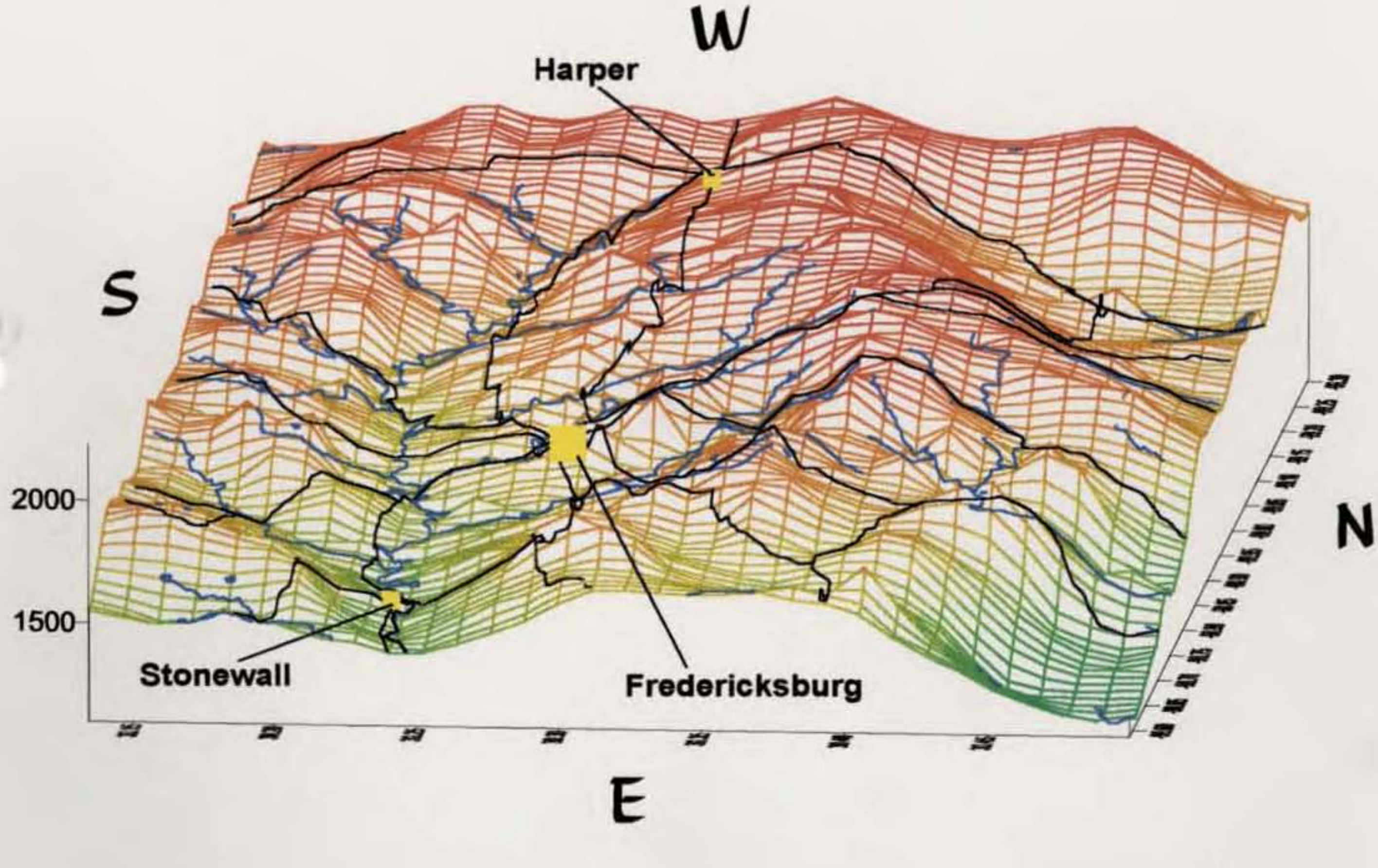
HILL COUNTRY UNDERGROUND WATER CONSERVATION DISTRICT

MANAGEMENT PLAN



GILLESPIE COUNTY, TEXAS

Gillespie County's economy is agricultural based, however over the past few decades there has been a significant shift to tourism. In addition, this County and other Hill Country counties have seen a significant growth in population.

The agricultural economy is derived from cattle, goats and sheep with significant contributions from the cultivation of peaches, pecans, grapes and grains. Wildlife hunting also contributes to the area economy.

Location and Extent

The Hill Country Underground Water Conservation District includes all of Gillespie County and covers roughly 1,061 square miles. The District lies immediately to the south of the geologic feature termed the "Llano Uplift", which is the geologic heart of the State of Texas.

The largest city in the District is Fredericksburg with a population of approximately 8,000 people. The small communities (<500 people) of Stonewall to the east of Fredericksburg and Harper to the west of Fredericksburg are also in the District.

Topography and Drainage

The District is within the Pedernales River basin which is the southern most tributary to the Colorado River, and is in the jurisdiction of the Lower Colorado River Authority. Drainage within the district is from west to east.

The District contains two major geologic features. The Llano Uplift located to the north extends into the northeastern portion of the district. This feature is made up of very old rocks ranging in age from 1.0 to 1.2 billion years and are comprised of granite and older metamorphic rocks. The other major feature is the Edwards Plateau. This is an elevated structure made up of Cretaceous age Edwards limestone, dolomite and marl. The Edwards Plateau extends west and covers many West Texas counties. Gillespie County lies at the eastern edge of the Plateau. The headwaters for the Pedernales River, like many other Hill Country rivers, is located at the edge and base of the Plateau.

Elevation within the District ranges from a low of approximately 1,100 feet above sea level in extreme northeastern Gillespie County to approximately 2,200 feet above sea level in extreme western Gillespie County.

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DISTRICT MISSION

The Hill Country Underground Water Conservation District (HCUWCD) was created for the purpose of conserving, preserving, recharging, controlling subsidence, protecting and preventing waste of groundwater for the aquifers within the district.

TIME PERIOD FOR THIS PLAN

This plan becomes effective upon adoption by the HCUWCD Board of Directors and subsequent certification by the Texas Water Development Board (TWDB), and remains in effect until a revised plan is certified or September 1, 2008, which ever is earlier. The plan may be revised at anytime, or after five years when the plan will be reviewed to insure that it is consistent with the applicable Regional Water Plans and the State Water Plan. This plan upon certification by the TWDB replaces the District Plan in effect from 1996-2000.

STATEMENT OF GUIDING PRINCIPLES

The HCUWCD was created to cover Gillespie County in 1987 in the 70th legislative session. The District's authority and power is granted through Chapters 35 and 36 of the Texas Water Code, Vernon's Texas Civil Statues. This was in advance of the Hill Country Area which includes Gillespie County, being declared a Critical Water Area by the then Texas Water Commission in 1990. This declaration gave notice to the residents of the area that water availability and quality will be at risk within the next 50 years. This District was created so that proper management techniques could be implemented at the local level to address local groundwater problems within the district. This plan provides a means to which the District can follow that will ensure a thorough understanding of local aquifer conditions and subsequently implement proper groundwater management policies.

General District Description

After the District was created in the 70th legislative session, the District was confirmed in August 1987 by the residents of Gillespie County. The current Board of Directors is comprised of Alton Klier - Chairman, Voy Althaus - Vice Chairman, Vaughn Usener - Secretary/Treasurer, Dennis Houy - Director and Harold Sohner - Director. The District Manager is Paul Tybor. District rules were adopted by the Board in 1988 and the first 5 year management plan was approved in 1990. The second five year management plan was approved in 1996.

Groundwater Resources of the HCUWCD

Within the HCUWCD there are four aquifers which are the primary source for groundwater. These are as follows with their estimated storage and effective annual recharge rates for Gillespie County:

Aquifer	Storage	Effective Annual Recharge
Edwards	776,000 ac.ft.	1,500 ac.ft./yr.
Hensell	4,382,041 ac.ft.	3,400 ac.ft./yr.
Ellenburger	4,000,000 ac.ft.	5,600 ac.ft./yr.
Hickory	2,880,654 ac.ft.	2,000 ac.ft./yr.

The methodology used in determining these values is presented in Appendix A located at the back of this report.

The technique developed by the TWDB to determine water saturation estimations was utilized by the HCUWCD for the Edwards, Hensell and Hickory aquifers within the Gillespie County. These are found in Appendix A on Figures 1 to 3 and Tables 1 to 3. The technique involves utilizing the computer program Surfer to create gridded surfaces representative of the aquifer water level and the aquifer bottom. The program subtracts the bottom gridded surface from the water level gridded surface then a specific yield value is multiplied by each grid. The result is a water saturation for each grid within the aquifer. The grids are summed and a total aquifer saturation value is obtained. These are presented on the maps (Figure 1 to 3) and tables (Table1 to 3) in Appendix A. The volumes on the Tables 1 to 3 in Appendix A are expressed in cubic feet which can then be converted to acre feet as they are expressed on the above table and on the Aquifer Characteristic Summary Table 4 in Appendix A.

For the Hensell, two different runs were made using two specific yield values (0.1 - Figure 2A, Table 2A and 0.05 - Figure 3A, Table 3A; Appendix A) which gave two different storage values. The Hickory aquifer within the county is under unconfined conditions at its outcrop area and confined in the subsurface. Consequently three different storage calculations were run on this aquifer (Figure 3A, B and C; Table 3A, B and C; Appendix A).

Other methods used to determine estimate of annual effective recharge or sustainable yield were taken from the draft of TWDB Water for Texas Today and Tomorrow. In this publication, the storage and recharge for these aquifers on a regional basis are provided. These regional estimates were taken and proportioned down to represent the values for the aquifers within Gillespie County and are shown on Table 4. In addition, calculations of sustainable yield utilizing the Darcy flow equation Q=TiW, which was used in the HCUWCD

Gillespie County Regional Water Management Plan 1995, are also provided on Table 4.

The Edwards aquifer within Gillespie County is comprised of limestone and dolomite that is an extension of the Edwards Plateau into Gillespie County from the west. Yields from the Edwards are generally low (10-20 gpm) and it is used primarily for rural domestic and livestock demands. Unconfined conditions exist in the Edwards. Recharge is from local precipitation which occurs on the outcrop. The Edwards thickness is greatest along the center of the west to east Plateau extension and groundwater moves north and south from this extension (Figure 4; Appendix A). It discharges at the base of the Edwards and is the headwaters for the Pedernales River and the streams within the county.

The Hensell aquifer is comprised primarily of sand with secondary amounts of clay and silt. It extends across the majority of Gillespie County, except along the northern border and the northeastern sector of the county where it has been eroded. The Hensell outcrops in the Pedernales River Valley, but it is in the subsurface where the Edwards Plateau is present. Yields from the Hensell are generally 10 to 20 gpm and used for rural domestic and livestock demands. Some drip irrigation occurs from the Hensell for peaches and vegetables. It is recharged from local precipitation on its outcrop and through the overlying units where it is in the subsurface. Regionally, groundwater movement within the Hensell is generally to the southeast, however locally it is from groundwater highs and towards the surface drainage system within the county (Figure 5; Appendix A).

The Ellenburger aquifer is a fractured limestone and dolomite and is present in the southeastern, northern and western portions of the county. It is absent in a broad area extending from the north central portion of the county continuing to the south, southwest part of Gillespie County. This is a faulted uplifted area where the Ellenburger and other older Paleozoic rocks were eroded prior to Cretaceous sea transgression and subsequent Hensell deposition. The area was termed "the Fredericksburg High" in the TWDR Report 339. In some areas significant cavity development has occurred within the Ellenburger resulting in it being able to produce very large amounts of groundwater (>500 gpm). It is utilized extensively by the City of Fredericksburg and many peach and grape growers in Gillespie County. Recharge to the Ellenburger is mainly through the overlying Hensell. Groundwater movement is away from groundwater highs and towards the surface drainage system or lows that have developed as a result of production in the large municipal well fields (Figure 6; Appendix A).

The Hickory aquifer is comprised of sand and like the Hensell extends across much of Gillespie County except across the northern border where it has been eroded. Although it is extensive in area, it only produces groundwater along the above mentioned Fredericksburg High. Off of the Fredericksburg High due to faulting, the Hickory is deeply buried and of the few wells that have penetrated it, very little groundwater has been produced due to an apparent lack of porosity and permeability and possible restrictions to recharge. Along the Fredericksburg High yields from the Hickory varies from very low (5 gpm) to good (>100 gpm). The City of Fredericksburg has three municipal wells completed in the Hickory. In the Eckert area the Hickory is used to drip irrigate grapes that are grown on the Hickory outcrop. Recharge to the Hickory occurs from local precipitation on its outcrop in northeastern Gillespie County and through the overlying units, where it is in the subsurface. Groundwater movement appears to be controlled by the elevation of the Hickory. That is, groundwater movement occurs away from the area where the Hickory is elevated towards the areas of the Hickory where it is lower in elevation. The highest elevated area of the Hickory is to the northwest of Fredericksburg along the Fredericksburg High (Figure 7; Appendix A). From here, groundwater movement radiates to the northeast, east and southeast (Figure 8; Appendix A).

