

GAM Run 08-17

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Texas Water Development Board
Groundwater Availability Modeling Section
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EXECUTIVE SUMMARY:

We ran the groundwater availability model for the central part of the Gulf Coast Aquifer using requestor-specified annual pumpage for a 60-year predictive simulation. In this model run, we used average recharge and evapotranspiration rates. The results of this model run indicated that using the specified pumpage in the model results in large areas of water-level declines over the 60-year model run. These areas of water-level declines occur in the Chicot, Evangeline, and the Jasper aquifers and are caused by increased pumping over most of the model area.

This model run is one of multiple model runs that will aid Groundwater Management Area 16 in developing their Desired Future Conditions for the central Gulf Coast Aquifer. Other previously completed model runs are GAM runs 07-12, 07-14, 07-35, and 07-36.

REQUESTOR:

Mr. Scotty Bledsoe from the Live Oak Underground Water Conservation District (on behalf of Groundwater Management Area 16).

DESCRIPTION OF REQUEST:

Mr. Bledsoe asked for a model run using the groundwater availability model for the central part of the Gulf Coast Aquifer. This model run would be a 60-year simulation using initial water levels from the end of the historic calibration simulation and average recharge conditions. Each year of the model run would use a pumpage provided by members of Groundwater Management Area 16.

METHODS:

We averaged recharge and evapotranspiration rates for the historic calibration-verification runs, representing 1981 to 1999. These averages were then used for each year of the 60-year predictive simulation along with the pumpage rates provided by Groundwater Management Area 16. We evaluated the resulting water levels and drawdowns. These evaluations are shown in the “Results” section below.

PARAMETERS AND ASSUMPTIONS:

We used the groundwater availability model for the central part of the Gulf Coast Aquifer for this model run. The parameters and assumptions for this model are described below:

- We used Version 1.01 of the groundwater availability model for the central part of the Gulf Coast Aquifer. This model assumes that most of the wells in the Evangeline Aquifer are partially penetrating in absence of adequate completion data in the lower portion of the aquifer.
- See Chowdhury and others (2004), and Waterstone and others (2003) for assumptions and limitations of the groundwater availability model for the central part of the Gulf Coast Aquifer.
- The mean absolute error (a measure of the difference between simulated and actual water levels during model calibration) in the entire model for 1999 is 26 feet, which is 4.6 percent of the hydraulic head drop across the model area (Chowdhury and others, 2004).
- The model includes four layers representing: the Chicot Aquifer (Layer 1), the Evangeline Aquifer (Layer 2), the Burkeville Confining Unit (Layer 3), and the Jasper Aquifer (Layer 4).
- Recharge rates, evapotranspiration rates, and initial streamflows are averages from the 1981 to 1999 calibration and verification time period.
- Pumpage used for each year of the 60-year predictive simulation was specified by members of Groundwater Management Areas 15 and 16. Details on this pumpage are given below.

Specified Pumpage

The pumpage specified by the members of Groundwater Management Area 16 was based on the baseline pumpage constructed for GAM Run 07-12 and GAM Run 07-14 (Donnelly, 2007a and 2007b). The assumptions used to create the baseline pumpage are detailed in the GAM Run 07-12 and 07-14 reports and will not be repeated in this report. The following modifications were made to the baseline pumpage to create the specified pumpage used in this simulation.

The baseline pumpage totals were increased in most counties in the model area. The total amount of pumpage used in each county in this simulation is shown in Table 1. Also included in Table 1 is the amount of additional pumpage assigned to each of the three aquifers (Chicot, Evangeline, and Jasper) within the Gulf Coast Aquifer System. The amount assigned to each aquifer was determined based on the percentages pumped from each aquifer in the baseline pumpage data set, unless the pumpage to each aquifer was specified by members of the Groundwater Management Area 16.

In addition to the total county pumpage, members of Groundwater Management Area 16 also had the option of specifying where the new pumpage would be allocated. The following specifications were made on where and how pumpage should be allocated.

- Bee County—same as in GAM Run 07-35 (Donnelly, 2008; Figure 1).

- Brooks County—one acre-inch per year (30,699 acre-feet per year), distributed eighty percent in the Evangeline Aquifer and twenty percent in the Chicot Aquifer.
- Jim Wells County—one acre-inch per year (46,304 acre-feet per year), distributed eighty percent in the Evangeline Aquifer and twenty percent in the Chicot Aquifer.
- Kenedy County—two acre-inch per year (70,557 acre-feet per year), distributed eighty percent in the Evangeline Aquifer and twenty percent in the Chicot Aquifer.
- Kleberg County—two acre-inch per year (116,309 acre-feet per year), distributed eighty percent in the Evangeline Aquifer and twenty percent in the Chicot Aquifer.
- Live Oak County—same as in GAM Run 07-35 (Figure 1).
- Nueces County—same as in GAM Run 07-35.
- Refugio County—eighty percent (80%) of Evangeline Aquifer pumping west of Highway 77, twenty percent east of the highway (Figure 2). Total pumping from the Evangeline Aquifer set to 22,000 acre-feet per year.
- San Patricio County—same as in GAM Run 07-35.

Table 1. Pumpage used in this model simulation. Pumpage is expressed in acre-feet per year. Please note that pumpage in Jim Hogg, Brooks, Kenedy, Brazoria, Fort Bend, and Austin counties represents only the pumpage located in the active portion of the model for the central part of the Gulf Coast Aquifer.

County	GAM Run 07-12 baseline pumpage	GAM Run 08-17 total pumpage	Additional pumpage	Additional Chicot pumpage	Additional Evangeline pumpage	Additional Jasper pumpage
Aransas	1,827	1,827	0	0	0	0
Bee	4,694	18,654	13,960	6,282	7,399	279
Brooks	4,040	30,699	26,659	5,332	21,327	0
Calhoun	1,517	2,940	1,423	1,387	36	0
Colorado	33,236	47,857	14,621	7,448	6,898	275
Dewitt	4,587	15,866	11,279	3,384	6,767	1,128
Duval	7,749	14,063	6,314	338	3,585	2,390
Fayette	2,197	8,697	6,500	0	715	5,785
Goliad	6,143	12,806	6,667	706	5,961	0
Jackson	53,615	87,876	34,261	24,979	9,282	0
Jim Hogg	981	981	0	0	0	0
Jim Wells	4,761	46,304	41,530	8,306	33,224	0
Karnes	2,897	15,200	12,303	0	1,107	11,196
Kenedy	104	70,557	70,453	14,091	56,362	0
Kleberg	8,634	116,309	107,675	21,535	86,140	0
Lavaca	11,376	38,171	26,795	4,060	16,583	6,152
Live Oak	8,693	11,987	3,307	0	1,058	2,249
Matagorda	35,000	49,221	14,221	11,254	2,967	0
McMullen	29	450	421	0	4	417
Nueces	3,097	56,000	52,903	13,226	39,677	0
Refugio	1,063	28,859	27,791	6,257	21,534	0
San Patricio	3,748	16,290	12,542	6,271	6,271	0
Victoria	13,872	41,128	27,257	15,091	12,166	0
Webb	143	2,000	1,857	0	1,765	92
Wharton	180,000	182,793	2,793	1,734	1,059	0

If locations for pumpage were not specified by members of Groundwater Management Area 16, the additional pumpage was distributed evenly across the entire active portion of each aquifer within each county.

RESULTS:

Included in Appendix A are estimates of the water budgets after running the model for 60 years for each county in the model area. It is important to note that sub-regional water budgets are not exact. This is due to the size of the model cells and the approach used to extract data from the model. To avoid double accounting, a model cell that straddles a political boundary, such as district or county boundaries, is assigned to one side of the boundary based on the location of the centroid of the model cell. This often results in slight discrepancies between model pumpage

input data and the well discharge component of the calculated water budget for a given area. The components of the water budget are described below.

- Wells—water produced from wells in each aquifer. This component is always shown as “Outflow” from the water budget, because all wells included in the model produce (rather than inject) water. Wells are modeled using the MODFLOW Well package.
- Springs and wetlands—water that drains from an aquifer if water levels are above the elevation of the spring or wetland. This component is always shown as “Outflow”, or discharge, from the water budget. Springs and wetlands are modeled using the MODFLOW Drain package.
- Recharge—simulates areally distributed recharge due to precipitation falling on the outcrop areas of aquifers. Recharge is always shown as “Inflow” into the water budget.
- Vertical Leakage (Upward or Downward)—describes the vertical flow, or leakage, between two aquifers. This flow is controlled by the water levels in each aquifer and aquifer properties of each aquifer that define the amount of leakage that can occur. “Inflow” to an aquifer from an overlying or underlying aquifer will always equal the “Outflow” from the other aquifer.
- Storage—water stored in the aquifer. The storage component that is included in “Inflow” is water that is removed from storage in the aquifer (that is, water levels decline). The storage component that is included in “Outflow” is water that is added back into storage in the aquifer (that is, water levels increase). This component of the budget is often seen as water both going into and out of the aquifer because this is a regional budget, and water levels will decline in some areas (water is being removed from storage) and will rise in others (water is being added to storage).
- Lateral flow—describes lateral flow within an aquifer between a county and adjacent counties.
- Evapotranspiration—water that flows out of an aquifer due to direct evaporation and plant transpiration. This component of the budget will always be shown as “Outflow”. Evapotranspiration is modeled using the MODFLOW Evapotranspiration package.
- Rivers and Streams—water that flows between streams and rivers and an aquifer. The direction and amount of flow depends on the water level in the stream or river and the aquifer. In areas where water levels in the stream or river are above the water level in the aquifer, water flows into the aquifer and is shown as “Inflow” in the budget. In areas where water levels in the aquifer are above the water level in the stream or river, water flows out of the aquifer and into the stream and is shown as “Outflow” in the budget. Rivers and streams are modeled using the MODFLOW Stream package.
- General-Head Boundary—the model uses general-head boundaries to simulate the movement of water out of the Chicot Aquifer at the coast.

The results of this model run are described for the three aquifers in the model area; the Chicot (layer 1 in the model), the Evangeline (layer 2), and the Jasper (layer 4) aquifers. Results for the Burkeville Confining Unit (layer 3) are not discussed because this is not a major source of water in the region.

Initial Water Levels

Initial water levels (which are from the end of the transient calibration run—the end of 1999) for the Chicot, Evangeline, and Jasper aquifers are shown in Figures 3, 4, and 5, respectively. These figures show the starting water levels for this 60-year predictive model run. These figures all show that water levels are highest in the outcrop portions of the aquifers, located farthest from the coast, and that water levels decrease as groundwater flows downdip towards the coast. A cone of depression (an area of decreased water levels around an area of heavy pumpage) can be observed in the Evangeline Aquifer in south-central Wharton County, as well as around the cities of Victoria and Kingsville in Victoria and Kleberg counties, respectively (Figure 4). Small cones of depression can also be observed in the Jasper Aquifer in southern Duval County, central Live Oak County, central De Witt County, and central Lavaca County.

Water Levels After 60 Years

Water levels at the end of the 60-year predictive simulation for the Chicot, Evangeline, and Jasper aquifers are shown in Figures 6, 7, and 8, respectively. These figures show the impact of the increased pumpage in many parts of the model area.

Some areas of drawdown are evident in the water level map for the Chicot Aquifer (Figure 6). In particular, an area of drawdown in Jackson and Wharton counties that was present in the initial water level map (Figure 3) has expanded because of the additional pumpage in Jackson County.

Water levels in the Evangeline Aquifer (Figure 7) also show the impact of additional pumpage in some areas of the model. An area of extremely depressed water levels can be seen in Jim Wells, Kenedy, and Kleberg counties. The effects of pumping are also evident in the Jackson-Wharton County area.

In the Jasper Aquifer, differences between initial water levels (Figure 5) and water levels after 60 years (Figure 8) are harder to discern because less pumpage was added to this aquifer than either the Chicot or Evangeline Aquifers. However, some pumping effects can be observed in San Patricio, Live Oak, Jackson, Colorado, Lavaca and Wharton counties.

Water-Level Changes After 60 Years

In addition to water level maps, we constructed maps of water-level changes for each aquifer. A water-level change map shows the difference between the initial water levels and simulated water levels at the end of the 60-year model run. These figures help evaluate the impact of pumpage on the water levels over the length of the model run. Negative water-level changes indicate lower water levels after 60 years. Water-level changes over the 60-year predictive simulation for the Chicot, Evangeline, and Jasper aquifers are shown in Figures 9, 10, and 11, respectively. Average water level changes for each aquifer in each county of the model are shown in Table 2.

Table 2. Average water-level changes by county and aquifer. Negative values indicates an average lowering of water levels between 1999 and 2060 while a positive value indicates an increase in water levels. A dashed line indicates the aquifer does not exist or was not modeled for a particular county. Please note that average water-level changes in Jim Hogg, Brooks, Kenedy, Brazoria, Fort Bend, and Austin counties represents only the active portion of the model for the central part of the Gulf Coast Aquifer.

