



# DROUGHT STUDY REPORT

Prepared for:

**Brazos River Authority**



JUNE 2017  
Revised AUGUST 2017

Prepared by:

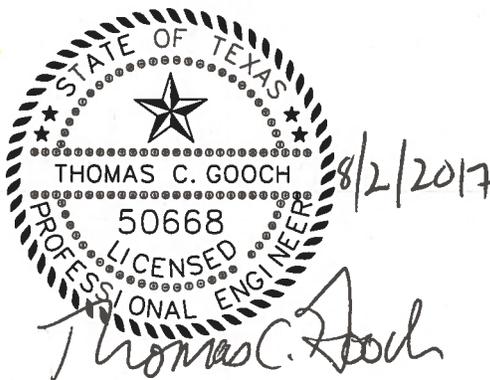
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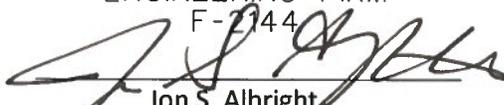
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**Brazos River Authority**



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TEXAS REGISTERED  
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## **DISCLAIMER**

*This report describes a water right availability analysis performed to meet the requirements of Special Condition 5.C.7 of Water Use Permit No. 5851. The analysis uses the methods employed by the Texas Commission on Environmental Quality in evaluating the legal availability of water for existing and proposed water rights. Because this is strictly a water rights analysis, it reflects the full exercise of the terms and conditions of all water rights in the Brazos Basin held by the Brazos River Authority (BRA) and other water right owners. Other considerations not included in water rights permits, such as drought contingency plans, infrastructure limits, operation plans, and contractual obligations, are not considered in the analysis. This applies to both the BRA and other water right owners in the Brazos River Basin. The results of this study are not intended to reflect the historical or proposed operation, including lake levels, of the BRA System or of water rights owned by others.*

## **EXECUTIVE SUMMARY**

The purpose of this study is to determine whether:

- The recent drought, which began in 2008 and ended in June 2015, represents a new drought of record for the Brazos River Basin, and
- The recent drought decreases the amount of water available for appropriation under Water Use Permit No. 5851, the System Operation Permit.

To examine these questions, the hydrology used in the Texas Commission on Environmental Quality's (TCEQ) Brazos River Basin Water Availability Model (Brazos WAM) was extended to cover the period from 1940 to 2015. Previously, the hydrology had ended in 1997, well before the onset of the recent drought. The extended hydrology and the model were then used to examine the most recent drought and the response of Brazos River Authority (BRA) System reservoirs to the drought, both individually and operating with the System Operation Permit.

The findings of the study are:

- The recent drought is a new drought of record for Possum Kingdom Lake, Lake Granbury, Lake Whitney, and Lake Proctor.
- The 1950s drought remains the drought of record for the remaining reservoirs that are a part of the BRA System – Lake Aquilla, Lake Belton, Lake Stillhouse Hollow, Lake Georgetown, Lake Granger, Lake Somerville, Lake Limestone and the proposed Allens Creek Reservoir.
- Since only part of the BRA System has experienced a drought worse than the 1950s drought, the yield of the system operating under the System Operation Permit has not been reduced, and therefore
- The appropriation for Water Use Permit No. 5851 does not need to be reduced.

Additionally, this study shows the benefits of the System Operation Permit, which through flexible operation allows the BRA to adapt and respond to differences in the timing of drought conditions throughout the basin to both increase the reliability of the BRA's existing supply and generate new supplies. Even though some system reservoirs have lost yield, operation under the System Operation Permit shows no net loss to the system as a whole. This makes the System Operation Permit even more valuable to the BRA and its customers than previous analyses have indicated.

## 1.0 INTRODUCTION

Special Condition 5.C.7 of Water Use Permit No. 5851, also known as the System Operation Permit, states that:

*In recognition of current drought conditions, BRA shall perform a detailed evaluation of whether the recently-ended drought: (1) represents a drought worse than the drought of record of the 1950s in the Brazos River Basin; and (2) decreases the amount of water available for appropriation under this permit. BRA shall provide a report to the TCEQ documenting its findings within nine months after issuance of this permit. If the report concludes that the recently ended drought decreases the amount of water available for appropriation under this permit, then the amount of that reduction shall be determined and the appropriation amounts specified in Paragraph I.A. and 5.D.5 of this permit shall be correspondingly reduced.*

This report is in response to this Special Condition 5.C.7.

### 1.1 BACKGROUND

Beginning in 2008, the Brazos River Basin experienced a period of extreme drought. Possum Kingdom Lake and the portion of the basin upstream of Possum Kingdom were most affected by the drought. A yield study performed at the end of 2013 by Freese and Nichols, Inc. (FNI) for the BRA<sup>1</sup> showed that, based on historical hydrology, as of the end of 2012 Possum Kingdom Lake was in drought-of-record conditions, while other BRA System reservoirs did not appear to be in a new record drought.

The new drought conditions were an issue during the contested case hearing for Permit No. 5851. While the 2013 FNI study did identify potential new drought conditions for some reservoirs, it did not address the impact on the BRA System as a whole or the appropriations sought by the BRA with approval of Permit No. 5851, for two reasons: (a) drought conditions

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<sup>1</sup> Freese and Nichols, Inc.: DRAFT Memorandum to Brad Brunett and Jim Forte of the Brazos River Authority, *Initial Analysis of Extended Hydrology*, December 19, 2013.

were ongoing in 2013, and (b) the hydrology in the Brazos WAM, which is required to determine the yield of the system, did not include the recent drought. As proposed by TCEQ staff and agreed by BRA during the 2015 evidentiary hearing, BRA was required to sponsor a new study to address the comparative extent and the impact of the recent drought on system yield, once Possum Kingdom Lake had filled. Possum Kingdom Lake filled in June 2015, signaling the probable end of drought-of-record conditions. The order granting the System Operation Permit was issued in September 2016, initiating this study.

## **1.2 PROJECT OVERVIEW**

A major part of the drought study was extending the hydrology of the existing Brazos WAM. A full analysis of the potential impact of the recent drought on the BRA System and the appropriation in the System Operation Permit requires a model like the Brazos WAM, which is used by TCEQ to evaluate water rights. However, the 9-month time frame for development of an analysis of the impact of the recent drought on the yield of the System Operation Permit does not allow time for a full update of the Brazos WAM. Therefore, the approach used in this study included:

- Developing approximate naturalized flows for the basin for 1998 through 2015 (to include the recent drought), and
- Analyzing the yield available from the System Operation Permit using the Brazos WAM and the approximate naturalized flows to determine the reliable supply available from the System Operation Permit and the maximum annual diversion under the System Operation Permit including hydrologic data for the period from 1998 through May 2015.

Because of the time limitations, the TCEQ staff agreed to this project approach. TCEQ staff provided input throughout the project.

This project is a water rights analysis and uses a modeling approach consistent with the approach used by TCEQ in evaluating water rights. It uses the same tool (the Brazos WAM), and assumes that all permitted water rights in the Brazos River Basin are diverting at their full authorization, including both diversion and storage. The only difference is that the model used

in the study includes return flows which are part of the authorization in the System Operation Permit. Because this is strictly a water rights analysis, it should not be considered an accurate representation of anticipated lake levels. Other operational considerations, such as drought contingency plans, infrastructure limits, operation plans, and some contractual limitations, which could impact lake levels, are not included in the model.

Consistent with the assumption of full use of water rights, all System Operation Permit model runs assume the full appropriation specified in Water Use Permit No. 5851, without the 14% reduction due to reservoir sedimentation, set out in Special Condition 5.D.5. This study does not examine reduction in yield due to sedimentation – only the impact of the recent drought on the BRA System.

Figure 1 is a location map showing the BRA System reservoirs.

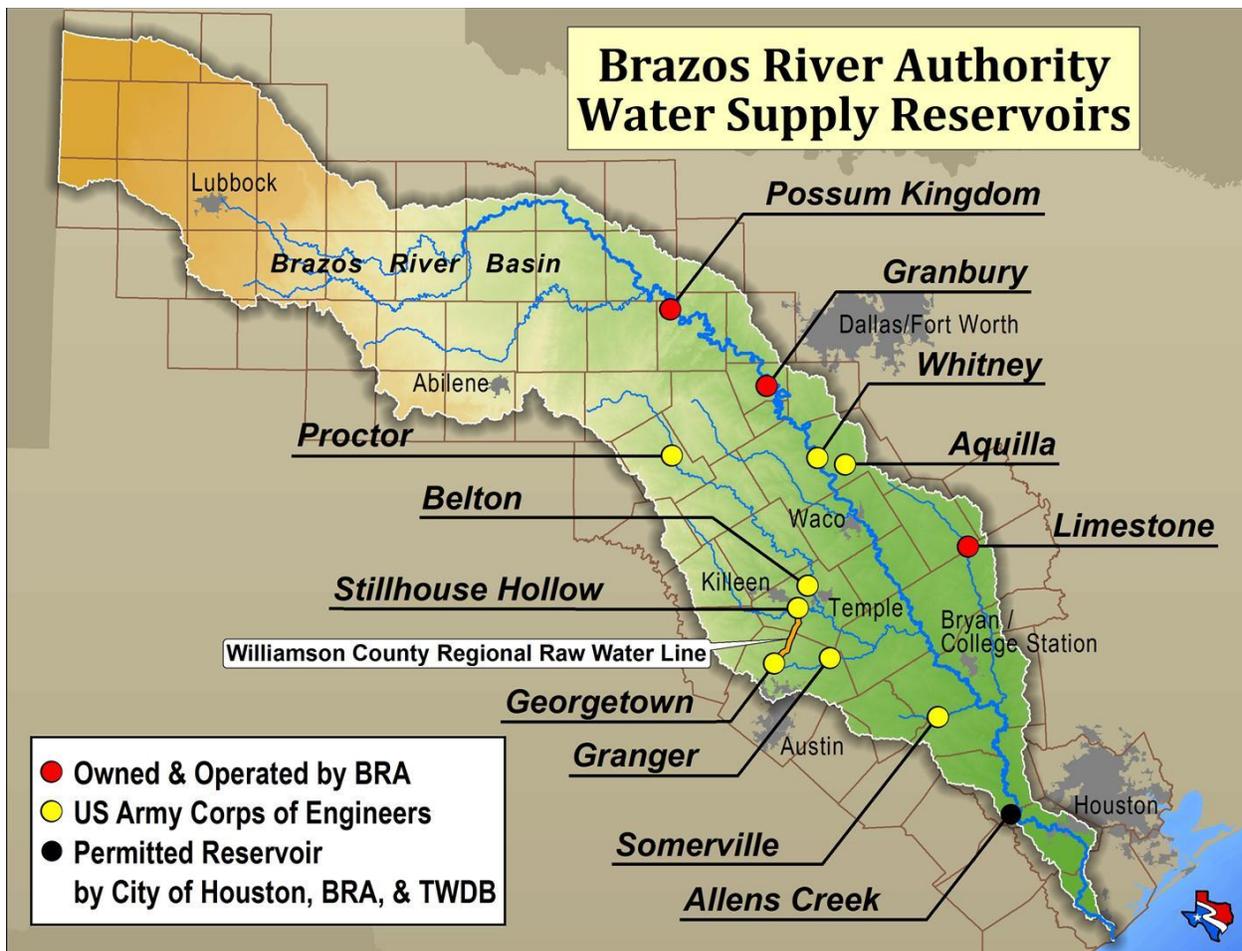


Figure 1: Location Map

## 2.0 EXTENSION OF HYDROLOGY

The process of developing the approximate naturalized flows is described in detail in Attachment 1 of this report. Attachment 1 is an update of the report describing the development of the original Brazos WAM naturalized flows in 2001.<sup>2</sup> The approximate naturalized flows from 1998 to 2015 were developed by adjusting historical gaged flows for:

- Diversions by water rights with permitted amounts of 1,000 acre-feet per year or more,
- Impacts of reservoirs with current storage capacity of 10,000 acre-feet or more, and
- Sources of return flows greater than 2 MGD (largest annual average in the period from 1998 through 2014).

Fully naturalized flows were developed for three gages (North Bosque River near Clifton, Lampasas River near Kempner, and Navasota River above Groesbeck) to demonstrate the conservative nature of the flow development process. For these three gages naturalized flows from 1998 to 2015 were developed by adjusting historical gaged flows for:

- Diversions by all water rights,
- Impact of reservoirs with more than 5,000 acre-feet of authorized storage, and
- Return flow sources greater than 1 MGD (largest annual average in the period from 1998 through 2014).

A comparison of the fully naturalized flows to the approximate naturalized flows is in Section 6.0 of Attachment 1. This comparison shows that:

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<sup>2</sup> Freese and Nichols, Inc., HDR Engineering, Inc. et al.: *Naturalized Flow Estimates for the Brazos River Basin and the San Jacinto-Brazos Coastal Basin*, prepared for the Texas Natural Resource Conservation Commission, October 2001.

- Not including all water rights and return flows has little impact on flows. Most of these corrections are small and have little impact on water availability.
- Not including smaller reservoirs could have some impact on water availability, depending on the magnitude of the flows in the area. This impact will be less as the corrections are passed downstream.

The fully naturalized flows at the three gaged locations were included in this analysis.

While extending the hydrology, several errors in the original Brazos WAM hydrology were identified. There were also cases where the method used to estimate missing hydrology changed as well. These modifications slightly change the original 1940 to 1997 hydrology. The modifications are described in detail in Attachment 1, the Updated Naturalized Flow Report.

### **3.0 IMPACT OF RECENT DROUGHT ON THE BRA SYSTEM**

The impact of the recent drought was evaluated in four ways:

- A comparison of the naturalized flows during the 1950s drought to the recent drought,
- The impact on storage in the BRA System reservoirs operating at their permitted diversions,
- The impact on the yield of the individual BRA System reservoirs (Run 3 permitting run conditions), and
- The impact on the yield of the System Operation Permit.

These impacts are discussed in the following sections.

### 3.1 IMPACT ON STREAMFLOWS

Table 1 compares the average annual naturalized flows from 1940 to 2015 to the annual average from 1950 to 1956 (labeled 50s Drought Average) and the annual average from 2008 to 2014 (labeled Recent Drought Average) for gages that are close to BRA System reservoirs. Note that the average annual flows for the recent drought are significantly lower for the Brazos River near South Bend, near Palo Pinto, and near Glen Rose gages, and for the Leon near Hasse gage. These results imply that Lakes Possum Kingdom, Granbury and Proctor may have experienced a new drought of record. Flows are also somewhat lower at the Brazos River near Aquilla gage, which is just downstream of Lake Whitney. For other gage locations in Table 1, the annual average flows are lower in the 1950s drought compared to the recent drought.

**Table 1: Comparison of Average Annual Naturalized Flows for Selected Gages**

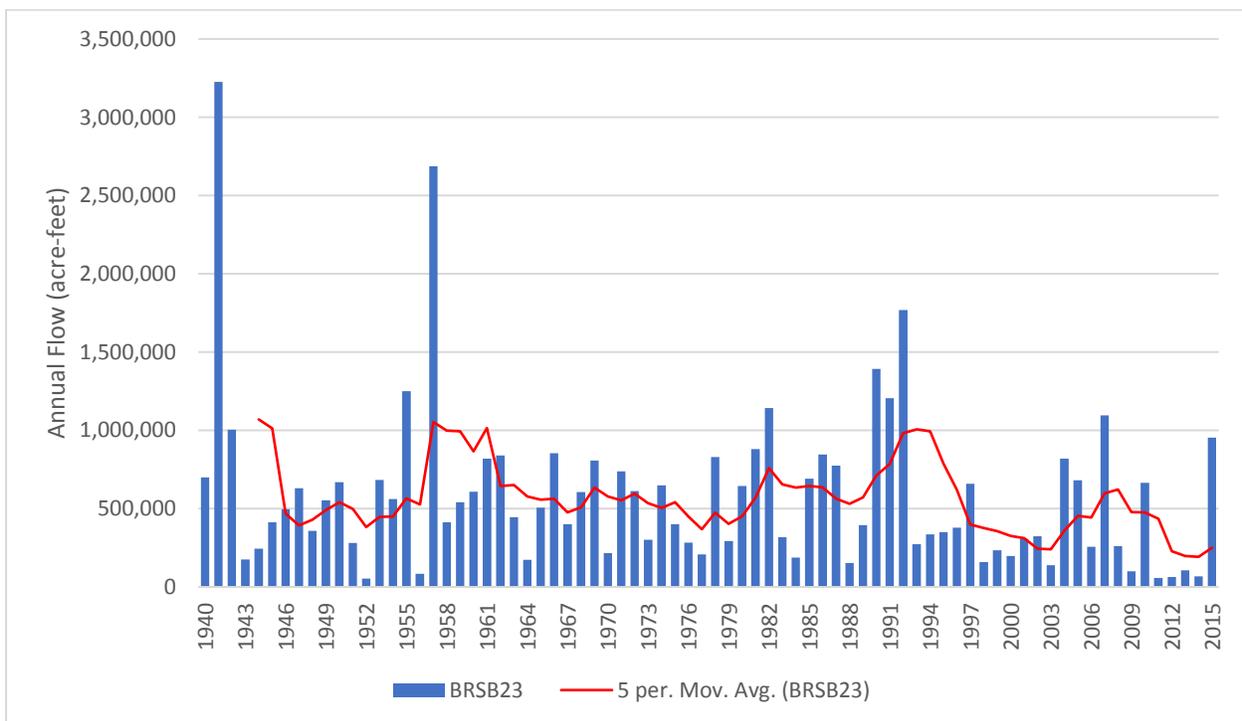
WAM Control Point	Gage Name	Description	Period Average	50s Drought Average	Recent Drought Average
BRBS23	Brazos River near South Bend	Upstream of Possum Kingdom	585,848	511,982	188,884
BRPP27	Brazos River near Palo Pinto	Downstream of Possum Kingdom	723,011	585,990	251,067
BRGR30	Brazos River near Glen Rose	Downstream of Lake Granbury	1,012,213	699,041	389,599
BRAQ33	Brazos River near Aquilla	Downstream of Lake Whitney	1,287,033	775,676	602,903
AQAQ34	Aquilla Creek near Aquilla	Downstream of Lake Aquilla	89,896	31,097	66,659
LEHS45	Leon River near Hasse	Downstream of Lake Proctor	118,472	56,149	31,619
LEBE49	Leon River near Belton	Downstream of Lake Belton	501,966	137,990	266,111
LABE52	Lampasas River near Belton	Downstream of Lake Stillhouse Hollow	231,687	67,198	128,045
NGGE54	North Fork San Gabriel River near Georgetown	Downstream of Lake Georgetown	56,923	13,309	27,705
GALA57	San Gabriel River at Laneport	Downstream of Lake Granger	190,419	42,824	103,836
YCSO62	Yegua Creek near Somerville	Downstream of Lake Somerville	225,115	73,377	92,861
NAEA66	Navasota River near Easterly	Downstream of Lake Limestone	333,788	129,930	241,177
BRR170	Brazos River at Richmond	Lower Basin	5,808,649	2,271,019	3,119,364

Notes: Period Average is the 76-year period of the naturalized flows, 1940 to 2015.

50s Drought Average is the 7-year period from 1950 to 1956.

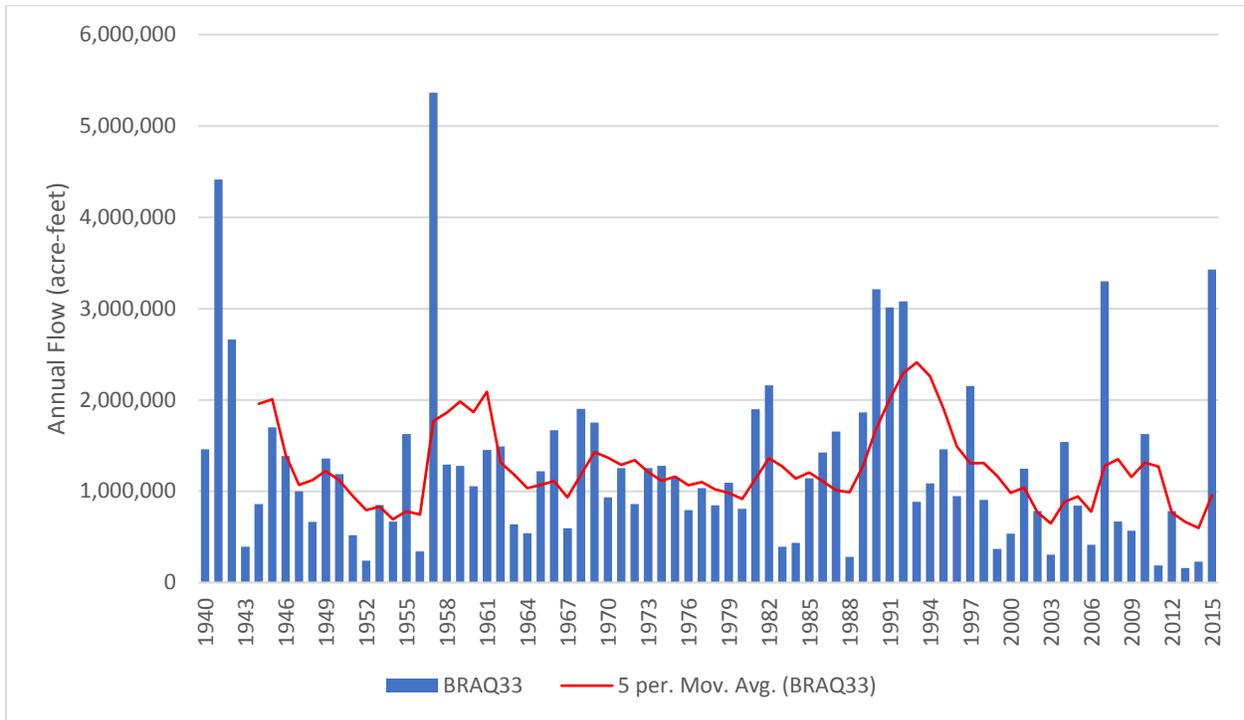
Recent Drought Average is the 7-year period from 2008 to 2014.

Figure 2 shows the annual naturalized flows for the Brazos River near South Bend. A 5-year moving average has been added to the chart to show trends in the data. This chart shows that for this gage, there are only two years in the 1950s that have very low flows – 1952 and 1956. Flows in 1955 are well above average. In the more recent drought, there are four consecutive years of very low flow from 2011 to 2014. Flows in 2009 are very low as well. This chart shows that the more recent drought is considerably more severe than the 1950s drought.



**Figure 2: Annual Naturalized Flows for the Brazos River near South Bend Gage (USGS 08088000)**

Figure 3 shows the annual naturalized flows for the Brazos River near Aquilla gage, which is located just downstream of Lake Whitney. In the 1950s drought, there are two years of abnormally low flow (1952 and 1956), while the more recent drought has three years (2011, 2013 and 2014). The more recent drought is worse, but the data show a trend toward the 1950s drought being similar in severity.

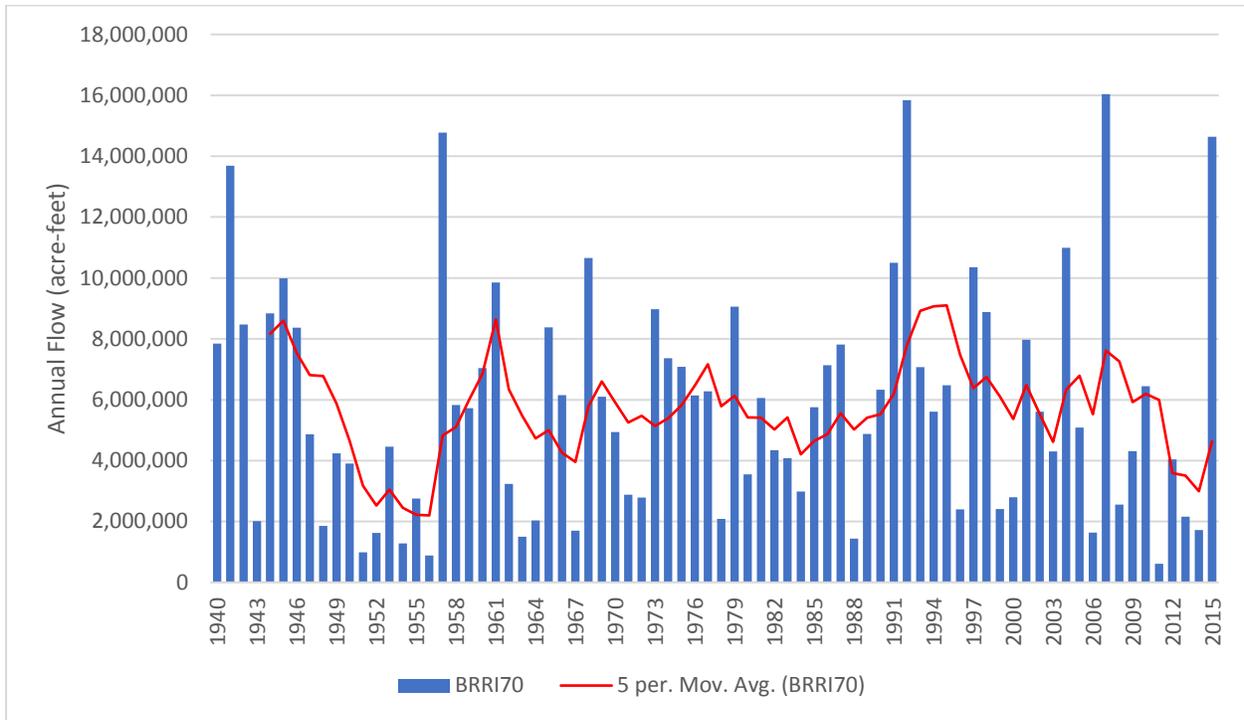


**Figure 3: Annual Naturalized Flows for the Brazos River near Aquilla Gage (USGS 08093100)**

Figure 4 shows the annual naturalized flows for the Brazos River at Richmond gage, which is located in the lower basin below all BRA System reservoirs. Much of the existing and future demand expected to be met by the System Operation Permit is located near this gage.

Although 2011 has the lowest annual flows of any year in the analysis period, the more recent drought is less severe than the 1950s drought.

Figures 2, 3, and 4 demonstrate the trend on the main stem of the Brazos River from Lake Possum Kingdom downstream. In the upper part of the BRA System, the more recent drought is the most severe. This trend reverses as you go downstream in the basin.

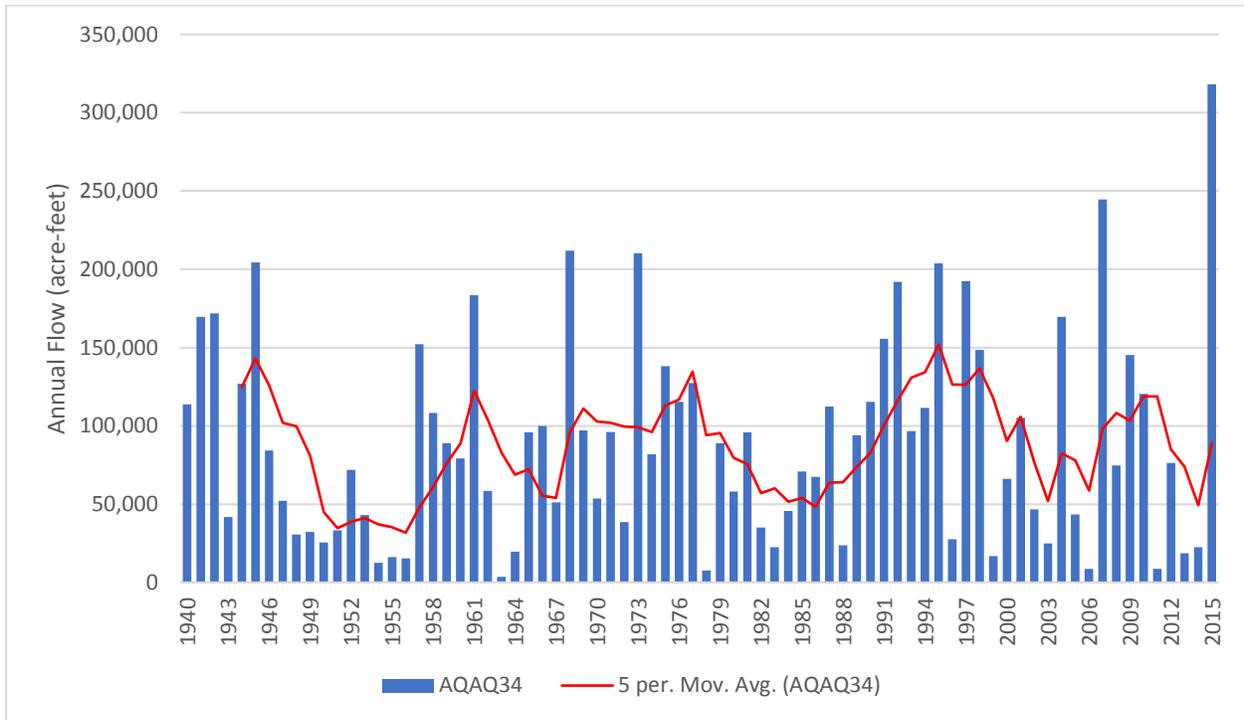


**Figure 4: Annual Naturalized Flows for the Brazos River at Richmond Gage (USGS 08114000)**

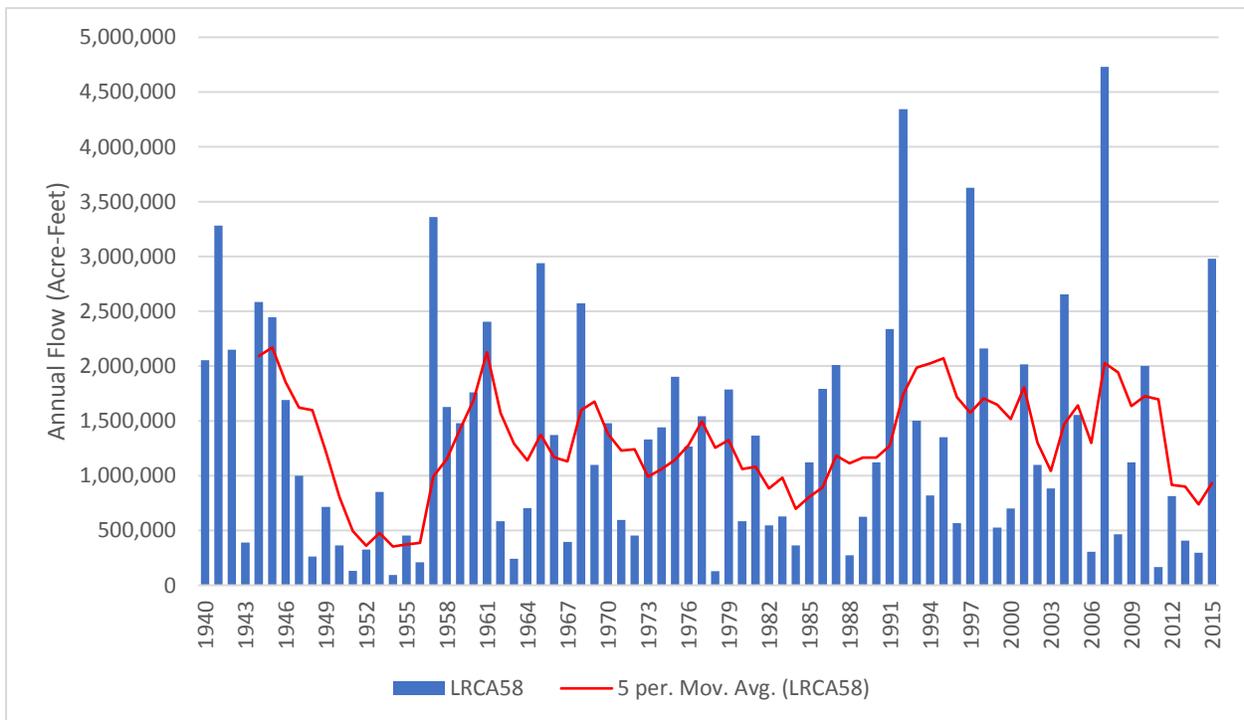
Figures 5 through 8 show the annual naturalized flows for major tributaries of the Brazos River, which are the locations of most of the BRA System reservoirs. Except for the tributaries near Lake Proctor (upper Little River watershed), the 1950s drought appears to be the worst drought in the record.

Annual plots of all the gages in Table 1 may be found in Appendix A.

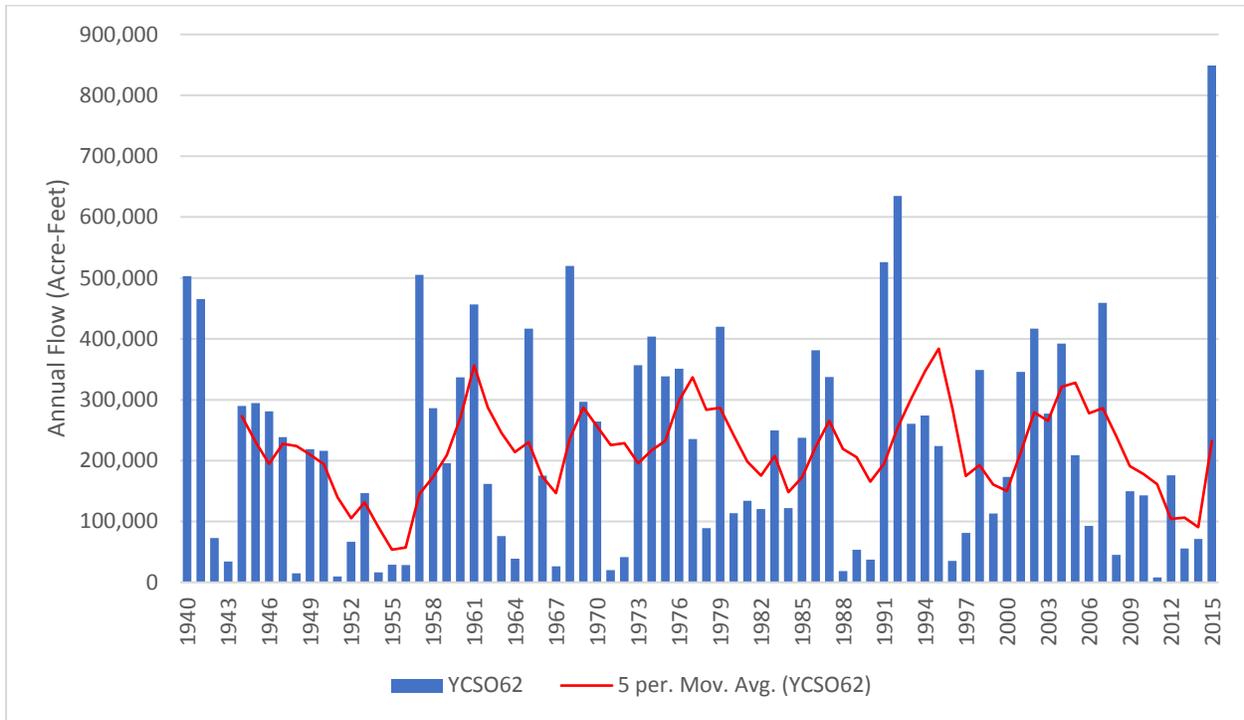
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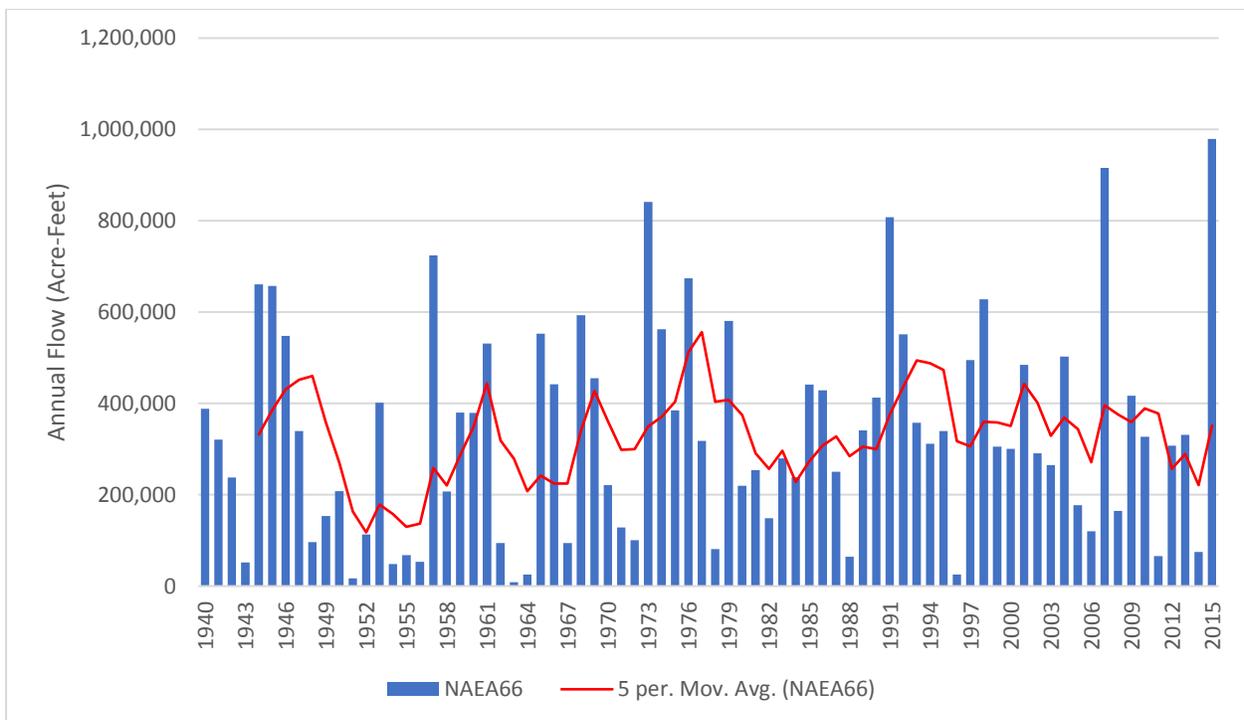
**Figure 5: Annual Naturalized Flows for the Aquilla Creek near Aquilla Gage (USGS 08093500)**



**Figure 6: Annual Naturalized Flows for the Little River near Cameron Gage (USGS 08106500)**



**Figure 7: Annual Naturalized Flows for the Yegua Creek near Somerville Gage (USGS 08110000)**



**Figure 8: Annual Naturalized Flows for the Navasota River near Easterly Gage (USGS 08110500)**

### 3.2 IMPACT ON BRA SYSTEM RESERVOIR STORAGE

The next two sections look at the impacts of drought on individual BRA System reservoirs. The charts in this section are the storage traces of each of the BRA System reservoirs assuming (a) the full permitted diversion at each reservoir and (b) full permitted storage without any return flows. These are the assumptions used in the Full Authorization Scenario (Run 3) of the Brazos WAM, which is the run TCEQ uses for permitting. As such, these storage traces represent full use of the appropriation for the BRA’s existing water rights associated with each reservoir. The storage traces do not include potential changes in storage due to the application of the System Operation Permit or the BRA System Order. With the System Operation Permit, reservoir drawdowns during wet to normal conditions would not be as severe, but during drought conditions drawdowns could be greater.

Figure 9 shows the storage trace for Possum Kingdom Lake. Note that the minimum content in 1953 is about 270,000 acre-feet, while the reservoir goes dry for several months in 2014-2015.

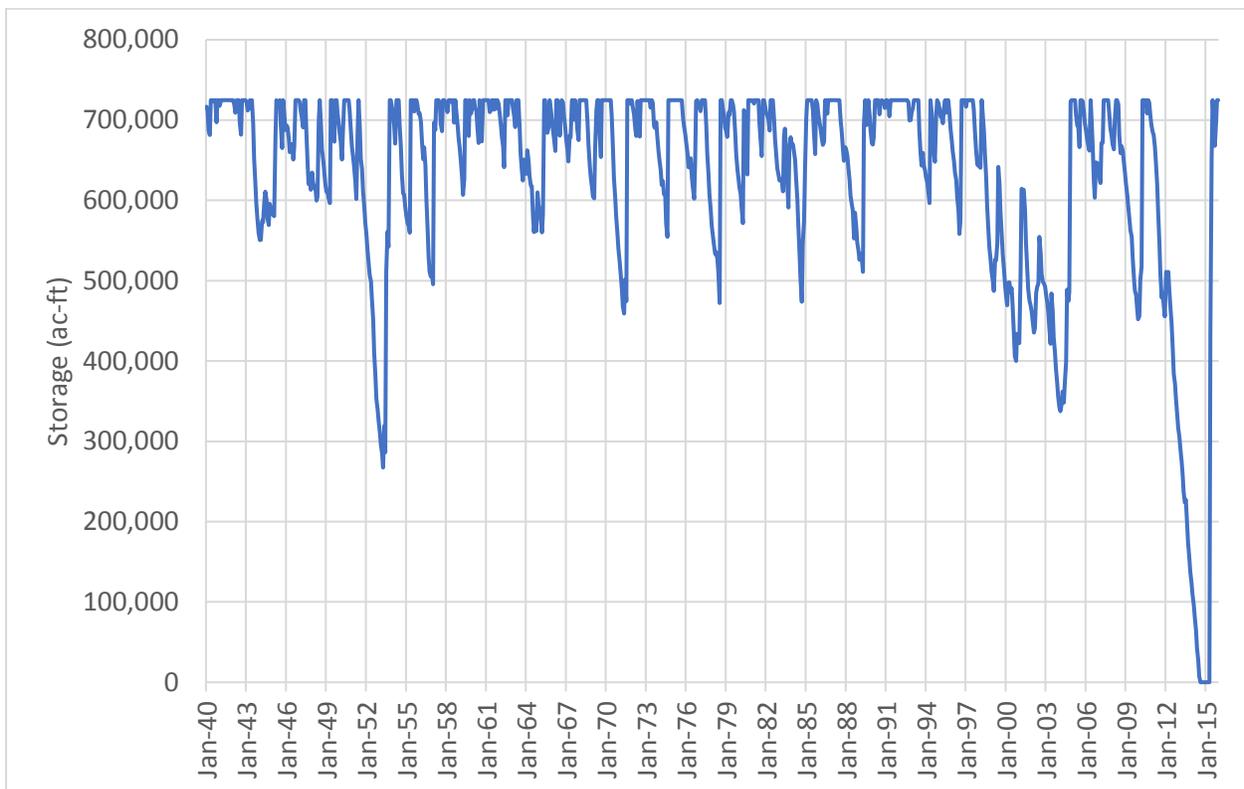
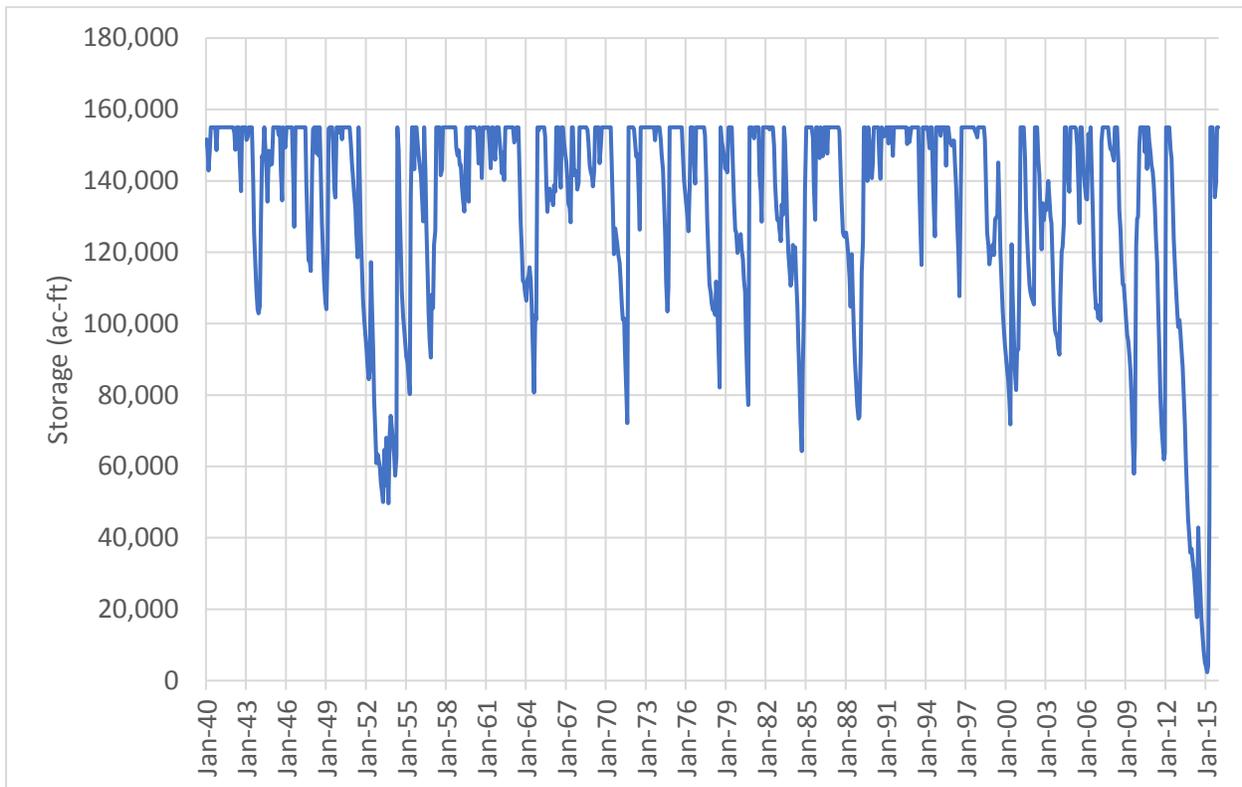


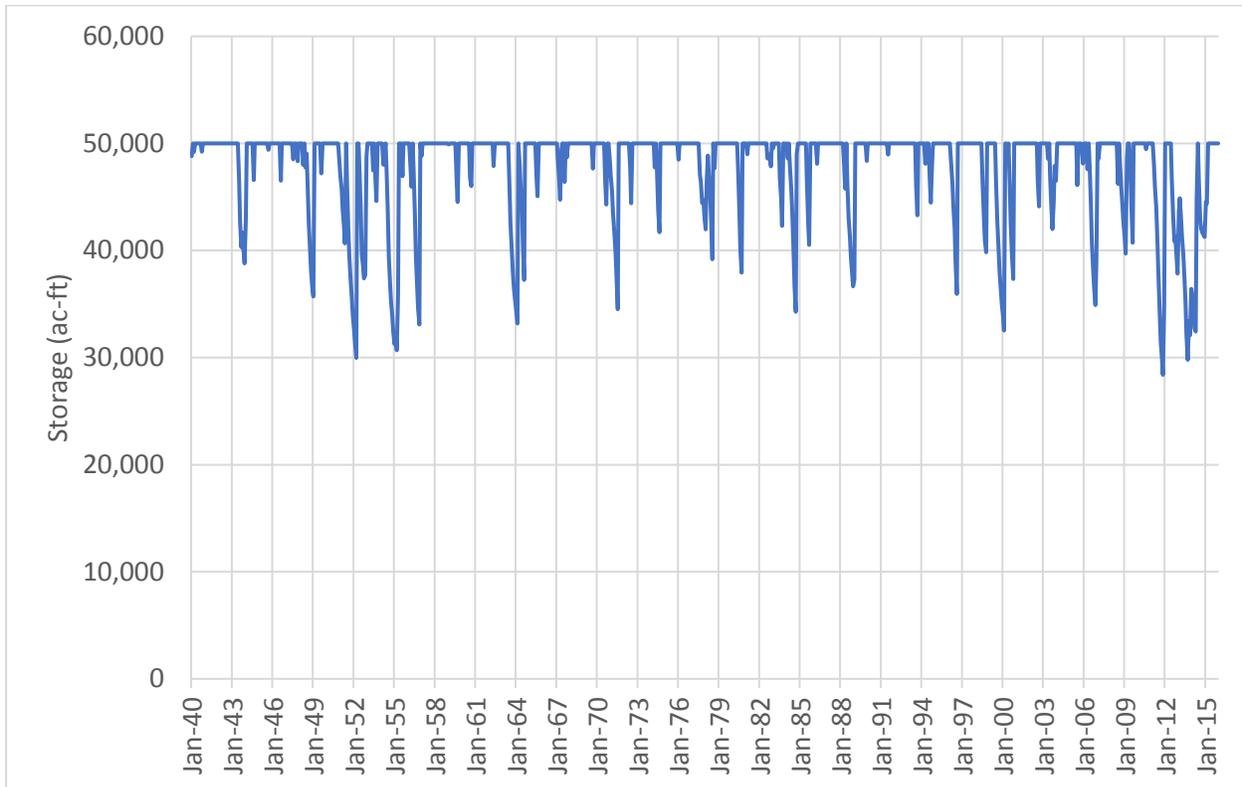
Figure 9: Run 3 Storage Trace for Possum Kingdom Lake

Figure 10 shows the same data for Lake Granbury. Similar to Possum Kingdom Lake, the more recent drought has much lower storage than the 1950s drought. The only difference is that instead of the reservoir going dry, there is a small amount of storage left at the lowest point in the record.



**Figure 10: Run 3 Storage Trace for Lake Granbury**

Figure 11 shows the storage trace for the BRA’s portion of the storage in Lake Whitney. (The BRA only has the right to use about 8 percent of the modeled storage in the reservoir using Run 3 original capacity assumptions. The remaining storage is associated with hydropower generation and does not have a Texas water right.) The lowest point in the storage trace is 28,391 acre-feet in November 2011. Storage volumes in March 1952 and September 2013 are almost as low. Although the recent drought may be a little worse than the 1950s drought for Lake Whitney, it is not much worse.



**Figure 11: Run 3 Storage Trace for Lake Whitney**

Figure 12 is the Run 3 storage trace for Lake Aquilla. Lake Aquilla is located to the east of Lake Whitney, on a tributary of the Brazos River that joins the main stem of the river just below Lake Whitney. The storage trace for this reservoir shows that the drought of the 1950s is still the drought of record for this reservoir, even though it is in the same general area as Lake Whitney.

Figure 13 shows the storage trace for Lake Proctor operating under Run 3 conditions. There are several significant drawdown periods for this reservoir, with the lake going completely dry for three months in 1954-1955, for 3 months in 2011, and 8 months in 2014-2015. It appears that the more recent drought is the worst drought in the record.

Figure 14 is the Run 3 storage trace for Lake Belton. This storage trace is for the full storage in the reservoir, including both the BRA storage and storage associated with CA No. 12-2936, held by the U.S. Department of the Army. This storage trace clearly shows that the 1950s drought is the worst drought in the simulation.

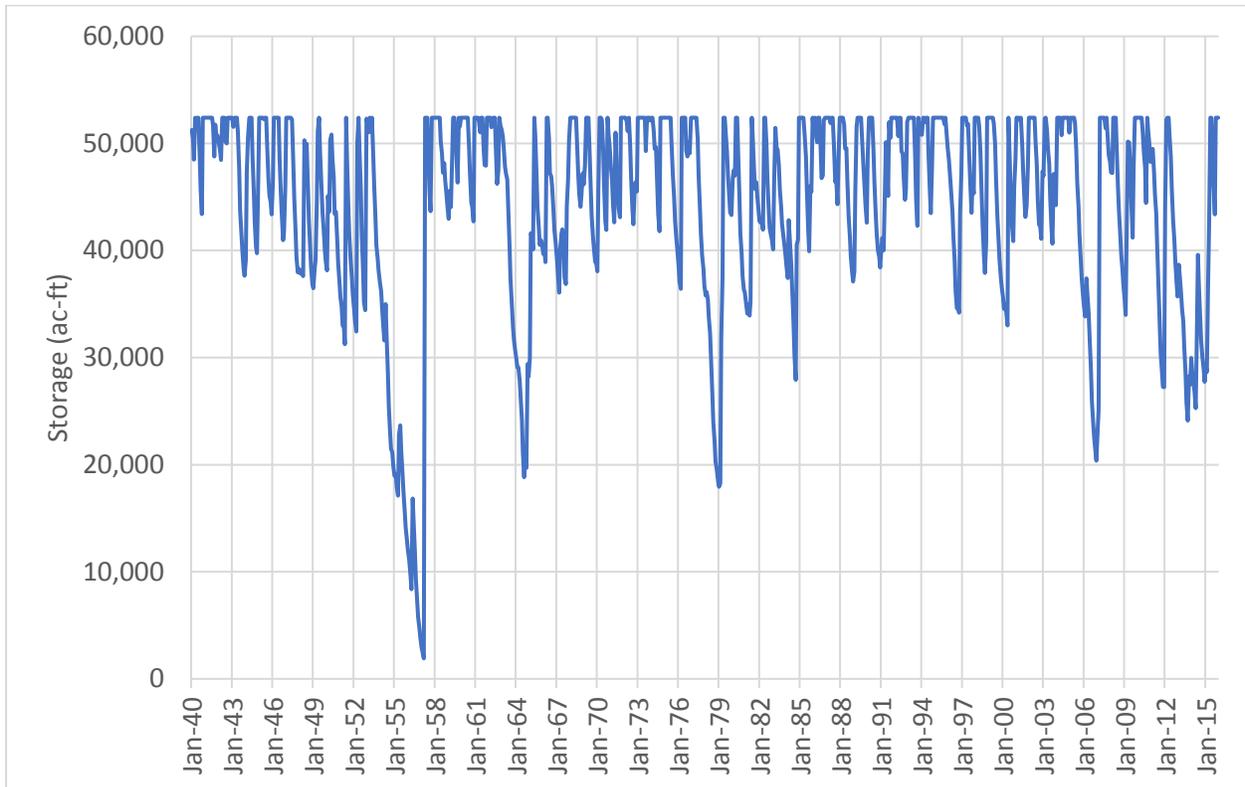


Figure 12: Run 3 Storage Trace for Lake Aquilla

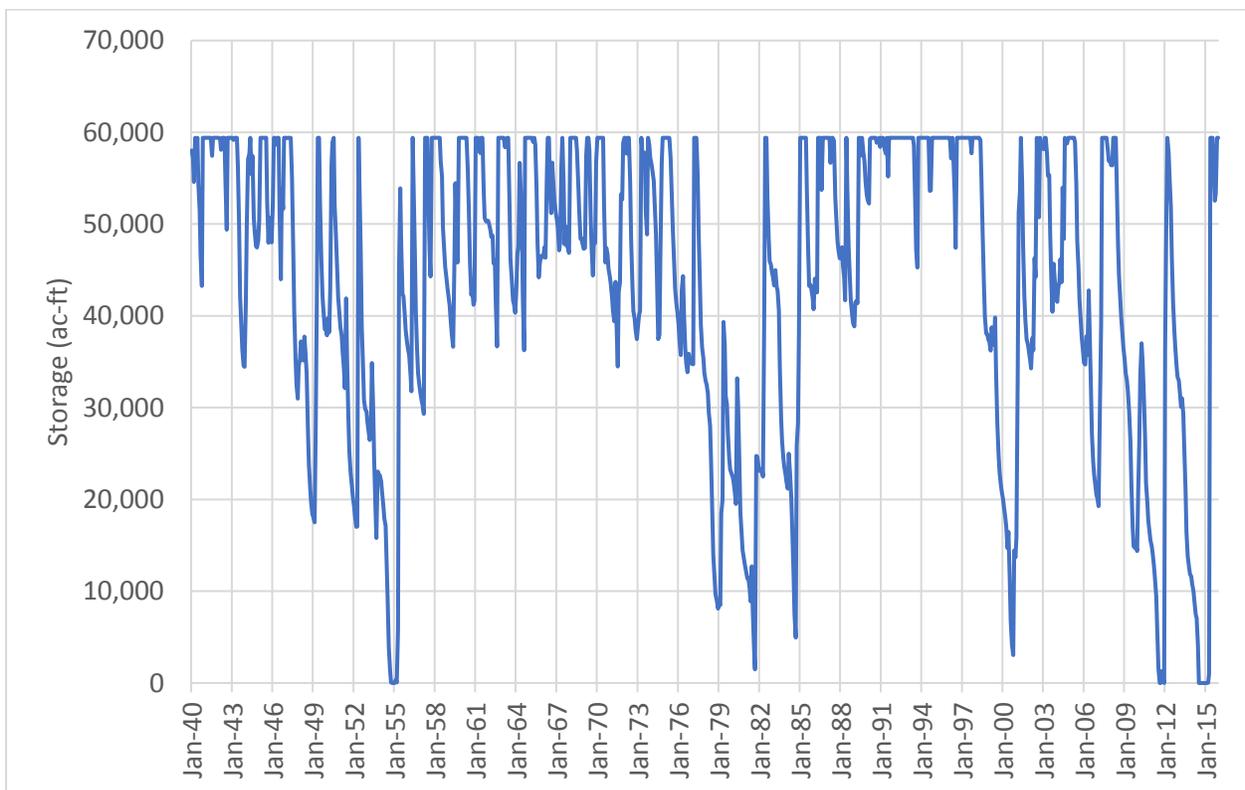
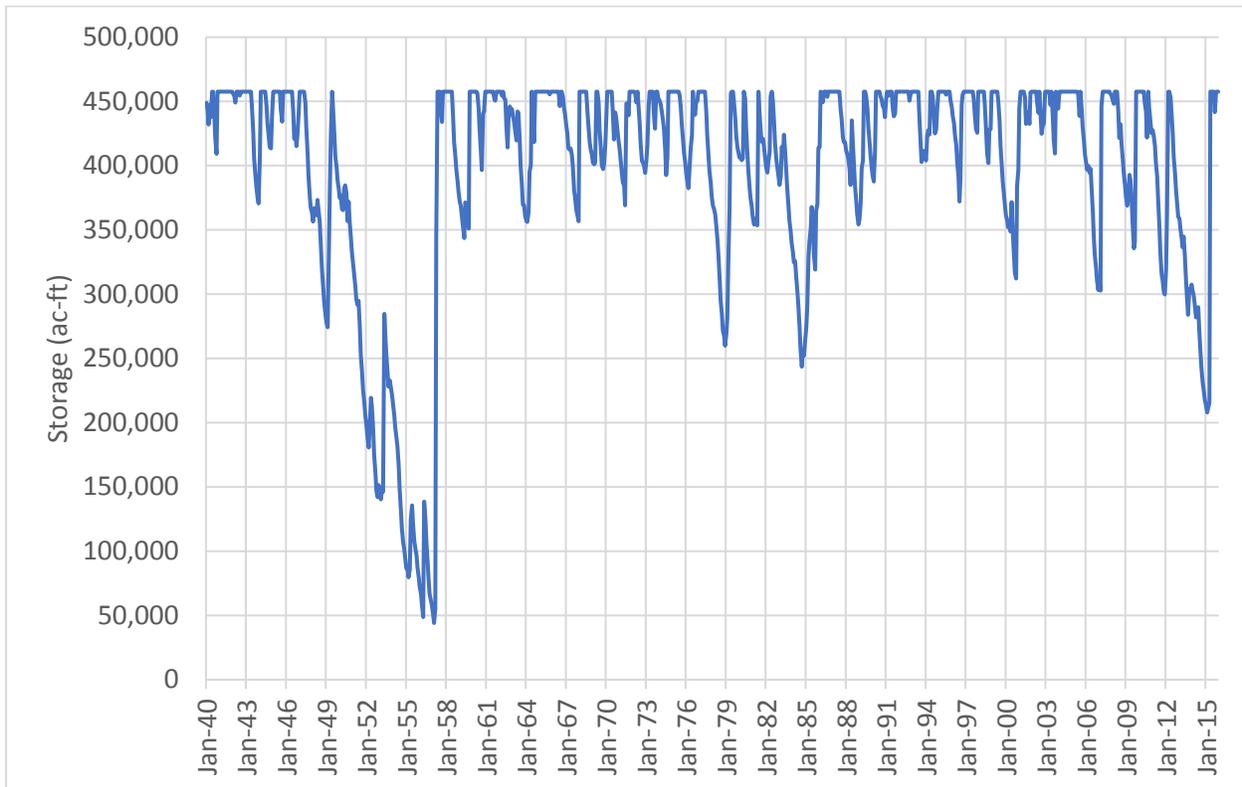


Figure 13: Run 3 Storage Trace for Lake Proctor



**Figure 14: Run 3 Storage Trace for Lake Belton**

Figure 15 is the Run 3 storage trace for Lake Stillhouse Hollow. For this reservoir, the worst drought remains the drought of the 1950s. Under Run 3 conditions, the reservoir goes dry in 13 months between January 1952 and February 1957.

Figure 16 is the storage trace for Lake Georgetown operating under Run 3 conditions. Using these assumptions, the reservoir goes dry for 5 months in 1951 and 1952, 8 months in 1956 and 1957, and 7 months in 2014 and 2015. Because there are more months that the reservoir is dry in the 1950s, it appears that the 1950s is the worst drought in the analysis period.

Figure 17 is the Run 3 storage trace for Lake Granger. For this reservoir, the 1950s drought is much worse than the recent drought. The reservoir goes empty for 6 months in the 1950s.

Figure 18 is the Run 3 storage trace for Lake Somerville. For this reservoir, the 1950s drought is clearly the drought of record. The reservoir goes dry for 5 months in the 1950s.

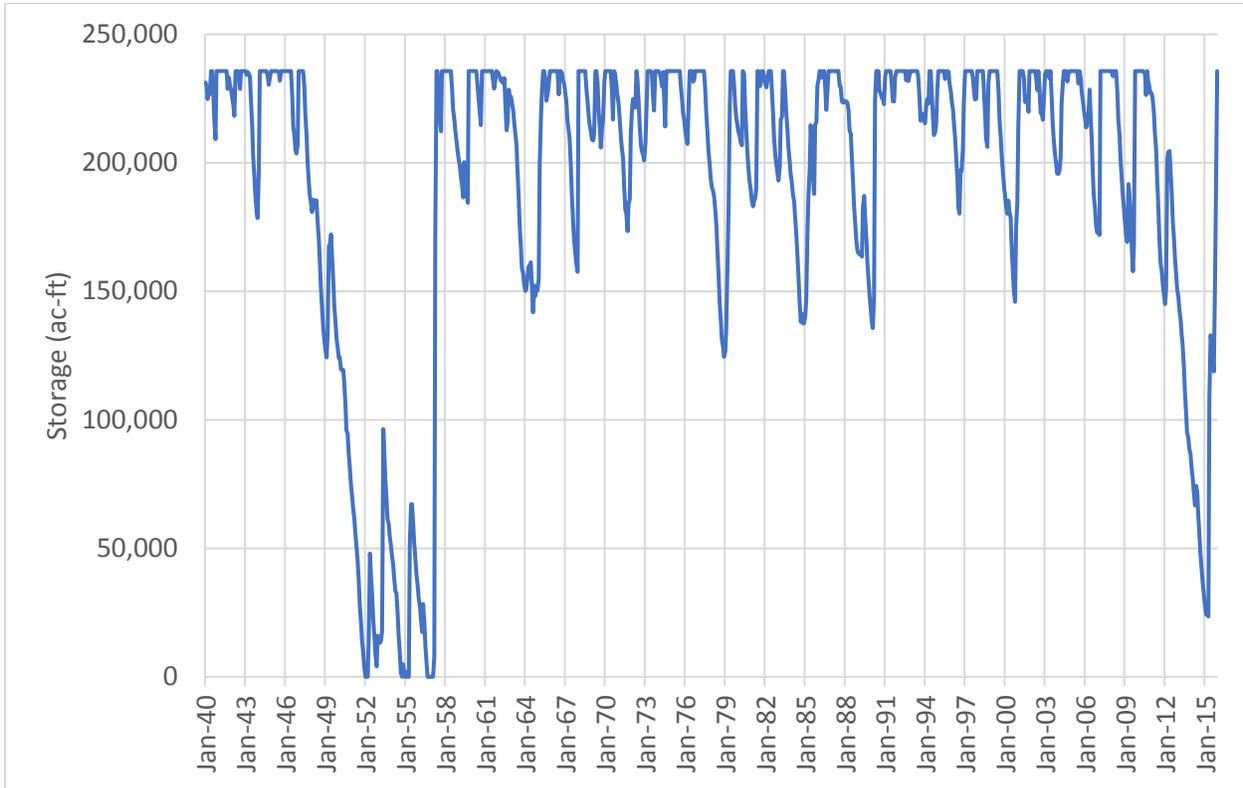


Figure 15: Run 3 Storage Trace for Lake Stillhouse Hollow

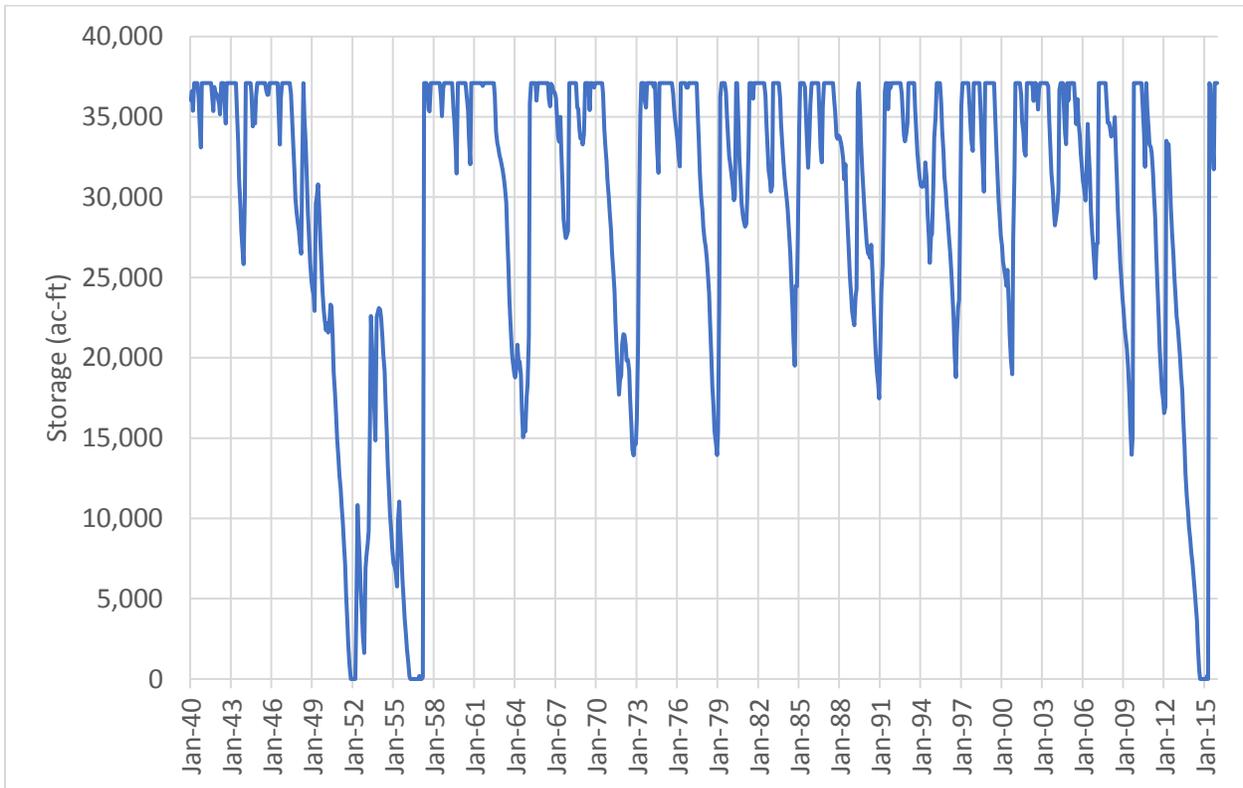
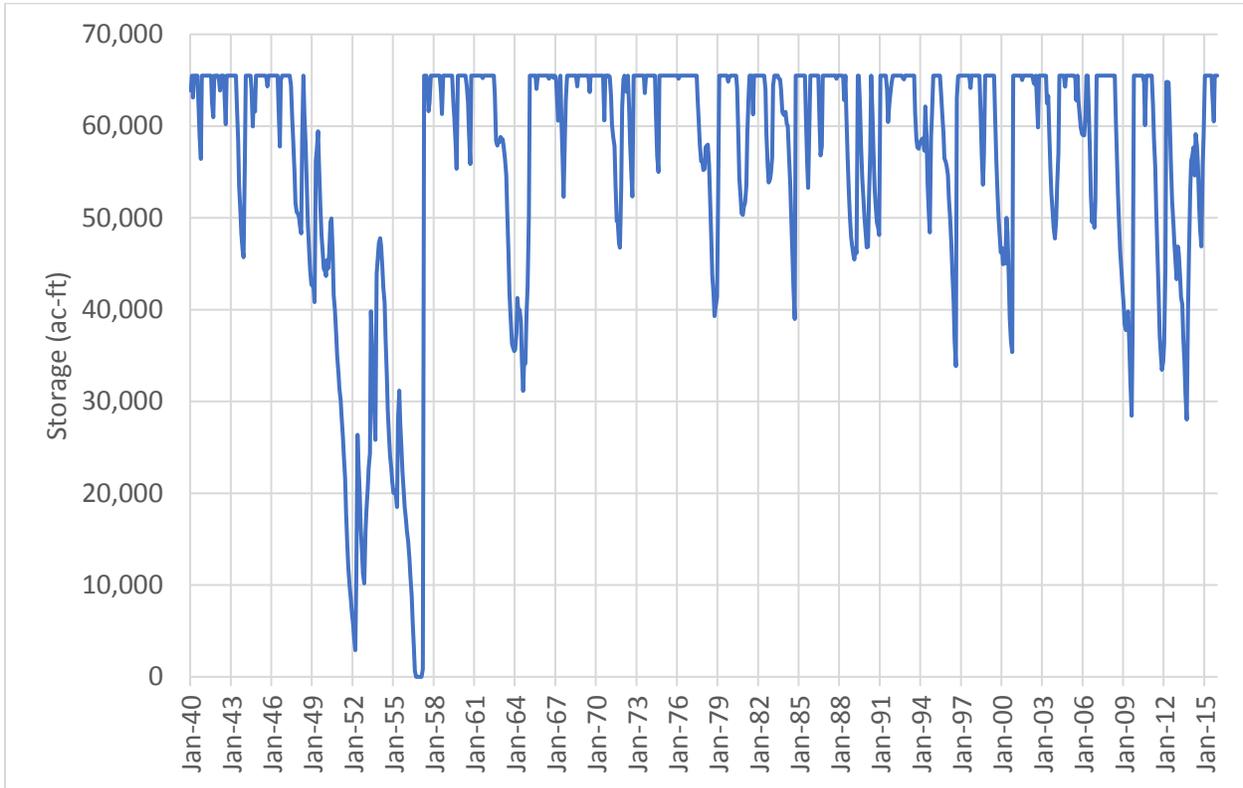
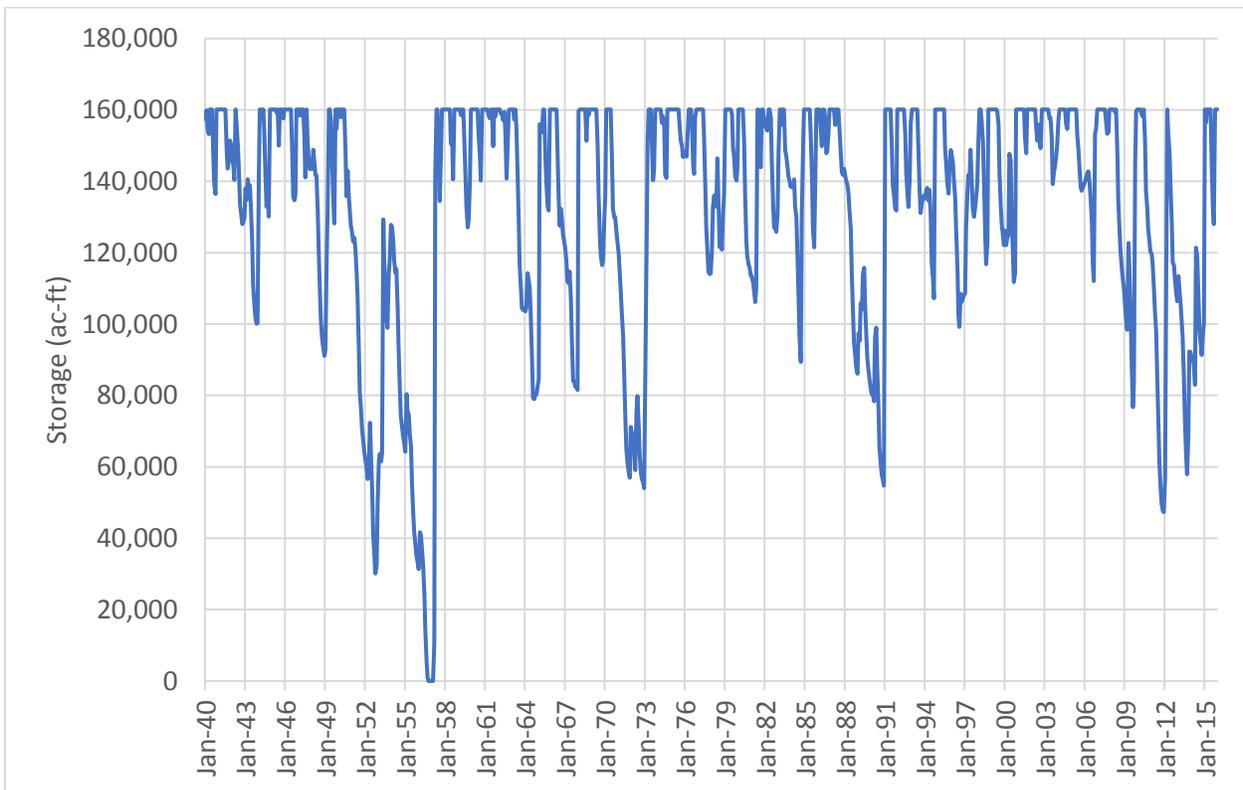


Figure 16: Run 3 Storage Trace for Lake Georgetown



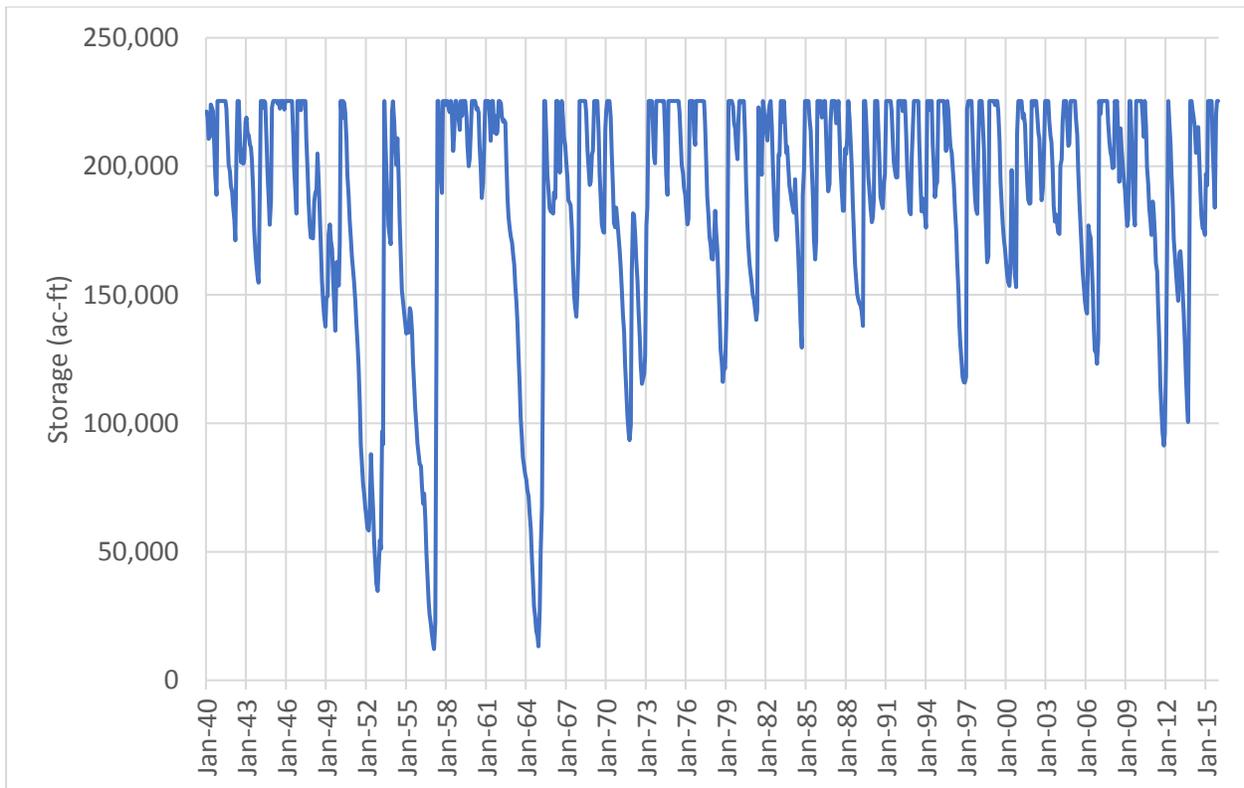
**Figure 17: Run 3 Storage Trace for Lake Granger**



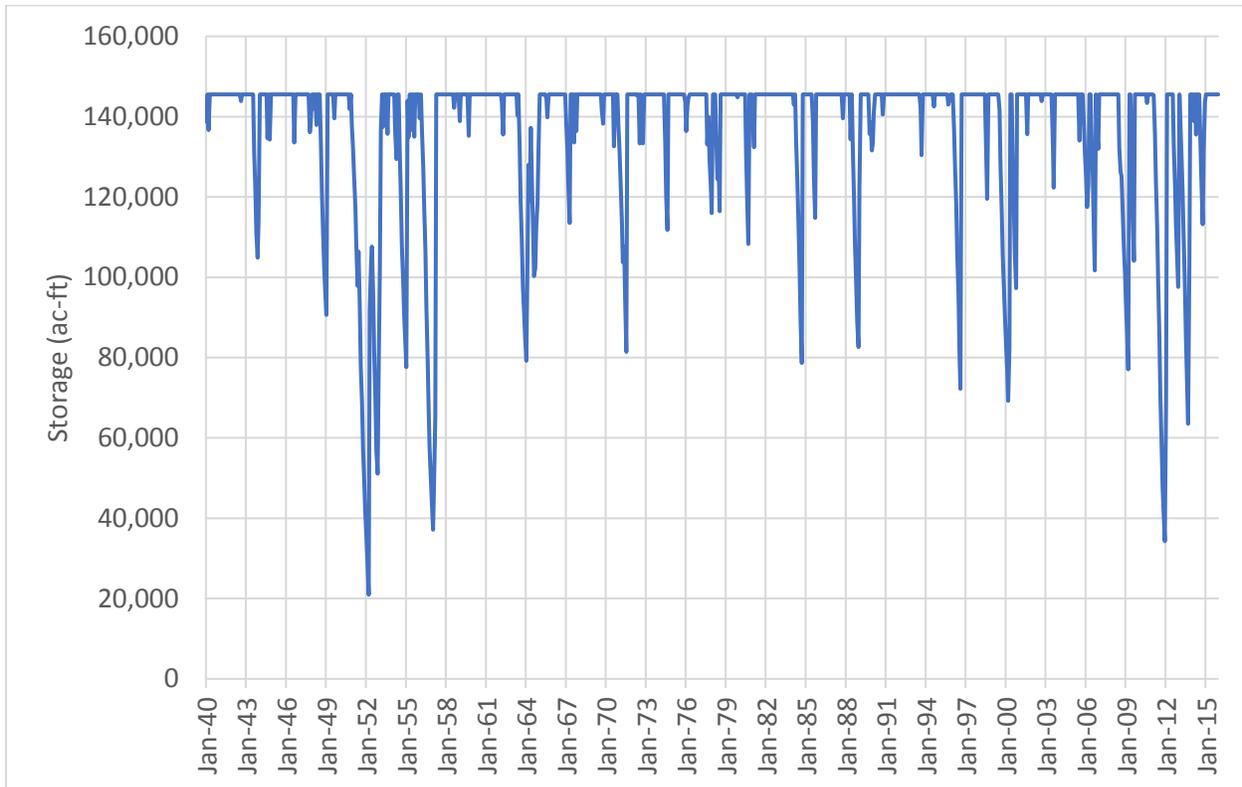
**Figure 18: Run 3 Storage Trace for Lake Somerville**

Figure 19 is the Run 3 storage trace for Lake Limestone. For this reservoir, the lowest storage occurs in February 1957, so the 1950s drought is the worst drought in the record. However, the storage is almost as low in December 1964.

Figure 20 is the Run 3 storage trace for the proposed Allens Creek Reservoir. The lowest storage point in the reservoir is in March 1952, making the 1950s drought the drought of record.



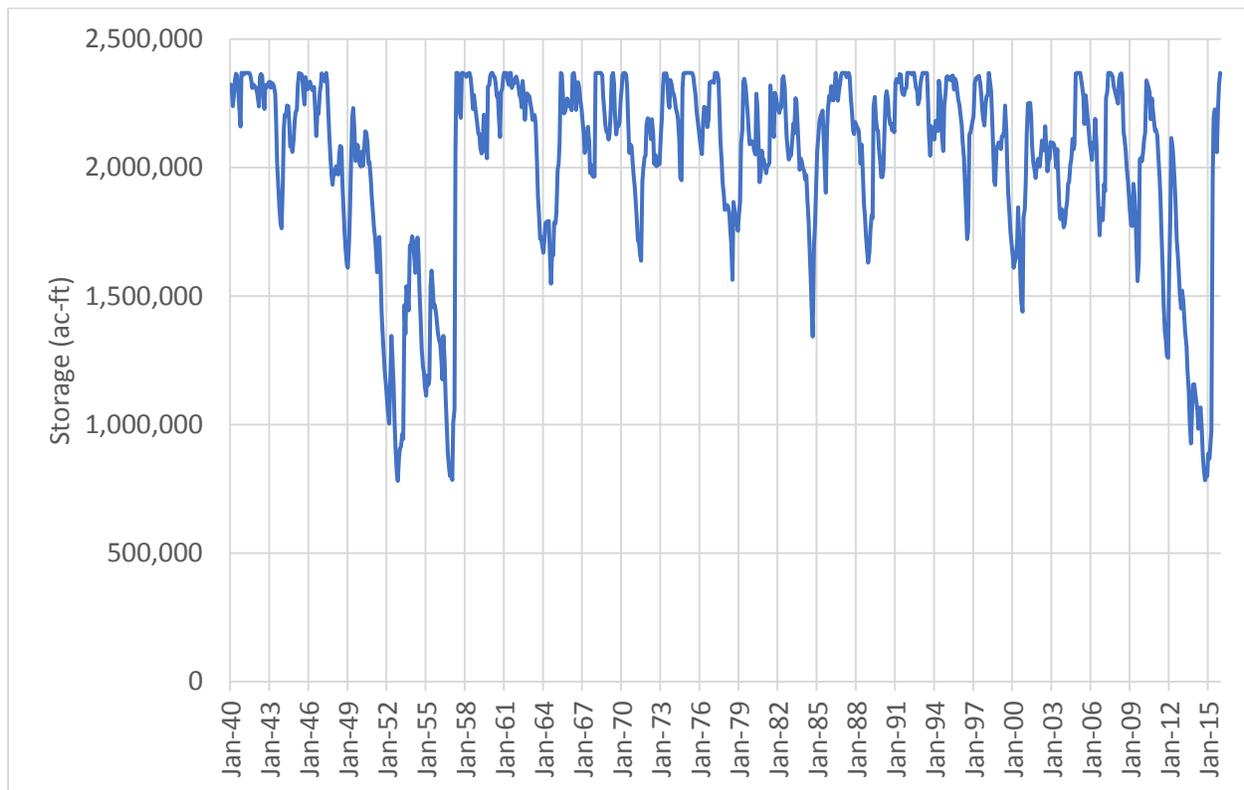
**Figure 19: Run 3 Storage Trace for Lake Limestone**



**Figure 20: Run 3 Storage Trace for Allens Creek Reservoir**

Figure 21 shows the total volume of water in storage in the BRA System throughout the Run 3 simulation of all the reservoirs operated independently at their permitted diversions. Note that there are three minimum storage points:

- October 1952 is the lowest storage point, with a combined system storage of 780,899 acre-feet. This point occurs 66 months after the last point the system is completely full in May 1947.
- January 1957 has 784,936 acre-feet of water in storage. This point occurs 50 months after the previous minima and 116 months after the last point the system is completely full, and the system storage remains low throughout those months.
- October 2014 has 783,504 acre-feet of water in storage. This point occurs 87 months after the system was full in July 2007. It should be noted that the system is almost full in May 2008, with only 2,126 acre-feet of empty storage. If this point is used, then the drought period is 10 months shorter.

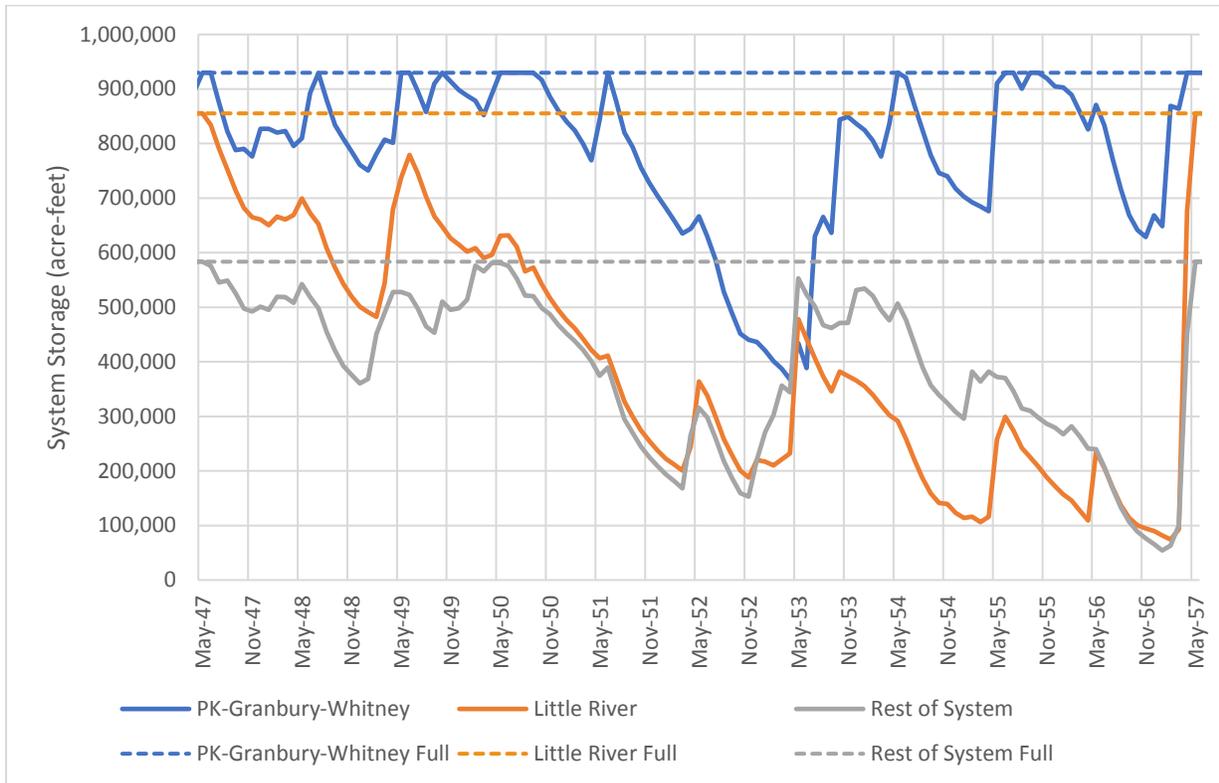


**Figure 21: Total BRA System Storage Run 3**

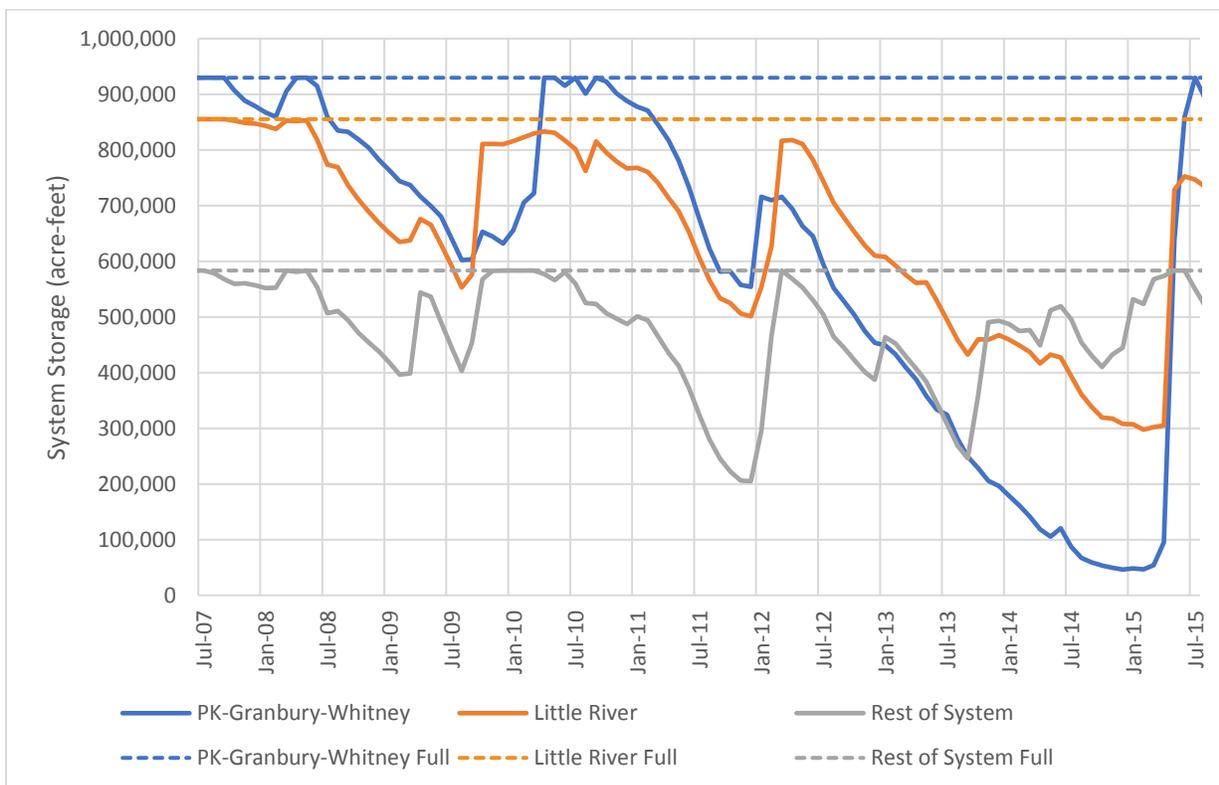
Looking at the total storage in the BRA System, the worst drought for the system is the period from May 1947 to January 1957. It is the longest period of drawdown and includes the lowest point in the system storage. It is also interesting to note that the minimum storage of the system as a whole is over 780,000 acre-feet. This implies that even though on an individual reservoir basis there is very little unpermitted yield under Run 3 assumptions, for the system there is additional yield available.

Figure 22 and Figure 23 divide the total system storage into three subsystems:

- *PK-Granbury-Whitney* which consists of the combined Run 3 storage of Lake Granbury, Possum Kingdom Lake, and the BRA's portion of the Lake Whitney storage.



**Figure 22: Comparison of System Storage 1950s Drought**



**Figure 23: Comparison of System Storage Recent Drought**

- *Little River* which consists of the five reservoirs – Lake Proctor, Lake Belton, Lake Stillhouse Hollow, Lake Georgetown and Lake Granger -- - on tributaries of the Little River.
- *Rest of System* which is the remaining four reservoirs – Lake Aquilla, Lake Limestone, Lake Somerville and Allens Creek Reservoir.

Figure 22 shows several interesting characteristics of the 1950s drought:

- The drought for the Little River subsystem begins in 1947 and the system does not refill until 1957. At its lowest point in early 1957, the Little River subsystem has about 74,000 acre-feet of water in storage.
- The worst period for the PK-Granbury-Whitney subsystem begins in 1951 and reaches its lowest point in 1953. After that, this subsystem is relatively full for the remainder of the 1950s drought. At its lowest point in April 1953, this subsystem has about 367,000 acre-feet of water in storage.
- The Rest of System begins its worst drought in 1950, several years after the Little River subsystem enters drought conditions, but almost a year before the PK-Granbury-Whitney subsystem. At its lowest point in early 1957, the Rest of System has about 54,000 acre-feet of water in storage.

Figure 23 shows the characteristics of the recent drought:

- The Little River subsystem is last full in September 2007, but almost fills in 2008, 2010 and 2012. At its lowest point in the recent drought, the subsystem has almost 300,000 acre-feet of water in storage.
- The worst period for the PK-Granbury-Whitney subsystem begins in 2010. At its lowest point, this subsystem has 46,311 acre-feet of water in storage.
- The worst period for the Rest of System begins in July 2010. At its lowest point in December 2011 this subsystem has about 204,000 acre-feet of water in storage. When

the other two subsystems are at their lowest point at the beginning of 2015, these reservoirs have already begun recovering from a low of about 400,000 acre-feet at the end of 2014.

The Run 3 storage traces discussed in this section show that Possum Kingdom Lake, Lake Granbury, Lake Proctor and possibly Lake Whitney have a new drought of record in the 2008-2015 drought. For the eight remaining BRA System reservoirs, the worst drought remains the 1950s drought.

When examined as a whole, the minimum storage in the BRA System is similar in the 1950s drought and the recent drought, although the 1950s drought appears to be of longer duration. Dividing the BRA System reservoirs into three different subsystems shows that these different subsystems react slightly differently to drought conditions. This indicates that, through system operation, these reservoirs can be operated to create additional yield. This is discussed in Section 3.4.

### **3.3 IMPACT ON INDIVIDUAL RESERVOIR YIELDS**

Table 2 shows the firm yield of the BRA System of reservoirs assuming TCEQ Full Authorization (Run 3) conditions (all rights diverting at their full authorization, original storage-area characteristics and no return flows). The firm yield of the system is about 39,000 acre-feet per year less than the total authorizations, with most of the reduction occurring at Possum Kingdom Lake.

The yields in Table 2 are limited to the authorized diversion in the reservoir's water right. There is a small amount of additional yield under Run 3 conditions in Lake Whitney, Lake Belton, Lake Limestone, and Allens Creek Reservoir that could be accessed either through the BRA's System Order or through the System Operation Permit, but it is not included in Table 2.

**Table 2: Firm Yields of BRA System Reservoirs, Full Authorization (Run 3) Conditions**

Reservoir	Authorized Diversion (Ac-Ft/Year)	Firm Yield (Ac-Ft/Year)	Critical Period Start	Critical Period End
Possum Kingdom	230,750	208,960	Oct-10	Mar-15
Granbury	64,712	64,712	May-12	Feb-15
Whitney	18,336	18,336	Mar-11	Nov-11
Aquilla	13,896	13,896	Jun-53	Mar-57
Proctor	19,658	15,430	Apr-12	Feb-15
Belton	100,257	100,257	Jun-47	Feb-57
Stillhouse Hollow	67,768	61,660	Jun-47	Feb-57
Georgetown	13,610	11,095	Jun-48	Feb-57
Granger	19,840	17,860	Jun-48	Feb-57
Somerville	48,000	45,630	Jul-50	Feb-57
Limestone	65,074	65,074	Jun-53	Feb-57
Allens Creek	99,650	99,650	Dec-50	Mar-52
<i>Total</i>	<i>761,551</i>	<i>722,560</i>	--	--

Firm Yields are limited to the Authorized Diversion.  
 Critical Period Start is the month after the reservoir was last full at the beginning of the worst drought in the simulation.  
 Critical Period End is the month with the greatest drawdown, which always occurs during the worst drought in the simulation.

### 3.4 IMPACT ON SYSTEM YIELD

This section describes the impact of drought on the yield of the BRA System operating with the System Operation Permit as described in the BRA’s Water Management Plan<sup>3,4</sup> (WMP). The modeling in the WMP used several variations of the TCEQ’s Brazos WAM, modified to include the System Operation Permit (Water Use Permit No. 5851). The appropriation models (also referred to as the Firm Use Scenarios) were used as the basis for the appropriations found in the System Operation Permit.

The appropriation modeling used for the permit has all the BRA customers diverting their full contract amounts, plus projected future demands identified in the 2012 State Water Plan. The

<sup>3</sup> Brazos River Authority: *Water Management Plan for Water Use Permit No. 5851*, May 2014.

<sup>4</sup> Brazos River Authority: *Technical Report in Support of the Water Management Plan for Water Use Permit No. 5851*, May 2014.

modeling is described in detail in the *Technical Report in Support of the Water Management Plan*.

In the Water Management Plan, the appropriation of water by the System Operation Permit was analyzed under four demand scenarios. These scenarios were designed to determine the impact of Allens Creek Reservoir and the proposed expansion at the Comanche Peak Nuclear Power Plant (CPNPP) on the potential use of appropriations by the BRA under its other water rights and the System Operation Permit. Four different demand levels are used in the scenarios, referred to using the letters A through D. The demands change because of assumptions about the CPNPP expansion and the presence of Allens Creek Reservoir. These projects are addressed separately because of their significant impact on water supply. Demand levels A and C do not have the CPNPP expansion. Demand levels B and D assume that the CPNPP expansion is in place. Demand levels A and B do not have Allens Creek Reservoir, while demand levels C and D assume that supplies are available from this source. Each of these demand levels has a different associated maximum diversion under the System Operation Permit, as well as the maximum yield of the system. These are summarized in Table 3. This table also includes the WMP run name that is the basis of the yield and diversion amounts. The maximum System Operation diversions were incorporated into Water Use Permit No. 5851, the System Operation Permit.

**Table 3: Demand Scenarios Used in Appropriation Modeling**

Demand Level	WMP Run Name	CPNPP Expansion	Allens Creek Reservoir	Maximum SysOps Diversion (acre-feet per year)	System Yield (acre-feet per year)
A	Firm 3	N	N	381,068	947,660
B	Firm 6	Y	N	344,625	939,365
C	Firm 9	N	Y	516,955	1,090,660
D	Firm 12	Y	Y	482,035	1,086,365

Evaluation of the impact of the more recent drought on the BRA System and the System Operation Permit required extension of the hydrology of the Brazos WAM to include the more recent drought. Extension of the hydrology is described in Section 2.0 of this report, with more detailed information in Attachment 1. This hydrology was added to the existing appropriation models. Running these models without modifications resulted in significant shortages for demands on the main stem of the Brazos River during the more recent drought, from Possum Kingdom to the Gulf of Mexico. There were no shortages or very small shortages for demands located on tributaries or at tributary reservoirs. In fact, at the end of the recent drought there was a significant amount of water in storage in tributary reservoirs, particularly in the Little River subsystem.

On examining these results, it became apparent that the operating rules incorporated into the original model, which were based on the characteristics of the 1950s drought, were not appropriate for the recent drought. Specifically, in the 1950s drought:

- All the water in the Little River subsystem is used to meet demands at the reservoirs and directly downstream of the reservoirs, upstream of the confluence of the Little River with the main stem of the Brazos. Because of the length of the 1950s drought for this subsystem, all the water in the Little River subsystem must be used to meet local demands during the 1950s drought.
- There is more water in storage in the PK-Granbury-Whitney subsystem at the end of the 1950s drought than in other parts of the basin. The operating rules in the original model take advantage of this to meet demands in the lower basin at the end of the 1950s drought.

Figure 24 illustrates the application of these operating rules. This figure shows the 1950s drought storage trace from the Demand Level C run (Firm 9), divided into the three subsystems used for Figure 22 and Figure 23. Note that there are two low points in the 1950s drought, one in 1952-1953 and the second in 1956 and the beginning of 1957. The storage for PK-Granbury-Whitney and Rest of System are close to zero in the first low point, while in the second low

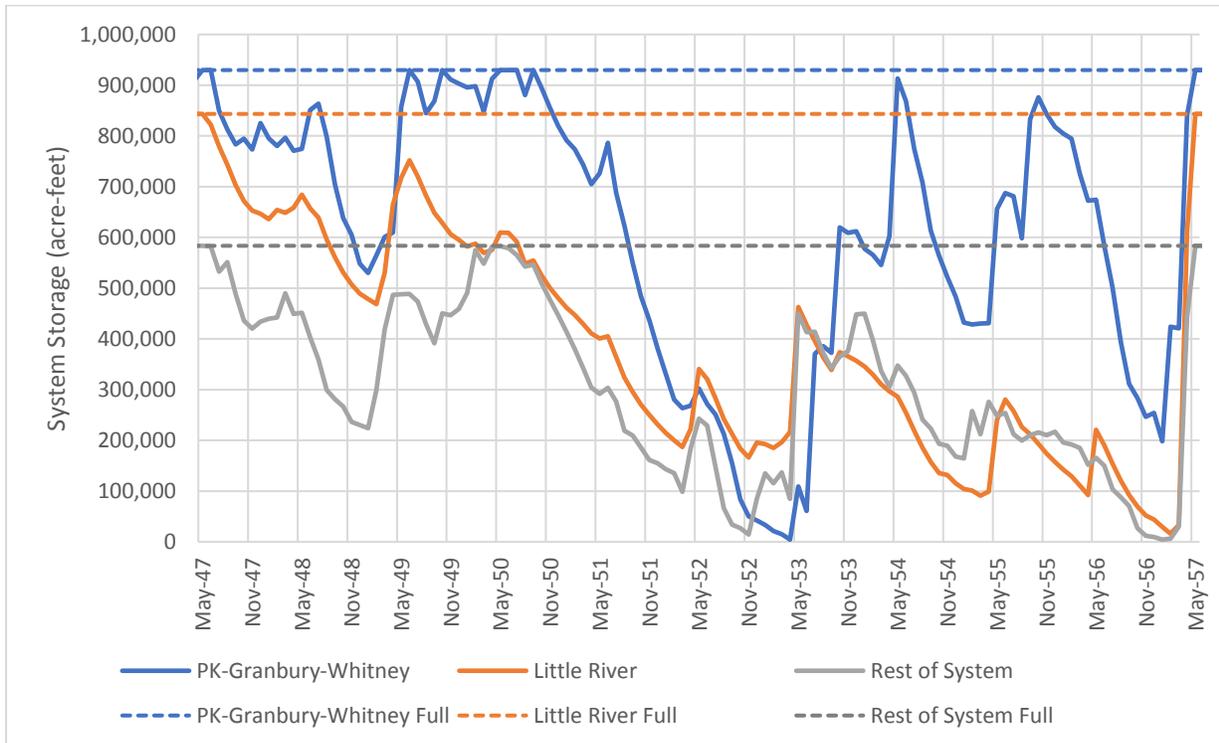
point, the Little River subsystem and Rest of System are close to zero. About 200,000 acre-feet of water is in storage in the PK-Granbury-Whitney subsystem at the end of the 1950s drought.

Figure 25 shows the results when these operating rules are applied to the more recent drought. Toward the end of the drought, the PK-Granbury-Whitney subsystem goes dry, and there is not enough water in the Rest of System to meet main stem demands. However, there is a significant amount of water in the Little River subsystem. The operating rules developed for the 1950s drought do not make use of this storage because all the Little River water has been reserved for local use. With these original operating rules, additional yield can be generated through system operation, but not as much as when considering only the 1950s drought. Yield runs with the existing operating rules are found in Table 4.

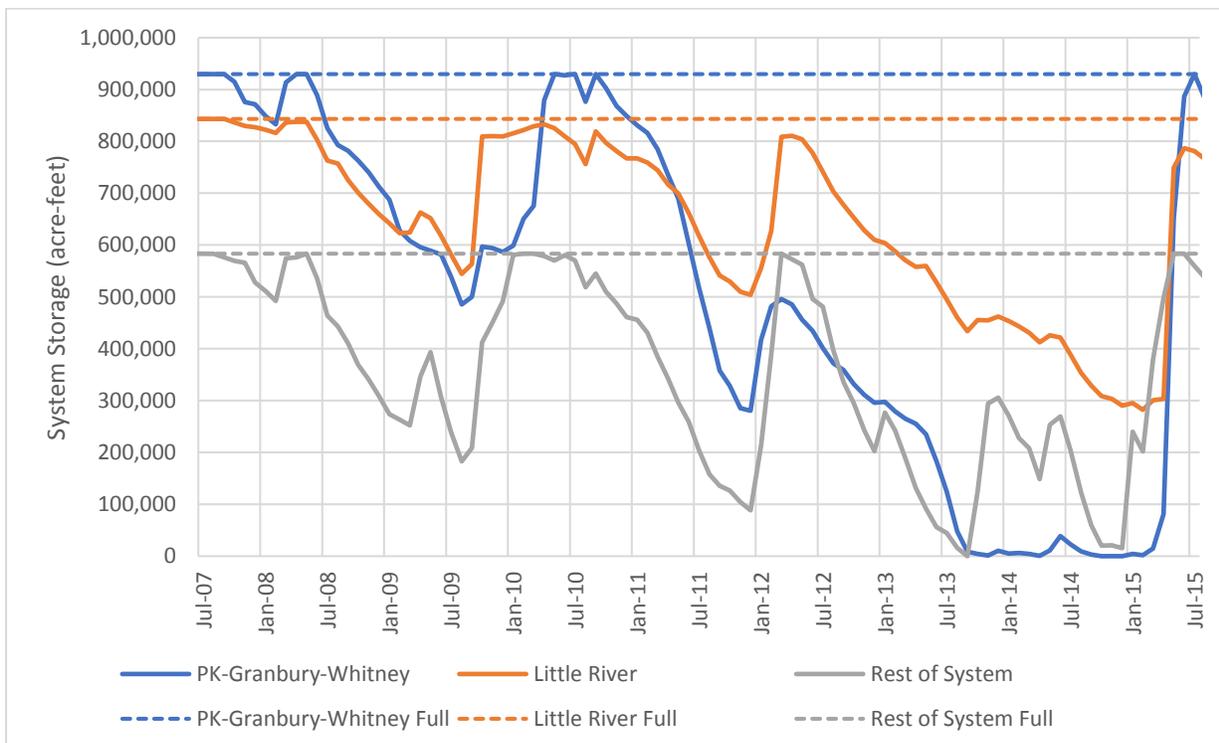
In actual operation, the BRA would take advantage of the water in storage in any part of its system to meet demands in other parts of the system.<sup>5</sup> This concept forms the basis for developing additional supply from system operation – water available in other parts of the system during drought periods is used to meet demands elsewhere where supplies are less plentiful, creating additional supplies. Figure 26 shows the subsystem storage traces for revised operating rules that (a) use the Little River subsystem during drought, and (b) rely less on the PK-Granbury-Whitney subsystem. These revised operating rules were incorporated into the appropriation models and new yield runs were made based on the recent drought. Applying the revised operating rules, the full diversion amount for all demand scenarios can be met during the recent drought, as shown in Table 4. Model code for the new setups may be found in Appendix B.

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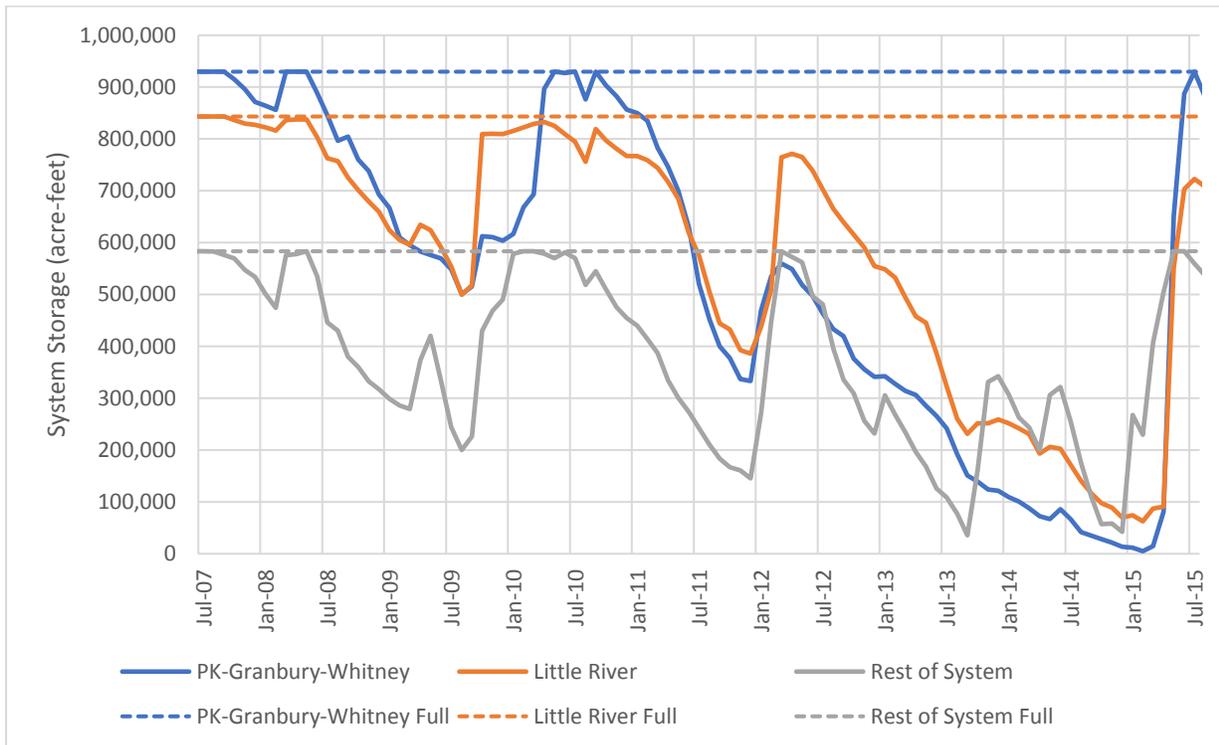
<sup>5</sup> In support of the concept of operating the BRA reservoirs as a system, and conforming with BRA's approved Water Management Plan, TCEQ has granted amendments to the BRA's existing reservoir water rights allowing for more flexible operation in the system context, specifically by removing a restriction that all system reservoirs must be at less than 30% for System Order use.



**Figure 24: Subsystem Storage Demand Level C Model using Original Drought Operating Rules – 1950s Drought**



**Figure 25: Subsystem Storage Demand Level C Model using Original Drought Operating Rules – Recent Drought**



**Figure 26: Subsystem Storage Demand Level C Model using Revised Drought Operating Rules – Recent Drought**

Table 4 shows the impact of the recent drought on the gain in yield due to system operation.

The columns in Table 4 contain the following information:

- *Demand Level* is the letter associated with one of the four demand scenarios described above.
- *Description* is the configuration associated with the demand level.
- *Yield with Original Hydrology* is the additional yield due to the System Operation Permit using the original hydrology from 1940 through 1997. These values are from Table 2.13 of the *Technical Report in Support of the Water Management Plan for Water Use Permit No. 5851<sup>4</sup>* and represent the uncommitted yield from the system after accounting for existing contracts and commitments from the regional water plans.
- *Yield with Extended Hydrology, Original Operating Rules* is the yield from the System Operation Permit using the original operating rules based on the 1950s drought. The

uncommitted yield has been reduced until there are no longer any shortages. These values are considerably lower than the original yields. However, in all scenarios the BRA would still be able to meet existing contracts and the demands included from regional water plans.

- *Yield with Extended Hydrology, Revised Operating Rules* applies the revised operating rules that use less water from the PK-Granbury-Whitney subsystem and more water from the Little River subsystem.

The yields in columns 3 and 5 of Table 4 are the same, showing that the yield with the revised operating rules during the recent drought is the same as the yield determined with the old operating rules during the 1950s drought. Since there is no reduction in yield, the appropriation amount stays the same and the appropriation for the System Operation Permit does not need to be reduced.

**Table 4: Impact of Drought on Additional Yield Due to System Operation**  
 (values in Acre-Feet per Year)

Demand Level	Description	Yield with Original Hydrology	Yield with Extended Hydrology, Original Operating Rules	Yield with Extended Hydrology, Revised Operating Rules
A	Without CPNPP expansion or Allens Creek	246,650	123,150	246,650
B	With CPNPP expansion, without Allens Creek	175,650	41,650	175,650
C	Without CPNPP expansion, with Allens Creek	291,000	188,900	291,000
D	With CPNPP expansion and Allens Creek	224,000	1,000	224,000

Applying the revised operating rules, there are some shortages during the 1950s drought. These shortages vary from a few months in the scenarios without the CPNPP expansion (Demand Scenarios A and C) and occur more frequently in the scenarios that include the CPNPP expansion (Demand Scenarios B and D). At this time, a model setup has not been developed

that meets demands in both droughts. Doing so will require a significant revision to the model code.

The revised operating rules result in diversions and uses of stored water that exceed the maximum annual use limits from the Water Management Plan for several reservoir reaches. These maximum use limits are based on maximum diversions assigned to the System Operation Permit based on the original operating rules. The maximum use limits were incorporated into the original WMP for informational purposes only – they were not intended to describe the maximum water available for use under the System Operation Permit.<sup>6</sup> The original operating rules did not use the Little River subsystem to meet demands in the lower basin. As a result, the maximum use by the System Operation Permit from Little River reservoirs is very low. For example, for Lake Belton it is only 14,859 acre-feet per year. In the new drought, where there is considerable water available in the Little River subsystem, Lake Belton can provide well over 100,000 acre-feet for system operation in some years. Without making use of this available water, demands could not be met at the levels incorporated in the appropriation models.

At this time, the model code cannot limit diversions from a particular reservoir once the diversion limit has been reached. The modeling relies on the reservoir system operation built into the Water Rights Analysis Package (WRAP) code, which is based on the modeled storage of the various system reservoirs. Using this structure, it is not possible to cut off diversions from one of the BRA System reservoirs based on an annual diversion limit. The code could be modified to apply these maximum annual use limits. However, doing so would require significant modification to the model code and the overall WAM model structure.

The maximum use diversion reach limits for non-reservoir reaches have been incorporated into the model so that run-of-the-river water appropriated by the System Operation Permit does not exceed those limits.

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<sup>6</sup> Because the maximum annual use limits for each reach were incorporated into the WMP as enforceable operational limitations, BRA must comply with those limitations unless modified in a future revision of the WMP or it is determined that the reach use limitations do not apply to stored water.

## 4.0 SUMMARY AND RECOMMENDATIONS

This study is in response to Special Condition 5.C.7 of Water Use Permit No. 5851, the System Operation Permit. The study addresses whether the recent drought:

- Is worse than the drought of the 1950s, and
- Decreases the amount of water available for appropriation by the System Operation Permit.

Based on the results discussed in Sections 3.1 and 3.2, the recent drought is worse than the drought of the 1950s for the following reaches, as defined in the BRA's Water Management Plan:

- Possum Kingdom Lake
- Possum Kingdom Lake Dam to Palo Pinto gage
- Palo Pinto gage to Dennis gage
- Dennis gage to Lake Granbury Dam
- Lake Granbury Dam to Glen Rose gage
- Glen Rose gage to Lake Whitney Dam
- Lake Proctor.

This affects four of the twelve BRA System reservoirs considered part of the System Operation Permit:

- Possum Kingdom Lake
- Lake Granbury
- Lake Whitney
- Lake Proctor.

For all other reaches and reservoirs, the drought of the 1950s remains the worst drought in the period between 1940 and 2015. The recent drought is the worst drought for only the western part of the Brazos Basin. For most of the BRA System reservoirs and the locations with the

largest present and future demands, the 1950s drought remains the worst drought in the record.

Section 3.4 examines the yield of the BRA System. By taking advantage of the operational flexibility of Permit No. 5851, the models used to support the appropriation for the System Operation Permit show that the demands in the models can be fully met for all four demand scenarios incorporated into the permit. Since the diversion amount is not reduced, the maximum appropriation in the System Operation Permit does not need to be reduced.

This study illustrates the benefits of the System Operation Permit and system operation in general. Figure 22 through Figure 26 illustrate the differences in the timing of critical drought conditions. Even in the 1950s drought, in the PK-Granbury-Whitney subsystem the worst of the drought is over well before the rest of the basin. The benefit of system operation is that it allows the flexibility to take advantage of these differences in timing to increase the reliability of a water supply, and this creates additional firm water supply. This concept is clearly demonstrated in the BRA System. Even though the new drought has significantly reduced the firm yield available from four reservoirs in the BRA System, the most significant being Possum Kingdom Lake, the ability to operate as a system results in no net loss of yield for the system as a whole.

**APPENDIX A**  
**Annual Flow Plots**



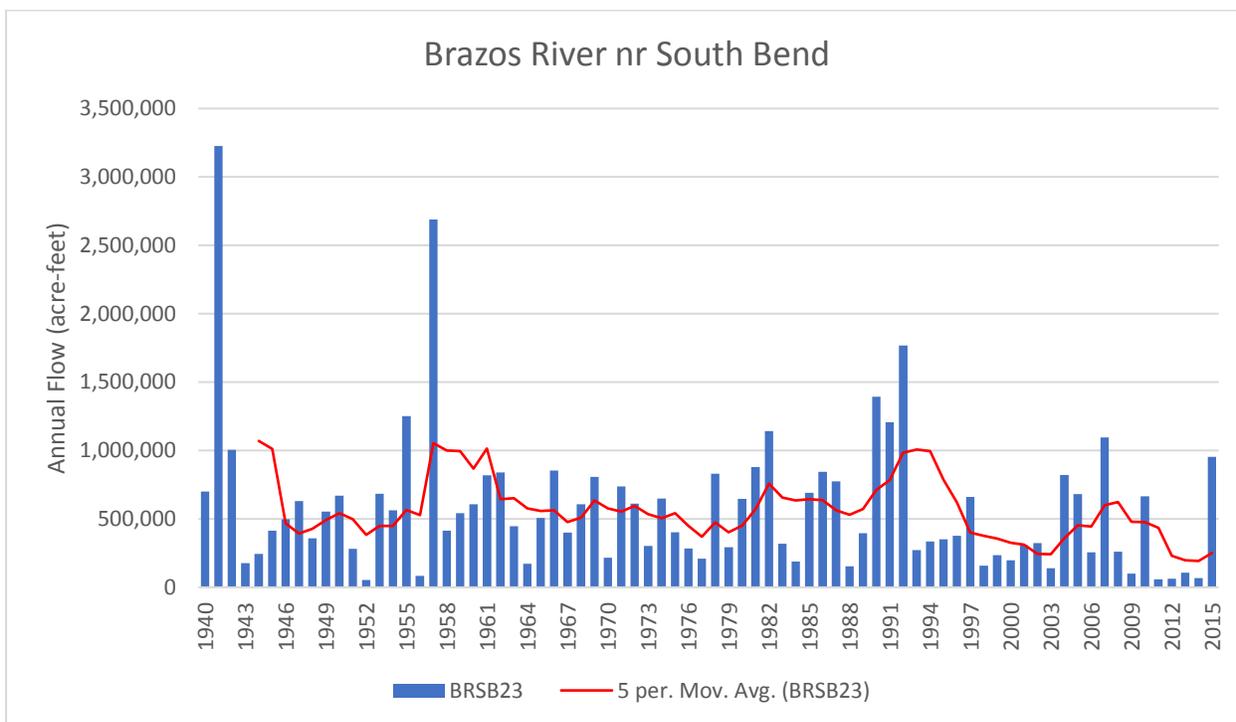


Figure A-1: Annual Naturalized flows for the Brazos River near South Bend Gage (USGS 08088000)

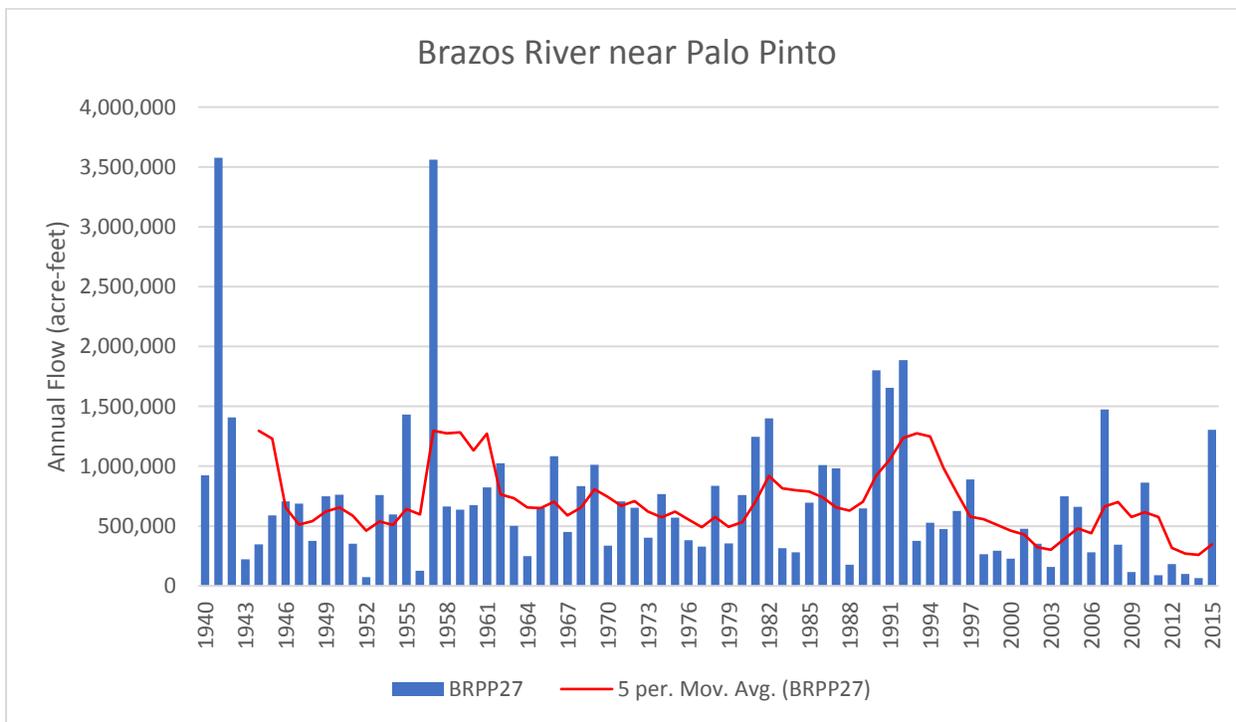
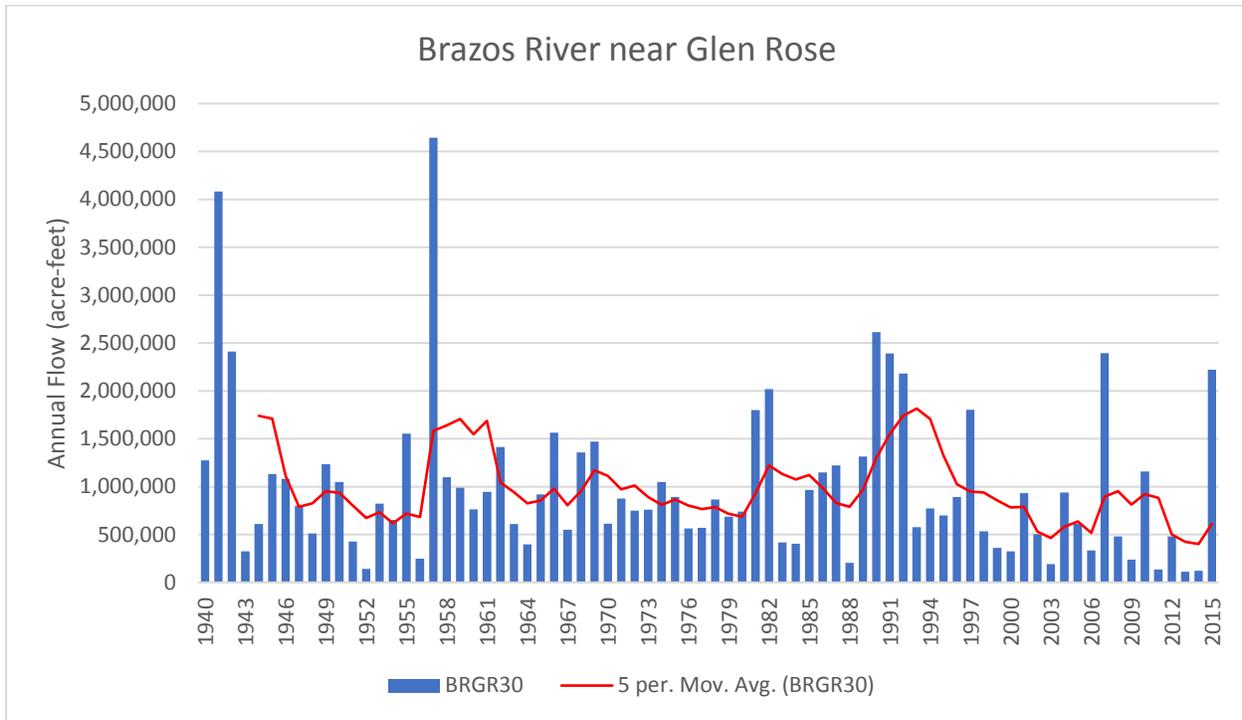
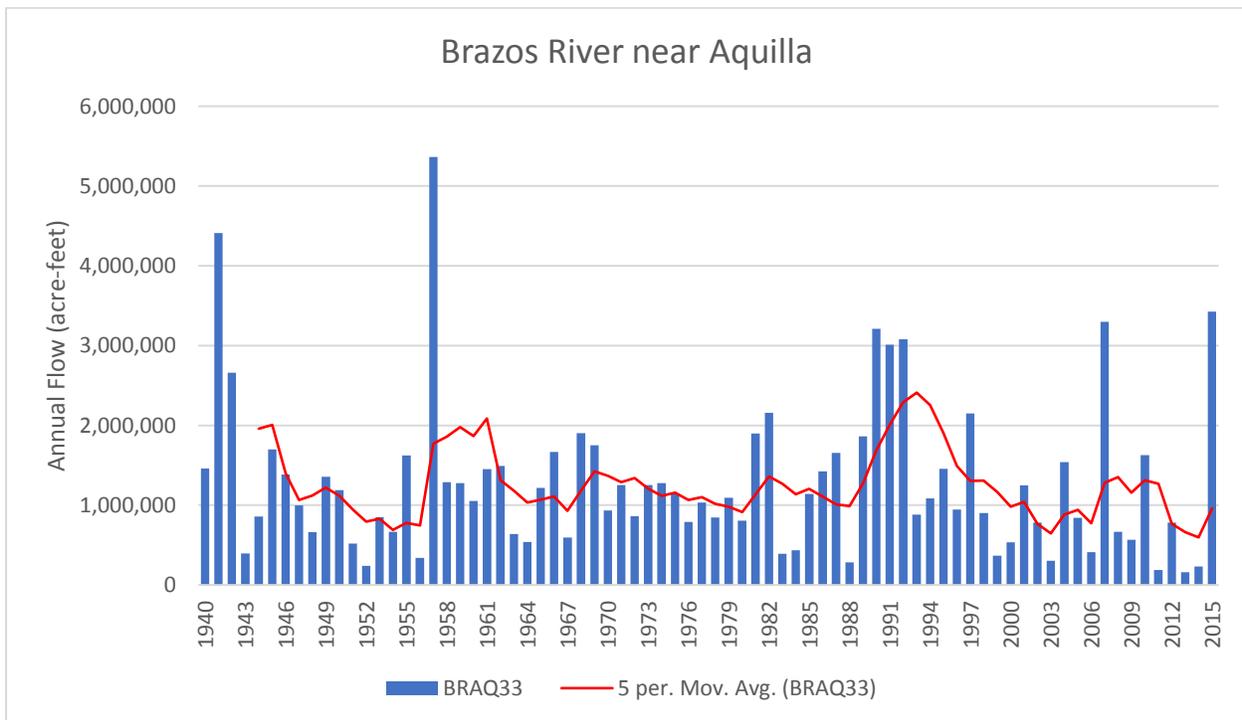


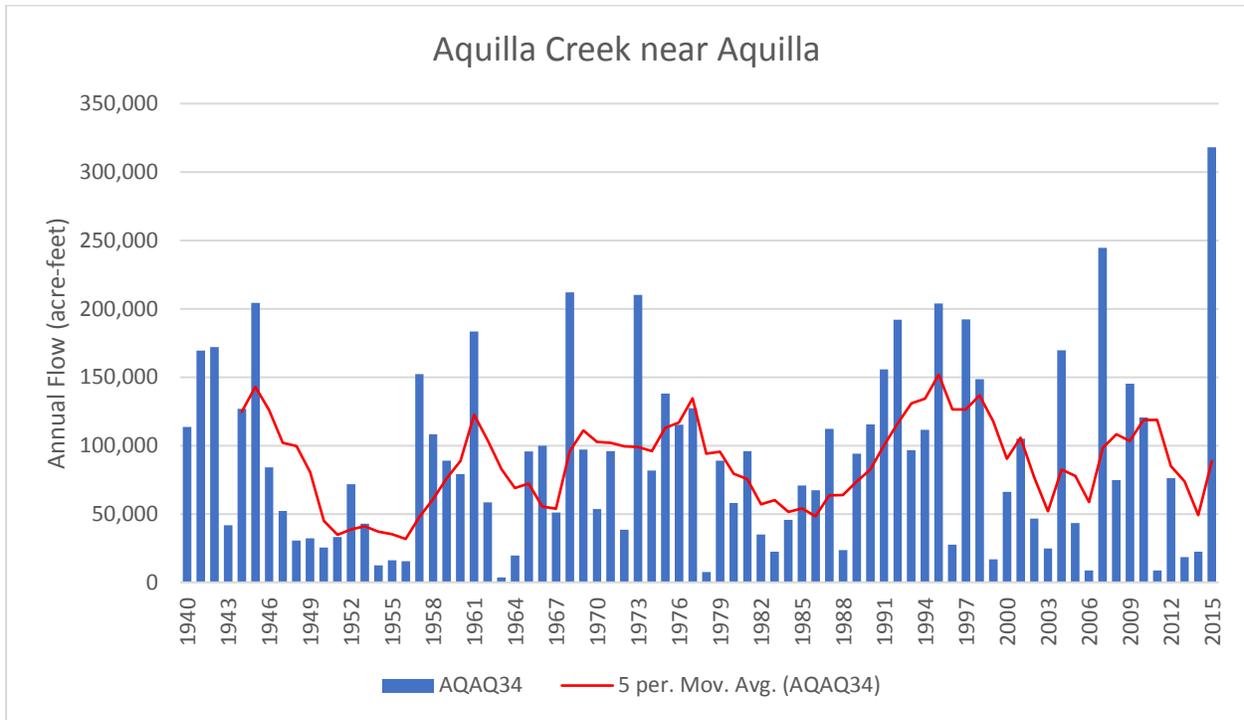
Figure A-2: Annual Naturalized flows for the Brazos River near Palo Pinto Gage (USGS 08089000)



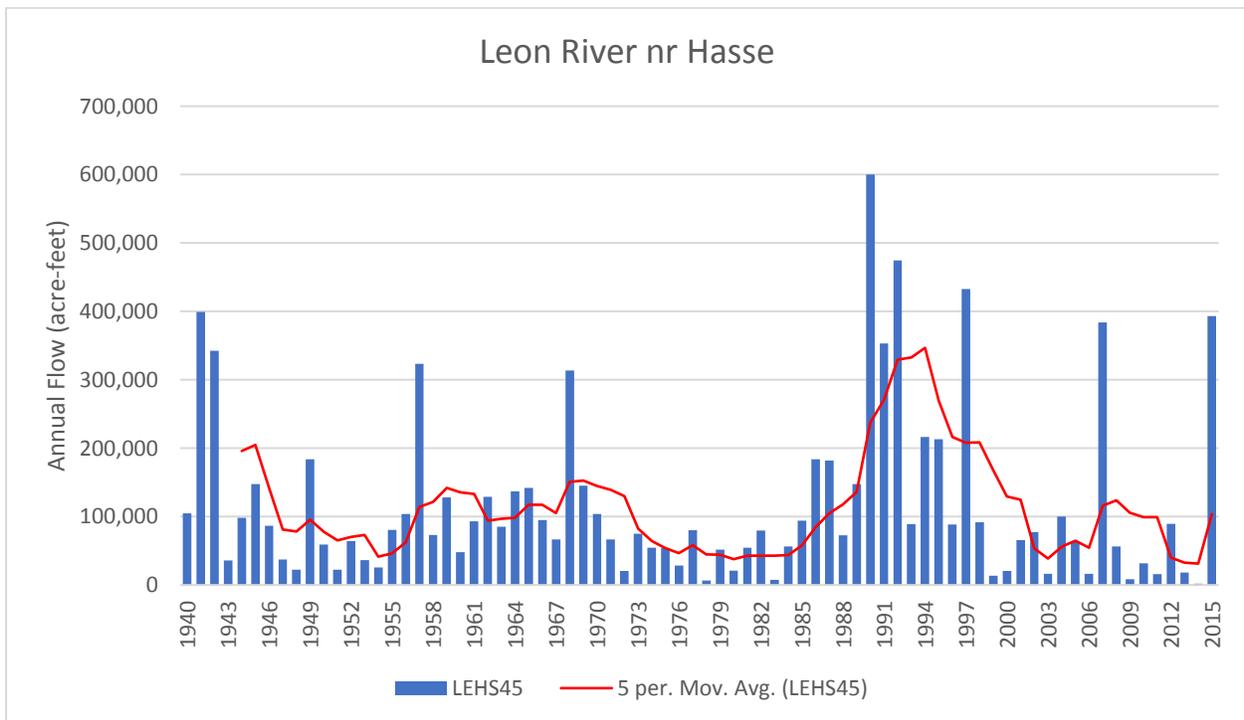
**Figure A-3: Annual Naturalized flows for the Brazos River near Glen Rose Gage (USGS 08091000)**



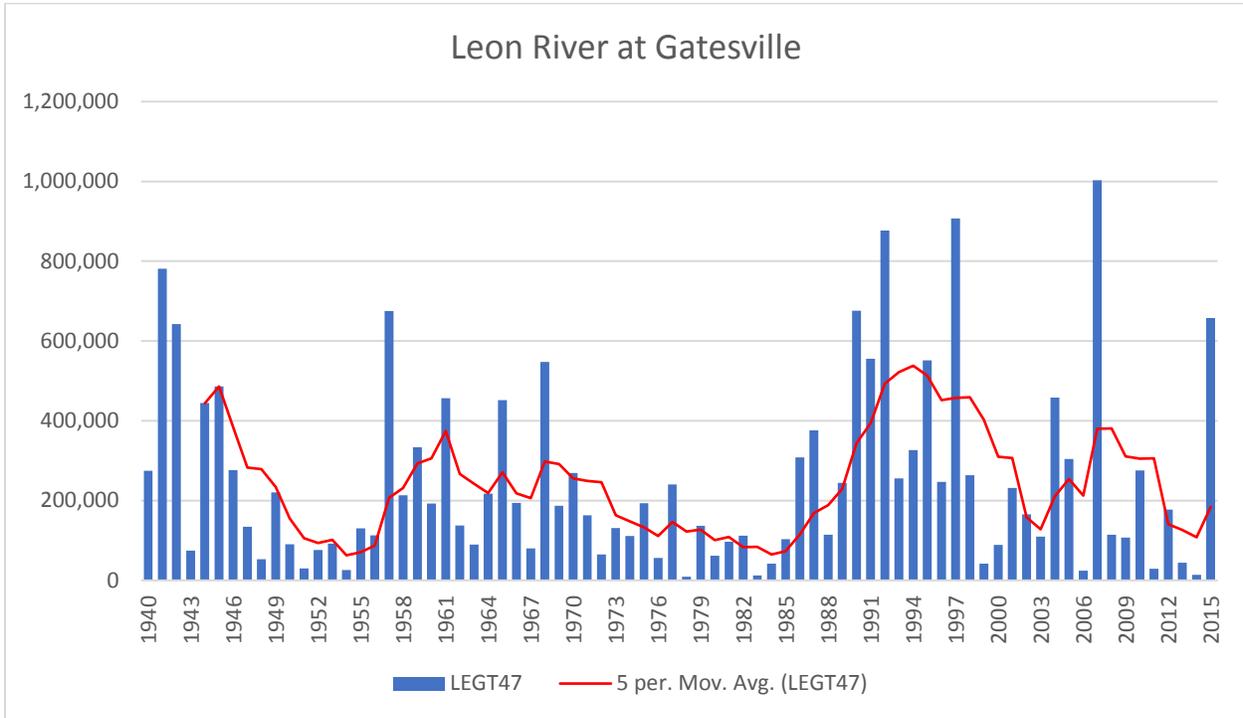
**Figure A-4: Annual Naturalized flows for the Brazos River near Aquilla Gage (USGS 08093100)**



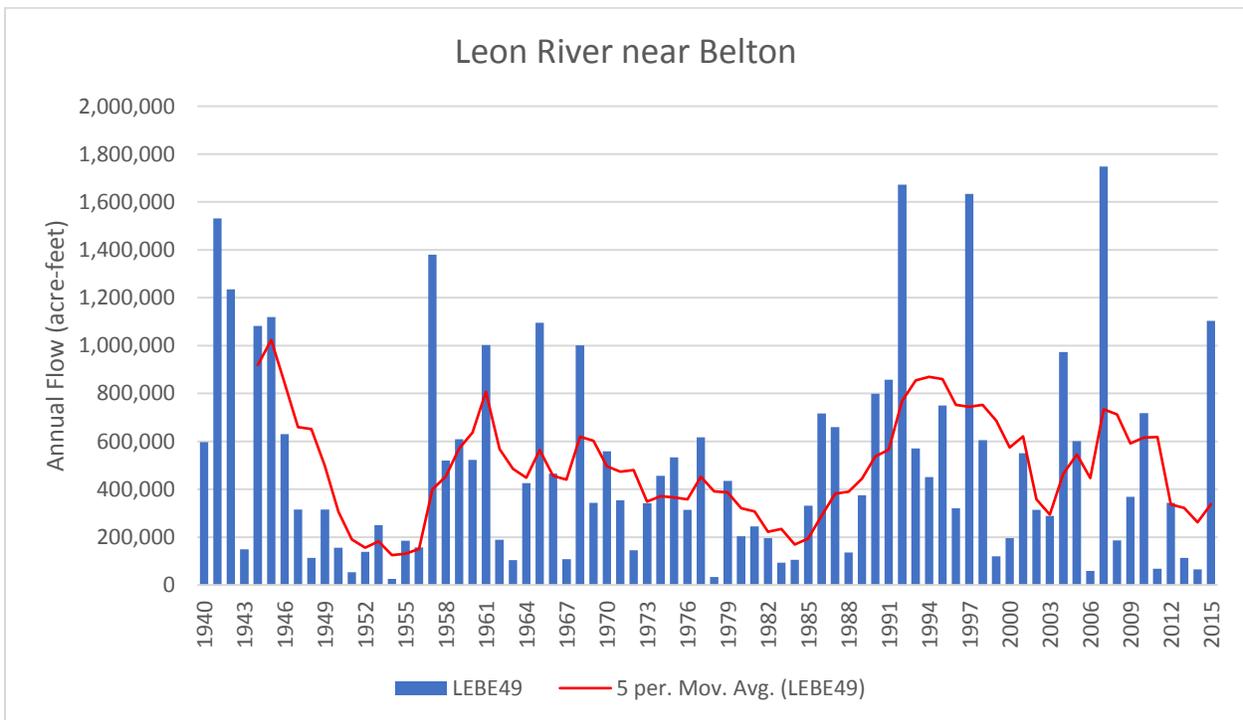
**Figure A-5: Annual Naturalized flows for the Aquilla Creek near Aquilla Gage (USGS 08093500)**



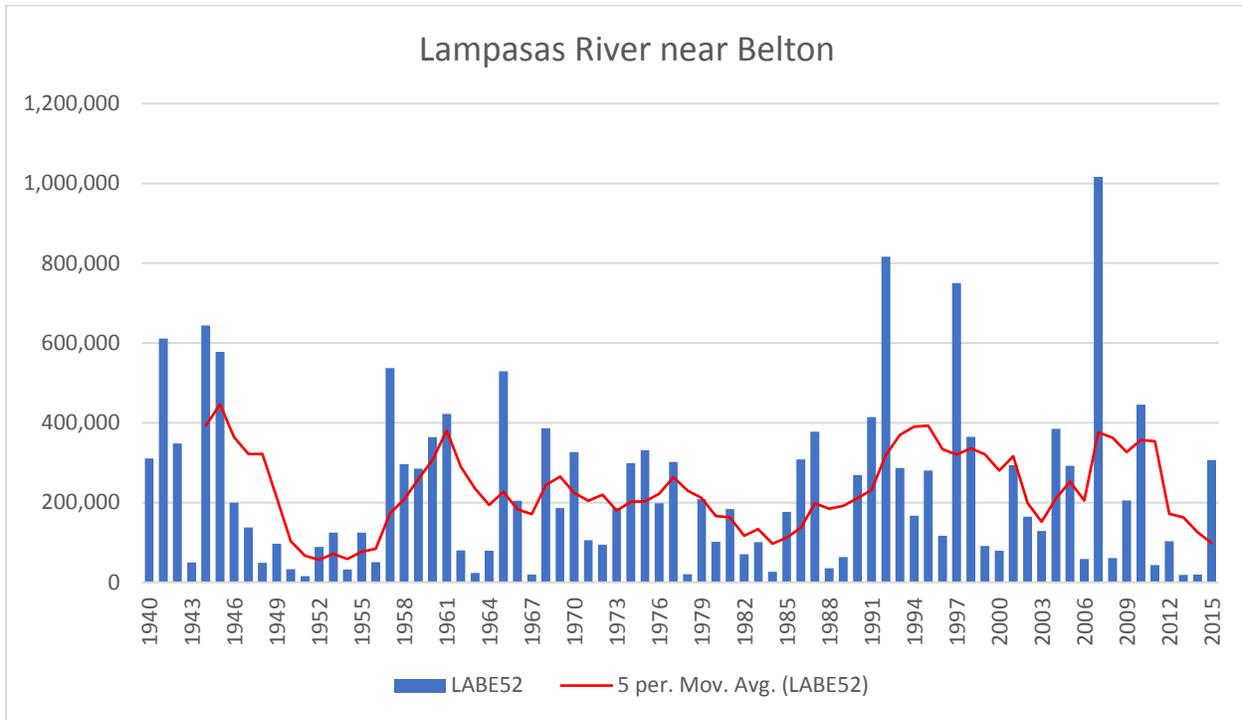
**Figure A-6: Annual Naturalized flows for the Leon River near Hasse Gage (USGS 08099500)**



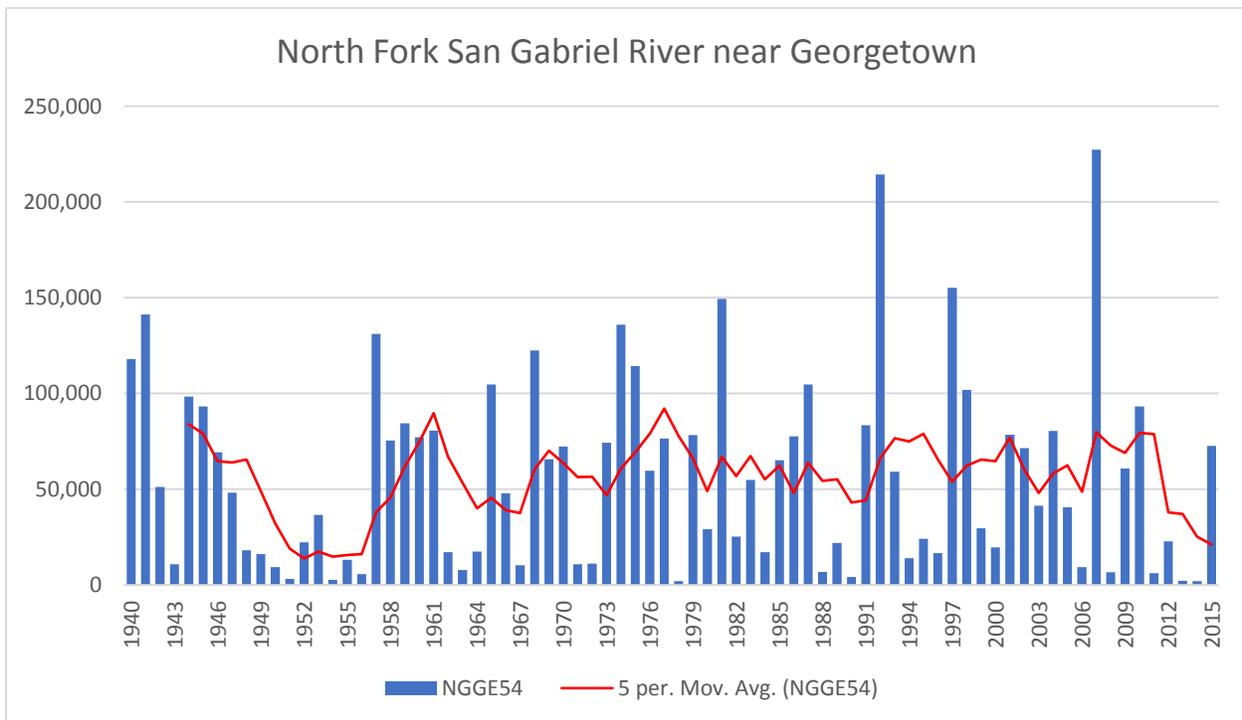
**Figure A-7: Annual Naturalized Flows for the Leon River at Gatesville Gage (USGS 08100500)**



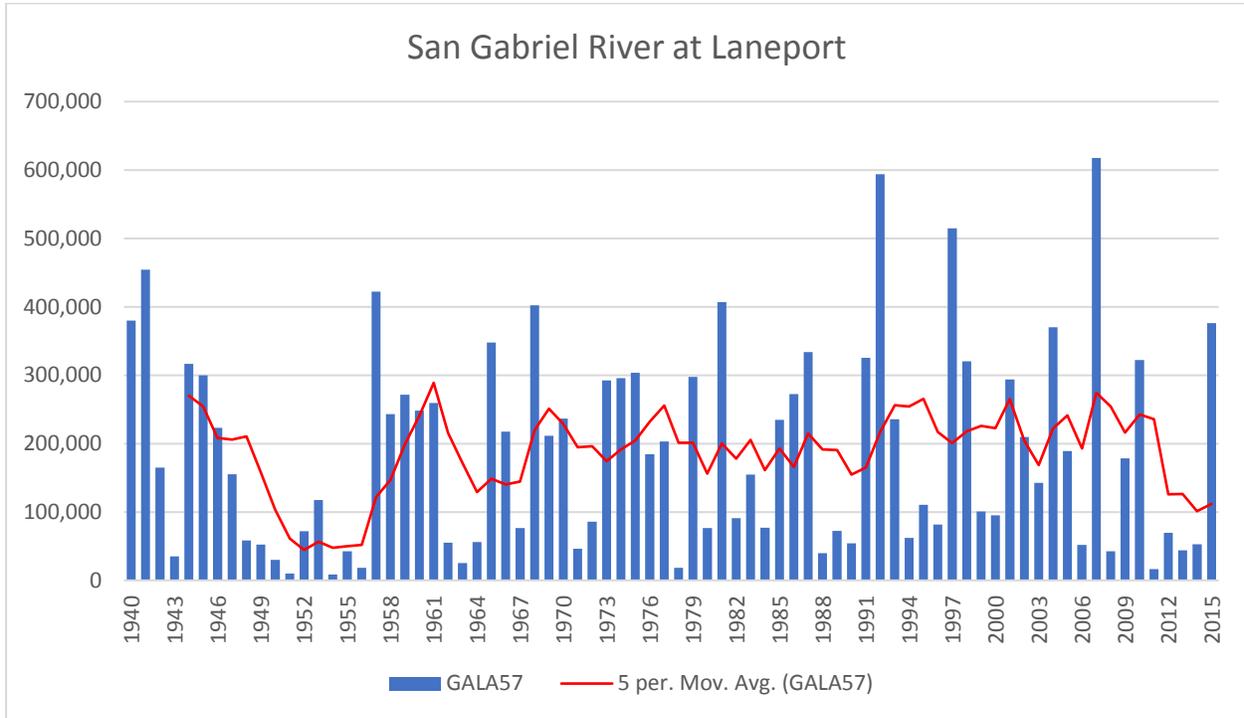
**Figure A-8: Annual Naturalized Flows for the Leon River near Belton Gage (USGS 08102500)**



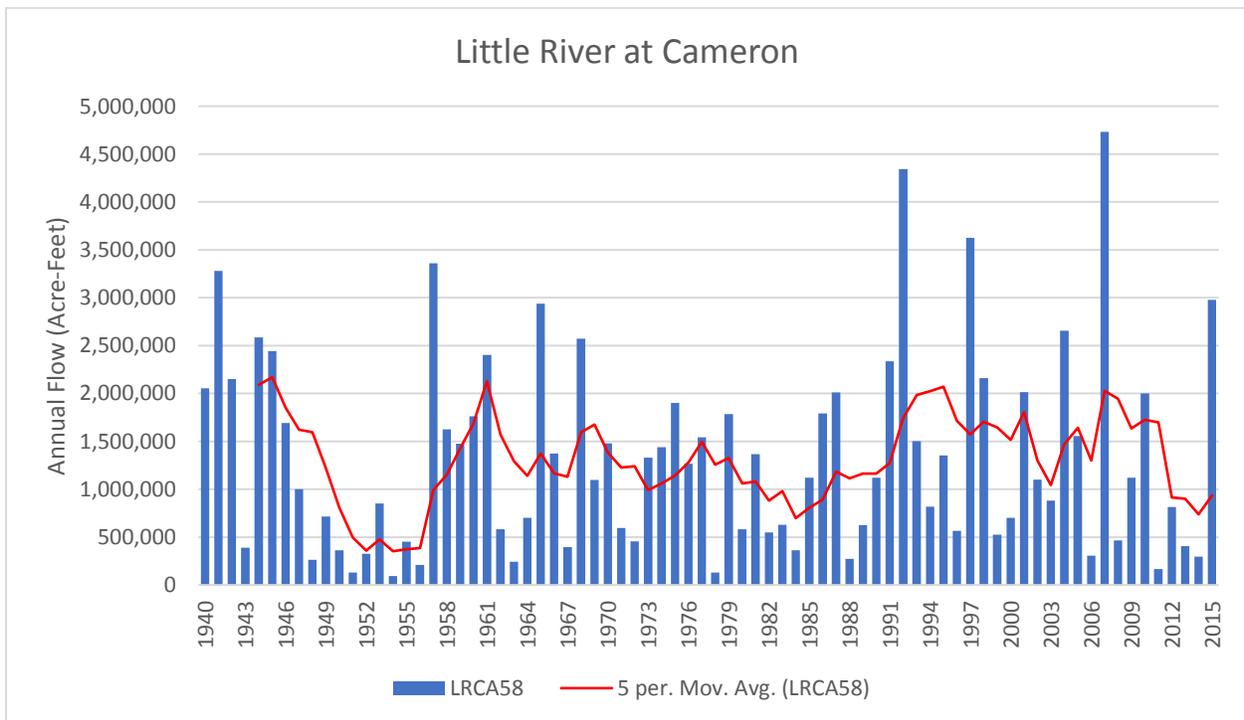
**Figure A-9: Annual Naturalized flows for the Lampasas River near Belton Gage (USGS 08104100)**



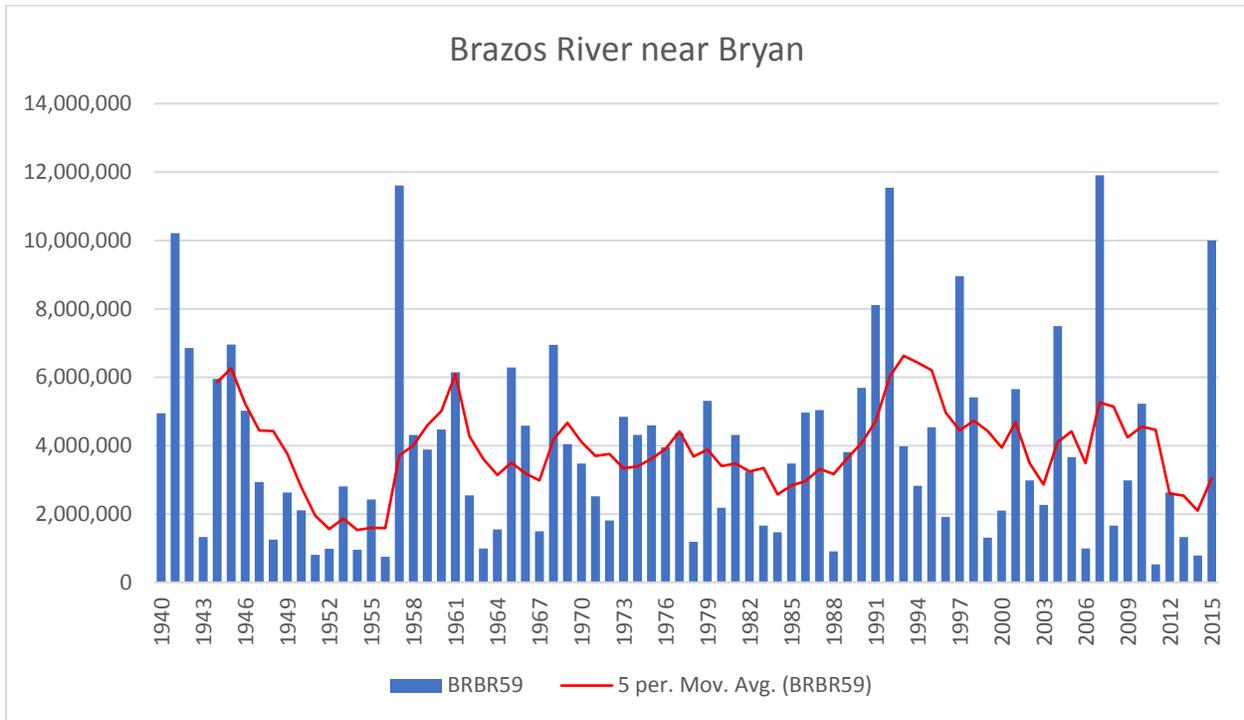
**Figure A-10: Annual Naturalized flows for the North Fork San Gabriel River near Georgetown Gage (USGS 08104700)**



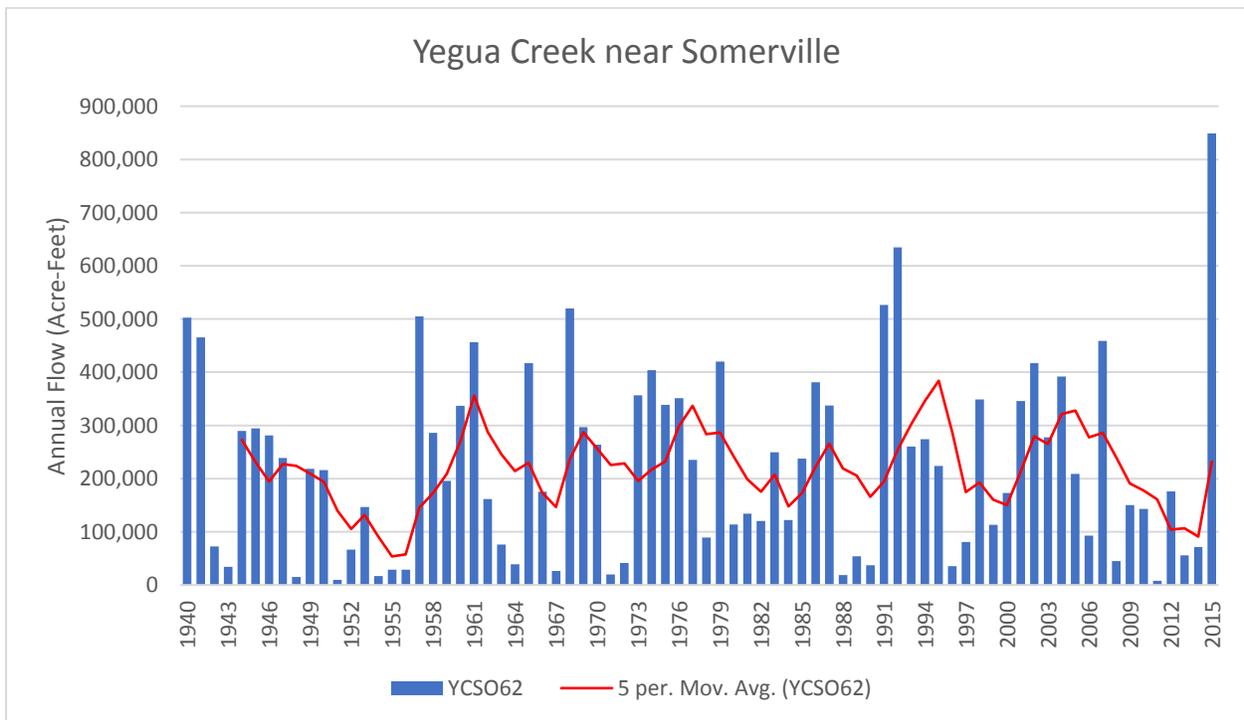
**Figure A-11: Annual Naturalized flows for the San Gabriel River at Laneport Gage (USGS 08105700)**



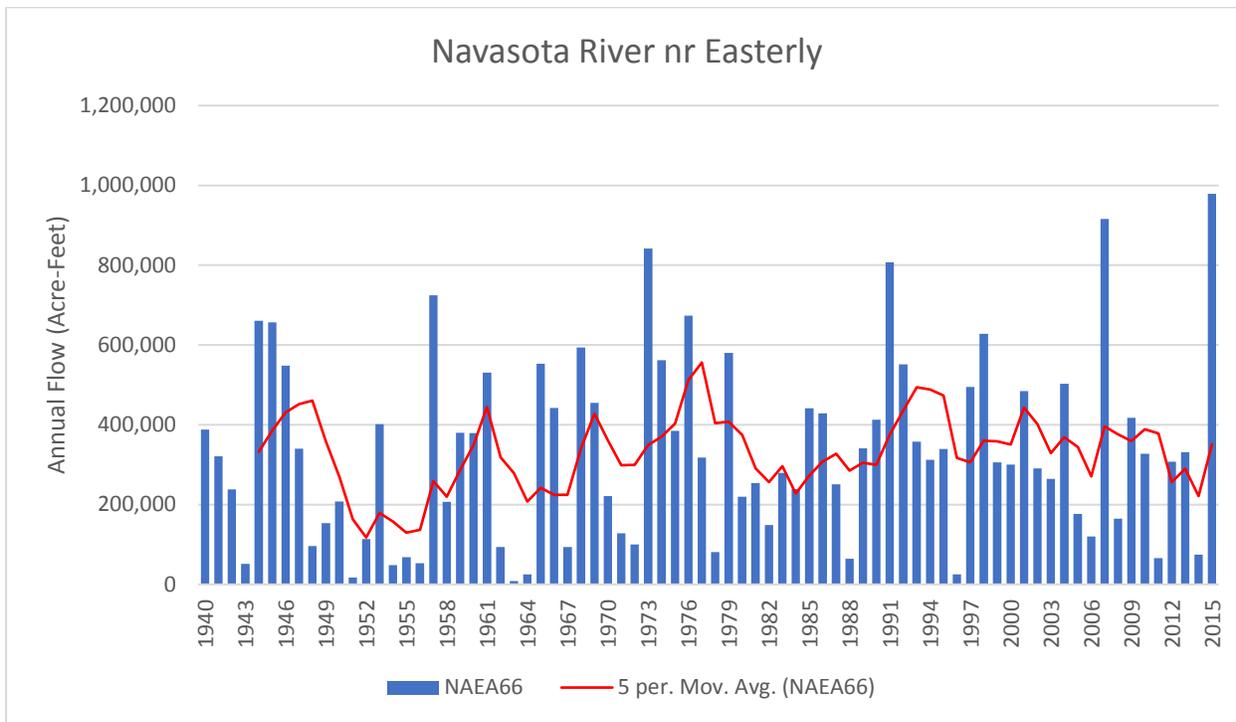
**Figure A-12: Annual Naturalized flows for the Little River at Cameron Gage (USGS 08106500)**



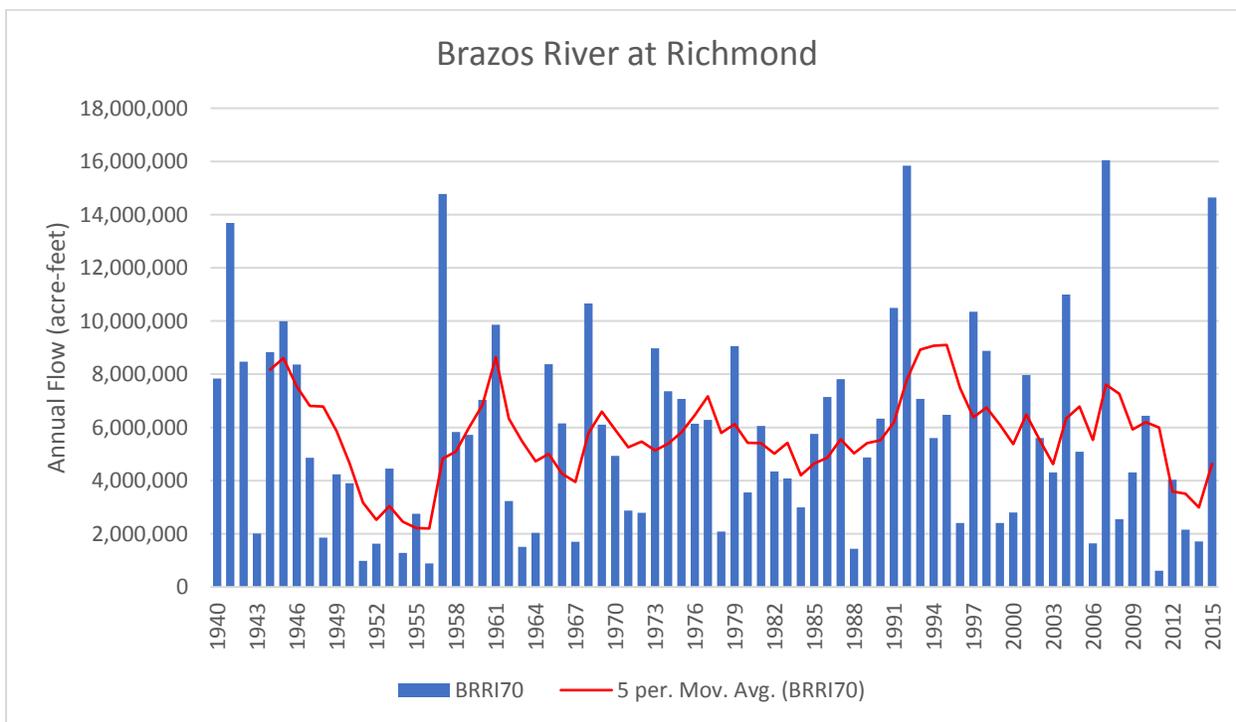
**Figure A-13: Annual Naturalized flows for the Brazos River near Bryan Gage (USGS 08109000)**



**Figure A-14: Annual Naturalized flows for the Yegua Creek near Somerville Gage (USGS 08110000)**



**Figure A-15: Annual Naturalized flows for the Navasota River near Easterly Gage (USGS 08110500)**



**Figure A-16: Annual Naturalized flows for the Brazos River at Richmond Gage (USGS 08114000)**

**APPENDIX B**  
**Model Code**



**Demand Level A – Revised Operation**

```

** Put in a small Type 3 right for using Proctor
WR516031 16000.    MUN220120301  3  2  0.0000    BLNT2_LS_MUN2  C5160  BE_LS
WSBRABEL 445600.    0                                3          -1
OR516031
**WSPRCTOR 59400.    1000
WSPRCTOR 59400.    10000
    
```

```

** Shared demand with Stillhouse (Stillhouse-Georgetown pipeline)
WR516231 26000.    PIPE20120301  1  2  0.0000    GGLTSTIT_SYS_MUN  C5162  GTSH_LS
**WSGRGTWN 37100.    31841
WSGRGTWN 37100.    37000
    
```

```

** System demand at Rosharon
**
WRBRRO72 272000    MUN420120302  2  2  0.0000    ROST2_SYS_YIELD  SYSTEM  SYSOPS
WSSMRVLE 160110.    500
OR516431 48033     1.0    1.0    0    0    0
WSBRAWHT 50000.    0                                1
OR515731 0        2.0    1.0    0    0    0
**WSALLENS 145533.    0
**OR292531 0        1.0    1.0
WSLMSTNE 225400.    0
OR516531 67620    1.3    1.5    0    0    0
WSGRNBRY 155000.    0
OR515631 46500    1.5    1.0    0    0    0
WSPOSDOM 724739.    100
OR515531 218922    1.0    1.0    0    0    0
WSGRNGER 65500.    0
OR516331 19650    1.0    0.5    0    0    0
WSSTLHSE 235700.    0
OR516131 70710    0.1    0.5    0    0    0
WSBRABEL 445600.    0                                3          -1
OR516031 137280    1.0    1.0    0    0    0
WSAQUILA 52400.    1000
OR515831 15720    1.0    1.0    0    0    0  10000
    
```

**Demand Level B – Revised Operation**

```

** Put in a small Type 3 right for using Proctor
WR516031 16000.    MUN220120301  3  2  0.0000    BLNT2_LS_MUN2  C5160  BE_LS
WSBRABEL 445600.    0                                3          -1
OR516031
WSPRCTOR 59400.    4000
OR515931    800
**OR515931    800
    
```

```

** downstream irr - System demand
WRW12421 540.    IRR420120302  2  2  0.0000    NAVBR_DS_IRR  C5164  SO_DS
WSSMRVLE 160110.    500
OR516431 48033    1.0    1.0    0    0    0
WSBRAWHT 50000.    0    0    0    0    1
OR515731 0    2.0    1.0    0    0    0
WSLMSTNE 225400.    0
OR516531 67620    1.0    1.0    0    0    0
**WSGRNBRY 155000.    0
**OR515631 46500    1.0    -1    0    0    0
WSPOSDOM 724739.    0
OR515531 218922    0.5    -1    0    0    0
**OR515531 218922    0.5    1.0    0    0    0
WSPOSDOM 724739.    0
OR515531 218922    0.5    -1    0    0    0
    
```

\*\* Demands at Richmond

\*\*

\*\* Limit to 22,270 ac-ft yr

\*\*

```

WRBRR170 22270  XMONTH20120302  8                                RMOT2_SYS_LIM  C5164  SO_DS
TO -7    SUB                                RMOT2_SYS_IRR  CONT
TO -7    SUB                                RMOT2_SYS_NRG  CONT
TO -7    SUB                                RMOT2_SYS_NRG2
**
**
    
```

```

WRBRR170 50.    IRR420120302  2  2  0.0000    RMOT2_SYS_IRR  C5164  SO_DS
WSSMRVLE 160110.    500
OR516431 48033    1.0    1.0    0    0    0
WSBRAWHT 50000.    0    0    0    0    1
OR515731 0    2.0    1.0    0    0    0
**WSALLENS 145533.    0
**OR292531 0    1.0    1.0
WSLMSTNE 225400.    0
OR516531 67620    1.0    1.0    0    0    0
    
```

\*\* Rosharon

```

WRBRRO72 12720.    MUN420120302  2  2  0.0000    ROST2_SYS_MUN  C5164  SO_DS
WSSMRVLE 160110.    500
OR516431 48033    1.0    1.0    0    0    0
WSBRAWHT 50000.    0    0    0    0    1
OR515731 0    2.0    1.0    0    0    0
**WSALLENS 145533.    0
**OR292531 0    1.0    1.0
WSLMSTNE 225400.    0
OR516531 67620    1.0    1.0    0    0    0
**OR516531 67620    1.0    -1    0    0    0
**WSGRNBRY 155000.    0
**OR515631 46500    1.0    1.0    0    0    0
WSPOSDOM 724739.    0
OR515531 275000    0.5    -1    0    0    0
**OR515531 218922    0.5    0.1    0    0    0
WSAQUILA 52400.    1000
OR515831 15720    1.0    1.0    0    0    0
    
```

Brazos River Authority

```

** NRG backup.
WR532001          20120302  2  1  1.0000  D53251          RMOT2_SYS_NRG  C5157  WH_DS
WSSMRVLE 160110.          500
OR516431  48033          1.0  1.0          0  0  0
WSBRAWHT  50000.          0  0  0  1
OR515731    0          2.0  1.0          0  0  0
**WSALLENS 145533.          0
**OR292531    0          1.0  1.0
WSLMSTNE 225400.          0
OR516531  67620          1.0  1.0          0  0  0
**WSGRNBRY 155000.          0
**OR515631  46500          1.0  1.0          0  0  0
WSPOSDOM 724739.          0
OR515531  275000          0.5  0.1          0  0  0
**OR515531  218922          0.5  0.1          0  0  0
    
```

\*\* Rest of NRG contract - set to 83,000 max diversion of 35,008 under backup and Excess flows = 47,992

```

WR532001  83000  IND420120302  2  1  0.0000          RMOT2_SYS_NRG2  C5157  WH_DS
**WR532001  47992  IND420120302  2  1  0.0000          RMOT2_sys_NRG2  C5157  wh_ds
WSSMRVLE 160110.          500
OR516431  48033          1.0  1.0          0  0  0
WSBRAWHT  50000.          0  0  0  1
OR515731    0          2.0  1.0          0  0  0
**WSALLENS 145533.          0
**OR292531    0          1.0  1.0
WSLMSTNE 225400.          0
OR516531  67620          1.0  0.5          0  0  0
**OR516531  67620          1.0  -1          0  0  0
**WSGRNBRY 155000.          0
**OR515631  46500          1.0  1.0          0  0  0
WSPOSDOM 724739.          0
OR515531  275000          0.5  -1          0  0  0
**OR515531  275000          0.5  0.1          0  0  0
**OR515531  218922          0.5  0.1          0  0  0
    
```

\*\* GCWA fixed demand

```

WRCON155  48080          20120302  2  2  0.0000          ROST2_SYS_GCWA  C5164  SO_DS
WSSMRVLE 160110.          500
OR516431  48033          1.0  1.0          0  0  0
WSBRAWHT  50000.          0  0  0  1
OR515731    0          2.0  1.0          0  0  0
**WSALLENS 145533.          0
**OR292531    0          1.0  1.0
WSLMSTNE 225400.          0
OR516531  67620          1.0  1.0          0  0  0
**WSGRNBRY 155000.          0
**OR515631  46500          1.0  1.0          0  0  0
WSPOSDOM 724739.          0
OR515531  275000          0.5  -1          0  0  0
**OR515531  275000          0.5  0.1          0  0  0
**WSAQUILA 52400.          1000
**OR515831  15720          1.0  1.0          0  0  0
**OR515531  218922          0.5  0.1          0  0  0
    
```

\*\* DOW backup. System

```

WRBRRO72  16000  IND420120302  2  2  0.0000          ROST2_SYS_DOW  C5164  SO_DS
WSSMRVLE 160110.          500
OR516431  48033          1.0  1.0          0  0  0
WSBRAWHT  50000.          0  0  0  1
OR515731    0          2.0  1.0          0  0  0
**WSALLENS 145533.          0
**OR292531    0          1.0  1.0
WSLMSTNE 225400.          0
OR516531  67620          1.0  1.0          0  0  0
**WSGRNBRY 155000.          0
**OR515631  46500          1.0  1.0          0  0  0
WSPOSDOM 724739.          0
    
```

Appendix B – Model Code



Brazos River Authority

OR515531	275000	0.5	-1	0	0	0			
**OR515531	218922	0.5	0.1	0	0	0			
WSAQUILA	52400.				1000				
OR515831	15720	1.0	1.0	0	0	0			
WRBRRO72	201000	MUN420120302	2	2	0.0000		ROST2_SYS_YIELD	SYSTEM	SYSOPS
WSSMRVLE	160110.				500				
OR516431	48033	1.0	2.0	0	0	0			
WSBRAWHT	50000.				0			1	
OR515731	0	2.0	1.0	0	0	0			
**WSALLENS	145533.				0				
**OR292531	0	1.0	1.0						
WSLMSTNE	225400.				0				
OR516531	67620	2.5	2.5	0	0	0			
**WSGRNBRY	155000.				0				
**OR515631	46500	1.5	1.0	0	0	0			
WSPOSDOM	724739.				100				
OR515531	275000	0.5	0.5	0	0	0			
**OR515531	218922	0.5	1.0	0	0	0			
WSGRNGER	65500.				5000				
OR516331	19650	1.0	0.5	0	0	0	10000		
WSSTLHSE	235700.				0				
OR516131	70710	0.5	-1	0	0	0	10000		
**OR516131	70710	1.0	0.5	0	0	0	0		
WSBRABEL	445600.				0			3	-1
**OR516031	200000	1.0	1.0	0	0	0			
**OR516031	137280	1.0	0.5	0	0	0			
OR516031	137280	1.0	1.0	0	0	0			
WSAQUILA	52400.				1000				
OR515831	15720	1.0	1.0	0	0	0	10000		

**Demand Level C – Revised Operation**

```

WR516031 16000.    MUN220120301  3  2  0.0000          BLNT2_LS_MUN2  C5160  BE_LS
WSBRABEL 445600.          0          3          -1
OR516031
**WSPRCTOR 59400.          1000
WSPRCTOR 59400.          10000
    
```

\*\* System demand at Rosharon  
\*\*

```

WRBRRO72 162000    MUN420120302  2  2  0.0000          ROST2_SYS_FIXED SYSTEM  SYSOPS
WSSMRVLE 160110.          500
OR516431 48033      1.0    1.0    0    0    0
WSBRAWHT 50000.          0          1
OR515731 0          2.0    1.0    0    0    0
WSALLENS 145533.          0
OR292531 0          1.0    1.0
WSLMSTNE 225400.          0
OR516531 67620      1.0    1.0    0    0    0
**WGRNBRY 155000.          0
**OR515631 46500    1.0    1.0    0    0    0
WSPOSDOM 724739.          100
OR515531 218922    0.7    1.0    0    0    0
    
```

```

WRBRRO72 254000    MUN420120302  2  2  0.0000          ROST2_SYS_YIELD SYSTEM  SYSOPS
WSSMRVLE 160110.          500
OR516431 48033      1.0    1.0    0    0    0
WSBRAWHT 50000.          0          1
OR515731 0          2.0    1.0    0    0    0
WSALLENS 145533.          0
OR292531 0          2.0    1.0
WSLMSTNE 225400.          0
OR516531 67620      1.3    1.5    0    0    0
WGRNBRY 155000.          0
OR515631 46500      1.5    1.0    0    0    0
WSPOSDOM 724739.          100
OR515531 218922    1.0    1.0    0    0    0
WGRNGER 65500.          0
OR516331 19650      1.0    0.5    0    0    0
WSSTLHSE 235700.          0
OR516131 70710      0.1    0.5    0    0    0
WSBRABEL 445600.          0          3          -1
OR516031 137280    1.0    1.0    0    0    0
WSAQUILA 52400.          1000
OR515831 15720      1.0    1.0    0    0    0  11000
    
```

**Demand Level D – Revised Operation**

WR516031 16000. MUN220120301 3 2 0.0000 BLNT2\_LS\_MUN2 C5160 BE\_LS  
 WSBRABEL 445600. 0 3 -1  
 OR516031  
 \*\*WSPRCTOR 59400. 1000  
 WSPRCTOR 59400. 10000

WR516231 25000. PIPE20120301 1 2 0.0000 GGLTSTIT\_SYS\_MUN C5162 GTSH\_LS  
 \*\*WSGRGTWN 37100. 31841  
 WSGRGTWN 37100. 36000

WR532001 83000 IND420120302 2 1 0.0000 RMOT2\_SYS\_NRG2 C5157 WH\_DS  
 \*\*WR532001 47992 IND420120302 2 1 0.0000 RMOT2\_sys\_NRG2 C5157  
 wh\_ds  
 WSSMRVLE 160110. 500  
 OR516431 48033 2.0 2.0 0 0 0  
 WSBRAWHT 50000. 0 1  
 OR515731 0 2.0 1.0 0 0 0  
 WSALLENS 145533. 0  
 OR292531 0 1.0 1.0  
 WSLMSTNE 225400. 0  
 OR516531 67620 2.0 2.0 0 0 0  
 \*\*WSGRNBRY 155000. 0  
 \*\*OR515631 46500 1.0 1.0 0 0 0  
 \*\*WSPOSDOM 724739. 0  
 \*\*OR515531 218922 0.5 0.1 0 0 0

WRCON155 48080 20120302 2 2 0.0000 ROST2\_SYS\_GCWA C5164 SO\_DS  
 WSSMRVLE 160110. 500  
 OR516431 48033 2.0 2.0 0 0 0  
 WSBRAWHT 50000. 0 1  
 OR515731 0 2.0 1.0 0 0 0  
 \*\*WSALLENS 145533. 0  
 \*\*OR292531 0 1.0 1.0  
 WSLMSTNE 225400. 0  
 OR516531 67620 2.0 2.0 0 0 0  
 \*\*WSGRNBRY 155000. 0  
 \*\*OR515631 46500 1.0 1.0 0 0 0  
 \*\*WSPOSDOM 724739. 0  
 \*\*OR515531 218922 0.5 0.1 0 0 0

WRBRRO72 16000 IND420120302 2 2 0.0000 ROST2\_SYS\_DOW C5164 SO\_DS  
 WSSMRVLE 160110. 500  
 OR516431 48033 2.0 2.0 0 0 0  
 WSBRAWHT 50000. 0 1  
 OR515731 0 2.0 2.0 0 0 0  
 WSALLENS 145533. 0  
 OR292531 0 2.0 2.0  
 WSLMSTNE 225400. 0  
 OR516531 67620 2.0 2.0 0 0 0  
 \*\*WSGRNBRY 155000. 0  
 \*\*OR515631 46500 1.0 1.0 0 0 0  
 WSPOSDOM 724739. 0  
 OR515531 218922 0.1 0.1 0 0 0

WRBRRO72 197000 MUN420120302 2 2 0.0000 ROST2\_SYS\_FIXED SYSTEM SYSOPS  
 WSSMRVLE 160110. 500  
 OR516431 48033 2.0 2.0 0 0 0  
 WSBRAWHT 50000. 0 1  
 OR515731 0 2.0 1.0 0 0 0  
 WSALLENS 145533. 0  
 OR292531 0 2.0 1.0  
 WSLMSTNE 225400. 0

Appendix B – Model Code



Brazos River Authority

OR516531	67620	2.0	2.0	0	0	0		
**WSGRNBRY	155000.				0			
**OR515631	46500	1.0	1.0	0	0	0		
**WSPOSDOM	724739.				100			
**OR515531	218922	1.0	1.0	0	0	0		
WSGRNGER	65500.				0			
OR516331	19650	0.5	0.5	0	0	0		
WSSTLHSE	235700.				0			
OR516131	70710	0.1	-1.0	0	0	0		
WSBRABEL	445600.				0		3	-1
OR516031	137280	2.0	1.0	0	0	0		
WRBRRO72	152000	MUN420120302	2	2	0.0000		ROST2_SYS_YIELD	SYSTEM SYSOPS
**WRBRRO72	140000	MUN420120302	2	2	0.0000		ROST2_SYS_YIELD	SYSTEM
SYSOPS								
**WRBRRO72	130000	MUN420120302	2	2	0.0000		ROST2_SYS_YIELD	SYSTEM
SYSOPS								
**WRBRRO72	120000	MUN420120302	2	2	0.0000		ROST2_SYS_YIELD	SYSTEM
SYSOPS								
**WRBRRO72	110000	MUN420120302	2	2	0.0000		ROST2_SYS_YIELD	SYSTEM
SYSOPS								
**WRBRRO72	70000	MUN420120302	2	2	0.0000		ROST2_SYS_YIELD	SYSTEM
SYSOPS								
**WRBRRO72	50000	MUN420120302	2	2	0.0000		ROST2_SYS_YIELD	SYSTEM
SYSOPS								
WSSMRVLE	160110.				500			
OR516431	48033	2.0	2.0	0	0	0		
WSBRAWHT	50000.				0		1	
OR515731	0	2.0	1.0	0	0	0		
WSALLENS	145533.				0			
OR292531	0	2.0	1.5					
WSLMSTNE	225400.				0			
OR516531	67620	2.0	2.0	0	0	0		
WSGRNBRY	155000.				0			
OR515631	46500	0.1	0.1	0	0	0		
WSPOSDOM	724739.				100			
OR515531	218922	0.1	-1.0	0	0	0		
WSGRNGER	65500.				0			
OR516331	19650	1.5	1.0	0	0	0		
WSSTLHSE	235700.				0			
OR516131	70710	-1.0	-1.0	0	0	0		
WSBRABEL	445600.				0		3	-1
OR516031	137280	2.0	1.0	0	0	0		
WSAQUILA	52400.				1000			
OR515831	15720	1.5	1.5	0	0	0	7000	



**APPENDIX C**  
**Errata – June 14, 2017 Brazos River Basin Drought Study**



# MEMORANDUM



Innovative approaches  
Practical results  
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www.freese.com

**TO:** Jim Forte, Brazos River Authority

**FROM:** Jon S. Albright

**SUBJECT:** Errata – June 14, 2017 Brazos River Basin Drought Study

**DATE:** August 2, 2017

**PROJECT:** BRA03108 – Drought Study

---

On July 13, 2017, the Texas Commission on Environmental Quality (TCEQ) staff provided comments on the June 14, 2017 *Brazos River Basin Drought Study* prepared for the Brazos River Authority (BRA) and submitted to TCEQ pursuant to the terms and conditions of BRA’s System Operation Permit, Water Use Permit No. 5851 (Drought Study Report). Comments on the main document for the Drought Study Report are addressed here in this errata sheet. Corrections to Attachment 1 of the Drought Study Report, *Updated Naturalized Flow Report for the Brazos River Basin* (Naturalized Flow Report), addressing items identified in that same July 13<sup>th</sup> set of TCEQ staff comments, have been made in an updated version of the Naturalized Flow Report. These corrections are identified and detailed in a new Appendix J of the updated Naturalized Flow Report.

Responses to the TCEQ staff comments on the Drought Study Report are in italics below, and correspond to the staff’s numbered comments.

1. The text on page 6 in the two bullets referencing return flows states “1998 through 2014”. Should this be “1998 through 2015”?  
*The dates in the report are correct. When the workplan was developed for the extension of the naturalized flows, return flow data were only available through 2014. By the time we developed the naturalized flow, data for 2015 were available and were included in the study. This makes little if any difference in the return flows selected for incorporation in the study.*
2. The gage for Figure 6 is not listed in Table 1 but it does appear in Appendix A.  
*In the Drought Study Report, the gages included in the figures and tables were selected to illustrate trends identified in the study. A specific set of gages was not selected. As a result, some tables and figures will not include the same data.*
3. Appendix A has two gages (Gatesville and Bryan) that do not appear in Table 1 or in the Annual Naturalized Flows Figures.  
*See response #2.*
4. Figures 2, 3, 4, 5, 7, and 8 are repeated in Appendix A.

*These figures were also included in the Appendix so that the reader could compare the gages without the need to refer to the main text of the report.*

5. Update the text in the first bullet under “Figure 23 shows the characteristics of the recent drought:” on page 25. Figure 23 shows that the Little River subsystem is full or almost fills in 2008.