Surface Water Resources of HCUWCD

Within the District all surface water impoundments, with the exception of a few dams on the Pedernales River at the LBJ Ranch, are restricted to livestock tanks. Based on a survey of existing surface water rights holders within Gillespie County, undertaken in the Gillespie County Regional Water Management Plan done by the HCUWCD in 1995, a total of 6,787 acre feet of water is permitted by the TNRCC mainly for irrigation use by landowners within the county.

The HCUWCD has no jurisdiction over surface water within the District.

Projected Water Supplies of Gillespie County

In Appendix A the methods for determining groundwater storage and effective annual recharge of each of the four main aquifers are presented. The storage values of each aquifer suggest that these aquifers contain an enormous amount of groundwater. However the vast majority of this water is unretrievable. The water that represents effective recharge is water that the aquifer rejects on the average on an annual basis. This water is available and can be retrieved without diminishing the volume of water in storage or in other words creating a mining situation within the aquifer. However if total utilization of this available water occurs, then base flow to area springs and streams will be greatly reduced. The annual effective recharge to the major four aquifers within Gillespie County is as follows:

Aquifers	Effective Annual Recharge
Edwards	1,500 ac.ft./yr.
Hensell	3,400 ac.ft./yr.
Ellenburger	5,600 ac.ft./yr.
Hickory	2,000 ac.ft./yr.
TOTAL	12,500 ac.ft./yr.

Groundwater Use in Gillespie County

Estimated historical groundwater use in Gillespie County is provided by the TWDB in the draft of Water for Texas Today and Tomorrow for years 1980 through 1995. These estimates are as follows:

Historical Water Use in Gillespie County (Units: Acre-Feet)

Year	Municipal*	Mining	Irrigation	Livestock	Total
1980	2778/1968	0	800	664	4242
1984	3106/2190	16	1887	446	5455
1985	2941/2030	16	1711	456	5124
1986	3007/2082	17	1425	533	4982
1987	3031/2108	14	465	498	4008
1988	3216/2282	15	125	526	3883
1989	3573/2428	14	1954	509	6050
1990	3449/2281	14	1740	528	5731
1991	3331/2151	9	1943	544	5827
1992	3383/2152	9	1946	648	5986
1993	3526/2263	9	2620	665	6820
1994	3526/2255	9	2300	623	6458
1995	3662/2342	9	2288	629	6588

*City of Fredericksburg pumpage: Source City of Fredericksburg

Projected Population and Water Demands in Gillespie County

In the TWDB Water for Texas Today and Tomorrow publication in draft, population and water demand projections are given for Gillespie County every ten years beginning in the year 2000 and ending with the year 2050. Various scenarios are provided based on different population migration rates and different water usage strategies (i.e., normal rainfall vs. below normal rainfall; normal/expected conservation vs. below normal/expected conservation). For planning purposes the estimates provided in that report which reflect the worst case scenario for high growth rate and water use are used in this management plan. These are provided on Table 1 in Appendix B for categories in municipal, industrial, irrigation and livestock water usage.

On Table 1 the TWDB estimates are listed in black. Next to the estimates for municipal and irrigation are a second set of numbers given in red. These values are adjusted TWDB estimates that the HCUWCD has developed utilizing local data. The adjusted municipal estimates are based on regression analysis of the City of Fredericksburg pumpage over the years 1957 to 1997. Two analyses were run using straight linear regression and polynomial regression with the data presented in Figures 1 to 2 and Tables 2 to 3 in Appendix B. The linear regression equation obtained from the analysis gives very high projected pumpage estimates for the future years 2000, 2010, 2020, 2030, 2040 and 2050 (Table 4; Appendix B). The polynomial regression analysis of the data inputs a flatting of the curve (Figure 2; Appendix B) and the derived equation projects future water use similar to the worst case scenario presented by the TWDB, but still at a some what higher demand than indicated by the TWDB estimates (Table 4; Appendix B) . These estimates determined from polynomial regression are used in this plan for the City's pumpage and are proportioned into the county-wide municipal future demand that is presented as the red numbers on Table 1 in Appendix B.

In the irrigation category the red set of numbers are estimates developed by the District. Out of a total of 1906 acres in the county currently cultivated in peaches and grapes, 875 acres are estimated to utilized drip irrigation systems. In addition, another 300 acres are estimated to be drip irrigated for vegetable production. The amount of water estimated to be applied through drip irrigation is placed at 1 acre foot per acre per year. This is based on the amount of pumpage that occurred on a 25 acre drip irrigated peach orchard during the dry year of 1996. As a result of this analysis, the HCUWCD estimates that in the year 1996 a total of 1175 acre feet of water was used in Gillespie County for irrigation (Table 5; Appendix B). This value was proportioned into the estimated future projected irrigation values listed in red on Table 1 in Appendix B.

Potential Demands and Aquifer Supply Capability Issues and Solutions

In the year 2050 a total countywide water demand is estimated to be approximately 10,500 acre feet per year (Table 1; Appendix B). The estimated amount of groundwater available within the county as sustainable yield is placed at 12,500 acre feet per year. As a result, it would appear that there will be a surplus of 2,000 acre feet per year in the year 2050 and no shortfall should occur. This will probably be the case for some of the county's aquifers and areas. However, there will probably be areas of the county where demand will be such that some of the aquifers will be in too great of stress to be able to meet demand.

On Table 6 in Appendix B, the four main categories of demand (municipal, industrial, irrigation and livestock) are broken out by the contribution that each of the four main aquifers make within the county. This breakout is projected into the future for each demand and aquifer contribution for the years 2000, 2010, 2020, 2030, 2040 and 2050. The estimated annual sustained yield for each aquifer is also provided. These projected estimates indicate the following for the year 2050:

2050

Aquifer	Countywide Demand	Annual Sustainable Field	Surplus/ (Deficit)
Edwards	681 acre feet	1500 acre feet	819 acre feet
Hensell	2273 acre feet	3400 acre feet	1127 acre feet
Ellenburger	5838 acre feet	5600 acre feet	(238) acre feet
Hickory	1693 acre feet	2000 acre feet	307 acre feet

The Edwards is projected to be able to meet future demands placed on it through the year 2050. The Hensell would also appear to be able to meet future demands, however the District believes that the areas adjacent to the City of Fredericksburg will experience shortfalls from the Hensell. Growth adjacent to the City is currently occurring at accelerated rates and is projected to continue into the future. Many of these areas are solely dependent upon the Hensell since the underlying Precambrian rocks are essentially void of groundwater. Consequently, the Hensell adjacent to the City will probably not be able to meet demand at some point in the future.

The Ellenburger indicates that in the year 2050 a deficit of 238 acre feet per year will occur due to the large amount of municipal and irrigation demand that will be placed on that aquifer.

The Hickory is estimated to have a surplus of only 238 acre feet per year in 2050, however in the area adjacent to Fredericksburg demand may surpass sustainable yield. This may be due to additional stress placed on it in areas where the overlying Hensell has become depleted.

To address these potential shortages, the District will actively pursue the augmentation of groundwater with surface water. Currently the District, City and LCRA are investigating the feasibility of incorporating an ASR project into the City's water service program (LCRA Preliminary Draft - Phase 1 Report - Aquifer Storage and Recovery Application for the City of Fredericksburg) . Preliminary estimates in this investigation indicate that an additional 1.02 mgd may result from this artificial recharge project. In addition, the District's management plan and rules will be incorporated together in order to manage and regulate the drilling and production of groundwater within the District, the possible transfer of water out of the District and the identification of potential groundwater depletion areas within the District.

Management of Groundwater Supplies

The District will manage the supply of groundwater within the District based on the District's assessment of water supply and groundwater storage conditions. The District will monitor groundwater conditions closely through its water level and water quality monitoring programs that are currently in place and will continue to maintain and update the District's database, which was established in 1990. Computer modeling projects currently underway at the District and those that will be undertaken in the future will also aid in the decision making process by this District in the management of groundwater.

The District will adopt rules to regulate groundwater withdrawals by means of spacing and production limits. In addition the District may choose to identify areas within the District which, based on its monitoring programs are potential groundwater depletion or drought sensitive areas. These areas when identified may require specific District rules to ensure that groundwater supply is maintained and protected.

The District will maintain and update the District's Drought Management Plan prepared in March of 1992. The plan will be linked to climatic conditions (i.e. Palmer Drought Severity Index) and observed hydraulic conditions within the District's aquifers.

The District will manage groundwater supplies utilizing the above described methods and programs and will emphasis to all District residents the importance and requirement that water conservation is a necessity within Gillespie County.

Actions, Procedures, Performance and Avoidance for Plan Implementation

The District will implement and utilize the provisions of this plan for all District activities. The District's current and future rules and amendments will be pursuant to Texas Water Code Chapter 36 and the provisions of this plan. These rules will be enforced based on the best technical evidence available.

All citizens will be treated equally and may apply to the District for discretion in enforcement of rules on grounds of adverse economic effect or unique local characteristic. In granting of discretion or a variance to any rule, the Board shall consider the potential for adverse effect on a adjacent landowner.

The District will seek cooperation and coordination in the implementation of this plan, and all District activities, with the appropriate state, regional or local water management entity. 15

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The methodology that the District will use to track its progress toward achieving the management goals. 23 27

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The District manager will present an annual report to the Board of Directors on District performance in regard to achieving management goals and objectives at the last regular board meeting of the year beginning in the year 2000.

The report will include the number of instances each activity pertaining to District goals was engaged in during the year. As closely as possible, the expenditure of staff time and budget will be referenced so that the effectiveness and efficiency of each activity may be evaluated.

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<u>Goal</u>

1.0 Implement management strategies that will provide for the most efficient use of groundwater. 16 17

<u>1.1 Management Objective</u>

Each year in the District newsletter provide at least two (2) articles identifying conservation practices and provide to the public upon request handout packets with conservation literature.

<u>*Performance Standards*</u>

1.1a - Annual number of District newsletter issues with water conservation articles.

1.1b - Annually at the District office number of handout packets with conservation literature provided to the public upon request.

<u>1.2 Management Objective</u>

To evaluate groundwater availability each year the District will monitor water levels on selected wells representative of the various aquifers within the District. The water level monitoring network and measuring schedule is as follows:

Aquifer	# of Wells	Measurement Frequencies
Ellenburger	35	6 times per year
Hensell	40	2 times per year
Edwards, Hickory, Mid Cambrian and Pre Cambrian	50	2 times per year

Performance Standard

1.2a - Number of monitor wells measured annually.

1.3 Management Objective

By January 2000, utilizing a system of local aquifer conditions and the Palmer Drought Severity Index determine aquifer conditions to be used to identify one trigger mechanism to implement emergency drought management plan.

Performance Standard

1.3a - Number of trigger conditions identified within District aquifers that indicate drought conditions by the year 2000.

Goal

2.0 Implement strategies that will prevent waste of groundwater.

2.1 Management Objective

Each year at least twice (2) and upon request provide speakers to schools (Fredericksburg 3rd grade annual field day) and civic groups to raise public awareness of practices to ensure the efficient use of groundwater and prevent wastes.

Performance Standard

2.1 a - Number of speaking appearances to provide public awareness of efficient groundwater use.

2.2 Management Objective

Beginning with water usage data for the year 1998 from the City of Fredericksburg, an audit of water usage within the City will be made to identify wasteful practices. One audit will be conducted every other year with the results provided to the City and the Board of Directors.

Performance Standard

2.2a - Number of audits conducted every other year and reported to the City and Board of Directors.

Goal

3.0 Implement management strategies that will address conjunctive surface water management issues.

3.1 Management Objective

By December 2000 perform in conjunction with other interested entities one feasibility study to determine effectiveness of Aquifer Storage and

Recovery (ASR) on the Ellenburger aquifer to incorporate into the City of Fredericksburg's water management system or other appropriate public water supply systems within the District.

Performance Standard
3.1a - Percent of Ellenburger ASR feasibility study completed by December 2000.

3.2 Management Objective
To evaluate the ground to surface water interrelationships within the District, each year the District will conduct stream flow measurements along eight (8) sites of the Pedernales River between Bear Creek and Palo Alto Creek at least six (6) times per year.

Performance Standard
3.2a - Number of stream flow measurements taken annually.

SB-1 NON APPLICABLE 31 TAC 356.5(a)(1) MANAGEMENT GOALS

Goal
4.0 Control and prevention of subsidence.

The rigid geologic framework of the region precludes significant subsidence from occurring thereby this goal is not applicable to the operations of the District.

Goal
5.0 Addressing natural resource issues which impact the use and availability of groundwater and which are impacted by the use of groundwater.

This goal is not applicable to the operations of the District.

***Summary Definitions:**

"Waste" - as defined by Chapter 36 of Texas Water Code means any one or more of the following:

1. Withdrawal of groundwater from a groundwater reservoir at a rate and in an amount that causes or threatens to cause intrusion into the reservoir of water unsuitable for agricultural, gardening, domestic, or stock raising purposes;

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

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

4. Pollution or harmful alteration of groundwater in groundwater reservoir by salt water or by other deleterious matter admitted from another stratum or from the surface of the ground;

5. Willfully or negligently causing, suffering, or allowing groundwater to escape into any river, creek, natural watercourse, depression, lake, reservoir, drain, sewer, street, highway, road, or road ditch, or onto any land other than that of the owner of the well unless such discharge is authorized by permit, rule, or order issued by the Commission under Chapter 26 of the Texas Water Code;

6. Groundwater pumped for irrigation that escapes as irrigation tailwater onto land other than that of the owner of the well unless permission has been granted by the occupant of the land receiving the discharge; or

7. For water produced from an artesian well "waste" has the meaning assigned by Section 11.205 of the Texas Water Code.

"District" - Hill Country Underground Water Conservation District.