County	Average Water-Level Change (feet)		
	Chicot Aquifer (Layer 1)	Evangeline Aquifer (Layer 2)	Jasper Aquifer (Layer 4)
Aransas	0.0	-25.3	--
Austin	+3.5	-3.3	-12.8
Bee	-4.8	-10.0	-6.3
Brazoria	+0.5	-11.4	-15.1
Brooks	-19.4	-175.6	-18.3
Calhoun	+0.6	-9.8	--
Colorado	-7.5	-11.6	-26.2
De Witt	-7.4	-6.4	-18.0
Duval	-5.2	-17.4	-35.0
Fayette	--	-14.4	-46.3
Fort Bend	+2.2	-3.2	-12.8
Goliad	+1.0	-4.6	-14.2
Gonzales	--	--	-15.8
Jackson	-19.0	-24.4	-27.3
Jim Hogg	+15.4	+7.8	+1.0
Jim Wells	-9.8	-133.0	-20.9
Karnes	--	-23.8	-51.6
Kenedy	-34.8	-816.1	--
Kleberg	-9.3	-706.3	-35.0
Lavaca	-13.6	-12.9	-62.1
Live Oak	-6.7	-9.5	-16.6
Matagorda	-3.8	-22.5	--
McMullen	--	--	-15.2
Nueces	-19.8	-137.7	-17.3
Refugio	-0.5	-30.5	--
San Patricio	-6.5	-29.0	-13.3
Victoria	+6.6	-0.5	-6.2
Washington	--	--	-52.0
Webb	--	-55.1	-56.9
Wharton	-15.2	-10.5	-23.0

Water levels in the Chicot Aquifer show a decline (drawdown) throughout most of the model area, including areas in Nueces, Kleberg, Jackson and Wharton counties where the declines are in excess of 50 feet (Figure 9). The water-level declines in Nueces and Kleberg counties occur due to heavy pumpage from the underlying Evangeline Aquifer in Kleberg County. However, there is little water-level decline directly over the most intense pumpage in western Kleberg County. This is due to the spatial distribution of vertical leakance in the Chicot Aquifer (Figure 12). Vertical leakance controls groundwater flow between aquifers. The effects of Evangeline

Aquifer pumpage in the Chicot Aquifer are greater in Nueces and eastern Kleberg counties where vertical leakance is higher. The relatively low vertical leakance in western Kleberg County insulate that part of the Chicot Aquifer from the effects of heavy pumpage in the underlying Evangeline Aquifer. Water-level declines can also be observed in Bee, Colorado, Jim Wells, and Matagorda counties where pumpage in the Chicot Aquifer was increased. Although pumpage in Victoria County was also increased in this model run from the baseline runs, water levels show a recovery across the county. This is due to the response of the aquifer to decreased pumping from the City of Victoria that was included in the baseline pumpage. Water-level decline can be observed at the southern edge of the model in Brooks and Kenedy counties. However, this is an unavoidable artifact of the way the model was constructed and should be ignored for management decisions.

In the Evangeline Aquifer, decreases in water levels are observed across most of the model area (Figure 10). Extremely high drawdowns are observed in Jim Wells, Kenedy, Kleberg, and Nueces counties where large amount of pumping from the Evangeline Aquifer were placed over limited areas. Throughout most of the rest of the model area water-level declines in the Evangeline Aquifer are less than 25 feet. Water levels recover in Victoria County due to decreased pumping from the Evangeline Aquifer for the City of Victoria.

In the Jasper Aquifer, significant declines in water levels occur throughout the model area (Figure 11). Several areas of significant decline occur in Fayette, Karnes, Lavaca, and Live Oak counties, all due to pumpage added to the Jasper Aquifer for this model run. Water-level declines of up to 30 feet can be observed in much of the rest of the model area. An area of higher drawdown in southern Duval County can be seen, however this was also observed in the baseline model run (GAM Run 07-12) and is not due to additional pumpage used in this model run. A localized area of recovery can also be observed in Bee County, which was also observed in the baseline model run and is not due to changes in pumpage used in this simulation. Water-level increases at the southern edge of the model are a result of the model construction and are not considered to be accurate.

Because some of the desired future conditions for the groundwater management area may be based on discharge to springs or baseflow to rivers and streams, we also pulled the water budgets for each of these components for each county in the model area. These budgets are provided in Appendix A. The components of the water budget are divided up into “In” and “Out”, representing water that is coming into and leaving from the budget. As might be expected, water from wells is only in the “Out” column, representing water that is pulled out of the budget or aquifer system from wells. Likewise, recharge is only found in the “In” column. Streams and rivers, however, have values in both the “In” and “Out” columns. This is because some streams lose water to the aquifer, and some gain water from the aquifer depending on the water levels in the aquifer. Also included in these budgets are values for vertical leakage to overlying and underlying formations as well as lateral inflow from adjacent counties. Future model runs can be compared to these budgets to determine the impact of additional pumpage compared to this baseline run.

REFERENCES:

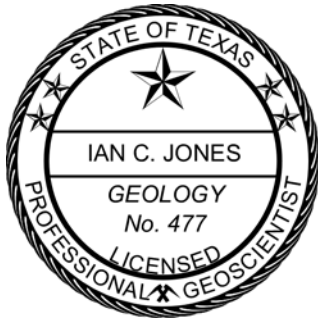
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Donnelly, A.C.A., 2008, GAM Run 07-35, Texas Water Development Board GAM Run Report, 48 p.

Waterstone Engineering, Inc., and Parsons, Inc., 2003, Groundwater Availability of the Central Gulf Coast Aquifer: Numerical Simulations to 2050 Central Gulf Coast, Texas- Final Report: contract report to the Texas Water Development Board, 158 p.



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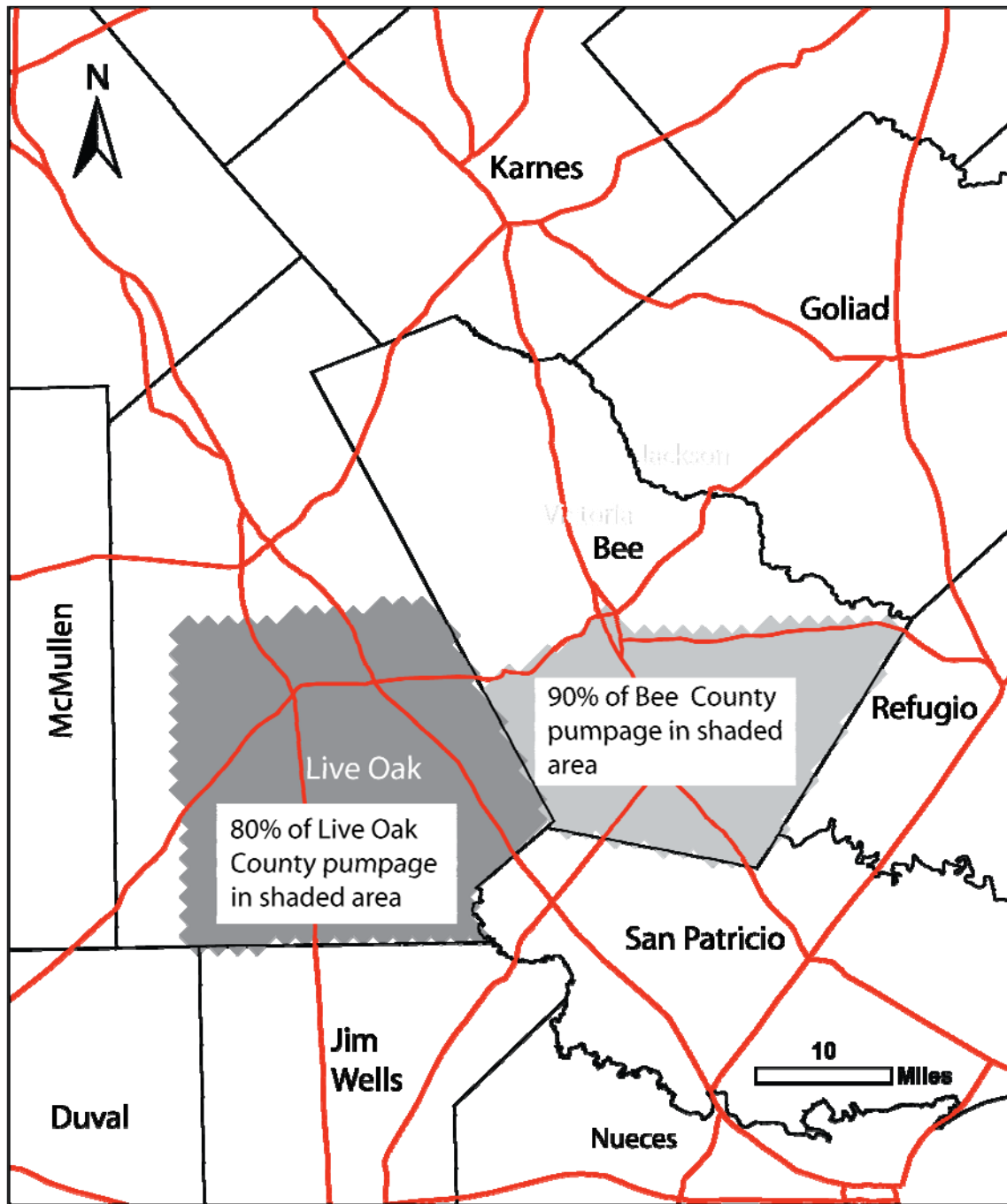


Figure 1. Location of additional pumpage in Bee and Live Oak counties. Pumpage in each county is concentrated in the shaded areas.

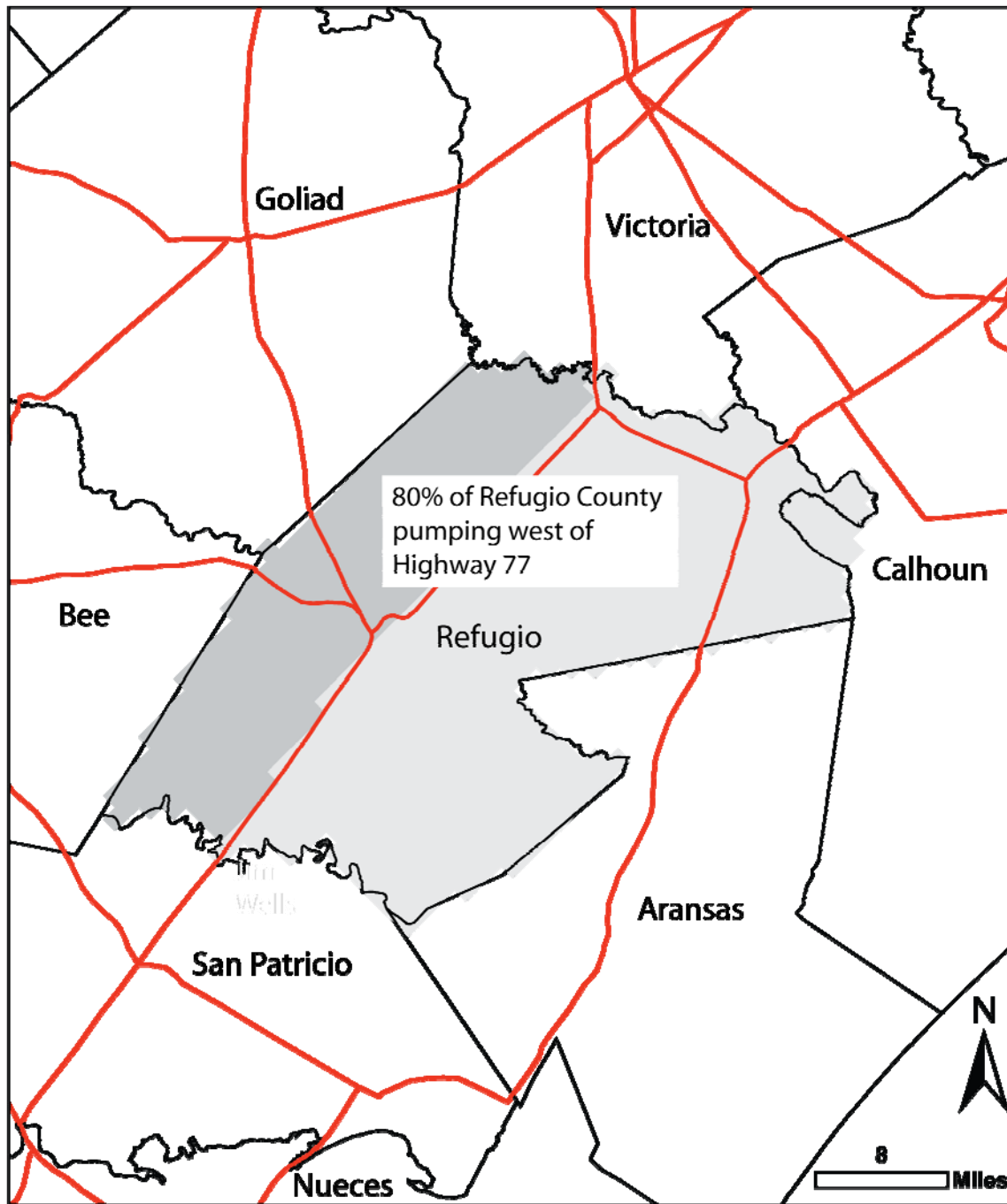


Figure 2. Location of additional pumpage in Refugio County. Pumpage is concentrated in the shaded area.