*In Figure 23, the Little River System is almost but not quite full in 2008. Lake Georgetown does not fill during this time. The first bullet under the description of characteristics of the recent drought at the bottom of page 25 should read: “The Little River subsystem is last full in September 2007, but almost fills in 2008, 2010 and 2012. At its lowest point in the recent drought, the subsystem has almost 300,000 acre-feet of water in storage.” This change has been incorporated into the report.*



# UPDATED NATURALIZED FLOW REPORT FOR THE BRAZOS RIVER BASIN

Prepared for:

**Brazos River Authority**



JUNE 2017  
Revised JULY 2017

Prepared by:

**FREESE AND NICHOLS, INC.**  
4055 International Plaza, Suite 200  
Fort Worth, Texas 76109  
817-735-7300

**ATTACHMENT 1**





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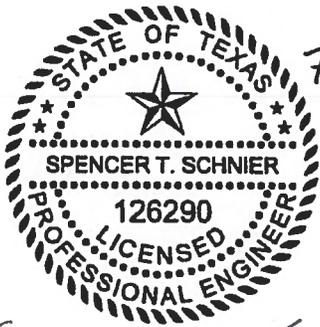
# UPDATED NATURALIZED FLOW REPORT FOR THE BRAZOS RIVER BASIN

Prepared for:

**Brazos River Authority**



*Jon S. Albright*  
Jon S. Albright  
Freese and Nichols, Inc.



7/27/2017

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7/28/2017

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## 1.0 INTRODUCTION

This report describes the extension of naturalized flows in the Brazos River Basin developed as part of a study that examines the impact of recent droughts on water available to the Brazos River Authority (BRA), referred to in this document as the “Drought Study.” The extension also includes net evaporation rates and climatic triggers associated with environmental flows. The existing naturalized flows and net evaporation rates were developed in 2001 for the Texas Natural Resource Conservation Commission, predecessor agency to the Texas Commission on Environmental Quality (TCEQ), for inclusion in the Brazos and San Jacinto-Brazos Water Availability Model (Brazos WAM). The evaporation data were modified to correct some errors in the data. The climatic data were developed when TCEQ’s adopted environmental flow standards were added to the Brazos WAM. To our knowledge the flow data have not been modified since 2001. The data covered the period from 1940 to 1997. The extended data cover the period from 1998 to 2015.

This report is an update to the original Naturalized Flow Report<sup>1</sup>, and includes much of the same information included in the original report, updated and augmented as needed. The extended flows do not include the San Jacinto-Brazos Coastal Basin.

The extended flows are not fully naturalized, having only been corrected for:

- Diversions by water rights authorized for more than 1,000 acre-feet per year,
- Reservoirs with current capacity of 10,000 acre-feet or more, and
- Return flows greater than 2 MGD.

Otherwise the flow extension uses the same methods employed in 2001. A special task in this study examined the difference between fully naturalizing the flows and only approximately naturalizing the flows in the extension period. The results of this effort are described in Section 6.0 of this report.

As part of this effort, a few changes were made to the 1940 to 1997 data. These changes include:

- Correcting evaporation weighting factors for Lake Cisco, Lake Alan Henry and Lake Leon (none of which are BRA system reservoirs).
- Updating fill relationships for control points BOWA40 (Bosque River near Waco) and YCSO62 (Yegua Creek near Somerville).
- Using historical releases from Lake Proctor to fill missing gage data for control point LEHS45 (Leon River near Hasse).
- Moving diversions for water right 2938 (City of Temple) to control point LEBE49 (Leon River near Belton) from LRLR53 (Little River near Little River).
- Correcting delivery factors for applying adjustments from control point YCSO62 at control point BRHE68 (Brazos River near Hempstead.)
- Using naturalized flows for the Brazos River at SH 21 near Bryan gage multiplied by the drainage area ratio to fill missing data for control point BRBR59 (Brazos River near Bryan).
- Updating net evaporation input data for TWDB evaporation quadrangle 405 and affected reservoirs. These corrections apply to the evaporation input into the model and do not affect the naturalized flows.

These changes are discussed in the corresponding sections of this report. For the most part, these changes should not have a significant impact on water availability. The exception is moving the diversions by the City of Temple to LEBE49. This move eliminates a large number of small negative incremental flows, which probably will affect availability in the watershed.

The estimates of naturalized flows are based on historical hydrologic records, adjusted to remove the impact of human activities. Naturalized flows were estimated at the primary control points listed in Table 1-1. Most of the primary control points are at U.S. Geological Survey (USGS) streamflow gages, for which historical streamflow data are available.<sup>2</sup> Three of the primary control points are not at USGS streamflow gages. Two are at USGS reservoir gages: Buffalo Springs Lake near Lubbock and Lake Graham near Graham. The remaining

primary control point represents the location at which water enters the Gulf of Mexico. Figure 1-1 shows the locations of the primary control points. There are 73 primary control points in the Brazos River Basin.

When flow records are available, estimates of naturalized flow are based on historical flow data adjusted to account for upstream diversions, return flows, changes in reservoir content, and evaporative losses from reservoirs. Streamflow loss factors are included in the adjustments for upstream activities. The procedures for flow naturalization are described in Section 1.1 below.

For many primary control points, records of historical streamflow are not available for parts of the period covered by the study, which is 1940 through 2015. When historical streamflows are not available, estimates of naturalized flow are based on relationships with other primary control points that have flow data covering the period in question. The relationships used to fill periods of missing data are described in Section 3.0 of this report.

Appendix B gives the naturalized flow data for the Brazos River Basin. Other appendices give additional information on the development of naturalized flow data and show comparisons with historical data. Appendix I consists of electronic files giving the naturalized flow data and the information used to develop those data.

**Table 1-1: Primary Control Points for the Brazos River Basins**

Control Point I.D.	Gage Name	USGS Number	Drainage Area (Square Miles)	Contributing Drainage Area (Square Miles)	Incremental Drainage Area (Square Miles)	Period of Data Used in Study
RWPL01	Running Water Draw at Plainview	08080700	1,291	382	382	1/40-9/53 & 10/56-4/60 & 3/61-9/78 & 10/02-12/15
WRSP02	White River Reservoir near Spur	08080910	3,069	689	307	4/64-9/76 & 7/79-12/15
DUGI03	Duck Creek near Girard	08080950	431	279	279	10/64-9/89
SFPE04	Salt Fork Brazos River near Peacock	08081000	4,619	1,985	1,017	1/50-9/51 & 10/64-9/86
CRJA05	Croton Creek near Jayton	08081200	290	290	290	9/59-9/86
SFAS06	Salt Fork Brazos River near Aspermont	08082000	5,130	2,496	221	1/40-12/15

**Table 1-1 (Continued)**

Control Point I.D.	Gage Name	USGS Number	Drainage Area (Square Miles)	Contributing Drainage Area (Square Miles)	Incremental Drainage Area (Square Miles)	Period of Data Used in Study
BSLU07	Buffalo Springs Lake near Lubbock	08079550	5,588	236	236	12/66-9/77
DMJU08	Double Mountain Fork Brazos River at Justiceburg	08079600	1,466	244	244	12/61-12/15
DMAS09	Double Mountain Fork Brazos River near Aspermont	08080500	8,796	1,864	1,384	1/40-12/15
NCKN10	North Croton Creek near Knox City	08082180	251	251	251	10/65-9/86
BRSE11	Brazos River at Seymour	08082500	15,538	5,972	1,361	1/40-12/15
MSMN12	Millers Creek near Munday	08082700	104	104	104	7/63-12/15
CFRO13	Clear Fork Brazos River near Roby	08083100	228	228	228	12/61-12/15
CFHA14	Clear Fork Brazos River at Hawley	08083240	1,416	1,416	1,188	10/67-9/89
MUHA15	Mulberry Creek near Hawley	08083245	205	205	205	10/67-9/89
CFNU16	Clear Fork Brazos River at Nugent	08084000	2,199	2,199	578	1/40-12/15
CAST17	California Creek near Stamford	08084800	478	478	478	10/62-12/15
CFFG18	Clear Fork Brazos River at Fort Griffin	08085500	3,988	3,988	1,311	1/40-12/15
HCAL19	Hubbard Creek below Albany	08086212	613	613	613	10/66-12/15
BSBR20	Big Sandy Creek above Breckenridge	08086290	280	280	280	2/62-12/15
HCBR21	Hubbard Creek near Breckenridge	08086500	1,089	1,089	196	5/55-9/86
CFEL22	Clear Fork Brazos River at Eliasville	08087300	5,697	5,697	620	7/28-9/51 & 10/61-9/82
BRSB23	Brazos River near South Bend	08088000	22,673	13,107	1,438	9/38-12/15
GHGH24	Lake Graham near Graham	08088400	221	221	221	3/58-9/00 & 10/01-12/15
CCIV25	Big Cedar Creek near Ivan	08088450	97	97	97	12/64-9/89

**Table 1-1 (Continued)**

Control Point I.D.	Gage Name	USGS Number	Drainage Area (Square Miles)	Contributing Drainage Area (Square Miles)	Incremental Drainage Area (Square Miles)	Period of Data Used in Study
SHGR26	Brazos River at Morris Sheppard Dam near Graford, Brazos River near Graford	08088600, 08088610	23,596	14,030	605	10/76-12/15
BRPP27	Brazos River near Palo Pinto	08089000	23,811	14,245	215	1/40-12/15
PPSA28	Palo Pinto Creek near Santo	08090500	573	573	573	5/51-9/76
BRDE29	Brazos River near Dennis	08090800	25,237	15,671	853	5/68-12/15
BRGR30	Brazos River near Glen Rose	08091000	25,818	16,252	581	1/40-12/15
PAGR31	Paluxy River at Glen Rose	08091500	410	410	410	6/47-12/15
NRBL32	Nolan River at Blum	08092000	282	282	282	12/47-2/87 & 10/92-9/96 & 10/97-12/98, 10/05-12/15
BRAQ33	Brazos River near Aquilla	08093100	27,244	17,678	734	1/40-12/15
AQAQ34	Aquilla Creek near Aquilla	08093500	308	308	308	1/40-5/01
	Aquilla Creek above Aquilla	08093360	255	255	255	5/01-12/15
NBHI35	North Bosque River at Hico	08094800	359	359	359	1/62-9/98
NBCL36	North Bosque River near Clifton	08095000	968	968	609	1/40-12/15
NBVM37	North Bosque River at Valley Mills	08095200	1,146	1,146	178	8/59-9/05, 8/07-12/15
MBMG38	Middle Bosque River near McGregor	08095300	182	182	182	9/59-9/85 & Partial Records 10/85-2/95 & 10/07-12/15
HGCR39	Hog Creek near Crawford	08095400	78	78	78	9/59-9/85 & Partial Records 10/85-9/95 & 10/07-12/15
BOWA40	Bosque River near Waco	08095600	1,656	1,656	250	10/59-9/75, 4/76-12/81 & 4/82-6/82
BRWA41	Brazos River at Waco	08096500	29,573	20,007	365	10/14-12/15
BRHB42	Brazos River near Highbank	08098290	30,436	20,870	863	10/65-12/15
LEDL43	Leon River near De Leon	08099100	479	479	479	9/60-9/86 & 10/96-9/97 & 10/07-12/15

**Table 1-1 (Continued)**

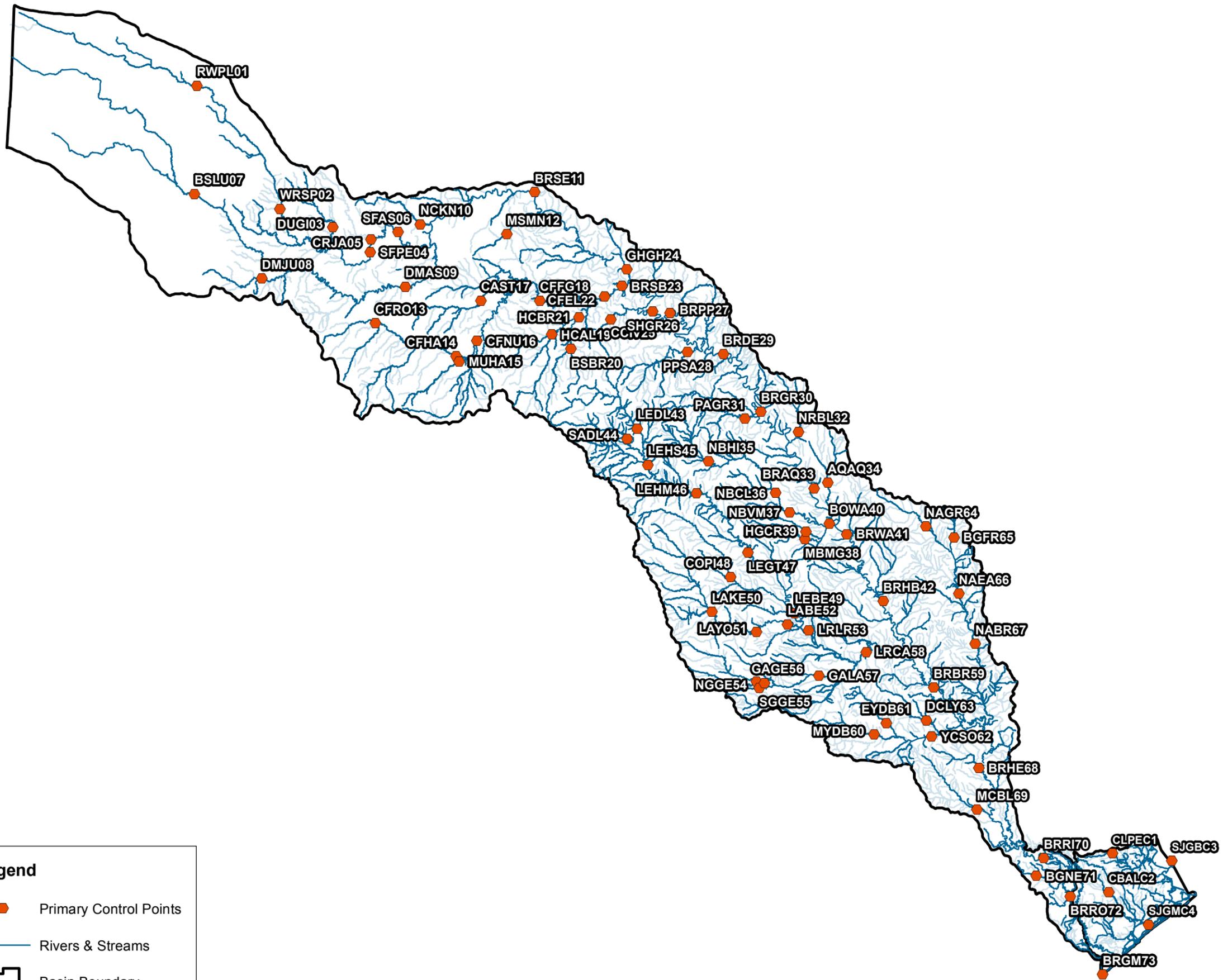
Control Point I.D.	Gage Name	USGS Number	Drainage Area (Square Miles)	Contributing Drainage Area (Square Miles)	Incremental Drainage Area (Square Miles)	Period of Data Used in Study
SADL44	Sabana River near De Leon	08099300	264	264	264	9/60-9/86 & 10/99-12/15
LEHS45	Leon River near Hasse	08099500	1,261	1,261	518	1/39-12/15
LEHM46	Leon River near Hamilton	08100000	1,891	1,891	630	9/60-12/97 & 10/07-12/15
LEGT47	Leon River at Gatesville	08100500	2,342	2,342	451	10/50-12/15
COPI48	Cowhouse Creek at Pidcoke	08101000	455	455	455	10/50-12/15
LEBE49	Leon River near Belton	08102500	3,542	3,542	745	10/23-12/15
LAKE50	Lampasas River near Kempner	08103800	818	818	818	10/62-12/15
LAYO51	Lampasas River at Youngsport	08104000	1,240	1,240	422	1/40-9/80
LABE52	Lampasas River near Belton	08104100	1,321	1,321	81	2/63-10/89 & 4/99-12/15
LRLR53	Little River near Little River	08104500	5,228	5,228	365	8/62-12/15
NGGE54	North Fork San Gabriel River near Georgetown	08104700	248	248	248	7/68-12/15
SGGE55	South Fork San Gabriel River at Georgetown	08104900	133	133	133	12/67-12/15
GAGE56	San Gabriel River at Georgetown	08105000	405	405	24	1/40-9/73 & partial 11/84-9/86
GALA57	San Gabriel River at Laneport	08105700	738	738	333	10/65-12/15
LRCAS8	Little River at Cameron	08106500	7,065	7,065	1,099	11/16-12/15
BRBR59	Brazos River at SH 21 near Bryan	08108700	39,049	29,483	1,548	8/93-12/15
	Brazos River near Bryan	08109000	39,515	29,949	2,014	7/26-9/93
MYDB60	Middle Yegua Creek near Dime Box	08109700	236	236	236	8/62-12/15
EYDB61	East Yegua Creek near Dime Box	08109800	244	244	244	8/62-12/15
YCSO62	Yegua Creek near Somerville	08110000	1,009	1,009	529	1/40-8/91 & 10/08-12/15
DCLY63	Davidson Creek near Lyons	08110100	195	195	195	10/62-12/15

**Table 1-1 (Continued)**

Control Point I.D.	Gage Name	USGS Number	Drainage Area (Square Miles)	Contributing Drainage Area (Square Miles)	Incremental Drainage Area (Square Miles)	Period of Data Used in Study
NAGR64	Navasota River above Groesbeck	08110325	240	240	240	6/78-12/15
BGFR65	Big Creek near Freestone	08110430	97	97	97	7/78-12/15
NAEA66	Navasota River near Easterly	08110500	968	968	631	3/24-12/15
NABR67	Navasota River near Bryan	08111000	1,454	1,454	486	1/51-9/94
BRHE68	Brazos River near Hempstead	08111500	43,880	34,314	1,707	1/40-12/15
MCBL69	Mill Creek near Bellville	08111700	376	376	376	8/63-9/92, 5/00-12/15
BRR170	Brazos River at Richmond	08114000	45,007	35,441	751	1/40-12-15
BGNE71	Big Creek near Needville	08115000	43	43	43	6/47-6/50 & 4/52-12/15
BRRO72	Brazos River at Rosharon	08116650	45,339	35,773	289	4/67-9/80 & 5/84-12/15
BRGM73	Brazos River at Gulf of Mexico	---	45,497	35,931	158	None

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**Legend**

- Primary Control Points
- Rivers & Streams
- Basin Boundary



PROJECT NO.	BR003108
DATE CREATED	5/31/2017
DATUM & COORDINATE SYSTEM	NAD83 State Plane North Texas North Central
FILE NAME	Fig1-1_Brazos_Primary_CP
PREPARED BY	DML

BRAZOS RIVER AUTHORITY  
BRA System Operation

**Control Point Locations**

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 10457 TOWN AND COUNTRY WAY, SUITE 600  
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## 1.1 SPECIFIC TECHNIQUES FOR NATURALIZATION OF FLOWS IN THE BRAZOS RIVER BASIN

### 1.1.1 Naturalization of Flow Data

Naturalized flow data are based on historical flows, adjusted to remove the effects of human activity. A general equation for naturalized flow is as follows:

$$\text{Naturalized Flow} = \text{Historical Flow} + \text{Delivery Factor} * (\text{Upstream Diversions} - \text{Upstream Return Flows} + \text{Changes in Upstream Reservoir Contents} + \text{Upstream Reservoir Evaporation})$$

The elements of the equation are as follows:

*Historical Flow* – Flow recorded at USGS streamflow gages or estimated from reservoir spills and releases.

*Upstream Diversions* – Upstream diversions as recorded in TCEQ records, BRA and other water right holder records, or as estimated when records are missing.

*Upstream Return Flows* – Upstream return flows as recorded in TCEQ records or as estimated when records are missing. Table E-1 lists significant municipal wastewater discharges in the Brazos River Basin used in the naturalization process. Table E-2 lists significant non-municipal wastewater discharges in the Brazos River Basin considered in the naturalization. In the original naturalized flows (1940 to 1997), all wastewater discharges as provided by TCEQ were included in the naturalization. However, when data were missing estimates of historical discharges were not made for permits of less than 1 MGD. In the extended flows (1998 to 2015), only return flows greater than 2 MGD were included in the naturalization.

*Changes in Upstream Reservoir Contents* – Changes in content for major upstream reservoirs are based on USGS records, Texas Water Development Board (TWDB) records, U.S. Army Corps of Engineers (USACE) records, and records kept by others, or estimates of content changes if records are not available. Table E-3 summarizes the method used for estimating content change for each major reservoir. In the original

naturalized flows, content changes for reservoirs with less than 5,000 acre-feet of permitted conservation storage were not used. (Lake Mexia, which currently has less than 5,000 acre-feet of conservation storage, is permitted for 9,600 acre-feet of storage.) For the extended flows, only reservoirs with current conservation storage capacity greater than 10,000 acre-feet were included in the naturalization. In the original naturalized flows, content changes were generally based on reported storage. However, in recent years the USGS has been reporting reservoir water surface elevation rather than storage. In these cases, reservoir storage was calculated from the reported elevation using the latest volumetric survey information.

*Upstream Reservoir Evaporation* – Evaporation from upstream reservoirs was estimated by multiplying the net reservoir evaporation rate by the reservoir surface area. Table E-3 summarizes the method for estimating the reservoir surface area for each major reservoir. Evaporation from reservoirs with less than 5,000 acre-feet of permitted conservation storage was not used in the calculations. The impact of evaporation from these smaller reservoirs on streamflows is minimal.

*Delivery Factor* - (1 - channel loss factor) applied to changes in flow. This factor is used to account for changes in the amount of water lost between control points from losses under natural conditions. Further discussion on reservoir loss factors may be found in Section 2.0 of this report.

Many reservoirs in the Brazos River Basin make large releases for downstream use, transporting the water by the bed and banks of natural streams. In some cases, these releases will pass and be measured by downstream gages before being diverted from the stream. The releases should not be treated as diversions in the computation of naturalized flows for the primary control points between the reservoir and the point of use.

### 1.1.2 Computation of Adjusted Net Reservoir Evaporation Rates

Adjusted net reservoir evaporation is the rate at which water is lost to evaporation from the surface of a reservoir. It represents the net impact of evaporation and of rainfall directly on the reservoir surface. The equation for adjusted net reservoir evaporation is as follows:

$$\text{Adjusted Net Reservoir Evaporation} = \text{Gross Reservoir Evaporation} - \text{Rainfall} + \text{the Portion of Rainfall That Would Have Run Off in the Absence of a Reservoir.}$$

The sources of the data needed to determine reservoir evaporation rates are as follows:

*Gross Reservoir Evaporation* – Gross evaporation rates have been measured for some of the study period at several of the large reservoirs, as shown in Table E-4. When pan measurements at the reservoir are available they were used to estimate reservoir evaporation. For those reservoirs where these data are unavailable, or for periods when pan evaporation is unavailable, evaporation rates were derived using TWDB quadrangle data. Monthly values for a specific location are derived by taking a weighted average for up to 4 nearby quadrangles. Table E-5 summarizes the quadrangle factors that were used to estimate gross reservoir evaporation when pan measurements are missing or not available.

*Precipitation* – Precipitation records are available throughout the basin from the National Oceanic and Atmospheric Administration, the USACE and TWDB. Precipitation data by quadrangle are available from the TWDB for 1940 through 2016.<sup>3</sup> As with pan evaporation, local rainfall data recorded at a reservoir site were used where available. When necessary, the TWDB quadrangle data were used to estimate precipitation.

*The Portion of Rainfall That Would Have Run Off in the Absence of a Reservoir* – Runoff (expressed as inches) is generally obtained from a nearby USGS gage or gages. Table E-6 shows streamflow gages that were used to estimate quadrangle runoff for each quadrangle.

### 1.1.3 Area and Capacity

Available area and capacity data were employed to convert historical elevations from the USGS and USACE to storage and surface area. Recent volumetric surveys by TWDB were employed when available.

## 1.2 DATA SOURCES AND METHODS OF FILLING MISSING DATA

The estimates of naturalized flow are based on historical streamflow data as recorded by USGS streamflow gages or, for reservoir primary control points, historical spills and releases from the reservoir. To convert historical flows to naturalized flows, the measured flows are adjusted by adding historical diversions, subtracting historical return flows, adding historical changes in upstream reservoir contents, and adding historical net evaporation losses from upstream reservoirs. These upstream changes were adjusted for channel losses as described in Section 2.0 below.

### 1.2.1 Historical Diversions

Historical diversions are based on self-reported data from water right holders maintained by the TCEQ.<sup>4</sup> Data in the TCEQ electronic database were compared with data from other sources, such as the TWDB or accounting plans, and corrected where appropriate. Since historical diversions are added to historical streamflows in the naturalization process, the assumption of no diversion results in a conservatively low estimate of naturalized flows. For that reason, historical diversions were seldom estimated when records were missing. Diversions were only estimated for rights with a clear record of consistent diversions and a few years of missing information. In some cases, recorded diversions that greatly exceeded water rights were assumed to be incorrect data and were not used in naturalization. The specific adjustments to recorded diversions are discussed in the water use files included in the electronic files in Appendix I.

There are some water rights in the Brazos River Basin that authorize release from reservoirs and diversion downstream. In the naturalization process, it is the location of the diversion from the stream that matters, and this is not generally reflected in TCEQ records. For example, most

BRA reservoir rights are also authorized for use downstream. All municipal use from Lake Palo Pinto was assumed to be diverted from Palo Pinto Creek downstream of the PPSA28 control point. The amount released from BRA System reservoirs for downstream diversion, the amount diverted directly from BRA reservoirs, and the location of the downstream diversions were developed on the basis of information provided by the BRA<sup>5</sup> and information in Freese and Nichols' files.<sup>6</sup> The amount diverted was based on the best available information, which included records provided by downstream users, TCEQ contract diversion records, and estimates based on BRA releases less channel losses. The water use files included in the electronic files, Appendix I, show the basis for the diversions used.

### 1.2.2 Return Flows

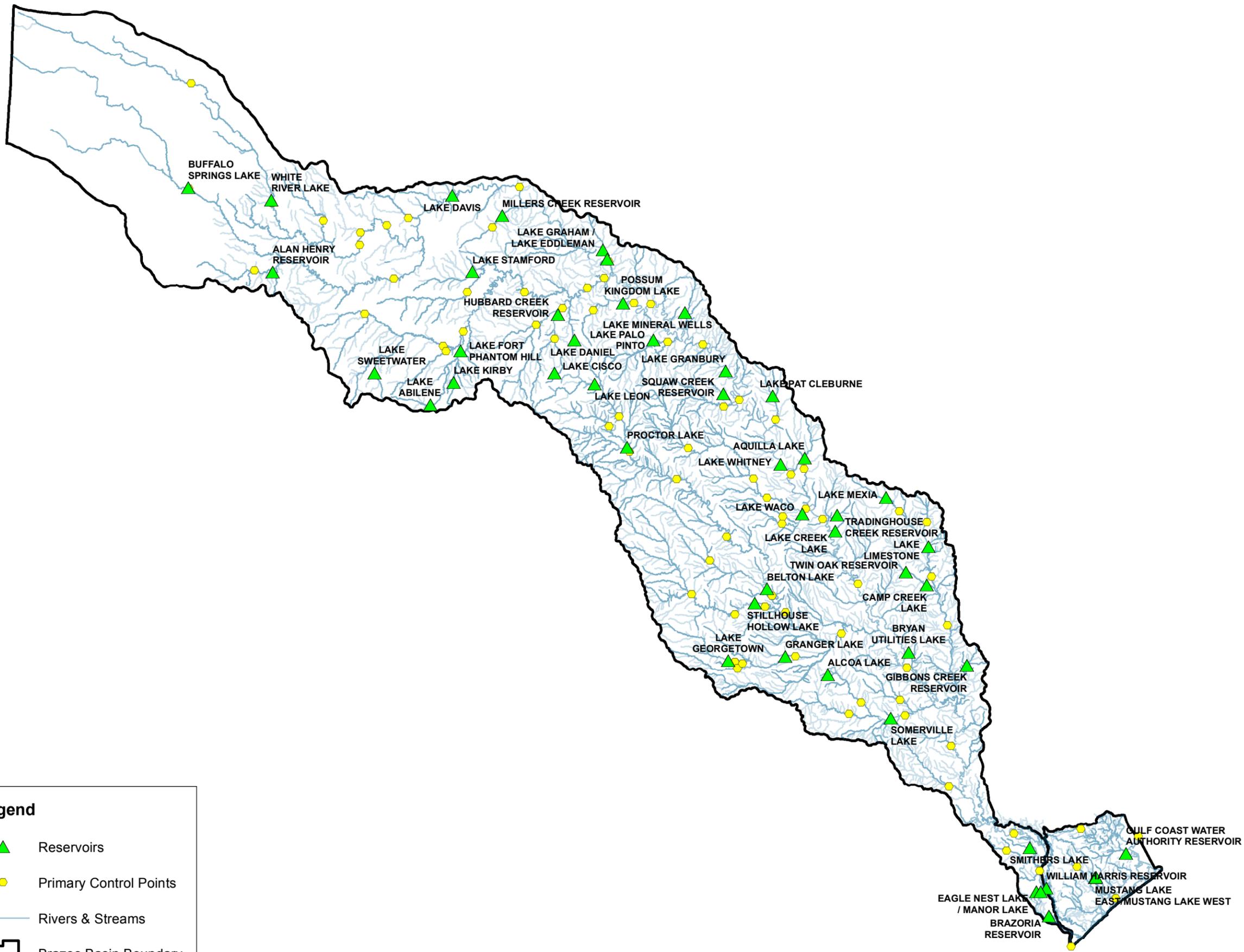
Data on return flows of treated wastewater since the mid-1970s are available from the TCEQ. Return flow data from earlier years are extremely limited. Even for the period with records available, some months are missing and some records appear to be inconsistent. Missing return flow data were estimated on the basis of use in other years and changes in population. Estimates for the early years of the study (1940 through mid-1970's) are less reliable than the actual data available in recent years. Return flow data for stormwater discharges or once-through cooling water discharges were not included in the naturalization process, since they do not reflect artificial increases to natural flows. Reported consumptive use from industrial recirculations is accounted for in the historical diversions.

In some cases, diversions from one part of the Brazos River Basin are released into the stream elsewhere. If the diversion and the release are in the same primary control point watershed, no adjustment is needed. However, if water is diverted in one primary control point watershed and released in another, the release should appear as a return flow in the receiving watershed. Examples of this operation include Alcoa's diversions from the Little River released into East Yegua Creek and NRG Texas Power's diversions from the Brazos River released into Smithers Lake on Dry Creek.

Generally, irrigation diversions are assumed to have no return flow. Irrigation return flows in the lower Brazos River Basin are discharged outside of the basin, primarily into the San Jacinto-Brazos Coastal Basin.

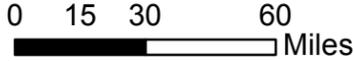
### 1.2.3 Changes in Reservoir Content

Figure 1-2 shows the locations of reservoirs in the Brazos River Basin that were included in the naturalization process. For the original naturalized flows (1940 to 1997), most of the data on changes in reservoir content are USGS reservoir content data, which are available for most of the major reservoirs in the Brazos River Basin. If USGS data were not available, data were obtained from reservoir owners (if possible) or from data provided by the TWDB. In more recent years the USGS has started reporting water surface elevation rather than reservoir storage. As a result, the extended flows (1998 to 2015) rely on elevation data from the USGS or the USACE, using area-capacity-elevation relationships to determine historical storage and surface area. If more than one volumetric survey was available for a reservoir, the following criteria were used to select a date to change between Area-Capacity-Elevation (ACE) relationships: A date half-way between the two volumetric surveys was selected and the estimated reservoir volume of nearby dates was compared for the two surveys. The date that minimized the difference between the two volume estimates was selected as the date to switch surveys. If no data were available, changes in reservoir contents were estimated on the basis of reservoir operation studies. The reservoir operation study is an iterative water balance spreadsheet model that uses runoff, demand, and net evaporation rate to determine the end of month content, average area, evaporation and spills. Table E-3 gives specific information regarding the source of content change data.



**Legend**

- ▲ Reservoirs
- Primary Control Points
- Rivers & Streams
- Brazos Basin Boundary



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DATE CREATED	6/7/2017
DATUM & COORDINATE SYSTEM	NAD83 State Plane North Texas North Central
FILE NAME	Fig1-2_Brazos_Primary_CPandReservoirs
PREPARED BY	DML

BRAZOS RIVER AUTHORITY  
BRA System Operation

## Reservoir and Control Point Locations

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 10497 TOWN AND COUNTRY WAY, SUITE 600  
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FIGURE  
**1-2**



### 1.2.4 Net Evaporation Losses from Reservoirs

Historical net evaporation losses from reservoirs were determined by multiplying the historical reservoir surface area by the net reservoir evaporation rate. Surface areas were based on reservoir contents or elevations and area-capacity-elevation relationships for the reservoirs. The net reservoir evaporation rates for reservoirs were based on data from nearby evaporation and rainfall gages where available<sup>7,8</sup>. For reservoirs without nearby evaporation gages, TWDB data on reservoir evaporation rates were used<sup>9,10</sup>. Table 1-2 lists the reservoirs used in the naturalization process.

**Table 1-2: Major Reservoirs in the Brazos River Basin Used for Naturalization**

Reservoir	Contributing Drainage Area (Square Miles)	Conservation Storage (Ac-Ft)		Survey Dates Used in Drought Study	Included in Drought Study	WR No.
		Permitted	Latest Survey			
White River	689	44,897	31,846	10/92	Yes	CA 12-3693
Buffalo Springs	236	4,730	4,200	Original	Yes	CA 12-3706
Alan Henry	395	115,937	94,808	Jul-05	Yes	P 12-4155
Davis	--	4,477	5,400	--	No	CA 12-3440
Sweetwater	104	10,000	12,200	1948	Yes	CA 12-4130
Abilene	110	11,868	6,095	1943	No	CA 12-4142
Kirby	44	8,500	7,620	1943	No	CA 12-4150
Fort Phantom Hill	470	73,960	70,030	Nov-93	Yes	CA 12-4151
Stamford	360	59,810	51,570	1999	Yes	CA 12-4179
Cisco	26.0	45,000	26,000	1923	Yes	CA 12-4211
Hubbard Creek	1,085	317,750	324,983	02/97	Yes	CA 12-4213
Daniel	115	11,400	6,115	1980	No	CA 12-4214
Millers Creek	228	30,696	27,888	07/93	Yes	CA 12-3444
Graham	221	52,389	45,302	Apr-98	Yes	CA 12-3458
Possum Kingdom	14,030	724,739	540,340	1994 and 2005	Yes	CA 12-5155
Palo Pinto	461	44,100	27,215	Jun-07	Yes	CA 12-4031
Mineral Wells	63	8,140	6,760	1970	No	CA 12-4039
Squaw Creek	64	151,500	151,273	Dec-07	Yes	CA 12-4097
Granbury	16,113	155,000	129,011	1993 (recalculated), 2003	Yes	CA 12-5156
Pat Cleburne	100	25,600	26,008	1998 and 2008	Yes	CA 12-4106
Whitney	17,623	50,000	554,203	Jun-05	Yes	CA 12-5157

**Table 1-2 (Continued)**

Reservoir	Contributing Drainage Area (Square Miles)	Conservation Storage (Ac-Ft)		Survey Dates Used in Drought Study	Included in Drought Study	WR No.
		Permitted	Latest Survey			
Aquilla	252	52,400	43,279	1995, 2002, 2008 and 2014	Yes	CA 12-5158
Waco	1,652	104,100	189,773	1995 (recalculated), 2011	Yes	CA 12-4342, P 5094
Tradinghouse	39	37,814	37,800	1973	Yes	CA 12-4342
Lake Creek	17	8,500	--	--	No	CA 12-4345
Marlin City Lake	18	6,847	--	--	No	CA 12-4355
Leon	252	28,000	28,042	2015	Yes	CA 12-3470
Proctor	1,259	59,400	54,762	1993 (recalculated), 2002 (recalculated), 2012	Yes	CA 12-5159
Belton	3,531	457,600	435,214	1994, 2003	Yes	CA 12-5160, CA 12-2936
Stillhouse Hollow	1,313	235,700	227,858	1995 (recalculated), 2005	Yes	CA 12-5161
Georgetown	247	37,100	36,904	2005	Yes	CA 12-5162
Granger	709	65,500	51,822	1995 (recalculated), 2002, 2008 & 2013	Yes	CA 12-5163
Alcoa	6	14,750	14,600	01/57	Yes	CA 12-5272
Sandow Surface Lignite Mine	--	7,529	--	--	No	CA 12-5540
Somerville	1,007	160,110	150,293	1995 (recalculated), 2003 (recalculated), 2012	Yes	CA 12-5164
Mexia	196	9,600	4,687	1996, 2008	No	CA 12-5287
Limestone	675	225,400	203,780	2002 (recalculated), 2012	Yes	CA 12-5165
Twin Oaks	45	30,319		1981	Yes	CA 12-5298
Camp Creek	40	8,400	8,350	1973	No	CA 12-5301
Gibbons Creek	85	32,084	27,603	Mar-08	Yes	CA 12-5311
Smithers	24	18,750	18,680	1973	Yes	CA 12-5325
Eagle Nest Lake & Manor Lake	13	18,000	--	--	No	CA-12-5492
William Harris	0	10,200	--	--	No	CA-12 5328
Brazoria	0	21,973	--	--	No	CA-12 5328

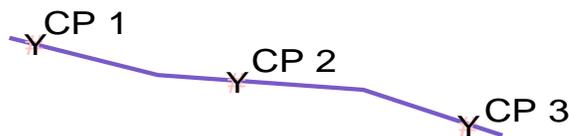
### 1.3 ADJUSTMENT FOR NEGATIVE NATURALIZED FLOWS

It is possible to compute negative monthly values for naturalized flows in the streamflow naturalization process. There are several potential causes of these negative values:

- Incorrect data on historical streamflows or upstream adjustments (streamflows too low, return flows too high, diversions too low, change in reservoir contents too low, evaporation too low, etc.)
- Losses different from those assumed in the naturalization process
- Timing problems, in which the effect of an upstream change arrives at the control point in a different month.

Most of the negative flows are relatively small, with larger values sometimes occurring downstream from major reservoirs. In this study, months with negative naturalized flows were reviewed carefully to correct any data problems that could be found. Corrections to data included revisions made to electronic TCEQ diversion records based on review of the TCEQ paper water use records and adjusting abnormally high or low values. Remaining negative naturalized flows were set to zero. The following example describes this process.

In reference to the figure below, the following equations describe how adjustments are passed to the downstream control point.



The adjustments to the upstream control point (CP2) are computed.

$$\text{Adjustment CP2} = \text{Diversions CP2} - \text{Return Flows CP2} + \text{Evaporative Losses CP2} + \text{Change in Storage CP2} + \text{Delivery Factor} * (\text{Diversions CP1} - \text{Return Flows CP1} + \text{Evaporative Losses CP1} + \text{Change in Storage CP1})$$

A negative naturalized flow at the upstream control point (CP2) occurs when the adjustments are a negative number with an absolute value greater than the historical flow at the control point. If the adjustments are greater than the historical flow, the adjustments are changed to equal the negative of the historical flow, resulting in zero naturalized flow.

$$\text{If Adjustment CP2} < (- \text{Historical Flow CP2}), \text{ then Adjustment CP2} = (- \text{Historical Flow CP2})$$
$$\text{Natural Flow CP2} = \text{Historical Flow CP2} + \text{Adjustment CP2}$$

The adjustments are passed to the downstream control point.

$$\text{Adjustment CP3} = \text{Diversions CP3} - \text{Return Flows CP3} + \text{Evaporative Losses CP3} + \text{Change in Storage CP3} + \text{Delivery Factor} * \text{Adjustment CP2}$$

#### **1.4 SPRINGFLOWS AND THEIR EFFECT ON NATURALIZED FLOWS**

The impact of groundwater development on streamflows in the Brazos River Basin has not been documented. Inspection of historical records does not show any marked changes in flow that may be attributed to changes in springflow. Therefore, no adjustments of gaged or naturalized flows were made to remove or adjust for the effects of groundwater development in the Brazos River Basin.

## **2.0 CHANNEL LOSSES**

The channel losses used for the flow extension have not been modified from the original data developed in 2001. Table 2-1 gives the delivery factor from each primary control point to the next downstream control point. The delivery factor is the fraction of upstream flows that reaches the downstream point and is equal to one minus the channel losses expressed as a fraction. Because the gaged records already reflect channel losses that occurred historically, channel losses in the flow naturalization and simulation are applied to changes in flow only, not to total flow.

The delivery factors selected for this study represent long-term averages. Loss rates during drought times have been shown to be substantially greater than those selected for this study

and delivery factors, which are defined as 1.0 – loss rate, are substantially lower during droughts.<sup>11</sup> The gaged flows upon which the naturalized flows are based inherently include the effects of channel losses. Accordingly, during the naturalization process, the delivery factors were applied to changes in flow that were added to or subtracted from the gaged flows (effluent discharges, historical diversions, changes in storage, etc.).

Between two control points, CP1 (upstream) and CP2 (downstream), the naturalized flows at the downstream point (CP2) are computed as follows:

$$\text{Naturalized Flow CP2} = \text{Historical Flow CP2} + \text{Diversions CP2} - \text{Return Flows CP2} + \text{Evaporative Losses CP2} + \text{Change in Storage CP2} + \text{Delivery Factor Between CP1 and CP2} \\
 * (\text{Diversions CP1} - \text{Return Flows CP1} + \text{Evaporative Losses CP1} + \text{Change in Storage CP1}).$$

**Table 2-1: Control Points and Corresponding Delivery Factors**

Upstream Control Point ID	Description	Downstream Control Point ID	Segment Delivery Factor from Nat Flow Report
RWPL01	Running Water Draw at Plainview	WRSP02	0.05
WRSP02	White River	SFPE04	0.61769
DUGI03	Duck Creek	SFPE04	0.80101
SFPE04	Salt Fork Brazos River near Peacock	SFAS06	0.84748
CRJA05	Croton Creek near Jayton	SFAS06	0.88268
SFAS06	Salt Fork Brazos River near Aspermont	BRSE11	0.53157
BSLU07	Buffalo Springs Lake near Lubbock	DMAS09	0.32574
DMJU08	Double Mountain Fork near Justiceburg	DMAS09	0.513
DMAS09	Double Mountain Fork near Aspermont	BRSE11	0.50862
NCKN10	North Croton Creek near Knox City	BRSE11	0.62723
BRSE11	Brazos River at Seymour	BRSB23	0.57884
MSMN12	Miller's Creek near Munday	BRSB23	0.537792
CFRO13	Clear Fork Brazos River near Roby	CFHA14	0.6628
CFHA14	Clear Fork Brazos River near Hawley	CFNU16	0.8803
MUHA15	Mulberry Creek near Hawley	CFNU16	0.89757
CFNU16	Clear Fork Brazos River at Nugent	CFFG18	0.56482
CAST17	California Creek near Stamford	CFFG18	0.67221

**Table 2-1 (Continued)**

Upstream Control Point ID	Description	Downstream Control Point ID	Segment Delivery Factor from Nat Flow Report
CFFG18	Clear Fork Brazos River at Fort Griffin	CFEL22	0.68637
HCAL19	Hubbard Creek below Albany	HCBR21	0.86321
BSBR20	Big Sandy Creek above Breckenridge	HCBR21	0.90326
HCBR21	Hubbard Creek near Breckenridge	CFEL22	0.84488
CFEL22	Clear Fork Brazos at Eliasville	BRSB23	0.91272
BRSB23	Brazos River near South Bend	SHGR26	0.98237
GHGH24	Lake Graham near Graham	SHGR26	0.98333
CCIV25	Big Cedar Creek near Ivan	SHGR26	0.99139
SHGR26	Brazos River at Morris Sheppard Dam near Graford	BRPP27	0.99487
BRPP27	Brazos River near Palo Pinto	BRDE29	0.98032
PPSA28	Palo Pinto Creek near Santo	BRDE29	0.95937
BRDE29	Brazos River near Dennis	BRGR30	0.98
BRGR30	Brazos River near Glen Rose	BRAQ33	0.97801
PAGR31	Paluxy River at Glen Rose	BRAQ33	0.9777
NRBL32	Nolan River at Blum	BRAQ33	0.98776
BRAQ33	Brazos River near Aquilla	BRWA41	0.98733
AQAQ34	Aquilla Creek	BRWA41	0.99269
NBHI35	North Bosque River at Hico	NBCL36	0.78957
NBCL36	North Bosque River near Clifton	NBVM37	0.93648
NBVM37	North Bosque River at Valley Mills	BOWA40	0.88857
MBMG38	Middle Bosque River at Valley Mills	BOWA40	0.94499
HGCR39	Hog Creek near Crawford	BOWA40	0.94601
BOWA40	Bosque River near Waco	BRWA41	0.9851
BRWA41	Brazos River at Waco	BRHB42	0.98619
BRHB42	Brazos River near Highbank	BRBR59	0.98035
LEDL43	Leon River near DeLeon	LEHS45	0.80254
SADL44	Sabana River near DeLeon	LEHS45	0.82774
LEHS45	Leon River near Hasse	LEHM46	0.63
LEHM46	Leon River near Hamilton	LEGT47	0.9751
LEGT47	Leon River at Gatesville	LEBE49	0.97109
COPI48	Cowhouse Creek near Pidcoke	LEBE49	0.99275
LEBE49	Leon River near Belton	LRLR53	0.9939
LAKE50	Lampasas River near Kempner	LAYO51	0.99121
LAYO51	Lampasas River at Youngsport	LABE52	0.99217
LABE52	Lampasas River near Belton	LRLR53	0.99477
LRLR53	Little River near Little River	LRCA58	0.97831
NGGE54	North Fork San Gabriel River near Georgetown	GAGE56	0.99854

**Table 2-1 (Continued)**

Upstream Control Point ID	Description	Downstream Control Point ID	Segment Delivery Factor from Nat Flow Report
SGGE55	South Fork San Gabriel River at Georgetown	GAGE56	0.99887
GAGE56	San Gabriel River at Georgetown	GALA57	0.99107
GALA57	San Gabriel River at Laneport	LRCA58	0.98762
LRCA58	Little River at Cameron	BRBR59	0.96473
BRBR59	Brazos River near Bryan	BRHE68	0.97315
MYDB60	Middle Yegua Creek near Dime Box	YCSO62	0.97764
EYDB61	East Yegua Creek near Dime Box	YCSO62	0.98052
YCSO62	Yegua Creek near Somerville	BRHE68	0.97487
DCLY63	Davidson Creek near Lyons	BRHE68	0.97181
NAGR64	Navasota River above Groesbeck	NAEA66	0.98678
BGFR65	Big Creek near Freestone	NAEA66	0.99323
NAEA66	Navasota River near Easterly	NABR67	0.99034
NABR67	Navasota River near Bryan	BRHE68	0.95909
BRHE68	Brazos River near Hempstead	BRRI70	0.97049
MCBL69	Mill Creek near Bellville	BRRI70	0.98008
BRRI70	Brazos River at Richmond	BRRO72	0.98969
BGNE71	Big Creek near Needville	BRRO72	0.99036
BRRO72	Brazos River near Rosharon	BRGM73	0.98344
BRGM73	Brazos River at Gulf of Mexico	N/A	--

### 3.0 FILLING NATURALIZED FLOWS

For the Drought Study, naturalized flow data were developed for January 1940 through December 2015. As can be seen in Table 1-1, streamflow data are not available to cover the entire period for many of the primary control points. To fill these missing data, statistical relationships were established with other locations for which data were available. Table 3-1 shows the relationships used to fill missing data. In 2001 when the original naturalized flows were developed, several different potential fill relationships were tried for most control points. Appendix E of the 2001 Naturalized Flow Report lists all of the relationships tried for each control point. In all but the few cases listed below, the fill relationships used in 2001 were retained when the flow was extended. These relationships were verified where appropriate.

Five new fill relationships were applied to the extended flow data, four of which were applied to data before 1997, changing the naturalized flows developed in 2001. These new fills are indicated by bold text in Table 3-1. These changes include:

- **AQAQ34 (Aquilla Creek near Aquilla).** In June 2001, this gage was cancelled and replaced with a new gage upstream, Aquilla Creek above Aquilla. The new gage is just downstream of Lake Aquilla. For the extended flows, the flows at the new upstream gage were naturalized and a drainage area ratio was used to calculate the flows at the old downstream location. This fill only affects the extended flows after June 2001.
- **BOWA40 (Bosque River near Waco).** A new fill relationship was developed for the extended flows using a multi-variable regression of the three upstream gages NBVM37, MBMG38 and HGCR39. This relationship was used to fill the flows between October 2007 and December 2015. This same relationship was applied to several months of missing data between 1975 and 1985 in the original flows, changing the original naturalized flows for those months.
- **LEHS45 (Leon River near Hasse).** USGS flow data are missing from October 1991 to August 2007. However, this gage is located very close to Lake Proctor, and almost all of the flow at the gage consists of releases from that reservoir. A statistical relationship was developed between the monthly gated flows reported by the USACE and the monthly historical USGS flows and applied to calculate the historical flows for the missing months. The adjusted gated flows were used as historical flows at the Hasse gage (i.e. naturalization corrections were applied to them). This changes the original flows at this location from October 1991 to December 1997, and affects the extended flows from January 1998 to August 2007.
- **BRBR59 (Brazos River near Bryan).** The Bryan gage was cancelled in October 1993 and replaced with a new gage, the Brazos River at SH21 near Bryan a few miles upstream. In 2001, the missing flows at the older downstream location were filled with other control points. The flows at the new upstream gage were not considered. For this study, the

flows at the new gage were naturalized and a drainage area ratio was applied to estimate flows at the BRBR59 location. This change affects the original flows from 1993 to 1997 and all of the extended flows.

- YCSO62 (Yegua Creek near Somerville). For the extended flows, a new fill relationship using the two upstream primary control points MYDB60 and EYDB61 was developed to fill missing flows between January 1998 and September 2008. This same fill relationship was applied to the missing flows from October 1991 to December 1997, changing the original naturalized flows.

Another significant change to the fill data was considered but not applied in the Drought Study. Like the Brazos River near Bryan gage, the Navasota River near Bryan gage was cancelled in October 1994 and replaced with a new gage several miles upstream, the Navasota River at OSR near Bryan. This gage could be naturalized and used to calculate flows at the old downstream location. We recommend that future modifications to the naturalized flows in the Brazos Basin consider making this change.

**Table 3-1: Relationships Used to Fill Missing Data**

Control Point	Name	Data Missing	Fill Relationship Used
RWPL01	Running Water Draw at Plainview	10/53-9/56 & 5/60-2/61	RWPL01 = 0.033 * SFAS06
		10/78-9/02	RWPL01 = 0.141 * WRSP02
WRSP02	White River Reservoir near Spur	1/40-8/63	WRSP02 = 0.207 * SFAS06
		10/76-6/79	Reservoir operation study
DUGI03	Duck Creek near Girard	1/40-9/64 & 10/89-12/15	DUGI03 = 0.138 * SFAS06
SFPE04	Salt Fork Brazos River near Peacock	1/40-12/49 & 10/51-9/64 & 10/86-12/15	SFPE04 = 0.701 * SFAS06
CRJA05	Croton Creek near Jayton	1/40-9/59 & 10/86-12/15	CRJA05 = 0.153 * SFAS06
BSLU07	Buffalo Springs Lake near Lubbock	1/40-8/59	BSLU07 = 0.129 * DMAS09
		12/61-12/66 & 10/77-12/15	Reservoir operation study
DMJU08	Double Mountain Fork Brazos River at Justiceburg	1/40-11/61	DMJU08 = 0.201 * DMAS09

**Table 3-1 (Continued)**

Control Point	Name	Data Missing	Fill Relationship Used
NCKN10	North Croton Creek near Knox City	1/40-9/65 & 10/86-12/15	NCKN10 = 0.154 * SFAS06
MSMN12	Millers Creek near Munday	1/40-6/63	MSMN12 = 0.050 * [CFFG18 - (0.56482 * CFNU16)]
CFRO13	Clear Fork Brazos River near Roby	1/40-12/61	CFRO13 = 0.061 * DMAS09
CFHA14	Clear Fork Brazos River at Hawley	1/40-9/67 & 10/89-12/15	CFHA14 = 0.464 * CFNU16
MUHA15	Mulberry Creek near Hawley	1/40-9/67 & 10/89-12/15	MUHA15 = 0.081 * CFNU16
CAST17	California Creek near Stamford	1/40-9/62	CAST17 = 0.156 * CFFG18
HCAL19	Hubbard Creek below Albany	1/40-9/51	HCAL19 = 0.241 * CFEL22
		10/51-4/55	HCAL19 = 0.179 * [BRSB23 - (0.57884 * BRSE11) - (0.62646 * CFFG18)]
		5/55 - 9/66	HCAL19 = 0.600 * HCBR21
BSBR20	Big Sandy Creek above Breckenridge	1/40-9/51	BSBR20 = 0.121 * [CFEL22 - (0.68637 * CFFG18)]
		10/51-4/55	BSBR20 = 0.067 * [BRSB23 - (0.57884 * BRSE11) - (0.62646 * CFFG18)]
		5/55 - 2/62	BSBR20 = 0.193 * HCBR21
HCBR21	Hubbard Creek near Breckenridge	1/40-9/51	HCBR21 = 0.586 * [CFEL22 - (0.68637 * CFFG18)]
		10/51-4/55	HCBR21 = 0.285 * [BRSB23 - (0.57884 * BRSE11) - (0.62646 * CFFG18)]
CFEL22	Clear Fork Brazos River at Eliasville	10/51-9/61 & 10/82-12/15	CFEL22 = 0.604 * [BRSB23 - (0.57884 * BRSE11)]
GHGH24	Lake Graham near Graham	5/62-9/63, 6/70-8/71, 5/73-7/74, 8/77-12/78, 8/82-9/84, 7/89-12/89, 11/96-12/97	GHGH24 = 0.305 * [BRPP27 - (0.97733 * BRSB23)]
CCIV25	Big Cedar Creek near Ivan	1/40-11/64 & 10/89-12/15	CCIV25 = 0.086 * [BRPP27 - (0.97733 * BRSB23)]
SHGR26	Brazos River at Morris Sheppard Dam near Graford, Brazos River near Graford	1/40-9/76	SHGR26 = 0.991 * BRPP27
PPSA28	Palo Pinto Creek near Santo	1/40-4/51 & 10/76-12/15	PPSA28 = 0.172 * [BRGR30 - (0.96071 * BRPP27)]
BRDE29	Brazos River near Dennis	1/40-4/68	BRDE29 = 0.904 * BRGR30
PAGR31	Paluxy River at Glen Rose	1/40-5/47	PAGR31 = 0.190 * [BRAQ33 - (0.97801 * BRGR30)]
NRBL32	Nolan River at Blum	1/40-11/47 & 3/87-9/92 & 10/96-9/97 & 1/99-9/05	NRBL32 = 0.230 * [BRAQ33 - (0.97801 * BRGR30)]
<b>AQAQ34</b>	<b>Aquilla Creek near Aquilla</b>	<b>6/01-12/15</b>	<b>AQAQ34 = 1.207843 * natural Aquilla abv Aquilla</b>
NBHI35	North Bosque River at Hico	1/40-12/61, 1/99 to 12/15	NBHI35 = 0.250 * NBCL36
NBVM37	North Bosque River at Valley Mills	1/40-7/59, 10/05-7/07	NBVM37 = 1.186 * NBCL36

**Table 3-1 (Continued)**

Control Point	Name	Data Missing	Fill Relationship Used
MBMG38	Middle Bosque River near McGregor	1/40-7/59 & 10/85-9/07	MBMG38 = 0.089 * [BRWA41 - (0.98733 * BRAQ33)]
HGCR39	Hog Creek near Crawford	1/40-8/59 & 10/85-9/07	HGCR39 = 0.045 * [BRWA41 - (0.98733 * BRAQ33)]
<b>BOWA40</b>	<b>Bosque River near Waco</b>	1/40-8/59 & 10/85-9/07	BOWA40 = 0.609 * [BRWA41 - (0.98733 * BRAQ33)]
		<b>10/75-3/76 &amp; 1/82-2/82 &amp; 6/82-9/85 &amp; 10/07-12/15</b>	<b>BOWA40 = 1.0324 * NBVM37 + 2.3979 * MBMG38 + 0.3561 * HGCR39</b>
BRHB42	Brazos River near Highbank	1/40-9/65	BRHB42 = 0.801 * BRWA41 + 0.191 * BRBR59
LEDL43	Leon River near De Leon	1/40-8/60 & 10/86-9/91 & 1/98-9/07	LEDL43 = 0.426 * LEHS45
		10/91-9/96 & 10/97-12/97	LEDL43 = 0.324 * LEHM46
SADL44	Sabana River near De Leon	1/40-8/60 & 10/86-9/91 & 1/98-9/99	SADL44 = 0.268 * LEHS45
		10/91-12/97	SADL44 = 0.209 * LEHM46
<b>LEHS45</b>	<b>Leon River near Hasse</b>	<b>10/91-8/07</b>	<b>Historical LEHS45 = 0.93 * USACE Proctor Gated Flow</b>
LEHM46	Leon River near Hamilton	1/40-9/50	LEHM46 = 1.086 * LEHS45
		10/50-8/60, 1/98 to 9/07	LEHM46 = 0.493 * LEHS45 + 0.424 * LEGT47
LEGT47	Leon River at Gatesville	1/40-9/50	LEGT47 = 0.588 * LEHS45 + 0.357 * LEBE49
COPI48	Cowhouse Creek at Pidcoke	1/40-9/50	COPI48 = 0.193 * [LEBE49 - (0.59655 * LEHS45)]
LAKE50	Lampasas River near Kempner	1/40-9/62	LAKE50 = 0.566 * LAYO51
LAYO51	Lampasas River at Youngsport	10/80-12/15	LAYO51 = 1.648 * LAKE50
LABE52	Lampasas River near Belton	1/40-1/63	LABE52 = 1.087 * LAYO51
		10/89-5/99	LABE52 = 0.290 * LRLR53
LRLR53	Little River near Little River	1/40-7/62	LRLR53 = 1.158 * (LAYO51 + LEBE49)
NGGE54	North Fork San Gabriel River near Georgetown	1/40-6/68	NGGE54 = 0.565 * GAGE56
SGGE55	South Fork San Gabriel River at Georgetown	1/40-11/67	SGGE55 = 0.358 * GAGE56
GAGE56	San Gabriel River at Georgetown	10/73-10/84 & 12/84-5/85 & 10/85-12/85 & 2/86-3/86 & 5/86-6/86 & 9/86-12/15	GAGE56 = 1.115 * (NGGE54 + SGGE55)
GALA57	San Gabriel River at Laneport	1/40-7/65	GALA57 = 1.818 * GAGE56
<b>BRBR59</b>	<b>Brazos River near Bryan</b>	<b>10/93-12/15</b>	<b>BRBR59 = 1.015806 * (natural Brazos at SH21 nr Bryan)</b>
MYDB60	Middle Yegua Creek near Dime Box	1/40-7/62	MYDB60 = 0.178 * YCSO62
EYDB61	East Yegua Creek near Dime Box	1/40-7/62	EYDB61 = 0.186 * YCSO62
<b>YCSO62</b>	<b>Yegua Creek near Somerville</b>	<b>10/91-9/08</b>	<b>YCSO62 = 2.2216 * (MYDB60 + EYDB61)</b>

**Table 3-1 (Continued)**

Control Point	Name	Data Missing	Fill Relationship Used
DCLY63	Davidson Creek near Lyons	1/40-9/62	DCLY63 = 0.204 * YCSO62
NAGR64	Navasota River above Groesbeck	1/40-5/78	NAGR64 = 0.265 * NAEA66
BGFR65	Big Creek near Freestone	1/40-6/78	BGFR65 = 0.099 * NAEA66
NABR67	Navasota River near Bryan	1/40-12/50 & 10/94-12/15	NABR67 = 1.228 * NAEA66
MCBL69	Mill Creek near Bellville	1/40-7/63	MCBL69 = 0.622 * YCSO62
		10/93-12/96	MCBL69 = 2.633 * natural Cypress Cr at House-Hahl Rd nr Cypress (San Jacinto Basin)
		1/97-4/00	MCBL69 = 2.566 * DCLY63
BGNE71	Big Creek near Needville	1/40-5/47 & 7/50-3/52	BGNE71 = 0.297 * natural Braes Bayou at Houston (San Jacinto Basin)
BRRO72	Brazos River at Rosharon	1/40-3/67 & 10/80-4/84	BRRO72 = 1.036 * BRRI70
BRGM73	Brazos River at Gulf of Mexico	1/40-12/15	BRGM73 = 0.9834 * BRRO72 + (DA BRGM73 / DA BGNE71) * BGNE71 BRRO72 and BGNE71 filled data is used when historical flow is not available

## 4.0 MODEL NET EVAPORATION AND CLIMATIC DATA

### 4.1 MODEL NET EVAPORATION RATES

Section 1.1.2 above discusses net reservoir evaporation as applied in the flow naturalization process. This section describes the development of net evaporation rates that were used as model input. These data are input in the EVA file.

The TWDB has developed monthly precipitation and reservoir gross evaporation rates for the entire state, by one-degree quadrangles of latitude and longitude for the 1940 to 2015 period. The precipitation and gross evaporation data can be combined into net evaporation rates for each one-degree quadrangle by subtracting the precipitation depths from the evaporation depths. These net evaporation rates are entered directly into the EVA file for the quadrangles included in the file (Table 4-1). These evaporation rates are used for smaller reservoirs in the Brazos WAM. For control points corresponding to larger reservoirs that do not have local data,

the net evaporation rate entered in the EVA file is calculated as the sum of weighted net evaporation from the component quadrangles. The weighting factors may be found in Table E-5 of Appendix E.

For both the simulation and the flow naturalization process, local evaporation and rainfall estimates were used instead of quadrangle data for major reservoirs when they were available (Table E-4 of Appendix E). When local data was missing, net evaporation was estimated using the relationships shown in Table E-5.

The net reservoir evaporation rates used in the flow naturalization process as described in Section 1.1.2 are slightly different than the net evaporation rates entered in the EVA file. The procedure used to derive reservoir net evaporation rate for use in the flow naturalization process begins the same as in the EVA files: rainfall for a given quadrangle is subtracted from the gross evaporation for the quadrangle. However, instead of using historical monthly runoff

**Table 4-1: Brazos WAM Control Points and Corresponding TWDB Quadrangles Used in the Calculation of General Net Evaporation Rates for the EVA file**

WAM Control Point	TWDB Quadrangle
366631	305
368131	306
370431	405
368931	406
341131	407
341331	408
344801	409
371431	506
372031	507
413331	508
220131	509
227031	510
225331	609
228731	610
406331	611
299231	710
375931	711
531531	712
401041	812
516841	813

depths (i.e., monthly streamflow volume divided by drainage area) the WRAP model uses naturalized flows to calculate the portion of rainfall that would have run off. The model calculates the unit runoff based on the input naturalized flows and drainage area, as specified in CP record field 9.

Several errors were discovered in the original Brazos WAM EVA file that were corrected during the Drought Study. These corrections are listed below:

- The original Brazos WAM EVA file has different values for Quad 405. Within the original EVA file, Quad 405 is simply a duplicate of Quad 305. This change affects the evaporative loss calculation for Lake Buffalo Springs and other small reservoirs that use this quadrangle.
- The evaporation weighting factors for Lakes Alan Henry, Leon and Cisco were updated to be consistent with Table E-5. In the original Brazos WAM EVA file, the factors for Alan Henry were repeated from Buffalo Springs, the factors for Cisco were repeated from Stamford, and the factors for Leon were repeated from Marlin City Lake.
- The TWDB corrected a value for July 1966 in quadrangle 710 that changed the calculation of net evaporation for that month for the reservoirs in Table E-5 involving that quadrangle.
- The input evaporation for Eagle Nest Lake (CP 549231), Brazoria Reservoir (CP 532842), and William Harris Reservoir (CP 532841) have been replaced using the weighting factors in Table E-5. The method used to calculate these in the original EVA files is not available. This only affects Eagle Nest Lake, since neither Brazoria nor William Harris are in the current Brazos WAM.

## **4.2 MODEL CLIMATIC DATA**

The preceding paragraphs of Section 4.0 focus on the development of the EVA file and net evaporation rates for the flow naturalization process. The remainder of Section 4.0 discusses climatic data input into the model as part of the Drought Study, specifically the development of the HIS file. The hydrologic index series (HIS) file contains hydrologic index (HI) records. The HI records and HIS file are not part of the flow naturalization process but are used within WRAP to

model environmental flow requirements specified as a function of the Palmer Hydrologic Drought Index (PHDI).

The PHDI value present on the last day of the month of the preceding season, as reported by the National Weather Service (NWS), and calculated for the geographic area as described in subsection (b) of Title 30, Part 1, Chapter 298, Subchapter G, Rule §298.470, will determine the hydrologic condition for the following season. The percentages of each climatic division within each geographic area, as defined in §298.455 of Title 30 (relating to Definitions), are listed in Table 4-2.

The PHDI criteria corresponding to specific hydrologic conditions (i.e., dry, average or wet) for all measurement points on the Brazos River and its associated tributaries are listed in Table 4-3.

**Table 4-2: Percentage of Climatic Division Within Each Brazos Basin Geographic Area**

Climatic Division	Percentage Located in Upper Basin	Percentage Located in Middle Basin	Percentage Located in Lower Basin
High Plains	2.7%	0%	0%
Low Rolling Plains	64.7%	0%	0%
North Central	32.6%	100%	61.9%
East Texas	0%	0%	14.7%
Trans Pecos	0%	0%	0%
Edwards Plateau	0%	0%	5.7%
South Central	0%	0%	13.2%
Upper Coast	0%	0%	4.5%

**Table 4-3: The PHDI for Calculating Hydrologic Conditions for all Measurement Points on the Brazos River and Its Associated Tributaries**

Geographic Area	Dry	Average	Wet
Upper Basin	Less than -1.78	-1.78 to 2.18	Greater than 2.18
Middle Basin	Less than -1.95	-1.95 to 2.39	Greater than 2.39
Lower Basin	Less than -1.73	-1.73 to 2.13	Greater than 2.13

The PHDI is reported by NWS on a monthly basis for each of the 10 climate divisions in Texas (of which 8 are listed in Table 4-2). The monthly PHDI data are found in Table F-1 of Appendix F. For example, the PHDI for the Upper Basin is calculated as the PHDI for the High Plains division times 0.027 plus the PHDI for the Low Rolling Plains division times 0.647 plus the PHDI for the North Central division times 0.326. The resultant PHDI for the Upper Basin is then compared to the criteria listed in Table 4-3 to determine the hydrologic condition of the Upper Basin: dry, average or wet.

The HIS file is a set of zeros and ones organized in the following way: first there is a block of 76 HI records, one for every year from 1940 to 2015, that represent dry conditions in the Upper Basin (UP-DRY). Each record has an entry corresponding to one of the twelve months of the year. If the Upper Basin is in “dry” hydrologic conditions during a given month, the value is set to 1, otherwise it is set to zero. The next 76 HI records represent average conditions in the Upper Basin (UP-AVG). If the composite PHDI in the Upper Basin is between -1.78 and 2.18 for a given month, then the value for that month in the UP-AVG HI record is set to 1, otherwise it is zero. HI records for UP-WET conditions are calculated in a similar manner. Because the Upper Basin can be in only one of the three hydrologic conditions during any given timestep, the sum of HI entries for any given month among UP-DRY, UP-AVG, and UP-WET must equal one. The same procedure is repeated for the Middle and Lower Basins for a total of  $(76 * 3 * 3 =)$  684 HI records in the final HIS file.

The HIS file developed for the Drought Study uses data developed by the Brazos Basin and Bay Area Stakeholder Committed (BBASC) data through February 2013. For the remainder of the period PHDI data were obtained from the NWS website.<sup>12</sup>

## 5.0 COMPARISON OF NATURALIZED FLOWS WITH HISTORICAL GAGED FLOWS

Appendix C is a comparison of historical and naturalized monthly flows for all primary control points in the Brazos River Basin. The changes from naturalized to historical flows for some key gages are described below.

*Brazos River at South Bend.* This gage is upstream of all the major main stem reservoirs, although there are several smaller reservoirs upstream. In general, historical low flows (minimum and 10th percentiles) are reduced in most months from natural conditions, but 25th percentile and higher historical flows are very near to naturalized conditions.

*Brazos River near Palo Pinto.* This is the gage downstream from Morris Sheppard Dam and Possum Kingdom Lake. As such, flows at this gage have been historically influenced by hydropower and other releases from Possum Kingdom. In general, historical low flows (minimum and 10th percentile) at this control point are significantly higher than naturalized flows, with the exception of 10th percentile flows in May and June, which are lower than naturalized flows. Median historical flows are lower than naturalized flows in the spring and higher in the winter and summer.

*Brazos River at Waco.* Historical flows at Waco tend to be lower than naturalized flows in the spring and higher in the remainder of the year, especially in the fall.

*Little River at Cameron.* In general, historical and naturalized flows are relatively close at this gage, with historical flows tending to be somewhat lower. For percentiles greater than the median, the naturalized flows are somewhat higher in the spring than the historical flows.

*Brazos River at Richmond.* Historical and naturalized flows tend to be relatively close at Richmond, which is near the mouth of the river. For percentiles greater than the median, the naturalized flows are somewhat higher in the spring than the historical flows.

## 6.0 COMPARISON OF APPROXIMATE NATURALIZED FLOWS TO FULLY NATURALIZED FLOWS AT SELECTED CONTROL POINTS

The extended hydrology in the Drought Study does not fully naturalize the flows. Rather, the approach is to correct only for:

- Diversions by water rights of 1,000 acre-feet per year and greater
- Reservoirs with current storage capacity of 10,000 acre-feet or more
- Return flows greater than 2 MGD

The scope of work for the Drought Study included full naturalization of up to three gages as a proof of concept for the approach. Table 6-1 shows the gages considered for full naturalization, with the selected gages shown in bold text and highlighted. Figure 6-1 shows the location of these gages. Criteria that were considered, with the relevant data summarized in Table 6-1, are:

- *Geographic distribution within the Brazos River Basin.* The selected gages should represent different parts of the basin important in the Drought Study.
- *Availability of data.* The gage must have a full or nearly full period of historical records between 1998 and 2015. There must also be available data for upstream corrections, minimizing the number of estimated values.
- *Number of water rights, return flows and reservoirs.* The difference in the number of sources for the corrections (diversions, return flows and reservoirs) should be significant enough to demonstrate the impact of the approach.
- *Number of upstream gage locations.* The location should be at or near the upstream end of a watershed so that the gage can be fully naturalized. A location downstream of multiple gages could only be fully naturalized if all upstream gages were naturalized.

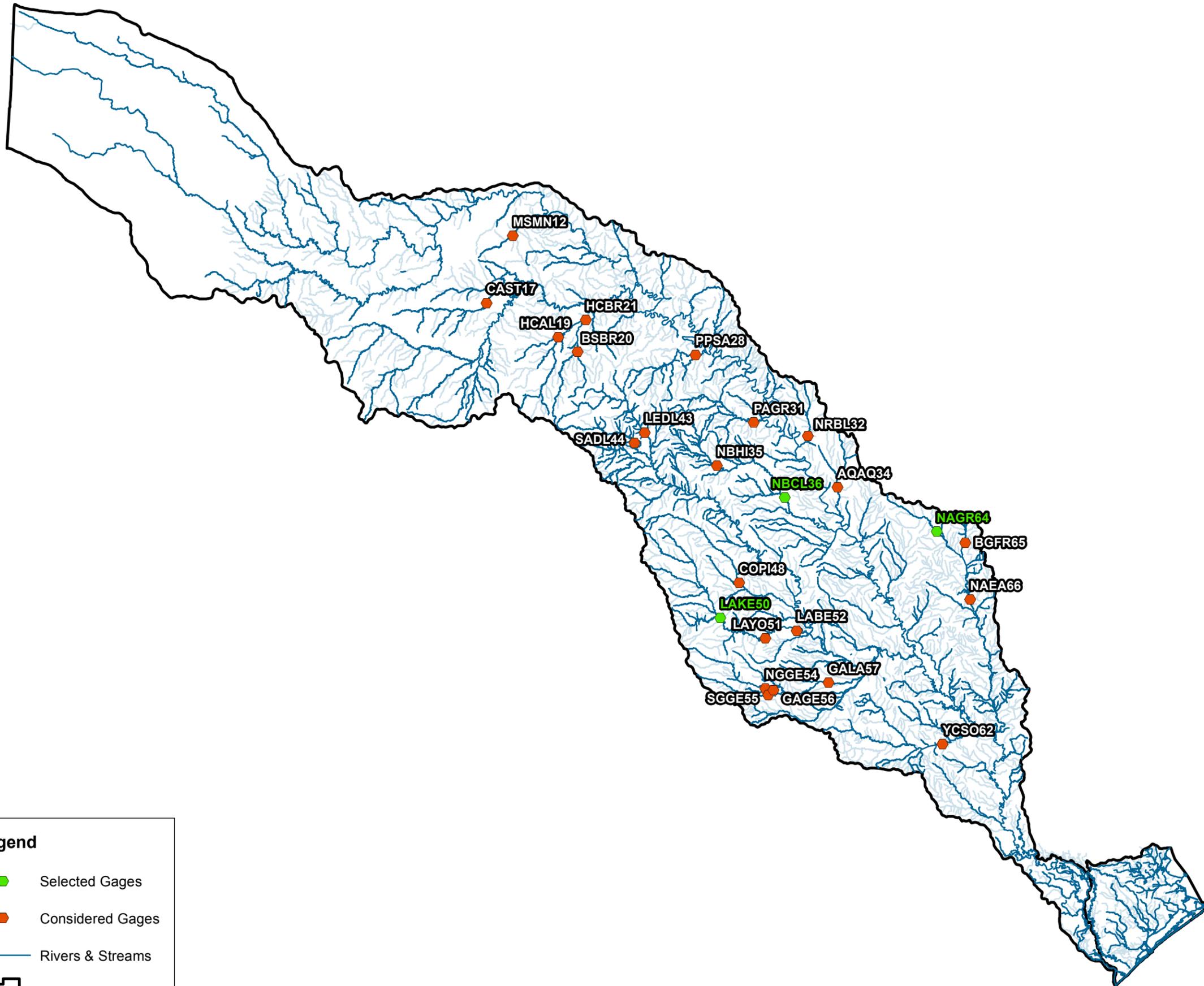
The fully naturalized gages developed for this portion of the study have been included in the flow dataset used for other analyses in the Drought Study. So, these three gages are fully naturalized, while the remaining gages are only partially naturalized.

Table 6-1: Gages Considered and Selected for Full Naturalization

Gage Name	Period with Gage Data Available	Gage ID	Fully Naturalized				Approximate Naturalized				Notes
			Number of Rights	Number of Reservoirs	Number of Return Flows	Total Diversion (ac-ft/yr)	Number of Rights	Number of Reservoirs	Number of Return Flows	Total Diversion (ac-ft/yr)	
California Cr nr Stamford	1/98-present	CAST17	7	0	1	1047	0	0	0	0	
Millers Creek nr Munday	1/98-present	MSMN12	0	1	0	0	0	0	0	0	Gage is above reservoir. No water rights above gage.
Hubbard Cr below Albany	1/98-present	HCAL19	8	0	3	1330	0	0	0	0	
Big Sandy abv Breckenridge	1/98-present	BSBR20	2	1	3	2027	2	1	0	2027	
Hubbard Cr nr Breckenridge	none	HCBR21	7	1	0	56085	5	1	0	56000	Spills from Hubbard Creek Reservoir. No gage data available.
Palo Pinto Cr nr Santo	None	PPSA28	28	1	3	8237	1	1	0	6000	No gage records for current period
Paluxy nr Glen Rose	1/98-present	PAGR31	18	0	0	1188	0	0	0	0	Wheeler Branch below gage
Nolan R nr Blum	10/05-present	NRBL32	7	1	3	6967	3	1	1	6000	
Aquilla Cr nr Aquilla	1/98-present	AQAQ34	7	1	3	7992	4	1	0	7943	Use Aquilla above Aquilla gage
N Bosque at Hico	none	NBHI35	62	0	2	4165	0	0	1	0	
<b>N Bosque nr Clifton</b>	<b>1/98-present</b>	<b>NBCL36</b>	<b>38</b>	<b>0</b>	<b>2</b>	<b>5837</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>3340</b>	<b>Requires full naturalization data be developed for NBHI35</b>
Leon nr DeLeon	10/07-present	LEDL43	53	1	1	10754	5	1	0	6300	
Sabana nr DeLeon	1/98-present	SADL44	22	0	0	783	0	0	0	0	
Cowhouse Cr at Pidcoke	1/98-present	COPI48	19	0	0	518	0	0	0	0	
<b>Lampasas at Kempner</b>	<b>1/98-present</b>	<b>LAKE50</b>	<b>39</b>	<b>0</b>	<b>1</b>	<b>5769</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>3760</b>	
Lampasas nr Youngsport	none	LAYO51	20	0	0	1686	0	0	0	0	
Lampasas nr Belton	5/99-present	LABE52	9	1	0	67871	4	1	0	67768	
N San Gabriel nr Georgetown	1/98 - present	NGGE54	8	1	0	13660	4	1	0	13610	
S San Gabriel nr Georgetown	1/98-present	SGGE55	4	0	1	327	0	0	0	0	
San Gabriel near Georgetown	none	GAGE56	8	0	1	163	0	0	1	0	
San Gabriel near Laneport	1/98-present	GALA57	20	1	4	21300	5	1	2	19840	
Yegua Cr nr Somerville	10/08-present	YCSO62	11	1	1	48100	4	1	0	48000	
<b>Navasota above Groesbeck</b>	<b>1/98-present</b>	<b>NAGR64</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>5474</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>5452</b>	<b>Lake Mexia does not meet storage criteria but does meet diversion</b>
Big Creek nr Freestone	1/98-present	BGFR65	4	0	1	634	0	0	0	0	
Navasota nr Easterly	1/98-present	NAEA66	11	1	2	65172	4	1	1	65074	

Selected gages are in bold text highlighted in yellow





**Legend**

- ◆ Selected Gages
- ◆ Considered Gages
- Rivers & Streams
- Basin Boundary



BRAZOS RIVER AUTHORITY <b>BRA System Operation</b>	<b>Selected and Considered Gage Locations</b>
FREESE AND NICHOLS, INC. 10457 TOWN AND COUNTRY WAY, SUITE 600 HOUSTON, TEXAS 77024 P: (713) 600-6800 F: (713) 600-6801	
<b>FIGURE</b> <b>6-1</b>	
FN PROJECT NO. BR003108 DATE CREATED 5/31/2017 DATUM & COORDINATE SYSTEM NAD83 State Plane North Texas North Central FILE NAME Fig-1_Selected_Considered_Gages PREPARED BY DML	



## 6.1 SELECTION OF GAGES

The selected gages are highlighted in yellow in Table 6-1 and are shown by green shaded text in Figure 6-1. Since the existence of a new drought of record has already been established for Possum Kingdom Lake and the watershed upstream of Possum Kingdom, the gages selected for this analysis are all located in the portion of the Brazos Basin below Possum Kingdom where it is not clear if a new drought of record has been established. The selected gages include:

- North Bosque River near Clifton (USGS 08095000, control point NBCL36). This location was selected because:
  - It is in the north central portion of the basin, near the upstream portion of the watershed important to the Drought Study.
  - It was fully operational between 1998 and 2015.
  - There are 100 small irrigation rights upstream with authorized diversions of less than 1,000 acre-feet per year that would not be included in the approximate naturalized flows.
  - There are three return flows upstream that are less than 2 MGD that would not be included in the approximate naturalized flows.
  - There is only one gage upstream, the North Bosque at Hico (NBHI35).  
Continuous historical flow data are not available for this gage, so the Hico gage was not a candidate for full naturalization. However, a full set of corrections (diversions and return flows) needed to be developed for the Hico gage so that the Clifton gage could be fully naturalized.
- Lampasas River near Kempner (USGS 08103800, control point LAKE50). This location was selected because:
  - It is in the west central portion of the basin, located on a tributary of the Little River. The Little River is a major tributary of the Brazos River that contains several BRA System reservoirs.
  - It was fully operational between 1998 and 2015.

- There are 38 small irrigation rights that would not be included in the approximate naturalized flows.
- There is one return flow that would not be included in the approximate naturalized flows.
- There are no gages upstream.
- Navasota River above Groesbeck (USGS 08110325, control point NAGR64). This gage was selected because:
  - It is in the east central portion of the basin, in an area with some of the highest rainfall in the Brazos Basin. It is also located upstream of Lake Limestone.
  - It was fully operational between 1998 and 2015.
  - Although there are only two water rights and one return flow that do not meet the criteria for approximate naturalization, there is a reservoir in the watershed, Lake Mexia, that has less than 10,000 acre-feet of storage and therefore does not meet the criteria for approximate naturalization. Historical data for this reservoir are available for 1998 and from April 1999 through 2015, so only three months of the storage (January through May 1999) needed to be estimated. Note that the diversion for this water right meets the criteria for inclusion in the approximate naturalized flows, but the storage does not.
  - There are no gages upstream.

## 6.2 RESULTS

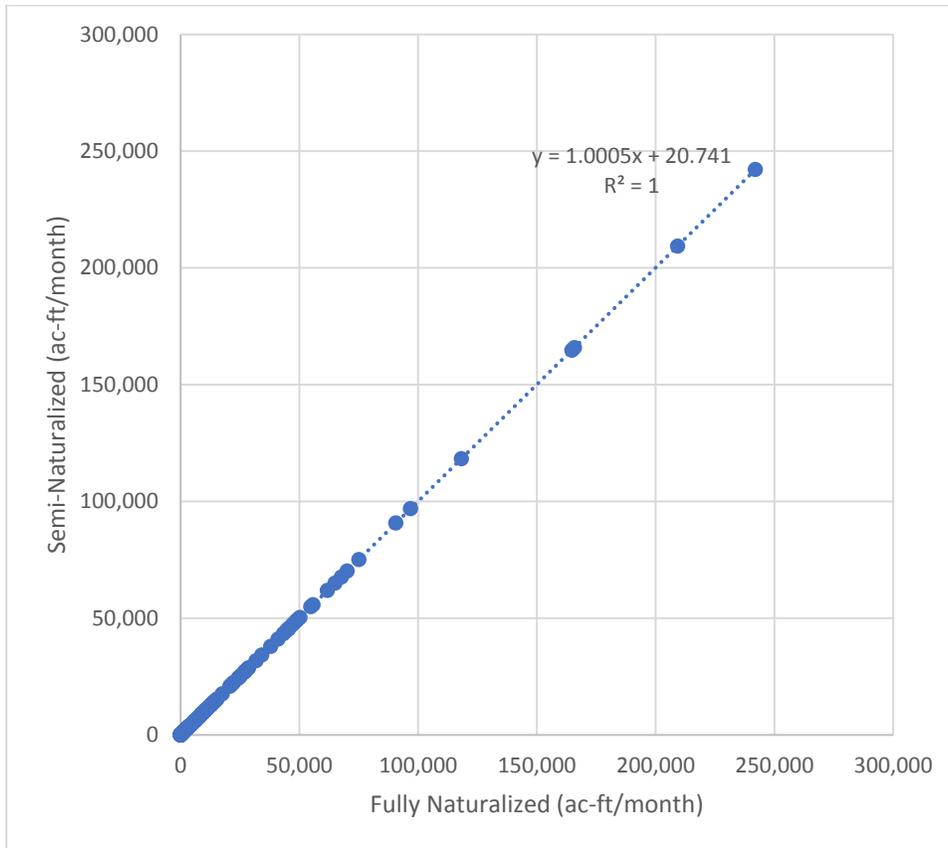
### 6.2.1 North Bosque River near Clifton

Table 6-2 compares the annual fully naturalized and approximate naturalized flows for the North Bosque River near Clifton gage, control point NBCL36, from 1998 to 2015, the period of the extended flows developed for the Drought Study. Figure 6-2 is a scatter plot comparing the monthly flows for the same period. The approximate naturalized flows are an average of 322 acre-feet per year higher than the fully naturalized flows. Table 6-3 compares the average annual corrections for diversions, return flows and reservoirs (these values include adjustments

made to prevent negative naturalized flows). Appendix G has tables that show the average annual diversions and return flows used for this analysis. Note that the corrections for return flows, which are subtracted from the historical flows (hence the negative numbers in Table 6-3) are of greater magnitude than the corrections for diversions. The difference in return flows is greater than the difference in the diversions, which are added to the historical flow data. So, the change in the volume subtracted from the fully naturalized flows because of the return flows is more than the change in the volume added because of consideration of the additional diversions, resulting in lower flows for the full naturalization.

**Table 6-2: Comparison of Annual Naturalized and Approximate Naturalized Flows – North Bosque River near Clifton (NBCL36)**  
(Values in Acre-Feet per Year)

Year	Fully Naturalized	Approximate Naturalized	Difference
1998	234,641	234,432	-209
1999	14,092	14,122	30
2000	38,957	39,273	316
2001	161,169	161,750	581
2002	115,550	115,820	270
2003	64,031	64,447	416
2004	341,625	342,184	559
2005	141,745	142,094	349
2006	15,700	15,757	57
2007	647,143	647,748	605
2008	61,531	61,879	348
2009	100,860	101,315	455
2010	242,700	242,991	291
2011	14,843	15,018	175
2012	136,031	136,306	275
2013	5,338	5,580	242
2014	10,325	10,642	317
2015	484,134	484,852	718
Average	157,245	157,567	322
Minimum	5,338	5,580	-209
Maximum	647,143	647,748	718



**Figure 6-2: Scatter Plot Comparison of Fully Naturalized to Approximate Naturalized Flows – North Bosque River near Clifton (NBCL36)**

**Table 6-3: Comparison of Average Annual Corrections – North Bosque River near Clifton (NBCL36)**  
 (Values in Acre-Feet per Year)

Type of Correction	Fully Naturalized	Approximate Naturalized	Difference
Diversions	732	384	-347
Return Flows	-1,798	-1,128	670
Reservoirs	0	0	0
<i>Average</i>	<i>-1,066</i>	<i>-744</i>	<i>322</i>

It should be noted that almost all the water rights in this watershed are associated with irrigation. Most of these water rights report zero diversion or do not have reported data. In general, unless an irrigation diversion is very consistent, irrigation diversions are not estimated if they are missing. This is a conservative assumption because diversions are added to the historical flows.

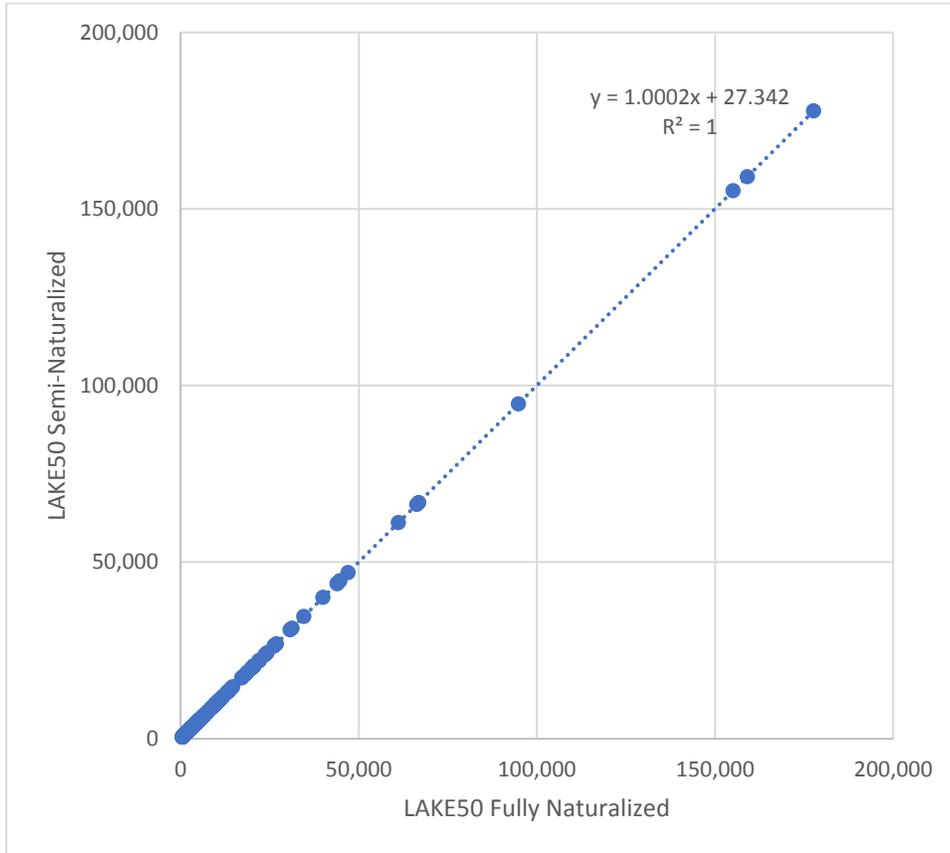
In 1998 the fully naturalized flows are larger than the approximate naturalized flows, and in 1999 the two sets of flows are about the same. This is the result of two new off-channel reservoirs in the watershed that began operation in the year 2000. These are the only diversion corrections large enough to be considered in the approximate naturalized flows.

#### 6.2.2 Lampasas River near Kempner

Table 6-4 compares the fully naturalized flows to the approximate naturalized flows for the Lampasas River near Kempner gage, control point LAKE50, from 1998 to 2015. Figure 6-3 is a scatter plot of the monthly flows during the same period. The approximate naturalized flows are slightly higher than the fully naturalized flows for the same reason seen at the Clifton gage – the return flows are of greater magnitude than the diversions (see Table 6-5). When fully naturalized, the subtraction of the return flows has a greater impact than the additional flow added when fully considering diversions.

**Table 6-4: Comparison of Annual Naturalized and Approximate Naturalized Flows –  
 Lampasas River near Kempner (LAKE50)**  
 (Values in Acre-Feet per Year)

Year	Fully Naturalized	Approximate Naturalized	Difference
1998	193,918	194,089	171
1999	87,699	87,941	242
2000	32,554	32,685	131
2001	105,362	105,850	488
2002	101,156	101,549	393
2003	54,249	54,690	441
2004	196,745	197,102	357
2005	148,615	149,101	486
2006	29,841	30,086	245
2007	594,933	595,411	478
2008	31,980	32,247	267
2009	96,589	96,914	325
2010	230,479	230,869	390
2011	15,852	16,073	221
2012	40,321	40,580	259
2013	13,371	13,711	340
2014	24,082	24,624	542
2015	109,403	109,952	549
Average	117,064	117,415	351
Minimum	13,371	13,711	131
Maximum	594,933	595,411	549



**Figure 6-3: Scatter Plot Comparison of Fully Naturalized to Approximate Naturalized Flows – Lampasas River near Kempner (LAKE50)**

**Table 6-5: Comparison of Average Annual Corrections – Lampasas River near Kempner (LAKE50)**  
 (Values in Acre-Feet per Year)

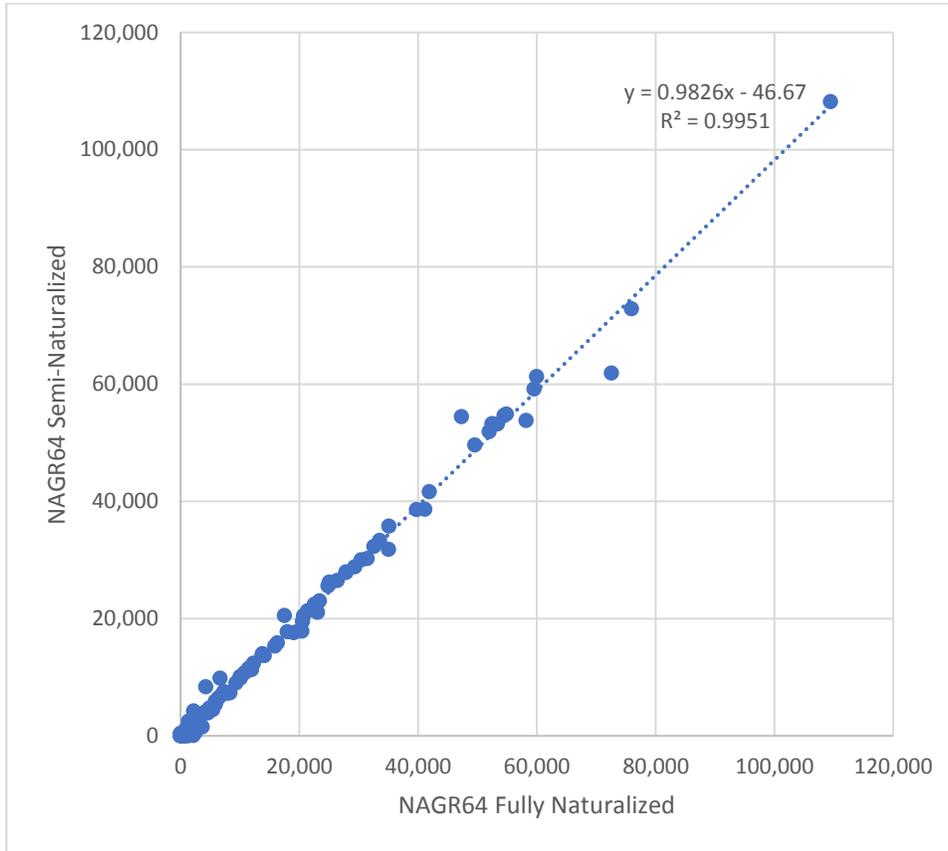
Type of Correction	Fully Naturalized	Approximate Naturalized	Difference
Diversions	189	24	-165
Return Flows	-516	0	516
Reservoirs	0	0	0
<i>Average Correction</i>	<i>-327</i>	<i>24</i>	<i>351</i>

### 6.2.3 Navasota River above Groesbeck

Table 6-6 compares the fully naturalized and approximate naturalized flows for the Navasota River above Groesbeck gage, control point NAGR64. Figure 6-4 is a scatter plot comparing the monthly flows. With some exceptions, the fully naturalized annual flows are greater than the approximate naturalized flows, and the difference in annual flows, shown in the third column, shows more variation than seen at the other two gages. Looking at Table 6-7, inclusion of the corrections for Lake Mexia is responsible for most of the difference between the fully naturalized and approximate naturalized flows. The magnitude of the return flows is small in comparison, and there is no difference in the average reported diversions.

**Table 6-6: Comparison of Annual Naturalized and Approximate Naturalized Flows – Navasota River above Groesbeck (NAGR64)**  
(Values in Acre-Feet per Year)

Year	Fully Naturalized	Approximate Naturalized	Difference
1998	145,012	142,691	-2,321
1999	32,699	31,774	-925
2000	99,762	95,037	-4,725
2001	133,540	131,913	-1,627
2002	62,461	57,134	-5,327
2003	64,500	65,791	1,291
2004	131,711	130,557	-1,154
2005	35,242	34,455	-787
2006	27,833	25,670	-2,163
2007	247,474	243,937	-3,537
2008	50,019	48,537	-1,482
2009	152,104	148,305	-3,799
2010	115,553	113,434	-2,119
2011	16,857	13,316	-3,541
2012	86,937	84,067	-2,870
2013	65,816	63,385	-2,431
2014	15,290	13,493	-1,797
2015	373,879	370,771	-3,108
Average	103,149	100,793	-2,357
Minimum	15,290	13,316	-5,327
Maximum	373,879	370,771	1,291



**Figure 6-4: Scatter Plot Comparison of Fully Naturalized to Approximate Naturalized Flows – Navasota River above Groesbeck (NAGR64)**

**Table 6-7: Comparison of Average Annual Corrections – Navasota River above Groesbeck (NAGR64)**  
 (Values in Acre-Feet per Year)

Type of Correction	Fully Naturalized	Approximate Naturalized	Difference
Diversions	757	757	0
Return Flows	-177	0	177
Reservoirs	2,533	0	-2,533
<i>Average Correction</i>	<i>3,114</i>	<i>757</i>	<i>-2,357</i>

### **6.3 CONCLUSIONS**

The difference between the fully naturalized and approximate naturalized flows at the Clifton and Kempner gages is small. The approximate naturalized flows would not greatly affect water availability in the vicinity of the gages. Downstream, where flows are larger, there would be even less effect.

For the Groesbeck gage, not including corrections for Lake Mexia could affect water availability near the gage. However, the impact would be diminished for larger flows downstream. It should be noted that in most cases historical storage information is not available for a reservoir the size of Lake Mexia, which currently stores less than 5,000 acre-feet (the permitted amount is 9,600 acre-feet). In those cases, either there is no correction in the naturalized flows if the permitted storage is less than 5,000 acre-feet, or the corrections must be estimated, which is also a potential source of inaccuracy.

### **7.0 REVIEW OF FLOWS FOR INTERNAL CONSISTENCY**

Table 7-1 shows the naturalized runoff per square mile for each primary control point, in acre-feet per month per square mile, for both the original 1940 to 1997 period of the original set of naturalized flows and for the extended 1940-2015 period examined in this study. In general, the runoff per square mile increases from upstream to downstream, from north to south, and from west to east, which is appropriate in Texas.

Appendix D shows the statistics from regression and double mass comparisons of gages with each other. In this comparison, it is desirable to have high  $R^2$  values, indicating that the flows vary consistently, and to have slopes of the linear regression and the double mass curve consistent with expected differences in flow.

In general, there is good internal consistency among the flow values.

**Table 7-1: Unit Runoff for Primary Control Points**

Control Point I.D.	Control Point Name	Contributing Drainage Area (Sq. Mi.)	Incremental Drainage Area (Sq. Mi.)	Original Flows (1940 to 1997)		Full Period Flows (1940 to 2015)	
				Overall Unit Runoff (Ac-Ft/Mo./Sq. Mi.)	Incremental Unit Runoff (Ac-Ft/Mo./Sq. Mi.)	Overall Unit Runoff (Ac-Ft/Mo./Sq. Mi.)	Incremental Unit Runoff (Ac-Ft/Mo./Sq. Mi.)
RWPL01	Running Water Draw at Plainview	382	382	0.5	0.5	0.4	0.4
WRSP02	White River Reservoir near Spur	689	307	2.0	4.5	1.7	3.8
DUGI03	Duck Creek near Girard	279	279	3.0	3.0	2.6	2.6
SFPE04	Salt Fork Brazos River near Peacock	1,985	1,017	2.3	2.9	1.9	2.5
CRJA05	Croton Creek near Jayton	290	290	3.6	3.6	3.0	3.0
SFAS06	Salt Fork Brazos River near Aspermont	2,496	221	2.6	7.8	2.2	6.7
BSLU07	Buffalo Springs Lake near Lubbock	236	236	6.0	6.0	6.7	6.7
DMJU08	Double Mountain Fork Brazos River at Justiceburg	244	244	7.6	7.6	7.9	7.9
DMAS09	Double Mountain Fork Brazos River near Aspermont	1,864	1,384	4.8	5.5	4.5	4.9
NCKN10	North Croton Creek near Knox City	251	251	4.3	4.3	3.7	3.7
BRSE11	Brazos River at Seymour	5,972	1,361	3.5	8.9	3.1	8.1
MSMN12	Millers Creek near Munday	104	104	4.7	4.7	4.5	4.5
CFRO13	Clear Fork Brazos River near Roby	228	228	2.6	2.6	2.2	2.2
CFHA14	Clear Fork Brazos River at Hawley	1,416	1,188	2.6	2.8	2.3	2.4
MUHA15	Mulberry Creek near Hawley	205	205	3.1	3.1	2.7	2.7
CFNU16	Clear Fork Brazos River at Nugent	2,199	578	3.6	6.9	3.1	6.0
CAST17	California Creek near Stamford	478	478	4.8	4.8	4.6	4.6
CFFG18	Clear Fork Brazos River at Fort Griffin	3,988	1,311	3.6	6.5	3.2	5.8
HCAL19	Hubbard Creek below Albany	613	613	7.8	7.8	6.6	6.6
BSBR20	Big Sandy Creek above Breckenridge	280	280	6.9	6.9	6.6	6.6
HCBR21	Hubbard Creek near Breckenridge	1,089	196	7.4	11.2	6.5	9.8
CFEL22	Clear Fork Brazos River at Eliasville	5,697	620	4.5	14.4	4.0	13.1
BRSB23	Brazos River near South Bend	13,107	1,334	4.2	14.1	3.7	12.6
GHGH24	Lake Graham near Graham	221	221	13.5	13.5	11.9	11.9

**Table 7-1 (Continued)**

Control Point I.D.	Control Point Name	Contributing Drainage Area (Sq. Mi.)	Incremental Drainage Area (Sq. Mi.)	Original Flows (1940 to 1997)		Full Period Flows (1940 to 2015)	
				Overall Unit Runoff (Ac-Ft/Mo./Sq. Mi.)	Incremental Unit Runoff (Ac-Ft/Mo./Sq. Mi.)	Overall Unit Runoff (Ac-Ft/Mo./Sq. Mi.)	Incremental Unit Runoff (Ac-Ft/Mo./Sq. Mi.)
CCIV25	Big Cedar Creek near Ivan	97	97	11.5	11.5	10.7	10.7
SHGR26	Brazos River at Morris Sheppard Dam near Graford	14,030	605	4.7	13.8	4.1	10.5
BRPP27	Brazos River near Palo Pinto	14,245	215	4.7	8.1	4.2	12.1
PPSA28	Palo Pinto Creek near Santo	573	573	9.3	9.3	8.6	8.6
BRDE29	Brazos River near Dennis	15,671	853	5.3	14.4	4.8	13.2
BRGR30	Brazos River near Glen Rose	16,252	581	5.7	19.4	5.2	18.5
PAGR31	Paluxy River at Glen Rose	410	410	11.9	11.9	11.7	11.7
NRBL32	Nolan River at Blum	282	282	19.9	19.9	20.7	20.7
BRAQ33	Brazos River near Aquilla	17,678	734	6.5	18.3	6.1	19.5
AQAQ34	Aquilla Creek near Aquilla	308	308	24.1	24.1	24.3	24.3
NBHI35	North Bosque River at Hico	359	359	10.4	10.4	10.1	10.1
NBCL36	North Bosque River near Clifton	968	609	14.0	17.4	13.9	17.4
NBVM37	North Bosque River at Valley Mills	1,146	178	14.8	23.6	14.8	24.4
MBMG38	Middle Bosque River near McGregor	182	182	25.3	25.3	25.3	25.3
HGCR39	Hog Creek near Crawford	78	78	27.5	27.5	27.3	27.3
BOWA40	Bosque River near Waco	1,656	250	17.8	32.0	17.9	32.9
BRWA41	Brazos River at Waco	20,007	365	8.1	33.0	7.7	32.4
BRHB42	Brazos River near Highbank	20,870	863	9.3	40.1	9.0	40.5
LEDL43	Leon River near De Leon	479	479	9.8	9.8	8.9	8.9
SADL44	Sabana River near De Leon	264	264	11.1	11.1	9.9	9.9
LEHS45	Leon River near Hasse	1,261	518	8.6	9.0	7.8	8.3
LEHM46	Leon River near Hamilton	1,891	630	7.3	11.2	7.0	11.2
LEGT47	Leon River at Gatesville	2,342	451	9.2	17.7	8.9	17.6
COP148	Cowhouse Creek at Pidcoke	455	455	14.2	14.2	14.0	14.0

**Table 7-1 (Continued)**

Control Point I.D.	Control Point Name	Contributing Drainage Area (Sq. Mi.)	Incremental Drainage Area (Sq. Mi.)	Original Flows (1940 to 1997)		Full Period Flows (1940 to 2015)	
				Overall Unit Runoff (Ac-Ft/Mo./Sq. Mi.)	Incremental Unit Runoff (Ac-Ft/Mo./Sq. Mi.)	Overall Unit Runoff (Ac-Ft/Mo./Sq. Mi.)	Incremental Unit Runoff (Ac-Ft/Mo./Sq. Mi.)
LEBE49	Leon River near Belton	3,542	745	12.1	20.7	11.8	20.4
LAKE50	Lampasas River near Kempner	818	818	12.2	12.2	12.1	12.1
LAYO51	Lampasas River at Youngsport	1,240	422	14.0	17.8	13.8	17.2
LABE52	Lampasas River near Belton	1,321	81	14.7	26.8	14.6	29.0
LRLR53	Little River near Little River	5,228	365	13.5	24.3	13.5	26.6
NGGE54	North Fork San Gabriel River near Georgetown	248	248	19.5	19.5	19.1	19.1
SGGE55	South Fork San Gabriel River at Georgetown	133	133	22.7	22.7	22.0	22.0
GAGE56	San Gabriel River at Georgetown	405	24	21.5	35.9	21.0	35.6
GALA57	San Gabriel River at Lanepport	738	333	21.4	21.5	21.5	22.3
LRLA58	Little River at Cameron	7,065	1,099	15.5	22.9	15.7	24.1
BRBR59	Brazos River near Bryan	29,949	2,014	11.2	18.9	11.0	19.9
MYDB60	Middle Yegua Creek near Dime Box	236	236	13.9	13.9	15.0	15.0
EYDB61	East Yegua Creek near Dime Box	244	244	14.7	14.7	15.7	15.7
YCSO62	Yegua Creek near Somerville	1,009	529	18.2	22.0	18.6	21.8
DCLY63	Davidson Creek near Lyons	195	195	20.3	20.3	21.1	21.1
NAGR64	Navasota River above Groesbeck	240	240	29.0	29.0	30.6	30.6
BGFR65	Big Creek near Freestone	97	97	27.7	27.7	29.8	29.8
NAEA66	Navasota River near Easterly	968	631	27.8	27.5	28.7	28.0
NABR67	Navasota River near Bryan	1,454	486	24.1	17.5	24.6	16.9
BRHE68	Brazos River near Hempstead	34,314	1,707	13.0	38.4	13.0	39.2
MCLB69	Mill Creek near Bellville	376	376	33.2	33.2	31.5	31.5
BRRI70	Brazos River at Richmond	35,441	751	13.8	55.8	13.7	53.5
BGNE71	Big Creek near Needville	43	43	49.7	49.7	48.7	48.7
BRRO72	Brazos River at Rosharon	35,773	289	14.2	85.6	14.1	84.8
BRGM73	Brazos River at Gulf of Mexico	35,931	158	14.2	49.7	14.1	48.7



## **Appendix A**

### List of References



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<sup>1</sup> Freese and Nichols, Inc., HDR Engineering, Inc. et al.: *Naturalized Flow Estimates for the Brazos River Basin and the San Jacinto-Brazos Coastal Basin*, prepared for the Texas Natural Resource Conservation Commission, October 2001.

<sup>2</sup> U.S. Geological Survey: Water Resources Data, Texas, published annually at Austin, Texas. Prior to 1960, these records were published as USGS Water Supply Papers.

<sup>3</sup> Texas Water Development Board: Gross Evaporation and Precipitation Data for Texas, available on-line at <http://www.twdb.texas.gov/surfacewater/conditions/evaporation/index.asp>.

<sup>4</sup> Texas Commission on Environmental Quality: Electronic files of self-reported water use data from water right holders, Austin.

<sup>5</sup> Brazos River Authority: electronic information on water sales and releases, Waco.

<sup>6</sup> Freese and Nichols, Inc.: Information from project files on releases from Brazos River Authority reservoirs for downstream users.

<sup>7</sup> U.S. National Oceanic and Atmospheric Administration, National Climatic Data Center: Climatological Data, Texas, Asheville, North Carolina. Previously published by the National Weather Service and the Weather Bureau.

<sup>8</sup> U.S. Army Corps of Engineers reservoir data, available on-line at <http://www.swf-wc.usace.army.mil/cgi-bin/rcshtml.pl>

<sup>9</sup> Texas Water Development Board Precipitation and Lake Evaporation, available on-line at <http://www.twdb.texas.gov/surfacewater/conditions/evaporation/index.asp>

<sup>10</sup> Texas Water Development Board: Report 64, Monthly Reservoir Evaporation Rates Data for Texas, 1940 through 1965, Austin, October 1967.

<sup>11</sup> Texas Water Development Board, Report 5807D Channel Gain and Loss Investigations, Texas Streams, 1918-1958, April 1960.

<sup>12</sup> NOAA National Centers for Environmental Information, Historical Palmer Drought Indices, available on-line at <https://www.ncdc.noaa.gov/temp-and-precip/drought/historical-palmers/phd/190001-201701>



## **Appendix B**

### Naturalized Flows



Appendix B - Naturalized Flows

NATURALIZED FLOW **RWPL01**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Running Water Draw at Plainview  
 Gage Number 08080700

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	1	9	0	3	5	0	0	0	0	3	20	1	42
1941	1	1	8	6	3,608	21,017	813	240	23	5,449	184	2	31,352
1942	0	0	0	175	0	169	0	2	9	161	0	6	522
1943	0	0	0	0	3	0	44	0	0	0	0	1	48
1944	3	0	0	0	14	59	0	0	0	0	0	2	78
1945	0	0	0	0	0	0	0	1	0	1	0	0	2
1946	0	0	0	0	0	0	0	2	18	1,085	0	682	1,787
1947	0	0	0	0	1,426	17	15	0	0	0	0	0	1,458
1948	0	1	0	2	3	3	0	18	3	1	0	0	31
1949	16	6	1	13	49	11	9	6	7	2	0	1	121
1950	0	0	0	7	7	5	50	20	48	4	1	2	144
1951	1	3	1	1	4,253	4	5	0	19	0	0	0	4,287
1952	1	0	0	20	0	0	3	0	0	0	0	0	24
1953	0	0	0	0	0	0	7	2	0	2,323	122	24	2,478
1954	13	7	1	857	3,283	82	1	1	0	1	4	2	4,252
1955	2	39	186	39	1,411	513	606	68	3,152	3,155	50	31	9,252
1956	26	30	4	1	335	64	1	15	0	0	0	0	476
1957	0	1	12	73	837	2,247	2	438	0	24	19	3	3,656
1958	19	8	33	21	8	34	7	5	5	1	1	0	142
1959	0	0	0	0	13	2,344	1,607	0	0	6	0	40	4,010
1960	6	4	2	1	26	99	1,173	8	0	2,569	75	54	4,017
1961	40	53	11	4	40	17	639	3	3	0	7	0	817
1962	0	0	0	6	1,170	220	49	5	68	46	9	1	1,574
1963	0	2	1	10	157	1,711	115	52	60	6	15	1	2,130
1964	2	9	1	14	58	1,121	65	55	126	9	1	7	1,468
1965	0	2	1	13	79	5,955	93	41	41	12	0	0	6,237
1966	1	0	4	29	85	170	125	90	55	8	0	0	567
1967	0	1	3	20	263	914	1,187	42	42	6	0	2	2,480
1968	7	8	5	16	86	1,231	114	125	98	16	24	4	1,734
1969	0	5	22	62	3,827	465	384	50	87	130	11	1	5,044
1970	0	12	19	282	241	38	61	57	44	49	0	0	803
1971	0	22	0	30	65	989	56	62	658	18	2	8	1,910
1972	0	0	14	46	298	121	244	134	49	27	7	0	940
1973	2	6	72	51	68	79	107	92	41	5	0	0	523
1974	0	0	19	22	47	3,454	78	670	98	110	6	5	4,509
1975	3	18	12	31	79	178	220	129	57	23	12	1	763
1976	0	0	19	26	58	59	174	143	67	2	0	0	548
1977	0	0	36	44	2,103	127	109	185	7	7	0	0	2,618
1978	0	0	26	36	104	542	116	120	22	36	31	16	1,049
1979	28	15	41	44	125	491	5,437	2	0	0	205	0	6,388
1980	0	0	20	47	481	215	6	99	147	0	47	0	1,062
1981	0	5	73	398	138	322	342	303	126	346	4	0	2,057
1982	0	5	75	0	832	1,569	207	3	436	0	0	29	3,156
1983	22	22	26	27	6	0	140	0	0	2,644	301	0	3,188
1984	31	19	51	1	82	21	0	41	16	0	67	0	329
1985	0	0	22	16	68	1,280	307	40	0	1,257	81	0	3,071
1986	0	213	0	285	81	379	4	468	1,452	2,946	389	170	6,387
1987	109	161	211	68	2,325	763	592	90	171	4	0	39	4,533
1988	16	34	47	91	29	0	95	0	22	0	0	0	334
1989	42	0	102	31	94	1,118	40	0	170	5	6	22	1,630
1990	0	0	190	110	0	134	0	1	0	0	9	12	456
1991	5	42	27	37	22	281	27	79	713	74	104	293	1,704
1992	120	201	90	87	485	791	5	0	156	0	15	32	1,982
1993	40	47	42	33	67	0	45	90	38	0	0	0	402
1994	33	12	18	12	417	93	0	56	0	32	0	42	715
1995	0	15	0	0	5	92	51	0	127	18	18	0	326
1996	32	18	0	0	86	71	0	109	0	0	25	0	341
1997	19	30	40	712	301	134	143	0	0	0	0	18	1,397
1998	11	4	56	0	0	0	133	99	0	0	0	0	303
1999	22	15	19	513	975	565	28	6	0	9	22	27	2,201
2000	25	41	73	74	48	7	12	14	9	62	8	6	379
2001	2	17	69	0	0	17	3	35	0	0	62	0	205
2002	17	2	4	74	39	77	0	15	0	32	0	3	263
2003	0	0	0	0	7	128	0	0	0	0	0	0	135
2004	19	29	49	71	0	269	63	103	78	180	209	0	1,070
2005	19	18	51	10	76	19	44	49	0	3	0	0	289
2006	0	0	19	14	60	4	0	7	87	44	0	17	252
2007	1	0	53	2	28	43	70	1	34	0	0	3	235
2008	0	0	0	0	25	3	0	15	23	27	0	0	93
2009	0	2	0	12	13	26	32	19	12	0	0	21	137
2010	23	25	41	109	28	22	169	27	0	26	8	0	478
2011	0	0	5	0	0	0	0	0	0	21	0	12	38
2012	0	4	6	4	8	92	17	5	12	0	0	1	149
2013	8	16	2	0	0	14	303	32	3	20	3	0	401
2014	0	0	0	1	109	480	86	1	97	1	45	0	820
2015	14	1	1	48	1,159	448	151	5	0	93	10	8	1,938
Min	0	0	0	0	0	0	0	0	0	0	0	0	2
Max	120	213	211	857	4,253	21,017	5,437	670	3,152	5,449	389	682	31,352
Average	11	17	27	64	425	711	221	62	116	304	29	22	2,010

Appendix B - Naturalized Flows

NATURALIZED FLOW **WRSP02**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name White River Reservoir near Spur  
 Gage Number 08080910

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	2	9	1	1,015	744	2,018	35	9,251	421	30	2,202	107	15,835
1941	3	228	2,285	10,193	27,677	15,220	3,184	830	7,370	28,124	1,918	830	97,862
1942	324	108	51	1,270	176	900	364	926	4,710	4,282	294	623	14,028
1943	205	35	109	114	395	4,757	1,394	2	2	2	7	29	7,051
1944	37	86	39	17	236	457	1,085	112	2,510	56	62	967	5,664
1945	150	65	94	67	2	3,921	8,174	61	1,958	1,898	8	2	16,400
1946	2	1	0	230	1,333	6,333	510	8,882	3,689	4,322	113	710	26,125
1947	181	33	76	290	18,641	1,049	107	2	1	1	71	610	21,062
1948	11	1,026	89	13	267	7,261	4,083	313	7	800	815	13	14,698
1949	127	75	72	217	10,074	6,831	1,191	479	2,777	765	82	61	22,751
1950	110	68	7	209	9,696	1,815	3,070	610	8,450	521	108	83	24,747
1951	71	94	92	55	3,855	1,829	589	2,279	85	7	6	2	8,964
1952	9	5	2	377	184	4	1,618	1	4	0	45	14	2,263
1953	1	0	5	76	330	1	2,303	2,342	22	14,571	762	148	20,561
1954	84	44	8	5,373	20,594	514	5	7	1	5	26	14	26,675
1955	12	242	1,170	242	8,853	3,218	3,804	427	19,770	19,789	315	192	58,034
1956	164	189	26	5	2,099	400	5	97	2	81	10	17	3,095
1957	4	234	110	6,027	21,355	15,801	681	321	183	2,559	2,645	104	50,024
1958	120	90	261	435	2,276	399	480	90	1,240	105	47	9	5,552
1959	9	8	5	77	318	11,880	4,978	1,482	13	1,801	68	1,347	21,986
1960	355	179	88	9	163	621	7,359	50	2	16,117	469	339	25,751
1961	248	334	183	55	276	11,698	7,952	197	72	130	502	112	21,759
1962	70	39	34	412	67	2,003	815	695	4,575	462	795	430	10,397
1963	127	106	98	279	1,836	6,763	120	35	111	346	359	349	10,529
1964	368	358	420	532	32	594	198	112	157	127	0	95	2,993
1965	10	21	12	1,412	1,791	154	933	439	689	452	9	110	6,032
1966	35	34	9	356	98	874	216	13,907	3,297	0	84	0	18,910
1967	70	16	1,601	251	2,170	1,507	1,515	0	414	0	0	0	7,544
1968	121	214	1,040	0	1,095	11,845	797	443	1,262	1,226	464	0	18,507
1969	51	11	158	501	6,854	1,519	195	224	3,270	870	0	9	13,662
1970	54	41	567	388	499	0	0	0	413	0	0	0	1,962
1971	121	0	57	155	6,178	2,056	0	1,609	5,560	0	0	5	15,741
1972	0	179	86	200	790	1,066	674	1,727	4,014	417	0	146	9,299
1973	479	491	463	646	0	0	0	0	0	0	0	0	2,079
1974	0	86	217	233	0	17,998	67	1,070	2,118	2,916	1,081	9	25,795
1975	0	354	0	342	1,687	1,291	1,176	44	0	0	0	2	4,896
1976	60	345	194	3,867	0	87	821	342	1,496	1,667	954	281	10,114
1977	462	311	270	2,598	7,527	1,491	435	1,734	330	4	24	25	15,211
1978	106	307	76	38	2,527	904	502	540	2,364	254	220	111	7,949
1979	201	105	294	312	889	3,485	38,559	11	0	0	1,453	0	45,309
1980	0	0	144	332	3,414	1,528	45	705	1,041	0	334	0	7,543
1981	0	37	515	2,821	976	2,286	2,422	2,146	894	2,451	29	0	14,577
1982	0	38	535	0	5,902	11,127	1,470	18	3,091	0	0	205	22,386
1983	154	153	187	193	45	0	993	0	0	18,752	2,134	0	22,611
1984	219	133	365	6	582	150	0	292	114	0	476	0	2,337
1985	0	0	158	113	484	9,079	2,174	283	0	8,916	578	0	21,785
1986	0	1,509	0	2,018	572	2,686	29	3,319	10,297	20,894	2,760	1,205	45,289
1987	772	1,141	1,493	485	16,489	5,413	4,202	636	1,211	26	0	276	32,144
1988	111	239	334	642	209	0	675	0	158	0	0	0	2,368
1989	299	0	723	223	666	7,928	285	0	1,209	33	44	156	11,566
1990	0	0	1,351	780	0	948	0	8	0	0	65	82	3,234
1991	35	298	191	260	155	1,993	195	562	5,055	526	737	2,079	12,086
1992	852	1,427	638	616	3,443	5,608	32	0	1,105	0	109	227	14,057
1993	283	333	301	231	475	0	319	640	272	0	0	0	2,854
1994	232	83	131	83	2,957	662	0	397	0	230	0	295	5,070
1995	0	104	0	0	37	655	360	0	902	126	129	0	2,313
1996	225	125	0	0	610	502	0	775	0	0	176	0	2,413
1997	132	211	286	5,048	2,134	947	1,014	0	0	0	0	129	9,901
1998	79	28	400	0	0	0	942	703	0	0	0	0	2,152
1999	154	106	133	3,636	6,916	4,004	198	46	0	67	158	194	15,612
2000	175	292	515	523	340	51	87	98	64	440	58	41	2,684
2001	17	118	486	0	0	119	23	247	0	0	437	0	1,447
2002	122	16	26	527	279	544	0	106	0	893	29	550	3,092
2003	150	0	82	341	0	4,011	55	0	0	74	18	19	4,750
2004	226	157	1,242	993	0	474	837	288	0	454	2,821	220	7,712
2005	450	269	342	94	0	0	9	26	34	0	56	77	1,357
2006	136	56	1	0	0	57	90	111	556	1,134	78	76	2,295
2007	161	89	603	190	151	281	0	204	67	34	36	41	1,857
2008	0	44	9	0	639	62	245	125	6,390	930	110	172	8,726
2009	29	167	80	28	62	86	0	13	4	0	129	96	694
2010	7	232	197	1,659	408	64	6,898	0	788	746	278	353	11,630
2011	236	299	260	296	103	256	272	215	108	219	116	57	2,437
2012	70	60	245	0	0	918	31	0	0	10	49	25	1,408
2013	108	0	55	63	36	530	315	14	19	89	16	53	1,298
2014	30	20	15	5	1,141	195	1,323	266	783	1	0	0	3,779
2015	101	26	74	183	9,245	520	1,528	0	224	180	267	178	12,526
Min	0	0	0	0	0	0	0	0	0	0	0	0	694
Max	852	1,509	2,285	10,193	27,677	17,998	38,559	13,907	19,770	28,124	2,821	2,079	97,862
Average	133	184	296	806	2,922	2,819	1,672	841	1,549	2,131	372	194	13,919

Appendix B - Naturalized Flows

NATURALIZED FLOW **DUGI03**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Duck Creek near Girard  
 Gage Number 08080950

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	1	6	1	677	496	1,346	23	6,167	280	20	1,468	71	10,556
1941	2	152	1,523	6,795	18,452	10,147	2,123	553	4,914	18,749	1,279	553	65,242
1942	216	72	34	847	117	600	243	617	3,140	2,855	196	415	9,352
1943	137	24	73	76	263	3,171	929	1	1	1	5	19	4,700
1944	25	58	26	12	157	304	724	75	1,673	37	41	645	3,777
1945	100	43	63	45	1	2,614	5,450	41	1,305	1,265	5	1	10,933
1946	1	0	0	153	889	4,222	340	5,921	2,459	2,882	75	474	17,416
1947	121	22	51	193	12,428	699	71	1	0	1	48	407	14,042
1948	7	684	59	9	178	4,841	2,722	209	5	533	543	9	9,799
1949	85	50	48	145	6,716	4,554	794	319	1,852	510	54	41	15,168
1950	74	46	5	139	6,464	1,210	2,047	406	5,634	347	72	55	16,499
1951	47	63	62	37	2,570	1,219	392	1,519	57	5	4	1	5,976
1952	6	3	2	251	123	3	1,078	1	2	0	30	9	1,508
1953	1	0	3	51	220	1	1,535	1,561	15	9,714	508	99	13,708
1954	56	30	6	3,582	13,729	343	3	5	1	3	17	9	17,784
1955	8	161	780	161	5,902	2,145	2,536	285	13,180	13,193	210	128	38,689
1956	109	126	17	4	1,399	266	3	65	1	54	7	12	2,063
1957	2	156	73	4,018	14,237	10,534	454	214	122	1,706	1,763	69	33,348
1958	80	60	174	290	1,517	266	320	60	827	70	31	6	3,701
1959	6	5	3	51	212	7,920	3,319	988	9	1,201	45	898	14,657
1960	237	119	59	6	109	414	4,906	33	2	10,745	312	226	17,168
1961	165	223	122	37	184	7,798	5,302	131	48	86	335	75	14,506
1962	47	26	23	275	45	1,335	543	463	3,050	308	530	286	6,931
1963	85	71	66	186	1,224	4,508	80	24	763	69	253	118	7,447
1964	80	162	65	45	5	844	68	14	469	0	29	41	1,822
1965	49	42	62	145	83	33	175	385	316	313	28	34	1,665
1966	31	30	72	44	37	246	16	10,909	3,144	79	64	62	14,734
1967	66	47	119	94	937	197	46	4	79	50	35	59	1,733
1968	49	115	91	64	75	1,318	319	34	4	6	17	30	2,122
1969	41	47	76	46	1,115	231	38	1	1,259	1,171	81	106	4,212
1970	128	82	151	130	341	28	98	58	254	39	99	79	1,487
1971	149	85	104	73	168	32	69	664	283	676	103	112	2,518
1972	120	152	146	126	118	81	390	2,298	640	118	87	95	4,371
1973	142	141	311	169	207	127	160	84	309	99	130	108	1,987
1974	87	85	89	236	137	7,789	235	421	365	390	121	133	10,088
1975	160	164	117	158	1,956	295	404	510	254	160	169	196	4,543
1976	180	206	304	667	226	135	528	2,944	385	169	144	146	6,034
1977	150	117	114	226	4,963	296	214	2,014	289	76	85	110	8,654
1978	121	108	132	171	1,773	149	91	183	730	56	116	63	3,693
1979	87	102	121	191	60	64	50	428	30	12	60	66	1,271
1980	73	81	89	190	1,593	611	153	173	72	23	32	63	3,153
1981	58	62	166	326	650	290	136	133	96	2,021	55	66	4,059
1982	58	57	146	79	2,410	7,071	378	245	3,178	86	105	108	13,921
1983	127	101	94	92	197	99	41	138	89	8,991	342	164	10,475
1984	90	75	95	100	89	64	48	42	1	10	23	91	728
1985	71	74	109	119	213	341	241	8	5	899	66	57	2,203
1986	66	70	85	47	408	590	344	723	6,044	16,518	832	569	26,296
1987	373	545	448	287	14,491	2,622	935	760	879	114	189	360	22,003
1988	372	281	351	302	111	203	269	6	541	91	92	144	2,763
1989	106	72	80	63	1,223	1,180	60	4	168	5	6	13	2,980
1990	176	101	414	1,082	562	8,997	390	499	140	84	124	74	12,643
1991	139	87	52	39	242	8,301	261	1,326	3,831	879	586	2,071	17,814
1992	1,195	1,950	932	902	2,332	6,952	578	189	228	13	260	180	15,711
1993	204	413	390	209	398	113	27	118	66	28	17	68	2,051
1994	85	136	71	43	1,877	144	3	31	151	78	226	67	2,912
1995	49	48	49	93	1,899	877	68	1,423	502	128	118	75	5,329
1996	102	55	74	34	105	206	53	1,725	3,042	409	276	217	6,298
1997	95	766	278	2,004	1,261	1,230	1,007	423	74	7	15	140	7,300
1998	129	132	414	89	200	9	68	133	1	22	19	2	1,218
1999	54	10	73	315	1,912	3,998	189	5	96	6	12	14	6,684
2000	13	22	1,669	307	315	739	69	7	5	466	115	77	3,804
2001	109	147	774	71	176	254	10	149	0	7	389	78	2,164
2002	36	45	78	501	71	148	425	66	8	551	194	339	2,462
2003	70	123	29	47	43	1,755	120	11	23	20	5	2	2,248
2004	55	26	906	577	19	1,310	3,484	1,018	373	1,936	3,077	933	13,714
2005	772	658	534	192	87	85	123	651	28	79	14	27	3,250
2006	29	21	45	41	1,371	95	12	25	583	2,855	353	314	5,744
2007	324	214	523	461	976	756	229	1,106	291	45	51	118	5,094
2008	52	45	48	290	238	152	144	497	3,023	754	157	109	5,509
2009	89	210	79	505	176	959	643	58	110	92	19	47	2,987
2010	77	217	251	1,965	930	186	6,823	280	338	198	170	101	11,536
2011	67	62	54	35	17	19	20	17	8	21	18	11	349
2012	7	9	23	7	11	846	15	659	252	63	4	3	1,899
2013	59	33	8	10	627	1,118	202	338	4	11	3	23	2,436
2014	3	9	2	1	93	163	351	378	1,466	310	155	47	2,978
2015	129	109	101	218	3,061	408	473	29	17	75	71	129	4,820
Min	1	0	0	1	1	1	3	1	0	0	3	1	349
Max	1,195	1,950	1,669	6,795	18,452	10,534	6,823	10,909	13,180	18,749	3,077	2,071	65,242
Average	115	144	196	425	1,845	1,779	753	711	972	1,390	229	171	8,729

Appendix B - Naturalized Flows

NATURALIZED FLOW SFPE04  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Salt Fork Brazos River near Peacock  
 Gage Number 08081000

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	7	31	3	3,437	2,521	6,835	118	31,327	1,424	102	7,458	361	53,624
1941	11	772	7,738	34,519	93,729	51,542	10,783	2,810	24,960	95,241	6,497	2,810	331,412
1942	1,096	365	172	4,301	595	3,049	1,232	3,135	15,950	14,500	996	2,110	47,501
1943	695	120	370	388	1,338	16,110	4,720	7	6	6	25	99	23,884
1944	127	292	131	59	800	1,546	3,675	379	8,500	189	210	3,275	19,183
1945	508	219	320	226	7	13,278	27,682	207	6,631	6,426	26	6	55,536
1946	6	2	0	779	4,514	21,445	1,726	30,078	12,492	14,638	383	2,406	88,469
1947	613	111	259	981	63,129	3,552	362	6	2	4	242	2,067	71,328
1948	36	3,474	301	43	904	24,590	13,827	1,061	25	2,709	2,758	44	49,772
1949	431	254	244	735	34,115	23,134	4,032	1,621	9,405	2,592	276	208	77,047
1950	182	85	13	890	30,020	3,567	13,336	1,265	27,135	1,558	219	256	78,526
1951	181	159	177	37	8,977	3,994	316	6,658	0	23	22	6	20,550
1952	32	17	8	1,277	624	15	5,478	4	13	1	152	46	7,667
1953	5	0	18	259	1,116	3	7,799	7,931	76	49,345	2,581	501	69,634
1954	284	150	28	18,197	69,742	1,741	17	25	3	15	88	46	90,336
1955	39	818	3,961	820	29,980	10,897	12,882	1,445	66,951	67,016	1,066	651	196,526
1956	554	639	88	18	7,108	1,353	17	328	6	273	35	59	10,478
1957	13	791	372	20,412	72,319	53,509	2,306	1,086	621	8,664	8,956	351	169,400
1958	406	304	883	1,474	7,708	1,352	1,626	305	4,200	356	158	30	18,802
1959	30	26	16	259	1,075	40,231	16,858	5,018	45	6,099	231	4,561	74,449
1960	1,202	605	298	31	552	2,102	24,920	169	8	54,581	1,587	1,149	87,204
1961	839	1,131	619	188	935	39,614	26,930	667	245	439	1,701	379	73,687
1962	237	132	116	1,395	229	6,783	2,759	2,353	15,494	1,566	2,693	1,455	35,212
1963	430	360	333	946	6,218	22,902	407	120	3,875	351	1,287	599	37,828
1964	409	824	331	229	27	4,287	346	74	2,383	78	14	62	9,064
1965	11	23	27	900	3,621	2,142	644	5,957	2,133	6,352	120	220	22,150
1966	178	188	128	1,535	1,252	1,346	141	31,828	22,921	816	335	250	60,918
1967	209	135	3,082	1,646	5,043	11,406	3,034	31	1,396	66	16	49	26,113
1968	355	445	3,086	884	2,479	35,402	3,848	753	783	761	506	260	49,562
1969	137	123	412	556	15,403	3,474	157	354	7,381	9,020	4,266	676	41,959
1970	563	326	4,485	1,071	1,207	1,414	95	59	327	21	53	17	9,638
1971	152	33	98	127	8,305	4,373	109	12,237	22,279	3,947	852	758	53,270
1972	387	455	452	264	1,572	1,526	2,052	45,015	11,866	3,614	2,584	1,016	70,803
1973	3,075	3,615	6,429	2,456	1,087	270	329	64	1,101	92	127	156	18,801
1974	191	216	288	715	388	24,225	217	5,233	10,172	6,785	2,166	644	51,240
1975	603	1,280	412	716	5,729	1,142	5,395	1,459	3,135	374	702	307	21,254
1976	362	487	417	7,867	1,037	1,92	1,738	2,301	3,818	2,868	1,637	582	23,306
1977	835	632	579	4,395	12,681	2,198	600	2,518	514	7	29	133	25,121
1978	240	464	290	147	6,431	1,925	1,272	534	4,143	493	391	276	16,606
1979	381	284	475	527	736	5,650	23,875	474	16	0	1,299	64	33,781
1980	117	185	196	348	10,939	4,828	152	574	5,483	806	534	492	24,654
1981	291	408	967	2,987	2,241	3,373	1,998	2,546	625	23,600	984	462	40,482
1982	460	471	808	176	18,441	27,936	3,870	224	3,530	218	139	525	56,798
1983	678	593	452	509	4,929	608	655	115	78	46,418	2,670	587	58,292
1984	659	438	562	254	613	132	31	209	90	1,869	742	1,373	6,972
1985	909	601	1,279	3,647	10,232	10,366	3,304	296	417	25,661	1,611	582	58,905
1986	364	1,268	220	1,831	4,427	8,712	3,005	11,616	23,631	39,591	5,314	2,381	102,360
1987	1,624	2,191	3,129	1,111	31,523	10,534	8,315	1,458	3,104	144	145	559	63,837
1988	505	391	574	726	295	1,012	1,789	205	1,698	74	72	184	7,525
1989	265	443	477	199	3,809	9,682	254	175	2,183	27	30	64	17,608
1990	893	512	2,103	5,499	2,852	45,704	1,982	2,533	709	427	627	376	64,217
1991	705	442	262	200	1,230	42,169	1,323	6,735	19,463	4,463	2,975	10,519	90,486
1992	6,072	9,906	4,736	4,580	11,843	35,314	2,934	960	1,157	64	1,319	916	79,801
1993	1,037	2,096	1,981	1,063	2,023	572	139	601	334	143	84	346	10,419
1994	432	693	360	216	9,534	733	15	159	768	397	1,150	339	14,796
1995	247	243	250	470	9,645	4,457	343	7,229	2,552	652	601	379	27,068
1996	519	279	376	171	531	1,047	271	8,761	15,451	2,077	1,404	1,101	31,988
1997	484	3,890	1,413	10,181	6,406	6,250	5,115	2,151	374	36	75	709	37,084
1998	657	670	2,102	453	1,016	46	346	677	4	112	99	8	6,190
1999	275	51	369	1,600	9,711	20,311	962	27	489	28	61	72	33,956
2000	66	109	8,480	1,560	1,599	3,752	353	37	24	2,366	583	389	19,318
2001	554	749	3,933	359	892	1,291	50	759	1	35	1,978	395	10,996
2002	184	227	397	2,543	362	753	2,157	333	39	2,800	986	1,722	12,503
2003	354	625	147	237	216	8,917	609	56	116	104	24	11	11,416
2004	278	135	4,603	2,929	95	6,654	17,700	5,170	1,893	9,836	15,630	4,737	69,660
2005	3,922	3,341	2,711	974	444	430	627	3,307	141	402	69	138	16,506
2006	149	107	226	210	6,963	482	62	129	2,960	14,503	1,792	1,596	29,179
2007	1,645	1,087	2,658	2,341	4,957	3,841	1,165	5,621	1,479	229	260	601	25,884
2008	264	230	243	1,473	1,211	775	731	2,523	15,358	3,832	798	553	27,991
2009	451	1,066	399	2,564	894	4,869	3,267	297	557	469	95	241	15,169
2010	392	1,101	1,277	9,981	4,722	944	34,661	1,421	1,715	1,007	863	515	58,599
2011	341	314	273	178	85	98	104	84	42	109	94	58	1,780
2012	35	44	117	34	55	4,300	78	3,349	1,278	318	22	16	9,646
2013	302	167	43	49	3,187	5,679	1,028	1,719	22	56	14	115	12,381
2014	16	45	13	6	472	826	1,785	1,921	7,448	1,577	789	236	15,134
2015	658	553	514	1,109	15,550	2,073	2,403	145	84	381	362	657	24,489
Min	5	0	0	6	7	3	15	4	0	0	14	6	1,780
Max	6,072	9,906	8,480	34,519	93,729	53,509	34,661	45,015	66,951	95,241	15,630	10,519	331,412
Average	564	738	1,133	2,348	9,068	9,652	4,358	3,698	5,365	7,195	1,312	828	46,260

Appendix B - Naturalized Flows

NATURALIZED FLOW CRJA05  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Croton Creek near Jayton  
 Gage Number 08081200

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	2	7	1	750	550	1,492	26	6,837	311	22	1,628	79	11,705
1941	2	168	1,689	7,534	20,457	11,249	2,353	613	5,448	20,787	1,418	613	72,331
1942	239	80	37	939	130	665	269	684	3,481	3,165	217	461	10,367
1943	152	26	81	85	292	3,516	1,030	2	1	1	6	22	5,214
1944	28	64	29	13	175	338	802	83	1,855	41	46	715	4,189
1945	111	48	70	49	2	2,898	6,042	45	1,447	1,403	6	1	12,122
1946	1	0	0	170	985	4,681	377	6,565	2,726	3,195	84	525	19,309
1947	134	24	56	214	13,778	775	79	1	0	1	53	451	15,566
1948	8	758	66	9	197	5,367	3,018	232	5	591	602	10	10,863
1949	94	55	53	160	7,446	5,049	880	354	2,053	566	60	45	16,815
1950	82	50	5	154	7,167	1,341	2,269	451	6,246	385	80	62	18,292
1951	52	70	68	41	2,849	1,352	435	1,684	63	5	5	1	6,625
1952	7	4	2	279	136	3	1,196	1	3	0	33	10	1,674
1953	1	0	4	56	244	1	1,702	1,731	17	10,770	563	109	15,198
1954	62	33	6	3,972	15,222	380	4	6	1	3	19	10	19,718
1955	9	179	865	179	6,544	2,378	2,812	315	14,613	14,627	233	142	42,896
1956	121	140	19	4	1,551	295	4	72	1	60	8	13	2,288
1957	3	173	81	4,455	15,784	11,679	503	237	136	1,891	1,955	77	36,974
1958	89	66	193	322	1,682	295	355	67	917	78	35	7	4,106
1959	7	6	4	57	235	8,781	3,679	1,095	10	3,338	35	1,163	18,410
1960	161	136	32	6	20	32	3,909	76	31	13,242	171	282	18,098
1961	126	196	100	21	1,861	3,822	2,755	60	118	27	299	6	9,391
1962	0	0	0	187	0	3,469	631	421	4,389	551	972	380	11,000
1963	51	42	4	17	7,232	5,861	431	26	2,176	55	618	51	16,564
1964	30	129	14	28	48	688	29	61	224	3	74	2	1,330
1965	0	0	0	643	473	1,189	44	316	1,056	1,354	0	527	5,602
1966	88	52	262	794	63	282	0	19,430	7,416	292	90	60	28,829
1967	28	10	132	463	2,467	2,229	8,091	195	1,373	790	0	19	15,797
1968	449	716	2,297	253	1,238	1,563	402	1,453	112	189	128	24	8,824
1969	0	35	154	47	4,659	883	6	65	4,687	2,124	562	165	13,387
1970	100	81	691	81	246	6	0	0	10	29	0	0	1,244
1971	0	0	0	0	1,579	623	0	5,883	3,435	1,087	124	332	13,063
1972	49	41	445	61	405	422	314	6,115	1,172	522	327	142	10,015
1973	433	450	947	444	132	37	28	2	965	1	1	0	3,440
1974	0	0	0	63	81	3,790	0	929	2,150	1,411	256	109	8,789
1975	113	226	49	32	4,364	318	190	144	248	2	91	27	5,804
1976	2	0	3	1,490	99	57	1,412	1,816	474	285	116	52	5,806
1977	78	81	122	967	14,614	770	64	1,263	27	0	0	0	17,986
1978	0	77	2	0	1,274	529	0	180	766	27	235	44	3,134
1979	56	23	186	219	728	1,154	783	1,586	0	0	45	21	4,801
1980	31	27	0	0	6,008	1,308	1	0	586	20	28	93	8,102
1981	5	35	82	549	1,569	1,209	17	237	206	4,284	70	30	8,293
1982	75	65	244	34	4,653	4,645	214	341	3,098	47	55	120	13,591
1983	451	178	113	164	484	700	52	0	0	12,280	648	179	15,249
1984	148	52	33	8	141	18	10	1,141	1	250	44	448	2,294
1985	109	138	284	645	503	688	74	0	264	5,209	123	46	8,083
1986	14	31	1	74	1,286	1,791	2,301	663	2,418	8,641	1,160	520	18,900
1987	354	478	683	243	6,880	2,299	1,815	318	677	31	32	122	13,932
1988	110	85	125	158	64	221	390	45	371	16	16	40	1,641
1989	58	97	104	43	831	2,113	55	38	476	6	7	14	3,842
1990	195	112	459	1,200	623	9,975	433	553	155	93	137	82	14,017
1991	154	97	57	44	269	9,204	289	1,470	4,248	974	649	2,296	19,751
1992	1,325	2,162	1,034	1,000	2,585	7,708	640	210	252	14	288	200	17,418
1993	226	457	432	232	442	125	30	131	73	31	18	75	2,272
1994	94	151	79	47	2,081	160	3	35	168	87	251	74	3,230
1995	54	53	54	103	2,105	973	75	1,578	557	142	131	83	5,908
1996	113	61	82	37	116	228	59	1,912	3,372	453	306	240	6,979
1997	106	849	308	2,222	1,398	1,364	1,116	469	82	8	16	155	8,093
1998	143	146	459	99	222	10	76	148	1	24	22	2	1,352
1999	60	11	80	349	2,120	4,433	210	6	107	6	13	16	7,411
2000	14	24	1,851	340	349	819	77	8	5	516	127	85	4,215
2001	121	163	858	78	195	282	11	166	0	8	432	86	2,400
2002	40	50	87	555	79	164	471	73	8	611	215	376	2,729
2003	77	136	32	52	47	1,946	133	12	25	23	5	2	2,490
2004	61	29	1,005	639	21	1,452	3,863	1,128	413	2,147	3,411	1,034	15,203
2005	856	729	592	213	97	94	137	722	31	88	15	30	3,604
2006	33	23	49	46	1,520	105	13	28	646	3,165	391	348	6,367
2007	359	237	580	511	1,082	838	254	1,227	323	50	57	131	5,649
2008	58	50	53	321	264	169	160	551	3,352	836	174	121	6,109
2009	98	233	87	560	195	1,063	713	65	121	102	21	53	3,311
2010	86	240	279	2,178	1,031	206	7,565	310	374	220	188	112	12,789
2011	74	69	60	39	19	21	23	18	9	24	21	13	390
2012	8	10	26	7	12	939	17	731	279	69	5	4	2,107
2013	66	36	9	11	696	1,239	224	375	5	12	3	25	2,701
2014	4	10	3	1	103	180	390	419	1,626	344	172	52	3,304
2015	144	121	112	242	3,394	452	524	32	18	83	79	143	5,344
Min	0	0	0	0	0	1	0	0	0	0	0	0	390
Max	1,325	2,162	2,297	7,534	20,457	11,679	8,091	19,430	14,613	20,787	3,411	2,296	72,331
Average	117	154	252	504	2,375	1,966	913	1,003	1,244	1,629	270	187	10,614

Appendix B - Naturalized Flows

NATURALIZED FLOW SFAS06  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Salt Fork Brazos River near Aspermont  
 Gage Number 08082000

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	10	44	4	4,903	3,596	9,751	168	44,689	2,032	146	10,639	515	76,497
1941	15	1,101	11,038	49,242	133,707	73,526	15,382	4,008	35,606	135,865	9,268	4,008	472,766
1942	1,564	521	245	6,136	849	4,349	1,758	4,472	22,753	20,685	1,421	3,010	67,763
1943	991	171	528	553	1,908	22,981	6,733	10	9	8	36	141	34,069
1944	181	417	187	84	1,141	2,206	5,243	541	12,125	270	299	4,672	27,366
1945	724	312	456	323	10	18,941	39,490	296	9,460	9,167	37	9	79,225
1946	9	3	0	1,111	6,439	30,592	2,462	42,907	17,820	20,881	546	3,432	126,202
1947	874	159	369	1,399	90,055	5,067	517	8	3	5	345	2,948	101,749
1948	52	4,956	430	62	1,289	35,079	19,725	1,514	35	3,865	3,935	63	71,005
1949	615	362	348	1,049	48,666	33,002	5,752	2,312	13,417	3,698	394	297	109,912
1950	533	330	33	1,008	46,842	8,766	14,833	2,945	40,823	2,518	523	402	119,556
1951	343	455	446	267	18,624	8,836	2,843	11,009	413	33	31	9	43,309
1952	45	24	12	1,822	890	21	7,815	5	18	2	217	66	10,937
1953	7	0	25	369	1,592	4	11,126	11,314	108	70,393	3,682	715	99,335
1954	405	214	40	25,958	99,489	2,483	24	36	4	22	126	66	128,867
1955	56	1,167	5,651	1,170	42,768	15,545	18,377	2,062	95,508	95,601	1,520	929	280,354
1956	790	912	126	26	10,140	1,930	24	468	9	389	50	84	14,948
1957	18	1,129	530	29,118	103,166	76,333	3,290	1,549	886	12,360	12,776	501	241,656
1958	579	434	1,259	2,102	10,996	1,928	2,319	435	5,992	508	226	43	26,821
1959	43	37	23	370	1,534	57,391	24,049	7,159	64	8,701	329	6,506	106,206
1960	1,715	863	425	44	787	2,998	35,549	241	11	77,862	2,264	1,639	124,398
1961	1,197	1,613	883	268	1,334	56,510	38,417	951	349	626	2,427	540	105,115
1962	338	188	166	1,990	326	9,676	3,936	3,356	22,103	2,234	3,841	2,076	50,230
1963	613	514	475	1,349	8,870	32,670	581	171	5,528	500	1,836	854	53,961
1964	583	1,176	472	326	38	6,116	493	105	3,400	131	717	149	13,706
1965	74	52	38	2,003	5,263	3,572	560	7,868	3,156	10,984	454	772	34,796
1966	580	546	1,810	3,742	2,059	2,330	151	64,231	41,265	1,563	768	648	119,693
1967	485	245	3,005	2,224	6,146	12,020	13,456	205	2,618	1,199	50	93	41,746
1968	1,030	1,681	5,612	1,283	3,154	35,395	3,628	3,403	716	797	888	424	58,011
1969	168	163	559	641	24,157	5,810	141	494	11,889	14,075	6,643	1,242	65,982
1970	883	533	4,884	1,321	880	1,051	87	68	659	739	71	56	11,232
1971	170	74	93	123	10,589	6,476	146	22,551	19,712	5,260	1,452	1,522	68,168
1972	680	649	637	321	2,302	1,932	2,956	65,781	16,237	5,408	4,074	1,496	102,473
1973	3,740	4,484	8,027	3,470	1,271	477	226	178	3,474	394	242	175	26,158
1974	328	247	421	849	899	24,439	186	5,867	15,658	8,611	3,236	1,054	61,795
1975	1,027	2,023	610	810	17,241	2,106	5,814	2,141	6,255	784	1,507	713	41,031
1976	688	620	479	9,595	1,496	271	4,359	5,873	6,689	5,381	3,081	939	39,471
1977	1,496	1,007	887	8,236	22,056	4,624	1,082	5,371	1,021	17	63	66	45,926
1978	366	1,007	251	117	8,133	2,906	1,413	1,568	7,618	851	734	385	25,349
1979	673	355	934	1,093	2,863	11,048	20,951	9,037	123	4	1,926	228	49,235
1980	310	522	196	265	18,825	7,483	221	490	9,147	1,415	1,002	1,237	41,113
1981	522	607	1,386	4,163	4,700	5,586	1,519	2,322	1,247	24,896	1,159	599	48,706
1982	950	792	1,175	290	20,774	33,956	4,672	1,095	8,047	273	375	722	73,121
1983	1,217	889	655	1,013	7,205	2,689	955	98	418	56,293	6,055	2,779	80,266
1984	1,423	829	773	217	1,124	163	32	1,914	95	2,253	1,274	3,178	13,275
1985	2,083	1,404	2,579	9,012	9,738	10,975	2,247	337	1,254	27,256	1,867	812	69,564
1986	493	1,417	331	1,831	3,342	8,146	8,289	12,655	28,519	56,478	7,581	3,396	132,478
1987	2,316	3,126	4,464	1,585	44,969	15,027	11,861	2,080	4,428	205	207	798	91,066
1988	721	558	819	1,035	421	1,444	2,552	293	2,422	106	103	263	10,737
1989	378	632	681	284	5,434	13,811	362	250	3,114	38	43	92	25,119
1990	1,274	731	3,000	7,844	4,069	65,199	2,828	3,613	1,012	609	895	537	91,611
1991	1,005	631	374	285	1,755	60,155	1,888	9,607	27,764	6,367	4,244	15,005	129,080
1992	8,662	14,131	6,756	6,533	16,895	50,376	4,185	1,370	1,650	91	1,882	1,307	113,838
1993	1,479	2,990	2,826	1,517	2,886	816	198	858	477	204	120	493	14,864
1994	616	989	514	308	13,600	1,046	21	227	1,095	566	1,641	484	21,107
1995	352	346	356	671	13,759	6,358	490	10,313	3,641	930	858	541	38,615
1996	741	398	537	244	758	1,493	387	12,498	22,042	2,963	2,003	1,570	45,634
1997	691	5,549	2,016	14,523	9,138	8,916	7,297	3,068	533	52	107	1,012	52,902
1998	937	956	2,998	646	1,450	66	494	966	5	160	141	11	8,830
1999	393	73	526	2,283	13,853	28,974	1,372	38	697	40	87	102	48,438
2000	94	156	12,097	2,225	2,281	5,353	503	53	34	3,375	831	555	27,557
2001	790	1,068	5,611	512	1,273	1,841	71	1,083	1	50	2,821	564	15,685
2002	262	324	567	3,628	516	1,074	3,077	475	55	3,995	1,406	2,456	17,835
2003	505	891	210	338	308	12,720	869	80	166	148	34	16	16,285
2004	396	192	6,566	4,178	136	9,492	25,249	7,375	2,700	14,032	22,297	6,758	99,371
2005	5,595	4,766	3,868	1,390	633	614	894	4,717	201	574	98	197	23,547
2006	213	153	323	299	9,933	688	88	184	4,223	20,689	2,556	2,277	41,626
2007	2,347	1,550	3,792	3,340	7,071	5,479	1,662	8,018	2,110	327	371	858	36,925
2008	377	328	346	2,101	1,727	1,105	1,043	3,599	21,908	5,466	1,139	789	39,928
2009	643	1,520	569	3,658	1,275	6,946	4,660	423	794	669	136	344	21,637
2010	559	1,571	1,821	14,238	6,736	1,346	49,445	2,027	2,446	1,436	1,231	734	83,590
2011	486	448	390	254	121	140	148	120	60	155	134	83	2,539
2012	50	63	167	49	79	6,134	111	4,777	1,823	453	31	23	13,760
2013	431	238	61	70	4,547	8,101	1,467	2,452	32	80	20	164	17,663
2014	23	64	18	9	674	1,178	2,547	2,740	10,625	2,249	1,126	337	21,590
2015	938	789	733	1,582	22,182	2,957	3,428	207	120	544	516	937	34,933
Min	7	0	0	9	10	4	21	5	1	2	20	9	2,539
Max	8,662	14,131	12,097	49,242	133,707	76,333	49,445	65,781	95,508	135,865	22,297	15,005	472,766
Average	855	1,085	1,612	3,412	13,128	13,408	6,095	5,784	7,769	9,973	1,961	1,257	66,340

Appendix B - Naturalized Flows

NATURALIZED FLOW **BSLU07**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Buffalo Springs Lake near Lubbock  
 Gage Number 08079550

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	5	101	0	227	809	1,674	31	4,671	1,860	0	925	37	10,340
1941	1	264	1,799	9,138	22,088	6,501	3,395	1,696	3,195	16,423	737	276	65,513
1942	74	11	2	1,058	224	1,078	246	2,316	3,115	4,219	215	496	13,054
1943	207	11	182	294	959	1,266	979	1	0	0	1	8	3,908
1944	2	81	3	53	1,115	324	1,926	201	177	188	127	300	4,497
1945	27	7	170	51	68	1,151	3,643	26	667	3,303	17	1	9,131
1946	6	0	1	3	338	875	105	1,402	1,526	4,352	93	747	9,448
1947	71	0	2	11	14,229	833	331	30	332	160	53	692	16,744
1948	3	1,314	85	1	461	3,103	4,533	679	33	618	1,243	2	12,075
1949	12	22	2	417	3,262	3,909	82	124	3,238	374	40	1	11,483
1950	0	38	0	1,084	5,920	526	1,666	395	5,863	104	2	1	15,599
1951	0	0	0	5	893	2,890	271	1,638	59	0	0	0	5,756
1952	0	0	0	67	1,535	74	757	114	62	0	24	2	2,635
1953	0	0	53	158	1,528	193	849	1,365	16	6,831	298	19	11,310
1954	3	0	0	6,841	7,642	596	0	8	0	15	163	0	15,268
1955	0	474	2,050	44	13,708	3,979	7,317	267	20,815	9,553	275	134	58,616
1956	80	62	4	2	1,505	246	186	181	0	105	9	3	2,383
1957	0	1,682	28	5,244	13,132	10,123	1,200	519	833	2,138	1,639	41	36,579
1958	51	39	143	836	4,659	954	192	324	1,278	143	175	29	8,823
1959	22	19	21	101	725	8,855	9,295	1,291	1	1,980	75	1,087	23,472
1960	109	69	20	1	377	459	9,360	132	7	17,365	528	295	28,722
1961	330	346	234	0	13	7,647	8,974	514	173	82	609	20	18,942
1962	13	7	3	5	2	6,396	2,085	1,320	18,450	290	12	204	28,787
1963	22	16	50	42	7,636	23,740	63	338	540	1,095	1,014	10	34,566
1964	289	16	5	3	1,426	1,755	5	1,269	943	2	128	293	6,134
1965	3	2	62	388	15,735	495	28	7,266	948	127	11	567	25,632
1966	17	10	14	6,929	1,271	368	28	2,877	437	9	8	6	11,974
1967	97	46	236	347	835	6,808	2,386	385	260	89	200	47	11,736
1968	484	756	1,386	705	2,392	1,651	3,162	1,518	682	1,245	1,976	1,950	17,907
1969	2,320	2,885	3,577	2,571	1,752	735	406	793	1,352	9,291	1,567	572	27,821
1970	686	544	1,294	1,132	3,292	1,013	264	119	592	647	310	274	10,167
1971	250	200	271	620	1,697	1,131	430	1,579	2,334	1,271	877	1,000	11,660
1972	672	538	478	378	1,498	3,100	2,537	2,316	2,200	1,038	673	697	16,125
1973	1,100	743	995	1,200	575	644	1,100	579	385	344	468	234	8,367
1974	275	237	789	299	384	184	284	1,189	2,930	1,724	747	521	9,563
1975	477	645	492	642	486	870	1,048	940	1,021	695	912	1,051	9,279
1976	910	1,631	833	800	238	614	1,999	1,241	1,145	728	631	471	11,241
1977	458	368	466	1,129	1,905	2,047	1,939	1,339	1,236	18	0	0	10,905
1978	0	0	0	0	7,265	2,456	580	162	3,375	238	152	18	14,246
1979	26	12	55	14	851	15,502	14,814	3,511	0	52	0	54	34,891
1980	1	0	0	0	2,567	2,879	0	251	14,492	90	42	883	21,205
1981	8	801	274	659	370	436	0	927	884	15,355	43	14	19,771
1982	13	5	59	115	5,682	13,111	1,010	360	0	15	0	5	20,375
1983	357	13	1	22	169	33	325	4	215	12,767	1,082	16	15,004
1984	13	4	2	0	156	514	197	1,295	621	1,703	1,605	1,830	7,940
1985	185	298	605	3,726	1,206	1,824	6,199	7	160	16,413	211	15	30,849
1986	3	1	0	175	2,154	1,341	382	3,478	13,413	2,614	1,440	302	25,303
1987	79	448	105	4	12,355	1,980	1,612	0	341	0	0	0	16,924
1988	0	0	0	63	151	495	1,132	3	2,145	2	0	1	3,992
1989	1	411	3	861	1	10,087	0	1,945	3,060	0	0	1	16,370
1990	919	1,230	948	841	220	1,761	695	5,963	4	185	235	32	13,033
1991	96	2	1	0	198	8,324	191	367	3,946	2,392	740	5,216	21,473
1992	1,841	3,121	416	875	14,381	7,029	1,755	134	682	0	521	34	30,789
1993	38	870	253	977	975	1,090	32	169	4	140	0	429	4,977
1994	0	17	0	84	3,692	3	0	0	459	673	134	0	5,062
1995	0	0	0	635	3,862	314	405	17	7,047	30	0	0	12,310
1996	1	0	0	0	14	998	428	6,096	447	17	550	5	8,556
1997	0	950	0	8,086	2,994	5,907	3,066	217	470	0	0	301	21,991
1998	0	0	648	2	621	2,341	0	188	0	4	35	0	3,839
1999	5	0	371	76	2,617	23,211	1,430	42	1,595	0	0	0	29,347
2000	0	0	2,021	10	174	7,224	136	0	0	20,069	504	8	30,146
2001	0	703	2,466	6	5,962	269	0	1,742	1,800	1,039	5,760	111	19,858
2002	0	148	3,502	1,657	25	251	3,219	2,943	168	4,083	24	1,173	17,193
2003	5	0	0	98	1,020	7,682	14	3,959	840	707	0	0	14,325
2004	151	224	2,139	2,642	20	1,024	8,206	9,432	5,969	13,656	17,315	487	61,265
2005	1,446	1,027	1,483	0	2,787	4,390	37	10,275	3	20	0	0	21,468
2006	0	0	6	552	3,457	264	429	1,841	5,055	21,333	86	719	33,742
2007	739	151	2,042	1,085	8,359	5,653	1,036	4,393	838	9	0	731	25,036
2008	30	4	0	544	860	980	309	5,451	24,029	4,773	117	100	37,197
2009	57	74	7	800	15	1,329	3,537	864	2,683	37	1	20	9,424
2010	340	2,524	3,761	14,346	182	4,173	52,083	397	2,019	60	7	62	79,954
2011	72	112	15	2	0	0	0	0	0	90	15	24	330
2012	19	23	29	696	2,057	1,500	270	0	361	0	0	0	4,955
2013	306	2	0	0	0	939	1,243	1,238	1,267	1,632	1	1,016	7,644
2014	19	49	1	0	140	1,695	433	150	17,869	101	385	19	20,861
2015	1,530	216	95	764	27,667	1,857	9,695	4	0	1,656	993	534	45,011
Min	0	0	0	0	0	0	0	0	0	0	0	0	330
Max	2,320	3,121	3,761	14,346	27,667	23,740	52,083	10,275	24,029	21,333	17,315	5,216	79,954
Average	229	350	488	1,095	3,310	3,285	2,474	1,458	2,565	2,744	642	345	18,984

Appendix B - Naturalized Flows

NATURALIZED FLOW **DMJU08**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Double Mountain Fork Brazos River at Justiceburg  
 Gage Number 08079600

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	7	157	0	354	1,260	2,609	48	7,277	2,898	0	1,442	58	16,110
1941	2	412	2,803	14,238	34,415	10,130	5,290	2,643	4,978	25,590	1,149	430	102,080
1942	115	17	4	1,649	350	1,680	383	3,608	4,854	6,575	335	773	20,343
1943	322	17	283	458	1,494	1,973	1,526	1	1	0	1	13	6,089
1944	2	126	5	83	1,737	504	3,001	313	275	293	198	468	7,005
1945	42	10	264	80	106	1,794	5,677	40	1,039	5,147	26	1	14,226
1946	9	0	2	5	527	1,363	164	2,184	2,378	6,781	145	1,165	14,723
1947	110	0	3	18	22,171	1,298	516	47	518	249	82	1,079	26,091
1948	4	2,048	133	2	718	4,835	7,064	1,057	52	964	1,937	3	18,817
1949	19	35	3	649	5,082	6,090	127	194	5,046	584	62	1	17,892
1950	0	58	0	1,689	9,225	819	2,596	616	9,135	162	4	2	24,306
1951	0	0	0	8	1,392	4,502	422	2,552	92	0	0	0	8,968
1952	0	0	0	105	2,391	115	1,180	178	96	0	37	4	4,106
1953	0	0	83	246	2,381	301	1,324	2,126	25	10,643	464	30	17,623
1954	4	0	0	10,659	11,908	929	0	13	0	23	254	0	23,790
1955	0	739	3,194	69	21,359	6,200	11,402	415	32,432	14,885	428	209	91,332
1956	124	96	6	4	2,345	383	290	283	0	163	14	5	3,713
1957	0	2,620	44	8,171	20,462	15,773	1,870	808	1,298	3,331	2,554	64	56,995
1958	79	61	222	1,302	7,260	1,486	299	505	1,992	223	273	46	13,748
1959	35	30	33	157	1,130	13,798	14,483	2,011	28	3,299	151	1,823	36,978
1960	204	135	56	28	647	781	14,904	243	34	27,590	865	492	45,979
1961	542	566	391	101	39	12,168	14,268	843	294	149	984	21	30,366
1962	13	7	3	5	2	6,613	2,156	1,365	19,075	300	12	211	29,762
1963	22	15	50	40	7,892	24,541	60	345	555	1,130	1,047	9	35,706
1964	298	15	3	0	1,471	1,810	0	1,308	972	0	131	302	6,310
1965	1	0	60	396	16,257	502	19	7,503	974	127	8	584	26,431
1966	16	8	10	7,158	1,303	371	19	2,965	446	5	5	4	12,310
1967	3	7	2,751	710	570	30,335	14,446	37	1,665	967	6	8	51,505
1968	434	806	1,703	229	664	727	833	1,083	0	203	2,303	35	9,020
1969	2	4	1,673	1,580	21,949	719	9	2,045	10,842	5,871	1,517	30	46,241
1970	12	6	5,020	150	2,886	427	2	198	1,397	246	1	1	10,346
1971	1	0	0	7	2,081	479	699	5,905	13,234	657	22	50	23,135
1972	10	8	7	3	1,023	3,011	2,465	25,111	2,110	437	59	30	34,274
1973	456	1,074	1,213	69	74	149	1,664	170	1,328	6	0	0	6,203
1974	0	0	0	127	90	25	84	615	3,227	1,696	89	9	5,962
1975	5	22	0	21	224	1,209	3,745	3,342	5,048	6	353	7	13,982
1976	12	2	1	1,899	159	114	5,677	432	862	512	16	3	9,689
1977	3	3	0	1,031	4,560	1,779	1	2,350	10	19	0	0	9,756
1978	0	0	0	0	7,511	2,539	600	168	3,489	246	157	19	14,729
1979	26	12	57	14	880	16,028	15,316	3,630	0	54	0	56	36,073
1980	1	0	0	0	2,654	2,977	0	260	14,983	93	43	913	21,924
1981	8	828	283	681	383	451	0	958	914	15,876	44	14	20,440
1982	13	5	61	119	5,875	13,555	1,044	372	0	16	0	5	21,065
1983	369	13	1	23	175	34	336	4	222	13,200	1,119	17	15,513
1984	13	4	2	0	161	531	204	1,339	642	1,761	1,659	1,892	8,208
1985	191	308	625	3,852	1,247	1,886	6,409	7	166	16,969	218	16	31,894
1986	3	1	0	181	2,227	1,386	395	3,596	13,868	2,703	1,489	312	26,161
1987	82	463	109	4	12,774	2,047	1,667	0	353	0	0	0	17,499
1988	0	0	0	65	156	512	1,170	3	2,218	2	0	1	4,127
1989	1	425	3	890	1	10,429	0	2,011	3,164	0	0	1	16,925
1990	950	1,272	980	869	227	1,821	719	6,165	4	191	243	33	13,474
1991	99	2	1	0	205	8,606	197	379	4,080	2,473	765	5,393	22,200
1992	1,903	3,227	430	906	14,873	7,274	1,822	147	713	6	547	43	31,891
1993	50	910	276	1,024	1,019	1,135	43	185	14	155	10	455	5,276
1994	11	27	10	97	3,828	14	12	10	483	705	148	10	5,355
1995	7	12	9	666	4,006	332	426	25	7,291	37	7	7	12,825
1996	13	11	12	11	25	1,042	454	6,315	474	30	579	16	8,982
1997	12	993	12	8,372	3,108	6,119	3,183	237	499	14	13	323	22,885
1998	0	0	670	2	642	2,420	0	194	0	4	36	0	3,968
1999	5	0	384	79	2,706	23,998	1,478	43	1,650	0	0	0	30,343
2000	0	0	2,089	10	180	7,469	141	0	0	20,749	521	8	31,167
2001	0	727	2,550	6	6,164	278	0	1,801	1,861	1,074	5,955	115	20,531
2002	0	153	3,621	1,713	26	259	3,328	3,043	174	4,221	25	1,213	17,776
2003	5	0	0	101	1,055	7,942	14	4,094	868	731	0	0	14,810
2004	156	232	2,212	2,732	21	1,058	8,484	9,752	6,171	14,119	17,902	504	63,343
2005	1,495	1,062	1,533	0	2,881	4,539	38	10,624	3	21	0	0	22,196
2006	0	0	6	571	3,574	273	444	1,903	5,226	22,056	89	743	34,885
2007	764	156	2,111	1,122	8,642	5,845	1,071	4,542	866	9	0	756	25,884
2008	31	4	0	563	889	1,013	319	5,636	24,844	4,935	121	103	38,458
2009	59	76	7	827	15	1,375	3,657	893	2,774	38	1	21	9,743
2010	351	2,610	3,889	14,832	188	4,314	53,849	410	2,087	62	7	64	82,663
2011	74	116	16	2	0	0	0	0	0	93	15	25	341
2012	20	24	30	720	2,126	1,551	279	0	373	0	0	0	5,123
2013	316	2	0	0	0	971	1,285	1,280	1,310	1,687	1	1,050	7,902
2014	20	51	1	0	145	1,753	448	155	18,475	104	398	20	21,570
2015	1,581	223	98	790	28,605	1,920	10,024	4	0	1,712	1,027	552	46,536
Min	0	0	0	0	0	0	0	0	0	0	0	0	341
Max	1,903	3,227	5,020	14,832	34,415	30,335	53,849	25,111	32,432	27,590	17,902	5,393	102,080
Average	152	303	554	1,255	4,326	4,053	3,126	2,012	3,282	3,223	659	298	23,245

Appendix B - Naturalized Flows

NATURALIZED FLOW **DMAS09**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Double Mountain Fork Brazos River near Aspermont  
 Gage Number 08080500

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	35	783	0	1,763	6,268	12,978	238	36,206	14,416	1	7,172	287	80,147
1941	10	2,049	13,944	70,834	171,221	50,398	26,317	13,150	24,768	127,313	5,714	2,138	507,856
1942	570	84	18	8,202	1,739	8,356	1,904	17,952	24,147	32,709	1,665	3,848	101,194
1943	1,601	84	1,410	2,281	7,434	9,814	7,593	4	3	1	4	64	30,293
1944	12	627	26	411	8,640	2,509	14,930	1,555	1,370	1,458	987	2,327	34,852
1945	210	52	1,315	398	529	8,924	28,243	201	5,167	25,605	128	7	70,779
1946	43	0	8	25	2,620	6,781	815	10,865	11,833	33,737	723	5,794	73,244
1947	548	1	16	89	110,305	6,460	2,567	235	2,577	1,241	408	5,367	129,814
1948	20	10,187	661	8	3,574	24,056	35,143	5,260	259	4,794	9,636	13	93,611
1949	95	173	16	3,230	25,283	30,300	633	964	25,104	2,903	307	5	89,013
1950	0	291	0	8,401	45,894	4,076	12,917	3,065	45,450	807	19	8	120,928
1951	0	0	0	40	6,926	22,400	2,101	12,698	457	0	0	0	44,622
1952	0	0	0	520	11,897	570	5,871	884	480	0	183	18	20,423
1953	0	0	414	1,223	11,846	1,499	6,585	10,578	123	52,950	2,309	151	87,678
1954	20	0	0	53,029	59,242	4,623	0	65	0	113	1,266	0	118,358
1955	0	3,676	15,889	344	106,266	30,848	56,724	2,066	161,354	74,054	2,131	1,041	454,393
1956	617	478	31	19	11,668	1,906	1,445	1,406	0	813	69	26	18,478
1957	0	13,037	219	40,652	101,800	78,471	9,304	4,022	6,456	16,571	12,708	319	283,559
1958	394	301	1,105	6,477	36,119	7,392	1,487	2,513	9,910	1,107	1,357	227	68,389
1959	173	148	164	782	5,622	68,647	72,057	10,004	139	16,412	750	9,068	183,966
1960	1,015	672	280	138	3,221	3,886	74,148	1,207	171	137,263	4,303	2,447	228,751
1961	2,697	2,814	1,945	501	196	60,537	70,986	4,193	1,465	739	4,895	647	151,615
1962	279	137	167	304	346	29,871	3,783	3,129	82,381	2,384	1,311	1,269	125,361
1963	341	222	156	6,845	19,685	75,134	1,445	286	11,046	2,211	2,617	529	120,517
1964	279	759	130	120	874	4,197	338	1,220	1,933	115	303	123	10,391
1965	104	80	131	619	70,249	12,608	146	21,214	4,459	25,389	268	498	135,765
1966	572	353	285	12,126	9,802	7,300	128	25,696	19,103	386	114	113	75,978
1967	130	132	815	4,566	4,992	93,258	26,702	1,767	10,436	841	370	241	144,250
1968	1,774	2,020	10,397	2,761	4,799	22,380	13,497	5,853	436	250	2,660	1,031	67,858
1969	233	235	1,769	965	44,896	5,694	443	983	62,433	18,201	7,599	1,919	145,370
1970	1,691	792	12,152	2,283	5,331	7,939	563	397	710	519	325	297	32,999
1971	257	240	477	601	31,524	9,652	1,128	67,768	44,554	17,357	2,714	2,176	178,448
1972	1,018	713	514	645	3,428	6,813	3,384	175,553	18,036	12,020	6,283	2,099	230,506
1973	7,014	5,985	12,179	2,810	1,437	2,623	1,417	1,308	9,098	671	576	438	45,556
1974	466	435	460	2,404	2,563	2,984	501	5,047	26,281	16,911	5,565	1,214	64,831
1975	895	1,520	857	772	5,394	1,835	37,764	13,221	12,452	1,382	4,893	695	81,680
1976	648	364	324	7,964	3,409	407	11,369	911	10,801	10,912	2,762	1,162	51,033
1977	1,072	707	633	6,420	8,640	4,143	758	6,534	987	142	153	170	30,359
1978	268	456	357	73	13,528	10,373	1,306	328	12,135	2,263	1,768	1,151	44,006
1979	930	669	5,377	1,629	4,754	29,230	23,283	3,934	530	66	227	813	71,442
1980	951	1,176	222	2,034	51,242	5,240	206	443	60,015	5,971	1,893	5,042	134,435
1981	1,859	1,663	4,892	9,582	7,570	13,707	2,727	7,870	1,305	24,052	2,737	1,806	79,770
1982	1,374	1,444	1,365	289	69,363	47,389	7,269	2,789	176	160	108	459	132,185
1983	3,016	2,532	1,053	441	29,477	2,271	3,753	204	84	45,687	8,391	1,558	98,467
1984	1,636	1,017	615	222	234	303	144	2,261	5,432	12,802	15,975	10,114	50,355
1985	4,829	3,337	3,791	15,284	25,013	18,196	14,691	1,018	4,288	45,458	2,935	1,779	140,619
1986	1,162	994	761	4,956	4,959	29,326	9,240	18,605	42,803	42,017	9,446	6,037	170,306
1987	3,780	6,873	6,961	2,138	46,478	15,995	17,386	1,432	6,427	295	95	498	108,358
1988	799	906	703	919	1,097	3,602	16,013	82	8,459	389	30	124	33,123
1989	169	1,787	615	914	361	28,905	535	1,193	4,665	392	93	22	39,651
1990	1,660	574	6,804	17,927	3,132	61,496	3,216	16,990	1,858	1,503	2,127	1,051	118,338
1991	1,966	852	452	254	2,330	67,851	2,727	8,312	17,350	10,072	5,550	21,782	139,498
1992	7,937	24,587	7,732	9,047	52,791	50,443	5,085	6,581	6,060	133	1,087	1,829	173,312
1993	1,784	2,688	2,180	687	3,623	6,889	293	1,851	1,196	661	8	689	22,549
1994	151	278	142	275	15,102	1,020	57	31	1,025	1,230	341	68	19,720
1995	32	0	131	940	15,822	10,933	229	8,588	20,362	1,434	670	200	59,341
1996	233	263	141	213	285	4,675	747	15,242	8,510	1,282	2,891	1,753	36,235
1997	720	9,223	2,049	23,278	10,795	25,452	7,539	1,196	714	0	73	1,102	82,141
1998	644	723	2,283	456	1,197	4,094	100	221	0	0	26	0	9,744
1999	223	48	989	987	11,138	102,633	9,110	1,875	5,601	251	279	31	133,165
2000	157	894	47,736	3,423	3,398	20,024	3,019	0	0	25,666	2,384	879	107,580
2001	1,393	2,350	7,434	1,887	7,605	2,935	0	1,757	1,613	964	8,767	1,324	38,029
2002	598	617	4,763	3,476	1,618	926	10,401	3,567	520	7,541	2,821	2,751	39,599
2003	1,248	543	793	943	1,312	23,256	1,391	6,657	2,393	577	270	0	39,383
2004	500	1,008	15,552	14,202	1,969	10,733	19,236	12,269	8,317	20,029	54,816	11,127	169,758
2005	7,640	5,057	5,233	2,482	2,864	3,811	1,768	61,871	4,064	2,776	767	858	99,191
2006	1,256	752	1,206	2,014	19,916	6,297	761	2,260	10,369	37,036	5,152	3,158	90,177
2007	2,669	2,293	6,582	7,729	18,717	8,885	4,509	16,562	4,795	1,044	628	2,248	76,661
2008	909	1,119	877	7,033	4,836	4,152	2,625	9,023	35,613	14,179	4,571	2,590	87,527
2009	1,675	1,776	1,329	2,881	925	4,335	8,170	2,110	1,519	100	389	473	25,682
2010	963	4,466	6,031	27,538	8,892	9,302	78,549	11,700	9,979	2,230	2,035	1,783	163,468
2011	1,560	1,693	1,442	1,244	563	581	963	823	225	1,012	362	194	10,662
2012	205	365	589	1,667	4,715	3,154	397	0	371	0	0	0	11,463
2013	884	243	554	481	3,299	2,989	7,344	9,611	2,381	1,273	0	935	29,994
2014	689	1,147	697	645	2,328	5,499	1,353	515	29,254	5,590	4,464	1,913	54,094
2015	3,093	1,908	2,017	3,280	63,027	16,774	40,308	4,608	1,428	3,143	3,010	3,216	145,812
Min	0	0	0	8	196	303	0	0	0	0	0	0	9,744
Max	7,937	24,587	47,736	70,834	171,221	102,633	78,549	175,553	161,354	137,263	54,816	21,782	507,856
Average	1,137	1,822	3,044	5,593	19,368	18,368	11,077	9,399	12,798	12,626	3,185	1,831	100,246

Appendix B - Naturalized Flows

NATURALIZED FLOW **NCKN10**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name North Croton Creek near Knox City  
 Gage Number 08082180

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	2	7	1	755	554	1,502	26	6,882	313	22	1,638	79	11,781
1941	2	170	1,700	7,583	20,591	11,323	2,369	617	5,483	20,923	1,427	617	72,805
1942	241	80	38	945	131	670	271	689	3,504	3,185	219	464	10,437
1943	153	26	81	85	294	3,539	1,037	2	1	1	6	22	5,247
1944	28	64	29	13	176	340	807	83	1,867	42	46	719	4,214
1945	111	48	70	50	2	2,917	6,081	46	1,457	1,412	6	1	12,201
1946	1	0	0	171	992	4,711	379	6,608	2,744	3,216	84	529	19,435
1947	135	24	57	215	13,868	780	80	1	0	1	53	454	15,668
1948	8	763	66	10	199	5,402	3,038	233	5	595	606	10	10,935
1949	95	56	54	162	7,495	5,082	886	356	2,066	569	61	46	16,928
1950	82	51	5	155	7,214	1,350	2,284	454	6,287	388	81	62	18,413
1951	53	70	69	41	2,868	1,361	438	1,695	64	5	5	1	6,670
1952	7	4	2	281	137	3	1,204	1	3	0	33	10	1,685
1953	1	0	4	57	245	1	1,713	1,742	17	10,841	567	110	15,298
1954	62	33	6	3,998	15,321	382	4	6	1	3	19	10	19,845
1955	9	180	870	180	6,586	2,394	2,830	318	14,708	14,723	234	143	43,175
1956	122	140	19	4	1,562	297	4	72	1	60	8	13	2,302
1957	3	174	82	4,484	15,888	11,755	507	239	136	1,903	1,968	77	37,216
1958	89	67	194	324	1,693	297	357	67	923	78	35	7	4,131
1959	7	6	4	57	236	8,838	3,704	1,102	10	1,340	51	1,002	16,357
1960	264	133	65	7	121	462	5,475	37	2	11,991	349	252	19,158
1961	184	248	136	41	205	8,703	5,916	146	54	96	374	83	16,186
1962	52	29	26	306	50	1,490	606	517	3,404	344	592	320	7,736
1963	94	79	73	208	1,366	5,031	89	26	851	77	283	132	8,309
1964	90	181	73	50	6	942	76	16	524	20	110	23	2,111
1965	11	8	6	308	811	550	86	1,212	486	4,891	119	60	8,548
1966	48	49	802	1,574	330	226	5	50,743	9,880	489	207	151	64,504
1967	109	82	54	1,079	440	275	2,672	28	147	31	18	27	4,962
1968	255	187	991	237	291	549	102	251	23	23	181	37	3,127
1969	25	17	31	16	1,861	67	2	2	417	781	199	56	3,474
1970	74	61	581	93	89	9	0	5	20	57	4	4	997
1971	4	3	1	4	252	91	1	6,270	615	2,321	174	313	10,049
1972	101	78	49	33	169	361	1,148	9,374	1,782	1,034	809	254	15,192
1973	418	506	1,688	691	186	366	152	24	1,009	77	77	42	5,236
1974	37	23	32	113	332	1,682	0	9	3,539	1,174	653	203	7,797
1975	141	415	144	113	6,161	1,284	2,638	413	3,907	331	1,049	232	16,828
1976	174	107	93	575	256	116	1,011	184	332	758	290	176	4,072
1977	188	104	69	1,213	995	454	59	118	13	15	41	37	3,306
1978	38	47	13	2	289	159	1	217	471	25	62	43	1,367
1979	39	24	53	180	62	267	108	616	28	0	73	19	1,469
1980	19	20	9	5	6,200	230	6	66	2,239	298	53	158	9,303
1981	56	85	167	209	1,458	3,892	35	120	825	1,198	74	80	8,199
1982	75	51	199	35	3,951	10,219	853	217	118	57	92	89	15,956
1983	132	158	91	164	562	385	112	3	0	28,798	2,029	889	33,323
1984	646	422	384	187	84	61	29	549	14	163	206	491	3,236
1985	388	207	1,006	819	683	3,187	45	371	97	5,010	228	143	12,184
1986	105	76	48	57	41	278	3,485	673	6,391	8,698	1,167	523	21,542
1987	357	481	687	244	6,925	2,314	1,827	320	682	32	32	123	14,024
1988	111	86	126	159	65	222	393	45	373	16	16	41	1,653
1989	58	97	105	44	837	2,127	56	39	480	6	7	14	3,870
1990	196	113	462	1,208	627	10,041	436	556	156	94	138	83	14,110
1991	155	97	58	44	270	9,264	291	1,479	4,276	981	654	2,311	19,880
1992	1,334	2,176	1,040	1,006	2,602	7,758	644	211	254	14	290	201	17,530
1993	228	460	435	234	444	126	30	132	73	31	18	76	2,287
1994	95	152	79	47	2,094	161	3	35	169	87	253	75	3,250
1995	54	53	55	103	2,119	979	75	1,588	561	143	132	83	5,945
1996	114	61	83	38	117	230	60	1,925	3,394	456	308	242	7,028
1997	106	855	310	2,237	1,407	1,373	1,124	472	82	8	16	156	8,146
1998	144	147	462	99	223	10	76	149	1	25	22	2	1,360
1999	61	11	81	352	2,133	4,462	211	6	107	6	13	16	7,459
2000	14	24	1,863	343	351	824	77	8	5	520	128	85	4,242
2001	122	164	864	79	196	284	11	167	0	8	434	87	2,416
2002	40	50	87	559	79	165	474	73	8	615	217	378	2,745
2003	78	137	32	52	47	1,959	134	12	26	23	5	2	2,507
2004	61	30	1,011	643	21	1,462	3,888	1,136	416	2,161	3,434	1,041	15,304
2005	862	734	596	214	97	95	138	726	31	88	15	30	3,626
2006	33	24	50	46	1,530	106	14	28	650	3,186	394	351	6,412
2007	361	239	584	514	1,089	844	256	1,235	325	50	57	132	5,686
2008	58	51	53	324	266	170	161	554	3,374	842	175	122	6,150
2009	99	234	88	563	196	1,070	718	65	122	103	21	53	3,332
2010	86	242	280	2,193	1,037	207	7,615	312	377	221	190	113	12,873
2011	75	69	60	39	19	22	23	18	9	24	21	13	392
2012	8	10	26	8	12	945	17	736	281	70	5	4	2,122
2013	66	37	9	11	700	1,248	226	378	5	12	3	25	2,720
2014	4	10	3	1	104	181	392	422	1,636	346	173	52	3,324
2015	144	122	113	244	3,416	455	528	32	18	84	79	144	5,379
Min	1	0	0	1	2	1	0	1	0	0	3	1	392
Max	1,334	2,176	1,863	7,583	20,591	11,755	7,615	50,743	14,708	28,798	3,434	2,311	72,805
Average	133	162	262	520	2,004	2,018	956	1,398	1,246	1,820	315	201	11,035

Appendix B - Naturalized Flows

NATURALIZED FLOW **BRSE11**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Brazos River at Seymour  
 Gage Number 08082500