"Board" - the Board of Directors of the Hill Country Underground Water Conservation District.

"TWDB" - Texas Water Development Board.

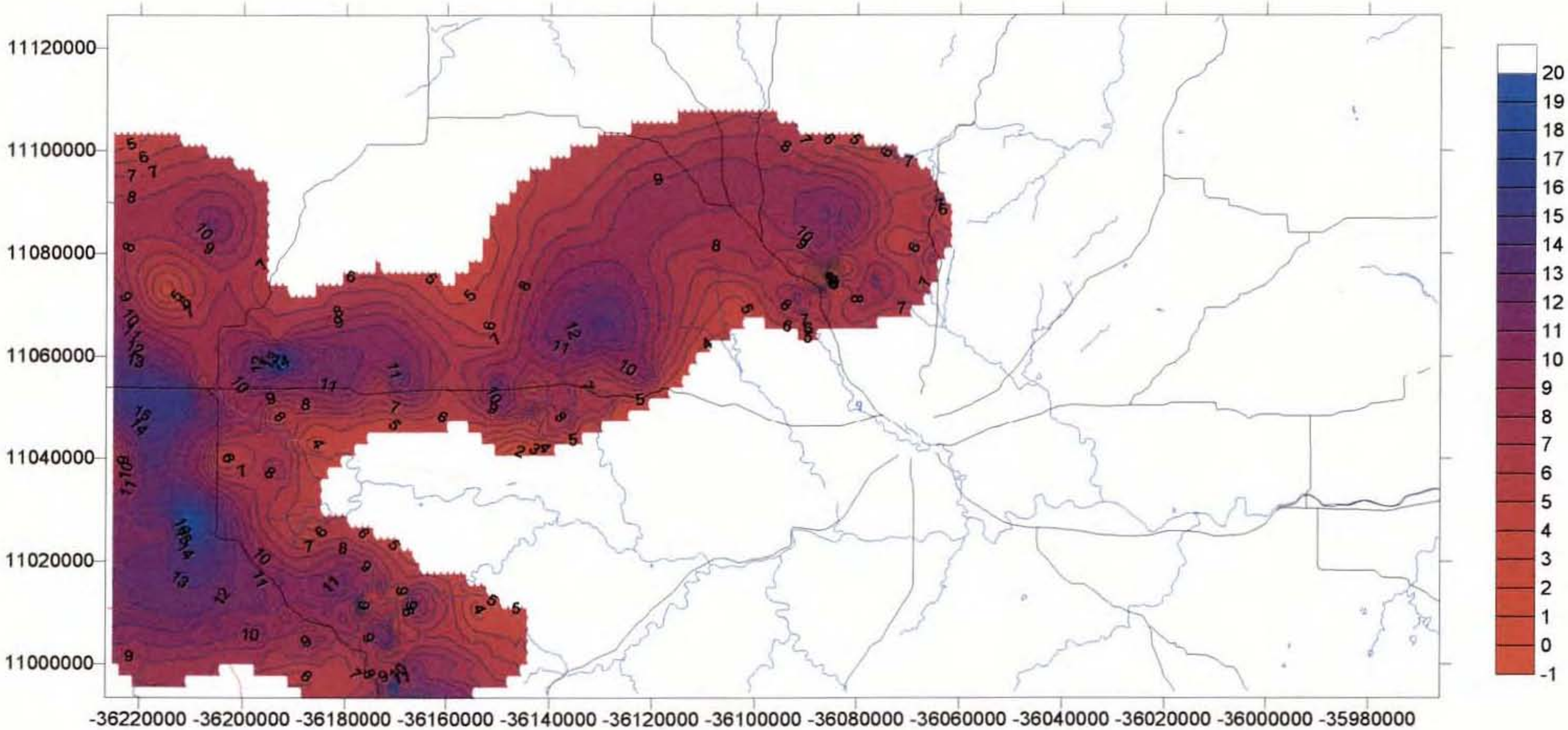
"TNRCC" - Texas Natural Resource Conservation Commission.

"LCRA" - Lower Colorado River Authority

APPENDIX A

APPENDIX A
FIGURE 1

Edwards Aquifer Estimated Water In Storage
Gillespie County, Texas
October 1996



*Multiply contour numbers by 10 for saturated thickness in feet.
Specific Yield 0.1

APPENDIX A
TABLE 1

Edwards Aquifer Estimated Water In Storage (Specific Yield 0.1)
Gillespie County, Texas
October 1996

VOLUME COMPUTATIONS

UPPER SURFACE
Grid File: C:/EDSTORAG96.GRD
Grid size as read: 200 cols by 60 rows
Delta X: 1309.05
Delta Y: 2252.54
X-Range: -3.62265E+007 to -3.5966E+007
Y-Range: 1.09935E+007 to 1.11264E+007
Z-Range: -0.482788 to 19.7606

LOWER SURFACE
Level Surface defined by Z = 0

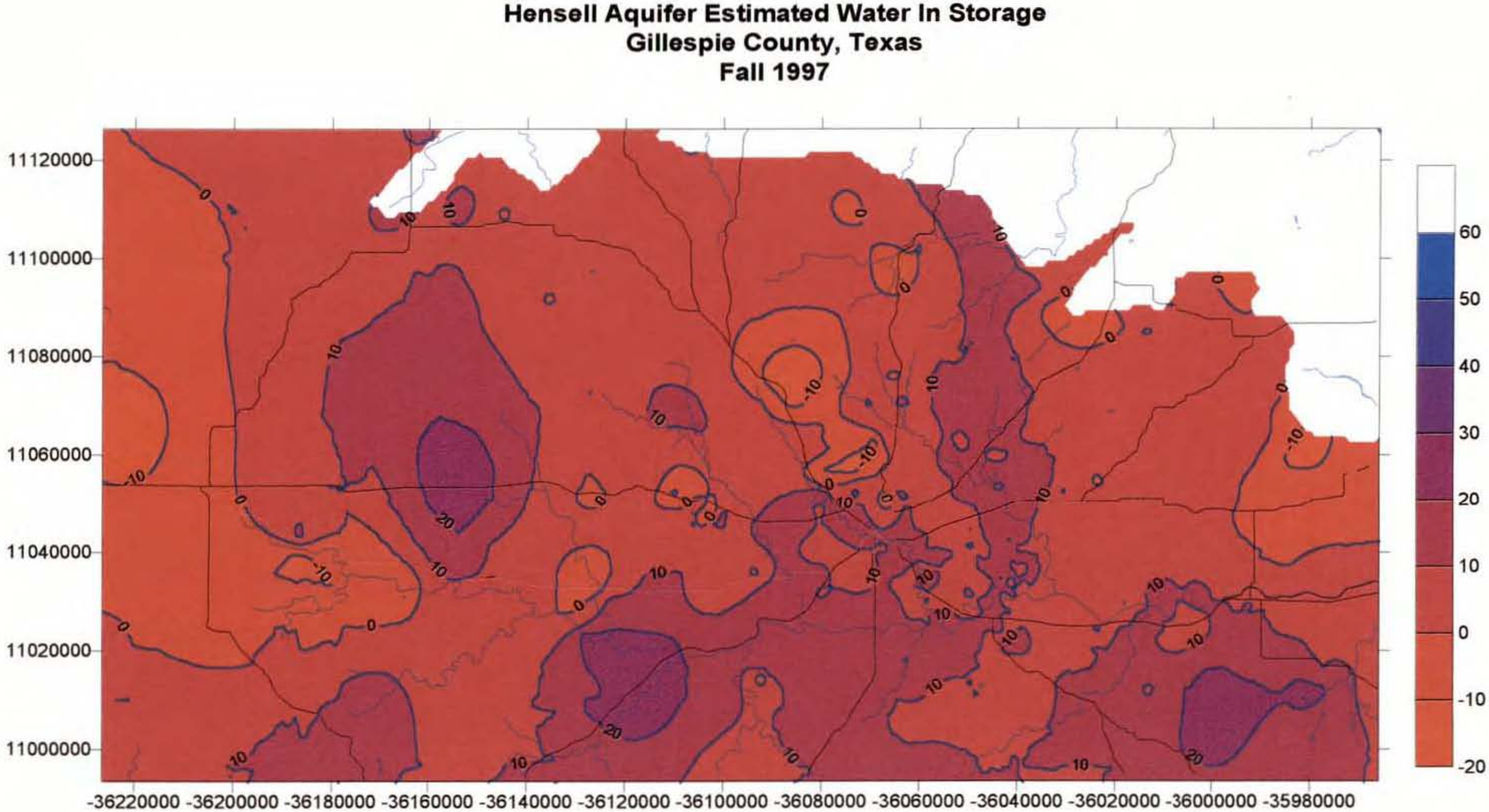
VOLUMES
Approximated Volume by
Trapezoidal Rule: 8.99069E+010
Simpson's Rule: 9.02763E+010
Simpson's 3/8 Rule: 9.00511E+010

CUT & FILL VOLUMES
Positive Volume [Cut]: 8.9907E+010
Negative Volume [Fill]: 19261.3
Cut minus Fill: 8.99069E+010

AREAS
Positive Planar Area
(Upper above Lower): 1.01669E+010
Negative Planar Area
(Lower above Upper): 124081
Blanked Planar Area: 2.44534E+010
Total Planar Area: 3.46205E+010

Positive Surface Area
(Upper above Lower): 1.01669E+010
Negative Surface Area
(Lower above Upper): 124082

APPENDIX A
FIGURE 2A



*Multiply contour numbers by 10 for saturated thickness in feet.
Specific Yield 0.1

APPENDIX A
FIGURE 2A
Hensell Aquifer Estimated Water In Storage (Specific Yield 0.1)
Gillespie County, Texas
Fall 1997

VOLUME COMPUTATIONS

UPPER SURFACE

Grid File: C:/VFP/HENSTOR97F1.GRD
Grid size as read: 300 cols by 120 rows
Delta X: 871.237
Delta Y: 1116.81
X-Range: -3.62265E+007 to -3.5966E+007
Y-Range: 1.09935E+007 to 1.11264E+007
Z-Range: -15.6605 to 52.1338

LOWER SURFACE

Level Surface defined by Z = 0

VOLUMES

Approximated Volume by
Trapezoidal Rule: 1.91681E+011
Simpson's Rule: 1.91711E+011
Simpson's 3/8 Rule: 1.90982E+011

CUT & FILL VOLUMES

Positive Volume [Cut]: 2.1676E+011
Negative Volume [Fill]: 2.50832E+010
Cut minus Fill: 1.91677E+011

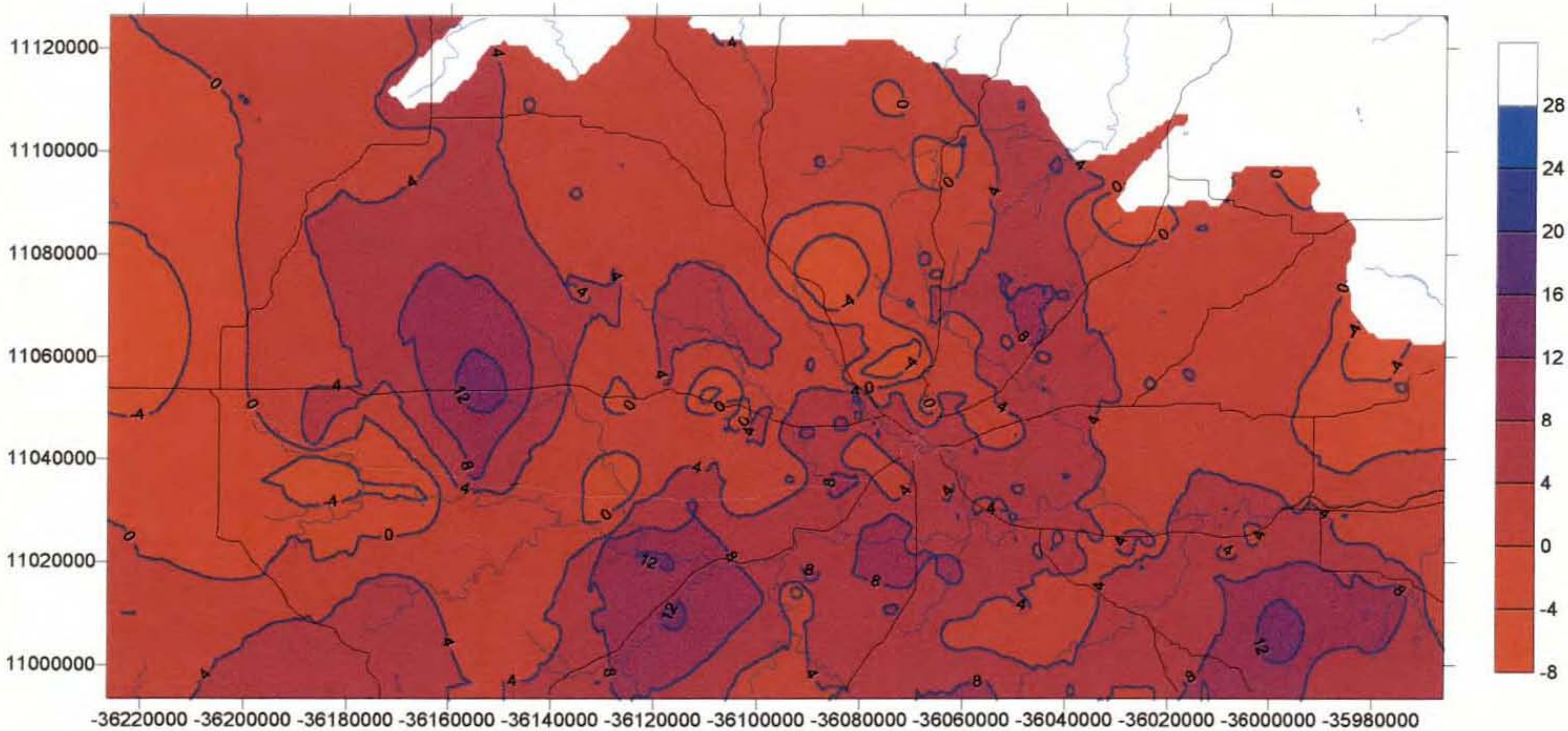
AREAS

Positive Planar Area
(Upper above Lower): 2.55153E+010
Negative Planar Area
(Lower above Upper): 5.15816E+009
Blanked Planar Area: 3.94699E+009
Total Planar Area: 3.46204E+010

