoned wells or cap wells not currently in use.

CHAPTER 9. WATER CONSERVATION AND DROUGHT

§9.1 CONSERVATION POLICY.

The District may implement conservation policies through various programs initiatives and incentives including public education, technical assistance, special programs, through grants and loans, from support by various local, state, and federal programs, industries, foundations, non profits, public and private individuals, corporations, partnerships, and other interest groups that will further the Districtôs goals of cost-effective water conservation, pollution prevention, and waste prevention of the Districtôs water resources.

§9.2 WATER CONSERVATION PLANS.

Each permittee who is required to prepare, adopt, and implement a water conservation plan or drought contingency plan by another agency of the State of Texas or by any water wholesale provider shall submit a copy of such plan to the District for the Districtôs files.

CHAPTER 10. ENFORCEMENT

§10.1 NOTICE AND ACCESS.

Pursuant to Texas Water Code Section 36.123, any authorized officer, agent, employee, or representative of the District, when carrying out technical and other investigations necessary to the implementation of the District Rules or the Act, and after reasonable notice to the owner or operator, may enter upon private property for the purpose of inspecting and investigating conditions relating to the withdrawal, waste, water quality, pollution, or contamination of groundwater or other acts covered by the District Rules or the Texas Water Code.

§10.2 SHOW CAUSE ORDERS AND COMPLAINTS.

The Board, either on its own motion or upon receipt of sufficient written protest or complaint, may at any time, after due notice to all interested parties, cite any person owning or operating a well within the District, or any person in the District violating the Act, the District Rules, or an Order of the Board. Under the citation, that person is ordered to appear before the Board in a public hearing and require him to show cause why an enforcement action should not be initiated and/or why his procedure and/or operating authority and/or permit should not be suspended, cancelled, and/or otherwise restricted and limited, for failure to abide by the terms and provisions of the permit, and/or the District Rules, and/or the Act.

§10.3 CONDUCT OF INVESTIGATION.

When investigations or inspections require entrance upon private property, such investigations and such inspections shall be conducted at reasonable times, and shall be consistent with all applicable rules and regulations concerning safety, internal security, and fire protection. The persons conducting such investigations shall identify themselves and present District identification upon request by the owner, operator, lessee, management in residence, or person in charge.

§10.4 SEALING OF WELLS.

(a) The District may seal wells that are prohibited by the Act, Rules, or Board orders from withdrawing groundwater within the District when the Board, or its designated District employee, determines that such action is reasonably necessary to assure that a well is not operated in violation of the Act, Rules, or Board orders. This authorization to seal a well or to take other appropriate action to prohibit the withdrawal of groundwater extends to, but is not limited to, the following circumstances in which: (i) a permit has been granted, but the applicable fees have

not been paid within the time period provided for payment; (ii) representations have been made by the well owner or operator that no groundwater is to be withdrawn from a well during a particular period; (iii) no application has been made for a permit to withdraw groundwater from an existing well that is not excluded or exempted from the requirement that a permit be obtained in order to lawfully withdraw groundwater; (iv) the Board has denied, cancelled, or revoked a permit; (v) permit conditions have not been met; or (vi) a threat of, or potential for, contamination to the aquifer exists.

(b) The well may be physically sealed by the District, and if sealed by the District, the well shall then be red-tagged to indicate that the well has been sealed. Other appropriate action may be taken as necessary to preclude operation of the well or to identify unauthorized operation of the well.

(c) Tampering with, altering, damaging, or removing the seal or red tag of a sealed or red tagged well, or in any other way violating the integrity of the seal or red tag, or the pumping of groundwater from a well that has been sealed or red tagged shall constitute a violation of the District Rules and shall subject the person performing that action, as well as any well owner and/or operator who authorizes or allows that action, to such penalties as provided by the Act and the District Rules.

§10.5 REQUEST FOR INJUNCTIVE RELIEF.