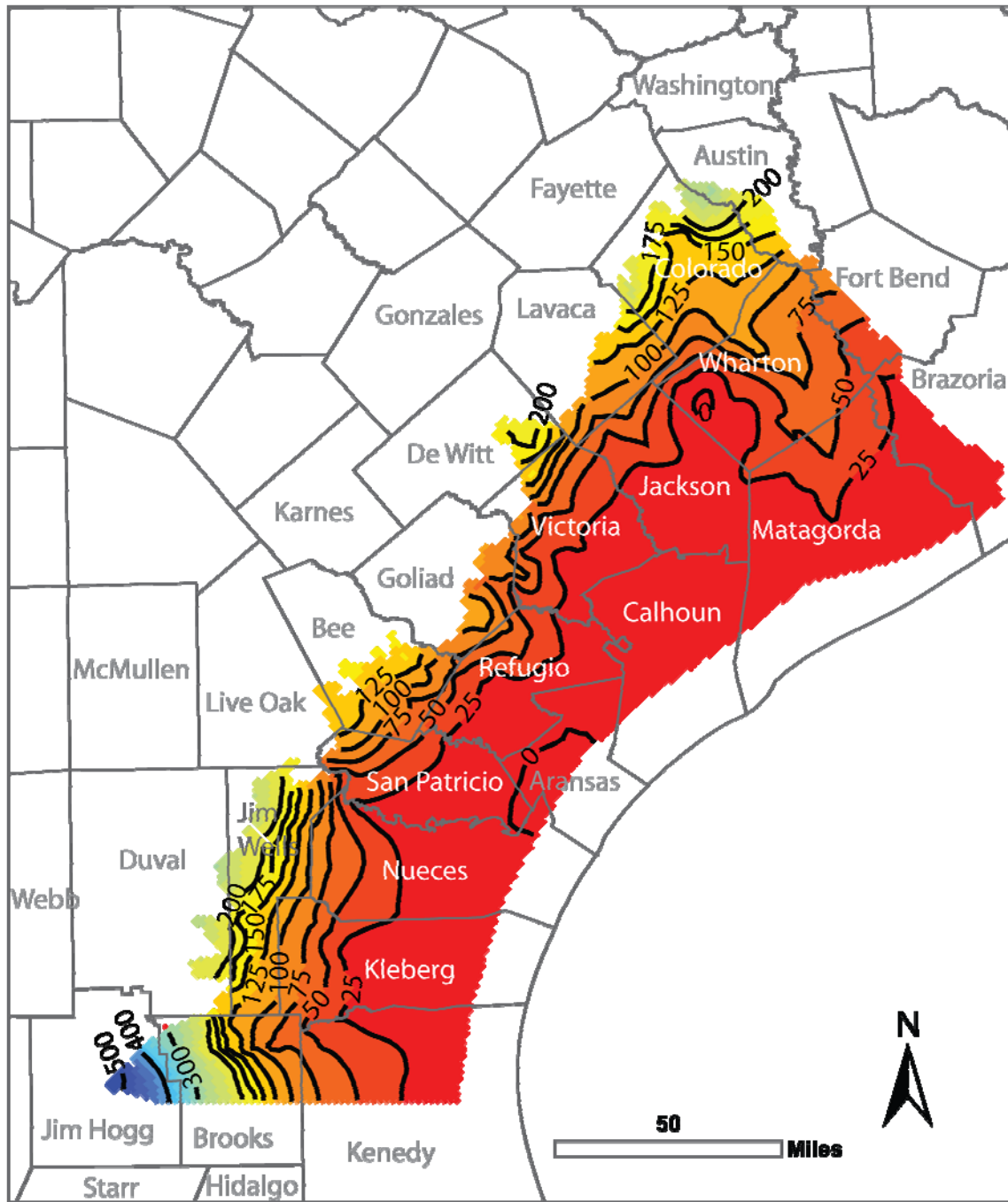


Figure 3. Initial water level elevations for the predictive model run in the Chicot Aquifer from the groundwater availability model for the central part of the Gulf Coast Aquifer. Water level elevations are in feet above mean sea level. Contour interval is 25 feet.

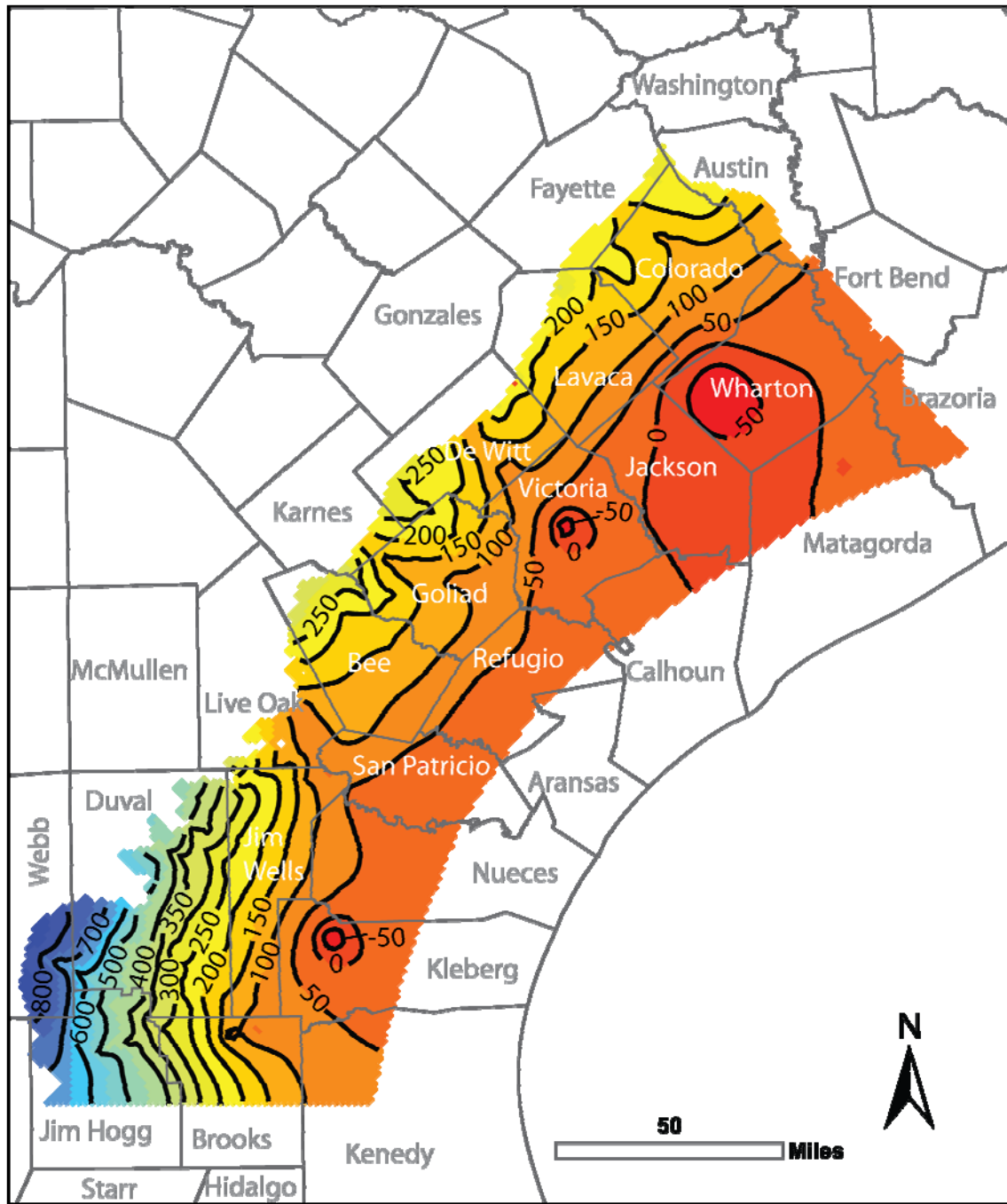


Figure 4. Initial water level elevations for the predictive model run in the Evangeline Aquifer from the groundwater availability model for the central part of the Gulf Coast Aquifer. Water level elevations are in feet above mean sea level. Contour interval is 50 feet.

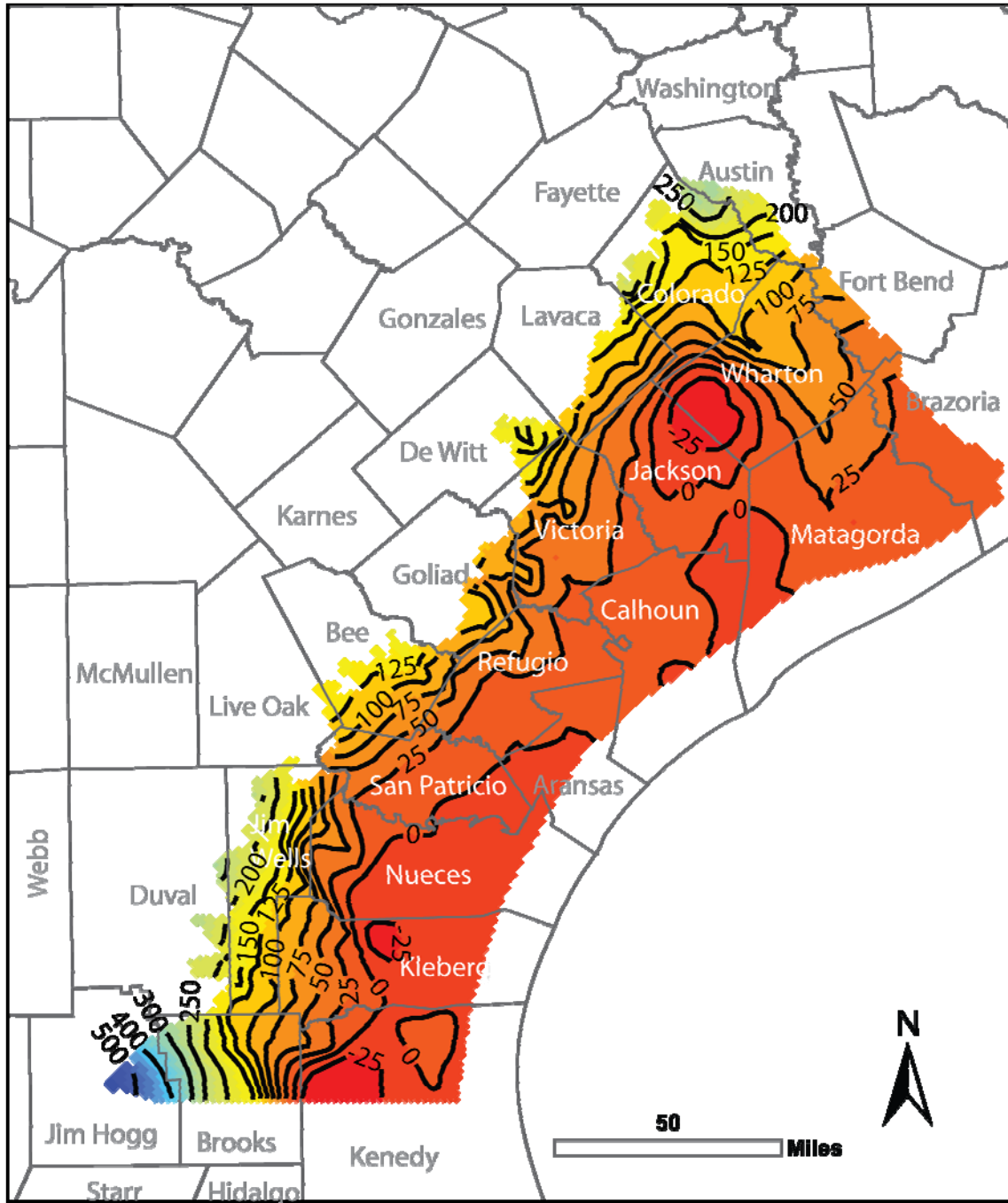


Figure 6. Water level elevations after 60 years using the specified pumpage in the Chicot Aquifer. Water level elevations are in feet above mean sea level. Contour interval is 25 feet.