Positive Surface Area
(Upper above Lower): 2.55153E+010
Negative Surface Area
(Lower above Upper): 5.15816E+009

APPENDIX A
FIGURE 2B

Hensell Aquifer Estimated Water In Storage
Gillespie County, Texas
Fall 1997



*Multiply contour numbers by 10 for saturated thickness in feet.
Specific Yield 0.05

APPENDIX A
TABLE 2B

Hensell Aquifer Estimated Water In Storage (Specific Yield .05)
Gillespie County, Texas
Fall 1997

VOLUME COMPUTATIONS

UPPER SURFACE

Grid File: C:/VFP/HENSTOR97F.GRD
Grid size as read: 300 cols by 120 rows
Delta X: 871.237
Delta Y: 1116.81
X-Range: -3.62265E+007 to -3.5966E+007
Y-Range: 1.09935E+007 to 1.11264E+007
Z-Range: -7.83026 to 26.0669

LOWER SURFACE

Level Surface defined by Z = 0

VOLUMES

Approximated Volume by
Trapezoidal Rule: 9.58404E+010
Simpson's Rule: 9.58554E+010
Simpson's 3/8 Rule: 9.54908E+010

CUT & FILL VOLUMES

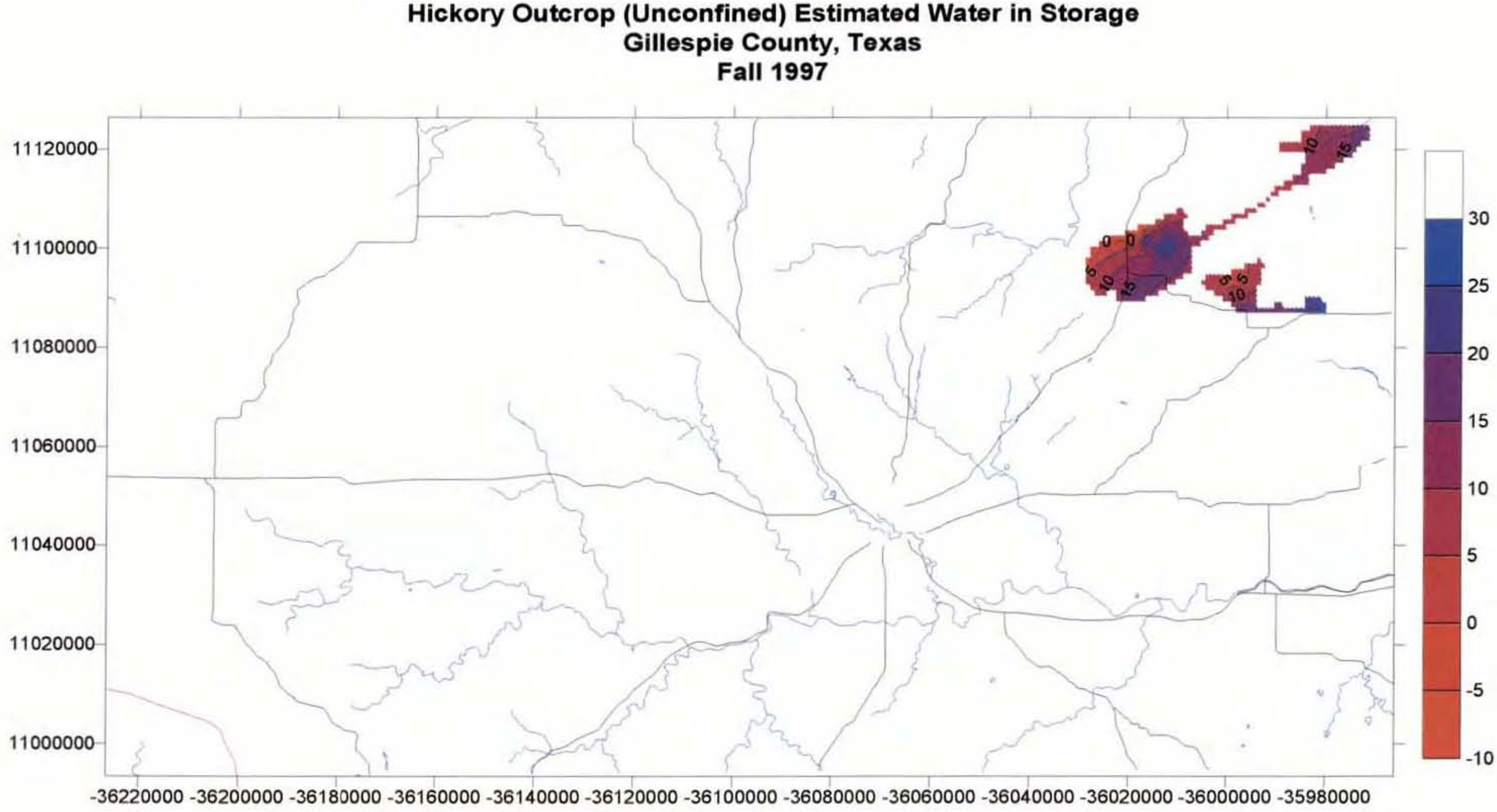
Positive Volume [Cut]: 1.0838E+011
Negative Volume [Fill]: 1.25416E+010
Cut minus Fill: 9.58386E+010

AREAS

Positive Planar Area
(Upper above Lower): 2.55153E+010
Negative Planar Area
(Lower above Upper): 5.15816E+009
Blanked Planar Area: 3.94699E+009
Total Planar Area: 3.46204E+010

Positive Surface Area
(Upper above Lower): 2.55153E+010
Negative Surface Area
(Lower above Upper): 5.15816E+009

APPENDIX A
FIGURE 3A



*Multiply contour numbers by 10 for saturated thickness in feet.
Specific Yield 0.1

APPENDIX A
TABLE 3A

Hickory Outcrop (Unconfined) Estimated Water in Storage (Specific Yield 0.1)
Gillespie County, Texas
Fall 1997

VOLUME COMPUTATIONS

UPPER SURFACE

Grid File: C:/HICSTORAGF97.GRD
Grid size as read: 300 cols by 120 rows
Delta X: 871.237
Delta Y: 1116.81
X-Range: -3.62265E+007 to -3.5966E+007
Y-Range: 1.09935E+007 to 1.11264E+007
Z-Range: -8.668 to 28.6838

LOWER SURFACE

Level Surface defined by Z = 0

VOLUMES

Approximated Volume by
Trapezoidal Rule: 7.57749E+009
Simpson's Rule: 7.57079E+009
Simpson's 3/8 Rule: 7.53963E+009

CUT & FILL VOLUMES

Positive Volume [Cut]: 7.68474E+009
Negative Volume [Fill]: 1.07249E+008
Cut minus Fill: 7.57749E+009

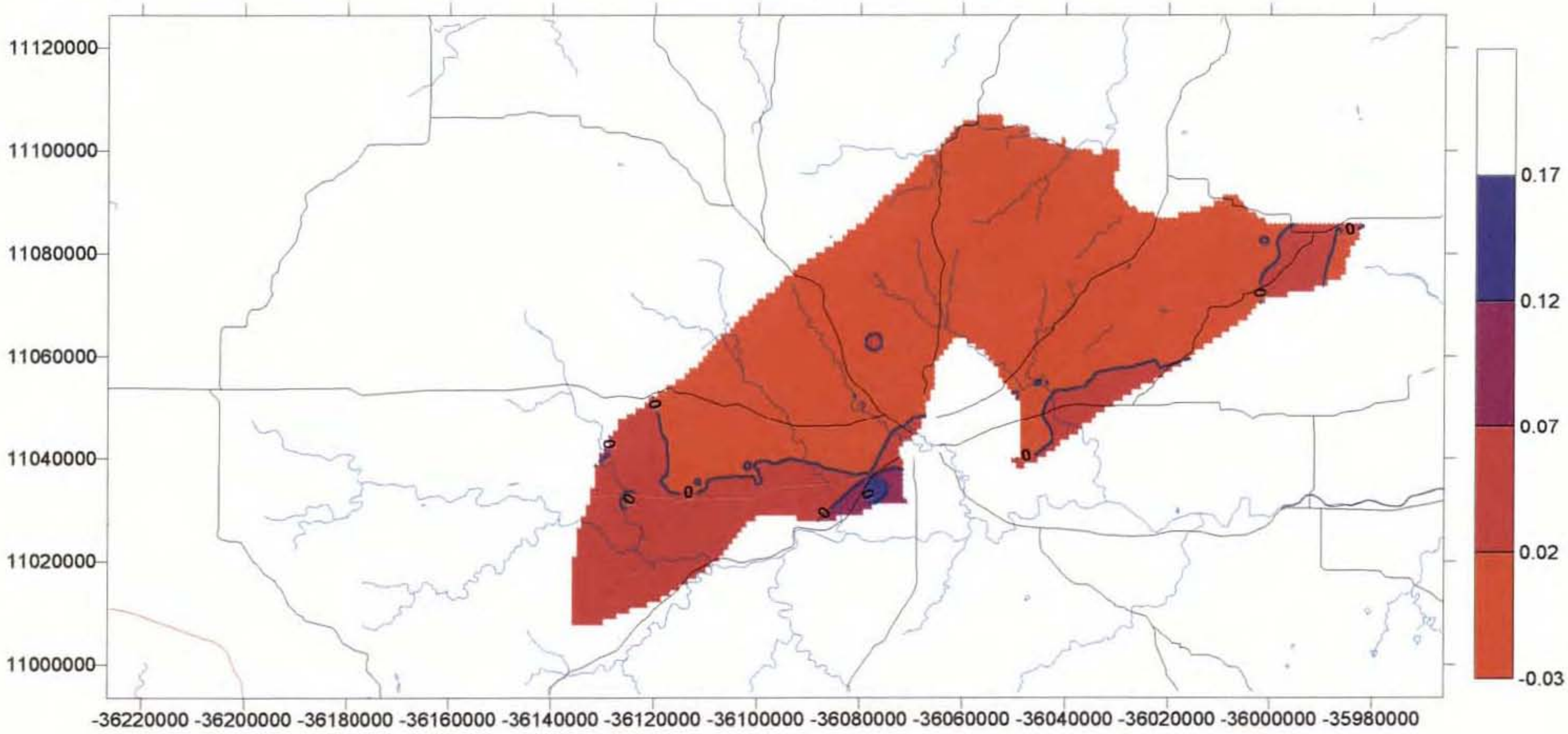
AREAS

Positive Planar Area
(Upper above Lower): 5.32361E+008
Negative Planar Area
(Lower above Upper): 1.93319E+007
Blanked Planar Area: 3.40688E+010
Total Planar Area: 3.46205E+010

Positive Surface Area
(Upper above Lower): 5.32363E+008
Negative Surface Area
(Lower above Upper): 1.93321E+007

APPENDIX A
FIGURE 3B

Hickory Aquifer Estimated Water Saturation
Component of the Artesian Portion of the Confined Aquifer
Gillespie County, Texas
Fall 1997



*Multiply contour numbers by 10 for saturated thickness in feet.
Storage Coefficient .0001

APPENDIX A
TABLE 3B

Hickory Aquifer Estimated Water Saturation
Component of the Artesian Portion of the Confined Aquifer (Storage Coefficient .0001)
Gillespie County, Texas
Fall 1997

VOLUME COMPUTATIONS

UPPER SURFACE

Grid File: C:/HITPSTAR.GRD
Grid size as read: 300 cols by 120 rows
Delta X: 871.237
Delta Y: 1116.81
X-Range: -3.62265E+007 to -3.5966E+007
Y-Range: 1.09935E+007 to 1.11264E+007
Z-Range: -0.0259888 to 0.161336