If it appears that a person has violated, is violating, or is threatening to violate any provision of the Act or any Rule, permit, Board order, or other order of the District, the Board may institute and conduct a suit in the name of the District for injunctive relief, for recovery of a civil penalty, or for both injunctive relief and penalty.

§10.6 PENALTIES FOR LATE PAYMENT OF FEES.

(a) Failure to Make Production or Export Fee Payment. Failure to make the production or export fee payment within the time period specified in the Districtôs fee schedule may constitute grounds for the District to declare the permit void.

(b) Late Payment Penalties. Failure to make complete and timely payments of a fee may automatically result in a late payment penalty in accordance with the Districtôs fee schedule.

(c) Loss of Installment Payment Option. The option of making payment of a production or export fee in installments may be made available by the District in order to avoid causing cash flow problems for permittees. Any permittee who, two or more times during the permit term, makes late payment of fee installments, may be required to pay production or export fees during the following two (2) years as an annual payment upon permit issuance, without an installment payment option.

(d) After failure to make payment of fees in accordance with the Districtôs fee schedule, all enforcement mechanisms provided by this Rule, the Districtôs fee schedule, and the Act, as amended, shall be available to prevent unauthorized use of the well, and may be initiated by the Districtôs designee, without further authorization from the Board.

§10.7 FAILURE TO REPORT PUMPAGE AND/OR EXPORTED VOLUMES.

The accurate reporting and timely submission of pumpage and/or exported volumes is necessary for the proper management of water resources. Failure of the permittee to submit complete, accurate, and timely pumpage, export and water quality reports, as required by the District Rules, may result in forfeiture of the permit, civil penalties, or payment of increased meter reading and inspection fees as a result of District inspections to obtain current and accurate pumpage and/or exported volumes and water quality reports.

§10.8 EMERGENCY ORDERS.

The District will develop Emergency Contingency Plans to deal with water quality or water quantity emergencies. Public hearings on Emergency Contingency Plans shall be conducted by the Board prior to adoption. To implement Emergency Contingency Plans, the Board, or the Districtôs designee, if specifically authorized by an Emergency Contingency Plan, may adopt emergency orders of either a mandatory or prohibitory nature, requiring remedial action by a permittee or other party responsible for the emergency condition.

§10.9 CIVIL PENALTIES.

(a) The District may enforce the District Rules by injunction or other appropriate remedy in a court of competent jurisdiction.

(b) Any person who violates any District Rule is subject to a civil penalty of up to $10,000 for each violation and for each day of continuing violation. Each day a violation continues may be considered a separate violation.

(c) All civil penalties recovered by the District shall be paid to the Brazoria County Groundwater Conservation District.

(d) A penalty under this section may be enforced by complaints filed in the appropriate court of jurisdiction in Brazoria County.

Appendix C

Historical Use of Groundwater and Surface Water in Brazoria County

This Page Intentionally Left Blank.

Table C.1. Historical Use of Groundwater and Surface Water in Brazoria County (acre-feet)