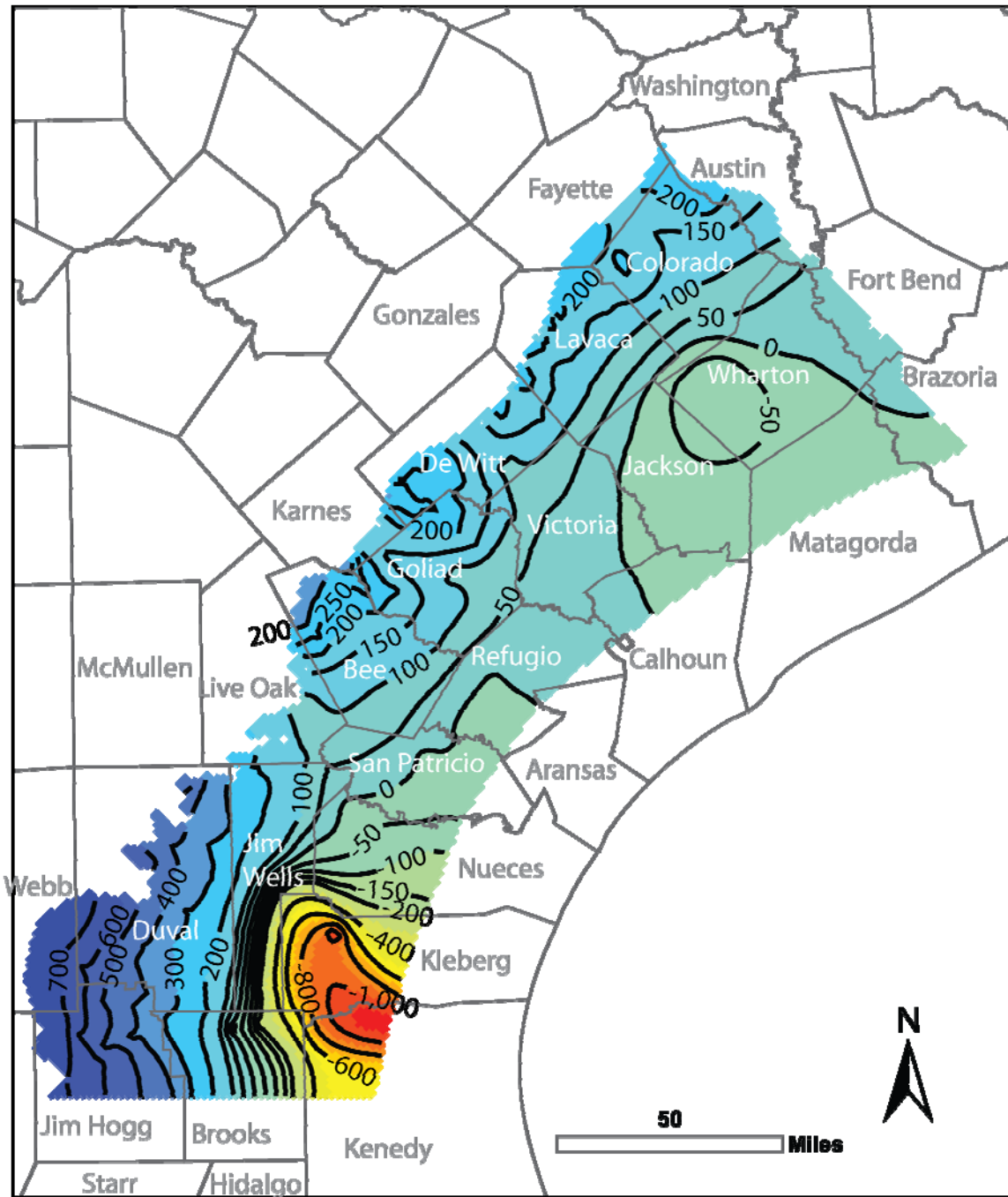


Figure 7. Water level elevations after 60 years using the specified pumpage in the Evangeline Aquifer. Water level elevations are in feet above mean sea level. Contour interval is 50 feet.

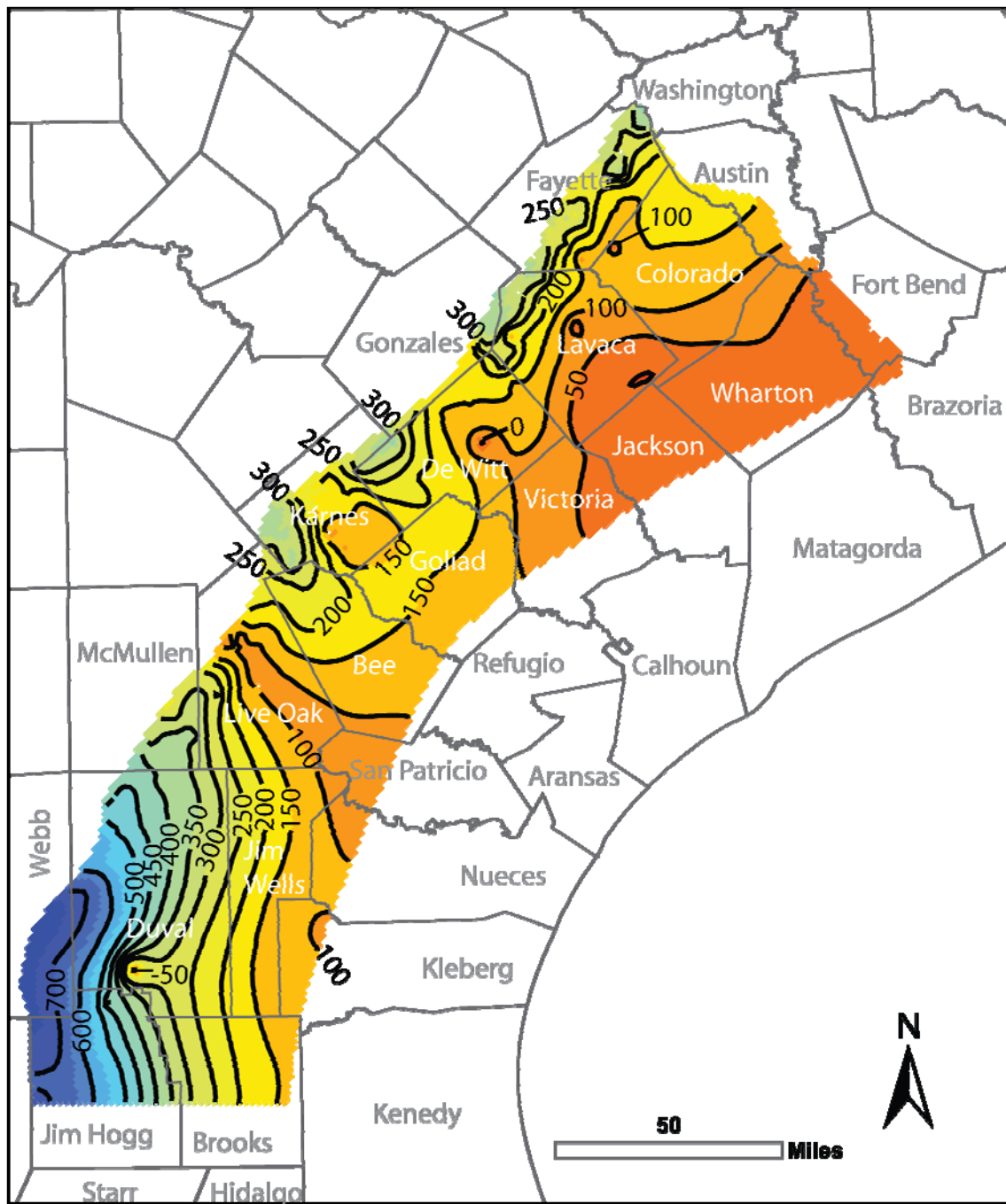


Figure 8. Water level elevations after 60 years using the specified pumpage in the Jasper Aquifer. Water level elevations are in feet above mean sea level. Contour interval is 50 feet.

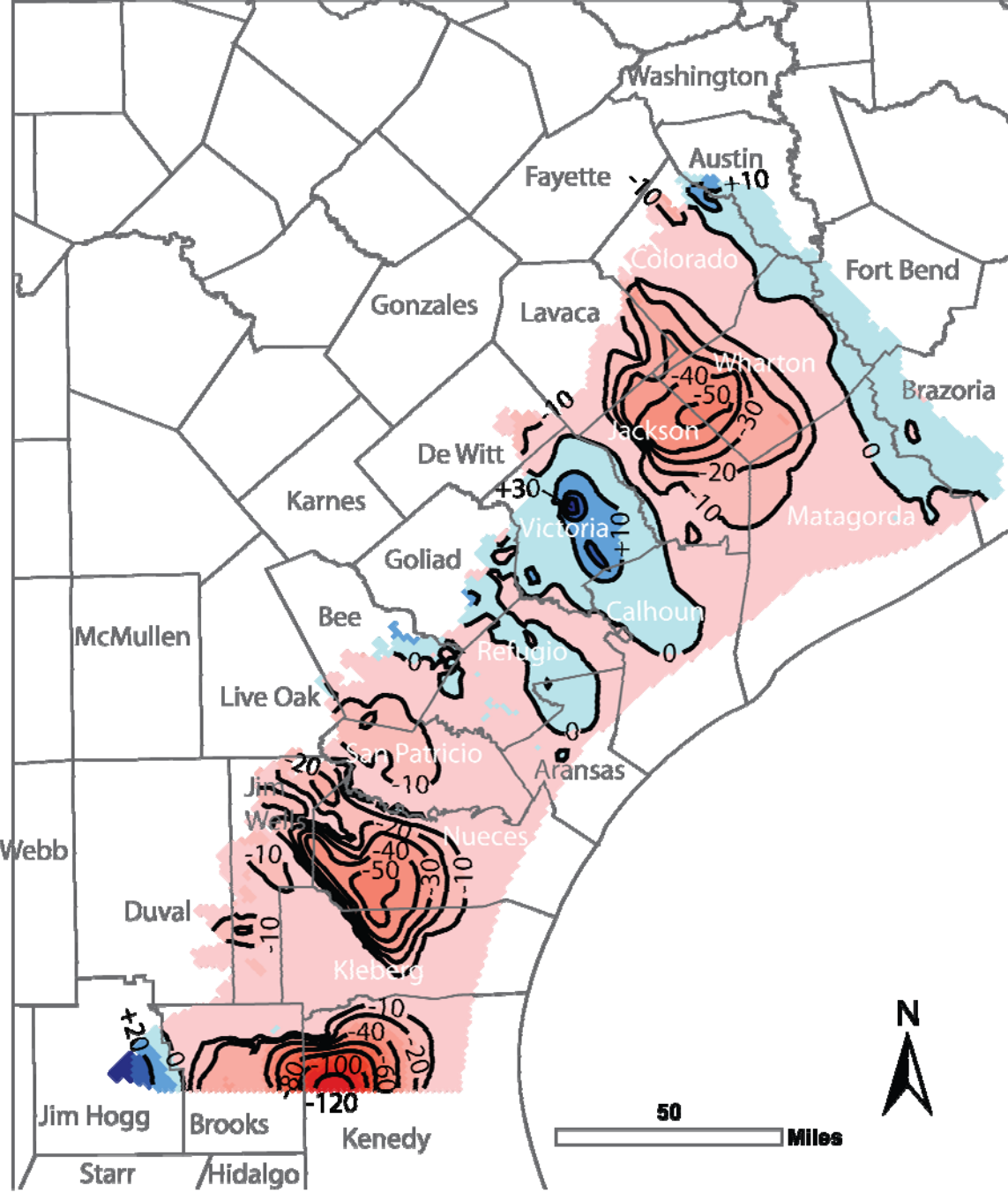


Figure 9. Changes in water levels after 60 years using the specified pumpage in Chicot Aquifer. Changes in water levels are in feet. Contour interval is 10 feet.

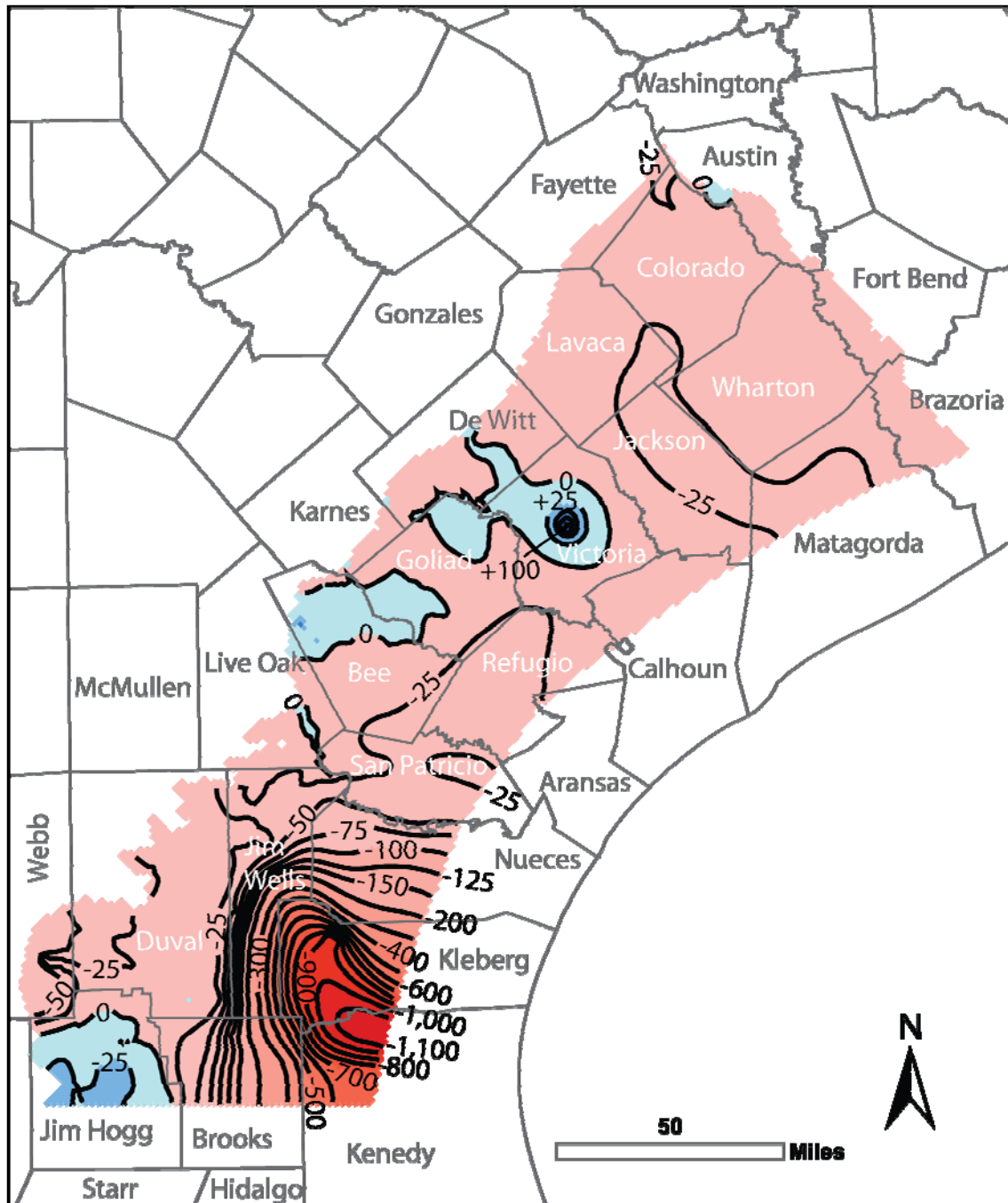


Figure 10. Changes in water levels after 60 years using the specified pumpage in the Evangeline Aquifer. Changes in water levels are in feet. Contour interval is 25 feet.