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	0	871	1	5,303	8,506	27,760	7,092	86,156	25,468	4	19,173	3,002	183,336
1941	323	2,459	30,114	131,878	414,811	195,658	52,999	26,939	59,657	340,923	24,494	12,651	1,292,906
1942	5,076	2,313	1,352	40,474	3,240	17,449	6,990	28,711	56,903	79,222	9,033	9,064	259,827
1943	4,868	997	3,690	13,733	16,624	41,364	11,521	0	54	60	978	93,889	93,889
1944	1,409	3,879	2,870	366	13,446	12,377	21,577	560	6,061	4,569	3,052	6,191	76,357
1945	2,469	1,394	9,718	2,760	455	19,603	61,219	954	10,749	36,235	1,060	560	147,176
1946	685	776	191	624	7,023	37,285	10,721	50,644	62,426	59,016	4,508	21,191	255,090
1947	2,888	904	1,025	1,412	314,512	13,732	2,740	306	1,428	2,131	3,611	14,705	359,394
1948	845	10,013	6,568	276	3,247	69,094	56,846	4,943	800	7,966	11,823	199	172,620
1949	2,229	3,752	1,178	2,842	81,345	100,652	4,658	4,828	51,955	10,933	2,616	1,259	268,247
1950	1,386	1,371	324	9,625	109,057	22,560	44,413	16,640	110,677	7,584	1,721	1,969	327,327
1951	1,522	2,851	1,732	780	33,876	33,946	7,154	22,554	5,638	0	130	134	110,317
1952	252	625	446	1,416	17,569	2,658	10,488	110	29	0	615	821	35,029
1953	0	1,418	3,720	693	6,693	395	40,117	41,032	859	122,758	10,912	2,445	231,042
1954	1,465	692	259	63,367	188,184	17,493	473	0	2	0	1,355	1,235	274,525
1955	681	3,868	24,679	1,000	150,226	61,774	45,910	7,474	229,964	246,199	8,552	5,368	785,695
1956	3,971	3,185	1,329	542	20,889	4,542	20	1,232	0	2,900	178	617	39,405
1957	104	11,392	1,637	66,762	239,563	166,184	11,594	4,215	5,726	44,714	40,954	2,790	595,635
1958	2,333	1,646	3,465	9,650	73,778	8,962	13,669	3,920	9,366	2,735	2,211	500	132,235
1959	374	322	135	3,202	5,713	113,139	89,801	13,357	219	50,708	2,533	14,423	293,926
1960	5,156	3,149	1,554	628	2,089	12,098	109,896	2,177	478	260,415	13,899	9,802	421,341
1961	6,683	7,585	7,128	3,054	15,597	124,137	129,277	6,421	4,143	3,050	10,786	3,279	321,140
1962	1,835	957	831	3,519	2,844	50,440	6,812	8,032	132,703	10,334	19,288	9,469	247,064
1963	3,417	2,247	2,726	9,094	28,647	116,893	4,105	640	11,812	2,798	6,961	2,513	191,853
1964	1,210	3,166	1,024	427	946	12,144	221	226	35,221	2,247	2,236	608	59,676
1965	712	528	259	7,023	66,450	20,153	1,166	35,476	10,637	58,879	3,173	1,711	206,167
1966	1,993	1,355	3,493	20,667	24,486	7,926	650	100,475	142,022	6,654	2,692	2,253	314,666
1967	1,865	1,167	2,924	50,970	6,866	102,281	62,067	4,030	16,312	2,648	1,181	1,411	253,722
1968	15,484	6,181	27,864	16,193	12,859	61,601	17,468	9,981	1,711	993	3,156	4,255	177,746
1969	666	913	3,291	2,140	86,214	10,868	532	1,954	79,064	31,914	20,681	5,165	243,402
1970	4,971	2,542	24,793	5,467	6,595	7,676	372	268	1,578	2,610	510	465	57,847
1971	534	418	475	506	37,272	18,503	1,191	109,531	61,711	51,224	10,614	7,219	299,198
1972	2,740	2,492	2,329	2,124	11,332	10,026	10,431	208,760	72,243	31,324	40,786	8,976	403,563
1973	14,885	14,293	39,997	15,122	4,381	33,497	2,525	2,998	17,205	2,606	1,882	1,324	150,715
1974	994	939	1,876	1,799	6,769	24,292	418	3,339	45,786	30,514	13,745	4,160	134,631
1975	4,173	6,565	3,206	3,105	42,973	12,124	48,146	20,909	32,884	4,769	9,057	2,924	190,835
1976	2,589	1,676	1,684	13,104	8,016	1,305	11,844	7,307	19,094	29,149	11,911	3,837	111,516
1977	3,881	3,010	2,405	22,870	48,811	13,726	2,963	7,158	4,498	234	321	455	110,332
1978	795	941	1,251	192	11,739	12,125	861	67,573	29,481	7,157	3,642	2,796	138,553
1979	2,748	2,393	8,921	4,277	14,067	34,036	30,185	19,271	1,924	93	3,326	1,677	122,918
1980	1,400	1,852	900	1,256	110,270	17,720	1,871	3,040	77,103	26,018	5,255	7,613	254,298
1981	4,043	5,225	9,936	13,363	11,889	29,247	2,444	6,860	2,142	61,252	5,839	3,748	155,988
1982	2,969	3,478	4,550	1,457	153,159	179,692	22,051	5,708	6,089	1,760	834	1,538	383,285
1983	3,066	6,188	3,003	2,650	50,816	11,163	3,126	109	454	156,392	22,946	7,778	267,691
1984	6,056	3,377	3,473	1,618	1,263	699	193	3,868	2,942	15,162	16,250	14,698	69,599
1985	12,062	11,063	15,540	31,411	50,456	62,947	16,056	3,651	3,237	85,782	9,676	4,406	306,287
1986	2,474	2,884	1,845	7,879	9,281	48,371	31,147	29,254	90,276	149,213	28,181	15,867	416,672
1987	11,802	21,428	23,083	8,038	148,218	81,073	35,003	8,803	11,083	2,555	1,391	2,731	355,208
1988	3,940	3,223	2,998	2,339	1,359	1,435	19,824	1,206	34,934	2,708	1,945	1,494	77,405
1989	1,393	6,659	2,580	1,565	45,677	49,358	2,000	2,689	42,621	1,831	1,223	1,392	158,988
1990	5,380	2,432	18,975	78,677	33,823	209,185	10,781	20,093	7,462	4,276	5,383	3,932	400,399
1991	7,962	4,451	2,568	1,855	34,669	192,287	5,761	27,945	48,032	15,775	13,614	37,800	392,719
1992	26,925	72,067	31,118	21,463	71,293	179,934	25,266	12,173	9,049	1,594	6,578	7,041	464,501
1993	5,919	18,342	18,193	6,103	9,944	19,148	1,669	1,292	4,383	1,682	1,020	2,571	90,266
1994	1,567	2,543	2,609	1,272	48,784	5,480	694	1,670	11,324	5,967	6,276	2,471	90,657
1995	2,251	1,222	2,634	1,466	41,752	48,146	5,428	62,659	15,565	5,050	6,168	2,067	194,408
1996	2,447	1,335	2,001	1,405	514	6,563	2,287	17,556	90,003	4,781	4,545	4,431	137,868
1997	1,386	17,095	6,660	36,915	48,176	42,260	21,801	11,611	4,965	2,525	1,177	5,211	199,782
1998	3,138	6,949	14,480	3,075	3,858	3,233	4,131	459	132	122	486	186	40,249
1999	2,558	1,878	9,210	5,322	38,807	129,081	16,495	3,760	4,694	920	330	423	213,478
2000	620	723	62,009	10,342	11,138	25,201	9,370	0	18	23,910	17,542	2,139	163,012
2001	1,759	11,849	43,348	8,607	12,182	7,115	0	2,176	3,182	587	12,094	2,724	105,623
2002	840	676	2,873	18,555	5,246	14,200	40,033	7,142	1,030	11,115	8,149	7,099	116,958
2003	3,859	1,910	2,365	1,457	1,445	47,637	5,556	2,319	4,097	374	327	190	71,536
2004	822	1,778	20,359	16,983	2,237	33,199	94,391	34,009	6,321	28,442	99,254	27,195	364,990
2005	16,247	13,796	12,023	5,592	4,765	9,554	5,553	149,318	8,130	8,149	3,086	2,577	238,790
2006	2,486	1,950	3,390	4,754	41,104	5,161	1,191	1,263	9,479	84,924	12,555	7,062	175,319
2007	7,097	4,946	13,412	15,952	38,387	43,236	16,985	41,913	9,810	3,650	2,337	4,419	202,144
2008	2,625	2,809	2,765	9,155	8,683	10,334	3,003	7,273	23,841	22,230	7,511	3,831	104,060
2009	2,426	1,969	1,539	2,551	3,022	9,935	10,957	5,732	3,262	1,818	1,306	1,352	45,869
2010	5,333	19,961	10,131	55,772	27,422	12,503	146,896	15,620	29,052	8,121	4,336	3,667	338,814
2011	3,476	3,463	2,422	1,769	736	366	573	472	146	663	94	500	14,680
2012	308	456	1,082	912	4,573	11,165	760	5,859	3,007	1,782	19	43	29,966
2013	987	518	677	1,186	6,570	11,642	7,476	11,219	2,449	1,582	0	538	44,844
2014	417	844	410	354	2,118	9,446	6,114	2,641	29,573	8,505	5,759	2,908	69,089
2015	3,397	2,424	3,132	6,064	96,767	48,150	56,796	6,599	1,615	3,569	5,928	14,974	249,415
Min	0	322	1	192	455	366	0	0	0	0	0	43	14,680
Max	26,925	72,067	62,009	131,878	414,811	209,185	146,896	208,760	229,964	340,923	99,254	37,800	1,292,906
Average	3,574	5,013	7,773	12,212	43,791	43,005	20,721	19,067	25,789	30,435	8,524	5,040	224,944

Appendix B - Naturalized Flows

NATURALIZED FLOW **MSMN12**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Millers Creek near Munday  
 Gage Number 08082700

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	0	148	0	26	1,353	1,816	356	2,397	392	0	428	25	6,941
1941	0	164	164	2,377	11,186	4,713	753	265	354	7,024	980	631	28,611
1942	138	123	59	659	470	908	24	27	425	1,336	109	109	4,387
1943	51	54	137	143	226	760	3	0	0	0	0	0	1,374
1944	0	24	170	0	625	302	219	0	72	645	41	38	2,136
1945	23	29	816	1,682	113	761	1,440	63	0	401	24	23	5,375
1946	21	25	24	2	115	95	0	344	1,313	1,043	147	701	3,830
1947	34	9	23	10	4,625	467	46	0	186	237	143	212	5,992
1948	16	1	110	3	387	1,029	653	35	11	201	10	0	2,456
1949	17	41	8	124	1,440	756	0	18	229	201	8	0	2,842
1950	0	0	0	537	1,050	118	471	223	687	0	0	0	3,086
1951	0	0	0	0	592	1,589	192	16	4	0	0	0	2,393
1952	0	0	0	0	75	154	2	2	0	0	0	0	233
1953	0	0	0	1	182	423	4,733	346	11	844	9	0	6,549
1954	0	0	0	21	3,211	160	0	0	0	3	40	0	3,435
1955	160	32	9	13	773	844	65	0	4,250	1,072	0	1	7,219
1956	0	0	0	0	193	0	0	0	0	0	0	0	193
1957	0	2,717	107	7,317	15,168	4,389	298	93	24	178	206	0	30,497
1958	0	0	0	0	495	270	551	0	1,970	47	0	0	3,333
1959	0	0	0	0	609	1,334	215	0	0	1,079	0	1	3,238
1960	41	91	0	0	0	0	2,938	0	0	410	0	0	3,480
1961	42	119	40	0	0	3,216	3,716	98	906	100	252	52	8,541
1962	20	50	55	156	7	5,035	351	41	5,393	173	82	40	11,403
1963	0	1	0	157	960	1,468	0	0	0	0	2	0	2,588
1964	0	23	0	0	134	260	0	0	77	0	5	0	499
1965	0	1	0	60	309	202	0	0	0	66	0	0	638
1966	0	0	0	1,736	1,608	0	0	2,374	2,362	6	0	0	8,086
1967	0	0	0	0	0	0	2,668	1	138	4	0	0	2,811
1968	2,138	30	434	334	6	105	160	4	0	0	7	1	3,219
1969	0	15	127	0	2,454	8	0	0	189	184	27	7	3,011
1970	5	0	1,228	44	54	0	0	0	0	0	0	0	1,331
1971	0	0	0	0	0	0	0	5,982	105	1,384	13	180	7,664
1972	3	5	4	10	158	0	1	564	1,926	598	2,245	7	5,521
1973	193	171	1,584	1,080	89	4,905	8	0	3	0	0	0	8,033
1974	0	0	0	0	7	13	0	0	22	5	1	0	48
1975	5	12	0	0	486	28	44	11	29	0	4	0	619
1976	0	0	0	2	7	0	0	20	24	461	41	0	555
1977	0	0	0	232	76	17	0	0	0	0	0	0	325
1978	0	0	1	0	0	0	0	24,809	22	0	11	0	24,843
1979	0	0	138	0	659	951	660	0	0	0	0	0	2,408
1980	0	0	0	0	149	25	0	0	3,259	39	0	100	3,572
1981	0	91	112	162	86	18	0	64	0	316	0	0	849
1982	0	0	0	0	11,205	24,988	83	82	2	0	0	1	36,361
1983	9	19	15	1	8	0	1	0	0	21	0	0	74
1984	0	0	0	0	0	0	0	3	0	1	9	297	310
1985	747	1,096	6	69	16	1,534	0	0	0	0	0	0	3,468
1986	0	0	0	0	0	499	11	62	0	5,697	594	81	6,944
1987	72	1,944	799	33	5,623	1,607	115	0	0	0	0	3	10,196
1988	0	0	0	0	0	0	133	0	4,290	5	0	0	4,428
1989	0	163	6	1	0	33	34	0	76	4	0	0	317
1990	0	0	14	7,626	987	2,378	0	2	4	1	4	0	11,016
1991	32	0	0	0	3,328	7,156	39	2	49	2	0	807	11,415
1992	552	5,435	649	60	1,548	12,672	32	3	0	0	154	79	21,184
1993	7	712	173	7	17	49	0	0	1	0	0	1	967
1994	0	0	0	0	562	0	0	0	0	1,460	11	58	2,091
1995	0	0	0	0	42	859	487	734	163	55	0	0	2,340
1996	0	0	0	0	65	291	32	60	49	0	29	4	530
1997	0	41	0	69	37	706	56	0	0	0	0	14	923
1998	0	18	383	0	0	0	2,739	0	0	0	0	0	3,140
1999	48	13	48	0	49	74	0	0	0	0	0	0	232
2000	0	0	9	69	900	59	0	0	0	113	1,607	21	2,778
2001	24	1,209	1,937	39	3	0	0	0	0	0	21	1	3,234
2002	0	0	474	423	250	3,694	164	0	0	0	1	5	5,011
2003	0	0	0	0	0	1,734	40	0	0	0	0	0	1,774
2004	0	1	4	57	0	743	1,215	225	0	0	3,838	36	6,119
2005	2	71	147	0	0	840	42	26,677	19	11	2	4	27,815
2006	1	1	1	0	514	0	2	0	26	1,226	0	0	1,771
2007	7	0	167	71	980	6,848	3,666	44	0	0	0	0	11,783
2008	0	0	0	0	510	44	0	0	10	11	0	0	575
2009	0	0	0	0	24	446	362	47	66	2	0	2	949
2010	780	788	639	1,446	1,030	181	295	8	597	4	0	0	5,768
2011	0	0	0	0	0	0	0	0	0	37	0	6	43
2012	0	0	0	0	0	46	59	0	457	30	0	0	592
2013	0	0	0	0	0	438	4	0	64	34	0	0	540
2014	0	0	0	0	0	39	81	0	40	26	83	1	270
2015	21	2	24	119	11,271	5,299	44	0	0	3	800	3,620	21,203
Min	0	0	0	0	0	0	0	0	0	0	0	0	43
Max	2,138	5,435	1,937	7,626	15,168	24,988	4,733	26,677	5,393	7,024	3,838	3,620	36,361
Average	69	204	143	355	1,172	1,453	399	865	399	353	158	94	5,662

Appendix B - Naturalized Flows

NATURALIZED FLOW **CFRO13**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Clear Fork Brazos River near Roby  
 Gage Number 08083100

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	2	48	0	108	382	792	15	2,209	879	0	437	18	4,890
1941	1	125	851	4,321	10,444	3,074	1,605	802	1,511	7,766	349	130	30,979
1942	35	5	1	500	106	510	116	1,095	1,473	1,995	102	235	6,173
1943	98	5	86	139	453	599	463	0	0	0	0	4	1,847
1944	1	38	2	25	527	153	911	95	84	89	60	142	2,127
1945	13	3	80	24	32	544	1,723	12	315	1,562	8	0	4,316
1946	3	0	0	2	160	414	50	663	722	2,058	44	353	4,469
1947	33	0	1	5	6,729	394	157	14	157	76	25	327	7,918
1948	1	621	40	0	218	1,467	2,144	321	16	292	588	1	5,709
1949	6	11	1	197	1,542	1,848	39	59	1,531	177	19	0	5,430
1950	0	18	0	512	2,800	249	788	187	2,772	49	1	0	7,376
1951	0	0	0	2	422	1,366	128	775	28	0	0	0	2,721
1952	0	0	0	32	726	35	358	54	29	0	11	1	1,246
1953	0	0	25	75	723	91	402	645	8	3,230	141	9	5,349
1954	1	0	0	3,235	3,614	282	0	4	0	7	77	0	7,220
1955	0	224	969	21	6,482	1,882	3,460	126	9,843	4,517	130	64	27,718
1956	38	29	2	1	712	116	88	86	0	50	4	2	1,128
1957	0	795	13	2,480	6,210	4,787	568	245	394	1,011	775	19	17,297
1958	24	18	67	395	2,203	451	91	153	605	68	83	14	4,172
1959	11	9	10	48	343	4,187	4,395	610	8	1,001	46	553	11,221
1960	62	41	17	8	196	237	4,523	74	10	8,373	262	149	13,952
1961	165	172	119	31	12	3,693	4,330	256	89	45	299	39	9,250
1962	100	67	70	121	24	2,894	254	34	1,727	375	96	112	5,874
1963	101	81	42	255	1,820	636	56	66	47	23	47	52	3,226
1964	53	50	58	69	68	491	19	20	10	159	16	27	1,040
1965	22	23	21	9	9,457	1,066	27	84	4	8,755	362	100	19,930
1966	90	69	62	1,176	136	627	22	664	1,128	107	92	85	4,258
1967	79	48	148	68	141	2,101	121	164	675	197	63	74	3,879
1968	85	83	112	546	1,765	945	1,121	124	48	45	83	87	5,044
1969	68	67	83	107	743	114	33	21	14,791	405	320	423	17,175
1970	402	402	444	289	612	663	111	139	72	117	106	129	3,486
1971	107	96	50	57	1,934	314	693	8,670	1,801	955	398	369	15,444
1972	314	226	195	199	229	123	59	2,642	780	181	167	180	5,295
1973	171	189	918	344	263	169	213	133	285	272	131	141	3,229
1974	148	129	118	265	125	61	35	571	267	359	131	217	2,426
1975	275	183	207	236	166	87	3,727	336	222	146	237	161	5,983
1976	192	160	144	335	200	115	395	76	296	964	146	149	3,172
1977	163	153	191	417	143	101	199	482	89	61	66	91	2,156
1978	108	93	94	79	358	328	27	20	91	38	44	63	1,343
1979	83	91	549	77	1,270	159	277	12	10	10	22	34	2,594
1980	38	31	36	35	8,019	256	24	143	10,352	671	160	283	20,048
1981	193	110	198	3,068	1,929	5,022	806	418	186	213	184	259	12,586
1982	353	252	191	98	15,773	2,803	699	376	219	182	168	233	21,347
1983	393	335	375	295	5,738	508	195	85	47	498	218	117	8,804
1984	130	122	106	86	68	48	35	102	281	94	78	323	1,473
1985	114	107	122	2,085	1,442	1,476	461	242	108	314	118	132	6,721
1986	158	170	141	160	1,011	773	412	2,672	7,422	6,918	1,045	972	21,854
1987	783	1,327	1,208	791	1,173	581	379	236	209	149	164	197	7,197
1988	215	216	249	199	133	528	1,348	62	96	68	66	82	3,262
1989	113	270	154	110	71	124	17	11	132	17	17	21	1,057
1990	35	22	50	606	83	1,116	61	78	174	50	49	55	2,379
1991	68	62	72	65	797	4,136	662	939	408	411	268	466	8,354
1992	483	1,375	779	567	888	714	568	348	348	218	226	260	6,774
1993	285	273	346	208	169	1,902	116	123	116	160	91	115	3,904
1994	120	91	105	90	283	56	11	14	20	18	33	39	880
1995	43	35	103	37	551	380	18	22	296	14	58	35	1,592
1996	32	29	28	22	8	441	18	100	7	8	53	19	765
1997	19	237	22	45	194	864	192	54	19	14	38	54	1,752
1998	48	39	41	31	34	4	1	0	0	1	1	1	201
1999	0	0	2	3	113	2,356	4	0	0	0	0	0	2,478
2000	0	0	11,082	94	2	1,007	185	0	0	45	2	0	12,417
2001	2	13	15	0	60	55	0	0	140	78	5	2	370
2002	0	0	1	0	100	6	56	0	0	12	3	8	186
2003	0	0	0	0	7	1,821	11	0	0	0	0	0	1,839
2004	0	0	2	0	1	157	22	11	0	2	15	0	210
2005	0	0	0	0	0	0	0	5,737	1	0	0	1	5,739
2006	1	0	0	0	758	0	0	0	4	0	0	0	763
2007	0	0	7	5	45	182	4	968	37	4	126	626	2,004
2008	8	6	24	1,496	884	203	16	30	1	36	1	1	2,706
2009	1	5	5	19	13	675	623	24	4	2	0	5	1,376
2010	22	38	40	346	175	1,401	1,281	218	455	468	209	175	4,828
2011	71	63	81	46	62	19	4	0	0	17	20	25	408
2012	24	20	18	1	32	7	2	0	29	1	0	1	135
2013	3	0	0	0	1,628	39	13	0	5	0	0	0	1,688
2014	0	0	0	0	481	293	0	0	158	0	8	0	940
2015	0	0	9	19	773	114	1,233	32	3	100	39	92	2,414
Min	0	0	0	0	0	0	0	0	0	0	0	0	135
Max	783	1,375	11,082	4,321	15,773	5,022	4,523	8,670	14,791	8,755	1,045	972	30,979
Average	90	127	282	361	1,421	898	569	471	843	741	124	120	6,046

Appendix B - Naturalized Flows

NATURALIZED FLOW CFHA14  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Clear Fork Brazos River at Hawley  
 Gage Number 08083240

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	13,476	915	484	892	2,538	9,221	2,354	16,798	2,716	1,729	551	347	52,021
1941	309	827	2,341	14,303	30,733	23,852	6,733	12,491	2,239	30,992	3,260	2,692	130,772
1942	1,535	1,333	694	4,324	6,358	4,526	888	1,540	5,455	16,021	1,551	1,563	45,788
1943	997	1,277	2,104	1,398	3,792	4,500	439	175	8	676	208	185	15,759
1944	465	1,792	838	195	9,369	2,859	7,182	2,790	2,050	5,806	743	635	34,724
1945	493	268	2,645	4,681	3,635	7,432	25,492	3,529	342	6,493	797	1,079	56,886
1946	983	891	813	1,076	6,041	982	710	1,361	5,336	4,697	1,120	4,430	28,440
1947	274	302	395	216	14,979	4,532	1,328	633	761	11,587	789	2,813	38,609
1948	488	1,123	1,723	387	1,195	3,546	5,170	1,496	354	6,691	151	141	22,465
1949	417	287	135	2,829	10,439	3,693	1,434	474	4,033	3,281	240	8	27,270
1950	317	233	278	1,671	10,831	1,319	5,748	5,280	6,335	551	268	316	33,147
1951	309	156	441	382	12,814	11,519	2,814	1,252	77	562	145	56	30,527
1952	249	217	97	1,151	2,499	931	601	967	2,066	0	1,100	294	10,172
1953	96	0	187	508	5,642	63	9,442	5,241	380	3,246	211	35	25,051
1954	1	244	262	3,710	15,363	551	198	87	135	221	1,239	0	22,011
1955	0	552	122	259	18,994	13,970	2,045	1,193	18,014	2,557	0	0	57,706
1956	0	332	102	1,397	8,306	681	0	538	0	599	505	287	12,747
1957	0	15,078	1,083	49,936	137,859	38,572	1,856	1,040	2,263	7,771	993	439	256,890
1958	779	820	918	1,541	2,395	1,738	1,755	908	2,760	523	98	184	14,419
1959	147	328	446	350	8,056	10,901	8,093	354	0	9,181	195	611	38,662
1960	1,556	710	900	1,640	73	1,136	3,301	246	0	5,557	0	175	15,294
1961	2,427	1,470	296	426	1,609	21,674	14,694	820	16,093	623	3,342	710	64,184
1962	737	628	1,088	1,109	177	20,053	6,973	409	11,777	2,561	449	791	46,752
1963	365	354	692	720	12,951	3,664	0	474	0	13	0	0	19,233
1964	646	1,245	1,086	1,737	340	512	1,200	3,582	1,019	970	4	138	12,479
1965	245	275	291	4,628	31,321	6,489	1,110	132	5,462	7,558	1,744	414	59,669
1966	600	365	1,240	12,807	13,523	1,705	376	1,789	7,115	1,069	376	392	41,357
1967	528	293	739	137	2,316	5,968	2,371	210	3,493	718	485	371	17,629
1968	2,833	1,034	4,098	4,179	3,300	2,202	1,568	1,054	164	20	547	406	21,405
1969	314	405	498	395	8,010	740	198	827	42,777	3,007	2,250	2,366	61,787
1970	2,142	1,651	2,140	3,091	2,714	4,114	376	350	663	350	453	394	18,438
1971	516	447	565	570	10,022	4,123	2,631	37,867	18,067	6,419	2,982	2,962	87,171
1972	2,413	2,058	1,599	1,044	1,188	792	2,221	5,585	3,660	2,100	5,382	1,574	29,616
1973	2,283	2,746	8,943	5,109	1,887	2,755	1,330	1,321	5,124	876	819	788	33,981
1974	799	553	755	1,099	821	366	46	7,196	17,778	12,568	6,810	2,650	51,441
1975	2,628	3,376	1,872	1,818	4,185	1,878	11,108	2,544	1,409	917	1,988	1,108	34,831
1976	1,252	1,219	1,532	2,579	1,415	506	3,110	2,711	1,153	5,326	1,591	1,170	23,564
1977	1,278	1,099	2,191	4,761	5,779	1,189	1,146	1,634	483	340	480	453	20,833
1978	548	650	633	720	710	2,267	88	6,107	2,505	414	325	357	15,324
1979	433	593	3,873	1,096	4,484	2,314	1,867	1,027	171	158	218	493	16,727
1980	392	424	479	244	6,787	953	593	1,644	44,868	19,628	2,777	3,873	82,662
1981	2,900	2,054	2,665	22,817	8,117	17,656	6,466	3,561	2,058	3,726	1,245	1,346	74,611
1982	1,306	1,186	1,414	1,880	50,600	16,708	7,199	2,737	1,362	1,504	1,212	1,277	88,385
1983	1,449	2,022	1,331	1,124	5,582	1,951	707	333	156	4,200	1,509	701	21,065
1984	1,111	974	728	476	346	273	131	352	598	1,303	1,458	1,656	9,406
1985	4,331	9,165	1,549	4,220	9,777	8,651	6,309	1,153	932	2,502	730	800	50,119
1986	707	917	891	648	1,633	17,125	2,285	4,869	27,583	57,999	6,037	5,824	126,518
1987	4,930	14,922	7,588	4,206	11,426	6,408	2,568	1,360	1,892	1,013	1,008	2,583	59,904
1988	1,447	1,022	1,262	1,210	964	2,257	5,837	679	11,215	1,210	901	1,081	29,085
1989	726	1,516	1,060	1,026	485	3,825	824	212	3,053	0	0	0	12,727
1990	1,350	438	7,350	13,121	26,215	3,172	0	3,277	6,249	2,676	1,316	541	65,705
1991	2,552	1,821	1,159	566	1,107	31,267	5,632	4,284	7,712	5,868	1,987	13,844	77,799
1992	7,704	31,999	9,028	6,127	6,778	12,798	6,920	4,734	2,522	927	1,706	1,461	92,704
1993	1,672	2,077	2,391	1,820	1,476	5,759	341	144	686	1,315	448	368	18,497
1994	590	0	834	1,076	26,463	4,269	0	13	1,342	790	2,379	306	38,062
1995	431	684	937	1,340	2,918	4,333	2,192	16,360	3,931	7	960	156	34,249
1996	0	1,012	767	2,698	219	539	0	1,959	9,062	4,617	1,443	1,661	23,977
1997	517	5,428	3,974	3,482	4,129	20,203	2,515	764	0	0	0	751	41,763
1998	530	633	1,940	556	21	218	428	18	0	0	335	134	4,813
1999	187	173	597	946	306	4,448	0	0	0	0	173	150	6,980
2000	0	70	3,821	81	29	3,057	3,525	0	0	9,390	4,082	0	24,055
2001	232	1,470	1,217	485	2,561	487	187	35	2,192	977	688	361	10,892
2002	295	254	989	599	2,058	199	13,967	388	471	1,930	506	694	22,350
2003	252	239	345	52	167	6,823	54	151	31	82	163	50	8,409
2004	333	767	815	1,905	483	1,375	103	5,860	20	4,450	10,229	390	26,730
2005	348	1,147	1,134	275	670	722	0	5,115	123	594	326	301	10,755
2006	496	488	774	2,626	9,240	301	92	111	867	0	116	157	15,268
2007	187	255	1,558	1,780	8,513	5,824	2,632	41,733	3,160	1,102	882	876	68,502
2008	641	889	5,085	3,209	4,921	1,397	181	3,433	1,387	901	207	264	22,515
2009	305	373	593	166	445	642	1,367	226	676	1,168	216	454	6,631
2010	3,104	2,521	1,856	2,093	3,400	4,349	4,779	676	3,593	1,876	405	840	29,492
2011	509	1,022	743	980	63	171	350	316	184	1,108	92	121	5,659
2012	735	438	354	72	417	89	154	144	3,041	1,721	116	34	7,315
2013	254	65	417	297	246	1,482	3,380	39	484	0	85	81	6,830
2014	67	62	122	36	169	919	588	70	303	51	227	2	2,616
2015	354	254	614	904	3,816	3,008	10,048	156	387	5,877	4,596	6,624	36,638
Min	0	0	97	36	21	63	0	0	0	0	0	0	2,616
Max	13,476	31,999	9,028	49,936	137,859	38,572	25,492	41,733	44,868	57,999	10,229	13,844	256,890
Average	1,169	1,802	1,573	2,974	8,174	5,572	3,057	3,170	4,426	4,017	1,250	1,100	38,282

Appendix B - Naturalized Flows

NATURALIZED FLOW **MUHA15**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Mulberry Creek near Hawley  
 Gage Number 08083245

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	2,352	160	84	156	443	1,610	411	2,932	474	302	96	61	9,081
1941	54	144	409	2,497	5,365	4,164	1,175	2,181	391	5,410	569	470	22,829
1942	268	233	121	755	1,110	790	155	269	952	2,797	271	273	7,994
1943	174	223	367	244	662	786	77	31	1	118	36	32	2,751
1944	81	313	146	34	1,636	499	1,254	487	358	1,014	130	111	6,063
1945	86	47	462	817	635	1,297	4,450	616	60	1,134	139	188	9,931
1946	172	156	142	188	1,055	171	124	238	931	820	196	773	4,966
1947	48	53	69	38	2,615	791	232	111	133	2,023	138	491	6,742
1948	85	196	301	68	209	619	903	261	62	1,168	26	25	3,923
1949	73	50	24	494	1,822	645	250	83	704	573	42	1	4,761
1950	55	41	49	292	1,891	230	1,003	922	1,106	96	47	55	5,787
1951	54	27	77	67	2,237	2,011	491	219	13	98	25	10	5,329
1952	43	38	17	201	436	163	105	169	361	0	192	51	1,776
1953	17	0	33	89	985	11	1,648	915	66	567	37	6	4,374
1954	0	43	46	648	2,682	96	35	15	24	39	216	0	3,844
1955	0	96	21	45	3,316	2,439	357	208	3,145	446	0	0	10,073
1956	0	58	18	244	1,450	119	0	94	0	104	88	50	2,225
1957	0	2,632	189	8,717	24,066	6,734	324	182	395	1,357	173	77	44,846
1958	136	143	160	269	418	303	306	158	482	91	17	32	2,515
1959	26	57	78	61	1,406	1,903	1,413	62	0	1,603	34	107	6,750
1960	272	124	157	286	13	198	576	43	0	970	0	31	2,670
1961	424	257	52	74	281	3,784	2,565	143	2,809	109	583	124	11,205
1962	129	110	190	194	31	3,501	1,217	71	2,056	447	78	138	8,162
1963	64	62	121	126	2,261	640	0	83	0	2	0	0	3,359
1964	113	217	190	303	59	89	209	625	178	169	1	24	2,177
1965	43	48	51	808	5,468	1,133	194	23	953	1,319	304	72	10,416
1966	105	64	217	2,236	2,361	298	66	312	1,242	187	66	68	7,222
1967	92	51	129	24	404	1,042	414	37	610	0	51	1	2,855
1968	1,185	222	1,097	1,725	315	106	48	0	0	0	51	1	4,750
1969	0	25	54	52	3,162	44	2	20	879	0	0	37	4,275
1970	46	0	78	1	58	955	4	0	89	0	0	0	1,231
1971	0	15	23	60	1,622	138	181	4,754	4,169	171	10	142	11,285
1972	22	23	26	68	386	20	0	4,001	96	849	759	11	6,261
1973	338	398	1,635	413	105	199	15	0	1,165	89	1	0	4,358
1974	0	10	110	2	21	0	0	1,599	6,785	6,046	1,982	532	17,087
1975	602	957	447	271	596	193	8,045	267	72	10	487	97	12,044
1976	86	70	93	606	97	2	277	56	1,706	3,580	414	241	7,228
1977	410	188	715	1,473	383	159	47	173	1	0	0	0	3,549
1978	0	1	2	1	0	1,530	0	3,975	676	14	8	0	6,207
1979	12	21	381	49	769	1,052	75	1	0	0	0	8	2,368
1980	0	0	0	0	2,604	341	0	40	2,854	62	6	1,320	7,227
1981	81	23	736	3,366	340	1,000	2,087	0	29	902	0	5	8,569
1982	14	16	23	4	3,005	811	683	24	0	16	0	0	4,596
1983	59	97	58	45	42	296	46	0	1	1,040	203	0	1,887
1984	0	0	0	0	0	0	113	1,111	413	3,128	301	642	5,708
1985	1,016	167	106	529	403	457	1,377	65	0	1,930	2	0	6,052
1986	0	26	2	0	79	5,411	1,421	559	718	8,467	708	959	18,350
1987	471	1,619	1,208	543	6,895	3,868	490	87	600	46	52	2,533	18,412
1988	318	247	247	328	466	1,424	445	0	2,344	22	1	22	5,864
1989	43	319	178	56	259	3,584	3	0	1,718	0	0	0	6,160
1990	236	77	1,283	2,291	4,576	554	0	572	1,091	467	230	94	11,471
1991	446	318	202	99	193	5,458	983	748	1,346	1,024	347	2,417	13,581
1992	1,345	5,586	1,576	1,070	1,183	2,234	1,208	826	440	162	298	255	16,183
1993	292	363	417	318	258	1,005	59	25	120	230	78	64	3,229
1994	103	0	146	188	4,620	745	0	2	234	138	415	53	6,644
1995	75	119	164	234	509	756	383	2,856	686	1	168	27	5,978
1996	0	177	134	471	38	94	0	342	1,582	806	252	290	4,186
1997	90	948	694	608	721	3,527	439	133	0	0	0	131	7,291
1998	93	111	339	97	4	38	75	3	0	0	59	23	842
1999	33	30	104	165	53	777	0	0	0	0	30	26	1,218
2000	0	12	667	14	5	534	615	0	0	1,639	713	0	4,199
2001	41	257	212	85	447	85	33	6	383	171	120	63	1,903
2002	51	44	173	105	359	35	2,438	68	82	337	88	121	3,901
2003	44	42	60	9	29	1,191	9	26	5	14	29	9	1,467
2004	58	134	142	333	84	240	18	1,023	3	777	1,786	68	4,666
2005	61	200	198	48	117	126	0	893	22	104	57	53	1,879
2006	87	85	135	458	1,613	53	16	19	151	0	20	27	2,664
2007	33	44	272	311	1,486	1,017	459	7,285	552	192	154	153	11,958
2008	112	155	888	560	859	244	32	599	242	157	36	46	3,930
2009	53	65	104	29	78	112	239	40	118	204	38	79	1,159
2010	542	440	324	365	593	759	834	118	627	328	71	147	5,148
2011	89	178	130	171	11	30	61	55	32	193	16	21	987
2012	128	76	62	13	73	16	27	25	531	300	20	6	1,277
2013	44	11	73	52	43	259	590	7	85	0	15	14	1,193
2014	12	11	21	6	30	160	103	12	53	9	40	0	457
2015	62	44	107	158	666	525	1,754	27	67	1,026	802	1,156	6,394
Min	0	0	0	0	0	0	0	0	0	0	0	0	457
Max	2,352	5,586	1,635	8,717	24,066	6,734	8,045	7,285	6,785	8,467	1,982	2,533	44,846
Average	182	258	260	498	1,389	1,029	601	578	661	758	190	200	6,604

Appendix B - Naturalized Flows

NATURALIZED FLOW **CFNU16**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Clear Fork Brazos River at Nugent  
 Gage Number 08084000

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	29,043	1,972	1,043	1,923	5,469	19,873	5,074	36,202	5,853	3,726	1,188	748	112,114
1941	667	1,783	5,045	30,826	66,235	51,406	14,510	26,921	4,826	66,794	7,026	5,802	281,841
1942	3,309	2,872	1,495	9,319	13,702	9,754	1,914	3,318	11,757	34,529	3,343	3,368	98,680
1943	2,148	2,753	4,535	3,013	8,173	9,698	947	378	18	1,456	449	398	33,966
1944	1,003	3,862	1,805	420	20,192	6,161	15,479	6,012	4,419	12,513	1,601	1,369	74,836
1945	1,062	577	5,701	10,088	7,835	16,017	54,939	7,606	738	13,994	1,717	2,326	122,600
1946	2,118	1,920	1,753	2,318	13,019	2,117	1,531	2,934	11,499	10,122	2,414	9,548	61,293
1947	591	650	852	465	32,283	9,767	2,862	1,365	1,640	24,972	1,701	6,063	83,211
1948	1,051	2,420	3,713	834	2,576	7,642	11,143	3,224	762	14,420	325	304	48,414
1949	899	618	292	6,097	22,497	7,959	3,090	1,022	8,691	7,071	518	18	58,772
1950	683	503	599	3,601	23,342	2,843	12,387	11,380	13,654	1,188	578	680	71,438
1951	667	336	950	824	27,617	24,826	6,064	2,699	165	1,211	312	120	65,791
1952	536	467	210	2,481	5,385	2,007	1,295	2,083	4,453	0	2,371	633	21,921
1953	207	0	404	1,094	12,160	135	20,349	11,296	818	6,996	454	76	53,989
1954	2	525	565	7,996	33,109	1,188	426	188	291	476	2,670	0	47,436
1955	0	1,190	263	558	40,935	30,107	4,408	2,572	38,823	5,510	0	0	124,366
1956	0	715	219	3,010	17,900	1,467	0	1,160	1	1,290	1,088	618	27,468
1957	0	32,495	2,333	107,620	297,109	83,130	3,999	2,241	4,877	16,747	2,141	947	553,639
1958	1,678	1,768	1,979	3,321	5,161	3,746	3,783	1,956	5,949	1,128	212	396	31,077
1959	316	707	961	755	17,361	23,494	17,441	763	0	19,787	421	1,317	83,323
1960	3,353	1,530	1,940	3,535	157	2,448	7,114	531	0	11,976	0	377	32,961
1961	5,230	3,168	638	918	3,468	46,711	31,668	1,767	34,684	1,343	7,202	1,531	138,328
1962	1,589	1,353	2,344	2,390	381	43,217	15,028	881	25,381	5,520	967	1,705	100,756
1963	786	762	1,491	1,552	27,911	7,896	0	1,022	0	27	0	0	41,447
1964	1,392	2,683	2,340	3,744	732	1,104	2,586	7,720	2,197	2,091	9	297	26,895
1965	529	592	627	9,975	67,502	13,984	2,392	285	11,771	16,288	3,759	892	128,596
1966	1,293	786	2,673	27,602	29,144	3,675	811	3,855	15,333	2,303	811	845	89,131
1967	1,137	631	1,593	295	4,991	12,862	5,109	453	7,527	2,548	1,569	1,341	40,056
1968	18,047	7,210	11,170	24,045	10,679	3,085	6,319	977	0	0	1,582	661	83,775
1969	205	1,262	1,828	2,545	50,381	10,768	599	2,325	42,040	3,930	3,592	4,030	123,505
1970	3,762	2,935	6,086	8,472	7,960	11,501	733	0	653	0	0	624	42,726
1971	807	946	1,911	2,793	14,631	9,636	3,448	55,882	42,097	12,373	3,589	5,126	153,239
1972	2,662	3,279	3,021	2,576	2,372	1,658	2,852	12,057	4,740	5,289	9,322	2,568	52,396
1973	4,540	4,310	11,224	6,708	4,888	1,461	559	957	6,625	2,770	1,113	330	45,485
1974	876	1,199	1,928	2,115	1,075	374	458	11,164	82,722	54,024	27,546	7,050	190,531
1975	7,829	10,899	7,918	4,461	7,596	5,065	27,106	4,834	2,313	1,196	4,641	2,360	86,218
1976	1,907	2,127	2,491	5,385	2,428	1,506	5,424	4,500	4,650	16,971	7,231	3,383	58,003
1977	1,815	2,648	9,497	15,804	8,361	1,231	1,385	1,462	214	487	0	342	43,246
1978	243	1,029	1,460	798	0	2,999	450	27,682	6,385	975	753	359	43,133
1979	1,263	1,209	15,233	10,673	10,266	6,945	2,111	1,200	0	160	0	1,170	50,230
1980	834	1,085	977	712	13,901	3,408	1,474	580	41,309	35,205	4,153	9,614	113,252
1981	4,597	2,734	8,206	32,202	8,652	21,785	13,789	3,216	1,730	52,372	12,533	2,856	164,672
1982	1,406	2,246	2,733	1,873	60,395	23,267	13,049	3,558	1,078	522	698	437	111,262
1983	2,451	3,594	2,306	1,862	5,648	5,457	6,619	187	292	7,065	2,757	920	39,158
1984	1,596	1,276	946	0	1,370	51	454	1,325	802	11,699	4,301	2,305	26,125
1985	10,247	9,442	3,118	5,348	12,707	8,561	11,305	2,625	0	11,828	997	510	76,688
1986	1,932	1,782	1,426	323	1,033	35,368	14,323	4,244	30,875	96,720	16,850	16,059	220,935
1987	9,987	27,859	24,045	9,458	35,752	15,187	5,782	2,365	3,646	1,099	799	10,154	146,133
1988	3,175	2,236	2,537	2,844	2,250	8,117	6,576	0	13,062	0	0	0	40,797
1989	0	4,737	1,692	25	0	36,934	4,237	0	6,844	0	0	0	54,269
1990	2,909	945	15,840	28,278	56,497	6,837	0	7,062	13,468	5,767	2,836	1,166	141,605
1991	5,500	3,924	2,498	1,219	2,386	67,385	12,137	9,232	16,620	12,646	4,283	29,837	167,667
1992	16,603	68,964	19,456	13,205	14,608	27,581	14,913	10,203	5,435	1,997	3,676	3,149	199,790
1993	3,604	4,476	5,154	3,923	3,181	12,411	734	310	1,479	2,835	966	793	39,866
1994	1,271	0	1,797	2,319	57,032	9,200	0	28	2,892	1,702	5,128	660	82,029
1995	929	1,475	2,020	2,889	6,288	9,339	4,725	35,258	8,471	15	2,070	336	73,815
1996	0	2,182	1,652	5,815	473	1,162	0	4,221	19,530	9,950	3,109	3,580	51,674
1997	1,115	11,698	8,564	7,504	8,899	43,541	5,421	1,647	0	0	0	1,619	90,008
1998	1,143	1,365	4,181	1,198	46	470	923	38	0	0	723	289	10,376
1999	402	373	1,287	2,039	659	9,587	0	0	0	0	373	323	15,043
2000	0	150	8,234	174	63	6,589	7,597	0	0	20,238	8,797	0	51,842
2001	501	3,168	2,622	1,046	5,519	1,049	402	75	4,724	2,106	1,483	779	23,474
2002	635	547	2,132	1,291	4,435	428	30,102	837	1,016	4,160	1,090	1,496	48,169
2003	543	515	743	113	359	14,705	116	325	67	177	352	107	18,122
2004	717	1,653	1,756	4,105	1,041	2,963	223	12,629	43	9,591	22,045	840	57,606
2005	750	2,473	2,443	593	1,444	1,556	0	11,024	266	1,281	703	649	23,182
2006	1,070	1,052	1,668	5,659	19,913	649	199	240	1,868	0	250	338	32,906
2007	402	549	3,357	3,837	18,347	12,551	5,672	89,941	6,810	2,374	1,901	1,889	147,630
2008	1,382	1,916	10,959	6,917	10,605	3,010	390	7,398	2,989	1,941	446	569	48,522
2009	657	803	1,279	358	959	1,383	2,947	488	1,456	2,518	465	978	14,291
2010	6,690	5,434	3,999	4,510	7,327	9,373	10,299	1,457	7,743	4,044	873	1,811	63,560
2011	1,097	2,202	1,601	2,111	135	368	755	682	396	2,388	198	261	12,194
2012	1,583	943	762	156	899	192	331	311	6,553	3,708	251	73	15,762
2013	547	141	898	640	531	3,195	7,285	83	1,044	0	184	174	14,722
2014	145	134	263	77	365	1,981	1,268	150	654	110	489	5	5,641
2015	763	548	1,323	1,948	8,225	6,482	21,655	337	833	12,666	9,906	14,275	78,961
Min	0	0	210	0	0	51	0	0	0	0	0	0	5,641
Max	29,043	68,964	24,045	107,620	297,109	83,130	54,939	89,941	82,722	96,720	27,546	29,837	553,639
Average	2,532	3,728	3,640	6,441	17,091	12,021	6,625	6,276	8,057	9,249	2,893	2,350	80,902

Appendix B - Naturalized Flows

NATURALIZED FLOW **CAST17**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name California Creek near Stamford  
 Gage Number 08084800

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	2,537	637	75	251	4,702	7,418	1,557	10,669	1,740	312	1,441	144	31,483
1941	54	669	956	10,131	40,737	19,236	3,629	3,198	1,529	27,800	3,677	2,480	114,096
1942	722	636	317	2,878	2,675	3,693	243	375	2,361	7,209	634	638	22,381
1943	350	412	826	712	1,425	3,225	94	0	96	7	0	0	7,147
1944	54	415	690	33	3,730	1,486	2,048	402	613	3,115	269	238	13,093
1945	166	142	3,048	6,138	1,043	3,784	9,335	867	25	2,483	225	275	27,531
1946	253	248	231	211	1,506	484	77	1,331	5,109	4,145	671	3,029	17,295
1947	157	86	147	73	17,273	2,316	397	120	726	2,938	596	1,196	26,025
1948	144	216	671	84	1,436	3,885	3,018	394	102	1,897	60	16	11,923
1949	134	181	52	923	6,475	3,061	235	146	1,481	1,250	72	0	14,010
1950	42	32	47	1,992	5,331	619	2,560	1,698	3,346	101	23	33	15,824
1951	32	13	39	52	4,280	7,146	1,134	288	28	92	23	0	13,127
1952	34	32	11	165	708	658	121	188	231	1	124	40	2,313
1953	18	0	26	99	1,640	1,331	16,560	2,076	107	3,251	70	0	25,178
1954	0	32	50	770	12,937	605	0	0	0	52	361	0	14,807
1955	498	204	52	89	6,019	5,285	591	150	16,682	3,830	0	2	33,402
1956	0	0	0	143	2,180	0	0	0	0	0	8	0	2,331
1957	0	11,339	539	32,312	73,502	21,020	1,281	487	505	2,031	833	27	143,876
1958	52	59	170	255	1,999	1,173	2,051	172	6,669	246	0	0	12,846
1959	0	0	0	0	3,430	6,232	2,207	0	0	5,110	0	118	17,097
1960	423	419	143	217	0	118	9,794	0	0	2,335	0	0	13,449
1961	592	650	181	0	191	14,149	14,384	460	5,883	429	1,421	296	38,636
1962	202	274	377	697	57	19,518	2,420	207	19,061	919	352	227	44,311
1963	234	176	163	1,065	12,404	7,349	313	91	33	20	50	26	21,924
1964	76	210	74	41	218	751	49	57	44	15	38	8	1,581
1965	8	11	6	131	22,175	290	88	42	715	5,533	65	36	29,100
1966	53	37	15	2,513	1,592	60	216	286	1,844	78	56	74	6,824
1967	72	52	71	44	792	159	1,844	82	1,955	56	76	95	5,298
1968	5,179	636	1,901	419	426	449	109	50	29	27	84	53	9,362
1969	43	63	164	238	18,146	395	94	300	2,688	255	218	450	23,054
1970	513	253	507	907	492	145	28	23	0	0	0	0	2,868
1971	0	0	0	110	8,261	2,061	120	57,217	14,410	2,781	886	921	86,767
1972	409	348	202	225	479	125	179	960	5,946	7,031	13,620	557	30,081
1973	1,991	2,964	8,078	1,436	414	1,686	249	76	1,710	66	57	76	18,803
1974	84	71	89	414	143	73	53	136	10,013	5,872	2,493	326	19,767
1975	569	912	261	262	2,115	148	3,589	1,481	144	32	365	155	10,033
1976	120	85	107	319	91	0	509	88	88	5,499	966	303	8,175
1977	336	231	209	375	1,874	215	255	14	0	0	1	25	3,535
1978	68	69	51	26	2,038	353	9	47,119	2,135	220	240	107	52,435
1979	266	190	1,221	270	6,971	1,903	845	457	10	0	0	72	12,205
1980	70	79	33	21	2,954	86	0	0	34,175	6,871	677	5,037	50,003
1981	812	636	614	9,487	3,307	21,978	588	240	73	2,154	213	216	40,318
1982	166	187	186	77	45,513	15,486	4,241	1,184	141	110	154	261	67,706
1983	536	2,274	607	309	6,508	1,433	76	6	6	1,045	1,271	199	14,270
1984	227	119	132	107	50	254	47	24	163	924	4,153	2,119	8,319
1985	4,098	10,259	3,036	10,340	4,228	9,608	748	86	111	299	102	128	43,043
1986	117	180	123	281	566	3,748	2,597	287	3,001	29,560	1,852	1,264	43,576
1987	1,182	3,790	1,657	616	8,017	5,304	1,113	92	618	29	52	1,434	23,904
1988	210	156	131	144	133	1,453	1,056	37	9,489	376	309	220	13,714
1989	187	1,178	370	255	382	7,640	72	24	930	20	0	23	11,081
1990	217	139	4,036	8,872	9,845	3,949	174	467	10,139	556	385	303	39,082
1991	1,341	409	294	172	935	23,792	9,314	13,044	1,786	3,185	965	10,355	65,592
1992	3,954	43,134	4,417	1,554	1,579	22,347	14,388	5,892	952	247	761	408	99,633
1993	459	585	580	2,294	1,874	3,690	51	39	329	12,326	362	326	22,915
1994	309	325	258	161	6,604	78	0	0	162	4,686	146	221	12,950
1995	207	120	158	139	854	4,642	346	5,418	6,199	348	531	151	19,113
1996	156	129	91	194	52	1,054	14	107	1,546	0	270	138	3,751
1997	65	2,950	482	848	3,044	7,318	799	193	0	0	4	320	16,023
1998	65	91	790	48	0	348	25	0	0	2	65	0	1,434
1999	115	29	195	922	1,857	8,496	103	2	13	12	13	25	11,782
2000	13	7	209	33	7	5,562	1,046	1	2	2,343	1,337	84	10,644
2001	66	4,217	2,438	258	445	10	2	2	245	3,242	590	417	11,932
2002	52	118	3,027	4,625	1,679	135	17,990	92	94	967	354	340	29,473
2003	136	86	70	58	1,105	32,505	514	155	184	52	39	57	34,961
2004	93	96	111	1,042	2,744	4,372	1,237	963	8	68	6,476	445	17,655
2005	268	374	397	142	861	2,009	77	41,304	492	273	195	208	46,600
2006	184	139	138	139	9,217	96	11	1	5	9	7	16	9,962
2007	27	21	655	2,299	13,598	10,404	1,139	36,704	853	305	216	255	66,476
2008	224	197	374	5,827	7,549	7,047	201	81	874	90	98	76	22,638
2009	70	62	56	354	2,018	3,137	1,456	769	912	385	28	159	9,406
2010	2,565	2,082	1,083	23,568	1,218	3,054	3,296	453	6,028	490	162	238	44,237
2011	212	206	160	137	36	3	0	42	14	561	76	624	2,071
2012	177	163	89	24	0	56	0	0	95	27	0	0	631
2013	0	0	0	1	1	1,581	2,325	246	117	65	2	3	4,341
2014	6	8	7	1	359	2,205	41	0	1,363	46	589	103	4,728
2015	96	68	193	6,957	22,964	11,500	3,864	92	16	5,111	4,057	10,587	65,505
Min	0	0	0	0	0	0	0	0	0	0	0	0	631
Max	5,179	43,134	8,078	32,312	73,502	32,505	17,990	57,217	34,175	29,560	13,620	10,587	143,876
Average	463	1,284	644	1,965	5,711	4,855	1,990	3,155	2,488	2,288	745	642	26,230

Appendix B - Naturalized Flows

NATURALIZED FLOW CFFG18  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Clear Fork Brazos River at Fort Griffin  
 Gage Number 08085500

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	16,265	4,082	480	1,610	30,141	47,554	9,979	68,394	11,151	1,999	9,234	925	201,814
1941	344	4,289	6,127	64,943	261,137	123,305	23,264	20,500	9,804	178,204	23,572	15,900	731,389
1942	4,631	4,077	2,034	18,449	17,147	23,673	1,557	2,407	15,134	46,213	4,061	4,089	143,472
1943	2,243	2,640	5,294	4,561	9,133	20,671	602	0	617	47	0	0	45,808
1944	343	2,660	4,422	213	23,911	9,523	13,128	2,579	3,928	19,968	1,725	1,527	83,927
1945	1,067	908	19,539	39,346	6,683	24,258	59,840	5,555	158	15,915	1,445	1,764	176,478
1946	1,621	1,592	1,480	1,351	9,657	3,100	492	8,535	32,748	26,571	4,303	19,419	110,869
1947	1,004	554	940	465	110,727	14,849	2,542	767	4,654	18,836	3,818	7,668	166,824
1948	923	1,385	4,304	540	9,203	24,906	19,349	2,528	655	12,159	385	105	76,442
1949	857	1,163	334	5,918	41,508	19,623	1,504	936	9,491	8,011	461	0	89,806
1950	270	203	300	12,767	34,175	3,965	16,409	10,886	21,447	649	150	214	101,435
1951	202	84	253	334	27,436	45,806	7,272	1,846	178	589	147	0	84,147
1952	217	203	69	1,059	4,539	4,219	774	1,207	1,479	5	792	255	14,818
1953	117	1	165	632	10,511	8,533	106,153	13,305	684	20,839	446	0	161,386
1954	0	204	322	4,934	82,927	3,881	0	0	0	336	2,317	0	94,921
1955	3,194	1,309	333	572	38,581	33,879	3,788	962	106,936	24,550	0	14	214,118
1956	0	0	0	917	13,976	0	0	0	0	54	0	0	14,947
1957	0	72,687	3,457	207,129	471,164	134,742	8,210	3,123	3,235	13,021	5,338	170	922,276
1958	332	381	1,087	1,634	12,816	7,519	13,150	1,102	42,751	1,579	0	0	82,351
1959	0	0	0	0	21,985	39,951	14,150	0	0	32,757	0	754	109,597
1960	2,714	2,687	917	1,391	0	758	62,779	0	0	14,967	0	0	86,213
1961	3,797	4,165	1,160	0	1,227	90,698	92,208	2,950	37,712	2,751	9,109	1,895	247,672
1962	1,292	1,759	2,414	4,466	365	125,117	15,512	1,324	122,188	6,571	2,190	1,763	284,961
1963	8	446	739	4,023	34,965	33,818	0	0	0	0	0	0	73,999
1964	334	4,082	1,462	1,634	427	7,714	352	2,837	1,490	384	0	0	20,716
1965	0	186	0	9,071	97,395	9,344	722	0	8,122	20,476	2,617	231	148,164
1966	286	418	1,308	54,078	47,791	1,760	0	3,370	33,093	5,165	51	9	147,329
1967	478	113	674	0	1,482	9,240	4,846	0	8,348	1,164	824	673	27,842
1968	41,128	7,721	24,868	27,034	16,851	4,579	3,707	0	0	0	83	468	126,439
1969	0	1,088	2,514	4,256	131,921	8,961	0	692	45,748	3,936	3,774	4,779	207,669
1970	4,383	3,318	7,646	11,652	8,885	8,915	0	0	0	0	0	0	44,799
1971	0	174	484	877	14,876	14,115	1,586	149,056	64,694	17,914	6,556	7,121	277,453
1972	3,853	4,383	3,102	2,230	4,802	0	2,109	8,996	14,689	11,423	35,464	2,665	93,716
1973	10,455	15,203	26,785	14,323	3,936	8,380	0	859	7,705	2,477	280	0	90,403
1974	418	289	1,359	1,155	0	0	0	5,848	93,141	62,781	57,679	9,575	232,245
1975	11,206	20,212	6,860	5,593	28,722	4,708	30,456	7,669	2,011	223	4,455	1,875	123,990
1976	1,208	1,168	1,655	4,119	2,281	0	4,012	4,425	8,671	35,380	11,217	3,200	77,336
1977	2,524	2,463	9,618	19,485	14,243	874	678	0	2,319	0	119	635	52,958
1978	567	1,204	1,076	0	762	4,467	0	413,172	10,451	2,332	1,492	1,476	436,999
1979	3,515	1,740	15,289	8,794	23,516	27,565	2,421	1,615	0	0	0	868	85,323
1980	788	1,372	799	90	16,876	4,449	172	0	133,989	103,366	6,405	21,546	289,852
1981	5,909	3,481	10,440	43,859	12,246	40,257	9,905	4,414	1,459	56,340	7,851	2,958	199,119
1982	1,971	2,381	2,692	560	138,291	121,430	24,623	6,855	0	1,364	671	1,600	302,438
1983	3,882	6,793	3,286	1,758	14,792	8,658	5,293	0	0	5,653	3,480	569	54,164
1984	1,374	1,047	368	0	0	0	0	0	0	9,486	14,955	4,881	32,111
1985	22,978	33,555	12,386	24,478	23,937	30,239	9,171	1,561	0	16,125	1,307	420	176,157
1986	1,720	1,249	1,336	5,081	1,604	42,110	25,810	2,348	25,091	169,975	23,799	23,942	324,065
1987	18,658	45,672	48,823	11,411	68,758	39,154	10,164	1,283	3,898	955	350	12,635	261,761
1988	5,627	2,412	3,208	1,873	2,456	6,549	7,525	0	29,424	983	384	1,376	61,817
1989	457	7,368	3,512	1,546	2,173	39,685	2,270	0	6,137	0	0	86	63,234
1990	2,261	826	21,738	67,983	130,292	26,683	0	9,946	68,605	6,127	3,664	1,583	339,708
1991	10,301	6,509	5,259	995	32,049	131,381	17,800	34,106	20,251	22,355	6,585	99,432	387,023
1992	43,438	254,170	58,307	21,701	18,884	114,296	34,070	18,588	8,451	3,080	4,942	5,459	585,386
1993	4,565	5,247	8,925	11,130	9,723	19,118	0	230	2,886	16,729	2,489	1,718	82,760
1994	2,957	8,810	2,740	1,730	72,534	8,201	0	0	1,579	26,382	4,528	870	130,331
1995	1,539	959	2,292	1,658	3,886	14,404	3,540	50,548	18,712	1,315	2,338	1,085	102,276
1996	1,175	1,908	1,058	5,612	78	5,417	0	2,673	18,667	6,421	4,589	4,930	52,528
1997	1,819	18,925	11,953	11,257	21,988	63,936	8,794	2,855	0	0	104	2,667	144,298
1998	1,164	1,813	10,694	3,011	0	0	2,263	0	0	0	0	0	18,945
1999	226	669	1,580	4,765	4,029	21,572	0	0	0	0	0	0	32,841
2000	0	0	5,468	436	0	7,720	11,426	0	0	13,235	13,705	195	52,185
2001	361	15,346	13,383	1,542	8,281	1,143	0	0	3,422	4,952	2,784	1,682	52,896
2002	907	726	13,619	23,216	10,724	9,740	52,509	281	171	4,652	2,324	1,444	120,313
2003	92	327	771	154	804	48,075	1,246	0	0	0	0	0	51,469
2004	0	1,274	1,930	9,315	2,531	8,893	10,395	13,556	701	5,344	58,071	1,038	113,048
2005	6,965	4,970	4,327	599	3,165	8,181	52	185,796	3,857	1,156	1,002	961	221,031
2006	1,384	1,089	1,627	3,455	28,584	606	0	0	0	0	0	0	36,745
2007	462	798	2,205	11,293	70,401	69,403	27,629	122,134	12,008	3,745	2,878	3,436	326,392
2008	2,293	2,729	13,444	15,289	16,765	15,994	325	4,875	5,534	1,220	169	430	79,067
2009	562	574	963	975	4,394	14,231	3,796	2,746	1,696	3,107	651	1,163	34,858
2010	11,235	13,846	9,603	51,332	9,597	9,611	15,786	2,121	21,683	4,988	979	2,545	153,326
2011	1,662	2,687	1,322	1,260	0	115	700	615	83	848	0	218	9,510
2012	1,172	611	757	0	0	0	0	0	3,064	2,781	0	0	8,385
2013	278	2	603	448	56	5,250	9,023	283	419	0	0	115	16,477
2014	55	68	0	0	0	5,053	1,646	0	1,142	0	1,103	192	9,259
2015	613	377	1,641	15,664	105,752	55,503	27,784	396	101	16,334	13,453	40,707	278,325
Min	0	0	0	0	0	0	0	0	0	0	0	0	8,385
Max	43,438	254,170	58,307	207,129	471,164	134,742	106,153	413,172	133,989	178,204	58,071	99,432	922,276
Average	3,719	8,182	5,841	11,803	32,993	25,685	11,148	15,995	14,708	14,734	4,997	4,367	154,173

Appendix B - Naturalized Flows

NATURALIZED FLOW **HCAL19**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Hubbard Creek below Albany  
 Gage Number 08086212

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	2,702	1,433	24	2,639	15,801	27,834	3,406	22,903	2,569	311	7,679	1,649	88,950
1941	332	5,751	2,758	17,124	115,660	56,365	7,925	17,185	4,616	52,964	10,444	4,251	295,375
1942	1,351	1,145	538	26,843	12,733	11,286	444	1,008	14,483	30,633	1,878	1,763	104,105
1943	905	774	2,648	4,672	1,947	4,855	94	0	8	336	0	16	16,255
1944	163	2,306	1,615	716	8,855	2,715	3,429	1,910	1,867	10,381	473	532	34,962
1945	221	229	9,181	11,534	3,169	8,191	15,706	1,736	19	6,283	469	421	57,159
1946	759	280	234	677	4,764	1,427	74	5,586	16,200	6,333	2,950	5,270	44,554
1947	258	74	284	58	27,790	3,418	444	122	853	7,376	918	2,823	44,418
1948	237	407	997	673	4,785	10,624	6,158	574	325	2,709	360	294	28,143
1949	469	592	847	2,009	24,317	12,271	1,103	2,156	5,019	6,070	492	11	55,356
1950	62	207	57	5,606	15,337	2,170	17,090	3,476	7,435	150	28	43	51,661
1951	31	35	0	81	11,577	18,245	1,924	194	37	28	32	0	32,184
1952	0	0	0	358	1,483	1,115	629	26	4	2	740	204	4,561
1953	22	0	685	931	9,843	0	30,558	8,414	2,184	24,513	2,511	870	80,531
1954	447	153	72	11,699	40,697	4,832	447	475	0	306	2,320	10	61,458
1955	535	839	1,325	1,155	15,970	10,590	894	5,481	17,570	1,589	4	2	55,954
1956	14	60	1	85	6,666	1,124	38	659	45	365	3,299	1,748	14,104
1957	0	27,658	216	75,052	147,181	20,552	1,349	670	2,131	29,602	5,943	415	310,769
1958	246	152	2,304	2,528	15,605	1,962	26,732	1,352	2,369	61	0	0	53,311
1959	23	0	0	0	8,533	9,989	2,402	114	155	24,681	1	5	45,903
1960	2,363	584	1,083	4,299	304	67	3,186	160	66	4,365	1	5	16,483
1961	7,155	1,465	83	5	11	29,912	7,957	71	8,804	547	3,121	387	59,518
1962	253	44	88	370	50	15,628	6,463	1,202	11,006	2,054	159	157	37,474
1963	0	0	0	3,366	17,192	851	0	126	205	1,373	11,977	347	35,437
1964	985	5,227	449	156	61	0	0	4,834	4,080	0	11,638	0	27,430
1965	110	0	0	1,802	48,705	556	0	680	1,760	1,643	0	221	55,477
1966	0	55	564	21,022	15,064	5,616	525	927	13,481	147	62	47	57,510
1967	56	43	56	189	1,881	2,523	337	422	4,023	230	65	301	10,126
1968	94,989	5,548	9,859	29,904	3,061	1,251	669	172	148	131	113	112	145,957
1969	0	418	5,325	1,978	55,702	1,386	37	18	1,000	1,075	76	3,441	70,456
1970	1,120	653	3,838	17,493	5,988	473	78	103	54	48	29	33	29,910
1971	28	21	18	59	13,887	414	257	2,022	1,840	525	114	607	19,792
1972	92	48	18	846	2,008	52	112	73	452	2,726	377	31	6,835
1973	1,207	829	1,018	663	89	130	709	62	573	1,236	42	14	6,572
1974	16	19	13	6,940	148	84	80	2,985	69,675	42,735	13,564	2,096	138,355
1975	2,064	12,071	1,709	1,547	7,957	1,528	547	197	53	45	233	33	27,984
1976	51	39	25	2,169	408	177	466	2,082	746	2,424	334	112	9,033
1977	179	132	1,790	2,264	360	2,857	109	76	73	65	38	42	7,985
1978	36	19	22	872	796	163	123	206,975	200	188	323	133	209,850
1979	559	174	14,665	3,328	24,919	2,702	595	504	176	70	41	62	47,795
1980	51	46	40	33	1,246	400	43	29	3,446	1,480	260	1,159	8,233
1981	235	136	2,436	1,131	253	2,702	93	69	238	91,176	868	573	99,910
1982	427	437	494	305	19,867	10,640	1,066	309	122	80	156	208	34,111
1983	265	296	487	243	250	1,122	129	122	67	61	48	39	3,129
1984	32	49	74	89	17	19	15	8	313	11,291	1,160	4,750	17,817
1985	2,908	749	1,434	650	24,692	1,660	2,532	69	11	3,676	101	31	38,513
1986	0	178	39	0	0	10,272	780	1	155	14,519	3,514	6,716	36,174
1987	2,356	11,095	8,309	1,235	11,977	2,990	334	134	0	0	30	649	39,109
1988	133	77	48	92	9	10	50	9	0	0	0	0	428
1989	27	21	29	47	317	15,983	71	70	1,872	38	23	33	18,531
1990	0	72	2,327	20,115	55,202	197	16	1,720	337	77	318	70	80,451
1991	354	207	160	164	810	10,739	253	5,406	7,725	6,969	1,066	71,385	105,238
1992	10,765	88,124	14,968	3,428	2,889	10,417	2,846	1,576	5,754	287	885	1,318	143,257
1993	682	930	1,444	592	549	1,341	15	0	0	116	7	131	5,807
1994	57	85	21	27	21,153	322	0	0	0	0	1,632	61	23,358
1995	78	28	63	133	106	1,075	55	6,490	2,827	198	94	53	11,200
1996	69	13	46	576	1,109	899	5	464	46,835	8,043	7,113	3,241	68,413
1997	755	26,875	14,006	8,280	12,429	37,304	1,916	1,257	187	137	173	552	103,871
1998	408	279	17,419	608	151	108	0	0	0	0	0	0	18,973
1999	0	0	2,327	286	108	5,091	195	0	0	0	0	22	8,029
2000	0	0	0	0	0	1,287	141	0	0	0	0	0	1,428
2001	0	2,947	558	59	11	0	0	0	37	1	307	4	3,924
2002	0	0	3,117	10,768	1,138	90	24,622	181	18	727	124	171	40,956
2003	81	86	81	17	100	8,956	22	477	113	5	1	0	9,939
2004	0	215	198	8,533	908	637	34	3,143	127	1,124	47,771	2,350	65,040
2005	1,125	1,051	2,130	617	630	5,547	435	3,588	28	18	12	7	15,188
2006	3	4	7	915	3,101	616	4	0	0	0	0	0	4,650
2007	0	0	0	27	12,411	62,844	22,604	3,789	265	52	54	96	102,142
2008	105	93	4,273	18,842	1,061	2,523	9	210	8	5	0	0	27,129
2009	0	0	0	0	214	19	2	0	0	0	0	0	235
2010	2,009	1,148	634	77	3,064	1,028	160	2	824	17	0	0	8,963
2011	0	0	0	1,063	111	4	0	0	0	2,754	0	0	3,932
2012	441	109	9	10	1	6	0	0	1,771	283	0	0	2,630
2013	0	0	0	0	0	0	6,007	14	0	0	0	0	6,021
2014	0	0	0	0	0	38	801	0	0	0	273	2	1,114
2015	0	0	0	0	16,605	854	4,208	3	0	9,719	8,653	5,686	45,728
Min	0	0	0	0	0	0	0	0	0	0	0	0	235
Max	94,989	88,124	17,419	75,052	147,181	62,844	30,558	206,975	69,675	91,176	47,771	71,385	310,769
Average	1,887	2,695	1,863	4,509	11,629	6,233	2,797	4,301	3,545	5,515	2,072	1,682	48,727

Appendix B - Naturalized Flows

NATURALIZED FLOW **BSBR20**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Big Sandy Creek above Breckenridge  
 Gage Number 08086290

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	6	380	0	1,191	5,430	10,025	881	5,819	364	0	3,088	751	27,935
1941	138	2,531	876	3,204	36,382	18,059	2,047	6,925	1,503	11,792	3,286	814	87,557
1942	294	237	101	11,945	4,969	3,700	94	306	6,015	11,542	606	546	40,355
1943	268	169	890	1,967	219	721	0	0	4	118	0	8	4,364
1944	53	937	443	342	2,460	572	631	745	611	3,554	94	140	10,582
1945	22	40	2,987	2,523	1,036	2,098	2,916	410	0	1,833	115	65	14,045
1946	247	8	0	228	1,590	459	0	2,096	5,414	973	1,124	1,033	13,172
1947	46	0	65	0	4,757	483	12	0	42	2,139	144	781	8,469
1948	43	89	143	293	1,638	3,265	1,485	78	109	350	149	139	7,781
1949	164	201	398	517	8,762	4,531	429	1,004	1,732	2,382	209	6	20,335
1950	9	87	4	1,754	4,862	760	7,218	841	1,952	22	2	4	17,515
1951	0	11	0	13	3,534	5,356	362	0	4	10	12	0	9,302
1952	0	0	0	134	555	417	235	10	1	1	277	76	1,706
1953	8	0	256	349	3,684	0	11,438	3,149	817	9,175	940	326	30,142
1954	167	57	27	4,379	15,233	1,809	167	178	0	115	868	4	23,004
1955	200	314	496	432	5,137	3,406	288	1,763	5,652	511	1	1	18,201
1956	5	19	0	27	2,144	361	12	212	14	118	1,061	562	4,535
1957	0	8,897	69	24,142	47,343	6,611	434	216	686	9,522	1,912	133	99,965
1958	79	49	741	813	5,020	631	8,599	435	762	20	0	0	17,149
1959	8	0	0	0	2,745	3,213	773	37	50	7,939	0	2	14,767
1960	760	188	348	1,383	98	22	1,025	52	21	1,404	0	2	5,303
1961	2,302	471	27	2	3	9,622	2,560	23	2,832	176	1,004	124	19,146
1962	81	14	0	198	0	6,641	3,455	0	6,072	1,268	0	127	17,856
1963	0	0	81	3,681	15,899	540	0	737	86	427	8,634	0	30,085
1964	658	2,521	345	15	0	0	0	6,781	6,820	5	10,133	0	27,278
1965	354	83	0	310	28,040	1,766	0	0	1,269	1,068	41	0	32,931
1966	0	169	0	9,297	12,129	7,858	63	158	5,771	0	0	0	35,445
1967	0	0	0	611	2,057	7,455	2,672	0	5,524	501	271	244	19,335
1968	37,067	3,626	6,252	10,384	782	2,291	286	71	0	0	92	6	60,857
1969	0	618	8,534	9,139	17,687	604	0	144	305	58	0	5,666	42,755
1970	232	612	2,429	2,773	1,297	90	0	931	0	0	0	0	8,364
1971	0	0	0	0	7,271	42	264	398	216	151	0	40	8,382
1972	0	0	0	1,222	3,812	0	16	167	0	2,447	98	0	7,762
1973	566	83	38	5,133	5	926	210	0	70	286	0	0	7,317
1974	0	0	0	4,154	276	0	0	1,658	7,146	13,826	1,848	30	28,938
1975	115	7,962	239	221	10	85	453	0	0	0	12	0	9,097
1976	0	0	0	992	1,307	0	0	110	316	3,059	10	0	5,794
1977	0	0	4,886	1,297	304	16	5	0	0	0	0	0	6,508
1978	0	0	0	1,776	356	122	101	14,251	0	0	0	0	16,606
1979	684	0	6,798	467	7,975	871	0	317	0	0	0	0	17,112
1980	18	0	0	0	723	0	0	0	1,773	1,306	0	1,373	5,193
1981	0	0	2,743	379	0	4,440	0	0	622	77,964	395	43	86,586
1982	22	68	110	0	1,209	8,453	118	0	0	0	0	0	9,980
1983	0	0	977	0	2,848	79	0	0	0	1,424	0	0	5,328
1984	0	0	0	0	0	778	0	0	16	6,982	951	5,126	13,853
1985	1,533	157	1,714	485	10,284	836	1,801	111	0	4,533	855	0	22,309
1986	0	913	80	0	493	6,634	206	0	456	7,312	2,035	2,749	20,878
1987	133	3,994	1,798	60	12,794	1,678	233	149	0	0	0	80	20,919
1988	0	0	0	0	0	1,615	143	0	0	0	0	0	1,758
1989	0	24	0	0	550	4,428	0	0	4,849	0	0	115	9,966
1990	107	1,791	2,737	13,656	11,224	126	11	280	0	0	81	0	30,013
1991	1,060	0	12	5	1,137	5,046	0	5,019	1,486	2,074	56	23,152	39,047
1992	2,443	28,825	17,216	1,082	3,093	7,198	2,836	1,182	1,808	0	7	549	66,239
1993	90	974	712	103	464	170	0	0	666	578	0	41	3,798
1994	12	499	0	12	12,880	254	0	0	0	430	599	0	14,686
1995	0	0	100	318	170	1,621	44	12,781	3,403	0	0	0	18,437
1996	0	0	0	353	842	1,247	0	367	25,938	4,083	8,809	691	42,330
1997	100	17,379	6,925	2,838	8,565	26,568	2,391	228	0	0	0	139	65,133
1998	322	258	12,455	164	0	0	194	0	0	0	0	0	13,393
1999	0	5	979	507	192	4,266	0	0	0	0	0	0	5,949
2000	0	0	0	168	0	1,860	0	0	0	33	860	0	2,921
2001	57	8,660	966	714	358	0	0	0	44	0	14	0	10,813
2002	5	10	2,514	216	2,755	73	14,217	72	0	2,394	146	261	22,663
2003	23	58	78	36	67	4,411	56	0	5	0	23	0	4,757
2004	0	681	352	2,646	581	269	0	158	0	1,132	13,878	286	19,983
2005	33	46	186	15	280	5,458	26	16,818	275	0	0	0	23,137
2006	0	45	43	418	2,524	201	0	0	0	0	6	0	3,237
2007	0	15	7,957	610	4,233	63,898	15,551	584	80	0	0	28	92,956
2008	42	94	5,717	9,896	176	5,307	0	0	0	0	11	0	21,243
2009	0	17	92	0	491	265	0	0	21	1,469	0	0	2,355
2010	666	1,006	244	235	1,785	3,357	0	0	2,113	5	0	0	9,411
2011	0	81	45	227	106	0	0	0	0	3,985	0	0	4,444
2012	4,437	700	399	0	0	1,072	0	0	926	1	27	0	7,562
2013	59	4	25	404	0	0	23,456	0	0	0	0	10	23,958
2014	0	36	73	0	0	11	1,104	0	0	0	1,117	0	2,341
2015	9	117	85	0	30,626	1,646	17,573	0	0	2,518	10,195	3,616	66,385
Min	0	0	0	0	0	0	0	0	0	0	0	0	1,706
Max	37,067	28,825	17,216	24,142	47,343	63,898	23,456	16,818	25,938	77,964	13,878	23,152	99,965
Average	734	1,274	1,379	1,880	4,846	3,535	1,699	1,155	1,403	2,698	1,001	656	22,259

Appendix B - Naturalized Flows

NATURALIZED FLOW **HCBR21**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Hubbard Creek near Breckenridge  
 Gage Number 08086500

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	28	1,843	0	5,769	26,297	48,551	4,267	28,180	1,761	0	14,957	3,639	135,292
1941	670	12,257	4,242	15,516	176,199	87,458	9,912	33,540	7,281	57,107	15,913	3,940	424,035
1942	1,422	1,145	490	57,850	24,065	17,920	454	1,483	29,130	55,897	2,933	2,642	195,431
1943	1,298	820	4,310	9,525	1,060	3,491	0	0	21	570	0	40	21,135
1944	259	4,538	2,148	1,656	11,913	2,771	3,057	3,606	2,959	17,210	457	680	51,254
1945	109	192	14,464	12,220	5,018	10,160	14,122	1,987	0	8,877	558	314	68,021
1946	1,194	41	0	1,103	7,700	2,222	0	10,151	26,218	4,713	5,442	5,003	63,787
1947	224	0	313	0	23,036	2,338	57	0	203	10,358	696	3,781	41,006
1948	206	433	694	1,419	7,933	15,814	7,190	379	526	1,696	721	672	37,683
1949	796	971	1,925	2,506	42,432	21,944	2,077	4,865	8,386	11,537	1,011	27	98,477
1950	42	421	17	8,496	23,548	3,683	34,955	4,075	9,451	105	9	18	84,820
1951	0	52	0	63	17,116	25,941	1,753	0	17	44	51	0	45,037
1952	0	0	0	570	2,361	1,775	1,001	41	6	3	1,178	325	7,260
1953	35	0	1,091	1,483	15,671	0	48,654	13,396	3,477	39,029	3,999	1,385	128,220
1954	711	243	115	18,627	64,797	7,693	711	756	0	487	3,694	15	97,849
1955	852	1,336	2,109	1,839	26,616	17,650	1,490	9,135	29,284	2,648	7	3	92,969
1956	24	100	2	142	11,110	1,873	64	1,098	75	609	5,498	2,913	23,508
1957	0	46,096	360	125,087	245,302	34,253	2,248	1,117	3,552	49,337	9,905	691	517,948
1958	410	254	3,840	4,213	26,008	3,270	44,554	2,253	3,948	102	0	0	88,852
1959	39	0	0	0	14,222	16,648	4,003	190	259	41,135	1	8	76,505
1960	3,939	974	1,805	7,165	507	112	5,310	267	110	7,275	1	8	27,473
1961	11,925	2,442	139	9	18	49,854	13,262	118	14,673	911	5,202	645	99,198
1962	421	73	147	617	83	26,047	10,771	2,003	18,343	3,423	265	261	62,454
1963	0	0	0	5,610	28,653	1,419	0	210	341	2,288	19,961	578	59,060
1964	1,642	8,712	748	260	102	0	0	8,056	6,800	0	19,396	0	45,716
1965	183	0	0	3,004	81,175	926	0	1,134	2,933	2,738	0	368	92,461
1966	0	92	940	35,036	25,106	9,360	875	1,545	22,469	0	621	0	96,044
1967	957	769	3,330	0	5,555	10,650	2,809	421	11,099	0	296	0	35,886
1968	106,063	10,440	18,041	36,089	4,238	4,862	0	0	0	1,397	0	0	181,130
1969	604	2,777	15,847	13,971	79,054	4,538	725	0	0	687	0	11,698	129,901
1970	671	2,944	5,178	25,697	7,622	1,822	0	0	0	0	0	873	44,807
1971	1,256	796	1,871	1,138	15,490	2,216	405	3,260	2,393	739	0	2,156	31,720
1972	0	1,389	700	3,169	4,143	101	0	1,424	0	8,605	0	301	19,832
1973	3,674	2,792	1,977	5,613	284	0	5,745	1,611	0	3,976	0	0	25,672
1974	2	2,173	0	15,359	0	0	1,765	4,739	79,826	62,183	23,708	0	189,755
1975	3,865	28,826	4,079	4,539	5,247	2,855	0	0	0	0	0	0	49,411
1976	848	1,524	1,632	2,743	2,015	347	0	2,162	1,715	7,412	0	0	20,398
1977	71	291	13,923	3,658	711	5,634	0	0	0	0	0	1,039	25,327
1978	438	0	1,214	7,464	2,095	0	433	259,545	0	0	0	0	271,189
1979	1,539	1,134	26,345	3,505	36,002	5,079	0	1,142	0	0	0	1,118	75,864
1980	0	1,151	1,257	2,481	6,230	190	167	1,181	13,749	3,688	450	4,830	35,374
1981	491	949	7,272	4,509	0	19,161	687	0	4,203	265,359	1,718	0	304,349
1982	422	1,289	3,009	913	34,099	42,015	1,482	0	0	58	0	0	83,287
1983	614	482	1,081	982	0	3,232	441	0	0	0	0	0	6,832
1984	1,530	794	0	0	1,067	0	2,169	0	2,039	29,042	4,071	14,177	54,889
1985	5,160	3,423	3,728	2,858	34,965	34	5,045	0	0	9,153	0	0	64,366
1986	1,031	811	1,875	0	0	18,277	2,872	335	0	18,342	5,118	9,333	57,994
1987	2,673	17,716	10,488	4,182	31,833	13,501	0	0	0	0	0	2,321	82,714
1988	1,416	195	0	1,603	0	2,310	0	0	0	0	0	409	5,933
1989	0	1,251	1,319	893	1,565	32,198	0	0	8,113	0	0	0	45,339
1990	730	4,788	7,874	52,924	93,596	0	517	6,462	781	0	552	0	168,224
1991	3,127	1,793	1,733	0	6,032	27,717	1,722	10,016	10,663	8,423	1,245	90,305	162,776
1992	22,369	103,336	55,236	25,347	3,425	22,988	3,614	5,643	8,179	835	0	1,990	252,962
1993	2,228	2,347	2,254	0	817	3,378	1,086	2,035	1,552	1,811	0	2	17,510
1994	0	738	1,697	755	38,960	1,982	0	2,608	0	0	4,539	0	51,279
1995	0	0	2,378	576	0	4,980	4,487	16,982	7,364	0	0	36	36,803
1996	0	1,768	2,371	5,073	1,898	1,904	0	150	88,545	12,978	15,859	3,995	134,541
1997	1,777	48,415	29,566	14,612	20,701	58,451	3,914	4,014	0	0	0	602	182,052
1998	2,891	1,207	36,488	772	518	2,516	2,501	0	0	0	0	0	46,893
1999	127	0	10,432	2,082	176	7,957	0	0	0	0	0	0	20,774
2000	0	111	1,144	1,598	0	2,835	0	0	0	0	1,908	63	7,659
2001	607	17,897	3,877	2,098	0	8	219	0	42	575	0	0	25,323
2002	1,701	199	6,227	10,763	5,605	0	41,043	56	0	1,251	511	1,039	68,395
2003	149	243	1,479	109	0	11,261	0	0	0	0	0	0	13,241
2004	134	2,491	1,909	11,794	1,813	6,896	0	3,834	0	614	64,957	2,024	96,466
2005	1,021	1,375	2,560	613	1,891	10,164	2,094	23,975	0	0	595	815	45,103
2006	1,534	993	2,165	4,396	10,368	4,034	0	103	0	0	510	0	24,103
2007	0	661	11,756	5,341	17,583	114,984	38,698	4,455	0	0	0	0	193,478
2008	0	4,702	10,518	29,740	2,746	3,958	527	0	0	201	152	0	52,544
2009	0	1,272	1,973	0	814	1,613	1,881	204	0	0	51	0	7,808
2010	2,837	3,037	3,184	2,510	5,340	3,247	0	0	3,990	5,854	0	529	30,528
2011	264	2,833	936	2,430	0	10	1,577	4,769	3,991	6,938	36	0	23,784
2012	6,296	1,089	1,013	0	0	946	0	0	4,448	768	117	0	14,677
2013	629	0	704	1,393	336	1,961	33,481	0	0	0	0	0	38,504
2014	0	249	516	0	0	0	1,227	0	0	0	1,574	0	3,566
2015	48	0	555	0	59,433	4,038	25,805	0	0	13,118	23,780	14,890	141,667
Min	0	0	0	0	0	0	0	0	0	0	0	0	3,566
Max	106,063	103,336	55,236	125,087	245,302	114,984	48,654	259,545	88,545	265,359	64,957	90,305	517,948
Average	2,740	4,849	4,798	8,369	19,109	11,579	5,262	6,457	5,854	10,291	3,477	2,533	85,317

Appendix B - Naturalized Flows

NATURALIZED FLOW **CFEL22**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Clear Fork Brazos River at Eliasville  
 Gage Number 08087300

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	11,211	5,946	101	10,949	65,563	115,492	14,131	95,033	10,659	1,289	31,861	6,844	369,079
1941	1,379	23,861	11,445	71,052	479,918	233,879	32,882	71,306	19,154	219,766	43,335	17,637	1,225,614
1942	5,606	4,753	2,233	111,383	52,835	46,828	1,844	4,182	60,097	127,107	7,793	7,315	431,976
1943	3,755	3,211	10,988	19,385	8,078	20,146	390	0	35	1,396	0	68	67,452
1944	677	9,569	6,700	2,972	36,741	11,265	14,227	7,924	7,746	43,074	1,963	2,208	145,066
1945	918	951	38,094	47,859	13,150	33,987	65,171	7,204	79	26,072	1,944	1,747	237,176
1946	3,151	1,162	970	2,810	19,769	5,920	308	23,180	67,218	26,280	12,240	21,866	184,874
1947	1,071	305	1,179	241	115,311	14,181	1,842	506	3,540	30,604	3,808	11,715	184,303
1948	985	1,690	4,138	2,792	19,855	44,081	25,551	2,382	1,347	11,239	1,494	1,218	116,772
1949	1,947	2,456	3,515	8,338	100,900	50,915	4,576	8,944	20,825	25,186	2,041	46	229,689
1950	257	857	235	23,262	63,641	9,006	70,912	14,425	30,849	624	118	177	214,363
1951	130	146	0	336	48,039	75,707	7,982	803	152	316	164	0	133,775
1952	0	0	0	1,608	6,721	5,359	2,415	544	572	9	2,797	785	20,810
1953	118	0	2,374	3,382	37,189	2,861	143,278	33,425	7,628	90,599	8,643	2,936	332,433
1954	1,507	593	366	41,342	168,703	17,773	1,507	1,601	0	1,160	8,706	33	243,291
1955	3,014	3,326	4,596	4,113	78,205	72,206	15,344	9,927	185,206	95,479	5,432	3,667	480,515
1956	3,052	2,254	890	925	15,105	3,529	53	0	40	243	6,534	4,764	37,389
1957	176	103,853	5,781	272,209	759,321	153,678	13,138	6,236	7,985	52,300	37,434	3,249	1,415,360
1958	2,326	1,600	6,663	8,497	65,622	10,105	63,277	2,057	38,124	3,908	704	635	203,518
1959	366	205	152	317	23,961	61,384	28,336	4,954	3,177	91,696	3,163	6,469	224,180
1960	9,202	7,321	2,568	6,397	845	4,441	81,341	7,327	631	84,039	9,725	5,777	219,614
1961	16,525	11,977	5,384	3,163	13,201	132,341	122,106	9,009	44,726	5,854	24,328	3,522	392,136
1962	1,974	1,747	2,943	5,390	813	168,880	31,804	6,271	163,992	11,896	4,189	3,338	403,237
1963	743	1,004	1,197	25,057	54,939	45,278	2,791	1,607	875	6,720	24,271	2,903	167,385
1964	3,010	17,014	2,405	1,952	1,981	6,139	240	12,934	9,136	599	23,911	241	79,562
1965	870	486	187	21,071	219,548	9,648	762	1,843	13,587	29,749	2,689	879	301,319
1966	672	733	1,574	107,125	85,681	14,421	872	8,197	105,551	4,045	758	461	330,090
1967	1,590	952	3,553	1,252	7,048	17,913	12,217	583	22,959	1,271	948	1,041	71,327
1968	157,388	18,714	55,006	88,997	25,372	15,213	13,389	0	175	1,193	254	311	376,012
1969	843	4,058	22,316	23,680	287,625	17,443	1,475	1,750	55,720	6,280	4,900	20,698	446,788
1970	6,007	7,406	15,124	43,301	34,752	10,365	159	0	0	0	0	303	117,417
1971	761	788	1,770	1,220	21,674	24,716	2,413	144,700	76,239	24,851	7,340	9,722	316,194
1972	3,910	4,603	3,619	8,800	10,085	482	2,507	9,706	14,289	21,508	44,112	3,499	127,120
1973	15,390	18,293	28,061	26,531	5,450	7,987	15,318	2,504	7,048	8,642	741	249	136,214
1974	627	2,377	1,117	19,325	810	529	1,604	9,994	184,888	140,256	107,784	11,015	480,326
1975	15,094	63,514	12,350	11,659	38,710	11,832	34,925	8,316	2,464	575	4,721	2,579	206,739
1976	3,390	2,865	3,303	6,165	4,964	657	5,617	6,065	23,846	49,802	16,900	3,506	127,080
1977	3,759	4,023	35,317	24,587	16,442	12,968	826	184	644	0	336	1,735	100,821
1978	1,124	1,236	1,925	12,461	3,231	5,123	386	587,132	10,526	3,976	2,809	2,132	632,061
1979	5,206	3,155	36,509	10,789	69,197	39,977	3,776	3,919	115	0	0	2,132	174,775
1980	1,267	2,451	1,859	2,304	27,590	5,002	305	753	95,013	162,963	8,140	32,243	339,890
1981	7,580	5,435	18,581	53,930	14,692	87,265	10,137	6,769	8,116	415,038	10,060	3,865	641,468
1982	2,389	4,377	5,974	1,946	222,483	282,907	57,520	6,796	1,380	2,719	1,918	3,052	593,461
1983	4,669	7,853	5,047	3,283	26,831	13,990	5,294	40	0	14,588	12,975	4,210	98,780
1984	4,700	2,916	2,216	1,078	818	0	1,193	323	838	36,241	18,634	20,533	89,490
1985	27,552	33,247	27,437	49,100	59,343	46,990	11,235	5,519	642	42,178	4,613	2,513	310,369
1986	2,990	2,607	3,105	4,839	8,119	69,470	25,161	381	39,757	152,197	30,000	26,237	364,863
1987	19,720	50,560	56,571	13,759	45,845	113,061	16,216	4,063	5,398	2,058	1,080	15,254	343,585
1988	6,415	2,985	2,967	2,963	1,899	4,846	10,266	898	26,386	3,101	1,256	1,783	65,765
1989	1,115	8,589	4,110	1,786	41,827	65,794	3,968	9,861	39,803	3,519	1,502	891	182,765
1990	3,074	6,145	52,111	206,870	257,745	83,982	5,990	19,409	48,105	9,593	5,962	2,765	701,751
1991	15,356	8,172	5,493	2,336	38,947	157,255	18,155	35,874	34,464	42,530	16,930	215,668	591,180
1992	53,303	290,447	143,569	35,159	34,538	226,270	50,264	23,129	15,659	3,799	10,843	18,684	905,664
1993	13,215	19,562	25,370	13,836	11,228	20,258	2,051	1,323	3,380	17,345	2,605	3,284	133,457
1994	2,367	3,212	3,211	2,074	95,736	8,908	4,076	1,293	2,422	33,584	10,870	3,395	171,148
1995	1,854	1,475	4,672	2,416	5,214	36,317	9,724	53,675	20,305	4,300	2,223	1,289	143,464
1996	1,754	2,492	2,290	5,945	1,298	3,383	543	9,368	101,510	14,363	22,517	14,490	179,953
1997	3,935	74,545	36,839	21,844	49,455	111,133	18,655	7,417	433	821	447	2,911	328,435
1998	3,902	3,522	58,233	4,342	2,152	2,624	6,187	12	58	88	19	474	81,613
1999	132	2,005	21,505	8,093	3,169	29,877	2,572	303	0	415	80	0	68,151
2000	0	0	11,795	9,241	5,293	7,374	7,521	0	0	1,074	17,164	3,730	63,192
2001	3,431	42,302	54,356	6,763	10,538	2,032	5,485	893	11,862	6,584	3,198	1,339	148,783
2002	1,110	462	6,998	30,622	19,325	18,876	51,609	7,528	1,617	4,296	7,908	4,241	154,592
2003	1,760	1,242	1,686	282	640	43,716	7,860	47	2,161	63	0	0	59,457
2004	0	2,590	6,700	15,262	4,401	24,092	38,011	74,420	11,680	17,513	153,261	19,969	367,899
2005	14,994	9,952	11,003	5,486	5,805	16,308	3,389	225,730	20,615	7,479	4,102	3,331	328,194
2006	3,212	2,142	4,067	6,311	38,330	4,280	237	8	4,767	19,744	8,664	2,073	93,835
2007	1,503	1,562	11,889	9,826	96,016	232,737	106,652	103,148	17,091	4,742	2,601	3,868	591,635
2008	2,878	4,874	23,083	28,656	15,719	16,093	704	2,591	14,309	6,911	3,293	1,654	120,765
2009	1,362	1,683	2,010	586	5,223	13,203	8,344	5,246	3,219	2,221	490	638	44,225
2010	9,735	18,605	13,629	103,829	32,476	12,425	42,027	8,861	25,085	10,603	2,637	3,386	283,298
2011	2,597	4,100	2,139	2,193	79	0	1,124	2,835	1,894	10,616	1,951	187	29,715
2012	13,831	1,515	1,846	238	0	3,377	107	0	5,486	2,575	165	0	29,140
2013	150	0	541	1,748	403	8,502	31,032	5,493	1,105	264	83	0	49,321
2014	0	131	321	0	0	3,525	3,753	0	2,696	3,926	2,988	1,355	18,695
2015	1,148	708	1,903	10,087	202,428	112,720	46,083	3,730	1,069	21,141	38,017	50,434	489,468
Min	0	0	0	0	0	0	53	0	0	0	0	0	18,695
Max	157,388	290,447	143,569	272,209	759,321	282,907	143,278	587,132	185,206	415,038	153,261	215,668	1,415,360
Average	6,904	12,677	12,787	23,049	58,771	45,043	19,147	22,953	23,292	30,668	11,449	8,410	275,149

Appendix B - Naturalized Flows

NATURALIZED FLOW **BRSB23**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Brazos River near South Bend  
 Gage Number 08088000

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	10,237	8,532	0	14,856	109,142	195,281	29,415	207,978	50,301	1,632	58,147	14,864	700,385
1941	2,362	38,110	39,327	221,308	1,246,324	512,940	103,139	102,802	88,632	717,023	107,636	45,614	3,225,217
1942	14,445	10,495	5,673	296,982	74,380	74,183	9,971	28,293	168,798	277,367	26,137	17,708	1,004,432
1943	8,501	3,551	19,738	39,539	13,817	78,762	11,221	97	0	1,048	35	112	176,421
1944	1,705	16,300	13,490	3,114	50,868	39,033	30,313	12,935	10,526	52,674	5,160	8,082	244,200
1945	4,748	3,702	67,190	64,832	14,094	51,379	122,832	8,374	3,709	67,024	3,960	2,357	414,201
1946	4,529	1,766	1,545	2,084	23,582	35,601	19,865	56,834	154,276	91,488	38,491	67,358	497,419
1947	6,801	2,106	3,740	3,622	492,576	37,396	7,065	631	3,797	33,825	10,013	28,645	630,217
1948	3,928	11,253	15,843	3,975	27,594	132,529	119,635	11,021	2,218	16,778	12,413	1,907	359,094
1949	8,534	11,353	6,452	11,548	216,900	145,679	9,707	13,069	79,063	42,527	7,005	2,131	553,968
1950	2,335	2,903	1,021	43,054	190,123	35,081	166,758	57,089	152,688	13,586	2,217	2,541	669,396
1951	2,290	2,884	1,763	1,569	89,017	132,591	20,082	17,320	12,032	524	347	0	280,419
1952	107	319	174	3,482	21,297	10,411	10,069	965	963	15	4,987	1,775	54,564
1953	196	0	6,083	6,000	65,446	4,965	260,437	79,091	13,127	221,055	20,626	6,276	683,302
1954	3,343	1,382	756	105,127	388,238	39,551	2,769	2,651	0	1,921	15,198	769	561,705
1955	5,385	7,745	21,894	7,389	216,436	155,303	51,978	20,762	439,744	300,587	13,944	9,179	1,250,346
1956	7,351	5,575	2,243	1,846	37,100	8,472	99	145	66	2,081	10,921	8,244	84,143
1957	352	178,536	10,518	489,321	1,395,822	350,227	28,463	12,764	16,535	112,472	85,683	6,994	2,688,087
1958	5,201	3,601	13,037	19,653	151,351	21,918	112,676	5,674	68,540	8,053	2,445	1,341	413,490
1959	822	526	330	2,378	42,978	167,119	98,894	15,933	5,387	181,167	6,703	19,059	541,296
1960	18,220	13,943	5,152	10,954	2,609	14,355	198,282	13,391	1,321	289,876	24,147	15,238	607,488
1961	31,228	24,220	13,040	7,004	30,884	290,963	276,993	18,632	76,447	10,691	30,554	8,881	819,537
1962	5,045	3,231	5,390	6,866	4,678	257,429	43,588	20,163	384,721	33,863	48,005	27,236	840,215
1963	6,344	5,104	6,843	48,423	97,234	209,756	9,928	1,792	13,789	10,069	30,528	6,498	446,308
1964	5,460	31,681	4,339	4,314	12,581	31,080	769	12,733	34,307	5,361	28,477	1,945	173,047
1965	2,361	1,398	581	24,685	309,135	31,634	2,769	26,979	25,394	71,095	7,445	3,340	506,816
1966	2,934	2,958	3,253	193,453	154,718	23,706	2,417	71,398	370,120	19,039	5,229	4,081	853,306
1967	4,407	2,587	5,348	52,522	11,236	112,177	144,488	9,689	46,008	6,797	2,835	2,963	401,057
1968	195,945	24,547	84,068	88,916	58,583	75,331	57,813	9,892	2,513	2,023	1,853	5,850	607,334
1969	2,581	7,174	35,069	36,816	417,992	32,099	3,252	2,434	165,104	39,957	34,852	30,608	807,938
1970	14,358	12,704	48,904	56,200	59,690	18,287	866	185	1,028	2,321	650	789	215,982
1971	1,430	1,191	2,081	1,278	47,373	56,803	4,433	326,192	153,045	98,936	23,708	21,862	738,332
1972	9,222	7,756	5,073	10,995	54,511	11,393	11,802	188,540	111,980	61,678	123,138	16,285	612,373
1973	34,663	35,611	63,615	58,470	12,541	34,236	16,302	7,145	20,705	13,404	3,053	2,598	302,345
1974	2,483	3,834	2,501	19,577	8,107	29,276	2,179	8,502	230,954	179,898	144,677	17,676	649,664
1975	19,751	54,589	16,253	15,011	99,672	44,232	62,148	27,774	35,164	7,421	12,743	6,564	401,322
1976	6,304	4,619	5,922	18,091	16,676	2,609	12,705	15,092	53,332	101,269	38,628	8,963	284,210
1977	8,672	7,584	40,590	48,899	52,136	33,648	6,052	2,350	6,096	428	228	1,648	208,331
1978	1,397	2,688	5,466	13,147	14,770	19,111	701	715,791	30,736	13,227	8,014	5,731	830,779
1979	9,062	7,355	44,576	15,686	74,452	80,480	30,015	23,706	1,841	85	2,329	3,391	292,978
1980	3,096	4,734	3,028	2,702	138,770	29,992	2,652	2,122	148,178	249,254	18,407	42,505	645,440
1981	15,001	10,136	33,732	63,588	27,808	127,708	13,729	13,970	11,332	532,470	20,779	9,821	880,074
1982	6,239	7,447	10,857	5,262	449,578	541,517	81,221	15,853	9,271	5,520	3,659	5,944	1,142,368
1983	9,505	16,584	10,095	6,969	73,837	29,624	10,575	129	97	114,678	34,764	11,472	318,329
1984	11,287	6,782	5,680	2,721	2,085	169	2,087	2,774	3,091	68,778	40,257	42,503	188,214
1985	52,598	61,449	54,420	99,474	127,456	114,235	27,895	11,251	2,936	119,485	13,239	6,711	691,149
1986	6,383	5,986	6,208	12,573	18,814	143,015	59,686	17,564	118,078	338,352	65,981	52,624	845,264
1987	39,480	96,112	107,022	27,432	161,697	234,115	47,108	11,822	15,353	4,886	2,594	26,835	774,456
1988	12,902	6,807	6,647	6,259	3,930	8,853	28,471	2,185	63,907	6,702	3,205	3,816	153,684
1989	2,653	18,075	8,298	3,863	95,690	137,501	7,727	17,883	90,570	6,886	3,194	2,281	394,621
1990	8,204	11,582	97,260	388,042	446,309	260,128	16,158	43,764	83,963	18,357	12,987	6,854	1,393,608
1991	30,033	16,106	10,581	4,941	84,550	371,659	33,392	75,569	84,863	79,545	35,910	378,947	1,206,096
1992	103,835	522,587	255,710	70,634	98,449	478,772	97,843	45,340	31,163	7,212	21,759	35,010	1,768,314
1993	25,306	43,005	52,534	26,440	24,346	44,623	4,361	2,938	8,133	29,690	4,903	6,926	273,205
1994	4,826	6,790	6,826	4,170	186,741	17,921	7,150	3,108	10,564	59,056	21,630	7,051	335,833
1995	4,372	3,149	9,259	4,848	32,800	87,996	19,242	125,135	42,627	10,042	7,251	3,331	350,052
1996	4,321	4,899	4,949	10,656	2,446	9,400	2,223	25,672	220,160	26,548	39,910	26,555	377,739
1997	7,317	133,314	64,846	57,534	109,765	208,457	43,505	19,000	3,591	2,821	1,422	7,836	659,408
1998	8,277	9,853	104,794	8,969	5,796	6,215	12,635	286	172	216	313	893	158,419
1999	1,699	4,407	40,935	16,479	27,709	124,182	13,806	2,678	1,470	1,219	323	67	234,974
2000	0	393	55,421	21,286	15,210	26,796	17,875	0	0	15,619	38,571	7,414	198,585
2001	6,699	76,895	115,085	16,179	24,499	7,482	9,081	2,738	21,481	11,241	12,295	3,794	307,469
2002	2,324	1,157	13,249	61,439	35,031	39,472	108,618	16,598	3,273	13,547	17,809	11,130	323,647
2003	5,147	3,162	4,161	1,310	1,896	99,952	16,229	1,420	5,949	320	183	0	139,729
2004	300	5,317	22,877	35,099	8,582	59,104	117,570	142,898	22,997	45,458	311,196	48,803	820,201
2005	34,229	24,463	25,176	12,319	12,369	32,530	8,825	460,157	38,836	17,100	8,577	7,006	681,587
2006	6,757	4,675	8,695	13,201	87,253	10,074	1,081	744	13,379	81,846	21,611	7,520	256,836
2007	6,597	5,449	27,447	25,502	181,187	410,353	186,408	195,035	33,975	9,963	5,659	8,962	1,096,537
2008	6,284	9,695	39,817	52,743	31,051	32,626	2,903	8,499	37,490	24,310	9,799	4,956	260,173
2009	3,660	3,926	4,218	2,447	10,397	27,610	20,157	12,003	7,217	4,729	1,567	1,839	99,770
2010	19,204	42,358	28,429	204,185	69,641	27,809	154,611	23,712	58,348	22,255	6,876	7,729	665,157
2011	6,312	8,792	4,944	4,654	557	210	2,193	4,967	3,220	17,960	3,285	599	57,693
2012	23,077	2,772	3,682	922	2,412	12,053	617	1,996	10,824	5,295	284	0	63,934
2013	820	18	1,287	3,580	4,470	20,815	55,705	15,588	3,247	1,353	137	0	107,020
2014	2	706	768	135	123	11,304	9,752	441	21,581	11,423	8,281	3,926	68,442
2015	3,867	2,576	4,963	20,211	391,158	214,494	109,172	9,995	2,705	37,068	66,374	92,168	954,751
Min	0	0	0	135	123	169	99	0	0	15	35	0	54,564
Max	195,945	522,587	255,710	489,321	1,395,822	541,517	276,993	715,791	439,744	717,023	311,196	378,947	3,225,217
Average	12,601	22,994	24,773	44,365	123,698	100,608	45,463	45,956	56,172	67,256	24,581	17,381	585,848

Appendix B - Naturalized Flows

NATURALIZED FLOW GHGH24  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Lake Graham near Graham  
 Gage Number 08088400

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	409	0	481	1,318	2,291	8,959	1,030	8,446	0	1,329	2,776	0	27,039
1941	468	7	589	1,499	0	168	450	142	1,223	2,073	453	0	7,072
1942	664	7,684	0	125,300	615	863	0	0	2,175	52,117	0	0	189,418
1943	0	0	171	984	0	14	259	0	389	21	0	0	1,838
1944	15	6,137	771	7,935	321	141	287	0	563	338	0	361	16,869
1945	549	0	3,206	5,811	138	1,151	0	1,175	0	6,212	113	0	18,355
1946	249	123	1,443	623	0	536	994	0	1,563	2,510	955	3,539	12,535
1947	0	232	408	0	2,371	2,936	0	384	0	110	0	0	6,441
1948	0	347	899	738	1,348	993	1,189	0	15	611	0	164	6,304
1949	95	8	2,712	0	22,527	1,477	2,393	0	596	3,121	0	0	32,929
1950	65	238	245	3,738	582	0	2,296	1,926	0	2	0	0	9,092
1951	0	0	0	0	1,889	5,773	46	0	3,572	0	0	97	11,377
1952	0	0	50	99	0	261	0	177	0	35	48	0	670
1953	12	0	0	0	1,198	0	155	1,522	971	9,383	314	10,337	23,892
1954	7	0	139	2,298	3,691	0	3,407	217	0	554	1,112	0	11,425
1955	0	0	0	159	2,009	21,268	0	404	6,153	641	0	1,319	31,953
1956	304	2	63	605	0	2,293	161	0	1,534	4,960	0	0	9,922
1957	0	3,369	0	131,514	263,724	133	0	152	509	418	1,324	104	401,247
1958	0	379	160	2,288	964	459	65	981	422	597	456	405	7,176
1959	64	0	11	0	473	0	3,671	0	41	10,280	0	32	14,572
1960	2,366	3,327	211	90	649	0	3,105	441	112	1,807	0	0	12,108
1961	1,774	1,058	588	162	0	0	0	1,074	80	3,132	502	0	8,370
1962	0	172	1,214	219	0	15,220	30,627	0	17,770	0	0	2,389	67,611
1963	0	395	492	16,856	1,338	1,807	0	0	0	740	608	0	22,236
1964	622	1,972	348	203	4,873	422	0	185	0	0	4,208	0	12,833
1965	64	0	39	817	5,331	0	0	244	2,257	736	0	5	9,493
1966	0	10	930	68,595	55	0	0	1,045	12,497	49	118	0	83,299
1967	132	0	297	200	3,108	362	2,055	0	4,207	0	0	0	10,361
1968	10,710	2	8,356	6	1,968	571	608	0	0	0	0	0	22,221
1969	0	306	3,970	4,178	0	1,085	0	0	12,597	1,424	0	3,446	27,006
1970	30	2,191	131	21,276	18	213	0	0	0	0	0	0	23,859
1971	0	570	348	817	0	7,093	1,514	0	932	37	0	1,486	12,797
1972	0	18	0	142	14,196	1,372	0	0	0	4,108	393	0	20,229
1973	1,430	124	80	867	3,322	5,616	4,256	969	104	5,380	0	0	22,148
1974	1,167	650	705	4,814	1,450	2,071	0	107	1,514	4,076	435	0	16,989
1975	3	2,531	23	619	28,111	4,403	5	0	0	0	0	0	35,695
1976	0	173	0	0	2,313	20	0	0	9,762	9,865	9	0	22,142
1977	1,034	482	7,382	6,173	3,834	7,491	4	0	0	0	489	478	27,367
1978	0	793	1,836	6,576	0	0	0	0	608	1,918	382	0	12,113
1979	316	51	2,746	438	250	418	276	708	0	181	0	197	5,581
1980	0	236	0	255	32,690	3	0	0	14,073	13	99	748	48,117
1981	146	119	842	2,171	1,617	2,356	48	0	0	49,589	373	0	57,261
1982	0	42	163	1,485	41,626	7,546	83	0	0	0	0	647	51,592
1983	0	275	1,609	820	6,577	2,648	0	0	0	0	0	0	11,929
1984	0	812	1,410	741	464	0	0	994	0	18,196	1,695	8,165	32,477
1985	51	1,799	8,730	3,028	1,135	4,533	541	0	0	4,607	0	0	24,424
1986	27	40	453	1,090	4,985	1,105	653	0	21,382	3,291	2,562	0	35,588
1987	1,148	7,895	5,775	776	3,356	4,763	6	0	204	0	17	3,879	27,819
1988	216	204	177	201	1,256	4,374	525	0	3,339	0	376	253	10,921
1989	67	2,717	683	0	62,647	31,106	0	3,036	7,907	610	0	747	109,520
1990	1,086	3,450	15,229	45,713	35,196	1,795	0	0	1,729	0	388	0	104,586
1991	896	237	288	97	3,059	4,531	79	0	163	9,728	0	20,994	40,072
1992	4,421	6,027	834	0	1,284	27,865	1,596	53	0	262	377	1,167	43,886
1993	731	2,281	4,053	1	1,509	1,232	192	722	679	2,134	541	402	14,477
1994	211	788	245	335	13,850	3	1,878	186	548	4,966	3,287	291	26,588
1995	7	0	1,358	268	4,145	1,904	2,203	636	0	0	0	0	10,521
1996	343	674	891	844	467	478	783	1,107	9,982	107	8,113	9,305	33,094
1997	2,518	31,992	8,806	8,657	6,887	3,018	4,785	4,140	2,854	347	17	557	74,578
1998	338	226	8,101	85	59	0	0	79	0	0	149	0	9,037
1999	72	356	6,468	679	6,528	1,721	0	0	0	0	0	30	15,854
2000	0	0	422	646	1,873	0	0	0	0	238	3,171	526	6,876
2001	1,248	7,300	7,300	485	671	458	2	0	0	251	9	0	17,724
2002	145	1	385	1,767	547	1,525	0	0	0	168	339	122	4,999
2003	0	0	31	21	0	2,670	0	0	0	0	0	15	2,737
2004	41	148	446	1,812	12	518	11,032	0	0	76	9,289	203	23,577
2005	2,626	430	163	114	343	576	121	1,202	0	9,330	0	52	14,957
2006	316	103	633	823	2,831	1,654	0	0	0	0	180	0	6,540
2007	0	80	4,604	449	5,132	9,276	1,463	0	410	0	0	0	21,414
2008	0	876	5,302	3,017	822	432	0	1,648	2,135	341	38	0	14,611
2009	0	522	292	164	0	1,319	1,001	0	2,221	1,260	48	0	6,827
2010	1,733	3,936	1,286	18,487	15,377	113	432	0	3,830	208	0	731	46,133
2011	66	756	269	241	0	0	34	512	0	6,358	1,485	0	9,721
2012	10,026	0	4,064	0	0	682	0	200	0	0	43	0	15,015
2013	232	58	195	31	148	780	0	0	0	0	0	88	1,532
2014	96	0	246	0	0	0	1,589	0	0	373	161	0	2,465
2015	283	185	807	576	66,483	19,457	698	0	146	2,729	14,197	8,309	113,870
Min	0	0	0	0	0	0	0	0	0	0	0	0	670
Max	10,710	31,992	15,229	131,514	263,724	31,106	30,627	8,446	21,382	52,117	14,197	20,994	401,247
Average	679	1,420	1,758	6,761	9,191	3,106	1,166	444	2,016	3,125	911	1,080	31,657

Appendix B - Naturalized Flows

NATURALIZED FLOW **CCIV25**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Big Cedar Creek near Ivan  
 Gage Number 08088450

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	16	166	73	207	755	8,735	1,493	3,558	469	151	2,006	3,034	20,663
1941	661	3,388	2,282	0	5,260	11,308	3,544	1,437	1,528	5,531	2,911	0	37,850
1942	1,044	292	749	15,680	5,820	6,869	517	0	280	4,896	892	0	37,039
1943	727	582	605	1,680	375	0	318	81	172	160	67	5	4,772
1944	197	0	2,808	1,785	416	1,100	301	405	1,351	293	633	354	9,643
1945	593	774	4,702	3,141	1,249	0	2,790	364	229	2,568	248	0	16,658
1946	1,301	1,167	682	581	564	865	821	324	5,450	2,007	2,109	3,091	18,962
1947	611	392	729	449	208	1,611	178	186	825	140	0	890	6,219
1948	0	0	862	411	468	0	0	311	441	165	0	94	2,752
1949	0	146	656	334	9,579	3,058	576	249	1,505	1,939	207	70	18,319
1950	67	449	143	1,398	1,603	698	2,997	1,560	0	557	0	0	9,472
1951	47	129	11	46	2,248	2,050	403	744	1,132	0	1	0	6,811
1952	33	0	61	321	0	339	402	386	383	228	0	58	2,211
1953	69	50	67	0	1,405	0	1,167	1,095	427	3,300	496	406	8,482
1954	169	337	76	534	279	432	1,033	953	43	0	358	0	4,214
1955	0	0	0	675	461	6,045	1,127	334	4,759	5,261	160	0	18,822
1956	703	0	0	89	538	544	0	0	122	402	644	1,093	4,135
1957	0	4,474	0	21,775	38,409	8,449	758	83	251	2,651	2,892	743	80,485
1958	393	372	1,961	3,936	6,080	957	8,602	253	0	194	34	0	22,782
1959	99	76	177	0	408	1,312	1,327	0	26	6,222	0	90	9,737
1960	2,443	1,894	351	990	339	0	842	0	0	0	575	368	7,802
1961	1,221	927	936	359	0	0	0	536	0	164	354	242	4,739
1962	41	0	72	22	0	4,292	8,636	0	5,011	0	0	674	18,748
1963	0	111	139	4,753	377	510	0	0	0	183	1,169	0	7,242
1964	224	1,307	322	34	54	316	203	378	885	0	3,236	0	6,959
1965	4	5	0	1,252	8,660	62	0	613	631	547	0	0	11,774
1966	0	64	0	6,089	1,786	1,330	60	4,699	7,825	7	0	0	21,860
1967	0	0	0	27	369	68	4,249	0	1,983	2	15	17	6,730
1968	7,390	752	3,261	1,552	173	889	6,819	0	0	0	0	0	20,836
1969	0	9	2,700	3,564	5,141	332	177	466	87	1	1	1,626	14,104
1970	38	250	759	192	89	2	0	0	0	0	0	0	1,330
1971	0	0	0	0	161	0	266	251	77	70	0	30	855
1972	0	0	0	65	272	29	5	0	0	95	32	0	498
1973	107	11	2	2,136	339	324	3,217	69	26	1,689	0	0	7,920
1974	0	0	0	2,325	162	47	1	129	2,523	12,538	1,145	87	18,957
1975	1,345	5,036	130	354	10	2	270	194	0	0	0	0	7,341
1976	0	0	0	39	21	2	274	61	193	1,133	2	1	1,726
1977	2	1	3,140	43	633	0	0	0	0	0	0	0	3,819
1978	0	0	0	1,731	101	50	0	5	3	2	3	2	1,897
1979	1	1	91	38	93	11	0	48	0	1	0	1	285
1980	4	4	1	0	202	0	0	0	1,575	66	0	204	2,056
1981	1	0	464	40	1	162	1	5	56	47,074	54	78	47,936
1982	8	7	91	5	8,271	12,891	247	9	3	5	6	8	21,551
1983	2	4	25	0	81	37	2	8	3	13	1	3	179
1984	1	3	2	0	3	3	3	2	54	1,867	477	14	2,429
1985	15	77	444	92	308	44	171	2	12	526	28	18	1,737
1986	12	97	5	78	507	2,218	61	6	5	1,031	252	533	4,805
1987	65	2,162	447	14	1,277	768	2	0	1	3	19	37	4,795
1988	1	3	4	3	3	63	74	3	281	11	12	9	467
1989	7	110	3	3	805	3,939	22	3,598	2,011	172	0	211	10,881
1990	387	1,124	5,632	16,244	9,648	1,040	145	308	2,120	261	749	122	37,780
1991	1,429	661	1,114	618	4,811	10,306	2,184	2,037	2,241	4,136	1,211	10,279	41,027
1992	4,626	1,575	5,298	890	574	2,414	270	0	0	0	0	0	15,647
1993	0	1,096	2,104	898	905	1,376	578	636	588	1,081	167	366	9,795
1994	155	297	446	41	7,697	604	824	244	649	1,638	2,592	1,907	17,094
1995	548	435	1,113	2,079	1,788	1,469	808	2,536	583	121	0	156	11,636
1996	203	531	805	798	575	642	451	2,592	7,494	3,218	2,288	2,624	22,221
1997	710	9,021	2,483	2,441	1,942	851	1,349	1,167	805	98	5	157	21,029
1998	697	553	5,385	719	856	495	272	281	110	68	130	2	9,568
1999	0	34	1,816	405	1,571	816	534	411	0	0	11	59	5,657
2000	355	326	0	178	64	707	152	0	49	0	1,369	88	3,288
2001	644	6,100	7,360	1,719	765	149	0	318	0	0	113	228	17,396
2002	334	326	2,053	934	10	0	0	171	0	0	136	234	4,198
2003	214	231	674	523	268	0	0	0	66	43	115	18	2,152
2004	0	609	750	406	336	0	0	0	0	0	0	274	2,375
2005	0	536	933	398	0	131	0	0	780	1,273	52	0	4,103
2006	313	530	372	817	1,873	182	155	208	0	0	25	0	4,475
2007	0	390	5,911	1,302	1,938	14,174	12,744	0	588	0	0	0	37,047
2008	101	226	4,306	1,883	887	0	88	368	84	27	9	0	7,979
2009	26	315	102	124	0	0	0	112	71	1,004	256	33	2,043
2010	341	2,528	1,788	7,478	5,373	1	0	146	291	262	0	63	18,271
2011	12	404	130	319	0	107	256	81	0	1,478	12	194	2,993
2012	5,670	923	3,211	125	0	253	0	0	242	0	43	74	10,541
2013	157	118	183	122	0	365	0	0	0	0	0	53	998
2014	0	65	128	165	18	0	40	68	0	189	0	104	777
2015	109	168	474	9	9,345	5,225	2,781	0	0	1,534	8,071	4,397	32,113
Min	0	0	0	0	0	0	0	0	0	0	0	0	179
Max	7,390	9,021	7,360	21,775	38,409	14,174	12,744	4,699	7,825	47,074	8,071	10,279	80,485
Average	483	720	1,113	1,585	2,074	1,633	1,021	462	782	1,583	505	467	12,427

Appendix B - Naturalized Flows

NATURALIZED FLOW **SHGR26**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Brazos River at Morris Sheppard Dam near Graford, Brazos River nr Graford  
 Gage Number 08088600, 08088610

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	10,094	10,172	836	16,772	114,403	289,797	45,691	242,432	54,126	3,317	79,433	49,363	916,436
1941	9,910	75,951	64,391	201,160	1,267,722	627,107	140,733	116,128	103,454	758,197	137,798	43,317	3,545,868
1942	26,025	13,531	14,131	468,326	139,111	151,003	15,609	23,207	166,710	325,061	35,589	16,542	1,394,845
1943	16,615	10,142	26,089	57,649	17,708	70,893	14,538	1,024	1,980	2,856	802	166	220,462
1944	3,922	13,485	45,426	23,584	54,063	50,477	32,829	17,198	25,757	54,397	12,288	11,908	345,334
1945	11,431	12,504	119,261	98,987	28,038	42,120	151,123	12,303	6,233	94,508	6,698	1,150	584,356
1946	19,379	15,155	9,356	8,718	29,334	44,444	28,702	58,775	212,225	111,731	61,578	100,854	700,251
1947	13,623	6,554	12,028	8,687	479,473	54,788	8,891	2,760	13,188	34,369	9,626	37,997	681,984
1948	3,748	5,871	25,281	8,583	32,120	127,828	115,435	14,256	7,234	18,154	10,575	2,927	372,012
1949	2,099	12,673	13,813	15,030	320,457	176,336	16,034	15,527	93,914	63,534	9,174	2,868	741,459
1950	3,037	7,982	2,631	57,812	202,611	42,025	196,046	73,270	146,770	19,577	804	1,782	754,347
1951	2,761	4,274	1,833	2,048	112,117	152,042	24,098	25,353	24,699	0	348	0	349,573
1952	484	55	872	7,073	16,673	13,986	14,388	5,388	5,349	2,645	4,576	2,382	73,871
1953	986	576	6,662	3,116	79,575	0	265,689	89,225	17,631	252,122	25,691	10,753	752,026
1954	5,182	5,221	1,602	107,969	379,232	43,287	14,581	13,551	492	539	18,851	0	590,507
1955	3,906	5,662	16,837	14,935	214,934	220,077	63,325	23,962	480,744	351,752	15,346	7,815	1,419,295
1956	15,225	4,032	23	2,811	42,134	14,472	0	1,468	6,654	17,993	20,585	125,397	0
1957	0	224,472	8,925	724,847	1,794,495	436,499	36,297	13,320	18,908	139,484	116,312	15,332	3,529,341
1958	9,566	7,775	35,228	64,389	216,646	32,253	208,255	8,415	60,971	10,036	2,757	0	656,291
1959	1,940	1,386	2,360	293	46,332	176,976	111,079	14,016	5,523	247,161	3,430	19,495	629,991
1960	45,796	35,331	9,037	22,013	6,439	13,086	201,748	9,875	0	276,670	30,007	19,004	669,006
1961	44,320	34,142	23,417	10,919	28,155	272,670	249,576	24,226	71,484	12,239	33,666	11,388	816,202
1962	5,357	2,973	6,050	6,906	1,965	298,783	141,730	14,825	430,354	29,743	43,409	34,142	1,016,237
1963	5,451	6,225	8,225	101,668	98,523	209,029	1,862	0	7,862	11,866	43,033	3,851	497,595
1964	7,867	45,741	7,915	4,575	12,812	33,748	3,084	16,691	43,424	5,058	64,870	2,110	247,895
1965	5,258	4,967	2,753	46,413	387,943	35,923	6,551	32,331	39,812	72,655	8,707	3,327	646,640
1966	244	4,735	9,563	237,550	216,185	24,612	3,806	59,069	485,459	23,755	7,052	2,802	1,074,832
1967	3,807	5,802	8,540	54,846	25,143	105,300	164,978	15,885	53,030	7,088	200	2,797	447,416
1968	261,954	43,953	159,012	118,990	71,618	91,662	63,214	9,996	0	0	0	4,969	825,368
1969	3,913	11,786	80,277	68,897	479,930	36,886	1,347	949	175,954	41,057	37,679	64,382	1,003,057
1970	26,851	22,662	97,074	63,514	105,177	18,404	0	0	0	0	0	0	333,682
1971	1,139	3,007	3,146	3,892	16,942	78,062	9,211	314,533	155,235	74,358	15,352	25,431	700,308
1972	5,175	11,671	7,401	15,629	73,325	19,893	9,225	172,491	113,151	47,080	152,376	19,114	646,531
1973	41,253	40,139	77,267	73,590	22,940	51,406	29,617	10,070	20,393	30,462	2,692	0	399,829
1974	6,198	5,824	4,714	34,603	12,562	35,083	1,810	15,257	222,268	221,078	181,422	18,757	759,576
1975	30,514	97,638	28,268	27,030	112,633	110,014	57,513	41,357	37,246	5,830	11,343	6,712	566,098
1976	7,548	8,493	5,107	18,257	36,498	6,133	21,752	22,568	74,336	95,560	56,334	9,625	362,211
1977	12,822	13,139	69,064	62,248	67,368	42,633	8,361	0	6,149	0	0	1,634	283,418
1978	217	3,801	10,109	27,861	14,396	15,250	926	756,840	33,600	17,672	7,256	3,868	891,796
1979	7,244	8,608	53,282	21,762	80,955	79,812	31,315	24,897	4,048	1,933	0	4,548	318,404
1980	2,209	7,432	4,084	6,158	166,083	34,913	6,775	5,405	122,749	308,062	18,514	48,318	731,202
1981	16,754	13,051	43,452	81,709	34,055	134,283	12,773	12,582	10,867	821,760	23,184	11,220	1,215,690
1982	7,437	11,680	16,168	9,818	597,583	716,466	127,253	14,071	5,822	3,824	1,133	7,055	1,518,310
1983	7,059	17,701	16,621	10,202	89,781	40,709	10,794	248	0	96,108	33,581	8,647	331,451
1984	15,485	10,450	7,204	4,653	3,202	0	0	3,841	1,229	93,904	48,428	74,734	263,130
1985	83,643	73,563	78,249	108,179	124,040	124,489	27,092	12,993	427	130,362	13,138	4,705	781,240
1986	8,722	7,251	10,302	15,700	27,714	162,130	76,312	18,966	127,335	407,997	77,213	63,025	1,002,667
1987	47,549	140,043	134,595	49,645	133,797	272,037	48,891	9,791	15,843	4,837	2,719	31,817	891,564
1988	14,119	9,353	8,266	7,744	8,600	19,361	28,450	5,457	58,212	6,235	2,238	5,402	173,437
1989	3,098	23,293	14,416	6,076	207,439	210,720	8,463	32,413	107,000	8,585	2,681	4,384	628,568
1990	13,204	21,927	154,314	542,715	550,520	247,928	16,739	47,117	109,788	21,290	19,809	7,328	1,752,679
1991	40,465	18,738	18,532	10,796	139,093	476,720	45,420	98,902	108,630	124,706	47,890	451,343	1,581,235
1992	151,843	505,830	291,036	74,376	91,899	490,821	82,274	42,699	25,548	4,604	16,608	24,242	1,801,780
1993	19,433	47,772	72,570	34,691	34,035	57,103	9,967	11,573	13,667	35,939	4,741	9,824	351,315
1994	6,001	8,853	10,822	6,118	309,202	22,676	18,239	8,873	19,646	75,452	40,042	12,330	538,254
1995	6,976	3,101	20,218	12,675	38,315	89,499	19,978	127,822	40,215	9,869	2,830	2,392	373,890
1996	3,346	8,371	7,638	17,100	7,494	14,601	6,891	43,500	236,320	35,189	45,471	35,637	461,558
1997	11,092	187,271	87,566	62,723	101,680	148,388	45,607	23,363	2,443	1,227	0	10,481	681,841
1998	12,420	12,737	132,776	9,904	6,054	6,977	9,696	345	0	557	680	51	192,197
1999	2,258	4,014	53,776	21,374	44,964	127,043	16,994	2,333	0	0	0	0	272,756
2000	2,857	3,111	49,152	22,457	16,107	32,967	17,192	0	0	14,077	52,286	6,778	216,984
2001	11,878	104,072	121,781	22,630	26,736	9,457	0	0	1,761	9,783	12,999	6,467	327,564
2002	4,141	1,452	22,513	66,485	30,926	33,585	93,185	17,299	0	7,090	17,541	10,573	304,790
2003	5,967	3,653	8,480	5,312	1,978	91,463	14,211	0	5,866	2,202	0	0	139,132
2004	0	7,985	27,798	36,800	10,657	48,063	61,307	120,769	13,317	32,788	254,036	46,043	659,563
2005	27,051	20,165	22,222	9,321	10,179	34,390	9,570	376,917	31,659	27,350	10,188	5,742	584,754
2006	8,318	6,529	11,107	19,507	100,660	13,034	1,811	517	5,283	65,327	19,387	6,819	258,299
2007	5,249	8,936	69,731	21,642	171,872	464,827	251,767	140,014	31,887	7,761	4,142	7,208	1,185,036
2008	7,399	12,589	60,051	56,331	32,707	30,091	2,902	11,511	38,165	21,491	8,310	3,662	285,209
2009	4,036	6,520	6,246	4,655	10,501	24,886	16,189	12,748	7,168	12,888	3,224	1,622	110,683
2010	19,355	62,927	36,436	244,289	111,646	26,723	154,729	23,356	60,208	24,747	4,877	8,399	777,692
2011	6,356	13,409	8,463	8,629	145	1,770	4,392	8,035	5,788	31,616	2,926	1,512	93,041
2012	69,536	8,291	24,704	597	0	13,543	0	1,154	13,278	3,679	283	0	135,065
2013	2,060	1,163	3,231	4,165	2,662	25,234	45,739	9,447	946	532	0	242	95,421
2014	0	1,410	2,730	1,989	0	9,260	10,433	1,382	14,641	13,360	6,402	4,848	66,455
2015	4,646	4,173	8,913	18,067	455,273	252,678	130,120	8,742	2,792	53,212	118,019	118,691	1,175,326
Min	0	55	23	293	0	0	0	0	0	0	0	0	66,455
Max	261,954	505,830	291,036	724,847	1,794,495	716,466	265,689	756,840	485,459	821,760	254,036	451,343	3,545,868
Average	17,570	29,565	36,105	59,858	146,793	116,506	51,883	46,923	61,312	78,797	28,692	21,385	695,388

Appendix B - Naturalized Flows

NATURALIZED FLOW BRPP27  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Brazos River near Palo Pinto  
 Gage Number 08089000

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	10,186	10,264	844	16,924	115,442	292,429	46,106	244,634	54,618	3,347	80,154	49,811	924,759
1941	10,000	76,641	64,976	202,987	1,279,235	632,802	142,011	117,183	104,394	765,083	139,049	43,710	3,578,071
1942	26,261	13,654	14,259	472,579	140,374	152,374	15,751	23,418	168,224	328,013	35,912	16,692	1,407,511
1943	16,766	10,234	26,326	58,173	17,869	71,537	14,670	1,033	1,998	2,882	809	168	222,465
1944	3,958	13,607	45,839	23,798	54,554	50,935	33,127	17,354	25,991	54,891	12,400	12,016	348,470
1945	11,535	12,618	120,344	99,886	28,293	42,503	152,495	12,415	6,290	95,366	6,759	1,160	589,664
1946	19,555	15,293	9,441	8,797	29,600	44,848	28,963	59,309	214,152	112,746	62,137	101,770	706,611
1947	13,747	6,614	12,137	8,766	483,827	55,286	8,972	2,785	13,308	34,681	9,713	38,342	688,178
1948	3,782	5,924	25,511	8,661	32,412	128,989	116,483	14,385	7,300	18,319	10,671	2,954	375,391
1949	2,118	12,788	13,938	15,166	323,367	177,937	16,180	15,668	94,767	64,111	9,257	2,894	748,191
1950	3,065	8,054	2,655	58,337	204,451	42,407	197,826	73,935	148,103	19,755	811	1,798	761,197
1951	2,786	4,313	1,850	2,067	113,135	153,423	24,317	25,583	24,923	0	351	0	352,748
1952	488	56	880	7,137	16,824	14,113	14,519	5,437	5,398	2,669	4,618	2,404	74,543
1953	995	581	6,722	3,144	80,298	0	268,102	90,035	17,791	254,412	25,924	10,851	758,855
1954	5,229	5,268	1,617	108,950	382,676	43,680	14,713	13,674	496	544	19,022	0	595,869
1955	3,941	5,713	16,990	15,071	216,886	222,076	63,900	24,180	485,110	354,947	15,485	7,886	1,432,185
1956	15,363	4,069	23	2,837	42,517	14,603	0	0	1,481	6,714	18,156	20,772	126,535
1957	0	226,511	9,006	731,430	1,810,792	440,917	36,627	13,441	19,080	140,751	117,368	15,471	3,561,394
1958	9,653	7,846	35,548	64,974	218,614	32,546	210,146	8,491	61,525	10,127	2,782	0	662,252
1959	1,958	1,399	2,381	296	46,753	178,583	112,088	14,143	5,573	249,406	3,461	19,672	635,713
1960	46,212	35,652	9,119	22,213	6,497	13,205	203,580	9,965	0	279,183	30,280	19,177	675,083
1961	44,722	34,452	23,630	11,018	28,411	275,146	251,843	24,446	72,133	12,350	33,972	11,491	823,614
1962	5,406	3,000	6,105	6,969	1,983	301,496	143,017	14,960	434,262	30,013	43,803	34,452	1,025,466
1963	5,501	6,282	8,300	102,591	99,418	210,927	1,879	0	7,933	11,974	43,424	3,886	502,115
1964	7,938	46,156	7,987	4,617	12,928	34,054	3,112	16,843	43,818	5,104	65,459	2,129	250,145
1965	5,306	5,012	2,778	46,835	391,466	36,249	6,610	32,625	40,174	73,315	8,786	3,357	652,513
1966	246	4,778	9,650	239,707	218,148	24,836	3,841	59,605	489,868	23,971	7,116	2,827	1,084,593
1967	3,842	5,855	8,618	55,344	25,371	106,256	166,476	16,029	53,512	7,152	202	2,822	451,479
1968	264,333	44,352	160,456	120,071	72,268	92,494	63,788	10,087	0	0	0	5,014	832,863
1969	3,949	11,893	81,006	69,523	484,289	37,221	1,359	958	177,552	41,430	38,021	64,967	1,012,168
1970	27,095	22,868	97,956	64,091	106,132	18,571	0	0	0	0	0	0	336,713
1971	1,149	3,034	3,175	3,927	17,096	78,771	9,295	317,390	156,645	75,033	15,491	25,662	706,668
1972	5,222	11,777	7,468	15,771	73,991	20,074	9,309	174,058	114,179	47,508	153,760	19,288	652,405
1973	41,628	40,504	77,969	74,258	23,148	51,873	29,886	10,161	20,578	30,739	2,716	0	403,460
1974	6,254	5,877	4,757	34,917	12,676	35,402	1,826	15,396	224,287	223,086	183,070	18,927	766,475
1975	30,791	98,525	28,525	27,275	113,656	111,013	58,035	41,733	37,584	5,883	11,446	6,773	571,239
1976	7,617	8,570	5,153	18,423	36,829	6,189	21,950	22,773	75,011	107,119	61,931	9,325	380,890
1977	17,211	17,237	82,510	64,766	79,131	45,641	12,148	380	5,537	171	1,825	3,179	329,736
1978	1,258	5,228	11,362	34,410	14,181	14,380	69	690,251	32,032	19,215	9,086	4,209	835,681
1979	7,206	9,874	61,229	27,491	97,004	81,239	31,296	23,902	5,089	4,199	0	5,957	354,486
1980	1,795	9,284	4,093	6,155	165,544	37,668	6,201	4,840	118,221	333,810	18,757	53,760	760,128
1981	19,577	13,876	51,793	81,609	37,819	148,708	12,098	12,928	9,411	822,049	23,061	12,468	1,245,397
1982	6,869	13,221	17,517	10,216	541,701	650,725	128,875	14,568	5,076	4,186	0	7,929	1,400,883
1983	6,167	17,109	15,141	9,500	93,726	37,633	9,129	0	0	92,917	31,311	1,680	314,313
1984	10,923	9,289	10,173	5,088	3,559	0	0	5,970	1,314	95,915	52,468	85,736	280,435
1985	72,312	68,450	71,784	93,659	110,781	112,533	20,367	5,249	0	123,836	10,936	5,031	694,938
1986	9,310	8,741	10,244	15,952	28,662	157,126	74,221	18,243	125,612	409,905	80,545	69,467	1,008,028
1987	54,754	142,482	150,908	60,395	143,949	320,102	48,374	8,583	14,929	4,397	2,606	31,446	982,925
1988	14,632	10,393	8,594	7,656	8,836	20,772	28,840	5,633	58,249	6,942	1,439	5,683	177,669
1989	4,460	24,381	13,642	4,905	220,183	217,993	5,018	27,432	114,442	8,731	1,960	4,677	647,824
1990	12,514	24,389	160,547	568,131	548,379	266,320	17,478	46,349	106,714	20,975	21,397	8,113	1,801,306
1991	45,973	23,423	23,295	12,018	138,573	483,068	58,029	97,546	108,997	125,838	49,177	489,880	1,655,817
1992	155,268	529,052	311,514	79,380	102,894	495,993	98,759	37,186	27,505	5,371	17,601	25,724	1,886,247
1993	20,568	54,777	75,807	36,278	34,320	59,615	10,985	10,269	14,789	41,585	6,737	11,030	376,760
1994	6,516	10,093	11,859	4,549	272,013	24,541	16,571	5,876	17,870	76,766	51,278	29,065	526,997
1995	10,645	8,130	21,992	28,915	52,846	103,083	28,201	151,789	48,441	11,218	4,890	5,074	475,224
1996	6,585	10,966	14,198	19,690	9,071	16,657	7,421	55,233	302,304	63,367	65,605	56,461	627,558
1997	15,406	235,185	92,248	84,612	129,857	213,627	58,206	32,143	12,866	3,895	1,446	9,485	888,976
1998	16,199	16,057	165,035	17,121	15,615	11,830	15,510	3,542	1,447	1,001	1,821	898	266,076
1999	1,597	4,705	61,124	20,812	45,353	130,856	19,697	7,402	0	992	441	753	293,732
2000	4,125	4,171	49,904	22,872	15,605	34,405	19,235	0	567	14,414	53,610	8,271	227,179
2001	14,031	146,087	198,052	35,801	32,835	9,046	3,078	6,369	2,283	10,064	13,334	6,358	477,338
2002	6,156	4,921	36,822	70,907	34,351	32,901	101,917	18,206	2,726	10,081	18,991	13,600	351,579
2003	7,523	5,782	11,909	7,363	4,974	96,589	15,010	190	6,585	813	1,517	213	158,468
2004	237	12,279	31,079	39,030	12,298	52,057	66,736	134,191	12,978	33,040	303,504	50,878	748,307
2005	33,104	30,140	35,450	16,663	11,447	33,312	7,737	398,232	47,024	31,516	8,984	6,116	659,725
2006	10,247	10,729	12,820	22,400	107,054	11,958	2,860	3,150	6,187	64,899	21,411	7,106	280,821
2007	5,619	9,860	95,552	40,059	199,620	565,865	330,370	165,285	40,040	9,015	4,810	7,025	1,473,120
2008	7,318	12,107	88,980	73,438	40,656	31,630	3,863	12,586	37,613	24,075	9,686	3,425	345,377
2009	3,881	7,496	5,312	3,833	9,930	24,787	16,111	13,032	7,881	16,293	4,507	2,176	115,239
2010	22,731	70,797	48,578	286,509	130,534	27,186	151,102	24,876	60,405	24,794	5,960	8,286	861,758
2011	6,304	13,289	6,340	8,255	0	1,446	5,124	5,791	788	34,735	3,346	2,839	88,257
2012	88,482	13,447	40,940	2,360	1,111	14,718	92	1,251	13,394	3,724	779	856	181,154
2013	2,625	1,391	3,381	4,920	1,937	24,585	46,211	10,495	2,458	602	102	614	99,321
2014	0	1,448	2,238	2,046	328	9,316	9,999	1,218	14,592	13,362	6,764	5,050	66,361
2015	5,041	4,474	10,362	19,860	490,948	270,388	139,036	9,026	2,096	54,063	158,714	141,203	1,305,211
Min	0	56	23	296	0	0	0	0	0	0	0	0	66,361
Max	264,333	529,052	311,514	731,430	1,810,792	650,725	330,370	690,251	489,868	822,049	303,504	489,880	3,578,071
Average	18,471	32,168	40,504	62,857	149,340	120,211	54,194	47,544	63,112	80,466	30,852		

Appendix B - Naturalized Flows

NATURALIZED FLOW **PPSA28**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Palo Pinto Creek near Santo  
 Gage Number 08090500

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	148	0	416	2,344	1,822	9,161	4,525	8,433	3,622	724	19,768	15,911	66,874
1941	3,821	20,652	7,227	6,634	10,355	29,927	5,908	15,049	486	0	11,089	907	112,055
1942	1,277	859	594	70,829	44,912	23,863	1,418	1,083	8,119	21,657	4,950	2,258	181,819
1943	336	1,556	5,259	2,872	3,075	3,612	0	383	1,337	443	107	517	19,497
1944	1,054	5,024	5,050	1,391	21,538	1,884	1,938	1,948	5,328	230	1,179	877	47,441
1945	3,266	13,275	23,148	20,289	4,919	1,913	16,856	556	968	10,231	627	908	96,956
1946	3,179	8,895	2,623	1,582	7,515	3,974	0	177	6,153	4,298	17,533	14,180	70,109
1947	3,109	2,369	7,176	3,856	0	2,622	443	441	771	1,853	768	5,966	29,374
1948	3,310	8,572	3,734	0	5,664	1,897	882	220	1,667	39	232	68	26,285
1949	43	4,377	7,997	3,091	47,395	14,773	2,434	0	948	6,403	1,752	718	89,931
1950	1,846	4,340	1,014	6,575	5,987	2,732	14,147	5,224	7,735	3,560	924	399	54,483
1951	0	1,311	847	0	6,060	8,716	594	0	0	623	0	0	18,151
1952	0	0	0	283	12,676	217	0	0	336	0	2,425	264	16,201
1953	15	0	71	2,055	7,829	0	7,277	1,760	194	21,663	2,662	344	43,870
1954	0	0	0	3,236	6,673	0	0	0	0	899	2,990	59	13,857
1955	97	932	202	1,186	32,724	7,776	246	0	2,179	0	0	0	45,342
1956	0	1,418	0	31	32,655	299	41	537	60	125	1,564	13,897	50,627
1957	0	5,169	811	41,699	159,551	5,469	1,071	20	23	21,917	16,455	1,261	253,446
1958	2,776	496	8,658	12,261	33,962	4,299	34,120	783	1,893	53	54	65	99,420
1959	30	11	0	54	335	5,387	2,217	0	431	90,443	1,624	827	101,359
1960	13,788	3,673	864	1,938	3,428	128	1,629	454	1	114	0	0	26,017
1961	14,096	5,002	1,342	182	51	22,055	444	0	187	1,262	351	27	44,999
1962	0	0	0	181	0	6,091	44,729	10,533	15,715	22,050	1,528	895	101,722
1963	198	145	191	7,486	15,376	4,705	32	363	1,061	0	703	0	30,260
1964	287	507	774	2,070	24	0	0	1,023	6,059	7,506	23,209	0	41,459
1965	2,317	2,724	0	4,527	45,912	2,146	0	1,780	2,074	1,584	0	0	63,064
1966	0	882	0	20,201	24,048	10,501	215	369	23,599	0	127	0	79,942
1967	104	0	384	1,642	2,267	2,623	18,623	0	3,054	41	180	0	28,918
1968	51,057	2,768	43,118	17,230	19,608	17,355	4,262	1,729	0	0	424	165	157,716
1969	557	753	22,343	29,379	21,885	2,070	4,261	3,734	962	3,034	222	10,792	99,992
1970	1,800	8,228	21,837	4,812	3,417	420	0	595	1,389	0	0	0	42,498
1971	45	0	0	236	14,592	393	3,702	954	3,223	7,812	0	5,324	36,281
1972	8	332	0	2,477	2,316	2,255	94	7	0	671	0	0	8,160
1973	421	1,106	510	12,378	1,505	5,448	12,662	234	983	12,922	59	0	48,228
1974	102	151	290	0	651	0	1,582	817	4,054	27,566	4,853	382	40,448
1975	1,001	11,006	2,086	9,848	5,344	10,123	508	0	0	0	0	0	39,916
1976	496	508	44	4,779	13,580	2,535	8,816	591	0	5,031	3,172	2,834	42,386
1977	641	3,366	29,913	4,571	3,732	1,492	40	0	0	95	244	284	44,378
1978	194	572	695	4,074	647	904	169	2,712	0	1,219	0	286	11,472
1979	675	156	6,754	12,568	31,091	5,801	301	55	0	1,368	0	924	59,693
1980	729	1,391	401	858	0	1,225	7	0	39	0	1,010	0	5,660
1981	0	282	3,019	507	2,884	4,145	0	1,584	0	73,191	16,504	2,343	104,459
1982	1,125	2,172	2,580	1,398	38,971	38,142	28,101	1,749	289	300	93	917	115,837
1983	467	964	2,793	1,047	9,326	1,709	665	0	210	999	0	2,074	20,254
1984	2,996	556	908	0	117	2,154	131	0	706	6,846	4,078	4,791	23,283
1985	10,646	0	8,865	7,238	7,917	4,560	2,468	1,180	2,477	4,923	1,043	110	51,427
1986	0	3,383	826	618	3,634	12,078	2,003	1,339	3,724	0	4,090	2,817	34,512
1987	3,434	572	15,039	3,370	9,184	12,573	2,349	501	184	0	770	0	47,976
1988	1,190	0	193	249	0	5,116	0	0	226	0	0	417	7,391
1989	512	4,338	7,017	3,679	54,702	43,644	794	3,031	311	945	689	0	119,662
1990	1,474	2,624	8,615	63,617	62,010	9,614	533	2,034	0	1,128	410	869	152,928
1991	1,271	1,197	0	2,076	1,011	9,346	0	2,675	0	30,276	14,144	79,318	141,314
1992	9,680	24,106	18,876	0	0	3,584	0	1,902	2,716	782	1,418	3,449	66,513
1993	1,745	7,211	5,107	2,071	1,831	621	0	0	22	17,594	621	1,514	38,337
1994	947	793	752	432	15,747	3,528	870	0	3,147	6,931	9,276	4,431	46,854
1995	3,101	0	4,893	2,447	1,072	2,955	0	20,788	6,806	1,091	750	336	44,239
1996	942	1,034	0	766	0	1,968	0	7,459	10,179	3,447	13,839	11,227	50,861
1997	2,932	59,448	37,393	28,737	18,292	1,209	9,008	2,096	423	739	641	2,093	163,011
1998	4,521	6,355	30,756	1,832	2,344	108	0	0	898	0	1,315	851	48,980
1999	1,244	283	4,715	1,614	1,427	4,801	0	438	0	0	0	136	14,658
2000	0	0	531	0	196	13,931	0	0	0	463	3,040	850	19,011
2001	4,506	29,512	27,766	12,834	5,918	683	0	0	470	0	408	495	82,592
2002	206	43	10,352	8,215	7,600	291	0	0	0	2,706	0	850	30,263
2003	443	1,303	1,838	523	0	322	0	0	1,677	1,062	702	385	8,255
2004	265	3,414	3,645	1,123	3,253	18,805	6,943	0	682	342	0	4,452	42,924
2005	2,216	1,285	4,335	494	266	0	0	0	134	0	0	495	9,225
2006	0	71	5,523	348	4,608	504	0	0	38	0	1,208	0	12,300
2007	1,008	321	5,717	26,283	18,095	52,987	53,419	4,365	3,701	586	724	1,108	168,314
2008	847	878	9,288	11,389	2,100	355	0	932	200	0	982	52	27,023
2009	128	406	723	333	782	569	0	692	2,880	12,065	2,873	1,050	22,501
2010	3,832	12,793	7,611	18,009	8,290	799	0	171	3,542	1,119	489	362	57,017
2011	267	273	349	2,227	1,191	0	0	0	0	4,695	212	935	10,149
2012	22,573	7,302	18,498	2,845	191	1,473	0	10	0	343	209	0	53,444
2013	1,032	196	450	1,335	0	0	0	0	57	0	0	1,044	4,114
2014	179	234	171	0	523	8,303	156	0	0	0	171	184	9,921
2015	408	360	1,048	9,761	53,435	37,956	9,808	918	0	1,553	39,003	12,325	166,575
Min	0	0	0	0	0	0	0	0	0	0	0	0	4,114
Max	51,057	59,448	43,118	70,829	159,551	52,987	53,419	20,788	23,599	90,443	39,003	79,318	253,446
Average	2,618	3,898	6,007	7,094	13,053	6,916	4,124	1,532	1,978	5,942	3,191	2,942	59,295

Appendix B - Naturalized Flows

NATURALIZED FLOW **BRDE29**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Brazos River near Dennis  
 Gage Number 08090800

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	9,623	6,212	2,917	27,016	109,835	302,116	63,826	256,784	66,474	6,713	173,508	126,885	1,151,909
1941	28,769	175,105	94,412	211,159	1,165,419	706,870	154,387	180,866	93,217	657,966	179,044	42,730	3,689,944
1942	29,517	16,372	15,505	782,690	357,963	257,755	21,132	26,032	188,772	398,700	57,206	26,365	2,178,009
1943	16,328	17,068	50,504	65,616	31,679	81,110	11,162	2,910	8,764	4,830	1,265	2,862	294,098
1944	8,978	38,220	66,351	27,981	160,579	54,137	38,954	25,309	50,573	48,883	16,965	15,046	551,976
1945	27,186	80,730	226,179	193,385	50,426	46,966	221,032	13,706	10,549	136,598	9,166	5,778	1,021,701
1946	33,693	60,035	21,986	15,957	65,202	59,837	21,623	52,437	218,329	120,507	146,114	162,912	978,632
1947	28,277	18,198	48,256	27,878	390,792	61,797	10,122	4,738	15,612	39,857	12,471	64,657	722,655
1948	20,684	50,198	41,780	5,483	57,920	121,994	105,800	13,650	15,102	16,117	10,486	2,922	462,136
1949	2,067	34,111	54,135	29,416	529,938	232,182	26,846	5,928	87,285	89,330	17,249	6,286	1,114,773
1950	12,364	29,806	7,637	85,224	209,027	51,189	246,163	91,667	169,279	35,867	5,561	3,660	947,444
1951	0	10,637	6,058	0	118,571	172,287	20,891	21,071	27,228	2,641	3,555	2,681	385,620
1952	1,606	2,543	1,733	13,512	60,549	357	12,987	8,615	5,717	1,445	13,127	4,544	126,735
1953	2,772	562	7,368	7,080	96,865	0	239,173	77,030	7,491	261,564	33,959	9,741	743,605
1954	5,360	4,172	6,441	100,135	356,162	66,959	7,845	19,734	0	3,383	20,321	816	591,328
1955	1,667	7,675	16,639	14,679	263,693	210,224	60,466	27,968	298,807	477,199	17,114	7,998	1,404,129
1956	7,256	5,057	4,505	8,266	104,092	16,511	1,562	2,958	1,842	11,093	18,267	43,256	224,665
1957	1,342	220,503	16,769	547,287	2,450,046	488,579	59,486	8,172	26,695	183,940	166,840	27,732	4,197,391
1958	26,513	19,614	72,565	80,887	403,828	41,999	24,999	22,497	62,553	4,494	5,740	5,978	992,088
1959	1,884	5,132	2,916	3,380	36,786	154,273	107,868	20,567	1,584	518,158	12,349	27,649	892,546
1960	87,843	53,354	21,713	27,050	15,146	14,599	177,812	16,876	944	222,455	40,919	11,026	689,737
1961	72,437	51,539	46,436	12,601	27,775	255,449	210,950	28,868	55,097	38,977	37,495	17,334	854,958
1962	4,629	3,478	6,669	17,451	3,973	281,571	244,014	71,502	472,187	79,702	51,994	40,402	1,277,572
1963	10,940	6,352	15,118	127,559	112,225	195,890	11,317	1,362	10,016	14,387	40,505	4,669	550,340
1964	5,165	50,669	13,388	13,878	15,336	26,113	0	20,899	70,908	15,818	120,391	5,823	358,388
1965	15,794	36,398	9,398	50,477	498,389	42,083	7,354	36,081	52,343	64,185	9,140	8,263	829,905
1966	0	13,601	13,065	209,419	412,609	70,564	1,430	59,112	570,900	49,801	9,478	3,641	1,413,620
1967	6,821	7,458	9,442	50,998	27,265	129,945	161,861	26,307	55,725	12,072	726	8,016	496,186
1968	295,845	68,998	268,570	149,497	128,707	129,449	88,245	20,095	4,059	56	1,396	7,101	1,162,018
1969	5,457	18,988	153,838	138,187	576,229	55,014	15,598	17,527	173,535	65,545	50,468	90,714	1,361,100
1970	49,854	50,788	248,444	87,480	131,906	26,862	9,121	15,575	21,039	15,010	0	3,074	659,153
1971	2,697	3,489	2,890	3,883	32,221	77,364	12,595	281,176	168,493	123,521	37,498	48,870	794,697
1972	13,019	10,629	5,499	19,467	79,925	24,489	8,077	150,914	114,753	50,547	156,146	27,724	681,189
1973	45,137	48,892	78,758	101,813	34,151	79,618	63,901	19,376	22,582	59,025	5,737	3,611	562,601
1974	10,357	6,453	5,618	38,940	14,518	36,968	0	21,386	229,619	277,496	290,234	32,598	964,187
1975	42,939	130,307	34,374	58,032	93,515	168,504	50,897	45,119	35,016	5,425	10,537	8,442	683,107
1976	6,351	9,190	5,674	27,905	74,947	11,433	33,268	22,919	73,434	120,889	75,474	14,036	475,520
1977	17,735	27,016	198,532	103,798	116,417	52,502	9,601	0	2,826	759	4,894	3,247	537,327
1978	1,726	6,132	11,305	50,682	17,012	15,338	0	691,945	21,771	27,437	9,674	3,625	856,647
1979	10,229	9,817	85,373	67,413	142,325	96,685	32,886	20,857	2,064	5,582	0	8,690	481,921
1980	2,695	15,327	4,259	5,691	157,091	42,952	7,316	12,336	133,904	299,915	25,739	46,560	753,785
1981	14,196	12,423	62,234	83,799	53,640	151,141	9,971	20,308	10,451	1,211,394	81,692	17,269	1,728,518
1982	9,948	19,902	19,596	13,879	689,400	831,998	239,037	27,603	6,856	5,327	2,020	13,916	1,879,482
1983	8,093	24,009	33,588	19,278	135,330	41,119	16,897	3,749	4,183	99,215	30,431	7,993	423,885
1984	21,484	10,336	10,660	4,387	3,614	1,225	600	5,517	6,003	123,629	74,820	108,317	376,092
1985	114,532	65,587	103,313	107,572	138,551	120,918	31,695	3,094	3,069	143,004	17,971	7,333	856,639
1986	9,557	23,728	10,889	16,744	33,950	176,335	70,336	22,261	126,229	374,051	98,743	81,766	1,044,589
1987	62,842	129,361	193,633	54,683	167,459	330,041	53,829	11,378	16,735	3,100	4,205	27,018	1,054,284
1988	19,653	8,227	6,399	7,263	11,560	41,043	29,281	5,546	59,453	5,029	175	9,360	202,989
1989	8,532	44,531	19,556	17,881	422,194	379,291	15,529	52,210	121,147	10,851	2,867	9,314	1,103,903
1990	23,950	31,300	170,428	860,177	771,828	286,008	19,381	47,332	100,695	26,875	22,411	10,875	2,371,260
1991	42,391	22,942	11,318	4,809	127,297	442,388	67,898	102,917	87,809	207,552	82,517	764,518	1,964,356
1992	190,859	556,001	355,105	71,247	113,005	520,388	97,325	40,008	35,223	9,258	18,594	33,016	2,040,029
1993	25,227	75,549	85,527	37,992	38,280	59,889	12,027	12,708	17,131	128,555	9,343	16,736	518,964
1994	8,205	13,354	12,905	4,446	337,739	31,541	17,658	543	22,992	101,423	81,254	20,082	652,142
1995	13,284	4,256	26,875	30,023	98,841	106,353	27,364	233,552	75,345	12,845	5,857	4,951	639,546
1996	5,195	9,831	7,096	19,744	6,628	28,256	6,815	87,277	349,624	70,520	125,453	85,061	801,500
1997	19,224	476,440	203,526	159,165	194,268	222,815	81,662	33,792	5,828	2,033	2,843	10,288	1,411,884
1998	18,351	20,761	242,866	11,286	10,072	0	9,514	1,073	8,378	0	3,507	396	326,204
1999	1,843	3,800	86,403	27,199	53,583	144,070	12,024	2,340	0	0	0	222	331,484
2000	2,981	2,686	48,345	21,967	16,459	64,063	16,825	0	0	14,301	61,866	7,915	257,408
2001	27,046	243,791	265,740	55,682	37,398	8,776	0	1,967	3,048	8,896	13,736	7,393	673,473
2002	6,125	3,415	72,418	78,581	41,603	32,586	96,403	16,713	1,734	28,169	18,823	16,993	413,563
2003	7,531	5,277	11,623	5,862	0	94,336	12,375	328	10,610	750	2,777	1,494	152,963
2004	1,796	22,879	37,711	37,059	17,234	83,448	87,426	119,495	12,595	31,338	277,427	54,714	783,122
2005	32,206	23,796	34,957	12,092	11,757	28,166	4,048	359,244	38,846	25,140	7,552	7,406	585,210
2006	8,047	8,229	18,035	22,136	11,277	15,857	0	0	5,792	62,871	20,034	8,253	286,531
2007	6,916	8,850	135,033	129,146	259,875	746,326	498,872	179,028	50,103	9,885	5,587	8,135	2,037,756
2008	8,460	12,915	138,008	123,069	44,264	31,177	2,975	18,478	37,801	22,337	11,911	3,742	455,137
2009	3,739	7,004	7,377	4,633	12,223	24,336	18,423	18,657	23,744	76,013	11,817	3,992	211,958
2010	42,041	122,260	78,388	354,009	161,941	29,706	147,901	25,542	66,529	26,358	6,257	8,596	1,069,528
2011	5,525	12,766	7,990	20,286	4,218	0	0	2,476	0	55,971	3,033	4,941	117,206
2012	173,829	34,383	114,551	8,946	2,273	21,377	0	0	11,353	3,835	1,746	0	372,293
2013	5,199	2,234	3,805	11,126	1,931	23,211	44,723	9,764	1,404	368	33	3,540	107,338
2014	401	1,876	2,067	650	303	22,204	10,445	0	12,890	12,680	7,967	5,487	76,970
2015	6,710	5,962	13,678	65,458	756,753	439,987	194,061	11,537	1,886	53,568	314,748	184,563	2,048,911
Min	0	562	1,733	0	0	0	0	0	0	0	0	0	76,970
Max	295,845	556,001	355,105	860,177	2,450,046	831,998	498,872	691,945	570,900	1,211,394	314,748		

Appendix B - Naturalized Flows

NATURALIZED FLOW **BRGR30**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Brazos River near Glen Rose  
 Gage Number 08091000

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	10,645	6,872	3,227	29,885	121,499	334,199	70,604	284,053	73,533	7,426	191,934	140,360	1,274,237
1941	31,824	193,700	104,438	233,583	1,289,180	781,936	170,782	200,073	103,116	727,839	198,058	47,268	4,081,797
1942	32,651	18,111	17,151	865,807	395,977	285,127	23,376	28,796	208,819	441,040	63,281	29,165	2,409,301
1943	18,062	18,881	55,867	72,584	35,043	89,724	12,347	3,219	9,695	5,343	1,399	3,166	325,330
1944	9,931	42,279	73,397	30,952	177,632	59,886	43,091	27,997	55,944	54,074	18,767	16,644	610,594
1945	30,073	89,303	250,198	213,922	55,781	51,954	244,504	15,162	11,669	151,104	10,139	6,392	1,130,201
1946	37,271	66,410	24,321	17,651	72,126	66,191	23,919	58,005	241,514	133,304	161,631	180,212	1,082,555
1947	31,280	20,130	53,380	30,839	432,292	68,360	11,197	5,241	17,270	44,090	13,795	71,523	799,397
1948	22,880	55,529	46,217	6,065	64,071	134,949	117,035	15,100	16,706	17,828	11,600	3,232	511,212
1949	2,287	37,733	59,884	32,540	586,215	256,838	29,697	6,557	96,554	98,816	19,081	6,954	1,233,156
1950	13,677	32,971	8,448	94,274	231,225	56,625	272,304	101,401	187,255	39,676	6,152	4,049	1,048,057
1951	0	11,767	6,701	0	131,163	190,583	23,110	23,309	30,120	2,922	3,932	2,966	426,573
1952	1,777	2,813	1,917	14,947	66,979	395	14,366	9,530	6,324	1,598	14,521	5,027	140,194
1953	3,066	622	8,150	7,832	107,152	0	264,572	85,210	8,287	289,341	37,565	10,775	822,572
1954	5,929	4,615	7,125	110,769	393,985	74,070	8,678	21,830	0	3,742	22,479	903	654,125
1955	1,844	8,490	18,406	16,238	291,696	232,549	66,887	30,938	330,539	527,875	18,931	8,847	1,553,240
1956	8,027	5,594	4,983	9,144	115,146	18,264	1,728	3,272	2,038	12,271	20,207	47,850	248,524
1957	1,485	243,919	18,550	605,406	2,710,228	540,463	65,803	9,040	29,530	203,473	184,558	30,677	4,643,132
1958	29,328	21,697	80,271	89,477	446,712	46,459	271,482	24,886	69,196	4,971	6,350	6,613	1,097,442
1959	2,084	5,677	3,226	3,739	40,693	170,656	119,323	22,751	1,752	573,184	13,660	30,585	987,330
1960	97,172	59,020	24,019	29,923	16,754	16,149	196,695	18,668	1,044	246,079	45,264	12,197	762,984
1961	80,129	57,012	51,367	13,939	30,725	282,576	233,352	31,934	60,948	43,116	41,477	19,175	945,750
1962	5,121	3,847	7,377	19,304	4,395	311,472	269,927	79,095	522,331	88,166	57,515	44,692	1,413,242
1963	12,102	7,027	16,724	141,105	124,143	216,693	12,519	1,507	11,080	15,915	44,806	5,165	608,786
1964	5,713	56,050	14,810	15,352	16,965	28,886	0	23,118	78,438	17,498	133,176	6,441	396,447
1965	17,471	40,263	10,396	55,837	551,315	46,552	8,135	39,913	57,902	71,001	10,111	9,140	918,036
1966	0	15,045	14,452	231,658	456,426	78,058	1,582	65,389	631,526	55,090	10,484	4,028	1,563,738
1967	7,545	8,250	10,445	56,414	30,160	143,247	179,050	29,101	61,643	13,354	803	8,867	548,879
1968	327,262	76,325	297,091	165,373	214,790	135,030	97,276	25,372	6,331	2,311	3,164	8,968	1,359,293
1969	5,868	20,877	154,442	158,971	665,327	73,848	10,715	21,360	156,726	54,378	52,448	94,881	1,469,841
1970	47,115	49,557	239,151	96,853	134,966	20,167	0	38	14,532	3,923	4,748	2,870	613,920
1971	4,572	6,051	5,376	7,595	33,183	76,915	19,910	265,521	163,139	157,956	43,315	92,398	875,931
1972	18,893	16,991	9,890	20,713	81,631	24,230	6,627	154,458	165,462	53,958	166,832	28,732	748,417
1973	50,773	60,892	94,547	163,054	55,737	109,076	83,391	34,125	24,519	67,695	9,591	6,983	760,383
1974	11,931	8,412	7,899	37,725	11,893	38,977	6,751	27,295	230,176	269,724	361,611	35,019	1,047,413
1975	46,417	179,711	44,570	93,486	96,347	238,183	54,761	62,287	48,617	6,396	12,635	7,938	891,348
1976	9,591	11,277	7,431	42,417	96,155	23,398	37,794	25,096	74,462	132,158	77,939	25,433	563,151
1977	20,262	36,130	253,183	88,795	97,720	52,524	11,903	164	1,005	714	3,173	4,703	570,276
1978	2,339	8,346	14,954	56,744	17,387	19,073	1,050	678,899	28,937	25,548	8,139	5,709	867,125
1979	10,850	10,393	98,089	99,478	273,952	111,775	31,817	23,285	3,720	11,989	0	11,093	686,441
1980	5,960	17,006	6,262	10,899	152,830	43,311	6,000	2,411	113,805	307,605	23,895	50,741	740,725
1981	18,238	14,973	67,313	81,350	53,102	166,965	8,627	21,628	8,273	1,215,281	118,110	25,602	1,799,462
1982	13,141	25,327	31,831	17,941	746,993	846,916	287,190	24,164	6,556	5,766	539	12,946	2,019,310
1983	8,639	22,044	30,784	15,214	144,265	46,092	12,638	0	1,223	95,076	28,005	13,671	417,651
1984	27,913	12,158	15,055	4,317	4,102	12,524	761	4,759	5,366	131,951	74,114	110,220	403,240
1985	131,369	63,395	120,503	132,059	152,456	134,622	33,915	11,904	14,399	147,592	16,573	5,473	964,260
1986	8,826	28,066	14,646	18,921	48,663	221,173	82,949	25,309	142,326	372,962	101,160	83,113	1,148,114
1987	72,568	140,207	232,416	77,618	191,689	380,625	60,129	11,161	15,410	2,196	6,978	29,954	1,220,951
1988	20,975	9,866	9,377	8,800	8,012	49,699	26,529	974	57,275	3,958	0	7,883	203,348
1989	7,264	48,643	53,901	26,104	529,566	463,170	9,435	43,978	111,753	13,881	5,887	1,367	1,314,949
1990	20,592	38,689	204,324	915,676	887,356	311,751	19,891	56,353	96,655	26,711	22,938	12,847	2,613,783
1991	51,557	29,460	13,112	23,613	139,005	518,424	49,496	109,268	98,120	296,918	129,476	931,781	2,390,230
1992	205,445	648,414	409,016	62,525	95,632	497,342	93,030	46,786	42,217	9,708	25,155	44,767	2,180,037
1993	29,907	94,552	102,520	46,895	43,619	60,883	5,324	7,601	14,336	142,244	10,081	19,400	577,362
1994	11,768	14,305	15,765	6,880	352,878	44,087	20,977	0	35,463	114,049	103,195	53,686	773,053
1995	28,256	4,135	49,577	42,006	57,003	116,215	16,614	266,683	86,107	17,118	9,056	6,826	699,596
1996	11,804	16,545	9,267	23,371	6,059	27,444	6,982	96,432	349,608	80,919	143,484	119,514	891,429
1997	31,848	571,570	306,024	248,365	231,105	212,262	108,290	43,066	14,820	8,038	5,114	21,281	1,801,783
1998	41,850	52,376	337,364	27,099	28,631	11,993	13,746	85	6,610	0	9,393	5,810	534,957
1999	8,764	6,164	86,137	29,380	51,870	153,627	12,420	9,655	0	0	0	1,512	359,529
2000	3,632	3,523	51,028	21,575	16,132	114,045	16,791	0	0	16,538	69,179	12,889	325,332
2001	39,677	311,930	351,699	109,011	65,954	12,663	23	2,922	4,927	8,018	15,183	8,988	930,995
2002	7,113	4,980	95,562	115,884	77,189	33,301	97,460	11,305	0	25,417	17,794	18,010	504,015
2003	9,802	13,131	22,129	10,117	2,177	94,669	9,497	0	16,076	6,954	5,538	2,444	192,534
2004	1,770	31,646	51,051	44,028	30,726	159,345	104,483	118,192	16,434	33,731	274,131	74,761	940,298
2005	44,685	36,424	59,261	18,880	12,542	29,753	3,216	320,499	45,955	26,421	8,129	8,755	614,520
2006	8,938	10,718	44,425	23,545	129,639	14,418	0	1,108	6,165	61,126	27,592	5,819	333,493
2007	11,259	11,339	125,036	191,296	296,982	851,695	627,967	184,170	59,983	12,068	8,830	13,192	2,393,817
2008	11,955	16,736	139,483	136,767	51,268	32,452	1,459	17,513	37,300	18,089	15,017	3,590	481,629
2009	4,470	9,564	9,308	5,617	14,086	27,121	12,780	16,545	24,317	85,796	21,034	8,198	238,836
2010	44,115	142,393	90,918	379,958	173,603	30,762	144,358	24,895	78,626	30,325	8,570	10,063	1,158,586
2011	7,608	14,355	8,122	20,877	6,923	0	0	3,765	0	60,666	4,446	8,166	134,928
2012	216,245	55,372	146,879	18,807	2,176	22,705	0	1,259	9,340	5,573	1,963	0	480,319
2013	8,524	2,477	5,864	12,486	312	22,193	43,488	7,514	2,691	514	0	6,657	112,720
2014	1,039	2,750	3,144	1,467	3,356	57,226	10,511	1,020	13,606	12,640	7,493	5,922	120,174
2015	7,215	6,392	16,050	75,827	782,325	480,439	190,597	14,009	1,477	60,969	379,242	207,315	2,221,857
Min	0	622	1,917	0	312	0	0	0	0	0	0	0	112,720
Max	327,262	648,414	409,016	915,676	2,710,2								

Appendix B - Naturalized Flows

NATURALIZED FLOW **PAGR31**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Paluxy River at Glen Rose  
 Gage Number 08091500

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	254	0	241	2,280	2,457	5,200	6,062	0	0	342	14,965	11,392	43,193
1941	5,225	17,611	11,974	12,233	12,683	1,646	8,921	3,652	1,292	0	6,553	0	81,790
1942	1,808	753	557	13,414	10,082	18,154	2,016	1,582	155	5,731	1,478	1,907	57,635
1943	895	1,421	2,043	2,723	3,413	1,490	522	40	1,265	22	156	380	14,369
1944	1,093	2,058	6,172	2,392	28,312	3,487	329	0	2,551	1,140	1,315	2,670	51,519
1945	6,218	17,116	21,677	38,709	5,365	6,842	7,530	1,930	608	4,846	983	852	112,675
1946	3,855	9,698	8,502	4,473	8,237	6,958	0	807	2,008	3,147	6,873	7,392	61,949
1947	6,185	2,681	3,367	6,081	11,735	2,773	375	342	1,496	1,210	690	3,457	40,392
1948	2,073	11,732	4,913	1,265	6,276	3,691	3,166	355	1,237	295	472	548	36,023
1949	1,062	4,477	6,159	9,378	73,244	7,309	1,541	1,099	561	5,139	783	996	111,748
1950	2,525	5,292	1,823	4,459	3,947	1,652	3,880	565	4,522	645	632	619	30,561
1951	536	728	643	697	1,748	9,388	353	60	16	49	209	347	14,774
1952	467	437	512	3,049	28,945	935	259	83	17	10	1,925	572	37,211
1953	486	349	576	1,660	4,167	140	833	1,588	314	1,450	620	453	12,636
1954	454	340	458	4,239	2,301	2,820	212	120	5	1,271	867	413	13,500
1955	325	529	741	1,722	37,170	2,297	638	195	19,926	1,048	254	360	65,205
1956	408	734	359	859	22,748	249	11	1,275	152	475	343	2,372	29,985
1957	379	419	977	38,551	63,312	9,808	1,551	332	218	5,566	8,493	3,346	132,952
1958	5,096	3,612	6,902	7,065	15,544	2,507	5,827	327	2,075	739	705	762	51,161
1959	666	648	502	2,955	501	2,981	1,548	1,207	530	44,517	3,122	3,650	62,827
1960	14,947	5,286	3,624	5,022	7,371	2,364	1,909	572	256	608	423	864	43,246
1961	12,885	13,482	5,758	3,497	2,571	6,629	4,887	819	967	18,938	3,779	3,731	77,943
1962	2,299	1,642	1,617	2,043	1,008	1,663	1,186	866	900	21,556	2,261	2,450	39,491
1963	1,585	1,162	1,091	2,140	4,947	1,832	302	219	110	66	283	494	14,231
1964	1,318	1,188	2,145	8,874	1,809	484	405	447	4,819	530	9,032	829	31,880
1965	2,555	10,290	2,347	1,695	28,384	3,145	591	228	425	1,754	764	799	52,977
1966	837	1,434	1,127	9,170	9,816	5,903	951	2,036	1,925	701	727	784	35,411
1967	641	589	727	1,212	2,272	756	5,465	399	3,162	899	909	1,132	18,163
1968	18,494	5,968	29,944	8,990	52,899	6,202	8,286	6,582	1,530	934	1,351	1,337	142,517
1969	1,188	1,244	4,105	31,382	36,101	6,274	1,447	2,348	850	6,030	1,558	3,632	96,159
1970	3,945	8,844	25,818	14,382	7,292	4,638	1,171	655	2,088	1,457	1,032	926	72,248
1971	864	791	761	841	4,645	1,003	5,523	2,824	628	11,567	1,941	20,008	51,396
1972	4,330	2,455	1,709	2,418	3,450	1,153	4,386	521	893	936	1,027	849	24,127
1973	1,699	2,464	3,130	43,423	9,394	18,306	6,393	1,673	934	4,108	1,453	1,138	94,115
1974	1,125	986	1,022	861	672	185	132	348	1,207	7,391	6,138	2,190	22,257
1975	1,882	10,534	3,674	11,098	3,573	2,191	755	343	904	140	225	496	35,815
1976	587	573	716	4,142	12,902	2,756	3,713	1,251	1,554	2,474	1,241	2,163	34,072
1977	1,800	2,825	26,398	13,410	15,171	2,479	672	565	261	109	346	482	64,518
1978	654	801	722	604	2,362	228	120	80	273	0	125	226	6,195
1979	1,359	564	4,437	6,244	55,878	3,587	1,207	1,541	410	107	250	678	76,262
1980	973	629	607	973	5,848	643	152	120	179	174	99	386	10,783
1981	348	353	793	422	236	2,527	526	496	169	6,089	3,461	785	16,205
1982	823	1,111	1,691	1,311	35,351	14,582	4,606	1,041	398	382	611	781	62,688
1983	774	645	831	591	1,606	1,058	179	127	30	33	66	221	6,161
1984	289	316	2,342	430	349	570	200	147	140	3,309	398	2,721	11,211
1985	2,779	1,160	1,827	7,747	3,317	2,670	1,045	40	87	847	309	420	22,248
1986	405	1,677	463	394	4,723	25,743	774	251	19,246	1,299	1,083	1,908	57,966
1987	2,376	6,526	7,736	2,170	13,835	15,396	1,711	640	411	293	578	722	52,394
1988	660	609	592	468	263	7,904	489	65	71	219	101	213	11,654
1989	359	1,520	26,144	10,725	46,564	52,994	3,525	2,987	1,731	1,037	1,133	1,156	149,875
1990	1,228	1,418	7,668	49,240	59,925	8,980	2,535	4,612	1,509	871	938	976	139,900
1991	1,722	1,543	1,430	1,420	2,945	5,469	603	1,673	1,507	26,075	12,567	84,978	141,932
1992	23,357	53,693	20,922	8,957	13,027	12,164	3,411	1,845	1,390	1,059	1,644	4,211	145,680
1993	2,963	8,743	13,496	11,821	5,422	2,732	1,828	1,052	2,059	5,306	1,055	1,111	57,588
1994	1,488	1,553	1,668	1,827	19,181	1,977	1,047	228	4,383	8,884	11,050	7,537	60,823
1995	6,738	3,492	8,921	8,354	18,770	32,737	15,124	44,373	4,449	2,136	1,763	1,801	148,658
1996	1,682	1,303	1,309	1,451	936	1,904	332	4,269	6,244	3,654	6,885	5,098	35,067
1997	2,890	50,461	30,827	23,381	29,115	15,588	6,123	2,060	984	1,152	1,355	1,599	165,535
1998	4,762	7,827	40,213	6,833	3,810	2,424	705	455	642	861	2,281	1,367	72,180
1999	1,095	861	1,087	865	768	4,378	580	1	0	0	115	599	10,349
2000	610	728	1,014	618	293	8,229	376	0	0	430	6,004	2,208	20,510
2001	6,716	19,841	30,081	6,762	3,011	982	254	69	360	141	936	870	70,023
2002	982	1,708	11,123	9,566	11,627	2,408	1,759	663	256	1,300	1,174	1,864	44,430
2003	1,196	2,731	2,985	2,152	1,347	3,223	370	39	2,622	569	475	498	18,207
2004	676	1,492	1,541	7,607	7,954	20,444	4,495	2,420	595	880	11,462	4,879	64,445
2005	3,259	6,857	8,567	3,491	1,902	1,152	299	164	26	22	132	295	26,166
2006	496	670	8,065	797	5,379	633	135	81	29	114	96	378	16,873
2007	768	456	12,320	6,994	32,299	80,356	46,199	7,833	3,021	1,636	1,400	1,422	194,704
2008	1,210	1,144	2,696	13,728	6,561	859	234	540	178	128	1,320	541	29,139
2009	565	525	871	648	514	48	0	986	2,009	11,721	3,088	1,964	22,939
2010	6,591	14,396	12,871	11,486	5,443	2,093	2,005	337	6,104	953	768	899	63,946
2011	936	746	738	620	779	38	0	67	0	2,301	163	586	6,974
2012	27,320	12,121	23,730	4,169	1,591	1,832	244	148	4	13	12	52	71,236
2013	616	471	551	588	270	36	0	0	825	55	24	300	3,736
2014	258	257	331	272	2,398	5,590	364	27	5	2	20	22	9,546
2015	52	25	50	18,040	142,302	24,105	4,032	1,321	612	5,165	35,903	21,116	252,723
Min	52	0	50	272	236	36	0	0	0	0	12	0	3,736
Max	27,320	53,693	40,213	49,240	142,302	80,356	46,199	44,373	19,926	44,517	35,903	84,978	252,723
Average	2,960	4,781	6,422	7,323	14,400	6,929	2,649	1,593	1,649	3,251	2,589	3,213	57,758

Appendix B - Naturalized Flows

NATURALIZED FLOW NRBL32  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Nolan River at Blum  
 Gage Number 08092000

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	307	0	292	2,760	2,975	6,295	7,338	0	0	414	18,115	13,790	52,287
1941	6,324	21,319	14,495	14,809	15,353	1,993	10,799	4,421	1,564	0	7,932	0	99,008
1942	2,188	912	674	16,238	12,204	21,976	2,441	1,915	187	6,937	1,789	2,308	69,769
1943	1,083	1,720	2,473	3,296	4,131	1,803	631	48	1,531	27	189	460	17,394
1944	1,323	2,491	7,472	2,895	34,273	4,221	399	0	3,088	1,380	1,592	3,232	62,365
1945	7,528	20,719	26,240	46,858	6,494	8,282	9,115	2,336	736	5,866	1,190	1,031	136,396
1946	4,666	11,740	10,292	5,414	9,971	8,423	0	977	2,430	3,810	8,320	8,948	74,991
1947	7,487	3,245	4,076	7,361	14,205	3,588	1,008	1,717	352	100	963	16,029	60,133
1948	3,162	13,093	9,738	1,898	12,191	7,799	11,518	39	500	0	24	282	60,244
1949	2,904	16,065	8,904	7,835	58,649	8,056	613	6	0	1,250	28	136	104,446
1950	2,932	26,728	2,573	8,173	3,878	2,047	553	0	1,383	0	0	0	48,267
1951	0	17	0	0	182	25,116	0	0	52	0	0	0	25,367
1952	0	169	78	8,129	9,761	107	0	0	0	0	11,335	3,999	33,578
1953	413	158	967	4,155	15,007	0	329	1,091	46	454	21	21	22,662
1954	28	0	0	865	429	0	0	0	0	849	286	0	2,457
1955	0	0	0	431	8,302	2,147	0	1,688	5,049	1,486	0	0	19,103
1956	31	349	0	0	3,675	0	0	1,157	1,898	350	592	69	8,121
1957	0	81	1,604	62,694	26,800	5,903	312	0	86	10,313	16,533	6,396	130,722
1958	7,947	3,990	7,794	18,216	30,251	1,518	2,324	257	6,879	1,461	597	808	82,042
1959	615	3,351	865	5,978	2,403	13,402	3,529	139	1,662	38,154	4,066	12,271	86,435
1960	21,960	6,650	3,384	1,831	1,957	517	171	149	0	57	20	3,159	39,855
1961	18,207	19,448	11,669	2,352	1,345	19,137	2,749	342	278	7,584	3,065	3,324	89,500
1962	1,625	1,076	914	1,381	293	32,491	764	301	2,192	7,797	1,426	1,147	51,407
1963	905	458	499	2,180	503	0	0	0	0	105	23	42	4,715
1964	667	146	7,006	14,146	848	8	0	4,660	5,634	7	6,103	792	40,017
1965	3,915	19,019	2,755	1,904	39,336	1,104	80	0	0	0	110	287	68,510
1966	2	1,760	2,143	46,032	13,288	2,697	0	547	829	525	162	54	68,039
1967	311	122	529	1,088	549	3,914	1,799	0	0	0	133	471	8,916
1968	11,793	2,555	19,966	3,433	65,346	6,211	354	39	0	50	183	23	109,953
1969	172	390	4,179	5,786	107,634	1,668	33	0	0	0	45	241	120,148
1970	359	5,941	15,657	20,375	5,801	1,633	7	170	961	3,125	282	241	54,552
1971	351	343	283	7,034	958	99	236	818	22	47,863	2,041	36,253	96,301
1972	10,506	2,743	1,410	1,889	1,910	0	1,564	0	264	4,993	2,179	1,004	28,462
1973	8,663	8,882	6,578	59,573	5,208	52,147	4,108	296	744	6,679	2,108	1,605	156,591
1974	6,354	2,586	1,752	669	2,021	1,094	0	12,836	13,025	16,498	12,274	4,207	75,316
1975	4,428	31,744	4,401	20,629	9,560	12,453	1,982	0	0	0	141	206	85,544
1976	224	273	303	14,337	14,972	2,307	7,770	0	3,184	2,352	1,254	4,317	51,293
1977	3,324	7,608	54,781	50,722	5,652	3,111	0	99	227	0	239	17	125,780
1978	0	586	379	1,623	1,556	0	0	0	0	0	274	0	4,418
1979	3,491	1,348	32,512	6,421	68,065	10,929	221	540	0	152	0	520	124,199
1980	1,458	708	637	4,084	14,425	207	0	0	73	0	0	200	21,792
1981	91	52	7,211	672	1,350	26,437	5,793	73	0	1,975	603	99	44,356
1982	654	3,323	3,582	1,605	18,291	6,545	642	70	0	366	229	894	36,201
1983	557	527	716	500	3,358	3,263	147	148	0	0	0	0	9,216
1984	2	209	6,528	111	0	0	0	0	122	651	90	4,438	12,151
1985	3,016	3,553	6,441	14,477	1,688	0	0	354	0	3,835	0	1,177	34,541
1986	834	4,172	1,684	2,279	11,482	21,334	1,774	916	25,770	3,074	1,490	4,433	79,242
1987	5,683	12,885	9,228	4,419	12,989	45,963	5,531	3,086	918	1,098	403	2,708	104,912
1988	1,701	2,156	1,419	937	1,262	7,796	1,754	691	992	0	0	601	19,308
1989	1,663	5,735	13,543	8,330	49,707	44,462	4,858	1,235	1,076	773	0	1,630	133,013
1990	3,572	1,977	14,020	47,877	66,299	13,298	410	1,591	0	970	1,117	0	151,132
1991	1,658	1,287	2,078	13,620	11,497	0	1,048	3,652	0	18,407	17,435	88,462	159,144
1992	38,356	55,454	38,726	17,069	22,392	31,399	11,517	609	0	0	164	58	215,745
1993	5,678	14,407	9,542	3,855	2,051	1,770	0	0	0	156	150	38	37,647
1994	589	2,948	1,918	1,228	2,388	3,085	1,292	507	89	4,131	12,456	7,396	38,027
1995	7,625	2,066	28,228	11,616	25,946	17,581	1,886	29	3,536	16	22	313	98,864
1996	1,232	202	1,188	1,459	664	1,343	476	3,198	1,157	492	1,590	0	13,001
1997	1,277	29,162	13,177	15,263	18,757	8,001	0	0	134	354	41	9,876	96,041
1998	19,610	21,243	44,172	4,593	5,374	2,108	1,764	2,320	2,141	0	15,577	7,491	126,393
1999	2,255	1,824	1,022	1,672	501	0	0	0	0	0	0	97	7,371
2000	146	599	452	189	468	32,210	0	2,820	1,646	1,931	6,165	3,460	50,086
2001	6,474	19,406	32,182	0	0	819	2,945	2,966	1,429	2,197	3,789	7,886	80,092
2002	5,960	8,259	15,481	10,410	8,421	2,581	1,964	2,902	1,200	3,971	3,173	2,003	66,325
2003	0	5,671	4,054	3,006	2,719	3,403	1,057	1,450	1,234	880	2,244	1,269	26,988
2004	2,783	4,795	5,552	13,681	11,583	25,794	11,026	11,628	9,056	2,678	31,971	11,747	142,294
2005	11,339	14,583	14,645	4,575	1,827	1,059	860	2,500	2,078	0	0	0	53,467
2006	324	616	23,150	654	1,301	85	111	0	0	649	9,832	4,955	41,677
2007	11,444	2,951	41,104	3,537	42,744	50,277	39,943	5,610	11,566	1,032	682	1,188	212,078
2008	1,356	1,612	12,217	16,624	2,649	595	367	1,288	258	846	1,024	356	39,192
2009	176	737	2,987	1,887	2,722	560	0	263	16,017	35,246	6,484	4,539	71,618
2010	22,235	17,956	15,856	5,054	1,803	0	0	216	35,651	0	108	714	99,593
2011	1,259	984	381	1,023	1,418	46	122	235	166	1,764	153	2,639	10,190
2012	24,755	9,370	25,755	2,219	1,520	952	0	0	273	0	1	0	64,845
2013	585	15	595	1,443	5,736	0	127	0	496	581	410	1,606	11,594
2014	202	215	198	216	3,561	11,928	220	158	0	0	0	0	16,698
2015	774	574	4,478	30,103	138,529	16,828	835	0	136	31,265	61,206	19,324	304,052
Min	0	0	0	0	0	0	0	0	0	0	0	0	2,457
Max	38,356	55,454	54,781	62,694	138,529	52,147	39,943	12,836	35,651	47,863	61,206	88,462	304,052
Average	4,388	6,474	8,866	9,628	14,676	8,657	2,253	1,146	2,263	3,815	3,740	4,201	70,108