Year[1]	Source	Municipal	Mfg.[2]	Steam Electric	Irrigation[3]	Mining	Livestock	Total
1974	GW	14,589	7,341	0	20,251	556	211	42,948
1974	SW	28	212,981	0	138,063	120	1,527	352,719
Total		**14,617**	**220,322**	**0**	**158,314**	**676**	**1,738**	**395,667**
1980	GW	21,009	4,049	0	22,498	1,168	730	49,454
1980	SW	1,455	216,545	0	267,319	45	459	485,823
Total		**22,464**	**220,594**	**0**	**289,817**	**1,213**	**1,189**	**535,277**
1984	GW	24,847	2,859	0	13,306	0	697	41,709
1984	SW	2,048	173,638	0	156,285	2,692	464	335,127
Total		**26,895**	**176,497**	**0**	**169,591**	**2,692**	**1,161**	**376,836**
1985	GW	25,558	3,335	0	13,587	156	715	43,351
1985	SW	1,423	194,437	0	168,146	323	476	364,805
Total		**26,981**	**197,772**	**0**	**181,733**	**479**	**1,191**	**408,156**
1986	GW	24,821	3,623	0	6,213	327	605	35,589
1986	SW	1,523	163,052	0	163,424	1,036	403	329,438
Total		**26,344**	**166,675**	**0**	**169,637**	**1,363**	**1,008**	**365,027**
1987	GW	25,264	3,407	0	5,207	315	665	34,858
1987	SW	1,242	158,002	0	136,946	1,336	443	297,969
Total		**26,506**	**161,409**	**0**	**142,153**	**1,651**	**1,108**	**332,827**
1988	GW	23,001	3,152	0	7,213	271	737	34,374
1988	SW	899	185,851	0	189,725	1,049	491	378,015
Total		**23,900**	**189,003**	**0**	**196,938**	**1,320**	**1,228**	**412,389**
1989	GW	17,968	2,736	0	6,109	218	767	27,798
1989	SW	6,036	184,929	0	142,230	736	511	334,442
Total		**24,004**	**187,665**	**0**	**148,339**	**954**	**1,278**	**362,240**
1990	GW	19,082	3,523	0	4,979	218	757	28,559
1990	SW	8,400	195,719	0	108,410	736	504	313,769
Total		**27,482**	**199,242**	**0**	**113,389**	**954**	**1,261**	**342,328**
1991	GW	18,888	4,062	0	4,756	220	773	28,699
1991	SW	7,843	181,839	0	103,904	1,152	515	295,253
Total		**26,731**	**185,901**	**0**	**108,660**	**1,372**	**1,288**	**323,952**
1992	GW	21,541	3,703	0	5,088	707	639	31,678
1992	SW	7,758	157,107	0	111,169	841	427	277,302
Total		**29,299**	**160,810**	**0**	**116,257**	**1,548**	**1,066**	**308,980**
1993	GW	21,868	2,004	0	10,352	701	618	35,543
1993	SW	7,514	204,722	0	95,931	841	413	309,421
Total		**29,382**	**206,726**	**0**	**106,283**	**1,542**	**1,031**	**344,964**
1994	GW	21,523	2,344	0	6,070	700	774	31,411
1994	SW	7,013	195,539	0	113,578	795	516	317,441
Total		**28,536**	**197,883**	**0**	**119,648**	**1,495**	**1,290**	**348,852**
1995	GW	19,364	2,242	0	10,902	699	662	33,869
1995	SW	8,887	205,606	0	101,033	795	441	316,762
Total		**28,251**	**207,848**	**0**	**111,935**	**1,494**	**1,103**	**350,631**
1996	GW	22,901	2,838	0	7,430	699	1,102	34,970
1996	SW	8,587	200,008	0	68,855	795	734	278,979
Total		**31,488**	**202,846**	**0**	**76,285**	**1,494**	**1,836**	**313,949**
1997	GW	21,583	1,813	0	7,192	824	721	32,133
1997	SW	10,081	201,653	0	66,642	2,773	481	281,630
Total		**31,664**	**203,466**	**0**	**73,834**	**3,597**	**1,202**	**313,763**
1998	GW	24,027	1,813	0	8,711	680	888	36,119
1998	SW	10,111	195,425	0	80,728	2,767	591	289,622
Total		**34,138**	**197,238**	**0**	**89,439**	**3,447**	**1,479**	**325,741**
1999	GW	27,605	2,832	0	7,231	680	959	39,307
1999	SW	10,860	106,345	0	67,008	2,767	639	187,619
Total		**38,465**	**109,177**	**0**	**74,239**	**3,447**	**1,598**	**226,926**