LOWER SURFACE

Level Surface defined by Z = 0

VOLUMES

Approximated Volume by
Trapezoidal Rule: 7.13581E+007
Simpson's Rule: 7.12365E+007
Simpson's 3/8 Rule: 7.17256E+007

CUT & FILL VOLUMES

Positive Volume [Cut]: 8.46664E+007
Negative Volume [Fill]: 1.33083E+007
Cut minus Fill: 7.13581E+007

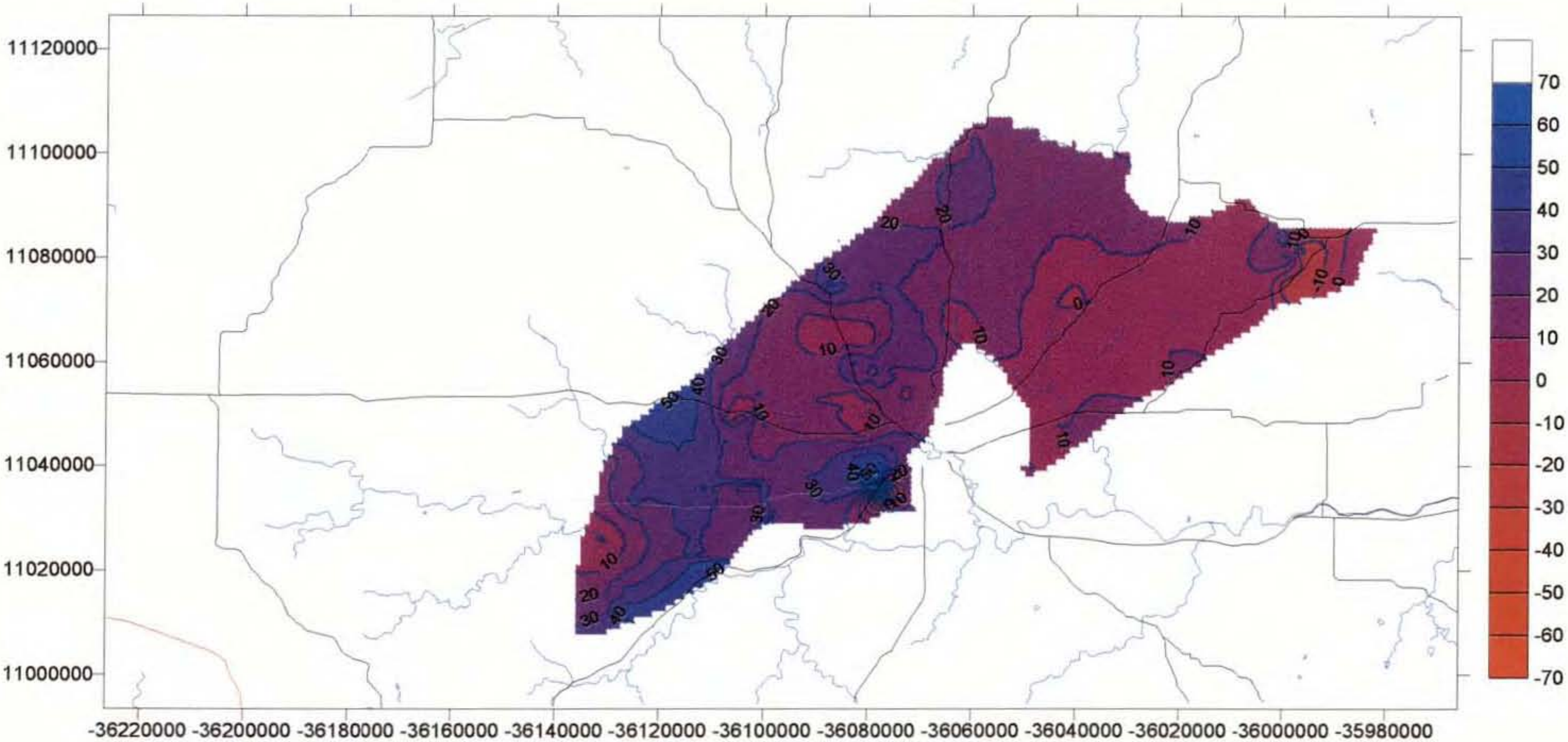
AREAS

Positive Planar Area
(Upper above Lower): 4.2614E+009
Negative Planar Area
(Lower above Upper): 1.8223E+009
Blanked Planar Area: 2.85367E+010
Total Planar Area: 3.46205E+010

Positive Surface Area
(Upper above Lower): 4.2614E+009
Negative Surface Area
(Lower above Upper): 1.8223E+009

APPENDIX A
FIGURE 3C

Hickory Aquifer Estimated Water Saturation
Component of the Unconfined Portion of the Confined Aquifer
Gillespie County, Texas



*Multiply contour numbers by 10 for saturated thickness in feet.
Specific Yield 0.1

APPENDIX A
TABLE 3C

Hickory Aquifer Estimated Water Saturation
Component of the Unconfined Portion of the Confined Aquifer (Specific Yield .1)
Gillespie County, Texas

VOLUME COMPUTATIONS

UPPER SURFACE
- Grid File: C:/HICSTORAGUC.GRD
- Grid size as read: 300 cols by 120 rows
- Delta X: 871.237
- Delta Y: 1116.81
- X-Range: -3.62265E+007 to -3.5966E+007
- Y-Range: 1.09935E+007 to 1.11264E+007
- Z-Range: -64.4421 to 65.9722

LOWER SURFACE
- Level Surface defined by Z = 0

VOLUMES

Approximated Volume by

Trapezoidal Rule:	1.03642E+011
Simpson's Rule:	1.03554E+011
Simpson's 3/8 Rule:	1.03707E+011

CUT & FILL VOLUMES

Positive Volume [Cut]:	1.05493E+011
Negative Volume [Fill]:	1.85082E+009
Cut minus Fill:	1.03642E+011

AREAS

Positive Planar Area (Upper above Lower):	5.8948E+009
Negative Planar Area (Lower above Upper):	1.8891E+008
Blanked Planar Area:	2.85367E+010
Total Planar Area:	3.46205E+010

Positive Surface Area (Upper above Lower):	5.89482E+009
Negative Surface Area (Lower above Upper):	1.8892E+008

APPENDIX A
TABLE 4

SUMMARY OF AQUIFER CHARACTERISTICS

Edwards Estimated Water Storage and Availability in Gillespie County

I. TWDB estimated water in storage in the Edwards for all of the Edwards Plateau....................145,000,000 ac.ft.

TWDB estimated annual effective recharge to the Edwards for all of the Edwards Plateau....................776,000 ac.ft./yr.

HCUWCD estimated water in storage in the Edwards in Gillespie County....................276,074 ac.ft.

HCUWCD estimated annual effective recharge to the Edwards in Gillespie County....................1,477 ac.ft./yr.

Based on the following calculation:

$$\frac{\text{Edwards annual recharge for Edwards Plateau}}{\text{Edwards Storage for Edwards Plateau}} = \frac{\text{Edwards annual recharge in Gillespie Co.}}{\text{Edwards Storage in Gillespie County}}$$

II. Estimated annual effective recharge or sustained yield for the Edwards in Gillespie County using the Darcy calculation Q = TiW where

Q = flow   i = hydraulic gradient   T = transmissivity   W = width

Q = 1544 ac.ft./yr.

This method was utilized in the Gillespie County Regional Water Management Plan.

Hensell Estimated Water Storage and Availability in Gillespie County

HCUWCD estimated water in storage in the Hensell in Gillespie County....................2,191,000 - 4,382,041 ac.ft.

APPENDIX A
TABLE 4 CONTINUED

SUMMARY OF AQUIFER CHARACTERISTICS

TWDB estimated annual effective recharge to the
Hensell in Gillespie County and used in the Gillespie
County Regional Water Management Plan..3,400 ac.ft./yr.

Ellenburger Water Storage and Availability in Gillespie County

TWDB estimated water in storage in the Ellenburger
in Llano Uplift region..20,000,000 ac.ft.
Recoverable..8,000,000 ac.ft.
Partially Recoverable ....12,000,000 ac.ft.

TWDB estimated average annual effective recharge
to the Ellenburger in Llano Uplift region...29,400 ac.ft./yr.

HCUWCD estimated water in storage in the Ellenburger
in Gillespie County (20% of total Llano Region)..4,000,000 ac.ft.
Recoverable..1,600,000 ac.ft.
Partially Recoverable..2,400,000 ac.ft.

HCUWCD estimated average annual effective recharge
to the Ellenburger in Gillespie County
(20% of total Llano Region)...5,880 ac.ft./yr.

Estimated annual effective recharge or sustained yield
for the Ellenburger in Gillespie County as calculated in
the Gillespie County Regional Water Management Plan
using the Darcy Equation Q = TiW...5,600 ac.ft./yr.

Hickory Estimated Water Storage and Availability in Gillespie County

TWDB estimated water in storage in the Hickory for all of the
Llano Uplift region...160,000,000 ac.ft.

APPENDIX A
TABLE 4 CONTINUED

SUMMARY OF AQUIFER CHARACTERISTICS

TWDB estimated annual effective recharge to the Hickory outcrop
area for all of the Llano Uplift region (10% of annual rainfall) ....52,600 ac.ft./yr.
This value does not include amount of recharge to Hickory in the subsurface from overlying units.

HCUWCD estimated water in storage in the Hickory in Gillespie County:

Outcrop Area..	172,995 ac.ft.
Subsurface	2,377,659 ac.ft.
Total Storage..	2,550,654 ac.ft.

HCUWCD estimated annual effective recharge to the Hickory in Gillespie County based on the following:

$$\frac{\text{Annual recharge to Hickory for Llano Region}}{\text{Hickory Storage for Llano Region}} = \frac{\text{Annual recharge to Hickory in Gillespie Co.}}{\text{Hickory Storage in Gillespie County}}$$

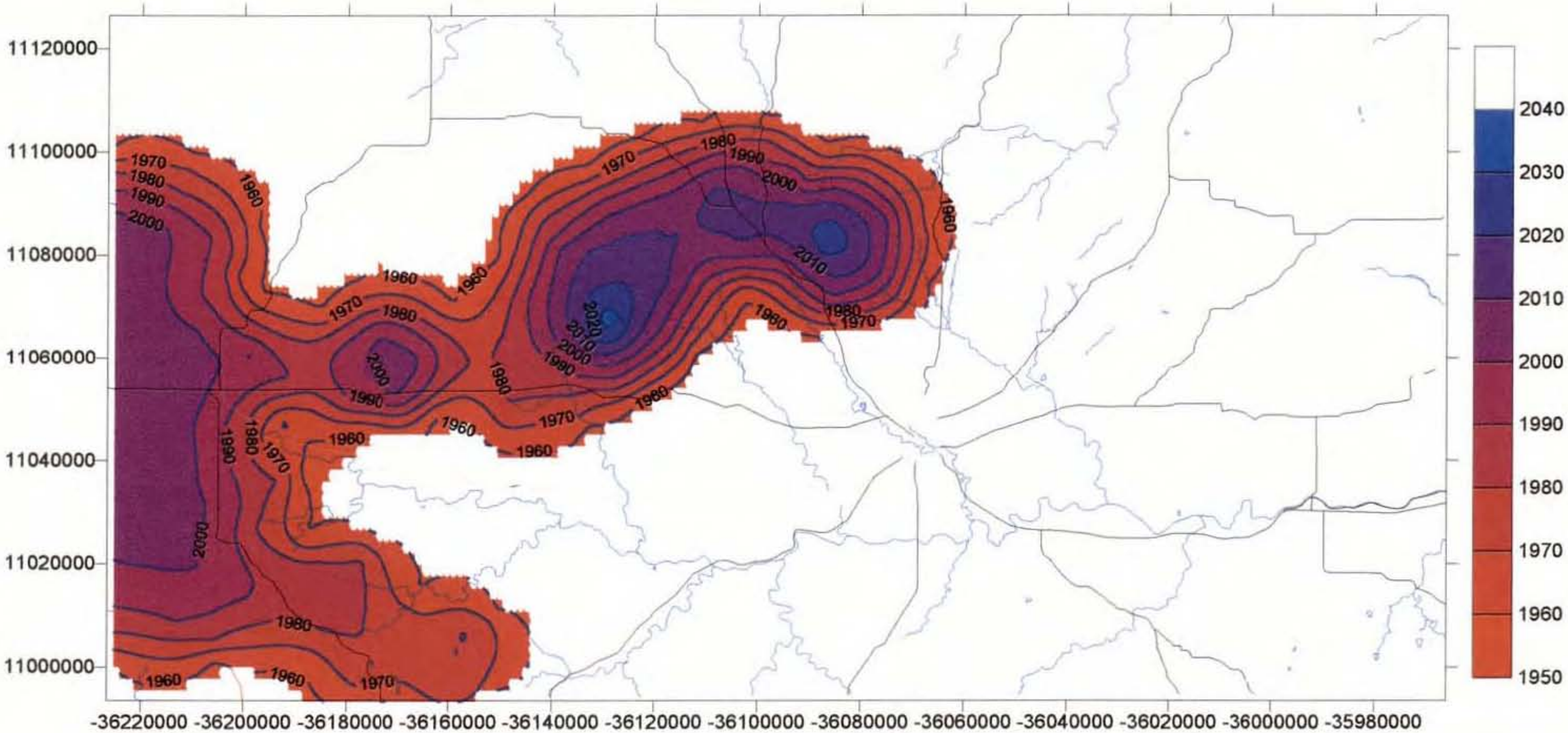
Annual recharge to Hickory in Gillespie County based on rainfall
to regional outcrop area..838 ac.ft./yr.