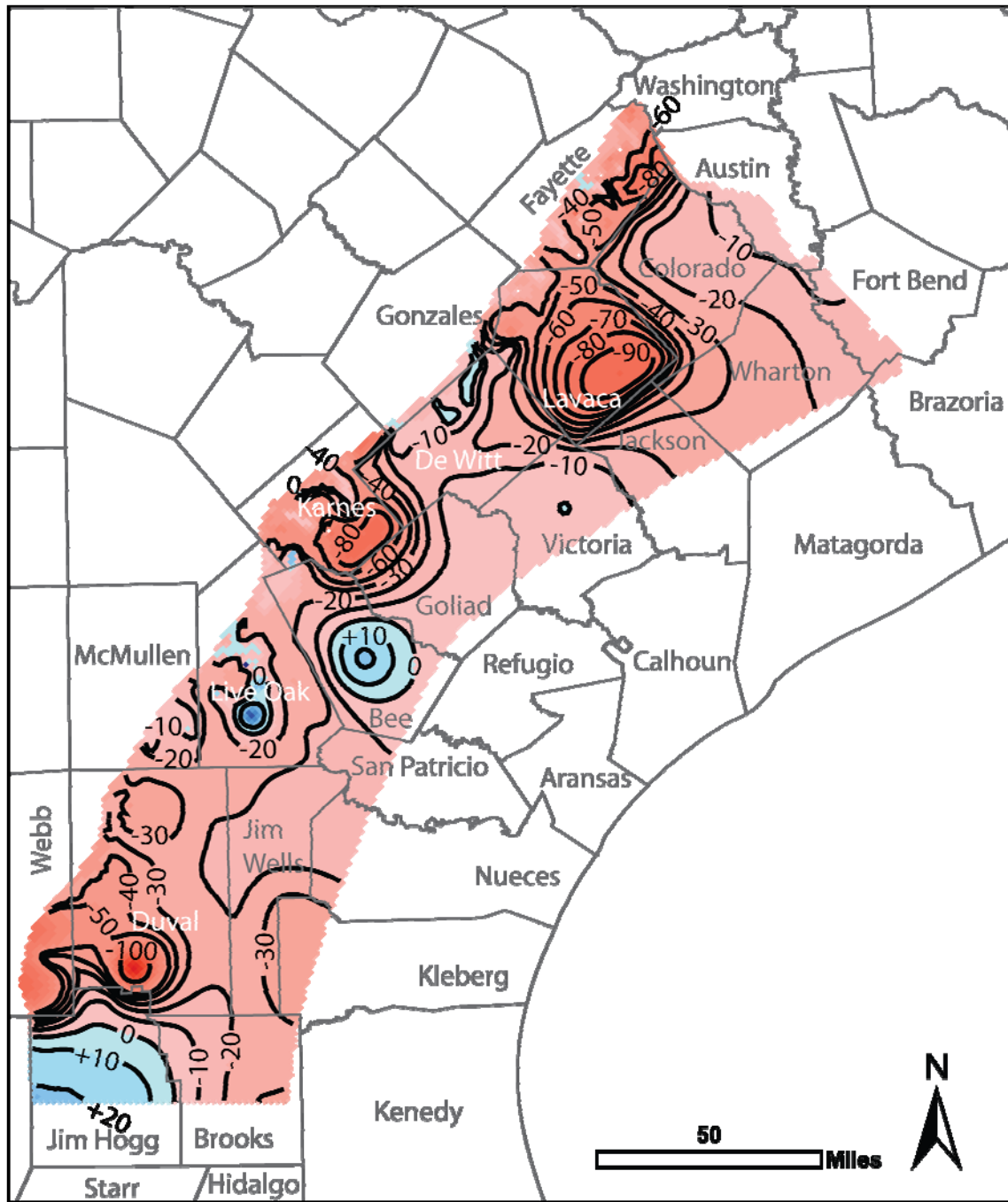


Figure 11. Changes in water levels after 60 years using the specified pumpage in the Jasper Aquifer. Changes in water levels are in feet. Contour interval is 10 feet.

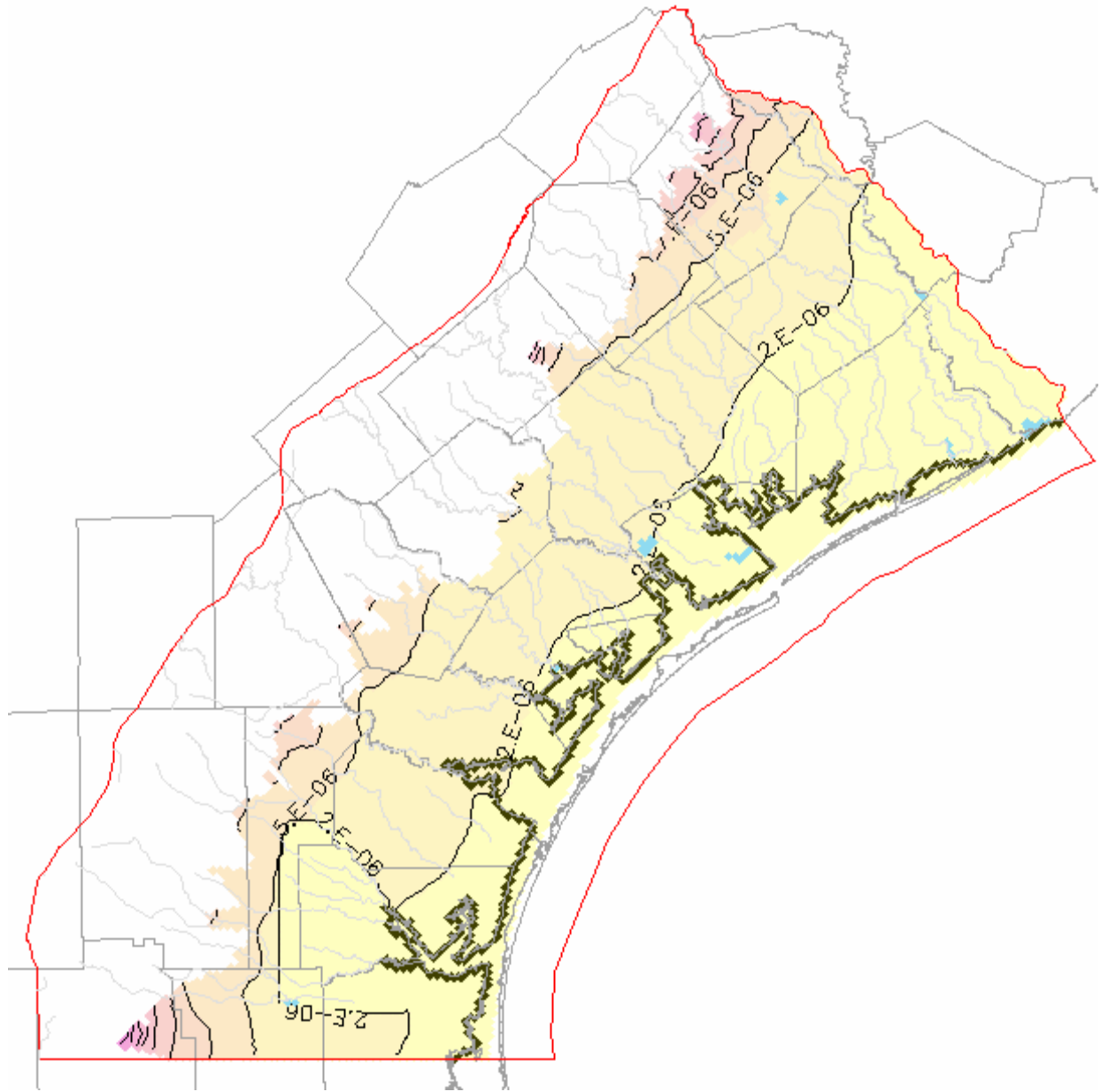


Figure 12. Calibrated vertical leakance distribution in the Chicot Aquifer. Vertical leakance values expressed in per day units (From Chowdhury and others, 2004).

Appendix A

Summary of Water Budgets After 60 Years

Table A-1. Annual water budgets for each county at the end of the 60-year predictive model run using the specified pumpage in the groundwater availability model for the central part of the Gulf Coast Aquifer (in acre-feet per year). Water budgets for Jim Hogg, Brooks, Kenedy, Brazoria, Fort Bend, and Austin counties represent only the portions of those counties located in the active portion of the model for the central part of the Gulf Coast Aquifer.

Aransas						
	GAM07-12		GAM07-14		GAM08-17	
	Baseline		Availability		New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	0	0	1	0	1	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	11	0	11	0	11
General Head Boundaries	1,104	3,497	1,417	3,111	1,628	3,091
Wells	0	1,827	0	1,827	0	1,827
Streams and Rivers	2,351	669	2,456	646	2,471	640
Recharge	164	0	164	0	164	0
Evapotranspiration	0	741	0	729	0	727
Lateral Inflow	4,229	1,161	3,670	1,355	3,697	1,615
Vertical Leakage Downward	58	0	0	30	0	50
Evangeline						
Storage	0	0	0	0	0	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	0	0	0	0	0
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	0	58	30	0	50	0
Lateral Inflow	105	47	136	166	53	103
Vertical Leakage Downward	--	--	--	--	--	--
Jasper						
Storage	--	--	--	--	--	--
Reservoirs (River package)	--	--	--	--	--	--
Springs (Drain package)	--	--	--	--	--	--
General Head Boundaries	--	--	--	--	--	--
Wells	--	--	--	--	--	--
Streams and Rivers	--	--	--	--	--	--
Recharge	--	--	--	--	--	--
Evapotranspiration	--	--	--	--	--	--
Vertical Leakage Upward	--	--	--	--	--	--
Lateral Inflow	--	--	--	--	--	--

Table A-1. (continued)

Austin						
	GAM07-12		GAM07-14		GAM08-17	
	Baseline		Availability		New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	2	0	8	0	8	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	3,118	0	3,118	0	3,118
Streams and Rivers	6,108	1,333	6,782	1,164	6,753	1,175
Recharge	6,758	0	6,758	0	6,758	0
Evapotranspiration	0	17	0	17	0	17
Lateral Inflow	2,481	4,051	2,300	4,190	2,303	4,186
Vertical Leakage Downward	0	6,830	0	7,359	0	7,325
Evangeline						
Storage	2	0	9	0	9	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	3,931	0	3,931	0	3,931
Streams and Rivers	0	0	0	0	0	0
Recharge	90	0	90	0	90	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	6,830	0	7,359	0	7,325	0
Lateral Inflow	1,409	4,341	1,263	4,707	1,260	4,681
Vertical Leakage Downward	42	102	35	118	46	118
Jasper						
Storage	16	0	48	0	44	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	23	0	23	0	23
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	97	40	121	27	121	39
Lateral Inflow	103	153	83	203	90	193

Table A-1. (continued)

Bee						
	GAM07-12 Baseline		GAM07-14 Availability		GAM08-17 New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	0	15	1,424	0	361	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	1,383	0	9,620	0	6,934
Streams and Rivers	4,811	10,996	7,027	975	7,444	3,687
Recharge	18,921	0	18,825	0	18,825	0
Evapotranspiration	0	219	0	45	0	116
Lateral Inflow	775	8,671	972	5,568	754	8,180
Vertical Leakage Downward	937	4,160	0	12,041	0	8,466
Evangeline						
Storage	0	41	173	0	67	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	2,973	0	13,553	0	10,370
Streams and Rivers	4,008	3,783	6,758	2,190	5,681	2,645
Recharge	4,993	0	5,089	0	5,089	0
Evapotranspiration	0	2	0	0	0	0
Vertical Leakage Upward	4,160	937	12,041	0	8,466	0
Lateral Inflow	2,354	6,841	5,104	13,006	3,093	8,706
Vertical Leakage Downward	96	1,031	612	1,023	352	1,022
Jasper						
Storage	39	187	594	0	382	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	260	0	658	0	540
Streams and Rivers	94	96	159	58	145	69
Recharge	23	0	24	0	24	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	884	148	1,152	270	1,072	206
Lateral Inflow	492	844	453	1,395	436	1,243

Table A-1. (continued)

Brazoria						
	GAM07-12 Baseline		GAM07-14 Availability		GAM08-17 New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	2	0	7	0	6	0
Reservoirs (River package)	338	0	341	0	341	0
Springs (Drain package)	0	72	0	63	0	64
General Head Boundaries	0	1,200	0	1,138	0	1,143
Wells	0	8,727	0	8,727	0	8,727
Streams and Rivers	9,469	19,328	9,872	18,989	9,850	19,003
Recharge	15,152	0	15,152	0	15,152	0
Evapotranspiration	0	1,338	0	1,320	0	1,322
Lateral Inflow	12,042	4,985	11,885	5,069	11,891	5,074
Vertical Leakage Downward	0	1,353	0	1,950	0	1,910
Evangeline						
Storage	2	0	10	0	9	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	284	0	284	0	284
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	1,353	0	1,950	0	1,910	0
Lateral Inflow	480	1,662	543	2,347	582	2,346
Vertical Leakage Downward	102	0	126	0	127	0
Jasper						
Storage	31	0	44	0	35	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	0	0	0	0	0
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	0	33	0	33	0	37
Lateral Inflow	8	5	0	11	8	6