Appendix B - Naturalized Flows

NATURALIZED FLOW BRAQ33  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Brazos River near Aquilla  
 Gage Number 08093100

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	11,746	6,676	4,427	41,228	131,761	354,218	100,957	267,803	68,217	9,062	266,476	197,232	1,459,803
1941	58,622	282,131	165,165	292,832	1,327,583	773,405	213,978	214,894	107,647	702,082	228,190	46,163	4,412,692
1942	41,448	21,676	19,705	917,367	440,331	374,403	33,475	36,487	205,042	461,503	69,667	38,560	2,659,664
1943	22,374	25,946	65,390	85,320	52,235	95,592	14,821	3,358	16,140	5,343	2,188	5,095	393,802
1944	15,463	52,180	104,269	42,860	322,738	76,923	43,877	18,260	68,138	58,884	25,275	30,329	859,196
1945	62,140	177,421	358,784	412,950	82,789	86,820	278,759	24,987	14,612	173,287	15,092	10,735	1,698,376
1946	56,740	115,994	68,533	40,803	113,890	101,356	23,236	60,978	246,770	146,936	194,250	215,154	1,384,640
1947	63,146	33,797	69,929	62,167	484,548	82,457	15,335	12,593	18,421	43,554	17,679	95,119	998,745
1948	30,487	91,821	71,971	11,076	87,088	155,963	137,334	12,983	24,798	20,760	12,827	6,933	664,041
1949	6,293	51,556	76,255	60,823	658,075	237,978	38,993	8,144	92,814	91,817	24,547	8,884	1,356,179
1950	20,623	85,267	16,422	114,020	233,354	64,009	266,161	127,376	202,952	45,828	5,175	6,176	1,187,363
1951	2,106	14,092	9,161	1,533	137,740	253,490	24,136	26,652	31,102	3,720	5,191	9,438	518,361
1952	1,760	3,725	2,162	49,046	94,298	0	8,092	11,554	9,221	2,196	39,278	19,463	240,795
1953	8,359	2,358	15,546	18,814	139,261	0	260,986	90,426	5,343	267,289	31,526	8,479	848,387
1954	2,564	3,675	6,456	115,126	382,975	76,955	13,920	25,459	3,149	12,656	24,488	0	667,423
1955	846	11,093	19,150	23,663	346,117	242,987	64,961	33,980	336,631	521,474	17,994	6,643	1,625,539
1956	12,412	14,494	8,936	16,417	147,763	21,374	6,646	7,614	11,204	22,669	22,619	49,715	341,863
1957	4,734	242,843	26,410	733,104	2,981,239	712,033	100,498	23,570	43,713	217,096	222,614	55,837	5,363,691
1958	61,624	48,059	115,520	155,551	496,609	58,023	226,837	25,032	76,952	6,088	9,121	10,672	1,290,088
1959	3,371	14,432	14,696	22,173	56,340	200,916	138,382	32,211	10,147	679,372	29,150	77,076	1,278,266
1960	185,887	98,349	47,461	76,052	60,520	26,472	193,715	19,921	3,818	242,647	54,240	44,410	1,053,492
1961	227,212	170,116	91,001	31,417	40,428	321,883	263,648	48,539	66,298	93,980	57,938	40,746	1,453,206
1962	16,130	9,763	12,553	28,789	6,401	332,790	239,044	81,671	522,707	138,405	55,521	46,653	1,490,427
1963	16,041	12,508	20,197	137,333	131,298	210,999	20,741	1,900	12,725	21,868	46,435	5,337	637,382
1964	11,600	60,828	38,335	53,959	26,112	34,675	2,953	34,088	96,667	13,813	155,620	11,621	540,271
1965	32,470	123,612	26,578	66,126	689,887	60,831	9,441	41,017	56,896	74,190	20,064	15,935	1,217,047
1966	3,317	22,588	24,052	347,056	477,733	81,431	8,331	71,476	546,460	64,072	14,029	6,102	1,666,647
1967	9,942	10,450	15,739	62,755	41,107	139,907	170,429	34,708	63,255	15,852	10,219	19,655	594,018
1968	364,437	107,205	389,425	200,250	472,706	168,340	120,298	35,265	12,040	7,996	10,314	12,753	1,901,029
1969	11,299	25,223	165,424	211,483	826,765	97,326	27,604	21,738	158,767	60,652	54,994	91,595	1,752,870
1970	62,417	75,517	346,748	163,258	156,966	41,037	10,820	10,671	27,515	21,997	7,863	932,519	
1971	9,566	10,328	7,847	23,998	61,768	82,910	39,162	264,129	146,281	280,196	71,689	256,927	1,254,801
1972	100,622	37,934	25,997	33,335	87,300	28,675	25,528	135,769	146,632	65,405	145,608	28,390	861,195
1973	75,526	87,818	115,416	314,615	86,801	250,287	98,039	52,097	31,519	97,615	24,852	17,176	1,251,761
1974	27,965	21,853	23,721	46,762	23,035	46,906	14,203	52,163	274,861	273,803	414,201	57,329	1,276,802
1975	75,626	273,194	63,803	177,167	132,703	252,848	61,454	60,407	41,697	3,461	1,797	1,733	1,145,890
1976	16,626	24,073	14,065	78,398	150,523	49,170	80,306	41,625	76,855	125,250	89,281	45,525	791,697
1977	40,279	82,256	368,533	296,028	148,604	63,811	18,903	0	4,368	0	6,394	5,811	1,034,987
1978	5,625	13,605	18,681	59,281	28,588	21,663	2,459	602,598	18,453	40,357	21,859	13,679	846,848
1979	21,338	26,230	176,345	131,746	438,404	158,673	41,423	35,664	15,979	22,204	2,106	24,177	1,094,289
1980	16,869	22,830	9,331	24,625	197,602	49,431	10,485	6,016	120,986	275,335	24,001	50,178	807,689
1981	14,192	16,531	89,040	93,001	50,910	279,186	27,189	34,137	15,144	1,088,921	162,659	28,488	1,899,398
1982	18,461	50,230	53,399	32,285	786,567	858,006	318,442	27,252	1,993	2,163	0	8,614	2,157,412
1983	0	23,326	32,028	19,278	143,813	44,816	11,691	2,496	1,302	89,373	23,179	0	391,302
1984	26,305	16,290	32,105	2,907	0	9,782	1,356	3,440	4,377	137,063	73,270	127,681	434,576
1985	141,753	72,603	166,950	187,178	182,099	139,139	41,668	17,387	11,703	149,084	23,573	9,917	1,143,054
1986	6,942	39,379	19,254	22,306	75,198	315,004	77,392	24,008	222,847	385,653	115,364	121,758	1,425,105
1987	104,803	187,746	267,429	95,124	243,949	572,096	82,855	24,331	19,062	6,923	8,577	41,071	1,653,966
1988	27,908	19,021	15,341	12,682	13,322	82,500	33,573	3,957	60,329	3,576	0	10,322	282,531
1989	14,335	72,510	111,597	61,746	734,400	646,299	30,350	48,382	113,973	16,935	5,019	8,426	1,863,612
1990	35,668	46,435	260,786	1,103,703	1,156,101	362,711	21,238	62,031	93,694	30,341	27,292	12,051	3,212,051
1991	57,634	34,407	21,858	82,309	185,937	491,671	52,964	122,744	94,884	370,418	202,431	1,295,910	3,013,167
1992	367,692	875,261	568,397	135,364	190,886	622,923	141,059	48,407	41,073	10,163	23,850	54,913	3,079,988
1993	42,288	161,456	184,979	90,935	71,791	79,402	15,926	22,418	25,748	143,416	16,689	28,231	883,279
1994	22,993	33,070	43,002	18,900	429,624	62,029	41,350	17,135	42,406	128,046	156,554	90,639	1,085,748
1995	65,057	23,929	134,174	108,485	307,859	255,802	68,419	360,055	93,732	17,239	8,394	15,089	1,458,234
1996	13,209	23,598	13,304	30,238	11,043	29,905	13,005	114,787	358,383	81,279	147,240	110,000	945,991
1997	36,700	685,791	356,584	309,263	307,574	242,383	101,728	36,157	15,075	3,292	3,853	53,521	2,151,921
1998	91,251	94,920	508,251	41,701	26,714	15,555	22,937	12,756	15,747	387	34,544	39,064	903,827
1999	18,376	13,959	88,687	36,005	52,908	148,816	7,290	0	0	0	0	1,899	367,940
2000	4,188	6,050	51,872	21,924	17,812	251,579	15,982	12,260	7,157	24,568	94,463	27,647	535,502
2001	66,951	389,445	483,886	97,766	62,322	15,946	12,825	15,754	11,033	17,394	31,322	43,076	1,247,720
2002	32,868	40,779	160,769	158,596	112,104	43,792	103,857	23,675	5,218	42,122	31,199	26,324	781,303
2003	8,653	37,499	39,270	22,965	13,952	107,381	13,885	6,304	21,089	10,625	15,173	7,909	304,705
2004	13,832	51,797	74,068	102,542	80,412	267,987	150,124	166,148	55,447	44,634	407,108	124,191	1,538,290
2005	93,004	99,029	121,630	38,355	20,210	33,705	6,886	324,319	53,980	28,825	9,727	13,377	843,047
2006	13,241	15,632	77,425	27,750	129,259	15,871	3,657	4,597	5,512	63,171	39,052	17,410	412,577
2007	30,895	17,546	217,877	222,355	474,870	1,143,727	818,603	202,028	115,644	24,921	11,623	16,615	3,296,704
2008	16,341	26,733	171,886	217,950	79,963	37,889	4,706	28,681	37,201	20,465	18,685	8,344	668,844
2009	10,088	14,075	20,733	21,269	20,367	30,774	29,972	28,897	56,401	238,137	56,378	38,276	565,367
2010	130,413	284,710	186,127	409,164	154,177	26,450	134,455	29,307	200,055	40,508	18,647	13,368	1,627,381
2011	9,629	11,519	11,713	23,378	13,696	5,365	2,448	5,170	8,402	70,346	8,868	16,578	187,112
2012	270,831	86,832	263,488	31,334	3,031	27,283	1,247	19,951	55,637	18,333	3,148	85	781,200
2013	15,086	2,737	9,720	17,404	9,027	24,333	47,965	5,295	8,660	7,168	0	12,428	159,823
2014	859	6,024	4,545	2,113	18,154	127,903	18,021	5,114	21,809	13,684	6,227	6,144	230,597
2015	10,620	7,845	30,933	136,898	1,242,423	640,564	208,						

Appendix B - Naturalized Flows

NATURALIZED FLOW AQQA34  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Aquilla Creek near Aquilla  
 Gage Number 08093500

Gage Name Aquilla Creek above Aquilla  
 Gage Number 08093360

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	0	60	0	20,495	1,044	16,796	13,809	0	0	0	35,234	26,228	113,666
1941	8,222	35,990	9,688	39,854	24,917	25,249	15,288	2,799	48	5,145	728	1,587	169,515
1942	1,034	764	1,188	88,899	20,117	14,300	1,698	3,267	21,517	10,921	3,980	4,252	171,937
1943	1,943	1,117	2,677	9,774	22,345	1,353	13	0	1,777	615	0	208	41,822
1944	2,518	10,688	5,511	10,043	82,956	5,240	82	0	0	140	349	9,423	126,950
1945	18,218	35,097	44,007	49,884	2,669	15,828	36,730	272	41	183	1,408	117	204,454
1946	4,446	12,168	17,381	11,030	23,748	6,551	21	0	298	5	1,866	6,653	84,167
1947	12,267	2,864	6,551	19,669	6,497	2,906	0	0	108	0	0	1,298	52,160
1948	670	1,187	1,185	1,838	17,469	1,733	6,603	0	0	0	0	0	30,685
1949	3,354	2,978	2,557	8,030	9,752	4,789	448	241	0	0	0	0	32,149
1950	0	9,279	593	9,580	2,426	57	953	0	2,622	0	0	0	25,510
1951	0	10	0	1,825	742	29,094	0	0	1,592	0	0	0	33,263
1952	0	680	271	22,567	19,802	283	0	0	0	0	5,375	22,866	71,844
1953	1,377	429	4,664	9,081	24,140	0	148	382	1,815	496	300	76	42,908
1954	45	0	0	393	5,937	0	0	0	0	4,828	1,334	0	12,537
1955	0	1,224	1,421	724	8,462	3,301	293	775	0	0	0	0	16,200
1956	0	1	0	855	12,146	0	0	0	0	880	1,402	134	15,418
1957	11	602	428	72,085	38,813	6,692	179	0	0	17,158	14,228	2,009	152,205
1958	3,026	2,440	11,296	19,816	64,835	250	2,775	1,220	2,568	0	11	29	108,266
1959	28	3,974	595	5,843	18,827	26,043	1,628	1	191	21,962	731	9,070	88,893
1960	20,131	3,941	1,880	5,614	11,868	5,707	177	91	0	837	0	28,956	79,202
1961	54,695	36,397	7,981	2,272	1,334	25,987	21,023	215	763	1,918	20,895	10,046	183,526
1962	1,841	2,094	1,066	2,436	3,608	28,547	412	17	3,472	13,813	275	937	58,518
1963	644	298	238	988	1,397	0	0	0	0	0	0	0	3,565
1964	130	68	1,314	338	0	0	0	0	4,813	0	12,889	58	19,610
1965	3,169	14,810	1,097	608	72,933	987	0	0	164	53	1,648	275	95,744
1966	183	1,070	744	71,450	23,351	605	17	1,915	493	0	0	0	99,828
1967	0	0	108	6,519	3,623	3,695	1,675	0	621	25,017	4,477	5,327	51,062
1968	23,788	7,073	24,650	12,512	123,995	11,730	569	0	105	1,194	2,374	3,930	211,920
1969	303	3,214	12,566	3,878	75,769	444	0	0	8	108	0	811	97,101
1970	203	9,827	21,868	4,009	1,728	165	0	0	189	14,981	480	187	53,637
1971	106	982	73	83	12,708	353	1,365	613	1,505	45,853	2,091	30,261	95,993
1972	9,199	2,608	2,370	1,243	6,781	94	7,817	93	680	5,321	2,015	316	38,537
1973	11,037	5,618	19,075	52,432	8,431	52,546	15,095	312	9,669	31,197	3,380	1,421	210,213
1974	2,241	2,308	873	394	2,409	6,004	25	4,985	14,276	23,864	19,674	4,690	81,743
1975	5,796	27,774	7,335	35,649	58,097	3,116	257	19	31	0	0	39	138,113
1976	35	58	742	20,854	20,198	14,662	47,498	132	992	2,661	364	7,175	115,371
1977	3,365	19,938	33,138	66,321	3,359	830	191	0	259	0	0	0	127,401
1978	0	1,206	912	1,018	4,487	0	0	0	0	0	0	31	7,654
1979	311	1,387	17,462	8,512	40,835	17,801	1,411	638	0	31	0	546	88,934
1980	5,223	2,386	1,227	17,881	30,233	34	0	0	118	29	38	943	58,112
1981	155	102	2,315	580	3,012	86,667	1,440	0	209	1,101	188	148	95,917
1982	82	1,165	1,885	440	18,422	11,801	828	0	0	0	0	380	35,003
1983	206	8,323	7,694	379	1,030	815	916	841	911	868	555	0	22,538
1984	212	233	7,957	330	0	0	0	0	0	15,832	2,015	19,064	45,643
1985	12,298	6,983	17,591	2,605	249	318	0	0	3,122	8,338	138	19,236	70,878
1986	572	8,043	884	565	7,856	26,978	1,098	0	2,211	7,417	2,547	9,292	67,463
1987	7,242	11,708	7,567	2,307	13,635	41,451	609	203	2,912	0	5,482	19,122	112,238
1988	4,111	6,842	6,704	1,718	0	2,470	0	0	795	0	816	260	23,716
1989	2,054	10,064	8,635	3,511	36,002	28,364	4,552	864	0	0	0	0	94,046
1990	8,399	16,841	29,176	40,348	20,446	0	0	0	0	0	229	0	115,439
1991	2,602	2,323	632	6,492	8,673	0	176	11,229	432	28,880	2,718	91,490	155,647
1992	34,635	57,697	30,441	0	36,839	19,027	0	3,198	0	0	1,931	8,247	192,015
1993	2,506	27,913	14,896	6,608	7,093	7,390	729	11	0	28,170	0	1,292	96,608
1994	1,167	15,211	11,484	1,358	27,185	4,375	0	149	239	6,653	12,993	30,733	111,547
1995	10,444	2,136	28,079	49,519	75,049	20,608	6,882	3,300	1,592	6,233	0	0	203,842
1996	416	696	314	2,057	160	0	0	3,260	2,144	1,203	11,825	5,566	27,641
1997	8,672	56,505	30,873	36,144	908	2,246	233	574	0	4,779	323	51,021	192,278
1998	35,987	14,936	30,084	1,715	51	0	1,134	0	0	4,354	22,606	37,676	148,543
1999	6,921	2,132	1,926	4,084	889	570	0	0	0	0	0	302	16,824
2000	26	324	2,057	914	144	51,867	0	52	0	173	6,308	4,329	66,194
2001	7,682	23,612	31,609	2,073	9,539	0	1,329	0	0	3,253	5,719	20,285	105,101
2002	2,413	12,600	13,533	6,763	2,268	214	0	0	25	809	0	8,045	46,670
2003	1,102	7,032	4,368	1,071	499	103	458	298	0	9,773	0	172	24,876
2004	18,650	11,834	7,699	21,170	0	13,682	4,737	4,418	3,715	21,258	62,517	0	169,680
2005	10,186	12,993	13,819	4,814	1,308	227	0	0	0	0	0	21	43,368
2006	295	0	5,623	126	0	0	487	1,218	903	0	0	0	8,652
2007	4,050	3,820	70,119	19,292	41,123	69,891	13,240	2,445	19,927	0	0	720	244,627
2008	430	1,545	23,915	39,516	6,375	0	864	0	948	1,138	11	0	74,742
2009	0	602	12,716	9,617	2,038	0	0	0	8,838	98,641	7,989	4,783	145,224
2010	29,730	25,040	17,052	4,802	1,423	0	1,029	0	39,882	1,385	182	0	120,525
2011	2,241	1,690	1,056	848	222	0	0	0	0	1,771	64	809	8,701
2012	21,259	10,892	38,658	4,889	146	435	0	0	0	0	0	0	76,279
2013	4,258	231	348	473	774	0	900	0	965	6,010	336	4,285	18,580
2014	0	251	838	655	8,410	12,326	0	0	79	0	0	0	22,559
2015	2,652	616	11,447	7,344	127,485	30,370	1,092	0	0	40,876	54,784	41,528	318,194
Min	0	0	0	0	0	0	0	0	0	0	0	0	3,565
Max	54,695	57,697	70,119	88,899	127,485	86,667	47,498	11,229	39,882	98,641	62,517	91,490	318,194
Average	5,832	8,257	10,010	13,190	18,079	10,079	2,907	659	2,113	6,949	4,471	7,351	89,896

Appendix B - Naturalized Flows

NATURALIZED FLOW NBH35  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name North Bosque River at Hico  
 Gage Number 08094800

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	26	28	10	1,632	363	6,138	231	326	56	0	12,565	10,891	32,266
1941	3,991	20,719	10,354	19,780	26,231	16,758	8,555	12,818	1,065	3,149	1,015	1,161	125,595
1942	763	567	490	25,202	17,361	22,727	1,744	1,510	16,609	15,743	3,729	3,296	109,741
1943	1,974	1,197	1,946	2,101	4,021	675	259	26	1,159	66	15	181	13,619
1944	1,610	4,466	2,972	3,356	17,928	1,863	335	190	377	632	267	1,339	35,332
1945	5,190	10,044	18,117	29,206	5,773	7,589	15,278	840	545	3,632	836	631	97,679
1946	1,571	5,226	8,814	3,499	9,529	3,150	360	174	1,481	317	4,001	1,782	39,903
1947	2,546	1,494	4,689	2,848	2,150	322	69	55	95	64	93	1,217	15,642
1948	581	9,421	1,917	486	5,434	3,097	1,926	176	782	41	44	271	24,177
1949	297	1,319	1,444	5,435	9,860	1,258	253	28	48	884	68	291	21,184
1950	418	3,748	549	1,334	698	570	2,759	50	5,692	195	111	134	16,257
1951	114	186	120	365	1,073	2,012	13	0	0	0	0	0	3,882
1952	0	0	0	3,912	10,301	435	9	0	0	0	1,344	418	16,419
1953	258	109	535	501	3,844	27	193	125	200	644	39	26	6,501
1954	27	25	13	601	262	834	0	0	0	569	380	0	2,711
1955	0	41	49	533	8,521	1,499	75	0	2,102	251	0	0	13,072
1956	0	101	0	230	12,908	52	0	0	0	0	133	356	13,779
1957	0	18	209	55,603	40,344	3,440	714	71	22	4,954	6,708	2,573	114,653
1958	4,233	4,196	7,121	7,303	20,850	1,174	3,802	183	193	162	138	180	49,531
1959	167	261	100	294	213	3,180	2,298	139	509	22,084	1,734	3,132	34,109
1960	11,544	4,814	2,884	3,008	2,841	649	632	215	63	371	136	2,739	29,894
1961	20,016	17,352	4,869	2,173	1,363	5,589	4,387	493	676	11,905	2,414	2,738	73,973
1962	402	312	213	586	0	486	79	0	3,591	7,316	306	99	13,390
1963	49	6	13	1,188	3,909	2,565	14	0	0	0	856	0	8,600
1964	1,558	1,257	964	8,167	267	0	1	369	10,347	1,791	7,984	276	32,981
1965	771	7,478	861	726	34,331	1,558	158	255	0	281	263	53	46,735
1966	65	771	11	4,976	6,180	3,694	468	1,523	2,796	289	271	137	21,181
1967	147	97	118	316	413	19	582	42	434	0	12	0	2,180
1968	19,899	2,865	21,001	6,705	31,523	2,703	2,457	2,284	273	185	173	136	90,204
1969	163	166	977	6,678	12,904	993	5,206	1,743	78	4,222	623	3,008	36,761
1970	2,332	6,156	18,508	9,704	10,635	7,203	760	414	2,538	805	319	349	59,723
1971	230	242	163	179	4,181	1,366	824	635	166	9,352	741	10,653	28,732
1972	3,270	970	663	2,531	2,588	377	2,511	523	263	345	132	129	14,302
1973	414	1,468	2,464	29,982	4,351	3,739	3,366	907	314	5,942	369	300	53,616
1974	470	181	147	158	234	195	242	194	2,178	4,175	3,785	885	12,844
1975	843	6,122	1,607	8,349	1,754	908	467	365	173	0	0	70	20,658
1976	0	0	0	1,883	3,557	3,046	1,144	626	568	1,858	286	648	13,616
1977	297	608	15,944	25,895	26,254	1,918	686	571	267	20	147	167	72,774
1978	126	142	82	100	2,167	602	12	0	126	0	0	0	3,357
1979	867	114	997	1,376	23,343	809	402	628	63	0	0	165	28,764
1980	300	141	151	334	3,826	56	138	171	9	0	0	0	5,126
1981	0	0	0	0	0	1,408	519	88	0	1,431	543	0	3,989
1982	50	169	131	7	7,502	7,924	1,411	280	47	0	55	115	17,691
1983	62	94	304	194	1,929	2,141	246	93	0	405	0	67	5,535
1984	18	220	2,772	108	145	11	128	59	0	1,836	126	2,171	7,594
1985	1,948	540	1,801	3,166	4,019	3,771	406	57	28	1,552	23	0	17,311
1986	0	64	35	154	8,238	43,903	615	243	7,408	641	482	1,112	62,895
1987	1,535	6,064	7,841	2,348	25,399	24,808	3,315	697	368	175	191	173	72,914
1988	138	130	71	63	154	10,806	542	69	3	483	300	63	12,822
1989	388	2,702	12,693	8,455	32,440	36,135	1,764	5,946	1,692	397	223	207	103,042
1990	329	333	4,321	29,987	47,073	3,429	959	1,611	275	127	256	312	89,012
1991	483	249	185	754	2,933	1,513	599	13,582	8,089	21,240	11,067	78,927	139,621
1992	24,965	43,107	12,871	5,262	6,652	8,430	2,087	1,196	1,923	152	2,000	5,568	114,213
1993	4,290	16,971	11,130	7,738	2,749	4,669	1,042	327	1,871	5,769	653	325	57,534
1994	913	1,476	1,057	4,280	45,165	5,153	1,569	594	1,987	3,437	8,449	5,850	79,930
1995	5,548	3,240	6,050	8,254	18,156	11,617	3,254	33,972	2,814	873	952	483	95,213
1996	308	200	186	715	525	3,609	483	13,640	15,696	4,084	8,149	4,888	52,483
1997	2,590	66,529	62,440	28,140	20,420	26,008	4,551	1,777	519	535	717	1,465	215,691
1998	5,420	6,835	32,524	3,700	3,327	996	451	94	33	61	2,257	480	56,178
1999	470	406	533	863	531	478	159	33	8	0	23	21	3,523
2000	13	5	0	36	5	6,755	40	3	0	218	2,415	251	9,739
2001	2,519	8,531	18,763	3,209	2,635	531	179	8	195	114	953	2,657	40,292
2002	3,595	5,189	7,935	5,606	2,640	630	1,892	175	41	327	139	720	28,888
2003	520	1,740	2,194	939	620	2,743	137	30	1,962	4,389	438	298	16,008
2004	737	2,262	2,281	11,150	11,346	16,907	2,418	7,176	665	1,061	22,662	6,744	85,406
2005	5,459	12,140	11,804	2,828	1,527	948	244	231	79	61	43	73	35,436
2006	305	269	2,460	250	599	19	24	0	0	0	0	0	3,925
2007	82	56	9,466	3,598	29,551	60,502	41,440	3,850	10,264	1,151	923	904	161,786
2008	734	706	2,256	7,044	3,332	502	177	77	64	223	195	76	15,383
2009	62	37	654	540	647	148	34	101	1,477	16,243	3,384	1,890	25,215
2010	17,539	15,431	11,378	5,269	1,710	739	1,306	287	6,104	314	270	329	60,675
2011	475	297	215	158	254	64	1	0	0	2,065	39	144	3,711
2012	10,824	6,089	13,708	1,450	1,459	470	10	0	0	0	0	0	34,008
2013	259	96	34	140	10	33	51	0	161	297	12	242	1,335
2014	93	51	30	26	753	1,535	84	0	0	0	0	10	2,581
2015	224	213	825	2,153	52,302	12,331	2,009	212	84	12,549	24,205	13,928	121,034
Min	0	0	0	0	0	0	0	0	0	0	0	0	1,335
Max	24,965	66,529	62,440	55,603	52,302	60,502	41,440	33,972	16,609	22,084	24,205	78,927	215,691
Average	2,374	4,169	4,908	5,629	9,356	5,486	1,810	1,515	1,575	2,427	1,897	2,381	43,527

Appendix B - Naturalized Flows

NATURALIZED FLOW NBCL36  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name North Bosque River near Clifton  
 Gage Number 08095000

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	104	113	39	6,528	1,452	24,553	924	1,305	225	0	50,259	43,563	129,065
1941	15,965	82,876	41,414	79,121	104,923	67,030	34,218	51,272	4,261	12,595	4,058	4,645	502,378
1942	3,052	2,266	1,961	100,808	69,445	90,906	6,977	6,041	66,437	62,973	14,917	13,182	438,965
1943	7,895	4,787	7,785	8,403	16,085	2,701	1,036	104	4,634	264	61	722	54,477
1944	6,440	17,863	11,886	13,424	71,711	7,451	1,339	758	1,508	2,527	1,066	5,354	141,327
1945	20,760	40,174	72,469	116,825	23,091	30,355	61,110	3,358	2,181	14,526	3,345	2,523	390,717
1946	6,283	20,904	35,254	13,996	38,114	12,600	1,441	696	5,923	1,267	16,005	7,128	159,611
1947	10,185	5,975	18,757	11,392	8,599	1,289	276	219	380	255	372	4,869	62,568
1948	2,323	37,685	7,669	1,943	21,736	12,389	7,705	705	3,129	165	175	1,084	96,708
1949	1,189	5,275	5,777	21,739	39,439	5,032	1,013	113	191	3,534	271	1,162	84,735
1950	1,673	14,992	2,194	5,336	2,792	2,280	11,035	201	22,768	779	442	537	65,029
1951	457	742	479	1,458	4,291	8,047	52	0	0	0	0	0	15,526
1952	0	0	0	15,649	41,204	1,739	35	0	0	0	5,377	1,672	65,676
1953	1,033	434	2,140	2,003	15,376	108	771	500	801	2,577	157	105	26,005
1954	107	99	53	2,405	1,047	3,336	0	0	0	2,275	1,521	0	10,843
1955	0	162	197	2,133	34,085	5,996	301	0	8,409	1,003	0	0	52,286
1956	0	403	0	919	51,633	206	0	0	0	0	533	1,422	55,116
1957	0	72	835	222,410	161,374	13,760	2,854	284	86	19,815	26,832	10,291	458,613
1958	16,931	16,782	28,482	29,210	83,401	4,696	15,206	730	771	647	551	718	198,125
1959	666	1,043	400	1,175	853	12,721	9,191	554	2,036	88,335	6,935	12,527	136,436
1960	46,177	19,255	11,535	12,033	11,363	2,594	2,526	858	252	1,485	543	10,956	119,577
1961	80,062	69,408	19,476	8,691	5,453	22,354	17,546	1,970	2,702	47,621	9,654	10,953	295,890
1962	6,152	4,180	4,108	6,435	4,418	5,047	1,590	317	7,972	13,361	1,615	2,033	57,228
1963	1,272	771	498	1,602	3,503	4,738	316	5	0	0	12,336	212	25,253
1964	5,994	4,903	14,513	25,213	2,559	1,367	10	108	19,857	3,757	15,050	1,721	95,052
1965	5,986	43,302	6,965	3,692	135,810	8,886	1,454	1,045	467	2,558	1,686	1,142	212,993
1966	993	2,538	1,438	45,889	31,051	13,318	922	4,313	12,035	1,595	997	1,161	116,250
1967	971	637	1,019	6,565	1,174	2,567	2,866	314	1,121	194	226	755	18,409
1968	71,052	16,840	67,801	23,363	148,201	19,393	49,094	5,432	1,756	1,174	1,800	2,079	407,985
1969	1,383	1,683	4,250	23,271	70,788	4,416	5,286	2,817	666	19,555	4,146	8,527	146,788
1970	10,285	30,110	73,544	28,141	19,439	10,905	2,035	841	11,323	3,687	1,424	1,407	193,141
1971	1,281	1,149	1,170	1,811	5,171	2,015	2,105	2,552	665	74,115	5,376	61,136	158,546
1972	21,328	7,878	4,132	4,832	5,924	1,602	3,524	1,831	1,987	3,362	1,665	1,280	59,345
1973	6,781	12,006	14,824	61,974	13,050	12,147	7,265	2,099	1,067	8,839	1,831	1,425	143,308
1974	2,948	1,965	1,482	866	929	339	273	277	11,884	11,127	15,376	6,068	53,534
1975	5,841	39,996	10,884	38,840	11,652	4,513	4,972	2,650	2,145	517	383	609	123,002
1976	474	472	456	4,341	15,454	11,722	6,192	835	2,229	3,468	1,795	3,662	51,100
1977	3,214	5,910	53,189	135,316	73,817	7,668	2,233	1,607	867	607	514	612	285,554
1978	652	966	689	790	4,808	1,206	221	81	0	38	140	141	9,732
1979	2,468	1,574	25,785	15,603	70,450	11,719	2,375	3,907	1,116	696	594	1,205	137,492
1980	2,792	1,477	1,038	1,720	10,025	1,230	410	324	1,556	352	244	743	21,911
1981	545	448	4,648	1,507	1,804	27,878	6,908	469	516	3,243	1,626	672	50,264
1982	862	2,471	5,469	3,810	46,524	18,538	5,516	671	114	145	41	349	84,510
1983	514	638	889	73	2,236	4,804	187	78	0	0	0	0	9,419
1984	49	483	6,913	372	37	0	110	58	2	4,118	594	3,716	16,452
1985	6,182	3,483	9,755	4,963	7,333	5,192	535	167	238	2,441	184	194	40,667
1986	204	754	281	265	12,657	87,904	2,702	635	26,729	4,623	3,113	10,924	150,791
1987	12,284	18,647	24,472	7,814	49,698	63,631	6,957	1,968	1,532	604	1,334	1,947	190,888
1988	1,322	1,581	1,180	776	591	50,535	909	226	2,355	1,135	332	591	61,533
1989	1,758	10,276	47,226	16,606	72,370	90,105	7,449	10,473	3,078	1,209	1,129	1,008	262,687
1990	1,465	2,481	15,299	139,046	90,803	10,319	2,556	4,068	1,066	776	1,184	758	269,821
1991	2,315	1,435	1,339	10,251	15,113	17,102	974	14,335	7,112	48,987	25,398	450,470	594,831
1992	86,105	214,690	80,679	18,349	28,069	23,968	6,233	3,436	3,509	1,192	3,619	10,423	480,272
1993	7,648	41,586	33,115	19,724	10,681	8,427	2,666	645	1,980	7,662	1,566	1,377	137,077
1994	1,640	3,393	3,276	4,831	131,288	10,643	2,873	1,246	5,688	14,024	23,120	32,226	234,248
1995	23,255	11,481	27,283	66,263	89,277	58,914	6,506	76,140	6,031	3,678	2,420	2,211	373,459
1996	1,851	1,640	1,257	2,222	590	7,214	824	28,612	21,843	7,491	17,255	16,525	107,324
1997	14,846	180,572	100,494	73,710	48,438	67,650	8,126	3,044	1,199	2,638	1,447	6,611	508,775
1998	11,699	25,298	164,702	12,681	6,368	2,732	958	566	917	611	3,550	4,559	234,641
1999	1,880	1,623	2,132	3,452	2,123	1,911	635	130	32	0	91	83	14,092
2000	52	21	0	142	20	27,019	160	11	0	870	9,659	1,003	38,957
2001	10,076	34,122	75,053	12,836	10,541	2,122	714	32	778	456	3,810	10,629	161,169
2002	14,381	20,754	31,738	22,423	10,560	2,520	7,567	700	163	1,309	557	2,878	115,550
2003	2,080	6,958	8,774	3,754	2,480	10,973	549	120	7,846	17,555	1,752	1,190	64,031
2004	2,947	9,047	9,124	44,600	45,383	67,626	9,671	28,702	2,659	4,242	90,647	26,977	341,625
2005	21,837	48,561	47,217	11,310	6,108	3,791	974	925	316	242	172	292	141,745
2006	1,218	1,074	9,839	999	2,395	77	97	0	1	0	0	0	15,700
2007	328	223	37,862	14,392	118,203	242,009	165,759	15,399	41,057	4,604	3,692	3,615	647,143
2008	2,936	2,822	9,022	28,174	13,328	2,006	709	306	254	891	779	304	61,531
2009	246	146	2,614	2,161	2,587	593	135	403	5,908	64,972	13,535	7,560	100,860
2010	70,156	61,722	45,512	21,077	6,838	2,954	5,225	1,147	24,416	1,256	1,080	1,317	242,700
2011	1,901	1,188	859	630	1,014	256	5	0	0	8,259	156	575	14,843
2012	43,295	24,354	54,831	5,798	5,836	1,879	38	0	0	0	0	0	136,031
2013	1,035	385	137	561	39	130	203	0	642	1,189	48	969	5,338
2014	370	204	121	104	3,010	6,139	336	0	0	0	0	41	10,325
2015	897	851	3,299	8,612	209,207	49,325	8,037	847	337	50,194	96,818	55,710	484,134
Min	0	0	0	73	20	0	0	0	0	0	0	0	5,338
Max	86,105	214,690	164,702	222,410	209,207	242,009	165,759	76,140	66,437	88,335	96,818	450,470	647,143
Average	9,518	16,514	18,724	22,002	32,753	18,866	7,007	3,902	4,917	8,846	6,855	11,672	161,575

Appendix B - Naturalized Flows

NATURALIZED FLOW NBVM37  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name North Bosque River At Valley Mills  
 Gage Number 08095200

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	123	134	46	7,742	1,722	29,120	1,096	1,548	267	0	59,607	51,666	153,071
1941	18,934	98,291	49,117	93,838	124,439	79,498	40,583	60,809	5,054	14,938	4,813	5,509	595,820
1942	3,620	2,687	2,326	119,558	82,362	107,815	8,275	7,165	78,794	74,686	17,692	15,634	520,612
1943	9,363	5,677	9,233	9,966	19,077	3,203	1,229	123	5,496	313	72	856	64,610
1944	7,638	21,186	14,097	15,921	85,049	8,837	1,588	899	1,788	2,997	1,264	6,350	167,614
1945	24,621	47,646	85,948	138,554	27,386	36,001	72,476	3,983	2,587	17,228	3,967	2,992	463,390
1946	7,452	24,792	41,811	16,599	45,203	14,944	1,709	825	7,025	1,503	18,982	8,454	189,299
1947	12,079	7,086	22,246	13,511	10,198	1,529	327	260	451	302	441	5,775	74,206
1948	2,755	44,694	9,095	2,304	25,779	14,693	9,138	836	3,711	196	208	1,286	114,696
1949	1,410	6,256	6,852	25,782	46,775	5,968	1,201	134	227	4,191	321	1,378	100,496
1950	1,984	17,781	2,602	6,328	3,311	2,704	13,088	238	27,003	924	524	637	77,124
1951	542	880	568	1,729	5,089	9,544	62	0	0	0	0	0	18,414
1952	0	0	0	18,560	48,868	2,062	42	0	0	0	6,377	1,983	77,892
1953	1,225	515	2,538	2,376	18,236	128	914	593	950	3,056	186	125	30,842
1954	127	117	63	2,852	1,242	3,956	0	0	0	2,698	1,804	0	12,860
1955	0	192	234	2,530	40,425	7,111	357	0	9,973	1,190	0	0	62,011
1956	0	478	0	1,090	61,237	244	0	0	0	0	632	1,686	65,368
1957	0	85	990	263,778	191,390	16,319	3,385	337	102	23,501	31,823	12,205	543,915
1958	20,080	19,903	33,780	34,643	98,914	5,569	18,034	866	914	767	653	852	234,976
1959	790	1,237	474	1,394	1,012	15,087	10,901	1,045	4,647	174,193	9,738	16,527	237,044
1960	57,584	26,898	17,111	13,192	11,967	3,597	5,735	1,415	693	4,208	1,184	20,258	163,842
1961	112,650	86,685	29,770	12,202	7,720	25,614	29,611	5,178	4,960	74,696	18,636	19,621	427,343
1962	10,707	6,998	6,322	7,426	7,214	6,851	2,621	743	13,350	12,117	2,143	2,660	79,152
1963	1,789	1,122	893	1,370	4,265	4,629	425	32	44	118	12,851	361	27,899
1964	6,203	6,318	16,158	26,593	2,604	3,440	84	1,216	27,668	4,217	24,100	3,167	121,768
1965	8,371	54,049	10,798	5,879	199,636	17,119	3,490	2,623	1,429	3,557	4,363	2,417	313,731
1966	2,137	4,393	3,337	64,292	42,880	15,997	2,092	6,685	13,336	2,459	1,686	2,101	161,395
1967	1,638	1,127	1,800	8,597	1,903	4,381	3,288	634	1,531	472	492	1,427	27,290
1968	81,604	20,644	72,632	27,872	170,610	23,163	43,787	8,523	3,723	2,397	2,744	3,003	460,702
1969	2,208	2,608	5,486	31,708	90,643	6,562	6,273	3,679	1,199	21,023	5,915	11,099	188,403
1970	12,522	32,169	84,065	31,850	22,116	13,584	2,368	1,278	13,254	4,883	1,878	1,904	221,871
1971	1,860	1,600	1,348	2,289	4,809	2,239	2,553	2,726	660	82,890	7,169	66,419	176,562
1972	24,658	9,778	5,600	5,251	7,391	2,082	4,248	1,992	2,012	3,457	1,919	1,434	69,822
1973	7,395	12,836	16,882	65,235	17,479	14,933	9,132	2,549	1,564	10,773	3,398	2,767	164,943
1974	4,073	2,938	2,383	1,513	1,455	647	488	530	18,179	13,277	20,104	8,162	73,749
1975	8,373	50,033	13,390	47,506	19,054	8,142	6,896	4,039	3,102	1,130	1,022	1,442	164,129
1976	1,229	1,009	1,125	5,607	18,749	18,321	13,281	2,100	3,318	4,317	3,137	5,306	77,499
1977	5,114	9,289	81,120	142,275	115,584	10,182	3,631	2,511	1,587	1,046	1,242	1,112	374,693
1978	1,086	1,545	1,014	1,015	5,675	1,718	243	110	49	73	629	215	13,372
1979	3,410	2,445	32,006	22,312	76,507	19,390	4,451	4,601	1,767	1,493	1,399	1,766	171,547
1980	3,346	1,932	1,712	2,567	12,792	2,066	555	514	1,836	711	522	1,564	30,117
1981	991	954	5,559	2,364	2,233	65,965	8,795	1,076	1,601	4,886	2,664	1,446	98,534
1982	1,589	3,711	9,042	5,402	51,878	21,386	6,388	972	312	369	448	762	102,259
1983	993	959	1,348	759	2,357	5,386	423	234	54	138	128	273	13,052
1984	294	729	7,806	300	136	14	101	224	0	7,757	1,344	5,108	23,813
1985	8,044	4,522	13,698	6,562	13,562	9,202	738	435	506	3,106	649	1,054	62,078
1986	1,007	2,371	851	1,114	12,919	87,269	2,792	654	20,482	5,225	4,072	11,753	150,509
1987	13,406	19,289	29,789	8,405	49,212	77,130	8,469	2,466	2,171	1,138	1,920	3,065	216,460
1988	2,088	3,171	1,858	1,241	1,006	52,233	1,509	586	3,710	1,507	634	827	70,370
1989	2,082	11,073	44,588	19,486	74,985	95,634	9,579	13,171	3,539	1,906	1,642	1,601	279,286
1990	2,113	4,004	22,247	130,600	104,797	11,500	2,094	4,988	1,696	1,189	1,742	1,367	288,337
1991	2,808	1,857	1,711	10,816	17,164	17,871	1,265	14,264	7,956	53,314	32,504	459,004	620,534
1992	107,925	296,311	130,534	30,028	37,194	39,274	10,857	4,684	4,792	1,770	4,831	12,400	680,600
1993	8,763	59,716	44,809	27,294	15,159	10,905	4,305	1,430	4,504	9,271	2,203	2,287	190,646
1994	2,866	4,750	4,574	5,049	145,140	11,440	2,720	1,280	6,185	16,140	26,048	35,392	261,584
1995	26,094	10,274	31,225	100,339	145,708	84,684	13,849	99,910	8,233	3,594	3,807	3,321	531,038
1996	2,352	2,585	1,580	2,542	1,917	11,459	1,329	34,723	32,224	9,307	22,081	24,217	146,316
1997	21,828	241,390	146,094	108,499	73,097	93,574	14,671	4,050	1,979	3,289	1,762	10,599	720,832
1998	17,234	32,123	175,981	19,552	10,142	4,355	1,833	1,262	2,438	1,609	4,537	11,372	282,438
1999	4,465	3,421	4,273	4,896	2,144	2,363	1,278	329	231	210	150	307	24,067
2000	344	258	411	427	336	29,552	207	12	0	1,974	15,919	999	50,439
2001	11,562	44,948	107,941	22,405	16,535	2,953	1,257	550	1,190	1,597	10,329	15,306	236,573
2002	17,178	28,879	37,174	27,520	11,148	3,510	8,871	1,308	748	1,813	976	4,019	143,144
2003	3,190	8,194	10,812	5,121	4,634	12,463	1,339	644	9,047	25,899	3,498	2,588	87,429
2004	5,711	14,801	16,429	55,800	58,682	79,764	14,589	31,861	4,418	6,093	118,522	34,440	441,110
2005	28,540	59,947	66,596	18,369	9,062	4,966	1,790	1,803	1,028	287	204	346	192,938
2006	1,445	1,274	11,669	1,185	2,840	91	115	0	1	0	0	0	18,620
2007	389	264	44,904	17,069	140,189	287,023	196,590	23,799	62,181	6,691	5,845	5,949	790,893
2008	4,372	3,709	13,708	32,636	19,114	2,758	1,186	803	534	1,270	1,654	586	82,330
2009	645	522	5,424	5,201	3,632	1,019	393	677	12,300	111,701	26,761	14,467	182,742
2010	97,781	98,626	57,929	26,994	9,862	4,979	8,291	2,497	36,649	2,553	1,658	2,441	350,260
2011	3,181	1,960	1,609	1,408	1,193	278	63	34	4	12,109	506	1,179	23,524
2012	47,322	27,167	65,861	7,541	6,582	2,063	320	162	140	145	221	178	157,702
2013	1,656	371	353	3,583	237	114	285	0	2,332	4,870	443	3,345	17,589
2014	764	464	522	374	4,397	8,437	662	107	83	123	147	111	16,191
2015	845	342	2,656	13,392	242,599	76,149	11,548	1,460	993	63,701	106,934	75,219	595,838
Min	0	0	0	300	136	14	0	0	0	0	0	0	12,860
Max	112,650	296,311	175,981	263,778	242,599	287,023	196,590	99,910	78,794	174,193	118,522	459,004	790,893
Average	12,139	21,460	23,797	26,709	40,402	23,510	8,818	5,076	6,559	12,349	8,979	13,677	203,476

Appendix B - Naturalized Flows

NATURALIZED FLOW **MBMG38**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Middle Bosque River near McGregor  
 Gage Number 08095300

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	170	192	173	5,371	0	9,059	6,129	0	438	362	13,622	18,790	54,307
1941	6,708	18,996	13,876	19,540	25,552	11,169	8,956	6,854	803	282	1,157	996	114,888
1942	2,600	884	863	44,087	20,981	18,704	1,678	1,753	13,857	6,381	3,307	2,940	118,033
1943	1,980	555	764	2,360	3,354	82	272	198	1,452	951	257	370	12,596
1944	1,833	6,517	5,006	5,590	42,786	4,807	888	71	69	482	422	2,278	70,750
1945	9,611	10,540	24,006	45,688	7,366	7,473	9,833	1,118	486	1,706	1,787	3,036	122,649
1946	3,453	5,987	12,818	4,537	12,289	4,505	158	0	717	361	672	1,245	46,743
1947	5,226	3,368	7,642	7,779	4,864	1,855	642	0	197	58	68	765	32,464
1948	551	1,775	1,522	1,193	4,245	590	3,053	0	529	3	0	43	13,503
1949	943	1,667	2,495	5,060	5,525	7,702	2,010	91	897	1,354	824	282	28,849
1950	632	3,555	718	2,059	1,632	1,433	184	372	3,280	853	376	164	15,258
1951	65	246	236	760	808	3,620	219	429	1,266	220	267	92	8,228
1952	84	375	183	5,860	7,841	416	28	0	224	62	2,181	4,177	21,431
1953	1,251	535	4,453	2,772	18,618	59	0	830	903	705	0	312	30,438
1954	132	79	14	385	5,124	2,917	475	2	124	1,573	489	30	11,342
1955	69	723	656	559	6,835	1,065	485	122	0	1,426	269	353	12,563
1956	0	0	0	388	10,192	324	0	0	0	384	790	292	12,369
1957	0	466	2,710	48,671	38,539	10,478	2,578	0	0	3,859	7,926	3,204	118,430
1958	3,100	5,780	6,207	4,775	24,597	1,364	2,563	2,060	1,001	573	160	169	52,349
1959	530	1,516	105	908	2,244	6,632	1,108	0	1,625	19,127	4,165	11,466	49,426
1960	16,318	7,620	3,777	1,914	1,397	233	1,003	19	9	5,217	621	22,028	60,156
1961	45,731	39,775	8,097	2,317	3,201	28,151	28,725	1,754	2,456	5,776	10,233	5,927	182,143
1962	2,539	1,763	1,337	1,224	1,237	6,420	855	14	741	0	3	365	16,498
1963	221	155	131	95	1,212	35	8	0	0	0	0	0	1,857
1964	19	337	1,359	4,173	1,763	26,448	603	222	3,620	1,219	13,331	2,604	55,698
1965	5,117	15,112	7,075	3,235	64,673	5,708	474	211	1,267	1,109	10,288	3,955	118,224
1966	2,801	4,542	4,762	16,276	10,678	2,329	400	4,178	13,486	2,473	780	428	63,133
1967	256	153	132	2,036	2,582	3,380	42	5	182	778	1,253	2,091	12,890
1968	28,887	10,032	18,492	8,620	26,612	9,293	22,584	940	1,196	719	751	2,951	131,077
1969	1,148	1,668	6,151	12,805	16,647	1,401	67	14	57	499	966	3,267	44,690
1970	1,777	4,310	21,963	4,245	4,677	2,767	185	13	459	1,266	374	221	42,257
1971	147	169	93	147	21	0	11,250	7,573	1,450	8,955	3,023	12,492	45,320
1972	7,662	3,412	1,587	433	2,941	555	2,870	5	2	1,576	1,012	692	22,747
1973	3,592	5,369	7,315	9,870	13,315	16,913	3,191	243	40	10,846	3,429	1,573	75,696
1974	984	1,034	848	696	2,535	97	14	6,329	15,868	34,324	13,216	5,474	81,419
1975	5,970	16,183	3,796	9,352	13,829	4,750	1,623	187	431	475	457	313	57,366
1976	292	180	174	3,421	6,575	10,885	46,380	1,445	1,763	6,250	3,794	11,806	92,965
1977	5,746	12,821	8,801	27,554	12,534	6,001	246	20	11	6	7	5	73,752
1978	5	59	403	310	310	37	0	1	0	0	16	136	1,277
1979	4,717	7,402	17,695	8,594	16,423	24,454	4,980	1,471	286	94	89	328	86,533
1980	2,188	2,989	1,944	3,396	18,553	1,508	61	14	8	5	4	41	30,711
1981	160	274	2,547	1,698	978	35,950	2,865	285	521	1,257	1,555	870	48,960
1982	594	889	5,784	3,554	5,217	1,156	230	13	3	152	249	348	18,189
1983	889	10,977	11,583	2,878	1,003	293	53	52	2	13	19	8	27,770
1984	8	0	591	66	9	5	0	0	0	8,475	2,727	8,686	20,567
1985	6,827	3,433	10,114	5,092	1,626	1,876	494	25	567	5,159	2,099	9,475	46,787
1986	1,810	9,722	1,641	1,542	6,414	21,644	2,378	459	4,357	0	2,048	5,339	57,355
1987	180	159	6,918	1,149	5,400	11,390	649	0	873	0	141	3,505	30,364
1988	1,868	1,759	205	190	318	5,784	224	177	153	784	732	718	12,910
1989	1,168	148	192	196	20,898	171	150	156	336	156	288	172	24,031
1990	822	3,615	10,060	14,814	24,096	5,721	147	0	152	510	614	46,082	106,632
1991	233	14,896	2,095	1,511	7,267	2,903	1,662	5,837	2,186	5,470	5,996	76,944	126,999
1992	7,010	18,267	13,695	7,267	11,060	6,220	30	9	34	396	337	468	64,793
1993	474	2,494	2,942	1,136	10,954	944	105	0	167	745	1,919	7,099	28,979
1994	7,748	5,303	4,346	3,540	18,089	2,882	427	6,452	577	464	1,153	1,387	52,369
1995	1,240	1,316	15,768	28,143	30,213	11,893	3,580	11,500	3,306	2,070	653	0	109,682
1996	0	0	0	884	457	787	30	3,768	5,736	1,460	2,895	10,271	26,287
1997	8,574	35,917	40,968	21,513	11,752	13,348	2,693	430	0	1,466	1,169	15,990	153,819
1998	17,786	8,868	22,649	5,111	2,066	78	24	0	423	4,975	5,910	12,289	80,178
1999	5,721	2,470	1,916	2,487	1,133	419	720	1,132	0	40	0	288	16,326
2000	889	514	794	1,505	1,363	11,984	0	0	0	192	6,947	4,874	29,061
2001	9,771	14,879	31,224	8,160	6,986	851	1,294	1,999	1,434	1,395	6,634	13,996	98,622
2002	4,123	5,971	6,144	4,690	900	751	796	0	0	1,267	1,508	10,355	36,507
2003	5,497	5,845	6,262	1,426	921	2,082	1	0	1,282	6,447	224	372	30,358
2004	4,817	6,875	7,038	13,423	10,959	12,340	1,571	1,064	0	5,385	32,726	8,026	104,224
2005	8,900	11,007	11,392	3,503	1,742	1,195	668	1,203	291	255	193	0	40,348
2006	694	287	1,866	8	1,081	0	0	0	0	94	0	204	4,233
2007	1,644	846	26,737	7,198	36,825	44,176	22,418	3,418	8,513	533	384	557	153,248
2008	382	241	4,058	1,989	8,208	553	68	180	39	4,406	564	324	21,012
2009	200	278	5,577	3,060	3,826	480	126	2	8,297	51,991	8,997	5,421	88,255
2010	22,139	22,901	18,038	6,385	2,047	384	349	10	19,467	926	368	301	93,315
2011	1,927	2,110	1,232	359	25	0	0	0	0	15	1	524	6,193
2012	3,566	6,254	21,257	3,981	871	190	23	4	6	2	11	6	36,171
2013	432	263	319	246	154	29	8	0	307	13,202	5,365	5,185	25,510
2014	2,511	1,085	649	372	1,328	14,452	1,523	94	22	2,607	1,855	1,105	27,603
2015	2,763	2,083	6,619	6,464	33,172	8,531	1,270	62	8	9,911	20,392	16,721	107,996
Min	0	0	0	8	0	0	0	0	0	0	0	0	1,277
Max	45,731	39,775	40,968	48,671	64,673	44,176	46,380	11,500	19,467	51,991	32,726	76,944	182,143
Average	4,058	5,274	6,626	6,508	9,664	6,146	2,808	1,012	1,714	3,349	2,882	5,205	55,246

Appendix B - Naturalized Flows

NATURALIZED FLOW **HGCR39**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Hog Creek near Crawford  
 Gage Number 08095400

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	86	97	87	2,716	0	4,581	3,099	0	222	183	6,887	9,501	27,459
1941	3,392	9,605	7,016	9,880	12,919	5,647	4,528	3,466	406	142	585	503	58,089
1942	1,314	447	436	22,291	10,608	9,457	849	886	7,006	3,226	1,672	1,486	59,680
1943	1,001	281	386	1,193	1,696	41	138	100	734	481	130	187	6,369
1944	927	3,295	2,531	2,826	21,633	2,431	449	36	35	244	214	1,152	35,772
1945	4,859	5,329	12,138	23,101	3,725	3,778	4,972	565	246	862	904	1,535	62,014
1946	1,746	3,027	6,481	2,294	6,214	2,278	80	0	362	183	340	630	23,634
1947	2,643	1,703	3,864	3,933	2,459	938	324	0	100	29	34	387	16,414
1948	279	897	770	603	2,146	298	1,544	0	267	1	0	22	6,828
1949	477	843	1,262	2,558	2,794	3,894	1,016	46	453	684	417	143	14,587
1950	320	1,798	363	1,041	825	725	93	188	1,658	431	190	83	7,715
1951	33	124	119	384	408	1,830	111	217	640	111	135	46	4,160
1952	42	189	92	2,963	3,964	210	14	0	113	31	1,103	2,112	10,836
1953	633	271	2,252	1,402	9,414	30	0	420	457	356	0	158	15,390
1954	67	40	7	195	2,591	1,475	240	1	63	795	247	15	5,735
1955	35	365	332	283	3,456	539	245	62	0	721	136	179	6,352
1956	0	0	0	196	5,153	164	0	0	0	194	399	148	6,254
1957	0	236	1,370	24,609	19,486	5,298	1,303	0	0	1,951	4,008	1,620	59,880
1958	1,567	2,923	3,138	2,414	12,437	690	1,296	1,042	506	290	81	85	26,469
1959	268	767	53	459	1,135	3,353	560	166	1,018	17,220	1,373	2,965	29,337
1960	6,452	3,193	1,603	847	463	62	1,479	135	21	1,512	166	10,663	26,596
1961	22,124	14,267	3,636	938	406	11,320	6,246	571	984	6,585	7,503	3,832	78,412
1962	1,343	1,031	845	1,594	933	1,248	282	13	1,487	10	18	34	8,838
1963	58	60	21	70	936	20	3	1	1	589	5	11	1,775
1964	136	304	1,113	2,360	670	5,911	200	66	2,515	513	8,009	1,261	23,058
1965	2,444	7,662	2,174	1,061	29,281	2,589	265	48	82	61	2,402	1,013	49,082
1966	805	1,684	1,747	11,232	4,252	1,240	217	403	1,493	421	181	111	23,786
1967	69	44	37	1,679	725	2,994	83	12	60	360	470	819	7,352
1968	12,732	4,223	7,410	3,618	10,517	1,715	9,626	424	217	114	136	703	51,435
1969	362	514	2,293	7,678	9,658	614	53	20	19	29	69	346	21,655
1970	360	1,598	8,485	1,666	1,255	570	69	18	269	687	156	86	15,219
1971	62	46	34	71	12	7	609	1,891	264	5,080	891	4,889	13,856
1972	2,422	1,240	610	241	710	407	2,976	34	9	612	275	217	9,753
1973	1,257	1,813	2,767	4,739	5,760	7,190	2,172	198	55	5,942	1,797	867	34,557
1974	520	429	378	305	517	43	8	361	7,577	12,940	5,330	2,331	30,739
1975	2,535	7,488	1,708	5,722	7,718	1,849	521	71	176	68	59	49	27,964
1976	33	22	21	1,354	2,517	5,788	12,906	683	2,348	1,622	1,317	3,080	31,691
1977	2,372	4,697	3,749	17,576	9,041	1,417	137	28	9	8	14	16	39,064
1978	14	27	124	71	140	23	6	3	1	1	7	25	442
1979	1,224	2,350	7,020	3,310	4,185	8,287	1,559	1,030	111	38	30	72	29,216
1980	305	572	450	698	3,300	1,104	43	9	4	4	6	20	6,515
1981	22	21	791	546	381	23,383	1,256	83	184	392	438	211	27,708
1982	158	310	2,602	1,406	2,065	582	127	12	4	2	9	27	7,304
1983	51	1,544	2,100	821	309	174	196	12	4	7	27	9	5,254
1984	22	10	105	15	27	11	1	0	0	1,209	492	1,884	3,776
1985	2,079	1,226	3,626	2,200	741	721	167	16	330	2,609	1,061	4,791	19,567
1986	915	4,916	830	780	3,243	10,944	1,202	232	2,203	0	1,035	2,699	29,000
1987	1,512	1,651	3,498	581	2,730	5,759	328	0	442	0	555	1,772	18,828
1988	944	117	873	350	161	2,925	113	0	248	396	120	363	6,610
1989	591	2,838	155	2,837	10,566	8,139	1,127	130	118	0	146	0	26,647
1990	415	115	5,087	159	12,183	127	253	121	269	117	310	145	19,302
1991	2,020	1,429	1,059	2,581	3,674	1,468	840	2,951	1,105	2,765	3,032	38,904	61,829
1992	14,663	22,781	9,972	3,323	5,592	3,145	0	418	231	83	998	2,430	63,637
1993	2,608	9,404	9,777	3,935	1,611	1,340	145	4	0	7	93	119	29,043
1994	787	2,681	2,198	1,790	9,146	296	361	92	3	234	252	1,343	19,183
1995	2,069	2,341	7,973	14,229	10,060	6,013	153	5,439	237	1,046	330	0	49,890
1996	0	0	0	447	231	398	15	1,905	2,900	738	1,464	5,193	13,291
1997	4,335	18,160	20,714	10,877	5,942	6,749	1,362	217	0	741	591	8,085	77,774
1998	8,993	4,484	11,452	2,584	1,044	39	12	0	214	2,515	2,988	6,214	40,539
1999	2,892	1,249	969	1,257	573	212	364	572	0	20	0	146	8,255
2000	449	260	401	761	689	6,059	0	0	0	97	3,512	2,464	14,694
2001	4,940	7,523	15,787	4,126	3,532	430	654	1,011	725	705	3,354	7,077	49,865
2002	2,085	3,019	3,107	2,372	455	380	402	0	0	640	763	5,236	18,458
2003	2,780	2,956	3,166	721	466	1,053	0	0	648	3,260	113	188	15,350
2004	2,435	3,476	3,558	6,787	5,541	6,239	794	538	0	2,723	16,547	4,058	52,697
2005	4,500	5,565	5,760	1,771	881	604	338	608	147	129	98	0	20,401
2006	351	145	943	4	547	0	0	0	0	48	0	103	2,140
2007	831	428	13,519	3,639	18,619	22,336	11,335	1,728	4,304	479	191	264	77,674
2008	190	110	2,455	1,245	3,414	218	22	28	10	446	6	42	8,186
2009	28	36	1,027	1,149	1,535	60	27	6	478	21,439	3,098	1,874	30,757
2010	8,471	9,959	6,450	2,735	1,161	165	79	10	11,553	482	210	128	41,403
2011	651	562	316	82	1	0	0	0	0	7	4	55	1,678
2012	851	971	6,492	1,244	143	37	5	0	1	1	0	3	9,748
2013	19	31	53	31	19	2	1	0	0	2,330	704	1,811	5,001
2014	681	378	505	164	212	1,113	44	2	0	42	16	29	3,186
2015	297	368	1,753	2,518	16,304	6,123	962	10	4	7,440	7,673	7,458	50,910
Min	0	0	0	4	0	0	0	0	0	0	0	0	442
Max	22,124	22,781	20,714	24,609	29,281	23,383	12,906	5,439	11,553	21,439	16,547	38,904	78,412
Average	1,999	2,586	3,132	3,319	4,472	2,885	1,092	386	768	1,559	1,288	2,086	25,573

Appendix B - Naturalized Flows

NATURALIZED FLOW **BOWWA40**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Bosque River near Waco  
 Gage Number 08095600

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	1,166	1,315	1,182	36,755	0	61,991	41,936	0	2,999	2,477	93,211	128,574	371,605
1941	45,901	129,987	94,948	133,705	174,843	76,423	61,285	46,901	5,494	1,926	7,916	6,814	786,144
1942	17,788	6,050	5,902	301,672	143,567	127,982	11,483	11,996	94,818	43,664	22,626	20,117	807,667
1943	13,550	3,796	5,229	16,148	22,952	559	1,865	1,355	9,932	6,510	1,759	2,534	86,188
1944	12,539	44,594	34,253	38,251	292,772	32,896	6,078	487	473	3,298	2,890	15,588	484,120
1945	65,762	72,123	164,265	312,630	50,405	51,133	67,281	7,651	3,323	11,672	12,228	20,777	839,250
1946	23,626	40,968	87,711	31,047	84,091	30,826	1,081	0	4,905	2,471	4,599	8,520	319,845
1947	35,763	23,043	52,294	53,229	33,283	12,696	4,391	0	1,349	395	463	5,237	222,143
1948	3,774	12,142	10,415	8,163	29,048	4,040	20,889	0	3,619	18	0	292	92,400
1949	6,454	11,404	17,074	34,624	37,805	52,702	13,753	619	6,136	9,262	5,639	1,933	197,407
1950	4,328	24,328	4,910	14,088	11,170	9,807	1,260	2,543	22,443	5,835	2,574	1,120	104,406
1951	443	1,685	1,614	5,204	5,528	24,770	1,499	2,933	8,665	1,505	1,829	627	56,301
1952	573	2,564	1,250	40,096	53,652	2,846	193	0	1,533	426	14,926	28,584	146,645
1953	8,560	3,664	30,471	18,970	127,397	401	0	5,680	6,179	4,824	0	2,132	208,277
1954	902	540	94	2,632	35,059	19,959	3,250	11	849	10,764	3,346	206	77,613
1955	473	4,944	4,491	3,827	46,769	7,290	3,319	835	0	9,760	1,840	2,416	85,964
1956	0	0	0	2,656	69,738	2,220	0	0	0	2,625	5,403	1,996	84,639
1957	0	3,189	18,543	333,043	263,708	71,697	17,639	0	0	26,404	54,237	21,921	810,381
1958	21,211	39,553	42,470	32,675	168,309	9,334	17,539	14,097	6,849	3,923	1,094	1,155	358,209
1959	3,625	10,377	716	6,212	15,355	45,381	7,585	2,250	7,435	241,239	26,023	63,969	430,166
1960	96,185	48,628	24,531	13,186	18,821	3,232	11,885	1,352	402	20,740	3,022	90,723	332,707
1961	254,155	198,458	51,284	18,670	14,240	100,056	92,526	9,080	12,561	79,822	44,005	30,473	905,330
1962	13,854	10,393	9,088	9,345	11,769	21,352	4,986	505	15,192	14,235	1,468	2,697	114,884
1963	2,476	1,758	1,424	3,095	3,709	5,548	436	20	12	0	12,402	424	31,304
1964	5,619	8,304	20,268	35,528	7,378	60,324	685	103	34,506	3,923	45,933	8,616	231,187
1965	19,947	80,289	37,457	14,730	362,356	37,462	6,674	3,461	6,164	6,413	39,925	13,142	628,200
1966	7,829	16,789	17,218	114,055	98,001	23,476	5,425	15,354	55,780	4,852	3,815	2,712	365,306
1967	3,052	2,082	3,747	17,690	6,912	23,658	3,882	1,606	3,061	5,485	10,552	11,449	93,176
1968	156,957	67,435	119,618	63,222	255,556	57,533	96,113	12,076	6,259	6,930	7,509	17,727	866,935
1969	6,074	14,434	32,921	67,195	134,246	11,087	7,019	4,316	750	20,181	9,936	27,392	335,551
1970	21,506	46,023	144,741	49,155	33,884	24,348	3,260	1,718	20,177	9,381	3,060	3,059	360,312
1971	3,363	3,111	3,087	4,267	5,149	2,646	40,950	19,459	18,386	87,682	12,457	94,376	294,933
1972	46,057	20,789	10,675	5,481	14,792	4,217	11,214	2,307	1,658	15,229	7,809	5,414	145,642
1973	21,666	29,097	33,643	81,430	43,243	75,564	16,632	76	2,555	53,149	10,856	5,262	373,173
1974	5,893	4,795	4,986	6,059	9,768	888	713	8,093	53,719	100,956	57,898	17,977	271,745
1975	22,135	98,261	19,952	76,017	74,009	20,401	7,677	2,493	3,016	2,330	2,172	2,257	330,720
1976	1,981	1,481	1,586	20,737	39,890	46,970	94,493	3,064	11,039	25,619	10,047	32,721	289,628
1977	13,022	53,620	76,588	222,544	133,634	14,702	365	0	0	653	643	834	516,605
1978	1,536	3,709	5,009	3,288	8,536	1,915	0	331	0	222	1,655	974	27,175
1979	19,764	21,138	68,763	38,701	142,478	85,770	14,891	7,195	1,169	1,555	841	5,376	407,641
1980	9,061	13,410	7,586	12,614	54,099	6,574	859	383	3,189	23	223	1,896	109,917
1981	556	1,652	11,074	6,827	4,458	152,542	13,281	1,620	605	8,444	5,995	2,682	209,736
1982	3,121	6,073	20,300	27,855	77,512	25,058	7,192	1,039	331	746	1,063	1,631	171,921
1983	3,175	27,862	29,914	7,977	4,948	6,325	634	371	62	176	187	304	81,936
1984	331	756	9,513	473	172	30	105	231	0	28,761	8,102	26,773	75,247
1985	25,415	13,337	39,685	19,768	18,164	14,255	2,006	515	2,000	35,303	14,365	64,834	249,648
1986	12,388	66,527	11,228	10,552	43,890	148,106	16,272	3,143	29,816	0	14,013	36,530	392,466
1987	20,464	22,348	47,337	7,861	36,952	77,938	4,439	0	5,976	0	7,506	23,986	254,807
1988	12,780	12,033	11,817	4,743	2,173	39,578	1,529	0	3,356	5,364	5,007	4,910	103,292
1989	7,993	38,409	52,424	38,396	142,999	110,147	15,258	16,900	2,301	0	1,969	0	426,796
1990	5,623	24,738	68,839	101,367	164,880	39,144	3,423	0	3,641	3,491	4,200	1,960	421,307
1991	27,338	19,334	14,337	34,931	49,726	19,861	11,374	39,940	14,959	37,426	41,027	526,506	836,758
1992	198,444	308,304	134,960	44,977	75,679	42,560	0	5,658	3,129	1,117	13,507	32,882	861,216
1993	18,545	87,879	74,908	35,248	21,804	18,129	5,670	0	0	25,566	2,025	1,610	291,386
1994	10,646	36,284	29,740	24,226	123,780	31,678	0	0	7,339	22,513	40,358	97,016	423,579
1995	70,241	31,675	107,898	192,572	206,738	81,379	24,498	78,692	22,623	14,163	4,466	0	834,945
1996	0	0	0	6,047	3,129	5,382	203	25,785	39,250	9,991	19,807	70,281	179,875
1997	58,669	245,769	280,332	147,206	80,417	91,336	18,426	2,940	0	10,028	8,001	109,415	1,052,539
1998	121,708	60,678	154,981	34,970	14,134	532	162	0	2,892	34,043	40,439	84,093	548,633
1999	39,144	16,904	13,109	17,017	7,756	2,867	4,925	7,743	0	276	0	1,973	111,714
2000	6,082	3,520	5,431	10,298	9,324	82,003	0	0	0	1,313	47,535	33,350	198,855
2001	66,857	101,812	213,654	55,837	47,802	5,823	8,852	13,680	9,816	9,548	45,394	95,770	674,844
2002	28,216	40,859	42,043	32,095	6,159	5,142	5,445	0	0	8,668	10,321	70,857	249,805
2003	37,617	39,999	42,848	9,757	6,300	14,248	4	0	8,771	44,112	1,533	2,542	207,730
2004	32,959	47,042	48,157	91,853	74,989	84,438	10,747	7,279	0	36,849	223,936	54,921	713,171
2005	60,897	75,317	77,950	23,968	11,919	8,175	4,568	8,234	1,991	1,744	1,324	0	276,087
2006	4,746	1,963	12,768	52	7,397	0	0	0	0	646	0	1,395	28,967
2007	11,248	5,791	182,953	49,252	251,980	302,283	153,397	23,390	58,249	8,356	7,023	7,571	1,061,493
2008	5,497	4,446	24,757	38,906	40,631	4,251	1,395	1,271	648	12,035	3,062	1,397	138,297
2009	1,155	1,218	19,339	13,116	13,471	2,224	717	706	32,764	247,624	50,305	28,602	411,242
2010	157,053	160,282	105,356	44,153	15,503	6,120	9,425	2,605	88,630	5,028	2,669	3,287	600,112
2011	8,137	7,283	4,728	2,344	1,292	287	65	35	4	12,540	526	2,493	39,734
2012	57,709	43,389	121,279	17,774	8,935	2,599	387	177	159	155	255	199	253,017
2013	2,752	1,025	1,148	4,300	621	188	314	0	3,144	37,515	13,573	16,531	81,110
2014	7,052	3,215	2,275	1,337	7,799	43,761	4,351	337	138	6,393	4,606	2,775	84,039
2015	7,604	5,479	19,238	30,223	335,808	101,253	15,310	1,660	1,046	92,180	162,029	120,407	892,236
Min	0	0	0	52	0	0	0	0	0	0	0	0	27,175
Max	254,155	308,304	280,332	333,043	362,356	302,283	153,397	78,692	94,818	247,624	223,936	526,506	1,061,493
Average	28,036	36,098	43,531	45,933	66,542	37,399	13,781	5,714	10,266	21,191	17,828	29,467	355,787

Appendix B - Naturalized Flows

NATURALIZED FLOW BRWA41  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Brazos River at Waco  
 Gage Number 08096500

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	13,511	8,751	6,311	101,058	122,519	451,522	168,538	255,025	72,277	13,015	416,155	405,857	2,034,539
1941	133,251	492,000	318,981	508,670	1,597,861	889,095	311,899	289,184	115,304	696,350	238,298	56,767	5,647,660
1942	70,132	31,336	29,147	1,401,100	670,494	579,811	51,907	55,723	358,139	527,354	105,937	71,104	3,952,184
1943	44,340	31,851	73,147	110,754	89,262	95,298	17,695	5,540	32,245	15,965	5,048	9,192	530,337
1944	35,857	124,744	159,193	105,126	799,391	129,965	53,302	18,829	68,051	63,554	29,701	55,540	1,643,253
1945	169,336	293,601	623,968	921,067	164,507	169,682	385,705	37,233	19,884	190,258	34,980	44,715	3,054,936
1946	94,816	181,795	211,690	91,267	250,528	150,689	24,717	58,841	251,697	149,131	199,340	226,418	1,890,929
1947	121,070	71,206	154,912	148,784	533,060	102,259	22,351	11,410	20,402	43,651	18,216	102,513	1,349,834
1948	36,297	110,596	88,161	24,339	133,683	160,620	169,895	10,027	30,427	20,527	12,101	7,324	803,997
1949	16,811	69,629	103,325	116,907	711,815	321,502	61,082	9,058	101,714	105,862	33,496	11,945	1,663,146
1950	27,468	124,134	24,277	135,709	248,739	79,302	264,857	129,938	237,233	54,828	9,336	7,937	1,343,758
1951	2,807	16,680	11,695	10,058	145,072	290,951	26,291	31,130	44,937	6,144	8,128	10,348	604,241
1952	2,679	7,888	4,187	114,264	181,202	4,674	8,307	7,541	11,621	2,868	63,290	66,153	474,674
1953	22,309	8,344	65,384	49,725	346,687	658	257,207	98,607	15,421	271,823	29,943	11,873	1,177,981
1954	4,012	4,515	6,528	117,990	435,691	108,754	19,080	25,155	4,504	30,170	29,672	339	786,410
1955	1,612	19,071	26,282	29,648	418,528	251,878	69,588	34,920	318,764	530,893	20,788	10,526	1,732,498
1956	11,472	11,813	8,006	20,571	260,403	24,749	1,858	6,619	9,965	26,692	31,205	52,363	465,716
1957	3,483	245,003	56,524	1,270,684	3,376,485	820,741	128,189	23,015	31,869	257,701	308,852	91,125	6,613,671
1958	95,673	112,397	183,794	207,233	766,686	72,614	252,762	47,863	87,224	12,452	10,802	12,434	1,861,934
1959	9,281	31,288	15,685	32,092	80,840	272,887	149,083	35,498	16,332	940,385	57,196	144,050	1,784,617
1960	330,275	154,751	83,972	97,134	99,926	39,077	205,696	22,776	4,688	264,411	68,642	192,364	1,563,712
1961	569,683	424,506	156,875	54,263	56,062	484,934	403,672	67,637	82,401	165,966	139,137	108,420	2,713,556
1962	45,581	29,281	33,000	48,551	33,921	410,456	239,290	115,982	554,450	165,200	59,877	66,017	1,801,606
1963	24,652	17,881	23,959	140,079	133,050	21,550	23,618	0	6,964	19,390	59,273	5,920	668,336
1964	19,843	72,007	66,433	92,482	35,696	99,403	6,707	31,985	142,709	15,875	224,565	25,200	832,905
1965	66,295	246,828	81,367	81,729	1,220,316	118,841	20,771	43,436	59,297	73,863	63,809	30,069	2,106,621
1966	10,374	44,689	46,120	569,538	680,920	113,837	35,109	100,584	619,620	98,012	34,137	17,952	2,370,892
1967	15,551	13,758	20,187	94,040	55,008	194,196	166,587	37,344	66,042	66,191	35,471	41,289	805,664
1968	578,887	189,354	574,447	306,677	919,100	249,614	227,614	51,313	23,272	20,152	19,894	35,462	3,195,786
1969	23,923	43,026	212,274	293,027	1,148,067	131,668	44,874	41,169	155,348	87,236	64,356	124,876	2,369,844
1970	93,143	129,342	553,969	222,930	202,016	60,775	6,199	9,244	41,546	53,912	13,753	12,781	1,399,610
1971	13,573	18,053	13,645	41,723	77,355	86,969	94,432	288,682	146,111	404,187	78,671	362,366	1,625,767
1972	147,430	61,154	31,200	46,158	122,561	38,504	34,945	130,924	138,505	86,680	162,195	44,090	1,044,346
1973	126,836	129,347	198,392	499,647	187,195	433,977	125,866	59,295	35,877	221,935	47,265	27,661	2,093,293
1974	52,972	26,028	27,132	55,440	38,405	42,590	8,813	70,812	374,049	423,610	559,597	100,490	1,779,938
1975	108,419	433,919	108,148	308,048	325,573	286,249	70,113	57,068	52,545	9,001	14,406	4,134	1,777,623
1976	11,436	21,516	18,152	142,910	219,231	132,632	285,253	37,920	100,263	165,958	96,379	111,548	1,343,198
1977	86,797	205,150	450,576	645,518	333,826	97,432	24,617	8,897	17,760	9,325	8,368	6,258	1,894,524
1978	7,479	22,674	33,817	66,443	42,198	26,715	3,940	600,279	24,761	28,105	17,598	8,752	882,761
1979	50,578	55,002	276,978	182,193	641,949	293,722	64,130	40,802	13,017	21,506	0	29,431	1,669,308
1980	59,915	56,220	25,129	82,858	312,879	52,285	7,002	1,770	116,136	270,537	17,054	52,978	1,054,763
1981	19,262	16,236	100,690	92,181	55,974	572,022	53,625	29,058	5,815	1,082,923	189,644	38,806	2,256,236
1982	26,170	48,280	91,801	47,773	797,530	909,416	399,441	38,612	4,688	4,578	20,062	21,144	2,409,495
1983	16,155	98,914	79,337	31,696	153,486	59,490	16,447	6,653	2,272	90,291	25,298	3,834	583,873
1984	36,045	18,372	57,088	13,022	12,071	17,494	5,094	11,301	10,640	215,466	92,308	235,050	723,951
1985	187,713	107,914	229,495	192,152	211,975	156,917	38,049	19,983	27,913	205,164	46,862	116,251	1,540,388
1986	27,195	148,119	37,447	39,350	146,315	554,209	103,130	28,865	268,983	374,165	136,913	180,199	2,044,890
1987	137,078	222,064	341,770	106,827	301,534	692,825	89,094	19,057	28,633	0	20,793	79,937	2,039,612
1988	48,540	38,539	34,550	20,310	16,721	146,444	35,659	733	65,076	12,339	8,221	18,254	445,386
1989	27,278	134,660	196,265	124,012	959,549	818,976	55,020	75,519	116,307	15,328	8,189	6,770	2,537,873
1990	44,449	86,468	370,518	1,256,167	1,412,192	422,392	26,589	60,117	98,486	35,689	33,843	15,117	3,862,027
1991	101,793	65,719	45,123	138,624	265,233	518,054	70,969	186,771	118,245	427,180	267,234	2,144,032	4,348,977
1992	688,885	1,370,418	782,804	207,503	312,735	684,916	135,066	57,084	45,690	11,869	45,727	108,210	4,450,907
1993	72,204	303,711	305,637	147,662	106,685	108,164	25,035	11,003	15,279	183,580	19,803	30,517	1,329,280
1994	40,182	92,230	91,292	58,440	627,432	113,259	35,650	0	53,920	163,390	220,840	248,794	1,745,429
1995	179,571	75,637	309,647	423,320	643,430	386,188	107,779	484,708	129,693	40,276	15,621	13,891	2,809,761
1996	4,700	19,714	12,805	39,784	16,041	38,364	13,173	155,672	418,292	96,655	177,899	224,011	1,217,110
1997	132,572	1,080,664	812,381	547,062	435,724	389,289	130,696	40,526	11,803	19,717	16,942	232,507	3,849,883
1998	289,943	193,353	756,296	98,595	49,584	16,232	22,913	6,739	20,297	56,282	100,509	176,652	1,787,395
1999	82,419	41,539	109,089	63,492	64,973	151,638	15,284	12,715	0	453	0	5,115	546,717
2000	14,121	11,754	60,132	38,556	32,896	383,043	15,037	8,266	4,483	26,413	171,321	82,058	848,080
2001	175,885	551,689	828,582	188,214	140,025	25,306	27,197	38,018	27,011	32,851	105,463	199,788	2,340,029
2002	78,783	107,354	227,768	209,288	120,797	51,680	111,482	18,214	3,390	55,821	47,751	142,341	1,174,669
2003	70,312	102,703	109,131	38,695	24,120	129,416	13,715	5,564	35,224	82,924	17,498	11,983	641,285
2004	67,777	128,386	152,205	252,068	202,528	403,242	165,869	175,996	28,425	104,576	769,661	212,800	2,663,533
2005	191,821	221,448	248,085	77,226	39,525	46,702	14,300	333,730	56,565	31,324	11,777	10,281	1,282,784
2006	20,866	18,658	97,410	27,483	139,767	14,359	2,761	3,605	1,586	63,432	36,982	19,480	446,389
2007	48,973	26,833	515,532	300,411	882,613	1,625,595	1,060,115	237,875	209,826	46,008	17,769	28,477	5,000,027
2008	23,103	35,492	232,184	268,619	145,335	40,519	5,725	30,821	38,155	29,497	20,532	10,069	880,051
2009	9,546	17,315	71,145	66,072	43,927	33,084	17,606	15,552	95,858	598,449	109,068	63,701	1,141,323
2010	312,067	406,679	316,925	411,008	189,348	74,515	158,310	33,868	386,606	48,907	22,073	20,814	2,381,120
2011	28,336	35,770	22,993	28,874	15,126	1,055	0	3,643	3,563	81,510	10,221	36,905	267,996
2012	368,637	166,415	503,434	66,252	16,714	28,908	0	849	19,025	12,665	4,259	1,551	1,188,709
2013	45,189	7,498	18,808	22,593	13,162	18,946	47,622	3,772	16,852	69,642	17,354	34,102	315,540
2014</													

Appendix B - Naturalized Flows

NATURALIZED FLOW **BRHB42**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Brazos River near Highbank  
 Gage Number 08098290

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	14,754	14,791	8,624	125,139	149,370	484,655	266,624	254,008	75,863	16,362	581,172	579,843	2,571,205
1941	242,060	610,386	436,244	574,812	1,741,740	1,000,421	390,093	305,527	135,616	708,094	256,758	64,313	6,466,061
1942	72,540	37,136	34,255	1,471,629	822,406	658,306	63,331	64,878	442,935	557,214	144,075	101,315	4,470,018
1943	61,658	43,228	95,827	141,587	113,266	108,353	22,502	9,022	36,114	25,609	7,586	12,430	677,182
1944	91,874	214,332	266,811	134,091	1,103,440	230,954	67,456	24,766	89,482	68,797	49,516	108,429	2,449,948
1945	258,151	367,216	723,267	1,130,141	219,028	222,330	404,381	49,550	29,139	228,879	43,755	94,476	3,770,313
1946	141,272	240,929	306,761	135,257	394,744	201,915	35,485	62,349	259,243	160,462	266,686	265,946	2,471,050
1947	207,038	92,565	213,859	180,641	576,248	122,082	27,458	23,214	23,917	43,847	21,727	107,848	1,640,443
1948	41,150	118,026	100,757	36,386	157,651	162,837	179,451	10,417	33,324	21,807	12,763	8,402	882,970
1949	22,813	74,636	130,898	188,770	728,713	334,014	71,827	10,364	101,357	111,194	37,293	20,009	1,831,887
1950	35,456	170,358	28,947	158,236	266,709	99,336	260,946	137,111	244,225	57,631	10,159	7,570	1,476,684
1951	3,801	19,537	17,639	11,330	151,274	300,659	25,803	31,399	49,062	7,044	8,801	11,028	637,377
1952	3,742	9,619	7,627	134,250	215,563	15,850	10,277	6,960	13,767	3,389	65,980	80,426	567,448
1953	42,749	14,661	84,483	59,268	473,887	6,463	259,218	99,713	23,148	308,720	38,461	67,286	1,478,057
1954	9,894	7,389	7,837	117,830	445,086	106,957	18,307	25,995	4,651	30,345	35,575	1,549	811,414
1955	3,324	31,418	31,571	62,712	449,060	275,275	75,111	42,489	306,273	536,254	22,932	11,384	1,848,252
1956	13,947	17,752	9,409	20,950	291,966	26,818	1,487	6,413	9,858	25,703	35,265	56,327	515,896
1957	3,147	241,491	68,649	1,507,982	3,599,267	929,163	160,864	36,435	37,778	429,483	366,850	124,351	7,505,459
1958	119,913	232,195	246,758	239,567	877,802	104,430	263,216	56,633	114,547	23,188	16,975	17,905	2,313,128
1959	13,039	44,682	20,753	60,758	99,304	295,583	160,089	45,235	20,416	1,098,654	103,509	207,196	2,169,219
1960	424,778	208,995	114,678	114,257	120,285	51,782	214,086	29,601	7,208	334,524	130,740	353,090	2,104,024
1961	754,970	575,016	204,719	79,737	73,251	536,581	450,763	82,794	116,807	191,112	149,487	128,823	3,344,059
1962	57,609	39,378	40,476	63,901	45,548	430,169	239,412	121,115	562,938	175,628	71,575	79,455	1,927,202
1963	28,382	31,685	29,500	146,905	143,185	212,787	27,795	1,183	7,689	22,613	63,902	8,478	724,103
1964	22,110	76,412	76,545	99,767	47,859	117,862	9,349	35,741	175,048	25,852	242,151	33,011	961,709
1965	127,605	334,006	116,823	129,173	1,548,670	186,943	42,812	57,295	73,150	84,119	109,101	52,737	2,862,434
1966	23,175	90,196	66,246	807,061	853,387	114,905	15,719	158,383	639,840	96,396	24,057	18,451	2,907,816
1967	22,811	15,796	23,110	110,258	78,174	220,324	167,316	38,721	83,614	66,418	107,537	77,920	1,011,999
1968	665,580	233,093	621,231	365,393	1,182,689	277,793	261,398	56,161	24,534	27,070	34,381	55,012	3,804,335
1969	29,287	58,607	274,155	376,767	1,184,408	107,435	38,546	39,140	151,103	84,261	77,093	155,326	2,576,128
1970	102,489	150,513	716,269	242,935	215,468	71,163	7,860	21,413	46,939	67,831	18,174	13,994	1,675,048
1971	14,089	19,220	14,683	46,635	71,340	96,475	118,966	298,187	144,958	417,910	125,819	467,845	1,836,127
1972	190,152	74,609	38,594	48,311	126,911	42,771	38,744	134,796	142,838	94,602	184,993	65,827	1,183,148
1973	182,142	144,690	340,091	648,655	274,976	656,153	148,257	73,570	40,112	332,523	87,074	40,532	2,968,775
1974	74,010	45,008	43,747	71,371	59,567	44,352	15,593	77,822	493,176	406,052	970,429	158,701	2,459,828
1975	161,798	545,183	133,214	334,016	502,220	376,170	106,132	84,482	64,398	14,975	25,255	17,525	2,365,368
1976	29,371	41,689	35,552	270,866	374,071	179,011	392,161	42,102	109,266	232,446	111,890	177,599	1,996,024
1977	87,557	334,863	461,386	859,980	348,084	115,121	39,926	13,985	29,263	15,189	14,355	8,674	2,328,383
1978	10,988	31,658	77,937	67,476	44,156	40,403	8,206	588,431	25,512	29,342	20,962	8,489	953,560
1979	63,961	73,759	322,162	267,734	899,009	495,448	88,528	56,679	20,296	28,557	1,817	59,749	2,377,699
1980	77,621	82,717	38,681	114,903	448,238	56,776	16,535	8,474	124,394	265,141	21,779	54,152	1,309,411
1981	22,885	25,869	106,519	101,523	63,441	762,399	76,926	26,771	22,351	1,174,439	217,018	51,933	2,652,074
1982	41,408	55,998	119,109	64,770	862,092	912,723	441,110	47,135	13,182	15,109	20,067	35,558	2,628,261
1983	17,683	132,446	116,317	42,434	193,648	71,345	24,784	39,848	3,568	90,827	24,528	5,961	763,389
1984	35,111	17,196	62,519	9,483	11,536	15,121	4,687	7,989	12,224	279,928	110,345	352,518	918,657
1985	214,714	171,806	253,650	177,428	238,483	164,569	46,910	12,701	24,387	243,661	143,653	225,932	1,917,894
1986	28,093	361,912	48,675	48,505	219,174	662,779	103,671	28,585	242,849	422,962	168,259	283,798	2,619,262
1987	172,024	267,570	420,633	130,678	326,600	853,712	122,554	25,960	34,347	3,843	25,130	105,520	2,488,571
1988	52,399	51,815	50,728	27,866	23,299	146,852	44,658	6,798	64,319	18,795	8,785	22,904	519,218
1989	35,114	153,189	192,830	107,245	1,104,256	980,735	89,757	126,517	122,286	22,897	12,171	14,201	2,961,198
1990	51,885	101,676	502,781	1,223,125	1,516,344	448,893	48,204	69,606	106,130	62,553	57,306	20,692	4,209,195
1991	249,270	138,750	54,223	187,407	355,606	526,230	69,356	204,684	146,026	429,051	361,266	2,233,092	4,954,961
1992	939,691	1,645,827	937,585	282,104	404,062	803,703	176,558	71,281	60,516	20,358	63,955	157,260	5,562,900
1993	101,052	368,163	455,007	236,873	172,471	125,042	29,349	22,153	33,517	201,392	39,827	41,370	1,826,216
1994	38,463	134,879	91,709	37,295	726,004	119,909	36,749	16,467	54,519	149,863	203,027	271,379	1,880,263
1995	184,666	71,270	344,333	435,263	707,848	411,874	94,873	562,779	126,833	39,790	17,498	20,783	3,017,810
1996	18,675	33,127	26,550	52,113	23,974	46,157	14,667	164,500	444,420	108,624	191,343	273,115	1,397,265
1997	159,582	1,164,141	937,521	729,985	538,634	470,012	165,376	45,074	17,444	25,324	24,154	330,870	4,608,117
1998	494,775	232,308	779,873	110,116	54,598	29,315	26,577	12,331	25,121	145,093	158,494	253,290	2,321,891
1999	120,367	78,796	121,415	83,693	72,187	152,830	15,666	12,208	2,555	4,530	2,426	11,334	678,007
2000	20,557	15,377	67,968	50,257	43,336	429,484	14,516	2,798	3,773	27,836	221,143	148,987	1,046,032
2001	250,642	557,950	957,174	192,824	151,230	31,527	16,721	66,050	50,321	58,899	159,755	386,148	2,879,241
2002	103,348	146,408	246,824	245,317	127,687	68,540	120,036	28,009	11,766	68,584	53,566	204,278	1,424,363
2003	102,620	214,140	148,004	44,397	25,147	138,526	13,843	6,637	38,127	129,252	21,784	14,953	897,430
2004	74,295	167,617	190,128	293,720	285,263	624,439	264,690	203,756	53,359	143,417	999,875	303,326	3,603,885
2005	219,665	302,523	331,238	102,772	49,959	59,572	17,815	438,484	66,802	32,964	16,743	20,562	1,659,099
2006	31,574	26,396	118,372	40,229	179,071	15,791	5,844	5,412	4,302	65,586	36,499	22,930	552,006
2007	157,115	28,657	582,551	402,668	1,219,099	1,777,753	1,254,439	283,412	235,900	62,707	23,078	39,014	6,066,393
2008	27,862	42,316	272,514	289,209	214,639	43,469	8,293	49,203	41,208	30,218	22,084	10,907	1,051,922
2009	10,950	19,693	83,729	91,429	68,063	29,725	13,149	15,015	116,528	839,736	181,365	109,506	1,578,888
2010	373,937	626,396	451,347	504,367	246,163	119,527	175,563	38,306	382,582	67,451	38,620	31,356	3,055,615
2011	57,901	37,529	22,795	26,799	18,278	3,254	660	1,620	2,292	85,781	15,488	50,351	322,748
2012	403,880	226,999	654,227	102,324	26,206	31,921	408	0	22,052	21,263	5,306	1,660	1,496,246
2013	79,28												

Appendix B - Naturalized Flows

NATURALIZED FLOW LEDL43  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Leon River near De Leon  
 Gage Number 08099100

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	29	103	75	3,690	1,076	14,245	1,206	1,736	247	0	13,634	8,583	44,624
1941	2,919	34,557	7,870	9,941	64,595	8,532	2,331	27,409	2,948	5,774	1,556	1,652	170,084
1942	1,100	838	656	49,754	26,302	12,505	1,381	469	19,776	28,396	2,723	1,937	145,836
1943	1,297	1,018	4,550	1,727	3,246	1,030	52	16	553	1,431	90	262	15,270
1944	3,776	4,520	4,504	1,544	17,860	938	4,827	201	1,623	767	584	777	41,924
1945	1,600	6,405	17,079	21,381	3,475	3,083	5,927	345	228	2,489	362	445	62,819
1946	2,572	5,302	1,422	925	3,931	3,016	346	1,031	6,447	361	8,861	2,706	36,919
1947	2,301	946	5,027	1,508	1,640	717	32	24	19	1,484	52	2,170	15,918
1948	930	1,273	626	308	2,733	1,478	1,814	29	259	18	14	24	9,508
1949	1,059	4,679	5,012	8,405	31,171	22,354	463	107	383	3,025	256	1,348	78,261
1950	555	1,413	502	3,060	8,082	3,767	7,456	172	207	8	8	49	25,280
1951	69	124	153	141	2,083	6,608	32	13	17	259	62	7	9,568
1952	6	15	26	597	25,355	221	5	3	143	1	794	283	27,448
1953	65	37	127	1,578	4,618	20	1,747	1,877	38	4,440	505	508	15,560
1954	83	71	180	6,562	648	81	66	68	91	1,462	1,647	59	11,016
1955	62	485	253	3,538	20,828	6,555	938	0	1,344	323	0	0	34,327
1956	46	400	87	1,407	40,505	3	74	0	37	17	29	1,633	44,238
1957	0	0	68	20,180	92,356	4,661	333	3	0	11,587	7,354	1,211	137,752
1958	1,904	1,474	6,657	3,840	12,733	950	2,662	229	544	0	85	107	31,184
1959	91	206	219	227	461	5,934	6,809	147	176	37,021	1,806	1,413	54,512
1960	9,970	2,670	1,394	1,985	2,061	869	238	269	0	0	0	0	19,455
1961	7,331	6,717	1,032	407	26	9,846	6,499	0	0	381	180	148	32,567
1962	174	261	129	408	0	1,491	13,412	0	17,030	3,785	247	445	37,382
1963	209	189	467	1,683	27,103	3,452	0	662	241	68	3,031	0	37,105
1964	605	3,598	1,322	1,101	0	165	0	926	13,370	0	10,538	305	31,930
1965	2,077	2,758	812	606	47,548	1,574	266	0	477	2,427	229	0	58,774
1966	274	440	189	12,631	20,823	11,343	149	117	2,152	208	218	52	48,596
1967	10	243	566	1,146	3,071	39,817	426	162	256	74	0	124	45,895
1968	64,910	5,879	32,130	7,604	10,922	10,803	1,538	1,432	120	0	139	276	135,753
1969	497	412	12,164	42,123	15,502	2,142	570	2,614	388	2,723	492	6,028	85,655
1970	2,100	6,013	14,629	3,282	3,980	1,622	180	456	562	260	5	141	33,230
1971	207	273	398	149	17,979	1,623	2,364	6,809	3,334	5,404	431	3,131	42,102
1972	968	965	770	1,428	1,276	399	2	0	118	1,130	70	211	7,337
1973	1,608	1,981	1,232	13,840	1,815	808	1,668	300	82	7,188	232	0	30,754
1974	251	415	751	624	556	68	38	484	3,423	7,959	9,240	612	24,421
1975	1,293	10,980	1,702	7,104	5,094	959	1,286	410	407	0	0	0	29,235
1976	220	231	203	3,466	1,906	154	0	740	115	2,730	68	126	9,959
1977	122	667	17,815	4,543	6,124	29	320	24	0	0	7	0	29,651
1978	118	0	528	205	91	282	0	2,877	384	0	0	123	4,608
1979	553	389	9,881	2,211	11,438	947	385	703	0	0	7	0	26,514
1980	454	26	351	473	2,538	453	0	410	0	0	0	693	5,398
1981	0	285	2,326	178	273	4,287	118	549	8	38,310	542	0	46,876
1982	0	863	646	101	4,776	13,228	494	336	0	0	0	225	20,669
1983	44	112	626	455	0	621	210	263	83	144	0	89	2,647
1984	0	88	131	185	167	700	938	73	460	10,559	7,311	4,715	25,327
1985	16,296	2,393	8,918	4,628	7,616	2,209	169	1,299	174	8	1,782	366	45,858
1986	145	138	700	657	1,432	42,819	3,546	92	0	1,595	3,357	193	54,674
1987	1,743	5,908	9,857	0	37,261	19,055	3,457	0	161	0	0	0	77,442
1988	730	1,220	0	597	1,103	25,284	1,365	121	483	0	1	0	30,904
1989	158	1,452	759	1,063	20,610	28,489	2,619	4,423	1,633	1,283	412	0	62,902
1990	1,633	0	4,278	135,939	79,517	10,173	8,055	10,984	1,273	1,364	1,690	726	255,634
1991	4,951	2,566	1,244	798	881	5,903	1,178	15,432	8,555	15,800	8,869	80,717	146,893
1992	27,905	59,730	22,189	10,944	14,731	13,342	13,689	12,128	11,996	2,154	1,886	4,662	195,354
1993	4,112	9,802	11,574	7,307	3,240	1,315	713	382	334	10,952	4,137	765	54,634
1994	1,150	1,718	1,388	897	46,930	14,925	7,946	1,232	1,360	3,979	6,123	6,784	94,432
1995	4,854	1,952	5,686	30,256	22,972	13,275	4,104	30,210	8,552	3,377	1,115	1,244	127,597
1996	913	982	812	1,761	1,242	5,897	792	10,873	9,509	4,479	6,056	5,434	48,749
1997	1,246	51,039	17,579	13,727	20,368	70,722	7,138	2,671	1,098	1,319	626	1,098	188,632
1998	1,317	2,100	29,167	5,509	849	0	0	0	0	0	130	0	39,074
1999	369	151	1,641	436	593	2,555	0	0	0	0	7	0	5,752
2000	0	145	112	135	0	2,261	0	0	0	0	5,993	39	8,685
2001	1,298	9,150	9,367	2,022	5,834	0	318	0	0	0	0	0	27,989
2002	0	0	2,046	300	5,888	936	13,548	0	0	9,829	322	0	32,869
2003	420	1,076	1,071	481	0	1,313	0	0	0	2,703	0	0	7,063
2004	0	763	990	1,321	0	6,260	254	10,366	1,665	605	17,170	3,333	42,726
2005	1,872	9,195	11,721	2,691	774	0	0	611	0	0	0	0	26,864
2006	0	0	1,970	0	5,022	0	0	0	0	0	0	27	7,019
2007	0	150	5,282	5,598	15,562	95,292	33,858	3,372	3,264	0	135	266	162,777
2008	254	467	13,377	5,579	434	1,869	0	0	0	0	341	0	22,321
2009	136	228	365	168	61	33	784	135	6	1,495	297	118	3,826
2010	1,535	2,482	3,169	2,128	959	1,401	0	0	504	0	0	92	12,270
2011	46	194	360	391	52	0	0	0	0	2,113	0	101	3,257
2012	14,349	4,932	11,269	738	163	206	0	0	0	0	30	0	31,687
2013	181	15	571	6,547	109	0	8,503	0	0	0	0	203	16,129
2014	0	200	197	0	0	0	0	0	0	140	60	9	606
2015	155	25	511	322	84,570	7,250	27,627	0	0	5,071	36,862	14,610	177,003
Min	0	0	0	0	0	0	0	0	0	0	0	0	606
Max	64,910	59,730	32,130	135,939	92,356	95,292	33,858	30,210	19,776	38,310	36,862	80,717	255,634
Average	2,661	3,691	4,414	6,463	12,204	7,594	2,753	2,090	1,693	3,296	2,248	2,150	51,257

Appendix B - Naturalized Flows

NATURALIZED FLOW **SADL44**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Sabana River near De Leon  
 Gage Number 08099300

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	18	65	47	2,322	677	8,962	758	1,092	155	0	8,577	5,400	28,073
1941	1,837	21,740	4,951	6,254	40,637	5,367	1,466	17,243	1,855	3,632	979	1,039	107,001
1942	692	527	413	31,301	16,547	7,867	869	295	12,441	17,864	1,713	1,218	91,747
1943	816	641	2,863	1,086	2,042	648	32	10	348	900	57	165	9,607
1944	2,376	2,844	2,833	972	11,236	590	3,037	126	1,021	483	368	489	26,375
1945	1,007	4,030	10,745	13,451	2,186	1,939	3,729	217	144	1,566	228	280	39,520
1946	1,618	3,335	895	582	2,473	1,897	218	649	4,056	227	5,575	1,702	23,226
1947	1,447	595	3,163	948	1,032	451	20	15	12	933	33	1,365	10,014
1948	585	801	394	194	1,719	930	1,141	18	163	11	9	15	5,981
1949	666	2,944	3,153	5,288	19,610	14,063	291	67	241	1,903	161	848	49,235
1950	349	889	316	1,925	5,085	2,370	4,691	108	130	5	5	31	15,904
1951	43	78	96	89	1,310	4,157	20	8	11	163	39	5	6,019
1952	4	9	16	375	15,951	139	3	2	90	1	499	178	17,268
1953	41	23	80	993	2,905	13	1,099	1,181	24	2,793	318	319	9,789
1954	52	45	113	4,128	407	51	41	43	57	920	1,036	37	6,930
1955	39	305	159	2,226	13,103	4,124	590	0	846	203	0	0	21,595
1956	29	252	55	885	25,482	2	47	0	23	10	18	1,027	27,831
1957	0	0	43	12,695	58,102	2,932	209	2	0	7,290	4,626	762	86,661
1958	1,198	927	4,188	2,416	8,010	597	1,675	144	342	0	54	67	19,618
1959	57	130	138	143	290	3,733	4,284	93	111	23,290	1,136	889	34,294
1960	6,272	1,680	877	1,249	1,296	546	150	169	12	528	34	103	12,916
1961	6,341	3,638	1,064	483	723	5,633	6,101	83	49	94	315	121	24,645
1962	111	122	107	212	7	1,535	6,950	71	23,853	3,019	398	412	36,797
1963	272	219	178	127	27,457	2,214	151	27	14	22	758	101	31,540
1964	613	1,422	471	931	82	23	5	164	18,895	409	11,843	436	35,294
1965	2,303	1,315	524	326	26,460	604	320	281	360	1,111	741	133	34,478
1966	101	152	112	7,962	17,516	5,034	1,650	130	2,287	95	90	123	35,252
1967	135	130	180	532	7,303	13,202	227	23	311	99	142	123	22,407
1968	36,232	3,170	16,439	2,995	13,131	2,452	860	432	32	25	154	197	76,119
1969	264	190	4,201	14,940	6,611	792	73	296	526	3,172	399	2,884	34,348
1970	1,260	2,977	10,582	1,833	3,104	4,920	136	166	645	257	102	102	26,084
1971	106	100	98	106	1,371	142	567	4,259	1,619	5,714	435	1,635	16,152
1972	545	382	193	1,527	542	166	101	183	72	100	38	46	3,895
1973	165	236	257	6,142	293	474	910	197	41	1,968	91	72	10,846
1974	99	107	109	33	64	8	67	259	3,142	4,709	2,525	431	11,553
1975	661	3,692	344	2,307	2,267	577	1,036	780	27	19	23	75	11,808
1976	84	38	30	653	1,203	51	160	183	340	2,009	108	90	4,949
1977	210	182	11,306	3,168	876	106	198	159	40	0	0	13	16,258
1978	70	41	36	31	19	8	51	846	228	0	6	52	1,388
1979	183	41	3,001	506	7,670	457	73	140	57	4	0	15	12,147
1980	50	44	71	25	1,114	34	63	104	98	1	0	12	1,616
1981	14	23	628	9	27	2,058	80	78	11	3,745	12	20	6,705
1982	8	36	44	9	2,182	9,848	473	127	42	3	19	31	12,822
1983	49	59	230	48	71	714	146	159	49	13	0	1	1,539
1984	4	17	32	14	0	7,580	97	36	33	7,630	1,119	6,038	22,600
1985	6,260	508	3,285	819	798	616	116	127	6	1,849	290	79	14,753
1986	69	1,389	65	88	6,321	33,507	1,041	203	345	1,003	2,112	122	46,265
1987	1,097	3,717	6,201	0	23,441	11,987	2,175	0	102	0	0	0	48,719
1988	459	767	0	375	694	15,906	859	76	304	0	1	0	19,442
1989	100	914	478	669	12,966	17,923	1,648	2,782	1,028	807	259	0	39,572
1990	1,028	0	2,692	85,520	50,025	6,400	5,068	6,910	801	858	1,063	457	160,821
1991	3,114	1,614	783	502	554	3,714	741	9,708	5,382	10,192	5,721	52,068	94,093
1992	18,000	38,530	14,313	7,059	9,502	8,607	8,830	7,823	7,738	1,389	1,216	3,007	126,015
1993	2,652	6,323	7,466	4,714	2,090	848	460	246	216	7,065	2,669	493	35,242
1994	742	1,108	895	578	30,273	9,627	5,126	795	877	2,567	3,950	4,376	60,915
1995	3,131	1,259	3,668	19,517	14,818	8,563	2,647	19,487	5,517	2,178	719	803	82,308
1996	589	633	524	1,136	801	3,804	511	7,014	6,134	2,958	4,046	4,334	32,482
1997	2,239	33,585	20,237	14,959	22,601	25,916	7,329	4,284	867	851	404	709	133,979
1998	828	1,321	18,349	3,466	534	0	0	0	0	0	82	0	24,581
1999	232	95	1,032	274	373	1,607	0	0	0	0	0	0	3,614
2000	9	3	1	70	0	1,333	22	0	0	306	4,960	313	7,017
2001	740	4,256	3,697	766	4,252	29	0	113	143	0	0	129	14,125
2002	29	670	531	274	8,753	1,003	15,925	236	32	8,671	1,149	1,355	38,628
2003	658	897	746	457	230	362	23	254	124	321	170	72	4,314
2004	75	340	451	660	369	4,416	490	5,232	808	317	9,506	868	23,532
2005	816	4,431	6,305	809	370	203	0	259	0	0	5	59	13,257
2006	126	344	600	85	5,684	18	0	0	0	0	0	73	6,930
2007	159	42	7,806	1,311	10,584	57,181	10,740	1,581	1,801	214	264	292	91,975
2008	390	209	7,241	1,882	505	138	0	37	37	58	323	40	10,860
2009	41	10	54	51	39	8	0	178	45	217	324	95	1,062
2010	1,393	1,291	1,664	1,697	162	95	12	0	0	0	0	1	6,315
2011	213	251	78	645	658	2	0	0	0	2,659	0	858	5,364
2012	8,617	4,768	7,317	486	154	15	1	0	504	106	0	16	21,984
2013	66	30	82	529	54	0	1,364	0	0	0	0	0	2,125
2014	0	19	0	5	1,933	1	0	0	0	0	0	0	1,958
2015	22	8	19	2,059	26,404	2,877	12,514	77	2	50	14,828	3,827	62,687
Min	0	0	0	0	0	0	0	0	0	0	0	0	1,062
Max	36,232	38,530	20,237	85,520	58,102	57,181	15,925	19,487	23,853	23,290	14,828	52,068	160,821
Average	1,617	2,231	2,663	3,762	7,712	4,430	1,612	1,291	1,417	1,863	1,301	1,362	31,260

Appendix B - Naturalized Flows

NATURALIZED FLOW LEHS45  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Leon River near Hasse  
 Gage Number 08099500

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	69	241	177	8,663	2,525	33,440	2,830	4,074	579	0	32,005	20,148	104,751
1941	6,853	81,119	18,475	23,335	151,632	20,027	5,472	64,340	6,920	13,554	3,653	3,878	399,258
1942	2,582	1,967	1,541	116,793	61,741	29,355	3,241	1,102	46,422	66,657	6,392	4,546	342,339
1943	3,045	2,390	10,681	4,053	7,619	2,418	121	38	1,297	3,358	212	614	35,846
1944	8,864	10,611	10,572	3,625	41,926	2,203	11,332	472	3,811	1,801	1,372	1,824	98,413
1945	3,757	15,036	40,092	50,189	8,157	7,236	13,913	810	536	5,843	849	1,045	147,463
1946	6,037	12,445	3,338	2,171	9,228	7,079	812	2,421	15,134	847	20,801	6,351	86,664
1947	5,401	2,221	11,801	3,539	3,849	1,682	75	57	44	3,483	122	5,093	37,367
1948	2,184	2,989	1,469	724	6,415	3,470	4,259	69	608	42	33	57	22,319
1949	2,486	10,984	11,765	19,730	73,172	52,474	1,086	250	899	7,101	601	3,164	183,712
1950	1,303	3,318	1,179	7,184	18,973	8,843	17,502	403	486	18	19	114	59,342
1951	161	290	360	331	4,889	15,512	76	30	40	608	146	17	22,460
1952	14	35	61	1,401	59,518	518	12	7	335	3	1,863	665	64,432
1953	152	86	299	3,704	10,841	47	4,102	4,405	89	10,423	1,185	1,192	36,525
1954	195	167	423	15,403	1,520	189	154	159	213	3,431	3,867	139	25,860
1955	146	1,139	594	8,306	48,891	15,387	2,202	0	3,155	759	0	0	80,579
1956	109	939	204	3,303	95,081	8	174	0	87	39	69	3,833	103,846
1957	0	0	159	47,370	216,797	10,942	781	8	0	27,200	17,262	2,843	323,362
1958	4,469	3,460	15,627	9,014	29,889	2,229	6,249	538	1,276	0	200	250	73,201
1959	214	484	515	534	1,083	13,929	15,984	346	414	86,903	4,239	3,318	127,963
1960	23,403	6,267	3,272	4,660	4,837	2,039	559	631	0	1,943	19	567	48,197
1961	24,659	21,535	5,748	2,075	2,034	18,692	14,987	248	5	1,533	749	1,025	93,290
1962	864	912	817	1,334	144	3,669	16,909	709	84,101	15,132	2,078	2,177	128,846
1963	1,547	1,861	1,130	2,604	54,908	13,522	123	230	119	0	9,324	0	85,368
1964	2,805	6,739	2,660	10,204	496	289	36	3,381	63,485	5,830	38,270	2,500	136,695
1965	9,739	10,715	3,374	2,561	101,052	5,002	2,680	0	431	3,823	1,811	645	141,833
1966	793	1,697	1,213	15,250	48,566	15,931	763	1,180	8,308	465	527	281	94,974
1967	736	679	2,062	3,038	12,822	41,212	1,075	0	3,656	281	530	540	66,631
1968	117,815	14,579	74,885	18,604	57,436	19,606	5,091	3,404	373	221	785	740	313,539
1969	1,371	1,144	16,704	60,344	36,398	4,196	1,935	4,525	739	5,328	1,063	11,586	145,333
1970	6,556	12,370	43,327	11,523	12,094	9,708	694	1,671	2,916	1,525	505	954	103,843
1971	878	1,156	1,269	816	15,064	4,138	2,112	15,146	5,256	12,063	1,184	7,616	66,698
1972	2,375	2,475	1,783	6,209	4,635	300	1,112	349	0	1,059	0	422	20,719
1973	2,050	2,636	2,352	34,830	2,705	4,042	6,841	922	67	16,811	1,168	602	75,026
1974	708	1,261	1,975	1,261	298	0	550	4,252	11,836	13,325	16,931	2,288	54,685
1975	3,836	17,707	3,544	12,988	7,227	3,097	3,411	1,467	373	30	169	0	53,449
1976	522	669	630	9,611	4,929	408	1,681	3,713	1,302	4,030	533	569	28,597
1977	353	1,359	46,942	17,418	10,733	1,375	1,016	218	505	105	91	84	80,199
1978	173	0	861	301	1,876	0	66	2,861	385	0	0	163	6,686
1979	1,194	478	14,799	3,682	25,273	1,633	712	3,720	34	351	0	104	51,980
1980	330	294	413	869	15,326	926	491	1,168	426	0	0	860	21,103
1981	206	731	1,835	342	484	8,155	447	882	42	40,256	1,297	0	54,677
1982	716	1,014	1,497	604	20,034	45,072	8,243	1,763	102	115	0	446	79,606
1983	88	242	2,514	746	966	1,780	568	877	0	0	0	0	7,781
1984	335	63	4,709	141	0	6,653	108	0	0	25,889	6,859	11,535	56,292
1985	39,466	4,179	14,944	8,190	12,283	9,205	160	1,491	199	1,549	1,869	326	93,861
1986	176	4,142	1,020	1,139	20,778	123,455	8,939	0	12,335	3,744	7,880	454	184,062
1987	4,092	13,869	23,139	0	87,466	44,729	8,115	0	379	0	0	0	181,789
1988	1,714	2,863	0	1,401	2,590	59,351	3,205	284	1,133	0	3	0	72,544
1989	372	3,409	1,782	2,496	48,381	66,876	6,148	10,382	3,834	3,011	966	0	147,657
1990	3,834	0	10,043	319,106	186,659	23,881	18,909	25,785	2,988	3,201	3,968	1,705	600,079
1991	11,621	6,023	2,920	1,874	2,068	13,857	2,766	36,225	20,083	49,531	14,356	191,979	353,303
1992	60,286	135,135	53,446	27,388	34,251	42,229	40,174	33,304	31,681	3,836	2,604	10,100	474,434
1993	3,602	13,752	10,057	9,914	2,793	1,941	1,789	0	0	40,335	4,989	0	89,172
1994	1,875	3,107	1,312	1,211	136,934	31,885	9,347	2,065	0	7,922	14,097	6,835	216,590
1995	3,076	261	8,436	23,539	28,334	15,784	3,647	99,464	23,666	5,963	0	1,218	213,388
1996	0	1,395	957	2,200	2,666	9,595	2,806	13,538	22,053	7,121	12,558	13,835	88,724
1997	2,618	117,210	62,338	52,689	47,726	110,993	37,578	0	0	72	571	983	432,778
1998	3,091	4,930	68,468	12,933	1,994	0	0	0	0	0	306	0	91,722
1999	867	355	3,852	1,023	1,391	5,998	0	0	0	0	16	0	13,502
2000	0	340	262	318	0	5,307	0	0	0	0	14,069	91	20,387
2001	3,047	21,479	21,988	4,747	13,694	0	746	0	0	0	0	0	65,701
2002	0	0	4,803	704	13,822	2,197	31,803	0	0	23,073	755	1	77,158
2003	987	2,525	2,515	1,128	0	3,081	0	0	0	6,344	0	0	16,580
2004	0	1,790	2,324	3,102	0	14,694	596	24,333	3,908	1,421	40,304	7,823	100,295
2005	4,394	21,585	27,513	6,316	1,817	0	0	1,435	0	0	0	0	63,060
2006	0	0	4,625	0	11,788	0	0	0	0	0	0	63	16,476
2007	0	352	12,398	13,140	36,531	223,689	79,478	7,915	7,661	1,240	0	1,429	383,833
2008	754	1,651	26,710	17,107	4,580	3,544	0	674	0	0	1,160	0	56,180
2009	0	713	0	351	0	4,270	386	0	0	1,470	1,354	0	8,544
2010	6,726	8,023	9,147	5,919	1,323	0	0	0	442	0	0	67	31,647
2011	0	46	0	4,003	1,436	0	0	0	0	10,176	0	69	15,730
2012	41,952	17,414	26,821	1,142	39	734	0	0	779	0	364	0	89,245
2013	632	0	135	9,286	224	0	7,105	0	37	216	0	395	18,300
2014	0	12	0	0	1,458	0	371	0	0	0	114	0	1,955
2015	209	0	999	2,029	173,340	28,074	88,648	3,389	0	5,379	53,146	38,061	393,274
Min	0	0	0	0	0	0	0	0	0	0	0	0	1,955
Max	117,815	135,135	74,885	319,106	216,797	223,689	88,648	99,464	84,101	86,903	53,146	191,979	600,079
Average	5,888	8,488	10,166	14,287	28,559	16,892	6,780	5,173	5,237	7,339	4,661	5,003	118,472

Appendix B - Naturalized Flows

NATURALIZED FLOW LEHM46  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Leon River near Hamilton  
 Gage Number 08100000

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	75	262	192	9,408	2,742	36,316	3,073	4,424	629	0	34,757	21,881	113,760
1941	7,442	88,095	20,064	25,342	164,672	21,749	5,943	69,873	7,515	14,720	3,967	4,212	433,594
1942	2,804	2,136	1,674	126,837	67,051	31,880	3,520	1,197	50,414	72,390	6,942	4,937	371,780
1943	3,307	2,596	11,600	4,402	8,274	2,626	131	41	1,409	3,647	230	667	38,929
1944	9,626	11,524	11,481	3,937	45,532	2,392	12,307	513	4,139	1,956	1,490	1,981	106,877
1945	4,080	16,329	43,540	54,505	8,859	7,858	15,110	880	582	6,345	922	1,135	160,145
1946	6,556	13,515	3,625	2,358	10,022	7,688	882	2,629	16,436	920	22,590	6,897	94,117
1947	5,865	2,412	12,816	3,843	4,180	1,827	81	62	48	3,783	132	5,531	40,581
1948	2,372	3,246	1,595	786	6,967	3,768	4,625	75	660	46	36	62	24,238
1949	2,700	11,929	12,777	21,427	79,465	56,987	1,179	272	976	7,712	653	3,436	199,511
1950	1,415	3,603	1,280	7,802	20,605	9,603	19,007	438	528	55	27	105	64,469
1951	181	407	433	546	5,269	16,445	69	15	20	300	72	8	23,765
1952	7	17	30	4,700	50,487	1,580	1,447	3	165	1	3,889	1,701	64,029
1953	964	224	3,215	3,688	26,183	251	4,449	3,612	938	10,999	1,343	1,065	56,930
1954	256	192	276	12,582	2,674	133	88	87	108	3,293	4,176	69	23,934
1955	75	1,983	721	7,600	49,465	18,846	3,270	42	9,111	3,918	28	0	95,059
1956	95	875	158	2,525	90,193	575	97	311	44	19	273	3,867	99,032
1957	91	75	1,940	75,645	269,321	28,441	2,410	468	257	35,383	24,320	7,214	445,565
1958	8,531	12,140	26,261	11,707	55,203	4,032	5,431	715	1,174	404	421	538	126,556
1959	565	1,008	678	798	1,432	15,358	16,260	857	745	148,955	8,292	9,572	204,520
1960	44,153	16,432	8,740	6,416	6,317	2,714	1,132	878	91	7,480	135	5,479	99,967
1961	55,338	59,959	17,971	6,683	5,636	30,023	22,555	1,327	447	16,037	2,634	2,876	221,486
1962	2,431	2,364	1,923	2,166	877	2,944	11,306	2,373	74,104	15,467	3,437	2,909	122,301
1963	2,608	2,217	1,669	2,093	43,865	20,639	3,002	346	847	0	8,582	303	86,171
1964	2,373	8,758	7,059	21,203	3,653	657	0	7,012	52,437	23,950	35,086	13,450	175,638
1965	14,187	26,913	5,519	3,853	139,322	17,664	19,337	13,080	1,752	3,256	3,180	1,023	249,086
1966	1,205	2,636	1,892	14,550	46,389	21,319	12,199	7,001	11,483	633	486	398	120,191
1967	799	733	1,744	4,089	13,579	30,648	11,469	131	2,994	151	364	473	67,174
1968	99,890	38,318	74,972	40,973	91,807	29,580	6,854	3,688	1,218	208	604	954	389,066
1969	1,360	1,327	10,628	45,881	53,230	3,793	2,431	4,464	833	6,174	3,494	12,357	145,972
1970	13,013	14,084	67,961	30,186	19,390	15,193	1,625	2,513	8,918	2,345	1,068	1,571	177,867
1971	1,414	1,351	1,413	946	9,858	2,759	5,756	10,951	4,505	25,550	8,140	23,227	95,870
1972	11,152	5,187	3,405	5,109	9,261	841	2,559	1,202	722	691	347	661	41,137
1973	2,361	3,595	4,504	30,818	10,409	3,714	6,106	1,957	281	16,787	2,082	794	83,408
1974	1,574	1,359	1,728	1,030	200	0	575	4,848	18,804	15,674	15,349	3,600	64,741
1975	6,091	21,758	7,174	27,131	10,792	4,635	6,076	2,465	917	152	102	201	87,494
1976	635	596	551	6,423	3,833	828	3,229	3,883	3,155	2,794	468	534	26,929
1977	532	1,316	43,193	57,234	34,559	10,392	5,127	2,482	547	0	0	143	155,525
1978	496	243	810	351	1,892	494	1,575	3,645	826	0	30	52	10,414
1979	1,222	727	13,748	5,890	31,353	4,994	1,171	4,523	851	370	0	194	65,043
1980	385	221	231	607	28,658	1,566	1,265	2,002	1,358	0	0	533	36,826
1981	192	551	1,300	363	845	5,831	761	1,227	1,159	25,969	2,475	71	40,744
1982	589	720	2,602	731	27,729	43,997	17,761	4,593	1,038	629	0	413	100,802
1983	352	461	2,095	687	1,936	2,288	1,042	1,719	942	1,499	0	0	13,021
1984	156	484	4,233	159	49	5,371	1,425	770	508	17,445	4,480	9,373	44,453
1985	29,493	7,488	13,787	8,514	11,891	9,359	1,546	1,970	874	1,730	1,099	288	88,039
1986	118	2,694	678	958	15,615	125,701	30,448	9,455	56,880	8,806	7,065	8,619	267,037
1987	8,574	16,489	41,886	10,502	89,157	66,490	24,086	9,400	3,144	984	609	848	272,169
1988	1,878	2,558	476	1,220	2,195	81,300	10,110	2,848	2,125	217	227	594	105,748
1989	450	2,817	17,503	5,273	39,890	90,930	16,954	12,470	7,772	4,447	1,454	325	200,285
1990	2,860	570	10,041	231,065	194,072	48,965	36,580	25,853	4,267	3,592	3,559	2,631	564,055
1991	8,959	5,126	2,530	3,428	3,342	9,888	3,586	23,557	13,561	48,764	27,372	249,127	399,240
1992	86,125	184,352	68,484	33,777	45,466	41,180	42,249	37,431	37,024	6,647	5,820	14,388	602,943
1993	12,691	30,253	35,723	22,553	9,999	4,059	2,202	1,179	1,032	33,804	12,769	2,360	168,624
1994	3,548	5,303	4,284	2,767	144,847	46,064	24,526	3,804	4,198	12,281	18,898	20,938	291,458
1995	14,981	6,024	17,549	93,384	70,900	40,972	12,667	93,241	26,395	10,423	3,442	3,840	393,818
1996	2,819	3,031	2,505	5,435	3,834	18,200	2,443	33,559	29,348	14,151	19,357	20,735	155,417
1997	10,711	160,693	96,830	71,572	108,140	123,999	35,065	20,498	4,146	4,072	1,933	3,390	641,049
1998	6,469	13,178	98,839	22,004	5,667	1,804	1,147	948	865	1,033	1,490	3,526	156,971
1999	2,239	1,367	4,830	4,568	2,361	7,117	867	507	270	147	43	183	24,499
2000	332	558	516	1,162	598	14,831	495	240	884	2,698	23,536	1,998	47,847
2001	7,838	29,368	44,577	13,222	18,539	2,225	1,191	3,045	2,060	1,291	2,318	5,069	130,742
2002	2,798	11,282	10,974	6,820	11,885	3,173	33,142	670	338	18,852	4,673	3,532	108,139
2003	2,830	5,725	7,471	2,617	1,011	6,965	629	389	1,397	22,717	1,617	1,247	54,617
2004	2,199	5,401	9,357	24,269	8,492	23,840	6,277	36,914	10,588	5,449	87,159	23,542	243,486
2005	16,478	45,971	55,802	14,063	5,946	3,891	1,419	13,607	743	536	674	840	159,969
2006	800	427	5,174	699	10,235	410	31	0	5	81	172	318	18,353
2007	261	355	24,041	22,008	79,626	252,901	150,486	42,961	31,133	4,683	2,670	3,403	614,530
2008	2,736	2,937	20,966	13,249	4,876	2,442	993	31,289	1,960	701	1,262	585	83,996
2009	502	966	881	1,495	1,838	6,568	4,196	966	206	2,195	2,678	1,542	24,033
2010	25,294	24,775	23,279	10,941	3,033	477	1,075	786	1,740	610	344	131	92,485
2011	223	183	181	3,066	2,357	0	0	0	375	12,868	0	95	19,348
2012	45,764	29,305	45,050	5,813	3,398	3,140	287	162	634	114	363	34	134,064
2013	681	28	240	6,504	10,445	759	4,895	209	228	298	0	420	24,707
2014	0	0	0	48	1,952	473	1,161	0	0	72	78	0	3,784
2015	144	0	796	3,500	206,528	65,360	93,950	19,971	933	18,180	58,999	60,286	528,647
Min	0	0	0	48	49	0	0	0	0	0	0	0	3,784
Max	99,890	184,352	98,839	231,065	269,321	252,901	150,486	93,241	74,104	148,955	87,159	249,127	641,049
Average	8,188	12,949	14,561	17,665	35,292	21,510	10,400	7,941	6,997	9,744	6,563	7,780	159,590

Appendix B - Naturalized Flows

NATURALIZED FLOW **LEGT47**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Leon River at Gatesville  
 Gage Number 08100500

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	444	779	506	15,835	4,025	55,216	18,872	5,549	1,079	2,036	82,728	87,715	274,783
1941	34,584	136,082	88,717	60,789	237,723	68,934	33,253	56,723	19,029	29,179	8,828	7,678	781,518
1942	5,436	4,617	3,834	172,094	131,691	84,353	9,953	10,638	93,383	91,729	21,320	13,284	642,331
1943	9,852	6,657	13,800	13,695	12,032	4,638	1,429	430	3,801	4,834	1,119	2,083	74,370
1944	22,341	48,439	45,001	26,686	216,855	39,876	14,327	3,491	6,097	4,550	3,866	12,833	444,361
1945	41,560	48,734	93,420	172,663	33,974	27,287	21,120	3,244	4,101	18,914	6,385	14,754	486,157
1946	20,833	37,083	57,520	17,065	57,903	21,567	4,148	2,671	18,377	3,099	21,897	14,035	276,200
1947	26,634	10,407	38,839	17,424	22,773	5,365	1,986	822	555	2,380	1,464	5,985	134,633
1948	2,555	8,998	5,020	3,246	14,538	6,018	8,813	619	3,335	130	100	130	53,502
1949	2,252	8,288	29,780	41,780	69,797	50,571	4,731	937	944	6,696	1,838	2,948	220,564
1950	1,518	6,190	1,719	9,046	26,265	14,064	19,070	849	11,504	110	41	116	90,492
1951	239	624	603	903	6,746	20,759	74	0	0	0	0	0	29,948
1952	0	0	0	9,465	49,872	3,128	3,403	0	0	0	7,011	3,241	76,120
1953	2,099	428	7,242	4,394	49,188	538	5,725	3,396	2,110	13,827	1,790	1,127	91,864
1954	377	258	160	11,765	4,542	95	29	20	7	3,778	5,354	0	26,385
1955	6	3,355	1,011	8,269	59,838	26,573	5,155	98	17,835	8,367	67	0	130,574
1956	98	973	135	2,115	102,194	1,348	27	734	2	0	563	4,665	112,854
1957	215	178	4,396	123,417	383,333	54,401	4,779	1,095	607	51,855	37,311	13,721	675,308
1958	14,935	24,632	43,798	17,141	95,516	6,922	5,543	1,061	1,286	954	760	980	213,528
1959	1,084	1,817	1,002	1,263	2,119	20,035	19,771	1,621	1,276	250,450	14,639	18,734	333,811
1960	76,983	31,495	16,824	9,720	9,280	4,032	2,021	1,338	418	12,377	1,128	27,267	192,883
1961	101,538	97,787	31,625	10,871	8,906	54,150	50,480	4,421	2,414	64,337	16,888	13,118	456,535
1962	7,401	5,222	4,583	4,803	2,517	7,001	7,479	6,320	65,587	15,899	5,785	5,172	137,769
1963	3,195	3,036	3,239	2,917	42,347	20,499	5,164	136	950	0	7,494	491	89,468
1964	2,235	8,660	9,137	20,466	6,474	7,520	0	11,906	62,357	24,044	50,215	14,064	217,078
1965	19,569	58,274	11,957	6,948	247,849	27,346	19,510	14,425	5,822	5,372	29,848	4,623	451,543
1966	3,670	7,888	5,782	43,094	57,763	28,455	12,499	12,073	18,039	2,178	1,397	1,139	193,977
1967	1,458	1,407	2,403	7,975	13,913	29,715	18,284	488	3,154	379	318	504	79,998
1968	119,596	52,395	110,424	61,458	134,770	45,834	12,718	4,636	1,638	808	1,130	1,781	547,188
1969	2,278	2,169	10,178	52,779	74,203	5,333	2,427	4,999	1,135	8,317	7,100	15,902	186,820
1970	18,576	23,291	106,578	43,847	27,754	21,686	2,382	2,383	14,633	4,330	1,660	2,140	269,260
1971	1,932	1,839	1,919	1,927	10,532	2,691	25,108	13,692	4,834	40,770	12,549	45,444	163,237
1972	19,756	9,516	5,914	5,830	12,638	2,153	3,058	1,102	1,280	1,990	659	832	64,728
1973	4,297	6,413	10,054	37,495	18,316	14,826	12,636	2,301	504	19,050	3,681	1,353	130,926
1974	2,271	2,006	2,414	1,482	670	0	99	6,176	32,273	26,664	28,083	9,583	111,721
1975	12,355	53,585	13,726	56,754	31,613	8,045	9,757	4,546	1,454	573	373	455	193,236
1976	862	1,061	909	7,553	4,992	5,918	20,973	3,718	3,400	3,457	1,137	2,674	56,654
1977	2,899	5,104	50,786	88,374	70,241	13,816	6,208	2,512	316	0	0	133	240,389
1978	1,041	831	1,166	628	1,569	313	760	2,667	611	0	0	22	9,608
1979	1,609	1,246	31,166	14,812	47,323	28,022	5,232	5,674	881	536	93	603	137,197
1980	1,222	1,111	853	1,245	50,133	3,261	1,053	1,570	717	0	0	622	61,787
1981	238	663	3,435	2,340	1,600	54,506	2,981	1,346	1,993	25,375	2,073	331	96,881
1982	927	1,331	8,794	2,940	34,100	42,412	15,804	5,267	608	293	0	0	112,476
1983	564	694	2,956	1,053	2,033	1,620	723	1,048	450	1,287	0	0	12,428
1984	48	189	5,226	97	192	4,512	978	465	104	17,248	4,138	8,605	41,802
1985	27,228	7,344	16,488	10,312	11,187	16,789	1,414	1,104	151	8,285	816	2,015	103,133
1986	486	3,708	924	878	19,437	145,961	39,688	11,043	51,278	9,697	8,617	16,939	308,656
1987	16,951	21,750	50,812	14,433	89,406	131,751	32,446	10,550	4,093	1,260	1,133	1,647	376,232
1988	2,405	4,068	1,212	1,713	2,443	82,089	10,717	3,769	3,645	1,267	413	658	114,399
1989	1,124	7,222	22,230	9,472	57,536	96,438	20,886	13,887	7,905	4,938	1,812	932	244,382
1990	3,327	1,578	20,575	268,527	233,540	59,846	41,844	27,360	6,763	4,472	4,220	4,103	676,155
1991	10,061	7,117	4,208	8,861	14,257	11,290	4,415	23,649	17,783	51,073	32,939	369,804	555,457
1992	128,531	276,611	123,875	46,369	74,056	59,164	48,119	42,895	39,554	8,756	7,394	21,205	876,529
1993	21,248	57,296	56,072	36,834	17,143	9,783	4,008	1,389	1,072	32,048	15,326	3,385	255,604
1994	3,989	7,839	6,787	3,391	146,121	47,367	29,922	4,724	6,858	14,364	21,892	33,433	326,687
1995	29,668	14,935	30,523	129,556	107,335	63,318	19,656	105,214	27,568	14,120	4,757	5,144	551,794
1996	4,855	5,699	4,598	6,603	4,111	22,787	3,002	44,064	55,714	22,741	32,409	40,273	246,856
1997	27,861	206,290	162,566	113,348	140,701	158,463	48,292	22,370	6,157	6,019	3,330	11,482	906,879
1998	11,673	25,371	153,604	36,886	11,056	4,259	2,707	2,238	2,043	2,438	3,162	8,325	263,762
1999	4,277	2,815	6,916	9,592	3,953	9,817	2,046	1,196	638	347	83	433	42,113
2000	783	922	913	2,374	1,411	28,834	1,168	566	2,088	6,369	39,180	4,610	89,218
2001	14,957	44,318	79,633	25,686	27,818	5,253	1,942	7,188	4,863	3,048	5,472	11,967	232,145
2002	6,606	26,635	20,315	15,281	11,961	4,932	41,204	1,581	797	17,634	10,154	8,337	165,437
2003	5,532	10,576	14,710	4,864	2,387	12,855	1,486	919	3,299	46,243	3,818	2,945	109,634
2004	5,191	10,666	19,383	53,683	20,048	39,169	14,126	58,809	20,446	11,210	158,830	46,469	458,030
2005	33,785	83,393	99,697	25,844	11,922	9,186	3,349	30,454	1,753	1,265	1,592	1,983	304,223
2006	1,889	1,008	6,829	1,651	10,435	967	73	0	12	191	407	677	24,139
2007	617	429	42,318	36,655	145,441	336,540	262,713	92,208	64,580	10,121	5,254	5,911	1,002,787
2008	4,565	4,545	26,290	18,343	18,590	3,738	1,666	29,203	3,036	1,701	1,873	1,079	114,629
2009	1,107	1,533	4,628	10,438	3,736	6,734	5,571	1,397	2,393	49,536	12,427	8,128	107,628
2010	74,560	79,934	52,304	25,021	8,958	3,268	4,827	1,711	21,735	1,327	910	1,142	275,697
2011	1,802	1,347	1,052	3,588	3,535	1,513	1,115	334	594	13,308	245	374	28,807
2012	49,875	35,496	69,138	11,618	5,573	3,228	367	312	861	301	588	191	177,548
2013	596	222	461	6,974	13,667	1,117	4,944	415	4,002	5,598	943	5,235	44,174
2014	1,233	555	464	425	3,213	4,518	1,905	277	258	295	303	227	13,673
2015	436	358	2,849	8,284	240,256	91,323	88,085	22,688	2,050	36,697	75,189	89,091	657,306
Min	0	0	0	97	192	0	0	0	0	0	0	0	9,608
Max	128,531	276,611	162,566	268,527	383,333	336,540	262,713	105,214	93,383	250,450	158,830	369,804	1,002,787
Average	14,353	22,070	26,196	28,473	52,025	31,811	15,319	10,167	10,196	15,195	11,162	14,066	251,034

Appendix B - Naturalized Flows

NATURALIZED FLOW COP148  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Cowhouse Creek at Pidcoke  
 Gage Number 08101000

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	210	317	197	4,809	1,082	15,371	8,977	1,236	332	1,100	30,865	38,695	103,191
1941	15,729	38,443	39,960	22,759	62,859	28,594	15,607	2,807	7,291	9,905	3,190	2,471	249,615
1942	1,821	1,644	1,406	42,465	44,459	32,891	3,977	5,274	30,383	20,727	8,758	5,213	199,018
1943	4,008	2,564	2,836	5,649	3,206	1,461	720	216	1,493	1,159	513	860	24,685
1944	8,240	21,591	19,750	12,857	99,077	20,603	2,838	1,683	1,646	1,680	1,496	6,147	197,608
1945	20,840	19,835	33,143	71,610	14,835	11,618	5,394	1,403	1,985	7,695	3,084	7,523	198,965
1946	8,648	14,659	29,650	8,285	27,307	8,594	1,891	396	3,382	1,308	2,831	4,838	111,789
1947	12,059	4,664	15,887	7,887	10,645	2,172	1,041	420	281	0	738	1,031	56,825
1948	436	3,570	2,078	1,442	5,082	1,751	2,920	305	1,539	52	40	45	19,260
1949	141	0	11,005	14,043	6,051	4,619	2,088	398	121	545	733	224	39,968
1950	257	1,910	419	1,780	5,984	3,774	2,731	285	6,008	45	11	27	23,231
1951	35	76	49	261	181	3,410	1	0	6	0	0	0	4,019
1952	0	0	1	4,903	14,713	383	299	0	0	0	3,550	2,721	26,570
1953	816	429	6,428	3,691	23,094	140	1,553	45	1,006	572	44	35	37,853
1954	40	10	1	149	1,014	10	0	0	93	533	1,355	10	3,215
1955	3	1,908	1,509	3,493	19,232	4,657	492	2,513	3,644	2,844	0	10	40,305
1956	32	88	3	0	40,038	4	0	1,902	0	0	754	182	43,003
1957	16	32	4,274	61,442	85,793	5,976	686	142	67	22,576	10,195	4,858	196,057
1958	4,134	18,387	14,838	7,676	17,074	2,408	617	315	260	159	144	152	66,164
1959	151	447	140	417	409	5,792	400	1,940	1,224	87,059	3,410	9,316	110,705
1960	25,305	12,474	7,521	3,824	1,740	595	282	96	125	13,617	1,561	24,867	92,007
1961	47,153	41,881	16,746	4,975	2,612	22,237	15,790	1,559	681	18,740	5,294	3,796	181,464
1962	2,358	1,593	1,256	1,509	561	2,630	450	2	20	2,900	466	1,847	15,592
1963	292	264	1,526	481	1,935	1,400	28	0	0	0	87	0	6,013
1964	15	386	3,231	3,540	2,206	2,731	11	9,092	17,254	1,002	9,939	1,466	50,873
1965	3,677	22,810	5,483	3,344	130,144	6,782	1,285	1,299	4,945	2,434	25,313	5,869	213,385
1966	3,574	5,246	4,673	18,419	8,002	2,224	547	14,757	8,670	1,912	922	726	69,672
1967	541	391	335	1,378	661	59	275	1	25	4	6	60	3,736
1968	31,256	6,476	26,836	14,989	29,693	5,827	2,864	722	356	135	165	272	119,591
1969	201	446	819	7,328	14,266	673	39	44	10	6,246	3,773	6,847	40,692
1970	5,106	8,965	39,156	14,547	10,649	7,781	695	126	25,785	3,135	1,180	1,076	118,201
1971	885	1,015	648	1,068	789	424	19,561	1,921	2,053	17,687	3,941	17,096	67,088
1972	8,281	3,929	2,074	1,137	5,610	1,351	103	33	45	1,042	129	70	23,804
1973	707	1,744	3,902	8,658	5,665	8,484	3,660	271	323	7,670	1,567	1,180	43,831
1974	1,410	1,045	833	295	265	346	29	1,359	13,077	14,479	9,941	4,681	47,760
1975	4,877	28,917	5,750	24,771	20,580	6,216	2,766	996	247	121	121	146	95,508
1976	109	88	153	644	960	3,546	24,554	921	1,540	1,212	535	2,360	36,622
1977	2,253	4,884	11,232	43,531	24,226	11,229	940	335	339	19	79	108	99,175
1978	97	194	142	141	61	21	54	4	13	0	46	5	778
1979	398	1,490	12,579	6,060	13,868	19,867	2,926	1,792	237	87	188	268	59,760
1980	379	201	194	219	10,337	401	45	12	1,255	25	13	104	13,185
1981	70	89	1,495	744	1,058	34,329	1,764	1,115	1,981	434	431	339	43,849
1982	348	574	5,611	3,055	9,890	3,203	1,742	41	13	0	8	25	24,510
1983	76	86	690	273	409	107	19	30	0	723	1	0	2,414
1984	1	0	3,937	24	63	792	34	18	13	2,069	8	1,174	8,133
1985	1,522	2,075	6,464	3,078	1,993	16,676	605	5	0	11,740	215	2,132	46,505
1986	606	1,552	708	373	9,996	26,218	1,168	632	2,126	7,601	6,165	12,908	70,053
1987	9,844	9,701	16,206	5,979	26,914	41,795	3,610	397	578	116	473	1,084	116,697
1988	576	761	491	282	64	3,547	10	1	369	18	1	0	6,121
1989	118	1,093	7,356	1,286	16,901	11,926	642	413	12	0	0	11	39,758
1990	78	236	8,125	28,997	28,229	1,573	490	160	53	51	139	94	68,225
1991	630	674	500	2,699	3,151	1,279	1,254	131	123	3,560	2,140	116,477	132,618
1992	35,954	90,480	37,195	15,831	22,442	17,771	5,609	1,466	1,046	441	1,551	3,941	233,727
1993	5,280	17,105	18,564	11,749	7,502	6,326	1,128	279	188	642	489	694	69,946
1994	419	1,142	1,042	700	17,170	3,488	133	81	1,016	1,342	1,954	5,984	34,471
1995	7,724	4,185	8,262	34,482	13,917	5,315	2,420	2,525	1,016	202	351	433	80,832
1996	350	252	212	328	148	1,000	31	8,125	5,066	1,970	8,700	9,000	35,182
1997	11,070	120,500	78,360	51,340	28,660	29,875	4,600	797	264	271	233	4,366	330,336
1998	5,474	14,210	54,569	6,278	2,309	1,384	114	0	47	1,447	2,628	8,446	96,906
1999	4,998	2,089	11,726	9,378	1,504	1,009	543	7	0	0	0	3	31,257
2000	8	39	32	446	1,584	11,709	120	14	1,380	1,118	7,321	1,334	25,105
2001	6,361	15,096	22,614	9,860	9,983	2,491	319	5,137	2,669	909	4,058	7,868	87,365
2002	8,729	13,890	6,623	4,340	681	632	10,793	176	60	130	132	1,065	47,251
2003	1,480	3,568	7,295	1,745	801	6,679	206	4	1,684	14,044	1,466	863	39,835
2004	1,557	3,053	5,375	13,498	5,421	26,773	4,391	17,690	3,215	2,136	53,958	14,148	151,215
2005	12,686	34,703	23,814	6,631	4,026	4,223	347	21,397	842	144	139	137	109,089
2006	222	226	1,074	221	3,918	1,032	47	0	0	0	0	0	6,740
2007	15	15	27,198	4,596	60,670	111,154	61,672	6,119	20,021	2,291	1,500	1,438	296,689
2008	1,135	778	1,944	2,370	4,228	229	88	4,843	13	37	24	34	15,723
2009	34	29	1,667	11,651	1,483	1,201	4,201	206	198	28,557	6,934	4,961	61,122
2010	53,877	34,742	23,798	12,839	5,744	1,896	1,721	116	7,963	149	156	187	143,188
2011	306	243	162	65	3,322	50	0	0	0	393	2	10	4,553
2012	4,782	4,827	13,286	2,190	1,102	279	12	0	1	1	0	0	26,480
2013	1	1	2	1	5,731	19	927	0	1,114	6,110	1,174	3,138	18,218
2014	990	607	449	335	1,490	661	94	11	0	16	15	17	4,685
2015	76	149	1,020	1,112	68,477	13,688	1,011	70	36	22,947	20,666	16,370	145,622
Min	0	0	1	0	61	4	0	0	0	0	0	0	778
Max	53,877	120,500	78,360	71,610	130,144	111,154	61,672	21,397	30,383	87,059	53,958	116,477	330,336
Average	5,183	8,602	9,560	9,016	14,973	8,544	3,171	1,692	2,511	4,764	3,421	4,946	76,384

Appendix B - Naturalized Flows

NATURALIZED FLOW **LEBE49**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Leon River near Belton  
 Gage Number 08102500

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	1,129	1,785	1,127	30,086	7,115	99,590	48,201	8,833	2,068	5,702	179,015	212,510	597,161
1941	85,585	247,577	218,070	131,841	416,151	160,102	84,131	52,924	41,903	59,409	18,710	15,119	1,531,522
1942	10,975	9,693	8,202	289,698	267,189	187,929	22,541	27,982	185,117	147,159	49,190	29,721	1,235,396
1943	22,582	14,711	21,064	31,685	21,155	9,010	3,804	1,141	8,511	8,009	2,784	4,823	149,279
1944	47,980	118,203	108,637	68,779	538,365	108,064	21,467	9,000	10,803	9,779	8,568	32,940	1,082,585
1945	110,222	111,742	195,644	400,977	81,729	64,513	36,246	7,753	10,605	43,356	16,487	39,604	1,118,878
1946	48,412	83,375	155,617	44,224	146,990	48,752	10,281	3,494	26,552	7,285	27,079	28,854	630,915
1947	65,706	25,492	89,354	42,976	57,449	12,258	5,438	2,208	1,482	930	3,899	8,378	315,570
1948	3,561	20,281	11,642	7,901	30,156	11,142	17,671	1,620	8,339	295	227	269	113,104
1949	2,214	5,125	64,040	84,534	75,001	55,235	11,464	2,213	1,164	7,061	4,159	3,047	315,257
1950	2,107	11,875	2,872	13,507	42,324	24,831	24,591	1,715	31,422	613	210	204	156,271
1951	474	907	1,473	2,197	16,318	28,658	596	400	2,238	293	200	200	53,954
1952	223	212	961	28,146	67,747	10,566	3,425	483	359	306	7,805	18,293	138,526
1953	6,094	1,522	17,553	10,774	159,373	3,602	11,376	5,241	3,727	21,879	5,682	3,026	249,849
1954	1,905	1,207	1,173	7,129	6,742	0	0	0	0	1,962	5,716	0	25,834
1955	0	8,912	3,397	22,382	79,796	35,168	4,710	2,824	19,107	8,375	0	0	184,671
1956	1,468	2,986	725	2,644	133,082	2,064	205	2,395	0	126	5,148	5,985	156,828
1957	1,000	1,419	19,735	321,009	629,875	115,840	48,893	9,663	2,662	121,874	75,168	32,620	1,379,758
1958	28,217	115,744	97,313	52,007	183,276	26,043	8,373	3,005	2,629	880	1,074	1,123	519,684
1959	1,741	4,180	3,196	4,339	4,490	50,394	29,033	12,768	6,817	374,132	44,666	73,064	608,820
1960	154,704	83,763	42,439	27,922	17,018	6,921	4,736	1,177	718	55,727	10,828	116,110	522,063
1961	251,510	238,234	94,904	33,446	17,508	99,289	103,535	16,975	11,516	81,330	29,574	24,116	1,001,937
1962	13,798	11,192	9,846	13,183	9,827	17,688	7,964	7,807	57,218	22,079	6,420	12,074	189,096
1963	5,201	4,992	6,922	4,921	42,054	21,457	7,921	268	913	459	8,389	359	103,856
1964	5,959	11,851	18,929	49,556	18,493	86,858	3,758	20,179	80,976	35,371	73,652	20,327	425,909
1965	37,932	114,608	59,800	30,439	557,088	84,818	42,076	28,658	19,516	13,281	82,134	25,005	1,095,355
1966	16,571	28,867	26,861	89,089	101,808	43,336	13,055	48,029	77,060	11,492	5,727	3,532	465,427
1967	4,377	3,226	5,376	13,195	19,855	27,330	15,483	1,061	8,610	1,730	5,064	3,210	108,517
1968	221,717	88,663	176,845	118,306	230,620	86,755	54,477	8,244	4,654	2,279	3,720	5,289	1,001,569
1969	4,636	6,889	20,063	110,014	118,339	13,649	3,198	7,238	757	12,597	14,419	31,205	343,004
1970	32,322	47,927	213,002	89,800	69,008	60,612	4,355	2,906	33,658	8,231	3,018	3,929	558,768
1971	4,125	3,541	3,813	6,014	18,604	3,795	113,542	25,674	8,849	64,167	23,014	79,361	354,499
1972	42,884	22,986	13,333	9,322	23,970	5,978	5,511	884	0	9,845	6,180	4,361	145,254
1973	17,440	21,321	41,578	66,585	42,854	49,156	26,644	2,335	2,535	51,649	13,765	5,671	341,533
1974	8,248	8,693	8,616	6,527	6,736	853	3,037	29,500	95,450	137,333	99,132	52,055	456,180
1975	47,145	161,764	52,336	102,809	94,771	39,852	21,614	8,886	1,205	244	0	2,364	532,990
1976	2,869	3,562	5,161	27,910	28,735	25,694	123,827	8,401	8,985	21,217	11,420	46,347	314,128
1977	21,382	55,290	82,826	251,306	143,347	47,869	10,349	3,239	1,199	325	0	486	617,618
1978	917	4,833	6,588	4,407	3,548	3,580	1,779	2,996	246	502	2,865	1,001	33,262
1979	17,922	20,369	70,327	42,155	115,042	130,414	22,082	12,954	27	986	0	3,158	435,436
1980	5,133	8,747	8,967	12,684	142,362	14,040	4,144	2,177	3,003	0	0	2,550	203,807
1981	900	1,879	13,437	11,072	7,197	152,102	7,639	4,297	7,856	31,974	5,121	1,077	244,551
1982	3,084	5,327	19,107	17,516	68,032	52,817	22,093	6,524	349	0	92	1,089	196,030
1983	2,083	14,340	33,405	9,472	23,655	5,952	183	2,369	0	2,520	0	0	93,979
1984	2,721	1,848	13,049	2,577	2,058	8,050	1,850	1,447	0	36,650	10,463	24,800	105,513
1985	38,283	24,228	51,796	25,584	27,097	33,992	3,439	3,107	1,179	57,758	12,537	52,912	331,912
1986	10,608	63,966	11,986	6,455	78,711	240,634	34,293	15,231	93,086	38,592	38,413	85,116	717,091
1987	52,593	51,242	88,156	33,527	110,612	226,410	64,106	9,803	1,700	4,419	7,392	659,678	
1988	5,210	7,378	6,661	5,612	4,092	81,708	9,066	6,148	4,530	3,077	1,540	1,389	136,411
1989	10,131	22,393	33,307	21,175	111,047	122,139	24,608	15,711	6,842	5,867	1,463	806	375,489
1990	5,220	4,229	38,765	286,251	309,516	66,422	33,062	24,941	11,113	9,317	7,419	2,358	798,613
1991	21,212	17,889	10,522	16,809	34,842	29,371	8,968	22,095	16,686	54,678	74,168	549,899	857,139
1992	244,325	512,612	248,031	108,669	187,524	144,643	82,962	44,896	38,861	11,241	12,661	36,351	1,672,776
1993	37,110	117,418	137,608	93,695	69,144	39,872	8,493	5,201	7,166	32,210	16,073	6,783	570,773
1994	6,331	28,048	16,063	9,625	198,131	60,476	27,783	6,699	7,557	18,128	25,872	46,149	450,862
1995	39,484	23,170	58,761	212,236	131,928	84,636	26,035	108,468	28,885	24,837	5,115	6,865	750,420
1996	5,535	6,767	4,199	8,579	5,480	21,984	5,081	46,726	81,293	24,517	41,590	68,254	320,005
1997	54,742	405,198	296,493	219,088	218,782	230,708	71,833	21,637	7,052	5,268	7,416	95,134	1,633,351
1998	73,886	85,443	251,353	68,450	20,382	7,712	2,429	5,348	5,895	34,767	9,011	41,028	605,704
1999	20,715	12,929	27,319	23,596	15,608	13,351	6,882	0	0	0	0	0	120,400
2000	1,105	5,172	5,575	16,100	5,423	41,799	635	0	3,216	7,047	87,800	22,117	195,989
2001	58,146	91,936	168,453	47,781	50,518	13,046	2,569	26,034	17,161	4,202	31,825	39,332	551,003
2002	20,884	46,074	33,015	35,944	14,468	9,488	77,623	1,413	0	24,502	12,049	37,975	313,435
2003	19,722	46,261	57,102	15,647	4,104	28,042	5,021	963	4,054	97,054	6,167	3,990	288,127
2004	21,941	42,776	53,974	107,809	64,711	117,105	35,542	74,527	25,527	26,539	304,923	97,822	973,196
2005	72,265	150,114	169,871	46,597	26,883	17,105	4,884	105,609	4,502	600	908	1,334	600,672
2006	3,512	4,220	15,616	6,763	24,234	1,688	202	0	0	1,153	0	876	58,264
2007	13,263	2,973	158,906	88,568	343,514	504,516	391,803	111,790	94,962	19,268	9,081	9,781	1,748,425
2008	7,465	8,612	37,335	29,431	63,078	4,389	0	32,086	1,286	1,021	1,154	0	185,857
2009	1,946	3,748	16,951	26,545	10,110	7,208	9,187	1,677	15,835	199,526	44,049	31,753	368,535
2010	164,601	199,221	131,072	65,420	21,823	7,762	11,561	789	110,178	3,168	1,072	1,909	718,576
2011	10,516	5,317	5,154	4,981	17,523	1,931	4,012	0	1,047	11,591	41	6,474	68,587
2012	53,443	64,511	182,285	28,266	8,554	5,717	0	0	354	0	184	0	343,314
2013	5,550	2,002	3,649	7,573	21,178	2,504	11,033	2,777	4,977	29,499	8,618	13,649	113,009
2014	5,459	4,807	4,819	3,207	16,744	16,906	6,047	108	759	1,999	3,114	927	64,896
2015	4,475	2,843	12,615	15,236	333,667	153,077	93,700	26,172	2,375	138,661	149,004	170,962	1,102,787
Min	0	212	725	2,197	2,058	0	0	0	0	0	0	0	25,834
Max	251,510	512,612	296,493	400,977	629,875	504,516	391,803	111,790	185,117	374,132	304,923	549,899	1,748,425
Average	32,327	50,331	57,983	58,319	97,846	58,802	27,370	14,866	18,380	30,384	23,533	31,824	501,966

Appendix B - Naturalized Flows

NATURALIZED FLOW LAKE50  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Lampasas River near Kempner  
 Gage Number 08103800

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	552	1,464	681	4,713	3,163	21,246	16,244	1,467	632	2,017	50,405	59,217	161,800
1941	30,240	54,188	53,762	49,246	63,335	35,013	13,877	7,017	1,718	5,774	2,118	1,979	318,267
1942	1,544	1,283	1,254	43,489	45,455	50,446	5,166	3,039	9,043	9,847	5,830	4,760	181,156
1943	3,993	2,569	3,619	3,485	3,081	995	648	288	4,456	1,268	755	993	26,149
1944	11,758	35,807	31,874	16,234	145,397	47,010	7,801	6,236	4,490	3,065	4,076	21,446	335,194
1945	42,740	46,625	56,471	61,676	27,399	18,517	5,742	4,201	10,190	8,685	7,029	11,778	301,054
1946	14,649	20,960	27,663	10,800	10,451	6,198	1,476	1,667	2,109	1,461	2,104	4,567	104,103
1947	17,449	7,919	17,521	11,889	8,933	2,656	1,198	1,268	664	535	729	882	71,641
1948	753	7,221	1,491	3,354	5,353	482	3,079	2,051	394	293	409	714	25,595
1949	554	508	13,800	20,439	4,263	6,946	1,164	1,125	269	316	448	619	50,451
1950	453	2,504	662	2,496	3,461	2,403	565	74	3,683	280	302	335	17,219
1951	329	366	362	349	3,059	1,969	76	49	786	146	285	300	8,078
1952	272	245	612	10,459	20,630	2,973	1,297	76	147	78	675	8,962	46,425
1953	2,163	1,285	3,073	4,561	44,627	2,261	1,071	367	2,081	2,263	523	633	64,909
1954	608	384	362	627	3,003	123	90	72	275	847	10,164	312	16,867
1955	1,375	3,458	1,251	2,138	29,951	12,973	5,650	2,713	4,494	273	232	355	64,864
1956	336	634	198	119	16,703	380	15	1,390	150	679	3,609	2,355	26,567
1957	519	710	6,523	87,450	108,427	19,809	2,019	711	1,026	25,319	15,838	11,207	279,559
1958	8,235	40,836	35,014	13,495	30,452	18,480	2,356	1,334	1,224	1,003	849	835	154,113
1959	748	910	793	1,328	737	14,179	1,879	4,380	3,524	81,673	14,130	24,188	148,469
1960	37,179	24,558	15,796	8,556	4,488	2,060	2,919	1,966	2,466	38,131	10,395	41,264	189,780
1961	56,170	65,070	27,379	14,331	7,145	9,139	18,919	3,626	2,640	5,803	7,301	2,531	220,055
1962	2,399	2,162	2,842	3,142	3,321	5,446	1,343	357	5,751	15,053	1,839	4,389	48,043
1963	2,345	2,414	2,702	1,550	2,389	1,252	786	418	1,299	504	2,433	752	18,844
1964	830	2,282	6,001	6,535	3,918	2,957	510	4,438	11,220	2,662	5,059	1,845	48,257
1965	2,588	25,771	7,364	4,544	184,211	16,446	3,315	2,285	11,544	8,404	17,404	8,036	291,912
1966	7,281	9,346	15,820	27,304	22,627	7,170	1,788	23,408	16,625	5,303	3,241	3,488	143,401
1967	2,484	2,116	1,550	3,053	1,303	682	898	517	1,099	1,271	1,004	973	16,950
1968	49,045	17,931	47,573	26,713	26,104	14,470	12,433	2,934	2,054	1,608	1,478	1,426	203,769
1969	1,196	1,200	1,725	13,558	25,133	2,659	1,688	2,310	1,653	16,260	7,746	12,802	87,930
1970	11,201	18,572	92,436	27,121	13,831	12,553	2,610	1,862	24,961	5,127	3,111	2,559	215,944
1971	2,239	1,972	1,799	1,387	2,747	1,433	14,401	4,228	1,784	14,626	5,166	19,822	71,604
1972	11,330	7,011	4,373	3,850	23,315	2,387	2,595	1,260	850	1,991	881	939	60,782
1973	1,166	1,549	4,267	8,356	6,144	8,112	2,956	1,019	1,042	13,030	3,803	2,822	54,266
1974	2,963	3,070	2,062	1,229	3,217	4,171	1,013	4,291	10,306	8,557	13,147	8,674	62,700
1975	10,390	43,030	13,126	25,004	34,222	14,884	8,699	6,409	2,042	2,006	1,864	1,842	163,518
1976	1,805	1,498	1,461	1,617	3,618	10,665	22,538	2,485	3,275	3,659	3,351	5,046	61,018
1977	5,913	7,246	13,808	65,893	31,353	9,866	2,720	1,806	1,734	1,376	1,450	1,973	145,138
1978	1,808	1,677	1,198	1,095	1,030	1,770	697	852	846	826	985	1,013	13,797
1979	1,364	2,007	5,926	5,710	15,608	18,035	5,118	12,871	1,542	1,325	1,348	1,964	72,818
1980	2,121	1,549	1,429	1,666	16,079	3,090	1,210	891	1,290	933	1,075	1,129	32,462
1981	955	955	4,097	2,282	4,477	23,107	2,748	1,694	4,841	3,693	3,522	2,210	54,581
1982	2,259	2,255	4,870	4,223	10,459	3,606	1,899	713	766	860	1,074	995	33,979
1983	898	990	1,854	1,530	3,196	1,108	758	1,025	829	1,194	906	995	15,283
1984	706	699	906	678	598	558	806	669	663	6,742	1,001	1,657	15,683
1985	2,027	1,805	11,050	8,544	8,378	24,228	1,082	818	915	27,917	1,041	2,637	90,442
1986	1,624	2,506	1,619	1,463	6,307	56,672	2,509	1,204	6,107	25,920	23,727	32,383	162,041
1987	24,221	19,474	29,608	13,794	24,253	102,189	11,401	4,164	5,105	2,417	2,743	3,506	242,875
1988	3,041	3,783	2,800	1,762	1,906	4,614	959	833	918	919	816	999	23,350
1989	1,057	865	1,291	1,182	10,029	6,667	1,365	983	824	727	632	968	26,590
1990	1,201	964	11,419	24,717	40,843	11,802	2,020	1,590	2,944	1,589	2,129	1,757	102,975
1991	3,734	4,204	3,448	3,275	15,712	12,254	2,713	1,494	1,410	2,849	3,099	196,276	250,468
1992	68,063	202,765	81,244	29,017	38,180	50,445	10,243	3,881	2,949	2,172	4,255	4,710	497,924
1993	5,464	23,079	34,519	22,892	22,461	14,370	3,534	1,252	1,483	1,964	1,822	1,798	134,638
1994	1,929	2,556	2,067	1,612	19,026	6,035	1,411	958	2,737	3,760	1,836	4,638	48,565
1995	6,260	5,649	14,794	24,958	16,274	8,240	2,102	2,518	1,798	667	1,250	1,177	85,687
1996	1,283	1,355	1,604	2,067	3,836	4,841	2,200	9,138	5,861	2,302	4,013	8,266	46,766
1997	10,861	145,614	95,862	62,404	48,134	98,633	11,914	3,495	2,161	2,154	2,236	6,236	489,704
1998	8,480	23,706	94,773	20,387	6,676	3,641	5,536	2,458	1,820	3,101	9,222	14,118	193,918
1999	11,011	6,257	24,314	20,545	10,469	6,271	2,440	1,165	1,128	1,168	1,418	1,513	87,699
2000	1,176	1,449	1,363	7,640	1,745	4,102	705	546	657	885	10,045	2,241	32,554
2001	5,634	18,183	30,773	12,963	10,091	2,707	1,399	2,693	2,698	1,231	9,535	7,455	105,362
2002	10,769	9,716	6,419	4,572	3,292	2,637	47,029	2,778	1,809	3,038	3,829	5,268	101,156
2003	4,866	6,413	13,407	5,410	2,707	10,432	1,566	1,266	1,628	3,066	1,927	1,561	54,249
2004	1,728	2,146	5,060	10,058	5,667	43,921	6,952	22,179	2,878	3,507	66,261	26,388	196,745
2005	20,595	31,255	34,534	14,679	8,954	8,695	2,882	20,504	2,799	1,133	1,213	1,372	148,615
2006	1,341	1,051	4,660	3,130	9,239	4,850	886	751	704	936	1,055	1,238	29,841
2007	1,086	939	39,948	10,824	159,044	177,694	155,073	17,170	18,788	5,293	4,632	4,442	594,933
2008	4,294	3,004	3,344	3,715	10,722	1,649	993	1,014	695	847	747	956	31,980
2009	1,068	781	1,915	26,243	2,091	6,098	2,111	1,022	1,568	26,846	13,308	13,538	96,589
2010	61,109	66,812	44,671	21,956	19,936	4,375	3,939	1,946	2,101	1,204	1,209	1,221	230,479
2011	1,124	1,013	1,475	868	3,762	568	513	501	520	4,408	484	616	15,852
2012	1,801	6,378	17,239	4,839	5,110	1,048	754	539	508	691	556	858	40,321
2013	1,060	1,267	939	828	798	462	761	640	707	2,235	1,498	2,176	13,371
2014	1,119	925	776	888	9,665	4,232	1,353	1,029	1,088	1,028	980	999	24,082
2015	1,412	2,711	1,699	1,052	43,935	11,086	2,259	995	705	11,960	11,667	19,922	109,403
Min	272	245	198	119	598	123	15	49	147	78	232	300	8,078
Max	68,063	202,765	95,862	87,450	184,211	177,694	155,073	23,408	24,961	81,673	66,261	196,276	594,933
Average	8,268	14,150	15,237	12,863	21,022	14,976	6,281	3,097	3,191	5,983	5,398	8,669	119,134

Appendix B - Naturalized Flows

NATURALIZED FLOW LAY051  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Lampasas River at Youngsport  
 Gage Number 08104000

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	976	2,586	1,203	8,327	5,588	37,537	28,699	2,591	1,117	3,563	89,055	104,624	285,866
1941	53,427	95,738	94,986	87,007	111,900	61,860	24,518	12,398	3,035	10,201	3,742	3,497	562,309
1942	2,728	2,266	2,215	76,835	80,309	89,128	9,128	5,370	15,977	17,397	10,300	8,410	320,063
1943	7,055	4,539	6,394	6,158	5,443	1,758	1,144	509	7,872	2,240	1,334	1,754	46,200
1944	20,774	63,264	56,314	28,682	256,885	83,057	13,782	11,017	7,932	5,415	7,202	37,891	592,215
1945	75,513	82,376	99,772	108,969	48,409	32,716	10,144	7,422	18,004	15,345	12,418	20,809	531,897
1946	25,881	37,031	48,875	19,081	18,464	10,950	2,607	2,945	3,726	2,581	3,718	8,069	183,928
1947	30,828	13,991	30,955	21,005	15,782	4,693	2,116	2,240	1,173	946	1,288	1,558	126,575
1948	1,331	12,758	2,634	5,926	9,457	852	5,440	3,624	696	518	723	1,281	45,220
1949	979	898	24,382	36,112	7,532	12,272	2,056	1,988	475	558	791	1,093	89,136
1950	801	4,424	1,170	4,410	6,115	4,245	999	131	6,507	495	534	591	30,422
1951	582	647	640	617	5,405	3,479	135	86	1,389	258	504	530	14,272
1952	480	432	1,082	18,479	36,449	5,252	2,291	134	260	137	1,193	15,834	82,023
1953	3,821	2,270	5,430	8,059	78,847	3,995	1,892	649	3,677	3,999	924	1,118	114,681
1954	1,075	679	639	1,107	5,305	218	159	128	486	1,496	17,958	551	29,801
1955	2,430	6,109	2,210	3,777	52,917	22,921	9,983	4,794	7,940	482	410	628	114,601
1956	594	1,121	349	210	29,510	672	26	2,456	265	1,199	6,376	4,161	46,939
1957	917	1,255	11,524	154,505	191,568	34,999	3,567	1,256	1,813	44,734	27,983	19,800	493,921
1958	14,549	72,149	61,862	23,843	53,802	32,650	4,162	2,357	2,162	1,772	1,500	1,476	272,284
1959	1,322	1,608	1,401	2,346	1,303	25,051	3,320	7,738	6,226	144,298	24,964	42,735	262,312
1960	65,687	43,389	27,909	15,116	7,930	3,640	5,158	3,474	4,357	67,369	18,366	72,905	335,300
1961	99,241	114,965	48,372	25,319	12,624	16,147	33,426	6,407	4,665	10,252	12,900	4,472	388,790
1962	4,238	3,819	5,021	5,552	5,868	9,622	2,372	630	10,160	18,916	2,448	4,956	73,602
1963	2,625	2,182	2,309	1,229	4,292	1,573	1,174	164	926	2,725	2,571	999	22,769
1964	1,447	4,973	9,014	9,595	7,247	5,913	375	3,607	15,775	2,870	8,045	3,387	72,248
1965	6,910	39,609	20,992	14,456	292,356	39,402	7,423	3,345	11,766	10,083	19,140	12,487	477,969
1966	10,188	14,019	17,929	34,108	40,283	10,388	2,624	24,220	33,381	8,109	4,593	3,867	203,709
1967	3,206	2,429	2,239	3,229	1,916	621	581	996	1,165	1,020	1,156	930	19,488
1968	91,279	33,814	91,455	45,629	58,595	29,139	19,890	4,302	4,187	2,067	2,013	2,751	385,121
1969	2,035	2,571	5,680	56,524	48,167	6,251	1,924	2,322	1,889	14,526	8,253	15,636	165,778
1970	15,542	24,329	128,386	38,077	29,267	23,772	4,211	1,823	27,004	5,261	3,163	2,963	303,798
1971	2,377	1,972	2,007	1,465	2,807	1,211	16,498	5,573	1,802	13,393	6,493	21,900	77,498
1972	12,474	7,704	4,647	3,683	27,920	5,686	3,761	2,479	746	3,009	2,346	2,126	76,581
1973	6,487	13,042	23,057	22,172	18,888	12,528	7,190	1,837	1,299	23,863	9,723	6,359	146,445
1974	6,159	4,695	3,409	2,056	10,329	5,123	978	34,338	46,791	55,935	66,641	28,486	264,940
1975	25,837	78,912	32,458	32,243	69,148	36,496	17,488	10,744	3,577	2,640	2,201	2,345	314,089
1976	1,821	1,649	1,927	12,232	29,508	23,761	40,393	6,741	6,032	14,574	12,335	20,992	171,965
1977	18,276	22,915	25,613	110,238	55,812	16,169	4,430	2,590	2,141	1,629	1,663	1,600	263,076
1978	1,525	1,981	1,998	1,724	1,069	3,756	446	614	888	608	1,132	963	16,704
1979	5,405	13,809	19,481	19,455	40,337	44,695	16,640	16,947	2,500	1,524	1,792	2,027	184,612
1980	1,878	1,996	2,082	3,166	54,024	7,703	1,556	806	998	1,538	1,772	1,861	79,379
1981	1,574	1,574	6,752	3,761	7,378	38,080	4,529	2,792	7,978	6,086	5,804	3,642	89,949
1982	3,723	3,716	8,026	6,960	17,236	5,943	3,130	1,175	1,262	1,417	1,770	1,640	55,997
1983	1,480	1,632	3,055	2,521	5,267	1,826	1,249	1,689	1,366	1,968	1,493	1,640	25,186
1984	1,163	1,152	1,493	1,117	986	920	1,328	1,103	1,093	11,111	1,650	2,731	25,846
1985	3,340	2,975	18,210	14,081	13,807	39,928	1,783	1,348	1,508	46,007	1,716	4,346	149,048
1986	2,676	4,130	2,668	2,411	10,394	93,395	4,135	1,984	10,064	42,716	39,102	53,367	267,044
1987	39,916	32,093	48,794	22,733	39,969	168,407	18,789	6,862	8,413	3,983	4,520	5,778	400,258
1988	5,012	6,234	4,614	2,904	3,141	7,604	1,580	1,373	1,513	1,515	1,345	1,646	38,481
1989	1,742	1,426	2,128	1,948	16,528	10,987	2,250	1,620	1,358	1,198	1,042	1,595	43,820
1990	1,979	1,589	18,819	40,734	67,309	19,450	3,329	2,620	4,852	2,619	3,509	2,896	169,703
1991	6,154	6,928	5,682	5,397	25,893	20,195	4,471	2,462	2,324	4,695	5,107	323,463	412,771
1992	112,168	334,157	133,890	47,820	62,921	83,133	16,880	6,396	4,860	3,579	7,012	7,762	820,579
1993	9,005	38,034	56,887	37,726	37,016	23,682	5,824	2,063	2,444	3,237	3,003	2,963	221,883
1994	3,179	4,212	3,406	2,657	31,355	9,946	2,325	1,579	4,511	6,196	3,026	7,643	80,035
1995	10,316	9,310	24,381	41,131	26,820	13,580	3,464	4,150	2,963	1,099	2,060	1,940	141,212
1996	2,114	2,233	2,643	3,406	6,322	7,978	3,626	15,059	9,659	3,794	6,613	13,622	77,070
1997	17,899	239,972	157,981	102,842	79,325	162,547	19,634	5,760	3,561	3,550	3,685	10,277	807,032
1998	13,975	39,067	156,186	33,598	11,002	6,000	9,123	4,051	2,999	5,110	15,198	23,266	319,577
1999	18,146	10,312	40,069	33,858	17,253	10,335	4,021	1,920	1,859	1,925	2,337	2,493	144,528
2000	1,938	2,388	2,246	12,591	2,876	6,760	1,162	900	1,083	1,458	16,554	3,693	53,649
2001	9,285	29,966	50,714	21,363	16,630	4,461	2,306	4,438	4,446	2,029	15,714	12,286	173,637
2002	17,747	16,012	10,579	7,535	5,425	4,346	77,504	4,578	2,981	5,007	6,310	8,682	166,705
2003	8,019	10,569	22,095	8,916	4,461	17,192	2,581	2,086	2,683	5,053	3,176	2,573	89,402
2004	2,848	3,537	8,339	16,576	9,339	72,382	11,457	36,551	4,743	5,780	109,198	43,487	324,236
2005	33,941	51,508	56,912	24,191	14,756	14,329	4,750	33,791	4,613	1,867	1,999	2,261	244,918
2006	2,210	1,732	7,680	5,158	15,226	7,993	1,460	1,238	1,160	1,543	1,739	2,040	49,178
2007	1,970	1,547	65,834	17,838	262,105	292,840	255,560	28,296	30,963	8,723	7,634	7,320	980,450
2008	7,077	4,951	5,511	6,122	17,670	2,718	1,636	1,671	1,145	1,396	1,231	1,575	52,703
2009	1,760	1,287	3,156	43,248	3,446	10,050	3,479	1,684	2,584	44,242	21,932	22,311	159,179
2010	100,708	110,106	73,618	36,183	32,855	7,210	6,491	3,207	3,462	1,984	1,992	2,012	379,829
2011	1,852	1,669	2,431	1,430	6,200	936	845	826	857	7,264	798	1,015	26,124
2012	2,968	10,511	28,410	7,975	8,421	1,727	1,243	888	837	1,139	916	1,414	66,449
2013	1,747	2,088	1,547	1,365	1,315	761	1,254	1,055	1,165	3,683	2,469	3,586	22,035
2014	1,844	1,524	1,279	1,463	15,928	6,974	2,230	1,696	1,793	1,694	1,615	1,646	39,687
2015	2,327	4,468	2,800	1,734	72,405	18,270	3,723	1,640	1,162	19,710	19,227	32,831	180,296
Min	480	432	349	210	986	218	26	86	260	137	410	530	14,272
Max	112,168	334,157	157,981	154,505	292,356	292,840	255,560	36,551	46,791	144,298	109,198	323,463	980,450
Average	14,267	24,152	25,906	22,290	36,952	25,852	10,577	5,189	5,435	10,315	9,528	14,630	205,092

Appendix B - Naturalized Flows

NATURALIZED FLOW LABE52  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Lampasas River near Belton  
 Gage Number 08104100

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	1,061	2,811	1,308	9,051	6,074	40,803	31,196	2,816	1,214	3,873	96,803	113,726	310,736
1941	58,075	104,067	103,250	94,577	121,635	67,242	26,651	13,477	3,299	11,088	4,068	3,801	611,230
1942	2,965	2,463	2,408	83,520	87,296	96,882	9,922	5,837	17,367	18,911	11,196	9,142	347,908
1943	7,669	4,934	6,950	6,694	5,917	1,911	1,244	553	8,557	2,435	1,450	1,907	50,219
1944	22,581	68,768	61,213	31,177	279,234	90,283	14,981	11,975	8,622	5,886	7,829	41,188	643,738
1945	82,083	89,543	108,452	118,449	52,621	35,562	11,027	8,068	19,570	16,680	13,498	22,619	578,172
1946	28,133	40,253	53,127	20,741	20,070	11,903	2,834	3,201	4,050	2,806	4,041	8,771	199,930
1947	33,510	15,208	33,648	22,832	17,155	5,101	2,300	2,435	1,275	1,028	1,400	1,694	137,587
1948	1,447	13,868	2,863	6,442	10,280	926	5,913	3,939	757	563	786	1,371	49,154
1949	1,064	976	26,503	39,254	8,187	13,340	2,235	2,161	516	607	860	1,188	96,891
1950	871	4,809	1,272	4,794	6,647	4,614	1,086	142	7,073	538	580	642	33,069
1951	633	703	696	671	5,875	3,782	147	93	1,510	280	548	576	15,514
1952	522	470	1,176	20,087	39,620	5,709	2,490	146	283	149	1,297	17,212	89,159
1953	4,153	2,467	5,902	8,760	85,707	4,343	2,057	705	3,997	4,347	1,004	1,215	124,658
1954	1,169	738	695	1,203	5,767	237	173	139	528	1,626	19,520	599	32,394
1955	2,641	6,640	2,402	4,106	57,521	24,915	10,852	5,211	8,631	524	446	683	124,571
1956	646	1,219	379	228	32,077	730	28	2,670	288	1,303	6,931	4,523	51,023
1957	997	1,364	12,527	167,947	208,234	38,044	3,877	1,365	1,971	48,626	30,418	21,523	536,892
1958	15,815	78,426	67,244	25,917	58,483	35,491	4,524	2,562	2,350	1,926	1,631	1,604	295,973
1959	1,437	1,748	1,523	2,550	1,416	27,230	3,609	8,411	6,768	156,852	27,136	46,453	285,133
1960	71,402	47,164	30,337	16,431	8,620	3,957	5,607	3,776	4,736	73,230	19,964	79,248	364,471
1961	107,875	124,967	52,580	27,522	13,722	17,552	36,334	6,964	5,071	11,144	14,022	4,861	422,615
1962	4,607	4,151	5,458	6,035	6,379	10,459	2,578	685	11,044	20,562	2,661	5,387	80,005
1963	2,853	2,115	1,813	1,512	3,303	1,329	896	201	1,948	2,780	3,669	951	23,370
1964	1,385	5,344	10,070	9,980	7,125	7,823	596	3,846	17,529	3,002	9,216	3,727	79,643
1965	8,439	49,947	25,707	16,939	310,885	51,107	9,334	3,713	10,813	10,282	19,790	12,597	529,553
1966	9,942	13,676	18,885	38,234	41,595	11,708	3,020	21,582	30,069	7,480	4,673	3,899	204,763
1967	3,237	2,658	2,484	2,890	2,306	765	534	759	620	1,079	1,316	1,033	19,681
1968	92,497	34,926	86,896	46,069	61,848	28,686	21,832	4,267	3,919	1,759	1,750	2,083	386,532
1969	2,565	3,616	7,245	60,756	54,630	6,800	2,061	3,301	1,437	14,570	9,166	19,951	186,098
1970	16,450	25,534	131,900	44,295	34,816	29,927	4,298	2,580	25,772	5,301	2,704	2,799	326,376
1971	2,473	2,701	4,815	2,114	2,550	2,001	23,672	8,659	1,645	16,224	7,705	31,202	105,761
1972	15,232	10,331	6,565	5,426	34,239	6,201	3,846	3,021	124	3,562	3,275	2,882	94,704
1973	10,433	16,962	29,234	26,795	24,703	14,689	9,408	1,255	671	32,284	13,625	6,205	186,264
1974	6,955	5,721	5,447	3,855	12,480	4,618	1,391	40,529	55,154	74,361	61,334	26,875	298,720
1975	24,219	85,080	28,935	31,712	80,167	43,082	18,758	11,699	2,404	1,951	1,601	1,775	331,383
1976	2,210	2,460	2,932	19,801	32,272	25,497	43,671	6,061	5,959	16,547	13,441	27,696	198,547
1977	18,450	28,424	31,343	142,320	53,827	15,396	4,653	2,895	2,061	472	948	849	301,638
1978	892	3,031	2,638	2,293	1,634	4,823	517	1,385	1,037	0	1,260	731	20,241
1979	7,084	13,465	32,670	23,026	46,981	46,652	18,061	16,311	984	1,074	342	2,172	208,822
1980	2,240	3,129	3,208	5,233	73,308	10,134	1,977	0	723	0	486	1,277	101,715
1981	645	1,073	6,682	7,637	10,355	104,836	14,223	5,159	10,015	11,216	9,179	3,276	184,296
1982	2,835	3,082	7,971	9,524	27,216	13,199	5,746	0	394	0	119	748	70,834
1983	1,678	11,119	27,692	10,289	34,709	12,292	2,323	867	0	191	0	0	101,160
1984	1,558	1,333	2,528	1,310	679	3,640	1,843	0	0	7,647	1,392	4,625	26,555
1985	8,722	12,121	34,864	20,052	17,878	24,207	1,933	16	482	28,815	5,194	22,681	176,965
1986	9,427	37,196	8,234	4,084	6,389	84,486	5,896	1,306	12,687	34,710	34,208	69,704	308,327
1987	55,132	34,059	51,727	25,432	29,423	128,926	27,067	5,927	8,473	2,405	3,544	5,368	377,483
1988	5,188	4,881	5,569	3,809	2,091	7,922	3,014	925	565	393	198	674	35,229
1989	2,458	3,518	6,363	5,546	26,613	13,250	2,488	238	0	1,825	523	302	63,124
1990	2,382	2,326	16,337	90,813	99,902	19,800	12,315	8,373	5,465	4,260	5,277	2,180	269,429
1991	15,435	12,116	8,077	8,930	35,938	21,064	6,087	7,812	7,611	18,483	26,255	246,281	414,088
1992	117,812	260,011	135,246	61,081	101,909	70,178	19,340	7,059	15,722	5,151	6,638	16,196	816,344
1993	16,014	50,618	58,985	39,491	49,547	33,482	10,973	3,223	4,508	10,841	5,823	3,161	286,665
1994	3,051	13,325	9,000	4,429	63,221	22,339	9,160	2,844	3,100	7,713	9,635	19,360	167,177
1995	20,538	10,315	28,285	74,078	47,901	30,944	8,541	36,708	9,708	9,899	1,392	2,158	280,465
1996	1,840	2,880	1,636	3,213	3,417	11,346	3,154	15,547	26,485	7,561	13,976	25,963	117,019
1997	30,056	166,481	113,975	114,806	98,729	114,651	34,565	10,574	3,299	2,973	4,527	55,137	749,774
1998	50,299	54,078	117,539	31,023	10,346	3,694	1,576	2,407	4,206	33,677	20,754	35,569	365,166
1999	16,036	9,402	20,306	17,611	13,071	10,527	2,983	618	0	0	597	601	91,752
2000	1,350	3,948	2,608	9,844	1,444	5,888	0	0	0	1,913	35,601	17,219	79,815
2001	38,892	44,629	71,485	35,113	29,317	6,828	2,942	6,783	8,128	2,228	29,244	18,103	293,692
2002	14,603	20,569	11,948	8,975	4,659	4,440	73,104	3,367	1,948	3,541	2,564	14,836	164,554
2003	14,474	28,147	40,904	14,252	5,053	15,693	2,452	666	1,690	1,601	1,840	2,240	129,012
2004	4,285	4,654	11,555	28,120	17,031	51,953	17,929	29,517	5,645	9,475	137,208	67,229	384,601
2005	38,010	57,966	75,523	25,562	14,352	10,862	4,571	47,030	9,070	3,347	2,756	3,087	292,136
2006	2,191	2,082	7,962	8,883	18,660	8,730	2,168	2,488	654	1,876	808	2,296	58,798
2007	5,149	2,686	69,602	49,806	265,195	298,679	220,127	42,708	35,874	11,992	7,124	7,204	1,016,146
2008	5,122	3,591	8,495	5,698	26,878	3,984	2,899	2,350	0	1,814	297	0	61,128
2009	0	0	2,272	23,664	3,163	4,717	1,950	1,537	17,321	86,080	38,846	25,528	205,078
2010	81,765	125,978	78,489	40,463	28,267	10,828	8,582	3,691	54,073	5,377	4,060	3,583	445,156
2011	4,454	3,896	3,365	2,441	9,659	1,478	3,424	3,829	1,346	9,279	0	25	43,196
2012	0	9,049	60,708	10,733	7,257	4,034	3,810	4,175	3,585	0	190	0	103,541
2013	0	0	1,466	0	1,679	545	4,510	1,565	2,354	3,637	506	2,471	18,733
2014	0	0	0	235	12,452	5,819	947	27	0	0	0	0	19,480
2015	0	805	5,851	4,013	93,526	34,988	7,779	4,687	4,787	44,203	45,426	60,363	306,428
Min	0	0	0	0	679	237	0	0	0	0	0	0	15,514
Max	117,812	260,011	135,246	167,947	310,885	298,679	220,127	47,030	55,154	156,852	137,208	246,281	1,016,146
Average	16,451	25,326	27,999	26,358	42,568	27,007	11,587	6,361	7,126	12,524	11,580	16,800	231,687