Annual recharge to Hickory in Gillespie County through overlying units
(1 - 2 x amount to outcrop)...838 - 1676

Estimated total annual Hickory recharge in Gillespie County....................1676 - 2514 ac.ft./yr.

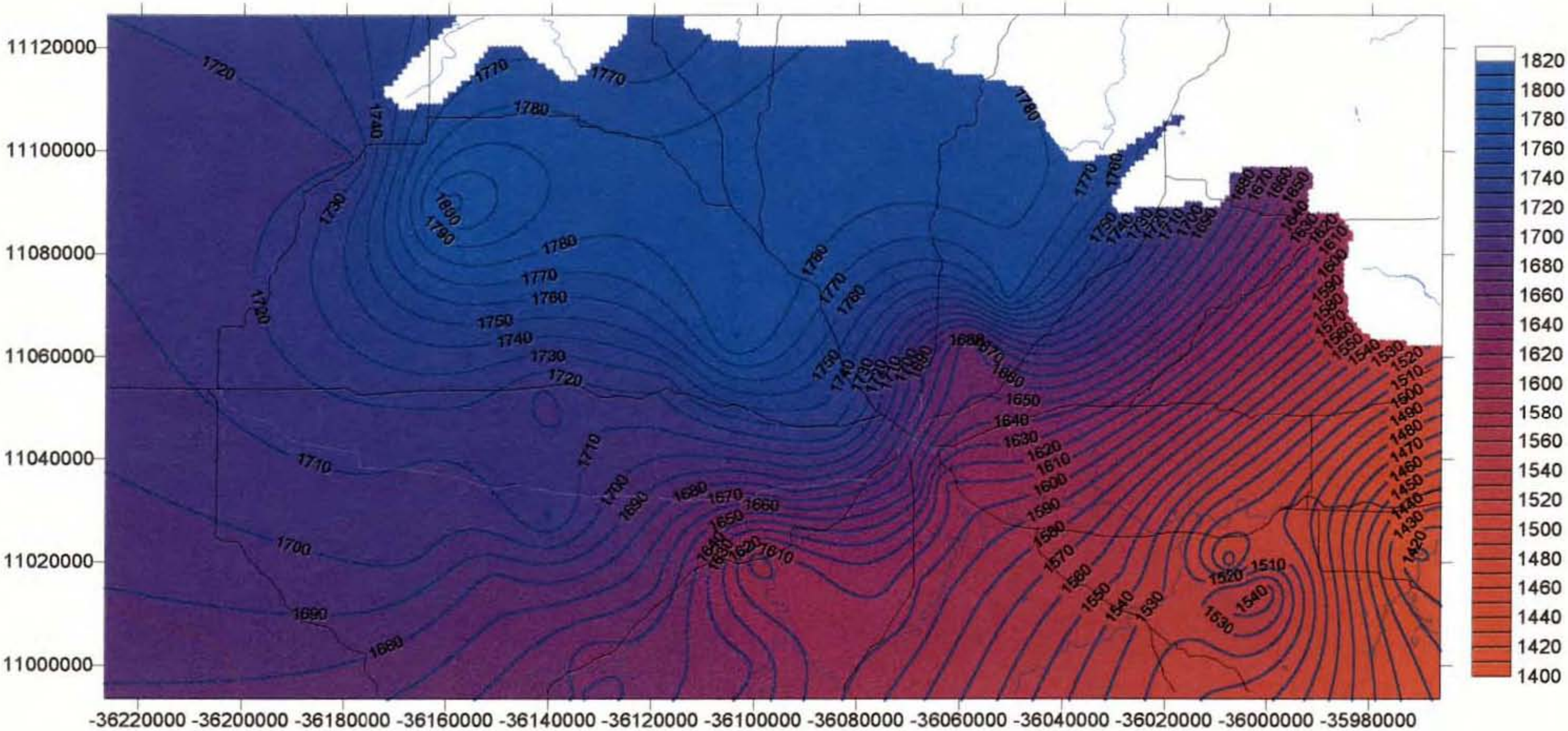
APPENDIX A
FIGURE 4

Edwards Water Levels
Feet Above Sea Level
Gillespie County, Texas
October 1996



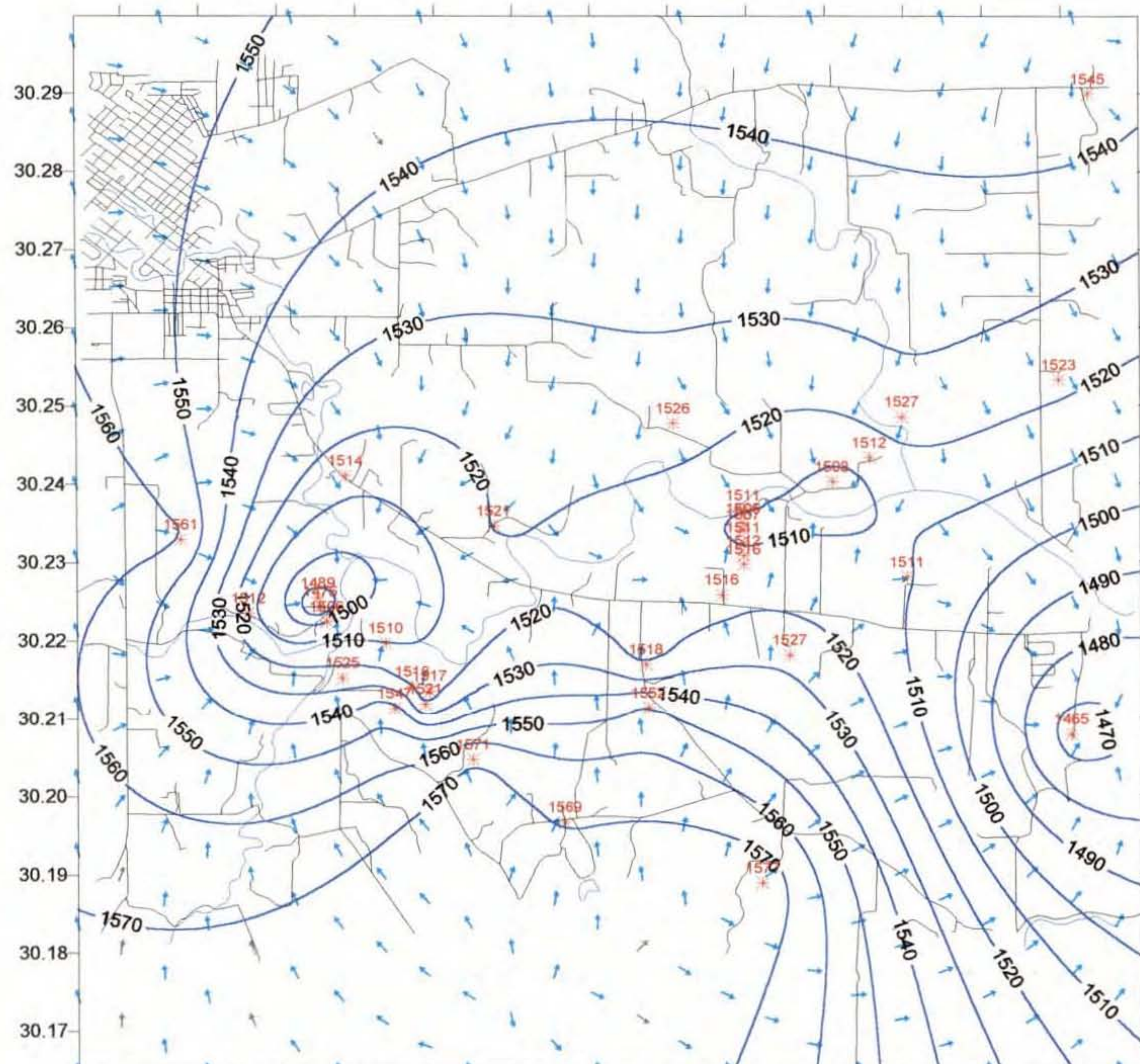
APPENDIX A
FIGURE 5

Hensell Water Levels
Feet Above Sea Level
Gillespie County, Texas
Fall 1997

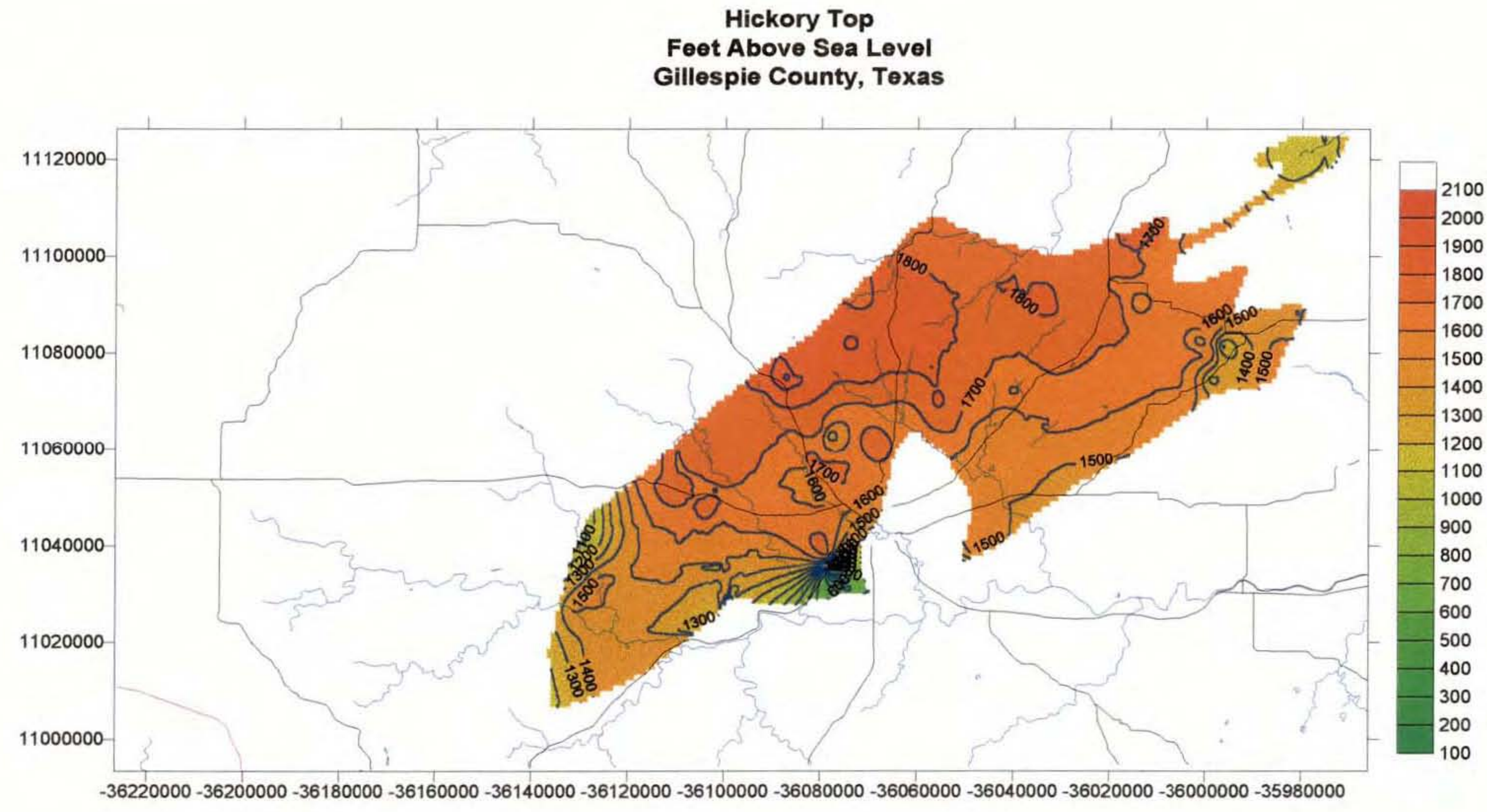


APPENDIX A
FIGURE 6

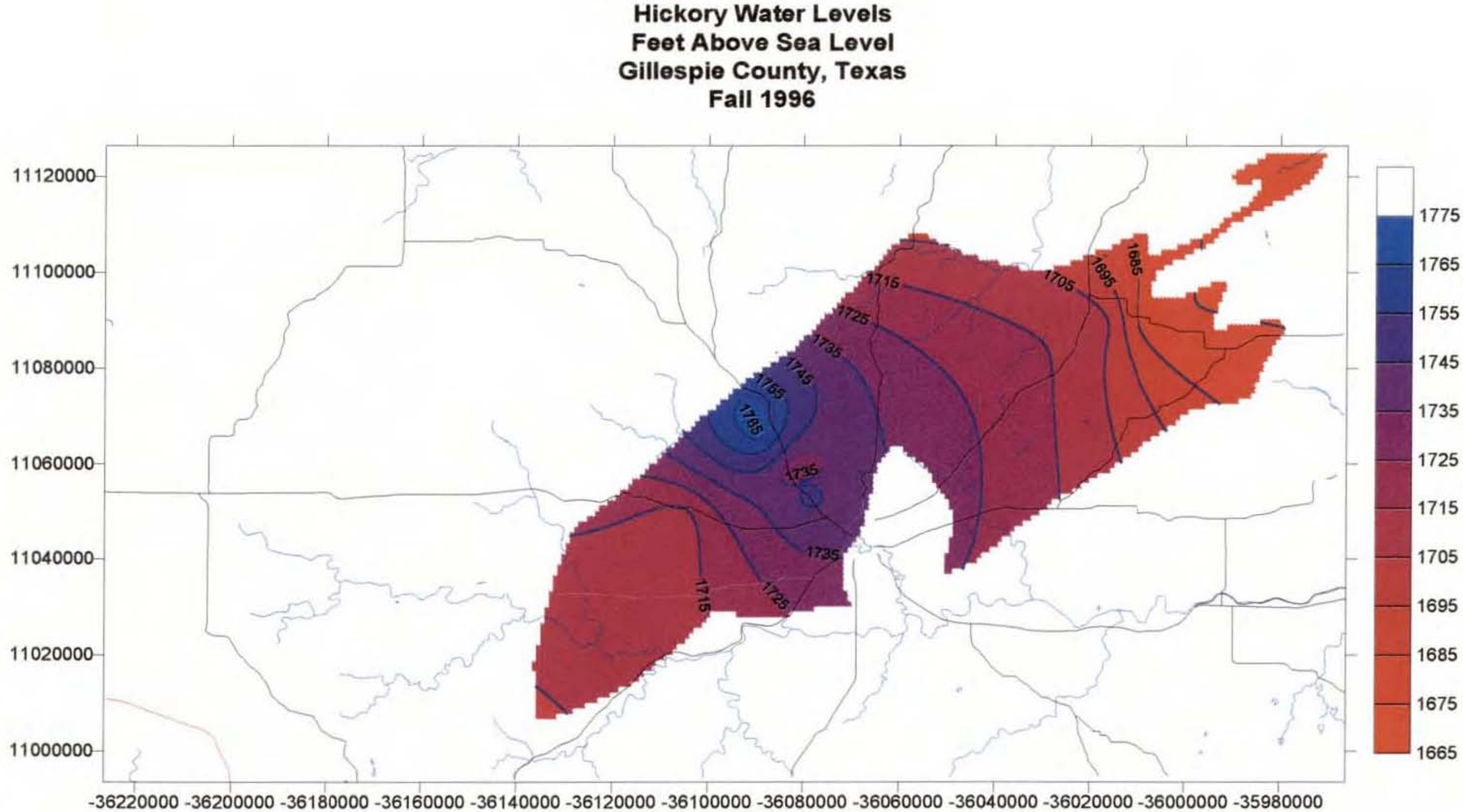
Ellenburger Water Levels
Feet Above Sea Level
December 17, 1997



APPENDIX A
FIGURE 7



APPENDIX A
FIGURE 8



APPENDIX B

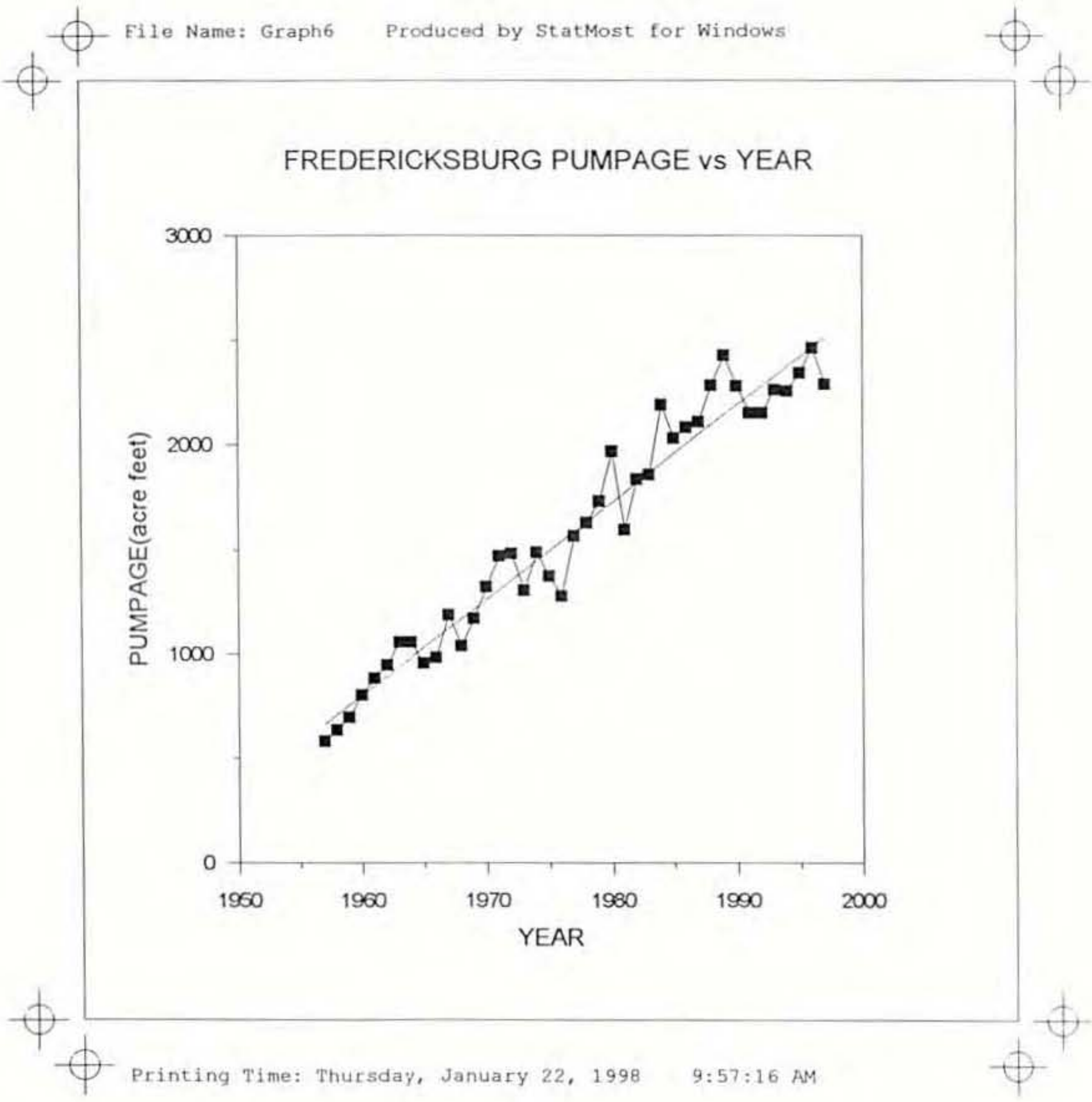
APPENDIX B
TABLE 1

Gillespie County Population Projection and Water Demand Using TWDB Worst Case Scenario and HCUWCD Adjusted Estimates for Municipal and Irrigation Demand

Year	2000	2010	2020	2030	2040	2050
Population	20700	22730	25433	27153	31367	34344
Municipal Water Demand - Rural and City With Below Rainfall	3958/4354	4319/4751	4812/5293	5188/5630	5892/6481	6494/7143
Industrial - Low Oil Prices Without Conservation	522	599	680	764	850	936
Irrigation - No Change In Efficiency	1974/1184	1949/1169	1924/1154	1899/1139	1874/1124	1850/1110
Livestock - Most Likely Scenario	1294	1294	1294	1294	1294	1294
Total Demand	7748/7354	8161/7813	8710/8421	9075/8827	9910/9749	10574/10483

*Black - TWDB Estimates
*Red - Adjusted TWDB Estimates Based on HCUWCD Data

APPENDIX B
FIGURE 1



APPENDIX B
TABLE 2

StatMost for Windows   Thursday, January 22, 1998   9:56:56 AM