Table A-1. (continued)

Brooks						
	GAM07-12 Baseline		GAM07-14 Availability		GAM08-17 New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	0	3	98	0	1,020	0
Reservoirs (River package)	3,431	0	3,431	0	3,431	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	359	0	359	0	5,681
Streams and Rivers	1,073	23,128	1,349	19,705	3,838	8,184
Recharge	23,402	0	23,402	0	23,402	0
Evapotranspiration	0	1,826	0	1,763	0	866
Lateral Inflow	5,005	4,877	4,674	4,580	5,388	4,601
Vertical Leakage Downward	1,365	4,081	507	7,051	0	17,743
Evangeline						
Storage	1	3	574	0	7,433	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	3,681	0	3,681	0	25,006
Streams and Rivers	0	863	5	828	430	135
Recharge	340	0	340	0	340	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	4,081	1,365	7,051	507	17,743	0
Lateral Inflow	2,680	1,752	3,308	7,610	5,447	11,789
Vertical Leakage Downward	808	245	1,562	214	5,542	1
Jasper						
Storage	1	208	282	58	1,708	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	0	0	0	0	0
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	197	785	188	998	11	2,573
Lateral Inflow	1,448	655	1,399	813	1,571	717

Table A-1. (continued)

Calhoun						
	GAM07-12 Baseline		GAM07-14 Availability		GAM08-17 New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	2	1	23	0	23	0
Reservoirs (River package)	2,993	0	3,269	0	3,280	0
Springs (Drain package)	0	1,151	0	1,021	0	1,017
General Head Boundaries	144	12,828	1,694	8,289	1,683	8,241
Wells	0	1,464	0	2,853	0	2,853
Streams and Rivers	6,370	3,564	3,899	2,066	3,903	2,011
Recharge	3,039	0	3,039	0	3,039	0
Evapotranspiration	0	1,282	0	1,224	0	1,223
Lateral Inflow	11,465	3,826	9,871	4,707	9,890	4,679
Vertical Leakage Downward	337	234	13	1,648	0	1,793
Evangeline						
Storage	1	0	7	0	6	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	27	0	64	0	64
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	234	337	1,648	13	1,793	0
Lateral Inflow	1,033	906	190	1,773	87	1,828
Vertical Leakage Downward	1	0	4	0	4	0
Jasper						
Storage	--	--	--	--	--	--
Reservoirs (River package)	--	--	--	--	--	--
Springs (Drain package)	--	--	--	--	--	--
General Head Boundaries	--	--	--	--	--	--
Wells	--	--	--	--	--	--
Streams and Rivers	--	--	--	--	--	--
Recharge	--	--	--	--	--	--
Evapotranspiration	--	--	--	--	--	--
Vertical Leakage Upward	--	--	--	--	--	--
Lateral Inflow	--	--	--	--	--	--

Table A-1. (continued)

Colorado						
	GAM07-12 Baseline		GAM07-14 Availability		GAM08-17 New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	183	15	1,463	0	1,441	0
Reservoirs (River package)	1,408	0	1,408	0	1,408	0
Springs (Drain package)	0	6	0	5	0	5
General Head Boundaries	0	0	0	0	0	0
Wells	0	16,930	0	24,378	0	24,378
Streams and Rivers	28,347	12,482	33,916	8,349	33,748	8,390
Recharge	35,074	0	35,074	0	35,074	0
Evapotranspiration	0	57	0	54	0	54
Lateral Inflow	8,838	21,384	8,743	20,894	8,726	20,765
Vertical Leakage Downward	703	23,677	322	27,245	323	27,127
Evangeline						
Storage	5	4	70	0	68	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	15,681	0	22,580	0	22,580
Streams and Rivers	3,928	3,103	5,238	1,978	5,236	1,979
Recharge	2,515	0	2,515	0	2,515	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	23,677	703	27,245	322	27,127	323
Lateral Inflow	8,786	19,394	8,880	18,816	8,849	18,678
Vertical Leakage Downward	473	508	565	813	581	814
Jasper						
Storage	112	1	481	0	461	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	624	0	900	0	900
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	485	226	1,029	59	1,009	89
Lateral Inflow	595	341	268	819	276	757

Table A-1. (continued)

De Witt						
	GAM07-12 Baseline		GAM07-14 Availability		GAM08-17 New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	0	0	11	0	11	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	98	0	3,482	0	3,482
Streams and Rivers	2,094	1,229	4,183	246	4,182	246
Recharge	4,569	0	4,569	0	4,569	0
Evapotranspiration	0	25	0	0	0	0
Lateral Inflow	0	1,467	89	1,214	89	1,214
Vertical Leakage Downward	0	3,845	0	3,910	0	3,910
Evangeline						
Storage	4	0	63	0	63	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	970	0	7,662	0	7,662
Streams and Rivers	8,294	8,747	12,430	5,692	12,428	5,692
Recharge	5,786	0	5,773	0	5,773	0
Evapotranspiration	0	60	0	56	0	56
Vertical Leakage Upward	3,845	0	3,910	0	3,910	0
Lateral Inflow	987	7,133	1,143	7,413	1,143	7,411
Vertical Leakage Downward	87	2,090	43	2,539	44	2,539
Jasper						
Storage	562	2	1,326	0	1,326	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	2,674	0	3,801	0	3,801
Streams and Rivers	780	643	1,053	454	1,053	454
Recharge	243	0	243	0	243	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	2,322	160	2,934	72	2,933	72
Lateral Inflow	663	1,090	459	1,688	460	1,687

Table A-1. (continued)

Duval						
	GAM07-12		GAM07-14		GAM08-17	
	Baseline		Availability		New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	1	0	106	0	159	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	394	0	733	0	733
Streams and Rivers	1,544	3,215	3,451	1,230	3,118	1,459
Recharge	5,270	0	5,270	0	5,270	0
Evapotranspiration	0	34	0	17	0	16
Lateral Inflow	671	3,467	666	3,184	585	3,369
Vertical Leakage Downward	339	715	40	4,368	51	3,604
Evangeline						
Storage	72	0	859	0	577	1
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	4,363	0	7,949	0	7,949
Streams and Rivers	2,962	8,272	6,070	4,955	5,538	4,995
Recharge	14,506	0	14,506	0	14,506	0
Evapotranspiration	0	335	0	28	0	31
Vertical Leakage Upward	715	339	4,368	40	3,604	51
Lateral Inflow	1,410	3,973	1,769	12,000	1,292	9,690
Vertical Leakage Downward	1,001	3,384	1,032	3,632	773	3,572
Jasper						
Storage	866	0	2,131	0	2,066	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	2,892	0	5,283	0	5,283
Streams and Rivers	0	0	0	0	0	0
Recharge	189	0	189	0	189	0
Evapotranspiration	0	412	0	371	0	371
Vertical Leakage Upward	3,597	940	4,188	431	4,124	352
Lateral Inflow	2,256	2,663	2,127	2,550	2,198	2,572

Table A-1. (continued)

Fayette						
	GAM07-12		GAM07-14		GAM08-17	
	Baseline		Availability		New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	--	--	--	--	--	--
Reservoirs (River package)	--	--	--	--	--	--
Springs (Drain package)	--	--	--	--	--	--
General Head Boundaries	--	--	--	--	--	--
Wells	--	--	--	--	--	--
Streams and Rivers	--	--	--	--	--	--
Recharge	--	--	--	--	--	--
Evapotranspiration	--	--	--	--	--	--
Lateral Inflow	--	--	--	--	--	--
Vertical Leakage Downward	--	--	--	--	--	--
Evangeline						
Storage	5	0	43	0	43	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	169	0	884	0	884
Streams and Rivers	94	773	803	59	803	59
Recharge	1,737	0	1,737	0	1,737	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	--	--	--	--	--	--
Lateral Inflow	108	700	51	565	51	565
Vertical Leakage Downward	56	356	0	1,126	0	1,126
Jasper						
Storage	1,107	0	3,693	0	3,694	0
Reservoirs (River package)	117	0	201	0	201	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	1,583	0	7,308	0	7,308
Streams and Rivers	677	452	1,241	19	1,241	19
Recharge	355	0	354	0	354	0
Evapotranspiration	0	11	0	5	0	5
Vertical Leakage Upward	507	314	1,769	9	1,769	9
Lateral Inflow	145	549	361	278	361	278

Table A-1. (continued)

Fort Bend						
	GAM07-12 Baseline		GAM07-14 Availability		GAM08-17 New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	5	0	13	0	11	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	5,921	0	5,921	0	5,921
Streams and Rivers	8,234	6,299	8,309	5,980	8,291	6,051
Recharge	884	0	884	0	884	0
Evapotranspiration	0	18	0	17	0	17
Lateral Inflow	10,575	4,483	10,552	4,473	10,566	4,469
Vertical Leakage Downward	0	2,976	0	3,368	0	3,295
Evangeline						
Storage	2	0	8	0	6	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	2,882	0	2,882	0	2,882
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	2,976	0	3,368	0	3,295	0
Lateral Inflow	2,298	2,654	2,281	3,015	2,286	2,992
Vertical Leakage Downward	251	0	240	0	286	0
Jasper						
Storage	135	0	206	0	159	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	0	0	0	0	0
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	0	226	0	202	0	254
Lateral Inflow	107	16	49	53	113	17

Table A-1. (continued)

Goliad						
	GAM07-12 Baseline		GAM07-14 Availability		GAM08-17 New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	0	0	15	0	6	0
Reservoirs (River package)	1,500	0	1,547	0	1,543	0
Springs (Drain package)	0	12	0	5	0	6
General Head Boundaries	0	0	0	0	0	0
Wells	0	650	0	1,383	0	1,382
Streams and Rivers	2,234	8,879	3,297	6,652	3,199	7,173
Recharge	10,556	0	10,556	0	10,556	0
Evapotranspiration	0	218	0	163	0	175
Lateral Inflow	912	4,690	773	3,406	784	3,932
Vertical Leakage Downward	783	1,535	105	4,684	163	3,584
Evangeline						
Storage	2	0	59	0	55	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	5,493	0	11,457	0	11,521
Streams and Rivers	16,678	15,202	18,789	9,515	18,127	9,981
Recharge	7,979	0	7,979	0	7,979	0
Evapotranspiration	0	43	0	31	0	32
Vertical Leakage Upward	1,535	783	4,684	105	3,584	163
Lateral Inflow	3,800	8,457	4,612	14,976	4,203	12,153
Vertical Leakage Downward	437	454	574	613	511	609
Jasper						
Storage	19	14	355	0	329	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	0	0	0	0	0
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	387	377	663	287	654	280
Lateral Inflow	526	540	376	1,107	383	1,087

Table A-1. (continued)

Gonzales						
	GAM07-12		GAM07-14		GAM08-17	
	Baseline		Availability		New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	--	--	--	--	--	--
Reservoirs (River package)	--	--	--	--	--	--
Springs (Drain package)	--	--	--	--	--	--
General Head Boundaries	--	--	--	--	--	--
Wells	--	--	--	--	--	--
Streams and Rivers	--	--	--	--	--	--
Recharge	--	--	--	--	--	--
Evapotranspiration	--	--	--	--	--	--
Lateral Inflow	--	--	--	--	--	--
Vertical Leakage Downward	--	--	--	--	--	--
Evangeline						
Storage	--	--	--	--	--	--
Reservoirs (River package)	--	--	--	--	--	--
Springs (Drain package)	--	--	--	--	--	--
General Head Boundaries	--	--	--	--	--	--
Wells	--	--	--	--	--	--
Streams and Rivers	--	--	--	--	--	--
Recharge	--	--	--	--	--	--
Evapotranspiration	--	--	--	--	--	--
Vertical Leakage Upward	--	--	--	--	--	--
Lateral Inflow	--	--	--	--	--	--
Vertical Leakage Downward	--	--	--	--	--	--
Jasper						
Storage	396	0	451	0	451	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	1	0	1	0	1
General Head Boundaries	0	0	0	0	0	0
Wells	0	4	0	4	0	4
Streams and Rivers	12	164	20	160	20	160
Recharge	139	0	139	0	139	0
Evapotranspiration	0	70	0	68	0	68
Vertical Leakage Upward	--	--	--	--	--	--
Lateral Inflow	43	350	21	398	21	398

Table A-1. (continued)

Jackson						
	GAM07-12 Baseline		GAM07-14 Availability		GAM08-17 New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	481	1	3,128	0	3,073	0
Reservoirs (River package)	4,149	0	4,213	0	4,213	0
Springs (Drain package)	0	100	0	36	0	37
General Head Boundaries	80	610	1,733	142	1,713	142
Wells	0	39,090	0	64,067	0	64,067
Streams and Rivers	55,771	26,417	53,223	8,086	53,253	8,171
Recharge	11,805	0	11,805	0	11,805	0
Evapotranspiration	0	529	0	385	0	386
Lateral Inflow	21,348	16,126	24,456	10,085	24,447	10,000
Vertical Leakage Downward	23	10,791	0	15,760	0	15,707
Evangeline						
Storage	9	0	77	0	69	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	14,417	0	23,697	0	23,697
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	10,791	23	15,760	0	15,707	0
Lateral Inflow	13,015	10,172	14,774	8,214	14,700	8,082
Vertical Leakage Downward	760	0	1,296	1	1,297	1
Jasper						
Storage	174	3	461	0	425	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	0	0	0	0	0
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	0	390	51	385	48	411
Lateral Inflow	261	42	101	228	106	168