Year[1]	Source	Municipal	Mfg.[2]	Steam Electric	Irrigation[3]	Mining	Livestock	Total
2000	GW	26,795	1,344	0	7,022	794	968	36,923
2000	SW	13,286	109,722	0	91,732	2,537	645	217,922
Total		**40,081**	**111,066**	**0**	**98,754**	**3,331**	**1,613**	**254,845**
2001	GW	16,987	710	0	3,915	357	429	22,398
2001	SW	15,840	220,772	0	58,743	3,000	1,184	299,539
Total		**32,827**	**221,482**	**0**	**62,658**	**3,357**	**1,613**	**321,937**
2002	GW	13,267	596	0	3,625	167	388	18,043
2002	SW	12,073	185,255	0	46,718	1,398	1,071	246,515
Total		**25,340**	**185,851**	**0**	**50,343**	**1,565**	**1,459**	**264,558**
2003	GW	15,751	663	0	2,706	144	444	19,708
2003	SW	17,836	205,850	0	73,900	1,210	1,225	300,021
Total		**33,587**	**206,513**	**0**	**76,606**	**1,354**	**1,669**	**319,729**
2004	GW	15,738	756	0	3,677	144	446	20,761
2004	SW	17,821	234,889	0	101,914	1,216	1,234	357,074
Total		**33,559**	**235,645**	**0**	**105,591**	**1,360**	**1,680**	**377,835**
2005	GW	28,351	2,386	0	3,652	1	1,341	35,731
2005	SW	16,317	255,767	0	106,152	1,339	447	380,022
Total		**44,668**	**258,153**	**0**	**109,804**	**1,340**	**1,788**	**415,753**
2006	GW	29,113	2,551	-	2,821	257	1,165	35,907
2006	SW	8,813	217,541	-	81,999	117	388	308,858
Total		**37,926**	**220,092**	**-**	**84,820**	**374**	**1,553**	**344,765**
2007	GW	26,837	1,488	0	8,994	1	1,241	38,561
2007	SW	10,481	208,668	0	64,210	94	413	283,866
Total		**37,318**	**210,156**	**0**	**73,204**	**95**	**1,654**	**322,427**
2008	GW	31,103	1,410	0	20,827	1	1,210	54,551
2008	SW	10,281	186,111	0	63,200	128	404	260,124
Total		**41,384**	**187,521**	**0**	**84,027**	**129**	**1,614**	**314,675**
2009	GW	30,089	1,521	0	14,508	168	1,231	47,517
2009	SW	12,012	204,374	0	56,572	790	410	274,158
Total		**42,100**	**205,894**	**0**	**71,080**	**957**	**1,641**	**321,672**
2010	GW	34,531	1,409	0	14,889	190	1,126	52,145
2010	SW	9,978	182,196	0	63,000	719	375	256,268
Total		**44,508**	**183,605**	**0**	**77,889**	**909**	**1,501**	**308,412**

1. Data for years 1974 – 2004 derived from TWDB Historical Water Use Summary Information Database. Data for years 2005-2010 derived from a combination of annual TWDB Water Use Summary Estimates and TWDB Historical Water Use Summary Information Database. These values differ slightly from the groundwater-specific data used in the body of the Groundwater Management Plan. Data available at http://www.twdb.state.tx.us/waterplanning/waterusesurvey/estimates/index.asp.

2. The 1992 "Manufact." (Manufacturing) value was reported as 37,027 acre-feet. This value, which is suspected to be in error, was amended by a factor of ten to better approximate historical usage. The revised total for 1992 of 3,703 acre-feet is therefore an estimate. Similarly, the 2008 entry has been adjusted to correct for a suspected erroneous entry of surface water demand as groundwater based on detailed TWDB usage records. The original 2008 manufacturing demand estimate was 26,024 acre-feet.

3. Due to limitations on measured usage data, TWDB irrigation demand values are typically estimated from available crop acreage data and other sources. The division of this estimated demand between groundwater and surface water, which plays a significant role in the table above, is based on the limited available data and annual irrigation practice assumptions.