Appendix B - Naturalized Flows

NATURALIZED FLOW **LRLR53**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Little River near Little River  
 Gage Number 08104500

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	2,438	5,062	2,698	44,482	14,710	158,793	89,050	13,229	3,688	10,729	310,425	367,241	1,022,545
1941	160,976	397,559	362,519	253,426	611,483	257,032	125,816	75,643	52,038	80,608	25,999	21,557	2,424,656
1942	15,868	13,849	12,063	424,445	402,403	320,832	36,673	38,622	232,867	190,556	68,889	44,156	1,801,222
1943	34,320	22,292	31,796	43,822	30,800	12,469	5,730	1,911	18,972	11,868	4,769	7,616	226,365
1944	79,617	210,139	191,013	112,860	920,900	221,318	40,818	23,180	21,695	17,595	18,262	82,022	1,939,418
1945	215,081	224,789	342,092	590,517	150,700	112,591	53,720	17,573	33,129	67,976	33,472	69,958	1,911,597
1946	86,031	139,430	236,802	73,307	191,596	69,135	14,924	7,456	35,062	11,425	35,663	42,757	943,588
1947	111,786	45,721	139,318	74,090	84,801	19,629	8,748	5,151	3,074	2,172	6,007	11,506	512,004
1948	5,665	38,259	16,532	16,012	45,872	13,889	26,763	6,073	10,463	941	1,100	1,772	183,339
1949	3,697	6,975	102,393	139,708	95,573	78,173	15,656	4,865	1,898	8,823	5,732	4,794	468,287
1950	3,367	18,874	4,681	20,748	56,092	33,670	29,633	2,138	43,922	1,283	862	921	216,190
1951	1,223	1,800	2,447	3,259	25,155	37,215	846	563	4,200	638	815	845	79,006
1952	814	746	2,366	53,992	120,659	18,317	6,619	714	717	513	10,420	39,519	255,396
1953	11,482	4,391	26,614	21,809	275,859	8,797	15,364	6,821	8,574	29,967	7,650	4,799	422,126
1954	3,451	2,184	2,098	9,537	13,950	252	184	148	563	4,004	27,414	638	64,425
1955	2,814	17,394	6,493	30,292	153,682	67,267	17,014	8,822	31,320	10,256	475	727	346,557
1956	2,388	4,756	1,244	3,305	188,282	3,168	267	5,617	307	1,534	13,345	11,749	235,962
1957	2,220	3,096	36,198	550,645	951,231	174,672	60,749	12,644	5,182	192,932	119,449	60,702	2,169,720
1958	49,523	217,580	184,325	87,834	274,536	67,966	14,516	6,209	5,548	3,071	2,981	3,010	917,099
1959	3,547	6,703	5,323	7,741	6,708	87,365	37,465	23,746	15,104	600,342	80,632	134,095	1,008,771
1960	255,213	147,242	81,463	49,838	28,890	12,230	11,457	5,386	5,877	142,545	33,807	218,879	992,826
1961	406,170	409,004	165,914	68,050	34,893	133,675	158,601	27,076	18,738	106,052	49,185	33,105	1,610,462
1962	20,886	17,383	17,216	21,695	18,175	31,625	11,969	9,496	71,840	50,713	13,509	22,237	306,743
1963	12,143	9,061	12,001	8,627	49,706	26,256	11,578	442	3,462	3,993	13,994	2,329	153,592
1964	9,802	19,317	34,183	61,644	31,475	108,236	6,969	24,072	107,475	46,657	91,203	26,094	567,127
1965	67,037	194,100	103,595	54,269	942,745	176,892	64,991	42,483	36,479	29,119	114,241	50,351	1,876,302
1966	38,430	63,444	63,475	147,372	166,188	63,668	21,297	71,997	113,606	22,931	12,865	10,243	795,516
1967	9,623	7,706	9,714	16,720	28,819	28,902	19,314	3,560	12,042	7,372	9,811	9,009	162,592
1968	353,735	133,888	278,565	163,767	305,531	113,425	92,545	17,413	12,736	6,655	8,709	12,089	1,499,058
1969	10,102	18,575	42,427	195,914	188,032	27,531	7,888	13,120	4,332	28,685	24,882	55,821	617,309
1970	55,278	83,766	369,520	138,037	117,075	86,708	12,304	7,268	62,994	18,074	7,050	8,241	966,315
1971	7,969	8,020	8,775	10,971	24,101	5,996	148,469	38,509	10,828	84,067	31,644	114,242	493,591
1972	61,097	34,311	20,942	16,093	59,755	16,217	11,538	5,139	601	17,985	18,322	12,207	274,207
1973	43,230	54,556	88,278	106,217	83,579	72,062	42,993	5,651	10,020	109,679	37,569	19,013	672,847
1974	23,020	19,686	18,521	13,834	25,738	8,233	7,260	83,288	172,532	262,076	207,737	96,923	938,848
1975	92,891	283,595	91,558	138,941	248,496	125,150	70,815	31,126	9,592	6,413	4,507	7,947	1,111,031
1976	7,597	8,448	12,215	77,025	85,187	56,035	173,941	20,403	21,484	53,235	34,826	95,962	646,358
1977	57,967	124,378	134,713	443,239	195,335	72,137	19,828	9,882	5,344	2,622	3,091	3,666	1,072,202
1978	3,766	12,066	13,341	8,729	6,550	11,987	5,668	5,575	2,521	7,23	7,166	3,717	81,809
1979	32,741	50,705	122,480	100,031	216,433	236,298	59,097	39,897	6,723	5,787	3,100	10,532	883,824
1980	11,516	17,417	17,547	23,793	258,499	31,683	9,783	4,921	6,928	1,760	2,851	6,486	393,184
1981	3,878	6,268	24,600	24,205	24,978	371,336	41,843	14,579	24,197	67,228	21,577	9,517	634,206
1982	10,561	12,219	30,164	34,611	109,465	70,860	26,318	7,625	1,579	1,474	3,576	4,259	312,711
1983	6,823	37,438	72,282	23,276	77,302	26,263	5,990	6,686	1,992	4,257	1,483	2,121	265,913
1984	6,272	4,363	20,570	5,011	2,597	17,183	6,073	1,094	1,206	55,106	16,950	37,955	174,380
1985	53,837	58,373	111,872	55,251	51,534	58,352	7,262	3,980	5,386	105,046	43,214	111,815	665,922
1986	28,728	149,719	26,233	15,442	87,885	343,521	54,784	20,580	112,825	86,182	93,494	203,682	1,223,075
1987	142,338	109,704	167,039	70,780	148,191	388,544	126,605	30,311	25,447	6,874	12,070	21,318	1,249,221
1988	15,019	15,443	15,672	12,384	8,178	102,307	15,532	9,724	5,981	4,290	3,440	3,451	211,421
1989	15,788	32,581	44,802	31,713	154,360	137,764	31,667	18,969	7,174	6,294	1,804	1,040	483,956
1990	8,213	8,019	56,333	313,147	344,491	68,275	42,467	28,872	18,844	14,690	18,197	7,517	929,065
1991	53,224	41,778	27,853	30,794	123,924	72,633	20,989	26,937	26,246	63,733	90,535	849,245	1,427,891
1992	406,249	896,589	466,367	210,623	351,411	241,992	66,690	24,343	54,214	17,762	22,889	55,849	2,814,978
1993	55,219	174,544	203,398	136,176	170,851	115,454	37,837	11,113	15,546	37,384	20,078	10,900	988,500
1994	10,521	45,948	31,034	15,272	218,005	77,032	31,585	9,806	10,688	26,595	33,225	66,760	576,471
1995	70,820	35,569	97,535	255,441	165,175	106,703	29,450	126,580	33,475	34,133	4,799	7,440	967,120
1996	6,344	9,931	5,640	11,079	11,782	39,125	10,877	53,612	91,329	26,073	48,193	89,528	403,513
1997	103,643	574,071	393,016	395,882	340,446	395,349	119,191	36,463	11,376	10,250	15,610	190,129	2,585,426
1998	173,446	186,475	405,306	106,975	35,675	12,738	5,433	8,300	14,502	116,127	71,564	122,653	1,259,194
1999	55,296	32,420	70,020	60,728	45,073	29,647	15,811	2,115	1,335	493	1,326	2,417	316,681
2000	4,395	11,877	11,651	35,510	9,101	50,688	94	0	4,973	12,106	152,661	60,101	353,157
2001	133,787	155,047	264,904	103,345	108,975	26,777	9,934	49,108	55,503	13,269	85,877	77,660	1,084,186
2002	44,284	75,889	52,592	55,838	22,663	17,776	158,159	10,719	4,336	34,824	18,662	69,787	565,529
2003	44,230	95,799	114,144	34,308	12,771	45,440	6,106	2,904	8,795	111,377	10,103	8,336	494,313
2004	34,746	63,352	73,732	152,618	96,936	200,117	64,246	107,142	34,738	39,636	491,645	182,958	1,541,866
2005	134,886	234,574	282,458	94,626	49,871	33,413	12,408	183,767	17,423	6,125	5,241	5,923	1,060,715
2006	7,220	9,147	28,720	23,279	56,973	14,382	4,270	1,794	511	6,497	763	6,288	159,844
2007	47,841	10,683	269,250	150,720	675,769	892,476	701,752	193,481	165,911	29,598	21,901	22,944	3,182,326
2008	16,455	15,183	52,550	36,830	98,233	11,941	4,616	38,409	2,902	5,570	3,161	1,522	287,372
2009	3,551	5,440	24,009	53,409	16,016	10,696	9,980	2,077	71,835	328,981	125,355	79,363	730,712
2010	276,716	387,615	261,107	126,236	60,296	25,585	28,252	6,317	251,365	13,955	8,322	9,109	1,454,875
2011	21,346	12,819	11,396	9,438	33,196	4,720	7,453	3,228	1,824	23,519	849	10,742	140,530
2012	57,527	83,559	280,243	45,122	18,398	11,780	5,034	5,780	7,544	1,277	1,131	906	518,301
2013	10,887	4,456	7,645	9,202	30,345	3,925	20,420	5,181	9,150	44,614	14,954	20,688	181,467
2014	8,628	6,994	7,962	5,496	37,872	25,606	8,277	0	3,549	4,172	6,679	2,050	117,285
2015	10,514	6,859	27,138	23,885	477,373	203,218	116,637	36,959	9,770	231,372	228,926	276,716	1,649,367
Min	814	746	1,244	3,259	2,597	252	94	0	307	493	475	638	64,425
Max	406,249	8											

Appendix B - Naturalized Flows

NATURALIZED FLOW **NGGE54**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name North Fork San Gabriel River near Georgetown  
 Gage Number 08104700

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	156	1,320	464	4,019	4,673	22,485	15,357	1,358	627	1,689	34,427	31,451	118,025
1941	16,009	23,154	21,295	25,629	24,857	17,799	5,201	1,574	912	2,764	951	1,045	141,191
1942	892	746	606	10,090	4,788	12,835	1,063	584	4,580	9,333	3,149	2,612	51,279
1943	2,420	1,621	1,696	1,425	1,689	428	475	157	349	346	210	106	10,920
1944	4,812	11,243	14,642	6,719	26,635	15,191	1,778	745	3,185	692	2,555	10,227	98,424
1945	15,498	14,572	12,708	18,817	8,437	11,502	2,967	1,633	1,700	1,556	2,428	1,420	93,239
1946	3,193	8,024	8,743	6,586	7,990	3,237	868	693	4,358	3,054	9,276	13,355	69,379
1947	16,400	8,857	8,271	6,600	3,676	1,528	702	692	395	335	364	419	48,239
1948	398	506	464	6,426	7,424	441	588	962	166	346	202	187	18,110
1949	236	380	1,456	7,515	1,928	2,598	877	249	237	234	156	347	16,214
1950	308	1,315	621	1,383	2,604	1,679	418	146	380	159	143	152	9,306
1951	137	193	288	379	356	227	49	49	1,102	159	125	124	3,188
1952	144	318	561	4,928	8,098	1,350	382	82	89	89	98	6,247	22,386
1953	1,803	1,678	1,744	7,833	7,994	915	218	506	2,015	9,049	1,477	1,331	36,564
1954	894	612	433	205	343	41	3	6	17	67	64	72	2,758
1955	179	612	630	196	5,258	2,809	1,505	1,796	146	20	36	42	13,228
1956	84	90	72	34	1,706	1	0	73	58	559	1,744	1,310	5,732
1957	151	372	1,031	50,386	20,059	25,863	2,155	772	1,264	11,376	9,432	8,287	131,148
1958	7,375	25,946	15,100	6,109	7,729	3,378	1,330	825	2,913	1,747	1,623	1,427	75,500
1959	1,143	1,809	1,879	3,560	2,388	2,846	1,067	2,156	1,493	38,694	7,505	19,858	84,397
1960	15,612	12,737	7,596	4,375	2,383	970	1,110	502	373	8,131	6,099	17,264	77,151
1961	16,451	29,130	10,004	4,026	2,085	1,931	6,681	1,892	2,357	2,218	1,865	1,986	80,625
1962	1,652	1,599	1,318	1,978	2,443	3,130	1,537	302	814	1,068	625	731	17,199
1963	646	645	728	614	509	246	136	80	55	3,402	480	357	7,899
1964	624	1,493	2,531	1,955	1,427	871	277	163	2,167	898	3,219	1,818	17,443
1965	3,921	15,270	8,316	6,279	39,058	8,308	2,765	1,058	4,783	2,695	4,192	8,030	104,676
1966	5,209	6,504	7,235	8,955	8,541	2,917	1,277	1,068	2,710	1,428	1,067	1,018	47,930
1967	816	661	500	863	2,798	516	201	148	513	893	1,230	1,187	10,327
1968	36,120	12,075	20,191	11,194	20,971	15,260	2,982	612	1,378	294	389	1,069	122,533
1969	700	1,457	5,545	23,324	18,072	3,248	663	3,709	2,255	943	1,022	4,690	65,628
1970	3,546	6,942	26,496	9,464	13,908	8,932	1,677	409	316	259	199	182	72,330
1971	182	178	178	108	100	29	3,363	359	54	2,053	1,413	2,839	10,856
1972	1,553	1,022	653	261	1,157	1,818	837	227	66	862	1,815	960	11,231
1973	2,349	5,619	9,162	7,173	13,320	4,438	7,130	1,032	948	14,532	5,478	3,055	74,236
1974	2,963	2,572	1,987	1,191	19,283	2,346	461	20,709	26,982	27,993	22,199	7,236	135,922
1975	6,223	29,390	7,000	3,031	32,694	19,343	7,708	6,285	1,022	603	526	503	114,328
1976	390	327	425	11,134	10,551	8,153	16,811	2,925	1,198	1,074	1,642	5,086	59,716
1977	4,545	7,229	5,743	44,905	10,018	2,801	613	154	87	67	249	120	76,531
1978	159	435	371	328	194	192	20	19	14	14	191	127	2,064
1979	2,293	9,095	13,740	14,521	17,746	14,054	4,569	1,277	362	147	204	281	78,289
1980	228	464	83	1,549	20,512	2,585	788	76	1,857	44	195	673	29,054
1981	613	988	2,570	4,172	8,145	75,382	7,118	1,233	27,565	10,717	8,189	2,724	149,416
1982	1,875	1,160	1,525	3,167	10,813	5,042	1,494	0	0	0	0	185	25,261
1983	1,164	7,254	14,580	4,937	16,072	7,974	2,076	808	0	43	0	0	54,908
1984	408	234	354	242	0	4,523	439	112	0	5,546	968	4,365	17,191
1985	7,484	8,781	15,466	6,938	5,538	1,408	352	0	0	2,756	2,591	13,907	65,221
1986	3,790	22,606	3,404	1,753	1,757	12,526	804	0	476	4,141	5,406	20,917	77,580
1987	11,431	6,453	8,048	3,627	3,695	54,409	13,936	1,081	590	77	318	1,022	104,687
1988	1,000	624	655	482	283	2,622	1,083	55	0	0	0	73	6,877
1989	327	596	2,674	1,646	13,540	2,888	302	0	0	0	0	0	21,973
1990	150	160	540	600	2,060	218	0	165	0	0	193	84	4,170
1991	4,122	4,018	2,792	4,327	8,320	5,822	2,606	152	3,170	1,246	1,954	44,888	83,417
1992	31,791	66,553	38,755	10,076	18,282	35,789	10,238	1,060	389	98	190	1,090	214,311
1993	1,353	4,141	8,846	6,892	8,200	21,790	6,507	692	252	7	133	296	59,109
1994	336	732	1,184	896	2,436	939	77	220	104	2,368	1,075	3,597	13,964
1995	4,102	2,154	4,489	5,123	3,616	3,596	757	0	232	0	36	59	24,164
1996	60	185	73	306	253	283	156	555	3,391	3,160	1,225	7,058	16,705
1997	6,896	16,168	23,437	28,528	22,140	35,596	6,425	881	94	0	217	14,833	155,215
1998	10,633	21,182	24,933	7,365	2,286	361	275	0	54	12,488	9,623	12,717	101,917
1999	5,520	2,560	3,929	1,711	6,224	2,279	6,522	260	0	0	281	384	29,670
2000	196	719	433	739	408	2,403	148	121	5	485	9,088	4,941	19,686
2001	12,131	8,683	15,981	7,700	5,446	1,107	554	1,138	394	978	21,248	3,061	78,421
2002	2,945	2,476	1,810	1,868	377	3,866	40,611	1,930	2,015	1,796	3,031	8,674	71,399
2003	8,820	12,559	12,175	4,066	1,360	1,298	463	244	0	379	0	0	41,364
2004	1,216	1,052	2,146	7,333	4,563	6,853	2,830	111	0	0	54,307	0	80,411
2005	5,858	9,283	12,241	5,172	2,568	571	732	2,786	383	750	95	188	40,627
2006	309	418	215	2,674	4,579	464	74	287	20	346	0	0	9,386
2007	2,654	1,094	27,338	8,920	35,433	76,105	55,353	14,087	5,179	0	66	1,069	227,298
2008	704	560	1,208	858	2,298	0	387	333	0	172	67	97	6,684
2009	100	151	58	244	66	58	31	70	1,991	37,655	11,523	8,969	60,916
2010	22,251	22,074	15,884	8,139	1,965	0	0	85	22,818	0	0	0	93,216
2011	682	649	558	392	553	2,057	260	397	183	200	75	118	6,124
2012	31	1,174	17,493	1,166	1,256	739	204	241	395	63	0	0	22,762
2013	0	183	102	0	175	65	287	81	1,038	71	0	181	2,183
2014	211	203	279	137	292	489	430	11	0	0	0	0	2,052
2015	7	177	1,105	715	38,076	1,454	0	605	240	8,459	10,882	10,983	72,703
Min	0	90	58	0	0	0	0	0	0	0	0	0	2,052
Max	36,120	66,553	38,755	50,386	39,058	76,105	55,353	20,709	27,565	38,694	54,307	44,888	227,298
Average	4,337	6,266	6,445	6,171	8,151	7,898	3,449	1,156	1,938	3,235	3,593	4,286	56,923

Appendix B - Naturalized Flows

NATURALIZED FLOW **SGGE55**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name South Fork San Gabriel River at Georgetown  
 Gage Number 08104900

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	99	837	294	2,546	2,961	14,247	9,730	861	397	1,070	21,814	19,928	74,784
1941	10,144	14,671	13,493	16,239	15,750	11,278	3,296	997	578	1,751	603	662	89,462
1942	565	473	384	6,394	3,034	8,133	674	370	2,902	5,913	1,995	1,655	32,492
1943	1,533	1,027	1,075	903	1,070	271	301	100	221	219	133	67	6,919
1944	3,049	7,124	9,278	4,257	16,877	9,626	1,127	472	2,018	439	1,619	6,480	62,364
1945	9,820	9,234	8,052	11,923	5,346	7,288	1,880	1,035	1,077	986	1,538	900	59,079
1946	2,023	5,084	5,540	4,173	5,063	2,051	550	439	2,762	1,935	5,877	8,462	43,960
1947	10,392	5,612	5,241	4,182	2,330	968	445	438	250	212	231	265	30,565
1948	252	321	294	4,072	4,704	279	372	609	105	219	128	118	11,475
1949	150	241	923	4,762	1,221	1,646	556	158	150	149	99	220	10,274
1950	195	833	393	876	1,650	1,064	265	92	241	101	91	96	5,897
1951	87	122	183	240	226	144	31	31	698	101	79	79	2,020
1952	91	201	355	3,122	5,131	855	242	52	57	57	62	3,958	14,185
1953	1,143	1,063	1,105	4,963	5,065	580	138	321	1,277	5,734	936	843	23,168
1954	567	388	275	130	217	26	2	4	11	43	41	45	1,747
1955	113	388	399	124	3,332	1,780	954	1,138	93	13	23	27	8,382
1956	53	57	46	22	1,081	1	0	47	37	354	1,105	830	3,632
1957	96	236	653	31,926	12,710	16,387	1,365	489	801	7,208	5,976	5,251	83,099
1958	4,673	16,440	9,568	3,871	4,897	2,140	843	523	1,845	1,107	1,028	904	47,839
1959	724	1,146	1,191	2,255	1,513	1,804	676	1,366	946	24,518	4,755	12,583	53,477
1960	9,892	8,071	4,813	2,772	1,510	614	703	318	237	5,152	3,864	10,939	48,885
1961	10,424	18,458	6,339	2,551	1,321	1,224	4,233	1,199	1,493	1,405	1,181	1,258	51,086
1962	1,047	1,013	835	1,253	1,548	1,983	974	192	516	677	396	463	10,898
1963	410	409	461	389	322	156	86	50	35	2,156	304	226	5,005
1964	395	946	1,603	1,239	904	552	175	103	1,373	569	2,040	1,152	11,053
1965	2,485	9,675	5,269	3,979	24,748	5,264	1,752	670	3,031	1,708	2,656	5,088	66,326
1966	3,300	4,121	4,584	5,674	5,412	1,848	809	677	1,717	905	676	645	30,369
1967	517	419	317	547	1,773	327	127	94	325	566	779	655	6,446
1968	27,140	7,480	10,209	6,405	11,816	15,596	2,936	519	3,140	735	658	1,567	88,201
1969	940	1,882	4,360	14,245	10,191	2,295	530	4,340	897	665	575	1,748	42,668
1970	1,843	2,866	11,720	6,069	12,496	5,274	1,214	137	462	318	210	263	42,872
1971	171	218	244	211	627	22	1,584	423	24	888	359	937	5,708
1972	588	441	330	121	1,844	778	161	251	71	598	2,237	893	8,313
1973	1,839	2,862	3,176	2,277	5,939	1,775	3,767	504	812	13,617	3,699	2,035	42,302
1974	2,220	2,126	1,408	1,380	11,982	2,205	332	8,058	3,306	12,210	7,406	3,497	56,130
1975	3,602	13,355	3,925	2,081	15,197	6,744	3,118	1,969	666	297	442	278	51,674
1976	208	153	99	7,105	6,720	4,594	5,278	1,736	836	1,043	1,331	2,836	31,939
1977	2,815	4,124	2,930	20,033	4,716	1,424	127	18	7	26	226	64	36,510
1978	111	460	507	351	293	342	8	5	2	4	287	225	2,595
1979	1,630	4,596	8,787	10,867	11,131	6,795	2,654	1,107	394	24	75	198	48,258
1980	305	329	577	841	4,778	1,400	125	2	310	173	146	323	9,309
1981	226	398	1,416	3,418	8,656	50,622	4,302	1,045	18,220	11,117	4,911	1,989	106,320
1982	1,089	714	867	2,817	7,190	4,217	1,143	100	17	36	277	525	18,992
1983	960	3,140	6,200	3,370	13,660	4,566	1,611	746	114	83	175	180	34,805
1984	196	120	216	62	15	465	47	3	1	7,809	970	2,987	12,891
1985	3,993	6,597	7,244	5,375	3,390	1,297	430	15	29	2,253	3,281	8,422	42,326
1986	3,364	17,151	2,898	1,148	2,321	9,824	1,238	225	668	1,952	2,372	11,520	54,681
1987	6,577	3,866	4,600	2,352	3,983	48,274	4,007	1,077	521	160	1,184	1,181	77,782
1988	883	564	540	318	195	463	326	48	20	8	9	14	3,388
1989	112	187	1,035	602	6,686	1,045	633	365	30	45	19	23	10,782
1990	21	45	797	652	2,329	234	53	29	43	33	88	97	4,421
1991	1,926	1,974	1,513	4,514	2,696	2,283	776	530	2,424	2,456	1,077	30,042	52,211
1992	19,509	40,911	22,594	5,000	8,848	11,849	3,947	856	303	80	701	2,001	116,599
1993	3,400	4,860	5,800	4,653	4,546	11,893	2,342	421	158	113	158	188	38,532
1994	236	330	315	111	2,977	274	16	54	54	3,656	1,154	4,171	13,348
1995	3,451	1,660	3,045	2,499	5,300	3,497	442	288	108	77	56	20	20,443
1996	19	47	68	53	35	43	21	354	8,099	4,247	1,383	6,932	21,301
1997	4,784	8,220	10,687	26,477	20,223	27,094	4,241	821	216	261	156	4,687	107,867
1998	4,671	7,295	11,466	4,520	1,581	277	591	6	19	11,338	6,549	4,558	52,871
1999	2,348	1,226	1,386	1,024	3,940	2,064	2,582	180	11	13	44	40	14,858
2000	68	111	123	208	652	160	18	8	7	190	4,108	2,610	8,263
2001	6,329	4,205	8,729	5,724	4,780	1,409	827	512	274	366	25,187	3,166	61,508
2002	2,031	1,501	1,194	817	169	3,113	21,800	1,499	1,435	1,732	3,150	5,484	43,925
2003	3,794	6,589	6,811	2,551	927	964	140	49	33	45	56	53	22,012
2004	1,090	1,167	1,486	5,151	2,638	4,969	3,124	818	236	1,722	22,554	6,089	51,044
2005	3,043	3,844	9,868	4,719	2,162	643	327	569	42	17	46	69	25,349
2006	44	31	91	1,441	1,043	167	93	14	93	245	184	439	3,885
2007	1,558	692	17,700	6,060	11,734	50,632	19,184	5,349	4,893	1,021	597	584	120,004
2008	429	274	852	907	1,315	137	35	14	28	4	6	10	4,011
2009	10	54	159	488	115	30	27	304	3,221	16,644	8,221	5,232	34,505
2010	7,813	12,793	9,822	4,863	2,021	648	631	40	15,247	925	478	366	55,647
2011	566	341	229	118	26	6	5	2	1	22	101	221	1,638
2012	220	1,179	4,917	1,085	1,155	216	193	157	673	212	81	83	10,171
2013	324	116	120	112	259	4	54	21	665	284	1,023	1,313	4,295
2014	565	249	367	443	878	442	836	28	82	219	770	285	5,164
2015	607	491	2,671	1,275	24,781	7,474	2,777	438	91	4,736	5,403	5,534	56,278
Min	10	31	46	22	15	1	0	2	1	4	6	10	1,638
Max	27,140	40,911	22,594	31,926	24,781	50,632	21,800	8,058	18,220	24,518	25,187	30,042	120,004
Average	2,683	3,716	3,672	3,978	5,035	5,172	1,749	643	1,239	2,237	2,292	2,760	35,177

Appendix B - Naturalized Flows

NATURALIZED FLOW **GAGE56**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name San Gabriel River at Georgetown  
 Gage Number 08105000

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	276	2,337	821	7,113	8,271	39,796	27,180	2,404	1,109	2,989	60,932	55,666	208,894
1941	28,335	40,981	37,691	45,361	43,994	31,502	9,206	2,786	1,614	4,892	1,683	1,850	249,895
1942	1,579	1,321	1,072	17,859	8,475	22,717	1,882	1,033	8,106	16,518	5,574	4,623	90,759
1943	4,283	2,869	3,002	2,522	2,990	757	840	278	617	612	371	187	19,328
1944	8,516	19,899	25,915	11,892	47,142	26,887	3,147	1,318	5,638	1,225	4,523	18,100	174,202
1945	27,430	25,792	22,492	33,305	14,933	20,357	5,251	2,891	3,008	2,754	4,297	2,514	165,024
1946	5,651	14,202	15,475	11,657	14,142	5,730	1,537	1,227	7,714	5,405	16,417	23,637	122,794
1947	29,027	15,676	14,639	11,682	6,507	2,704	1,242	1,224	699	593	644	741	85,378
1948	705	896	822	11,374	13,140	780	1,040	1,702	293	613	357	331	32,053
1949	418	673	2,577	13,301	3,412	4,598	1,552	441	419	415	276	615	28,697
1950	545	2,327	1,099	2,448	4,608	2,971	739	258	672	282	253	269	16,471
1951	243	341	510	670	630	402	86	87	1,950	281	222	220	5,642
1952	255	562	993	8,722	14,332	2,389	676	146	158	158	174	11,057	39,622
1953	3,192	2,970	3,087	13,863	14,149	1,619	386	896	3,567	16,016	2,615	2,355	64,715
1954	1,583	1,083	767	362	607	73	6	10	30	119	114	127	4,881
1955	316	1,084	1,115	347	9,306	4,971	2,664	3,178	259	35	63	75	23,413
1956	149	160	128	61	3,019	2	0	130	103	989	3,086	2,318	10,145
1957	268	659	1,825	89,179	35,502	45,775	3,814	1,366	2,237	20,134	16,693	14,668	232,120
1958	13,053	45,923	26,725	10,812	13,680	5,978	2,354	1,460	5,155	3,092	2,872	2,525	133,629
1959	2,023	3,201	3,326	6,300	4,227	5,038	1,888	3,816	2,642	68,485	13,283	35,147	149,376
1960	27,632	22,544	13,444	7,743	4,217	1,716	1,964	889	661	14,392	10,794	30,555	136,551
1961	29,117	51,558	17,706	7,125	3,691	3,418	11,825	3,348	4,171	3,925	3,300	3,515	142,699
1962	2,924	2,830	2,333	3,501	4,324	5,540	2,721	535	1,441	1,890	1,107	1,294	30,440
1963	1,144	1,142	1,289	1,087	900	435	240	141	98	6,022	850	632	13,980
1964	1,104	2,643	4,479	3,461	2,526	1,542	490	289	3,835	1,589	5,697	3,218	30,873
1965	6,940	27,026	14,719	11,114	69,129	14,705	4,894	1,872	8,466	4,770	7,419	14,213	185,267
1966	9,219	11,511	12,805	15,850	15,117	5,163	2,260	1,891	4,797	2,527	1,889	1,802	84,831
1967	1,445	1,170	885	1,527	4,953	913	356	262	908	1,580	2,177	2,101	18,277
1968	63,929	21,371	35,736	19,812	37,116	27,008	6,988	2,394	6,203	2,233	2,173	3,898	228,861
1969	2,853	4,731	11,802	38,903	30,040	6,473	1,979	10,627	4,196	2,748	2,523	8,084	124,959
1970	6,762	12,516	41,349	16,220	28,768	17,434	4,384	1,682	2,185	2,005	1,503	1,582	136,390
1971	1,374	1,087	1,140	812	911	314	5,080	1,422	376	3,366	2,396	5,162	23,440
1972	3,107	2,175	1,605	886	3,671	3,179	1,476	1,009	542	2,501	6,182	3,048	29,381
1973	5,600	11,311	15,907	12,423	22,514	7,720	13,141	2,931	3,340	31,386	10,232	5,675	142,180
1974	5,779	5,238	3,785	2,867	34,860	5,074	884	32,075	33,771	44,826	33,010	11,967	214,136
1975	10,955	47,661	12,181	5,700	53,398	29,087	12,071	9,203	1,882	1,004	1,079	871	185,092
1976	667	535	584	20,336	19,257	14,213	24,629	5,197	2,268	2,360	3,315	8,833	102,194
1977	8,206	12,659	9,670	72,406	16,428	4,711	825	192	105	104	530	205	126,041
1978	301	998	979	757	543	595	31	27	18	20	533	392	5,194
1979	4,374	15,265	25,118	28,308	32,198	23,247	8,054	2,658	843	191	311	534	141,101
1980	594	884	736	2,665	28,198	4,443	1,018	87	2,416	242	380	1,111	42,774
1981	935	1,545	4,444	8,463	18,733	140,494	12,733	2,540	51,050	24,345	14,607	5,255	285,144
1982	3,305	2,090	2,667	6,672	20,073	10,324	2,940	112	19	40	309	792	49,343
1983	2,368	11,589	23,170	9,262	33,151	13,982	4,111	1,733	127	140	195	201	100,029
1984	673	395	636	339	17	5,562	542	128	1	14,891	3,877	8,197	35,258
1985	12,797	17,146	25,322	13,729	9,955	3,912	1,881	751	888	5,585	6,547	24,897	123,410
1986	8,175	44,329	7,027	3,861	4,547	24,920	2,767	870	1,276	6,794	8,672	36,167	149,405
1987	20,079	11,506	14,103	6,667	8,561	114,492	20,006	2,406	1,239	264	1,675	2,456	203,454
1988	2,100	1,325	1,332	892	533	3,440	1,571	115	22	9	10	97	11,446
1989	489	873	4,136	2,507	22,552	4,385	1,043	407	33	50	21	26	36,522
1990	191	229	1,491	1,396	4,894	504	59	216	48	37	313	202	9,580
1991	6,744	6,681	4,800	9,858	12,283	9,037	3,771	760	6,237	4,128	3,380	83,547	151,226
1992	57,200	119,822	68,404	16,810	30,250	53,116	15,816	2,136	772	198	993	3,446	368,963
1993	5,300	10,036	16,330	12,873	14,212	37,557	9,867	1,241	457	134	324	540	108,871
1994	638	1,184	1,671	1,123	6,035	1,352	104	306	176	6,717	2,485	8,661	30,452
1995	8,422	4,253	8,400	8,499	9,941	7,909	1,337	321	379	86	103	88	49,738
1996	88	259	157	400	321	363	197	1,014	12,811	8,259	2,908	15,599	42,376
1997	13,023	27,193	38,048	61,331	47,235	69,899	11,893	1,898	346	291	416	21,765	293,338
1998	17,064	31,752	40,585	13,252	4,312	711	966	7	81	26,566	18,032	19,262	172,590
1999	8,773	4,221	5,926	3,050	11,333	4,842	10,151	491	12	14	362	473	49,648
2000	294	925	620	1,056	1,182	2,858	185	144	13	753	14,714	8,419	31,163
2001	20,583	14,370	27,552	14,968	11,402	2,805	1,540	1,840	745	1,499	51,775	6,943	156,022
2002	5,548	4,434	3,349	2,994	609	7,782	69,588	3,823	3,847	3,934	6,892	15,786	128,586
2003	14,065	21,350	21,169	7,378	2,550	2,522	672	327	37	473	62	59	70,664
2004	2,571	2,474	4,050	13,920	8,029	13,182	6,639	1,036	263	1,920	85,700	6,789	146,573
2005	9,925	14,637	24,652	11,028	5,274	1,354	1,181	3,741	474	855	157	287	73,565
2006	394	501	341	4,588	6,269	704	186	336	126	659	205	489	14,798
2007	4,696	1,991	50,217	16,703	52,591	141,312	83,109	21,671	11,230	1,138	739	1,843	387,240
2008	1,263	930	2,297	1,968	4,028	153	471	387	31	196	81	119	11,924
2009	123	229	242	816	202	98	65	417	5,811	60,543	22,015	15,834	106,395
2010	33,521	38,877	28,662	14,497	4,444	723	704	139	42,442	1,031	533	408	165,981
2011	1,392	1,104	878	569	646	2,300	295	445	205	248	196	378	8,656
2012	280	2,624	24,987	2,510	2,688	1,065	443	444	1,191	307	90	93	36,722
2013	361	333	248	125	484	77	380	114	1,899	396	1,141	1,666	7,224
2014	865	504	720	647	1,305	1,038	1,412	43	91	244	859	318	8,046
2015	685	745	4,210	2,219	70,086	9,955	3,096	1,163	369	14,712	18,158	18,416	143,814
Min	88	160	128	61	17	2	0	7	1	9	10	26	4,881
Max	63,929	119,822	68,404	89,179	70,086	141,312	83,109	32,075	51,050	68,485	85,700	83,547	387,240
Average	7,721	11,082	11,252	11,175	14,560	14,430	5,823	2,091	3,596	6,089	6,584	7,832	102,235

Appendix B - Naturalized Flows

NATURALIZED FLOW GALA57  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name San Gabriel River at Laneport  
 Gage Number 08105700

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	502	4,249	1,493	12,931	15,037	72,349	49,413	4,370	2,016	5,434	110,774	101,201	379,769
1941	51,513	74,503	68,522	82,466	79,981	57,271	16,737	5,065	2,934	8,894	3,060	3,363	454,309
1942	2,871	2,402	1,949	32,468	15,408	41,300	3,421	1,878	14,737	30,030	10,134	8,405	165,000
1943	7,786	5,216	5,458	4,585	5,436	1,376	1,527	505	1,122	1,113	674	340	35,138
1944	15,482	36,176	47,113	21,620	85,704	48,881	5,721	2,396	10,250	2,227	8,223	32,906	316,699
1945	49,868	46,890	40,890	60,548	27,148	37,009	9,546	5,256	5,469	5,007	7,812	4,570	300,014
1946	10,274	25,819	28,134	21,192	25,710	10,417	2,794	2,231	14,024	9,826	29,846	42,972	223,239
1947	52,771	28,499	26,614	21,238	11,830	4,916	2,258	2,225	1,271	1,078	1,171	1,347	155,217
1948	1,282	1,629	1,494	20,678	23,889	1,418	1,891	3,094	533	1,114	649	602	58,272
1949	760	1,224	4,685	24,181	6,203	8,359	2,822	802	762	754	502	1,118	52,171
1950	991	4,230	1,998	4,450	8,377	5,401	1,344	469	1,222	513	460	489	29,944
1951	442	620	927	1,218	1,145	731	156	158	3,545	511	404	400	10,257
1952	464	1,022	1,805	15,857	26,056	4,343	1,229	265	287	287	316	20,102	72,033
1953	5,803	5,399	5,612	25,203	25,723	2,943	702	1,629	6,485	29,117	4,754	4,281	117,652
1954	2,878	1,969	1,394	658	1,104	133	11	18	55	216	207	231	8,874
1955	574	1,971	2,027	631	16,918	9,037	4,843	5,778	471	64	115	136	42,565
1956	271	291	233	111	5,489	4	0	236	187	1,798	5,610	4,214	18,444
1957	487	1,198	3,318	162,127	64,543	83,219	6,934	2,483	4,067	36,604	30,348	26,666	421,994
1958	23,730	83,488	48,586	19,656	24,870	10,868	4,280	2,654	9,372	5,621	5,221	4,590	242,938
1959	3,678	5,819	6,047	11,453	7,685	9,159	3,432	6,937	4,803	124,506	24,148	63,897	271,566
1960	50,235	40,985	24,441	14,077	7,667	3,120	3,571	1,616	1,202	26,165	19,623	55,549	248,250
1961	52,935	93,732	32,190	12,953	6,710	6,214	21,498	6,087	7,583	7,136	5,999	6,390	259,427
1962	5,316	5,145	4,241	6,365	7,861	10,072	4,947	973	2,620	3,436	2,013	2,352	55,340
1963	2,080	2,076	2,343	1,976	1,636	791	436	256	178	10,948	1,545	1,149	25,416
1964	2,007	4,805	8,143	6,292	4,592	2,803	891	525	6,972	2,889	10,357	5,850	56,127
1965	12,617	49,133	26,759	20,205	125,677	26,734	8,897	4,221	17,479	8,314	17,051	30,828	347,915
1966	18,400	23,544	22,125	57,966	42,189	14,339	6,129	5,422	15,609	4,815	3,301	3,519	217,358
1967	2,647	2,525	1,982	4,379	20,691	1,946	540	242	8,741	7,059	12,997	12,910	76,659
1968	128,984	39,328	54,586	34,706	58,231	35,700	18,360	4,332	7,795	3,650	5,631	10,687	401,990
1969	6,241	14,218	24,786	59,051	48,722	12,516	4,304	12,824	7,300	5,395	3,762	12,280	211,399
1970	12,330	26,620	72,688	28,681	47,070	22,963	7,542	2,758	6,989	3,573	2,689	2,593	236,496
1971	2,290	2,286	1,935	1,543	1,868	1,061	5,934	3,312	463	3,466	9,658	12,319	46,135
1972	5,965	4,456	3,395	2,327	8,300	15,928	3,051	1,941	594	17,869	13,481	8,407	85,714
1973	15,967	22,140	25,757	32,910	45,422	14,350	15,936	3,733	12,589	66,904	24,390	12,438	292,536
1974	14,065	10,875	8,914	6,412	49,195	10,292	3,154	28,866	45,702	24,915	71,015	22,340	295,745
1975	19,998	72,900	21,093	11,927	85,051	44,847	17,828	13,956	5,392	3,773	3,340	3,376	303,481
1976	2,916	2,380	3,006	41,918	46,118	18,559	24,053	7,599	4,649	5,845	7,841	19,536	184,420
1977	15,276	34,072	18,629	86,683	27,786	9,571	3,511	2,089	1,344	1,104	1,650	1,269	202,984
1978	1,415	3,898	2,873	3,100	1,570	1,430	27	58	5	0	1,856	2,231	18,463
1979	13,208	34,355	48,883	49,815	65,068	49,037	18,425	7,101	3,641	2,459	2,626	3,102	297,720
1980	1,865	8,967	6,543	6,944	37,839	5,341	509	0	3,055	929	1,576	2,847	76,415
1981	2,544	4,152	9,922	9,958	19,776	212,283	35,735	0	53,704	30,869	19,468	8,595	407,006
1982	5,954	4,170	4,977	13,016	38,458	14,860	5,104	1,167	0	111	1,136	1,958	90,911
1983	3,871	15,952	32,859	13,018	50,231	24,169	6,040	3,766	1,781	237	1,563	1,071	154,558
1984	2,564	1,419	2,470	788	0	6,951	448	0	0	36,804	8,488	17,300	77,232
1985	20,383	44,366	38,826	23,319	21,756	8,701	3,126	694	0	11,208	18,296	43,965	234,640
1986	14,181	67,208	11,934	6,621	10,348	31,971	3,366	525	3,499	24,672	16,665	81,566	272,556
1987	29,227	26,182	27,740	14,330	37,513	153,054	12,935	7,398	4,714	2,798	9,310	8,479	333,680
1988	7,525	5,435	5,070	3,483	2,886	12,399	1,944	197	112	0	231	442	39,724
1989	1,780	1,721	5,565	3,708	48,095	8,789	1,633	49	0	473	343	165	72,321
1990	1,074	1,469	7,431	7,351	34,115	1,423	237	0	0	0	742	343	54,185
1991	23,617	16,421	11,404	46,378	33,868	17,598	5,113	1,887	6,177	4,707	5,082	153,129	325,381
1992	92,288	200,960	97,229	28,148	63,998	56,210	25,660	8,161	3,656	3,108	4,158	10,465	594,041
1993	12,666	31,022	40,678	26,604	41,969	54,307	20,618	1,700	1,429	636	1,755	2,362	235,746
1994	2,457	2,389	3,141	1,762	8,793	1,858	0	655	0	12,648	5,387	22,874	61,964
1995	15,990	8,197	22,056	14,790	21,868	17,735	3,573	2,694	910	542	830	1,404	110,589
1996	1,157	1,814	447	1,251	640	1,088	0	1,282	35,454	7,864	4,661	26,191	81,849
1997	18,432	43,837	54,301	144,130	88,076	88,427	20,352	5,890	2,901	3,780	4,956	39,811	514,893
1998	42,712	53,065	56,284	19,982	6,674	966	1,351	495	3,656	61,594	40,595	33,012	320,386
1999	12,663	8,229	14,875	6,682	25,995	11,127	16,258	2,011	546	391	688	1,374	100,839
2000	1,752	2,351	2,829	3,144	7,087	3,838	0	90	0	3,890	43,029	27,387	95,397
2001	36,284	20,380	53,540	24,791	22,002	14,632	4,218	5,638	5,428	3,715	63,344	39,811	293,783
2002	14,011	10,435	9,216	8,530	2,723	5,906	80,731	5,646	5,252	9,172	19,476	38,409	209,507
2003	29,106	46,545	38,852	14,176	5,090	5,570	1,246	452	0	633	357	749	142,776
2004	4,172	5,212	7,960	32,151	46,145	41,839	15,769	12,022	2,574	14,433	155,066	32,973	370,316
2005	24,810	35,333	54,481	20,359	12,554	4,703	2,848	27,061	2,140	1,750	1,531	1,566	189,136
2006	1,559	2,396	4,539	12,969	17,571	2,941	603	0	812	3,074	1,333	4,112	51,909
2007	46,862	9,939	88,559	29,220	74,879	161,225	133,538	33,074	22,140	7,194	5,507	5,280	617,417
2008	4,244	4,054	7,152	6,432	19,332	675	385	0	0	0	0	475	42,749
2009	581	1,134	1,388	3,970	2,420	0	0	0	12,437	92,620	35,757	28,300	178,607
2010	49,334	67,350	53,378	24,863	8,940	5,826	3,277	488	96,667	5,260	3,841	3,172	322,396
2011	5,201	3,545	3,145	1,597	355	1,345	0	0	0	0	0	1,497	16,685
2012	2,956	10,808	39,875	4,623	4,280	752	1,351	1,128	1,845	683	663	437	69,401
2013	4,494	1,378	1,882	2,100	1,635	0	706	0	2,192	13,535	7,424	8,729	44,075
2014	5,454	2,968	3,570	5,280	6,720	2,837	5,589	0	4,150	1,386	10,217	4,768	52,939
2015	17,451	6,693	23,227	4,903	147,347	37,416	11,029	3,242	1,726	41,301	40,058	41,752	376,145
Min	271	291	233	111	0	0	0	0	0	0	0	136	8,874
Max	128,984	200,960	97,229	162,127	147,347	212,283	133,538	33,074	96,667	124,506	155,066	153,129	617,417
Average	15,507	21,047	20,453	21,289	28,311	22,765	9,387	3,734	6,834	11,532	13,142	16,417	190,419

Appendix B - Naturalized Flows

NATURALIZED FLOW **LRCAS8**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Little River at Cameron  
 Gage Number 08106500

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	4,226	21,590	5,258	106,874	118,826	246,699	402,102	19,419	8,135	4,494	506,043	610,025	2,053,691
1941	315,015	455,249	479,749	373,646	726,450	362,612	284,316	63,418	64,426	91,153	32,427	31,703	3,280,164
1942	23,611	21,123	19,061	425,968	430,470	399,414	50,023	37,407	363,203	194,890	104,992	79,515	2,149,677
1943	57,419	35,887	63,315	80,834	60,425	21,543	13,362	5,494	17,899	14,416	7,409	11,745	389,748
1944	135,107	250,461	293,582	104,170	1,068,993	348,160	61,097	25,485	56,025	22,389	51,861	167,740	2,585,070
1945	297,406	273,082	363,820	727,422	202,568	198,538	78,125	36,702	27,620	108,970	38,912	91,309	2,444,474
1946	139,674	206,938	285,994	149,243	296,667	130,471	28,742	14,292	68,527	31,978	195,863	142,338	1,690,727
1947	291,010	104,020	194,623	143,001	153,935	50,412	16,065	10,289	7,174	4,703	8,828	15,754	999,814
1948	10,866	30,929	28,824	35,460	76,132	22,572	34,969	6,918	9,551	2,361	1,682	2,760	263,024
1949	14,723	24,365	78,938	328,270	128,538	79,659	19,277	6,419	3,331	8,830	8,072	13,894	714,316
1950	6,726	56,791	10,487	63,095	67,402	53,388	32,613	3,478	61,696	3,375	1,599	2,105	362,755
1951	2,611	5,155	17,552	5,355	33,660	53,471	1,467	301	9,340	1,075	762	1,216	131,965
1952	1,363	2,140	4,449	66,334	147,441	40,465	6,167	569	138	0	9,514	48,593	327,173
1953	36,746	21,494	31,668	43,637	308,663	18,475	11,828	6,444	22,460	180,729	30,009	139,037	851,190
1954	12,246	7,276	4,999	8,667	33,501	475	0	0	860	3,033	21,177	1,155	93,389
1955	3,600	36,916	15,375	51,022	164,372	99,766	17,922	23,811	27,147	10,262	1,374	1,738	453,305
1956	2,925	9,833	1,125	2,811	152,065	5,659	0	2,831	0	728	16,396	16,909	211,282
1957	2,607	4,488	50,450	929,046	918,866	438,709	73,001	39,282	18,148	557,379	216,687	111,664	3,360,327
1958	87,997	453,674	271,336	134,012	378,921	120,408	39,518	13,992	68,460	24,499	19,309	15,024	1,627,150
1959	13,152	29,231	17,090	52,056	40,144	73,974	51,048	28,158	24,909	753,700	155,217	238,965	1,477,644
1960	340,217	231,696	122,539	79,099	51,135	26,208	19,503	11,288	8,637	322,052	127,078	421,908	1,761,360
1961	553,695	604,538	232,882	98,840	60,081	224,410	218,526	49,454	115,459	115,417	56,456	73,759	2,403,517
1962	40,451	37,600	29,927	60,323	37,021	88,819	29,972	11,339	74,906	59,869	53,616	60,046	583,889
1963	19,809	44,792	20,582	23,737	51,970	25,929	13,557	1,093	4,563	13,292	18,456	4,742	242,522
1964	11,291	31,643	48,912	65,529	44,834	117,569	15,575	24,660	143,596	48,878	109,310	41,251	703,048
1965	233,725	370,928	143,948	116,730	1,318,820	199,500	82,157	51,246	57,902	57,110	177,221	129,635	2,938,922
1966	70,891	124,107	97,966	371,789	286,912	87,748	30,997	76,556	150,064	37,775	20,012	17,760	1,372,577
1967	15,644	12,761	13,961	27,651	85,504	28,495	19,753	3,474	27,722	29,343	83,842	47,114	394,904
1968	691,179	205,116	393,809	247,904	463,805	225,954	192,741	27,587	29,516	13,096	26,869	56,208	2,573,784
1969	24,527	75,735	120,255	327,192	268,971	55,234	15,234	30,360	18,783	39,106	28,597	93,091	1,097,085
1970	85,925	159,999	504,523	182,968	237,647	129,582	26,745	13,191	70,573	43,533	12,272	12,767	1,479,725
1971	11,873	11,588	11,994	17,885	40,434	7,667	146,754	51,275	12,877	80,495	54,204	149,833	596,879
1972	74,673	45,308	27,681	18,948	82,310	44,846	14,985	7,136	3,577	61,083	44,518	30,027	455,092
1973	104,430	98,033	143,984	181,283	161,845	98,291	62,924	14,154	29,247	278,161	110,701	46,225	1,329,278
1974	76,919	43,123	33,644	22,298	113,397	22,772	9,554	106,604	272,387	227,225	380,375	131,685	1,439,983
1975	131,624	408,277	126,978	145,360	573,685	255,464	123,067	60,049	27,287	21,281	13,602	16,224	1,902,898
1976	14,866	13,260	22,667	260,718	235,922	92,361	247,136	39,960	34,040	69,345	64,920	171,131	1,266,326
1977	82,723	251,195	161,936	656,112	234,128	87,301	29,723	13,078	7,976	4,360	6,054	6,432	1,541,018
1978	7,332	19,543	21,676	18,276	9,525	13,262	4,795	8,281	3,355	1,259	14,717	7,500	129,512
1979	83,132	129,730	272,071	212,398	422,350	316,702	233,673	61,626	15,153	10,207	8,764	19,410	1,785,216
1980	25,589	40,881	50,858	46,461	328,978	38,702	10,663	6,086	10,701	5,316	5,994	12,790	583,019
1981	8,961	16,088	59,370	39,853	57,057	799,401	90,423	19,311	85,918	117,037	48,975	23,145	1,365,539
1982	20,988	19,677	35,739	69,517	232,420	100,345	38,285	8,666	1,478	4,523	7,512	8,706	547,856
1983	15,134	83,314	145,169	46,038	192,712	86,093	15,258	26,037	4,920	5,582	4,077	4,338	628,672
1984	9,162	6,394	25,206	6,831	200	21,500	3,457	968	958	170,335	29,156	89,967	364,134
1985	108,074	145,985	186,556	87,594	86,652	81,523	14,691	3,964	2,656	109,488	96,975	197,208	1,121,366
1986	49,012	265,796	52,260	27,152	131,257	382,707	40,137	23,798	116,563	165,251	119,910	418,340	1,792,183
1987	187,731	172,890	236,612	100,789	229,769	769,116	148,631	46,176	31,534	15,015	31,691	39,836	2,009,790
1988	31,266	24,430	25,210	17,994	9,326	122,827	15,184	13,392	4,689	2,721	3,610	4,290	274,939
1989	17,922	36,184	52,400	34,823	247,672	161,426	37,357	19,064	7,259	6,157	2,523	1,512	624,299
1990	9,502	10,749	76,092	344,119	423,856	98,846	61,141	30,123	19,721	15,027	22,703	8,335	1,120,214
1991	195,629	91,213	50,440	130,023	186,190	112,976	28,842	28,866	37,793	68,147	87,023	1,320,476	2,337,618
1992	574,007	1,403,134	690,402	224,455	568,671	401,559	163,606	107,930	67,388	24,847	32,648	86,264	4,344,911
1993	100,125	233,872	299,941	186,716	290,037	208,703	62,121	13,753	16,662	42,206	28,278	18,621	1,501,035
1994	16,747	48,845	49,030	19,760	233,477	96,342	34,322	8,649	14,615	100,532	52,084	144,548	818,951
1995	100,499	51,054	211,479	295,826	240,507	193,661	49,435	118,097	36,356	33,852	9,057	11,818	1,351,641
1996	10,621	12,162	7,734	14,615	11,028	41,468	11,163	53,621	153,431	42,197	58,170	150,288	566,498
1997	134,521	655,331	461,957	665,578	536,944	615,745	177,539	58,338	18,969	17,882	25,225	258,520	3,626,549
1998	304,818	281,133	504,230	167,616	55,790	18,716	10,771	10,682	35,824	344,725	222,977	204,567	2,161,849
1999	77,525	50,036	111,749	79,550	102,497	48,811	39,078	5,016	1,844	1,630	3,133	4,585	525,454
2000	10,873	15,349	19,452	49,543	47,577	57,088	0	0	5,099	27,998	330,178	137,162	700,319
2001	227,599	189,243	420,056	152,843	187,136	60,977	45,750	69,478	111,127	32,895	231,787	285,645	2,014,536
2002	84,853	110,807	75,732	86,100	30,441	27,313	270,122	22,048	16,824	73,826	106,201	195,132	1,099,399
2003	114,133	248,826	200,148	61,452	29,090	58,540	11,325	5,014	12,042	117,701	13,232	11,131	882,634
2004	44,782	82,561	93,440	220,124	241,330	430,534	121,511	144,410	53,604	98,710	882,268	242,388	2,655,662
2005	212,524	314,327	416,949	131,420	81,517	47,974	17,572	274,190	29,583	10,160	8,642	10,613	1,555,471
2006	11,062	14,799	36,460	47,181	97,996	22,345	7,191	2,275	4,583	31,914	3,315	26,556	305,677
2007	237,209	29,848	484,160	202,247	934,170	1,183,013	1,069,600	229,918	205,929	80,359	39,132	35,574	4,731,159
2008	27,475	27,516	73,452	59,960	198,432	19,008	6,330	39,984	3,019	5,719	3,383	2,426	466,704
2009	4,853	7,886	28,100	63,578	25,624	8,838	9,630	4,292	121,915	523,858	188,391	133,234	1,120,199
2010	357,104	492,003	375,168	169,019	82,807	47,558	40,493	9,582	366,857	29,362	16,641	15,583	2,002,177
2011	35,354	20,419	15,681	10,745	33,188	4,687	4,474	572	224	22,739	554	17,300	165,937
2012	88,532	176,573	394,787	70,947	31,041	12,218	14,524	6,748	9,142	5,898	2,347	1,954	814,711
2013	29,488	8,485	11,977	15,013	33,728	4,744	23,100	2,972	17,282	87,081	134,343	39,205	407,418
2014	19,812	13,854	15,897	14,282	80,556	37,650	31,813	0	25,095	8,107	39,532	11,226	297,824
2015	92,335	20,920	143,918	42,									

Appendix B - Naturalized Flows

NATURALIZED FLOW **BRBR59**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Brazos River near Bryan  
 Gage Number 08109000

Gage Name Brazos River at SH 21 near Bryan  
 Gage Number 08108700

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	20,668	40,863	18,746	232,185	269,189	646,622	691,217	261,672	94,492	31,193	1,301,729	1,338,018	4,946,594
1941	710,547	1,136,414	949,374	879,685	2,428,022	1,515,113	736,922	388,539	227,318	790,699	346,374	99,034	10,208,041
1942	86,065	63,247	57,321	1,837,071	1,499,240	1,018,998	114,298	106,385	819,979	708,839	311,066	232,995	6,855,504
1943	137,312	93,055	195,608	277,769	219,433	168,290	43,754	24,074	54,064	67,327	18,607	26,615	1,325,908
1944	331,523	600,770	731,462	262,075	2,432,619	666,069	130,085	50,873	183,722	94,056	135,087	335,714	5,954,055
1945	643,402	693,733	1,174,413	2,061,577	458,367	453,955	501,842	103,622	69,387	401,884	82,676	307,964	6,952,822
1946	343,075	500,677	720,574	326,418	1,019,155	426,609	82,388	80,017	303,123	215,604	562,144	444,504	5,024,288
1947	577,924	186,643	471,548	322,963	784,758	211,094	50,201	73,896	39,806	46,732	37,496	135,330	2,938,391
1948	63,472	154,786	158,408	88,707	265,750	179,979	228,030	12,543	47,058	28,207	16,146	13,324	1,256,230
1949	49,102	99,175	252,884	499,542	833,942	402,269	120,341	16,335	104,621	138,819	54,998	54,826	2,626,854
1950	70,680	372,552	49,925	260,311	354,734	188,168	256,775	173,686	285,073	72,116	14,094	6,383	2,104,497
1951	8,153	32,455	43,439	17,204	184,438	355,571	24,964	34,005	68,698	11,157	12,042	14,403	806,529
1952	8,382	17,344	22,435	224,519	370,045	63,546	19,038	4,844	23,427	5,736	80,380	144,166	983,862
1953	130,626	41,889	168,688	102,143	1,030,531	31,154	279,843	109,043	56,700	478,233	76,055	303,242	2,808,147
1954	35,071	19,809	13,702	122,695	505,465	104,431	15,920	30,746	5,489	32,504	62,047	6,705	954,584
1955	10,673	84,766	55,274	204,562	598,425	388,861	101,843	76,284	268,188	583,972	33,015	15,521	2,421,384
1956	25,001	43,538	15,745	23,528	438,285	36,770	0	5,851	9,871	22,754	53,976	75,628	750,947
1957	1,882	238,083	122,810	2,575,745	4,704,304	1,428,307	305,691	94,527	64,376	1,171,332	627,741	269,780	11,604,578
1958	227,382	746,386	522,867	386,662	1,385,853	242,999	319,499	96,137	234,717	69,378	43,707	41,730	4,317,317
1959	29,437	103,051	43,018	184,041	181,537	404,820	213,850	88,268	38,534	1,815,178	302,937	482,212	3,886,883
1960	841,750	446,700	249,066	191,563	211,468	107,588	259,391	59,662	18,136	644,791	397,760	1,044,904	4,472,779
1961	1,568,851	1,234,336	415,335	190,504	148,904	778,766	669,773	150,360	266,836	305,731	199,992	220,590	6,149,978
1962	110,847	83,645	73,785	131,388	96,534	533,194	251,173	148,369	625,045	227,687	124,083	139,640	2,545,390
1963	45,385	91,168	54,166	182,483	192,489	219,579	46,648	6,209	11,094	37,214	86,349	19,621	992,405
1964	32,674	98,506	122,625	135,061	101,206	200,946	20,888	53,200	319,133	68,983	327,411	67,379	1,548,012
1965	391,171	715,944	271,268	334,557	3,000,876	481,229	137,421	118,208	134,782	155,443	315,399	229,530	6,286,428
1966	113,927	251,099	208,574	1,237,878	1,197,997	227,639	52,823	247,042	784,380	173,670	50,464	39,491	4,584,984
1967	46,400	38,326	45,858	135,072	177,135	237,971	183,870	44,321	115,761	73,233	246,829	148,446	1,493,222
1968	1,456,032	499,348	1,023,666	661,433	1,630,043	738,834	525,274	91,418	56,734	46,092	64,062	150,473	6,943,409
1969	67,133	188,290	486,872	821,178	1,370,062	189,882	84,922	88,664	179,249	134,766	133,769	300,458	4,045,245
1970	226,770	334,726	1,314,813	461,873	493,555	222,462	41,357	35,910	120,132	157,540	35,537	31,185	3,475,860
1971	31,728	37,095	29,815	64,905	133,934	101,410	243,689	362,673	158,866	479,714	206,122	667,256	2,517,207
1972	282,930	137,056	70,214	62,397	239,490	90,483	59,114	152,062	150,663	187,218	258,260	120,972	1,810,859
1973	387,373	273,673	551,847	790,550	531,444	759,127	235,476	101,955	73,249	735,781	278,151	124,902	4,843,528
1974	230,543	95,440	95,990	107,638	223,014	75,476	33,111	174,376	929,514	599,355	1,419,989	324,883	4,308,929
1975	317,733	1,029,283	284,841	415,774	1,148,894	697,812	286,081	172,326	103,478	57,461	50,319	31,661	4,595,663
1976	43,515	55,528	69,349	638,166	783,576	318,646	696,008	100,914	159,100	335,200	222,985	528,654	3,951,641
1977	197,199	714,681	626,249	1,623,031	742,472	256,312	65,992	29,064	40,501	23,247	27,405	20,913	4,366,166
1978	24,239	66,035	133,606	97,893	57,917	70,881	16,533	589,180	36,965	29,814	42,839	20,179	1,186,081
1979	204,304	284,597	746,323	667,905	1,544,650	1,037,698	461,230	154,547	47,464	49,121	19,164	87,360	5,304,363
1980	144,792	156,428	116,631	163,057	870,269	129,144	41,578	19,637	133,166	268,067	70,030	74,063	2,186,862
1981	29,033	47,920	176,527	155,016	141,509	1,686,711	239,822	66,730	111,611	1,267,926	309,482	84,565	4,316,852
1982	60,714	77,182	154,642	159,152	1,112,761	991,595	506,443	58,640	17,272	20,039	26,874	58,385	3,243,699
1983	44,400	287,728	295,827	101,668	477,799	171,481	10,331	68,190	21,656	103,196	33,368	14,907	1,660,551
1984	48,183	28,973	106,605	24,767	12,652	49,359	13,105	13,211	18,356	502,395	159,079	485,220	1,461,905
1985	359,156	377,035	493,997	296,327	334,985	257,223	79,595	24,539	26,606	361,255	353,319	508,292	3,472,329
1986	93,268	663,626	124,127	90,499	453,788	1,063,521	151,293	68,306	380,714	605,613	361,673	905,412	4,961,840
1987	386,730	467,121	687,708	246,076	554,146	1,925,764	333,201	99,900	81,131	29,576	63,602	168,552	4,043,507
1988	110,616	84,808	95,571	63,075	44,687	278,413	67,726	28,061	68,902	21,587	12,093	28,652	904,191
1989	55,385	195,067	237,870	181,451	1,366,723	1,205,630	164,274	197,977	134,127	37,830	20,556	15,172	3,812,062
1990	63,667	112,234	612,719	1,578,224	2,062,194	680,086	116,887	110,817	138,322	72,456	100,652	37,771	5,686,029
1991	647,767	309,365	118,781	380,199	609,352	687,377	116,897	227,286	183,488	455,015	469,368	3,906,483	8,111,368
1992	1,814,637	3,502,061	1,901,725	652,462	1,129,659	1,389,555	402,609	193,307	118,116	56,483	100,835	11,542,819	11,542,819
1993	241,125	596,133	938,830	488,321	645,041	484,733	130,652	43,261	47,291	242,061	67,333	50,892	3,975,673
1994	57,146	203,526	146,207	61,365	938,181	243,462	64,002	24,768	55,094	293,244	238,611	499,582	2,825,188
1995	331,045	114,704	559,764	715,881	947,517	631,318	143,540	767,999	159,533	87,962	35,212	45,099	4,539,574
1996	37,122	52,564	37,827	72,571	34,068	65,776	27,435	208,514	609,500	142,219	210,580	419,077	1,917,253
1997	251,950	1,848,302	1,642,552	1,678,914	1,131,753	1,098,999	390,435	117,905	35,121	43,364	48,727	668,632	8,956,654
1998	988,608	588,996	1,323,053	332,429	102,159	35,948	23,622	12,553	89,642	794,118	548,281	571,802	5,411,211
1999	228,407	165,198	236,008	171,318	186,157	211,741	60,627	20,983	3,145	1,625	4,617	16,469	1,306,295
2000	40,050	32,958	105,025	121,725	115,045	501,095	22,876	1,481	10,422	67,070	692,323	387,866	2,097,936
2001	601,369	760,198	1,399,986	422,895	412,164	126,449	86,138	109,919	304,643	117,690	441,798	873,790	5,657,039
2002	245,240	295,530	344,044	389,050	169,236	116,967	413,426	61,936	36,682	158,822	262,223	491,075	2,984,231
2003	281,628	585,448	429,329	132,462	67,902	226,722	35,382	11,998	56,014	353,309	52,744	36,568	2,269,506
2004	124,154	292,090	316,654	521,533	781,966	1,419,053	560,815	372,594	134,374	276,055	2,011,502	686,630	7,497,420
2005	554,485	707,504	845,170	267,590	154,030	117,892	51,383	730,315	116,601	55,643	30,931	32,020	3,663,564
2006	47,126	51,814	157,130	100,352	329,735	47,345	15,158	9,092	13,609	118,035	43,110	56,965	989,471
2007	515,670	71,838	1,155,691	667,661	2,443,461	3,007,325	2,639,665	616,794	454,603	153,632	92,533	87,218	11,906,091
2008	59,112	83,534	366,824	331,176	430,736	86,843	27,571	136,938	48,889	39,806	28,533	18,154	1,658,116
2009	18,811	31,083	112,521	165,404	128,308	35,887	25,548	23,090	276,031	1,511,730	400,408	254,462	2,983,283
2010	698,452	1,206,335	897,189	667,464	332,457	219,679	228,487	58,866	710,597	94,882	54,031	52,968	

Appendix B - Naturalized Flows

NATURALIZED FLOW **MYDB60**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Middle Yegua Creek near Dime Box  
 Gage Number 08109700

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	6	676	4	372	2,456	10,232	36,819	14	51	146	15,087	23,641	89,502
1941	4,349	4,447	11,333	4,901	10,816	16,997	27,746	226	37	201	1,544	250	82,846
1942	154	154	140	9,420	426	346	584	14	562	76	511	563	12,951
1943	1,769	205	1,551	291	1,199	684	17	1	126	127	9	128	6,106
1944	7,311	6,787	5,847	566	6,657	732	110	446	1,900	2	9,355	11,856	51,569
1945	14,572	4,021	2,203	11,830	1,057	3,849	336	7,607	1,465	4,274	287	919	52,419
1946	6,622	5,583	15,423	1,446	4,668	2,537	79	0	583	752	10,841	1,509	50,043
1947	6,521	462	10,101	1,939	4,701	297	345	17,755	81	1	0	299	42,503
1948	59	1,223	192	54	988	45	143	0	0	0	0	0	2,704
1949	190	4,762	3,021	19,017	2,486	907	42	0	117	6,133	108	2,139	38,923
1950	1,157	9,521	498	9,324	3,869	11,473	377	0	2,254	9	0	0	38,481
1951	0	31	815	471	104	293	0	0	17	0	12	0	1,743
1952	0	154	83	974	3,132	344	3,370	0	0	0	533	3,265	11,854
1953	2,888	762	328	1,122	12,474	28	1,088	101	683	3,324	1,317	1,982	26,095
1954	417	216	102	166	1,187	96	105	529	75	28	23	32	2,977
1955	47	3,085	45	699	48	827	62	136	78	94	40	15	5,177
1956	54	2,320	597	1,181	364	140	100	92	83	45	14	111	5,100
1957	6	52	2,446	23,940	13,012	11,249	128	82	2,760	24,228	9,654	2,319	89,876
1958	7,720	13,023	2,471	3,643	10,706	161	2,373	53	6,757	2,110	1,482	455	50,952
1959	704	6,463	821	17,413	2,503	272	52	14	23	525	2,410	3,656	34,855
1960	3,341	4,669	1,159	1,915	5,001	7,045	783	305	97	8,469	16,016	11,183	59,983
1961	12,630	10,605	1,937	775	1,405	20,103	2,920	184	24,943	443	3,236	2,053	81,235
1962	2,141	890	902	695	1,252	1,590	1,708	0	1,148	1,194	1,370	10,447	23,336
1963	1,319	7,577	826	3,382	346	21	0	0	0	0	0	0	13,471
1964	0	0	141	44	45	9	0	0	159	135	3	6	542
1965	595	10,582	670	476	22,177	2,767	21	1	196	357	7,561	12,506	57,909
1966	1,498	4,994	5,355	3,943	11,998	468	52	112	1,954	1,114	99	213	31,800
1967	249	292	280	291	364	55	0	0	1	0	1,326	102	2,960
1968	26,456	2,616	6,089	5,282	9,066	9,318	1,874	9	5,002	193	1,685	11,544	79,134
1969	1,392	12,474	15,314	21,114	3,695	202	2	45	82	7	105	2,571	57,003
1970	1,374	7,678	17,236	7,178	23,290	3,410	31	0	25	184	11	0	60,417
1971	34	85	40	43	1	88	2	0	26	549	219	3,560	4,647
1972	397	463	192	59	2,469	2,227	4	0	0	28	30	76	5,945
1973	3,876	2,154	3,326	3,455	1,173	1,332	215	14	429	15,051	3,503	1,281	35,809
1974	15,086	1,224	935	388	2,289	3,009	12	1,120	21,909	613	24,692	6,206	77,483
1975	3,503	17,960	986	750	40,691	9,251	4,163	493	332	155	215	482	78,981
1976	517	474	2,079	18,335	13,503	13,997	688	55	199	839	2,392	19,559	72,637
1977	1,925	10,162	1,508	17,501	885	134	3	0	0	0	0	0	32,118
1978	413	761	777	278	436	178	0	0	37	0	15	177	3,072
1979	2,764	4,469	4,851	4,284	17,668	8,765	695	111	0	0	0	205	43,812
1980	1,994	1,177	10,184	2,778	13,699	289	0	0	0	0	0	0	30,121
1981	38	185	576	211	674	30,938	2,102	14	0	4,288	4,687	460	44,173
1982	469	454	525	1,470	17,998	510	35	0	0	0	0	6	21,467
1983	1,153	5,807	8,591	701	13,044	1,003	181	329	0	28	28	57	30,922
1984	80	183	542	207	0	0	0	0	0	7,088	2,823	6,344	17,267
1985	3,411	3,076	4,768	1,090	2,985	3,018	154	0	2,658	21,865	5,066	5,066	48,091
1986	1,171	5,117	512	246	2,933	14,389	426	33	274	2,328	4,423	20,384	52,236
1987	2,238	5,121	8,448	406	3,152	62,553	558	65	221	58	394	683	83,897
1988	510	550	689	1,034	676	306	0	0	0	0	0	0	3,765
1989	363	76	1,135	563	3,366	1,595	149	93	0	0	0	0	7,340
1990	46	363	456	1,529	777	1	26	0	0	0	49	0	3,247
1991	29,591	9,583	1,401	6,591	1,928	433	81	0	541	0	112	42,649	92,910
1992	15,111	51,206	16,869	2,845	31,068	24,883	941	63	205	27	1,609	3,657	148,484
1993	11,517	4,121	5,229	9,750	10,956	1,929	568	0	0	14	113	355	44,552
1994	552	638	799	492	1,421	704	43	352	180	23,634	2,784	27,871	59,470
1995	13,767	1,453	6,841	3,869	2,371	16,216	573	839	29	267	1,694	849	48,768
1996	711	668	964	794	572	396	321	506	3,670	112	506	661	9,881
1997	641	3,922	2,731	2,070	1,302	3,309	501	308	127	516	749	1,235	17,411
1998	3,082	3,469	3,939	508	573	343	134	217	609	17,135	31,427	7,520	68,956
1999	2,382	997	10,176	943	1,776	874	1,192	528	397	458	542	672	20,937
2000	1,204	879	1,240	1,059	2,565	876	478	523	426	1,065	19,351	8,652	38,318
2001	7,452	2,850	17,014	4,409	4,812	2,196	1,498	758	4,427	1,087	20,172	23,502	90,177
2002	3,066	3,580	2,331	2,029	661	1,198	2,239	633	755	4,734	35,014	39,013	95,253
2003	6,877	37,974	5,411	1,791	1,204	1,037	733	591	668	653	773	1,023	58,735
2004	1,369	4,108	1,252	2,158	1,027	8,154	4,923	1,060	803	4,572	44,412	3,076	76,914
2005	6,936	14,624	14,870	1,844	7,638	1,265	986	876	414	463	642	520	51,078
2006	384	424	507	448	556	160	206	39	237	10,144	847	1,999	15,951
2007	11,605	1,335	19,593	2,650	24,226	11,532	39,029	1,552	413	431	1,343	1,335	115,044
2008	793	1,783	2,319	1,116	1,629	145	185	154	43	64	32	225	8,488
2009	313	276	372	2,885	412	27	0	0	604	8,296	2,801	4,988	20,974
2010	2,892	10,302	2,616	955	2,059	8,457	372	96	167	64	265	254	28,499
2011	508	352	335	104	494	54	15	0	0	0	0	484	2,346
2012	6,754	5,958	16,423	1,411	660	398	274	84	47	201	99	184	32,493
2013	1,142	357	350	375	875	100	98	60	385	1,873	4,108	782	10,505
2014	693	678	750	509	2,330	700	264	120	327	341	848	573	8,133
2015	11,385	1,027	13,146	3,429	95,133	6,300	705	181	112	22,142	30,337	12,147	196,044
Min	0	0	4	43	0	0	0	0	0	0	0	0	542
Max	29,591	51,206	19,593	23,940	95,133	62,553	39,029	17,755	24,943	24,228	44,412	42,649	196,044
Average	3,767	4,589	4,033	3,477	6,555	4,628	1,935	521	1,188	2,449	4,613	4,639	42,392

Appendix B - Naturalized Flows

NATURALIZED FLOW EYDB61  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name East Yegua Creek near Dime Box  
 Gage Number 08109800

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	6	706	4	389	2,566	10,691	38,473	14	53	153	15,765	24,704	93,525
1941	4,544	4,647	11,843	5,122	11,302	17,760	28,993	236	39	210	1,614	261	86,569
1942	161	161	146	9,843	446	362	611	15	587	79	534	589	13,533
1943	1,849	214	1,621	304	1,253	715	17	1	131	132	9	134	6,381
1944	7,640	7,092	6,110	591	6,956	765	115	466	1,985	2	9,775	12,389	53,887
1945	15,227	4,201	2,302	12,361	1,104	4,022	351	7,949	1,531	4,466	299	960	54,775
1946	6,920	5,834	16,116	1,511	4,878	2,651	83	0	610	786	11,328	1,576	52,292
1947	6,814	483	10,555	2,026	4,912	311	360	18,553	85	1	0	313	44,413
1948	61	1,278	200	57	1,033	47	149	0	0	0	0	0	2,825
1949	198	4,976	3,157	19,871	2,597	948	44	0	123	6,409	113	2,236	40,672
1950	1,209	9,949	520	9,743	4,043	11,988	394	0	2,355	10	0	0	40,210
1951	0	32	852	493	109	306	0	0	17	0	12	0	1,821
1952	0	161	86	1,018	3,272	359	3,522	0	0	0	557	3,411	12,387
1953	3,017	796	342	1,173	13,035	29	1,137	106	714	3,473	1,376	2,071	27,268
1954	436	225	106	174	1,240	101	110	553	78	29	24	34	3,111
1955	49	3,224	47	731	50	864	65	142	82	98	42	16	5,410
1956	56	2,424	623	1,234	381	146	105	97	86	47	14	116	5,329
1957	6	54	2,556	25,016	13,597	11,755	134	86	2,884	25,317	10,088	2,424	93,915
1958	8,066	13,608	2,582	3,806	11,187	168	2,480	55	7,060	2,205	1,548	475	53,242
1959	736	6,753	858	18,195	2,615	284	54	15	24	549	2,519	3,820	36,422
1960	3,491	4,879	1,211	2,001	5,226	7,362	819	318	101	8,850	16,735	11,686	62,678
1961	13,197	11,081	2,024	810	1,468	21,007	3,051	192	26,064	463	3,382	2,146	84,886
1962	2,237	930	942	726	1,308	1,662	1,784	543	1,987	1,140	7,451	9,065	29,776
1963	1,607	9,050	1,418	4,839	595	410	529	504	265	332	11	0	19,560
1964	159	350	616	442	1,131	480	513	337	2,879	797	474	382	8,560
1965	968	13,021	1,043	1,813	27,167	2,714	544	387	224	289	4,535	7,361	60,066
1966	1,632	7,460	3,855	11,747	11,669	704	552	223	798	364	329	247	39,580
1967	431	544	617	1,044	1,796	722	375	369	125	357	1,304	145	7,829
1968	16,515	1,763	3,195	3,686	7,008	27,176	13,853	561	1,565	302	971	3,709	80,304
1969	1,498	11,977	12,489	15,530	3,081	632	501	360	607	140	595	2,696	50,106
1970	2,093	8,704	16,628	5,750	18,137	1,586	531	485	253	463	380	430	55,440
1971	409	361	582	702	577	412	366	84	171	38	152	1,785	5,639
1972	406	585	501	271	1,950	5,054	248	198	320	346	262	249	10,390
1973	6,691	2,442	4,875	6,002	4,342	4,062	381	364	30	13,673	2,098	1,398	46,358
1974	15,226	1,135	1,200	637	1,985	6,931	430	3,956	30,038	740	20,502	7,233	90,013
1975	3,822	17,628	1,231	1,283	40,139	7,944	3,729	1,232	456	235	348	645	78,692
1976	1,023	786	4,111	22,523	9,526	7,561	1,495	671	979	1,298	2,071	18,802	70,846
1977	1,849	11,868	1,967	22,190	1,727	1,031	677	486	573	526	506	586	43,986
1978	884	1,216	1,650	1,706	953	1,898	566	457	252	304	802	911	11,599
1979	3,634	5,769	15,976	7,270	19,860	17,185	1,792	467	820	1,237	798	129	74,937
1980	8,155	2,342	14,735	1,755	15,227	554	556	450	84	291	203	163	44,515
1981	380	374	1,272	325	592	22,638	7,830	344	142	238	1,221	381	35,737
1982	350	380	644	2,432	12,221	565	484	411	294	437	373	1,291	19,882
1983	2,759	5,826	14,427	1,360	18,426	1,329	418	3,427	723	778	372	407	50,252
1984	1,137	1,381	2,218	1,004	398	455	429	429	284	15,978	2,119	8,959	34,791
1985	5,823	4,175	8,398	988	2,987	2,331	489	535	654	1,193	16,209	1,457	45,239
1986	845	6,055	768	351	11,201	26,160	718	239	359	1,439	8,556	22,076	78,767
1987	1,772	7,419	5,412	1,264	4,103	47,898	509	814	390	0	525	370	70,476
1988	684	197	1,027	0	856	1,485	934	899	784	631	562	172	8,231
1989	1,797	0	1,558	692	1,845	1,467	465	331	344	214	84	288	9,085
1990	0	137	246	8,573	1,369	563	365	918	311	0	274	67	12,823
1991	25,545	9,778	1,037	3,827	951	588	475	1,288	68	416	475	40,048	84,496
1992	14,239	52,708	16,099	4,074	21,050	20,955	1,540	685	635	448	1,573	3,170	137,176
1993	12,437	3,473	11,204	16,078	11,869	12,252	1,305	785	578	1,460	695	584	72,720
1994	396	1,157	1,262	486	1,653	558	570	1,088	192	29,862	1,653	25,127	64,004
1995	12,263	1,520	8,137	7,405	5,500	12,524	678	1,328	808	281	1,071	461	51,976
1996	245	321	310	406	298	1,093	658	499	1,144	511	377	258	6,120
1997	353	4,354	2,723	1,864	1,208	1,406	1,809	1,697	1,572	548	636	949	19,119
1998	3,610	3,975	3,468	1,342	1,394	1,141	1,024	731	2,277	24,010	32,837	12,352	88,161
1999	2,820	1,938	9,600	2,201	3,551	2,519	1,475	1,236	1,025	1,036	1,286	1,230	29,917
2000	1,442	1,323	1,777	1,811	10,082	1,968	1,397	1,267	1,477	1,879	7,826	7,399	39,648
2001	7,198	2,955	15,522	3,125	7,030	1,873	1,851	1,330	2,732	2,089	5,953	13,764	65,422
2002	3,163	3,973	2,771	2,806	1,709	1,814	4,618	1,939	1,709	5,121	32,915	29,918	92,456
2003	9,591	33,387	6,989	2,467	1,805	1,659	2,334	1,670	1,361	1,465	1,621	1,822	66,171
2004	2,043	4,598	1,884	2,741	3,428	24,259	7,713	1,919	1,685	2,864	42,408	4,006	99,548
2005	5,912	10,660	11,220	2,766	3,643	1,428	1,355	1,408	1,211	843	1,321	1,106	42,873
2006	1,293	1,251	1,855	2,050	1,371	1,151	1,380	1,275	1,208	8,592	1,414	2,911	25,751
2007	10,743	2,145	16,493	4,352	19,443	7,134	21,307	2,012	995	1,322	2,876	2,802	91,624
2008	1,234	1,832	3,285	924	2,843	792	538	199	314	229	190	263	12,643
2009	396	353	528	1,220	629	588	482	506	5,587	15,946	5,756	6,009	38,000
2010	3,824	8,924	3,077	1,087	1,330	17,277	663	637	144	365	244	196	37,768
2011	134	275	478	476	762	555	676	698	568	296	160	287	5,365
2012	2,441	8,830	21,609	1,598	445	732	679	445	154	275	302	208	37,718
2013	550	234	546	327	626	461	305	476	286	2,235	4,038	795	10,879
2014	488	362	2,044	573	3,226	1,743	444	523	220	183	320	265	10,391
2015	12,951	1,428	15,323	4,139	103,705	6,222	792	520	418	8,435	27,205	15,849	196,987
Min	0	0	4	0	50	29	0	0	0	0	0	0	1,821
Max	25,545	52,708	21,609	25,016	103,705	47,898	38,473	18,553	30,038	29,862	42,408	40,048	196,987
Average	3,866	4,847	4,562	4,125	6,908	5,381	2,358	993	1,575	2,734	4,276	4,376	46,000

Appendix B - Naturalized Flows

NATURALIZED FLOW YCSO62  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Yegua Creek near Somerville  
 Gage Number 08110000

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	34	3,798	22	2,089	13,797	57,481	206,846	76	287	820	84,756	132,817	502,823
1941	24,430	24,984	63,671	27,535	60,762	95,486	155,875	1,267	208	1,129	8,676	1,403	465,426
1942	865	867	785	52,921	2,396	1,944	3,283	79	3,158	427	2,870	3,164	72,759
1943	9,941	1,150	8,715	1,634	6,734	3,845	94	3	706	712	50	720	34,304
1944	41,074	38,130	32,850	3,179	37,398	4,115	616	2,507	10,673	10	52,554	66,609	289,715
1945	81,866	22,588	12,377	66,458	5,937	21,623	1,886	42,736	8,231	24,012	1,610	5,163	294,487
1946	37,204	31,367	86,644	8,122	26,226	14,250	445	0	3,277	4,226	60,904	8,475	281,140
1947	36,635	2,596	56,749	10,893	26,409	1,670	1,936	99,749	457	4	0	1,682	238,780
1948	330	6,871	1,077	305	5,553	251	803	0	0	0	0	0	15,190
1949	1,066	26,751	16,973	106,836	13,965	5,097	237	0	659	34,456	607	12,019	218,666
1950	6,500	53,487	2,796	52,380	21,735	64,454	2,116	0	12,663	53	0	0	216,184
1951	0	174	4,581	2,648	584	1,646	0	0	94	0	66	0	9,793
1952	0	865	465	5,473	17,594	1,931	18,933	0	0	0	2,994	18,341	66,596
1953	16,223	4,279	1,840	6,304	70,079	155	6,112	568	3,839	18,674	7,397	11,133	146,603
1954	2,345	1,211	571	935	6,666	542	592	2,973	422	158	130	181	16,726
1955	263	17,332	255	3,928	271	4,646	350	766	439	526	224	84	29,084
1956	302	13,032	3,352	6,635	2,047	787	562	519	464	252	76	624	28,652
1957	32	291	13,742	134,492	73,102	63,197	720	461	15,505	136,113	54,235	13,030	504,920
1958	43,368	73,163	13,882	20,465	60,144	904	13,331	297	37,959	11,854	8,324	2,554	286,245
1959	3,955	36,308	4,613	97,825	14,059	1,527	291	81	127	2,951	13,541	20,537	195,815
1960	18,767	26,232	6,513	10,758	28,097	39,579	4,401	1,711	544	47,578	89,975	62,826	336,981
1961	70,954	59,576	10,883	4,353	7,895	112,941	16,405	1,033	140,131	2,490	18,181	11,535	456,377
1962	12,027	5,000	5,067	3,904	7,034	8,933	9,593	532	12,133	14,748	24,496	58,294	161,761
1963	11,603	37,720	3,950	16,814	1,624	611	666	491	564	323	347	1,388	76,101
1964	1,003	3,666	13,519	2,944	2,941	2,423	495	328	2,088	4,288	1,950	3,502	39,147
1965	4,935	73,363	4,546	3,709	187,964	26,595	781	1,066	189	1,678	29,769	82,175	416,770
1966	11,292	46,854	28,447	18,328	55,526	1,109	680	735	8,940	1,973	923	495	175,302
1967	1,731	1,074	1,070	3,335	6,785	3,585	428	172	3,688	1,073	3,479	192	26,612
1968	78,945	5,997	14,441	28,527	60,080	150,473	34,213	5,136	65,853	2,974	22,697	50,476	519,812
1969	7,488	70,766	79,337	94,563	27,142	2,058	0	0	805	0	1,982	12,549	296,690
1970	8,167	34,049	71,815	24,035	99,351	24,412	403	236	0	1,322	0	216	264,006
1971	529	1,175	1,083	1,181	0	0	0	548	0	809	0	14,778	20,103
1972	0	1,999	1,361	1,286	21,854	13,374	130	837	0	759	0	0	41,600
1973	35,785	28,823	39,460	42,124	11,928	73,461	3,690	0	1,879	95,562	15,148	8,927	356,787
1974	69,960	14,468	8,611	3,363	7,669	17,393	1,315	5,144	114,219	16,657	107,634	37,296	403,729
1975	23,187	69,676	7,373	7,959	148,977	44,472	23,189	6,264	3,335	695	602	2,727	338,456
1976	3,159	3,214	8,497	75,243	56,441	51,496	5,969	187	2,635	14,478	23,671	106,104	351,094
1977	7,804	68,958	5,624	136,002	9,286	4,571	0	151	835	0	634	1,361	235,226
1978	6,386	14,050	8,882	3,565	9,159	19,971	3,614	1,915	5,676	0	10,025	5,912	89,155
1979	44,416	42,416	41,022	41,784	125,867	110,486	10,382	0	0	250	0	3,467	420,090
1980	20,801	9,939	21,756	13,490	43,243	3,583	1,134	0	0	0	0	0	113,946
1981	1,481	779	2,323	1,821	7,542	70,768	12,564	0	237	16,210	20,194	406	134,325
1982	1,043	1,971	2,905	13,763	87,226	7,135	0	0	0	747	0	5,751	120,541
1983	18,813	56,616	75,795	3,157	68,889	16,115	1,035	5,629	2,931	361	0	0	249,341
1984	3,118	2,042	6,254	6,297	3,460	1,261	3,546	0	0	38,271	20,636	37,296	122,181
1985	33,505	38,987	38,730	5,374	8,653	4,709	2,078	386	450	16,479	63,468	24,553	237,372
1986	9,279	20,049	666	1,808	37,106	142,010	13,423	2,125	4,089	6,992	30,422	113,144	381,113
1987	11,548	47,150	27,843	4,074	11,738	198,692	26,249	6,736	698	0	381	2,160	337,269
1988	1,474	1,324	3,678	2,591	2,379	5,455	1,055	0	818	0	0	0	18,774
1989	10,152	1,669	13,274	3,681	15,963	7,963	579	416	0	0	0	0	53,697
1990	892	2,624	964	22,273	10,251	0	333	119	0	0	0	0	37,456
1991	165,599	49,637	8,023	74,007	33,375	7,149	1,265	234	947	924	1,304	183,720	526,184
1992	65,204	230,855	73,242	15,371	115,785	101,834	5,512	1,662	1,866	1,055	7,069	15,167	634,622
1993	53,216	16,871	36,508	57,379	50,708	31,505	4,161	1,744	1,284	3,275	1,795	2,086	260,531
1994	2,106	3,988	4,579	2,173	6,829	2,804	1,362	3,199	826	118,847	9,857	117,740	274,310
1995	57,828	6,605	33,275	25,046	17,486	63,849	2,779	4,814	1,859	1,217	6,143	2,910	223,813
1996	2,124	2,197	2,830	2,666	1,933	3,308	2,175	2,233	10,695	1,384	1,962	2,042	35,548
1997	2,208	18,386	12,117	8,740	5,576	10,475	5,132	4,454	3,774	2,364	3,077	4,852	81,155
1998	14,867	16,538	16,455	4,110	4,370	3,297	2,573	2,106	6,412	91,408	142,769	44,148	349,051
1999	11,557	6,520	43,934	6,985	11,834	7,538	5,925	3,919	3,159	3,319	4,061	4,225	112,977
2000	5,878	4,892	6,703	6,376	28,097	6,318	4,166	3,977	4,228	6,540	60,376	35,659	173,209
2001	32,546	12,896	72,282	16,738	26,308	9,040	7,440	4,639	15,904	7,056	58,039	82,790	345,679
2002	13,838	16,780	11,335	10,741	5,265	6,691	15,234	5,714	5,474	21,894	150,911	153,137	417,014
2003	36,585	158,536	27,548	9,460	6,685	5,989	6,814	5,023	4,508	4,705	5,319	6,320	277,491
2004	7,580	19,341	6,967	10,884	9,897	72,009	28,072	6,618	5,527	16,520	192,879	15,733	392,028
2005	28,543	56,171	57,962	10,242	25,062	5,983	5,201	5,074	3,610	2,901	4,361	3,612	208,722
2006	3,726	3,721	5,247	5,550	4,281	2,913	3,523	2,919	3,210	41,624	5,023	10,908	92,645
2007	49,648	7,731	80,169	15,556	97,015	41,468	134,042	7,918	3,128	3,894	9,373	9,191	459,134
2008	4,503	8,031	12,450	4,532	9,935	2,082	1,606	784	793	0	0	579	45,295
2009	802	1,056	1,216	27,372	487	470	1,063	823	9,267	60,700	17,238	29,536	150,030
2010	23,667	64,971	10,660	4,828	7,087	29,000	2,384	76	0	0	0	324	142,997
2011	1,020	1,579	1,633	0	1,222	575	817	0	53	213	382	597	8,091
2012	11,471	48,705	108,429	867	3,474	1,279	1,629	14	0	0	238	0	176,106
2013	7,871	194	2,124	0	2,232	2,522	1,282	969	222	10,410	26,279	1,844	55,949
2014	1,473	2,018	4,078	1,678	39,835	8,941	3,144	0	313	0	4,815	5,262	71,557
2015	69,338	258	61,268	48,234	360,820	38,262	0	0	2,952	70,925	110,642	86,189	848,888
Min	0	174	22	0	0	0	0	0	0	0	0	0	8,091
Max	165,599	230,855	108,429	136,002	360,820	198,692	206,846	99,749	140,131	136,113	192,879	183,720	848,888
Average	19,867	25,131	20,825	20,825	33,067	26,006	11,062	3,459	7,394	13,082	21,178	23,219	225,115

Appendix B - Naturalized Flows

NATURALIZED FLOW **DCLY63**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Davidson Creek near Lyons  
 Gage Number 08110100

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	7	775	4	426	2,815	11,726	42,197	16	59	167	17,290	27,095	102,576
1941	4,984	5,097	12,989	5,617	12,395	19,479	31,799	258	42	230	1,770	286	94,947
1942	176	177	160	10,796	489	397	670	16	644	87	585	645	14,843
1943	2,028	235	1,778	333	1,374	784	19	1	144	145	10	147	6,998
1944	8,379	7,779	6,701	649	7,629	839	126	511	2,177	2	10,721	13,588	59,102
1945	16,701	4,608	2,525	13,557	1,211	4,411	385	8,718	1,679	4,898	328	1,053	60,075
1946	7,590	6,399	17,675	1,657	5,350	2,907	91	0	669	862	12,424	1,729	57,353
1947	7,474	530	11,577	2,222	5,387	341	395	20,349	93	1	0	343	48,711
1948	67	1,402	220	62	1,133	51	164	0	0	0	0	0	3,099
1949	217	5,457	3,462	21,795	2,849	1,040	48	0	134	7,029	124	2,452	44,608
1950	1,326	10,911	570	10,686	4,434	13,149	432	0	2,583	11	0	0	44,102
1951	0	35	935	540	119	336	0	0	19	0	13	0	1,998
1952	0	176	95	1,116	3,589	394	3,862	0	0	0	611	3,742	13,586
1953	3,309	873	375	1,286	14,296	32	1,247	116	783	3,809	1,509	2,271	29,907
1954	478	247	116	191	1,360	111	121	606	86	32	27	37	3,412
1955	54	3,536	52	801	55	948	71	156	90	107	46	17	5,933
1956	62	2,659	684	1,354	418	161	115	106	95	51	16	127	5,845
1957	7	59	2,803	27,436	14,913	12,892	147	94	3,163	27,767	11,064	2,658	103,004
1958	8,847	14,925	2,832	4,175	12,269	184	2,720	61	7,744	2,418	1,698	521	58,394
1959	807	7,407	941	19,956	2,868	312	59	17	26	602	2,762	4,190	39,946
1960	3,828	5,351	1,329	2,195	5,732	8,074	898	349	111	9,706	18,355	12,817	68,744
1961	14,475	12,154	2,220	888	1,611	23,040	3,347	211	28,587	508	3,709	2,353	93,101
1962	2,454	1,020	1,034	796	1,435	1,822	1,957	109	2,475	3,901	13,193	10,350	40,545
1963	1,483	9,730	772	8,020	300	41	0	0	0	0	100	510	20,956
1964	768	569	1,850	1,026	2,106	211	0	0	232	296	65	614	7,737
1965	1,152	15,956	496	500	21,943	1,579	0	0	0	1,501	10,435	53,562	53,562
1966	3,006	14,240	2,765	8,367	8,338	193	0	60	2,544	132	0	40	39,685
1967	24	48	69	1,124	3,050	172	0	0	0	0	0	0	4,487
1968	5,357	470	3,272	4,053	10,271	50,000	3,760	48	3,706	156	3,231	8,306	92,630
1969	1,417	17,138	17,985	28,663	2,387	372	0	0	0	0	1	1,829	69,972
1970	927	6,001	10,104	3,972	21,177	963	9	0	171	1	0	0	43,325
1971	0	117	9	99	593	0	0	81	0	689	164	3,421	5,173
1972	295	193	38	0	3,798	1,197	163	40	24	525	199	74	6,546
1973	9,838	3,812	11,872	14,707	2,716	25,798	186	55	470	27,321	1,594	2,966	101,335
1974	13,765	876	801	225	1,181	2,881	0	2,051	25,428	1,771	20,780	6,715	76,474
1975	4,162	12,956	686	1,310	20,580	5,526	3,271	1,865	1,085	65	78	330	51,914
1976	797	484	2,799	18,312	6,900	14,703	1,150	0	0	332	902	18,083	64,462
1977	1,070	19,356	853	41,165	611	93	0	0	0	0	0	1	63,149
1978	354	1,525	2,313	178	54	1,569	0	0	1,229	33	1,137	964	9,356
1979	9,839	9,059	21,893	12,251	21,891	23,332	2,721	384	257	17	563	1,757	103,964
1980	14,191	4,107	12,749	2,914	23,065	177	0	0	0	38	123	16	57,380
1981	410	348	992	102	1,919	15,952	3,000	112	75	3,459	6,828	222	33,419
1982	249	313	664	8,138	22,045	165	2	0	0	1,001	1,305	5,917	39,799
1983	10,278	16,256	19,597	769	26,462	1,381	123	2,173	3,044	431	142	200	80,856
1984	336	250	2,443	132	761	708	0	0	0	12,030	3,036	9,451	29,147
1985	7,386	11,257	6,080	410	604	45	1	0	0	3,534	12,486	2,094	43,897
1986	445	3,712	178	100	8,364	14,547	37	0	1,431	729	3,861	18,307	51,711
1987	1,311	10,974	5,779	474	2,148	24,446	161	0	23	0	53	413	45,782
1988	88	227	459	968	143	4,489	0	0	0	0	0	0	6,374
1989	6,525	484	1,250	241	1,977	2,329	223	23	0	0	0	8	13,060
1990	0	61	60	30,953	6,410	0	0	0	0	0	29	93	37,606
1991	42,165	8,145	1,282	16,687	450	297	131	0	676	263	40	39,642	109,778
1992	16,312	54,457	14,522	2,359	27,695	15,900	363	0	0	84	2,814	6,794	141,300
1993	18,985	2,639	12,237	6,071	19,232	30,551	227	0	0	221	180	227	90,570
1994	340	2,194	2,015	409	926	367	0	0	0	54,457	381	23,822	84,911
1995	16,351	874	6,026	7,987	2,544	5,450	241	2,559	687	210	224	3,239	46,392
1996	123	83	114	278	0	134	0	281	3,411	3	583	1,085	6,095
1997	2,071	6,780	2,042	764	711	5,173	17	0	0	670	665	1,796	20,689
1998	17,852	19,281	5,697	230	52	13	0	0	9,271	25,222	30,541	12,811	120,970
1999	1,217	397	5,184	606	1,901	2,013	1,226	24	0	8	35	26	12,637
2000	140	54	3,165	911	6,210	475	0	0	0	12	6,498	6,455	23,920
2001	8,235	1,415	20,540	749	796	233	18	454	11,276	5,543	2,835	17,829	69,923
2002	1,257	2,678	554	732	79	51	993	780	1	3,215	26,469	28,474	65,283
2003	7,529	42,157	3,652	672	232	1,058	257	17	846	3,854	3,489	488	64,251
2004	6,901	15,053	1,724	2,184	16,516	55,277	13,250	293	45	516	21,297	1,007	134,063
2005	8,939	13,966	11,770	2,027	1,802	132	69	224	0	7	0	0	38,936
2006	195	88	475	152	195	251	567	14	8	16,761	193	2,920	21,819
2007	15,570	506	30,168	2,377	12,974	1,697	3,395	300	59	169	1,144	3,954	72,313
2008	477	2,680	4,753	682	10,729	74	6	5	12	0	0	0	19,418
2009	1	20	397	4,660	151	1	446	31	2,863	14,636	3,804	4,852	31,862
2010	8,200	13,424	2,737	436	837	14,814	483	37	401	1	1	0	41,371
2011	360	98	43	12	56	18	0	0	0	0	0	220	807
2012	1,033	13,778	35,471	2,186	259	161	175	2	0	74	0	57	53,196
2013	4,001	43	157	34	470	1	19	0	40	3,320	6,262	123	14,470
2014	54	38	431	31	12,164	1,355	39	15	120	48	1,193	497	15,985
2015	22,151	321	13,933	7,596	75,604	6,885	254	5	0	19,537	17,663	30,409	194,358
Min	0	20	4	0	0	0	0	0	0	0	0	0	807
Max	42,165	54,457	35,471	41,165	75,604	55,277	42,197	20,349	28,587	54,457	30,541	39,642	194,358
Average	4,989	5,967	4,987	4,981	6,817	5,772	1,682	574	1,590	3,470	3,694	4,815	49,338

Appendix B - Naturalized Flows

NATURALIZED FLOW NAGR64  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Navasota River above Groesbeck  
 Gage Number 08110325

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	65	464	71	2,128	7,639	2,132	4,592	58	59	54	58,093	27,476	102,831
1941	19,805	23,179	10,902	4,206	5,586	15,982	3,704	686	247	96	242	427	85,063
1942	194	377	260	15,941	23,434	7,034	131	133	5,363	444	2,923	6,838	63,072
1943	2,675	375	2,258	2,203	1,695	2,877	118	9	4	1,029	223	253	13,720
1944	15,669	33,886	16,905	1,573	82,209	4,840	107	74	245	22	5,090	14,493	175,112
1945	21,217	10,366	30,856	39,579	3,250	4,230	3,075	8,173	6,970	15,191	1,370	29,824	174,103
1946	13,989	18,392	19,133	4,245	46,669	13,539	439	125	820	193	23,680	3,991	145,215
1947	20,816	1,501	21,526	3,510	34,767	6,307	197	308	103	52	82	881	90,052
1948	1,834	7,536	3,420	3,368	8,120	218	699	28	34	26	49	225	25,556
1949	7,531	1,746	11,129	3,389	659	2,537	498	69	197	12,122	245	599	40,721
1950	7,846	30,555	955	10,084	2,067	2,718	541	66	48	41	123	71	55,115
1951	99	193	423	326	1,247	846	22	11	1,093	38	45	151	4,492
1952	168	2,169	2,603	6,400	11,282	301	42	20	16	10	1,003	6,051	30,065
1953	6,203	668	19,028	1,122	54,792	168	185	133	164	994	1,696	21,269	106,423
1954	3,374	423	248	335	7,402	70	21	25	22	60	310	452	12,741
1955	532	3,923	2,591	6,440	2,572	1,412	196	228	27	87	12	37	18,058
1956	163	2,141	120	88	10,288	573	31	27	32	14	613	36	14,126
1957	34	1,402	7,555	62,560	53,430	11,606	76	32	64	39,883	14,065	1,195	191,903
1958	4,574	7,726	1,453	1,778	13,185	3,102	220	7,629	11,445	2,718	290	709	54,829
1959	485	8,075	1,522	11,425	19,759	21,349	2,002	420	521	9,858	6,441	18,923	100,781
1960	16,519	5,290	5,922	1,929	4,710	3,054	533	221	110	3,601	6,059	52,637	100,587
1961	48,453	31,709	6,263	1,626	639	28,271	9,014	319	5,632	734	1,396	6,700	140,754
1962	5,167	2,214	1,482	5,280	4,934	4,100	552	30	70	271	453	360	24,914
1963	165	616	466	371	467	45	0	0	0	0	16	73	2,220
1964	768	570	1,562	1,190	295	0	0	532	924	33	681	79	6,633
1965	9,735	10,226	8,683	23,242	84,654	7,631	204	0	118	43	935	1,088	146,558
1966	781	4,990	2,538	59,635	19,452	298	0	8,321	20,069	517	166	381	117,148
1967	300	204	493	2,921	2,481	1,750	41	35	1,201	580	5,682	9,272	24,960
1968	33,896	7,043	17,166	21,828	38,083	28,415	3,217	68	239	83	1,504	5,724	157,266
1969	2,704	14,645	30,221	41,064	11,740	188	34	511	0	559	2,172	16,757	120,597
1970	4,667	9,979	28,747	7,710	641	157	0	0	1,233	5,047	252	175	58,609
1971	184	2,315	407	232	540	0	403	409	252	930	5,394	22,928	33,992
1972	10,044	2,759	338	147	36	481	2,771	136	0	2,684	2,936	4,290	26,622
1973	19,927	4,598	36,002	31,019	9,527	44,068	1,710	112	1,288	41,858	17,276	15,617	223,001
1974	26,531	5,678	4,810	3,619	5,411	205	41	785	25,386	3,845	61,088	11,586	148,986
1975	6,323	26,178	2,907	7,473	44,884	7,134	3,463	377	317	1,887	533	569	102,044
1976	381	689	3,402	38,089	39,653	21,342	7,112	193	1,076	23,534	3,935	39,133	178,538
1977	7,025	31,031	14,120	25,355	3,816	1,918	91	0	530	34	162	249	84,332
1978	1,165	5,425	7,685	779	769	41	0	0	0	131	171	348	16,513
1979	3,343	5,986	7,788	32,209	85,878	7,030	474	1,263	655	703	277	10,729	156,335
1980	9,747	9,667	2,270	7,516	45,200	206	68	11	49	136	177	537	75,584
1981	199	263	584	221	3,626	33,273	3,480	229	0	23,394	1,176	364	66,809
1982	395	1,033	11,804	2,525	5,927	729	0	51	0	87	422	4,540	27,513
1983	1,090	12,951	1,873	304	0	0	0	8,432	0	1,066	46	376	26,138
1984	507	3,845	8,791	394	296	338	0	0	0	9,495	3,095	23,774	50,535
1985	5,221	22,973	5,250	748	1,587	141	0	40	2,213	5,869	27,445	37,528	109,015
1986	606	50,916	501	2,004	19,550	15,512	75	0	7	47	10,353	22,216	121,787
1987	1,565	11,422	10,377	32	3,950	28,888	11	55	347	0	23	18,383	75,053
1988	534	9,572	7,243	244	0	108	146	0	155	61	22	66	18,151
1989	1,928	2,011	3,102	1,469	75,963	13,309	0	21	291	383	284	0	98,761
1990	216	6,056	74,999	2,278	43,395	588	24	172	74	64	11	652	128,529
1991	32,405	28,721	2,699	12,298	13,634	244	681	1,538	354	713	4,141	82,278	179,706
1992	26,911	42,870	17,838	883	12,794	14,219	683	1,261	449	387	0	11,410	129,705
1993	2,499	12,391	23,417	5,782	4,102	883	179	75	177	7,888	263	249	57,905
1994	246	24,249	5,028	671	16,919	1,650	53	561	447	65	93	12,253	62,235
1995	7,384	380	14,263	3,655	32,238	2,374	741	35,338	0	171	11	76	96,631
1996	98	341	288	284	449	0	88	383	176	209	36	1,560	3,912
1997	3,298	43,069	16,518	51,989	4,467	5,658	674	370	398	0	125	12,242	138,808
1998	49,554	10,010	10,058	628	0	716	848	0	0	19,007	26,356	27,835	145,012
1999	27,857	1,834	862	576	342	910	193	0	0	24	1	100	32,699
2000	114	643	415	1,305	2,543	39,739	1,344	0	199	0	19,966	33,494	99,762
2001	23,373	15,846	35,048	1,005	1,581	362	0	33	464	0	1,370	54,458	133,540
2002	555	6,434	5,823	2,738	4,621	1,167	912	0	0	2,802	2,421	34,988	62,461
2003	6,664	41,852	7,022	281	176	753	0	0	1,569	5,825	173	185	64,500
2004	1,027	10,785	2,942	11,451	13,792	30,408	2,559	0	39	1,239	54,871	2,598	131,711
2005	4,983	20,693	7,273	469	324	698	0	626	130	0	0	46	35,242
2006	160	163	23,056	776	3,239	0	0	0	0	23	29	387	27,833
2007	41,095	312	58,171	4,227	59,540	14,098	52,411	13,702	2,223	197	127	1,371	247,474
2008	303	4,137	22,540	9,322	12,258	0	31	248	16	863	134	167	50,019
2009	74	324	8,305	75,928	2,179	0	0	0	2,442	53,339	6,015	3,498	152,104
2010	31,437	24,799	32,537	1,899	815	17,966	312	39	5,421	215	73	40	115,553
2011	11,976	648	311	618	683	209	0	78	82	0	133	2,119	16,857
2012	20,546	11,444	51,944	236	266	678	61	202	942	453	66	99	86,937
2013	16,307	2,062	2,898	184	267	0	55	0	3,638	20,430	17,469	2,506	65,816
2014	1,445	261	1,833	1,309	4,251	4,866	62	0	15	994	241	13	15,290
2015	7,853	228	21,371	29,297	109,456	25,046	795	0	77	72,530	47,296	59,930	373,879
Min	34	163	71	32	0	0	0	0	0	0	0	0	2,220
Max	49,554	50,916	74,999	75,928	109,456	44,068	52,411	35,338	25,386	72,530	61,088	82,278	373,879
Average	8,757	10,032	10,963	9,500	16,435	6,759	1,487	1,250	1,434	5,237	5,949	10,328	88,132

Appendix B - Naturalized Flows

NATURALIZED FLOW **BGFR65**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Big Creek near Freestone  
 Gage Number 08110430

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	24	173	27	795	2,854	796	1,716	21	22	20	21,703	10,265	38,416
1941	7,399	8,659	4,073	1,571	2,087	5,971	1,384	256	92	36	90	159	31,778
1942	73	141	97	5,955	8,755	2,628	49	50	2,003	166	1,092	2,554	23,563
1943	999	140	844	823	633	1,075	44	3	1	384	83	94	5,126
1944	5,854	12,659	6,315	587	30,712	1,808	40	28	92	8	1,902	5,415	65,419
1945	7,927	3,873	11,527	14,786	1,214	1,580	1,149	3,053	2,604	5,675	512	11,142	65,042
1946	5,226	6,871	7,148	1,586	17,435	5,058	164	47	306	72	8,846	1,491	54,250
1947	7,776	561	8,042	1,311	12,989	2,356	74	115	39	20	31	329	33,642
1948	685	2,815	1,278	1,258	3,034	81	261	10	13	10	18	84	9,547
1949	2,813	652	4,158	1,266	246	948	186	26	74	4,528	92	224	15,213
1950	2,931	11,415	357	3,767	772	1,015	202	25	18	15	46	27	20,590
1951	37	72	158	122	466	316	8	4	408	14	17	56	1,678
1952	63	810	972	2,391	4,215	112	16	7	6	4	375	2,260	11,232
1953	2,317	249	7,109	419	20,470	63	69	50	61	371	634	7,946	39,758
1954	1,260	158	93	125	2,765	26	8	9	8	23	116	169	4,760
1955	199	1,466	968	2,406	961	528	73	85	10	32	5	14	6,746
1956	61	800	45	33	3,843	214	11	10	12	5	229	14	5,277
1957	13	524	2,822	23,371	19,961	4,336	29	12	24	14,900	5,255	447	71,692
1958	1,709	2,886	543	664	4,926	1,159	82	2,850	4,276	1,015	108	265	20,483
1959	181	3,017	569	4,268	7,382	7,976	748	157	195	3,683	2,406	7,069	37,650
1960	6,171	1,976	2,212	721	1,760	1,141	199	83	41	1,345	2,264	19,665	37,578
1961	18,101	11,846	2,340	608	239	10,562	3,367	119	2,104	274	521	2,503	52,584
1962	1,930	827	554	1,973	1,843	1,532	206	11	26	101	169	135	9,307
1963	62	230	174	139	175	17	0	0	0	0	6	27	829
1964	287	213	583	445	110	0	0	199	345	12	254	29	2,478
1965	3,637	3,820	3,244	8,683	31,625	2,851	76	0	44	16	349	407	54,752
1966	292	1,864	948	22,279	7,267	111	0	3,109	7,497	193	62	142	43,765
1967	112	76	184	1,091	927	654	15	13	449	217	2,123	3,464	9,325
1968	12,663	2,631	6,413	8,155	14,227	10,615	1,202	25	89	31	562	2,138	58,752
1969	1,010	5,471	11,290	15,341	4,386	70	13	191	0	209	812	6,260	45,053
1970	1,743	3,728	10,740	2,880	239	59	0	0	461	1,886	94	65	21,896
1971	69	865	152	87	202	0	150	153	94	347	2,015	8,565	12,699
1972	3,752	1,031	126	55	13	180	1,035	51	0	1,003	1,097	1,603	9,946
1973	7,445	1,718	13,450	11,588	3,559	16,463	639	42	481	15,637	6,454	5,834	83,310
1974	9,912	2,121	1,797	1,352	2,021	77	15	293	9,484	1,436	22,822	4,328	55,659
1975	2,362	9,780	1,086	2,792	16,768	2,665	1,294	141	118	705	199	212	38,122
1976	142	257	1,271	14,230	14,814	7,973	2,657	72	402	8,792	1,470	14,620	66,699
1977	2,625	11,593	5,275	9,472	1,426	716	34	0	198	13	60	93	31,505
1978	435	2,027	2,871	291	287	77	53	24	20	56	1,692	707	8,540
1979	4,682	3,404	6,870	11,390	8,408	2,656	160	593	833	98	206	3,191	42,491
1980	2,985	5,078	1,148	3,369	9,671	62	17	17	3	0	0	0	22,350
1981	0	176	412	276	490	8,371	3,806	20	22	7,394	389	196	21,552
1982	194	537	1,457	781	4,350	40	80	18	15	2	609	8,433	16,516
1983	864	12,150	4,228	358	6,814	484	180	421	12	0	80	184	25,775
1984	109	394	2,287	186	12	24	16	15	0	12,576	3,547	5,803	24,969
1985	4,243	7,027	3,675	427	315	37	11	14	1	713	8,936	8,219	33,618
1986	416	8,709	269	2,129	7,893	1,205	12	16	0	1,594	4,210	13,546	39,999
1987	2,341	5,628	4,742	325	1,330	6,507	141	16	0	922	5,560	28,231	28,231
1988	1,887	1,518	6,792	562	223	86	11	5	0	0	0	40	11,124
1989	97	422	726	245	16,365	9,482	1,172	20	277	0	0	48	28,854
1990	759	1,565	12,811	5,722	20,602	434	12	2	78	723	3,029	2,531	48,268
1991	16,103	14,466	5,197	5,953	4,959	2,315	147	720	1,987	1,587	3,909	37,449	94,792
1992	13,463	15,733	9,086	1,021	13,083	4,118	161	302	13	9	367	3,057	60,413
1993	2,676	2,993	12,186	4,923	3,396	6,796	99	0	0	1,162	62	213	34,506
1994	220	8,205	1,671	1,874	10,848	2,453	85	62	33	1,411	2,868	12,312	42,042
1995	9,213	3,171	6,910	1,442	3,135	331	641	1,132	332	22	0	190	26,519
1996	391	344	362	784	289	0	0	48	38	0	32	374	2,662
1997	1,515	17,057	8,764	20,704	1,136	6,305	51	73	0	45	244	4,484	60,378
1998	20,220	9,918	4,701	777	114	9	0	0	2,609	18,484	7,174	10,364	74,370
1999	18,940	1,739	1,013	1,970	2,955	2,658	91	0	88	0	0	112	29,566
2000	355	152	324	1,501	2,067	2,671	13	0	0	0	9,204	11,653	27,940
2001	9,154	6,345	14,404	681	451	967	78	3	572	752	867	15,659	49,933
2002	639	4,898	4,945	5,926	730	128	1,264	1	0	193	1,005	10,625	30,354
2003	3,072	16,808	3,546	246	101	897	14	0	27	187	106	128	25,132
2004	183	2,184	756	1,352	2,626	18,319	1,368	463	150	709	16,614	3,033	47,757
2005	3,675	10,421	3,324	432	421	155	35	1,718	11	0	0	0	20,192
2006	44	135	8,040	703	989	867	1	0	22	95	42	6,127	17,065
2007	22,722	344	23,739	1,017	25,230	10,465	45,512	506	145	0	66	207	129,953
2008	164	448	4,764	1,414	1,564	0	0	456	74	0	0	8	8,892
2009	13	67	1,968	31,706	2,334	12	0	190	166	15,470	911	2,032	54,869
2010	4,982	10,711	10,169	698	408	779	1,030	26	0	11	2	0	28,816
2011	1,985	180	36	245	2,134	2	0	0	0	0	5	956	5,543
2012	4,286	8,173	18,381	413	232	60	0	0	48	0	0	0	31,593
2013	426	746	59	12	5	0	0	0	419	27,805	13,890	3,858	47,220
2014	617	433	464	591	2,396	641	150	0	1	26	841	280	6,440
2015	4,947	336	15,966	22,126	39,693	2,730	99	0	0	3,516	10,019	29,944	129,376
Min	0	67	27	12	5	0	0	0	0	0	0	0	829
Max	22,722	17,057	23,739	31,706	39,693	18,319	45,512	3,109	9,484	27,805	22,822	37,449	129,953
Average	3,669	3,982	4,316	4,000	5,860	2,459	970	239	537	2,077	2,326	4,232	34,668

Appendix B - Naturalized Flows

NATURALIZED FLOW **NAEA66**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Navasota River near Easterly  
 Gage Number 08110500

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	245	1,750	269	8,032	28,826	8,044	17,329	217	223	204	219,220	103,682	388,041
1941	74,737	87,468	41,141	15,872	21,081	60,311	13,978	2,587	932	364	912	1,611	320,994
1942	733	1,423	980	60,156	88,432	26,542	493	500	20,236	1,677	11,032	25,803	238,007
1943	10,095	1,414	8,522	8,314	6,398	10,856	447	33	15	3,883	843	953	51,773
1944	59,128	127,872	63,791	5,934	310,223	18,264	402	278	926	82	19,208	54,692	660,800
1945	80,066	39,118	116,438	149,354	12,265	15,963	11,605	30,843	26,302	57,325	5,169	112,543	656,991
1946	52,788	69,403	72,201	16,019	176,110	51,090	1,657	472	3,095	727	89,358	15,060	547,980
1947	78,550	5,664	81,231	13,247	131,198	23,801	744	1,163	389	197	311	3,324	339,819
1948	6,919	28,438	12,906	12,708	30,642	823	2,636	106	130	98	185	848	96,439
1949	28,418	6,587	41,997	12,790	2,487	9,575	1,879	261	743	45,742	925	2,260	153,664
1950	29,608	115,303	3,602	38,051	7,801	10,255	2,043	250	183	153	465	269	207,983
1951	375	728	1,597	1,231	4,704	3,192	82	40	4,123	143	168	568	16,951
1952	634	8,185	9,823	24,151	42,572	1,134	160	75	62	36	3,786	22,833	113,451
1953	23,409	2,519	71,805	4,235	206,764	634	699	500	619	3,750	6,401	80,262	401,597
1954	12,731	1,596	935	1,264	27,933	264	78	93	83	228	1,171	1,704	48,080
1955	2,009	14,805	9,777	24,300	9,706	5,329	741	860	103	327	46	141	68,144
1956	615	8,081	454	331	38,821	2,164	116	103	121	51	2,313	137	53,307
1957	129	5,292	28,508	236,075	201,624	43,797	288	120	241	150,502	53,077	4,511	724,164
1958	17,259	29,155	5,484	6,709	49,756	11,706	832	28,787	43,187	10,257	1,095	2,676	206,903
1959	1,830	30,473	5,743	43,115	74,561	80,563	7,556	1,584	1,967	37,200	24,305	71,407	380,304
1960	62,337	19,961	22,347	7,280	17,775	11,523	2,013	835	416	13,588	22,866	198,632	379,573
1961	182,840	119,656	23,633	6,137	2,413	106,683	34,014	1,202	21,252	2,770	5,267	25,282	531,149
1962	19,498	8,355	5,592	19,925	18,619	15,472	2,084	113	265	1,024	1,709	1,359	94,015
1963	624	2,324	1,760	1,401	1,763	168	0	0	0	0	61	276	8,377
1964	2,899	2,151	5,893	4,491	1,113	0	0	2,006	3,486	123	2,570	297	25,029
1965	36,736	38,590	32,766	87,704	319,449	28,796	769	0	445	161	3,527	4,107	553,050
1966	2,946	18,830	9,578	225,038	73,405	1,125	0	31,401	75,732	1,950	627	1,437	442,069
1967	1,133	771	1,859	11,022	9,362	6,602	155	131	4,531	2,190	21,441	34,990	94,187
1968	127,908	26,576	64,778	82,370	143,710	107,227	12,140	257	903	312	5,676	21,601	593,458
1969	10,205	55,265	114,043	154,957	44,303	710	127	1,928	0	2,111	8,198	63,235	455,082
1970	17,611	37,658	108,481	29,095	2,419	594	0	4,652	19,047	950	660	221,167	
1971	694	8,735	1,535	875	2,036	0	1,520	1,543	952	3,510	20,354	86,519	128,273
1972	37,902	10,412	1,277	553	136	1,814	10,458	512	0	10,129	11,078	16,190	100,461
1973	75,198	17,350	135,856	117,051	35,950	166,295	6,452	422	4,860	157,953	65,192	58,933	841,512
1974	100,118	21,428	18,152	13,656	20,419	774	153	2,963	95,798	14,508	230,522	43,720	562,211
1975	23,859	98,785	10,970	28,201	169,372	26,919	13,068	1,422	1,196	7,120	2,012	2,146	385,070
1976	1,436	2,600	12,839	143,733	149,635	80,534	26,836	729	4,059	88,808	14,848	147,673	673,730
1977	26,511	117,098	53,282	95,680	14,400	7,237	344	0	2,001	130	610	940	318,233
1978	4,395	20,470	28,999	2,939	2,902	781	120	10	2,342	332	13,229	4,281	80,800
1979	38,040	36,671	121,285	117,328	145,535	67,852	11,447	9,122	7,962	2,466	0	22,693	580,401
1980	30,832	37,161	9,519	31,464	105,019	2,130	805	179	451	0	791	1,091	219,442
1981	2,062	6,169	5,805	5,949	19,994	128,546	9,897	21	0	71,874	2,870	866	254,053
1982	3,870	5,078	19,531	17,028	40,359	0	0	0	0	5,015	57,626	148,507	148,507
1983	8,178	105,404	47,336	5,036	84,404	4,141	1,822	18,690	0	2,083	1,594	870	279,558
1984	4,145	8,320	28,036	3,614	373	3,657	0	0	0	96,841	23,480	70,245	238,711
1985	32,700	91,986	34,484	5,128	7,165	0	0	459	2,514	13,371	143,444	109,856	441,107
1986	4,314	132,331	6,738	20,641	78,306	28,391	739	0	0	7,565	39,413	110,537	428,975
1987	11,988	41,387	51,649	4,665	16,857	85,426	1,611	0	433	598	2,759	33,362	250,735
1988	6,187	14,328	26,390	4,357	4,761	2,053	492	1,056	771	0	0	4,062	64,457
1989	3,161	8,529	8,083	5,361	229,403	76,305	6,972	200	328	1,640	715	130	340,827
1990	7,091	20,819	139,775	40,649	151,030	7,744	839	1,634	6,513	5,148	21,510	10,121	412,873
1991	146,114	106,671	30,613	72,759	63,073	11,635	3,177	6,555	6,327	9,624	18,375	332,958	807,881
1992	122,024	186,852	80,245	7,239	82,824	36,796	0	1,134	0	2,111	1,632	32,342	551,299
1993	26,834	26,438	144,903	40,412	44,533	48,182	2,795	1,373	983	17,240	904	2,869	357,466
1994	2,171	73,596	12,657	7,993	80,999	21,869	633	4,249	0	11,080	8,157	88,602	312,006
1995	89,897	14,974	66,527	18,677	63,691	3,329	4,031	67,847	8,462	0	0	1,863	339,298
1996	1,548	2,839	2,214	1,763	5,213	0	3,497	0	0	0	1,095	7,036	25,205
1997	12,429	153,808	66,474	148,760	20,897	44,526	2,107	2,856	0	0	1,408	41,878	495,143
1998	178,687	60,675	36,380	5,427	2,098	1,400	1,357	626	11,949	156,857	79,220	93,442	628,118
1999	177,668	69,031	7,968	20,307	15,649	10,480	3,405	0	0	407	0	643	305,558
2000	3,638	2,487	4,421	10,997	26,655	54,881	1,619	0	0	0	89,485	106,171	300,354
2001	93,879	59,688	134,306	5,975	19,066	5,856	8,827	1,277	0	6,143	6,558	142,997	484,572
2002	6,624	27,673	24,210	43,393	6,391	8,860	16,010	0	1,084	10,768	26,284	119,692	290,989
2003	36,749	143,973	37,664	4,568	7,414	11,750	3,262	161	1,748	13,175	770	3,606	264,840
2004	6,668	43,473	15,813	27,716	38,223	147,510	31,976	4,259	2,478	6,671	157,466	20,451	502,704
2005	33,301	86,981	34,287	5,276	3,371	2,352	0	10,331	74	0	0	620	176,953
2006	3,134	6,805	60,466	9,555	11,737	4,383	0	0	1,402	3,109	1,628	17,805	120,024
2007	152,958	3,519	164,959	36,819	222,950	58,792	244,818	22,473	2,286	0	1,872	4,414	915,860
2008	2,255	9,731	54,898	13,476	26,006	134	0	52,687	1,913	1,115	815	1,681	164,711
2009	1,457	4,591	15,531	184,719	46,857	0	0	1,273	746	131,958	15,961	14,171	417,264
2010	38,346	130,484	98,838	6,483	5,402	45,734	693	0	1,291	0	0	0	327,271
2011	21,068	5,115	2,169	3,416	13,026	1,260	25	1,875	1,965	265	1,628	13,687	65,499
2012	50,681	63,116	173,701	4,609	1,633	1,032	651	0	5,592	3,444	1,600	1,589	307,648
2013	31,987	11,150	3,624	379	0	225	284	13	4,931	80,849	176,195	21,409	331,046
2014	4,773	5,060	6,539	6,505	21,115	16,669	3,524	800	0	1,932	5,548	2,332	74,797
2015	43,475	3,188	96,402	102,684	255,733	49,003	1,465	0	1,537	53,852	131,064	240,484	978,887
Min	129	728	269	331	0	0	0	0	0	0	0	0	8,377
Max	182,840	186,852	173,701	236,075	319,449	166,295	244,818	67,847	95,798	157,953	230,522	332,958	978,887
Average	34,948	39,768	40,859	36,383	58,805	25,532	7,142	4,283	5,267	17,750	24,210	38,839	333,788

Appendix B - Naturalized Flows

NATURALIZED FLOW **NABR67**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Navasota River near Bryan  
 Gage Number 08111000

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	301	2,149	330	9,863	35,398	9,878	21,280	266	274	251	269,202	127,321	476,514
1941	91,777	107,411	50,521	19,491	25,887	74,062	17,165	3,177	1,144	447	1,120	1,978	394,181
1942	900	1,747	1,203	73,872	108,594	32,594	605	614	24,850	2,059	13,547	31,686	292,273
1943	12,397	1,736	10,465	10,210	7,857	13,331	549	41	18	4,768	1,035	1,170	63,577
1944	72,609	157,027	78,335	7,287	380,954	22,428	494	341	1,137	101	23,587	67,162	811,462
1945	98,321	48,037	142,986	183,407	15,061	19,603	14,251	37,875	32,299	70,395	6,348	138,203	806,785
1946	64,824	85,227	88,663	19,671	216,263	62,739	2,035	580	3,801	893	109,732	18,494	672,919
1947	96,459	6,955	99,752	16,267	161,111	29,228	914	1,428	478	242	382	4,082	417,298
1948	8,497	34,922	15,849	15,605	37,628	1,011	3,237	130	160	120	227	1,041	118,427
1949	34,897	8,089	51,572	15,706	3,054	11,758	2,307	321	912	56,171	1,136	2,775	188,699
1950	36,359	141,592	4,423	46,727	9,580	12,593	2,509	307	225	188	571	330	255,403
1951	1,472	3,215	7,166	3,819	7,819	4,188	272	63	3,196	287	439	1,489	33,425
1952	1,518	9,276	12,853	30,454	32,109	15,832	373	81	45	14	2,982	25,036	130,573
1953	35,876	6,239	69,519	15,431	251,498	1,404	1,294	876	1,894	16,538	9,717	115,970	526,256
1954	15,278	3,929	2,637	2,945	43,663	818	109	77	72	877	2,579	2,860	75,844
1955	4,280	31,019	12,731	67,627	11,426	6,746	866	884	205	344	467	548	137,143
1956	2,051	28,741	2,958	2,777	27,763	1,915	119	88	56	42	1,862	356	68,728
1957	395	4,628	20,570	272,649	245,466	59,554	810	332	207	204,645	56,030	16,104	881,390
1958	24,776	44,671	20,875	8,167	59,310	16,083	1,761	14,591	84,520	17,369	4,832	6,671	303,626
1959	5,340	60,028	9,361	94,864	90,631	60,448	27,652	4,628	1,963	37,193	33,914	93,800	519,822
1960	95,055	33,168	34,941	7,160	28,696	9,019	11,349	2,626	841	26,074	83,919	255,249	588,097
1961	247,798	157,101	42,244	14,785	4,052	95,170	42,585	2,330	29,869	5,176	11,254	55,036	707,400
1962	31,306	23,538	13,030	15,393	31,924	20,604	4,083	216	607	1,239	2,743	4,537	149,220
1963	2,590	7,853	3,707	7,152	4,577	2,420	145	0	0	9	281	986	29,720
1964	3,947	3,789	10,786	6,719	4,881	564	2	3,508	7,050	1,015	5,909	2,041	50,211
1965	36,014	53,517	11,070	119,674	338,069	58,093	987	64	500	548	7,595	12,196	638,327
1966	9,899	29,859	15,579	245,379	141,599	2,191	270	23,163	83,713	6,389	1,480	2,504	562,025
1967	2,802	2,321	3,728	17,281	11,685	8,359	216	183	4,782	2,235	20,139	28,392	102,123
1968	125,087	30,631	62,303	105,973	157,564	131,835	52,670	968	1,630	764	5,479	34,361	709,265
1969	17,628	73,730	168,543	222,850	74,837	2,046	319	1,893	363	1,071	9,313	54,453	627,046
1970	24,521	27,216	123,733	44,240	7,782	2,504	147	39	5,542	32,709	2,633	1,789	272,855
1971	1,759	8,462	10,085	1,616	5,540	384	1,486	2,126	707	4,399	22,055	108,965	167,584
1972	47,131	17,193	2,409	1,184	655	2,096	12,421	648	202	7,808	29,688	21,526	142,961
1973	89,939	56,920	193,294	108,644	63,830	181,304	8,272	402	20,129	207,797	69,646	75,769	1,075,946
1974	148,498	50,909	26,916	18,631	37,868	3,070	553	17,946	146,714	15,775	233,457	75,301	775,638
1975	34,077	142,933	16,546	25,799	186,786	42,839	25,328	4,103	3,091	7,700	3,702	4,114	497,018
1976	6,076	5,842	18,791	121,409	194,558	86,951	40,505	1,561	3,560	86,767	23,920	180,186	770,126
1977	29,820	143,764	50,843	143,855	27,095	8,530	807	164	3,988	525	1,262	1,905	412,558
1978	7,592	28,110	34,070	5,381	4,984	1,442	217	41	2,852	521	20,352	5,683	111,245
1979	61,581	60,045	184,860	176,477	116,361	191,668	37,677	22,935	13,122	4,212	3,821	24,112	896,871
1980	46,552	50,638	18,877	36,821	144,397	3,901	1,209	347	796	175	1,532	2,178	307,423
1981	3,463	8,931	14,086	7,901	27,353	163,807	17,485	538	14,916	97,664	9,225	3,030	368,399
1982	6,737	8,128	21,364	37,029	69,221	1,260	880	309	213	639	7,399	67,317	220,496
1983	24,411	169,677	82,359	13,206	122,004	12,661	4,478	34,275	4,530	3,619	4,872	4,909	481,001
1984	8,473	12,619	42,696	6,092	1,715	4,848	3,498	512	228	173,721	66,204	95,564	416,170
1985	54,957	136,118	72,379	10,597	13,506	1,288	782	1,931	4,227	17,851	148,298	167,263	629,197
1986	8,557	140,235	8,533	18,073	102,589	40,035	1,927	1,234	1,118	14,950	44,610	163,493	545,354
1987	25,793	42,931	97,975	6,653	12,916	165,320	2,695	0	607	1,002	5,191	40,550	401,633
1988	8,215	16,282	30,498	7,535	8,154	1,948	0	214	853	1	33	5,417	79,150
1989	6,415	10,208	9,905	6,109	236,892	85,861	7,550	0	141	0	0	0	363,081
1990	6,948	21,505	126,049	26,983	170,898	6,921	643	318	4,515	4,715	22,257	10,383	402,135
1991	234,958	147,415	36,201	90,733	76,950	12,136	2,734	6,293	6,929	9,789	17,601	384,272	1,026,011
1992	144,581	261,984	143,821	9,802	77,756	60,740	0	0	0	0	3,388	54,064	756,136
1993	52,490	31,360	180,617	62,543	80,556	75,496	7,273	3,378	3,437	21,730	2,859	6,748	528,487
1994	5,026	78,556	29,212	11,818	80,776	49,388	1,861	5,985	1,199	13,606	10,017	108,803	396,247
1995	110,394	18,388	81,695	22,935	78,213	4,088	4,950	83,316	10,391	0	0	2,288	416,658
1996	1,901	3,486	2,719	2,165	6,402	0	4,294	0	0	0	1,345	8,640	30,952
1997	15,263	188,876	81,630	182,677	25,662	54,678	2,587	3,507	0	0	1,729	51,426	608,036
1998	219,428	74,509	44,675	6,664	2,576	1,719	1,666	769	14,673	192,620	97,282	114,747	771,329
1999	218,176	84,770	9,785	24,937	19,217	12,869	4,181	0	0	500	0	790	375,225
2000	4,467	3,054	5,429	13,504	32,732	67,394	1,988	0	0	0	109,888	130,378	368,835
2001	115,283	73,297	164,928	7,337	23,413	7,191	10,840	1,568	0	7,544	8,053	175,600	595,054
2002	8,134	33,982	29,730	53,287	7,848	10,880	19,660	0	1,331	13,223	32,277	146,982	357,334
2003	45,128	176,799	46,251	5,610	9,104	14,429	4,006	198	2,147	16,179	946	4,428	325,224
2004	8,188	53,385	19,418	34,035	46,938	181,142	39,267	5,230	3,043	8,192	193,368	25,114	617,321
2005	40,894	106,813	42,104	6,479	4,582	2,888	0	12,686	91	0	0	761	217,298
2006	3,849	8,357	74,252	11,734	14,413	5,382	0	0	1,722	3,818	1,999	21,865	147,389
2007	187,832	4,321	202,570	45,214	273,783	72,197	300,637	27,597	2,807	0	2,299	5,420	1,124,676
2008	2,769	11,950	67,415	16,549	31,935	165	0	64,700	2,349	1,369	1,001	2,064	202,265
2009	1,789	5,638	19,072	226,835	57,540	0	0	1,563	916	162,044	19,600	17,402	512,400
2010	47,089	160,234	121,373	7,961	6,634	56,161	851	0	1,585	0	0	0	401,889
2011	25,872	6,281	2,664	4,195	15,996	1,547	31	2,303	2,413	325	1,999	16,808	80,433
2012	62,236	77,506	213,305	5,660	2,005	1,267	799	0	6,867	4,229	1,965	1,951	377,792
2013	39,280	13,992	4,450	465	0	276	349	16	6,055	99,283	216,367	26,290	406,524
2014	5,861	6,214	8,030	7,988	25,929	20,470	4,327	982	0	2,372	6,813	2,864	91,851
2015	53,387	3,915	118,382	126,096	314,040	60,176	1,799	0	1,887	66,130	160,947	295,314	1,202,073
Min	301	1,736	330	465	0	0	0	0	0	0	0	0	29,720
Max	247,798	261,984	213,305	272,649	380,954	191,668	300,637	83,316	146,714	207,797	269,202	384,272	1,202,073
Average	45,872	52,574	52,693	45,930	71,567	33,787	10,446	5,413	7,746	23,197	30,259	49,622	429,106

Appendix B - Naturalized Flows

NATURALIZED FLOW **BRHE68**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Brazos River near Hempstead  
 Gage Number 08111500

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	31,649	149,252	27,694	196,281	365,199	666,230	1,169,485	270,114	104,996	50,294	1,583,495	2,555,544	7,170,233
1941	979,247	1,259,427	1,410,847	975,471	2,546,960	1,875,875	1,090,393	388,552	218,959	696,832	480,542	141,057	12,064,162
1942	121,393	91,784	81,192	2,179,373	1,850,680	1,212,631	208,756	113,331	854,651	724,460	391,230	254,386	8,083,867
1943	279,553	113,166	206,330	295,215	245,965	237,666	79,147	49,935	69,435	82,923	34,604	57,692	1,751,631
1944	603,979	918,534	1,001,116	285,473	2,873,795	1,001,501	164,638	69,061	271,158	102,042	365,180	719,386	8,375,863
1945	1,276,690	864,125	1,398,516	2,609,293	749,770	602,668	528,786	235,449	293,928	544,513	120,164	413,930	9,637,832
1946	653,822	838,506	1,171,931	460,553	1,593,598	791,866	143,677	90,000	288,791	258,801	943,605	581,967	7,817,117
1947	967,053	277,791	799,363	432,631	1,000,378	330,427	89,097	294,902	86,479	56,045	68,392	167,786	4,570,344
1948	90,927	228,448	251,690	151,638	313,734	230,557	258,432	10,550	56,222	33,461	21,356	20,060	1,667,075
1949	78,886	260,970	476,036	786,000	992,585	531,890	172,158	30,151	123,286	310,062	165,043	214,943	4,142,010
1950	219,523	778,975	131,746	541,309	521,444	523,810	263,838	216,515	313,183	108,910	26,170	16,962	3,662,385
1951	15,206	44,123	55,948	51,714	186,876	373,286	31,795	35,109	74,308	18,347	17,408	23,601	927,721
1952	14,518	38,079	66,357	320,688	447,993	177,529	43,689	11,596	32,333	9,639	82,694	213,923	1,459,038
1953	262,333	122,826	264,572	128,560	1,734,822	85,529	289,575	111,500	81,149	482,956	155,644	510,874	4,230,340
1954	96,913	38,216	23,137	135,825	543,755	136,769	29,167	43,685	12,194	36,126	68,414	14,457	1,178,658
1955	23,614	229,326	71,595	323,653	569,671	391,921	115,774	78,914	218,878	623,465	43,545	21,180	2,711,536
1956	30,693	102,177	37,886	47,356	433,944	44,872	1,643	16,270	12,699	24,657	57,089	87,282	896,618
1957	4,982	240,688	167,145	2,568,225	5,723,474	1,563,512	412,584	118,377	75,232	1,571,000	902,597	393,682	13,741,498
1958	428,231	917,726	681,004	474,522	1,586,392	258,629	381,396	79,567	316,635	149,946	84,245	72,058	5,430,351
1959	54,250	267,825	65,306	705,367	426,649	471,742	282,046	124,275	55,041	1,749,062	375,424	622,514	5,199,501
1960	991,604	610,903	330,544	235,044	362,810	294,985	348,178	82,947	25,569	606,888	831,487	1,458,006	6,178,965
1961	2,107,635	1,757,539	657,012	245,124	167,689	960,449	825,934	172,883	612,469	296,899	268,213	346,045	8,417,891
1962	198,945	157,239	111,573	125,395	155,134	523,288	283,191	156,254	582,902	241,861	152,600	317,686	3,006,068
1963	112,454	220,821	72,283	285,536	200,949	228,459	63,972	13,527	17,473	44,087	96,124	45,405	1,401,090
1964	55,001	140,689	214,174	161,308	135,622	206,354	37,636	51,309	320,405	114,096	366,469	111,808	1,914,871
1965	512,568	1,141,895	325,565	481,274	3,317,694	756,083	149,762	113,577	123,718	156,591	336,735	437,176	7,852,638
1966	186,484	395,879	341,249	1,239,937	1,753,522	271,484	81,552	272,210	761,195	237,360	61,597	46,777	5,649,246
1967	54,807	39,497	49,537	172,097	214,180	265,066	178,049	46,134	115,640	50,472	255,095	157,998	1,598,572
1968	1,578,515	591,144	1,152,980	1,033,861	2,133,563	1,503,288	957,940	135,899	222,105	90,886	187,854	441,579	10,029,614
1969	121,712	485,213	881,813	1,373,146	1,478,281	268,482	95,014	97,265	181,244	131,152	166,832	376,345	5,656,499
1970	309,194	412,966	1,514,064	656,221	681,790	287,769	72,635	52,023	192,542	247,962	76,147	44,227	4,547,540
1971	46,220	48,059	53,272	80,867	167,192	111,208	234,626	388,154	165,210	447,284	248,300	799,588	2,789,980
1972	367,806	185,893	90,377	87,477	356,981	133,043	64,212	156,439	145,667	156,562	333,165	159,528	2,237,150
1973	553,860	499,162	918,266	1,141,694	765,145	1,285,945	296,387	116,051	115,417	1,389,280	396,121	311,456	7,788,784
1974	619,076	299,839	157,616	145,717	277,372	99,726	43,788	202,959	1,456,569	744,166	1,757,427	635,072	6,439,327
1975	468,062	1,272,999	396,948	572,999	1,643,212	996,601	405,967	203,418	120,815	77,972	70,387	51,322	6,280,432
1976	59,769	82,360	124,748	831,759	1,179,533	580,132	722,099	127,069	169,287	423,434	319,978	1,015,165	5,635,333
1977	290,226	1,069,119	693,595	2,205,217	930,935	306,174	83,919	38,203	55,117	32,064	40,542	51,691	5,796,802
1978	106,545	175,301	183,733	112,008	69,873	109,343	24,609	580,831	106,833	36,615	115,966	57,370	1,679,027
1979	529,210	502,141	1,069,192	1,032,908	1,709,100	1,723,142	512,949	298,116	114,692	80,443	55,539	135,203	7,762,635
1980	324,015	315,415	222,890	290,801	1,152,527	164,906	54,636	26,983	141,864	266,415	44,865	81,303	3,086,620
1981	53,638	77,368	206,786	178,577	251,009	2,122,164	325,257	69,492	171,949	1,329,083	588,130	110,134	5,483,587
1982	81,252	97,429	181,921	307,147	1,391,769	976,557	517,114	80,017	32,759	33,183	48,431	167,523	3,915,102
1983	172,341	602,204	630,218	194,478	918,831	304,859	69,396	166,134	92,650	121,401	53,552	68,057	3,394,121
1984	78,164	63,006	213,330	46,059	54,859	82,786	36,488	21,855	28,734	987,868	452,494	722,077	2,787,720
1985	620,550	572,389	816,672	376,713	412,317	282,707	97,237	22,499	36,491	412,176	577,582	899,053	5,126,386
1986	123,096	833,621	162,461	116,222	696,243	1,418,480	189,964	98,505	411,127	618,584	499,366	1,306,844	6,474,513
1987	576,826	629,392	992,301	302,690	554,487	2,542,750	424,470	111,061	98,226	45,879	101,556	248,335	6,627,973
1988	144,989	115,153	204,897	95,939	69,725	265,518	84,484	40,188	80,989	28,888	16,973	38,140	1,185,883
1989	143,940	255,567	348,473	264,450	1,488,986	1,275,320	231,947	225,722	141,761	46,319	36,454	25,468	4,484,407
1990	100,487	182,522	742,057	1,621,966	2,269,407	773,362	149,582	124,595	155,126	84,231	136,657	61,992	6,401,984
1991	1,486,745	575,540	242,527	741,269	805,098	739,273	152,036	243,981	236,140	456,992	455,184	4,205,115	10,339,810
1992	2,451,846	4,310,347	2,411,111	808,865	1,443,301	1,798,333	449,601	244,907	171,433	89,178	153,234	489,900	14,822,056
1993	593,854	726,762	1,236,991	789,723	1,058,926	949,845	255,186	80,715	65,611	292,922	100,431	89,763	6,240,729
1994	112,563	311,862	300,283	120,815	1,002,066	353,977	101,911	67,122	81,990	1,363,836	289,928	939,900	5,046,253
1995	754,753	214,615	767,486	853,516	977,812	744,099	183,764	767,377	196,341	110,553	56,118	136,461	5,762,895
1996	44,471	56,570	41,931	89,042	45,748	76,705	38,424	210,755	679,660	173,469	220,157	492,996	2,169,928
1997	416,222	2,069,258	1,961,994	1,701,186	1,167,022	1,151,842	426,245	160,646	66,858	101,895	111,753	701,908	10,036,829
1998	1,301,512	875,780	1,390,736	379,394	142,234	58,406	41,982	27,070	243,922	1,345,635	1,379,469	931,054	8,117,194
1999	339,452	487,002	319,618	251,143	269,856	270,736	91,913	34,293	19,044	12,042	12,782	22,713	2,130,594
2000	52,541	39,388	133,346	145,661	227,436	548,314	29,430	107	18,006	74,274	970,577	499,033	2,738,113
2001	933,159	875,374	1,923,731	558,560	497,891	338,103	123,187	95,311	522,050	201,971	430,379	1,137,969	7,637,685
2002	314,398	343,726	379,209	455,796	180,354	154,151	482,200	176,919	61,548	359,259	960,879	1,138,297	5,006,736
2003	516,954	1,204,562	827,897	187,022	115,768	271,945	74,992	29,760	129,735	504,773	146,202	77,390	4,087,000
2004	280,485	711,322	472,965	564,312	1,328,699	1,906,031	1,122,164	413,466	163,704	297,736	2,444,548	1,005,149	10,710,581
2005	682,614	1,087,686	1,227,855	338,217	185,436	137,124	66,230	709,125	130,924	67,420	43,092	52,441	4,728,164
2006	67,813	89,317	220,363	159,638	347,349	66,534	31,920	11,846	21,084	387,212	73,034	111,716	1,587,826
2007	1,246,376	124,282	1,624,969	880,714	2,530,686	3,198,214	3,332,536	770,922	511,223	208,420	127,999	151,606	14,707,947
2008	88,187	208,481	488,886	325,659	547,968	96,364	40,682	165,011	81,272	52,766	57,559	30,100	2,182,935
2009	31,363	44,486	131,529	373,286	386,109	43,801	32,023	30,134	273,377	1,654,384	646,484	417,229	4,064,205
2010	697,424	1,781,											

Appendix B - Naturalized Flows

NATURALIZED FLOW **MCBL69**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Mill Creek near Bellville  
 Gage Number 0811700

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	21	2,362	14	1,299	8,582	35,753	128,658	47	179	510	52,718	82,612	312,756
1941	15,195	15,540	39,603	17,127	37,794	59,392	96,954	788	129	702	5,396	873	289,495
1942	538	539	488	32,917	1,490	1,209	2,042	49	1,964	266	1,785	1,968	45,256
1943	6,183	715	5,421	1,016	4,189	2,392	58	2	439	443	31	448	21,337
1944	25,548	23,717	20,433	1,977	23,262	2,560	383	1,559	6,639	6	32,689	41,431	180,203
1945	50,921	14,050	7,698	41,337	3,693	13,450	1,173	26,582	5,120	14,935	1,001	3,211	183,171
1946	23,141	19,510	53,893	5,052	16,313	8,864	277	0	2,038	2,629	37,882	5,271	174,869
1947	22,787	1,615	35,298	6,775	16,426	1,039	1,204	62,044	284	2	0	1,046	148,521
1948	205	4,274	670	190	3,454	156	499	0	0	0	0	0	9,448
1949	663	16,639	10,557	66,452	8,686	3,170	147	0	410	21,432	378	7,476	136,010
1950	4,043	33,269	1,739	32,580	13,519	40,090	1,316	0	7,876	33	0	0	134,466
1951	0	108	2,849	1,647	363	1,024	0	0	58	0	41	0	6,091
1952	0	538	289	3,404	10,943	1,201	11,776	0	0	0	1,862	11,408	41,423
1953	10,091	2,662	1,144	3,921	43,589	96	3,802	353	2,388	11,615	4,601	6,925	91,187
1954	1,459	753	355	582	4,146	337	368	1,849	262	98	81	113	10,404
1955	164	10,781	159	2,443	169	2,890	218	476	273	327	139	52	18,090
1956	188	8,106	2,085	4,127	1,273	490	350	323	289	157	47	388	17,822
1957	20	181	8,548	83,654	45,469	39,309	448	287	9,644	84,662	33,734	8,105	314,060
1958	26,975	45,507	8,635	12,729	37,410	562	8,292	185	23,610	7,373	5,178	1,589	178,044
1959	2,460	22,584	2,869	60,847	8,745	950	181	50	79	1,836	8,423	12,774	121,797
1960	11,673	16,316	4,051	6,691	17,476	24,618	2,737	1,064	338	29,594	55,964	39,078	209,602
1961	44,133	37,056	6,769	2,708	4,911	70,249	10,204	643	87,161	1,549	11,309	7,175	283,866
1962	7,481	3,110	3,152	2,428	4,375	5,556	5,967	331	7,547	9,173	15,237	36,259	100,615
1963	7,217	23,462	2,457	10,458	1,010	380	414	83	50	196	209	484	46,421
1964	940	2,196	8,665	1,317	711	958	91	131	375	300	485	1,800	17,969
1965	22,117	33,610	4,069	1,721	104,920	12,249	308	145	158	292	4,354	21,935	205,878
1966	10,089	33,707	9,920	12,013	33,462	1,116	888	362	253	225	261	650	102,946
1967	976	638	744	3,278	5,015	323	46	56	3,098	3,587	696	871	19,328
1968	14,534	1,927	2,464	22,023	70,176	105,795	12,318	499	14,475	6,979	9,359	34,988	295,537
1969	7,045	49,206	39,557	27,021	11,160	4,390	327	214	2,080	510	1,620	2,806	145,936
1970	3,288	2,898	20,016	12,301	35,428	13,035	375	177	8,080	41,581	1,988	2,245	141,412
1971	2,842	3,110	1,708	1,309	1,012	203	41	295	642	1,853	838	6,037	19,890
1972	4,269	2,680	18,742	5,447	84,466	7,119	1,741	804	330	2,563	5,222	3,434	136,817
1973	15,988	24,798	61,163	81,822	12,447	99,123	2,215	944	3,007	58,678	12,851	18,095	371,131
1974	83,005	10,707	7,477	4,747	6,532	875	455	18,532	71,522	7,131	54,072	28,209	293,264
1975	18,547	24,966	11,458	41,659	73,085	42,754	7,463	10,295	5,695	3,836	3,164	5,057	247,979
1976	3,232	2,341	4,427	22,404	28,893	41,172	9,140	1,022	5,819	48,689	13,146	90,475	270,760
1977	14,605	64,692	8,104	83,287	7,021	9,236	957	530	877	683	1,198	1,453	192,643
1978	9,898	14,096	3,723	1,953	1,057	1,491	287	194	34,225	837	20,615	9,393	97,769
1979	72,961	41,252	13,309	77,103	118,664	77,031	3,236	1,771	19,102	2,094	2,406	7,348	436,277
1980	36,158	12,316	6,883	5,058	34,323	1,809	402	302	388	2,276	1,419	1,616	102,950
1981	3,153	2,059	2,305	9,148	19,716	57,544	4,855	1,156	1,860	2,222	70,044	2,952	177,014
1982	2,885	3,547	3,597	8,486	64,666	1,596	1,105	311	152	386	4,107	8,672	99,510
1983	9,042	28,137	73,874	5,068	59,948	1,835	1,174	3,859	1,418	990	1,584	7,284	194,213
1984	3,438	4,340	9,607	1,893	8,915	1,495	382	354	164	6,697	1,547	11,438	50,270
1985	18,721	36,884	26,328	6,717	3,801	1,825	1,558	165	266	2,325	47,375	10,964	156,929
1986	4,522	8,908	4,265	2,052	9,977	75,146	845	457	4,976	5,195	13,218	63,016	192,577
1987	11,983	23,521	15,612	2,292	20,578	120,290	2,657	781	3,056	681	4,365	9,550	215,366
1988	3,802	3,689	32,449	3,114	20,337	4,194	847	302	100	160	295	555	69,844
1989	15,230	2,803	12,116	2,305	5,313	1,911	936	11,827	912	560	874	782	55,569
1990	1,813	5,188	4,074	3,448	1,867	131	174	56	252	262	608	980	18,853
1991	52,010	11,708	4,992	95,396	13,890	8,985	1,162	641	4,160	840	1,906	58,838	254,528
1992	52,172	125,766	58,070	42,451	61,723	74,975	4,198	1,530	874	876	6,555	30,661	459,851
1993	29,981	12,748	9,027	26,776	60,068	97,411	4,682	988	374	4,100	6,019	2,270	254,443
1994	553	14,245	4,650	985	21,222	1,977	843	2,191	890	64,243	2,986	6,074	120,857
1995	22,773	4,810	41,886	21,646	3,581	5,250	748	1,008	1,572	1,353	879	1,569	107,076
1996	276	208	340	621	363	732	463	1,477	11,572	658	2,135	3,741	22,589
1997	5,314	17,397	5,240	1,960	1,824	13,274	44	0	1,719	1,706	4,609	53,088	53,088
1998	45,808	49,475	14,619	590	133	33	0	0	23,789	64,720	78,368	32,873	310,409
1999	3,123	1,019	13,302	1,555	4,878	5,165	3,146	62	0	21	90	67	32,427
2000	359	139	8,121	2,338	4,644	3,002	279	73	278	420	20,047	5,437	45,137
2001	16,683	4,403	63,358	6,286	3,112	3,145	564	396	7,194	20,463	3,287	15,941	144,832
2002	4,744	2,886	2,422	14,061	474	316	2,373	413	243	61,956	93,701	81,233	264,822
2003	28,695	37,180	14,777	3,602	1,283	2,849	1,425	241	4,594	1,027	739	1,210	97,622
2004	8,918	30,032	5,804	16,590	23,772	99,066	10,804	1,297	735	919	68,364	6,085	272,386
2005	12,889	27,287	13,369	2,957	2,110	754	842	279	85	154	328	583	61,637
2006	794	891	1,498	883	387	483	564	81	45	1,991	292	1,798	9,707
2007	54,809	2,465	40,268	15,824	17,215	9,719	28,903	4,270	1,613	1,178	33,769	6,026	216,059
2008	6,500	14,410	8,763	2,700	2,660	396	642	253	441	240	1,737	653	39,395
2009	746	686	982	44,772	1,618	230	151	82	168	10,321	1,511	7,611	68,878
2010	9,358	25,674	4,982	1,615	1,555	597	830	123	400	108	177	297	45,716
2011	650	532	470	176	82	71	5	0	0	9	49	198	2,242
2012	3,642	16,986	26,255	1,050	671	425	9,713	208	105	126	205	276	59,662
2013	616	398	374	564	387	184	125	40	102	6,610	7,315	2,309	19,024
2014	3,386	990	4,309	270	35,296	3,882	326	197	567	201	4,474	4,315	58,213
2015	8,140	1,256	70,391	14,124	125,667	64,324	6,042	1,104	611	20,024	22,949	54,563	389,195
Min	0	108	14	176	82	33	0	0	0	0	0	0	2,242
Max	83,005	125,766	73,874	95,396	125,667	120,290	128,658	62,044	87,161	84,662	93,701	90,475	459,851
Average	13,541	15,147	13,738	15,147	20,387	18,390	5,410	2,226	5,269	8,597	11,921	12,507	142,281

Appendix B - Naturalized Flows

NATURALIZED FLOW **BRR170**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Brazos River at Richmond  
 Gage Number 08114000

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	51,388	148,983	43,536	200,366	319,711	660,078	1,324,620	257,455	110,259	66,620	1,408,897	3,249,758	7,841,671
1941	1,186,703	1,355,739	1,619,576	1,228,815	2,796,540	2,107,989	1,152,359	363,548	316,619	749,626	640,748	166,534	13,684,796
1942	138,492	106,630	97,484	2,145,750	1,970,552	1,313,170	352,632	114,526	855,136	722,141	409,734	243,467	8,469,714
1943	330,500	121,938	226,982	312,768	226,929	269,630	141,321	87,178	63,622	88,172	53,705	88,417	2,011,162
1944	673,563	954,468	1,167,998	361,915	2,857,197	1,081,845	174,037	72,567	269,622	114,746	327,290	779,695	8,834,943
1945	1,313,526	914,825	1,348,255	2,559,708	772,068	585,794	546,197	439,752	358,430	546,770	129,400	476,875	9,991,600
1946	659,964	871,209	1,314,319	510,389	1,622,994	881,705	220,849	88,108	297,844	275,542	1,036,817	587,139	8,366,879
1947	985,930	305,066	811,933	434,429	1,001,273	355,034	100,173	349,615	129,601	71,563	88,359	230,712	4,863,688
1948	101,686	239,221	358,633	158,440	315,390	228,983	275,322	16,909	60,544	44,598	32,482	27,623	1,859,831
1949	70,752	237,852	495,180	785,060	1,050,634	505,226	216,966	36,342	102,590	278,977	199,336	264,135	4,243,050
1950	281,302	758,164	173,479	529,259	559,935	665,037	249,888	198,309	294,131	126,091	39,685	32,724	3,908,004
1951	21,960	49,278	60,101	78,885	175,609	365,389	37,510	31,827	77,248	32,549	23,549	32,394	986,299
1952	22,984	49,682	77,765	393,345	458,385	219,555	49,301	0	30,155	12,295	69,616	245,520	1,628,603
1953	285,188	123,706	263,749	103,516	1,789,796	113,051	295,388	123,982	125,569	455,454	222,665	554,888	4,456,952
1954	135,089	51,879	29,087	139,559	520,301	158,876	31,811	51,523	18,084	42,704	75,283	25,592	1,279,788
1955	33,044	256,186	79,451	314,768	536,870	409,296	134,969	84,539	195,279	619,294	60,011	30,702	2,754,409
1956	37,235	100,759	45,217	50,820	397,035	46,507	0	16,593	16,259	24,255	54,949	93,447	883,076
1957	10,858	237,968	231,060	1,942,569	6,135,967	1,996,446	592,794	173,089	101,539	1,821,342	1,058,396	470,560	14,772,588
1958	558,033	878,216	796,690	429,472	1,567,955	311,146	425,606	106,634	337,799	227,230	106,396	82,627	5,827,804
1959	61,452	308,889	120,248	859,597	554,020	506,531	302,174	150,339	60,468	1,670,904	468,373	658,377	5,721,372
1960	1,038,955	680,333	381,922	246,050	482,260	437,924	438,910	109,012	45,382	598,179	1,009,328	1,573,000	7,041,255
1961	2,303,823	2,005,108	740,319	316,672	205,553	1,079,096	1,019,744	260,043	779,813	360,902	381,448	402,191	9,854,712
1962	230,102	198,162	137,378	128,895	193,001	521,757	321,100	159,859	551,405	290,719	146,452	356,108	3,234,938
1963	186,274	201,687	100,323	276,817	188,286	208,901	84,374	23,813	25,469	45,659	105,701	57,072	1,504,376
1964	61,659	169,838	243,104	158,595	164,224	188,103	51,835	52,374	300,761	133,024	376,162	132,862	2,032,541
1965	483,959	1,100,064	375,736	476,658	3,407,291	1,005,054	190,042	157,948	146,922	175,312	399,223	461,101	8,379,310
1966	204,833	431,696	373,350	1,110,649	2,137,720	329,387	110,935	300,289	734,303	283,166	73,750	57,841	6,147,919
1967	70,215	52,000	60,324	174,545	216,873	282,584	176,842	52,563	134,681	72,944	255,070	153,537	1,702,178
1968	1,614,894	650,743	1,064,248	961,780	2,356,649	1,773,470	988,761	162,445	251,818	131,167	184,921	518,474	10,659,370
1969	148,911	580,528	937,591	1,434,431	1,601,376	310,791	116,057	112,371	196,344	133,563	167,197	364,297	6,103,457
1970	305,686	375,045	1,586,789	705,582	723,134	347,911	89,192	50,517	197,704	394,078	103,769	57,089	4,936,496
1971	54,012	54,664	55,804	80,186	165,629	109,426	216,471	395,929	194,587	416,142	288,953	847,698	2,879,501
1972	432,446	250,277	151,780	102,236	561,083	174,771	83,425	174,050	155,278	138,687	384,859	177,846	2,786,738
1973	533,688	567,407	967,724	1,350,544	926,721	1,452,896	378,210	158,592	143,866	1,525,605	529,168	434,748	8,969,169
1974	796,270	412,046	205,564	161,613	335,157	112,346	50,946	178,183	1,557,058	842,775	1,928,125	782,281	7,362,364
1975	532,032	1,398,216	484,680	664,070	1,690,171	1,133,260	507,047	263,308	150,404	92,086	82,548	79,866	7,077,688
1976	79,608	107,999	141,032	833,057	1,235,909	666,721	760,433	164,567	192,715	458,937	372,548	1,129,444	6,142,970
1977	384,519	1,176,188	712,219	2,151,353	1,008,468	418,149	131,069	55,363	80,479	43,683	56,408	60,976	6,278,874
1978	172,454	266,016	213,886	117,475	74,315	140,094	36,928	568,503	179,829	46,062	155,978	114,250	2,085,790
1979	699,175	610,027	1,113,033	1,284,797	1,848,544	2,016,513	494,945	385,024	263,185	109,015	70,989	165,705	9,060,952
1980	432,347	399,077	209,892	352,571	1,230,039	242,993	71,945	40,224	153,472	280,655	53,016	85,050	3,551,281
1981	63,744	84,230	216,128	188,510	289,476	2,213,501	487,272	115,023	235,013	1,231,089	787,587	141,870	6,053,443
1982	89,079	111,174	180,507	330,125	1,441,025	1,033,809	628,572	103,808	37,993	48,550	121,657	219,332	4,345,631
1983	212,279	693,191	766,201	266,892	996,263	380,750	99,920	211,139	140,591	137,138	71,234	105,113	4,080,711
1984	93,160	86,021	242,124	63,499	78,462	89,974	48,959	45,251	47,218	933,848	542,572	718,469	2,989,557
1985	669,009	598,961	911,078	431,756	427,595	321,095	123,541	34,807	49,544	408,300	686,298	1,096,661	5,758,645
1986	184,704	842,186	214,889	140,713	747,052	1,562,514	239,215	133,107	426,842	653,223	545,686	1,449,379	7,139,510
1987	673,429	669,456	1,143,503	426,511	629,627	2,904,433	573,018	182,832	123,464	67,624	133,993	284,178	7,812,068
1988	204,383	138,647	243,450	119,431	90,832	298,130	96,090	54,595	89,199	38,623	23,001	45,419	1,441,800
1989	158,911	297,711	345,285	321,204	1,477,450	1,370,947	330,189	295,853	151,012	51,429	43,958	28,933	4,872,882
1990	116,545	209,457	738,166	1,569,056	2,171,669	768,316	165,871	137,262	161,944	81,830	144,268	69,109	6,333,493
1991	1,564,316	673,384	281,117	930,135	899,337	812,485	191,609	258,410	256,333	456,604	453,630	3,718,155	10,494,975
1992	2,762,863	4,261,375	2,663,016	1,022,126	1,448,711	1,853,487	493,121	317,995	203,649	96,122	174,926	545,897	15,843,288
1993	676,871	782,145	1,240,275	886,982	1,233,985	1,196,201	347,899	89,871	72,716	308,426	129,086	111,867	7,076,324
1994	130,954	348,536	341,469	124,831	1,055,032	414,949	131,337	74,540	105,159	1,550,594	352,969	976,506	5,606,876
1995	929,653	278,291	872,798	923,482	1,026,825	839,968	212,647	794,204	211,619	135,062	81,567	172,257	6,478,373
1996	83,688	80,924	56,098	87,794	48,673	84,968	61,928	220,088	734,417	223,540	238,326	481,266	2,401,710
1997	439,268	1,888,739	2,090,787	1,726,457	1,177,087	1,168,615	495,253	194,433	100,382	179,067	128,686	766,741	10,355,515
1998	1,321,280	913,644	1,431,753	438,631	181,312	80,766	55,520	34,783	301,689	1,556,189	1,617,834	950,426	8,883,827
1999	349,500	495,799	346,916	287,171	309,889	326,501	131,681	56,035	34,170	20,073	20,478	29,654	2,407,867
2000	53,157	41,410	131,685	152,505	250,686	541,783	49,340	25,882	16,884	74,480	993,379	467,444	2,798,635
2001	955,653	853,499	1,941,607	668,058	521,814	384,078	135,030	98,553	589,274	271,265	411,374	1,139,316	7,969,521
2002	367,374	345,007	366,487	514,530	176,547	154,103	479,049	218,162	93,875	483,805	1,210,830	1,195,857	5,605,626
2003	606,509	1,139,742	938,791	220,178	132,894	270,555	79,912	40,214	135,617	480,721	169,644	88,951	4,303,728
2004	286,709	730,929	469,308	526,457	1,406,180	1,812,313	1,326,041	420,491	206,578	280,709	2,420,926	1,106,177	10,992,818
2005	679,065	1,147,164	1,309,210	400,625	224,861	167,330	92,188	693,553	168,794	81,580	55,922	62,743	5,083,035
2006	71,857	88,010	215,991	167,408	341,748	73,377	42,533	23,285	28,052	412,369	89,081	82,526	1,636,237
2007	1,365,244	161,812	1,652,526	1,027,377	2,610,654	3,446,269	3,533,758	946,463	568,777	264,626	244,911	216,101	16,038,518
2008	156,289	274,517	547,060	362,938	586,780	144,730	54,189	164,444	96,534	55,351	78,436	32,113	2,553,381
2009	41,404	49,285	136,167	457,208	437,936	64,354	53,972	39,100	274,836	1,487,533			

Appendix B - Naturalized Flows

NATURALIZED FLOW **BGNE71**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Big Creek near Needville  
 Gage Number 08115000

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	21	1,268	11	53	242	978	344	0	28	205	8,122	2,879	14,151
1941	1,306	882	4,801	4,186	3,150	4,909	997	563	15,219	6,714	4,127	960	47,814
1942	590	1,255	680	1,060	89	789	9,986	1,181	2,432	87	530	1,991	20,671
1943	2,856	177	1,783	183	69	94	8,630	1,261	102	29	13,375	3,346	31,903
1944	10,664	1,741	5,900	75	7,216	252	33	108	342	102	1,448	2,141	30,023
1945	2,293	1,399	74	4,068	1,872	418	75	9,408	931	2,249	45	4,950	27,781
1946	5,866	2,963	1,244	266	5,977	8,144	1,897	114	5,052	514	12,678	1,883	46,598
1947	5,248	151	560	130	5,471	84	215	469	1	0	1,019	3,435	16,783
1948	1,104	1,820	1,371	81	1,217	1	5	0	0	0	115	0	5,714
1949	54	3,358	575	5,302	83	131	1,473	3,656	173	12,438	48	8,331	35,622
1950	2,025	3,721	11	1,253	189	2,410	787	238	153	110	85	94	11,077
1951	243	195	1,339	148	196	253	139	150	624	102	213	113	3,715
1952	87	1,215	139	7,416	3,667	435	214	65	41	25	1,012	1,696	16,011
1953	112	671	51	16	8,983	9	30	8,902	6,296	106	1,645	5,341	32,162
1954	808	22	0	0	527	4	56	68	12	14	1	0	1,512
1955	652	4,723	0	42	1,603	63	765	217	467	15	0	0	8,547
1956	1,185	724	0	75	325	202	1	7	36	0	0	11	2,566
1957	0	9	7,981	7,515	780	1,000	20	15	1,387	10,578	5,762	43	35,090
1958	3,836	2,331	37	29	99	103	82	78	1,888	955	49	122	9,609
1959	110	12,385	144	8,517	1,578	86	529	4,982	131	15,606	7,150	4,015	55,233
1960	1,692	2,602	72	906	89	27,782	293	2,692	81	5,058	941	6,655	48,863
1961	3,790	5,163	55	450	119	13,236	10,237	77	10,009	49	2,430	1,021	46,636
1962	10	2	2	277	697	698	372	50	1,579	54	273	5,605	9,619
1963	4,020	1,130	23	21	20	663	566	50	33	19	82	1,484	8,111
1964	726	2,826	3,965	78	93	304	92	94	1,113	885	1,019	2,580	13,775
1965	3,408	3,425	24	65	1,072	705	194	148	126	1,279	6,113	3,542	20,101
1966	2,398	5,258	233	8,174	8,327	473	275	539	1,833	91	6	23	27,630
1967	576	202	53	369	1,076	119	473	3,548	2,047	1,621	25	1,886	11,995
1968	4,360	1,047	797	716	6,288	11,940	889	206	1,260	853	570	1,192	30,118
1969	1,245	7,958	3,570	774	9,320	105	48	178	231	639	187	1,589	25,844
1970	712	1,684	3,322	590	2,660	560	121	146	2,588	10,802	109	9	23,303
1971	12	132	9	231	141	127	179	5,107	14,840	1,495	33	3,057	25,363
1972	2,053	3,582	579	522	8,142	1,016	351	613	203	554	4,435	61	22,111
1973	3,705	5,279	5,637	12,919	520	16,933	1,724	489	12,815	12,145	941	398	73,505
1974	11,346	55	2,279	435	4,036	369	357	867	5,476	1,984	10,649	2,476	40,329
1975	720	422	0	1,165	8,237	4,092	220	654	137	254	891	2,635	19,427
1976	0	0	0	288	1,857	4,265	1,255	0	32	504	1,099	10,827	20,127
1977	322	2,662	0	2,960	153	174	290	232	722	0	354	47	7,916
1978	6,863	3,035	0	93	55	2,259	306	6	1,166	1,438	2,849	648	18,718
1979	9,843	4,652	1,592	8,191	3,608	327	660	587	23,650	0	1	3,094	56,205
1980	4,763	417	713	36	1,051	162	263	387	304	85	33	33	8,247
1981	252	103	123	81	4,333	3,845	7,330	6,500	7,501	7,136	1,560	22	38,786
1982	24	1,316	50	1,254	13,677	382	599	87	0	0	6,257	1,026	24,672
1983	1,938	7,481	2,662	47	1,667	591	6,315	17,399	11,095	33	2,744	53	52,025
1984	444	196	0	38	518	353	262	824	10	15,168	864	453	19,130
1985	1,864	1,436	4,471	969	239	609	263	116	328	746	17,542	5,258	33,841
1986	0	1	0	34	936	6,506	208	509	2,418	10,269	6,631	11,748	39,260
1987	1,992	5,131	191	0	1,067	13,065	1,628	74	56	0	764	3,322	27,200
1988	338	0	1,015	1,348	304	103	942	126	0	72	0	0	4,248
1989	1,494	19	524	1,161	5,390	395	372	8,875	0	0	216	0	18,446
1990	207	3,058	1,214	1,612	1,011	0	5	0	0	103	43	0	7,253
1991	5,929	2,065	285	5,514	132	4,255	637	574	105	0	685	9,851	30,032
1992	7,001	11,539	4,536	7,529	778	2,862	521	117	194	0	3,694	1,653	40,424
1993	4,065	2,593	4,886	3,649	5,504	13,768	17	7	55	0	2,527	1,072	38,143
1994	259	869	388	650	6,813	910	0	284	2,095	15,710	0	2,572	30,550
1995	6,200	480	2,692	3,977	1,906	2,289	655	274	0	65	822	5,872	25,232
1996	155	98	57	0	0	1,108	56	1,234	2,748	92	468	851	6,867
1997	1,958	2,852	6,440	9,244	2,147	760	24	28	6,936	6,038	839	2,694	39,960
1998	2,023	2,544	21	0	0	0	0	806	8,654	2,245	8,673	1,426	26,392
1999	2,155	0	3,373	0	0	1,162	146	0	0	0	0	0	6,836
2000	0	0	0	1,627	1,511	0	0	0	0	8	7,949	879	11,974
2001	2,159	0	4,317	15	74	1,644	0	5,566	8,681	3,731	349	5,205	31,741
2002	0	0	0	2,750	0	482	3,770	3,914	651	11,830	9,480	3,282	36,159
2003	705	1,803	1,084	76	0	204	169	0	1,752	342	8,468	655	15,258
2004	7,304	5,489	323	354	11,297	12,520	389	230	0	1,320	18,240	83	57,549
2005	232	6,596	3,719	0	1,203	0	390	775	0	0	0	540	13,455
2006	189	0	632	728	133	90	3,637	0	0	21,135	259	344	27,147
2007	8,036	0	2,788	2,446	1,488	793	15,200	2,082	560	2,473	1,041	183	37,090
2008	5,123	1,581	788	0	0	0	0	110	287	1	850	0	8,740
2009	0	0	962	7,821	0	0	0	0	347	3,930	111	7,011	20,182
2010	1,444	2,110	0	0	7,896	1,605	8,767	321	552	0	0	983	23,678
2011	346	0	0	0	0	0	0	0	0	76	0	185	607
2012	3,918	5,336	4,297	0	1,860	513	2,850	0	667	249	0	0	19,690
2013	2,798	0	0	421	1,624	0	0	0	148	2,409	3,106	1	10,507
2014	82	40	1,160	0	5,646	209	601	44	2,280	335	9	2,669	13,075
2015	2,310	0	5,353	12,501	21,772	1,879	0	0	2,629	10,681	2,107	2,625	61,857
Min	0	0	0	0	0	0	0	0	0	0	0	0	607
Max	11,346	12,385	7,981	12,919	21,772	27,782	15,200	17,399	23,650	21,135	18,240	11,748	73,505
Average	2,297	2,070	1,421	1,915	2,656	2,363	1,331	1,303	2,320	2,709	2,589	2,140	25,112

Appendix B - Naturalized Flows

NATURALIZED FLOW **BRRO72**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Brazos River at Rosharon  
 Gage Number 08116650

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	53,238	154,346	45,103	207,579	331,221	683,841	1,372,306	266,723	114,228	69,018	1,459,617	3,366,749	8,123,971
1941	1,229,424	1,404,546	1,677,881	1,273,052	2,897,215	2,183,877	1,193,844	376,636	328,017	776,613	663,815	172,529	14,177,449
1942	143,478	110,469	100,993	2,222,997	2,041,492	1,360,444	365,327	118,649	885,921	748,138	424,484	252,232	8,774,624
1943	342,398	126,328	235,153	324,028	235,098	279,337	146,409	90,316	65,912	91,346	55,638	91,600	2,083,564
1944	697,811	988,829	1,210,046	374,944	2,960,056	1,120,791	180,302	75,179	279,328	118,877	339,072	807,764	9,153,001
1945	1,360,813	947,759	1,396,792	2,651,857	799,862	606,883	565,860	455,583	371,333	566,454	134,058	494,043	10,351,298
1946	683,723	902,573	1,361,634	528,763	1,681,422	913,446	228,800	91,280	308,566	285,462	1,074,142	608,276	8,668,087
1947	1,021,423	316,048	841,163	450,068	1,037,319	367,815	103,779	362,201	134,267	74,139	91,540	239,018	5,038,781
1948	105,347	247,833	371,544	164,144	326,744	237,226	285,234	17,518	62,724	46,204	33,651	28,617	1,962,785
1949	73,299	246,415	513,006	813,322	1,088,457	523,414	224,777	37,650	106,283	289,020	206,512	273,644	4,395,800
1950	291,429	785,458	179,724	548,312	580,093	688,978	258,884	205,448	304,720	130,630	41,114	33,902	4,048,692
1951	22,751	51,052	62,265	81,725	181,931	378,543	38,860	32,973	80,029	33,721	24,397	33,560	1,021,806
1952	23,811	51,471	80,565	407,505	474,887	227,459	51,076	0	31,241	12,738	72,122	254,359	1,687,233
1953	295,455	128,159	273,244	107,243	1,854,229	117,121	306,022	128,445	130,089	471,850	230,681	574,864	4,617,402
1954	139,952	53,747	30,134	144,583	539,032	164,596	32,956	53,378	18,735	44,241	77,993	26,513	1,325,860
1955	34,234	265,409	82,311	326,100	556,197	424,031	139,828	87,582	202,309	641,589	62,171	31,807	2,853,568
1956	38,575	104,386	46,845	52,650	411,328	48,181	0	17,190	16,844	25,128	56,927	96,811	914,867
1957	11,249	246,535	239,378	2,012,501	6,356,862	2,068,318	614,135	179,320	105,194	1,886,910	1,096,498	487,500	15,304,401
1958	578,122	909,832	825,371	444,933	1,624,401	322,347	440,928	110,473	349,960	235,410	110,226	85,602	6,037,605
1959	63,664	320,009	124,577	890,542	573,965	524,766	313,052	155,751	62,645	1,731,057	485,234	682,079	5,927,341
1960	1,076,357	704,825	395,671	254,908	499,621	453,689	454,711	112,936	47,016	619,713	1,045,664	1,629,628	7,294,740
1961	2,386,761	2,077,292	766,970	328,072	1,212,953	1,117,943	1,056,455	269,405	807,886	373,894	395,180	416,670	10,209,482
1962	238,386	205,296	142,324	133,535	199,949	540,540	332,660	165,614	571,256	301,185	151,724	368,928	3,351,396
1963	192,980	208,948	103,935	286,782	195,064	126,421	87,411	24,670	26,386	47,303	109,506	59,127	1,558,534
1964	63,879	175,952	251,856	164,304	170,136	194,875	53,701	54,259	311,588	137,813	389,704	137,645	2,105,712
1965	501,382	1,139,666	389,262	493,818	3,529,953	1,041,236	196,884	163,634	152,211	181,623	413,595	477,701	8,680,965
1966	212,207	447,237	386,791	1,150,632	2,214,678	341,245	114,929	311,099	760,738	293,360	76,405	59,923	6,369,244
1967	72,743	53,872	62,496	161,697	215,655	291,282	191,355	54,686	137,072	70,468	252,708	148,530	1,172,563
1968	1,655,422	709,552	1,096,849	1,019,345	2,416,016	1,940,965	1,104,017	197,091	247,750	129,609	171,922	541,554	11,230,092
1969	181,117	672,181	1,045,344	1,502,523	1,753,511	305,154	126,158	111,636	185,342	145,015	180,855	393,570	6,602,406
1970	332,502	380,405	1,773,115	741,772	751,270	354,833	116,308	59,617	217,086	521,927	128,654	62,526	5,440,015
1971	58,955	54,005	62,413	92,707	170,520	133,926	224,025	430,181	299,845	389,925	266,443	868,325	3,051,270
1972	417,036	276,062	145,848	97,850	617,498	185,419	82,074	178,153	166,355	137,275	382,949	158,094	2,844,613
1973	552,725	601,721	1,029,568	1,436,967	927,200	1,714,632	439,071	168,972	288,636	1,620,001	507,607	425,220	9,712,320
1974	841,561	421,775	201,624	166,816	332,885	123,316	69,089	172,236	1,536,147	777,146	2,004,674	815,359	7,462,628
1975	531,784	1,394,469	486,914	671,522	1,695,468	1,244,990	527,384	282,466	169,447	103,894	104,349	96,658	3,909,345
1976	85,727	96,815	134,745	751,302	1,244,955	723,135	776,477	179,504	203,509	451,052	401,772	1,199,691	6,248,684
1977	323,102	1,143,267	695,947	2,165,941	1,002,423	390,954	139,702	65,244	98,458	52,795	59,425	61,890	6,199,148
1978	206,573	260,273	205,082	120,843	104,319	183,111	71,511	559,080	153,830	48,548	136,049	95,028	2,144,247
1979	701,835	640,934	1,142,089	1,285,909	1,815,319	2,011,865	502,267	422,703	427,089	108,713	75,286	175,494	9,309,503
1980	487,565	403,920	190,107	336,857	1,208,657	258,955	98,345	44,640	173,865	290,759	54,925	88,112	3,636,706
1981	66,039	87,262	223,909	195,296	299,897	2,293,187	504,814	119,164	243,473	1,275,408	815,940	146,977	6,271,367
1982	92,286	115,176	187,005	342,010	1,492,902	1,071,026	651,201	107,545	39,361	50,298	126,037	227,228	4,502,074
1983	219,921	718,146	793,784	276,500	1,032,128	394,457	103,517	218,740	145,652	142,075	73,798	108,897	4,227,617
1984	96,514	89,118	250,840	65,785	139,089	113,170	57,309	40,427	39,461	1,029,222	601,387	728,240	3,250,562
1985	726,941	626,922	1,086,374	462,385	431,489	322,877	143,217	58,291	53,810	417,446	767,134	1,144,965	6,241,851
1986	180,990	884,100	217,160	141,528	722,371	1,558,922	241,642	156,110	415,001	658,943	588,119	1,492,015	7,256,901
1987	679,717	680,381	1,081,759	355,005	572,037	2,813,698	551,885	201,865	146,816	78,617	142,715	293,739	7,598,234
1988	210,128	137,068	240,183	128,597	115,090	300,785	155,227	91,695	93,273	36,792	23,065	36,492	1,568,395
1989	143,601	295,805	319,845	321,358	1,451,993	1,419,647	377,298	377,605	162,549	61,764	53,921	26,836	5,012,222
1990	113,065	214,525	696,572	1,521,915	2,179,844	885,393	200,357	141,222	164,200	81,972	133,252	64,041	6,396,358
1991	1,652,592	703,014	283,866	1,050,496	861,082	838,275	226,245	247,632	239,783	451,621	476,809	3,426,567	10,457,982
1992	3,394,321	4,603,451	3,054,388	1,255,254	1,658,775	2,187,101	522,513	327,883	232,375	117,197	199,316	530,618	18,083,192
1993	682,580	753,214	1,294,015	966,391	1,300,141	1,291,780	347,931	116,203	80,736	331,637	214,069	134,439	7,513,136
1994	137,474	356,652	399,974	137,269	1,138,169	463,741	155,225	90,161	130,789	1,663,555	401,602	1,094,251	6,168,862
1995	1,113,428	349,166	1,024,366	1,101,250	1,133,876	892,112	269,002	797,222	218,285	152,338	95,323	251,802	7,398,170
1996	83,338	78,941	58,982	89,495	52,079	82,307	64,281	227,108	751,389	241,728	232,994	477,861	2,440,503
1997	493,637	1,945,129	2,338,184	1,912,946	1,269,150	1,179,514	497,421	216,589	177,798	238,925	123,557	775,925	11,168,775
1998	1,458,308	970,000	1,600,068	448,044	207,433	104,898	76,631	60,052	470,202	1,619,132	1,790,164	1,004,908	9,809,840
1999	368,104	510,377	364,145	277,475	301,848	326,588	127,012	51,882	35,545	27,061	24,002	35,289	2,449,328
2000	57,861	46,383	121,110	158,041	242,203	547,168	49,004	26,219	22,467	74,843	1,018,284	434,485	2,798,068
2001	963,620	804,458	1,908,036	656,357	482,079	411,175	126,776	99,813	684,136	320,436	404,400	1,153,447	8,014,733
2002	395,768	341,110	386,684	526,915	212,897	174,884	471,587	283,084	120,305	533,110	1,202,604	1,147,817	5,796,765
2003	614,406	1,046,644	961,942	246,709	166,027	286,876	115,251	48,946	199,836	508,353	247,741	126,831	4,569,562
2004	342,096	818,049	511,490	548,781	1,500,613	1,856,374	1,459,068	499,874	296,219	357,486	2,367,850	1,162,361	11,720,261
2005	661,903	1,133,569	1,301,572	398,874	249,499	165,318	95,617	627,817	179,515	90,359	62,459	68,184	5,034,686
2006	71,590	86,643	217,493	189,060	370,806	109,401	109,508	37,309	39,358	556,625	123,960	87,730	1,999,483
2007	1,373,215	195,755	1,586,286	1,042,397	2,423,186	3,385,534	3,476,078	1,014,638	542,178	309,071	298,061	237,752	15,884,151
2008	225,779	306,406	569,542	381,139	620,992	165,975	63,201	184,601	127,015	66,793	96,398	51,474	2,859,313
2009	41,869	49,534	143,151	539,715	494,900								

Appendix B - Naturalized Flows

NATURALIZED FLOW **BRGM73**  
 ADJUSTED FOR NEGATIVE INCREMENTAL FLOWS  
 UNITS: ACRE-FEET

Gage Name Brazos River at Gulf of Mexico  
 Gage Number ---

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1940	52,435	156,451	44,397	204,338	326,624	676,110	1,350,845	262,306	112,439	68,627	1,465,291	3,321,573	8,041,437
1941	1,213,863	1,384,529	1,667,737	1,267,352	2,860,812	2,165,748	1,177,736	372,469	378,505	788,422	667,985	173,201	14,118,359
1942	143,269	113,252	101,820	2,190,078	2,008,013	1,340,816	395,969	121,024	880,186	736,070	419,403	255,371	8,705,271
1943	347,221	124,887	237,810	319,334	231,459	275,055	175,693	93,454	65,194	89,940	103,861	102,378	2,166,287
1944	725,439	978,852	1,211,687	369,010	2,937,553	1,103,158	177,437	74,333	275,959	117,284	338,779	802,254	9,111,743
1945	1,346,703	937,204	1,373,932	2,622,891	793,495	598,368	556,764	482,607	368,607	565,335	132,005	504,048	10,281,959
1946	693,956	898,515	1,343,656	520,986	1,675,538	928,244	231,980	90,186	322,020	282,622	1,102,938	605,123	8,695,763
1947	1,023,791	311,371	829,290	443,093	1,040,244	362,033	102,851	357,926	132,047	72,912	93,768	247,681	5,017,007
1948	107,659	250,416	370,429	161,723	325,805	233,302	280,528	17,228	61,685	45,438	33,512	28,144	1,915,873
1949	72,284	254,673	506,624	819,335	1,070,737	515,228	226,467	50,460	105,159	329,936	203,269	299,724	4,453,895
1950	294,044	786,123	176,788	543,836	571,181	686,424	257,488	202,921	300,237	128,873	40,746	33,685	4,022,347
1951	23,268	50,925	66,152	80,916	179,639	373,203	38,726	32,977	80,998	33,537	24,776	33,419	1,018,536
1952	23,736	55,083	79,740	428,007	480,497	225,291	51,016	239	30,874	12,619	74,646	256,378	1,718,125
1953	290,974	128,503	268,906	105,525	1,856,530	115,214	301,064	159,028	151,069	464,426	232,905	584,969	4,659,115
1954	140,604	52,937	29,635	142,189	532,042	161,885	32,616	52,744	18,469	43,560	76,705	26,074	1,309,460
1955	36,062	278,368	80,948	320,854	552,877	417,240	140,323	86,929	200,675	631,019	61,142	31,281	2,837,718
1956	42,291	105,318	46,069	52,053	405,711	48,126	4	16,931	16,698	24,712	55,984	95,248	909,145
1957	11,063	242,485	264,740	2,006,788	6,254,458	2,037,741	604,038	176,406	108,549	1,894,531	1,099,512	479,585	15,179,896
1958	582,644	903,330	811,839	437,671	1,597,865	317,388	433,927	108,930	351,102	235,021	108,581	84,632	5,972,930
1959	63,014	360,217	123,043	907,090	570,258	516,392	309,812	171,478	62,089	1,759,733	503,471	685,536	6,032,134
1960	1,064,750	702,714	389,383	254,016	491,675	548,259	448,257	120,958	46,535	628,036	1,031,805	1,627,095	7,353,482
1961	2,361,162	2,061,863	754,472	324,293	209,864	1,148,065	1,076,575	265,226	831,285	367,883	397,565	413,521	10,211,773
1962	234,475	201,903	139,974	132,342	199,199	534,154	328,518	163,055	567,597	296,396	150,215	383,414	3,331,241
1963	204,555	209,640	102,298	282,110	191,908	252,274	88,044	24,445	26,070	46,589	107,994	63,600	1,154,788
1964	65,489	183,422	262,254	161,870	167,660	192,765	53,150	53,706	310,518	138,783	386,995	144,846	2,121,457
1965	505,601	1,133,378	382,904	485,879	3,475,436	1,026,584	194,336	161,468	150,154	183,315	429,208	482,805	8,611,068
1966	217,504	459,151	381,241	1,161,613	2,208,600	337,332	114,036	307,928	754,875	288,836	75,162	59,015	6,365,294
1967	73,655	53,722	61,655	160,375	216,037	286,896	189,924	66,817	142,324	75,257	248,615	153,000	1,728,278
1968	1,644,029	701,649	1,081,614	1,005,096	2,399,112	1,952,695	1,089,001	194,584	248,277	130,597	171,169	536,966	11,154,788
1969	182,692	690,291	1,041,151	1,480,485	1,758,718	300,486	124,245	110,441	183,122	144,962	178,547	392,891	6,588,032
1970	329,612	380,293	1,755,959	731,656	748,603	351,015	114,827	59,166	223,000	552,975	126,924	61,524	5,435,553
1971	58,023	53,596	61,413	92,021	168,214	132,175	220,973	441,822	349,408	388,961	262,152	865,178	3,093,935
1972	417,673	284,652	145,560	98,148	637,189	188,082	82,005	177,455	164,346	137,037	392,903	155,700	2,878,751
1973	557,186	611,154	1,033,231	1,460,641	913,756	1,748,457	438,135	167,971	330,944	1,637,800	502,659	419,641	9,821,572
1974	869,315	414,992	206,659	165,652	342,202	122,630	69,257	172,569	1,530,830	771,567	2,010,605	810,955	7,487,233
1975	525,623	1,372,927	478,851	664,682	1,697,657	1,239,409	519,459	280,191	167,144	103,107	105,895	104,739	7,259,685
1976	84,307	95,212	132,514	739,919	1,231,162	726,831	768,230	176,531	200,256	445,434	399,157	1,219,607	6,219,161
1977	318,935	1,134,116	684,422	2,140,949	986,385	385,119	138,454	65,016	99,480	51,921	59,742	61,038	6,125,577
1978	228,370	267,115	201,686	119,184	102,794	188,379	71,451	549,844	155,567	53,028	144,264	95,835	2,177,516
1979	726,380	647,414	1,129,026	1,294,712	1,798,515	1,979,550	496,375	417,860	506,916	106,913	74,043	183,956	9,361,858
1980	496,992	398,763	189,579	331,411	1,192,503	255,262	97,683	45,323	172,103	286,256	54,136	86,774	3,606,785
1981	65,871	86,196	220,653	192,360	310,852	2,269,340	523,388	141,074	267,003	1,280,508	808,160	144,624	6,310,029
1982	90,846	118,104	184,092	340,954	1,518,434	1,054,694	642,618	106,084	38,709	49,465	146,940	227,235	4,518,175
1983	223,400	733,742	790,420	272,094	1,021,162	390,096	125,007	279,049	184,008	139,843	82,659	107,288	4,348,769
1984	96,547	88,362	246,687	64,835	138,689	112,593	57,323	42,785	38,844	1,067,912	594,603	717,845	3,267,024
1985	721,752	621,817	1,084,812	458,288	425,222	319,768	141,812	57,752	54,124	413,274	818,887	1,145,324	6,262,832
1986	177,993	869,463	213,564	139,309	713,848	1,557,012	238,405	155,395	417,013	685,764	602,745	1,510,474	7,280,984
1987	675,780	687,967	1,064,547	349,126	566,485	2,815,109	548,728	198,794	144,590	77,315	143,159	300,750	7,252,351
1988	207,890	134,798	239,935	131,421	114,301	296,182	156,118	90,640	91,728	36,447	22,683	35,888	1,558,031
1989	146,713	290,976	316,474	320,302	1,447,753	1,397,589	372,417	403,962	159,857	60,741	53,822	26,392	4,996,998
1990	111,953	222,209	689,498	1,502,635	2,147,461	870,731	197,057	138,883	161,481	80,993	131,203	62,980	6,317,085
1991	1,647,011	698,960	280,212	1,053,361	847,308	840,028	229,839	245,640	236,198	444,142	471,430	3,406,020	10,395,148
1992	3,363,836	4,569,617	3,020,474	1,262,132	1,634,164	2,161,324	515,775	322,883	229,240	115,256	209,589	527,905	17,932,269
1993	686,213	750,269	1,290,539	963,796	1,298,835	1,320,978	342,232	114,304	79,601	326,145	219,809	136,152	7,528,872
1994	136,149	353,939	394,776	137,384	1,144,355	459,405	152,654	89,711	136,321	1,693,732	394,951	1,085,581	6,178,959
1995	1,117,771	345,148	1,017,294	1,097,626	1,122,102	885,749	266,954	785,027	214,670	150,054	96,765	269,208	7,368,369
1996	82,527	77,994	58,215	88,013	51,217	85,015	63,422	227,881	749,043	238,063	230,855	473,075	2,425,321
1997	492,657	1,923,397	2,323,127	1,915,234	1,256,022	1,162,774	489,272	213,105	200,339	257,155	124,594	772,975	11,130,650
1998	1,441,592	963,285	1,573,648	440,624	203,998	103,161	75,362	62,019	494,214	1,600,568	1,792,387	993,506	9,744,364
1999	369,927	501,925	370,509	272,880	296,849	325,449	125,445	51,023	34,956	26,613	23,605	34,705	2,433,885
2000	56,903	45,615	119,104	161,402	243,744	538,107	48,192	25,785	22,095	73,633	1,030,629	430,520	2,795,729
2001	955,596	791,136	1,892,301	645,543	474,368	410,407	124,677	118,612	704,704	328,839	398,986	1,153,471	7,998,639
2002	389,214	335,461	380,281	528,294	209,371	173,759	477,630	292,778	120,705	567,750	1,217,522	1,140,869	5,833,634
2003	606,822	1,035,937	949,995	242,903	163,278	282,875	113,963	48,135	202,964	501,191	274,753	127,137	4,549,954
2004	363,269	824,671	504,207	540,994	1,517,273	1,871,636	1,436,335	492,441	291,314	356,416	2,395,660	1,143,417	11,737,633
2005	651,794	1,139,034	1,293,683	392,269	249,788	162,580	95,467	620,268	176,542	88,863	61,425	69,039	5,000,751
2006	71,099	85,208	216,214	188,604	365,154	107,920	121,058	36,691	38,706	625,066	122,859	87,541	2,066,121
2007	1,380,002	192,513	1,570,261	1,034,123	2,388,526	3,332,383	3,474,365	1,005,486	535,257	313,040	296,950	234,487	15,757,394
2008	240,864	307,141	563,006	374,827	610,708	163,226	62,154	181,948	125,966	65,691	97,925	50,622	2,844,079
2009	41,176	48,714	144,315	559,515	486,704	66,78							



## **Appendix C**

### Comparisons with Historical Gaged Flows



## **Appendix C**

### **Comparisons with Historical Gaged Flows**

The following tables show the historical and naturalized minimum, 10th percentile, 25th percentile, 50th percentile (median), 75th percentile, 90th percentile, and maximum monthly flows for each primary control point. The values in these tables are based on the period of historical flow data only, so the historical and naturalized values are directly comparable. (In other words, the naturalized data are not for the entire 1940-2015 period unless historical data are available for the entire period.)



Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
RWPL01	Running Water Draw at Plainview	All Months	Historical	0	0	0	3	20	98	21,017
			Naturalized	0	0	0	5	42	135	21,017
		January	Historical	0	0	0	0	2	16	23
			Naturalized	0	0	0	0	2	16	23
		February	Historical	0	0	0	1	6	16	29
			Naturalized	0	0	0	1	6	18	29
		March	Historical	0	0	0	1	10	41	53
			Naturalized	0	0	0	2	19	41	72
		April	Historical	0	0	0	4	13	71	254
			Naturalized	0	0	1	12	31	71	282
		May	Historical	0	0	4	20	125	1,478	4,253
			Naturalized	0	0	7	54	145	1,494	4,253
June	Historical	0	0	4	30	457	2,257	21,017		
	Naturalized	0	0	7	69	476	2,257	21,017		
July	Historical	0	0	0	12	70	340	1,607		
	Naturalized	0	0	4	59	123	410	1,607		
August	Historical	0	0	1	5	28	88	530		
	Naturalized	0	0	1	19	83	147	670		
September	Historical	0	0	0	9	33	84	639		
	Naturalized	0	0	0	19	57	97	658		
October	Historical	0	0	0	4	27	132	5,449		
	Naturalized	0	0	1	7	27	133	5,449		
November	Historical	0	0	0	0	8	20	209		
	Naturalized	0	0	0	0	8	20	209		
December	Historical	0	0	0	1	3	13	682		
	Naturalized	0	0	0	1	3	13	682		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
WRSP02	White River Reservoir near Spur	All Months	Historical	0	0	0	0	0	0	20,849
			Naturalized	0	0	9	155	549	1,728	38,559
		January	Historical	0	0	0	0	0	0	323
			Naturalized	0	0	12	107	215	425	852
		February	Historical	0	0	0	0	0	0	1,046
			Naturalized	0	0	27	106	286	357	1,509
		March	Historical	0	0	0	0	0	0	712
			Naturalized	0	3	75	207	480	945	1,601
		April	Historical	0	0	0	0	0	0	0
			Naturalized	0	0	44	256	595	2,424	5,048
		May	Historical	0	0	0	0	0	0	15,584
			Naturalized	0	0	36	492	2,048	6,651	16,489
June	Historical	0	0	0	0	0	0	4,624		
	Naturalized	0	0	95	659	2,040	7,232	17,998		
July	Historical	0	0	0	0	0	0	0	3,249	
	Naturalized	0	0	30	259	940	1,980	38,559		
August	Historical	0	0	0	0	0	0	0	0	
	Naturalized	0	0	2	165	557	1,692	13,907		
September	Historical	0	0	0	0	0	0	0	8,869	
	Naturalized	0	0	0	224	1,210	3,727	10,297		
October	Historical	0	0	0	0	0	0	0	20,849	
	Naturalized	0	0	0	67	490	2,137	20,894		
November	Historical	0	0	0	0	0	0	0	2,479	
	Naturalized	0	0	0	58	306	1,030	2,821		
December	Historical	0	0	0	0	0	0	0	990	
	Naturalized	0	0	0	41	175	327	2,079		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
DUG103	Duck Creek near Girard	All Months	Historical	0	17	55	95	278	825	16,518
			Naturalized	0	37	69	119	290	825	16,518
		January	Historical	31	46	58	87	135	257	373
			Naturalized	31	46	62	90	146	257	373
		February	Historical	30	45	59	75	116	236	545
			Naturalized	30	45	66	85	129	236	545
		March	Historical	38	52	75	95	129	327	448
			Naturalized	62	74	89	114	149	327	448
		April	Historical	28	45	64	94	175	312	635
			Naturalized	44	47	76	130	209	312	667
		May	Historical	37	53	100	226	1,408	3,431	14,491
			Naturalized	37	69	115	226	1,408	3,431	14,491
		June	Historical	18	30	55	203	596	4,402	7,728
			Naturalized	28	33	90	231	601	4,402	7,789
		July	Historical	0	2	8	54	302	355	935
			Naturalized	16	40	55	160	332	454	935
		August	Historical	0	3	5	44	670	2,485	10,909
			Naturalized	1	4	38	183	694	2,566	10,909
		September	Historical	1	3	61	238	674	3,134	6,044
			Naturalized	1	5	84	289	685	3,158	6,044
		October	Historical	0	5	32	86	529	4,809	16,518
			Naturalized	0	8	45	99	533	4,809	16,518
		November	Historical	17	26	33	74	119	250	832
			Naturalized	17	26	45	87	126	250	832
		December	Historical	30	38	61	91	136	254	569
			Naturalized	30	38	63	95	139	262	569

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
SFPE04	Salt Fork Brazos River near Peacock	All Months	Historical	0	8	156	448	2,052	6,351	43,900
			Naturalized	0	91	245	644	3,020	8,818	46,418
		January	Historical	0	55	168	286	519	756	2,779
			Naturalized	11	127	181	359	593	872	3,075
		February	Historical	3	49	163	279	426	831	3,312
			Naturalized	23	59	166	423	567	1,274	3,615
		March	Historical	7	14	161	322	575	3,277	6,143
			Naturalized	13	63	202	435	927	3,786	6,429
		April	Historical	0	35	100	516	1,297	3,155	5,453
			Naturalized	37	137	285	800	1,785	4,021	7,867
		May	Historical	187	311	1,021	3,889	8,943	12,972	30,022
			Naturalized	388	675	1,218	4,678	9,918	16,922	30,020
June	Historical	26	123	800	2,280	4,568	18,107	28,074		
	Naturalized	132	231	1,363	3,424	7,947	26,081	35,402		
July	Historical	0	0	4	280	2,048	3,954	13,337		
	Naturalized	31	102	172	964	3,237	9,366	23,875		
August	Historical	0	0	43	795	5,368	17,215	43,900		
	Naturalized	31	62	242	1,009	5,776	22,033	45,015		
September	Historical	0	0	25	1,644	7,988	21,812	27,138		
	Naturalized	0	47	441	2,634	9,474	23,276	27,135		
October	Historical	0	2	58	807	5,867	21,996	39,733		
	Naturalized	0	13	92	816	6,352	24,837	46,418		
November	Historical	0	12	114	328	1,048	2,482	4,266		
	Naturalized	14	21	127	534	1,611	2,636	4,266		
December	Historical	0	21	138	306	587	858	1,373		
	Naturalized	17	54	156	307	587	913	1,373		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
CRJA05	Croton Creek near Jayton	All Months	Historical	0	0	28	125	645	2,203	19,430
			Naturalized	0	0	28	125	645	2,203	19,430
		January	Historical	0	0	2	51	113	436	451
			Naturalized	0	0	2	51	113	436	451
		February	Historical	0	0	23	52	136	271	716
			Naturalized	0	0	23	52	136	271	716
		March	Historical	0	0	2	82	244	742	2,297
			Naturalized	0	0	2	82	244	742	2,297
		April	Historical	0	0	21	74	463	829	1,490
			Naturalized	0	0	21	74	463	829	1,490
		May	Historical	0	42	132	728	2,467	6,253	14,614
			Naturalized	0	42	132	728	2,467	6,253	14,614
June	Historical	6	29	318	770	1,791	3,987	5,861		
	Naturalized	6	29	318	770	1,791	3,987	5,861		
July	Historical	0	0	6	64	631	2,986	8,091		
	Naturalized	0	0	6	64	631	2,986	8,091		
August	Historical	0	0	60	237	1,263	5,929	19,430		
	Naturalized	0	0	60	237	1,263	5,929	19,430		
September	Historical	0	1	112	586	2,176	4,449	7,416		
	Naturalized	0	1	112	586	2,176	4,449	7,416		
October	Historical	0	1	27	285	1,411	6,623	13,242		
	Naturalized	0	1	27	285	1,411	6,623	13,242		
November	Historical	0	0	35	91	256	624	972		
	Naturalized	0	0	35	91	256	624	972		
December	Historical	0	0	21	52	179	464	1,163		
	Naturalized	0	0	21	52	179	464	1,163		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
SFAS06	Salt Fork Brazos River near Aspermont	All Months	Historical	0	36	273	887	3,697	12,068	135,868
			Naturalized	0	65	326	1,010	3,936	13,444	135,865
		January	Historical	2	19	235	546	936	1,611	8,216
			Naturalized	7	44	315	580	947	1,609	8,662
		February	Historical	0	41	221	508	971	2,130	13,367
			Naturalized	0	64	240	552	1,093	2,313	14,131
		March	Historical	3	26	248	477	1,766	5,146	11,828
			Naturalized	0	37	269	529	1,818	5,611	12,097
		April	Historical	6	49	266	961	2,540	7,470	49,244
			Naturalized	9	107	301	1,102	3,076	8,469	49,242
		May	Historical	13	307	1,158	3,321	10,807	43,284	133,710
			Naturalized	10	393	1,174	3,469	12,949	43,428	133,707
June	Historical	1	552	1,381	5,361	13,761	38,782	76,332		
	Naturalized	4	573	1,863	5,963	14,723	39,889	76,333		
July	Historical	1	20	174	1,710	5,208	18,779	45,834		
	Naturalized	21	104	413	2,068	5,799	20,093	49,445		
August	Historical	1	11	216	1,530	4,759	11,103	64,836		
	Naturalized	5	76	261	1,741	5,223	11,669	65,781		
September	Historical	0	10	124	2,034	9,248	22,302	95,510		
	Naturalized	1	16	175	2,071	9,382	22,298	95,508		
October	Historical	4	21	156	756	5,871	23,740	135,868		
	Naturalized	2	37	171	824	6,142	25,604	135,865		
November	Historical	4	37	132	757	1,885	4,582	20,820		
	Naturalized	20	48	137	845	1,984	4,787	22,297		
December	Historical	0	33	146	557	1,235	3,210	13,914		
	Naturalized	9	61	167	582	1,291	3,243	15,005		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max	
BSLU07	Buffalo Springs Lake near Lubbock	All Months	Historical	0	0	0	244	1,164	3,632	52,115	
			Naturalized	0	0	15	369	1,271	3,737	52,083	
		January	Historical	0	0	0	7	305	925	2,289	
			Naturalized	0	0	3	48	353	973	2,320	
		February	Historical	0	0	0	0	506	1,076	3,088	
			Naturalized	0	0	3	72	543	1,088	3,121	
		March	Historical	0	0	0	0	685	2,066	3,715	
			Naturalized	0	0	1	79	754	2,071	3,761	
		April	Historical	0	0	0	74	789	2,563	14,314	
			Naturalized	0	0	4	363	856	2,592	14,346	
		May	Historical	0	0	0	0	825	2,882	7,758	27,728
			Naturalized	0	14	176	998	2,942	7,853	27,667	
June	Historical	0	58	337	1,428	5,288	8,595	23,710			
	Naturalized	0	260	539	1,576	5,337	8,853	23,740			
July	Historical	0	0	1	332	2,023	8,381	52,115			
	Naturalized	0	0	81	432	2,064	8,436	52,083			
August	Historical	0	0	2	726	1,767	5,547	10,140			
	Naturalized	0	2	138	829	1,919	5,605	10,275			
September	Historical	0	0	35	746	2,267	8,256	24,024			
	Naturalized	0	0	194	838	2,267	8,320	24,029			
October	Historical	0	0	0	176	1,602	13,986	21,296			
	Naturalized	0	0	19	290	1,714	13,996	21,333			
November	Historical	0	0	0	45	634	1,459	17,362			
	Naturalized	0	0	1	128	652	1,465	17,315			
December	Historical	0	0	0	24	491	1,008	5,206			
	Naturalized	0	0	7	62	551	1,058	5,216			

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
DMJU08	Double Mountain Fork Brazos River at Justiceburg	All Months	Historical	0	0	6	197	1,319	4,560	53,849
			Naturalized	0	0	8	197	1,319	4,560	53,849
		January	Historical	0	0	1	13	113	610	1,903
			Naturalized	0	0	3	13	113	610	1,903
		February	Historical	0	0	1	10	251	1,022	3,227
			Naturalized	0	0	2	12	251	1,028	3,227
		March	Historical	0	0	0	13	748	2,381	5,020
			Naturalized	0	0	1	14	748	2,381	5,020
		April	Historical	0	0	5	123	874	2,316	14,832
			Naturalized	0	0	6	123	874	2,316	14,832
		May	Historical	0	15	161	1,016	3,635	10,708	28,605
			Naturalized	0	18	161	1,021	3,638	10,708	28,605
June	Historical	0	132	472	1,469	4,866	11,992	30,335		
	Naturalized	0	132	472	1,469	4,866	11,992	30,335		
July	Historical	0	0	19	443	1,900	7,447	53,849		
	Naturalized	0	0	19	446	1,906	7,447	53,849		
August	Historical	0	2	151	754	3,118	6,234	25,111		
	Naturalized	0	4	153	754	3,118	6,240	25,111		
September	Historical	0	0	210	943	3,293	13,551	24,844		
	Naturalized	0	0	210	943	3,293	13,551	24,844		
October	Historical	0	0	14	197	1,700	13,660	22,056		
	Naturalized	0	1	16	197	1,700	13,660	22,056		
November	Historical	0	0	0	31	429	1,503	17,902		
	Naturalized	0	0	1	31	429	1,503	17,902		
December	Historical	0	0	3	21	302	819	5,393		
	Naturalized	0	0	5	21	302	819	5,393		

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
DMAS09	Double Mountain Fork Brazos River near Aspermont	All Months	Historical	0	16	228	1,536	6,703	18,909	175,033
			Naturalized	0	94	443	1,768	7,292	22,394	175,553
		January	Historical	0	10	40	512	1,494	2,684	7,942
			Naturalized	0	11	170	631	1,518	2,793	7,937
		February	Historical	0	3	75	570	1,595	4,637	24,585
			Naturalized	0	34	241	718	1,784	4,643	24,587
		March	Historical	0	6	28	513	1,871	8,400	42,121
			Naturalized	0	16	180	732	2,257	8,531	47,736
		April	Historical	0	24	180	1,133	5,014	12,897	70,834
			Naturalized	8	133	462	1,648	6,054	14,527	70,834
		May	Historical	31	293	1,821	5,211	18,715	54,649	171,221
			Naturalized	196	781	2,577	5,945	19,858	60,378	171,221
June	Historical	17	1,220	3,005	7,200	22,364	60,721	93,090		
	Naturalized	303	1,734	3,934	8,148	23,856	60,825	102,633		
July	Historical	0	19	492	2,684	10,563	35,808	77,966		
	Naturalized	0	188	750	2,873	12,530	35,929	78,549		
August	Historical	0	68	639	2,185	8,461	18,147	175,033		
	Naturalized	0	203	969	2,651	9,906	18,148	175,553		
September	Historical	0	8	475	4,869	11,948	35,610	161,373		
	Naturalized	0	134	711	4,730	12,373	37,770	161,354		
October	Historical	0	19	277	1,466	15,367	36,696	137,153		
	Naturalized	0	47	390	1,446	16,531	38,530	137,263		
November	Historical	0	15	129	1,204	3,884	7,543	52,933		
	Naturalized	0	29	269	1,289	3,980	7,837	54,816		
December	Historical	0	8	58	674	1,836	5,103	21,780		
	Naturalized	0	8	156	869	2,054	5,140	21,782		

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
NCKN10	North Croton Creek near Knox City	All Months	Historical	0	13	48	155	491	1,686	50,743
			Naturalized	0	13	48	155	491	1,686	50,743
		January	Historical	4	20	39	101	181	412	646
			Naturalized	4	20	39	101	181	412	646
		February	Historical	3	18	36	78	173	421	506
			Naturalized	3	18	36	78	173	421	506
		March	Historical	1	10	40	91	483	1,003	1,688
			Naturalized	1	10	40	91	483	1,003	1,688
		April	Historical	2	4	34	164	633	1,186	1,574
			Naturalized	2	4	34	164	633	1,186	1,574
		May	Historical	41	66	178	330	1,227	5,719	6,200
			Naturalized	41	66	178	330	1,227	5,719	6,200
June	Historical	9	62	138	278	917	3,751	10,219		
	Naturalized	9	62	138	278	917	3,751	10,219		
July	Historical	0	0	4	59	932	2,665	3,485		
	Naturalized	0	0	4	59	932	2,665	3,485		
August	Historical	2	3	26	217	583	8,753	50,743		
	Naturalized	2	3	26	217	583	8,753	50,743		
September	Historical	0	13	26	417	2,011	5,894	9,880		
	Naturalized	0	13	26	417	2,011	5,894	9,880		
October	Historical	0	17	44	331	1,186	4,986	28,798		
	Naturalized	0	17	44	331	1,186	4,986	28,798		
November	Historical	4	23	68	174	259	1,001	2,029		
	Naturalized	4	23	68	174	259	1,001	2,029		
December	Historical	4	21	40	89	218	455	889		
	Naturalized	4	21	40	89	218	455	889		

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
BRSE11	Brazos River at Seymour	All Months	Historical	0	422	1,467	4,472	15,274	47,649	414,813
			Naturalized	0	535	1,691	4,767	16,030	49,194	414,811
		January	Historical	0	312	747	2,362	3,890	7,174	26,694
			Naturalized	0	404	989	2,458	4,025	7,357	26,925
		February	Historical	233	587	1,082	2,324	4,616	13,138	71,667
			Naturalized	322	687	1,181	2,446	4,822	12,433	72,067
		March	Historical	2	304	1,311	2,602	8,817	24,211	59,010
			Naturalized	1	435	1,399	2,872	9,591	24,713	62,009
		April	Historical	67	493	1,173	3,227	12,217	33,879	131,879
			Naturalized	192	599	1,426	3,361	13,298	37,983	131,878
		May	Historical	226	1,522	5,245	13,506	45,477	120,688	414,813
			Naturalized	455	1,896	5,363	13,757	48,632	121,654	414,811
June	Historical	8	2,922	9,388	18,794	47,669	118,806	208,560		
	Naturalized	366	4,149	10,103	19,376	49,111	125,620	209,185		
July	Historical	8	249	1,540	7,124	21,533	58,135	144,680		
	Naturalized	0	514	2,072	7,315	24,462	58,158	146,896		
August	Historical	0	48	1,529	5,617	19,745	54,222	207,372		
	Naturalized	0	295	2,010	6,140	19,888	54,249	208,760		
September	Historical	0	143	1,898	8,653	33,947	76,742	229,972		
	Naturalized	0	197	2,219	8,590	34,422	77,691	229,964		
October	Historical	0	131	1,843	4,718	29,314	83,027	340,925		
	Naturalized	0	200	1,821	4,916	30,173	85,181	340,923		
November	Historical	6	184	1,227	4,180	10,577	20,363	97,511		
	Naturalized	0	325	1,318	4,422	10,881	19,706	99,254		
December	Historical	36	276	1,271	2,797	6,546	14,217	37,047		
	Naturalized	43	462	1,331	2,793	6,829	14,506	37,800		

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
MSMN12	Millers Creek near Munday	All Months	Historical	0	0	0	1	60	747	26,677
			Naturalized	0	0	0	1	60	747	26,677
		January	Historical	0	0	0	0	7	157	2,138
			Naturalized	0	0	0	0	7	157	2,138
		February	Historical	0	0	0	0	22	765	5,435
			Naturalized	0	0	0	0	22	765	5,435
		March	Historical	0	0	0	1	135	646	1,937
			Naturalized	0	0	0	1	135	646	1,937
		April	Historical	0	0	0	0	67	396	7,626
			Naturalized	0	0	0	0	67	396	7,626
		May	Historical	0	0	0	52	550	2,200	11,271
			Naturalized	0	0	0	52	550	2,200	11,271
June	Historical	0	0	0	54	854	5,181	24,988		
	Naturalized	0	0	0	54	854	5,181	24,988		
July	Historical	0	0	0	4	82	591	3,666		
	Naturalized	0	0	0	4	82	591	3,666		
August	Historical	0	0	0	0	32	666	26,677		
	Naturalized	0	0	0	0	32	666	26,677		
September	Historical	0	0	0	2	65	541	4,290		
	Naturalized	0	0	0	2	65	541	4,290		
October	Historical	0	0	0	2	36	543	5,697		
	Naturalized	0	0	0	2	36	543	5,697		
November	Historical	0	0	0	0	11	418	3,838		
	Naturalized	0	0	0	0	11	418	3,838		
December	Historical	0	0	0	0	7	92	3,620		
	Naturalized	0	0	0	0	7	92	3,620		

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Monthly flow in Acre-feet (Historical/Naturalized)											
		Period	Type	Min	10th	25th	50th	75th	90th	Max			
CFRO13	Clear Fork Brazos River near Roby	All Months	Historical	0	0	18	91	262	792	15,773			
			Naturalized	0	0	19	91	262	792	15,773			
		January	Historical	0	0	7	75	159	334	783			
			Naturalized	0	0	7	75	159	334	783			
		February	Historical	0	0	11	67	163	272	1,375			
			Naturalized	0	0	11	67	163	272	1,375			
		March	Historical	0	1	20	77	191	497	11,082			
			Naturalized	0	1	20	77	191	497	11,082			
		April	Historical	0	0	19	88	291	699	3,068			
			Naturalized	0	0	19	88	291	699	3,068			
		May	Historical	0	11	68	197	919	1,932	15,773			
			Naturalized	0	11	68	197	919	1,932	15,773			
June	Historical	0	13	105	354	955	2,224	5,022					
	Naturalized	0	13	111	354	961	2,229	5,022					
July	Historical	0	2	14	56	399	960	3,727					
	Naturalized	0	2	17	58	399	964	3,727					
August	Historical	0	0	12	76	266	954	8,662					
	Naturalized	0	0	12	77	266	954	8,670					
September	Historical	0	0	5	94	288	1,428	14,791					
	Naturalized	0	0	5	94	288	1,428	14,791					
October	Historical	0	0	12	73	232	585	8,755					
	Naturalized	0	0	12	73	232	585	8,755					
November	Historical	0	0	13	65	161	253	1,045					
	Naturalized	0	0	13	65	161	253	1,045					
December	Historical	0	0	7	84	176	346	972					
	Naturalized	0	0	7	84	176	346	972					

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
CFHA14	Clear Fork Brazos River at Hawley	All Months	Historical	38	367	644	1,316	3,202	7,189	55,341
			Naturalized	20	393	727	1,454	3,253	7,394	57,999
		January	Historical	308	396	579	1,226	2,323	3,651	4,608
			Naturalized	314	404	667	1,292	2,467	3,902	4,930
		February	Historical	391	403	660	1,086	1,907	7,019	14,180
			Naturalized	405	431	636	1,143	2,055	7,428	14,922
		March	Historical	387	470	652	1,278	2,125	6,159	8,569
			Naturalized	479	518	748	1,473	2,310	6,541	8,943
		April	Historical	214	360	468	1,044	3,818	4,476	21,654
			Naturalized	244	419	702	1,167	4,186	5,005	22,817
		May	Historical	330	456	1,109	3,519	7,279	10,401	48,280
			Naturalized	346	553	1,132	3,743	8,037	11,005	50,600
June	Historical	97	229	867	2,136	4,398	16,119	16,647		
	Naturalized	273	408	913	2,262	4,694	17,000	17,656		
July	Historical	38	83	514	1,610	3,560	6,485	10,502		
	Naturalized	46	101	539	1,718	3,792	6,979	11,108		
August	Historical	139	253	683	1,342	3,604	7,128	36,534		
	Naturalized	212	338	790	1,497	3,888	6,869	37,867		
September	Historical	115	137	631	1,775	12,129	36,211	42,992		
	Naturalized	156	166	647	1,975	12,856	38,219	44,868		
October	Historical	57	215	693	1,145	4,273	16,789	55,341		
	Naturalized	20	213	642	1,404	4,482	17,510	57,999		
November	Historical	226	292	466	1,089	2,335	5,433	6,528		
	Naturalized	218	363	532	1,229	2,382	5,841	6,810		
December	Historical	345	352	477	1,098	2,289	3,444	5,361		
	Naturalized	357	378	483	1,139	2,420	3,600	5,824		

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
MUHA15	Mulberry Creek near Hawley	All Months	Historical	0	0	1	74	587	1,712	8,467
			Naturalized	0	0	2	77	587	1,712	8,467
		January	Historical	0	0	0	45	356	892	1,185
			Naturalized	0	0	0	45	356	892	1,185
		February	Historical	0	0	1	26	228	786	1,619
			Naturalized	0	0	14	26	228	789	1,619
		March	Historical	0	0	9	97	514	1,175	1,620
			Naturalized	0	1	23	100	514	1,175	1,635
		April	Historical	0	0	2	54	533	1,649	3,366
			Naturalized	0	0	2	58	533	1,649	3,366
		May	Historical	0	3	74	356	980	3,115	6,895
			Naturalized	0	6	74	362	982	3,115	6,895
		June	Historical	0	1	91	319	1,145	3,783	5,411
			Naturalized	0	1	91	319	1,145	3,783	5,411
		July	Historical	0	0	0	62	538	1,887	8,045
			Naturalized	0	0	3	62	538	1,887	8,045
		August	Historical	0	0	0	48	697	3,993	4,754
			Naturalized	0	0	0	48	697	3,993	4,754
		September	Historical	0	0	1	507	1,709	3,775	6,785
			Naturalized	0	0	1	507	1,709	3,775	6,785
		October	Historical	0	0	0	54	1,263	5,306	8,467
			Naturalized	0	0	0	54	1,263	5,306	8,467
		November	Historical	0	0	0	9	329	744	1,982
			Naturalized	0	0	0	9	329	744	1,982
		December	Historical	0	0	0	10	314	1,212	2,533
			Naturalized	0	0	0	10	314	1,212	2,533

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
CFNU16	Clear Fork Brazos River at Nugent	All Months	Historical	0	77	336	1,058	3,141	9,322	288,593
			Naturalized	0	152	660	2,077	6,704	15,964	297,109
		January	Historical	2	28	300	597	1,315	2,414	15,011
			Naturalized	0	102	558	1,084	2,375	5,857	29,043
		February	Historical	3	95	306	742	1,547	2,775	78,797
			Naturalized	0	439	664	1,503	2,842	5,967	68,964
		March	Historical	1	78	335	891	1,845	4,805	23,915
			Naturalized	210	589	1,102	1,934	3,928	9,936	24,045
		April	Historical	1	176	421	978	2,669	7,572	68,963
			Naturalized	0	315	855	2,561	6,027	13,985	107,620
		May	Historical	52	272	652	2,964	9,992	26,299	288,593
			Naturalized	0	363	1,389	7,716	18,235	43,769	297,109
June	Historical	10	356	1,085	2,764	7,980	19,665	82,389		
	Naturalized	51	595	1,739	6,891	13,704	35,838	83,130		
July	Historical	0	22	169	1,520	3,777	10,003	44,737		
	Naturalized	0	81	633	3,269	9,624	16,068	54,939		
August	Historical	0	2	186	1,018	2,545	7,926	77,954		
	Naturalized	0	64	397	1,707	5,718	12,229	89,941		
September	Historical	0	16	250	1,434	5,115	19,086	36,298		
	Naturalized	0	0	318	2,941	8,289	27,029	82,722		
October	Historical	0	75	347	1,301	4,654	14,091	88,421		
	Naturalized	0	0	1,006	2,659	11,939	21,658	96,720		
November	Historical	5	89	312	768	1,850	3,405	30,698		
	Naturalized	0	0	385	1,089	3,528	7,701	27,546		
December	Historical	6	56	286	688	1,382	3,753	41,984		
	Naturalized	0	14	332	786	2,321	6,359	29,837		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
CAST17		All Months	Historical	0	11	68	238	1,202	5,528	57,183
			Naturalized	0	9	70	227	1,184	5,533	57,217
		January	Historical	0	20	74	184	389	1,748	5,163
			Naturalized	0	19	69	177	373	1,731	5,179
		February	Historical	0	19	82	170	509	2,975	43,154
			Naturalized	0	15	70	163	497	2,958	43,134
		March	Historical	0	31	108	209	635	2,791	8,097
			Naturalized	0	22	90	195	611	2,791	8,078
		April	Historical	1	28	124	274	1,046	6,505	23,568
			Naturalized	1	29	121	262	1,054	6,505	23,568
		May	Historical	0	49	401	1,594	6,575	13,114	45,562
			Naturalized	0	42	398	1,592	6,556	13,120	45,513
June	Historical	3	41	151	1,705	6,305	13,904	32,505		
	Naturalized	0	65	154	1,686	6,305	13,892	32,505		
July	Historical	0	5	37	201	1,134	3,762	17,990		
	Naturalized	0	5	50	216	1,126	3,754	17,990		
August	Historical	0	1	13	96	472	10,197	57,183		
	Naturalized	0	0	24	92	462	10,183	57,217		
September	Historical	1	5	22	245	1,815	8,191	34,201		
	Naturalized	0	3	31	245	1,815	8,173	34,175		
October	Historical	0	7	36	267	2,225	5,710	29,593		
	Naturalized	0	1	29	264	2,201	5,703	29,560		
November	Historical	0	12	47	203	615	2,191	13,638		
	Naturalized	0	2	52	204	612	2,173	13,620		
December	Historical	0	13	62	213	363	1,369	10,587		
	Naturalized	0	12	68	204	357	1,349	10,587		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
BGFR65	Big Creek near Freestone	All Months	Historical	0	0	40	460	3,380	10,354	45,512
			Naturalized	0	0	38	460	3,376	10,345	45,512
		January	Historical	12	94	290	1,896	4,811	16,682	22,722
			Naturalized	0	86	288	1,887	4,815	16,670	22,722
		February	Historical	67	174	416	2,981	8,464	14,733	17,066
			Naturalized	67	171	408	2,993	8,457	14,719	17,057
		March	Historical	36	314	885	4,239	8,407	14,716	23,739
			Naturalized	36	313	885	4,228	8,402	14,716	23,739
		April	Historical	12	246	423	794	2,756	13,261	31,706
			Naturalized	12	245	420	784	2,749	13,253	31,706
		May	Historical	5	114	415	2,134	7,360	17,227	39,693
			Naturalized	5	111	415	2,134	7,354	17,212	39,693
June	Historical	0	2	51	779	2,701	8,603	18,319		
	Naturalized	0	2	50	779	2,701	8,593	18,319		
July	Historical	0	0	1	61	151	1,274	45,512		
	Naturalized	0	0	11	66	160	1,274	45,512		
August	Historical	0	0	0	3	215	603	1,718		
	Naturalized	0	0	0	17	218	606	1,718		
September	Historical	0	0	1	29	154	728	2,615		
	Naturalized	0	0	0	22	154	730	2,609		
October	Historical	0	0	1	52	1,232	12,872	27,805		
	Naturalized	0	0	0	51	1,224	12,865	27,805		
November	Historical	0	0	5	379	3,167	9,286	16,614		
	Naturalized	0	0	4	378	3,159	9,286	16,614		
December	Historical	0	3	171	2,286	8,278	13,762	37,454		
	Naturalized	0	0	170	2,282	8,273	13,757	37,449		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
HCAL19	Hubbard Creek below Albany	All Months	Historical	0	0	2	124	1,140	6,710	206,934
			Naturalized	0	0	18	137	1,148	6,671	206,975
		January	Historical	0	0	0	81	489	2,055	94,959
			Naturalized	0	0	0	69	500	2,064	94,989
		February	Historical	0	0	0	99	535	5,524	88,141
			Naturalized	0	0	19	86	545	5,548	88,124
		March	Historical	0	0	5	115	2,351	9,834	17,461
			Naturalized	0	0	20	160	2,327	9,859	17,419
		April	Historical	0	0	22	617	2,061	10,768	29,871
			Naturalized	0	0	53	592	2,074	10,768	29,904
		May	Historical	0	1	123	839	6,967	21,197	55,730
			Naturalized	0	1	110	810	6,973	21,153	55,702
June	Historical	0	3	93	1,028	2,728	10,604	62,844		
	Naturalized	0	10	119	1,028	2,780	10,640	62,844		
July	Historical	0	0	11	66	532	2,838	24,622		
	Naturalized	0	0	19	123	632	2,846	24,622		
August	Historical	0	0	0	26	891	3,588	206,934		
	Naturalized	0	0	2	76	881	3,588	206,975		
September	Historical	0	0	0	113	756	3,945	69,622		
	Naturalized	0	0	0	127	785	4,023	69,675		
October	Historical	0	0	0	99	1,261	9,555	91,168		
	Naturalized	0	0	5	124	1,297	9,551	91,176		
November	Historical	0	0	0	69	322	3,360	47,771		
	Naturalized	0	0	6	85	326	3,326	47,771		
December	Historical	0	0	0	57	554	3,431	71,379		
	Naturalized	0	0	4	57	582	3,421	71,385		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
BSBR20	Big Sandy Creek above Breckenridge	All Months	Historical	0	0	1	51	843	4,681	70,764
			Naturalized	0	0	0	59	936	5,352	77,964
		January	Historical	0	0	0	11	143	860	33,654
			Naturalized	0	0	0	5	124	910	37,067
		February	Historical	0	0	2	25	597	3,518	26,194
			Naturalized	0	0	0	46	650	3,847	28,825
		March	Historical	0	0	0	107	1,709	6,267	15,658
			Naturalized	0	0	0	96	1,956	6,862	17,216
		April	Historical	0	1	12	273	1,157	6,503	12,428
			Naturalized	0	0	10	314	1,241	7,136	13,656
		May	Historical	0	2	72	613	3,551	11,678	25,878
			Naturalized	0	0	96	652	3,917	12,837	30,626
June	Historical	0	0	86	759	3,819	6,676	54,586		
	Naturalized	0	0	78	854	4,415	7,327	63,898		
July	Historical	0	0	0	21	246	2,884	15,869		
	Naturalized	0	0	0	3	241	3,146	23,456		
August	Historical	0	0	0	13	285	3,062	12,966		
	Naturalized	0	0	0	0	289	3,339	16,818		
September	Historical	0	0	0	22	922	5,152	23,562		
	Naturalized	0	0	0	11	1,012	5,648	25,938		
October	Historical	0	0	1	29	1,339	3,939	70,764		
	Naturalized	0	0	0	5	1,435	4,308	77,964		
November	Historical	0	0	0	9	307	4,868	12,691		
	Naturalized	0	0	0	7	302	5,335	13,878		
December	Historical	0	0	0	6	114	1,906	21,045		
	Naturalized	0	0	0	0	118	2,061	23,152		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
HCBR21	Hubbard Creek near Breckenridge	All Months	Historical	0	0	0	0	44	3,184	240,666
			Naturalized	0	0	0	884	4,001	17,042	265,359
		January	Historical	0	0	0	0	19	431	23,700
			Naturalized	0	0	8	606	1,686	3,932	106,063
		February	Historical	0	0	0	1	37	947	107,500
			Naturalized	0	0	245	1,143	2,788	16,988	103,336
		March	Historical	0	0	0	1	49	1,892	46,500
			Naturalized	0	0	795	1,892	4,903	15,655	55,236
		April	Historical	0	0	0	1	35	5,074	123,051
			Naturalized	0	0	585	2,496	5,612	25,662	125,087
		May	Historical	0	0	0	1	1,685	26,168	240,666
			Naturalized	0	0	139	2,746	19,142	38,368	245,302
June	Historical	0	0	0	1	408	19,055	51,772		
	Naturalized	0	0	637	3,247	10,956	31,302	114,984		
July	Historical	0	0	0	0	137	4,482	44,402		
	Naturalized	0	0	0	687	2,841	12,764	44,554		
August	Historical	0	0	0	0	45	1,053	140,600		
	Naturalized	0	0	0	210	2,431	7,737	259,545		
September	Historical	0	0	0	0	93	2,751	28,185		
	Naturalized	0	0	0	0	4,097	14,488	88,545		
October	Historical	0	0	0	0	92	2,745	206,803		
	Naturalized	0	0	0	609	4,915	17,297	265,359		
November	Historical	0	0	0	0	17	1,783	9,880		
	Naturalized	0	0	0	1	1,410	14,668	64,957		
December	Historical	0	0	0	0	17	703	84,024		
	Naturalized	0	0	0	3	956	4,663	90,305		

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
CFEL22	Clear Fork Brazos River at Eliasville	All Months	Historical	0	169	1,124	4,790	16,271	59,862	470,791
			Naturalized	0	336	1,380	5,946	21,591	63,590	587,132
		January	Historical	0	158	909	1,821	4,159	9,808	60,301
			Naturalized	130	645	857	1,947	4,558	13,541	157,388
		February	Historical	166	504	970	1,980	5,019	12,676	65,956
			Naturalized	146	585	978	2,865	5,691	18,546	63,514
		March	Historical	113	152	838	2,382	9,716	22,758	37,478
			Naturalized	0	206	1,386	3,515	13,737	36,032	55,006
		April	Historical	87	445	2,602	6,153	21,147	65,860	110,352
			Naturalized	241	1,233	2,801	11,659	25,794	81,819	111,383
		May	Historical	970	1,814	6,242	19,379	61,154	180,653	470,791
			Naturalized	810	2,481	9,082	27,590	67,380	221,309	479,918
June	Historical	345	1,270	5,605	10,508	47,027	140,585	272,158		
	Naturalized	482	2,395	8,497	15,213	46,053	147,525	282,907		
July	Historical	1	37	403	4,838	19,083	48,930	66,926		
	Naturalized	159	306	849	3,776	14,773	48,482	70,912		
August	Historical	0	3	253	4,483	7,247	82,381	459,277		
	Naturalized	0	74	1,205	6,271	9,850	85,542	587,132		
September	Historical	0	4	1,987	8,682	40,300	77,749	149,117		
	Naturalized	0	93	1,111	10,526	43,285	101,336	184,888		
October	Historical	3	35	1,072	7,873	27,385	154,068	345,842		
	Naturalized	0	173	1,276	9,941	30,390	156,151	415,038		
November	Historical	0	140	790	4,240	10,271	37,854	89,274		
	Naturalized	0	35	806	3,999	15,735	39,893	107,784		
December	Historical	0	109	1,043	2,858	7,581	15,059	27,178		
	Naturalized	46	196	566	2,394	7,197	19,780	32,243		

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
BRSB23	Brazos River near South Bend	All Months	Historical	0	975	3,782	11,348	38,473	111,303	1,379,048
			Naturalized	0	1,424	4,182	12,670	42,890	124,849	1,395,822
		January	Historical	33	409	2,629	5,557	9,506	26,864	107,171
			Naturalized	0	821	2,599	6,262	10,054	30,392	195,945
		February	Historical	34	1,193	2,891	5,675	14,258	42,426	516,952
			Naturalized	0	1,181	3,006	6,786	15,565	46,480	522,587
		March	Historical	39	715	3,194	6,759	22,553	62,720	254,737
			Naturalized	0	1,207	4,248	8,497	34,735	65,549	255,710
		April	Historical	49	1,710	3,854	10,316	41,038	93,372	470,662
			Naturalized	135	2,290	4,399	14,029	48,780	101,170	489,321
		May	Historical	208	3,672	13,178	45,494	106,724	317,812	1,379,048
			Naturalized	123	3,534	13,886	49,121	123,033	389,114	1,395,822
June	Historical	61	5,707	17,420	37,384	124,403	261,825	514,830		
	Naturalized	169	8,739	21,091	39,253	136,274	269,379	541,517		
July	Historical	0	528	4,378	15,411	56,404	124,353	270,928		
	Naturalized	99	2,151	6,305	16,266	59,218	129,329	276,993		
August	Historical	6	146	2,267	12,495	24,676	110,130	575,724		
	Naturalized	0	574	2,693	12,850	26,652	130,464	715,791		
September	Historical	0	65	3,618	16,198	70,169	148,695	428,469		
	Naturalized	0	1,009	3,353	18,620	74,470	157,524	439,744		
October	Historical	0	617	5,198	13,786	67,227	225,504	714,516		
	Naturalized	15	1,168	5,401	16,939	70,516	229,515	717,023		
November	Historical	67	556	3,664	10,176	25,316	52,686	241,712		
	Naturalized	35	340	3,197	10,467	30,015	60,497	311,196		
December	Historical	25	621	2,580	7,163	15,843	34,278	370,415		
	Naturalized	0	718	2,403	6,890	16,023	42,504	378,947		

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
GHGH24	Lake Graham near Graham	All Months	Historical	0	0	0	0	57	2,025	264,386
			Naturalized	0	0	0	214	1,294	4,583	263,724
		January	Historical	0	0	0	0	0	567	6,867
			Naturalized	0	0	0	72	509	1,733	10,710
		February	Historical	0	0	0	0	0	974	6,439
			Naturalized	0	0	2	173	832	3,450	7,895
		March	Historical	0	0	0	0	303	2,691	11,297
			Naturalized	0	0	150	422	1,401	6,468	15,229
		April	Historical	0	0	0	0	687	6,649	128,839
			Naturalized	0	0	98	576	1,790	7,935	131,514
		May	Historical	0	0	0	0	1,712	18,160	264,386
			Naturalized	0	0	138	1,284	4,145	29,027	263,724
June	Historical	0	0	0	0	1,304	6,762	31,856		
	Naturalized	0	0	90	731	2,435	7,970	31,106		
July	Historical	0	0	0	0	170	939	4,354		
	Naturalized	0	0	0	79	889	2,240	11,032		
August	Historical	0	0	0	0	0	237	6,866		
	Naturalized	0	0	0	0	349	1,141	8,446		
September	Historical	0	0	0	0	0	2,211	15,563		
	Naturalized	0	0	0	146	1,646	7,597	21,382		
October	Historical	0	0	0	0	0	2,688	51,322		
	Naturalized	0	0	2	341	2,729	9,452	52,117		
November	Historical	0	0	0	0	0	1,046	7,962		
	Naturalized	0	0	0	48	477	3,144	14,197		
December	Historical	0	0	0	0	0	1,015	20,017		
	Naturalized	0	0	0	0	371	3,474	20,994		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
CCIV25	Big Cedar Creek near Ivan	All Months	Historical	0	0	1	12	203	1,737	47,074
			Naturalized	0	0	1	12	203	1,737	47,074
		January	Historical	0	0	0	2	14	602	7,390
			Naturalized	0	0	0	2	14	602	7,390
		February	Historical	0	0	0	4	87	1,316	5,036
			Naturalized	0	0	0	4	87	1,316	5,036
		March	Historical	0	0	0	4	446	2,876	3,261
			Naturalized	0	0	0	4	446	2,876	3,261
		April	Historical	0	0	4	43	1,402	2,821	6,089
			Naturalized	0	0	4	43	1,402	2,821	6,089
		May	Historical	1	3	85	202	719	6,393	8,660
			Naturalized	1	3	85	202	719	6,393	8,660
June	Historical	0	0	3	50	550	2,906	12,891		
	Naturalized	0	0	3	50	550	2,906	12,891		
July	Historical	0	0	1	22	257	3,630	6,819		
	Naturalized	0	0	1	22	257	3,630	6,819		
August	Historical	0	0	0	6	162	1,807	4,699		
	Naturalized	0	0	0	6	162	1,807	4,699		
September	Historical	0	0	1	26	456	2,216	7,825		
	Naturalized	0	0	1	26	456	2,216	7,825		
October	Historical	0	0	1	12	910	7,203	47,074		
	Naturalized	0	0	1	12	910	7,203	47,074		
November	Historical	0	0	0	2	26	365	1,145		
	Naturalized	0	0	0	2	26	365	1,145		
December	Historical	0	0	0	3	34	336	1,626		
	Naturalized	0	0	0	3	34	336	1,626		

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
SHGR26	Brazos River at Morris Sheppard Dam near Graford, B	All Months	Historical	1,131	2,833	5,603	12,601	32,289	94,079	714,177
			Naturalized	0	1,227	5,742	13,278	46,043	126,604	821,760
		January	Historical	1,349	1,823	3,941	7,795	16,163	44,071	135,094
			Naturalized	0	2,060	4,036	7,399	15,485	47,549	151,843
		February	Historical	1,380	1,599	3,638	7,226	13,256	38,033	498,091
			Naturalized	1,163	3,101	6,520	9,353	20,165	104,072	505,830
		March	Historical	1,432	2,253	4,867	10,274	32,309	106,157	304,225
			Naturalized	2,730	6,246	8,913	22,222	69,064	132,776	291,036
		April	Historical	1,131	4,153	5,264	12,059	29,827	93,289	473,183
			Naturalized	597	4,653	7,744	18,067	49,645	81,709	542,715
		May	Historical	1,622	3,870	6,609	27,423	75,771	153,427	525,586
			Naturalized	0	1,978	10,179	34,055	124,040	309,202	597,583
June	Historical	1,964	4,011	8,142	20,001	106,754	366,756	686,573		
	Naturalized	0	9,260	19,361	40,709	148,388	464,827	716,466		
July	Historical	1,317	2,650	11,099	20,245	37,488	94,276	237,882		
	Naturalized	0	926	8,361	16,739	45,739	127,253	251,767		
August	Historical	1,956	3,259	11,159	17,587	35,766	75,535	525,719		
	Naturalized	0	0	2,333	11,573	32,413	127,822	756,840		
September	Historical	1,488	4,512	7,507	17,843	29,326	84,333	104,184		
	Naturalized	0	0	2,443	13,278	38,165	109,788	236,320		
October	Historical	1,539	2,728	5,646	11,590	21,334	106,976	714,177		
	Naturalized	0	624	4,662	15,875	62,298	129,796	821,760		
November	Historical	1,622	2,596	4,481	8,918	17,956	69,532	179,887		
	Naturalized	0	0	2,349	7,783	30,982	55,929	254,036		
December	Historical	1,698	2,668	3,663	8,226	18,319	50,382	441,013		
	Naturalized	0	70	3,714	6,937	12,053	61,554	451,343		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
BRPP27	Brazos River near Palo Pinto	All Months	Historical	235	3,653	7,832	18,711	45,776	113,926	1,857,402
			Naturalized	0	1,796	5,963	16,190	58,139	153,145	1,810,792
		January	Historical	235	3,214	7,196	14,370	33,638	47,073	138,605
			Naturalized	0	1,225	3,943	7,262	16,624	45,097	264,333
		February	Historical	687	2,772	5,915	11,243	23,569	60,901	521,353
			Naturalized	56	3,759	5,800	10,561	23,284	72,550	529,052
		March	Historical	832	2,967	6,373	13,960	40,526	74,499	324,635
			Naturalized	23	2,573	7,598	14,229	58,791	104,672	311,514
		April	Historical	1,575	4,471	6,214	16,687	38,693	84,746	528,476
			Naturalized	296	3,899	8,357	22,307	64,922	112,286	731,430
		May	Historical	1,652	4,041	10,366	33,103	95,089	251,130	1,857,402
			Naturalized	0	6,040	16,892	53,700	143,055	419,174	1,810,792
June	Historical	2,150	6,622	12,336	37,984	114,012	306,898	627,055		
	Naturalized	0	11,920	24,636	48,288	156,200	307,078	650,725		
July	Historical	930	6,858	16,389	36,344	58,745	131,413	316,556		
	Naturalized	0	1,863	8,046	19,466	66,027	156,689	330,370		
August	Historical	1,789	9,155	15,429	32,239	46,496	91,079	460,316		
	Naturalized	0	785	5,812	14,264	32,505	139,470	690,251		
September	Historical	1,807	4,903	10,070	21,121	52,910	130,040	455,187		
	Naturalized	0	546	5,166	18,475	74,292	171,022	489,868		
October	Historical	1,392	3,455	6,865	16,714	46,592	179,860	807,719		
	Naturalized	0	938	5,499	22,473	76,333	261,843	822,049		
November	Historical	2,015	2,776	5,412	12,067	34,197	80,019	229,735		
	Naturalized	0	414	2,733	10,804	37,494	80,271	303,504		
December	Historical	1,813	2,987	5,777	12,574	25,553	53,224	479,603		
	Naturalized	0	494	2,830	7,066	19,576	54,570	489,880		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
PPSA28	Palo Pinto Creek near Santo	All Months	Historical	0	2	127	752	2,920	13,941	159,562
			Naturalized	0	0	10	591	4,158	15,512	159,551
		January	Historical	0	1	20	237	1,120	13,952	48,514
			Naturalized	0	0	4	104	1,401	13,911	51,057
		February	Historical	0	0	56	534	2,101	5,895	10,391
			Naturalized	0	0	6	508	2,746	6,393	11,006
		March	Historical	0	0	30	243	1,236	17,473	43,089
			Naturalized	0	0	0	202	1,103	22,039	43,118
		April	Historical	14	66	257	1,217	6,239	21,912	41,710
			Naturalized	0	45	260	2,477	11,055	23,872	41,699
		May	Historical	12	65	983	5,457	22,924	37,138	159,562
			Naturalized	0	43	2,077	7,251	22,426	37,547	159,551
June	Historical	0	1	376	2,801	6,533	12,529	22,072		
	Naturalized	0	0	279	2,579	6,512	12,557	22,055		
July	Historical	0	0	288	1,287	4,272	22,034	44,739		
	Naturalized	0	0	39	833	5,016	23,272	44,729		
August	Historical	0	0	13	703	1,725	2,857	10,540		
	Naturalized	0	0	0	412	971	2,366	10,533		
September	Historical	0	1	219	579	1,709	8,454	20,069		
	Naturalized	0	0	1	697	2,398	8,956	23,599		
October	Historical	0	1	82	656	6,421	22,001	90,472		
	Naturalized	0	0	0	671	10,367	24,256	90,443		
November	Historical	0	10	148	720	2,052	8,838	16,485		
	Naturalized	0	0	0	222	2,025	9,494	23,209		
December	Historical	0	2	19	265	894	5,439	13,908		
	Naturalized	0	0	0	27	605	7,511	13,897		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
BRDE29	Brazos River near Dennis	All Months	Historical	65	4,183	8,218	18,080	49,732	130,864	1,087,577
			Naturalized	0	2,381	7,142	20,058	74,915	165,804	1,211,394
		January	Historical	1,767	4,039	6,415	14,586	29,032	57,040	174,307
			Naturalized	401	2,525	5,525	9,948	25,227	52,452	190,859
		February	Historical	1,529	2,039	5,984	12,738	30,190	99,857	548,192
			Naturalized	1,876	3,474	7,004	13,354	34,383	129,550	556,001
		March	Historical	1,404	2,125	6,920	27,844	89,455	189,931	367,081
			Naturalized	2,067	5,251	10,660	34,374	114,551	211,394	355,105
		April	Historical	1,611	5,357	8,374	17,341	63,239	151,681	792,682
			Naturalized	650	4,596	11,286	27,905	78,581	130,954	860,177
		May	Historical	1,872	3,831	10,338	37,730	119,226	327,493	743,550
			Naturalized	0	3,480	15,003	64,294	141,382	437,598	771,828
June	Historical	3,669	7,179	12,819	32,016	112,506	393,765	802,750		
	Naturalized	0	11,167	25,082	53,758	149,373	440,227	831,998		
July	Historical	1,563	3,600	10,728	23,537	46,766	104,915	486,678		
	Naturalized	0	0	8,338	16,861	61,383	102,383	498,872		
August	Historical	65	5,503	12,753	23,166	49,797	124,756	467,300		
	Naturalized	0	0	3,258	18,568	43,841	184,480	691,945		
September	Historical	616	5,137	8,820	20,284	48,979	97,955	218,969		
	Naturalized	0	1,701	4,585	19,085	71,708	137,363	349,624		
October	Historical	1,700	3,382	5,990	17,810	46,542	188,102	1,087,577		
	Naturalized	0	712	5,464	26,617	93,415	214,546	1,211,394		
November	Historical	2,140	4,601	6,183	11,703	44,299	112,400	297,509		
	Naturalized	0	161	3,152	11,177	59,017	128,522	314,748		
December	Historical	2,182	3,499	6,296	11,465	35,151	53,708	752,571		
	Naturalized	0	2,916	4,944	8,643	27,548	85,626	764,518		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
BRGR30	Brazos River near Glen Rose	All Months	Historical	456	2,635	7,723	26,350	65,815	177,739	2,755,041
			Naturalized	0	3,226	8,852	25,575	88,638	230,826	2,710,228
		January	Historical	1,073	2,082	6,376	19,144	41,906	75,466	195,511
			Naturalized	0	2,012	6,248	11,868	31,688	57,860	327,262
		February	Historical	913	2,032	6,668	19,556	45,221	94,469	649,527
			Naturalized	622	4,471	8,432	18,496	54,623	140,863	648,414
		March	Historical	1,220	3,040	8,618	25,979	70,623	180,871	410,995
			Naturalized	1,917	6,143	9,505	31,308	95,308	242,465	409,016
		April	Historical	595	4,769	8,511	26,849	67,235	186,862	854,275
			Naturalized	0	7,381	16,591	31,746	98,822	219,243	915,676
		May	Historical	966	4,494	17,681	54,270	190,501	434,533	2,755,041
			Naturalized	312	6,664	30,725	95,894	231,195	561,785	2,710,228
June	Historical	1,042	5,554	14,883	53,889	162,054	418,643	812,549		
	Naturalized	0	15,630	30,005	73,959	215,585	468,351	851,695		
July	Historical	746	2,445	11,720	33,442	69,450	149,883	607,636		
	Naturalized	0	963	8,640	22,044	96,215	236,698	627,967		
August	Historical	583	2,421	6,579	33,717	55,903	122,683	407,096		
	Naturalized	0	731	5,570	22,935	46,084	163,372	678,899		
September	Historical	527	1,409	5,784	27,581	57,217	141,811	594,704		
	Naturalized	0	1,169	6,570	26,728	84,237	193,724	631,526		
October	Historical	456	1,839	6,493	19,086	73,838	265,587	1,098,248		
	Naturalized	0	2,739	8,023	32,028	127,476	300,124	1,215,281		
November	Historical	752	3,096	6,178	15,614	54,471	168,297	369,477		
	Naturalized	0	1,794	7,107	15,878	56,248	163,191	379,242		
December	Historical	1,170	2,176	5,986	17,891	38,010	73,136	919,866		
	Naturalized	0	3,106	5,845	10,419	30,654	93,143	931,781		

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
PAGR31	Paluxy River at Glen Rose	All Months	Historical	0	140	494	1,210	3,947	11,683	142,302
			Naturalized	0	178	525	1,228	3,947	11,683	142,302
		January	Historical	52	377	612	1,157	2,546	6,718	27,320
			Naturalized	52	377	612	1,157	2,548	6,718	27,320
		February	Historical	25	412	633	1,274	5,084	11,771	53,693
			Naturalized	25	412	633	1,274	5,084	11,771	53,693
		March	Historical	50	511	741	1,761	7,719	25,850	40,213
			Naturalized	50	511	746	1,766	7,719	25,851	40,213
		April	Historical	272	588	892	3,270	8,981	14,746	49,240
			Naturalized	272	591	892	3,270	8,982	14,748	49,240
		May	Historical	205	513	1,805	5,111	17,947	47,192	142,302
			Naturalized	236	513	1,832	5,163	17,964	47,198	142,302
June	Historical	36	249	1,006	2,610	6,969	18,198	80,356		
	Naturalized	36	249	1,105	2,670	6,969	18,306	80,356		
July	Historical	0	13	271	826	3,271	5,361	46,199		
	Naturalized	0	135	317	833	3,289	5,523	46,199		
August	Historical	0	4	108	389	1,298	2,676	44,305		
	Naturalized	0	60	148	496	1,298	2,824	44,373		
September	Historical	0	5	136	612	1,612	4,395	19,926		
	Naturalized	0	16	174	628	1,643	4,449	19,926		
October	Historical	0	22	175	907	2,876	8,882	44,517		
	Naturalized	0	33	197	934	2,892	8,884	44,517		
November	Historical	12	98	326	899	1,843	6,885	35,903		
	Naturalized	12	101	326	909	1,844	6,885	35,903		
December	Historical	22	300	495	870	2,176	4,211	84,978		
	Naturalized	22	300	497	870	2,177	4,211	84,978		

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
NRBL32	Nolan River at Blum	All Months	Historical	0	137	290	927	3,692	14,330	135,899
			Naturalized	0	0	88	865	4,359	15,593	138,529
		January	Historical	83	170	334	832	3,608	12,603	22,118
			Naturalized	0	1	224	905	5,678	14,359	24,755
		February	Historical	125	255	378	1,200	6,817	17,469	32,450
			Naturalized	0	69	273	1,612	6,650	18,381	31,744
		March	Historical	89	283	571	1,891	9,278	24,177	53,887
			Naturalized	0	138	627	2,871	9,591	26,992	54,781
		April	Historical	77	536	977	2,505	9,168	21,392	62,866
			Naturalized	0	466	1,343	2,893	9,034	25,366	62,694
		May	Historical	129	761	1,482	3,429	13,865	49,972	135,899
			Naturalized	0	526	1,495	3,618	14,562	50,697	138,529
June	Historical	19	161	312	2,226	8,058	22,602	51,884		
	Naturalized	0	0	96	2,078	8,774	23,225	52,147		
July	Historical	0	57	175	362	1,255	3,127	43,275		
	Naturalized	0	0	0	221	1,614	3,819	39,943		
August	Historical	0	28	126	283	507	1,696	9,473		
	Naturalized	0	0	0	119	515	2,004	12,836		
September	Historical	6	74	183	386	1,460	8,959	31,639		
	Naturalized	0	0	0	151	1,721	9,223	35,651		
October	Historical	12	121	219	602	2,754	11,676	41,153		
	Naturalized	0	0	0	410	2,894	12,169	47,863		
November	Historical	0	143	238	398	1,667	10,662	59,433		
	Naturalized	0	0	23	206	1,903	11,617	61,206		
December	Historical	78	162	284	582	3,401	7,342	36,153		
	Naturalized	0	0	48	520	4,103	7,968	36,253		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
BRAQ33	Brazos River near Aquilla	All Months	Historical	610	5,855	20,748	38,709	82,391	209,745	2,121,000
			Naturalized	0	6,191	15,214	39,274	115,494	269,978	2,981,239
		January	Historical	610	2,504	12,786	35,915	59,119	95,259	1,107,412
			Naturalized	0	3,355	10,221	19,542	60,874	112,486	367,692
		February	Historical	899	2,581	8,716	32,591	61,694	150,164	643,648
			Naturalized	2,358	7,494	14,448	33,434	87,572	204,275	875,261
		March	Historical	1,642	4,392	13,464	32,442	93,346	278,404	842,142
			Naturalized	2,162	9,280	18,798	52,636	164,066	349,699	568,397
		April	Historical	745	5,397	18,792	36,625	94,286	237,946	853,045
			Naturalized	1,533	18,391	25,406	61,957	150,997	310,869	1,103,703
		May	Historical	798	6,270	26,998	72,590	260,669	490,688	1,824,119
			Naturalized	0	13,875	51,241	131,530	340,272	703,133	2,981,239
June	Historical	5,415	18,078	31,547	63,650	216,780	639,372	2,121,000		
	Naturalized	0	19,746	38,676	91,206	253,330	587,344	1,143,727		
July	Historical	1,757	24,222	36,723	55,496	99,763	190,919	1,195,497		
	Naturalized	1,247	6,064	13,894	33,524	103,325	230,499	818,603		
August	Historical	3,780	23,972	34,337	49,041	63,135	110,695	322,951		
	Naturalized	0	4,405	12,634	26,952	52,147	176,912	602,598		
September	Historical	1,694	13,108	24,068	36,703	57,440	144,690	490,832		
	Naturalized	0	4,966	11,787	39,137	94,596	210,384	546,460		
October	Historical	1,503	5,272	17,085	30,882	53,427	180,005	756,522		
	Naturalized	0	3,542	13,716	42,838	142,163	307,263	1,088,921		
November	Historical	1,222	2,726	15,333	26,582	56,307	201,717	428,495		
	Naturalized	0	2,860	9,273	23,926	66,735	196,704	546,809		
December	Historical	1,781	4,209	14,506	35,565	57,336	128,268	610,512		
	Naturalized	0	5,669	8,682	18,437	48,950	122,488	1,295,910		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
AQAQ34	Aquilla Creek near Aquilla	All Months	Historical	0	16	108	866	6,691	22,446	124,102
			Naturalized	0	0	25	1,098	7,698	23,534	127,485
		January	Historical	14	61	160	902	5,279	16,402	75,094
			Naturalized	0	0	162	2,148	7,572	19,094	54,695
		February	Historical	10	75	246	2,496	9,331	22,374	51,336
			Naturalized	0	66	684	2,524	11,504	25,860	57,697
		March	Historical	10	118	591	2,203	13,379	28,481	64,796
			Naturalized	0	261	891	5,088	14,627	30,191	70,119
		April	Historical	13	393	932	4,049	16,140	47,169	89,004
			Naturalized	0	394	996	4,808	18,939	43,099	88,899
		May	Historical	1	75	1,177	7,708	21,918	60,223	124,102
			Naturalized	0	145	1,315	7,475	23,100	60,118	127,485
		June	Historical	0	32	153	1,627	15,217	30,413	86,775
			Naturalized	0	0	40	1,990	14,572	28,711	86,667
		July	Historical	0	5	61	312	1,746	11,156	47,576
			Naturalized	0	0	0	245	1,356	9,444	47,498
		August	Historical	0	0	6	57	327	2,265	7,529
			Naturalized	0	0	0	0	365	2,919	11,229
		September	Historical	0	0	22	161	825	3,568	31,091
			Naturalized	0	0	0	141	1,570	4,044	39,882
		October	Historical	0	1	56	243	3,856	17,666	74,569
			Naturalized	0	0	0	823	6,548	24,210	98,641
		November	Historical	0	17	53	389	2,439	17,458	43,416
			Naturalized	0	0	0	330	2,675	13,364	62,517
		December	Historical	0	21	121	456	7,322	27,610	64,371
			Naturalized	0	0	5	765	7,828	27,046	91,490

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
NBHI35	North Bosque River at Hico	All Months	Historical	0	77	225	623	3,276	10,112	79,184
			Naturalized	0	12	154	612	3,304	10,026	78,927
		January	Historical	65	135	237	492	1,857	5,602	25,236
			Naturalized	0	14	132	402	1,753	5,446	24,965
		February	Historical	91	137	246	476	3,163	9,497	66,801
			Naturalized	0	52	142	333	3,053	9,377	66,529
		March	Historical	98	115	218	1,065	7,119	19,119	62,729
			Naturalized	0	13	139	964	6,946	19,007	62,440
		April	Historical	63	172	338	2,335	8,106	26,483	30,167
			Naturalized	0	93	255	2,348	7,953	26,344	29,987
		May	Historical	51	220	1,921	4,128	19,454	32,934	47,236
			Naturalized	0	152	1,842	4,019	19,288	32,818	47,073
June	Historical	34	95	926	2,646	6,265	25,233	44,019		
	Naturalized	0	49	859	2,565	6,178	25,048	43,903		
July	Historical	0	3	236	506	1,644	3,174	4,988		
	Naturalized	1	66	324	599	1,667	3,325	5,206		
August	Historical	0	0	33	269	1,343	7,475	33,969		
	Naturalized	0	34	94	414	1,360	7,473	33,972		
September	Historical	0	13	62	315	2,132	7,579	15,828		
	Naturalized	0	0	40	275	2,083	7,544	15,696		
October	Historical	0	22	211	615	2,787	6,326	21,425		
	Naturalized	0	0	94	483	2,648	6,217	21,240		
November	Historical	0	93	241	406	900	8,129	11,264		
	Naturalized	0	0	129	300	799	8,017	11,067		
December	Historical	26	90	193	363	1,120	5,806	79,184		
	Naturalized	0	0	69	207	999	5,624	78,927		

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
NBCL36	North Bosque River near Clifton	All Months	Historical	0	155	709	2,513	11,266	41,238	450,704
			Naturalized	0	104	646	2,476	11,264	41,160	450,470
		January	Historical	16	186	941	2,298	9,655	22,392	86,390
			Naturalized	0	106	871	2,198	9,531	22,262	86,105
		February	Historical	67	317	852	2,797	18,567	42,274	214,986
			Naturalized	0	191	758	2,680	18,451	42,101	214,690
		March	Historical	41	273	1,178	6,434	27,079	58,903	164,876
			Naturalized	0	179	1,071	6,345	26,909	58,722	164,702
		April	Historical	163	806	2,025	8,170	22,357	68,723	222,492
			Naturalized	73	732	1,958	8,109	22,252	68,497	222,410
		May	Historical	86	936	2,913	11,538	48,068	95,180	209,466
			Naturalized	20	989	2,847	11,508	47,960	95,039	209,207
June	Historical	26	578	2,182	6,644	18,280	64,743	242,269		
	Naturalized	0	517	2,162	6,677	18,179	64,651	242,009		
July	Historical	0	70	365	1,584	6,450	10,176	165,983		
	Naturalized	0	84	355	1,522	6,438	10,080	165,759		
August	Historical	0	11	120	582	1,993	7,410	76,128		
	Naturalized	0	0	115	658	2,067	7,371	76,140		
September	Historical	0	11	260	1,191	4,590	14,431	66,486		
	Naturalized	0	0	228	1,119	4,541	14,382	66,437		
October	Historical	0	50	566	1,487	6,934	28,242	88,421		
	Naturalized	0	0	471	1,397	6,774	28,157	88,335		
November	Historical	2	145	359	1,526	4,210	16,476	96,972		
	Naturalized	0	46	286	1,436	4,124	16,380	96,818		
December	Historical	3	182	707	1,479	6,614	14,270	450,704		
	Naturalized	0	70	610	1,392	6,475	14,185	450,470		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
NBVM37	North Bosque River At Valley Mills	All Months	Historical	0	463	1,456	4,017	13,835	49,619	459,223
			Naturalized	0	446	1,415	4,039	13,708	49,540	459,004
		January	Historical	417	984	1,834	3,853	12,841	52,521	112,729
			Naturalized	294	918	1,756	3,742	12,743	52,453	112,650
		February	Historical	386	743	1,891	4,562	27,059	60,014	296,588
			Naturalized	258	626	1,793	4,458	26,965	59,832	296,311
		March	Historical	468	1,053	1,875	10,011	33,418	82,696	176,144
			Naturalized	353	954	1,778	9,920	33,298	82,593	175,981
		April	Historical	358	1,145	2,648	8,557	27,714	64,809	142,348
			Naturalized	300	1,065	2,561	8,501	27,608	64,764	142,275
		May	Historical	181	1,238	4,191	12,456	49,944	130,445	242,842
			Naturalized	136	1,324	4,107	12,380	49,879	130,362	242,599
June	Historical	38	1,360	3,359	9,502	21,910	78,531	95,766		
	Naturalized	14	1,369	3,318	9,692	21,830	78,447	95,634		
July	Historical	7	215	684	2,425	8,303	13,433	43,795		
	Naturalized	63	264	719	2,587	8,336	13,565	43,787		
August	Historical	12	131	549	1,225	3,691	13,512	99,898		
	Naturalized	0	109	559	1,294	3,949	13,499	99,910		
September	Historical	0	85	783	1,961	5,913	18,905	62,247		
	Naturalized	0	53	707	1,996	5,879	18,870	62,181		
October	Historical	83	229	1,343	3,487	9,465	57,635	174,274		
	Naturalized	73	184	1,270	3,457	9,307	57,469	174,193		
November	Historical	160	544	1,099	2,223	7,250	24,988	118,717		
	Naturalized	128	446	1,022	2,143	7,169	24,879	118,522		
December	Historical	200	420	1,507	2,745	11,484	28,459	459,223		
	Naturalized	111	339	1,367	2,660	11,372	28,306	459,004		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
MBMG38	Middle Bosque River near McGregor	All Months	Historical	0	8	162	1,135	5,151	13,256	64,673
			Naturalized	0	9	168	1,136	5,151	13,256	64,673
		January	Historical	5	148	265	1,852	5,589	15,461	45,731
			Naturalized	5	148	265	1,852	5,589	15,461	45,731
		February	Historical	0	153	266	2,097	7,566	16,076	39,775
			Naturalized	0	153	266	2,097	7,566	16,076	39,775
		March	Historical	83	170	635	3,787	8,273	18,083	21,963
			Naturalized	93	170	635	3,787	8,273	18,083	21,963
		April	Historical	66	182	421	2,872	6,385	9,870	27,544
			Naturalized	66	190	433	2,878	6,385	9,870	27,544
		May	Historical	6	102	1,212	2,941	12,522	21,777	64,673
			Naturalized	9	102	1,212	2,941	12,534	21,777	64,673
June	Historical	0	23	212	1,506	7,476	24,851	35,950		
	Naturalized	0	24	212	1,508	7,476	24,853	35,950		
July	Historical	0	0	47	246	1,523	11,250	46,380		
	Naturalized	0	8	53	246	1,523	11,250	46,380		
August	Historical	0	0	5	25	243	4,175	7,573		
	Naturalized	0	0	5	25	243	4,178	7,573		
September	Historical	0	0	8	169	1,248	7,829	19,467		
	Naturalized	0	0	8	175	1,249	7,829	19,467		
October	Historical	0	2	152	926	5,776	13,202	51,991		
	Naturalized	0	2	152	926	5,776	13,202	51,991		
November	Historical	0	4	141	780	3,429	10,288	20,392		
	Naturalized	0	4	141	780	3,429	10,288	20,392		
December	Historical	0	11	316	988	5,461	12,423	46,082		
	Naturalized	0	11	316	988	5,461	12,423	46,082		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
HGCR39	Hog Creek near Crawford	All Months	Historical	0	7	42	362	1,721	6,209	29,278
			Naturalized	0	7	42	362	1,723	6,209	29,281
		January	Historical	14	22	64	586	2,299	7,058	22,124
			Naturalized	14	22	64	586	2,299	7,058	22,124
		February	Historical	10	26	85	562	2,082	8,010	14,267
			Naturalized	10	26	85	562	2,082	8,010	14,267
		March	Historical	21	36	332	1,656	3,411	7,137	9,777
			Naturalized	21	36	332	1,656	3,411	7,137	9,777
		April	Historical	15	70	254	1,245	2,681	6,309	17,576
			Naturalized	15	71	257	1,245	2,681	6,309	17,576
		May	Historical	1	24	381	936	4,249	10,242	29,278
			Naturalized	1	24	381	936	4,252	10,243	29,281
June	Historical	0	10	61	598	2,402	7,519	23,383		
	Naturalized	0	10	61	598	2,404	7,519	23,383		
July	Historical	0	3	35	153	786	3,628	12,906		
	Naturalized	0	3	35	153	786	3,630	12,906		
August	Historical	0	0	9	28	135	683	5,439		
	Naturalized	0	0	9	28	135	683	5,439		
September	Historical	0	0	4	71	367	2,365	11,553		
	Naturalized	0	0	4	71	367	2,365	11,553		
October	Historical	1	4	24	407	1,540	7,990	21,439		
	Naturalized	1	4	24	407	1,540	7,990	21,439		
November	Historical	0	6	18	174	998	5,547	8,009		
	Naturalized	0	6	18	174	998	5,547	8,009		
December	Historical	3	15	36	241	1,858	4,149	10,663		
	Naturalized	3	15	36	241	1,858	4,149	10,663		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
BOWA40	Bosque River near Waco	All Months	Historical	0	0	100	5,544	29,297	78,728	284,069
			Naturalized	0	800	3,211	10,856	33,282	83,166	362,356
		January	Historical	0	0	77	6,762	19,656	139,844	253,206
			Naturalized	556	1,724	4,491	13,022	21,901	144,803	254,155
		February	Historical	0	11	265	13,043	50,392	93,011	197,353
			Naturalized	1,652	1,823	4,252	16,789	51,124	94,667	198,458
		March	Historical	0	61	440	16,848	34,229	99,372	161,066
			Naturalized	1,424	3,285	6,942	20,110	40,914	106,709	144,741
		April	Historical	0	24	225	13,218	58,215	68,368	223,361
			Naturalized	3,095	3,680	6,827	18,670	63,222	101,005	222,544
		May	Historical	0	94	5,244	16,717	124,939	222,179	284,069
			Naturalized	3,709	4,734	8,536	33,884	98,001	210,325	362,356
June	Historical	0	246	1,531	25,401	51,784	99,579	113,242		
	Naturalized	888	2,134	5,215	22,414	58,231	95,770	152,542		
July	Historical	0	0	51	3,089	11,766	97,687	105,342		
	Naturalized	0	386	823	6,847	15,326	93,903	96,113		
August	Historical	0	0	0	106	2,761	5,974	37,331		
	Naturalized	0	37	370	2,013	7,420	14,371	19,459		
September	Historical	0	0	0	226	10,024	31,911	56,297		
	Naturalized	0	5	750	3,189	15,192	46,034	55,780		
October	Historical	0	0	23	1,905	15,140	76,892	239,472		
	Naturalized	0	83	3,331	8,913	32,502	96,974	241,239		
November	Historical	0	0	134	2,029	17,393	44,344	148,994		
	Naturalized	223	702	2,680	8,873	15,849	45,355	57,898		
December	Historical	0	0	79	5,835	29,666	80,551	88,116		
	Naturalized	424	876	2,693	7,015	28,162	82,697	94,376		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
BRWAA1	Brazos River at Waco	All Months	Historical	1,609	12,085	29,547	56,413	127,865	326,386	2,233,388
			Naturalized	0	9,294	20,936	62,222	174,744	406,432	3,376,485
		January	Historical	2,743	8,557	23,902	59,084	111,127	189,471	1,730,182
			Naturalized	1,612	8,740	17,424	44,819	106,763	221,258	688,885
		February	Historical	1,609	6,099	22,968	55,390	125,161	285,563	969,977
			Naturalized	4,515	11,821	20,165	67,674	153,093	334,601	1,370,418
		March	Historical	4,381	10,633	28,403	64,725	168,827	424,510	1,245,917
			Naturalized	4,187	13,393	29,660	89,727	231,512	527,063	828,582
		April	Historical	5,117	15,469	34,526	75,567	171,582	434,891	1,337,137
			Naturalized	7,290	26,540	47,968	103,092	208,842	520,188	1,401,100
		May	Historical	2,674	21,042	47,377	119,499	386,414	779,715	2,233,388
			Naturalized	12,071	30,263	58,290	184,199	508,726	931,235	3,376,485
June	Historical	8,420	22,377	40,318	103,509	330,616	709,728	2,209,587		
	Naturalized	658	23,008	51,831	132,150	388,514	687,289	1,625,595		
July	Historical	3,025	24,309	42,405	63,159	105,775	242,838	1,629,619		
	Naturalized	0	6,057	17,607	46,248	145,579	259,502	1,060,115		
August	Historical	4,217	25,200	36,586	49,050	66,587	130,612	448,834		
	Naturalized	0	3,632	9,440	32,927	59,912	202,102	600,279		
September	Historical	1,980	14,674	29,520	41,244	68,121	167,474	564,831		
	Naturalized	0	4,633	15,649	37,016	115,928	283,917	619,620		
October	Historical	2,372	11,012	24,168	41,229	102,785	291,721	832,253		
	Naturalized	0	11,106	20,246	63,493	188,589	439,781	1,082,923		
November	Historical	2,569	7,902	19,265	39,184	84,856	270,818	663,491		
	Naturalized	0	8,324	17,129	33,990	104,225	228,685	829,174		
December	Historical	2,507	8,126	19,738	49,009	115,810	227,294	926,797		
	Naturalized	339	6,616	11,955	37,856	110,766	228,245	2,144,032		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
BRHB42	Brazos River near Highbank	All Months	Historical	1,771	16,929	36,690	67,113	164,251	433,181	1,963,438
			Naturalized	0	14,673	27,070	74,609	219,174	494,135	2,233,092
		January	Historical	10,253	16,016	37,820	73,538	145,328	210,153	1,963,438
			Naturalized	10,950	18,050	28,989	74,153	174,554	361,608	939,691
		February	Historical	1,771	8,411	30,270	78,052	154,510	349,988	1,255,002
			Naturalized	14,924	17,300	32,760	86,457	228,326	527,481	1,645,827
		March	Historical	5,207	17,297	46,484	100,124	333,443	651,913	1,397,673
			Naturalized	13,457	23,454	53,349	138,154	428,312	710,065	957,174
		April	Historical	7,724	23,084	38,548	98,644	257,042	473,854	934,433
			Naturalized	9,483	28,809	49,819	112,581	290,337	634,226	1,223,125
		May	Historical	10,996	21,736	49,153	157,840	407,684	867,838	1,853,355
			Naturalized	11,536	24,091	62,473	215,054	511,324	1,174,846	1,939,542
June	Historical	7,196	22,677	38,403	92,378	474,913	788,989	1,406,479		
	Naturalized	3,254	29,356	45,706	131,784	476,371	837,792	1,777,753		
July	Historical	5,187	22,830	34,844	63,648	116,818	274,438	1,819,040		
	Naturalized	408	7,895	15,648	42,292	120,666	264,361	1,254,439		
August	Historical	5,224	15,010	41,503	58,025	77,545	127,675	528,813		
	Naturalized	0	3,712	12,609	38,931	79,487	275,539	588,431		
September	Historical	6,885	14,611	31,545	47,369	67,029	164,773	586,996		
	Naturalized	2,292	5,048	21,613	44,074	122,813	242,154	639,840		
October	Historical	5,754	14,927	32,852	53,478	112,145	285,555	844,641		
	Naturalized	3,843	15,910	27,836	68,584	201,392	421,952	1,174,439		
November	Historical	4,320	10,185	27,683	53,123	130,015	317,990	1,073,812		
	Naturalized	1,817	12,052	20,962	39,827	158,494	220,318	1,003,462		
December	Historical	5,445	12,212	34,485	73,297	191,332	357,298	1,124,786		
	Naturalized	1,660	10,149	20,562	52,737	204,278	348,188	2,233,092		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
LEDL43	Leon River near De Leon	All Months	Historical	0	0	2	155	1,289	7,416	70,582
			Naturalized	0	0	68	383	2,110	9,543	84,570
		January	Historical	0	0	22	152	841	5,175	61,801
			Naturalized	0	0	122	251	1,293	10,138	64,910
		February	Historical	0	0	54	229	1,664	6,017	52,576
			Naturalized	0	26	194	412	2,482	6,295	51,039
		March	Historical	0	11	97	473	2,604	13,771	31,722
			Naturalized	129	194	398	751	8,918	15,809	32,130
		April	Historical	0	49	110	589	3,878	8,090	41,526
			Naturalized	0	160	391	1,101	4,628	13,069	42,123
		May	Historical	0	13	120	1,261	7,999	22,813	70,230
			Naturalized	0	0	109	1,815	10,922	23,335	84,570
June	Historical	0	0	20	1,054	6,151	22,469	70,582		
	Naturalized	0	17	206	1,401	4,287	23,864	70,722		
July	Historical	0	0	0	41	482	5,936	27,077		
	Naturalized	0	0	0	266	1,538	7,684	27,627		
August	Historical	0	0	0	16	264	890	5,460		
	Naturalized	0	0	0	263	703	2,637	6,809		
September	Historical	0	0	0	2	138	2,212	16,132		
	Naturalized	0	0	0	117	473	3,361	17,030		
October	Historical	0	0	0	148	1,170	4,367	29,129		
	Naturalized	0	0	0	142	2,728	7,419	38,310		
November	Historical	0	0	0	90	388	7,708	30,458		
	Naturalized	0	0	0	137	477	7,890	36,862		
December	Historical	0	0	0	67	234	3,720	19,851		
	Naturalized	0	0	0	125	351	4,931	14,610		

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
SADL44	Sabana River near De Leon	All Months	Historical	0	0	22	147	854	4,780	57,181
			Naturalized	0	1	36	165	860	4,783	57,181
		January	Historical	0	11	62	147	657	5,073	36,232
			Naturalized	0	11	62	147	659	5,073	36,232
		February	Historical	3	18	40	200	1,297	3,670	4,768
			Naturalized	3	18	41	200	1,297	3,676	4,768
		March	Historical	0	24	76	292	3,066	7,659	16,439
			Naturalized	0	31	76	301	3,072	7,659	16,439
		April	Historical	5	17	81	514	1,563	3,111	14,940
			Naturalized	5	17	81	518	1,570	3,116	14,940
		May	Historical	0	16	136	831	6,394	16,201	27,457
			Naturalized	0	21	136	837	6,394	16,201	27,457
June	Historical	0	1	28	489	2,558	9,131	57,181		
	Naturalized	0	8	33	526	2,558	9,168	57,181		
July	Historical	0	0	0	45	846	6,695	15,925		
	Naturalized	0	0	20	126	873	6,695	15,925		
August	Historical	0	0	0	55	223	755	5,232		
	Naturalized	0	0	37	150	255	826	5,232		
September	Historical	0	0	0	32	360	2,093	23,853		
	Naturalized	0	0	12	49	360	2,093	23,853		
October	Historical	0	0	0	99	1,849	4,323	8,671		
	Naturalized	0	0	3	100	1,849	4,323	8,671		
November	Historical	0	0	0	102	399	3,986	14,828		
	Naturalized	0	0	0	102	399	3,986	14,828		
December	Historical	0	1	31	95	313	1,523	6,038		
	Naturalized	0	1	31	95	313	1,523	6,038		

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
LEHS45	Leon River near Hasse	All Months	Historical	0	76	242	1,169	6,274	22,647	297,005
			Naturalized	0	0	176	1,509	7,618	24,561	319,106
		January	Historical	0	43	131	285	2,560	12,255	103,041
			Naturalized	0	0	181	1,091	3,815	10,304	117,815
		February	Historical	0	53	139	286	3,361	16,484	81,142
			Naturalized	0	8	343	1,744	6,621	17,502	135,135
		March	Historical	0	66	197	424	6,785	24,134	99,241
			Naturalized	0	172	885	2,515	11,792	31,287	74,885
		April	Historical	0	111	276	1,666	8,959	43,245	116,765
			Naturalized	0	339	1,140	3,654	12,581	29,621	319,106
		May	Historical	78	412	912	5,165	18,453	61,722	297,005
			Naturalized	0	200	1,832	8,693	36,498	89,751	216,797
		June	Historical	25	317	1,019	3,774	19,006	38,842	114,704
			Naturalized	0	0	1,038	4,636	15,894	44,832	223,689
		July	Historical	0	724	1,183	2,091	13,626	45,274	175,015
			Naturalized	0	0	156	1,099	6,224	17,087	88,648
		August	Historical	0	0	528	1,633	3,746	21,859	112,227
			Naturalized	0	0	0	505	3,251	14,020	99,464
		September	Historical	0	67	464	1,199	2,645	17,749	83,389
			Naturalized	0	0	0	382	3,113	16,619	84,101
		October	Historical	0	68	284	674	3,477	10,143	84,887
			Naturalized	0	0	7	1,498	6,249	23,918	86,903
		November	Historical	0	32	136	362	2,328	9,659	48,613
			Naturalized	0	0	17	675	3,814	15,129	53,146
		December	Historical	0	38	151	389	2,793	9,192	60,014
			Naturalized	0	0	5	554	2,447	8,506	191,979

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
LEHM46	Leon River near Hamilton	All Months	Historical	0	119	389	1,952	12,918	40,411	263,385
			Naturalized	0	208	796	3,033	13,479	38,318	249,127
		January	Historical	13	121	327	1,109	11,006	20,487	113,098
			Naturalized	0	181	525	2,367	10,821	34,374	99,890
		February	Historical	5	119	343	1,809	10,578	39,471	122,025
			Naturalized	0	210	689	2,665	13,630	32,673	184,352
		March	Historical	25	88	575	2,833	16,873	51,279	120,119
			Naturalized	0	405	1,385	4,259	18,720	68,118	96,830
		April	Historical	9	117	416	3,568	20,166	56,725	90,704
			Naturalized	48	534	1,426	5,624	23,698	49,287	231,065
		May	Historical	71	436	1,795	10,198	30,434	93,944	263,385
			Naturalized	49	1,550	3,265	10,427	44,265	117,495	206,528
		June	Historical	0	293	765	5,066	34,871	80,758	105,937
			Naturalized	0	489	2,152	6,200	33,229	70,933	125,701
		July	Historical	0	173	525	1,632	24,020	63,685	98,122
			Naturalized	0	705	1,242	3,891	13,739	31,833	93,950
		August	Historical	0	190	416	1,195	14,690	32,971	79,825
			Naturalized	0	195	1,196	3,247	9,829	27,484	93,241
		September	Historical	0	78	384	901	4,895	32,419	73,694
			Naturalized	0	270	722	1,218	4,505	30,883	74,104
		October	Historical	0	89	182	1,286	8,199	15,647	44,239
			Naturalized	0	65	430	3,025	13,830	24,110	48,764
		November	Historical	0	33	185	1,042	3,541	18,298	48,982
			Naturalized	0	0	256	1,358	4,250	18,944	58,999
		December	Historical	0	58	298	803	3,449	22,413	158,715
			Naturalized	0	69	309	821	3,780	20,755	249,127

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
LEGT47	Leon River at Gatesville	All Months	Historical	0	172	931	4,065	18,706	53,951	382,691
			Naturalized	0	323	1,196	4,863	19,437	52,359	383,333
		January	Historical	31	289	850	2,182	15,437	33,341	154,790
			Naturalized	0	239	984	2,899	14,946	40,221	128,531
		February	Historical	21	328	891	3,396	17,599	65,984	215,802
			Naturalized	0	400	1,035	4,068	22,521	57,687	276,611
		March	Historical	26	499	1,291	5,355	23,427	73,642	185,296
			Naturalized	0	753	2,161	6,916	30,845	87,659	162,566
		April	Historical	38	666	2,085	9,053	26,732	75,587	126,984
			Naturalized	97	1,168	2,929	9,472	31,250	58,636	268,527
		May	Historical	286	1,288	3,041	13,437	49,594	130,648	382,691
			Naturalized	192	2,085	4,767	14,257	58,801	142,597	383,333
June	Historical	87	377	2,986	9,862	38,719	90,781	210,633		
	Naturalized	0	1,256	3,885	11,290	40,791	85,783	336,540		
July	Historical	4	63	717	4,812	21,492	65,048	321,342		
	Naturalized	0	260	1,786	4,944	18,897	41,460	262,713		
August	Historical	0	20	202	1,426	11,295	36,859	156,137		
	Naturalized	0	221	1,055	2,512	11,475	29,703	105,214		
September	Historical	0	26	355	1,683	7,107	33,920	73,712		
	Naturalized	0	132	625	2,050	6,811	35,185	65,587		
October	Historical	2	71	738	3,460	12,215	39,492	249,257		
	Naturalized	0	0	749	5,155	16,236	42,412	250,450		
November	Historical	14	129	354	1,741	8,180	30,764	139,484		
	Naturalized	0	29	526	1,973	9,001	32,568	158,830		
December	Historical	12	152	694	2,134	10,085	29,579	281,601		
	Naturalized	0	88	578	2,407	10,058	29,117	369,804		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
COP148	Cowhouse Creek at Pidcoke	All Months	Historical	0	4	125	1,041	5,246	16,714	130,124
			Naturalized	0	10	129	1,042	5,246	16,718	130,144
		January	Historical	0	15	88	630	4,938	11,716	53,877
			Naturalized	0	15	88	630	4,938	11,716	53,877
		February	Historical	0	31	214	1,045	5,861	25,253	120,500
			Naturalized	0	31	214	1,045	5,861	25,253	120,500
		March	Historical	1	99	572	3,882	11,479	25,023	78,360
			Naturalized	1	104	574	3,902	11,479	25,023	78,360
		April	Historical	0	191	432	3,078	9,018	20,947	61,442
			Naturalized	0	191	432	3,078	9,018	20,960	61,442
		May	Historical	47	325	1,074	5,421	16,980	29,073	130,124
			Naturalized	61	351	1,080	5,421	16,988	29,073	130,144
June	Historical	4	81	642	2,630	7,257	23,822	111,154		
	Naturalized	4	88	647	2,630	7,282	23,829	111,154		
July	Historical	0	3	60	543	1,729	4,988	61,672		
	Naturalized	0	12	71	543	1,753	5,004	61,672		
August	Historical	0	0	3	152	1,396	5,530	21,397		
	Naturalized	0	0	9	160	1,413	5,530	21,397		
September	Historical	0	0	12	260	1,460	6,224	25,783		
	Naturalized	0	0	13	260	1,460	6,225	25,785		
October	Historical	0	0	43	607	2,959	15,434	87,059		
	Naturalized	0	0	43	607	2,959	15,441	87,059		
November	Historical	0	1	39	449	2,824	9,072	53,958		
	Naturalized	0	1	39	449	2,824	9,072	53,958		
December	Historical	0	2	35	795	4,445	10,394	116,477		
	Naturalized	0	2	35	795	4,445	10,394	116,477		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
LEBE49	Leon River near Belton	All Months	Historical	0	481	1,254	7,617	38,599	115,984	538,195
			Naturalized	0	928	3,835	12,942	46,233	111,776	629,875
		January	Historical	0	386	1,079	3,053	33,957	93,912	311,504
			Naturalized	0	1,122	3,524	10,562	39,184	77,396	251,510
		February	Historical	0	422	743	3,415	35,657	118,896	247,557
			Naturalized	212	1,870	4,374	13,635	61,797	127,776	512,612
		March	Historical	157	472	1,193	8,787	89,121	190,089	407,107
			Naturalized	725	3,337	7,242	20,564	86,824	178,477	296,493
		April	Historical	101	388	1,995	16,373	56,382	181,410	400,800
			Naturalized	2,197	4,963	9,510	28,034	68,697	155,960	400,977
		May	Historical	53	1,250	6,995	26,865	100,335	226,962	538,195
			Naturalized	2,058	6,359	17,141	42,589	128,531	279,887	629,875
June	Historical	3	1,027	7,412	21,355	79,702	172,857	357,140		
	Naturalized	0	3,595	9,130	29,015	84,773	152,395	504,516		
July	Historical	16	809	3,027	13,835	38,449	159,601	386,579		
	Naturalized	0	623	4,045	9,734	28,721	79,225	391,803		
August	Historical	0	480	1,291	2,917	19,389	55,707	358,453		
	Naturalized	0	220	1,634	5,295	19,378	45,445	111,790		
September	Historical	0	376	1,097	3,290	12,668	42,959	279,025		
	Naturalized	0	0	1,168	5,436	17,042	78,235	185,117		
October	Historical	0	329	752	3,351	20,766	69,057	240,916		
	Naturalized	0	294	1,290	9,548	34,128	86,047	374,132		
November	Historical	0	335	956	3,142	19,150	67,958	181,956		
	Naturalized	0	0	1,482	6,918	21,938	74,468	304,923		
December	Historical	0	356	925	2,617	32,551	69,119	284,033		
	Naturalized	0	203	1,348	6,824	35,498	81,088	549,899		

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
LAKE50	Lampasas River near Kempner	All Months	Historical	257	820	1,244	2,660	8,729	23,220	202,810
			Naturalized	418	868	1,267	2,702	8,699	23,315	202,765
		January	Historical	635	1,091	1,214	2,132	6,765	16,892	68,091
			Naturalized	706	1,058	1,199	2,239	6,771	16,889	68,063
		February	Historical	627	954	1,383	2,416	9,528	29,075	202,810
			Naturalized	699	945	1,402	2,506	9,531	29,061	202,765
		March	Historical	820	1,337	1,694	4,683	16,542	46,422	95,873
			Naturalized	776	1,320	1,712	4,660	16,530	46,412	95,862
		April	Historical	527	1,008	1,553	4,863	20,486	26,876	65,806
			Naturalized	678	1,069	1,615	4,839	20,466	26,958	65,893
		May	Historical	404	1,791	3,410	9,699	22,523	39,778	184,140
			Naturalized	598	1,809	3,455	9,665	22,544	39,778	184,211
		June	Historical	356	1,020	2,704	6,109	13,297	47,846	177,739
			Naturalized	462	1,072	2,683	6,098	13,462	47,835	177,694
		July	Historical	355	624	877	2,122	3,713	12,178	155,125
			Naturalized	510	756	1,003	2,111	3,737	12,225	155,073
		August	Historical	257	505	819	1,388	3,147	11,250	23,254
			Naturalized	418	584	925	1,494	3,215	11,378	23,408
		September	Historical	483	667	778	1,585	2,914	10,729	24,797
			Naturalized	508	699	883	1,653	2,911	10,854	24,961
		October	Historical	414	768	1,151	2,225	5,068	14,761	27,832
			Naturalized	504	837	1,159	2,204	5,169	14,840	27,917
		November	Historical	519	811	1,025	1,903	4,370	12,380	66,301
			Naturalized	484	849	1,069	1,896	4,349	12,407	66,261
		December	Historical	658	924	1,156	2,054	5,547	16,959	196,300
			Naturalized	616	962	1,165	2,075	5,510	16,970	196,276

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
LAYO51	Lampasas River at Youngsport	All Months	Historical	0	616	1,696	4,909	18,568	48,079	292,209
			Naturalized	26	723	1,808	4,973	18,684	48,167	292,356
		January	Historical	446	797	1,342	3,786	16,846	63,204	99,215
			Naturalized	480	824	1,389	3,821	16,909	63,235	99,241
		February	Historical	399	918	1,950	4,596	29,021	77,456	114,932
			Naturalized	432	943	1,989	4,695	29,072	77,559	114,965
		March	Historical	339	1,072	1,987	5,661	29,405	85,515	128,301
			Naturalized	349	1,100	2,045	5,680	29,432	85,536	128,386
		April	Historical	193	1,197	3,343	14,400	33,040	84,916	154,463
			Naturalized	210	1,276	3,456	14,456	33,176	84,973	154,505
		May	Historical	868	2,848	5,955	27,729	53,855	105,527	292,209
			Naturalized	1,069	3,104	5,992	27,920	53,913	105,582	292,356
		June	Historical	143	834	3,752	10,239	30,825	43,517	89,088
			Naturalized	218	924	3,876	10,388	30,895	43,636	89,128
		July	Historical	0	55	1,093	3,493	9,935	23,474	40,257
			Naturalized	26	389	1,365	3,567	10,064	23,592	40,393
		August	Historical	0	46	719	2,438	5,865	12,015	33,943
			Naturalized	86	140	901	2,590	5,990	12,122	34,338
		September	Historical	216	465	1,054	2,967	7,816	17,510	46,661
			Naturalized	260	528	1,141	3,035	7,902	17,599	46,791
		October	Historical	107	478	1,244	2,842	14,168	42,598	144,256
			Naturalized	137	497	1,273	2,940	14,243	42,647	144,298
		November	Historical	357	706	1,271	3,382	11,764	24,346	89,010
			Naturalized	410	730	1,300	3,441	11,826	24,382	89,055
		December	Historical	480	607	1,292	3,388	15,752	36,887	104,580
			Naturalized	530	658	1,315	3,442	15,785	36,951	104,624

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
LABE52	Lampasas River near Belton	All Months	Historical	42	269	466	2,551	15,388	42,006	310,739
			Naturalized	0	482	1,948	5,154	18,093	43,612	310,885
		January	Historical	108	254	342	1,578	13,277	67,001	96,256
			Naturalized	0	0	1,648	4,788	14,506	38,627	92,497
		February	Historical	142	236	463	2,059	21,753	49,009	182,499
			Naturalized	0	912	2,686	4,881	25,534	47,820	125,978
		March	Historical	139	289	792	5,070	25,678	50,623	84,180
			Naturalized	0	2,357	3,365	8,234	32,670	73,908	131,900
		April	Historical	181	247	750	8,721	26,404	47,560	101,631
			Naturalized	0	1,753	4,013	9,980	26,795	45,359	142,320
		May	Historical	94	394	2,119	15,919	31,331	60,181	310,739
			Naturalized	679	1,885	5,387	19,549	34,789	76,738	310,885
June	Historical	126	377	1,250	8,519	31,256	59,451	217,860		
	Naturalized	545	1,740	4,744	10,678	27,889	68,220	298,679		
July	Historical	87	235	607	3,103	20,090	57,367	139,134		
	Naturalized	0	746	1,998	3,617	9,390	25,370	220,127		
August	Historical	42	216	474	1,007	6,487	16,488	214,135		
	Naturalized	0	8	786	2,958	5,735	25,550	47,030		
September	Historical	147	223	362	671	10,597	28,644	188,703		
	Naturalized	0	0	579	1,948	8,921	27,921	55,154		
October	Historical	88	189	380	718	7,745	22,183	49,025		
	Naturalized	0	0	1,079	3,347	11,216	33,740	86,080		
November	Historical	94	253	396	1,178	13,577	26,212	80,543		
	Naturalized	0	147	597	2,756	9,216	37,548	137,208		
December	Historical	116	284	402	616	14,025	30,720	131,167		
	Naturalized	0	10	951	3,087	17,219	29,800	69,704		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
LRLR53	Little River near Little River	All Months	Historical	741	4,832	7,217	20,404	71,242	175,599	626,916
			Naturalized	0	4,341	9,176	26,256	78,512	181,745	942,745
		January	Historical	3,620	4,488	6,800	12,625	62,290	179,155	445,904
			Naturalized	3,551	6,301	9,713	28,728	57,747	139,357	406,249
		February	Historical	3,336	4,647	6,620	16,925	77,547	181,063	490,591
			Naturalized	4,363	6,913	10,307	34,311	102,752	218,384	896,589
		March	Historical	3,886	6,770	9,553	29,290	136,707	272,354	626,916
			Naturalized	5,640	10,387	19,546	52,550	128,597	281,572	466,367
		April	Historical	3,533	5,408	9,830	40,582	112,222	250,852	549,620
			Naturalized	5,011	9,296	16,407	53,409	131,206	204,739	443,239
		May	Historical	6,284	9,528	20,346	58,816	149,694	283,498	420,119
			Naturalized	2,597	12,178	29,582	83,579	179,442	342,873	942,745
		June	Historical	3,277	7,890	18,007	46,643	139,388	272,882	483,094
			Naturalized	3,925	11,130	21,681	56,035	114,440	302,909	892,476
		July	Historical	3,328	5,095	11,204	28,471	83,757	257,649	481,487
			Naturalized	94	5,527	7,671	19,828	56,941	123,639	701,752
		August	Historical	741	4,452	6,670	12,577	30,077	121,821	611,087
			Naturalized	0	1,936	5,171	10,916	36,587	77,643	193,481
		September	Historical	2,460	3,784	5,896	10,088	35,656	75,108	502,599
			Naturalized	511	1,702	4,814	10,758	35,173	110,150	251,365
		October	Historical	2,646	4,080	6,233	11,917	45,531	91,282	257,758
			Naturalized	493	2,191	6,252	20,503	51,344	110,528	328,981
		November	Historical	3,299	3,827	5,859	8,875	41,371	109,665	247,259
			Naturalized	763	1,644	4,726	15,282	38,980	119,798	491,645
		December	Historical	2,934	3,965	5,706	8,923	67,528	120,392	433,983
			Naturalized	906	2,225	6,437	12,148	71,755	152,806	849,245

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
NGGE54	North Fork San Gabriel River near Georgetown	All Months	Historical	5	49	174	436	3,285	13,329	59,121
			Naturalized	0	7	194	1,045	5,174	14,042	76,105
		January	Historical	29	46	180	413	2,961	6,359	21,114
			Naturalized	0	92	309	1,353	4,545	10,793	31,791
		February	Historical	21	48	177	1,020	6,940	16,696	36,603
			Naturalized	151	182	464	1,174	7,254	21,360	66,553
		March	Historical	22	68	174	650	8,941	24,263	51,170
			Naturalized	58	163	540	2,674	12,241	23,736	38,755
		April	Historical	24	32	257	1,566	7,170	14,876	44,904
			Naturalized	0	244	715	3,031	7,333	11,811	44,905
		May	Historical	27	38	129	1,042	10,550	18,311	33,421
			Naturalized	0	190	1,157	4,563	13,540	20,838	38,076
June	Historical	6	15	152	859	8,767	22,467	55,799		
	Naturalized	0	64	571	2,585	7,974	35,635	76,105		
July	Historical	14	35	234	633	4,260	31,867	59,121		
	Naturalized	0	30	278	745	4,268	10,608	55,353		
August	Historical	5	29	119	333	682	3,002	32,239		
	Naturalized	0	0	82	274	1,053	3,003	20,709		
September	Historical	10	45	84	307	877	2,620	29,816		
	Naturalized	0	0	1	246	1,158	3,570	27,565		
October	Historical	9	49	137	298	843	4,277	27,987		
	Naturalized	0	0	9	277	1,989	10,894	37,655		
November	Historical	24	66	164	352	1,314	5,898	22,195		
	Naturalized	0	0	66	265	2,432	10,946	54,307		
December	Historical	29	54	185	505	4,591	11,004	40,931		
	Naturalized	0	0	102	817	4,878	12,836	44,888		

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
SGGE55	South Fork San Gabriel River at Georgetown	All Months	Historical	1	33	180	841	3,497	8,065	50,632
			Naturalized	1	33	180	841	3,497	8,066	50,632
		January	Historical	10	66	229	1,090	3,391	6,354	27,140
			Naturalized	10	66	229	1,090	3,391	6,354	27,140
		February	Historical	31	105	288	1,203	4,185	8,677	40,911
			Naturalized	31	105	288	1,203	4,185	8,677	40,911
		March	Historical	68	123	402	1,500	6,658	10,765	22,594
			Naturalized	68	123	402	1,500	6,658	10,765	22,594
		April	Historical	53	117	517	2,179	4,966	7,481	26,477
			Naturalized	53	117	517	2,179	4,966	7,481	26,477
		May	Historical	15	164	956	3,184	8,290	12,612	24,781
			Naturalized	15	164	956	3,184	8,290	12,612	24,781
June	Historical	4	42	293	1,417	5,198	16,746	50,632		
	Naturalized	4	42	293	1,417	5,198	16,746	50,632		
July	Historical	5	21	125	632	2,746	4,247	21,800		
	Naturalized	5	21	126	632	2,746	4,247	21,800		
August	Historical	2	6	28	296	800	1,759	8,057		
	Naturalized	2	6	28	296	800	1,759	8,058		
September	Historical	1	7	29	187	777	3,465	18,220		
	Naturalized	1	7	29	187	777	3,465	18,220		
October	Historical	4	17	53	291	1,897	11,139	16,644		
	Naturalized	4	17	53	291	1,897	11,139	16,644		
November	Historical	6	46	149	586	2,338	6,635	25,187		
	Naturalized	6	46	149	586	2,338	6,635	25,187		
December	Historical	10	40	193	893	3,332	6,089	30,042		
	Naturalized	10	40	193	893	3,332	6,089	30,042		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
GAGE56	San Gabriel River at Georgetown	All Months	Historical	0	277	983	2,736	8,457	22,573	89,179
			Naturalized	0	280	899	2,751	8,468	22,529	89,179
		January	Historical	149	262	704	2,926	8,513	28,611	64,001
			Naturalized	149	263	705	2,924	8,516	28,612	63,929
		February	Historical	160	610	1,125	2,848	16,730	34,002	51,558
			Naturalized	160	611	1,086	2,850	16,732	34,004	51,558
		March	Historical	128	793	1,090	3,043	15,599	31,268	41,429
			Naturalized	128	794	1,092	3,045	15,583	31,231	41,349
		April	Historical	61	546	2,446	8,721	13,862	35,574	89,179
			Naturalized	61	547	2,448	8,722	13,863	35,544	89,179
		May	Historical	607	942	3,621	8,371	16,976	40,596	69,114
			Naturalized	607	906	3,606	8,373	16,966	40,555	69,129
June	Historical	2	391	1,523	4,596	14,682	28,847	45,775		
	Naturalized	2	367	1,542	4,598	14,705	28,806	45,775		
July	Historical	0	180	762	2,002	4,256	9,991	27,178		
	Naturalized	0	194	764	1,926	4,242	9,992	27,180		
August	Historical	10	128	343	1,319	2,267	3,229	10,695		
	Naturalized	10	138	327	1,226	2,268	3,229	10,627		
September	Historical	30	135	598	1,613	4,171	6,848	8,452		
	Naturalized	30	136	542	1,614	4,171	6,807	8,466		
October	Historical	35	206	611	2,489	4,820	16,316	68,485		
	Naturalized	35	207	613	2,501	4,831	16,317	68,485		
November	Historical	63	197	574	2,532	5,602	14,849	60,930		
	Naturalized	63	198	576	2,460	5,605	14,850	60,932		
December	Historical	75	198	685	2,511	9,607	27,787	55,664		
	Naturalized	75	200	687	2,514	9,571	27,788	55,666		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
GALA57	San Gabriel River at Laneport	All Months	Historical	0	260	823	4,709	19,023	46,057	146,166
			Naturalized	0	469	1,938	5,934	20,892	45,534	212,283
		January	Historical	155	321	1,482	9,169	17,954	39,857	129,100
			Naturalized	581	1,578	2,626	9,928	18,824	42,069	128,984
		February	Historical	113	292	1,453	7,251	27,379	43,965	90,325
			Naturalized	1,134	1,730	2,857	9,453	31,785	52,413	200,960
		March	Historical	131	495	3,034	10,471	35,307	59,538	135,886
			Naturalized	447	2,031	3,526	11,669	39,108	54,576	97,229
		April	Historical	41	357	2,426	10,083	29,870	59,060	100,245
			Naturalized	788	1,796	4,277	12,448	28,281	49,471	144,130
		May	Historical	41	634	2,024	17,932	43,111	57,634	129,297
			Naturalized	0	1,658	6,709	21,935	46,376	64,961	147,347
June	Historical	33	585	1,038	11,595	27,416	67,711	138,472		
	Naturalized	0	976	2,614	10,710	26,120	56,020	212,283		
July	Historical	12	219	682	3,040	16,502	65,671	135,001		
	Naturalized	0	3	680	3,542	15,811	23,710	133,538		
August	Historical	1	118	323	1,993	4,441	12,803	93,679		
	Naturalized	0	0	90	1,887	5,638	12,664	33,074		
September	Historical	0	200	300	1,269	6,632	20,660	85,230		
	Naturalized	0	0	463	2,901	6,989	21,208	96,667		
October	Historical	37	198	332	2,624	6,847	23,945	67,020		
	Naturalized	0	22	683	3,773	11,208	35,617	92,620		
November	Historical	150	258	394	3,463	17,076	37,389	77,609		
	Naturalized	0	418	1,563	4,956	16,665	40,488	155,066		
December	Historical	185	301	587	8,531	19,680	37,675	146,166		
	Naturalized	165	530	1,958	8,479	26,191	39,811	153,129		

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
LRCA58	Little River at Cameron	All Months	Historical	47	5,937	13,103	37,628	129,781	310,850	1,068,932
			Naturalized	0	4,944	14,719	43,328	131,670	295,153	1,403,134
		January	Historical	1,551	5,027	10,933	37,177	118,731	303,390	594,069
			Naturalized	1,363	6,164	12,473	42,617	127,251	299,630	691,179
		February	Historical	2,339	6,576	14,235	38,470	167,098	299,895	749,554
			Naturalized	2,140	9,429	19,863	45,050	201,148	382,133	1,403,134
		March	Historical	1,402	9,305	18,694	55,180	218,049	367,914	886,810
			Naturalized	1,125	11,989	23,302	68,384	227,531	417,881	690,402
		April	Historical	981	9,343	26,696	74,186	178,466	353,504	727,339
			Naturalized	2,811	14,894	36,558	79,325	182,547	352,420	929,046
		May	Historical	8,116	19,268	45,786	123,249	289,513	485,346	1,068,932
			Naturalized	200	30,861	52,925	149,753	282,427	570,175	1,318,820
	Historical	901	13,800	32,911	75,702	202,652	410,731	692,965		
	Naturalized	475	12,949	27,609	83,808	199,260	400,058	1,183,013		
	Historical	97	8,581	16,007	31,783	109,649	321,255	795,114		
	Naturalized	0	5,755	13,799	30,485	70,482	200,477	1,069,600		
August	Historical	136	4,352	7,849	16,387	38,623	94,983	699,768		
	Naturalized	0	1,056	6,169	14,223	39,978	71,601	274,190		
September	Historical	122	3,966	7,716	19,107	60,875	115,987	598,413		
	Naturalized	0	2,412	7,438	19,345	60,748	128,419	366,857		
October	Historical	47	3,074	8,234	23,189	90,866	205,506	623,419		
	Naturalized	0	2,939	8,288	31,946	96,821	242,506	753,700		
November	Historical	914	4,316	9,004	26,249	95,067	227,401	506,134		
	Naturalized	554	2,950	8,780	29,583	102,988	218,574	882,268		
December	Historical	1,410	4,658	10,181	31,392	133,241	252,664	610,155		
	Naturalized	1,155	2,660	11,356	37,390	138,568	247,228	1,320,476		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
BRBR59	Brazos River near Bryan	All Months	Historical	6,831	35,590	62,824	126,110	359,003	775,206	3,237,025
			Naturalized	0	24,827	54,090	150,417	402,524	788,812	4,704,304
		January	Historical	12,424	26,229	55,975	133,133	335,068	631,857	2,838,347
			Naturalized	1,882	24,772	45,639	127,390	340,187	662,972	1,814,637
		February	Historical	12,734	30,171	51,444	131,673	428,098	686,370	2,489,256
			Naturalized	17,344	33,901	61,397	160,813	495,138	750,529	3,502,061
		March	Historical	16,669	35,296	62,824	157,541	518,082	943,751	2,542,810
			Naturalized	13,702	41,461	79,232	222,291	599,480	1,161,215	1,901,725
		April	Historical	24,280	40,265	82,091	223,552	515,882	829,121	2,001,322
			Naturalized	17,204	62,087	121,968	239,131	496,737	987,143	2,575,745
		May	Historical	28,002	69,932	119,854	380,062	897,169	1,505,843	3,237,025
			Naturalized	12,652	73,491	177,824	446,037	1,027,687	1,759,688	4,704,304
June	Historical	19,425	61,508	103,979	243,019	683,380	1,278,250	2,999,008		
	Naturalized	10,517	48,755	117,198	243,231	685,554	1,260,808	3,007,325		
July	Historical	35,270	51,194	67,124	108,734	296,212	666,851	2,932,369		
	Naturalized	0	20,333	41,412	115,593	274,730	535,936	2,639,665		
August	Historical	17,508	39,387	57,369	88,780	134,782	252,111	1,097,876		
	Naturalized	29	8,694	24,596	78,151	149,862	291,972	767,999		
September	Historical	12,857	32,550	48,033	74,367	145,171	290,079	919,544		
	Naturalized	3,145	16,173	38,604	85,386	182,428	402,881	929,514		
October	Historical	6,831	26,902	44,215	100,175	256,160	665,014	1,586,420		
	Naturalized	1,625	26,719	46,252	126,400	359,269	739,307	1,815,178		
November	Historical	11,577	23,525	42,703	86,423	330,610	580,017	1,445,236		
	Naturalized	4,617	17,869	38,832	84,513	310,670	552,440	2,011,502		
December	Historical	10,489	23,935	48,980	118,275	353,616	643,412	1,967,524		
	Naturalized	6,255	15,416	33,157	113,440	374,828	674,031	3,906,483		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
MYDB60	Middle Yegua Creek near Dime Box	All Months	Historical	0	0	124	670	3,002	11,532	95,133
			Naturalized	0	0	124	668	2,997	11,529	95,133
		January	Historical	0	153	512	1,369	3,690	12,909	29,601
			Naturalized	0	148	509	1,369	3,690	12,902	29,591
		February	Historical	0	225	469	1,783	5,472	11,717	51,225
			Naturalized	0	221	469	1,783	5,464	11,717	51,206
		March	Historical	40	341	626	1,511	6,471	15,979	19,593
			Naturalized	40	341	623	1,508	6,465	15,979	19,593
		April	Historical	43	216	462	1,116	3,406	6,946	21,114
			Naturalized	43	209	462	1,116	3,406	6,943	21,114
		May	Historical	0	383	671	2,059	10,019	22,845	95,133
			Naturalized	0	383	668	2,059	10,011	22,845	95,133
June	Historical	0	38	192	1,011	4,855	14,240	62,573		
	Naturalized	0	38	190	1,003	4,855	14,232	62,553		
July	Historical	0	0	14	188	694	2,014	39,029		
	Naturalized	0	0	14	185	692	2,011	39,029		
August	Historical	0	0	0	58	347	804	1,552		
	Naturalized	0	0	0	58	335	799	1,552		
September	Historical	0	0	0	178	427	1,551	21,909		
	Naturalized	0	0	0	174	427	1,551	21,909		
October	Historical	0	0	20	309	1,364	9,220	23,645		
	Naturalized	0	0	12	304	1,364	9,220	23,634		
November	Historical	0	0	34	701	2,998	23,282	44,412		
	Naturalized	0	0	32	696	2,993	23,279	44,412		
December	Historical	0	0	184	735	6,242	19,978	42,655		
	Naturalized	0	0	182	733	6,241	19,972	42,649		

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
EYDB61	East Yegua Creek near Dime Box	All Months	Historical	0	54	280	1,172	3,520	12,797	103,952
			Naturalized	0	276	476	1,232	3,581	12,334	103,705
		January	Historical	157	265	742	1,741	5,892	13,333	25,704
			Naturalized	0	351	519	1,772	5,868	12,745	25,545
		February	Historical	105	265	1,025	2,340	7,773	11,840	53,746
			Naturalized	0	293	565	2,145	7,440	11,933	52,708
		March	Historical	152	343	1,068	2,192	9,332	15,717	21,729
			Naturalized	246	535	1,040	2,218	8,999	15,794	21,609
		April	Historical	39	262	834	1,666	4,175	10,529	21,632
			Naturalized	0	373	813	1,811	4,107	10,477	22,523
		May	Historical	183	459	1,147	2,703	10,435	19,806	103,952
			Naturalized	298	593	1,170	2,843	10,642	19,693	103,705
		June	Historical	9	66	395	1,551	6,832	21,339	48,367
			Naturalized	410	510	668	1,586	7,033	21,965	47,898
		July	Historical	0	3	47	248	1,237	4,071	21,350
			Naturalized	248	377	483	658	1,436	4,262	21,307
		August	Historical	0	0	5	142	912	1,682	4,124
			Naturalized	84	285	425	539	1,244	1,808	3,956
		September	Historical	0	3	96	360	1,216	1,820	30,113
			Naturalized	30	143	262	576	1,209	2,132	30,038
		October	Historical	0	21	110	632	1,467	11,327	30,932
			Naturalized	0	199	295	537	1,461	11,133	29,862
		November	Historical	1	64	256	1,130	3,141	18,210	42,700
			Naturalized	11	197	366	887	3,167	18,356	42,408
		December	Historical	47	139	361	1,424	6,335	17,041	40,050
			Naturalized	0	168	282	1,028	6,315	17,326	40,048

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
YCSO62	Yegua Creek near Somerville	All Months	Historical	0	11	89	2,395	19,241	56,824	206,848
			Naturalized	0	0	552	3,358	18,291	60,200	360,820
		January	Historical	1	14	90	3,921	18,772	41,772	81,868
			Naturalized	0	263	1,043	7,871	23,667	69,338	165,599
		February	Historical	1	14	198	10,760	36,472	55,353	91,014
			Naturalized	174	865	1,669	13,032	38,987	64,971	73,363
		March	Historical	0	24	110	4,608	32,852	56,751	86,646
			Naturalized	22	785	2,124	7,373	21,756	63,671	108,429
		April	Historical	3	130	1,797	5,500	30,343	59,845	134,761
			Naturalized	0	1,181	2,944	6,297	27,535	75,243	136,002
		May	Historical	0	144	2,822	14,003	40,383	70,112	188,188
			Naturalized	0	1,624	5,937	13,797	43,243	87,226	360,820
		June	Historical	0	186	1,673	8,713	41,347	86,400	113,036
			Naturalized	0	542	1,646	5,455	38,262	95,486	198,692
		July	Historical	0	11	96	915	14,037	80,787	206,848
			Naturalized	0	0	445	1,134	4,401	18,933	206,846
		August	Historical	0	0	7	121	2,454	22,830	102,924
			Naturalized	0	0	0	297	1,033	5,144	99,749
		September	Historical	0	0	26	291	3,686	15,560	140,154
			Naturalized	0	0	94	659	3,688	12,663	140,131
		October	Historical	0	0	45	173	3,037	34,459	136,381
			Naturalized	0	0	0	759	11,854	38,271	136,113
		November	Historical	0	1	52	314	18,260	55,946	97,702
			Naturalized	0	0	0	1,950	20,636	60,904	110,642
		December	Historical	0	11	72	722	18,373	66,599	132,819
			Naturalized	0	0	324	3,164	18,341	66,609	132,817

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
DCLY63	Davidson Creek near Lyons	All Months	Historical	0	1	56	516	3,804	14,814	75,604
			Naturalized	0	0	40	497	3,798	14,814	75,604
		January	Historical	1	76	367	1,331	8,587	16,393	42,242
			Naturalized	0	68	347	1,311	8,587	16,335	42,165
		February	Historical	20	75	296	2,235	12,128	16,810	54,528
			Naturalized	20	57	282	2,194	12,107	16,785	54,457
		March	Historical	27	125	535	2,329	8,114	18,982	35,471
			Naturalized	9	87	525	2,313	8,092	18,952	35,471
		April	Historical	12	120	298	911	5,392	15,935	41,189
			Naturalized	0	99	260	911	5,366	15,895	41,165
		May	Historical	38	108	552	2,126	11,447	22,033	75,604
			Naturalized	0	105	532	2,106	11,447	22,004	75,604
		June	Historical	1	24	170	981	5,521	24,038	55,277
			Naturalized	0	15	148	963	5,488	24,000	55,277
		July	Historical	0	0	7	60	345	2,910	13,250
			Naturalized	0	0	0	37	310	2,888	13,250
		August	Historical	0	0	0	15	90	650	2,610
			Naturalized	0	0	0	2	71	650	2,559
		September	Historical	0	0	1	24	725	3,303	25,446
			Naturalized	0	0	0	12	682	3,264	25,428
		October	Historical	0	0	11	215	3,241	15,699	54,506
			Naturalized	0	0	3	190	3,241	15,699	54,457
		November	Historical	0	0	64	497	3,311	15,438	30,541
			Naturalized	0	0	34	472	3,296	15,428	30,541
		December	Historical	0	1	115	1,069	6,761	18,217	39,705
			Naturalized	0	0	88	1,046	6,735	18,195	39,642

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Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
NAGR64	Navasota River above Groesbeck	All Months	Historical	0	0	6	256	7,194	26,372	108,163
			Naturalized	0	0	114	683	7,273	26,800	109,456
		January	Historical	0	1	136	2,481	13,523	30,511	49,581
			Naturalized	74	151	451	2,499	14,142	31,631	49,554
		February	Historical	0	2	292	6,488	17,870	41,726	50,483
			Naturalized	163	263	646	6,434	18,270	42,056	50,916
		March	Historical	0	155	2,174	7,254	19,342	38,944	68,168
			Naturalized	288	484	2,485	7,273	19,605	38,427	74,999
		April	Historical	0	32	266	946	7,759	29,456	72,798
			Naturalized	32	233	432	1,305	5,005	29,879	75,928
		May	Historical	0	15	67	3,927	15,633	60,235	108,163
			Naturalized	0	141	396	3,950	15,356	62,825	109,456
June	Historical	0	0	23	371	13,891	28,193	38,549		
	Naturalized	0	0	190	741	13,506	29,040	39,739		
July	Historical	0	0	2	18	176	2,427	53,207		
	Naturalized	0	0	0	65	682	1,466	52,411		
August	Historical	0	0	0	3	32	1,634	35,026		
	Naturalized	0	0	0	40	373	2,227	35,338		
September	Historical	0	0	0	5	51	562	4,378		
	Naturalized	0	0	0	143	453	2,245	5,421		
October	Historical	0	0	0	23	2,566	18,154	61,855		
	Naturalized	0	0	58	299	3,558	20,726	72,530		
November	Historical	0	0	0	43	3,201	26,452	54,835		
	Naturalized	0	10	44	175	3,357	26,465	54,871		
December	Historical	0	0	11	492	17,931	39,806	70,927		
	Naturalized	0	45	181	1,840	19,341	39,221	82,278		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
BGFR65	Big Creek near Freestone	All Months	Historical	0	0	40	460	3,380	10,354	45,512
			Naturalized	0	0	38	460	3,376	10,345	45,512
		January	Historical	12	94	290	1,896	4,811	16,682	22,722
			Naturalized	0	86	288	1,887	4,815	16,670	22,722
		February	Historical	67	174	416	2,981	8,464	14,733	17,066
			Naturalized	67	171	408	2,993	8,457	14,719	17,057
		March	Historical	36	314	885	4,239	8,407	14,716	23,739
			Naturalized	36	313	885	4,228	8,402	14,716	23,739
		April	Historical	12	246	423	794	2,756	13,261	31,706
			Naturalized	12	245	420	784	2,749	13,253	31,706
		May	Historical	5	114	415	2,134	7,360	17,227	39,693
			Naturalized	5	111	415	2,134	7,354	17,212	39,693
June	Historical	0	2	51	779	2,701	8,603	18,319		
	Naturalized	0	2	50	779	2,701	8,593	18,319		
July	Historical	0	0	1	61	151	1,274	45,512		
	Naturalized	0	0	11	66	160	1,274	45,512		
August	Historical	0	0	0	3	215	603	1,718		
	Naturalized	0	0	0	17	218	606	1,718		
September	Historical	0	0	1	29	154	728	2,615		
	Naturalized	0	0	0	22	154	730	2,609		
October	Historical	0	0	1	52	1,232	12,872	27,805		
	Naturalized	0	0	0	51	1,224	12,865	27,805		
November	Historical	0	0	5	379	3,167	9,286	16,614		
	Naturalized	0	0	4	378	3,159	9,286	16,614		
December	Historical	0	3	171	2,286	8,278	13,762	37,454		
	Naturalized	0	0	170	2,282	8,273	13,757	37,449		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
NAEA66	Navasota River near Easterly	All Months	Historical	6	321	936	3,307	26,821	86,709	322,433
			Naturalized	0	104	928	5,774	29,495	89,773	332,958
		January	Historical	145	650	1,227	9,593	37,257	106,225	182,860
			Naturalized	129	721	2,993	14,995	42,193	106,690	182,840
		February	Historical	740	1,291	1,963	17,584	54,674	115,748	191,103
			Naturalized	728	2,272	5,385	20,216	62,506	117,865	186,852
		March	Historical	301	1,142	3,205	20,040	62,865	111,045	156,042
			Naturalized	269	1,711	6,055	23,922	64,531	117,892	173,701
		April	Historical	296	1,122	2,813	11,353	37,741	124,027	236,021
			Naturalized	331	1,654	5,165	12,749	39,822	125,250	236,075
		May	Historical	423	1,568	3,283	20,805	78,155	171,988	319,422
			Naturalized	0	2,079	6,590	23,561	80,326	183,764	319,449
June	Historical	112	605	1,033	8,000	36,914	80,641	166,255		
	Naturalized	0	158	1,166	9,218	42,047	80,543	166,295		
July	Historical	23	137	533	1,680	3,670	13,125	247,575		
	Naturalized	0	0	154	836	3,517	13,341	244,818		
August	Historical	6	52	247	812	3,167	10,314	63,453		
	Naturalized	0	0	24	466	1,622	12,839	67,847		
September	Historical	14	100	347	1,098	2,912	5,788	96,026		
	Naturalized	0	0	76	915	3,388	9,508	95,798		
October	Historical	11	143	341	1,378	4,148	57,647	155,400		
	Naturalized	0	0	155	2,017	11,002	74,567	157,953		
November	Historical	25	437	768	1,549	15,465	79,926	241,523		
	Naturalized	0	57	858	2,815	20,068	89,396	230,522		
December	Historical	135	559	992	3,665	57,708	112,675	322,433		
	Naturalized	0	487	1,475	11,904	58,606	111,139	332,958		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
NABR67	Navasota River near Bryan	All Months	Historical	0	422	1,763	6,547	36,664	116,403	373,555
			Naturalized	0	327	1,940	8,473	40,270	121,647	384,272
		January	Historical	406	1,519	3,117	16,322	37,023	134,404	247,743
			Naturalized	395	1,905	5,105	16,453	46,986	134,834	247,798
		February	Historical	2,019	2,978	5,507	28,876	55,646	143,029	266,019
			Naturalized	2,321	4,279	9,017	30,245	60,041	145,590	261,984
		March	Historical	2,176	2,954	9,732	20,126	67,597	131,871	193,162
			Naturalized	2,409	3,718	10,857	21,120	67,715	156,182	193,294
		April	Historical	1,107	2,795	5,538	15,036	83,422	132,079	271,938
			Naturalized	1,184	3,382	7,154	16,356	84,957	160,166	272,649
		May	Historical	934	4,059	8,047	51,017	115,712	191,364	338,182
			Naturalized	655	4,729	11,491	51,487	120,593	215,725	338,069
June	Historical	495	1,239	1,916	8,392	60,048	138,361	192,093		
	Naturalized	384	1,274	2,120	8,775	60,225	147,821	191,668		
July	Historical	25	192	353	1,184	5,596	32,409	52,143		
	Naturalized	0	114	284	1,252	7,481	32,665	52,670		
August	Historical	0	42	242	1,164	2,822	14,563	25,103		
	Naturalized	0	20	107	593	3,190	16,269	34,275		
September	Historical	0	86	406	1,848	3,330	24,227	146,152		
	Naturalized	0	64	262	1,762	4,719	24,999	146,714		
October	Historical	0	112	560	1,767	8,160	83,632	205,258		
	Naturalized	0	11	525	4,212	17,369	93,305	207,797		
November	Historical	175	576	2,396	4,637	20,832	67,736	244,427		
	Naturalized	0	450	2,633	5,909	22,257	68,269	233,457		
December	Historical	173	1,087	2,059	11,913	75,259	166,676	373,555		
	Naturalized	0	1,187	2,860	16,104	75,301	165,755	384,272		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
BRHE68	Brazos River near Hempstead	All Months	Historical	11,113	50,376	85,049	194,910	546,278	1,078,253	4,296,198
			Naturalized	107	40,584	81,662	220,260	574,462	1,152,844	5,723,474
		January	Historical	23,746	48,619	86,217	222,169	555,868	1,025,385	3,443,306
			Naturalized	4,982	40,624	82,986	240,928	589,597	1,068,036	2,451,846
		February	Historical	27,392	42,080	101,688	273,382	635,896	1,047,483	3,149,752
			Naturalized	38,079	49,950	104,924	272,808	765,922	1,160,695	4,310,347
		March	Historical	26,186	55,508	99,145	266,182	800,435	1,261,962	3,102,149
			Naturalized	23,137	54,862	131,583	322,592	872,715	1,402,215	2,411,111
		April	Historical	32,751	61,533	124,279	294,700	704,182	1,174,133	2,550,744
			Naturalized	42,889	85,494	153,638	324,656	732,294	1,279,900	2,609,293
		May	Historical	58,633	104,518	194,207	471,263	1,259,727	1,924,840	4,296,198
			Naturalized	45,748	114,475	232,068	545,862	1,376,002	2,174,316	5,723,474
	Historical	38,368	84,583	148,711	328,979	929,822	1,702,851	3,092,231		
	Naturalized	17,069	76,161	168,062	334,265	957,798	1,745,699	3,198,214		
	Historical	50,235	71,825	86,152	136,304	378,253	870,346	3,574,213		
	Naturalized	1,643	31,992	64,717	149,672	342,448	679,029	3,332,536		
August	Historical	23,935	47,102	70,061	99,641	206,514	305,078	1,286,082		
	Naturalized	107	13,023	35,883	97,885	196,449	325,127	770,922		
September	Historical	26,999	42,804	70,177	100,069	198,610	492,912	1,072,740		
	Naturalized	9,614	24,224	62,127	122,051	232,631	540,306	1,456,569		
October	Historical	11,113	35,560	56,544	136,642	317,059	803,384	1,526,876		
	Naturalized	9,639	33,378	62,405	156,577	454,565	1,090,233	1,749,062		
November	Historical	16,502	37,313	66,289	138,621	437,534	902,993	1,754,579		
	Naturalized	12,782	32,074	58,569	149,401	421,815	948,787	2,444,548		
December	Historical	18,407	40,695	74,658	181,944	521,336	1,080,442	2,556,694		
	Naturalized	14,457	24,908	63,508	167,655	564,194	1,052,006	4,205,115		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
MCBL69	Mill Creek near Bellville	All Months	Historical	0	240	699	3,058	12,372	41,673	125,827
			Naturalized	0	231	683	3,032	12,350	41,651	125,766
		January	Historical	616	893	3,282	8,918	17,626	52,126	83,026
			Naturalized	616	882	3,260	8,918	17,615	52,075	83,005
		February	Historical	398	809	2,414	8,934	26,481	38,820	125,827
			Naturalized	398	809	2,403	8,908	26,481	38,809	125,766
		March	Historical	374	1,292	3,919	8,684	19,399	59,346	73,902
			Naturalized	374	1,292	3,896	8,665	19,379	59,307	73,874
		April	Historical	176	983	2,029	5,096	19,316	51,600	95,447
			Naturalized	176	983	2,003	5,068	19,307	51,592	95,396
		May	Historical	82	612	1,833	10,600	35,334	76,523	125,667
			Naturalized	82	612	1,805	10,569	35,329	76,499	125,667
June	Historical	71	229	715	2,926	41,592	97,945	120,347		
	Naturalized	71	222	715	2,926	41,568	97,908	120,290		
July	Historical	5	120	341	894	2,833	9,327	28,903		
	Naturalized	5	115	327	868	2,802	9,312	28,903		
August	Historical	0	80	195	338	1,027	3,963	18,553		
	Naturalized	0	70	165	311	988	3,941	18,532		
September	Historical	0	99	243	611	3,116	9,378	71,542		
	Naturalized	0	97	243	611	3,098	9,359	71,522		
October	Historical	9	186	317	1,023	5,580	26,804	61,956		
	Naturalized	9	158	298	1,009	5,549	26,798	61,956		
November	Historical	49	264	733	2,217	12,945	49,411	93,701		
	Naturalized	49	245	728	2,197	12,925	49,384	93,701		
December	Historical	198	559	1,162	5,259	12,586	55,860	90,498		
	Naturalized	198	534	1,153	5,247	12,564	55,846	90,475		

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
BRR170	Brazos River at Richmond	All Months	Historical	12,474	52,185	90,357	217,746	585,942	1,178,974	4,746,446
			Naturalized	0	51,079	100,954	251,252	626,253	1,230,774	6,135,967
		January	Historical	29,619	55,580	104,631	260,837	658,329	1,137,104	3,719,008
			Naturalized	10,858	52,626	95,292	283,245	667,148	1,224,750	2,762,863
		February	Historical	25,561	52,351	120,030	305,157	704,008	1,098,137	3,129,917
			Naturalized	41,410	55,756	122,380	306,978	776,150	1,155,871	4,261,375
		March	Historical	27,388	57,980	134,251	322,761	890,480	1,295,500	3,324,298
			Naturalized	29,087	59,982	143,719	352,775	960,491	1,457,346	2,663,016
		April	Historical	22,477	55,628	116,186	338,499	715,472	1,255,124	2,493,223
			Naturalized	35,457	85,512	159,350	396,985	821,058	1,375,710	2,559,708
		May	Historical	42,057	87,958	199,314	483,749	1,274,633	2,109,914	4,746,446
			Naturalized	48,673	153,199	232,868	560,509	1,432,314	2,227,163	6,135,967
		June	Historical	27,275	69,624	151,650	363,481	1,052,489	1,810,578	3,473,058
			Naturalized	16,825	83,992	193,303	396,687	1,067,774	1,896,375	3,446,269
		July	Historical	36,928	55,295	83,282	148,324	386,078	980,858	3,751,337
			Naturalized	0	49,198	83,662	175,440	435,584	802,626	3,533,758
		August	Historical	22,856	38,469	62,339	97,712	227,485	364,674	1,437,619
			Naturalized	0	21,372	50,769	114,775	219,607	388,296	946,463
		September	Historical	24,647	36,965	69,251	116,394	246,521	484,110	1,180,979
			Naturalized	2,277	32,966	73,849	148,663	268,013	574,926	1,557,058
		October	Historical	12,474	40,773	65,432	171,015	374,097	812,610	1,768,542
			Naturalized	12,295	44,324	73,328	201,304	458,354	1,023,020	1,821,342
		November	Historical	17,411	46,603	76,204	153,733	494,489	1,050,293	1,925,554
			Naturalized	16,645	42,676	74,133	168,421	464,687	1,043,291	2,420,926
		December	Historical	23,381	51,010	79,395	209,832	562,647	1,128,980	3,250,909
			Naturalized	25,035	32,310	82,551	225,022	579,076	1,132,406	3,718,155

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
BGNE71	Big Creek near Needville	All Months	Historical	0	54	132	619	2,612	6,876	27,782
			Naturalized	0	0	50	526	2,489	6,648	27,782
		January	Historical	0	102	358	1,430	3,786	6,553	11,427
			Naturalized	0	7	226	1,345	3,726	6,399	11,346
		February	Historical	2	84	149	1,475	3,375	5,690	12,385
			Naturalized	0	0	21	1,376	3,375	5,382	12,385
		March	Historical	0	19	68	537	2,779	4,642	7,981
			Naturalized	0	0	11	356	2,670	4,491	7,981
		April	Historical	0	67	134	590	2,734	8,120	12,990
			Naturalized	0	0	36	435	2,446	7,892	12,919
		May	Historical	20	98	203	1,115	3,677	8,317	22,199
			Naturalized	0	0	132	1,067	3,667	8,255	21,772
		June	Historical	1	84	155	529	2,087	12,035	27,782
			Naturalized	0	0	104	478	1,820	11,998	27,782
		July	Historical	1	70	143	367	765	3,980	15,634
			Naturalized	0	0	48	275	655	3,664	15,200
		August	Historical	0	62	144	244	935	5,007	17,492
			Naturalized	0	0	28	178	775	5,007	17,399
		September	Historical	0	42	117	467	2,231	8,977	23,714
			Naturalized	0	0	33	328	2,095	8,659	23,650
		October	Historical	0	24	71	558	2,749	12,202	21,512
			Naturalized	0	0	14	335	2,473	11,893	21,135
		November	Historical	0	45	125	941	2,836	8,338	18,646
			Naturalized	0	0	43	822	2,744	8,053	18,240
		December	Historical	0	36	122	1,192	3,156	6,149	11,944
			Naturalized	0	0	47	1,026	3,094	6,029	11,748

Appendix C

Monthly flow in Acre-feet (Historical/Naturalized)

Control Point	Description	Period	Type	Min	10th	25th	50th	75th	90th	Max
BRRO72	Brazos River at Rosharon	All Months	Historical	13,591	40,980	85,739	224,172	629,375	1,285,225	4,339,835
			Naturalized	13,515	61,802	121,043	287,756	704,649	1,388,093	4,603,451
		January	Historical	33,352	75,327	159,911	387,947	688,284	1,230,516	4,339,835
			Naturalized	41,869	77,464	162,668	406,402	681,864	1,415,762	3,394,321
		February	Historical	25,061	50,028	162,570	425,514	732,485	1,170,456	3,482,975
			Naturalized	46,383	67,065	167,457	412,848	814,651	1,268,868	4,603,451
		March	Historical	30,635	57,092	135,760	479,881	1,031,568	1,497,322	3,699,174
			Naturalized	58,982	90,588	202,489	540,516	1,095,489	1,686,592	3,054,388
		April	Historical	16,562	36,342	109,924	368,501	901,785	1,326,581	1,907,365
			Naturalized	59,383	91,422	159,869	462,385	992,868	1,463,189	2,165,941
		May	Historical	19,170	65,561	164,656	492,536	1,196,514	1,620,857	2,421,818
			Naturalized	52,079	127,122	214,966	594,768	1,276,898	1,924,677	4,016,649
	Historical	13,591	27,134	94,516	310,146	1,174,374	2,069,356	3,137,056		
	Naturalized	46,439	88,307	165,811	372,894	1,256,688	2,064,436	3,385,534		
	Historical	15,128	27,421	50,978	114,352	398,633	1,005,658	3,684,692		
	Naturalized	28,739	61,433	92,231	155,226	447,200	826,628	3,476,078		
August	Historical	17,157	33,445	51,328	81,636	207,327	388,042	1,491,173		
	Naturalized	13,515	34,321	53,985	148,666	256,341	517,636	1,014,638		
September	Historical	20,620	31,110	70,219	140,311	219,516	478,875	1,152,536		
	Naturalized	17,575	39,430	97,162	171,656	276,074	580,315	1,536,147		
October	Historical	21,051	40,362	72,787	168,972	418,309	778,680	1,490,618		
	Naturalized	27,061	58,176	80,295	238,925	515,140	1,192,482	1,663,555		
November	Historical	17,242	45,031	106,587	185,375	553,766	1,301,930	1,997,355		
	Naturalized	22,067	43,650	100,374	214,069	547,863	1,437,628	2,367,850		
December	Historical	30,809	54,479	83,111	254,876	849,709	1,222,949	2,217,123		
	Naturalized	26,836	45,481	95,359	293,739	841,842	1,177,293	3,426,567		

## **Appendix D**

Comparisons of Naturalized Flows with Each Other



## **Appendix D**

### **Comparisons of Naturalized Flows with Each Other**

The following table summarizes the comparison of naturalized flows from this study with flows for other primary control points. The  $R^2$  values shown in the table are for a linear regression with zero intercept.



### Appendix D Comparison of Monthly Naturalized Flow Values

Control Point	Location Name	Compared to	Location Name	Ratio of Area	R <sup>2</sup> of Scatter Plot	Slope of Scatter Plot	Slope of Double Mass	Quality of Double Mass Fit?
RWPL01	Running Water Draw at Plainview	WRSP02	White River Reservoir near Spur	0.554	0.3327	0.1534	0.1445	Fair
WRSP02	White River Reservoir near Spur	SFAS06	Salt Fork Brazos River near Aspermont	0.153	0.2578	0.0319	0.0303	Fair
DUGI03	Duck Creek near Girard	SFAS06	Salt Fork Brazos River near Aspermont	0.276	0.7425	0.2046	0.2094	Good
SFPE04	Salt Fork Brazos River near Peacock	DUGI03	Duck Creek near Girard	2.470	0.731	1.4121	1.5914	Good
CRJA05	Croton Creek near Jayton	SFAS06	Salt Fork Brazos River near Aspermont	0.112	0.9082	0.138	0.1316	Very good
SFAS06	Salt Fork Brazos River near Aspermont	SFAS06	Salt Fork Brazos River near Aspermont	0.795	0.988	0.7009	0.6972	Excellent
		SFAS06	Salt Fork Brazos River near Aspermont	0.116	0.902	0.1565	0.16	Excellent
		DMAS09	Double Mountain Fork Brazos River near Aspermont	1.339	0.7044	0.6257	0.6623	Fair
		BRSE11	Brazos River near South Bend	0.190	0.5414	0.0984	0.1132	Fair
		DMAS09	Brazos River near Seymour	0.418	0.8651	0.3213	0.2949	Fair
		DMAS09	Double Mountain Fork Brazos River near Aspermont	0.127	0.5256	0.1555	0.1896	Poor-Fair
		DMAS09	Double Mountain Fork Brazos River near Aspermont	0.131	0.7463	0.2205	0.2321	Fair-Good
		BRSE11	Brazos River near South Bend	0.142	0.4919	0.1326	0.1709	Good
		CRJA05	Croton Creek near Jayton	0.866	0.7669	1.0974	0.4453	Very good
		BRSE11	Brazos River near South Bend	0.019	0.3211	0.0159	0.0188	Poor-Fair
		BRSE11	Brazos River near South Bend	0.456	0.6657	0.3159	0.3837	Very good
		CAST17	California Creek near Stamford	0.218	0.5171	0.2291	0.2158	Good
		BRSE11	Brazos River near South Bend	0.008	0.5257	0.0127	0.0097	Fair
		CFHA14	Clear Fork Brazos River near Hawley	0.161	0.3795	0.1248	0.157	Poor-Fair
		DMAS09	Double Mountain Fork Brazos River near Aspermont	0.122	0.5529	0.0581	0.0604	Fair
		CFNU16	Clear Fork Brazos River at Nugent	0.644	0.9135	0.4641	0.4712	Excellent
		CFFG18	Clear Fork Brazos River at Fort Griffin	0.355	0.6518	0.1901	0.26	Good
		CFHA14	Clear Fork Brazos River at Hawley	0.145	0.8005	0.1599	0.1726	Very Good
		CFFG18	Clear Fork Brazos River at Fort Griffin	0.051	0.6431	0.0331	0.0429	Good
		CFFG18	Clear Fork Brazos River at Fort Griffin	0.551	0.7006	0.4064	0.5306	Good
		CFFG18	Clear Fork Brazos River at Fort Griffin	0.120	0.8291	0.163	0.1694	Good
		BRSE11	Brazos River near South Bend	0.304	0.8151	0.2839	0.2641	Good

Control Point	Location Name	Compared to	Location Name	Ratio of Area	R <sup>2</sup> of Scatter Plot	Slope of Scatter Plot	Slope of Double Mass	Quality of Double Mass Fit?
HCAL19	Hubbard Creek below Albany	BSBR20 HCBR21	Big Sandy Creek above Breckenridge Hubbard Creek near Breckenridge	2.189 0.563	0.5808 0.9138	1.8991 0.6021	2.1891 0.5711	Poor Good
BSBR20	Big Sandy Creek above Breckenridge	HCBR21	Hubbard Creek near Breckenridge	0.257	0.7552	0.2292	0.2609	Fair
HCBR21	Hubbard Creek near Breckenridge	CFEL22	Clear Fork Brazos River at Eliasville	0.191	0.8108	0.3389	0.3098	Good
CFEL22	Hubbard Creek near Breckenridge	CFFG18	Clear Fork Brazos River at Fort Griffin	0.273	0.5893	0.4846	0.5512	Fair-Good
BR26	Clear Fork Brazos River at Eliasville	BR26	Brazos River near South Bend	0.435	0.9094	0.4882	0.4698	Good-Very good
BR27	Brazos River near South Bend	SHGR26	Brazos River at Morris Shepard Dam near Graford	0.934	0.9674	0.8405	0.8429	Excellent
GHGH24	Lake Graham near Graham	CCIV25	Big Cedar Creek near Ivan	2.278	0.5187	3.0577	2.8159	Poor-Fair
CCIV25	Big Cedar Creek near Ivan	SHGR26- BR26*	Brazos River at Morris Shepard Dam near Graford - Brazos River near South Bend * 0.98237	0.239	0.5557	0.3165	0.2922	Poor
SHGR26	Big Cedar Creek near Ivan	SHGR26- BR26*	Brazos River at Morris Shepard Dam near Graford - Brazos River near South Bend * 0.98237	0.105	0.7756	0.0898	0.1038	Poor
BR27	Brazos River at Morris Shepard Dam near Graford	BR27	Brazos River near Palo Pinto	0.985	0.9947	0.98	0.9623	Very good
BR28	Brazos River near Palo Pinto	BR28	Brazos River near Dennis	0.909	0.9321	0.7954	0.8029	Excellent
PPSA28	Palo Pinto Creek near Santo	PAGR31	Paluxy River at Glen Rose	1.398	0.5454	0.8471	1.0258	Poor-Fair
BR29	Brazos River near Dennis	BR29- BR27*	Brazos River near Dennis - Brazos River near Palo Pinto * 0.98032	0.402	0.7644	0.2238	0.3086	Good
BR30	Brazos River near Glen Rose	BR30	Brazos River near Glen Rose	0.964	0.9926	0.9012	0.8905	Excellent
PAGR31	Paluxy River at Glen Rose	BRAQ33- BR30*	Brazos River near Aquilla Brazos River near Aquilla - Brazos River near Glen Rose * 0.97801	0.919 0.288	0.9435 0.6888	0.8181 0.1664	0.7708 0.1798	Good Fair
NRBL32	Nolan River at Blum	BR30- BR29*	Brazos River near Glen Rose - Brazos River near Dennis * 0.98000	0.706	0.4522	0.3313	0.4451	Fair
BRAQ33	Brazos River near Aquilla	NRBL32	Nolan River at Blum	1.454	0.6883	0.7472	0.8202	Good-Very good
AQAQ34	Aquilla Creek near Aquilla	AQAQ34- BR30*	Aquilla Creek near Aquilla Brazos River near Aquilla - Brazos River near Glen Rose * 0.97801	0.916 0.198	0.5771 0.7215	0.5573 0.1966	0.7036 0.2192	Good Fair-Good
BRWA41	Brazos River near Aquilla	BRWA41	Brazos River at Waco	0.884	0.9377	0.7217	0.6949	Excellent
BOWA40	Brazos River near Aquilla	BRWA41- BOWA40*	Brazos River at Waco - Bosque River near Waco * 0.98510	0.963	0.9841	0.883	0.8582	Very good
AQAQ34	Aquilla Creek near Aquilla	AQAQ34- BR30*	Brazos River near Aquilla - Brazos River near Glen Rose * 0.97801	0.216	0.6202	0.2632	0.3026	Good
NBHI35	North Bosque River at Hico	NBCL36 LEHM46	North Bosque River near Clifton Leon River near Hamilton	0.371 0.190	0.877 0.7473	0.2489 0.2479	0.2694 0.2727	Fair-good good

Control Point	Location Name	Compared to	Location Name	Ratio of Area	R <sup>2</sup> of Scatter Plot	Slope of Scatter Plot	Slope of Double Mass	Quality of Double Mass Fit?
NBCL36	North Bosque River near Clifton	NBVM37	North Bosque River at Valley Mills	0.845	0.9752	0.8212	0.794	Very Good
		LEGT47	Leon River at Gatesville	0.413	0.7956	0.6623	0.6439	Good
NBVM37	North Bosque River at Valley Mills	BOWA40	Bosque River near Waco	0.585	0.786	0.5044	0.4449	good
		BOWA40	Bosque River near Waco	0.692	0.8249	0.6208	0.5604	good
MBMG38	Middle Bosque River near McGregor	HGCR39	Hog Creek near Crawford	2.327	0.8593	1.9736	2.1589	Good
		BOWA40-NBCL36*	Bosque River near Waco - North Bosque River near Clifton * 0.93648	0.265	0.7331	0.2431	0.2627	good
HGCR39	Hog Creek near Crawford	BOWA40-NBCL36*	Bosque River near Waco - North Bosque River near Clifton * 0.93648	0.114	0.7795	0.1187	0.1217	Good
BOWA40	Bosque River near Waco	AQAQ34	Aquilla Creek near Aquilla	5.377	0.7098	3.2216	4.0379	good
BRWA41	Brazos River at Waco	BRWA41-BRAQ33*	Brazos River at Waco - Brazos River near Aquilla * 0.98733	0.711	0.9809	0.6088	0.6155	Excellent
		BRHB42	Brazos River at Highbank	0.959	0.9799	0.8575	0.8245	Excellent
BRHB42	Brazos River at Highbank	BRBR59	Brazos River near Bryan	0.697	0.9277	0.5889	0.5728	Excellent
LEDL43	Leon River near De Leon	BRBR59-LRCA58*	Brazos River near Bryan - Little River at Cameron * 0.96473	0.912	0.9802	0.8685	0.8442	Excellent
		SADL44	Sabana River near De Leon	1.814	0.9217	1.5937	1.6412	Excellent
SADL44	Sabana River near De Leon	LEHS45	Leon River near Hasse	0.380	0.9455	0.4036	0.4036	Very Good
LEHS45	Leon River near Hasse	LEHS45	Leon River near Hasse	0.209	0.962	0.2463	0.2459	Very Good
LEHM46	Leon River near Hamilton	LEHM46	Leon River near Hamilton	0.667	0.9248	0.8692	0.7964	Very Good
LEGT47	Leon River at Gatesville	LEGT47	Leon River at Gatesville	0.807	0.9173	0.6615	0.6361	Good
COP148	Cowhouse Creek at Pidcoke	LEBE49	Leon River near Belton	0.661	0.9092	0.5295	0.5082	Fair
		LEHM46*	Leon River at Gatesville - Leon River near Hamilton * 0.97510	1.009	0.7674	0.831	0.801	Good
LEBE49	Leon River near Belton	LEBE49	Leon River near Belton	0.128	0.8931	0.1719	0.1546	Good
LAKE50	Lamparas River near Kempner	LABE52	Lamparas River near Belton	2.681	0.8792	2.02	2.1307	Very Good
		LRLR53	Little River near Little River	0.678	0.9711	0.6033	0.584	Very Good
LAYO51	Lamparas River at Youngsport	COP148	Cowhouse Creek at Pidcoke	1.798	0.8558	1.4327	1.5609	Very Good
LAYO51	Lamparas River at Youngsport	LAYO51	Lamparas River at Youngsport	0.660	0.9865	0.5895	0.5809	Very Good
LABE52	Lamparas River near Belton	LABE52	Lamparas River near Belton	0.939	0.9335	0.9551	0.8859	Very Good
LRLR53	Little River near Little River	LRLR53	Little River near Little River	0.253	0.9474	0.2818	0.2741	Excellent
NGGE54	North Fork San Gabriel River near Georgetown	LRLR53	Little River at Cameron	0.740	0.9266	0.6645	0.6366	Very Good
		LRCAS8-GALA57*	Little River at Cameron - San Gabriel River at Laneport * 0.98762	0.826	0.9393	0.7627	0.7375	Excellent
SGGE55	South Fork San Gabriel R. at Georgetown	SGGE55	South Fork San Gabriel River at Georgetown	1.865	0.9094	1.5677	1.6182	Very good
SGGE55	South Fork San Gabriel R. at Georgetown	GAGE56	San Gabriel River at Georgetown	0.612	0.9837	0.5771	0.5568	Excellent
		GAGE56	San Gabriel River at Georgetown	0.328	0.9614	0.3427	0.3425	Very Good

Control Point	Location Name	Compared to	Location Name	Ratio of Area	R <sup>2</sup> of Scatter Plot	Slope of Scatter Plot	Slope of Double Mass	Quality of Double Mass Fit?
GAGE66	San Gabriel River at Georgetown	GALA57	San Gabriel River at Laneport	0.549	0.9283	0.573	0.5363	Very Good
GALA57	San Gabriel River at Laneport	LRCAS8-LRLR53*	Little River at Cameron - Little River near Little River * 0.97831	0.402	0.809	0.3484	0.3755	Very Good
LRCAS8	Little River at Cameron	BRBR59-BRHB42*	Brazos River near Bryan - Brazos River at Highbank * 0.98035	0.778	0.9721	0.7718	0.7641	Excellent
BRBR59	Brazos River near Bryan	BRHE68	Brazos River near Hempstead	0.873	0.9473	0.7765	0.7447	Excellent
		BRHE68-YCSO62-NABR67*	Brazos River near Hempstead - Yegua Creek near Somerville * 0.97487 - Navasota River near Bryan * 0.95909	0.940	0.9581	0.8826	0.8454	Excellent
MYDB60	Middle Yegua Creek near Dime Box	EYDB61	East Yegua Creek near Dime Box	0.967	0.907	0.9609	0.9216	Very good
		YCSO62	Yegua Creek near Somerville	0.234	0.874	0.1976	0.1837	Good
EYDB61	East Yegua Creek near Dime Box	YCSO62	Yegua Creek near Somerville	0.242	0.9265	0.2026	0.1993	Very good
		DCLY63	Davidson Creek near Lyons	1.251	0.7862	0.8397	0.9323	Very good
YCSO62	Yegua Creek near Somerville	DCLY63	Davidson Creek near Lyons	5.174	0.8268	4.1087	4.677	Very good
DCLY63	Davidson Creek near Lyons							
NAGR64	Navasota River above Groesbeck	NAEA66	Navasota River near Easterly	0.248	0.8794	0.27	0.264	Good
BGFR65	Big Creek near Freestone	NAEA66	Navasota River near Easterly		0.914	0.1062	0.1039	good
		NAEA66-NAGR64*	Navasota River near Easterly - Navasota River above Groesbeck * 0.98678	0.134	0.898	0.1428	0.1405	Fair
NAEA66	Navasota River near Easterly	NABR67	Navasota River near Bryan	0.666	0.968	0.7948	0.7779	Excellent
NABR67	Navasota River near Bryan	LRCAS8	Little River at Cameron	0.206	0.5252	0.2719	0.3218	Fair
		BRBR59-BRWA41-LRCA58*	Brazos River near Bryan - Brazos River at Waco * 0.96681 - Little River at Cameron * 0.96473	0.505	0.721	0.4739	0.493	Good
BRHE68	Brazos River near Hempstead	BRR170	Brazos River at Richmond	0.968	0.9862	0.9433	0.9216	Excellent
MCBL69	Mill Creek near Bellville	YCSO62	Yegua Creek near Somerville	0.373	0.7327	0.5421	0.6166	Fair
BRR170	Brazos River at Richmond	BRRO72	Brazos River at Rosharon	0.991	0.995	0.9628	0.9575	Excellent
BGNE71	Big Creek near Needville	MCBL69	Mill Creek near Bellville	0.114	0.193	0.1075	0.1765	Fair
BRRO72	Brazos River at Rosharon	BRGM73	Brazos River at Gulf of Mexico	0.996	0.9996	1.0051	1.0014	Excellent

Note: \* Loss rates were considered in determining intervening flows.

## **Appendix E**

### Information on Flow Naturalization



## **Appendix E**

### **Information on Flow Naturalization**

Tables E-1 and E-2 list wastewater dischargers in the Brazos River Basin for which data were provided by TCEQ. Table E-3 summarizes the methodology used to determine reservoir content change. Table E-4 gives the location of evaporation and precipitation stations near major reservoirs. Where available, these data were used to calculate net reservoir evaporation. Where these data were not available, Texas Water Development Board quadrangle data were used. Table E-5 summarizes the methodology used to calculate net reservoir evaporation using the quadrangle data. Table E-6 gives the methodology used to calculate quadrangle runoff, which is a factor used to correct for the portion of rainfall that would have become runoff in the absence of a reservoir.



**Table E-1  
Municipal Wastewater Effluent Discharges in the Brazos Basin**

Primary Control Point	TPDES Number	Name	County	Permitted Flow (MGD)	Use in Drought Study
WRSP02	WQ0010537001	City of Plainview	Hale	3.3	Yes
BSLU07	WQ0001895000	City of Lubbock	Lubbock	0.79	No
BSLU07	WQ0010207001	City of Littlefield	Lamb	1.25	No
DMAS09	WQ0010778001	Town of Ransom Canyon	Lubbock	0.41	No
DMAS09	WQ0013048001	City of Post	Garza	0.5	No
BRSE11	WQ0010102001	City of Goree	Knox	0.055	No
BRSE11	WQ0010228002	City of Munday	Knox	0.2	No
BRSE11	WQ0010416001	City of Knox City	Knox	0.2	No
MSMN12	WQ0010281001	City of Seymour	Baylor	0.35	No
CFHA14	WQ0010373002	City of Sweetwater	Nolan	0.2	No
CFHA14	WQ0010786002	City of Merkel	Taylor	0.32	No
CAST17	WQ0010491002	City of Hamlin	Jones	0.32	No
CFFG18	WQ0010334004	City of Abilene (Hamby Plant)	Jones	22	Yes
CFFG18	WQ0010472002	City of Stamford	Jones	0.56	No
CFFG18	WQ0010728001	City of Haskell	Haskell	0.7	No
HCAL19	WQ0010035001	City of Albany	Shackelford	0.29	No
HCAL19	WQ0010037001	City of Baird	Callahan	0.4	No
HCAL19	WQ0010037003	City of Baird	Callahan	0.2	No
BSBR20	WQ0010424001	City of Cisco	Eastland	0.44	No
BSBR20	WQ0010424002	City of Cisco	Eastland	0.3	No
BSBR20	WQ0010424002	City of Cisco	Eastland	0.3	No
CFEL22	WQ0010040001	City of Breckenridge WWTP	Stephens	0.95	No
CFEL22	WQ0010469002	City of Throckmorton	Throckmorton	0.12	No
SHGR26	WQ0010487001	City of Graham WWTP	Young	2.1	Yes
SHGR26	WQ0002461000	Sportsmans World MUD WTP	Palo Pinto	0.8	No
BRPP27	WQ0002789000	Double Diamond (The Cliffs WWTP)	Palo Pinto	0.06	No
PPSA28	WQ0011557001	City of Ranger (Ranger WWTP)	Eastland	0.55	No
PPSA28	WQ0011557003	City of Ranger	Eastland	0.55	No
PPSA28	WQ0011557004	City of Ranger	Eastland	0.35	No
BRDE29	WQ0010585001	City of Mineral Wells (Pollard Creek WWTP)	Palo Pinto	2.35	Yes
BRDE29	WQ0010585004	City of Mineral Wells (Willow Creek WWTP)	Parker	1.26	No
BRDE29	WQ0010722001	City of Graford	Palo Pinto	0.111	No
BRGR30	WQ0002625000	City of Granbury	Hood	0.125	No
BRGR30	WQ0002889000	Authority SWATs	Hood	2.5	Yes
BRGR30	WQ0010178002	City of Granbury (WWTP)	Hood	2	Yes
BRGR30	WQ0011208001	Acton MUD (Decordova Bend WWTP)	Hood	0.6	No
BRGR30	WQ0011415001	Acton MUD (Pecan Plantation WWTP)	Hood	0.487	No
BRGR30	WQ0014212001	Acton MUD	Hood	0.82	No
NRBL32	WQ0010006001	City of Cleburne WWTP	Johnson	7.5	Yes
NRBL32	WQ0010006001	City of Cleburne WWTP	Johnson	7.5	No
NRBL32	WQ0010006002	City of Cleburne	Johnson	0.05	No
NRBL32	WQ0010542001	City of Godley	Johnson	0.36	No
BRAQ33	WQ0010177001	City of Glen Rose WWTP	Somervell	0.6	No
BRAQ33	WQ0011408002	City of Whitney (Polk Street WWTP)	Hill	0.4	No
AQAQ34	WQ0010423001	City of Itasca WWTP	Hill	0.378	No
AQAQ34	WQ0010630001	City of Hillsboro (WWTP)	Hill	1.81	No
AQAQ34	WQ0010630001	City of Hillsboro	Hill	1.36	No
NBHI35	WQ0010188001	City of Hico WWTP	Hamilton	0.25	No
NBHI35	WQ0010290001	City of Stephenville (Stephenville WWTP)	Erath	3	Yes
NBCL36	WQ0010043001	City of Clifton WWTP	Bosque	0.65	No
NBCL36	WQ0010113002	City of Meridian WWTP	Bosque	0.45	No
NBCL36	WQ0011565001	City of Iredell	Bosque	0.05	No
BOWA40	WQ0010219002	City of McGregor (South WWTP)	Mclennan	1.1	No
BOWA40	WQ0010307001	City of Valley Mills	Bosque	0.36	No
BRHB42	WQ0010110002	City of Marlin WWTP	Falls	2	Yes
BRHB42	WQ0010544001	City of West WWTP	Mclennan	0.45	No
BRHB42	WQ0010645001	City of Mart	Mclennan	0.35	No
BRHB42	WQ0011071001	City of Waco WMRSS (Waco Metropolitan Area Regional WWTP)	Mclennan	37.8	Yes
BRHB42	WQ0012195001	City of Lorena WWTP	Mclennan	0.15	No
BRHB42	WQ0003466000	City of Robinson	Mclennan	1	No
LEDL43	WQ0010637001	City of Eastland WWTP	Eastland	0.9	No

Primary Control Point	TPDES Number	Name	County	Permitted Flow (MGD)	Use in Drought Study
LEHS45	WQ0010078001	City of DeLeon WWTP	Comanche	0.295	No
LEHS45	WQ0014544001	Upper Leon MWD WWTP	Comanche	0.065	No
LEHM46	WQ0010405001	City of Dublin WWTP	Erath	0.45	No
LEHM46	WQ0010719001	City of Comanche WWTP	Comanche	0.595	No
LEGT47	WQ0010176002	City of Gatesville (Stillhouse Branch)	Coryell	2.2	Yes
LEGT47	WQ0010492002	City of Hamilton	Hamilton	0.88	No
LEBE49	WQ0002230000	US Dept. of the Army	Bell	0.06	No
LEBE49	WQ0002233000	US Dept. of the Army	Bell	0	No
LEBE49	WQ0002233000	US Dept. of the Army	Bell	0	No
LEBE49	WQ0002233000	US Dept. of the Army	Bell	0	No
LEBE49	WQ0002233000	US Dept. of the Army	Coryell	0	No
LEBE49	WQ0010045003	City of Copperas Cove (South WWTP)	Coryell	2.5	Yes
LEBE49	WQ0010045004	City of Copperas Cove (Northeast WWTP)	Coryell	2.5	Yes
LEBE49	WQ0010045005	City of Copperas Cove (Northwest WWTP)	Coryell	4	Yes
LEBE49	WQ0010176001	City of Gatesville (Leon Plant WWTP)	Coryell	1.5	No
LEBE49	WQ0010225001	City of Moody WWTP	Mclennan	0.2	No
LEBE49	WQ0010351001	Bell County WCID #1 WWTP	Bell	0.9	No
LEBE49	WQ0012096001	North Forth Hood WWTP	Coryell	0.25	No
LAKE50	WQ0010205002	City of Lampasas (Henderson WWTF)	Lampasas	1.5	No
LRLR53	WQ0010797001	Bell County WCID #3	Bell	0.675	No
LRLR53	WQ0010944001	City of Florence WWTP	Williamson	0.25	No
LRLR53	WQ0011318001	Authority TBRSS (Temple Belton Regional WWTP)	Bell	10	Yes
LRLR53	WQ0013358001	Universal Services Fort Hood WWTP	Bell	0.09	No
LRLR53	WQ0010351002	Bell County WCID #1	Bell	18	Yes
LRLR53	WQ0010351003	Bell County WCID #1 WWTP 2	Bell	6	Yes
LRLR53	WQ0010155001	City of Harker Heights WWTP	Bell	3	Yes
LRLR53	WQ0011090001	Bell County WCID #2 (Academy WWTP)	Bell	0.094	No
LRLR53	WQ0011091001	Bell County WCID #2 (Little River WWTP)	Bell	0.16	No
SGGE55	WQ0014477001	Liberty Hill Regional WWTP	Williamson	0.4	No
GAGE56	WQ0010489002	City of Georgetown (San Gabriel WWTP)	Williamson	2.5	Yes
GALA57	WQ0010489003	City of Georgetown (Dove Springs WWTP)	Williamson	2.5	Yes
GALA57	WQ0010489005	City of Georgetown (Pecan Branch WWTP)	Williamson	3	Yes
GALA57	WQ0010489006	City of Georgetown	Williamson	0.4	No
GALA57	WQ0010891001	City of Granger	Williamson	0.2	No
LRC A58	WQ0010004001	City of Cameron (Cameron WWTP)	Milam	0.96	No
LRC A58	WQ0010264001	Authority/LCRA BCRWSS West (Brushy Creek Regional WWTP)	Williamson	3	Yes
LRC A58	WQ0010264002	Authority/LCRA BCRWSS East (Brushy Creek Regional WWTP East)	Williamson	21.5	Yes
LRC A58	WQ0010299001	City of Taylor (Mustang Creek WWTP)	Williamson	4	Yes
LRC A58	WQ0010880001	City of Bartlett WWTP	Bell	0.325	No
LRC A58	WQ0010897001	City of Holland WWTP	Bell	0.2	No
LRC A58	WQ0011324001	City of Hutto	Williamson	0.2	No
LRC A58	WQ0011459001	Anderson Mill MUD (Anderson Mill WWTP)	Williamson	0.99	No
LRC A58	WQ0011865001	Brushy Creek MUD	Williamson	0	No
LRC A58	WQ0012308001	City of Cedar Park (Water Reclamation)	Williamson	2.5	Yes
LRC A58	WQ0012644001	City of Leander WWTP	Williamson	2.25	Yes
LRC A58	WQ0013031001	Block House MUD	Williamson	0	No
LRC A58	WQ0013866001	Forest Creek Utility Company Inc.	Williamson	0.8	No
BRBR59	WQ0010046002	City of Hearne WWTP 2	Robertson	1.2	No
BRBR59	WQ0010095001	City of Calvert WWTP	Robertson	0.25	No
BRBR59	WQ0010440001	City of Franklin	Robertson	0.3	No
BRBR59	WQ0010470002	City of Temple (Doshier Farm WWTP)	Bell	7.5	Yes
BRBR59	WQ0010731001	City of Rosebud WWTP	Falls	0.25	No
BRBR59	WQ0010917001	City of Bremond	Robertson	0.12	No
BRBR59	WQ0011263001	City of Troy WWTP	Bell	0.309	No
MYDB60	WQ0010016001	City of Lexington WWTP	Lee	0.2	No
EYDB61	WQ0010658001	City of Rockdale WWTP	Milam	1.25	No
YCSO62	WQ0010456001	City of Giddings (North WWTP)	Lee	0.7	No
DCLY63	WQ0010813001	City of Caldwell	Burleson	0.711	No
NAGR64	WQ0010717001	TX Dept MHMR (Mexia State School)	Limestone	0.45	No
BGFR65	WQ0010300001	City of Teague West WWTP	Freestone	0.21	No
NAEA66	WQ0010182001	City of Groesbeck	Limestone	0.525	No
NAEA66	WQ0010222001	City of Mexia WWTP	Limestone	2	Yes
BRHE68	WQ0002585000	Texas A&M University (Brayton Fire Training School)	Brazos	2	Yes
BRHE68	WQ0010024006	City of College Station (Carters Creek WWTP)	Brazos	9.50	Yes
BRHE68	WQ0010231001	City of Navasota (Old WWTP)	Grimes	1.8	No

Primary Control Point	TPDES Number	Name	County	Permitted Flow (MGD)	Use in Drought Study
BRHE68	WQ0010231001	City of Navasota (Old WWTP)	Grimes	1.8	No
BRHE68	WQ0010371001	City of Somerville WWTP	Burleson	0.3	No
BRHE68	WQ0010388001	City of Brenham WWTP	Washington	3.55	Yes
BRHE68	WQ0010426001	City of Bryan (Burton Creek WWTP)	Brazos	8	Yes
BRHE68	WQ0010426001	City of Bryan (Burton Creek WWTP)	Brazos	8	Yes
BRHE68	WQ0010426002	City of Bryan (Still Creek WWTP)	Brazos	4	Yes
BRHE68	WQ0010426003	City of Bryan (Turkey Creek WWTP)	Brazos	0.75	No
BRHE68	WQ0010968003	Texas A&M University (TAMU Main Campus WWTP)	Brazos	4	Yes
BRHE68	WQ0012458002	Texas Dept. of Criminal Justice (Luther WWTP)	Grimes	0.25	No
BRHE68	WQ0013743001	Texas Dept. of Criminal Justice (Pack Unit WWTP)	Grimes	0.5	No
BRHE68	WQ0010024003	City of College Station (Lick Creek WWTP)	Brazos	2	Yes
MABL69	WQ0010385002	City of Bellville WWTP	Austin	0.95	No
BRR170	WQ0010001001	Brookshire MWD WWTP	Waller	0.65	No
BRR170	WQ0010258001	City of Richmond (Richmond North Second Street WWTP)	Fort Bend	1	No
BRR170	WQ0010276001	City of Sealy (Allens Creek WWTP)	Austin	0.975	No
BRR170	WQ0010607003	City of Rosenberg (Plant NO 1A WWTP)	Fort Bend	2	Yes
BRR170	WQ0010765001	City of Wallis WWTP	Austin	0.2	No
BRR170	WQ0013314001	City of Fulshear WWTP	Fort Bend	0.1	No
BRR170	WQ0010948001	City of Hempstead WWTP	Waller	0.6	No
BRR170	WQ0011275002	Prairie View A&M University WWTP	Waller	2	Yes
BGNE71	WQ0010607002	City of Rosenberg WWTP 2	Fort Bend	4.5	Yes
BGNE71	WQ0010607004	City of Rosenberg WWTP 3	Fort Bend	0.025	No
BRRO72	WQ0010258003	City of Richmond (SW WWTP, Richmond Regional WWTP)	Fort Bend	1.5	No
BRRO72	WQ0010986001	Texas Department of Criminal Justice - Central	Fort Bend	0.45	No
BRRO72	WQ0011046001	Quail Valley UD WWTP	Fort Bend	4	Yes
BRRO72	WQ0011317001	SLRSS (Sugarland North WWTP)	Fort Bend	6	Yes
BRRO72	WQ0011475001	Texas Department of Criminal Justice - Jester I	Fort Bend	0.315	No
BRRO72	WQ0011475003	Texas Department of Criminal Justice - Jester III	Fort Bend	0.75	No
BRRO72	WQ0011655001	Pecan Grove MUD	Fort Bend	1.9	No
BRRO72	WQ0012806001	First Colony MUD 009	Fort Bend	0.3	No
BRRO72	WQ0012833002	City of Sugarland (South WWTP)	Fort Bend	7.5	Yes
BRRO72	WQ0012833003	City of Sugarland	Fort Bend	0	No
BRRO72	WQ0013051002	Fort Bend Co. MUD 081	Fort Bend	0.325	No
BRRO72	WQ0013845001	Fort Bend Co. MUD 001	Fort Bend	0.5	No
BRRO72	WQ0013873001	Missouri City Steep Bank Flat Bank WWTP	Fort Bend	1.5	No
BRRO72	WQ0013940001	Royal Lakes Limited	Fort Bend	0.2	No
BRRO72	WQ0013976001	Fort Bend Co. MUD 116	Fort Bend	0.5	No
BRRO72	WQ0014100001	AFB/Johnson North L.L.C.	Fort Bend	0.902	No
BRRO72	WQ0014118001	Sienna Plantation MUD 1	Fort Bend	1.2	No
BRRO72	WQ0014140001	Fort Bend MUD 116	Fort Bend	0.98	No
BRRO72	WQ0011971001	Plantation MUD	Fort Bend	0.44	No
BRRO72	WQ0013355001	Fort Bend MUD 106	Fort Bend	1.35	No
BRRO72	WQ0013628001	Fort Bend MUD 112 (New Territory North Regional WWTP)	Fort Bend	2.5	Yes
BRRO72	WQ0011317001	SLRSS (Sugarland North WWTP)	Fort Bend	6	Yes
BRGM73	WQ0010047001	City of Lake Jackson WWTP	Brazoria	5.85	Yes
BRGM73	WQ0010312001	City of West Columbia WWTP	Brazoria	1.6	No
BRGM73	WQ0010882001	City of Freeport (Central WWTP)	Brazoria	2.25	Yes

Table E-2  
Other Wastewater Dischargers in the Brazos Basin

Primary Control Point	TPDES Number	Name	County	Permitted Flow (MGD)	Use in Drought Study	Notes
BSLU07	WG0001920000	Plains Cooperative Oil Mill	Lubbock	#N/A	No	
CFHA14	WG0002963000	Encogen One Partners, Ltd.	Nolan	#N/A	No	
PPSA28	WG0001903000	Brazos Electric Power Coop Inc.	Palo Pinto	#N/A	No	Once-through cooling
PPSA28	WG0001903000	Brazos Electric Power Coop Inc.	Palo Pinto	#N/A	No	
BRDE29	WG0003957000	Vulcan Materials Co.	Parker	3.6	No	Use if data available
BRGR30	WG0001401000	Unimin Corp.	Somervell	0.5	No	
BRGR30	WG0001401000	Unimin Corp.	Somervell	#N/A	No	
BRGR30	WG0002170000	Txi Operations L.P.	Parker	3.6	No	Use if data available
BRGR30	WG0002170000	Txi Operations L.P.	Parker	2.7	No	Use if data available
BRGR30	WG0002170000	Txi Operations L.P.	Parker	1.35	No	
BRGR30	WG000	Decordova Steam Electric Station	Hood	1041.48	No	Once-through cooling
BRGR30	WG000	AES Wolf Hollow Power Plant	Hood	1.1	No	
NRBL32	WG0000740000	Burlington Northern & Santa Fe Railway Co.	Johnson	0.3	No	
BRAQ33	WG0001854000	Commanche Peak Nuclear Power Plant	Somervell	3168	No	Once-through cooling
BRAQ33	WG0001854000	Commanche Peak Nuclear Power Plant	Somervell	3168	No	Once-through cooling
BRAQ33	WG0003874000	Texas Lime Co.	Johnson	0.43	No	
BRAQ33	WG000	Bosque County Power Plant	Bosque	1.8	No	
BOWA40	WG0003821000	Sanderson Farms Inc	Brazos	1.7	No	
BRHB42	WG0002893000	Cornerstone C & M Inc.	Mclennan	0.36	No	
BRHB42	WG000	Lake Creek Steam Electric Station	Mclennan	294	No	Once-through cooling
BRHB42	WG000	Tradinghouse Steam Electric Station	Mclennan	1056	No	Once-through cooling
BRBR59	WG0002877000	Twin Oaks Power Station	Robertson	3	No	
BRBR59	WG0002877000	Twin Oaks Power Station	Robertson	3	No	
BRBR59	WG0002877000	Twin Oaks Power Station	Robertson	3	No	
BRBR59	WG0002881000	Phillips Coal Co. & Kiewit Texas Mining Co.	Robertson	#N/A	No	
BRBR59	WG0002881000	Phillips Coal Co. & Kiewit Texas Mining Co.	Robertson	#N/A	No	
BRBR59	WG0002881000	Phillips Coal Co. & Kiewit Texas Mining Co.	Robertson	#N/A	No	
BRBR59	WG0002881000	Phillips Coal Co. & Kiewit Texas Mining Co.	Robertson	#N/A	No	
BRBR59	WG0002881000	Phillips Coal Co. & Kiewit Texas Mining Co.	Robertson	#N/A	No	
BRBR59	WG0002881000	Phillips Coal Co. & Kiewit Texas Mining Co.	Robertson	#N/A	No	
BRBR59	WG0002881000	Phillips Coal Co. & Kiewit Texas Mining Co.	Robertson	#N/A	No	
BRBR59	WG0002881000	Phillips Coal Co. & Kiewit Texas Mining Co.	Robertson	#N/A	No	
BRBR59	WG0002881000	Phillips Coal Co. & Kiewit Texas Mining Co.	Robertson	#N/A	No	
BRBR59	WG0002881000	Phillips Coal Co. & Kiewit Texas Mining Co.	Robertson	#N/A	No	
MYDB60	WG0000395008	Aluminum Company of America	Robertson	#N/A	No	
EYDB61	WG0000395000	Aluminum Co. of America (Rockdale Plant)	Milam	326	No	Mining depressurization. In most cases no flow reaches river.
EYDB61	WG0000395000	Aluminum Co. of America (Rockdale Plant)	Milam	326	No	Mining depressurization. In most cases no flow reaches river.
EYDB61	WG0000395000	Aluminum Co. of America (Rockdale Plant)	Milam	326	No	Mining depressurization. In most cases no flow reaches river.
EYDB61	WG0000395000	Aluminum Co. of America (Rockdale Plant)	Milam	326	No	Mining depressurization. In most cases no flow reaches river.
EYDB61	WG0000395000	Aluminum Co. of America (Rockdale Plant)	Milam	326	No	Mining depressurization. In most cases no flow reaches river.