Table A-1. (continued)

Jim Hogg						
	GAM07-12		GAM07-14		GAM08-17	
	Baseline		Availability		New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	0	2	0	2	1	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	14	0	14	0	14
Streams and Rivers	0	2,024	0	2,009	0	1,288
Recharge	6,440	0	6,440	0	6,440	0
Evapotranspiration	0	443	0	442	0	410
Lateral Inflow	382	3,251	377	3,261	292	3,763
Vertical Leakage Downward	313	1,399	310	1,399	284	1,542
Evangeline						
Storage	4	42	30	17	29	12
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	371	0	371	0	371
Streams and Rivers	342	4,069	412	3,655	385	3,536
Recharge	7,165	0	7,165	0	7,165	0
Evapotranspiration	0	657	0	584	0	577
Vertical Leakage Upward	1,399	313	1,399	310	1,542	284
Lateral Inflow	504	1,996	321	2,037	360	2,679
Vertical Leakage Downward	549	2,514	408	2,761	407	2,428
Jasper						
Storage	11	399	51	269	92	132
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	594	0	594	0	594
Streams and Rivers	0	0	0	0	0	0
Recharge	155	0	155	0	155	0
Evapotranspiration	0	172	0	162	0	169
Vertical Leakage Upward	2,370	533	2,628	392	2,362	390
Lateral Inflow	1,355	2,194	865	2,284	1,016	2,341

Table A-1. (continued)

Jim Wells						
	GAM07-12 Baseline		GAM07-14 Availability		GAM08-17 New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	8	0	281	0	380	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	14	0	5	0	3
General Head Boundaries	0	0	0	0	0	0
Wells	0	2,257	0	13,567	0	10,553
Streams and Rivers	5,557	18,173	14,515	6,284	18,982	2,907
Recharge	25,328	0	25,328	0	25,328	0
Evapotranspiration	0	237	0	157	0	128
Lateral Inflow	3,722	9,291	3,316	8,293	3,421	8,609
Vertical Leakage Downward	568	5,212	209	15,340	2	25,912
Evangeline						
Storage	5	0	4,994	0	5,877	0
Reservoirs (River package)	562	0	562	0	562	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	2,491	0	36,421	0	35,521
Streams and Rivers	561	4,370	1,019	3,410	3,819	731
Recharge	2,234	0	2,234	0	2,206	0
Evapotranspiration	0	8	0	5	0	2
Vertical Leakage Upward	5,212	568	15,340	209	25,912	2
Lateral Inflow	3,693	5,521	18,266	7,387	11,292	18,643
Vertical Leakage Downward	865	175	5,254	237	5,276	43
Jasper						
Storage	100	3	1,410	0	1,612	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	7	0	7	0	7
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	132	735	245	1,971	41	1,959
Lateral Inflow	1,765	1,251	1,625	1,302	1,680	1,367

Table A-1. (continued)

Karnes						
	GAM07-12 Baseline		GAM07-14 Availability		GAM08-17 New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	--	--	--	--	--	--
Reservoirs (River package)	--	--	--	--	--	--
Springs (Drain package)	--	--	--	--	--	--
General Head Boundaries	--	--	--	--	--	--
Wells	--	--	--	--	--	--
Streams and Rivers	--	--	--	--	--	--
Recharge	--	--	--	--	--	--
Evapotranspiration	--	--	--	--	--	--
Lateral Inflow	--	--	--	--	--	--
Vertical Leakage Downward	--	--	--	--	--	--
Evangeline						
Storage	0	0	61	3	66	3
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	104	0	1,147	0	1,163
Streams and Rivers	280	581	486	3	485	3
Recharge	884	0	839	0	850	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	--	--	--	--	--	--
Lateral Inflow	214	539	358	305	358	304
Vertical Leakage Downward	36	190	0	286	0	286
Jasper						
Storage	1,497	8	7,538	21	7,525	21
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	2,231	0	12,607	0	12,607
Streams and Rivers	747	551	2,239	0	2,236	0
Recharge	417	0	417	0	417	0
Evapotranspiration	0	78	0	1	0	1
Vertical Leakage Upward	395	97	936	0	935	0
Lateral Inflow	560	652	1,877	379	1,885	369

Table A-1. (continued)

Kenedy						
	GAM07-12 Baseline		GAM07-14 Availability		GAM08-17 New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	1	0	110	0	3,013	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	18,999	0	17,601	693	2,686
Wells	0	41	0	41	0	14,133
Streams and Rivers	897	6,442	952	4,947	8,225	877
Recharge	25,221	0	25,221	0	25,221	0
Evapotranspiration	0	2,283	0	2,169	0	257
Lateral Inflow	4,224	2,619	3,919	2,580	4,923	1,637
Vertical Leakage Downward	214	175	0	2,859	0	22,483
Evangeline						
Storage	3	0	158	0	17,959	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	62	0	62	0	56,426
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	175	214	2,859	0	22,483	0
Lateral Inflow	728	663	1,406	4,983	11,017	436
Vertical Leakage Downward	33	1	623	0	5,405	0
Jasper						
Storage	--	--	--	--	--	--
Reservoirs (River package)	--	--	--	--	--	--
Springs (Drain package)	--	--	--	--	--	--
General Head Boundaries	--	--	--	--	--	--
Wells	--	--	--	--	--	--
Streams and Rivers	--	--	--	--	--	--
Recharge	--	--	--	--	--	--
Evapotranspiration	--	--	--	--	--	--
Vertical Leakage Upward	--	--	--	--	--	--
Lateral Inflow	--	--	--	--	--	--

Table A-1. (continued)

Kleberg						
	GAM07-12 Baseline		GAM07-14 Availability		GAM08-17 New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	6	0	431	0	1,174	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	1	0	0	0	0
General Head Boundaries	0	16,786	3,803	7,454	18,493	3,669
Wells	0	948	0	5,086	0	22,497
Streams and Rivers	19,863	12,407	26,367	7,961	38,650	5,027
Recharge	4,486	0	4,486	0	4,486	0
Evapotranspiration	0	1,137	0	933	0	755
Lateral Inflow	12,640	4,515	12,126	5,964	11,081	10,119
Vertical Leakage Downward	55	1,256	0	19,816	0	31,816
Evangeline						
Storage	20	0	6,479	0	22,460	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	7,682	0	44,910	0	93,858
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	1,256	55	19,816	0	31,816	0
Lateral Inflow	5,789	427	15,229	4,062	29,844	4,560
Vertical Leakage Downward	1,095	0	7,448	0	14,299	0
Jasper						
Storage	100	0	817	0	1,193	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	0	0	0	0	0
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	0	431	0	1,089	0	1,649
Lateral Inflow	388	57	321	48	477	21

Table A-1. (continued)

Lavaca						
	GAM07-12 Baseline		GAM07-14 Availability		GAM08-17 New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	89	0	1,349	0	1,329	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	1,726	0	5,784	0	5,784
Streams and Rivers	8,823	5,526	12,585	1,454	12,579	1,462
Recharge	18,276	0	18,276	0	18,276	0
Evapotranspiration	0	3	0	1	0	1
Lateral Inflow	1,537	15,123	1,176	16,680	1,173	16,660
Vertical Leakage Downward	85	6,433	4	9,469	4	9,452
Evangeline						
Storage	6	0	61	9	60	9
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	6,907	0	23,405	0	23,405
Streams and Rivers	9,941	6,149	21,548	1,624	21,527	1,626
Recharge	6,093	0	6,051	0	6,051	0
Evapotranspiration	0	4	0	2	0	2
Vertical Leakage Upward	6,433	85	9,469	4	9,452	4
Lateral Inflow	4,055	13,064	3,892	13,715	3,890	13,674
Vertical Leakage Downward	189	513	73	2,331	74	2,331
Jasper						
Storage	1,331	1	3,021	0	3,018	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	2,404	0	8,533	0	8,533
Streams and Rivers	597	0	879	0	879	0
Recharge	170	0	169	0	169	0
Evapotranspiration	0	5	0	0	0	0
Vertical Leakage Upward	669	179	3,502	14	3,493	14
Lateral Inflow	478	656	1,278	302	1,291	302

Table A-1. (continued)

Live Oak						
	GAM07-12		GAM07-14		GAM08-17	
	Baseline		Availability		New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	0	0	63	0	2	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	88	0	88	0	88
Streams and Rivers	177	0	177	0	177	0
Recharge	1,194	0	1,194	0	1,194	0
Evapotranspiration	0	6	0	4	0	0
Lateral Inflow	242	190	92	301	91	280
Vertical Leakage Downward	0	1,328	0	1,133	0	1,095
Evangeline						
Storage	0	0	0	0		
Reservoirs (River package)	0	8	123	0	32	0
Reservoirs (River package)	2,634	0	2,890	0	2,835	0
Springs (Drain package)	0	5	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	1,802	0	4,140	0	2,938
Streams and Rivers	635	8,684	1,106	5,915	905	6,435
Recharge	4,205	0	4,205	0	4,205	0
Evapotranspiration	0	68	0	38	0	44
Vertical Leakage Upward	1,328	0	1,133	0	1,095	0
Lateral Inflow	2,561	767	1,550	693	1,358	927
Vertical Leakage Downward	254	284	30	251	117	204
Jasper						
Storage	1,386	65	2,949	0	2,155	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	2,744	0	7,705	0	4,988
Streams and Rivers	441	394	997	90	654	184
Recharge	527	0	528	0	527	0
Evapotranspiration	0	56	0	39	0	46
Vertical Leakage Upward	386	949	1,151	268	606	455
Lateral Inflow	1,955	488	2,684	207	2,099	368

Table A-1. (continued)

Matagorda						
	GAM07-12 Baseline		GAM07-14 Availability		GAM08-17 New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	92	0	337	0	331	0
Reservoirs (River package)	795	0	804	0	804	0
Springs (Drain package)	0	215	0	189	0	190
General Head Boundaries	897	10,747	2,496	8,702	2,480	8,711
Wells	0	27,682	0	38,931	0	38,931
Streams and Rivers	58,043	30,017	65,190	25,697	65,027	25,741
Recharge	23,061	0	23,061	0	23,061	0
Evapotranspiration	0	3,095	0	2,981	0	2,983
Lateral Inflow	12,254	14,546	11,547	15,560	11,588	15,458
Vertical Leakage Downward	0	8,845	0	11,374	0	11,278
Evangeline						
Storage	7	0	36	0	32	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	7,240	0	10,207	0	10,207
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	8,845	0	11,374	0	11,278	0
Lateral Inflow	2,565	4,431	3,057	4,569	3,047	4,456
Vertical Leakage Downward	229	0	303	0	300	0
Jasper						
Storage	--	--	--	--	--	--
Reservoirs (River package)	--	--	--	--	--	--
Springs (Drain package)	--	--	--	--	--	--
General Head Boundaries	--	--	--	--	--	--
Wells	--	--	--	--	--	--
Streams and Rivers	--	--	--	--	--	--
Recharge	--	--	--	--	--	--
Evapotranspiration	--	--	--	--	--	--
Vertical Leakage Upward	--	--	--	--	--	--
Lateral Inflow	--	--	--	--	--	--

Table A-1. (continued)

McMullen						
	GAM07-12		GAM07-14		GAM08-17	
	Baseline		Availability		New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	--	--	--	--	--	--
Reservoirs (River package)	--	--	--	--	--	--
Springs (Drain package)	--	--	--	--	--	--
General Head Boundaries	--	--	--	--	--	--
Wells	--	--	--	--	--	--
Streams and Rivers	--	--	--	--	--	--
Recharge	--	--	--	--	--	--
Evapotranspiration	--	--	--	--	--	--
Lateral Inflow	--	--	--	--	--	--
Vertical Leakage Downward	--	--	--	--	--	--
Evangeline						
Storage	--	--	--	--	--	--
Reservoirs (River package)	--	--	--	--	--	--
Springs (Drain package)	--	--	--	--	--	--
General Head Boundaries	--	--	--	--	--	--
Wells	--	--	--	--	--	--
Streams and Rivers	--	--	--	--	--	--
Recharge	--	--	--	--	--	--
Evapotranspiration	--	--	--	--	--	--
Vertical Leakage Upward	--	--	--	--	--	--
Lateral Inflow	--	--	--	--	--	--
Vertical Leakage Downward	--	--	--	--	--	--
Jasper						
Storage	401	0	624	0	622	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	19	0	286	0	437
Streams and Rivers	368	590	465	520	458	488
Recharge	249	0	249	0	249	0
Evapotranspiration	0	116	0	105	0	102
Vertical Leakage Upward	258	0	333	0	332	0
Lateral Inflow	205	756	190	950	195	828

Table A-1. (continued)

Nueces						
	GAM07-12 Baseline		GAM07-14 Availability		GAM08-17 New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	9	0	1,217	0	4,357	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	89	0	59	0	42
General Head Boundaries	91	4,039	4,137	467	7,502	251
Wells	0	1,862	0	15,935	0	15,091
Streams and Rivers	11,348	11,049	36,234	1,836	38,569	739
Recharge	4,795	0	4,795	0	4,795	0
Evapotranspiration	0	372	0	281	0	237
Lateral Inflow	8,976	6,697	10,109	5,722	13,181	6,131
Vertical Leakage Downward	1,235	2,345	5	32,198	0	45,911
Evangeline						
Storage	2	0	88	0	680	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	1,083	0	33,913	0	40,761
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	2,345	1,235	32,198	5	45,911	0
Lateral Inflow	2,047	2,501	6,217	6,302	5,689	14,167
Vertical Leakage Downward	424	0	1,715	0	2,651	0
Jasper						
Storage	26	1	265	0	438	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	0	0	0	0	0
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	0	330	0	567	0	700
Lateral Inflow	402	98	396	93	371	109