Linear Regression Analysis Results

Variables: X = "YEAR", Y = "TOT._PUMP."
Equation: TOT._PUMP. = -90083.1413 + 46.3699*YEAR

Variable	N	Mean	Variance
YEAR	41	1977.0000	143.5000
TOT._PUMP.	41	1590.0732	324194.9195

Regression Coefficient	= 46.369861
Standard Error of B	= 1.672048
Y-Intercept	= -90083.141289
R-Squared	= 0.951738
Adjusted R-Squared	= 0.950500
Standard Error of Estimate	= 126.679038

The 95.0% confidence limits for the slope are: [42.9878, 49.7519]

Analysis of Variance Table

Source	DF	SS	MS	F	P
Linear	1	1.234E+007	1.234E+007	769.0843	0.0000
Deviation	39	6.259E+005	16047.5786		
Total	40	1.297E+007	3.242E+005		

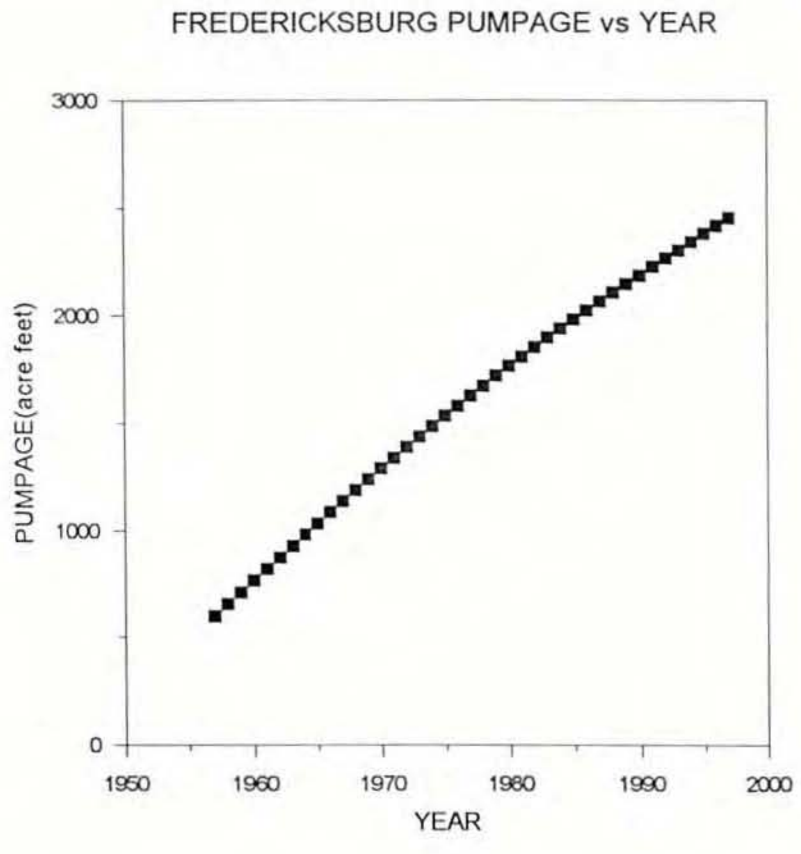
Goodness of Fit Statistics ...
Coefficient of Determination: 0.951737710
Correlation Coefficient: 0.975570454
Model Selection Criterion: 2.933543797

Parameter Statistics
95.00% Confidence Intervals
Parameter a: -90083.141289209
StdDev: 3305.698624594
Univariate ...
LOW: -96769.547873689
HIGH: -83396.734704729
Supporting Plane:
LOW: -98495.603475435
HIGH: -81670.679102983
Parameter b: 46.369860627
StdDev: 1.672048266
Univariate ...
LOW: 42.987823785
.IGH: 49.751897469
Supporting Plane:
LOW: 42.114771337
HIGH: 50.624949917

************************************ The End ************************************

APPENDIX B
FIGURE 2

File Name: Graph8   Produced by StatMost for Windows



Printing Time: Thursday, January 22, 1998   11:17:49 AM

APPENDIX B
TABLE 3

StatMost for Windows   Thursday, January 22, 1998   11:19:30 AM

Polynomial Regression Analysis Results

Number of Data Points = 41
Order of Polynomial = 2
Ind Var Column = YEAR
Dep Var Column = TOT._PUMP.