Primary Control Point	TPDES Number	Name	County	Permitted Flow (MGD)	Use in Drought Study	Notes
EYDB61	WG0000395000	Aluminum Co. of America (Rockdale Plant)	Milam	326	No	Mining depressurization. In most cases no flow reaches river.
EYDB61	WG0000395000	Aluminum Co. of America (Rockdale Plant)	Milam	326	No	Mining depressurization. In most cases no flow reaches river.
EYDB61	WG0000395000	Aluminum Co. of America (Rockdale Plant)	Milam	326	No	Mining depressurization. In most cases no flow reaches river.
YCSO62	WG0000395000	Aluminum Co. of America (Rockdale Plant)	Lee	326	No	Mining depressurization. In most cases no flow reaches river.
NAEA66	WG0001176000	US Silica Co.	Limestone	0.5	No	
NAEA66	WG0001176000	US Silica Co.	Limestone	0.5	No	
NAEA66	WG0001176000	US Silica Co.	Limestone	0.5	No	
NAEA66	WG0001176000	US Silica Co.	Limestone	0.50	No	
NAEA66	WG0001176000	US Silica Co.	Limestone	0.50	No	
NAEA66	WG0002430000	Limestone Electric Generating Station	Limestone	3.597	No	Use if discharging > 2 MGD
NAEA66	WG0002430000	Limestone Electric Generating Station	Freestone	3.597	No	Use if discharging > 2 MGD
NAEA66	WG0002430000	Limestone Electric Generating Station	Limestone	3.597	No	Use if discharging > 2 MGD
NAEA66	WG0002653000	Northwestern Resources Co.	Leon	#N/A	No	
NAEA66	WG0002653000	Northwestern Resources Co.	Leon	#N/A	No	
NAEA66	WG0002653000	Northwestern Resources Co.	Leon	#N/A	No	
NAEA66	WG0002653000	Northwestern Resources Co.	Leon	#N/A	No	
NAEA66	WG0002653000	Northwestern Resources Co.	Leon	#N/A	No	
NAEA66	WG0002653000	Northwestern Resources Co.	Leon	#N/A	No	
NAEA66	WG0002653000	Northwestern Resources Co.	Leon	#N/A	No	
NAEA66	WG0002653000	Northwestern Resources Co.	Leon	#N/A	No	
BRHE68	WG0001393000	Elf Atochem North America	Brazos	#N/A	No	
BRHE68	WG0001906000	City of Bryan	Brazos	0.38	No	
BRHE68	WG0002117000	City of Bryan	Brazos	78	No	Once-through cooling, uses groundwater
BRHE68	WG0002460000	Gibbons Creek SES	Grimes	511	No	Once-through cooling
BRHE68	WG0002460000	Texas Municipal Power Agency	Grimes	#N/A	No	
BRHE68	WG0002460002	Texas Municipal Power Agency		#N/A	No	
BRHE68	WG0002460003	Texas Municipal Power Agency		#N/A	No	
BRHE68	WG0002460004	Texas Municipal Power Agency		#N/A	No	
BRHE68	WG0002460005	Texas Municipal Power Agency		#N/A	No	
BRHE68	WG00033821000	Sanderson Farms Brazos Processing Division	Brazos	1.678	No	
BRHE68	WG0013888001	Ben Thomas Mahoney & Michael Garth Mahoney	Brazos	0.20	No	
BRR170	WG0002314000	Postive Feeds Inc.	Austin	0.11	No	
BRR170	WG0002443000	Frito-Lay Inc.	Fort Bend	1.09	No	
BRR170	WG0002624000	Pioneer Concrete of Texas Inc.	Fort Bend	1.3	No	
BRR170	WG0002665000	Pioneer Concrete of Texas Inc.	Waller	1	No	
BRR170	WG0003015000	Hines Nurseries Inc.	Fort Bend	#N/A	No	
BGNE71	WG0001237000	Quanex Corp.	Fort Bend	0.22	No	
BRRO72	WG0000442000	Imperial Holly Corp.	Fort Bend	#N/A	No	
BRRO72	WG0000442000	Imperial Holly Corp.	Fort Bend	#N/A	No	
BRRO72	WG0001893000	Imperial Holly Corp.	Fort Bend	2.2	No	
BRRO72	WG000	WA Parish SES	Fort Bend	2158	No	Once-through cooling
BRGM73	WG000	Dow Chemical	Brazoria	2160	No	Gulf of Mexico reach, not part of naturalization

**Table E-3**  
**Methods for Estimating Reservoir Content Change and Surface Area in the Brazos River Basin**

Reservoir	Impoundment Date	Period	Method
White River	10/63	Before 10/63	No impact
		10/63-3/64	Assume even filling of reservoir
		4/64-9/76	USGS data
		10/76-6/79	Operation study, inflows estimated from Double Mountain Fork Brazos River near Aspermont
		7/79-10/90	WRMWD Data
		11/90-12/90	Data interpolated
		1/91-12/98	TWDB Data
		1/99-12/15	USGS data
Buffalo Springs	09/59	Before 9/59	No impact
		9/59-12/66	Operation study, inflows estimated from Double Mountain Fork Brazos River at Justiceburg, Double Mountain Fork Brazos River near Aspermont
		1/67-9/77	USGS data
		10/77-12/15	Operation study, inflows using Double Mountain Fork Brazos River at Justiceburg
Alan Henry	Oct-93	Before 10/93	No impact
		10/93-1/95	Operation study, inflows using Double Mountain Fork Brazos River at Justiceburg
		2/95-9/97	BRA Elevation data
		10/97-12/15	USGS data
Davis	1958	Before 1/59	No impact
		1/59-11/59	Operation study, inflows using Brazos River at Seymour
		12/59-9/85	Operation study, inflows using S. Wichita near Benjamin (Red River Basin)
		10/85-12/97	Operation study, incremental flows between S. Wichita near Benjamin and S. Wichita near Guthrie (Red River Basin)
		1/98-12-15	Not included in Drought Study
Sweetwater	1930	1/40-9/74	USGS data
		10/74-12/97	Operation study, inflows estimated from Clear Fork Brazos River near Roby, Clear Fork near Hawley
		1/98-3/99	Operation study, inflows estimated from Clear Fork Brazos River near Roby, Clear Fork at Nugent
		4/99-12/15	USGS elevation data with estimated year 2000 area-capacity
Abilene	08/21	1/40-1/64	Operation study, inflows estimated from Elm Creek at Ballinger (Colorado River Basin)
		2/64-12/97	Texas Water Development Board Data
		1/98-12/15	Not included in Drought Study
Kirby	1928	1/40-12/63	Operation study, inflows estimated from Elm Creek at Ballinger (Colorado River Basin)
		1/64-12/97	Texas Water Development Board Data
		1/98-12/15	Not included in Drought Study
Fort Phantom Hill	10/38	1/40-6/40	Operation study, inflows estimated from Clear Fork Brazos River at Nugent
		7/40-9/86	USGS data
		10/86-12/98	Elevation data from Freese and Nichols, Inc. files
		01/99	Estimated
		2/99-12/15	USGS data
Stamford	06/53	7/53-9/86	USGS data
		10/86-1/99	West Texas Utilities elevation data
		2/99-9/02	USGS data
		10/02-9/03	Operation Study
		10/03-12/15	USGS data
Cisco	1923	1/40-1/62	Operation study, inflows estimated from Clear Fork Brazos River at Fort Griffin
		2/62-1/99	Operation study, inflows estimated from Clear Fork Brazos River at Fort Griffin, Big Sandy Creek above Breckenridge
		2/99-12/15	USGS data
Hubbard	12/62	Before 9/62	No impact
		9/62-12/15	USGS data

Reservoir	Impoundment Date	Period	Method
Daniel	09/48	Before 1948 1948-8/51 9/51-9/61 10/61-2/62 3/62-11/64 12/64-8/75 9/75-3/76 4/76-9/89 10/89-12/97 1/98-12/15	No impact Operation study, inflows estimated from Clear Fork Brazos River at Eliasville Operation study, inflows estimated from Brazos River near South Bend Operation study, inflows estimated from Clear Fork Brazos River at Eliasville Operation study, inflows estimated from Big Sandy Creek above Breckenridge Operation study, inflows estimated from Big Cedar Creek near Ivan Operation study, inflows estimated from Big Sandy Creek above Breckenridge Operation study, inflows estimated from Big Cedar Creek near Ivan Operation study, inflows estimated from Big Sandy Creek above Breckenridge Not included in Drought Study
Millers Creek	07/74	Before 1974 7/74-9/94 10/94-6/98 7/98-9/02 10/02-9/09 10/09-12/15	No impact USGS data Operation study using Millers Creek near Munday USGS data Operation study using Millers Creek near Munday USGS data
Graham	1929 <sup>a</sup>	1/40 to 12/59 1/60-9/00 10/00-9/01 10/01-12/15	Content data from FNI files USGS data Operation study using W Fk Trinity near Jacksboro USGS data
Possum Kingdom	03/41	Before 2/41 2/41-12/15	No impact USGS data
Palo Pinto	04/64	Before 4/64 4/64-8/82 9/82-12/90 1/91-12/98 01/99 2/99-12/15	No impact USGS data Operation study, inflows estimated from Palo Pinto Creek near Santo Texas Water Development Board Data Interpolated USGS data
Mineral Wells	09/20	1/40-12/46 1/47-12/96  1/97-12/97 1/98-12/15	Operation study, inflows estimated from Brazos River near Palo Pinto Operation study, inflows estimated from West Fork Trinity River near Boyd (Trinity Basin) Operation study, inflows estimated from West Fork Trinity River near Jacksboro (Trinity Basin) Not included in Drought Study
Squaw Creek	02/77	Before 2/77 2/77-12/15	No impact USGS data
Granbury	10/68	Before 10/68 11/68-12/15	No impact USGS data
Pat Cleburne	08/64	Before 8/64 8/64-3/65  4/65-9/85 10/85-12/89  1/90-5/98 6/98-12/15	No impact Operation study, inflows estimated from Nolan River at Blum, Clear Fork Trinity River near Benbrook (Trinity Basin) USGS data Operation study, inflows estimated from Nolan River at Blum, Clear Fork Trinity River near Benbrook (Trinity Basin) Texas Water Development Board Data USGS data
Whitney	12/51	Before 12/51 12/51-12/97 1/98-12/15	No impact USGS data USACE data
Aquilla	05/83	Before 5/83 5/83-12/15	No impact USGS data
Waco	02/65	Before 2/65  2/65-12/97 1/98-12/15	Old Lake Waco operation study inflows estimated using North Bosque near Clifton and Aquilla Creek near Aquilla USGS data USACE data
Tradinghouse	07/68	Before 7/68 7/68-12/84 1/85-12/90 1/91-12/91 1/92-12/99 1/00-12/01 1/02-3/04 4/04-12/15	No impact No data available, assumed reservoir is full Operation study, inflows estimated Brazos River at Waco No data available, assumed reservoir is full TXU elevation data Operation study, inflows estimated using Aquilla Cr nr Aquilla No data available, assumed reservoir is full Operation study, inflows estimated using Aquilla Cr nr Aquilla

Reservoir	Impoundment Date	Period	Method
Lake Creek	06/52	Before 6/52 6/52-12/90  1/91-12/93 1/94-12/96  1/97-12/97 1/98-12/15	No impact Operation study, inflows estimated from Brazos River at Waco and Brazos River near Highbank No data available, assumed reservoir is full Operation study, inflows estimated from Brazos River at Waco and Brazos River near Highbank TXU elevation data Not included in Drought Study
Leon	06/54	Before 4/54 4/54-12/54 1/55-9/83 10/83-12/98 1/99-2/99 3/99-12/15	No impact Assume even filling of reservoir USGS data Texas Water Development Board Data Interpolated USGS data
Proctor	09/63	Before 9/63 9/63-12/97 1/98-12/15	No impact USGS data USACE data
Belton	03/54	Before 3/54 3/54-12/97 1/98-12/15	No impact USGS data USACE data
Stillhouse Hollow	02/68	Before 2/68 2/68-12/97 1/98-12/15	No impact USGS data USACE data
Georgetown	04/80	Before 4/80 3/80-12/97 1/98-12/15	No impact USGS data USACE data
Granger	01/80	Before 1/80 1/80-12/97 1/98-12/15	No impact USGS data USACE data
Alcoa	10/52	Before 1953 1/53-12/53 1/54-12/15	No impact Alcoa Data No data available, assumed reservoir is full
Somerville	01/67	Before 1967 1/67-12/97 1/98-12/15	No impact USGS data USACE data
Mexia	06/61	Before 1961 6/61-9/86 10/86-3/99 4/99-12/15	No impact USGS data Texas Water Development Board Data USGS data
Limestone	11/78	Before 11/78 11/78-12/15	No impact USGS data
Twin Oaks	1981	Before 1981 1/81-12/15	No impact Operation study, inflows estimated from Big Creek near Freestone and Navasota River near Easterly
Camp Creek	11/48	Before 1948 11/48-12/97 1/98-12/15	No impact Operation study, inflows estimated from Navasota River near Easterly Not included in Drought Study
Gibbons Creek	Jan-79	Before 1/79 1/79-12/97  1/98-12-15	No impact Operation study, inflows estimated from naturalized Bedias Cr nr Madisonville (Trinity) Operation study, inflows estimated from historical Bedias Cr nr Madisonville
Smithers	10/57	Before 1957 10/57-12/97 1/98-12/06 1/07-12/15	No impact Operation study, inflows estimated from Big Creek near Needville Assume reservoir is full NRG accounting plan data

a Lake Eddleman was completed in 1929. Lake Graham was completed in April 1958.

**Table E-4**  
**Evaporation/Precipitation Stations Near Reservoirs Used for Naturalization**

<b>Reservoir</b>	<b>Evaporation Stations</b>	<b>Period</b>	<b>Rain Stations</b>	<b>Period</b>
Whitney	Whitney Dam	1953-2015	Whitney Dam	1949-2015
Waco	Waco Dam	1965-2015	Waco Dam	1965-2015
Proctor	Proctor Reservoir	1963-2015	Proctor Reservoir	1963-2015
Belton	Belton Dam	1953-1992	Belton Dam	1953-1992
Stillhouse Hollow	Stillhouse Hollow Dam	1964-2015	Stillhouse Hollow Dam	1963-2015
Georgetown	Georgetown Lake	1981-2015	Georgetown Lake	1980-2015
Granger	Granger Dam	1980-2015	Granger Dam	1980-2015
Somerville	Somerville Dam	1965-2015	Somerville Dam	1963-2015
Smithers	Thompsons 3 WSW	1957-2015	Thompsons 3	1957-2015

**Table E-5**

**Method Used for Estimating Missing Net Reservoir Evaporation at Major Reservoirs**

<b>Reservoir</b>	<b>Quadrangle Interpolation Factor</b>
White River	0.589 * (406) + 0.411 * (407)
Buffalo Springs	0.097 * (305) + 0.115 * (306) + 0.170 * (405) + 0.618 * (406)
Alan Henry	0.284 * (406) + 0.249 * (407) + 0.245 * (506) + 0.222 * (507)
Davis	0.267 * (407) + 0.733 * (408)
Sweetwater	0.633 * (507) + 0.158 * (508) + 0.114 * (607) + 0.094 * (608)
Abilene	0.277 * (507) + 0.364 * (508) + 0.175 * (607) + 0.184 * (608)
Kirby	0.193 * (507) + 0.550 * (508) + 0.116 * (607) + 0.141 * (608)
Fort Phantom Hill	0.103 * (407) + 0.126 * (408) + 0.168 * (507) + 0.602 * (508)
Stamford	0.188 * (407) + 0.339 * (408) + 0.176 * (507) + 0.297 * (508)
Cisco	0.345 * (508) + 0.364 * (509) + 0.146 * (608) + 0.146 * (609)
Hubbard	0.194 * (408) + 0.194 * (409) + 0.299 * (508) + 0.313 * (509)
Daniel	0.142 * (408) + 0.158 * (409) + 0.255 * (508) + 0.446 * (509)
Millers Creek	0.707 * (408) + 0.118 * (409) + 0.098 * (508) + 0.076 * (509)
Graham	0.193 * (408) + 0.410 * (409) + 0.159 * (508) + 0.237 * (509)
Poosum Kingdom	0.386 * (409) + 0.614 * (509)
Palo Pinto	0.137 * (409) + 0.108 * (410) + 0.586 * (509) + 0.170 * (510)
Mineral Wells	0.206 * (409) + 0.195 * (410) + 0.312 * (509) + 0.287 * (510)
Squaw Creek	0.218 * (509) + 0.468 * (510) + 0.142 * (609) + 0.173 * (610)
Granbury	0.199 * (509) + 0.556 * (510) + 0.112 * (609) + 0.132 * (610)
Pat Cleburne	0.577 * (510) + 0.154 * (511) + 0.157 * (610) + 0.112 * (611)
Whitney	0.296 * (510) + 0.169 * (511) + 0.355 * (610) + 0.180 * (611)
Aquila	0.262 * (510) + 0.196 * (511) + 0.321 * (610) + 0.221 * (611)
Waco	0.138 * (510) + 0.119 * (511) + 0.528 * (610) + 0.215 * (611)
Tradinghouse	0.480 * (610) + 0.520 * (611)
Lake Creek	0.480 * (610) + 0.520 * (611)
Leon	0.177 * (508) + 0.569 * (509) + 0.113 * (608) + 0.141 * (609)
Proctor	0.511 * (509) + 0.489 * (609)
Belton	0.171 * (609) + 0.421 * (610) + 0.151 * (709) + 0.257 * (710)
Stillhouse Hollow	0.175 * (609) + 0.329 * (610) + 0.168 * (709) + 0.329 * (710)
Georgetown	0.128 * (609) + 0.158 * (610) + 0.200 * (709) + 0.514 * (710)
Granger	0.157 * (610) + 0.117 * (611) + 0.557 * (710) + 0.169 * (711)
Alcoa	0.153 * (610) + 0.146 * (611) + 0.391 * (710) + 0.309 * (711)
Somerville	0.150 * (710) + 0.592 * (711) + 0.108 * (810) + 0.150 * (811)
Mexia	0.064 * (510) + 0.086 * (511) + 0.094 * (610) + 0.755 * (611)
Limestone	0.655 * (611) + 0.143 * (612) + 0.113 * (711) + 0.089 * (712)
Twin Oaks	0.724 * (611) + 0.276 * (711)
Camp Creek	0.338 * (611) + 0.197 * (612) + 0.284 * (711) + 0.182 * (712)
Gibbons Creek	0.168 * (611) + 0.162 * (612) + 0.359 * (711) + 0.310 * (712)
Smithers	0.144 * (811) + 0.856 * (812)
Eagle Nest Lake	0.714 * (812) + 0.286 * (912)
William Harris	0.734 * (812) + 0.266 * (912)
Brazoria	0.565 * (812) + 0.435 * (912)

**Table E-6  
Methods for Estimating Quadrangle Runoff**

Quadrangle	Data Source/Gage	Basin	USGS Gage Number	Drainage Area (Square Miles)	Contributing Drainage Area (Square Miles)	Period
304	Tierra Blanca Creek above Buffalo Lake near Umbarger	Red	7295500	1,968	575	1/40-9/54
	North Tule Draw at Reservoir near Tulia	Red	7298000	189	65	10/54-9/73
	Running Water Draw at Plainview	Brazos	8080700	1,291	382	10/73-9/78
	Prairie Dog Town Fork Red River near Wayside	Red	7297910	4,211	930	10/78-12/15
305	Tierra Blanca Creek above Buffalo Lake near Umbarger	Red	7295500	1,968	575	1/40-9/54
	North Tule Draw at Reservoir near Tulia	Red	7298000	189	65	10/54-9/73
	Running Water Draw at Plainview	Brazos	8080700	1,291	382	10/73-9/78
	Prairie Dog Town Fork Red River near Wayside	Red	7297910	4,211	930	10/78-12-15
306	North Tule Draw at Reservoir near Tulia	Red	7298000	189	65	1/40-9/73
	Running Water Draw at Plainview	Brazos	8080700	1,291	382	10/73-9/78
	Prairie Dog Town Fork Red River near Wayside	Red	7297910	4,211	930	10/78-12/15
308	Salt Fork Red River at Mangum, OK	Red	7300500	1,566	1,357	1/40-11/61
	Groesbeck Creek at State Highway 6 near Quanah	Red	7299670	303	303	12/61-12/15
404	Use 304					
405	Use 305					
406	Double Mountain Fork Brazos River at Lubbock	Brazos	8079500	5,300	224	1/40-9/49
	Double Mountain Fork Brazos River near Aspermont	Brazos	8080500	8,796	1,864	10/49-12/15
407	Salt Fork Brazos River near Aspermont	Brazos	8082000	5,130	2,496	1/40-12/15
408	Brazos River at Seymour	Brazos	8082500	15,538	5,972	1/40-12/15
409	Big Sandy Creek near Bridgeport	Trinity	8044000	333	333	1/40 - 2/56
	West Fork Trinity River near Jacksboro	Trinity	8042800	683	683	3/56-12/15
410	Big Sandy Creek near Bridgeport	Trinity	8044000	333	333	1/40 - 9/49
	Denton Creek near Justin	Trinity	8053500	400	400	10/49-12/15
506	Double Mountain Fork Brazos River at Lubbock	Brazos	8079500	5,300	224	1/40-5/46
	Colorado River at Colorado City (before Lk Thomas)	Colorado	8121000	4,082	1,585	6/46-8/52
	Colorado River at Colorado City (Lk Thomas not spilling)	Colorado	8121000	4,082	651	9/52-9/58
	Beals Creek near Westbrook	Colorado	8123800	9,903	1,988	10/58-12/15
507	Double Mountain Fork Brazos River near Aspermont	Brazos	8080500	8,796	1,864	1/40-5/46
	Colorado River at Colorado City (before Lk Thomas)	Colorado	8121000	4,082	1,585	6/46-8/52
	Colorado River at Colorado City (Lk Thomas not spilling)	Colorado	8121000	4,082	651	9/52-11/61
508	Clear Fork Brazos River near Roby	Brazos	8083100	228	228	12/61-12/15
	Clear Fork Brazos River at Nugent	Brazos	8084000	2,199	2,199	1/40-9/66
509	Hubbard Creek below Albany	Brazos	8086212	613	613	10/66-12/15
	Legacy WAM Naturalized Flow for Leon Reservoir	Brazos	8099000	259	259	1/40 - 4/51
	Palo Pinto Creek near Santo	Brazos	8090500	573	573	5/51-2/58
	North Bosque River at Stephenville	Brazos	8093700	96	96	3/58-9/79
	North Bosque River at Hico	Brazos	8094800	359	359	10/79-12/98
	Paluxy River at Glen Rose	Brazos	8094800	410	410	1/99-9/99
510	Sabana River nr DeLeon	Brazos	8099300	264	264	10/99-5/12
	Clear Fork Trinity River at Fort Worth	Trinity	8047500	518	518	1/40 - 7/47
	Clear Fork Trinity River near Aledo	Trinity	8046000	251	251	8/47 - 2/57
	Denton Creek near Justin	Trinity	8053500	400	400	3/57 - 9/60
	Walnut Creek near Mansfield	Trinity	8049700	62.8	62.8	10/60-12/15
511	Cedar Creek near Mabank	Trinity	8063000	733	733	1/40-12/62
	Kings Creek near Kaufman	Trinity	8062900	233	233	1/63-9/87
	Walnut Creek near Mansfield	Trinity	8049700	63.0	63.0	10/87-12/15
607	Concho River at San Angelo	Colorado	8136000	5,380	4,411	1/40-12/15
608	Brady Creek at Brady	Colorado	8145000	575	575	1/40-9/86
	Elm Creek at Ballinger	Colorado	8127000	450	450	10/86-12/15
609	Lampasas River at Youngsport	Brazos	8104000	1,240	1,240	1/40-9/50
	Cowhouse Creek at Pidcoke	Brazos	8101000	455	455	10/50-8/62
	Lampasas River near Kempner	Brazos	8103800	818	818	9/62-12/15
610	Aquilla Creek near Aquilla	Brazos	8093500	309	309	1/40 - 8/59
	Middle Bosque near McGregor	Brazos	8095300	182	182	9/59-9/85
	North Bosque near Clifton	Brazos	8095000	968	968	10/85-12/15
611	Richland Creek near Richland	Trinity	8063500	734	734	1/40 - 3/68
	Tehuacana Creek near Streetman	Trinity	8064700	142	142	4/68-12/15
612	Neches Naturalized Flow Between Neches (NE_NE) and Alto (NF_AL)	Neches	8032000 - 8032500	800	800	1/40-12/96
	Upper Keechi Creek nr Oakwood	Trinity	8065200	150	150	1/97-12/15
709	Pedernales River near Johnson City	Colorado	8153500	947	947	1/40-9/66
	Sandy Creek near Kingsland	Colorado	8152000	327	327	10/66-9/93
	Pedernales River near Johnson City	Colorado	8153500	901	901	10/93-12/15
710	San Gabriel River at Georgetown	Colorado	8105000	399	399	1/40-7/67
	Brushy Creek near Rockdale	Colorado	8106300	505	505	8/67-10/80
	Onion Creek at U.S. Highway 183 near Austin	Colorado	8159000	321	321	11/80-12/15

Quadrangle	Data Source/Gage	Basin	USGS Gage Number	Drainage Area (Square Miles)	Contributing Drainage Area (Square Miles)	Period
711	Yegua Creek near Somerville	Brazos	8110000	1,009	1,009	1/40 - 9/62
	Davidson Creek near Lyons	Brazos	8110100	195	195	10/62-12/15
712	East Fork San Jacinto River near Cleveland	San Jacinto	8070000	325	325	1/40-Present
811	Navidad River near Ganado	Lavaca	8164500	1,062	1,062	1/40-9/61
	Navidad River near Hallettsville	Lavaca	8164300	332	332	10/61-12/15
812	Buffalo Bayou at Houston	San Jacinto	8074000	358	358	1/40 - 9/57
	Buffalo Bayou near Addicks	San Jacinto	8073500	293	293	10/57-2/59
	Chocolate Bayou near Alvin	San Jacinto - Brazos	8078000	88	88	3/59-12/15
813	Neches Naturalized Flow for Pine Island Bayou near Sour Lake (PI_SL)	Neches	8041700	336	336	1/40-12/97
	Historical Pine Island Bayou near Sour Lake	Neches	8041700	336	336	1/98-12/15
912	Buffalo Bayou at Houston	San Jacinto	8074000	358	358	1/40 - 4/54
	San Bernard River near Boling	Brazos-Colorado	8117500	727	727	5/54-6/70
	Big Boggy Creek near Wadsworth	Brazos-Colorado	8117900	10	10	7/70-9/77
	San Bernard River near Boling	Brazos-Colorado	8117500	727	727	10/77-Present

## **Appendix F**

PHDI Data



## **Appendix F**

### **PHDI Data**

Table F-1 contains the raw Palmer Hydrologic Drought Index (PHDI) data used to develop the climatic conditions for application of environmental flows. Data from 1940 through 2011 are from FNI internal files from work performed by the Brazos Basin Bay and Basin Expert Science Team (BBEST) and BBASC during development of the Brazos Basin SB3 environmental flows. These data served as the basis for setting the definition of dry, average and wet conditions. In 2013, the National Climatic Data Center changed the way that the PHDI and other drought indices were calculated. Information on the change can be found at <https://www.ncdc.noaa.gov/sotc/national/2013/03/supplemental/page-7/>. The original unchanged PDHI data were retained for this analysis to be consistent with the BBEST/BBASC work. For 2013 and later, the modified data were used.



**Table F-1: PHDI Data Used to Make HIS File**

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Oct-39	-2.29	-3.83	-3.18	-3.21	-2.47	-3.61	-2.11
Nov-39	-2.40	-3.36	-2.65	-2.98	-1.76	-3.58	-2.21
Dec-39	-2.02	-3.20	-2.89	-2.72	-1.69	-3.73	-2.42
Jan-40	-1.81	-3.11	-3.09	-2.87	-1.70	-3.89	-2.69
Feb-40	-1.35	-2.51	-2.70	-2.16	-0.99	-3.63	-2.26
Mar-40	-1.60	-2.89	-3.12	-2.55	-0.89	-3.51	-2.30
Apr-40	-1.38	-2.48	-2.16	-1.91	0.97	-3.51	-1.94
May-40	-1.52	-2.79	-1.74	-1.80	1.22	-3.53	-2.23
Jun-40	-1.96	-2.42	1.93	-0.90	2.75	-1.61	-2.01
Jul-40	-2.99	-3.03	2.61	1.28	3.19	-1.02	-2.09
Aug-40	-2.67	-1.95	3.28	2.46	3.18	-1.13	-1.99
Sep-40	-3.01	-2.27	2.53	1.95	2.09	-1.68	-2.29
Oct-40	-3.21	-2.59	1.78	1.57	1.93	-1.26	-1.71
Nov-40	-1.51	-1.32	3.57	3.99	3.07	2.22	1.49
Dec-40	-1.50	-1.29	4.32	4.77	3.74	3.33	2.31
Jan-41	-1.21	-1.10	3.80	3.93	3.44	3.00	1.84
Feb-41	-0.80	1.57	4.32	3.76	4.11	3.44	1.73
Mar-41	2.29	1.94	4.03	3.79	5.11	4.08	2.39
Apr-41	3.05	3.06	4.24	3.40	5.70	4.93	2.76
May-41	5.70	4.57	3.80	3.11	5.18	5.04	3.48
Jun-41	6.81	6.03	4.67	3.88	5.33	5.46	3.46
Jul-41	8.24	6.91	5.15	4.43	5.47	5.90	4.06
Aug-41	8.70	7.87	6.16	4.35	4.85	5.61	3.77
Sep-41	8.75	7.48	5.08	4.47	4.57	4.91	4.68
Oct-41	10.69	8.84	5.46	4.97	4.50	4.70	5.33
Nov-41	9.60	7.96	4.73	4.45	3.80	3.95	4.68
Dec-41	8.78	7.49	4.31	3.83	3.05	3.37	3.99
Jan-42	7.90	6.69	3.61	2.96	2.24	2.44	3.22
Feb-42	7.10	5.85	2.83	2.08	1.68	2.08	3.19
Mar-42	6.70	5.12	2.11	1.53	1.15	1.55	2.93
Apr-42	7.81	6.31	4.26	2.28	1.73	1.66	3.22
May-42	6.57	5.33	3.89	1.93	1.19	0.92	2.22
Jun-42	6.94	4.63	3.92	2.25	-1.57	-1.70	2.09
Jul-42	6.60	3.98	3.47	2.18	-1.78	1.81	3.54
Aug-42	7.05	4.19	3.58	3.47	-0.58	2.55	3.94
Sep-42	7.09	4.19	3.78	3.44	1.18	2.65	3.67
Oct-42	7.87	4.57	4.10	2.70	1.73	2.71	2.93
Nov-42	6.79	3.83	3.42	1.74	1.21	2.20	2.41
Dec-42	6.98	4.00	3.23	1.33	0.91	1.60	1.93
Jan-43	6.08	3.34	2.46	0.94	-0.79	1.37	1.97
Feb-43	5.09	2.46	1.48	-2.23	-1.52	0.58	1.39
Mar-43	4.29	2.47	1.79	-2.16	-1.21	0.77	1.64

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Apr-43	3.71	2.02	1.01	-2.67	-1.65	-1.49	0.92
May-43	3.54	2.04	0.95	-2.46	-1.57	-1.37	0.56
Jun-43	2.91	1.62	0.73	-2.65	-1.61	-1.73	-1.43
Jul-43	2.91	0.93	-1.30	-2.21	-1.60	-1.10	0.89
Aug-43	1.61	-2.03	-2.29	-2.55	-2.48	-1.83	-0.53
Sep-43	0.94	-2.24	-2.16	-2.36	-1.61	-1.55	-0.64
Oct-43	-2.09	-2.60	-2.31	-2.34	-1.85	-1.85	-1.20
Nov-43	-1.94	-2.48	-2.76	-2.59	-1.60	-1.40	0.80
Dec-43	-0.57	-1.58	-2.33	-2.50	-1.16	-1.06	1.20
Jan-44	1.77	-0.81	-1.71	-1.41	1.12	1.32	2.74
Feb-44	1.84	1.67	-0.70	-0.76	1.60	1.07	1.88
Mar-44	1.54	1.44	-0.62	1.47	1.87	1.85	3.13
Apr-44	1.81	1.15	-0.60	1.59	1.46	1.29	2.21
May-44	1.92	1.00	1.72	3.11	2.67	2.13	3.33
Jun-44	1.78	0.83	1.03	2.26	2.64	1.76	2.37
Jul-44	2.32	0.90	0.71	1.09	2.01	1.16	1.32
Aug-44	2.10	1.03	1.03	1.75	3.30	1.64	1.46
Sep-44	2.21	0.65	-0.59	1.04	2.83	1.05	1.31
Oct-44	1.83	0.59	-0.82	-1.68	2.29	-0.96	0.60
Nov-44	1.77	0.92	0.47	-0.80	2.60	0.69	0.61
Dec-44	2.36	1.43	1.09	1.92	3.02	1.09	0.95
Jan-45	2.40	1.58	1.18	1.93	3.15	1.18	0.59
Feb-45	2.04	1.78	2.15	2.13	3.24	1.38	-0.77
Mar-45	1.61	1.70	3.07	2.96	3.50	1.64	-0.83
Apr-45	1.61	1.92	3.20	2.95	3.49	1.94	0.89
May-45	-1.17	0.80	2.21	2.53	2.51	1.18	0.50
Jun-45	-1.89	0.85	2.41	2.65	2.45	1.23	0.51
Jul-45	-1.68	1.97	3.19	3.55	2.25	1.10	0.29
Aug-45	-1.59	1.93	3.49	4.13	1.70	1.56	2.55
Sep-45	-1.13	1.78	3.41	3.58	1.65	0.89	1.75
Oct-45	-1.14	1.62	3.27	3.99	1.72	1.05	1.86
Nov-45	-1.54	0.88	2.45	3.07	1.18	-0.87	1.18
Dec-45	-1.60	-0.94	1.85	2.73	1.14	-0.93	1.90
Jan-46	-1.18	-0.47	2.16	3.48	1.61	0.47	2.55
Feb-46	-1.30	-0.64	2.24	3.68	1.35	0.56	2.41
Mar-46	-1.39	-0.92	2.09	3.61	0.98	1.14	2.23
Apr-46	-1.94	-1.66	1.66	2.97	1.18	1.32	1.95
May-46	-2.20	-1.86	2.17	3.87	1.28	1.41	2.84
Jun-46	-2.72	-2.25	1.79	3.75	1.25	2.08	3.44
Jul-46	-3.44	-3.06	1.24	3.39	0.59	2.17	3.71
Aug-46	-3.04	-3.26	1.48	3.51	-0.85	2.98	3.89
Sep-46	-2.60	-2.52	1.63	2.89	0.53	3.35	4.02
Oct-46	-0.76	-2.50	0.91	2.37	0.41	3.27	3.99
Nov-46	2.14	-2.07	2.00	3.88	0.42	3.52	5.59

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Dec-46	2.13	-1.49	2.17	3.18	0.44	3.07	4.69
Jan-47	2.18	-1.28	2.19	3.20	1.39	3.21	4.44
Feb-47	1.86	-1.47	1.53	2.45	0.91	2.51	3.41
Mar-47	2.07	-1.04	1.71	2.90	1.19	2.57	3.34
Apr-47	2.54	-0.72	1.54	2.21	1.03	2.29	2.69
May-47	3.81	1.67	1.31	2.44	0.84	2.40	3.22
Jun-47	3.80	1.37	1.04	1.95	0.60	1.82	2.67
Jul-47	3.71	0.80	-0.74	1.19	-0.86	1.22	1.82
Aug-47	2.69	-1.41	-0.65	0.77	-0.72	1.74	2.04
Sep-47	1.22	-2.14	-1.21	-1.26	-1.45	0.56	0.93
Oct-47	-2.30	-2.35	-1.65	-1.86	-2.25	-1.82	-1.73
Nov-47	-1.77	-1.57	-1.51	-1.65	-1.82	-1.45	-1.28
Dec-47	-1.32	-1.08	-0.87	-1.26	-1.68	-1.25	-1.03
Jan-48	-1.20	-1.11	-0.77	-1.04	-1.83	-1.25	0.71
Feb-48	1.32	1.05	0.81	-0.74	-1.55	-0.90	0.86
Mar-48	1.33	0.97	-0.23	-0.98	-1.54	-0.93	-0.19
Apr-48	0.81	-0.64	-0.88	-1.11	-1.36	-1.13	-0.58
May-48	-0.56	-0.87	-0.85	-1.00	-1.74	-1.25	-0.76
Jun-48	-0.73	-0.81	-0.73	-1.56	-1.51	-1.66	-1.36
Jul-48	-0.75	-0.51	-0.59	-2.00	-1.44	-2.02	-2.00
Aug-48	-0.60	-0.81	-1.10	-2.57	-1.76	-2.00	-2.35
Sep-48	-1.22	-1.61	-1.78	-3.18	-1.88	-1.93	-2.49
Oct-48	-1.39	-1.58	-2.08	-3.48	-2.02	-2.20	-3.00
Nov-48	-1.11	-1.84	-2.55	-3.06	-2.18	-2.41	-2.72
Dec-48	-1.42	-2.23	-3.04	-3.44	-2.30	-3.10	-3.53
Jan-49	1.54	-0.57	-1.84	-2.09	-1.27	-2.62	-3.43
Feb-49	1.47	1.31	-1.42	-1.88	1.37	-2.11	-2.60
Mar-49	1.34	1.22	-1.22	-1.43	1.30	-1.86	-1.94
Apr-49	1.81	1.59	-0.95	-0.97	2.55	1.94	2.03
May-49	2.89	2.08	-0.69	-1.73	2.30	1.02	1.10
Jun-49	3.89	2.38	1.25	-1.80	2.70	0.75	-1.23
Jul-49	4.38	2.29	1.16	-1.03	2.63	1.13	-0.86
Aug-49	4.30	2.24	1.05	-0.84	2.90	0.80	-1.07
Sep-49	4.17	2.30	0.82	-0.72	2.52	-0.88	-1.51
Oct-49	3.68	2.35	1.52	2.49	2.75	1.04	3.01
Nov-49	2.60	1.49	0.64	1.40	1.88	-0.61	2.06
Dec-49	2.25	1.25	-0.76	1.59	2.03	-0.23	2.93
Jan-50	1.63	0.85	-0.46	1.65	1.42	-0.71	2.09
Feb-50	0.85	-1.13	-0.08	2.10	1.32	-0.68	2.29
Mar-50	-2.09	-1.59	-0.68	1.58	0.73	-1.03	1.71
Apr-50	-2.25	-1.58	0.32	1.76	0.80	0.45	2.18
May-50	-2.27	-1.10	0.49	2.04	0.64	-0.39	1.46
Jun-50	-2.06	-1.20	0.54	1.98	-0.81	-0.17	1.64
Jul-50	2.19	1.02	2.02	2.21	-0.63	-0.42	1.37

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Aug-50	2.87	1.60	3.01	1.85	-0.43	-0.79	0.70
Sep-50	3.88	2.00	3.12	2.17	-0.41	-0.96	-1.11
Oct-50	2.86	0.84	2.03	1.22	-1.26	-1.76	-1.85
Nov-50	2.07	-1.52	1.06	-1.44	-1.75	-2.42	-2.48
Dec-50	1.44	-1.94	-2.21	-2.50	-2.20	-3.01	-3.15
Jan-51	1.18	-2.30	-2.72	-2.78	-2.56	-3.51	-3.11
Feb-51	1.11	-2.47	-2.77	-2.90	-2.62	-3.74	-3.68
Mar-51	0.92	-2.40	-2.99	-2.57	-2.24	-3.14	-3.10
Apr-51	-1.35	-2.58	-3.26	-2.93	-2.48	-3.55	-3.31
May-51	1.13	-2.41	-3.37	-3.27	-2.67	-3.58	-3.17
Jun-51	0.93	-2.29	-2.58	-3.10	-3.05	-3.45	-3.28
Jul-51	-0.36	-2.66	-2.80	-3.34	-3.71	-4.21	-3.54
Aug-51	-0.73	-2.78	-3.35	-4.08	-3.99	-4.73	-4.14
Sep-51	-1.18	-2.90	-3.31	-2.90	-4.23	-3.37	-2.84
Oct-51	-1.40	-3.05	-3.33	-3.21	-4.51	-3.53	-3.12
Nov-51	-1.50	-3.18	-3.52	-3.38	-4.51	-3.30	-3.30
Dec-51	-1.69	-3.50	-4.13	-3.53	-4.62	-3.61	-3.59
Jan-52	-1.89	-3.65	-4.85	-3.74	-4.88	-4.15	-4.28
Feb-52	-2.19	-3.98	-5.27	-3.16	-4.87	-4.21	-3.10
Mar-52	-2.35	-3.91	-4.86	-2.93	-4.29	-3.93	-2.80
Apr-52	-1.53	-3.35	-3.81	-1.77	-3.48	-3.34	-1.64
May-52	-2.14	-3.38	-3.37	-1.30	-2.81	-2.98	-1.35
Jun-52	-3.27	-4.79	-4.00	-1.93	-3.23	-3.36	-1.70
Jul-52	-3.21	-4.93	-4.39	-1.89	-3.64	-3.31	-1.43
Aug-52	-3.65	-5.60	-5.06	-2.67	-4.38	-3.98	-2.12
Sep-52	-3.90	-5.55	-5.30	-3.36	-2.80	-3.15	-2.32
Oct-52	-4.29	-5.81	-5.54	-3.75	-3.04	-3.46	-2.78
Nov-52	-3.63	-4.89	-4.01	-2.85	-2.16	-2.20	-1.86
Dec-52	-3.33	-4.40	-3.18	-2.34	-1.16	-1.62	-1.42
Jan-53	-3.33	-4.55	-3.29	-2.49	-1.49	-1.99	-1.92
Feb-53	-3.28	-4.38	-3.24	-2.26	-1.61	-1.75	-1.49
Mar-53	-3.38	-3.94	-2.87	-1.86	-1.36	-2.31	-2.21
Apr-53	-3.51	-3.68	-2.31	-0.88	-1.34	-2.01	-2.56
May-53	-4.15	-4.34	-2.10	1.86	-1.52	-2.04	-1.56
Jun-53	-5.56	-5.37	-2.65	1.26	-2.36	-2.47	-1.44
Jul-53	-5.38	-4.82	-2.62	1.43	-2.69	-3.00	-1.67
Aug-53	-5.09	-4.02	-2.30	1.35	-2.20	-1.67	1.90
Sep-53	-5.62	-4.55	-2.65	0.64	-2.19	-1.90	0.93
Oct-53	-4.06	-3.20	-1.97	-0.88	-1.59	-1.40	0.67
Nov-53	-3.75	-2.91	-1.77	-1.18	-1.80	-1.66	0.78
Dec-53	-3.49	-2.95	-1.62	-0.74	-1.86	-1.36	1.13
Jan-54	-3.46	-2.89	-1.47	-0.90	-2.09	-1.76	-0.57
Feb-54	-3.83	-3.37	-2.10	-1.80	-2.76	-2.62	-1.50
Mar-54	-4.02	-3.61	-2.52	-2.41	-3.05	-3.07	-1.87

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Apr-54	-3.72	-3.07	-2.45	-2.54	-3.05	-3.06	-1.85
May-54	-2.56	-1.62	-2.15	-1.76	-3.24	-3.31	-1.93
Jun-54	-3.04	-1.95	-2.58	-2.39	-3.48	-3.86	-2.46
Jul-54	-3.92	-2.71	-3.16	-2.93	-4.09	-4.31	-2.93
Aug-54	-3.84	-3.32	-3.70	-3.69	-4.55	-4.62	-3.30
Sep-54	-4.61	-4.17	-4.16	-4.33	-5.00	-5.03	-3.77
Oct-54	-4.25	-4.40	-3.78	-3.01	-4.79	-4.73	-3.19
Nov-54	-4.41	-4.30	-3.63	-2.79	-4.59	-4.84	-3.35
Dec-54	-4.30	-3.91	-3.84	-2.86	-4.83	-5.13	-3.91
Jan-55	-3.97	-3.53	-3.85	-2.68	-4.32	-5.08	-3.59
Feb-55	-3.92	-3.37	-3.63	-1.90	-3.87	-4.39	-2.93
Mar-55	-4.15	-3.29	-3.60	-2.26	-3.83	-4.54	-3.38
Apr-55	-4.41	-3.89	-3.72	-1.93	-4.49	-5.03	-3.32
May-55	-3.55	-3.12	-3.36	-1.93	-4.28	-4.83	-3.30
Jun-55	-3.64	-2.34	-2.81	-2.01	-4.19	-4.89	-3.46
Jul-55	-3.39	-2.47	-2.68	-1.81	-3.67	-4.99	-3.46
Aug-55	-3.95	-2.97	-2.44	1.22	-3.32	-4.51	-2.62
Sep-55	-3.71	-2.46	-2.22	0.76	-3.32	-4.42	-2.56
Oct-55	-3.18	-2.01	-2.65	-0.78	-3.67	-4.59	-2.91
Nov-55	-3.27	-2.28	-3.24	-1.67	-3.63	-4.62	-3.35
Dec-55	-3.50	-2.62	-3.66	-2.51	-3.67	-4.61	-3.70
Jan-56	-3.64	-2.75	-3.70	-2.76	-3.59	-4.72	-3.75
Feb-56	-3.05	-2.75	-3.58	-2.39	-3.57	-4.94	-3.92
Mar-56	-3.32	-3.22	-4.08	-2.67	-3.88	-4.96	-4.00
Apr-56	-3.70	-3.57	-4.26	-2.78	-4.25	-4.99	-3.77
May-56	-4.01	-3.71	-4.55	-2.90	-4.82	-5.24	-4.06
Jun-56	-4.64	-4.95	-5.29	-2.93	-5.58	-5.89	-4.04
Jul-56	-4.69	-5.37	-6.03	-3.44	-5.84	-6.34	-4.58
Aug-56	-5.19	-5.86	-6.40	-3.60	-5.79	-6.40	-4.94
Sep-56	-5.86	-6.33	-6.92	-4.26	-6.08	-6.67	-5.45
Oct-56	-5.77	-5.84	-6.65	-4.45	-5.86	-6.42	-5.29
Nov-56	-5.65	-5.64	-6.02	-4.17	-5.44	-6.24	-5.40
Dec-56	-5.53	-5.23	-5.52	-4.54	-5.09	-5.76	-4.87
Jan-57	-5.20	-4.98	-5.27	-4.50	-4.94	-5.93	-5.30
Feb-57	-4.82	-4.48	-4.80	-4.27	-4.59	-5.74	-5.45
Mar-57	-3.77	-3.90	-3.87	-3.04	-3.65	-4.28	-3.42
Apr-57	-2.36	-1.45	-0.68	-0.55	-1.23	-2.48	-1.76
May-57	-0.96	4.14	4.63	-0.68	4.11	-1.79	-1.80
Jun-57	2.89	4.64	4.20	2.80	4.01	-1.23	-1.24
Jul-57	2.27	4.54	3.47	2.35	3.24	-1.27	-1.73
Aug-57	1.93	3.57	2.31	2.12	2.05	-1.77	-2.19
Sep-57	1.24	2.83	2.40	2.56	2.18	-0.61	-1.38
Oct-57	1.88	3.01	2.89	3.83	3.22	2.51	-0.60
Nov-57	2.32	4.05	3.97	4.79	4.10	3.25	2.29

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Dec-57	1.70	3.38	3.55	3.93	3.52	2.71	1.52
Jan-58	2.14	3.47	3.47	3.72	3.96	3.89	1.90
Feb-58	2.05	3.43	3.16	3.02	4.47	4.71	2.06
Mar-58	2.98	3.80	3.33	2.49	4.52	4.19	1.64
Apr-58	3.48	4.02	3.70	2.84	3.89	3.51	1.19
May-58	3.39	3.95	3.07	2.12	3.86	3.01	-1.07
Jun-58	3.07	3.54	2.59	2.01	4.37	2.41	-1.76
Jul-58	4.02	3.95	2.50	1.74	3.68	2.03	-2.24
Aug-58	3.28	3.30	2.35	2.02	3.40	1.13	-2.45
Sep-58	3.22	2.99	2.46	3.61	3.95	2.13	-0.77
Oct-58	2.54	2.31	1.82	3.05	4.21	2.86	-0.66
Nov-58	2.13	1.75	1.26	2.48	3.67	2.41	-0.95
Dec-58	1.63	1.11	0.65	1.54	3.08	2.33	-0.82
Jan-59	1.21	-1.59	-1.85	0.69	2.41	1.84	-1.04
Feb-59	0.71	-1.99	-2.18	1.06	2.29	2.54	2.27
Mar-59	-1.53	-2.38	-2.54	-1.36	1.61	1.81	1.54
Apr-59	-1.48	-2.53	-2.62	-0.57	1.79	2.32	1.99
May-59	-1.24	-2.44	-3.09	0.77	1.43	2.08	1.80
Jun-59	-1.04	-1.71	-2.29	0.85	2.46	2.16	1.51
Jul-59	-0.56	-0.83	-1.59	2.03	3.08	1.91	2.05
Aug-59	-0.94	-1.35	-1.27	2.41	2.94	2.44	2.98
Sep-59	-1.41	-1.87	-1.51	1.88	2.21	1.67	2.37
Oct-59	-0.84	-0.70	1.79	1.94	3.27	2.27	2.92
Nov-59	-0.90	-0.60	1.65	1.40	3.22	2.12	2.43
Dec-59	1.47	1.84	2.14	1.74	3.46	2.03	2.45
Jan-60	1.85	2.34	2.54	1.79	3.33	1.73	1.91
Feb-60	2.20	2.51	2.40	2.01	3.29	1.88	2.06
Mar-60	2.13	2.27	1.91	1.55	3.18	1.80	1.67
Apr-60	1.78	1.66	1.28	0.86	2.56	1.66	1.20
May-60	1.00	1.30	0.57	-1.40	1.70	1.06	-1.09
Jun-60	1.46	1.39	-1.30	-0.61	0.79	1.68	1.61
Jul-60	3.70	2.37	-0.94	0.63	1.18	1.63	1.43
Aug-60	3.45	2.31	0.54	1.19	1.58	2.40	2.44
Sep-60	3.24	1.66	-0.29	1.34	0.67	1.54	1.49
Oct-60	4.34	2.64	-0.03	1.62	1.30	3.58	2.48
Nov-60	3.62	1.97	-0.62	1.57	1.06	3.71	2.47
Dec-60	3.89	2.71	0.97	2.93	1.92	4.69	3.65
Jan-61	3.70	3.03	1.82	3.19	2.15	4.38	3.76
Feb-61	3.69	3.15	2.00	3.16	2.47	4.53	3.77
Mar-61	4.30	3.27	1.86	3.15	1.81	3.45	2.72
Apr-61	3.60	2.41	0.93	2.17	1.08	2.84	2.41
May-61	2.84	1.77	-1.44	1.24	-1.65	1.69	1.55
Jun-61	3.32	2.81	0.92	2.22	1.24	2.40	2.80
Jul-61	4.44	4.08	1.55	3.04	2.07	2.89	3.50

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Aug-61	4.23	3.74	1.26	3.21	1.56	2.54	3.48
Sep-61	3.54	3.54	1.42	3.76	1.04	2.61	4.46
Oct-61	2.77	2.92	1.21	3.02	0.88	2.03	3.35
Nov-61	3.32	3.58	1.41	3.03	0.85	2.14	4.05
Dec-61	2.86	3.13	1.24	3.27	-0.76	1.46	3.35
Jan-62	2.63	2.62	0.81	3.13	-1.05	0.93	2.56
Feb-62	1.91	1.76	-0.84	2.28	-1.69	-1.65	1.41
Mar-62	1.45	1.42	-0.99	1.58	-1.80	-1.84	0.80
Apr-62	1.12	1.51	-0.58	1.64	-1.41	-1.59	1.05
May-62	-2.00	-1.97	-1.58	0.69	-2.37	-2.31	-1.67
Jun-62	-1.16	-0.75	-0.67	1.21	-2.43	-2.07	-1.23
Jul-62	1.47	1.30	1.38	0.89	-3.05	-2.83	-1.81
Aug-62	0.77	0.60	1.11	-1.23	-3.44	-3.36	-2.26
Sep-62	1.25	1.74	2.00	-0.75	-3.32	-2.95	-2.45
Oct-62	1.00	1.68	1.99	-0.85	-3.18	-3.13	-2.56
Nov-62	0.64	1.64	2.08	-0.81	-3.03	-3.08	-2.45
Dec-62	-0.57	1.45	1.73	-1.11	-2.88	-2.48	-2.06
Jan-63	-0.85	0.97	1.16	-1.45	-3.03	-2.68	-2.05
Feb-63	-0.92	-0.64	-1.07	-1.71	-2.77	-2.41	-1.87
Mar-63	-1.48	-0.93	-1.67	-2.34	-3.12	-2.91	-2.43
Apr-63	-2.17	-1.41	-1.63	-2.40	-3.45	-3.35	-3.05
May-63	-2.02	-1.30	-1.91	-2.87	-3.29	-3.99	-3.68
Jun-63	-1.59	-1.15	-2.27	-2.97	-3.60	-4.11	-3.39
Jul-63	-1.84	-1.74	-2.71	-2.90	-4.25	-4.50	-3.71
Aug-63	-1.67	-1.92	-3.14	-3.30	-4.34	-4.79	-4.14
Sep-63	-2.02	-2.27	-3.50	-3.10	-4.41	-4.92	-3.68
Oct-63	-2.60	-2.87	-4.00	-3.78	-4.54	-5.04	-4.13
Nov-63	-2.49	-2.14	-3.59	-3.45	-3.61	-4.39	-3.48
Dec-63	-2.39	-2.02	-3.55	-3.37	-3.39	-4.02	-3.15
Jan-64	-2.46	-1.78	-2.98	-3.24	-2.74	-3.62	-2.74
Feb-64	-1.76	-1.23	-2.82	-3.07	-2.35	-3.19	-2.17
Mar-64	-1.83	-1.19	-2.26	-2.66	-1.87	-2.67	-1.84
Apr-64	-2.47	-1.60	-2.20	-2.23	-1.76	-2.81	-2.20
May-64	-2.95	-1.99	-2.51	-2.47	-2.11	-2.87	-2.55
Jun-64	-3.03	-1.97	-2.49	-2.76	-2.64	-2.84	-2.73
Jul-64	-3.91	-2.58	-3.05	-3.37	-3.11	-2.86	-2.84
Aug-64	-4.19	-2.49	-2.32	-3.03	-2.82	-2.84	-2.77
Sep-64	-3.59	-1.96	-0.77	-2.34	-1.19	-2.26	-2.28
Oct-64	-3.92	-2.36	-1.02	-2.65	-1.15	-2.35	-2.38
Nov-64	-3.01	-1.90	1.72	-2.83	-1.02	-2.54	-2.57
Dec-64	-2.63	-1.94	1.26	-3.21	-1.22	-2.52	-2.22
Jan-65	-2.69	-1.96	1.52	-3.25	-1.22	-2.22	-2.50
Feb-65	-2.47	-1.86	2.16	-1.96	1.33	-0.90	-2.14
Mar-65	-2.18	-1.84	1.84	-1.52	1.17	-0.84	-2.04

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Apr-65	-2.37	-1.82	1.07	-2.38	0.88	-1.09	-2.53
May-65	-2.39	-1.44	2.17	-1.54	1.80	1.33	-2.55
Jun-65	-0.58	-1.40	1.69	-1.64	2.06	1.18	-2.70
Jul-65	-0.88	-2.12	0.98	-2.05	1.66	0.71	-3.04
Aug-65	-0.82	-1.93	0.60	-2.11	1.00	-0.60	-3.14
Sep-65	-0.86	-1.83	0.76	-1.62	0.60	-0.90	-3.27
Oct-65	-0.90	-1.39	-0.76	-1.98	-0.89	0.25	-3.16
Nov-65	-1.56	-1.77	-0.96	-2.51	-1.21	0.35	-2.91
Dec-65	-1.60	-1.90	-1.14	-2.24	-1.00	1.19	-2.11
Jan-66	-1.42	-1.67	-1.29	-1.88	-0.97	1.32	-1.23
Feb-66	-1.28	-1.71	-1.17	-1.22	-0.86	1.69	1.61
Mar-66	-1.62	-2.00	-1.52	-1.82	-1.00	1.27	1.10
Apr-66	-1.40	-0.97	1.78	1.74	0.54	1.65	1.77
May-66	-2.28	-1.88	1.12	1.47	-0.17	2.02	2.47
Jun-66	-2.17	-2.22	0.93	0.77	-0.52	1.91	2.31
Jul-66	-2.58	-2.75	-0.81	-1.13	-1.21	1.62	2.01
Aug-66	-0.72	-0.69	1.30	0.91	1.09	1.81	2.67
Sep-66	1.54	2.24	1.85	1.00	1.39	1.42	1.89
Oct-66	0.77	1.65	1.22	0.94	0.93	0.87	1.73
Nov-66	-1.19	0.70	-1.35	-0.92	-1.14	-1.50	0.95
Dec-66	-1.39	-1.52	-1.83	-1.31	-1.58	-1.87	-1.43
Jan-67	-1.82	-2.08	-2.65	-2.02	-2.00	-2.21	-1.73
Feb-67	-2.08	-2.50	-3.33	-2.45	-2.28	-2.52	-1.96
Mar-67	-2.61	-2.89	-3.70	-3.00	-2.76	-2.90	-2.34
Apr-67	-2.88	-3.14	-3.78	-2.77	-3.33	-3.52	-2.52
May-67	-3.21	-3.60	-3.54	-1.98	-3.65	-3.44	-2.44
Jun-67	-2.40	-3.61	-4.21	-2.25	-4.33	-4.42	-3.07
Jul-67	-1.66	-3.18	-4.23	-1.96	-4.22	-4.63	-2.85
Aug-67	-1.87	-3.60	-4.56	-2.03	-4.07	-3.91	-2.48
Sep-67	-1.86	-2.83	-3.01	-1.65	-2.77	-0.86	-1.68
Oct-67	-2.27	-2.87	-2.31	-1.46	-2.38	3.09	-1.33
Nov-67	-2.37	-2.70	-1.93	-2.15	-1.53	2.93	-1.84
Dec-67	-2.22	-2.52	-1.38	-1.74	-1.36	2.64	-1.65
Jan-68	-1.51	-0.86	3.09	-0.97	2.45	3.82	-0.60
Feb-68	-1.19	1.74	2.90	-1.07	2.40	3.64	-0.65
Mar-68	-0.75	2.23	3.39	-0.98	2.79	3.38	-0.58
Apr-68	-0.64	2.26	3.09	1.07	3.04	3.22	0.53
May-68	1.09	2.26	3.26	1.80	2.95	3.72	1.38
Jun-68	0.91	2.41	3.37	2.73	2.81	4.75	3.22
Jul-68	1.02	3.15	3.90	2.86	3.03	5.00	3.19
Aug-68	1.37	3.58	3.79	2.59	2.38	4.49	2.55
Sep-68	0.65	2.74	3.66	3.29	2.16	4.71	2.37
Oct-68	-0.76	1.88	2.72	2.82	1.16	4.03	2.06
Nov-68	-0.24	2.66	3.03	3.20	1.78	4.11	1.77

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Dec-68	-0.43	2.22	2.57	3.13	1.31	3.69	1.24
Jan-69	-0.87	1.64	2.03	2.26	0.71	3.00	-1.16
Feb-69	0.24	1.67	2.02	2.52	0.59	3.46	0.73
Mar-69	0.79	2.29	2.69	3.34	0.87	3.75	1.02
Apr-69	0.68	1.98	2.60	3.34	1.60	3.93	1.52
May-69	1.24	2.56	2.71	3.40	1.65	3.70	1.68
Jun-69	1.22	2.56	2.16	2.49	1.46	3.08	1.12
Jul-69	0.88	2.08	1.35	1.58	0.85	2.23	0.60
Aug-69	0.77	2.16	1.29	0.74	1.19	2.02	-0.98
Sep-69	1.46	2.69	1.15	-1.90	0.92	1.51	-1.36
Oct-69	2.39	3.14	1.69	-1.59	2.27	1.52	-1.34
Nov-69	2.23	2.90	1.37	-1.56	2.65	1.67	-1.69
Dec-69	2.00	2.98	1.75	-1.16	2.69	1.68	-1.52
Jan-70	1.54	2.43	1.39	-1.55	2.24	1.57	-1.67
Feb-70	1.06	2.23	2.16	-1.12	2.45	1.67	-1.72
Mar-70	1.65	3.13	2.56	-0.75	2.79	2.10	-0.67
Apr-70	1.67	2.86	2.30	-0.79	2.19	1.65	-0.70
May-70	0.63	2.24	1.84	-0.94	2.42	2.48	1.77
Jun-70	-1.19	1.62	1.11	-1.20	2.11	2.23	1.47
Jul-70	-1.77	0.63	-1.41	-1.55	1.24	1.93	1.18
Aug-70	-2.09	-1.97	-1.73	-1.76	0.64	1.62	0.74
Sep-70	-1.97	-1.94	1.15	-1.24	1.04	2.00	1.34
Oct-70	-1.88	-1.94	1.27	1.29	-0.86	2.14	2.44
Nov-70	-2.05	-2.29	0.60	0.76	-1.36	1.35	1.80
Dec-70	-2.43	-2.71	-1.18	-1.07	-1.93	-1.36	0.82
Jan-71	-2.63	-3.11	-1.96	-1.89	-2.45	-2.24	-1.98
Feb-71	-2.21	-3.22	-2.34	-1.97	-2.63	-2.75	-2.12
Mar-71	-2.46	-3.65	-2.92	-2.50	-3.09	-3.33	-2.41
Apr-71	-2.53	-3.83	-3.17	-2.85	-2.95	-3.59	-2.46
May-71	-2.80	-4.00	-3.46	-2.77	-3.63	-3.95	-2.56
Jun-71	-3.19	-4.58	-4.18	-3.09	-3.51	-4.24	-2.86
Jul-71	-3.11	-4.67	-3.53	-2.72	-3.22	-4.84	-3.35
Aug-71	-2.04	-1.92	-2.35	-2.15	2.87	-2.87	-2.54
Sep-71	-0.74	-0.71	-2.09	-2.00	2.80	-1.14	-1.27
Oct-71	1.88	3.45	-1.10	-1.81	3.31	-0.59	-1.11
Nov-71	2.52	2.99	-1.05	-1.90	2.75	-0.59	-1.30
Dec-71	2.44	3.06	2.37	-1.05	2.45	2.82	1.42
Jan-72	1.94	2.54	2.17	-0.55	2.01	2.62	1.42
Feb-72	1.34	1.93	1.33	-1.48	1.29	2.17	0.81
Mar-72	-1.28	1.11	-1.45	-1.63	0.62	1.53	-0.74
Apr-72	-1.99	-1.47	-1.66	-1.83	-1.63	1.02	-1.03
May-72	-1.64	-1.33	-2.00	-2.03	-0.90	2.16	0.88
Jun-72	-1.48	-1.42	-2.31	-1.80	-0.77	2.29	0.61
Jul-72	-0.89	-1.38	-2.42	-1.26	-0.96	2.65	0.75

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Aug-72	1.27	1.47	-2.17	-0.97	1.52	2.94	0.55
Sep-72	1.28	1.45	-2.18	-0.60	1.38	2.56	0.73
Oct-72	1.29	2.09	-1.32	1.35	1.23	2.16	0.65
Nov-72	1.81	2.24	-0.86	1.60	1.00	2.20	1.29
Dec-72	1.54	1.77	-0.98	1.54	-0.57	1.58	0.84
Jan-73	1.81	2.53	1.35	1.84	0.31	1.82	0.97
Feb-73	1.95	2.74	1.40	1.58	0.66	1.97	1.13
Mar-73	3.45	3.70	1.49	2.36	0.69	1.95	1.33
Apr-73	4.16	4.03	2.11	3.22	0.78	2.57	2.75
May-73	3.50	3.06	1.47	2.60	0.05	1.87	2.23
Jun-73	2.86	2.96	2.20	3.86	0.52	3.69	3.54
Jul-73	3.39	3.41	3.46	4.23	1.44	4.02	3.34
Aug-73	2.62	2.69	3.21	4.29	0.84	4.34	3.71
Sep-73	2.40	3.32	3.76	5.44	0.97	4.91	4.73
Oct-73	1.69	2.93	4.39	6.13	1.66	6.04	5.39
Nov-73	0.98	2.10	3.88	5.64	0.92	5.06	4.24
Dec-73	0.61	1.28	3.24	5.38	-1.07	4.21	3.50
Jan-74	-1.40	0.65	2.94	5.87	-1.28	4.31	3.87
Feb-74	-1.74	-2.01	2.24	4.57	-1.81	3.28	2.88
Mar-74	-1.90	-2.45	1.24	3.39	-2.21	2.96	2.71
Apr-74	-2.37	-2.52	0.81	2.85	-2.34	2.23	2.26
May-74	-3.30	-3.22	-2.04	2.19	-2.37	2.21	2.92
Jun-74	-3.69	-3.54	-2.09	2.13	-2.98	1.83	2.35
Jul-74	-4.39	-4.25	-2.45	1.69	-3.49	1.23	1.68
Aug-74	-1.91	-3.14	1.69	2.80	-0.71	2.40	2.00
Sep-74	3.02	-1.20	3.01	4.41	3.63	2.85	1.87
Oct-74	4.00	3.08	3.76	4.38	4.31	2.59	1.54
Nov-74	3.65	2.88	4.10	5.03	4.26	3.28	2.43
Dec-74	3.41	2.89	3.96	4.49	4.18	2.96	2.41
Jan-75	3.20	2.87	3.54	3.69	3.54	2.48	1.91
Feb-75	3.58	3.30	3.69	3.90	3.62	2.25	1.22
Mar-75	3.17	2.86	3.26	3.50	2.91	1.58	0.75
Apr-75	3.07	2.43	2.96	3.33	2.71	1.57	0.59
May-75	3.11	2.76	3.39	3.59	3.59	2.31	1.20
Jun-75	3.33	2.79	3.11	3.66	3.57	2.56	1.50
Jul-75	4.43	3.96	3.42	3.47	4.05	2.95	1.37
Aug-75	4.10	4.30	3.38	3.24	3.89	3.41	1.80
Sep-75	3.67	4.27	2.84	2.61	3.38	3.04	1.28
Oct-75	2.52	3.31	1.95	2.28	2.89	2.69	1.26
Nov-75	2.65	3.43	1.24	1.53	2.52	1.97	0.90
Dec-75	2.13	3.09	0.66	0.69	1.97	1.62	0.83
Jan-76	1.55	2.35	-2.28	-1.88	1.27	0.90	-0.78
Feb-76	0.61	1.32	-3.28	-2.56	-1.81	-1.99	-1.63
Mar-76	-1.79	0.75	-3.22	-1.77	-2.08	-2.13	-1.77

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Apr-76	-1.20	1.43	-2.19	-1.38	-1.40	-0.63	-1.38
May-76	-1.47	0.76	-1.67	-0.70	-1.28	1.73	-1.23
Jun-76	-2.10	-1.66	-1.49	1.71	-1.65	1.50	-0.70
Jul-76	-1.69	-0.84	1.86	2.35	2.11	2.78	1.48
Aug-76	-2.01	-1.03	2.04	2.26	2.34	2.60	1.25
Sep-76	-1.24	-0.61	2.39	2.63	2.57	2.60	1.34
Oct-76	-1.12	1.57	2.96	2.71	3.34	3.94	1.68
Nov-76	-1.11	1.36	2.56	2.13	3.09	4.36	2.17
Dec-76	-1.43	0.92	2.50	2.16	2.85	5.02	3.06
Jan-77	-1.40	1.02	2.68	1.94	2.75	4.98	2.88
Feb-77	-1.50	0.84	2.42	1.72	2.23	4.58	2.21
Mar-77	-1.69	0.80	3.01	1.93	2.23	3.90	1.72
Apr-77	-0.74	1.70	3.21	1.90	3.21	4.69	2.04
May-77	1.11	1.75	2.04	0.77	2.61	4.03	1.42
Jun-77	-0.65	1.59	1.26	-1.06	2.34	3.67	1.36
Jul-77	-1.33	1.29	-1.96	-1.64	1.43	2.82	0.74
Aug-77	0.75	1.52	-1.94	-1.25	0.57	1.82	-0.89
Sep-77	-0.93	-1.08	-2.66	-1.48	-2.42	1.08	-1.08
Oct-77	-1.42	-1.47	-2.99	-1.94	-2.35	0.68	-1.17
Nov-77	-1.73	-1.85	-3.05	-1.76	-2.01	0.76	0.73
Dec-77	-2.05	-2.31	-3.62	-2.25	-2.36	-1.97	0.20
Jan-78	-1.90	-2.37	-3.74	-1.63	-2.37	-1.74	1.01
Feb-78	-1.25	-1.80	-3.26	-1.49	-2.01	-1.49	1.19
Mar-78	-1.44	-2.00	-2.99	-1.55	-2.14	-1.64	0.60
Apr-78	-2.18	-2.78	-3.31	-2.21	-2.60	-1.77	-0.77
May-78	-1.16	-2.28	-3.29	-2.59	-2.86	-2.27	-1.62
Jun-78	-0.87	-2.59	-3.64	-2.77	-2.83	-1.83	-1.40
Jul-78	-1.78	-3.31	-4.24	-3.17	-3.25	-2.09	-1.60
Aug-78	-2.04	-2.31	-3.58	-3.36	-2.06	-2.14	-2.03
Sep-78	-1.41	-1.52	-3.70	-3.05	-1.51	-0.92	-1.68
Oct-78	-1.74	-1.88	-3.97	-3.31	-1.81	-1.20	-2.19
Nov-78	-1.16	-1.73	-3.00	-2.63	-1.07	1.02	-1.72
Dec-78	-1.22	-1.93	-2.97	-2.49	-1.13	0.99	-1.90
Jan-79	-0.88	-1.66	-2.22	-1.18	-0.99	1.92	-0.79
Feb-79	-0.91	-1.64	-1.72	-0.68	-0.63	2.00	1.15
Mar-79	0.68	0.95	1.77	1.96	1.56	2.21	1.62
Apr-79	0.68	0.77	1.47	2.33	1.47	2.69	2.53
May-79	0.86	0.59	2.29	2.76	1.08	3.02	2.62
Jun-79	1.49	1.22	1.96	2.46	1.66	3.06	2.24
Jul-79	1.86	1.79	2.19	3.51	1.70	4.06	4.27
Aug-79	2.16	2.34	2.89	3.84	1.89	4.03	3.97
Sep-79	1.14	1.25	2.20	4.74	0.79	4.28	5.78
Oct-79	0.68	-1.51	1.61	4.22	-1.67	3.28	5.02
Nov-79	-1.12	-1.54	0.84	3.71	-1.78	2.62	4.22

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Dec-79	-1.06	-1.17	0.92	3.46	-1.39	2.38	3.74
Jan-80	-0.79	-1.09	0.73	3.22	-1.45	2.09	3.91
Feb-80	-0.75	-1.19	-1.15	2.55	-1.63	1.62	3.19
Mar-80	0.29	-1.21	-1.26	2.48	-1.55	1.48	3.56
Apr-80	0.62	-1.55	-1.35	2.38	-1.84	0.91	2.82
May-80	0.99	-0.77	-0.90	2.31	-1.46	1.19	2.92
Jun-80	-0.79	-1.37	-1.39	1.57	-2.08	-1.28	1.96
Jul-80	-2.07	-2.36	-2.23	0.72	-2.90	-1.89	1.10
Aug-80	-2.33	-2.84	-3.07	-1.93	-2.62	-1.11	-1.74
Sep-80	-1.55	-0.85	-1.92	-1.79	-1.03	-0.86	-1.05
Oct-80	-1.98	-1.12	-2.06	-1.88	-1.22	-1.14	-1.03
Nov-80	-1.55	-0.77	-2.07	-2.04	-0.55	-0.72	-1.19
Dec-80	-1.48	1.35	-2.14	-2.91	1.22	-1.16	-1.77
Jan-81	-1.65	1.02	-2.57	-3.46	1.02	-1.18	-1.83
Feb-81	-1.80	1.07	-2.88	-3.92	0.60	-1.42	-1.83
Mar-81	-1.39	1.29	-2.17	-3.84	1.52	-1.18	-1.86
Apr-81	-1.26	1.68	-2.45	-4.30	2.20	-1.38	-2.08
May-81	-1.60	1.65	-1.98	-3.13	2.37	-0.62	-1.16
Jun-81	-2.33	1.71	1.48	-1.78	3.47	2.12	2.18
Jul-81	-2.19	1.45	1.83	-0.99	3.59	2.69	2.64
Aug-81	-0.77	1.44	1.84	-0.76	3.36	3.89	3.22
Sep-81	1.31	0.71	1.64	-0.56	2.64	3.16	2.62
Oct-81	1.88	1.49	3.53	2.81	3.59	3.96	3.04
Nov-81	1.95	1.15	3.36	2.23	2.91	3.60	2.76
Dec-81	1.37	0.63	2.72	1.15	2.10	3.00	2.58
Jan-82	0.96	0.61	2.60	0.79	1.64	2.36	1.88
Feb-82	0.81	-0.54	2.34	-1.43	1.68	2.71	2.20
Mar-82	0.62	-0.61	1.87	-1.76	1.15	2.11	1.61
Apr-82	-0.91	-0.89	1.56	-1.15	0.83	1.81	1.48
May-82	0.49	1.73	2.80	-0.92	1.20	2.15	1.92
Jun-82	1.38	3.50	3.39	1.02	1.34	1.60	1.52
Jul-82	2.10	4.00	3.57	0.85	0.81	0.81	0.75
Aug-82	0.85	3.64	3.08	-0.38	-1.13	-1.39	-1.35
Sep-82	-1.54	2.70	1.97	-0.98	-1.68	-2.03	-2.05
Oct-82	-1.95	1.82	1.47	0.28	-2.12	-1.76	-1.96
Nov-82	-1.67	1.87	1.76	0.95	-1.56	-1.04	-0.72
Dec-82	-1.03	1.84	1.85	2.09	-1.32	-1.10	1.57
Jan-83	1.24	2.36	1.57	1.32	-1.05	-1.06	1.44
Feb-83	1.56	2.15	1.65	1.89	-0.95	-0.55	2.09
Mar-83	1.52	2.24	1.96	2.15	0.72	1.68	2.36
Apr-83	1.49	2.01	1.10	1.23	-0.45	0.96	1.55
May-83	1.29	1.80	1.41	1.94	-0.61	1.06	1.53
Jun-83	1.25	1.86	1.43	2.00	-0.18	1.03	1.52
Jul-83	-0.85	1.46	1.49	1.88	-0.45	1.82	2.51

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Aug-83	-2.12	-1.11	1.62	2.41	-0.94	1.98	3.57
Sep-83	-2.83	-1.89	0.79	2.06	-1.65	2.05	4.35
Oct-83	-1.56	1.45	0.58	1.47	-1.16	1.95	3.84
Nov-83	-1.22	1.58	-0.90	1.13	-0.85	1.61	3.53
Dec-83	-0.98	1.52	-1.27	1.15	-1.11	1.12	3.29
Jan-84	-0.96	1.40	-1.61	0.69	-0.81	1.30	3.36
Feb-84	-1.11	1.22	-1.87	0.86	-1.23	0.84	2.81
Mar-84	-0.81	1.07	-1.34	0.87	-1.48	0.56	2.19
Apr-84	-0.66	0.56	-1.91	-1.04	-2.16	-1.30	1.20
May-84	-1.53	-1.51	-2.51	-1.27	-2.95	-1.73	1.05
Jun-84	-1.15	-1.98	-2.71	-1.39	-3.41	-2.29	-1.67
Jul-84	-1.56	-2.32	-3.04	-1.64	-3.61	-2.52	-1.85
Aug-84	-0.93	-1.96	-3.17	-1.90	-3.97	-2.81	-1.90
Sep-84	-1.38	-2.19	-3.37	-1.96	-3.87	-3.06	-1.64
Oct-84	0.69	-1.61	-1.67	2.14	-2.69	-1.56	2.03
Nov-84	1.23	-0.65	-1.05	2.14	-2.08	-1.41	1.88
Dec-84	1.72	2.23	2.65	1.65	-0.90	-1.02	1.29
Jan-85	1.73	2.13	2.45	1.34	-0.62	1.48	1.27
Feb-85	1.99	2.57	2.42	1.58	1.74	1.74	1.80
Mar-85	2.51	3.06	2.52	1.32	1.81	1.88	2.58
Apr-85	2.64	3.25	2.20	0.95	1.44	2.05	2.26
May-85	2.30	2.65	1.55	-0.69	1.15	1.60	1.51
Jun-85	3.25	3.63	1.74	-1.08	1.33	1.88	1.35
Jul-85	3.22	4.06	1.70	-1.06	1.21	1.79	1.09
Aug-85	2.53	3.49	0.88	-1.73	-0.73	0.95	-0.95
Sep-85	3.65	3.29	0.82	-1.74	-0.56	1.09	-0.77
Oct-85	4.66	3.53	1.47	1.06	-0.35	1.24	-0.31
Nov-85	4.17	3.12	1.66	1.76	-0.45	2.06	-0.42
Dec-85	3.66	2.48	1.57	1.66	-0.76	1.70	-0.56
Jan-86	2.91	1.66	0.85	0.62	-1.09	1.29	-1.02
Feb-86	2.79	1.40	1.17	-0.91	-1.32	0.86	-1.35
Mar-86	2.05	0.65	-0.73	-1.73	-1.80	-0.93	-1.60
Apr-86	1.35	-1.78	-0.82	-1.38	-2.62	-1.48	-1.96
May-86	1.21	-1.76	0.61	-0.73	-2.04	-0.76	-1.50
Jun-86	1.99	-1.44	1.50	1.63	-1.41	0.99	-0.56
Jul-86	1.43	-1.54	1.68	1.08	-2.07	0.41	-1.03
Aug-86	2.50	-0.70	1.78	0.92	-1.63	0.27	-1.16
Sep-86	3.01	1.35	2.06	1.01	-1.25	0.12	-1.23
Oct-86	3.69	3.00	2.42	1.31	2.11	1.04	1.27
Nov-86	4.41	3.48	2.78	1.86	2.33	1.30	2.33
Dec-86	4.69	3.69	3.19	2.01	3.27	2.57	3.04
Jan-87	4.57	3.72	2.94	1.40	2.70	2.33	2.95
Feb-87	4.76	4.46	3.34	1.96	3.27	3.07	3.25
Mar-87	4.77	4.30	2.87	1.54	3.22	2.60	2.44

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Apr-87	4.17	3.47	1.80	-1.16	2.87	1.87	1.46
May-87	5.12	4.60	2.20	-1.29	3.86	2.24	1.36
Jun-87	5.39	4.65	2.79	0.64	5.28	4.04	2.43
Jul-87	5.40	4.81	2.96	0.76	5.75	4.31	2.82
Aug-87	5.75	4.77	2.64	0.36	5.64	3.97	2.40
Sep-87	5.88	4.27	2.47	0.36	4.99	3.29	2.06
Oct-87	4.84	3.13	1.60	0.03	3.76	2.40	1.19
Nov-87	4.07	2.36	1.84	0.92	3.43	2.44	1.33
Dec-87	4.24	2.70	2.26	2.08	3.22	2.21	1.24
Jan-88	3.79	2.26	1.75	1.35	2.47	1.52	0.87
Feb-88	3.20	1.68	1.34	0.89	1.78	0.93	-0.93
Mar-88	3.33	1.60	1.13	1.09	1.33	0.94	-0.30
Apr-88	3.81	1.48	0.59	-0.88	0.55	0.62	-0.30
May-88	3.89	-1.34	-1.50	-1.73	-1.88	-1.30	-0.89
Jun-88	3.69	-1.18	-1.12	-2.20	-1.90	-1.60	-1.23
Jul-88	4.25	-0.75	-0.79	-2.15	-1.12	-1.54	-1.33
Aug-88	3.69	-1.28	-1.16	-2.11	-1.48	-1.96	-1.70
Sep-88	4.33	0.90	-0.82	-2.53	-1.24	-2.19	-1.73
Oct-88	3.24	-0.57	-1.13	-2.23	-1.79	-2.49	-2.08
Nov-88	2.42	-1.12	-1.45	-1.96	-2.35	-3.19	-2.89
Dec-88	1.90	-1.24	-1.52	-1.73	-2.41	-3.42	-3.23
Jan-89	1.39	-1.38	-1.39	-1.15	-1.97	-2.64	-2.57
Feb-89	1.44	-0.75	-0.70	-0.86	-1.21	-2.93	-2.93
Mar-89	1.01	-0.85	0.79	1.30	-0.95	-2.59	-2.57
Apr-89	-2.08	-1.52	0.11	0.61	-1.37	-2.53	-2.70
May-89	-2.15	-1.63	1.07	1.38	-1.70	-2.82	-2.03
Jun-89	-0.91	0.93	2.52	2.78	-1.72	-2.52	2.17
Jul-89	-1.23	0.31	2.96	3.22	-2.28	-2.83	2.17
Aug-89	1.08	0.32	3.42	3.11	-2.58	-3.03	2.29
Sep-89	1.26	0.76	3.13	2.47	-2.74	-3.39	1.41
Oct-89	-0.77	-0.68	2.39	1.93	-2.65	-3.33	1.02
Nov-89	-1.27	-1.32	1.38	0.84	-2.70	-3.28	-1.11
Dec-89	-1.24	-1.53	0.55	-2.18	-2.77	-3.40	-1.72
Jan-90	-0.97	-1.36	0.61	-1.27	-2.90	-3.62	-1.46
Feb-90	0.65	-0.75	0.91	-1.02	-2.41	-3.34	-1.32
Mar-90	0.94	1.08	1.90	1.70	-1.65	-2.42	0.79
Apr-90	1.29	2.12	2.88	1.68	-0.97	-1.97	1.10
May-90	0.62	1.96	3.05	2.19	-0.84	-2.32	0.87
Jun-90	-1.92	1.62	2.30	1.69	-1.71	-3.06	-0.64
Jul-90	-1.72	2.19	2.29	1.40	1.24	-2.14	-0.51
Aug-90	-1.70	2.20	2.15	0.84	0.81	-2.65	-1.24
Sep-90	-1.34	2.08	1.90	0.91	1.21	-2.66	-1.37
Oct-90	-1.62	1.53	1.60	1.11	1.14	-2.59	-1.37
Nov-90	-1.47	1.72	1.76	1.29	1.10	-2.66	-1.64

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Dec-90	-1.48	1.49	1.38	1.25	0.56	-2.97	-2.02
Jan-91	-1.00	2.04	1.96	2.38	1.04	-1.64	1.72
Feb-91	-1.46	1.29	1.57	2.47	0.59	-1.32	2.17
Mar-91	-1.71	0.57	0.87	1.86	-0.77	-1.28	1.86
Apr-91	-2.50	-1.69	0.67	2.83	-1.05	1.48	3.04
May-91	-2.52	-1.68	0.58	2.70	-1.51	1.36	3.15
Jun-91	-2.16	1.22	0.96	2.66	-1.11	1.85	3.46
Jul-91	-1.28	1.63	1.40	2.49	-1.11	1.99	3.22
Aug-91	-1.04	2.19	2.70	3.18	-1.07	1.79	2.86
Sep-91	1.62	3.40	2.86	3.25	1.26	2.06	2.73
Oct-91	1.10	3.31	3.60	3.13	0.94	1.67	2.12
Nov-91	1.55	3.03	3.36	2.98	0.84	1.23	2.15
Dec-91	2.86	4.77	5.70	3.88	2.96	3.63	3.06
Jan-92	3.05	5.18	5.90	3.90	3.42	4.50	4.08
Feb-92	3.02	5.91	6.14	4.30	4.41	5.71	5.02
Mar-92	2.87	5.35	5.64	4.24	4.44	5.91	4.87
Apr-92	2.92	4.98	4.59	3.40	3.97	5.89	5.02
May-92	3.65	5.02	4.66	2.94	4.42	6.55	5.20
Jun-92	5.05	6.62	4.99	3.18	5.01	6.39	5.10
Jul-92	5.51	7.09	5.26	3.49	5.37	6.05	4.79
Aug-92	5.93	6.84	5.19	3.18	5.03	5.45	4.09
Sep-92	4.68	5.75	4.74	3.01	3.74	4.37	3.10
Oct-92	3.40	4.35	3.75	2.60	2.59	3.42	2.28
Nov-92	3.64	4.72	3.96	2.84	2.74	3.88	3.00
Dec-92	3.51	4.43	4.24	3.32	2.43	3.59	2.90
Jan-93	3.73	4.29	4.19	3.45	2.15	3.41	3.47
Feb-93	3.61	4.53	4.52	2.94	1.87	3.53	3.19
Mar-93	3.61	4.38	4.39	3.08	1.83	3.98	3.95
Apr-93	3.46	4.17	4.11	3.00	1.68	3.83	4.25
May-93	2.96	3.96	3.40	2.74	1.31	4.63	4.70
Jun-93	2.87	3.86	3.32	3.72	1.16	5.59	5.31
Jul-93	3.12	3.61	2.41	2.73	-0.99	4.95	4.25
Aug-93	2.98	3.19	1.38	2.00	-1.32	3.80	3.17
Sep-93	2.29	2.48	1.43	1.47	-1.25	2.54	2.04
Oct-93	1.79	2.28	2.27	2.26	-1.42	2.40	2.25
Nov-93	1.52	1.82	2.09	2.17	-1.64	1.89	2.31
Dec-93	1.15	1.52	2.04	1.73	-1.82	1.52	1.95
Jan-94	0.96	1.25	1.81	1.49	-1.43	0.90	1.68
Feb-94	-1.03	1.09	1.83	1.85	-1.43	-1.93	1.09
Mar-94	-1.07	0.76	1.35	1.55	-1.20	-1.40	0.98
Apr-94	-0.81	0.65	1.05	0.92	-1.36	-1.25	0.80
May-94	-0.57	1.02	1.77	1.30	-1.12	-0.69	1.17
Jun-94	-1.75	-1.34	1.13	0.93	-1.83	-0.77	1.35
Jul-94	-1.56	-1.75	1.42	1.17	-2.12	-1.36	0.74

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Aug-94	-1.85	-2.42	1.30	1.63	-2.54	-1.00	0.95
Sep-94	-2.03	-2.27	1.23	1.18	-2.36	-0.93	-0.61
Oct-94	-2.13	-2.06	2.02	2.99	-1.95	1.84	2.02
Nov-94	-1.90	-1.52	2.87	2.63	-1.53	1.27	1.19
Dec-94	-1.99	-1.54	3.33	3.42	-0.94	2.12	1.74
Jan-95	-1.91	-1.54	3.10	3.75	-1.22	1.79	1.93
Feb-95	-2.25	-1.78	2.27	2.83	-1.34	1.57	1.49
Mar-95	-2.32	-1.50	2.70	2.68	-0.99	1.97	2.03
Apr-95	-2.36	-1.44	2.82	3.00	-0.80	1.80	2.22
May-95	-1.37	1.03	3.09	2.63	0.85	2.00	2.42
Jun-95	-1.11	1.87	2.99	2.34	0.87	2.05	2.48
Jul-95	-1.22	2.01	3.40	2.40	-0.43	1.77	2.30
Aug-95	-1.60	3.54	4.12	2.13	-0.71	1.81	2.09
Sep-95	0.95	3.95	4.02	1.91	-0.51	1.24	1.19
Oct-95	-0.44	3.18	2.97	1.20	-1.11	0.98	1.00
Nov-95	-0.96	2.53	2.22	-1.21	-0.76	0.90	0.88
Dec-95	-0.90	1.97	1.57	-1.33	-1.08	0.56	1.62
Jan-96	-1.17	1.41	0.81	-1.87	-1.51	-1.35	1.14
Feb-96	-1.61	0.55	-2.70	-2.86	-2.07	-2.17	-1.03
Mar-96	-1.94	-1.72	-2.60	-3.18	-2.17	-2.26	-1.37
Apr-96	-2.55	-2.17	-2.65	-2.96	-2.33	-2.57	-1.54
May-96	-3.44	-3.40	-3.76	-3.73	-3.24	-3.68	-2.42
Jun-96	-3.32	-3.68	-4.07	-3.54	-3.82	-3.73	-1.80
Jul-96	-2.03	-3.54	-3.95	-3.15	-4.12	-4.31	-2.36
Aug-96	-0.63	-2.13	-2.05	-1.43	-2.71	-2.97	-1.07
Sep-96	2.32	-1.49	-1.27	2.08	-2.08	-2.52	1.44
Oct-96	1.60	-1.67	-1.08	1.78	-1.82	-2.88	1.13
Nov-96	1.62	-0.92	2.83	2.08	-1.04	-2.74	0.73
Dec-96	1.14	-1.38	2.46	1.73	-1.12	-2.74	-0.56
Jan-97	0.97	-1.57	2.10	1.54	-1.17	-2.63	0.41
Feb-97	1.22	1.46	3.90	3.11	2.04	-2.31	0.91
Mar-97	-0.66	0.85	3.59	2.98	2.39	-1.29	2.25
Apr-97	2.78	2.76	4.23	3.74	3.12	1.85	3.52
May-97	2.89	2.66	3.79	3.12	3.05	2.22	3.67
Jun-97	3.41	3.85	4.07	3.22	4.60	3.08	3.18
Jul-97	3.67	4.28	3.92	2.73	4.67	2.84	2.39
Aug-97	4.05	4.60	3.80	3.27	3.69	2.23	1.50
Sep-97	3.50	3.89	2.55	2.52	2.56	1.80	1.91
Oct-97	2.90	3.38	2.58	2.75	2.12	3.03	2.63
Nov-97	2.61	2.86	2.32	2.70	1.86	3.36	2.71
Dec-97	3.27	3.38	3.43	2.96	1.91	3.33	2.83
Jan-98	2.66	3.01	4.05	3.55	1.51	2.93	3.28
Feb-98	2.81	3.08	4.16	3.80	1.48	3.57	3.54
Mar-98	3.49	3.77	4.41	3.37	1.96	3.42	3.15

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Apr-98	3.09	3.01	3.41	2.45	1.17	2.64	2.28
May-98	1.79	1.74	1.83	1.02	-1.76	1.33	0.90
Jun-98	-2.17	0.67	0.69	-2.75	-2.35	-2.33	-2.12
Jul-98	-2.51	-2.75	-3.30	-3.81	-3.02	-2.99	-2.85
Aug-98	-2.35	-3.04	-3.45	-3.55	2.29	-1.73	-2.38
Sep-98	-3.34	-3.94	-3.38	-2.05	1.45	-1.01	-0.70
Oct-98	-1.78	-3.63	-2.53	-0.79	1.45	3.71	2.31
Nov-98	-1.18	-3.27	-1.65	2.75	1.74	4.49	2.86
Dec-98	-1.11	-3.28	-0.79	2.93	1.41	4.14	2.58
Jan-99	1.73	-2.66	1.68	3.46	0.76	3.38	2.03
Feb-99	0.99	-3.17	0.66	1.89	-1.44	2.42	1.08
Mar-99	1.57	-2.12	1.01	1.92	-0.67	2.63	1.05
Apr-99	2.63	-1.62	0.62	1.44	-0.83	1.92	-1.42
May-99	3.32	-1.14	0.71	1.46	-1.23	1.64	-1.25
Jun-99	4.14	1.76	0.71	1.71	-1.01	1.80	-0.85
Jul-99	4.07	1.22	0.59	1.55	-1.17	1.85	-0.66
Aug-99	3.48	-0.93	-1.11	-1.08	-1.86	1.55	-1.47
Sep-99	3.11	-1.37	-1.64	-1.36	-2.64	0.76	-1.78
Oct-99	2.24	-1.70	-1.78	-1.47	-2.78	-1.20	-2.17
Nov-99	1.25	-2.45	-2.63	-2.48	-3.34	-1.97	-2.86
Dec-99	1.16	-2.58	-2.65	-2.71	-3.48	-2.44	-3.17
Jan-00	0.66	-2.85	-2.79	-3.15	-3.70	-2.45	-3.76
Feb-00	-2.01	-3.22	-3.15	-3.91	-3.86	-2.97	-4.63
Mar-00	-0.81	-1.98	-2.87	-3.54	-4.01	-2.59	-4.69
Apr-00	-0.73	-1.92	-2.72	-3.04	-4.37	-2.81	-4.06
May-00	-1.74	-3.07	-2.95	-2.28	-4.99	-2.59	-3.22
Jun-00	1.24	-1.52	-1.60	-1.14	-3.89	-2.42	-3.11
Jul-00	-0.67	-1.97	-1.77	-1.44	-4.49	-3.15	-3.65
Aug-00	-2.11	-2.98	-2.64	-2.28	-5.02	-3.67	-4.12
Sep-00	-3.18	-3.72	-3.15	-2.59	-5.06	-4.09	-4.33
Oct-00	-1.84	-2.61	-2.53	-2.64	-3.42	-3.32	-4.10
Nov-00	-1.02	-1.17	2.02	2.23	-1.02	-1.20	-2.28
Dec-00	-0.62	-0.92	2.53	2.65	-0.84	-0.72	-2.12
Jan-01	2.14	2.18	3.00	2.92	2.99	2.50	-1.36
Feb-01	2.25	2.59	3.76	3.36	2.57	1.84	-2.05
Mar-01	3.14	3.12	4.30	4.48	2.83	2.60	-0.91
Apr-01	2.55	2.28	3.13	3.00	2.16	1.84	-1.51
May-01	2.97	2.27	2.45	2.37	1.71	1.43	-1.62
Jun-01	2.29	1.37	1.75	3.34	0.69	0.97	1.67
Jul-01	0.98	-1.86	0.80	2.75	-2.12	-1.42	1.40
Aug-01	0.73	-1.52	1.26	2.96	-1.48	1.45	2.45
Sep-01	-1.70	-1.59	1.31	3.78	-1.42	1.57	2.69
Oct-01	-2.32	-2.04	1.05	3.85	-1.63	1.40	2.86
Nov-01	-1.44	-0.75	0.91	3.69	1.27	1.99	3.08

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Dec-01	-1.58	-0.91	1.17	4.20	1.00	2.35	3.19
Jan-02	-1.28	-0.90	1.04	3.35	-0.52	1.76	2.37
Feb-02	-1.24	-0.82	0.80	2.77	-0.68	1.22	1.55
Mar-02	-0.56	1.21	1.49	3.09	-0.61	0.81	1.11
Apr-02	-0.61	1.22	1.08	2.30	-1.11	-1.17	0.98
May-02	-1.51	-0.64	0.89	1.68	-1.92	-1.75	-1.46
Jun-02	-2.20	-0.67	0.79	1.41	-2.22	-1.72	-1.16
Jul-02	-2.41	1.23	1.65	1.57	1.60	1.20	-0.76
Aug-02	-2.20	0.80	1.49	1.30	0.77	0.93	1.07
Sep-02	-2.49	-0.73	0.95	0.87	-0.89	1.50	1.70
Oct-02	-0.75	1.21	1.96	1.81	1.51	3.12	3.45
Nov-02	-0.63	1.14	1.64	1.87	1.45	3.81	3.62
Dec-02	1.85	1.71	2.57	3.06	1.54	4.53	4.32
Jan-03	1.39	1.36	1.99	1.96	1.12	4.14	3.70
Feb-03	1.13	1.21	2.35	2.99	1.29	4.30	3.44
Mar-03	0.93	0.92	1.68	2.17	1.12	3.87	2.81
Apr-03	-0.75	0.68	0.83	1.16	-0.69	2.83	1.89
May-03	-1.39	-1.05	-1.68	-2.06	-1.31	1.47	-2.05
Jun-03	1.22	1.54	-0.94	-1.42	-0.87	1.09	-1.84
Jul-03	-0.99	1.06	-1.26	-1.33	0.53	1.49	-1.41
Aug-03	-1.62	0.79	-1.13	-1.25	0.55	0.94	-1.43
Sep-03	-1.69	-0.83	-0.77	-0.83	0.84	1.82	0.94
Oct-03	-2.04	-1.23	-0.92	-1.00	1.07	1.61	1.13
Nov-03	-2.13	-1.33	-1.20	-1.19	0.74	1.08	1.16
Dec-03	-2.42	-1.88	-1.85	-1.64	-0.79	-0.98	1.14
Jan-04	-1.97	-1.50	-1.90	-1.54	0.11	0.10	1.47
Feb-04	-1.04	-0.61	-1.05	1.19	0.31	0.35	2.02
Mar-04	1.32	1.22	-1.37	0.75	0.81	0.22	1.45
Apr-04	2.39	1.68	-0.78	0.72	1.79	1.29	1.69
May-04	1.00	-1.09	-1.33	0.68	1.18	1.40	2.51
Jun-04	1.77	1.14	1.69	2.15	2.30	2.96	4.00
Jul-04	1.99	1.92	2.55	1.86	2.36	3.11	3.43
Aug-04	2.54	2.73	3.53	2.06	3.04	3.05	2.67
Sep-04	3.61	1.95	2.64	1.28	2.49	2.34	1.61
Oct-04	4.12	2.38	2.93	1.41	2.95	2.36	1.51
Nov-04	6.73	5.10	4.60	2.62	5.17	4.09	3.46
Dec-04	6.23	4.65	4.05	2.05	4.41	3.38	2.91
Jan-05	6.43	4.63	4.14	1.79	3.93	3.19	2.22
Feb-05	6.25	4.71	3.89	1.89	4.00	3.34	2.52
Mar-05	6.10	4.54	3.39	1.33	4.00	3.55	2.62
Apr-05	5.50	3.65	2.29	0.72	3.09	2.71	1.87
May-05	5.10	3.24	1.68	-1.41	3.22	2.36	1.61
Jun-05	4.72	2.80	0.87	-2.21	2.50	1.52	0.64
Jul-05	4.52	2.84	0.55	-2.27	2.34	1.37	0.79

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Aug-05	5.22	4.49	1.23	-2.08	2.90	0.72	-1.40
Sep-05	3.81	3.41	-1.67	-2.11	1.54	-1.98	-1.71
Oct-05	3.46	3.04	-2.14	-2.67	1.78	-2.04	-1.87
Nov-05	2.55	1.97	-2.80	-3.25	1.08	-2.38	-1.96
Dec-05	1.88	1.22	-3.43	-4.09	-1.44	-2.81	-2.32
Jan-06	1.01	-2.28	-3.67	-4.11	-1.81	-3.41	-2.87
Feb-06	-2.30	-2.54	-3.62	-3.83	-2.12	-3.91	-3.33
Mar-06	-2.09	-2.26	-2.83	-3.19	-2.13	-4.09	-3.63
Apr-06	-2.71	-2.69	-3.03	-3.47	-2.55	-4.81	-3.88
May-06	-3.37	-3.17	-3.53	-3.93	-3.22	-4.95	-3.54
Jun-06	-4.06	-4.08	-3.85	-4.02	-3.72	-4.95	-2.66
Jul-06	-4.38	-4.78	-4.36	-3.87	-4.04	-4.39	-0.97
Aug-06	-2.79	-4.37	-4.47	-4.09	-3.87	-4.89	-0.89
Sep-06	-1.75	-3.61	-4.20	-4.05	-3.60	-4.13	-0.84
Oct-06	-1.20	-2.52	-3.58	-2.51	-3.33	-3.61	3.06
Nov-06	-1.43	-2.49	-3.51	-2.47	-3.75	-4.05	2.17
Dec-06	2.28	-1.68	-3.08	-1.69	-3.54	-3.53	2.12
Jan-07	2.52	-1.02	-1.93	2.47	-2.45	-1.92	3.12
Feb-07	2.11	-1.15	-2.20	1.62	-2.64	-2.27	2.27
Mar-07	3.74	2.50	-0.67	1.24	-0.57	-0.55	2.75
Apr-07	3.91	2.64	-0.73	0.85	2.08	2.11	3.06
May-07	4.39	3.23	2.43	1.14	3.39	2.24	3.13
Jun-07	4.97	4.67	4.37	1.82	4.81	2.65	2.92
Jul-07	5.12	5.28	5.48	3.77	6.51	5.75	4.90
Aug-07	4.93	6.63	5.94	3.94	8.02	6.54	5.11
Sep-07	4.60	5.76	5.60	3.27	6.99	5.71	4.59
Oct-07	3.38	4.47	4.75	2.62	5.77	4.81	3.84
Nov-07	2.64	3.63	3.86	1.88	4.92	4.20	3.44
Dec-07	2.76	3.39	3.18	1.35	4.02	3.24	2.50
Jan-08	2.14	2.59	2.20	0.88	3.16	2.70	2.84
Feb-08	1.69	1.98	1.38	1.04	2.09	1.72	2.36
Mar-08	1.09	1.95	2.27	1.76	2.27	1.48	2.06
Apr-08	-1.68	1.77	2.35	1.37	1.68	1.08	1.57
May-08	-1.83	1.09	1.70	1.29	0.55	-2.42	0.75
Jun-08	-2.19	-1.73	1.02	1.17	-2.97	-3.34	-1.59
Jul-08	-2.02	-2.19	-1.76	-0.81	-3.25	-3.09	-1.79
Aug-08	-0.85	-1.08	-0.84	1.34	-1.83	-2.48	-0.98
Sep-08	1.13	-0.59	-1.14	1.84	-2.15	-3.08	-0.77
Oct-08	2.10	1.36	-1.33	1.55	-2.24	-3.23	-0.89
Nov-08	1.62	0.73	-1.65	1.43	-2.65	-3.61	-0.89
Dec-08	1.10	-1.04	-2.30	0.73	-2.93	-3.97	-1.54
Jan-09	-1.01	-1.57	-2.92	-1.08	-3.15	-4.49	-2.45
Feb-09	-1.31	-2.14	-3.73	-1.77	-3.63	-5.26	-3.33
Mar-09	-1.63	-2.50	-3.02	-0.83	-3.06	-4.91	-3.26

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Apr-09	-1.24	-2.27	-2.36	1.15	-2.46	-4.44	-1.89
May-09	-1.97	-2.90	-2.44	1.07	-2.91	-4.94	-2.21
Jun-09	-1.90	-3.21	-2.54	-0.69	-3.41	-5.85	-2.85
Jul-09	-1.14	-2.51	-2.12	0.88	-3.33	-6.37	-3.30
Aug-09	-1.27	-2.85	-2.09	0.94	-3.68	-6.51	-3.72
Sep-09	-1.58	-2.32	1.33	1.97	-2.91	-5.26	-3.52
Oct-09	-1.29	-1.98	3.20	4.69	-2.06	-3.53	-1.84
Nov-09	-1.76	-2.42	2.79	3.85	-1.88	-2.39	-1.60
Dec-09	-1.42	-1.97	2.90	3.83	-1.46	-1.36	-0.55
Jan-10	-0.69	-1.30	3.40	3.34	1.62	-0.57	1.88
Feb-10	1.59	1.22	3.70	3.45	2.18	3.73	2.08
Mar-10	2.08	1.40	3.85	3.14	2.38	3.62	1.86
Apr-10	3.12	2.60	3.33	2.03	2.68	3.18	1.14
May-10	2.74	2.13	2.19	0.78	2.43	2.64	0.72
Jun-10	2.79	2.16	1.59	-1.83	1.98	2.55	-0.93
Jul-10	3.97	3.72	1.72	-1.53	2.61	3.24	1.31
Aug-10	3.61	3.14	0.90	-2.13	1.87	2.36	0.85
Sep-10	2.81	3.02	2.31	-2.34	1.90	3.60	1.16
Oct-10	2.21	2.28	1.74	-2.49	0.93	2.64	-0.79
Nov-10	1.93	1.54	1.15	-2.69	-1.58	1.99	-0.80
Dec-10	1.32	0.95	0.74	-3.45	-1.78	1.28	-1.03
Jan-11	0.80	-1.60	0.59	-3.18	-1.74	1.42	-0.92
Feb-11	0.59	-1.81	-1.18	-3.37	-2.01	0.68	-1.50
Mar-11	-1.89	-2.50	-2.05	-4.05	-2.64	-2.05	-1.88
Apr-11	-2.74	-3.50	-2.49	-4.41	-3.55	-2.97	-2.67
May-11	-3.80	-4.44	-2.59	-4.54	-4.29	-3.51	-3.43
Jun-11	-5.31	-5.81	-3.33	-4.95	-5.11	-4.03	-3.92
Jul-11	-6.13	-6.49	-4.43	-5.73	-5.64	-4.73	-4.16
Aug-11	-6.79	-6.94	-5.00	-6.44	-5.92	-5.33	-4.90
Sep-11	-6.70	-7.02	-5.28	-6.50	-6.13	-5.75	-5.29
Oct-11	-6.19	-6.09	-4.49	-6.22	-5.52	-5.48	-5.02
Nov-11	-5.82	-5.54	-4.25	-5.92	-5.10	-5.33	-5.04
Dec-11	-4.42	-4.62	-3.13	-4.81	-4.06	-4.50	-4.80
Jan-12	-4.44	-4.06	-2.03	-4.36	-3.75	-4.37	-4.72
Feb-12	-3.96	-3.66	-1.63	-3.47	-3.00	-3.58	-3.54
Mar-12	-3.77	-3.46	-0.77	-2.27	-2.33	-2.58	-2.68
Apr-12	-3.82	-3.82	-1.53	-2.64	-2.65	-2.91	-2.57
May-12	-4.29	-4.39	-2.23	-3.19	-2.03	-2.67	-2.61
Jun-12	-4.52	-4.51	-2.59	-3.22	-2.60	-3.05	-2.71
Jul-12	-5.00	-4.75	-2.99	-2.51	-2.52	-2.54	-1.65
Aug-12	-5.12	-4.54	-2.61	-2.48	-2.68	-2.82	-1.61
Sep-12	-4.39	-3.60	-2.21	-1.59	-1.91	-2.41	-1.62
Oct-12	-4.49	-3.93	-2.59	-1.88	-2.43	-2.75	-2.13
Nov-12	-4.76	-4.35	-3.38	-2.71	-3.01	-3.34	-2.82

Date	Div 1 High Plains	Div 2 Low Rolling Plains	Div 3 North Central	Div 4 East Texas	Div 6 Edwards Plateau	Div 7 South Central	Div 8 Upper Coast
Dec-12	-4.47	-4.42	-3.70	-3.06	-3.32	-3.78	-3.15
Jan-13	-3.87	-3.90	-3.22	-2.63	-2.74	-3.47	-2.89
Feb-13	-2.99	-3.35	-3.43	-2.66	-3.05	-3.81	-3.15
Mar-13	-3.01	-3.56	-3.39	-2.94	-3.24	-4.03	-3.47
Apr-13	-3.35	-3.64	-3.21	-2.80	-3.34	-3.59	-2.62
May-13	-4.16	-4.26	-3.22	-2.69	-3.11	-3.69	-2.69
Jun-13	-4.14	-4.17	-3.41	-2.63	-3.40	-4.22	-2.87
Jul-13	-3.42	-3.25	-2.76	-2.38	-2.85	-4.28	-2.93
Aug-13	-3.33	-3.02	-2.97	-2.85	-3.17	-4.47	-2.98
Sep-13	-3.29	-2.97	-2.69	-1.69	-2.53	-3.69	-2.70
Oct-13	-3.34	-3.15	-2.03	1.93	-2.02	-2.79	-2.02
Nov-13	-3.05	-3.08	-1.74	2.21	-1.58	-2.53	-1.58
Dec-13	-2.72	-2.59	-1.41	1.81	-1.46	-2.73	-2.10
Jan-14	-2.82	-2.82	-1.78	1.04	-1.78	-2.95	-2.49
Feb-14	-2.78	-2.76	-2.16	0.60	-2.12	-3.30	-2.45
Mar-14	-3.00	-2.82	-2.32	-1.00	-2.38	-2.86	-2.10
Apr-14	-3.45	-3.27	-2.56	-1.34	-2.94	-3.28	-2.46
May-14	-3.28	-3.30	-2.37	-0.57	-2.37	-2.34	-1.58
Jun-14	-2.89	-3.10	-1.91	0.80	-2.52	-2.42	-1.45
Jul-14	-2.39	-2.70	-1.25	1.48	-2.77	-2.59	-1.33
Aug-14	-2.85	-2.72	-1.12	1.42	-2.58	-3.08	-1.51
Sep-14	-1.45	-2.19	-1.58	1.04	-2.29	-2.93	-1.32
Oct-14	-1.78	-2.64	-1.63	1.05	-2.76	-3.17	-1.55
Nov-14	-1.34	-1.79	-1.15	1.08	-1.67	-2.14	-1.23
Dec-14	-1.48	-1.96	-1.48	0.60	-1.86	-2.08	-1.08
Jan-15	-0.69	-1.33	-0.95	1.30	-1.25	-1.47	0.58
Feb-15	-0.59	-1.31	-0.74	0.84	-1.46	-1.64	-0.59
Mar-15	-0.64	-1.14	0.79	2.14	1.12	2.03	1.38
Apr-15	1.29	1.11	1.30	2.67	1.14	2.68	2.29
May-15	3.60	3.71	4.07	4.13	3.22	4.32	3.38
Jun-15	4.34	4.22	4.23	4.04	3.97	4.52	3.79
Jul-15	5.54	5.33	4.20	3.10	3.85	4.12	3.01
Aug-15	5.43	4.88	3.24	2.10	2.71	3.20	2.76
Sep-15	4.18	3.38	1.99	1.00	1.43	2.19	2.53
Oct-15	5.31	3.43	3.45	1.93	2.30	3.12	3.30
Nov-15	5.46	4.30	5.26	2.95	3.06	2.99	3.19
Dec-15	5.41	4.36	5.65	3.60	2.96	2.74	2.70



## **Appendix G**

### Water Rights by Control Point



Table G-1  
Water Rights Upstream of Running Water Draw at Plainview

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in AFY	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
3653	Adj.	Hale	588-500000		Frest Kenese Jr	Slaton Draw	Irr	150	473	18	200		7/14/1975	RWPL01	No	
3654	Adj.	Hale	588-500000		Frest Kenese Jr	Slaton Draw	Irr	170		44	224		5/31/1979	RWPL01	No	
3655	Adj.	Hale	588-500000		REKS Joe James	Slaton Draw	Irr	80	140	7	3		3/15/1976	RWPL01	No	
3656	Adj.	Hale	588-500000		Frest Kenese Jr	Slaton Draw	Irr	110	188	11			3/29/1976	RWPL01	No	
3657	Adj.	Hale	588-500000		Frest Kenese Jr	Slaton Draw	Irr	110	188	11			4/1/1970	RWPL01	No	
3658	Adj.	Hale	588-500000		Randy Falkenberg Et Ux	Running Water Draw	Irr	28	28	13			3/24/1981	RWPL01	No	
4111	Permit	Hale	588-400000	3813	Franklin G Gabriel Et Al	Running Water Draw	Irr	8	160	13			12/19/1977	RWPL01	No	
3659	Adj.	Hale	588-400000		Margaret W Heck	Running Water Draw	Irr	1	272	13	1		7/31/1978	RWPL01	No	
3660	Adj.	Hale	588-200000		K W Carson	N Frk Remaining Water Draw	Irr	1	141	2	3		6/25/1973	RWPL01	No	
3679	Adj.	Castro	588-400000		L D Amerson	N Frk Remaining Water Draw	Irr	3	130	9			10/9/1968	RWPL01	No	
3678	Adj.	Castro	588-450000		Roy Back	N Frk Remaining Water Draw	Irr	40	43	9			2/9/1970	RWPL01	No	
3677	Adj.	Castro	588-500000		Wilma Lemons	N Frk Remaining Water Draw	Irr	31	165	20			9/29/1969	RWPL01	No	
3676	Adj.	Castro	588-500000		Keith David Lemons Et Al	N Frk Remaining Water Draw	Irr	31	165	20			6/30/1961	RWPL01	No	
4383	Permit	Castro	588-600000	4064	The Twelve Co. A Texas Corp	Running Water Draw	Irr	86	62	18			7/11/1983	RWPL01	No	
3675	Adj.	Castro	588-600000		Tom McGill	Running Water Draw	Irr	60	200	22	200		3/10/1975	RWPL01	Yes	
3673	Adj.	Parmer	588-700000		David W Smith Et Al	Running Water Draw	Irr	1,248	600	107	4,427		3/10/1975	RWPL01	No	
3674	Adj.	Parmer	588-700000		R J Sanderson	Running Water Draw	Irr	26	320	27			3/10/1975	RWPL01	No	
3672	Adj.	Parmer	588-720000		Jim Roy Daniel	Running Water Draw	Irr	988	600	53			11/7/1969	RWPL01	No	
3671	Adj.	Parmer	588-720000		A Wayne Clark	Running Water Draw	Irr	338	1,300	27			6/6/1977	RWPL01	No	
3670 A	Adj.	Parmer	588-740000		J W Gammon	Running Water Draw	Irr	120	240	53			6/6/1977	RWPL01	No	
3669	Adj.	Parmer	588-700000		Randy K Roberts Et Ux	Running Water Draw	Other				30		2/3/1968	RWPL01	No	
3668	Adj.	Parmer	588-600000		Kuntz Cattle Company	Unmanned Tribes Remaining Water Draw	Other						4/7/1968	RWPL01	No	
3667	Adj.	Parmer	588-600000		Alpine Lezo Harzog Jt Et Ux	Calfish Draw	Irr	75	204	18			7/31/1978	RWPL01	No	
3666	Adj.	Parmer	588-600000		Reben Alpine Estlek Et Ux	Calfish Draw	Irr	123	330	16			7/31/1978	RWPL01	No	
3665	Adj.	Parmer	588-600000		Arvel & Edger Fleming	Calfish Draw	Irr	14	80	39			7/31/1978	RWPL01	No	
3664	Adj.	Parmer	588-650000		Human & Wray Allen McCallip	Calfish Draw	Irr	50	80	20			9/27/1978	RWPL01	No	
3664	Adj.	Parmer	589-1000000		Human & Wray Allen McCallip	Calfish Draw	Irr	3	33	10						

Use	Number	Amt (af-y)
Min	0	0
Ind	0	0
Irr	25	3,796
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	0	0
Other	1	0
Total	26	3,796

Table G-2  
Water Rights Downstream of Running Water Draw at Plainview and Upstream of White River Reservoir near Spur

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in AFY (cfs)	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
3693	Adj.	Crosby	5857000000		White River Mead	White River	Min	4,000		21	44,897		9/27/1958	WRSF02	Yes	White River Reservoir
3693	Adj.	Crosby	5857000000		White River Mead	White River	Min	2,000					9/27/1958	WRSF02	Yes	White River Reservoir
3692	Adj.	Crosby	5860000000		Olis W. Farfalk Jr. Et Al	White River	Irr	29	12	2	14		5/12/1953	WRSF02	No	
3691	Adj.	Crosby	5870000000		Dennis H & Claude Snow - Trustees	Unnamed Trlb. Crawfish Draw	Irr	11	75	28			11/12/1963	WRSF02	No	
3690	Adj.	Elsold	5870500000		Charles Donald Schuler	Crawfish Draw	Irr	48	5	13			3/10/1960	WRSF02	No	
3689	Adj.	Hale	5877000000		Glen B. Annanett	Running Water Draw	Irr	4	65	8			3/5/1992	WRSF02	No	
4569	Permit	Hale	5887000000	5405	Maurice Hastey	Running Water Draw	Irr	200	32	9			5/31/1983	WRSF02	No	
3688	Adj.	Hale	5882100000	4035	Lee J. Mitchell	Running Water Draw	Irr	87	160	18			1/31/1963	WRSF02	No	
4215	Permit	Hale	5882150000	3915	Texas Department of Criminal Justice	Running Water Draw	Irr	60	158	8			5/10/1982	WRSF02	No	
3687	Adj.	Hale	5882200000		Grady D. Ellis	Running Water Draw	Irr	75	209	27			11/15/1976	WRSF02	No	
3686	Adj.	Hale	5882400000		Billy H. Todd	Running Water Draw	Irr	120	130	18			11/15/1976	WRSF02	No	

Use	Number	Am't (af-y)
Min	1	4,000
Ind	0	0
Irr	10	656
Mining	1	2,000
Hydro	0	0
Nav	0	0
Rec	0	0
Other	0	0
Total	12	6,656

Table G-3  
Water Rights Upstream of Duck Creek near Girard

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Contention (Irr)	Maximum Diversion Rate in AFY	Impoundment in AF	Expiration Date	Priority Date	Primary Contention Point	Include in Diversion Study?	Remarks
3770	Adj.	Dickens	584700000		Jesse H. & Robb D. Daugherty	Deekum Ck.	Irr	160	175	43			11/17/1969	DLG03	No	
3699	Adj.	Dickens	584300000		John R. & Kathryn Hunter	Deekum Ck.	Irr	160	80	44	437		6/2/1969	DLG03	No	
3698	Adj.	Dickens	584600000		O.J. & Eleanora S. Barron	Conawaywood Ck.	Irr	768	412	133	2,249		8/1/1966	DLG03	No	
3697	Adj.	Dickens	584650000		O.J. & Eleanora S. Barron	Rock House	Rec.				338		8/28/1972	DLG03	No	
3696	Adj.	Dickens	584700000		O.J. & Eleanora S. Barron	Duck Ck.	Irr	260	248	22	634		9/14/1965	DLG03	No	

Use	Number	Amt. (af/y)
Mun	0	0
Irr	0	0
Irr	4	1,348
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	1	0
Other	0	0
Total	5	1,348

Table G-4  
Water Rights Downstream of White River Reservoir and Duck Creek near Girard and Upstream of Salt Fork Brazos River near Peacock

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
3701	Adj.	Ken	5540000000		County Of Kent	Umanstead Twh Backbone Ck	Irr	80	40	13	2%		10/1/1975	SFPED4	No	
3695	Adj.	Crosby	5903500000		Mervin Shamber	McLennand Ck	Irr	47	47	9	1		9/29/1969	SFPED4	No	
3694	Adj.	Crosby	5904000000		W.C. Hufaker Jr	Yellowhouse Ck	Irr	47	47	9	1		12/2/1966	SFPED4	No	

Use	Number	Amt (af/y)
Main	0	0
Irr	0	0
Irr	2	127
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	0	0
Other	1	0
Total	3	127

Table G-5  
Water Rights Upstream of Croton Creek near Jayton

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
															No	

Use	Number	Amt. (af/y)
Main	0	0
Irr	0	0
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	0	0
Other	0	0
Total	0	0

Table G-6  
 Water Rights Downstream of Salt Fork Brazos River near Peacock and Croton Creek near Jayton and Upstream of Salt Fork Brazos River near Aspermont

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use Rec.	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
3702	Abi.	Stonevall	5526003000		Don H. Murphy	S. Camp Hollow	Rec.						11/24/1989	SFAS06	No	Recreation & Stockraising

Use	Number	Amt (af/y)
Min	0	0
Irr	0	0
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	1	0
Other	0	0
Total	1	0

Table G-7  
Water Rights Upstream of Buffalo Springs Lake near Lubbock

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Ind)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Priority Control Point	Include in Drought Study?	Remarks
3706	Adi.	Lubbock	9715000000		Lubbock Co Wtd 1	N FA Dbl Min Brazos River	Rec	4,480			4,750		4/8/1957	BSLU07	No	
4340	Permit	Lubbock	9759000000	3985	City of Lubbock	Effluent	Ind	18,430	10,000				3/7/1983	BSLU07	No	Effluent based diversion so not in drought study
3705	Adi.	Lubbock	9759000000	3985	City of Lubbock	Effluent	Ind	18,430	10,000				3/7/1983	BSLU07	No	Effluent based diversion so not in drought study
3705 A	Adi.	Lubbock	9760000000		City of Lubbock	Yellow House Draw	Rec	657	155	2	536		4/6/1973	BSLU07	No	
3705 A	Adi.	Lubbock	9760000000		City of Lubbock	Yellow House Draw	Ind	244	91	1			6/10/1996	BSLU07	No	Huffman Athletic Complex & Res. Vicinity
3705 A	Adi.	Lubbock	9760000000		City of Lubbock	Yellow House Draw	Ind	262	98	1			6/10/1996	BSLU07	No	Buddy Holly Park & Reservoir Vicinity
3704	Adi.	Hale	9780000000		Anna M Johnston Et Al	Blackwater Draw	Ind	50	200	36	105		6/30/1962	BSLU07	No	Mac Simmonds Park & Reservoir Vicinity
3703	Adi.	Bailey	9900000000		W T Millen	Blackwater Draw	Ind	255	255	44			11/25/1968	BSLU07	No	

Use	Number	Am't (cfs)
Min	0	
Ind	1	4,480
Rec	6	19,898
Mining	0	0
Hidro	0	0
Nav	0	0
Res	2	0
Other	0	0
Total	9	24,378

**Table G-8  
Water Rights Upstream of Double Mountain Fork Brazos River at Justiceburg**

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFTY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tens cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
5559 A	Permit	Garza	9591000000	5559	Torch Operating Co	S Frk Dbl Mtn Frk	Min	200		4			5/19/1991	DMU08	No	Amend S.93

Use	Number	Am't (af/y)
Min	0	0
Irr	0	0
Mining	1	200
Hydro	0	0
Nav	0	0
Rec	0	0
Other	0	0
Total	1	200

Table G-9  
Water Rights Downstream of Double Mountain Fork Brazos River at Justiceburg and Upstream of Double Mountain Fork Brazos River near Asperment

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in AFY	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
3721	Adj.	Stonewall	6500/000000		Sum Exploration & Prod Co Et Al	Dbl Min Fk Brazos River	Min	565	100	22	176		7/31/1972	DMAAS09	No	
3721	Adj.	Fisher	9541/000000		Bruce & Pruss K Cox	Unmanned Trib Reel Ck	Irr	100	100	0			7/28/1965	DMAAS09	No	
3721	Adj.	Fisher	9541/000000		Bruce & Pruss K Cox	Unmanned Trib Reel Ck	Irr	216	100	0			3/31/1966	DMAAS09	No	
3720	Adj.	Fisher	9542/000000		Billie Joe McComb	Unmanned Trib Reel Ck	Irr	44	40	22	185		10/5/1963	DMAAS09	No	
3719	Adj.	Fisher	9548/000000		Sum Exploration & Prod Co Et Al	Dbl Min Fk Brazos River	Min	165	40	3			6/24/1968	DMAAS09	No	
3718	Adj.	Kent	9565/000000		Texaso Inc	Dbl Min Fk Brazos River	Min	3,525	111	50			3/5/1958	DMAAS09	Yes	
3717	Adj.	Kent	9566/000000		Texaso Inc	Dbl Min Fk Brazos River	Min	420	144	33			7/22/1969	DMAAS09	Yes	
4155	Permit	Garza	9568/000000	4146	Baldridge Family Land	Dbl Min Fk Brazos River	Min	35,000	10,000	696	115,937		8/31/1951	DMAAS09	No	
4155	Permit	Garza	9568/000000	4146	Brazos River Authority	S Fk Dbl Min Fk	Min	21,000	10,000	696			10/5/1981	DMAAS09	Yes	Lake Alan Henry
4155	Permit	Garza	9568/000000	4146	Brazos River Authority	S Fk Dbl Min Fk	Irr	200					10/5/1981	DMAAS09	Yes	Lake Alan Henry
3716	Adj.	Kent	9570/000000		Caro Sue Reed	Unmanned Trib Grape Ck	Irr	134	100	16	2		10/5/1981	DMAAS09	No	Lake Alan Henry
3715	Adj.	Garza	9587/000000		Post Independent School District	Coon Ck	Min	166		1	526		11/16/1927	DMAAS09	No	
3714	Adj.	Borden	9591/000000		Marlin Allen Parks	Unmanned Trib Dbl Min Fk	Irr	63	42	22			12/11/1969	DMAAS09	No	
3713	Adj.	Lynn	9620/000000		Ray Adams	Dbl Min Fk Brazos River	Irr	140	140	18	430		6/30/1967	DMAAS09	No	
3711	Adj.	Garza	9661/000000		White River Mwd	N Fk Dbl Min Brazos River	Min	5,600		542	57,420		1/20/1970	DMAAS09	Yes	Post Dam & Reservoir
3711	Adj.	Garza	9661/000000		White River Mwd	N Fk Dbl Min Brazos River	Irr	4,000					1/20/1970	DMAAS09	No	Post Dam & Reservoir
3710	Adj.	Garza	9661/000000		White River Mwd	N Fk Dbl Min Brazos River	Min	4,000					1/20/1970	DMAAS09	Yes	Post Dam & Reservoir
3709	Adj.	Crosby	9670/000000		R E Jones Gravel Co	N Fk Dbl Min Brazos River	Min	450	15	13	196		4/7/1968	DMAAS09	No	
3709	Adj.	Crosby	9671/000000		Stuhardt Clark Wood Jr Et Us	N Fk Dbl Min Brazos River	Irr	15	15	5			12/31/1967	DMAAS09	No	
3709	Adj.	Crosby	9671/000000		Stuhardt Clark Wood Jr Et Us	N Fk Dbl Min Brazos River	Irr	295	1,265	196			4/7/1968	DMAAS09	No	
3708	Adj.	Crosby	9673/000000		Delton Caldwell	Plain Ck	Irr	120	1,250	11			8/7/1966	DMAAS09	No	
3707	Adj.	Lubbock	9706/000000		Ransom Canyon	Unmanned Trib N Fk Dbl Min Fk	Min	150		2	282		4/6/1972	DMAAS09	No	Lake Ransom Canyon
3707	Adj.	Lubbock	9706/000000		Ransom Canyon	Unmanned Trib N Fk Dbl Min Fk	Rec				278		8/25/1980	DMAAS09	No	
3707	Adj.	Lubbock	9706/000000		Ransom Canyon	Unmanned Trib N Fk Dbl Min Fk	Irr	4		8			8/25/1980	DMAAS09	No	Lake Ransom Canyon

Use	Number	Amt (af/y)
Min	4	40,916
Irr	3	1,226
Min	11	22,835
Mining	6	11,080
Hydro	0	0
Nav	0	0
Rec	1	0
Other	0	0
Total	25	76,057

Table G-10  
Water Rights Upstream of North Croton Creek near Knox City

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
															No	

Use	Number	Amt. (af/y)
Main	0	0
Irr	0	0
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	0	0
Other	0	0
Total	0	0

Table G-11  
Water Rights Downstream of Double Mountain Fork Brazos River near Aspermont, Salt Fork Brazos River near Knox City and Upstream of Brazos River at Seymour

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Rate in AFY (cfs)	Impoundment in AF	Expiration Date	Priority Date	Primary Cont'd Point	Include in Diversion Study?	Remarks
3412	Adj.	Brazos	5777.000000		Seymour Golf & Country Club, Inc.	Unnamed Trib Brazos River	Irr	50	40	9	150		11/23/1970	BRSE11	No	
3413	Adj.	Knox	5780.000000		City Of Mansfield	Prague Ck.	Res.	2,000	1,187	160	4,477		12/18/1939	BRSE11	No	
3440	Adj.	Knox	5805.000000		League Ranch	Unnamed Trib Dutchman Ck	Irr	31		38	1,750		6/13/1958	BRSE11	Yes	Lake Davis
3440	Adj.	Knox	5805.000000		League Ranch	Unnamed Trib Dutchman Ck	Res.						5/17/1965	BRSE11	No	Lake Catherine
3440	Adj.	Knox	5805.000000		League Ranch	Unnamed Trib Dutchman Ck	Other			136	1,252		5/15/1972	BRSE11	No	Lk Davis / Lk Catherine
3414	Adj.	Knox	5810.000000		City Of Benjamin	Dutchman Ck	Min	34		4	915		1/22/1929	BRSE11	No	
5435	Permit	Knox	5810.000000	5435	Plains Petroleum Operating Company	Brazos River	Min	235		150			11/5/1992	BRSE11	No	
3413	Adj.	Knox	5811.000000		Samuel E Cloms	Wild Horse Ck	Irr	182	144	20	100		8/31/1957	BRSE11	No	
3413	Adj.	Knox	5811.000000		Marion C Perdue	Wild Horse Ck	Irr						8/31/1957	BRSE11	No	
5154 A	Permit	Stonewall	5812.000000	5154 A	Maikel C Wilson	Brazos River	Min	1,647		23			8/31/1957	BRSE11	Yes	
3412	Adj.	King	5813.000000		Tex Con Oil & Gas Co	Unnamed Trib Ld Croton Ck	Other			18	248		3/28/1977	BRSE11	No	Livestock only
5242	Permit	Stonewall	5814.000000	5242	James C Henderson	Unnamed Trib	Irr	75	150	18			1/30/1978	BRSE11	No	
3724	Permit	Stonewall	59045.000000	5162	Phillips Petroleum Co	Brazos River	Min	1,552	3	1	39		6/1/1989	BRSE11	Yes	C B Long Unit
5282	Permit	Haskell	59049.000000	5282	City Of Aspermont	Tonk Ck	Irr	8	467	44	1,196		11/12/1987	BRSE11	No	
					Don W Davis	DBI Min Fk Brazos River	Irr	1,016		8			8/31/1955	BRSE11	Yes	
					Clifton 1994 Invest Ltd Partnership	DBI Min Fk Brazos River	Min	235		8			2/2/1990	BRSE11	No	

Use	Number	Amr (dFy)
Min	1	34
Irr	0	0
Mining	4	3,502
Hydro	0	3,669
Res	0	0
Other	2	0
Total	18	7,465

Table G-12  
Water Rights Upstream of Millers Creek near Munday

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
															No	

Use	Number	Amt. (af/y)
Main	0	0
Irr	0	0
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	0	0
Other	0	0
Total	0	0

**Table G-13  
Water Rights Upstream of Clear Fork Brazos River near Roby**

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in AFY	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
4206	Abt.	Fisher	5600100000		TERRY T POSBY E/UX	Clear Fork Brazos River	Irr	40	30	18			9/8/2027	CFR013	No	

Use	Number	Amt (af/y)
Min	0	0
Irr	1	40
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	0	0
Other	0	0
<b>Total</b>	<b>1</b>	<b>40</b>

Table G-14  
Water Rights Downstream of Clear Fork Brazos River near Roby and Upstream of Clear Fork Brazos River at Hawley

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Cont'd. Point	Include in Diversion Study?	Remarks
4127	Adj.	Jones	5403000000		Henry C Remough & Wife	Clear Fk Brazos River	Irr	212	170	21	6		12/31/1965	CFHA14	No	
4131	Adj.	Jones	5408000000		Dan Emaco	Clear Fk Brazos River	Res						5/26/1981	CFHA14	No	
4130	Adj.	Nolan	5420000000		Clvs Of Sweetwater	Cottonwood Crk	Mun	2,750		70	10,000		10/17/1927	CFHA14	Yes	Lake Sweetwater
4130	Adj.	Nolan	5420000000		Clvs Of Sweetwater	Cottonwood Crk	Irr	960					10/17/1927	CFHA14	No	
4129	Adj.	Nolan	5480000000		Clvs Of Sweetwater	Kildogran	Irr	40	100	9	892		10/17/1927	CFHA14	No	
4128 A	Adj.	Nolan	5510000000		Sweetwater Country Club Inc	Sweetwater Crk	Mun	2,000	46	77	2,500		10/8/1914	CFHA14	Yes	Lake Trammel
4127	Adj.	Jones	5514800000		James Randolph Scott	Clear Fk Brazos River	Irr	120	80	18			4/30/1967	CFHA14	No	
4126	Adj.	Fisher	5538000000		Boyd H Lakey	Clear Fk Brazos River	Irr	55	55	27	20		12/31/1949	CFHA14	No	
4125	Adj.	Fisher	5539000000		Rex & Neva Hall	Clear Fk Brazos River	Irr	117	50	20	2		5/31/1962	CFHA14	No	
4124	Adj.	Fisher	5540000000		Alfred S Wadrop Et Al	Clear Fk Brazos River	Irr	55	55				4-3/1926	CFHA14	No	
4123	Adj.	Fisher	5570000000		Freddie Max Stuart	Clear Fk Brazos River	Irr	17	66	11	12		2/29/1928	CFHA14	No	
4122	Adj.	Fisher	5591000000		Max D Cariker Estate	Clear Fk Brazos River	Irr	263	120	71	22		12/31/1962	CFHA14	No	
4121	Adj.	Fisher	5591350000		Willard L Burk	Clear Fk Brazos River	Irr	74	115	71	26		5/31/1936	CFHA14	No	
4120	Adj.	Fisher	5591500000		Max D Cariker Estate	Clear Fk Brazos River	Irr	8	155	11	15		12/31/1937	CFHA14	No	
4118 A	Adj.	Fisher	5592300000		Zanna H Andersson	Cottonwood Crk	Irr	8	6	22			12/31/1963	CFHA14	No	
4119	Adj.	Fisher	5592300000		Alfred L Carey Et Ux	Cottonwood Crk	Irr	5	4	6	5		12/31/1963	CFHA14	No	
4117	Adj.	Fisher	5592600000		Dr Helen F Yeats	Cottonwood Crk	Irr	1	10	6			12/31/1955	CFHA14	No	
4116	Adj.	Fisher	5592800000		Marjorie Hambright	Cottonwood Crk	Irr	2	11	3			12/31/1926	CFHA14	No	
4115	Adj.	Nolan	5594000000		H & H Feedlot Inc	Cottonwood Crk	Irr	45	11	4	127		12/31/1958	CFHA14	No	

Use	Number	Am (cfs/y)
Mun	2	4730
Irr	2	176
Res	15	1079
Missing	0	0
Hydro	0	0
New	0	0
Res	1	0
Other	0	0
Total	20	6,814

Table G-15  
Water Rights Upstream of Mulberry Creek near Hawley

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumptive (Irr)	Maximum Diversion Rate in AFY	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
4133	Min	Tyler	5296000000		Hubert Lilly	Unnamed Trib Mulberry	Irr	28	45	10			8/2/1966	MUH15	No	
4134	Min	Tyler	5296000000		Billy Dean	Examiner	Irr	45	45	12			10/6/1969	MUH15	No	

Use	Number	Amt (af/y)
Min	0	0
Irr	0	0
Irr	2	73
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	0	0
Other	0	0
Total	2	73

Table G-16  
Water Rights Downstream of Clear Fork Brazos River at Hawley and Mulberry Creek near Hawley and Upstream of Clear Fork Brazos River at Nugent

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumptive (Ind)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Point	Include in Diversion Study?	Remarks
4102	Adj.	Jones	4897.000000		James H Lee	Clear Fork Brazos River	Irr	170	19	17			12/31/1959	CFNU16	No	
4103	Adj.	Jones	4897.500000		Billy Mae Cook	Clear Fork Brazos River	Irr	44	29				12/31/1959	CFNU16	No	
4141	Adj.	Jones	4897.500000		Doris Kessie	Elm Fork Trinity River	Irr	69	80	695	73,960		3/25/1937	CFNU16	Yes	
4161 A	Adj.	Jones	4901.000000		City Of Abilene	Elm	Min	25,690					3/25/1937	CFNU16	Yes	
4161 A	Adj.	Jones	4901.000000		City Of Abilene	Elm	Ind	4,000					3/25/1937	CFNU16	Yes	
4161 A	Adj.	Jones	493.205000		Woodrow W Griffith	Unnamed Trib Rainey	Rsc.	1,000	400				10/15/1974	CFNU16	No	
4159	Adj.	Taylor	493.250000		J C Griffith	Unnamed Trib Rainey	Irr	42	25	20	80		12/31/1938	CFNU16	No	
4158 A	Adj.	Taylor	493.300000		Roy J Griffith	Unnamed Trib Rainey	Irr	75	60	22	175		11/30/1944	CFNU16	No	
4157	Adj.	Taylor	493.400000		Roy J Griffith	Unnamed Trib Rainey	Irr	70	75	19			12/31/1967	CFNU16	No	
4156	Adj.	Taylor	493.450000		H C Welch	Cedar	Irr	5	7	1			5/31/1964	CFNU16	No	
4155	Adj.	Taylor	493.500000		Roy Elton Robbins & Wife	Cedar	Irr	6	7	4			12/31/1959	CFNU16	No	
4154	Adj.	Taylor	501.000000		Raymond Menutt	Cedar	Ind				10		5/12/1921	CFNU16	No	Cedar Creek
4151	Adj.	Taylor	503.000000		West Texas Utilities Company	Elm	Ind	2,500		5,840			10/12/1928	CFNU16	Yes	Upper Lytle Lake
4153	Adj.	Taylor	503.500000		City Of Abilene	Lytle	Ind	230			62		6/00/1914	CFNU16	No	
4152	Adj.	Taylor	504.000000		City Of Abilene	Lytle	Min	360			1,184		6/00/1914	CFNU16	No	Lytle Lake
4152	Adj.	Taylor	504.000000		West Texas Utilities Company	Lytle	Ind						11/21/1967	CFNU16	No	Lytle Lake
3999	Permit	Taylor	509.500000	3721	Meat Corporation	Buttonsollow	Irr		176				3/72/1979	CFNU16	No	
4150 A	Adj.	Taylor	510.000000		City Of Abilene	Cedar	Min	3,765		100	8,500		10/00/1927	CFNU16	Yes	Lake Kirby
4150 A	Adj.	Taylor	510.000000		City Of Abilene	Cedar	Irr	115		22			10/00/1927	CFNU16	No	
4150 A	Adj.	Taylor	510.000000		City Of Abilene	Cedar	Irr	1,120					3/72/1979	CFNU16	Yes	
4149 A	Adj.	Jones	510.500000		Ned W Peire	Elm Crk	Irr	42	14	22			4/30/1963	CFNU16	No	
4148	Adj.	Taylor	510.650000		Ruby G Maxwell Co	Elm	Irr	14	8	7			5/31/1964	CFNU16	No	
4146	Adj.	Taylor	510.100000		Lee Ann Presswood	Elm	Irr	14	14	3			5/31/1964	CFNU16	No	
4145 A	Adj.	Taylor	513.900000		Bull Bay Et Al	Unnamed Trib Elm	Ind	168	59	7	6		12/31/1964	CFNU16	No	
4144 A	Adj.	Taylor	513.910000		Bull Bay Et Al	Unnamed Trib Elm	Ind	73	7	7	150		12/31/1964	CFNU16	No	
4143	Adj.	Taylor	515.100000		Kickapoo Land Co	Elm	Rsc.	50		7	66		12/18/1972	CFNU16	No	
4142	Adj.	Taylor	516.000000		City Of Abilene	Elm	Min	1,675		100	11,868		12/31/1918	CFNU16	Yes	Lake Abilene
4140 A	Adj.	Jones	516.480000		Ralph S Bridwell Et Ux	Clear Fork Brazos River	Irr	165	163	11			12/31/1966	CFNU16	No	
4139 A	Adj.	Jones	519.000000		City Of Abilene	Clear Fork Brazos River	Min			10,060	608		8/3/1949	CFNU16	No	Diversion To Ft Phantom Hill
4138	Adj.	Jones	521.000000		Thomas Jerry Marshall & Wife	Clear Fork Brazos River	Irr	2	2	14			3/16/1964	CFNU16	No	
4137	Adj.	Jones	526.000000		Ross S Bradford Et Ux	Clear Fork Brazos River	Irr	54	33	6			7/13/1926	CFNU16	No	
4136	Adj.	Jones	528.500000		Nelson Pheet	Unnamed Trib Mulberry	Min	338		8	850		7/22/1948	CFNU16	No	
4136	Adj.	Jones	528.500000		Nelson Pheet	Unnamed Trib Mulberry	Ind	7					7/22/1948	CFNU16	No	
4133	Adj.	Jones	538.500000		James Farrington Et Al	Clear Fork Brazos River	Irr	225	150	71	7		12/31/1964	CFNU16	No	

Use	Number	Amnt (af-y)
Min	5	31,360
Ind	8	7,108
Irr	21	3,236
Mining	1	338
Hydro	0	0
Nav	0	0
Rec	2	50
Other	0	0
Total	37	42,092

Table G-17  
Water Rights Upstream of California Creek near Stamford

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumptive Use	Maximum Rate in AFY (cfs)	Impoundment in AF	Expiration Date	Priority Date	Primary Contract Point	Include in Diversion Study?	Remarks
4180	Permit	Hood	3291250000	3851	Walnut Creek Farms Of Granbury Inc.	Be Br	Irr	55	17	2	17	12/12/1981	12/12/1981	CAST17	No	
4180	Permit	Hood	3291250000	3851	Walker Maxey Rantle	Be Br	Irr	55	17	2	17	12/12/1981	12/12/1981	CAST17	No	
4180	Permit	Hood	3291250000	3851	Sam C Cowan Jr	Be Br	Irr	150	84			12/12/1981	12/12/1981	CAST17	No	
4183	Adj.	Jones	4618500000		Marshall D O'Dell	Unnamed Trib Center	Irr	150	75	12	7	5/8/1978	5/8/1978	CAST17	No	
4182	Adj.	Jones	4618500000		City Of Anson	Unnamed Trib Center	Rec.	542		67	2,500	4/18/1950	3/3/1975	CAST17	No	Anson North Lake
4181 A	Adj.	Jones	4618600000		City Of Anson	Thompson	Mun	300		11	1,900	3/3/1959	3/3/1959	CAST17	No	
4180	Adj.	Jones	4619000000		City Of Hamlin	Dry California	Mun	300		11	1,900	3/3/1959	3/3/1959	CAST17	No	

Use	Number	Amt (af/y)
Mun	2	842
Irr	0	0
Mining	4	205
Hydro	0	0
Nav	0	0
Rec	1	0
Other	0	0
Total	7	1,047

Table G-18  
Water Rights Downstream of Clear Fork Brazos River at Nugent and California Creek near Stamford and Upstream of Clear Fork Brazos River at Fort Griffin

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Utd)	Maximum Diversion Rate in AFY	Impoundment in AF	Expiration Date	Priority Date	Primary Cont'd Point	Include in Diversion Study?	Remarks
4185	Adj.	Shackelford	460000000		Ernest D Fincher	Clear Fk Brazos River	Irr	10	30	27	10	7/14/1975	7/14/1975	CFFG18	No	
4186	Adj.	Haskell	461000000		Haskell County Country Club	Unnamed Trib Red Ck	Irr	7	30	21	75	7/25/1977	7/25/1977	CFFG18	No	
4179 A	Adj.	Haskell	462000000		City Of Stamford	Paint Ck	Min	10,000	1	3,207	59,810	6/8/1949	6/8/1949	CFFG18	Yes	Lake Stamford
4179 A	Adj.	Haskell	462000000		City Of Stamford	Paint Ck	Irr	78	168	27	30	6/8/1949	6/8/1949	CFFG18	No	Lake Stamford
4179 A	Adj.	Haskell	462000000		Emilie G.Goff Et Al	Unnamed Trib Paint Ck	Other	95	125	10	18	12/31/1955	12/31/1955	CFFG18	No	College Lake
4177	Adj.	Haskell	471000000		W B Griffin Et Al	Unnamed Trib Paint Ck	Irr	120	40	1	1	12/31/1962	12/31/1962	CFFG18	No	
4176	Adj.	Haskell	471000000		Joseph Elmer Cox	Stink Ck	Irr	21	21	2	108	7/1/1926	7/1/1926	CFFG18	No	
4175	Adj.	Shackelford	480000000		H R Stasney & Sons Ltd	Clear Fk Brazos River	Min	63				10/2/1918	10/2/1918	CFFG18	No	
4174	Adj.	Shackelford	480000000		H R Stasney & Sons Ltd	Clear Fk Brazos River	Res	40	40	22	375	7/31/1965	7/31/1965	CFFG18	No	
4173	Adj.	Jones	486000000		City Of Stamford	Clear Fk Brazos River	Irr	40	68	23		7/31/1963	7/31/1963	CFFG18	No	
4172	Adj.	Jones	487000000		Violet H Frazer	Clear Fk Brazos River	Irr	92	68	14		12/31/1918	12/31/1918	CFFG18	No	
4170	Adj.	Jones	488000000		Mary Lois Springer Wilson	Clear Fk Brazos River	Irr	310	360	20		7/31/1962	7/31/1962	CFFG18	No	
4169	Adj.	Jones	488500000		J M Alexander Ranch Co Ltd	Deatman Cr	Irr	200	463	17		10/19/1970	10/19/1970	CFFG18	No	
4767	Adj.	Jones	488500000		Richard Schkade	Deatman Cr	Irr	67	80	13		12/31/1961	12/31/1961	CFFG18	No	
4767	Adj.	Jones	488500000		First National Bank, Abilene	Deatman Cr	Irr	60	45	2	6	8/28/1967	8/28/1967	CFFG18	No	
4589 B	Permit	Jones	488500000	4256	City Of Abilene	Deatman Cr	Irr	4,330	2,165	9		7/2/1985	7/2/1985	CFFG18	Yes	Amend 5:2:97/7 Holding Funds, 3/19
4589 B	Permit	Jones	488500000	4256	City Of Abilene	Deatman Cr	Irr	40				7/2/1985	7/2/1985	CFFG18	No	Amend 5:2:97/7 Holding Funds, 3/19
4166	Adj.	Jones	489000000		Gene M Smith Et Al	Deatman Cr	Irr	32	16	9		12/31/1965	12/31/1965	CFFG18	Yes	
4165 A	Adj.	Jones	489000000		City Of Abilene	Deatman Cr	Min	3,000				9/31/1954	9/31/1954	CFFG18	Yes	
4164	Adj.	Jones	489000000		J N Montgomery & Wife	Deatman Cr	Irr	32	49	6		12/31/1966	12/31/1966	CFFG18	No	

Use	Number	Am't (d/c)
Min	3	13,021
Irr	1	0
Res	15	5,473
Mining	2	103
Hydro	0	0
Nav	0	0
Rec	1	0
Other	1	0
Total	23	18,597

Table G-19  
Water Rights Upstream of Hubbard Creek below Albany

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Divisions in A/E/Y	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs.	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Exclude in Drought Study?	Remarks
4207	Adj.	Shickelford	4440000000		City Of Moran	Unmanned Trib Deep	Min	80		11	181		4/2/1923	HGAL19	No	Moran City Lake & Unmanned
4205	Adj.	Callahan	4457500000		Burns Lee Finley	Mexia	Irr	50	58	13			12/31/1946	HGAL19	No	
4204	Adj.	Callahan	4458000000		Kenneth M George & Wife	Mexia	Irr	16	42	9			7/31/1963	HGAL19	No	
4203	Adj.	Callahan	4499000000		A E Dyer Jr Estate	Mexia	Irr	24	28	8	8		7/31/1963	HGAL19	No	
4202 A	Adj.	Callahan	4500000000		City Of Baird	Unmanned Trib Mexia	Min	550		20	2,070		7/6/1949	HGAL19	No	Livestock only
4201	Adj.	Callahan	4501000000		Charles Ezzell	E Frk Branch	Rec				390		6/19/1914	HGAL19	No	Livestock only
4200	Adj.	Callahan	4505000000		City Of Albany	Salt Ponge	Min	600		22	2,600		11/15/1976	HGAL19	No	06/16/1992 (Use 7 & 1700 Of Res Cap)
4208	Adj.	Shickelford	4543000000		City Of Albany	Salt Ponge	Min	600		22	2,600		3/25/1941	HGAL19	No	Messury Lake

Use	Number	Am't (dFy)
Min	3	1,240
Irr	0	0
Mining	0	0
Hydro	0	0
Rec	1	0
Other	1	0
<b>Total</b>	<b>8</b>	<b>1,330</b>

Table G-20  
Water Rights Upstream of Big Sandy Creek above Breckenridge

Water Right Number	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFS	Irrigated Acres (Irr) or Consumption (Ind)	Maximum Diversion Rate in cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
4211 A	Eschscholtz	4300000000		City Of Cisco	Sandy Sandy	Min	1.971		88	-5,000		4/16/1970	BSBR20	Yes	Lake Cisco
4211 A	Eschscholtz	4300000000		City Of Cisco		Ind	56		10			9/5/1978	BSBR20	No	

Use	Number	Amt (af/y)
Min	1	1.971
Ind	1	56
Irr	0	0
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	0	0
Other	0	0
Total	2	2.027

Table G-21  
Water Rights Downstream of Hubbard Creek below Albany and Big Sandy Creek above Breckenridge and Upstream of Hubbard Creek near Breckenridge

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in AFY	Impoundment in AF	Expiration Date	Priority Date	Primary Cont. Point	Include in Diversion Study?	Remarks
4213 B	Adj.	Stephens	4255000000		West Central, Texas Mtd	Hubbard	Mun	44,800		1956	317,750		5/28/1957	HCBR21	Yes	
4213 B	Adj.	Stephens	4255000000		West Central, Texas Mtd	Hubbard	Irr	1,200					8/14/1972	HCBR21	Yes	
4213 B	Adj.	Stephens	4255000000		West Central, Texas Mtd	Hubbard	Mun	6,000					5/28/1957	HCBR21	Yes	
4213 B	Adj.	Stephens	4255000000		West Central, Texas Mtd	Hubbard	D&L	2,000				12/1/2000	8/14/1972	HCBR21	Yes	
4210	Adj.	Shackelford	4402100000		James R Green	Hubbard	Irr	2,000	35	11	72	12/1/2000	5/28/1957	HCBR21	Yes	
4209	Adj.	Shackelford	4410000000		Dunson Oil Corp Et Al	Medowell	Irr	35		1	773		3/31/1965	HCBR21	No	Lake DeLafosse
						Dry Br	Irr	50					3/31/1925	HCBR21	No	Lake DeLafosse

Use	Number	Amt (af/y)
Mun	1	44,800
Irr	2	1,250
Irr	2	2,035
Mining	1	6,000
Hydro	0	0
Nav	0	0
Rec	0	0
Other	1	2,000
Total	7	56,085

Table G-22  
Water Rights Downstream of Clear Fork Brazos River at Fort Griffin and Hubbard Creek near Breckenridge and Upstream of Clear Fork Brazos River at Eliasville

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Divisions in AEFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs.	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Exclude in Drought Study?	Remarks
4223	Adj.	Stephens	3995500000		Breckenridge Gasoline Co.	Clear Fork Brazos River	Ind	97		2			6/1/1926	CFE#22	No	
4224	Adj.	Stephens	3995500000		Breckenridge Gasoline Co.	Clear Fork Brazos River	Min						6/1/1926	CFE#22	No	
4225	Adj.	Stephens	4095500000		Ella Pearl Robertson	Clear Fork Brazos River	Min	45		13			4/30/1961	CFE#22	No	
4199	Adj.	Stephens	4082900000		Owen D Woodward	Clear Fork Brazos River	Ir	98	100	18	3		12/31/1924	CFE#22	No	
4221	Adj.	Stephens	4082950000		Ella Pearl Robertson	Hubbard	Ir	42	21	17			8/31/1949	CFE#22	No	
4220	Adj.	Stephens	4083000000		Ella Pearl Robertson	Hubbard	Ir	39	31	13			4/30/1964	CFE#22	No	
4219	Adj.	Stephens	4083050000		Ella Pearl Robertson	Hubbard	Ir	22	28	17			12/31/1945	CFE#22	No	
4218	Adj.	Stephens	4083100000		Jack T Robertson	Hubbard	Ir	32	32	13			6/30/1955	CFE#22	No	
4217 A	Adj.	Stephens	4115010000		Swanson Milkshoe Ranch	Bf Br	Min	218		6	375		4/28/1975	CFE#22	No	
4216	Adj.	Stephens	4125000000		Sarah Satterwhite	Gonzales Crk	Min	30	30	13			4/30/1966	CFE#22	No	
4215	Adj.	Stephens	4210000000		City Of Breckenridge	Gonzales Crk	Min	2,100		87	11,400		4/26/1946	CFE#22	No	
4198	Adj.	Stephens	4210100000		T C Fambro & Sons	Gonzales Crk	Ir	6	16	4	7		7/31/1947	CFE#22	No	
4197	Adj.	Stephens	4260000000		Mary C Cleveland	Clear Fork Brazos River	Other	30	30	10	430		2/16/1920	CFE#22	No	
4196	Adj.	Stephens	4260000000		J W Sullivan	Clear Fork Brazos River	Ir	38	38	12			5/31/1953	CFE#22	No	
4195	Adj.	Stephens	4260000000		Clear Fork Brazos River	Clear Fork Brazos River	Ir	22	22	5			6/30/1962	CFE#22	No	
4194	Adj.	Throckmorton	4580000000		Gilbert E Brakenberger Et Ux	Clear Fork Brazos River	Min	60		2	1,003		3/14/1963	CFE#22	No	
4193	Adj.	Stephens	4580000000		Chas O Woodson	Clear Fork Brazos River	Other	30		22	165		4/13/1920	CFE#22	No	Livestock Only
4192	Adj.	Stephens	4589000000		Mrs W R Powers Estate	Clear Fork Brazos River	Ir	60	60	22			12/31/1915	CFE#22	No	
4191	Adj.	Stephens	4591000000		M Ray Puckett Et Al	Greens	Ir	195	151	6			5/31/1964	CFE#22	No	
4190 A	Adj.	Stephens	4594000000		Breckenridge Partnership Ltd	Clear Fork Brazos River	Ir	70	35	22			8/31/1958	CFE#22	No	
4189 A	Adj.	Stephens	4594500000		Breckenridge Partnership Ltd	Clear Fork Brazos River	Ir	69	82	22			8/31/1958	CFE#22	No	
4188 A	Adj.	Stephens	4595000000		T C Harris Jr	Clear Fork Brazos River	Ir	40	28	20			12/31/1914	CFE#22	No	
4187	Adj.	Stephens	4596000000		Breckenridge Partnership Ltd	Clear Fork Brazos River	Ir	300	100	22			12/31/1952	CFE#22	No	
4186	Adj.	Shackelford	4602000000		Raymond C Taylor Et Al	Clear Fork Brazos River	Ir	20	40	27	60		9/16/1966	CFE#22	No	
4186	Adj.	Shackelford	4602000000		Raymond C Taylor Et Al	Clear Fork Brazos River	Ir	43					9/16/1966	CFE#22	No	

Use	Number	Amt (af/y)
Min	2	2,160
Ind	1	97
Ir	19	1,141
Mining	2	218
Hydro	0	0
Nav	0	0
Rec	0	0
Other	2	0
Total	26	3,616

Table G-23  
Water Rights Downstream of Clear Fork Brazos River at Eliasville and Upstream of Brazos River near South Bend

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in A-FY	Irrigated Acres (Irr or Conserved)	Maximum Diversion Rate in cfs	Impoundment in A-FY	Expiration Date	Priority Date	Primary Control Point	Include in Depletable Study?	Remarks
4227	Adjt	Young	3951/000/000		Zahn Milham	Clear Fk Brazos River	Irr	15	27	22			8/31/1966	BRSSB23	No	
4227	Adjt	Young	3961/500/000		C R Baldwin Jr	Clear Fk Brazos River	Irr	181	48	22			8/31/1966	BRSSB23	No	
4226	Adjt	Young	3961/000/000		Samuel John Roach	Clear Fk Brazos River	Irr	628	350	244			6/30/1964	BRSSB23	No	
4225	Adjt	Young	3965/500/000		F E Riley	Clear Fk Brazos River	Irr	30	60	9			12/31/1954	BRSSB23	No	
4224	Adjt	Young	3970/000/000		Breckentidge Gasoline Co	Clear Fk Brazos River	Res	250		13	454		3/16/1920	BRSSB23	No	Whiskey Cr Res. & Newwastle Lake
3452	Adjt	Young	5685/000/000		City Of Newwastle	Whiskey Ck	Mun	26	51	7			11/22/1966	BRSSB23	No	
3451	Adjt	Young	5700/100/000		George Wilkenson	Elm Ck	Irr	27					8/31/1966	BRSSB23	No	
3450	Adjt	Throckmorton	5720/000/000		City Of Throckmorton	Elm Ck	Mun	600		14	1,675		11/23/1940	BRSSB23	No	
3449	Adjt	Throckmorton	5750/000/000		Throckmorton Land & Cattle Company	North Elm Ck	Other				705		1/23/1950	BRSSB23	No	Livestock only
3448	Adjt	Young	5750/200/000		George W Wilkenson	Long Br	Irr	45	57	7	2		2/28/1966	BRSSB23	No	
3447	Adjt	Young	5750/200/000		R T Wells Jr	Boggy Ck	Irr	45	90	11			5/31/1964	BRSSB23	No	
3446	Adjt	Throckmorton	5751/000/000		J J Keester Trust	Dry Boggy Ck	Irr	5	14	13			9/2/1959	BRSSB23	No	
3445	Adjt	Baylor	5775/500/000		Patsy Stout Cooper Et Al	Dry Boggy Ck	Irr	5	14	13			8/31/1931	BRSSB23	No	
3444	Adjt	Baylor	5776/000/000		North Central Texas Mva	Millers Ck	Mun	3,500	50	200	30,696		10/1/1958	BRSSB23	Yes	
3444	Adjt	Baylor	5776/000/000		North Central Texas Mva	Millers Ck	Irr	1,000					10/1/1958	BRSSB23	No	
3443	Adjt	Baylor	5776/000/000		North Central Texas Mva	Millers Ck	Mun	500		9			10/1/1958	BRSSB23	No	
3443	Adjt	Baylor	5776/000/000		North Central Texas Mva	Millers Ck	Irr	28	55				12/31/1963	BRSSB23	No	

Use	Number	Amount (cfs)
Mun	3	4,350
Irr	2	1,072
Mining	1	6,638
Hydro	0	500
Nav	0	0
Res	1	0
Other	1	0
<b>Total</b>	<b>19</b>	<b>6,915</b>

Table G-24  
Water Rights Upstream of Lake Graham near Graham

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Rate in AFY	Impoundment in AF	Expiration Date	Priority Date	Primary Cont'd Pmts	Include in Divert Study?	Remarks
3457	Adj.	Young	38085/0000		Louis Phoeck, Jr Et Al	River Br	Irr	50	30	13	5.5		12/31/1969	GHHH24	No	
3456	Adj.	Young	3810000000		Reynold D Stephens	Unmanned Fish Salt Ck	Irr	59	30	15			12/31/1989	GHHH24	No	
3455 A	Adj.	Young	3812800000		Charles D Crowe & Wanda L Crow	Howard Ck	Irr	76		8			6/30/1967	GHHH24	No	
3455 A	Adj.	Young	3812800000		Charles D Crowe & Wanda L Crow	Howard Ck	Irr	6			82		6/20/1977	GHHH24	No	
5165	Permit	Young	3814000000	5165	Charles D Crowe & Wanda L Crow	Howard Ck	Irr	376	80	7			12/22/1987	GHHH24	No	
3454	Adj.	Young	3826000000		Parker & Pauline Development Co	Salt Ck	Mfn	64	48		3		8/31/1965	GHHH24	No	

Use	Number	Amnt (af/y)
Mun	0	0
Irr	2	82
Mining	4	183
Hydro	1	376
Nav	0	0
Rec	0	0
Other	0	0
Total	7	641

Table G-25  
Water Rights Upstream of Big Cedar Creek near Ivan

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
															No	

Use	Number	Amt. (af/y)
Main	0	0
Irr	0	0
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	0	0
Other	0	0
Total	0	0

Table G-26  
Water Rights Downstream of Brazos River near South Bend, Lake Graham near Graham, and Big Cedar Creek near Ivan and Upstream of Brazos River at Morris Sheppard Dam near Graford

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tens cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Draft Study?	Remarks
5155	Adj.	Palo Pinto	3470000000		Brazos River Authority	Brazos River	Min	230,750			724,739		4/6/1938	SHGR26	Yes	Possum Kingdom Lake
5155	Adj.	Palo Pinto	3470000000		Brazos River Authority	Brazos River	Irr						4/6/1938	SHGR26	No	Possum Kingdom Lake
5155	Adj.	Palo Pinto	3470000000		Brazos River Authority	Brazos River	Irr						4/6/1938	SHGR26	No	Possum Kingdom Lake
5155	Adj.	Palo Pinto	3470000000		Brazos River Authority	Brazos River	Mfn						4/6/1938	SHGR26	No	Possum Kingdom Lake
5155	Adj.	Palo Pinto	3470000000		Brazos River Authority	Brazos River	Hidro						4/6/1938	SHGR26	No	Possum Kingdom Lake
5155	Adj.	Palo Pinto	3470000000		Brazos River Authority	Brazos River	Res						4/6/1938	SHGR26	No	Possum Kingdom Lake
3463	Adj.	Jack	3677000000		Lorena Jane Leach	Rock Crk	Irr	16	46	12			12/31/1963	SHGR26	No	Possum Kingdom Lake
3463	Adj.	Jack	3681000000		Clay Of Bryson	E Rock Crk	Min	90		3	950		8/1/1977	SHGR26	No	
3463	Adj.	Young	3787000000		Mrs T T Campbell	Salt Crk	Irr	27	43	12			3/31/1963	SHGR26	No	
3458	Adj.	Young	3805000000		City Of Graham	Flint Crk	Min	4,000		85	13,426		11/21/1927	SHGR26	Yes	Lake Edleman
3458	Adj.	Young	3805000000		City Of Graham	Flint Crk	Min	7,000		89	39,000		11/15/1954	SHGR26	Yes	Lake Edleman
3458	Adj.	Young	3805000000		City Of Graham	Flint Crk	Irr	1,000			40		11/21/1927	SHGR26	No	Lake Edleman
3458	Adj.	Young	3805000000		City Of Graham	Flint Crk	Irr	7,400		7,820			11/15/1954	SHGR26	Yes	Lake Edleman
3458	Adj.	Young	3805000000		City Of Graham	Flint Crk	Irr	100		11			11/15/1954	SHGR26	No	
3458	Adj.	Young	3805000000		City Of Graham	Flint Crk	Min	500		39			11/15/1954	SHGR26	No	
3460	Adj.	Young	3807500000		EAFCO Limited Partnership	Salt Crk	Irr	76	95	7			8/20/1928	SHGR26	No	
3459	Adj.	Young	3808250000		Zack Burkett	Salt Crk	Irr	12	9	10			8/31/1964	SHGR26	No	
3453	Adj.	Young	3833000000		Pfetsch Brothers Ready-Mix Concrete	Brazos River	Min	100		4			12/19/1960	SHGR26	No	

Use	Number	Acft (cfs)
Min	4	241,840
Irr	3	8,400
Mfn	0	231
Hidro	1	600
Res	0	0
Other	0	0
Total	18	251,071

Table G-27  
Water Rights Downstream of Brazos River at Morris Sheppard Dam near Graford and Upstream of Brazos River near Palo Pinto

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
3727	Abt.	Palo Pinto	344800000		Marvin H. McMurey Jr. Et Al	Brazos River	Irr	2.5	2014	9			8/16/1956	BRP27	No	

Use	Number	Am't (af/y)
Min	0	0
Irr	1	2.5
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	0	0
Other	0	0
Total	1	2.5

Table G-28  
Water Rights Upstream of Palo Pinto Creek near Santo

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFSY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Rate in Diversion AFS	Impoundment in AF	Expiration Date	Priority Date	Primary Cont'd Permit	Include in Diversion Study?	Remarks
4031	Adj.	Palo Pinto	3337000000		Palo Pinto M W D No 1	Palo Pinto Ck	Mun	10,000		850	41,100		7/31/1962	PPSA28	Yes	
4031	Adj.	Palo Pinto	3337000000		Palo Pinto M W D No 1	Palo Pinto Ck	Mun	2,500			24		9/8/1964	PPSA28	Yes	
4031	Adj.	Palo Pinto	3337000000		Palo Pinto M W D No 1	Palo Pinto Ck	Irr	6,000					7/3/1962	PPSA28	Yes	
4036	Adj.	Palo Pinto	3345500000		Row E Sauntes Et Al	Palo Pinto Ck	Irr	55	75	7	139		4/30/1965	PPSA28	No	
4035	Adj.	Palo Pinto	3345700000		Ertl Waddell Inc	Big Sunday	Irr	5	28	15			10/11/1977	PPSA28	No	
4034	Adj.	Palo Pinto	3345710000		J L McDaniel	Big Sunday	Irr	30	16	16			3/31/1955	PPSA28	No	
4033	Adj.	Palo Pinto	3345800000		J L McDaniel	Big Sunday	Irr	12	21	13	24		6/26/1972	PPSA28	No	
4032	Adj.	Palo Pinto	3346000000		James R & Janice Moore	Unmanned Trib Palo Pinto Ck	Irr	16	11	11			7/31/1965	PPSA28	No	
4030	Adj.	Palo Pinto	3347500000		Charlie Ray Cockburn	Palo Pinto Ck	Irr	2	12	4	307		2/7/1977	PPSA28	No	
4029	Adj.	Palo Pinto	3348200000		Ertl Waddell Inc	Dry Ck	Irr	38	30	18	26		1/5/1970	PPSA28	No	
4028	Adj.	Erath	3348750000		J L McDaniel	Unmanned Trib Barton	Irr	360	30	13	1,023		5/31/1933	PPSA28	No	
4024 A	Adj.	Palo Pinto	3349500000		City Of Gordon	Panther	Mun	45	7	7	60		6/4/1973	PPSA28	No	
4027	Adj.	Palo Pinto	3350000000		Jack R Dauberty	Gibson Ck	Irr	80	160	18	969		5/22/1978	PPSA28	No	
4026	Adj.	Erath	3350485000		Thurber Lake Resort Inc	Gibson Ck	Mun	20	3	3			10/15/1973	PPSA28	No	
4025	Adj.	Erath	3350490000		Tarrant Investment Company Inc	Gibson Ck	Mun	60	700	10	700		10/15/1973	PPSA28	No	
4023	Adj.	Erath	3352000000		Tarrant Investment Company Inc	Gibson Ck	Mun	30	30	11			10/15/1973	PPSA28	No	
4022	Adj.	Palo Pinto	3353500000		A D Crawford	Unmanned Trib W Frk Palo Pinto Ck	Irr	60	40	14			4/30/1963	PPSA28	No	
4021	Adj.	Palo Pinto	3353750000		Penny Sparks	Palo Pinto Ck	Irr	30	20	9	164		3/7/1971	PPSA28	No	
4021	Adj.	Palo Pinto	3353750000		R J Caraway	Sally Ck	Mun	41	165	13			3/7/1971	PPSA28	No	
4020	Adj.	Palo Pinto	3354100000		Perry R Horton Et Al	Palo Pinto Ck	Irr	362	4	4	1,200		2/15/1965	PPSA28	No	
4019	Adj.	Palo Pinto	3355200000		City Of Strawn	Russell Ck	Mun	100	30	4			2/15/1965	PPSA28	No	
4018	Adj.	Eastland	3365500000		Westco Energy	Russell Ck	Irr	40	20	4	48		11/19/1973	PPSA28	No	
4017	Adj.	Eastland	3365500000		Westco Energy	Russell Ck	Irr	40	20	4			11/19/1973	PPSA28	No	
4016	Adj.	Eastland	3365500000		Hibert D Garner Jr Et Ux	Unmanned Trib Russell Ck	Irr	22	22	3			5/17/1971	PPSA28	No	
4015	Adj.	Eastland	3394500000		Fred Haganman Et Al	N Frk Palo Pinto Ck	Irr	27	54	13			12/31/1963	PPSA28	No	
4014	Adj.	Eastland	3400000000		Fred Haganman Et Al	N Frk Palo Pinto Ck	Irr	500	500	60	1,158		4/12/1926	PPSA28	No	
4014	Adj.	Eastland	3400000000		Fred Haganman Et Al	N Frk Palo Pinto Ck	Irr	100					4/12/1926	PPSA28	No	

Use	Number	Amt (af/v)
Mun	7	13,145
Irr	3	6,112
Mimming	17	1,409
Hydro	2	71
Nav	0	0
Rec	0	0
Other	1	0
Total	30	20,737

Table G-29  
Water Rights Downstream of Brazos River near Palo Pinto and Upstream of Brazos River near Dennis

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in AFY	Impoundment in AF	Expiration Date	Priority Date	Primary Cont'd Point	Include in Divert Study?	Remarks
4043	Adj.	Parker	3301000000		D C Woodruff	Brazos River	Irr	160	50	13			7/31/1957	BRDE29	No	
4043	Adj.	Parker	3306000000		H E Brandon	Hill Ck	Irr	100	50	13			8/17/1970	BRDE29	No	
5164	Permit	Parker	3313000000	5164	Millsap Water Supply Corporation	Wilson Ck	Min	90		4	2.15		12/31/1987	BRDE29	No	
4191 A	Permit	Parker	3313000000	3862A	Berness Pritchard	Dry Ck	Irr	45		1	1.7	12/31/2003	2/22/1982	BRDE29	No	Consr By 07/05/1993
4042	Adj.	Parker	3314000000		R E Walden	Unnamed Trib Dry Ck	Irr	42	83	10	30		8/31/1965	BRDE29	No	Hicks & Franklin Surveys
4040	Adj.	Parker	3314500000		Delmar & Martha Jane Kling	Unnamed Trib	Irr	8	8	22	8		10/31/1966	BRDE29	No	James Youngblood Survey
4039	Adj.	Parker	3325000000		City Of Mineral Wells	Rock Ck	Min	1,680		116	7,065		11/15/1920	BRDE29	Yes	
4039	Adj.	Parker	3325000000		City Of Mineral Wells	Rock Ck	Min	840		85			3/22/1943	BRDE29	No	
5447	Permit	Palo Pinto	3326000000	5447	Palo Pinto W D No 1	Unnamed Trib	Res	1,153	1,000	27	646		2/3/1993	BRDE29	Yes	
4013	Adj.	Palo Pinto	3330000000		Rocking W Ranch LP	Brazos River	Irr	1,329	118	32			11/14/1947	BRDE29	No	
4012	Adj.	Palo Pinto	3335000000		Earl W & Anita Gardner	Palo Pinto Ck	Irr	236	150	2			9/30/1964	BRDE29	No	
4038	Adj.	Palo Pinto	3339500000		Herman Petty	Palo Pinto Ck	Irr	150	150	2			5/31/1964	BRDE29	No	
4011	Adj.	Palo Pinto	3407500000		Jackie Lee Chastain ELA	Brazos River	Irr	8	11	2			7/31/1966	BRDE29	No	
4008	Adj.	Palo Pinto	3408250000		W A Carey	Brazos River	Irr	110	83	19			2/1/1956	BRDE29	No	
4010	Adj.	Palo Pinto	3408500000		Charles W & Jean Welch	Brazos River	Irr	33	44	13			12/31/1962	BRDE29	No	
4009	Adj.	Palo Pinto	3408500000		Ernest F Ammons	Brazos River	Irr	24	30	13			12/31/1962	BRDE29	No	
4007	Adj.	Palo Pinto	3408900000		Mary E Rippette	Pollard Ck	Irr	50	25	10			6/7/1976	BRDE29	No	
4006	Adj.	Palo Pinto	3409000000		Sam Roe Lie	Pollard Ck	Irr	63	88	16			12/31/1958	BRDE29	No	
4005	Adj.	Palo Pinto	3411500000		W J Ribotes ELA	Brazos River	Irr	781	462	107			4/30/1952	BRDE29	No	
4004	Adj.	Palo Pinto	3427100000		City Of Gratiot	E-FK Ketchik Ck	Min	50		11	50		2/1/1957	BRDE29	No	
4004	Adj.	Palo Pinto	3427100000		City Of Gratiot	E-FK Ketchik Ck	Min	5		3			3/18/1952	BRDE29	No	
4003	Adj.	Palo Pinto	3427100000		City Of Gratiot	Utmore Ck	Irr	4	55	10			12/31/1945	BRDE29	No	
4002	Adj.	Palo Pinto	3427400000		Martha & Ernest L Trustees	Unnamed Trib Two Branch Br	Irr	15	36	10	200		5/31/1962	BRDE29	No	
4001	Adj.	Palo Pinto	3427400000		James M & M F Ewton	Brazos River	Irr	40	56	11			4/30/1963	BRDE29	No	
4000	Adj.	Palo Pinto	3427700000		Curtis Mitchell	Brazos River	Irr	31	61	17			4/30/1963	BRDE29	No	

Use	Number	Amt (af/y)
Min	5	2,665
Irr	1	45
Mining	20	3,248
Hydro	0	0
Nav	0	0
Rec	1	1,153
Other	0	0
Total	27	7,111

Table G-30  
Water Rights Downstream of Brazos River near Dennis and Upstream of Brazos River near Glen Rose

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diverters in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in CFS	Impoundment in AF	Expiration Date	Priority Date	Primary Control Policy	Includes in Diversion Study?	Remarks
4083	AdJ	Hood	3284.000000		Daryl Ellington	Brazos River	Irr	203	30	12		9/30/1963	BRGR30	No		
4084	AdJ	Somervell	3286.500000		S E Garrison	Brazos River	Irr	45	203	33		7/31/1950	BRGR30	No		
4085	AdJ	Somervell	3287.000000		E L Vaughan	Brazos River	Irr	160	160	24		7/2/1966	BRGR30	No		
4086	AdJ	Somervell	3288.000000		V V & M G Durant	Brazos River	Irr	112	112	24		7/2/1966	BRGR30	No		
4079	AdJ	Hood	3288.450000		Mrs. Jessie M Reed	Brazos River	Irr	92	46	22	20	9/30/1964	BRGR30	No		
4077	AdJ	Hood	3288.500000		Robert & Margaret King Investments	Brazos River	Irr	54	16	11		9/30/1957	BRGR30	No		
4076	AdJ	Hood	3288.750000		Ruth E Brown	Brazos River	Irr	30	32	13		8/31/1964	BRGR30	No		
4075	AdJ	Hood	3289.100000		D J Vaughan	Brazos River	Irr	15	15	22		7/10/1960	BRGR30	No		
4074	AdJ	Hood	3289.100000		Robert K Spindler	Brazos River	Irr	24	24	44	1	7/10/1960	BRGR30	No		
4073	AdJ	Johnson	3289.300000		James E Anthony Et Al	Unnamed Trib	Rec	308	3,300	44	300	12/3/1956	BRGR30	No		
4072	AdJ	Hood	3289.500000		The R K Hanger Trust	Brazos River	Irr	26	51	22		7/5/1976	BRGR30	No		
4071	AdJ	Hood	3289.600000		E F Allison	Brazos River	Irr	42	42	33		8/19/1956	BRGR30	No		
5156	AdJ	Hood	3290.000000		James R Robinson	Brazos River	Min	61,562	56	33	155,000	8/19/1956	BRGR30	No	Lake Granbury	
5156	AdJ	Hood	3290.000000		Brazos River Authority	Brazos River	Irr					2/13/1964	BRGR30	No	Lake Granbury	
5156	AdJ	Hood	3290.000000		Brazos River Authority	Brazos River	Irr					2/13/1964	BRGR30	No	Lake Granbury	
4071	AdJ	Hood	3291.150000		Brazos River Authority	Brazos River	Rec		62			8/31/1956	BRGR30	No	Lake Granbury	
4069	AdJ	Hood	3291.200000		R E Mabery	Brazos River	Irr	83	106	27		8/31/1956	BRGR30	No		
4068	AdJ	Hood	3291.300000		Walker Murray Remble	Walnut Crk	Irr	120	60	14		10/21/1974	BRGR30	No		
4067	AdJ	Hood	3291.450000		Collie W Oliver	Brazos River	Irr	72	57	17		7/31/1967	BRGR30	No		
4066	AdJ	Hood	3291.450000		Courts K C Cleveland Jr	Brazos River	Irr	63	42	14		12/31/1956	BRGR30	No		
4065	AdJ	Hood	3291.450000		Robert & J J Wittigleal	Brazos River	Irr	84	42	17		7/31/1955	BRGR30	No		
4064	AdJ	Hood	3291.500000		Commons Hearing Owners Association	Unnamed Trib Brazos	Rec	616	308	10	43	7/31/1950	BRGR30	No		
4063	AdJ	Hood	3291.750000		James D. Hester Et Al	Brazos River	Irr	107	115	22		12/31/1963	BRGR30	No		
4062	AdJ	Hood	3292.400000		Bronson S Banks Jr	Brazos River	Irr	348	280	89		7/31/1963	BRGR30	No		
4058	AdJ	Hood	3292.550000		Thomas Family Trust	Brazos River	Irr	383	302	40	24	12/20/1976	BRGR30	No		
4059 A	AdJ	Hood	3292.580000		Oak Trail Owners Association	Unnamed Trib	Rec	65	65	16		5/31/1956	BRGR30	No		
4057	AdJ	Hood	3292.600000		Bronson S Banks Jr	Brazos River	Irr	35	35	44		12/31/1963	BRGR30	No		
4114	AdJ	Hood	3292.650000		Helen T Durham Estate	Brazos River	Irr	109	87	49	1,454	6/30/1962	BRGR30	No		
4055	AdJ	Hood	3292.900000		Bank One Texas Na Trustee	Star Hollow	Irr	144	47	22		8/31/1967	BRGR30	No		
4054	AdJ	Hood	3293.000000		Thomas Brothers Grass Ltd	Long Crk	Irr	300	225	111		7/31/1955	BRGR30	No		
4052	AdJ	Hood	3293.120000		MGL Land Company	Long Crk	Irr	42	31	10		7/31/1962	BRGR30	No		
4051	AdJ	Palmer	3294.000000		Jesse T Crowder Jr Trust	Brazos River	Irr	12	29	10		7/31/1962	BRGR30	No		
4049	AdJ	Palmer	3294.400000		John Wessler Et Al	Brazos River	Irr	27	64	87	3	7/31/1962	BRGR30	No		
4050	AdJ	Hood	3294.500000		Western Lake Est Owners Assn	Hart Br	Rec	760	811	20		1/13/1975	BRGR30	No		
4048	AdJ	Hood	3295.000000		Grege W Cartwright	Brazos River	Irr	166	83	4	2	12/31/1954	BRGR30	No		
4047	AdJ	Hood	3296.000000		Fred L Thormann	Unnamed Trib Kicklappo Crk	Irr	23	68	4	2	4/30/1964	BRGR30	No		
4046	AdJ	Hood	3296.700000		Fred L Thormann	Kicklappo Crk	Irr	25	30	29		1/18/1976	BRGR30	No		
4045	AdJ	Palmer	3296.700000		H D Howard	Kicklappo Crk	Min	55	200	31		1/18/1976	BRGR30	No		
4044	AdJ	Palmer	3298.000000		Adelaide Elizabeth Biggs	Brazos River	Irr	69	69	28		10/31/1964	BRGR30	No		
4043	AdJ	Palmer	3298.000000		Kenneth W Fuller	Brazos River	Irr	75	75	11		12/31/1958	BRGR30	No		
4042	AdJ	Palmer	3298.000000		Larry & David Nash	Brazos River	Irr	75	75	11		12/31/1958	BRGR30	No		