Table A-1. (continued)

Refugio						
	GAM07-12 Baseline		GAM07-14 Availability		GAM08-17 New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	0	1	58	0	28	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	129	0	92	0	95
General Head Boundaries	0	7,900	19	6,266	13	6,289
Wells	0	597	0	6,800	0	6,800
Streams and Rivers	27,574	39,589	36,727	21,749	34,615	26,451
Recharge	14,669	0	14,669	0	14,669	0
Evapotranspiration	0	1,906	0	1,725	0	1,772
Lateral Inflow	14,002	10,469	10,226	8,717	12,485	9,978
Vertical Leakage Downward	4,671	325	34	16,385	0	10,426
Evangeline						
Storage	0	0	9	0	4	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	466	0	35,465	0	21,924
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	325	4,671	16,385	34	10,426	0
Lateral Inflow	6,615	1,818	19,299	751	11,777	599
Vertical Leakage Downward	18	2	559	0	317	0
Jasper						
Storage	--	--	--	--	--	--
Reservoirs (River package)	--	--	--	--	--	--
Springs (Drain package)	--	--	--	--	--	--
General Head Boundaries	--	--	--	--	--	--
Wells	--	--	--	--	--	--
Streams and Rivers	--	--	--	--	--	--
Recharge	--	--	--	--	--	--
Evapotranspiration	--	--	--	--	--	--
Vertical Leakage Upward	--	--	--	--	--	--
Lateral Inflow	--	--	--	--	--	--

Table A-1. (continued)

San Patricio						
	GAM07-12		GAM07-14		GAM08-17	
	Baseline		Availability		New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	0	63	623	0	645	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	376	0	250	0	153
General Head Boundaries	30	4,366	654	2,651	1,600	2,002
Wells	0	2,404	0	3,877	0	8,705
Streams and Rivers	3,004	12,018	3,593	6,015	4,491	4,343
Recharge	12,704	0	12,704	0	12,704	0
Evapotranspiration	0	515	0	440	0	409
Lateral Inflow	7,138	3,500	4,558	3,439	6,996	2,370
Vertical Leakage Downward	1,601	1,234	44	5,503	0	8,455
Evangeline						
Storage	0	2	21	0	21	0
Reservoirs (River package)	676	0	823	0	864	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	1,304	0	2,110	0	7,587
Streams and Rivers	0	657	0	584	0	512
Recharge	148	0	148	0	148	0
Evapotranspiration	0	13	0	10	0	10
Vertical Leakage Upward	1,234	1,601	5,503	44	8,455	0
Lateral Inflow	2,429	1,225	1,116	5,408	1,775	3,892
Vertical Leakage Downward	326	11	546	1	738	0
Jasper						
Storage	0	26	157	0	152	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	0	0	0	0	0
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	5	315	5	320	0	436
Lateral Inflow	358	23	280	122	314	29

Table A-1. (continued)

Victoria						
	GAM07-12 Baseline		GAM07-14 Availability		GAM08-17 New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	0	20	165	0	164	0
Reservoirs (River package)	1,046	0	1,056	0	1,056	0
Springs (Drain package)	0	1,653	0	1,383	0	1,388
General Head Boundaries	0	594	0	389	0	389
Wells	0	7,680	0	22,769	0	22,769
Streams and Rivers	40,668	38,578	50,301	24,469	50,254	24,786
Recharge	24,830	0	24,830	0	24,830	0
Evapotranspiration	0	1,022	0	875	0	878
Lateral Inflow	7,789	19,437	7,198	19,289	7,270	19,347
Vertical Leakage Downward	1,250	6,601	56	14,434	77	14,095
Evangeline						
Storage	0	1	12	0	12	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	6,191	0	18,360	0	18,360
Streams and Rivers	1,611	4,238	2,021	2,465	2,012	2,472
Recharge	743	0	743	0	743	0
Evapotranspiration	0	27	0	26	0	26
Vertical Leakage Upward	6,601	1,250	14,434	56	14,095	77
Lateral Inflow	8,988	6,572	9,909	6,952	9,684	6,337
Vertical Leakage Downward	386	49	778	37	764	37
Jasper						
Storage	0	99	150	0	148	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	0	0	0	0	0
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	39	393	48	516	48	515
Lateral Inflow	637	184	556	238	557	237

Table A-1. (continued)

Washington						
	GAM07-12		GAM07-14		GAM08-17 New Pumpage	
	Baseline		Availability		In	Out
	In	Out	In	Out		
Chicot						
Storage	--	--	--	--	--	--
Reservoirs (River package)	--	--	--	--	--	--
Springs (Drain package)	--	--	--	--	--	--
General Head Boundaries	--	--	--	--	--	--
Wells	--	--	--	--	--	--
Streams and Rivers	--	--	--	--	--	--
Recharge	--	--	--	--	--	--
Evapotranspiration	--	--	--	--	--	--
Lateral Inflow	--	--	--	--	--	--
Vertical Leakage Downward	--	--	--	--	--	--
Evangeline						
Storage	--	--	--	--	--	--
Reservoirs (River package)	--	--	--	--	--	--
Springs (Drain package)	--	--	--	--	--	--
General Head Boundaries	--	--	--	--	--	--
Wells	--	--	--	--	--	--
Streams and Rivers	--	--	--	--	--	--
Recharge	--	--	--	--	--	--
Evapotranspiration	--	--	--	--	--	--
Vertical Leakage Upward	--	--	--	--	--	--
Lateral Inflow	--	--	--	--	--	--
Vertical Leakage Downward	--	--	--	--	--	--
Jasper						
Storage	11	0	21	0	21	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	6	0	6	0	6
Streams and Rivers	0	0	0	0	0	0
Recharge	1	0	1	0	1	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	--	--	--	--	--	--
Lateral Inflow	2	8	0	17	0	17

Table A-1. (continued)

Webb						
	GAM07-12		GAM07-14		GAM08-17	
	Baseline		Availability		New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	--	--	--	--	--	--
Reservoirs (River package)	--	--	--	--	--	--
Springs (Drain package)	--	--	--	--	--	--
General Head Boundaries	--	--	--	--	--	--
Wells	--	--	--	--	--	--
Streams and Rivers	--	--	--	--	--	--
Recharge	--	--	--	--	--	--
Evapotranspiration	--	--	--	--	--	--
Lateral Inflow	--	--	--	--	--	--
Vertical Leakage Downward	--	--	--	--	--	--
Evangeline						
Storage	0	0	372	0	5	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	135	0	2,786	0	1,899
Streams and Rivers	0	770	79	32	7	152
Recharge	3,008	0	2,996	0	3,008	0
Evapotranspiration	0	471	0	0	0	3
Vertical Leakage Upward	--	--	--	--	--	--
Lateral Inflow	43	315	72	81	49	152
Vertical Leakage Downward	331	1,692	13	632	70	933
Jasper						
Storage	5	5	141	0	105	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	7	0	148	0	99
Streams and Rivers	0	0	0	0	0	0
Recharge	46	0	46	0	46	0
Evapotranspiration	0	88	0	59	0	67
Vertical Leakage Upward	1,680	325	651	12	934	68
Lateral Inflow	151	1,457	190	810	174	1,027

Table A-1. (continued)

Wharton						
	GAM07-12 Baseline		GAM07-14 Availability		GAM08-17 New Pumpage	
	In	Out	In	Out	In	Out
Chicot						
Storage	740	0	2,450	0	2,401	0
Reservoirs (River package)	537	0	537	0	537	0
Springs (Drain package)	0	9	0	8	0	8
General Head Boundaries	0	0	0	0	0	0
Wells	0	111,755	0	114,552	0	113,490
Streams and Rivers	121,457	13,331	127,760	12,631	126,903	12,774
Recharge	21,792	0	21,792	0	21,792	0
Evapotranspiration	0	243	0	233	0	235
Lateral Inflow	36,668	19,087	34,606	19,369	34,253	19,439
Vertical Leakage Downward	0	36,773	0	40,353	0	39,941
Evangeline						
Storage	18	0	81	0	70	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	68,245	0	69,980	0	69,306
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	36,773	0	40,353	0	39,941	0
Lateral Inflow	32,102	2,925	30,172	3,062	29,762	3,098
Vertical Leakage Downward	2,208	0	2,429	0	2,621	0
Jasper						
Storage	803	0	1,277	0	967	0
Reservoirs (River package)	0	0	0	0	0	0
Springs (Drain package)	0	0	0	0	0	0
General Head Boundaries	0	0	0	0	0	0
Wells	0	0	0	1,062	0	0
Streams and Rivers	0	0	0	0	0	0
Recharge	0	0	0	0	0	0
Evapotranspiration	0	0	0	0	0	0
Vertical Leakage Upward	0	970	45	595	0	1,024
Lateral Inflow	274	105	370	35	188	131

Appendix B

Summary from GAM Run 08-19 Southern Gulf Coast Aquifer Groundwater Availability Model

Table B-1. Summary of pumpage used in this model run. Pumpage is expressed in acre-feet per year. Pumpage in Jim Hogg, Brooks, and Kenedy counties represents only the pumpage located in the active portion of the model for the southern part of the Gulf Coast Aquifer.

County	GAM Run 07-11 baseline pumpage	GAM Run 07-28 specified pumpage	GAM Run 07-33 specified pumpage	GAM Run 07-34 specified pumpage	GAM Run 08-19 total pumpage (acre-feet/year)	Chicot pumpage (acre-feet/year)	Evangeline pumpage (acre-feet/year)
Brooks	389	50,389	15,556	25,669	50,325	10,065	40,260
Cameron	2,832	89,679	89,653	89,653	105,228	104,700	528
Hidalgo	20,325	52,538	27,883	32,920	168,821	33,764	135,057
Jim Hogg	38	4,880	4,880	4,880	4,880	0	4,880
Kenedy	199	51,744	15,500	25,700	207,520	41,504	166,016
Starr	394	7,600	7,600	7,600	7,600	0	7,600
Willacy	28	48,029	14,502	24,153	83,648	16,730	66,918

Table B-2. Average water-level changes by county and aquifer. Water-level changes in Jim Hogg, Brooks, and Kenedy counties represent only the active portion of the model for the southern part of the Gulf Coast Aquifer. Negative values indicate an average lowering of water levels between 1999 and 2060 while a positive value indicates an increase in water levels.

County	Average Water Level Change (feet)	
	Chicot Aquifer (Layer 1)	Evangeline Aquifer (Layer 2)
Brooks	-118	-818
Cameron	-12.0	-43.8
Hidalgo	-60.4	-285
Jim Hogg	-83.1	-272
Kenedy	-109	-281
Starr	-77.6	-300
Willacy	-47.9	-136

Table B-3. Water budgets for each county at the end of the 60-year predictive model run using the specified pumpage (in acre-feet per year). A dashed line indicates the aquifer does not exist or was not modeled for a particular county. Water budgets for Jim Hogg, Brooks, and Kenedy counties represent only portion of those counties located in the active portion of the model for the southern part of the Gulf Coast Aquifer.

	Brooks		Cameron		Hidalgo		Jim Hogg		Kenedy		Starr		Willacy		Non-Texas	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
Chicot																
Storage	0	0	3	0	5	0	--	--	17	9	--	--	7	0	0	0
Rivers	0	0	133,979	1,854	80,146	963	--	--	0	0	--	--	10,628	0	0	0
Wells	0	0	0	104,674	0	21,906	--	--	0	34,304	--	--	0	15,297	0	0
Gulf of Mexico (Constant Head)	0	0	26,257	349	0	0	--	--	146,959	0	--	--	33,150	36	39,020	0
Recharge	0	0	7,514	0	2,220	0	--	--	6,766	0	--	--	4,254	0	0	0
Evapotranspiration	0	0	0	0	0	0	--	--	0	299	--	--	0	69	0	0
Lateral Inflow	0	0	8,557	29,813	856	60,359	--	--	20,288	1,720	--	--	33,381	17,126	0	12,785
Vertical Leakage Downward	0	0	0	39,619	0	0	--	--	0	137,697	--	--	0	48,892	0	26,235
Evangeline																
Storage	41	47	9	0	102	6	372	0	37	0	304	10	14	0	2	0
Rivers	0	0	0	0	42,760	0	0	0	0	0	1,044	18	0	0	0	0
Wells	0	13,206	0	528	0	131,028	0	4,868	0	166,016	0	6,759	0	66,917	0	0
Gulf of Mexico (Constant Head)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Recharge	1,513	0	0	0	6,760	0	2,430	0	1,480	0	3,220	0	743	0	115	0
Evapotranspiration	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0
Vertical Leakage Upward	0	0	39,619	0	58,720	0	0	0	137,697	0	0	0	48,892	0	26,235	0
Lateral Inflow	10,215	273	2,648	42,167	24,915	5,651	0	821	32,943	9,624	588	2,591	34,881	18,566	703	27,201
Vertical Leakage Downward	1,757	0	418	0	3,603	176	2,886	0	3,484	0	4,452	225	952	0	147	0