Order/Name	Mean	Standard Dev.
1	1977.0000	12659.2034
2	3908669.0000	2.50295E+007
TOT._PUMP.	1590.0732	569.3812

Regression Statistics

R-Squared	= 0.95496586
Adjusted R-Squared	= 0.95259564
Standard error of estimation	= 123.96875171
Durbin-Watson statistics	= 1.42940879
Mean absolute error	= 93.85925960
Sum of squared error	= 583993.55324777
Mean squared error	= 15368.25140126

Polynomial Expression:

TOT._PUMP. = -1088313.9951
+1056.25 * YEAR^1
-0.255407 * YEAR^2

Table of Estimates

Order	Estimate	Standard Error	t-Value	P-Value
0	-1088313.9951	580200.8895	-1.8758	0.0684
1	1056.2501	-599.2954	-1.7625	0.0860
2	-0.2554	0.1548	-1.6504	0.1071

Coeff of Determination = 0.95496586
Correlation = 0.97722355
Model Selection Criterion = 2.95399299

************************************** The End **************************************

APPENDIX B
TABLE 4

City of Fredericksburg Projected Pumpage
(Based on Annual Pumpage from 1957 to 1997)

Linear Regression Analysis

Total Pumpage = -90083.1413 + 46.3699 x year

2000	2010	2020	2030	2040	2050
2656	3120	3584	4048	4471	4975

Polynomial Regression Analysis

Total Pumpage = -1088313.995 + 1056.25 x year -0.255407 x $year^2$

2000	2010	2020	2030	2040	2050
2558	2879	3148	3367	3534	3651

Texas Water Development Board Analysis

High Population & Below Normal Rainfall (Worst Case Scenario)

2000	2010	2020	2030	2040	2050
2153	2325	2583	2732	3143	3544

Population (High Growth Rate)

2000	2010	2020	2030	2040	2050
7944	8577	9528	10080	11596	13073

APPENDIX B
TABLE 5

ESTIMATED AMOUNT OF WATER USED FOR IRRIGATION IN GILLESPIE COUNTY

Estimated total number of acres cultivated in orchards and vineyards in Gillespie County for peaches, pecans and grapes. Source - Gillespie County Appraisal District	1906
Estimated total number of drip irrigated acres in Gillespie County for orchards and vineyards. Source - Gillespie County Extension Service	875
Estimated total number of drip irrigated acres in Gillespie County for vegetables. Source - Gillespie County Extension Service	300
Estimated total number of drip irrigated acres in Gillespie County. Source - Gillespie County Extension Service	1175
Estimated amount of water applied through drip irrigation. Source - Muller Orchards	1 acre foot/acre
Estimated total amount of water used for irrigation in Gillespie County.	1175 ac.ft./yr.

APPENDIX B
TABLE 6

GILLESPIE COUNTY PROJECTED WATER DEMAND BY AQUIFER

% of Demand Contributed by Aquifer

	Edwards	Hensell	Ellenburger	Hickory
Muncipal	5%	20%	60%	15%
Industrial	0%	20%	60%	20%
Irrigation	0%	30%	60%	10%
Livestock	25%	25%	25%	25%

Individual Aquifer Contribution

Edwards (Estimated Annual Sustained Yield 1500 ac.ft./yr.)

Year	2000	2010	2020	2030	2040	2050
Municipal	198 /218	216 /238	241 /265	256 /282	295 /324	325 /357
Industrial	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0
Livestock	324	324	324	324	324	324
Total Demand	522 /542	540 /562	565 /589	580 /606	619 /648	649 /681

Hensell (Estimated Annual Sustained Yield 3400 ac.ft./yr.)

Year	2000	2010	2020	2030	2040	2050
Municipal	792 /871	864 /950	962 /1059	1024 /1126	1178 /1296	1299 /1429
Industrial	104	120	136	153	170	187
Irrigation	592 /355	584 /351	577 /346	570 /342	562 /337	555 /333
Livestock	324	324	324	324	324	324
Total Demand	1812 /1654	1892 /1745	1999 /1865	2071 /1945	2234 /2127	2365 /2273

Ellenburger (Estimated Annual Sustained Yield 5600 ac.ft./yr.)

Year	2000	2010	2020	2030	2040	2050
Municipal	2375 /2613	2591 /2850	2887 /3176	3071 /3378	3535 /3889	3896 /4286
Industrial	313	359	408	458	510	562
Irrigation	1184 /710	1169 /701	1154 /692	1139 /683	1124 /674	1110 /666
Livestock	324	324	324	324	324	324
Total Demand	4196 /3960	4443 /4234	4773 /4600	4992 /4843	5493 /5397	5892 /5838

Hickory (Estimated Annual Sustained Yield 2000 ac.ft./yr.)

Year	2000	2010	2020	2030	2040	2050
Municipal	594 /653	648 /713	722 /794	768 /845	884 /972	974 /1071
Industrial	104	120	136	153	170	187
Irrigation	197 /118	195 /117	192 /115	190 /114	187 /112	185 /111
Livestock	324	324	324	324	324	324
Total Demand	1219 /1199	1287 /1274	1374 /1369	1435 /1436	1565 /1578	1670 /1693

*Black - TWDB Estimates

*Red - Adjusted TWDB Estimates Based on HCUWCD Data

HILL COUNTRY UNDERGROUND WATER CONSERVATION DISTRICT

RESOLUTION OF THE BOARD OF DIRECTORS OF THE HILL COUNTRY UNDERGROUND WATER CONSERVATION DISTRICT

WHEREAS, the Hill Country Underground Water Conservation District (the "District") is a political subdivision of the State of Texas, duly created by the Texas Legislature pursuant to 1987 Tex. Gen. Laws Chapter 865; and 10

WHEREAS, the District has created and developed a new management plan to comply with requirements set forth in Senate Bill 1, passed in the 75th Texas Legislative; and

WHEREAS, the District conducted a open public meeting on July 7, 1998 at the District's Office, 508 South Washington, Fredericksburg, Texas to receive public comments concerning the proposed management and duly posted notices in accordance with the requirements of the Texas Open Meeting Act, Texas Government Code Chapter 55; and

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Hill Country Underground Water District as follows:

1. The Hill Country Underground Water District hereby adopts the Management Plan as presented and attached hereto and incorporated herein by reference for all purposes.

2. This plan becomes effective upon adoption by the District and subsequent certification by the Texas Water Development Board.

3. This plan upon certification by the Texas Water Development Board replaces the District Plan in effect from 1996-2000.

EXECUTED this 7th day of July, 1998.

Alton Klier, Chairman

ATTEST:

Vaughn Usener

Vaughn Usener, Secretary/Treasurer

508 S. Washington, Fredericksburg, TX 78624
(830) 997-4472 FAX (830) 997-6721

HILL COUNTRY UNDERGROUND WATER CONSERVATION DISTRICT

T W D B
RECEIVED

AUG 14 1998

ROUTE TO

August 13, 1998

Mr. Bill Mullican, Director
Water Resources Planning
Texas Water Development Board
P.O. Box 13231
Austin, Texas 78711-3231

Re: Hill Country Underground Water Conservation District's Management Plan

Dear Mr. Mullican: Bill

As required by Section 356.6 "Plan Submittal" of the Texas Water Code, please find enclosed a copy of the adopted Hill Country Underground Water Conservation District's Management Plan for your review and certification of the administrative completeness of the plan. Along with the management plan I have also enclosed an original resolution adopting the plan and a copy of the minutes from the July 7th board meeting outlying the plan was adopted after notices were published and a public hearing was held. These should satisfy items one, two and three, however items four and five do not pertain to our district.

If you have any questions or need any additional information regarding this matter, please feel free to contact me.

Sincerely,

Paul Tybor

Paul Tybor
Manager

PT/mr

Encl.

508 S. Washington, Fredericksburg, TX 78624
(830) 997-4472 FAX (830) 997-6721

MINUTES
July 7, 1998

ATTENDANCE: Directors - Alton Klier, Voy Althaus, Harold Sohner, Dennis Houy and Vaughn Usener; Manager Paul Tybor; Secretary - Margaret Ratliff

Chairman Klier opened the Public Hearing at 8:00 a.m at the District's Office, 508 South Washington, Fredericksburg, Texas to receive public comments concerning the proposed District's Management Plan. The District duly posted notices in accordance with the requirements of the Texas Open Meetings Act, Texas Government Code Chapter 551. There were no representatives from the public in attendance. At 8:09 a.m. Chairman Klier called the public hearing to a close and called the regular board meeting to order.

The Board reviewed the minutes. Voy Althaus moved and Harold Sohner seconded the motion to approve the minutes from the previous meeting; motion carried.

The Board reviewed the financial report. Vaughn Usener moved and Dennis Houy seconded the motion to approve the financial report; motion carried.

The Board reviewed and discussed the proposed District Management Plan. Voy Althaus moved and Vaughn Usener seconded the motion to adopt the District Management Plan as presented and prepare a resolution stating the District complied with the requirements as set forth in Senate Bill 1 and the Texas Open Meetings Act; motion carried. 11

The Board discussed granting a variance to Julia Hooper for a new well to be drilled on 0.99 acre, German Emigration Company Outlots No. 360 and 361. The well currently on the property is old and has been cleaned out, however it is producing mud. The adjoining landowners, Victor and Janie Heinemann, have agreed to sign a waiver. Voy Althaus moved and Harold Sohner seconded the motion to approve a variance for a new well to be drilled on Julia Hooper property to encroach within the 75' setback property line with the condition that Julia Hooper and the adjoining landowners sign a Affidavit to the Public prepared by the District and have it recorded; motion carried.

The Board discussed granting a variance to Charles Ottmers on an existing well located approximately 1000 feet from their residence on Koenneke-Eckhardt Road. Virdell Drilling drilled the aforementioned well in May of 1997. The well is 80 feet deep, cemented down 18 feet with water coming in at 31, 40 and 55 feet, and located in the Edwards Aquifer. The log shows the well produces 10 gallons per minute, however Mr. Ottmers feels it not providing that amount. Mr. Ottmers would like to deepen the well to the base of the Edwards, which would be approximately another 20 feet. The District has a rule which requires 50 feet of cement, but if shallow water needs to be used then the driller can complete the well to the top of the first potable water bearing strata. Voy Althaus moved and

Dennis Houy seconded the motion to approve the variance with the stipulation that the well not be deepened pass the base of the Edwards. Mr. Ottmers is aware that this type of completion could possibly pose a problem with time if the shallow water should become contained, and he is doing this at his own risk; motion carried

The Board reviewed the bids received for a new vehicle. Harold Sohner moved and Vaughn Usener seconded the motion to reject the one valid bid received on the basis of the trade-in amount on the existing company vehicle and the rebate amount were unclear. The District will re-open for bids until 5:00 p.m. Monday, July 13, 1998 and will call a special board meeting for Tuesday, July 14, 1998 to review the bids received. The delivery date of the new vehicle of no later than 14 days from the bid acceptance will be added to the bid forms and specifications; motion carried.

Voy Althaus moved and Harold Sohner seconded the motion to amend the budget by $25,000.00 for the purpose of purchasing a new district vehicle; motion carried.

Paul Tybor updated the Board on the status of the Lower Colorado Regional Water Planning Group. The Group has a meeting tomorrow in Smithville. The current draft of the scoping study is being developed and will be submitted for funding to the Texas Water Development Board. The study was basically done through LCRA and will be reviewed by the planning committee. The Trinity Sub-Region Group will be on the agenda, however the Plateau Water Planning Group has indicated they will not recognize them. The Texas Water Development Board has indicated to the three regions (LCRWPG, PWPG & EAPG) that it will conduct a regional study of the Trinity aquifer at little to no cost to the regions.

The Board discussed creating a water conservation awareness fund through private donations. Section 36.158 of the Texas Water Code allows a district to accept donations. Voy Althaus moved and Harold Sohner seconded the motion for the District to amend the District by-laws to provide a special water conservation fund from private donations. These items will be placed on next months agenda for approval; motion carried.

Vaughn Usener moved and Voy Althaus seconded the motion to adjourn the meeting at 9:20 a.m.; motion carried.

Respectfully submitted,

Vaughn Usener, Secretary/Treasurer
by Paul Tybor, Manager

Alton Klier
Chairman of the Board

HILL COUNTRY UNDERGROUND WATER CONSERVATION DISTRICT

July 2, 1998
NOTICE

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TO: Members of the Board of Directors of the Hill Country Underground Water Conservation District: Alton Klier, Voy Althaus, Dennis Houy, Vaughn Usener and Harold Sohner.

A Public Hearing and meeting of the Board of Directors of the Hill Country Underground Water Conservation District will be held on Tuesday, July 7, 1998 at 8:00 a.m. at the District Office, 508 South Washington, Fredericksburg, Texas.

The agenda will include:

PUBLIC HEARING:

1) To receive public comments concerning the proposed District's Management Plan,

MEETING:

1) Discussion and possible action on the adopting the District's Management Plan,

2) Discussion and possible action on granting a variance to Julia Hooper,

3) Discussion and possible action on granting a variance to Charles Ottmers,

4) Review bids received on a new vehicle and possible action on accepting a bid,

5) Possible action to amend budget for purpose of purchasing a new vehicle,

6) Update the Board on the status of the Lower Colorado Regional Water Planning Group,

7) Discussion and possible action on creating a water conservation awareness fund through private donations,

Other business as may come before the Board,

Alton Klier, Chairman

Advisors to the Board:

Dan Hartmann	Dwayn Boos
Jerry Bain	Tom Hammer
Taylor Virdell, Jr.	Bill Botard

508 S. Washington, Fredericksburg, TX 78624
(830) 997-4472 FAX (830) 997-6721

FILED JUL 02 1998
Doris Lange
COUNTY CLERK
Gillespie Co., Texas
by: Deborah Pace
Deputy

NOTICE OF PUBLIC HEARING

A Public Hearing will be held on Tuesday, July 7, 1998 at 8 a.m. at the Hill Country Underground Water Conservation District's Office, 508 South Washington, Fredericksburg, TX.

The agenda will include: 1) Receive public comments concerning the proposed District's Management Plan.

Alton Klier, Chairman
Hill Country
Underground Water
Conservation District
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