Use	Number	Am (cfs)
Min	1	61,597
Irr	39	0
Mining	1	5,372
Hydro	0	0
Nrv	0	0
Rec	5	0
Other	0	0
Total	48	66,969

Table G-31  
Water Rights Upstream of Paluxy River at Glen Rose

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumptive (Utd)	Maximum Rate in Diversion Units	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks	
4093	Adj.	Somerville	3262.000000		J.C. McGill	Paluxy	Irr	1.0	61	13		12/31/1949	12/31/1949	PAGR31	No		
4094	Adj.	Somerville	3271.500000		J.B. Sanderson Et Al	Paluxy	Irr	1.6	61	13		6/30/1935	6/30/1935	PAGR31	No		
4095	Adj.	Somerville	3271.500000		Ernest H. Cannon	Paluxy	Irr	9.4	150	20		12/31/1983	12/31/1983	PAGR31	No		
4096	Adj.	Hoed	3273.000000	3939	Kenneth Lesley	Lallah Br	Irr	245	98	45	725	11/1/1982	11/1/1982	PAGR31	No		
4097	Adj.	Hoed	3273.000000		Kenneth Lesley	Lallah Br	Irr	360	174	20	511	1/20/1965	1/20/1965	PAGR31	No		
4098	Adj.	Hoed	3273.000000		Robert D. Adams Sr	Paluxy	Irr	6	5	11		7/31/1964	7/31/1964	PAGR31	No		
4099	Adj.	Hoed	3277.000000		Richard T. Lietz	Mitchell	Irr	197	100	10	332	8/14/1967	8/14/1967	PAGR31	No		
4089	Adj.	Hoed	328.000000		Jacob T. & Laura Dameron	Richardson	Irr	31	62	17		3/31/1963	3/31/1963	PAGR31	No		
5628	Permit	Hoed	328.020000	5628	Blugreen Southwest	Richardson	Res.					5/5/1999	5/5/1999	PAGR31	No		
4088	Adj.	Hoed	328.130000	5628	Blugreen Southwest	Paluxy	Res.	5.5	55	27	2	6/30/1966	6/30/1966	PAGR31	No		
4087	Adj.	Hoed	328.150000		Herman A. Anderson & Chester D. Swift	Paluxy	Irr	81	184	27	360	9/30/1965	9/30/1965	PAGR31	No		
4086	Adj.	Hoed	328.090000		Mary Frazier Clark Et Al	S Paluxy	Irr	1.5	16	12	2	9/2/1975	9/2/1975	PAGR31	No		
4085	Adj.	Hoed	328.3150000		Gary & Beverly Lawellen	Unmanned Trib N Paluxy	Irr	1.0	20	3		12/9/1974	12/9/1974	PAGR31	No		
4084	Adj.	Hoed	328.3150000		Erri R. Allison	Unmanned Trib N Paluxy	Irr	1.8	35	13		11/19/1973	11/19/1973	PAGR31	No		
4084 A	Adj.	Hoed	328.3230000		Erri R. Allison	N Paluxy	Other	2.5	18	2	2.5	11/19/1973	11/19/1973	PAGR31	No		
4084 A	Adj.	Hoed	328.3230000		Dupe Allison Et Ux	N Paluxy	Irr	9	32	2		11/19/1973	11/19/1973	PAGR31	No		
								16									

Use	Number	Amr (dFy)
Min	0	0
Irr	0	0
Res	0	0
Mining	0	1,163
Hydro	0	0
Other	0	0
Res	2	0
Other	1	2.5
Total	18	1,188

Table G-32  
Water Rights Upstream of Nolan River at Blum

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Ind)	Maximum Rate in AFY (cfs)	Impoundment in AF	Expiration Date	Priority Date	Primary Contract	Include in Diversion Study?	Remarks
4107	Adj. Permit	Johnson	3257450000	4258	Recreation Inc	Buffalo Ck	Irr	231	60	18			12/31/1964	NRBL 32	No	
4567	Permit	Johnson	3256800000		City Of Cleburne	W Fork Buffalo Ck	Min	720		20	550		5/31/1985	NRBL 32	No	
4106	Adj.	Johnson	3257000000		City Of Cleburne	Nolan	Min	5,760		280	25,600		8/6/1962	NRBL 32	Yes	
4106	Adj.	Johnson	3257000000		City Of Cleburne	Nolan	Irr	240	80				3/29/1976	NRBL 32	No	
4106 A	Adj.	Johnson	3257000000		City Of Cleburne	Nolan	Ind						8/6/1962	NRBL 32	No	
4105	Adj.	Johnson	3257450000		Wesley Row Carson	Nolan	Irr	12	2	1			1/31/1977	NRBL 32	No	
4105	Adj.	Johnson	3257450000		Cropey Mynke Of Texas Inc	Nolan	Irr	4	1				1/31/1977	NRBL 32	No	

Use	Number	Amt (af/y)
Man	2	6,480
Ind	1	0
Irr	4	487
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	0	0
Other	0	0
Total	7	6,967

**Table G-33  
Water Rights Downstream of Paluxy River at Glen Rose and Nolan River at Blum and Upstream of Brazos River near Aquilla**

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFT	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs.	Impoundment in AF	Expiration Date	Priority Date	Priority Point	Include in Drought Study?	Remarks
4319	Adi.	Hill	3243900000		Birch Willong	Texas	Irr	34	27	13			3/31/1962	BRAQ33	No	
4318 A	Adi.	Bosque	3244000000		Helen S. Hadde	Brazos River	Irr	517					12/31/1921	BRAQ33	No	
4318 A	Adi.	Bosque	3244000000		John McPherson Et Al	Brazos River	Irr	150					12/31/1921	BRAQ33	No	
4317 A	Adi.	Bosque	3244000000		Ed Hudlleston Et Lx	Brazos River	Irr	2,153		89	288		12/31/1921	BRAQ33	Yes	
4316	Adi.	Bosque	3244200000		Mary Krampp Jenkins Et Al	Brazos River	Irr	243	96	36			12/31/1963	BRAQ33	No	
4315	Adi.	Hill	3244500000		B. W. Bowers & Wife	Brazos River	Irr	75	60	13			12/31/1961	BRAQ33	No	
4315	Adi.	Hill	3244600000		Chestley J. Auten	Brazos River	Irr	30	45	14			12/31/1960	BRAQ33	No	
5157	Adi.	Hill	3246200000		Brazos River Authority	Brazos River	Min	8,336		50,000			8/30/1982	BRAQ33	Yes	Lake Whitney
4113	Adi.	Hill	3248000000		Brazos River Authority	Brazos River	Min	43		40	140		5/31/1964	BRAQ33	No	Lake Whitney
5346	Permit	Bosque	3248500000	5346	James M Walker	N Cedron	Irr	43					3/8/1991	BRAQ33	No	Cedron Cr
4112	Adi.	Bosque	3250000000		Special Camps For Special Kids	Unnamed Trib	Rec	12	13	11			3/23/1964	BRAQ33	No	
4111	Adi.	Bosque	3250750000		Louis & Virginia Gregory	Unnamed Trib Steele Crk	Irr	6	8	9	15		7/31/1953	BRAQ33	No	
4110	Adi.	Bosque	3250750000		Paul C Murphy JF	Unnamed Trib Steele Crk	Irr	20	20	7			5/31/1966	BRAQ33	No	
4109 A	Adi.	Bosque	3250750000		John & Virginia Gregory	Steele Crk	Irr	15	19	11	10		6/30/1961	BRAQ33	No	
4108 A	Adi.	Bosque	3250800000		Harro V. Dicks	Mesquite	Irr	5	27	4			6/30/1961	BRAQ33	No	Permit expires when lease is terminated
4108 A	Adi.	Bosque	3250800000		DK L Ltd	Mesquite	Irr	12	16	4			6/30/1961	BRAQ33	No	
4104	Adi.	Bosque	3257900000		Berco R Bass Inc	Brazos River	Irr	3,811	1,954	317			12/31/1957	BRAQ33	Yes	
4102	Adi.	Bosque	3258170000		Carl Wagner Jr Et Al	Brazos River	Irr	186	186	37			12/31/1963	BRAQ33	No	
4101	Adi.	Johnson	3258200000		Stanpland Investment Co	Grass	Irr	77	166	10			9/9/1969	BRAQ33	No	
4101	Adi.	Johnson	3258400000		Texas Parks & Wildlife Dept	Unnamed Trib	Rec	125		22	1,450		12/31/1959	BRAQ33	No	
5028	Permit	Somervell	3258650000	5028	Ladras Corporation	Brazos River	Min	5		895			1/8/1985	BRAQ33	No	Trib Brazos River
4099	Adi.	Somervell	3258750000		O'Grady Six O Ranch & Cattle Co Lc	Unnamed Trib	Rec	27		13			8/31/1949	BRAQ33	No	
4098	Adi.	Somervell	3258800000		Dorothy W. Little Et Al	Brazos River	Irr	258	130	22			7/31/1954	BRAQ33	No	
5460	Permit	Somervell	3258900000	5460	Bob Harris OH Company	Brazos River	Irr	356	161	1	5	12/31/2003	4/27/1993	BRAQ33	No	Res C
5460	Permit	Somervell	3258900000	5460	The County Of Somervell	Squaw Crk	Irr	17					4/27/1993	BRAQ33	No	Res A
5460	Permit	Somervell	3258900000	5460	The County Of Somervell	Squaw Crk	Rec	15					8/19/1993	BRAQ33	No	Res B
4097	Adi.	Somervell	3259000000		Texas Utilities Electric Co	Squaw Crk	Rec	23180	23180	51370			4/25/1973	BRAQ33	Yes	Squaw Creek Reservoir
4096	Adi.	Somervell	3259000000		City Of Glen Rose	Paluxy	Rec	2					8/28/1974	BRAQ33	No	
4094	Adi.	Somervell	3259300000		City Of Glen Rose	Paluxy	Rec	2					8/28/1974	BRAQ33	No	
5744	Permit	Somervell	3259300000	5744	SOMERVELL COUNTY WATER DISTRICT	Paluxy	Min	5,000	2,000		4,118		6/27/2001	BRAQ33	Yes	Whistler Branch Res

Use	Number	Amf (d.c.F)
Min	2	13,336
Irr	3	23,185
Irr	20	8,013
Minning	1	125
Hydro	0	0
Nav	0	0
Rec	7	32
Other	0	0
Total	33	44,691

Table G-34  
Water Rights Upstream of Aquilla Creek near Aquilla

Water Right Number	Type	County	Reg.	SWRA	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Ind)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Drought Study?	Remarks
4334	Adj.	Hill	G		3229000000		Alphons D Urbanovskys	Aquilla Ck	Irr	40	54	11		7/31/1964	AQMQ34	No		
5158	Adj.	Hill	G		3225000000		George W Meink LEI AL	Unnamed Trib Aquilla Ck	Irr	1	19	1		8/11/1964	AQMQ34	No		
5158	Adj.	Hill	G	20	3225000000		Brazos River Authority	Aquilla Ck	MIn	7,943		900	52,400	10/25/1976	AQMQ34	Yes	Lake Aquilla	
5158	Adj.	Hill	G	20	3225000000		Brazos River Authority	Aquilla Ck	Ind					10/25/1976	AQMQ34	No	Lake Aquilla	
4333	Adj.	Hill	G	20	3229000000		Brazos River Authority	Aquilla Ck	MIn					10/25/1976	AQMQ34	No	Lake Aquilla	
4333	Adj.	Hill	G	20	3229000000		Hilberson County Club	Unnamed Trib Pescan	Irr	8	3	29	18	8/14/1976	AQMQ34	No	Lake Aquilla	

Use	Number	Amf (af/y)
MIn	1	7,943
Ind	1	0
Irr	3	49
MInning	1	0
Hydro	0	0
Use	0	0
Other	0	0
<b>Total</b>	<b>7</b>	<b>7,992</b>

Table G-35  
Water Rights Upstream of North Bosque River at Hico

Water Right Number	Type	County	Reg.	SWRA	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AF/Y	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Drought Study?	Remarks
2260	Adj.	Hamilton	G		3190450000		F. Melvin & Helene Johnson Et Ux	N Bosque River	Irr	56	59	20		7/31/1950	NBHES5	No		
2259	Adj.	Hamilton	G		3190510000		F. Melvin Johnson Et Ux	N Bosque River	Irr	112	149	27		12/31/1965	NBHES5	No		
2258	Adj.	Hamilton	G		3191000000		Randy Ruten	N Bosque River	Irr	63	75	37		12/31/1966	NBHES5	No		
2257	Adj.	Hamilton	G		3191010000		W F Patey	Glenn Creek	Irr	52	83	6		12/31/1955	NBHES5	No		
2255	Adj.	Hamilton	G		3191020000		Wayne V Donelan	N Bosque River	Irr	48	36	10		12/31/1962	NBHES5	No		
2254	Adj.	Hamilton	G		3191030000		Wayne V Donelan	N Bosque River	Irr	36	36	10		12/31/1962	NBHES5	No		
2253	Adj.	Hamilton	G		3191040000		Wayne V Donelan	N Bosque River	Irr	82	63	5		12/31/1962	NBHES5	No		
5051 A	Permit	Hamilton	G		3191150000	5051A	Deems R Haden	Glenn Creek	Irr	606	303	6	1,227	12/31/2006	NBHES5	No		
2252	Adj.	Hamilton	G		3191200000		J B Patey Tomase	N Bosque River	Irr	30	30	6		12/31/1965	NBHES5	No	Irr that expired in 1985	
2253	Adj.	Hamilton	G		3191250000		J P Cattle Company	Spring Ck	D&L				270	12/31/1985	NBHES5	No		
2251	Adj.	Hamilton	G		3191600000		Wanda Trimble	N Bosque River	Irr	28	22			7/18/1963	NBHES5	No		
2250	Adj.	Hamilton	G		3192500000		Ocey Shadden	Green Ck	Irr	4	14	6		7/31/1967	NBHES5	No		
2249	Adj.	Hamilton	G		3192500000		Thomas H & Dolores C Benson	N Lf Green Ck	Irr	19	55	10	179	4/8/1968	NBHES5	No		
2248	Adj.	Hamilton	G		3192600000		Alvina Laine Heizer Hancock	N Lf Green Ck	Irr	62	63	15	179	9/30/1957	NBHES5	No		
2247	Adj.	Hamilton	G		3197130000		Bear Te-Lo Corporation	N Lf Green Ck	Irr	58	35	10		4/8/1968	NBHES5	No		
2246	Adj.	Hamilton	G		3197130000		Bear Te-Lo Corporation	N Lf Green Ck	Irr	58	35	10		4/8/1968	NBHES5	No		
2245	Adj.	Hamilton	G		3201400000		Donald S Heizer	Greenwood Ck	Irr	152	124	15	169	3/30/1966	NBHES5	No		
2244	Adj.	Hamilton	G		3203000000		Donald S Heizer	Greenwood Ck	Irr	20	55	7	54	2/21/1965	NBHES5	No		
2243	Adj.	Hamilton	G		3204000000		Donald S Heizer	Greenwood Ck	Irr	27	28	11	88	2/21/1965	NBHES5	No		
2242	Adj.	Hamilton	G		3205000000		Bert E Robbins	Bell Br	Irr	90	68	11	148	9/8/1958	NBHES5	No		
2241	Adj.	Hamilton	G		3206900000		Mrs W K Richardson	Unnamed Tib Bell Br	Irr	40	40	10	148	12/22/1969	NBHES5	No		
2240	Adj.	Hamilton	G		3210000000		Wayne Pittman Et Al	Unnamed Tib Bell Br	Irr	33	33	10	148	12/22/1969	NBHES5	No		
2239	Adj.	Hamilton	G		3212000000		A Dwin Mayfield Et Al	Unnamed Tib Green Ck	Irr	137	110	20	137	10/13/1970	NBHES5	No		
2238	Adj.	Hamilton	G		3214000000		Jon David Mayfield Trust	Unnamed Tib Green Ck	Irr	106	82	9	164	6/27/1955	NBHES5	No		
2237	Adj.	Hamilton	G		3216000000		Marvin Mayfield	Unnamed Tib Green Ck	Irr	61	70	22	60	7/31/1955	NBHES5	No		
2236	Adj.	Hamilton	G		3220000000		Marvin Mayfield	Green Ck	Irr	90	90	12	181	6/4/1958	NBHES5	No		
2235	Adj.	Hamilton	G		3220300000		Bruce E Todd	N Bosque River	Irr	24	15	9		12/31/1961	NBHES5	No		
2234	Adj.	Hamilton	G		3220400000		7 M Ranch Trust	N Bosque River	Irr	8	15	9		4/30/1963	NBHES5	No		
4226	Permit	Hamilton	G		3220433000	4124	Bruce E Todd	N Bosque River	Irr	225	210	37	180	6/21/1982	NBHES5	No		
2233	Adj.	Hamilton	G		3220500000		Bruce E Todd	N Bosque River	Irr	125	210	37		12/31/1963	NBHES5	No		
5557	Permit	Hamilton	G		3220600000		J W Oak Et Al	N Bosque River	Irr	18	29	9		7/31/1957	NBHES5	No		
2229	Adj.	Hamilton	G		3220550000	5557	Randy M Taylor Et Ux	N Bosque River	Irr	100	200	3		8/12/2007	NBHES5	No		
2228	Adj.	Hamilton	G		3220550000		J B McCormell	N Bosque River	Irr	44	53	16		5/31/1953	NBHES5	No		
2227	Adj.	Hamilton	G		3220550000		J T Fair Et Ux	N Bosque River	Irr	61	70	19	272	7/31/1960	NBHES5	No		
2226	Adj.	Hamilton	G		3220550000		Swain & Gaudin Jr	Green Ck	Irr	61	70	19	272	7/31/1960	NBHES5	No		
2225	Adj.	Hamilton	G		3221000000		Swain & Gaudin Jr	Green Ck	Irr	60	70	19	272	11/18/1965	NBHES5	No		
2224	Adj.	Hamilton	G		3221200000		Esque O C C Winnes	Live Oak Ck	Irr	40	50	20		10/24/1966	NBHES5	No		
2223	Adj.	Hamilton	G		3221500000		Charles Elliott & Robert Elliott	Live Oak Ck	Irr	76	15	8	172	3/25/1968	NBHES5	No		
2222	Adj.	Hamilton	G		3221500000		T V Murray	Live Oak Ck	Irr	16	13	200		10/24/1966	NBHES5	No		
2221	Adj.	Hamilton	G		3221500000		T V Murray	N Bosque River	Irr	34	80	5	280	6/30/1966	NBHES5	No		
2220	Adj.	Hamilton	G		3221500000		Valerie Jane Hinkle	Indian Ck	D&L					3/11/1974	NBHES5	No		
5052 A	Permit	Hamilton	G		3221600000	5052A	Lawrence A Hancock	N Bosque River	Irr	80	107	8		8/15/1976	NBHES5	No	Irr that expired in 1985	
2221	Adj.	Hamilton	G		3222000000		Haim & Zovannina Te Velle Trust	N Bosque River	Irr	110	138	11		3/28/1986	NBHES5	No		
2220	Adj.	Hamilton	G		3222000000		Remond Lesley	N Bosque River	Irr	38	38	12		10/31/1962	NBHES5	No		
5067 A	Permit	Hamilton	G		3222500000	5067A	Harold Pack	N Bosque River	Irr	12	15	9		5/6/1985	NBHES5	No		
2220	Adj.	Hamilton	G		3222700000		James F Johnson Et Ux	N Bosque River	Irr	13	15	9		5/31/1963	NBHES5	No		
2219	Adj.	Hamilton	G		3222800000		Great Southern Ranch, Inc	N Cornith Ck	Irr	54	54	13	160	12/31/1964	NBHES5	No		
2218	Adj.	Hamilton	G		3223500000		Craig W Ray	N Cornith Ck	Irr	54	54	9		2/26/1968	NBHES5	No		
2217	Adj.	Hamilton	G		3223600000		G K Lowallen	Grass Br	Irr					8/21/1972	NBHES5	No		
4221 A	Permit	Hamilton	G		3223850000	3900	Bruce S Terrill	S Fk N Bosque River	Irr	150	106	8		12/31/2002	NBHES5	No		
2211	Adj.	Hamilton	G		3224000000		Ellie Pearl Robertson	N Bosque River	Irr	85	90	22	147	6/7/1982	NBHES5	No		
2210	Adj.	Hamilton	G		3224000000		J T Hicks	N Bosque River	Irr	2	3	3		1/24/1977	NBHES5	No		
2209	Adj.	Hamilton	G		3224500000		Harold L Jarratt	N Bosque River	Irr	52	43	10		9/12/1977	NBHES5	No		
2208 B	Adj.	Hamilton	G		3224500000		John Mack Et Ux	Unnamed Tib N Fk N Bosque River	Irr	40	55	10	121	7/6/1971	NBHES5	No		
2207	Adj.	Hamilton	G		3224500000		Elvas Ray Stone Sr Et Al	Unnamed Tib N Fk N Bosque River	Irr	23	15	33	185	1/3/1972	NBHES5	No		
2206	Adj.	Hamilton	G		3224300000		H W Northcutt	Unnamed Tib N Fk N Bosque River	Irr	60	40	33	185	1/3/1972	NBHES5	No		
2205	Adj.	Hamilton	G		3224400000		Jack Berry	Scarbrough Ck	Irr	150	150	17	307	12/21/1970	NBHES5	No		
2204	Adj.	Hamilton	G		3224410000		Jerry Rankin	N Bosque River	D&L					12/31/1985	NBHES5	No	Irr that expired in 1985	
2203	Adj.	Hamilton	G		3224420000		Jerry Rankin	N Bosque River	D&L					12/31/1985	NBHES5	No	Irr that expired in 1985	
2202	Adj.	Hamilton	G		3224420000		James F Ewert	N Bosque River	D&L					8/27/1972	NBHES5	No	Irr that expired in 1985	
2201	Adj.	Hamilton	G		3224500000		A E Capeland Jr	N Bosque River	Irr	197	100	13		3/18/1968	NBHES5	No	Listed as NB_ST in original files. Should be off-line	
5619	Permit	Hamilton	G		3222900000	5619	City Of Stephenville	N Bosque River	Rec					11/30/1998	NBHES5	No	Listed as NB_ST in original files. Should be off-line	
5619	Permit	Hamilton	G		3222900000	5619	City Of Stephenville	N Bosque River	Rec					11/30/1998	NBHES5	No	Listed as NB_ST in original files. Should be off-line	
2218 A	Adj.	Hamilton	G		3223000000		Samuel M Frazier Et Al	Dry Br	Irr					7/10/1978	NBHES5	No	Listed as NB_ST in original files. According to WAM files diversion expired	
2217 A	Adj.	Hamilton	G		3223100000		O H Frazier & M B Cwey	Dry Br	Irr					2/5/1973	NBHES5	No	Listed as NB_ST in original files. According to WAM files diversion expired	

Use	Number	Amount (\$)
Man	0	0
Irr	0	0
Mining	62	4,165
Hydro	0	0
Nav	0	0
Rec	2	0
Other	5	0
Total	69	4,165

Table G-36  
Water Rights Downstream of North Bosque River at Hico and Upstream of North Bosque River near Clifton

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Rate in Diversion Units	Impoundment in AF	Expiration Date	Priority Date	Primary Point	Include in Diversion Study?	Remarks
2201	Adj.	Bosque	3155000000		City of Clifton	N Bosque River	Min	607		40	100		3/14/1963	NRCL 36	No	
5899	Permit	Bosque	3155000000	5899	CITY OF AMERIDIAN	N Bosque River	Min	1,336		16			9/8/2003	NRCL 36	No	
5551	Permit	Bosque	3160000000	5551	City of Clifton	Unnamed Trib N Bosque River	Min	2,004		12	2,000		4/3/1946	NRCL 36	Yes	Related to 12-2291
2290	Adj.	Bosque	3161000000		J. L. Jensen	N Bosque River	Min	16	14	9			12/31/1956	NRCL 36	No	
2290	Adj.	Bosque	3161000000		James Coskey Et Ux	N Bosque River	Irr	29	25				12/31/1956	NRCL 36	No	
2289	Adj.	Bosque	3162000000		Texas Parks & Wildlife Dept	Bee Crk	Res.			360			9/22/1969	NRCL 36	No	
4079 A	Permit	Bosque	3163510000	3809	Mrs. Jesse M Reed	Unnamed Trib Spring Crk	Irr	230	205	43		12/31/2001	11/3/1980	NRCL 36	No	
2288	Adj.	Hamilton	3164000000		Shannon Laird Hodges Et Al	Austin Br	Irr	3	9	16			12/31/1965	NRCL 36	No	
2287	Adj.	Hamilton	3164500000		Billy G & Mrs Sorley Hodges	Austin Br	Irr	7	11	16	13		12/31/1965	NRCL 36	No	
5411	Permit	Bosque	3168200000	5411	Norman J Neelley	N Bosque River	Irr	20	10	11		12/31/2002	3/27/1992	NRCL 36	No	
2285	Adj.	Bosque	3170000000		Dr Leonard Randle	N Bosque River	Irr	35	35	7			12/31/1949	NRCL 36	No	
2284	Adj.	Bosque	3171000000		L. C. & Isabelle Howard Et Ux	N Bosque River	Irr	25	38	13			12/31/1939	NRCL 36	No	
2283	Adj.	Bosque	3171500000		Margaret D White	N Bosque River	Irr	8	20	7			12/31/1964	NRCL 36	No	
2282	Adj.	Bosque	3174000000		Lester M Alberthal Jr	N Bosque River	Irr	25.3	32.0	44			12/31/1958	NRCL 36	No	
2281 B	Adj.	Bosque	3174500000		Ray J Miller	N Bosque River	Irr	7	88	1			4/30/1960	NRCL 36	No	
2280	Adj.	Bosque	3177500000		John David Bell Et Ux	N Bosque River	Irr	100	88	3			10/1/1984	NRCL 36	No	
2279	Adj.	Bosque	3177500000		Louise Pauline Landgraf Humpel Et Al	N Bosque River	Irr	69	69	37			7/31/1955	NRCL 36	No	
2278	Adj.	Bosque	3178500000		William E Gibson	N Bosque River	Irr	114	114	7			12/31/1966	NRCL 36	No	
2277	Adj.	Bosque	3179500000		Thomas G Peters Et Ux	N Bosque River	Irr	10	20	8			12/31/1951	NRCL 36	No	
2276	Adj.	Bosque	3180000000		Louis A Beecherl Jr	N Bosque River	Irr	90	60	27	90		12/31/1954	NRCL 36	No	
2275	Adj.	Bosque	3180500000		Louis A Beecherl Jr	Bull Crk	Irr	155	155	70	1,999		10/20/1969	NRCL 36	No	
2274	Adj.	Bosque	3180700000		Louis A Beecherl Jr	High Crk	Irr	81	81	70	1,564		10/20/1969	NRCL 36	No	
2273	Adj.	Erath	3181500000		W F Furr	Stough Crk	Irr	48	48	40	528		12/31/1922	NRCL 36	No	
2272	Adj.	Bosque	3181500000		Albert N Braw	N Bosque River	Irr	42	56	28			12/31/1922	NRCL 36	No	
2271	Adj.	Bosque	3181500000		Albert N Braw	N Bosque River	Irr	15	30	13			12/31/1950	NRCL 36	No	
2270	Adj.	Bosque	3181500000		Albert N Braw	N Bosque River	Irr	15	30	13			12/31/1950	NRCL 36	No	
2269	Adj.	Bosque	3184500000		Michael J Lett Et Ux	Royal Br	Irr	24	36	9	26		5/31/1967	NRCL 36	No	
2268	Adj.	Erath	3185800000		Barry L Polk Et Ux	N Bosque River	Irr	11	13	5			12/31/1966	NRCL 36	No	
2267	Adj.	Erath	3185900000		Romae W Parain	Duffau Crk	Irr	0	1	0			12/31/1963	NRCL 36	No	
2266	Adj.	Bosque	3186500000		Margo Jay Parain Battershell	Duffau Crk	Irr	1	1	0			12/31/1947	NRCL 36	No	
2265	Adj.	Bosque	3186850000		Karl T Buiz Jr	N Bosque River	Irr	18	24	7			12/31/1966	NRCL 36	No	
2264	Adj.	Hamilton	3188000000		Dorel Fillingim	N Bosque River	Irr	268	155	27			12/31/1955	NRCL 36	No	
2263	Adj.	Hamilton	3188400000		William Van Zandt Sheam Et Ux	Honey Crk	Irr	45	45	16			12/31/1955	NRCL 36	No	
2262	Adj.	Hamilton	3188500000		William Van Zandt Sheam Et Ux	Honey Crk	Irr	65	100	18			12/31/1959	NRCL 36	No	
2261	Adj.	Hamilton	3189650000		Vernon Clark Beard	Honey Crk	Irr	30	53	18			12/31/1967	NRCL 36	No	
2261	Adj.	Hamilton	3190200000		Cecil Parks	N Bosque River	Irr	8	10	7			12/31/1967	NRCL 36	No	
2213	Adj.	Erath	3223650000		Wilburn L Gaines	Goose Br	Irr						8/21/1972	NRCL 36	No	

Use	Number	Amount (d/y)
Min	3	3,947
Ind	0	0
Irr	35	1,890
Minning	0	0
Hydro	0	0
Nav	0	0
Other	0	0
Total	39	5,837

Table G-37  
Water Rights Downstream of North Bosque River near Clifton and Upstream of North Bosque River at Valley Mills

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumptive (Irr)	Maximum Diversion Rate in AFY	Impoundment in AF	Expiration Date	Priority Date	Primary Cont'd Pct	Include in Divert Study?	Remarks
2292	Adj.	Bosque	3142050000		D Ballou	N Bosque River	Irr	22	42	13			12/31/1960	NBVM17	No	
2293	Adj.	Bosque	3143130000		W O Gluff	N Bosque River	Irr	261	347	25			12/31/1949	NBVM17	No	
2298	Adj.	Hamilton	3143330000		Charles E Stevens	S Fork Neils Crk	Irr	104	104	12			4/5/1965	NBVM17	No	
2295	Adj.	Bosque	3143000000		Reinhold W & Nellie Lindberg	N Bosque River	Irr	49	49	27			6/30/1953	NBVM17	No	
2294	Adj.	Bosque	3143100000		R D J M & M L Lundberg Et Al	N Bosque River	Irr	80	160	25			6/30/1946	NBVM17	No	
2293	Adj.	Bosque	3144000000		Escher K Wiedersanders	N Bosque River	Irr	7	15	6			12/31/1905	NBVM17	No	

Use	Number	Amt (af/y)
Man	0	0
Ind	0	0
Irr	6	523
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	0	0
Other	0	0
Total	6	523

Table G-38  
Water Rights Upstream of Middle Bosque River near McGregor

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in AFY	Impoundment in AF	Expiration Date	Priority Date	Primary Controlling Party	Include in Diversion Study?	Remarks
2153	Permit	McLennan	313.500000	4135	City of Comstock	Tank Ck	Min	55		8	2.30		5/15/1983	MBMG38	No	
2308	App	McLennan	313.600000		Jim H. Westerbald	M Bosque River	Irr	1.0	10	8			7/31/1966	MBMG38	No	
2307	App	McLennan	313.500000		Samuel N Carroll Et Al	M Bosque River	Irr	2.3	23	14			12/31/1983	MBMG38	No	

Use	Number	Amt (af/y)
Min	1	55
Irr	0	0
Irr	2	33
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	0	0
Other	0	0
Total	3	88

Table G-39  
Water Rights Upstream of Hog Creek near Crawford

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumptive (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
3931 A	Permit	McClain	311898000	003636A	Jim H. Westersfeld	Hog Crk	Irr	219	260	11	419	12/1/2000	7/7/1985	HGCC839	No	SITE 2 HOGG CR. WS. AMEND 1/91

Use	Number	Amt (af/y)
Main	0	0
Irr	0	0
Mining	2	233
Hydro	0	0
Nav	0	0
Rec	0	0
Other	0	0
Total	2	233

Table G-40  
Water Rights Downstream of Middle Bosque River near McGregor, Hog Creek near Crawford, and North Bosque River at Valley Mills and Upstream of Bosque River near Waco

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in AFY (cfs)	Impoundment in AF	Expiration Date	Priority Date	Primary Cont'd Permit	Include in Diversion Study?	Remarks
2312	Adj.	Mt. Lemmon	3070/000000		C. L. Slight Farms	Bosque River	Irr	163	29	800	104,100		10/30/1925	ROWA40	No	
2313	Adj.	Mt. Lemmon	3095/000000		City of Waco	Bosque River	Min	58,200		800			1/10/1929	ROWA40	No	
2315	Adj.	Mt. Lemmon	3095/000000		City of Waco	Bosque River	Irr	900					2/31/1929	ROWA40	No	Lake Waco
5094	Permit	Mt. Lemmon	3095/100000	5094	City of Waco	Bosque River	Min	20,770		1,000	87,962		9/12/1986	ROWA40	Yes	Lake Waco Enlargement
5094	Permit	Mt. Lemmon	3095/100000	5094	City of Waco	Bosque River	Res.						9/12/1986	ROWA40	No	Lake Waco Enlargement
2314	Adj.	Mt. Lemmon	31153/000000		Rainbow Lake Incorporated	Unnamed Trib	Res.				105		12/31/1920	ROWA40	No	
2312 A	Adj.	Mt. Lemmon	311869/0000		Robert Hall	Hog Ck	Irr	162	194	22	5		12/31/1920	ROWA40	No	
5397	Permit	Mt. Lemmon	31200/0000	5397	Tom Wade And Judy Wade	Unnamed Trib S Bosque River	Irr	10	22	7	2		1/30/1992	ROWA40	No	
2310	Adj.	Mt. Lemmon	31271/000000		Jim Heering	Harris Ck	Irr	16	32	9	18		12/31/1946	ROWA40	No	
2309	Adj.	Mt. Lemmon	31310/000000		Jerry Clemmons & Joy Clemmons	S Bosque River	Irr	10	14	2			12/31/1967	ROWA40	No	
2306	Adj.	Mt. Lemmon	31365/000000		Harry A Britton Et Al	N Bosque River	Irr	5	19				12/31/1899	ROWA40	No	
2305	Adj.	Mt. Lemmon	31370/000000		Bertrand A Talbert	N Bosque River	Irr	40	30	6			7/31/1963	ROWA40	No	
2304	Adj.	Mt. Lemmon	31375/000000		Hugh Whitfield Davis	N Bosque River	Irr	3	3	13			6/30/1955	ROWA40	No	
2304	Adj.	Mt. Lemmon	31375/000000		Walter Warren Fair Et Ux	N Bosque River	Irr	44	37				6/30/1955	ROWA40	No	
2208 B	Adj.	Mt. Lemmon	31375/000000		John Mosek Et Ux	N Bosque River	Irr	20	55	1			7/6/1971	ROWA40	No	
2303	Adj.	Mt. Lemmon	31376/000000		Walter Warren Fair Et Ux	N Bosque River	Irr	30	25	13			6/30/1955	ROWA40	No	
2302	Adj.	Mt. Lemmon	31382/000000		Steven K Chertson Et Ux	N Bosque River	Irr	122	175				12/31/1966	ROWA40	No	
2301	Adj.	Mt. Lemmon	31390/000000		Abigail Halbert Kamm	N Bosque River	Irr	70	30	20			5/31/1958	ROWA40	No	
2300	Adj.	Bosque	31410/000000		William J Hix Et Al	N Bosque River	Irr	100	70	24			12/31/1967	ROWA40	No	

Use	Number	Amr (d/cy)
Min	2	78,970
Irr	15	1,725
Min/ing	0	0
Hydro	0	0
Nat	0	0
Res	2	0
Other	0	0
Total	19	80,695

Table G-41  
Water Rights Downstream of Brazos River near Aquilla, Aquilla Creek near Waco and Upstream of Brazos River at Waco

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in terms of GCS	Impoundment in AF	Expiration Date	Priority Date	Primary Cont'd Point	Include in Divert Study?	Remarks
4340 A	Adj.	Mt. Lemman	2935.600000		City Of Waco	Brazos River	Min Res.	5,600		100	3,537		6/29/1914	BRWA41	Yes	
4340 A	Adj.	Mt. Lemman	2935.600000		City Of Waco	Brazos River	Res.						1/8/1968	BRWA41	Yes	
4340 A	Adj.	Mt. Lemman	2935.600000		Yount Brothers, Inc Contractors	Brazos River	Hydro	1,257,530	41	33			6/29/1914	BRWA41	Yes	non-erratic basis
4339	Adj.	Mt. Lemman	2900.000000		Bonnie T. George	Brazos River	Irr	100					5/23/1963	BRWA41	No	
4339	Adj.	Mt. Lemman	2900.000000		Charlene Walker	Brazos River	Irr						5/23/1963	BRWA41	No	
2317	Adj.	Mt. Lemman	3045.101000		Leannette English & Billy O English	Brazos River	Irr	248	126	25			11/20/1918	BRWA41	No	
2318	Adj.	Mt. Lemman	3045.250000		Charlotte Bridges Johnson Et Al	Brazos River	Irr	35	26	33			12/31/1957	BRWA41	No	
4338	Adj.	Mt. Lemman	322.650000		Frank W. Sipson Et Al	Bosque River	Irr	130	60	43			5/23/1963	BRWA41	No	
4337	Adj.	Mt. Lemman	322.680000		Jrtn G Dollins Sr	Brazos River	Irr	58	37	11			6/30/1966	BRWA41	No	
4336	Adj.	Mt. Lemman	322.680000		Donald Risinger Defined Benefit	White River	Irr	55	21	31			6/30/1953	BRWA41	No	
4336	Adj.	Mt. Lemman	322.680000		Evee Smith Romine	Giles	Irr	55	21				6/30/1953	BRWA41	No	
4330	Adj.	Mt. Lemman	324.087000		Kaye Smith Boyd	Giles	Irr	16	10				12/31/1940	BRWA41	No	
4331	Adj.	Mt. Lemman	324.088000		Karl Lee Reddell & Wife	Brazos River	Irr	44	29				12/31/1940	BRWA41	No	
4332	Adj.	Mt. Lemman	324.090000		Diana M Wellborn Et Al	Brazos River	Irr	32	21				12/31/1940	BRWA41	No	
4329	Adj.	Mt. Lemman	324.127000		Karl Lee Reddell Et Al	Brazos River	Irr	74	274	63			12/31/1964	BRWA41	No	
4329	Adj.	Mt. Lemman	324.127000		Thomas Brothers Grass Ltd	Brazos River	Irr	856	80	7			12/31/1964	BRWA41	No	
4328	Adj.	Mt. Lemman	324.146000		Thomas Brothers Grass Ltd	Brazos River	Irr	40	11	33			7/1/1964	BRWA41	No	
4327	Adj.	Mt. Lemman	324.170000		George L Moore	Brazos River	Irr	4	11	33			12/31/1959	BRWA41	No	Mary Ware Survey - 50 Acre Tract
4326	Adj.	Mt. Lemman	324.188000		Dan Wellton Williams	Brazos River	Irr	6	18	33			12/31/1959	BRWA41	No	Mary Ware Survey - 16 Acre Tract
4325	Adj.	Mt. Lemman	324.150000		Dan Wellton Williams	Brazos River	Irr	48	26	18			6/30/1967	BRWA41	No	
4324	Adj.	Mt. Lemman	324.150000		Selda Kathryn Cargill	Brazos River	Irr	305	173	43	12		6/30/1965	BRWA41	No	
4323	Adj.	Hill	324.200000		Vanessa A Gillin	Brazos River	Irr	173	138	22			6/30/1966	BRWA41	No	
4321	Adj.	Hill	324.200000		DESK L Burpede	Brazos River	Irr	173	150	22			6/30/1966	BRWA41	No	
4321	Adj.	Hill	324.200000		Willa B O Bunnert	Brazos River	Irr	327	260	32			8/31/1964	BRWA41	No	
4355 B	Perm.	Hill	324.510000	4141B	Walter K Gaultier	Brazos River	Irr	170	172	29			5/15/1984	BRWA41	No	
4320	Adj.	Bosque	324.260000		W L Rappason Et Al	Brazos River	Irr	84	84	22			7/31/1967	BRWA41	No	
4320	Adj.	Bosque	324.260000		Herman L. Brn	Brazos River	Irr	84	84	22			7/31/1967	BRWA41	No	

Use	Number	Amt (df/v)
Min	1	5,600
Irr	23	74
Mining	0	2,971
Hydro	0	0
Nav	0	1,257,530
Rec	0	0
Other	0	0
Total	27	1,266,175

**Table G-42  
Water Rights Downstream of Brazos River at Waco and Upstream of Brazos River near Highbank**

Water Right Number	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Conservation (Irr)	Maximum Diversion Rate in terms of cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
42-57 A	McLennan	2812000000	3956A	Holy Land & Cattle A Partnership	Brazos River	Irr	2,660	2,350	134			8/30/1982	BRIH42	Yes	

Use	Number	Am't (af/y)
Min	7	18,600
Irr	4	39,000
Irr	20	111,602
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	5	0
Other	0	0
Total	36	70,202

Table G-43  
Water Rights Upstream of Leon River near De Leon

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (In or Consumption (Acre)	Maximum Rate in Diversion Units	Impoundment in AF	Expiration Date	Priority Date	Primary Cont'd Point	Include in Diversion Study?	Remarks
3525	Adj.	Eastland	2429520000		Thomas H. Richardson II	Unnamed Trib. Sabana River	Irr	40				12/31/2000	10/13/1969	LEDI43	No	
3526	Adj.	Eastland	2429538000		Jeta Beth Cook EA II	Unnamed Trib. Sabana River	Irr	25	42	7		12/31/2000	12/8/1975	LEDI43	No	
3527	Adj.	Eastland	2429540000		Robert M. & Ingeborg Burns	Unnamed Trib. Sabana River	Irr	20	20	2			6/9/1969	LEDI43	No	
3528	Adj.	Eastland	2429549000		James L. Hughes	Unnamed Trib. Hunting Shirt Crk	Irr	7			10		7/31/1965	LEDI43	No	
3529	Adj.	Eastland	2429550000		Ben Hamner	Hunting Shirt	Irr	40	40	6			5/5/1969	LEDI43	No	
3530	Adj.	Comanche	2435000000		Harold G. Haganbottom	Unnamed Trib. Leon River	Irr	65	65	9			3/22/1971	LEDI43	No	
3531	Adj.	Comanche	2466550000		Ohko Ranch Corporation	Leon River	Irr	24	23	7			4/30/1966	LEDI43	No	
3498	Adj.	Comanche	2466900000		N.L. Box	Unnamed Trib. Leon River	Irr	3	50	3	25		8/31/1951	LEDI43	No	
3499	Adj.	Comanche	2466900000		Raymond L. Glider	Houston Spring Crk	Irr	100	100	18			12/14/1970	LEDI43	No	
3497	Adj.	Comanche	2466920000		Herrald Abels	Houston Spring Crk	Irr	50	50	9			7/28/1975	LEDI43	No	
3496	Adj.	Comanche	2467000000		Nunnie Lee Thompson	Unnamed Trib. Leon River	Irr	21	10	3			10/28/1968	LEDI43	No	
3495	Adj.	Comanche	2467100000		Moody B. Koonce	Unnamed Trib. Leon River	Irr	94	65	5			5/23/1967	LEDI43	No	
3494	Adj.	Comanche	2467150000		Moody B. Koonce	Unnamed Trib. Leon River	Irr	140	100	12			3/22/1971	LEDI43	No	
3493	Adj.	Comanche	2467200000		Eddie Lindley	Unnamed Trib. Leon River	Irr	35	40	6			4/27/1970	LEDI43	No	
3492	Adj.	Comanche	2467380000		John J. Holland	Unnamed Trib. Leon River	Irr	52	88	10			8/21/1967	LEDI43	No	
3490	Adj.	Comanche	2468200000		John J. Holland	Unnamed Trib. Leon River	Irr	80	85	12			6/5/1967	LEDI43	No	
3489	Adj.	Eastland	2468350000		Thomas H. Birdsong II	Unnamed Trib	Irr	80	57		323		1/3/1977	LEDI43	No	
3488	Adj.	Eastland	2468370000		Thomas H. Birdsong II	Unnamed Trib	Irr	140	100	36			10/13/1969	LEDI43	No	
3487	Adj.	Eastland	2468370000		Therrell L. Dickson	Bliss Crk	Irr	30	55	8			9/22/1969	LEDI43	No	
3486	Adj.	Eastland	2468400000		D.B. Warren	Unnamed Trib. Leon River	Irr	40	40	20			2/19/1968	LEDI43	No	
3485	Adj.	Eastland	2468520000		Reggie N. Love Et Ux	Unnamed Trib. Shil Br	Irr	150	355	85			10/20/1975	LEDI43	No	
3484	Adj.	Eastland	2468530000		H.L. Perrin Et Ux	Shil Br	Irr	148	74	11	350		12/19/73	LEDI43	No	
3483	Adj.	Eastland	2468530000		James N. Love Et Ux	Shil Br	Irr	148	148	18			4/6/1973	LEDI43	No	
3482	Adj.	Eastland	2468530000		James N. Love Et Ux	Shil Br	Irr	148	148	18			4/6/1973	LEDI43	No	
3481	Adj.	Eastland	2468570000		Marjorie C. Rodgers	Shil Br	Irr	40	48	4			5/13/1970	LEDI43	No	EXP 12/2000, AMEND 2/91, 2/94
3480	Adj.	Eastland	2468600000		D.B. Warren	Unnamed Trib. Leon River	Irr	90	26	14	244		7/31/1969	LEDI43	No	
3482	Adj.	Eastland	2468660000		Johnny W. & Mary C. Eaves	Unnamed Trib. Nash Crk	Irr	13	26	7	25		7/31/1964	LEDI43	No	
3481	Adj.	Eastland	2468750000		Will D. Brown Et Ux	Unnamed Trib. Nash Crk	Irr	25	40	9			7/29/1968	LEDI43	No	
3480	Adj.	Eastland	2468900000		Saul Pullman	Unnamed Trib. Nash Crk	Irr	40					1/0/1900	LEDI43	No	Irr that expire 93
3479	Adj.	Eastland	2469000000		Saul Pullman	Unnamed Trib. Nash Crk	Irr	40			60		1/0/1900	LEDI43	No	Irr that expire 93
3478	Adj.	Eastland	2469000000		Eddy J. & Charlotte Ann Smider	Unnamed Trib. Nash Crk	Irr	30	30	8			4/5/1966	LEDI43	No	
3477	Adj.	Eastland	2471000000		Romney Lowe	Elm Br	Irr	40	50	10			10/27/1969	LEDI43	No	
3472	Adj.	Eastland	2476000000		R.V. Robinson	Unnamed Trib. Colony Crk	Irr	103	103	9	169		12/31/2000	LEDI43	No	
3471	Adj.	Stephens	2490500000		Glynn A. Wilson	Unnamed Trib. N. Colony Crk	Irr	50	70	23	115		10/11/1977	LEDI43	No	
3470	Adj.	Eastland	2490500000		Glynn A. Wilson	Leon River	Irr	50	30	5	125		12/31/2000	LEDI43	No	
3470	Adj.	Eastland	2491000000		Eastland County Wd	Leon River	Min	2,438			28,000		3/21/1952	LEDI43	Yes	Lake Leon
3470	Adj.	Eastland	2491000000		Eastland County Wd	Leon River	Min	1,748					3/25/1986	LEDI43	Yes	Lake Leon
3470	Adj.	Eastland	2491000000		Eastland County Wd	Leon River	Min	1,265					5/17/1931	LEDI43	Yes	Lake Leon
3470	Adj.	Eastland	2491000000		Eastland County Wd	Leon River	Ind	350					3/25/1986	LEDI43	No	
3469	Adj.	Eastland	2491000000		Eastland County Wd	Leon River	Irr	500					8/21/1967	LEDI43	No	
3475	Adj.	Eastland	2499000000		Larry Morrow	Unnamed Trib	Irr	21	21	10			5/26/1969	LEDI43	No	
3474	Adj.	Eastland	2499200000		C.M. Pippin Jr	Unnamed Trib. Leon River	Irr	8	48	10			4/28/1969	LEDI43	No	
3468	Adj.	Eastland	2500000000		Jerry P. McHaffey	Leon River	Min	607			1,607		12/15/1979	LEDI43	No	Lake Olden
3468	Adj.	Eastland	2500000000		Edna Iron Inc	Leon River	Min	1,000					12/15/1979	LEDI43	No	
3467	Adj.	Eastland	2513000000		Wayne Hargrave Et Ux	Unnamed Trib. S. Fk. Leon River	Irr	12	24	10			12/31/1965	LEDI43	No	
3466	Adj.	Eastland	2530000000		City Of Eastland	N. Fk. Leon River	Min	670			1,740		10/28/1979	LEDI43	No	Lake Eastland
3465	Adj.	Eastland	2530000000		City Of Eastland	N. Fk. Leon River	Min	670					10/28/1979	LEDI43	No	
3466	Adj.	Eastland	2530000000		City Of Eastland	U. Fk. Leon River	Min	100					10/28/1979	LEDI43	No	
3466	Adj.	Eastland	2530000000		City Of Eastland	U. Fk. Leon River	Rse						1/12/1976	LEDI43	No	
5274A	Permit	Eastland	2468500000	5274A	J.R. GRAMSHAW ET UX	Rough Br	Irr	25	35	5			12/31/1989	LEDI43	No	

Use	Number	Amt (df/y)
Min	4	5,900
Ind	2	400
Irr	44	2,847
Mining	2	1,607
Hydro	0	0
Nav	0	0
Rec	1	0
Other	0	0
Total	53	10,754

Table G-44  
Water Rights Upstream of Sabana River near De Leon

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumptive (Utd)	Maximum Rate in AFY (cfs)	Impoundment in AF	Expiration Date	Priority Date	Primary Cont'd Pctis	Include in Divert Study?	Remarks
3543	Adj.	Comanche	242550000		John Lampman Et Al	Sabana River	Irr	17	28	3	29		12/31/1964	SADI44	No	
3543	Adj.	Comanche	242550000		Henry Sims Wilcox	Sabana River	Irr	28	28	3	29		5/4/1970	SADI44	No	
3542	Adj.	Comanche	242590000		Shivers Lake Development Corporation	Fife Ck	Rec				450		4/28/1976	SADI44	No	Nibors Lake
3541	Adj.	Comanche	242800000		Sum D & Martha L. Upshaw	Unnamed Trib Sabana River	Irr	45	55	10			3/17/1969	SADI44	No	
3539	Adj.	Comanche	242850000		Et Glover Jr	Unnamed Trib Sabana River	Irr	30	60	10			11/19/1973	SADI44	No	
3537 B	Adj.	Comanche	242850000		William T. Morris Et Ux	Unnamed Trib	Irr	9	75	12	9	12/31/2000	12/17/1973	SADI44	No	
3536	Adj.	Comanche	242890000		Lyndell F. Coan	Unnamed Trib Sabana River	Irr	31	58	7			4/26/1971	SADI44	No	
3535	Adj.	Comanche	242892000		Jack & Thelma Lou Riley	Unnamed Trib Sabana River	Irr	8	100	9			10/26/1971	SADI44	No	
3534	Adj.	Comanche	242895000		June M Rountree Trussie	Sabana River	Irr	24	36	7	4		7/31/1967	SADI44	No	
3533	Adj.	Comanche	242900000		Bobby L Skaggs & Gene E Skaggs	Unnamed Trib Sabana River	Irr	25	60	10			3/24/1969	SADI44	No	
3532	Adj.	Comanche	242905000		Jimmy L Bingham Et Al	Sabana River	Irr	29	45	16	29		3/29/1971	SADI44	No	
5260 A	Permit	Comanche	242905300	005560A	Lee Tilley	Unnamed Trib Sabana River	Irr	95	60	30		12/31/2000	11/13/1989	SADI44	No	
5260 A	Permit	Comanche	242905300	005560A	Lee Tilley	Unnamed Trib Sabana River	Irr	30	65	9	98	12/31/2000	11/13/1989	SADI44	No	
3531 B	Adj.	Comanche	242906000		John R. Scott Et Ux	Unnamed Trib Sabana River	Irr	30	65	9	40		1/3/1978	SADI44	No	
3531 B	Adj.	Comanche	242906000		John R. Scott Et Ux	Unnamed Trib Sabana River	Irr	10		8	28		11/3/1988	SADI44	No	
3528	Adj.	Comanche	242907000		John R. Scott Et Ux	Unnamed Trib Sabana River	Irr	10		8	28		11/3/1988	SADI44	No	
3528 B	Adj.	Comanche	242907000		Margrette Jean Moon Et Al	Unnamed Trib Sabana River	Irr	121	120	23	121		9/15/1969	SADI44	No	
3530	Adj.	Comanche	242910000		Troy Underwood	Unnamed Trib	Irr	20	20	5			8/30/1976	SADI44	No	
3530	Adj.	Comanche	242910000		Louis Schlatte Et Al	Unnamed Trib Sabana River	Irr	14	15	7			6/30/1967	SADI44	No	
4568 A	Permit	Comanche	242928000	004263A	Jon R Coan Et Ux	Unnamed Trib Sabana River	Irr	46	35	18			9/9/1969	SADI44	No	
								126	90	18			5/21/1985	SADI44	No	

Use	Number	Am't (d/cy)
Min	0	0
Irr	21	783
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	1	0
Other	0	0
Total	22	783

Table G-45  
Water Rights Downstream of Leon River near De Leon and Upstream of Leon River near Hasse

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in Acre Feet	Irrigated Acres (In or Consumption (Acre))	Maximum Diversion Rate in cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Point	Include in Diversion Study?	Remarks
3529	Adj.	Erath	2391 002000		Bobbe & Linda Stiles	Unmanned Trib. Walnut Crk.	Irr	18	160	18		9/8/1975	LEHS45	No		
3526	Adj.	Comanche	2393 000000		Wolfe Pesantlands Inc.	Leon River	Irr	169	160	18		7/15/1963	LEHS45	No		
3527	Adj.	Comanche	2398 000000		Druid Kay Dentman Et Al	Leon River	Irr	13	26	13		1/15/1967	LEHS45	No		
5159	Adj.	Comanche	2400 000000		Brazos River Authority	Leon River	Min	19,658			59,400	12/16/1963	LEHS45	Yes	Lake Precator	
5159	Adj.	Comanche	2400 000000		Brazos River Authority	Leon River	Irr					12/16/1963	LEHS45	No	Lake Precator	
5159	Adj.	Comanche	2400 000000		Brazos River Authority	Leon River	Min					12/16/1963	LEHS45	No	Lake Precator	
5159	Adj.	Comanche	2400 000000		Brazos River Authority	Leon River	Res.	14				4/23/1966	LEHS45	No		
3624	Adj.	Comanche	2404 390000		Pauline Hall	Unmanned Trib. Duncan Crk.	Irr	26	26	6	10	4/23/1966	LEHS45	No		
3622	B	Comanche	2404 450000		Mrs. Merle Matthews	Unmanned Trib.	Irr	58	60	11	50	6/28/1976	LEHS45	No		
3620	B	Comanche	2405 550000		Curtis D. Lesley & Rowee G. Lesley	Unmanned Trib.	Irr	25	58	4		5/31/1967	LEHS45	No		
3620	Adj.	Comanche	2406 000000		E. J. Alderman	Marshall Spring Br.	Irr	72	75	33		9/11/1967	LEHS45	No		
3619	A	Comanche	2407 600000		E. J. Alderman	Unmanned Trib. Coppens (Rush) Crk.	Irr	20	20	4	30	2/22/1971	LEHS45	No		
3619	A	Comanche	2407 600000		Jiff Farms - A Partnership	Unmanned Trib. Coppens (Rush) Crk.	Irr	20	20	28	10	8/22/1968	LEHS45	No		
3618	Adj.	Comanche	2408 000000		Jiff Farms - A Partnership	Unmanned Trib. Coppens (Rush) Crk.	Irr	85	100	20		7/31/1967	LEHS45	No		
3618	Adj.	Comanche	2408 000000		Ohbso Ranch Corporation	Unmanned Trib. Sweetwater Crk.	Irr	9	10	10		5/6/1968	LEHS45	No		
3617	Adj.	Comanche	2408 200000		Ohbso Ranch Corporation	Unmanned Trib. Sweetwater Crk.	Irr	3	11	10		4/29/1968	LEHS45	No		
3616	Adj.	Comanche	2409 200000		Walter Mizurek	Unmanned Trib. Sweetwater Crk.	Irr	12	8	10		6/16/1969	LEHS45	No		
3615	Adj.	Comanche	2409 500000		A. E. Vineyard	Unmanned Trib. Sweetwater Crk.	Irr	48	32	10		6/16/1969	LEHS45	No		
3614	Adj.	Comanche	2410 000000		Don P. Chester	Unmanned Trib. Sweetwater Crk.	Irr	10	10	10		11/18/1965	LEHS45	No		
3614	Adj.	Comanche	2410 050000		Hugh Monsele Obrien	Unmanned Trib. Sweetwater Crk.	Irr	95	80	7		5/17/1971	LEHS45	No		
3612	Adj.	Comanche	2410 600000		Fred S. Davis	Unmanned Trib. Sweetwater Crk.	Irr	33	80	15	40	3/31/1959	LEHS45	No		
3611	Adj.	Comanche	2410 600000		Hugh Monsele Obrien	Unmanned Trib. Sweetwater Crk.	Irr	133	38	12		12/19/1969	LEHS45	No		
3609	Adj.	Comanche	2410 700000		John M. Hinkley	Unmanned Trib. Sweetwater Crk.	Irr	50	73	6		10/18/1971	LEHS45	No		
3608	Adj.	Comanche	2410 900000		Steven Moore Et. Ux	Sweetwater Crk.	Irr	21	40	6		10/26/1971	LEHS45	No		
3608	Adj.	Comanche	2410 900000		Avery Moore	Sweetwater Crk.	Irr					10/26/1971	LEHS45	No		
3607	A	Comanche	2410 900000		J. C. Mizurek, Jr. (D&L Only)	Jimmies Crk.	D&L				25	12/31/1993	LEHS45	No	Use 1 Exp 12/31/1993, Now D&L Only	
3607	A	Comanche	2410 900000		J. C. Mizurek, Jr. (D&L Only)	Jimmies Crk.	D&L					12/31/1993	LEHS45	No	Use 1 Exp 12/31/1993, Now D&L Only	
3606	Adj.	Comanche	2410 900000		Bobbie G. Wilson	Jimmies Crk.	Irr	3	5	4		7/31/1963	LEHS45	No		
3605	A	Comanche	2410 700000		Gary G. & Mary Lou Hall (D&L Only)	Jimmies Crk.	D&L				41	12/31/1993	LEHS45	No	Use 1 Exp 12/31/1993, Now D&L Only	
3604	A	Comanche	2410 690000		Gary G. & Mary Lou Hall (D&L Only)	Jimmies Crk.	D&L					2/28/1972	LEHS45	No	Use 2 Exp 12/31/1993, Now D&L Only	
3604	A	Comanche	2410 690000		Larry Steele Et Ux (D&L Only)	Jimmies Crk.	D&L				35	12/31/1993	LEHS45	No	Use 2 Exp 12/31/1993, Now D&L Only	
3604	A	Comanche	2410 690000		Larry Steele Et Ux (D&L Only)	Jimmies Crk.	D&L				15	12/31/1993	LEHS45	No	Use 2 Exp 12/31/1993, Now D&L Only	
3604	A	Comanche	2410 690000		Larry Steele Et Ux (D&L Only)	Jimmies Crk.	D&L				15	12/31/1993	LEHS45	No	Use 2 Exp 12/31/1993, Now D&L Only	
3604	A	Comanche	2410 690000		Larry Steele Et Ux (D&L Only)	Jimmies Crk.	D&L				35	12/31/1993	LEHS45	No	Use 2 Exp 12/31/1993, Now D&L Only	
3603	A	Comanche	2410 400000		Paul L. Rains (D&L Only)	Jimmies Crk.	D&L				35	12/31/1993	LEHS45	No	Use 2 Exp 12/31/1993, Now D&L Only	
3603	A	Comanche	2410 400000		Paul L. Rains (D&L Only)	Jimmies Crk.	D&L				35	12/31/1993	LEHS45	No	Use 2 Exp 12/31/1993, Now D&L Only	
3603	A	Comanche	2410 400000		Paul L. Rains (D&L Only)	Jimmies Crk.	D&L				14	12/31/1993	LEHS45	No	Use 2 Exp 12/31/1993, Now D&L Only	
4210	A	Permit	2410 410000	093902A	Gary G. & Mary Lou Hall	Jimmies Crk.	Irr	20	60	6		12/31/2000	LEHS45	No		
4210	A	Permit	2410 410000	093902A	Dennis L. Shelton	Jimmies Crk.	Irr	30	15	14		12/31/2000	LEHS45	No		
3602	A	Comanche	2410 200000		Paul L. Rains	Jimmies Crk.	D&L					12/31/1993	LEHS45	No		
3602	A	Comanche	2410 200000		Dennis L. & Lavorette M. Shelton (D&L Only)	Jimmies Crk.	D&L					12/31/1993	LEHS45	No		
3601	A	Comanche	2410 200000		H. Reese Ward & Donald L. Ward	Jimmies Crk.	Res.					2/7/1972	LEHS45	No		
3601	A	Comanche	2410 200000		H. Reese Ward & Donald L. Ward	Jimmies Crk.	D&L					2/7/1972	LEHS45	No		
3601	A	Comanche	2410 200000		H. Reese Ward & Donald L. Ward	Jimmies Crk.	Res.					2/7/1972	LEHS45	No		
3601	A	Comanche	2410 200000		H. Reese Ward & Donald L. Ward	Jimmies Crk.	D&L					2/7/1972	LEHS45	No		
3599	A	Comanche	2410 480000		Gay Tall Et Al	Jimmies Crk.	Res.					2/7/1972	LEHS45	No		
3599	A	Comanche	2410 480000		Jimmies Crk.	Jimmies Crk.	Res.					2/7/1972	LEHS45	No		
3599	A	Comanche	2410 480000		Jimmies Crk.	Jimmies Crk.	Res.					2/7/1972	LEHS45	No		
3599	A	Comanche	2410 480000		Jimmies Crk.	Jimmies Crk.	Res.					2/7/1972	LEHS45	No		
3596	Adj.	Comanche	2410 600000		R. C. Pinkard	Sweetwater Crk.	Irr	280	187	35	400	8/25/1969	LEHS45	No		
3596	Adj.	Comanche	2410 600000		Gene E. Gable Et Al	Sweetwater Crk.	Irr					8/25/1969	LEHS45	No		
3596	Adj.	Comanche	2410 600000		Blute Stewart Kinney	Sweetwater Crk.	Irr	10	29	7	4	4/15/1956	LEHS45	No		
3595	Adj.	Comanche	2410 600000		Res. Mgalamis	Coppens Creek (Rush)	Irr	8	15	16	25	6/30/1969	LEHS45	No		
3595	Adj.	Comanche	2410 700000		Vera Muil	Unmanned Trib. Coppens (Rush) Crk.	Irr	17	104	10		6/30/1969	LEHS45	No		
3594	Adj.	Comanche	2410 700000		Wolfe Pesantlands Inc	Unmanned Trib. Coppens (Rush) Crk.	Irr	16	104	22		2/22/1971	LEHS45	No		
3592	Adj.	Comanche	241 000000		Leon Y. Nichols	Soda Springs Br.	Irr	109	109	20		4/23/1967	LEHS45	No		
3590	Adj.	Comanche	241 12 200000		Clinton D. & Frankie Geve	Martins Crk.	Irr	322	230			10/13/1970	LEHS45	No		
3590	Adj.	Comanche	241 12 200000		Clinton D. & Frankie Geve	Martins Crk.	Res.					10/13/1970	LEHS45	No		
3589	A	Comanche	241 12 400000		Louis G. & Betty Harelik	Martins Crk.	Irr	185	95	15		10/13/1970	LEHS45	No		
3589	A	Comanche	241 12 400000		Louis G. & Betty Harelik	Martins Crk.	Res.					10/13/1970	LEHS45	No		
3588	Adj.	Comanche	241 12 600000		Billy J. Gressett Et Al	Martins Crk.	Irr	29	15	7		10/13/1970	LEHS45	No		
3587	A	Comanche	241 12 800000		Billy J. Gressett Et Al	Martins Crk.	Res.					10/13/1970	LEHS45	No		
3587	A	Comanche	241 12 800000		George E. Bligham Et Al	Martins Crk.	Irr	195	296	15		10/13/1970	LEHS45	No		
3586	Adj.	Comanche	241 12 800000		George E. Bligham Et Al	Martins Crk.	Res.					10/13/1970	LEHS45	No		
3586	Adj.	Comanche	241 13 000000		Don P. Chester Et Ux	Martins Crk.	Irr	154	79	10	960	10/13/1970	LEHS45	No		
3586	Adj.	Comanche	241 13 000000		Don P. Chester Et Ux	Martins Crk.	Irr	10	23	23		10/19/1977	LEHS45	No		
5416	A	Permit	241 13 050000	095116A	Don P. & Jeanne Chester	Unmanned Trib. Martins Br.	Irr	10	11	13		12/31/2000	LEHS45	No		
4272	A	Permit	241 13 100000	092464A	George E. Bligham Et Al	Unmanned Trib. Martins Crk.	Irr	40	40	9		4/15/1985	LEHS45	No		
3585	B	Comanche	241 13 200000		Wayne D. Gilliam	Unmanned Trib.	Irr	23	2	20		7/27/1970	LEHS45	No		
3585	B	Comanche	241 13 200000		Wayne D. Gilliam	Unmanned Trib.	Irr	10	5	17		12/31/2000	LEHS45	No		
3585	B	Comanche	241 13 200000		Wayne D. Gilliam	Unmanned Trib.	Irr	8	8	10		8/21/1983	LEHS45	No		
3584	B	Comanche	241 13 200000		Wayne D. Gilliam	Unmanned Trib.	Irr	8	8	10		8/21/1983	LEHS45	No		
3584	Adj.	Comanche	241 14 000000		Bluto Baxter	Martins Crk.	Irr	30	30	3	4	12/31/1959	LEHS45	No		

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Divisions in A/FY	Irrigated Acres (I+R) or Consumption (Ind)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Control Point	Include in Drought Study?	Remarks	
3580 C	Adj.	Comanche	2412140000		George E Bingham Et Al	Unmanaged Trib Beattie Br	Irr	70	100	3		12/31/2000	4/24/1972	LEHS45	No	
3578 B	Adj.	Comanche	2412200000		Pecan Valley Nut Company	Coppers Ck	Irr	700	700	171	829	12/31/2000	7/31/1969	LEHS45	No	
3579 B	Adj.	Comanche	2412500000		T.A Nowlin	Coppers Ck	Irr	32	32	5	50		4/30/1955	LEHS45	No	
3575 B	Adj.	Comanche	2412700000		Bobby N Huddleston	Unmanaged Trib Coppers (Rush) Ck	Irr	16	10	10		12/31/2000	9/25/1972	LEHS45	No	
3576 B	Adj.	Comanche	2412700000		Bobby N Huddleston	Unmanaged Trib Coppers (Rush) Ck	Irr	130	165	38	244		9/8/1975	LEHS45	No	
3574 B	Adj.	Comanche	2412700000		Kemeth Keith & Max Keith	Unmanaged Trib	Irr	90	75	40	100	12/31/2000	8/18/1975	LEHS45	No	
4197	Permit	Comanche	2412760000	3880	Jordell F Coan Et Al	Unmanaged Trib Coppers Ck	Minn						3/22/1982	LEHS45	No	
5255 A	Permit	Comanche	2412800000	005255A	Gloria Jean Dukes	Unmanaged Trib Coppers (Rush) Ck	Irr	75	75	11		12/31/2000	8/28/1989	LEHS45	No	
3573 B	Adj.	Comanche	2413200000		G H England Dns 4B Frains	Unmanaged Trib Coppers (Rush) Ck	Irr	60	125	13		12/31/2000	5/8/1972	LEHS45	No	
3572	Adj.	Comanche	2414000000		A L Gidness	Unmanaged Trib Coppers (Rush) Ck	Irr	140	150	140			3/18/1968	LEHS45	No	
3546	Adj.	Comanche	2414600000		A L Gidness	Unmanaged Trib Coppers (Rush) Ck	Irr	11	11				2/17/1976	LEHS45	No	
3548	Adj.	Comanche	2414600000		Martha Jones	Unmanaged Trib Coppers (Rush) Ck	Irr	10	44				9/17/1970	LEHS45	No	OFC Channel Reservoir
3549	Adj.	Comanche	2414110000		Alice Mae Jones	Unmanaged Trib Spurgis Ck	Irr	50	90	12	25		9/17/1970	LEHS45	No	Exempt Reservoir
3548	Adj.	Comanche	2414110000		Alice Mae Jones	Unmanaged Trib Spurgis Ck	Irr	50	90	12	25		9/17/1970	LEHS45	No	Exempt Reservoir
5187 A	Permit	Comanche	2415200000	005187A	C B Shell	S Coppers Ck	Irr	15	31	7		12/31/2000	6/28/1988	LEHS45	No	
3567	Adj.	Comanche	2414500000		Bronn R Gibson	Unmanaged Trib Coppers (Rush) Ck	Res				81		9/31/1974	LEHS45	No	
3565 B	Adj.	Comanche	2414850000		L R French Jr	Unmanaged Trib Coppers (Rush) Ck	Irr	150	150	6	236	12/31/2000	1/28/1974	LEHS45	No	
3563 B	Adj.	Comanche	2415100000		L R French Jr	Unmanaged Trib Coppers (Rush) Ck	Irr	100	100	18		12/31/2000	6/30/1975	LEHS45	No	
3562 B	Adj.	Comanche	2415100000		L R French Jr	Unmanaged Trib Coppers (Rush) Ck	Irr	56	55	11		12/31/2000	4/24/1972	LEHS45	No	
3561 B	Adj.	Comanche	2415200000		L R French Jr	Unmanaged Trib Coppers (Rush) Ck	Irr	248	248	19	267		6/24/1974	LEHS45	No	
3560	Adj.	Comanche	2415200000		Charles & Debrah Stuel	Shipe Spring Br	Irr	35	40			12/31/1990	12/8/1975	LEHS45	No	
4088 A	Permit	Comanche	2415200000	003844A	Wimie D Anderson	Unmanaged Trib	D&L	246	123	5		12/31/2000	11/04/1980	LEHS45	No	
4088 A	Permit	Comanche	2415380000	003844A	Custer D Swift et al	Coppers Ck	Irr	156	78	421		12/31/2000	11/04/1980	LEHS45	No	
4087 A	Permit	Comanche	2415400000	003808A	Leland A Hodges Et Al	Coppers Ck	Irr	1,060	530	60		12/31/2000	12/3/1980	LEHS45	Yes	
3558	Adj.	Comanche	2415910000		Steven Mark Biggs Et Al	Sowells Ck	Irr	12	15	17			7/31/1961	LEHS45	No	
3557	Adj.	Comanche	2418000000		Lake Proctor Irrigation Authority	Unmanaged Trib Sabana River	Irr	97	103				4/15/1968	LEHS45	No	
3556	Adj.	Comanche	2418010000		Gusie Meglunis	Unmanaged Trib Sabana River	Irr	7	105	10			4/15/1968	LEHS45	No	
3555 B	Adj.	Comanche	2418200000		Jerry Solomon	Unmanaged Trib	Irr	100	155	6		12/31/2000	5/22/1978	LEHS45	No	
3554	Adj.	Comanche	2419000000		E T Terry	Unmanaged Trib Sabana River	Irr	25	25	10			6/30/1969	LEHS45	No	
3553	Adj.	Comanche	2420000000		Lee Roy Cotton	Unmanaged Trib Sabana River	Irr	53	27	9			6/13/1966	LEHS45	No	
5075 A	Permit	Comanche	2420500000	005075A	Thomas Randolph Simpson	Unmanaged Trib Sabana River	Irr	60	43	11		12/31/2000	7/8/1986	LEHS45	No	
3552	Adj.	Comanche	2420800000		J V Skaggs	Unmanaged Trib Sabana River	Irr	80	106	11			6/7/1971	LEHS45	No	
3551 B	Adj.	Comanche	2422000000		Bobby W Stralbs	Unmanaged Trib	Irr	30	45	9		12/31/2000	4/5/1985	LEHS45	No	
3540	Adj.	Comanche	2423000000		Thomas A Lee Jr Et Ux	Unmanaged Trib Sabana River	Irr	60	60	9			9/11/1967	LEHS45	No	
3539	Adj.	Comanche	2425000000		A Walton	Unmanaged Trib Sabana River	Irr	62	66	30			8/27/1968	LEHS45	No	
3546	Adj.	Comanche	2425000000		Scott E Golden	Unmanaged Trib Sabana River	Irr	20	81	20			4/11/1966	LEHS45	No	
3546	Adj.	Comanche	2425000000		E A Walker	Unmanaged Trib Sabana River	Irr	8	24	2	11		7/31/1965	LEHS45	No	
3545 B	Adj.	Comanche	2425900000		R D Walker	Unmanaged Trib Sabana River	Irr	1	4	7			4/26/1971	LEHS45	No	
3540	Adj.	Comanche	2426000000		Spruill Brothers Drilling Company	Unmanaged Trib Sabana River	Irr	15	30	4		12/31/2000	10/31/1967	LEHS45	No	
3539	Adj.	Comanche	2426000000		Spruill Brothers Drilling Company	Unmanaged Trib Sabana River	Irr	23	27	27			7/31/1967	LEHS45	No	
3519	Adj.	Comanche	2426000000		Gary D Beard Et Al	Unmanaged Trib Sabana River	Irr	90	90	18			4/25/1967	LEHS45	No	
3518	Adj.	Comanche	2425000000		Keller-Hyden Inc	Unmanaged Trib Cow Ck	Irr	25	50	9			6/15/1970	LEHS45	No	
3517	Adj.	Comanche	2425000000		Merle Jo Parks Trustee	E F Hackberry	Irr	110	110	37			8/8/1967	LEHS45	No	
3514 B	Adj.	Comanche	2425810000		Guines Oil Inc	Hackberry Ck	Irr	250	255	50	266		7/29/1968	LEHS45	No	
3515 B	Adj.	Comanche	2425830000		Robert Jess Hoffman	E FRK Armstrong	Irr	7	10	4			8/1/1966	LEHS45	No	
3512	Adj.	Comanche	2426500000		Ruby Johnson	W FRK Armstrong	Irr	168	135	27	292	12/31/2000	5/1/1972	LEHS45	No	
3511	Adj.	Comanche	2426500000		Jimmy Dale Johnson	Leon River	D&L	6	12	3		12/31/1963	12/31/1963	LEHS45	No	
3508 B	Adj.	Comanche	2426500000		A D McCellan	Leon River	Irr	73	73	8			8/31/1966	LEHS45	No	
3506	Adj.	Comanche	2426500000		Obbo Ranch Corporation	Flat Ck	Irr	45	53	9		12/31/2000	4/5/1985	LEHS45	No	
3505	Adj.	Comanche	2426800000		J V Stewart	Flat Ck	Irr	3	13	13	10		3/31/1963	LEHS45	No	
3504	Adj.	Comanche	2426900000		Wayne Moore Et Ux	Unmanaged Trib Leon River	Irr	36	30	7			7/22/1968	LEHS45	No	
3503 B	Adj.	Comanche	2426600000		Elmer Roy Joiner	Unmanaged Trib Leon River	Irr	20	40	5			4/8/1968	LEHS45	No	
3502 B	Adj.	Comanche	2426500000		Herold Lee Morris Et Ux	Unmanaged Trib	Irr	45	60	9	5	12/31/2001	2/28/1977	LEHS45	No	
3502 B	Adj.	Comanche	2426500000		Donald K Seizler	Unmanaged Trib Leon River	Irr	64	56	10		12/1/2000	1/30/1978	LEHS45	No	
4263 A	Permit	Comanche	2426545000	003934A	Toy Morris Et Ux	Unmanaged Trib Leon River	Irr	25	30	4	25	12/31/2000	1/18/1982	LEHS45	No	

Use	Number	Am't (c/f/c)
Min	2	19,658
In	1	0
Fr	105	7,883
Mining	1	0
Hydro	0	0
Nav	0	0
Rec	12	0
Other	17	0
Total	138	27,541

Table G-46  
Water Rights Downstream of Leon River near Hase and Upstream of Leon River near Hamilton

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (In or Consumption (Acre))	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Point	Include in Diversion Study?	Remarks
2840	Adj.	Hamilton	2355/5000/0		Evel Kavanagh	Leon River	Irr	15	30	10			12/31/1936	LEHM46	No	
2840	Adj.	Hamilton	2355/5000/0		Owens Kavanagh	Leon River	Irr						12/31/1936	LEHM46	No	
2840	Adj.	Hamilton	2355/5000/0		Maurice K. Waits	Leon River	Irr						12/31/1936	LEHM46	No	
2861	Adj.	Hamilton	2355/5000/0		Axel L. Watson	S Mesquite Ck	Irr	1	5	16	5		12/31/1967	LEHM46	No	
2859	Adj.	Hamilton	2355/5000/0		Larry A. Dunn Et Ux	Leon River	Irr	98	74	27			12/31/1965	LEHM46	No	
2858	Adj.	Hamilton	2355/5000/0		J.L. Robinson Jr Et Al	Leon River	Irr	18	27	24			12/31/1967	LEHM46	No	
2857	Adj.	Hamilton	2355/7800/0		J.L. Robinson Jr Et Al	Leon River	Irr	153	112	36			12/31/1954	LEHM46	No	
2856	Adj.	Hamilton	2355/8000/0		Jack D Graham	Leon River	Irr	1	11	11			12/31/1954	LEHM46	No	
2855	Adj.	Hamilton	2355/8400/0		Larry Wayne Adams	Leon River	Irr	91	94	33			12/31/1946	LEHM46	No	
2854	Adj.	Hamilton	2355/8800/0		Ernest L. Newsom	Leon River	Irr	44	62	11			12/31/1963	LEHM46	No	
2853	Adj.	Comanche	2366/0000/0		Gaydon D & Clara Jones	Resley Ck	Irr	52	70	18			12/31/1957	LEHM46	No	
2852	Adj.	Comanche	2366/0000/0		Dean H. Bottlinger Et Ux	Resley Ck	Irr	149	170	18			12/31/1964	LEHM46	No	
2851	Adj.	Comanche	2371/0000/0		J.W. Barbee	Lone Br	Irr	72	150	30	164		12/31/1945	LEHM46	No	
2850	Adj.	Comanche	2371/0000/0		J.A. Hulsey	Dutchman Ck	Irr	87	52	11			8/1/1966	LEHM46	No	
2849	Adj.	Erith	2372/0000/0		J. & J. Dalry	Sawyer Br	Irr	29	34	11			4/5/1971	LEHM46	No	
2849	Adj.	Erith	2372/0000/0		Byron Jones Et Al	Sawyer Br	Irr	3	3	11			4/5/1971	LEHM46	No	
2848	Adj.	Erith	2373/0000/0		M.D. Sturbin	Sawyer Br	Irr	31	37	9	3		4/5/1971	LEHM46	No	
2847	Adj.	Erith	2373/0000/0		G.G. Hall	Resley Ck	Irr	13	15	13			6/10/1968	LEHM46	No	
2846	Adj.	Erith	2374/0000/0		Guy G Hall	Unmanned Trib Resley Ck	Irr	27	55	13			6/10/1968	LEHM46	No	
2845	Adj.	Erith	2374/0000/0		Bobby John Foster	Unmanned Trib Resley Ck	Irr	10	30	6			6/10/1968	LEHM46	No	
2844	Adj.	Erith	2374/0000/0		Bobby John Foster	Unmanned Trib Resley Ck	Irr	27	30	6			6/10/1968	LEHM46	No	
5390	Permit	Erith	2374/0000/0	5390	Debra Vines	Kirkendall Ck	Irr	29	69	15			1/30/1967	LEHM46	No	
2843	Adj.	Erith	2374/0000/0		Walter E. & Joyce Travis	Resley Ck	Irr	48	64	9			1/26/1967	LEHM46	No	
2841	Adj.	Erith	2377/5000/0		Walter E. & Joyce Stovall	Unmanned Trib Resley Ck	Irr	27	35	30			8/31/1965	LEHM46	No	
2835	Adj.	Comanche	2377/5000/0		Herman North	Leon River	Irr	284	150	27			5/31/1958	LEHM46	No	
2830 A	Adj.	Hamilton	2377/6300/0		Dean Gromatzky	Leon River	Irr	30	31	1			8/31/1954	LEHM46	No	
2830	Adj.	Hamilton	2377/5000/0		Ed A. Ross Et Al	Leon River	Other				13		11/6/1978	LEHM46	No	
2829	Adj.	Hamilton	2377/8000/0		Ed A. Ross Et Al	Leon River	Irr	40	40	14			12/31/1961	LEHM46	No	
2838	A	Comanche	2377/9000/0		Ed A. Ross Et Al	Leon River	Irr	37	38	31			12/31/1961	LEHM46	No	
2837 A	Adj.	Comanche	2377/9500/0		Wade N. Caraway	Leon River	Irr	136	76	2			5/31/1958	LEHM46	No	
2836	Adj.	Comanche	2377/9500/0		Wade N. Caraway	Leon River	Irr	47	86	24			5/31/1967	LEHM46	No	
2834	Adj.	Comanche	2378/0000/0		Nelson Shave	Leon River	Irr	87	26	24			12/31/1961	LEHM46	No	
2832	Adj.	Comanche	2378/0000/0		Willie E. Yonnie Manning Ray	Leon River	Irr	43	35	14			12/31/1966	LEHM46	No	
2831	Adj.	Comanche	2378/0000/0		Anne Weaver Adair	Leon River	Irr	47	108	24			12/31/1966	LEHM46	No	
2829	Adj.	Comanche	2378/1000/0		Charlie Brantl Shockey	Leon River	Irr	24	24	11			7/31/1966	LEHM46	No	
2828	Adj.	Comanche	2378/1000/0		Guy Crow	Leon River	Irr	57	75	18			12/31/1960	LEHM46	No	
2827	Adj.	Comanche	2378/2000/0		Martin L. Geve Et Al	Leon River	Irr	56	69	9			8/31/1950	LEHM46	No	
2826	Adj.	Comanche	2378/5000/0		Rickie Stevens	Leon River	Irr	87	60	1			12/31/1957	LEHM46	No	
2825	Adj.	Comanche	2378/5000/0		J.A. Denman	Leon River	Irr	24	31	22			12/31/1957	LEHM46	No	
2825	Adj.	Comanche	2378/6000/0		Berk Denman	Leon River	Irr	6	7	22			7/31/1967	LEHM46	No	
2824	Adj.	Comanche	2379/0000/0		Mente Carmichael Et Al	Leon River	Irr	46	55	22			3/31/1967	LEHM46	No	
2823	Adj.	Comanche	2379/0000/0		Max Deriden	Leon River	Irr	39	102	22			12/31/1963	LEHM46	No	
2823	Adj.	Comanche	2379/0000/0		Charles S. Thomas Et Ux	Leon River	Irr	51	53	2			12/31/1963	LEHM46	No	
2822	Adj.	Comanche	2379/0200/0		J.E. Taum	Leon River	Irr	22	20	22			12/31/1957	LEHM46	No	
2821	Adj.	Comanche	2379/1000/0		Janita Wink, Adlers	Leon River	Irr	106	67	17			12/31/1963	LEHM46	No	
2820	Adj.	Comanche	2379/1300/0		Walter R. & Caroline Miller	Leon River	Irr	42	47	11			12/31/1962	LEHM46	No	
2819	Adj.	Comanche	2379/1300/0		J.R. Gunter	Leon River	Irr	18	18	22			8/31/1950	LEHM46	No	
2814	Adj.	Comanche	2379/4500/0		Estate of Wayne Adams	Leon River	Irr	32	32	22			8/31/1950	LEHM46	No	
2814	Adj.	Comanche	2379/4600/0		Graes Olea Adams	Leon River	Irr	83	98				12/31/1953	LEHM46	No	
2814	Adj.	Comanche	2379/4600/0		Graes Olea Adams	Leon River	Irr	870	931	52			12/31/1953	LEHM46	No	
2817	Adj.	Comanche	2379/4800/0		Estate of Wayne Adams	Unmanned Trib Leon River	Irr	258	109	31	3		12/31/1953	LEHM46	No	
2816	Adj.	Comanche	2379/5600/0		Nancy Page Allen Et Vir	Leon River	Irr	69	84	17			12/31/1968	LEHM46	No	
3476	Adj.	Comanche	2379/6500/0		E.W. Cannell Et Ux	Leon River	Irr	36	49	17			4/30/1952	LEHM46	No	
3663	A	Comanche	2379/6500/0		Garth Pettit	S Leon River	Irr	51	72	9			4/30/1952	LEHM46	No	
3662 A	Adj.	Comanche	2380/0000/0		R.E. Bushkum Jr	Mountain Ck	Irr	67	65	4	36		12/18/1947	LEHM46	No	
3661	Adj.	Comanche	2380/0000/0		Jimmy E. Gore Et Al	Merced Ck	Rec		450	22	4,800		4/22/1975	LEHM46	No	
3660	Adj.	Comanche	2380/0000/0		C.H. Mccall Et Ux	Moore Ck	Irr	187	187	10			6/30/1964	LEHM46	No	
3659	Adj.	Comanche	2381/0000/0		Béve Bean	Unmanned Trib Moore Ck	Irr	58	58	9			7/31/1952	LEHM46	No	
3658	Adj.	Comanche	2381/0000/0		Erw. the Et Al	Merced Ck	Min	200	100	12	1,000		7/20/1925	LEHM46	No	Lake Eames
3657	Adj.	Comanche	2381/0000/0		H.L. Wellingham Estate	Leon River	Irr	7	14	2			3/31/1963	LEHM46	No	
3656	Adj.	Comanche	2381/1600/0		Leo C. Haggard Et Ux	Leon River	Irr	56	56	17			7/31/1966	LEHM46	No	
3655	Adj.	Comanche	2381/2000/0		Martin W. & Juanita Seiler	Leon River	Irr	36	43	33			7/31/1966	LEHM46	No	
3654	Adj.	Comanche	2381/3000/0		Arlene N. Boyd Et Ux	Leon River	Irr	22	53	14			12/31/1957	LEHM46	No	
3653	Adj.	Comanche	2381/3000/0		Gary K Boyd	Leon River	Irr	98	130	23			12/31/1957	LEHM46	No	
3652	Adj.	Comanche	2381/3000/0		Garrett Hedges Trustee	Leon River	Irr	13	13	7			8/31/1963	LEHM46	No	
3651	Adj.	Comanche	2381/6000/0		Leo D. Moore	Leon River	Irr	15	35	7			7/31/1963	LEHM46	No	
3651	Adj.	Comanche	2386/0000/0		John R. Moore Et Ux	Leon River	Irr	122	137	29			7/31/1961	LEHM46	No	

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Divisions in AFY	Irrigated Acres (Irr) or Consumption (Ind)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Drought Study?	Remarks
3652	Adj.	Comanche	2387850000		O A Dickey	Leon River	Irr	8	12	18			7/31/1964	LEHM46	No	
3650	Adj.	Comanche	2388100000		Guy E Moore	Leon River	Irr	34	70	12	7		7/31/1964	LEHM46	No	
3649	Adj.	Comanche	2388150000		Cullen Stephens	Leon River	Irr	130	125	9			6/30/1950	LEHM46	No	
3648	Adj.	Comanche	2388270000		Eva F Moore	Baggett Crk	Irr	49	58	13	6		8/31/1952	LEHM46	No	
3647	Adj.	Comanche	2388290000		Donald W. Moore	Unmansd Trib Baggett Crk	Irr	41	65	18	126		9/30/1954	LEHM46	No	
3646	Adj.	Comanche	2388330000		Guyland Stephens Et Ux	Leon River	Irr	40	116	9			7/31/1952	LEHM46	No	
3645	Adj.	Comanche	2388360000		Thomas E Luker	Leon River	Irr	7	14	16			6/30/1967	LEHM46	No	
3644	Adj.	Comanche	2388380000		Mark & Sherri Gunter	Salt Crk	Irr	18	36	4	18		7/12/1971	LEHM46	No	
3643	Adj.	Comanche	2388390000		Billy Bluce	Unmansd Trib	Irr	15	75	9			7/31/1976	LEHM46	No	
3642	Adj.	Comanche	2388400000		John Paul McCullough Et Al	Unmansd Trib Salt Br	Irr	69	116	15	36		4/30/1953	LEHM46	No	
3641 A	Adj.	Comanche	2388530000		Carl Dwin Hill	Indian Crk	Irr	9	14	11			7/31/1960	LEHM46	No	
3640	Adj.	Comanche	2388540000		Serry Rice Bingham D&L Ohby	Leon Crk	D&L					12/31/1995	LEHM46	No		
3639	Adj.	Comanche	2388550000		Gregory M. L. York	Indian Crk	Irr	23	87	24	4		12/31/1953	LEHM46	No	
3638	Adj.	Comanche	2388560000		J B Gunter & P D Gunter	Indian Crk	Irr	35	61	13	4		7/31/1958	LEHM46	No	
3637	Adj.	Comanche	2388600000		Gress Inc	Indian Crk	Irr	40	26	3	25		12/31/1946	LEHM46	No	
3635	Adj.	Comanche	2389240000		Lee Riley	Leon River	Irr	84	452	37	84		6/30/1952	LEHM46	No	
3634	Adj.	Comanche	2389330000		Beatrice Lorentis	Leon River	Irr	31	125	20			7/31/1964	LEHM46	No	
3633	Adj.	Comanche	2389750000		Donald Des-Salter Et Al	Leon River	Irr	61	30	9			5/31/1967	LEHM46	No	
3632	Adj.	Comanche	2389770000		Randle Joe Evans	Leon River	Irr	3	63	11			6/10/1967	LEHM46	No	
3631	Adj.	Comanche	2390100000		J Z Stark	Leon River	Irr	50	67	20			7/31/1966	LEHM46	No	
3630	Adj.	Comanche	2390100000		J H Van Zant	Leon River	Irr	30	30	16			12/31/1929	LEHM46	No	
5161	Permit	Comanche	2412010000	5161	William D Carroll Et Ux	Unmansd Trib	Irr	54	150	22			11/13/1987	LEHM46	No	Trib Compans Ck
3581	Adj.	Comanche	2412100000		Eldon Wade Butler	Unmansd Trib	Irr	65	65	7			1/5/1970	LEHM46	No	

Use	Number	Amount (df-y)
Man	1	200
Ind	1	11
Irr	97	6,763
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	1	0
D&L	1	0
Other	1	0
Total	102	6973.7

Table G-47  
Water Rights Downstream of Leon River near Hamilton and Upstream of Leon River near Gatesville

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Conveyance (Irr)	Maximum Diversion Rate in AFY	Impoundment in AF	Expiration Date	Priority Date	Primary Cont'd Point	Include in Diversion Study?	Remarks
2801	Adj.	Corvell	2356/00000		Jack & Minnie Morse	Leon River	Irr	100	37	12		12/31/1965	12/31/1965	LEGT47	No	
2802	Adj.	Corvell	225/60000		Charles C Powell	Leon River	Irr	14	30	27		12/31/1964	12/31/1964	LEGT47	No	
2809	Adj.	Corvell	225/650000		Texas Dept Of Criminal Justice	Leon River	Irr	70	108	14		1/25/1971	1/25/1971	LEGT47	No	Agriculture Headquarters
2808	Adj.	Corvell	227/800000		Donald Mackie Et Ux	Leon River	Irr	8	8	10		12/31/1925	12/31/1925	LEGT47	No	
2807	Adj.	Corvell	230/800000		Glenis G Egeger	Leon River	Irr	15	15	22		12/31/1967	12/31/1967	LEGT47	No	
2896	Adj.	Corvell	230/000000		R H Melton	Plum Ck	Irr	8	23	18		12/31/1965	12/31/1965	LEGT47	No	
2895	Adj.	Corvell	230/000000		Margaret Callaway	Mistake Ck	Irr	24	188	2		12/31/1959	12/31/1959	LEGT47	No	
2894	Adj.	Corvell	230/700000		William Travis Lason	Plum Ck	Irr	29	38	2		12/31/1965	12/31/1965	LEGT47	No	
2893	Adj.	Corvell	230/700000		San Pablo Corporation	Leon River	Irr	2	7	2		12/31/1965	12/31/1965	LEGT47	No	
2892	Adj.	Corvell	231/000000		Seaborn L Ashby	Leon River	Irr	10	27	14		8/1/1918	8/1/1918	LEGT47	No	
2891	Adj.	Corvell	231/000000		W N & Mary Jane Whisenand	Leon River	Irr	32	32	20		12/31/1957	12/31/1957	LEGT47	No	
2890	Adj.	Corvell	231/130000		W F Moreland By Pass Trust	Leon River	Irr	57	52	18		8/31/1964	8/31/1964	LEGT47	No	
2888	Adj.	Corvell	231/400000		Don Thomas Rogers	Leon River	Irr	8	15	5		12/31/1963	12/31/1963	LEGT47	No	
2887	Adj.	Corvell	231/700000		W J Alexander	Leon River	Irr	10	11	12		12/31/1966	12/31/1966	LEGT47	No	
2886	Adj.	Corvell	231/800000		George T Reynolds III Et Ux	Leon River	Irr	2	65	3		12/31/1929	12/31/1929	LEGT47	No	
2885	Adj.	Corvell	231/850000		Lee Trust Lightsey Et Al	Leon River	Irr	30	65	24		7/31/1964	7/31/1964	LEGT47	No	
2884	Adj.	Hamilton	233/050000		Moody E Courtney	Leon River	Irr	71	71	24		12/31/1966	12/31/1966	LEGT47	No	Survey 345
2883	Adj.	Hamilton	233/0750000		John C Courtney Et Ux	Leon River	Irr	200	74	13		12/31/1954	12/31/1954	LEGT47	No	Alexander McKenzie Survey
2882	Adj.	Hamilton	233/090000		John C Courtney Et Ux	Leon River	Irr	196	87	27		12/31/1950	12/31/1950	LEGT47	No	Samuel Johnson Survey
2881	Adj.	Hamilton	233/100000		David C Courtney	Leon River	Irr	5	5	24		12/31/1969	12/31/1969	LEGT47	No	Samuel Johnson Survey No.451
2880 A	Adj.	Hamilton	233/200000		Moody E Courtney	Leon River	Irr	124	176	24		12/31/1963	12/31/1963	LEGT47	No	Survey 1606
2880	Adj.	Hamilton	233/200000		Billy R Fisher Et Ux	Leon River	Irr	116	62	12		8/7/1969	8/7/1969	LEGT47	No	
2879 A	Adj.	Hamilton	233/200000		Billy R Fisher Et Ux	Leon River	Irr	135	100	12		12/31/1945	12/31/1945	LEGT47	No	
2879	Adj.	Hamilton	233/200000		Thomas F Winkler Estate	Leon River	Irr	170	150	33		12/31/1924	12/31/1924	LEGT47	No	
2878	Adj.	Hamilton	233/300000		Paul E Melton	Leon River	Irr	93	211	33	12	12/31/1960	12/31/1960	LEGT47	No	
2877	Adj.	Hamilton	233/300000		O C & Willie Neldine Marshall	Frank Ck	Irr	37	100	16		12/31/1957	12/31/1957	LEGT47	No	
2876	Adj.	Hamilton	233/480000		Charles Crute Jr	Leon River	Irr	15	48	9		12/31/1963	12/31/1963	LEGT47	No	
2875	Adj.	Hamilton	233/5100000		Harriet Monds Havens	Leon River	Irr	85	103	9	75	12/31/1954	12/31/1954	LEGT47	No	
2874	Adj.	Hamilton	233/5200000		Leonard T Wadlick Et Ux	Alexander Ck	Irr	54	93	17	75	12/31/1958	12/31/1958	LEGT47	No	
2873	Adj.	Hamilton	233/6000000		Raese Floyd Manning	Leon River	Irr	20	40	6		12/31/1964	12/31/1964	LEGT47	No	
2872	Adj.	Hamilton	233/6500000		Seth Moore	Two Mile Ck	Irr	2	36	1	15	12/31/1944	12/31/1944	LEGT47	No	
2871	Adj.	Hamilton	233/6501000		Seth Thomas Moore Sr Et Al	Two Mile Ck	Irr	72	36	9	15	12/31/1944	12/31/1944	LEGT47	No	
2870	Adj.	Hamilton	234/0000000		City Of Hamilton	Two Mile Ck	Mun	614	614	22	614	1/22/1923	1/22/1923	LEGT47	No	
2869	Adj.	Hamilton	234/0500000		Betty Jean Harris Tooley	Leon River	Irr	105	90	51		12/31/1962	12/31/1962	LEGT47	No	
4122	Permit	Hamilton	234/1000000	3826	Upper Leon MWD	Leon River	Res	45	45	45		5/11/1981	5/11/1981	LEGT47	No	Lake Precitor
2868	Adj.	Hamilton	234/5000000		Arvid M Abemethy	Leon River	Irr	50	95	11		12/31/1989	12/31/1989	LEGT47	No	
2867	Adj.	Hamilton	234/5750000		Geraldine D Warren Et Al	Leon River	Irr	4	11	45		12/31/1939	12/31/1939	LEGT47	No	
2866	Adj.	Hamilton	234/7100000		Riverside Acquisitions Llc	Leon River	Irr	82	82	22		12/31/1934	12/31/1934	LEGT47	No	
2865	Adj.	Hamilton	234/8250000		Riverside Acquisitions Llc	Leon River	Irr	169	169	11		12/31/1934	12/31/1934	LEGT47	No	
2864	Adj.	Hamilton	234/8251000		K A Sparks Et Al	Leon River	Irr	185	127	11		12/31/1961	12/31/1961	LEGT47	No	
2863	Adj.	Hamilton	234/8650000		Riverside Acquisitions Llc	Leon River	Irr	43	57	9		10/31/1955	10/31/1955	LEGT47	No	
2862	Adj.	Hamilton	234/8700000		Tom J Thompson	Leon River	Irr	15	30	22						

Use	Number	Amr (dFy)
Min	1	614
Irr	40	2
Mun	0	2,391
Manning	0	0
Res	0	0
Other	0	45
Total	43	3,252

Table G-48  
Water Rights Upstream of Cowhouse Creek at Pidcoke

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in Acre Feet	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Rate in Terms of CFS	Impoundment in AF	Expiration Date	Priority Date	Primary Cont'd. Pct.	Include in Diversion Study?	Remarks
2923	Adj.	Coville	2178370000		Robert M Scott Et Al	Ree House Ck	Irr	46	92	27		11/30/1965	8/31/1954	COPH48	No	
2933	Adj.	Coville	2179000000		Marshall Lee Hanna	Rick's Br	Irr	46	92	18			5/31/1962	COPH48	No	
2932	Adj.	Hamilton	2178270000		James Billingsley	Cowhouse Ck	Irr	6	12	7			5/31/1962	COPH48	No	
2931	Adj.	Hamilton	2178000000		Ronald S Beasley Et Ux	Cowhouse Ck	Irr	52	46	11			9/30/1962	COPH48	No	
2930	Adj.	Hamilton	2178200000		Cous Burton Cathley Estate	Cowhouse Ck	Irr	31	91	12			3/31/1970	COPH48	No	
2929	Adj.	Hamilton	2179100000		Reginald & Norma Ea Wiselbusch	Cowhouse Ck	Irr	4	13	2			7/31/1950	COPH48	No	
2928	Adj.	Hamilton	2179150000		Garv L Lundberg Et Ux	Cowhouse Ck	Irr	13	36	11			6/30/1950	COPH48	No	
2927	Adj.	Hamilton	2179270000		Elvin L Genery Et Ux	Cowhouse Ck	Irr	9	40	11			5/31/1938	COPH48	No	
2926	Adj.	Hamilton	2179430000		William Jackson Wisdom	Cowhouse Ck	Irr	13	20	13			5/31/1966	COPH48	No	
2924	Adj.	Hamilton	2179500000		Jerry W & Bonnie Jean Hopper	Unnamed Trib Cowhouse Ck	Irr	59	50	18	3		12/31/1913	COPH48	No	
2923	Adj.	Hamilton	2179600000		Henry Marwitz Et Al	Cowhouse Ck	Irr	13	32	19			12/31/1913	COPH48	No	
2922	Adj.	Hamilton	2179600000		Billy H Roberts Et Ux	Cowhouse Ck	Irr	32	32	32			6/30/1966	COPH48	No	
2921	Adj.	Hamilton	2179700000		Lee R Hopper	Cowhouse Ck	Irr	9	33	18			3/31/1967	COPH48	No	
2920	Adj.	Mills	2179750000		W J & Anita Faye Hopper	Cowhouse Ck	Irr	28	32	12			5/31/1965	COPH48	No	
2919	Adj.	Mills	2179800000		Doug Hopper	Washboard Ck	Irr	12	23	5	6		4/30/1958	COPH48	No	
2918	Adj.	Mills	2179850000		Fritz Hopper	Unnamed Trib Washboard Ck	Irr	27	27	12			3/31/1963	COPH48	No	
2917	Adj.	Mills	2179870000		Paula Ann Marwitz Pope Et Al	Cowhouse Ck	Irr	20	20	11			5/31/1959	COPH48	No	
2916	Adj.	Mills	2179900000		Wilford & Ruth Witzsche	W Br Cowhouse Ck	Irr	25	29	12	8					
					Lee Roy Schwartz	Cowhouse Ck	Irr	53	84	13						

Use	Number	Amr (d/y)
Min	0	0
Irr	0	0
Min	19	518
Mining	0	0
Hydro	0	0
Nat	0	0
Res	0	0
Other	0	0
Total	19	518

Table G-49  
Water Rights Downstream of Leon River at Gatesville and Cowhouse Creek at Pitcoke and Upstream of Leon River near Belton

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Und)	Maximum Diversion Rate in CFS	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
2938	Adj.	Bell	2116000000		City Of Temple	Leon River	Mun	15,804		310	500	10/30/1915	10/30/1915	LEBE49	Yes	
2938	Adj.	Bell	2116000000		City Of Temple	Leon River	Mun	20,000		307		1/11/1957	1/11/1957	LEBE49	Yes	
4322 A	Permit	Bell	2114000000	4024A	LVGC Inc.	Leon River	Irr	300	110	26	15	7/31/1963	7/31/1963	LEBE49	No	
2937	Adj.	Bell	2117000000		Vernon W & Betty Ann Barge	Leon River	Irr	59	67	7		8/24/1953	8/24/1953	LEBE49	No	
2936 A	Adj.	Bell	2140000000		United States Dept Of The Army	Leon River	Mun	10,000		310	12,000	8/23/1954	8/23/1954	LEBE49	Yes	Lake Belton
2935	Adj.	Corvell	2176500000		Jean Amor Whaley	Unmanned Trls Settlement Br	Mun	2,000		9	190	4/30/1963	4/30/1963	LEBE49	No	
2915	Adj.	Bell	2186000000		Robert L Moore	Film Crk	Irr	38	72	2		3/31/1959	3/31/1959	LEBE49	No	
2914	Adj.	Corvell	2191300000		Pat & Mabel Ruth Grimes	Leon River	Irr	18	15	20		12/31/1928	12/31/1928	LEBE49	No	
2813	Adj.	Corvell	2194000000		Rudolph Carl Drosche Jr	Leon River	Irr	153	80	22		7/22/1965	7/22/1965	LEBE49	No	
2911	Adj.	Corvell	2195000000		Glenn Dippel Et Al	Leon River	Irr	74	80	18		4/30/1963	4/30/1963	LEBE49	No	
2910	Adj.	Corvell	2195000000		John Shaud Et Ux	Leon River	Irr	77	66	39		4/30/1963	4/30/1963	LEBE49	No	
2909	Adj.	Corvell	2195700000		Carl Drosche	Leon River	Irr	26	17	22		7/22/1965	7/22/1965	LEBE49	No	
2907 A	Adj.	Corvell	2195800000		Rudolf Drosche	Leon River	Irr	237	283	24		12/31/1958	12/31/1958	LEBE49	No	
2907 A	Adj.	Corvell	2195800000		Leo Luehke Et Ux	Leon River	Irr	150	283	24		12/31/1958	12/31/1958	LEBE49	No	
2908	Adj.	Corvell	2195800000		Demis Charles Luehke Et Al	Leon River	Irr	150	283	24		12/31/1958	12/31/1958	LEBE49	No	
2906	Adj.	Corvell	2200000000		Dan G Davidson	Leon River	Irr	22	24	8		8/6/1925	8/6/1925	LEBE49	No	
2905	Adj.	Corvell	2219000000		Thelma R Carter	Leon River	Irr	36	24	9		12/31/1967	12/31/1967	LEBE49	No	
2903	Adj.	Corvell	2222000000		Dan G Davidson Estate	Corvell Crk	Irr	14	40	8		12/31/1967	12/31/1967	LEBE49	No	
2902	Adj.	Corvell	2230000000		Sterling J Barnard	Leon River	Irr	40	52	27		11/28/1913	11/28/1913	LEBE49	No	
2902	Adj.	Corvell	2230000000		Glenrock Farms	Leon River	Irr	530	530	89		12/31/1957	12/31/1957	LEBE49	No	
2902	Adj.	Corvell	2230000000		Quentin G & Elizabeth C. McCorkle	Leon River	Irr	18	18	10		12/31/1957	12/31/1957	LEBE49	No	

Use	Number	Am't (cfs)
Mun	0	47,804
Irr	0	0
Mining	18	1,830
Hydro	0	0
Nav	0	0
Rec	0	0
Other	0	0
Total	22	49,634

Table G-50  
Water Rights Upstream of Lampasas River near Kempner

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Point	Include in Diversion Study?	Remarks	
2986	Adj.	Lampasas	1600400000		Robert C Hallmark Et Al	Sulphur Ck	Irr	47		10			6/21/1914	LAKE50	No		
2987	Adj.	Lampasas	1750000000		Jones Buford Briggs	Sulphur Ck	Irr	2	23	19			2/6/1919	LAKE50	No		
2988	Adj.	Lampasas	1750000000		R B & Frances M Potter	Sulphur Ck	Irr	18	18	13			5/31/1963	LAKE50	No		
2989	Adj.	Lampasas	1750000000		Doope & Barbara J Walker	Sulphur Ck	Irr	18	18	13			5/31/1963	LAKE50	No		
2993	Adj.	Lampasas	1752000000		Ralph D & Robbie Burrow	Sulphur Ck	Irr	7	7	13			5/31/1963	LAKE50	No		
2994	Adj.	Lampasas	1752000000		A J Dewayne Kendrick	Sulphur Ck	Irr	6	6	13			5/31/1963	LAKE50	No		
2981	Adj.	Lampasas	1759300000		Dorothy N Capps	Sulphur Ck	Irr	6	6	13			5/31/1963	LAKE50	No		
2982	Adj.	Lampasas	1759300000		Joe D Boyd	Sulphur Ck	Irr	45	45				5/31/1963	LAKE50	No		
2980	Adj.	Lampasas	1759300000		Wylie R Capps	Sulphur Ck	Irr	6	6				5/31/1963	LAKE50	No		
2979	Adj.	Lampasas	1791000000		Robert L Gaylor	Sulphur Ck	Irr	1	1	11			1/29/1926	LAKE50	No		
2978	Adj.	Lampasas	1819500000		John T Hightens	Sulphur Ck	Irr	95	54	78	21		12/31/1915	LAKE50	No		
2977	Adj.	Lampasas	1840000000		Gunderland Park Ranch Inc	Sulphur Ck	Irr	54	70	13	15		12/31/1961	LAKE50	No		
2976	Adj.	Lampasas	1870000000		Dr Curtis Kidd Et Ux	Sulphur Ck	Irr	42	40	11			5/7/1914	LAKE50	No		
2975	Adj.	Lampasas	1880000000		Ray A Jones	Sulphur Ck	Irr	48	1	12			6/26/1914	LAKE50	No		
2974	Adj.	Lampasas	1960000000		Ray A & Elizabeth K Jones	Sulphur Ck	Irr	46	13	22			6/13/1914	LAKE50	No		
2973	Adj.	Lampasas	1970400000		E C O'Neal Jr	Sulphur Ck	Irr	144	41	22			5/11/1913	LAKE50	No		
2972	Adj.	Lampasas	2023000000		Melvin Potts	Burleson Ck	Irr	6	6	11	3		3/31/1964	LAKE50	No		
2971 A	Adj.	Lampasas	2023000000		City Of Lampasas	Sulphur Ck	Rese	228	65	12	20		12/31/1966	LAKE50	No		
2970	Adj.	Lampasas	2035400000		City Of Lampasas	Sulphur Ck	Min	3,760		117			6/23/1914	LAKE50	Yes		
2969	Adj.	Lampasas	2035400000		Fred Willis Et Ux	Sulphur Ck	Irr	3		6			12/31/1946	LAKE50	No		
2968	Adj.	Lampasas	2035400000		Charles E Blanton	Sulphur Ck	Irr	51	17	6			12/31/1946	LAKE50	No		
2967	Adj.	Lampasas	2035400000		Buried Ranch	Sulphur Ck	Irr	6	2	6			12/31/1946	LAKE50	No		
2966	Adj.	Lampasas	2035800000		Leonard J Trovero Sr	Leanderson Ck	Rese	8	8	3			12/31/1976	LAKE50	No		
2965	Adj.	Lampasas	2035800000		H V J & Mrs Pollard Price	Leanderson Ck	Irr	5	19	5	200		12/31/1963	LAKE50	No		
2964	Adj.	Lampasas	2038050000		Marvin E & Mary Blanches White	Leanderson Ck	Irr	31	40	13	4		6/30/1963	LAKE50	No		
2963	Adj.	Lampasas	2038050000		Therese E Boatright House Et Al	Lampasas River	Irr	34	64	18			6/30/1963	LAKE50	No		
2962	Adj.	Lampasas	2038050000		Row Lee Boatright House	Lampasas River	Irr	19	35	18			6/30/1963	LAKE50	No		
2961	Adj.	Lampasas	2038600000		Erd Brooks	Lampasas River	Irr	1	1	2			5/31/1929	LAKE50	No		
2960	Adj.	Lampasas	2039000000		Frances Virginia Nuckles Et Al	Unnamed Trib Lampasas River	Irr	41	67	11	45		6/30/1957	LAKE50	No		
2959	Adj.	Lampasas	2040450000		Joseph Henry Langford Et Ux	Lampasas River	Irr	7	12	6			6/30/1957	LAKE50	No		
2958	Adj.	Lampasas	2040450000		M K & Ruth Neal Panteson	School Ck	Irr	354	81	11			5/31/1957	LAKE50	No		
2957	Adj.	Lampasas	2041000000		Leonard J Trovero Sr	Simms Ck	Irr	28	56	56			3/31/1925	LAKE50	No		
2956	Adj.	Lampasas	2041500000		Albert S & Winifred L Baker	Simms Ck	Irr	46	62	7			12/31/1980	LAKE50	No		
2955	Adj.	Lampasas	2042730000		John R & Lynn Coats	Lampasas River	Irr	23	45	33			9/27/1976	LAKE50	No		
2954	Adj.	Lampasas	2042730000		Samuel G Toub	Lampasas River	Irr	7	0	3			9/27/1976	LAKE50	No		
2953	Adj.	Lampasas	2042730000		W G Betts Et Al	Lampasas River	Irr	310	10	3			9/27/1976	LAKE50	No		
2952	Adj.	Mills	2043000000		Fossil Creek Realty, Inc.	Bennett Ck	Irr	65	49	13			8/31/1940	LAKE50	No		
2951	Adj.	Mills	2046000000		Howard K Moore	Unnamed Trib N Bennett Ck	Irr	150	100	17			7/1/1968	LAKE50	No		
2950	Adj.	Mills	2046680000		Martin P Shelton Et Al	Unnamed Trib	Irr	150	100	17			7/1/1977	LAKE50	No		
2949	Adj.	Mills	2046680000		Homer Messiland	Unnamed Trib	Min										

Use	Number	Amount(y)
Min	2	3,760
Irr	1	48
Minning	57	1,961
Hydro	0	0
Rese	0	0
Other	2	0
Total	42	5,769

Table G-51  
Water Rights Downstream of Lampassas River near Kemper and Upstream of Lampassas River near Youngsport

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumptive (Irr)	Maximum Diversion Rate in AFY	Impoundment in AF	Expiration Date	Priority Date	Primary Cont'd Permit	Include in Diversion Study?	Remarks
2993	Adj.	Bell	1651000000		Bonnie M Gibbs	Lampassas River	Irr	32	22	30			6/30/1967	LAY051	No	
3002	Adj.	Bell	1651000000		Gene & Sheila Foy Bay	Lampassas River	Irr	150	120	30			12/31/1961	LAY051	No	
3003	Adj.	Bell	1644000000		Eld Melton	Lampassas River	Irr	12	27	15			12/31/1967	LAY051	No	
3008	Adj.	Bell	1641000000		James L Shephard	Lampassas River	Irr	105	69	13			4/30/1957	LAY051	No	
2998	Adj.	Bell	1641525000		Gracie Duncanson	Lampassas River	Irr	157	204	11			12/31/1925	LAY051	No	
2999	Adj.	Bell	1641525000		Lavalia R Blum	Lampassas River	Irr	3	10	2			5/31/1947	LAY051	No	
2997 A	Permit	Bell	1641620000	5594	William W Aldrich Et Ux	Lampassas River	Irr	64	33	17		11/7/2007	9/30/1963	LAY051	No	
5594	Permit	Bell	1641680000	5594	Bradley B Ware	Lampassas River	Irr	130	100	3			4/1/1966	LAY051	No	
2996	Adj.	Bell	1641700000		Dudley Black	Lampassas River	Irr	120	67	27			3/7/1966	LAY051	No	
2995	Adj.	Burnet	1644000000		Morse Ranch A Partnership	Lampassas River	Irr	44	33	9	2.5		12/31/1925	LAY051	No	
2993	Adj.	Burnet	1644250000		Hansford B Smith Et Al	Rocky Crk	Irr	6	10	6			12/31/1925	LAY051	No	
2994	Adj.	Burnet	1644251000		Thomas M & Betty L R Spencer	Rocky Crk	Irr	68	55	13	8		3/14/1954	LAY051	No	
2992	Adj.	Burnet	1644253000		O O & Mary Florene Smith	Rocky Crk	Irr	145	97	23			12/31/1965	LAY051	No	
2991	Adj.	Burnet	1644255000		W G Christanson & Sons	Lampassas River	Irr	63	89	11			4/30/1966	LAY051	No	
2990	Adj.	Burnet	1645100000		Herbert A & Barbara Maas	Lampassas River	Irr	9	22	29			12/31/2023	LAY051	No	
2989	Adj.	Burnet	1645300000		Carolyn Sue Carolthers	Lampassas River	Irr	19	45	3			7/1/1997	LAY051	No	
2988	Permit	Burnet	1645300000	5593	J Bar E Ranches LP	Lampassas River	Irr	270	300	5			6/23/1914	LAY051	No	
5593	Permit	Burnet	1650000000	5593	Jerry W Gilze Et Ux	Lampassas River	Irr	130	5	5			7/1/1997	LAY051	No	
2988	Adj.	Lampassas	1660000000		Poe T & Caroline Parks	Lampassas River	Irr	3	5	5			6/23/1914	LAY051	No	

Use	Number	Am (af/y)
Min	0	0
Ord	0	0
Per	20	1,686
Missing	0	0
Hydro	0	0
New	0	0
Rec	0	0
Other	0	0
Total	20	1,686

Table G-52  
Water Rights Downstream of Lampasas River at Youngsport and Upstream of Lampasas River near Belton

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in AFY	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
3092	Adj.	Bel	1630000000		Keel B. Wagner Estate	Lampasas River	Irr	38	6	10		4/30/1967	4/30/1967	LABEL52	No	
3093	Adj.	Bel	1630100000		Yell E. & Betty London	Lampasas River	Irr	5	6	6		6/30/1965	6/30/1965	LABEL52	No	
3094	Adj.	Bel	1629500000		Dr. Jamie W. Barrow Estate	Lampasas River	Irr	50	37	7		8/2/1967	8/2/1967	LABEL52	No	
4450	Permit	Bel	1629700000	4130	United States Arms Corps	Old Channel Lampasas River	Rec.			13	5		5/8/1984	LABEL52	No	
5161	Adj.	Bel	1630000000		Brazos River Authority	Lampasas River	Rec.	67,768			23.5-700	12/16/1963	12/16/1963	LABEL52	Yes	
5161	Adj.	Bel	1630000000		Brazos River Authority	Lampasas River	Min					12/16/1963	12/16/1963	LABEL52	No	
5161	Adj.	Bel	1630000000		Brazos River Authority	Lampasas River	Irr					12/16/1963	12/16/1963	LABEL52	No	
5161	Adj.	Bel	1630000000		Brazos River Authority	Lampasas River	Min					12/16/1963	12/16/1963	LABEL52	No	

Use	Number	Amt (af/y)
Min	1	67,768
Irr	1	0
Irr	4	103
Mining	1	0
Hydro	0	0
Nav	0	0
Rec	2	0
Other	0	0
Total	9	67,871

Table G-53  
Water Rights Downstream of Lampasas River near Belton and Upstream of Little River near Little River

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumed (Irr)	Maximum Diversion Rate in AFY	Impoundment in AF	Expiration Date	Priority Date	Primary Point	Include in Diversion Study?	Remarks
4049 B	Permit	Bell	1623110000	3762A	Paul Meyer Et Al	Salado Ck	Irr	361	31	40	20		5/27/1980	LRL R53	No	
3014	Adj.	Bell	1623350000		Paul F. Eason	Salado Ck	Irr	36	71	9		12/31/1983	LRL R53	No		
3013 B	Adj.	Bell	1623900000		Harris A. Bailey Estate	Salado Ck	Irr	63	18	47	6		12/31/1983	LRL R53	No	
3013 A	Adj.	Bell	1623920000		Mill Creek Golf & Country Club	Salado Ck	Irr	168	141	3		5/14/1999	LRL R53	No	Amend 11/19/99	
3012	Adj.	Bell	1623940000		Mill Creek Golf & Country Club	Salado Ck	Res.	168	139	8	10		4/15/1965	LRL R53	No	
3011	Adj.	Bell	1623960000		Stangsoch Jim Properties Inc	Salado Ck	Irr	17	64	5	9		8/22/1976	LRL R53	No	
3011	Adj.	Bell	1623500000		Lawanna Ellis Et Vir	Lampasas River	Irr	47		1			12/31/1962	LRL R53	No	
4241	Permit	Bell	1623500000	4002	Michael Dupes Et Al	Lampasas River	Irr	0		1			12/31/1962	LRL R53	No	
4241	Permit	Bell	1626900000	4002	Joseph B Morrow Et Ux	Lampasas River	Irr	33	33	18		9/20/1982	LRL R53	No		
4242	Permit	Bell	1626900000	4003	Troyan Malone Marrell	Lampasas River	Irr	7	7	10		9/20/1982	LRL R53	No		
4246	Permit	Bell	1626900000	4000	Mike & Rhia Lynne Berry	Lampasas River	Irr	30	30	10		9/20/1982	LRL R53	No		
3010	Adj.	Bell	1627500000		Thomas E. & Odessa J. Lovelace	Lampasas River	Irr	20	20	11		9/20/1982	LRL R53	No		
3009	Adj.	Bell	1627790000	5076	Clifford D. Jones	Lampasas River	Irr	25	20	3		6/30/1955	LRL R53	No		
3007	Adj.	Bell	1628000000		Haynes Corporation	Lampasas River	Irr	81	25	2		7/18/1986	LRL R53	No		
3008	Adj.	Bell	1628100000		Joseph Lewis Et Ux	Lampasas River	Irr	48	56	16		12/31/1962	LRL R53	No		
4280	Permit	Bell	1628200000	4012	River Farm Ltd	Lampasas River	Irr	192	207	49		12/31/1947	LRL R53	No		
2953	Adj.	Bell	2047090000		Eleanor B. Tuttle	Lampasas River	Irr	61	61	22		6/30/1950	LRL R53	No		
2953	Adj.	Bell	2047300000		Billy G Curry Et Al	Leon River	Irr	440	220	27		12/31/1982	LRL R53	No		
2953	Adj.	Bell	2047300000		Roger W. Hinds Et Ux	Leon River	Irr	89	61	45		4/15/1984	LRL R53	No		
2953	Permit	Bell	2047300000	5472	Charles N. Vergeusen Et Ux	Leon River	Irr	75	51			4/15/1984	LRL R53	No		
2942	Adj.	Bell	2047480000		Dennis Lyndell Et Ux	Leon River	Irr	70	47			12/31/2003	LRL R53	No		
2942	Adj.	Bell	2047480000		Paul B. Construction Co Inc	Leon River	Irr	199	110	22		12/31/1993	LRL R53	No		
2942	Adj.	Bell	2047480000		Phyllis Construction Co Inc	Leon River	Irr	5	32	22	37		12/31/1993	LRL R53	No	
2942	Adj.	Bell	2047480000		Veronica T. Blair	Leon River	Irr	105	39	10		12/31/1915	LRL R53	No		
2942	Adj.	Bell	2047500000		Alfred F. Nietel Et Ux	Leon River	Irr	34	39	14		7/31/1963	LRL R53	No		
2947 A	Adj.	Bell	2048300000		David R. Krauss Et Ux	Nolan Ck	Irr	25	30	14		8/31/1962	LRL R53	No		
2947 A	Adj.	Bell	2048400000		Peter Grothaus Et Ux	Nolan Ck	Irr	11	60	11		8/31/1952	LRL R53	No		
2948	Adj.	Bell	2048450000		Chester E. Dickson Et Ux	Nolan Ck	Irr	37	22	22		7/31/1960	LRL R53	No		
2946	Adj.	Bell	2048500000		Berry Siebenlist Et Ux	S Nolan Ck	Irr	24	24	16		5/20/1974	LRL R53	No		
2944	Adj.	Bell	2048970000		Glenn Baird	S Nolan Ck	Irr	36	53	10		6/30/1966	LRL R53	No		
4520	Permit	Bell	2048980000	4218	The Silver Quail Company	Shaw Br	Mfn	138	69	28		4/28/1975	LRL R53	No		
5089 A	Permit	Bell	2048980000	5089	Tc & E Realty Inc	S Nolan Ck	Irr	60	60	2		11/27/1984	LRL R53	No		
5088 A	Permit	Bell	2049010000	5088	City Of Killen	S Nolan Ck	Irr	37	37	2		12/31/2008	LRL R53	No		
2943 A	Adj.	Bell	2049100000		City Of Killen	Unmanned Trib	Irr	220	140	42	46		7/31/1978	LRL R53	No	
2943 A	Adj.	Bell	2049100000		Killen Willows Inc	Unmanned Trib	Res.					7/31/1978	LRL R53	No		
5330	Permit	Bell	2065060000	5330	City Of Temple	Bird Ck	Irr	187	76	26	36		11/19/1990	LRL R53	No	
2941	Adj.	Bell	2070200000		Shallow Ford Construction Co	Leon River	Irr	36	18	9		12/31/1966	LRL R53	No		
2939	Adj.	Bell	2080000000		Brazos Electric Cooperative Inc	Leon River	Irr	38,800	72	891		2/7/1949	LRL R53	Yes	Passive Plant	

Use	Number	Am't (d/y)
Min	0	0
Irr	1	38,800
Mfning	41	3,667
Hydro	1	138
Nav	0	0
Res	0	0
Other	3	0
Total	47	42,605

Table G-54  
Water Rights Upstream of North Fork San Gabriel River near Georgetown

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Cont'd Permit	Include in Diversion Study?	Remarks
5162	Adj.	Williamson	1601000000		Brazos River Authority	N Fork San Gabriel River	Min	13,610			371,100		2/12/1968	NGGFS4	Yes	Lake Georgetown
5162	Adj.	Williamson	1601000000		Brazos River Authority	N Fork San Gabriel River	Irr						2/12/1968	NGGFS4	No	Lake Georgetown
5162	Adj.	Williamson	1601000000		Brazos River Authority	N Fork San Gabriel River	Irr						2/12/1968	NGGFS4	No	Lake Georgetown
5162	Adj.	Williamson	1601000000		Brazos River Authority	N Fork San Gabriel River	Mfn						2/12/1968	NGGFS4	No	Lake Georgetown
5162	Adj.	Williamson	1601000000		Brazos River Authority	N Fork San Gabriel River	Rec				2.6		2/12/1968	NGGFS4	No	Lake Georgetown
3732	Adj.	Williamson	1605900000		San Gabriel River Ranch, Inc	Luskey Ck	Rec	2.9					5/17/1976	NGGFS4	No	Lake Georgetown
3731	Adj.	Williamson	1605900000		Rouben Floyd Clark	W Fork San Gabriel River	Irr	2.1					12/31/1962	NGGFS4	No	
3730	Adj.	Williamson	1606000000		Lee P. Orr And Henrietta Callan	Big Ck	Irr			2			3/1/1967	NGGFS4	No	

Use	Number	Amt (af/y)
Min	1	13,610
Irr	1	0
Irr	3	50
Mining	1	0
Hydro	0	0
Nav	0	0
Rec	2	0
Other	0	0
Total	8	13,660

Table G-55  
Water Rights Upstream of South Fork San Gabriel River at Georgetown

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
3737 A	Adj.	Williamson	1557000000		Alamo Concrete Products, Ltd	S Fork San Gabriel River	Other	270		44			5/4/1970	SGGES5	No	
3737 A	Adj.	Williamson	1557000000		Alamo Concrete Products, Ltd	S Fork San Gabriel River	Mit	30		44			5/4/1970	SGGES5	No	
3736	Adj.	Williamson	1557000000		Henry Grady Kshmaier	S Fork San Gabriel River	Irr	1	5	1			6/30/1961	SGGES5	No	
3735	Adj.	Burnet	1580000000		Henry Grady Kshmaier	S Fork San Gabriel River	Irr	26	26	11			6/30/1963	SGGES5	No	

Use	Number	Amt (af/y)
Main	0	0
Ind	0	0
Irr	2	27
Mining	1	30
Hydro	0	0
Nav	0	0
Rec	0	0
Other	1	270
Total	4	327

Table G-56  
Water Rights Downstream of North Fork San Gabriel River near Georgetown and South Fork San Gabriel River near Georgetown and Upstream of San Gabriel River near Georgetown

Water Right Number	Type	Canny	River Order	Permit	Owner Name	Stream	Use	Authorized Divisions in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Drought Study?	Remarks
3738	Adi.	Williamson	1598500000		City Of Georgetown	San Gabriel River	Rec	45	33	9	11		12/6/1976	GAGE56	No	
3734	Adi.	Williamson	1598500000		Georgetown Country Club	M Fk San Gabriel River	Irr				10		12/31/1941	GAGE56	No	
3733	Adi.	Williamson	1599000000		Georgetown Builders, Inc	N Fk San Gabriel River	Rec				40		9/17/1970	GAGE56	No	
4212 C	Permit	Williamson	1598500000	3913	Capitol Aggregates LTD	M Fk San Gabriel River	Min	118		6.68	4		11/22/1976	GAGE56	No	Amended 8/15/97, 5/28/99
4212 C	Permit	Williamson	1598500000	3913	Capitol Aggregates LTD	M Fk San Gabriel River	Irr						5/3/1982	GAGE56	No	Amended 8/15/97, 5/28/100
4212 C	Permit	Williamson	1598500000	3913	Capitol Aggregates LTD	M Fk San Gabriel River	Min						5/3/1982	GAGE56	No	Amend 5/28/99-Added This Div Pt On River
4212 C	Permit	Williamson	1598500000	3913	Capitol Aggregates LTD	M Fk San Gabriel River	Irr						5/3/1982	GAGE56	No	Amend 5/28/99-Added This Div Pt On River

Use	Number	Amr (dFy)
Min	0	0
Irr	2	0
Mining	1	45
Hwy	2	118
Nav	0	0
Rec	3	0
Other	0	0
Total	8	163

Table G-57  
Water Rights Downstream of San Gabriel River near Georgetown and Upstream of San Gabriel River near Laneport

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tens cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
5163	Adj.	Williamson	1440000000		Brazos River Authority	San Gabriel River	Min	19,840			65,500		2/12/1968	GALAS7	Yes	Lake Granter
5163	Adj.	Williamson	1440000000		Brazos River Authority	San Gabriel River	Irr						2/12/1968	GALAS7	No	Lake Granter
5163	Adj.	Williamson	1440000000		Brazos River Authority	San Gabriel River	Mfn						2/12/1968	GALAS7	No	Lake Granter
5163	Adj.	Williamson	1440000000		Brazos River Authority	San Gabriel River	Res.						2/12/1968	GALAS7	No	Lake Granter
3748	Adj.	Williamson	1460100000		A C Stearns Estate	San Gabriel River	Irr	203	20	13			12/31/1945	GALAS7	No	Lake Granter
4419 A	Permit	Williamson	1473000000	4091 A	David Kelley Et Ux	San Gabriel River	Other				11	12/31/1999	1/3/1984	GALAS7	No	Livestock
3747	Adj.	Williamson	1473000000	094091 A	Jimmy F Byers	San Gabriel River	Irr	448	224	26			7/31/1966	GALAS7	No	
3746	Adj.	Williamson	1473000000		Charlene M Seick	San Gabriel River	Irr	284	243	36			12/31/1957	GALAS7	No	
3745	Adj.	Williamson	1473000000		B W K Farmership	San Gabriel River	Irr	12	23	41			12/31/1963	GALAS7	No	
3744	Adj.	Williamson	1473000000		T D Vaughan	San Gabriel River	Irr	33	38	17			9/30/1952	GALAS7	No	
3741	Adj.	Williamson	1478400000		Linda Ann Smith	San Gabriel River	Irr	110	115	15			5/1/1964	GALAS7	No	
3741	Adj.	Williamson	1478400000		Ted Kalbus Et Ux	San Gabriel River	Irr	17	24	56			5/1/1964	GALAS7	No	
3742	Adj.	Williamson	1478401000		Maxine Harris	Berry Crk	Irr	17	24	56			5/1/1964	GALAS7	No	
3743	Adj.	Williamson	1478401000		R Scott Pope Et Ux	Berry Crk	Irr	7	10	13			5/1/1964	GALAS7	No	
5533	Permit	Williamson	1478500000	5533	J.L. Enterprises LLP	Berry Crk	Irr	32	48	13			3/31/1954	GALAS7	No	
3740	Adj.	Williamson	1542500000		Don Webb Texas L P	San Gabriel River	Irr	26	10	0			7/11/1995	GALAS7	No	
3739	Adj.	Williamson	1543100000		Wendell F Gibson	San Gabriel River	Irr	20	20	18			5/1/1963	GALAS7	No	
					Gene H & Nancy C Bingham Et Al	San Gabriel River	Mfn	240	24	40			3/1/1964	GALAS7	No	

Use	Number	Am (cfs/y)
Min	1	9,840
Ord	2	203
Ex	13	1,017
Mining	2	240
Hydro	0	0
New	0	0
Res	1	0
Other	1	0
Total	20	21,300

Table G-58  
Water Rights Downstream of San Gabriel River near Laneport and Little River near Little River and Upstream of Little River at Cameron

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in A/FY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in A/F	Expiration Date	Priority Date	Priority Point	Includes in Drought Study?	Remarks
3767	Permit	Bell	1233400000	5227	Five Wells Ranch Company	Unnamed Trib S Elm Ck	Irr	120	150	258			7/19/1971	LRCAS8	No	
3768	Permit	Bell	1233420000	5227	Five Wells Ranch Company	S Elm Ck	Other	120	150	295			3/30/1989	LRCAS8	No	Livestock
3769	Adi.	Milam	1230000000		City Of Cameron	Little River	Mun	2,792	21	10			7/17/1925	LRCAS8	Yes	
3770	Adi.	Milam	1232000000		Clifford L Gustafson Et Ux	Little River	Irr	42	20				2/12/1973	LRCAS8	No	Fish farm, no diversion
4041 A	Permit	Milam	1233150000	3761A	B & B Minnow Farm	Unnamed Trib Mustang Ck	Irr	400	300	44	195		5/27/1980	LRCAS8	No	
4042 A	Permit	Milam	1233150000	3761A	Robert W Norris	Little River	Irr	300	175	33	44		1/3/1985	LRCAS8	No	
3758	Adi.	Milam	1233640000	4212	Carl Moody Et Al	Unnamed Trib Sandy Ck	Irr	300	500	50	50		8/29/1977	LRCAS8	No	
3759	Adi.	Milam	1235000000		Aluminum Company Of America	Little River	Irr	18,000	750	13			4/30/1967	LRCAS8	Yes	Lake Alcoa
3749	Adi.	Milam	1236000000	5245	W T Pearson Jr	San Gabriel River	Irr	110	13	1	1	12/31/1999	LRCAS8	No		
3750	Adi.	Milam	1236000000	5245	Alton Leroy Caste	Brushy Ck	Irr	100	10	469			6/23/1989	LRCAS8	No	
3751	Adi.	Williamson	1239000000		City Of Thonshale	Spring Br	Mun	150	16				9/15/1966	LRCAS8	No	
3752	Adi.	Williamson	1239000000		City Of Thonshale	Spring Br	Mun	30	13	273			9/20/1982	LRCAS8	No	
3753	Adi.	Williamson	1239000000		W A & Beck Whittemore	Unnamed Trib Spring Br	Irr	100	8				5/1/1963	LRCAS8	No	
3754	Adi.	Williamson	1239000000		City Of Shiles	Spring Ck	Mun	60	1				6/20/1961	LRCAS8	No	
3755	Adi.	Williamson	1260100000		City Of Taylor	Unnamed Trib Brushy Ck	Irr	1	0	26			5/1/1963	LRCAS8	No	
3756	Adi.	Williamson	1278300000	5188	City Of Taylor	Ball Br	Rec			12			7/20/1976	LRCAS8	No	
4470	Permit	Williamson	1279800000	4166	Strawel W & Margaret Jones	Brushy Ck	Irr	120	13			12/31/1999	LRCAS8	No	(APP PENDING)	
3751	Adi.	Williamson	1338000000		Bertha S Johnson	Brushy Ck	Irr	30	30	7			8/18/1922	LRCAS8	No	
4482	Permit	Williamson	1338500000	4171	Tom Kohn	Unnamed Trib Lake Ck	Rec			3			8/14/1984	LRCAS8	No	
5118	Permit	Williamson	1339000000	5118	Killean Savings & Loan Association	Unnamed Trib Lake Ck	Rec			7			1/12/1987	LRCAS8	No	
4314	Permit	Williamson	1339000000	3971	Tonkawa Springs Home Owners	Dry Frk Brushy Ck	Rec			13			1/31/1983	LRCAS8	No	
3750	Adi.	Milam	1357000000		T R Coffield	San Gabriel River	Irr	125	42	38			6/30/1943	LRCAS8	No	
4591 A	Permit	Milam	1609500000	4279A	Warens Turf Nursery Inc	Unnamed Trib Lil River	Irr	74	76				7/9/1985	LRCAS8	No	
4591 A	Permit	Milam	1609500000	4279A	Hillard Ranches Inc	Unnamed Trib Lil River	Irr	849	485				7/9/1985	LRCAS8	No	
4591 A	Permit	Milam	1609500000	4279A	James K Wilson Et Ux	Unnamed Trib Lil River	Irr	127	73				7/9/1985	LRCAS8	No	
3729	Adi.	Milam	1609500000		Joe Glaser	Indian Hollow	Irr	100	11	387			9/27/1976	LRCAS8	No	
3727	Adi.	Milam	1610250000		B K Lutterborn	Sevier Br	Irr	72	3	201			10/11/1977	LRCAS8	No	
3728	Adi.	Milam	1610465000		Dry & Run Channel	Sevier Br	Irr						10/11/1977	LRCAS8	No	
3728	Adi.	Milam	1610465000		Bretel J Mahoney Et Ux	Mul Br	Rec			246			6/5/1978	LRCAS8	No	
3728	Adi.	Milam	1610465000		Larry J Howell Et Ux	Mul Br	Rec						6/5/1978	LRCAS8	No	
3728	Adi.	Milam	1610465000		Larry D Griffith Et Ux	Mul Br	Rec						6/5/1978	LRCAS8	No	2 Diversion Points: #2 Most Downstream
5500	Permit	Milam	1614790000	5500	Calvin Kraemer	Little River	Irr	659	570	5		12/31/2004	LRCAS8	No		
4249	Permit	Milam	1614810000	4015	Calvin Kraemer	Little River	Irr	700	700	123			9/20/1982	LRCAS8	No	
4436	Permit	Milam	1615560000	4109	Betsy Kacer Wheeler	Little River	Irr	400	140	24			2/28/1984	LRCAS8	No	
3726	Adi.	Bell	1617000000		Mollie H. Brooks Et Al	N Dams Ck	Irr	5	6	12			7/31/1960	LRCAS8	No	
3726	Adi.	Bell	1617000000		Mollie H. Brooks Et Al	N Dams Ck	Irr	5	5	11			11/6/1969	LRCAS8	No	
3725	Adi.	Bell	1618450000		Ohl F Teague Veterans Center	Unnamed Trib Knob Ck	Rec			96			1/24/1977	LRCAS8	No	
4048 A	Permit	Bell	1619600000	3762A	Ellis G & Jean M Marshall	Little River	Irr	100	66	15			5/27/1980	LRCAS8	No	
4430	Permit	Bell	1619710000	4095	Sidney Kaci	Little River	Irr	240	197	3			4/2/1984	LRCAS8	No	
4430 A	Permit	Bell	1619710000	4095	Sidney Kaci	Little River	Irr	308					8/16/1999	LRCAS8	No	Amend 3/13/2000-Add 308 A/F R/R

Use	Number	Am (cfs)
Mun	4	1412
Irr	3	18,110
Hydro	27	5,240
Mining	0	0
Nav	0	0
Rec	9	0
Other	1	0
Total	44	26,442

Table G-59  
Water Rights Downstream of Brazos River near Highbank and Little River at Cameron and Upstream of Brazos River near Bryan

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Divisions in AFY	Irrigated Acres (Irr) or Consumption (Ind)	Maximum Diversion Rate in tenths cfs	Impairment in AF	Expiration Date	Priority Date	Primary Control Point	Includes in Deputh Study?	Remarks
5236	Permit	Brazos	1205400000	5236	Lee J Fazzino And Sara F Fazzino	Brazos River	Er	402	246	45		12/31/1999	5/16/1989	BRBR59	No	
5238	Permit	Brazos	1205400000	5238	Lee J Fazzino And Sara F Fazzino	Ltd Brazos	Er	400	200	33		12/31/1999	5/16/1989	BRBR59	No	
4778	Permit	Robertson	1205186000		Robert H Benbow	Unmanned Trth Dum	Roe				166		6/27/1977	BRBR59	No	
4777	Permit	Robertson	1205280000		George C Gassen	Three Mile	Er	20	20	17	48		12/31/1958	BRBR59	No	
4376	Permit	Robertson	1205300000		Nelson Family Farming Trust	Touchoise	Er	74	74	9			8/31/1963	BRBR59	No	
4364 B	Permit	Robertson	1205302000		Cliff A Skiles Jr	L Brazos River	Er	724	398	69	6		12/31/1958	BRBR59	No	
4364 A	Permit	Robertson	1205302000		Cliff A Skiles Jr	L Brazos River	Er	3,026	1,202	133		12/31/2006	7/10/1984	BRBR59	Yes	
4363 A	Permit	Robertson	1205310000		Joe Restiano Estate	Brazos River	Er	432	179	89			9/19/1983	BRBR59	Yes	
4363 A	Permit	Robertson	1205310000		Joe Restiano Estate	Brazos River	Er	432	571	55	178		7/23/1987	BRBR59	No	
5148 B	Permit	Robertson	1205336000	5148B	Texas-New Mexico Power Company	Dry Br	Ind	458			20		10/22/1986	BRBR59	No	
5106	Permit	Robertson	1205337000	5106	Walnut Creek Mining Company	Unmanned Trth Bee Br	Min				95		12/31/1963	BRBR59	No	
4775	Permit	Robertson	1205339000		Rosd Kemperki	Unmanned Trth Bee	Er	4	10	3			12/31/1986	BRBR59	No	
5117	Permit	Robertson	1205339000	5117	Walnut Creek Mining Company	Unmanned Trth Bee Willow Ck	Other				26		12/31/1986	BRBR59	No	
5116	Permit	Robertson	1205339000	5116	Walnut Creek Mining Company	Unmanned Trth Walnut Ck	Other				8		12/31/1986	BRBR59	No	
5243	Permit	Robertson	1205432000	5243	Walnut Creek Mining Company	Unmanned Trth Walnut Ck	Other	8					12/31/1986	BRBR59	No	
5249	Permit	Robertson	1205433000	5249	Walnut Creek Mining Company	Brazos River	Er	780	1,110	134		12/31/2001	2/28/1994	BRBR59	No	
5237	Permit	Brazos	1205454000	5237	Lee J Fazzino And Sara F Fazzino	Brazos River	Er	414	207	45		12/31/1999	5/16/1989	BRBR59	No	
4372 A	Permit	Brazos	1205455000		Forbin Investment N V	Moatone	Er	700	400	45	120		3/29/1983	BRBR59	No	
4372 A	Permit	Brazos	1205455000		Lake Woodrow Inc	Unmanned Trth Sweetgum	Roe						6/26/1972	BRBR59	No	
4373	Permit	Milam	1205487500		Dravton McJame Jr	Ferguson	Roe	410	224	53		2/24/1975	BRBR59	No		
4371 A	Permit	Robertson	1206300000		Sam F Dessefano	Brazos River	Er	290	160	160		7/31/1956	BRBR59	No		
4371 A	Permit	Robertson	1206300000		Sam F Dessefano	Brazos River	Er	290	160	160		2/7/1983	BRBR59	No		
4370 A	Permit	Robertson	1207000000		Omah B Penn Et Al	Unmanned Trth Brazos River	Er	297	198	89	15		12/31/1984	BRBR59	No	
4369 A	Permit	Robertson	1208510000	4080A	Gaithan Restino	Brazos River	Er	1,500	750	201		7/19/1983	BRBR59	Yes		
4369 A	Permit	Milam	1210700000		Gene W Bonorden	Three Mile	Er	4	9	7	4		12/31/1965	BRBR59	No	
4368 A	Permit	Milam	1214500000		Gloria Ely Holden	Brazos River	Er	76	76	56		8/31/1954	BRBR59	No		
4368 A	Permit	Milam	1214500000		John W & Janie Niglazzo	Brazos River	Er	448	224	50		5/15/1984	BRBR59	No		
3772	Permit	Milam	1219250000		V J White	Little River	Er	8	50	56		7/31/1966	BRBR59	No		
3773	Permit	Milam	1219250000		Adreage & Shannon Limited Partnership	Unmanned Trth Little River	Er	1,300	1,500	182	12		8/31/1956	BRBR59	Yes	
3774	Permit	Milam	1220200000		Jane Smoot	Little River	Er	30	59	40		6/30/1959	BRBR59	No		
3775	Permit	Milam	1220200000		Blanton W Adkinson Et Al	Little River	Er	150	30	30		6/30/1959	BRBR59	No		
3770	Permit	Milam	1220200000		Blanton W Adkinson Et Al	Little River	Er	150	297	30		6/30/1959	BRBR59	No		
3769	Permit	Milam	1220200000	5077	Dana B & Audrey F Hatcher	Little River	Er	600	300	89		7/21/1986	BRBR59	No		
3768	Permit	Milam	1220630000		Laura Weaver McClaren	Little River	Er	140	86	44		8/31/1956	BRBR59	No		
3768	Permit	Milam	1221350000		Linda Ehrhardt-Grothe	Little River	Er	90	192	33	2		12/31/1952	BRBR59	No	
3768	Permit	Milam	1221350000		Michael Lloyd Et Us	Unmanned Trth Big Elm Ck	Ind	112				2/28/1977	BRBR59	No		
3768	Permit	Milam	1221350000		Michael Lloyd Et Us	Unmanned Trth Big Elm Ck	Er	13	31	24		5/31/1965	BRBR59	No		
5226	Permit	Bell	1224410000	5226	Civ Of Temple	Unmanned Trth Big Elm Ck	Roe		80		309		2/28/1977	BRBR59	No	
3765	Permit	Milam	1226500000		Laura Weaver McClaren Et Al	Little River	Er	148	197	44		3/28/1989	BRBR59	No		
3764	Permit	Milam	1226520000		Harold B & Obal B Fisher	Little River	Er	45	60	20		7/1/1952	BRBR59	No		
3763	Permit	Milam	1226500000		Estate Of Hubert L McClaren	Little River	Er	40	40	20		7/31/1952	BRBR59	No		
5470 A	Permit	Robertson	2560000000		Clifford A Skiles Jr Et Us	Brazos River	Er	514	1,500	13		11/22/1917	BRBR59	No	Goodland Farms	
5470 A	Permit	Robertson	2560000000		Clifford A Skiles Jr Et Us	Brazos River	Er	2,400	1,500	13		6/26/1984	BRBR59	Yes	Goodland Farms	
4367	Permit	Robertson	2561500000		Gerard Papp Et Al	Brazos River	Er	145	145	64		12/31/1959	BRBR59	No		
4366 A	Permit	Robertson	2561620000		Blen Wise Briet Et Al	Brazos River	Er	275	250	67		6/30/1957	BRBR59	No		
4366 A	Permit	Robertson	2561620000		Blen Wise Briet Et Al	Brazos River	Er	125	180	78		10/31/1983	BRBR59	No		
4362	Permit	Robertson	2562350000		Wesley F Anderson And Jane A McLellan	Brazos River	Er	268	232	122		6/30/1958	BRBR59	No		
4361	Permit	Robertson	2562350000		Wesley F Anderson And Jane A McLellan	Brazos River	Er	184	184	56		12/31/1981	BRBR59	No		
4320 A	Permit	Robertson	2563010000	4023A	Don Weinsacht Et Al	Brazos River	Er	600	300	67		2/7/1983	BRBR59	No		
4401 A	Permit	Robertson	2571100000	4078A	John R & Mary F Woodall	Brazos River	Er	825	500	185		9/26/1983	BRBR59	No		
4360	Permit	Falls	2577800000		Civ Of Rosebud	Unmanned Trth Pond	Mun	224			408		11/28/1961	BRBR59	No	
4410 A	Permit	Milam	2577950000	4076A	James H Jones & Wife	Brazos River	Er	250	150	7		11/7/1983	BRBR59	No		
4393 B	Permit	Robertson	2578690000	4075B	Anderson Development Corporation	Brazos River	Er	512	256	67		9/6/1983	BRBR59	No		
4359 A	Permit	Falls	2590000000		John C Isaacs Et Al	Little River	Er	991	495	55		10/22/1925	BRBR59	No		
3775	Permit	Milam	1219000000		Lloyd E LeFevre Et Us	Little River	Er	578				4/10/1960	BRBR59	No	66.75 AF More Owned Br. Robertson Feo)	
3775	Permit	Milam	1219000000		Veronica Roessler Et Al	Little River	Er	623				4/10/1960	BRBR59	No	66.75 AF More Owned Br. Robertson Feo)	
5548	Permit	Bell		5548	Edward Coufal	Daily Branch	Er	50	80	1		7/18/2002	3/15/1996	BRBR59	No	SG-5/1-8-31. Wastewater Discharge

Use	Number	Amnt (af/y)
Min	1	224
Ind	3	570
Er	48	25,157
Mining	0	0
High	0	0
Nov	0	0
Roe	4	0
Other	2	8
Total	59	23,959

Table G-60  
Water Rights Upstream of Middle Yegua Creek near Dime Box

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
															No	

Use	Number	Amt. (af/y)
Main	0	0
Irr	0	0
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	0	0
Other	0	0
Total	0	0

Table G-61  
Water Rights Upstream of East Yegua Creek near Dime Box

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Rate in terms of GFS	Impoundment in AF	Expiration Date	Priority Date	Primary Cont'd Permit	Include in Diversion Study?	Remarks
5272	Adi	Uvalde	1151300000	5540	John McCallik & Wife	Spring	Irr	18	35	13			9/23/1974	EYDR61	No	
5540	Permit	Milam	1151800000	5540	Aluminum Company Of America	Unnamed Trib	Other				356		10/09/1995	EYDR61	No	Sandow Surface Lignite Mine
5540	Permit	Milam	1151800000	5540	Aluminum Company Of America	Unnamed Trib	Other				7,173		10/09/1995	EYDR61	No	Sandow Surface Lignite Mine
5273	Adi	Milam	1151870000		Reskalee Country Club	Unnamed Trib Yegua	Irr	1	48	3	2		10/11/1977	EYDR61	No	Sandow Surface Lignite Mine
5272	Adi	Milam	1154100000		Aluminum Company Of America	Sandy	Irr	14,000		-4,022	15,650		12/12/1951	EYDR61	Yes	Alcon Lake

Use	Number	Amt (af/y)
Min	0	0
Irr	1	14,000
Mining	2	19
Hydro	0	0
Nav	0	0
Rec	0	0
Other	2	0
Total	5	14,019

Table G-62  
Water Rights Downstream of Middle Yegua Creek near Dime Box and Upstream of Yegua Creek near Somerville

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFW	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Drought Study?	Remarks
5164	Adj.	Washington	1123000000		Brazos River Authority	Yegua Ch	Mun	48,000			160,110		12/16/1963	YCS062	No	Lake Somerville
5164	Adj.	Washington	1123000000		Brazos River Authority	Yegua Ch	Irr						12/16/1963	YCS062	No	Lake Somerville
5164	Adj.	Washington	1123000000		Brazos River Authority	Yegua Ch	Irr						12/16/1963	YCS062	No	Lake Somerville
5164	Adj.	Washington	1123000000		Brazos River Authority	Yegua Ch	Min						12/16/1963	YCS062	No	Lake Somerville
5164	Adj.	Washington	1123000000		Brazos River Authority	Yegua Ch	Rec						12/16/1963	YCS062	No	Lake Somerville
5280	Adj.	Washington	1123600000		Waldo Neustadt	Fertella	Irr	20		1	4		6/1/1981	YCS062	No	Lake Somerville
5279	Adj.	Burleson	1124000000		Bjreh Creek Forest Properties Inc.	Unnamed Trib Birch	Rec				15		12/2/1974	YCS062	No	
5278	Adj.	Washington	1125000000		K.L. Nixon	Fourmile	Rec				13.5		11/16/1950	YCS062	No	
5277	Adj.	Lee	1125510000		Tommy Bredhauer Et Al	Unnamed Trib Cedar	Irr	20	20	30	101		6/30/1959	YCS062	No	
5276	Adj.	Washington	1125590000		George W Sprankle	Unnamed Trib Tracy	Irr	2	9	4			6/26/1972	YCS062	No	
5275	Adj.	Lee	1126000000		Ludwig M Kipp & Wife	Unnamed Trib Hickory	Irr	38	34	5			7/28/1969	YCS062	No	

Use	Number	Am't (cfs)
Mun	1	48,000
Irr	2	20
Irr	4	80
Minning	1	0
Hydro	0	0
Nav	0	0
Rec	3	0
Other	0	0
Total	11	48,100

Table G-63  
Water Rights Upstream of Davidson Creek near Lyons

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
5282	Adj.	Burke	1118450000	4140	Beaver Creek Developers	Unnamed Trib Davidson	Rec			4.350	113		2/3/1975	DCLY63	No	
4443	Permit	Burke	1119050000		Lee D. Duesin	Beaver Crk	Other						4/10/1984	DCLY63	No	
5283	Adj.	Burke	1119230000		Russell E. Wiggins	2ND Davidson	Rec						11/09/1981	DCLY63	No	
5281	Adj.	Burke	1119900000		Harry H. Bowers	Unnamed Trib Davidson	Rec				60		3/3/1980	DCLY63	No	

Use	Number	Amt. (af/y)
Main	0	0
Ind	0	0
Irr	0	0
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	3	0
Other	1	0
Total	4	0

Table G-64  
Water Rights Upstream of Navasota River above Groesbeck

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Ind)	Maximum Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Cont'd Permit	Include in Divert Study?	Remarks
5289	Adj.	Limestone	840000000		City Of Groesbeck	Navasota	Min	2,500		26	1,500		6/13/1921	NAGRE64	Yes	
5288	Adj.	Limestone	870000000		Texas Parks & Wildlife Dept	Navasota	Irr	5	5	1	3,100		1/18/1939	NAGRE64	No	Fert Parker Lake
5288	Adj.	Limestone	870000000		Texas Parks & Wildlife Dept	Navasota	Rec.						1/18/1939	NAGRE64	No	Fert Parker Lake
5287	Adj.	Limestone	1035000000		Bistone Municipal Wsd	Navasota	Min	2,887		67	9,600		4/15/1957	NAGRE64	Yes	Lake Mexian
5287	Adj.	Limestone	1035000000		Bistone Municipal Wsd	Navasota	Ind	65					4/15/1957	NAGRE64	No	

Use	Number	Amt (af/y)
Min	2	5,387
Ind	1	65
Irr	1	5
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	1	0
Other	0	0
Total	5	5,457

Table G-65  
Water Rights Upstream of Big Creek near Freestone

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Rate in Diversion Units	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
5293	Adj.	Livestock	809000000		D G Brown	Chambers	Rec				1.87		12/31/1984	BGFR65	No	
5293	Adj.	Freestone	809000000		Freestone Huming & Fishing Club	Jeter	Rec				7.50		1/6/1975	BGFR65	No	Brown Lake
5293	Adj.	Freestone	809000000		City Of Teague	Jeter	Min	29					1/6/1975	BGFR65	No	Upper & Lower Club Lakes
5291	Adj.	Freestone	810000000		City Of Teague	Holman	Min	605			1,160		8/14/1952	BGFR65	No	Teague City Lake

Use	Number	Amtd (d.f.v)
Min	2	634
Ind	0	0
Irr	0	0
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	2	0
Other	0	0
Total	4	634

Table G-66  
Water Rights Downstream of Navasota River above Groesbeck and Big Creek near Freestone and Upstream of Navasota River near Easterly

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
5160	Permit	Robertson	7832000000	5160	Camp Cochen Ltd	Unnamed Trib Steels CK	Other				423		10/21/1987	NAEA066	No	
5297	Adj.	Robertson	7831500000		Camp Cochen Ltd	Unnamed Trib Bear	Rec.				420		4/31/1972	NAEA066	No	American & Wolf Lakes Dam
5367	Adj.	Robertson	7831600000		Bert Wheeler	Bear	Rec.				1,298		2/25/1974	NAEA066	No	Antelope Lake
5165	Adj.	Robertson	8030000000		Brazos River Authority	Navasota	Min	65,074			225,400		5/6/1974	NAEA066	Yes	Lake Limestone
5165	Adj.	Robertson	8030000000		Brazos River Authority	Navasota	Irr						5/6/1974	NAEA066	No	Lake Limestone
5165	Adj.	Robertson	8030000000		Brazos River Authority	Navasota	Min						5/6/1974	NAEA066	No	Lake Limestone
5319	Permit	Leon	8060000000	5319	Brazos River Authority	Navasota	Irr	90			516		10/12/1990	NAEA066	No	Lake Limestone
5295	Adj.	Limestone	8078000000		Northwestern Resources Company	Unnamed Trib	Rec.						3/29/1976	NAEA066	No	
5290	Adj.	Limestone	8125000000		J G Kennedy	Unnamed Trib Big	Rec.				285		12/4/1972	NAEA066	No	
					Erni Luna Et Al	Unnamed Trib Plummers	Irr	8	23	5				NAEA066	No	

Use	Number	Amt (af-y)
Man	1	65,074
Irr	2	90
Irr	2	8
Mining	1	0
Hydro	0	0
Nav	0	0
Rec	4	0
Other	1	0
Total	11	65,172

Table G-67  
Water Rights Downstream of Navasota River near Easterly and Upstream of Navasota River near Bryan

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
5302	Adj.	Leon	7669/000/00		City Of Navasota	Running	Res.				360		2/3/1975	NABR67	No	Normangee Lake
5303	Adj.	Leon	7670/000/00		Hilroy Lake Resort City	Unnamed Trib Running	Res.				1,241		8/25/1969	NABR67	No	
5307	Adj.	Robertson	7750/000/00		Camp Creek Water Company	Camp Mill	Res.				8,400		6/14/1948	NABR67	No	Camp Creek Lake
5308	Adj.	Robertson	7800/000/00		David Price Et Ux		Res.				290		4/11/1955	NABR67	No	Kopy Lake
4600	Permit	Leon	7800/000/00	4296	Horizon Land & Cattle Company	2 Unnamed Trib Poleson Resost Ck	Irr	120	206	25			8/6/1985	NABR67	No	Cheney Lake
5299	Adj.	Leon	7803/000/00		Janes Dammison Et Al	Unnamed Trib Clear	Res.	30,319	13,200	20,889	30,319		8/30/1976	NABR67	No	Cheney Lake
5298	Adj.	Robertson	7809/000/00		Texas Utilities Electric Co	Duck	Irr						7/1/1974	NABR67	Yes	Twin Oak Steam Electric Station

Use	Number	Amnt (af/y)
Man	0	0
Irr	1	30,319
Irr	1	120
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	5	0
Other	0	0
Total	7	30,439

Table G-68  
Water Rights Downstream of Brazos River near Bryan, Davidson Creek near Lyons, Yegua Creek near Somerville and Navasota River near Bryan and Upstream of Brazos River near Bryan and Hemphstead

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Divisions in AFT	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in cfs	Impoundment in AFT	Expiration Date	Priority Date	Primary Control Point	Includes in Control Study?	Remarks
5116	Permit	Washington	7355/0000		Chappell Hills, Inc	Unnamed Tribs, LI Canal	Rec				56		4/7/1980	BRHE68	No	5 Lakes
5166	Permit	Grimes	7470/0000		Protem Episcopal Church Cou	Brazos Creek	Rec						9/30/1988	BRHE68	No	SC
5200	Permit	Grimes	7414/0000	5290	Texas Dept Of Criminal Justice	Unnamed Trib	Rec	550	125	67	30		4/3/1980	BRHE68	No	Peck State Farm
5200	Permit	Grimes	7414/0000	5290	Erni Loma Et Al	Unnamed Trib	Rec	558	299	67	277		4/3/1980	BRHE68	No	Peck State Farm
5315	Adi	Grimes	7431/0000		Navasota Fishlake Club Inc	Unnamed Trib Bartlett	Rec	464	578	89			2/14/1972	BRHE68	No	
5286	Adi	Grimes	7435/0000		Joyce Ann Freale	Brazos River	Rec	403		89			12/31/1956	BRHE68	No	
5286	Adi	Brazos	7435/0000		Willie Balalobano Et Us	Brazos River	Rec	54	67				12/31/1956	BRHE68	No	
5286	Adi	Brazos	7435/0000		Stewart & Mary Thompson & Stewart Thom	Navasota River	Rec	47			7		12/31/1956	BRHE68	No	
5286	Adi	Brazos	7435/0000	5566	Willie Balalobano Et Us	Navasota River	Rec	250	100	1			1/5/1997	BRHE68	No	Gilbons Creek
5354	Adi	Grimes	7456/1000	5354	Texas Municipal Power Agency	Unnamed Trib	Ind	200		3	192		4/1/1991	BRHE68	No	Waltrip Lake
5313	Adi	Grimes	7457/0000		Texas Municipal Power Agency	Unnamed Trib Gilbons	Rec				519		8/9/1971	BRHE68	No	Sediment Control
5053	Permit	Grimes	7457/0000	5053	Texas Municipal Power Agency	Unnamed Trib Rock Lake Ck	Min				1420		4/3/1986	BRHE68	No	Dust Control
5458	Permit	Grimes	7457/0000	5458	Texas Municipal Power Agency	Peach Creek	Ind	100		3	253		4/5/1993	BRHE68	No	Sediment Control
5458	Permit	Grimes	7457/0000	5458	Texas Municipal Power Agency	Peach Creek	Other						4/5/1993	BRHE68	No	Sediment Control
5312	Adi	Grimes	7458/0000		Texas Municipal Power Agency	Big Br	Min	200		17	92		5/24/1982	BRHE68	No	Lake Carlos
5312	Adi	Grimes	7458/0000		Texas Municipal Power Agency	Big Br	Min	200		17	92		5/24/1982	BRHE68	No	Lake Carlos
5311 A	Adi	Grimes	7458/0000		Texas Municipal Power Agency	Gilbons	Ind	9740	9740	15,111	32,084		2/22/1977	BRHE68	Yes	Gilbons Creek Power Plant
5473	Permit	Grimes	7459/0000	5473	Texas Municipal Power Agency	Unnamed Trib Sulphur Ck	Ind	10		3	6		1/19/1993	BRHE68	No	Dust Control
5314	Adi	Brazos	7461/0000		Woodlake Preservation Association	Unnamed Trib Pin Oak	Rec				230		10/21/1974	BRHE68	No	Prierson Lake
5081	Permit	Brazos	7462/0000	5081	Brazos Coal Limited	Unnamed Trib Lick Ck	Rec			106			8/6/1986	BRHE68	No	
5385	Permit	Brazos	7463/0000	5385	Nantucket Ltd	Unnamed Trib Lick Ck	Rec	325	130	42			9/19/1991	BRHE68	No	
5385	Permit	Brazos	7463/0000	5385	Nantucket Ltd	Unnamed Trib Lick Ck	Rec	325	130	42			9/19/1991	BRHE68	No	
5329 A	Permit	Brazos	7464/0000	5329	Rebelle Creek County Club Inc	Unnamed Trib Lick Ck	Rec	365		2	16		1/16/1990	BRHE68	No	
5329 A	Permit	Brazos	7464/0000	5329	Rebelle Creek County Club Inc	Unnamed Trib Lick Ck	Rec	365		2	16		1/16/1990	BRHE68	No	
5329 B	Permit	Brazos	7464/0000	5329	Rebelle Creek County Club Inc	Unnamed Trib Lick Ck	Rec	365		2	16		1/16/1990	BRHE68	No	
5312	Permit	Grimes	7465/0000	5312	Reed Minsky Trust Et Al	Navasota	Rec			2,330	2,157		5/13/1987	BRHE68	No	
5312	Permit	Grimes	7465/0000	5312	Reed Minsky Trust Et Al	Navasota	Rec			2,330	2,157		5/13/1987	BRHE68	No	
5310	Adi	Brazos	7465/0000		Greater Lake Home Owners Corp	Unnamed Trib Carter	Rec			14	481		1/6/1969	BRHE68	No	
5345	Permit	Brazos	7470/0000	5345	The Realty Inc	Unnamed Trib Carters Ck	Rec			13			2/8/1991	BRHE68	No	Wolf Pen Cr
5357	Permit	Brazos	7470/0000	5357	Civ Of College Station	Wolf Pen Ck	Rec			13			4/11/1991	BRHE68	No	County Club Lake
5309	Adi	Brazos	7471/3000		Civ Of Bryan	Unnamed Trib Burton	Rec	119		5	73		1/6/1975	BRHE68	No	
5422	Permit	Brazos	7471/3500	5422	Elf Atosham North America Inc	Unnamed Trib	Other	119		5			6/10/1992	BRHE68	No	
5308	Adi	Brazos	7471/4000		Briarcrest Country Club Inc	Unnamed Trib	Rec	12	56	18	12		9/27/1976	BRHE68	No	
5308	Adi	Brazos	7471/4000		Briarcrest Country Club Inc	Unnamed Trib	Rec	12	56	18	12		9/27/1976	BRHE68	No	
5307 A	Adi	Grimes	7471/8000		Texas Municipal Power Agency	Navasota	Rec	6000		247	17		12/15/1980	BRHE68	Yes	Navasota River Intake
5306	Adi	Grimes	7471/8000		Texas Municipal Power Agency	Navasota	Rec	6000		247	17		12/15/1980	BRHE68	Yes	Navasota River Intake
5306	Adi	Grimes	7471/8000		Texas Municipal Power Agency	Navasota	Rec	6000		247	17		12/15/1980	BRHE68	Yes	Navasota River Intake
5304	Adi	Madison	7567/5000		Joint Texas Division Of Lower Colorado River Authority	Unnamed Trib Kyleleigh	Rec			210			10/12/1976	BRHE68	No	Oakland Lake
5304	Adi	Madison	7567/5000		Joint Texas Division Of Lower Colorado River Authority	Unnamed Trib Kyleleigh	Rec			210			10/12/1976	BRHE68	No	Oakland Lake
4283 C	Permit	Brazos	1117/0000	4016C	Tom J Moore Farms	Colorado River	Main	5,440	3,627	869	43		2/2/2000	BRHE68	Yes	Service Area City Of Leander 2 Counties
4283 A	Permit	Brazos	1117/5000	4011A	Robert Henry Moore	Brazos River	Rec	905	603	279			12/20/1982	BRHE68	No	
4283 A	Permit	Brazos	1117/5000	4011A	Robert Henry Moore	Brazos River	Rec	905	603	279			12/20/1982	BRHE68	No	
5284	Adi	Burleson	111781/0000		Melanie Moore Kolby Et Al	Brazos River	Rec	498	332				12/20/1982	BRHE68	No	Amend 12/3/87
5284	Adi	Burleson	111781/0000		William J Terrell Et Al	Brazos River	Rec	752	501	100			12/20/1982	BRHE68	No	
5752	Permit	Burleson	11595/0000	5752	Seply & Robert Hutchings	Unnamed Trib Yegua	Rec	30	15	75			1/9/1967	BRHE68	No	New since WAM
5752	Permit	Burleson	11595/0000	5752	WILLIAM GAVRANOVIC ET UX	Brazos River	Rec	1260	820	367			10/18/2001	BRHE68	Yes	New since WAM
4284 A	Permit	Brazos	11580/0000	4017A	Robert J & Geraldine Moore	Brazos River	Rec	962	642	89			12/20/1982	BRHE68	No	
4284 A	Permit	Brazos	11580/0000	4017A	Robert J & Geraldine Moore	Brazos River	Rec	962	642	89			12/20/1982	BRHE68	No	
5973	Permit	Burleson	11666/3000	5903	William Gavranoic Jr	Brazos River	Rec	102	31	11			5/8/1984	BRHE68	No	
5973	Permit	Burleson	11666/3000	5903	William Gavranoic Jr	Brazos River	Rec	102	31	11			5/8/1984	BRHE68	No	
5771	Adi	Burleson	11667/3000		Texas A & M University	Yegua River	Rec	3500	1,000	9			10/10/1991	BRHE68	Yes	
5771	Adi	Burleson	11667/3000		Texas A & M University	Yegua River	Rec	3500	1,000	9			10/10/1991	BRHE68	Yes	
5770	Adi	Brazos	1202/10000		Lower Colorado River Authority	Unnamed Trib Thompson	Rec	420	1,700	100	64		5/1/1984	BRHE68	Yes	
5770	Adi	Brazos	1202/10000		Lower Colorado River Authority	Unnamed Trib Thompson	Rec	420	1,700	100	64		5/1/1984	BRHE68	Yes	
5269	Adi	Brazos	1204/10000		The Travelers Insurance Co	Still	Rec	38	18	49			6/1/1976	BRHE68	No	
5269	Adi	Brazos	1204/10000		The Travelers Insurance Co	Still	Rec	38	18	49			6/1/1976	BRHE68	No	
5268	Adi	Brazos	1204/10000		R O Lawrence II Et Us	Still	Rec	717	345				1/30/1978	BRHE68	No	
5268	Adi	Brazos	1204/10000		R O Lawrence II Et Us	Still	Rec	717	345				1/30/1978	BRHE68	No	
5268	Adi	Brazos	1204/10000		Willard Harvey Zamswalt, Jr Et Us	Still	Ind	180	87				5/30/1972	BRHE68	Yes	Danahy Power Plant
5268	Adi	Brazos	1204/10000		Willard Harvey Zamswalt, Jr Et Us	Still	Ind	180	87				5/30/1972	BRHE68	Yes	Danahy Power Plant
4282 A	Permit	Brazos	11175/0000	4011	Melanie Moore Kolby Et Al	Brazos River	Rec	498	850	2,222	15,227		12/20/1982	BRHE68	No	Amend 12/3/87
4282 A	Permit	Brazos	11175/0000	4011	Melanie Moore Kolby Et Al	Brazos River	Rec	498	850	2,222	15,227		12/20/1982	BRHE68	No	Amend 12/3/87

Use	Number	Amount (af/y)
Min	1	0
Ind	9	17,320
Irr	26	20,899
Minning	2	200
Hydro	0	0
Nav	0	0
Rec	18	0
Other	2	119
Total	58	38,538

Table G-69  
Water Rights Upstream of Mill Creek near Belleville

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
															No	

Use	Number	Amt. (af/y)
Main	0	0
Irr	0	0
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	0	0
Other	0	0
Total	0	0

Table G-70  
Water Rights Downstream of Brazos River near Hempstead and Mill Creek near Bellville and Upstream of Brazos River near Richmond

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in A/FY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Exclude in Drought Study?	Remarks
5320	Adj.	Fort Bend	480000000		Richmond Irrigation Co.	Brazos River	Irr	12,000	15,179	3.550			10/23/1926	BRR70	Yes	
5320	Adj.	Fort Bend	480000000		Richmond Irrigation Co.	Brazos River	Irr	28,000					10/23/1926	BRR70	Yes	
5320	Adj.	Fort Bend	480000000		Houston Lighting & Power Co.	Brazos River	Irr						10/23/1926	BRR70	No	
5319	Adj.	Fort Bend	480000000		Houston Lighting & Power Co.	Brazos River	Irr	117		80	41		5/31/1963	BRR70	No	
4534 B	Permit	Waller	538000000	4232B	Weldon S. Luns Et Al	Unnamed Trib Brazos River	Irr	884	818	53	1,499		4/9/1985	BRR70	No	
3194	Permit	Fort Bend	724000000	2925	Twinwood Corporation Nv And	Unnamed Trib Brazos River	Min	99,650		8889			9/1/1999	BRR70	Yes	SC
4601 A	Permit	Austin	724750000	2925	TEXAS WATER DEVELOPMENT BOARD	Allens Creek								BRR70	No	189181 AF Over 3-Yr Period To Fill Res
5665	Permit	Austin	734800000	4280A	Avme Brick Company	Brazos River	Irr	10		6			8/6/1985	BRR70	No	San Felipe Plant
5665	Permit	Waller	736500000	5665	PAUL WEINMAN	Brazos River	Other	1,894					6/21/2001	BRR70	Yes	Duck habitat
4354 A	Permit	Waller	73740000	4009A	ROBERT STARKS	Brazos River	Other	554		16			4/18/1983	BRR70	No	Duck habitat
5317	Adj.	Waller	73740000		Jean W. Epperson	Brazos River	Irr	136	57	27	415		5/17/1976	BRR70	No	
5317	Adj.	Waller	73740000		G.W. Hecker	Unnamed Trib Clear	Rec						7/28/1975	BRR70	No	
					Rolling Hills Property Owners Assn	Gladish	Rec							BRR70	No	

Use	Number	Am't (A/FY)
Min	1	99,650
Irr	3	12,010
Err	5	29,137
Mimming	0	0
Hydro	0	0
Nav	0	0
Rec	2	0
Other	2	2,448
Total	13	143,245

Table G-71  
Water Rights Upstream of Big Creek near Needville

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in A/FY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
															No	

Use	Number	Amt. (af/y)
Main	0	0
Irr	0	0
Mining	0	0
Hydro	0	0
Nav	0	0
Rec	0	0
Other	0	0
Total	0	0

Table G-72  
Water Rights Downstream of Big Creek near Needville and Upstream of Brazos River at Richmond and Upstream of Brazos River near Rosharon

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFY	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Include in Diversion Study?	Remarks
5272	Adj.	Fort Bend	213500000		Texas Parks & Wildlife Dept	Unimproved Trib Big	Res.	310		67	854		12/11/1978	BRRO72	No	
5115	Permit	Fort Bend	217000000	5115	Fort Bend County Drainage District	Big Ck	Other						12/18/1986	BRRO72	No	Hale Ranch Park
5335	Adj.	Fort Bend	230000000		Houston Lighting & Power Co.	Div	Ind	28,711	28,711	33,882	18,750		12/16/1955	BRRO72	Yes	Southers Lake
5324	Adj.	Fort Bend	235000000		Mary D Myers	Unimproved Tribs Big	Res.				500		7/11/1955	BRRO72	No	Lake Paw Paw
5606	Permit	Fort Bend	238000000	5606	City of Rosebaurg	Stelbourne Creek	Res.						2/24/1998	BRRO72	No	
5606	Permit	Fort Bend	238000000	5606	City of Rosebaurg	Stelbourne Creek	Res.	18		1			2/24/1998	BRRO72	No	Div Pt To Maint Res + One Time Div.3
5606	Permit	Fort Bend	238000000	5606	City of Rosebaurg	Stelbourne Creek	Other						2/24/1998	BRRO72	No	Wetlands Habitat & Floodflow Detention
5322	Adj.	Brazoria	230000000		Beverly T McDonald Et Al	Brazos River	Irr	112	56	67	550		3/30/1965	BRRO72	Yes	
5322	B	Fort Bend	235000000		Chocolate Bayou Water Company	Brazos River	Irr	145,000	41,200	9,000	864		2/8/1929	BRRO72	Yes	
5166	Adj.	Fort Bend	390000000		Chocolate Bayou Water Company	Brazos River	Ind	10,000		0			2/8/1929	BRRO72	No	Excess Flows
5167	Adj.	Fort Bend	395000000		Brazos River Authority	Brazos River	Min			0				BRRO72	No	3000 transbasin to SIB
5167	Adj.	Fort Bend	395000000		Brazos River Authority	Brazos River	Ind	99,932		6,850				BRRO72	No	170000 transbasin to SIB
5168	Adj.	Fort Bend	400000000		Gulf Coast (Galveston County) Water Auth	Brazos River	Min						1/15/1926	BRRO72	Yes	
5168	Adj.	Fort Bend	400000000		Gulf Coast (Galveston County) Water Auth	Brazos River	Ind						1/15/1926	BRRO72	No	
5168	Adj.	Fort Bend	400000000		Gulf Coast (Galveston County) Water Auth	Brazos River	Irr						3/17/1947	BRRO72	No	
5168	Adj.	Fort Bend	400000000		Gulf Coast (Galveston County) Water Auth	Brazos River	Other				7,308			BRRO72	No	
5168	Adj.	Galveston	400000000		Gulf Coast (Galveston County) Water Auth	Brazos River	Ind						4/29/1999	BRRO72	No	
5171	Adj.	Fort Bend	420000000		Gulf Coast Water Authority	Brazos River	Min	75,000					2/1/1939	BRRO72	Yes	
5171	Adj.	Fort Bend	420000000		Gulf Coast Water Authority	Brazos River	Ind						2/1/1939	BRRO72	No	
5171	Adj.	Fort Bend	420000000		Gulf Coast Water Authority	Brazos River	Irr	50,000	25,000	6,000			12/12/1980	BRRO72	Yes	
5171	Adj.	Fort Bend	420000000		Gulf Coast Water Authority	Brazos River	Min						2/1/1939	BRRO72	No	
5172	Permit	Fort Bend	470000000	5552	Ed Ashtat Company Inc	Brazos River	Min	2,300		11	8		3/16/1958	BRRO72	Yes	
5172	Permit	Fort Bend	470000000	5172	Fort Bend County Levee ID No 11	Waffle Branch	Other						3/16/1958	BRRO72	No	
5110	Permit	Fort Bend	477000000	5110	Fort Bend County Levee ID No 11	M Brazos	Res.				354		11/18/1986	BRRO72	No	
5567	Permit	Fort Bend	478000000	5567	Sand Supply Inc	Brazos River	Ind	2,100	252	9			1/29/1997	BRRO72	No	Only 12% consumptive

Use	Number	Amt (df/v)
Min	4	174,932
Ind	7	40,811
Irr	4	195,112
Mining	2	2,300
Hydro	0	0
Nav	0	0
Res	6	328
Other	4	0
Total	27	413,483

Table G-73  
Water Rights Downstream of Brazos River near Rossharon and Upstream of Mouth

Water Right Number	Type	County	River Order	Permit	Owner Name	Stream	Use	Authorized Diversion in AFS	Irrigated Acres (Irr) or Consumption (Irr)	Maximum Diversion Rate in tenths cfs	Impoundment in AF	Expiration Date	Priority Date	Primary Control Point	Exclude in Drought Study?	Remarks
5332 A	Adj.	Brazoria	20000000		United States Dept Of Energy	Brazos River	Min	52,000		910			6/25/1979	BRGM73	No	Brown Mound Spr. Site Near Freepart
5332 B	Adj.	Brazoria	20000000		United States Dept Of Energy	Brazos River	Min	4					4/27/1981	BRGM73	Yes	Brown Mound Spr. Site Near Freepart
5332 C	Adj.	Brazoria	20000000		United States Dept Of Energy	Brazos River	Min	135					6/25/1979	BRGM73	No	Brown Mound Spr. Site Near Freepart
5328 A	Adj.	Brazoria	40000000		Dow Chemical Company	Brazos River	Incl	85,000		6,300	21,973		2/28/1929	BRGM73	Yes	Brazoria Res-Off-Channel
5328 B	Adj.	Brazoria	40000000		Dow Chemical Company	Brazos River	Incl	150,000		6,300	10,200		2/14/1942	BRGM73	Yes	Harris Res-Off-Channel
5328 C	Adj.	Brazoria	40000000		Dow Chemical Company	Brazos River	Incl	7,500		3,400	600		2/14/1942	BRGM73	No	
5328 D	Adj.	Brazoria	40000000		Dow Chemical Company	Brazos River	Incl	58,175		7,400	30		4/3/1951	BRGM73	Yes	
5328 E	Adj.	Brazoria	40000000		Dow Chemical Company	Brazos River	Min	3,156					3/8/1976	BRGM73	Yes	
5328 F	Adj.	Brazoria	40000000		Dow Chemical Company	Brazos River	Min	20		156			2/14/1942	BRGM73	No	
5328 G	Adj.	Brazoria	40000000		Dow Chemical Company	Brazos River	Irr	1,800					2/14/1942	BRGM73	Yes	
5328 H	Adj.	Brazoria	40000000		Dow Chemical Company	Brazos River	Rec	25					1/14/1988	BRGM73	No	
5366	Adj.	Brazoria	41000000		Brazosport Water Authority	Brazos River	Min	45,000					4/4/1989	BRGM73	Yes	
5330	Adj.	Brazoria	15000000		Troy Lake Incorporated	Brazos River	Rec	14					7/31/1956	BRGM73	No	
5331	Adj.	Brazoria	15000000		Dr. Frank L. G. Trustee	Brazos River	Irr	333	67	333	342		6/1/1954	BRGM73	No	
5332	Adj.	Brazoria	15000000		U T L Loh Trustee	Brazos River	Irr	333	333	333	2,000		6/7/1954	BRGM73	No	
5339	Adj.	Brazoria	15000000		U T L Loh Trustee	Brazos River	Irr	21	21				6/7/1954	BRGM73	No	
5329	Adj.	Brazoria	15000000		Reynold J. Pugh Et.Ux	Brazos River	Irr	13	13				6/7/1954	BRGM73	No	
5236	Claim	Brazoria	17900000		James Earl Hook	Brazos River	Irr	76	76				6/7/1954	BRGM73	No	
1549	Permit	Brazoria	18000000	1444	T.L. Smith Heirs	Manor Lake	Irr	2,151	3,118	27			8/28/1969	BRGM73	Yes	Eagle Nest Lake & Manor Lake
5492	Adj.	Brazoria	18000000		T.L. Smith Heirs	Eagle Nest Lake	Irr	4,000	2,000	0	18,000		1/15/1948	BRGM73	Yes	Eagle Nest Lake
5365	Adj.	Brazoria	18000000		T.L. Smith Revocable Trust Et Al	Unnamed Trlb. Of Yankers Ck	Rec	1,800	580	356	11,315		9/9/1993	BRGM73	Yes	Eagle Nest Lake
5365	Adj.	Brazoria	189150000		Cit Properties Inc	Unnamed Trlb. Brazos River	Rec	92		62			10/5/1970	BRGM73	No	Temecort Lake & Columbia Lake
4432 B	Permit	Brazoria	189210000	4105B	Great Lakes Inc	Unnamed Trlb. Brazos River	Rec	3,000		111	3,400		1/31/1984	BRGM73	No	Temecort Lake & Columbia Lake
5327	Adj.	Brazoria	213000000		Brazos River Club	Brazos River	Rec	746	756	170			4/24/1940	BRGM73	Yes	Rainey State Farm

Use	Number	Am't (cfs)
Min	4	30,156
Incl	6	300,810
Irr	10	10,997
Mining	1	52,000
Hydro	0	0
Nav	0	0
Rec	6	3,323
Other	0	0
Total	27	415,290



## **Appendix H**

Average Annual Diversions and Return Flows by Permit for Full Naturalization Gages



**Appendix H – Average Annual Diversions and Return Flows by Permit for Full Naturalization Gages**

The tables in this appendix contain the average annual diversions and return flows for the gages selected for full naturalization, as described in Section 6.0 of this report. The average historical amounts are for the years 1998 through 2015, the period of extended flows. Tables H-1 through H-4 show the type of use, authorized diversion amount, average annual amount used for full naturalization and average annual amount used for approximate naturalization, for each water right in the watershed. Tables H-5 through H-8 contain the permitted discharge, average annual return flows used for full naturalization and average annual return flows used for approximate naturalization for each wastewater discharger considered in this study.



**Table H-1: Average Annual Diversions at NBHI35- N Bosque at Hico**  
 (values in acre-feet per year)

WR Number	Type of Use	Authorized Diversion	Fully Naturalized	Approximate Naturalized
2260	Irrigation	56	10	0
2259	Irrigation	112	7	0
2258	Irrigation	32	0	0
2254	Irrigation	65	0	0
2255	Irrigation	47.65	0	0
2255	Irrigation	26.83	0	0
2255	Irrigation	84.52	0	0
5051 A	Irrigation	606	1	0
2252	Irrigation	30	0	0
2251	Irrigation	28	0	0
2250	Irrigation	4	0	0
2249	Irrigation	19	0	0
2248	Irrigation	62	6	0
2247	Irrigation	35	0	0
2247 A	Irrigation	50	7	0
2246	Irrigation	152	0	0
2245	Irrigation	20	0	0
2244	Irrigation	27	0	0
2243	Irrigation	90	0	0
2242	Irrigation	40	0	0
2241	Irrigation	33	0	0
2240	Irrigation	137	9	0
2239	Irrigation	32	0	0
2238	Irrigation	106.02	45	0
2238	Irrigation	89.98	33	0
2237	Irrigation	90	0	0
2236	Irrigation	24	0	0
2235	Irrigation	8	1	0
4226	Irrigation	225	3	0
2234 A	Irrigation	125	0	0
2233	Irrigation	18	0	0
5557	Irrigation	100	5	0
2229	Irrigation	44	0	0
2226	Irrigation	61	0	0
2228	Irrigation	78	0	0
2227	Irrigation	60	0	0

**Table H-1 (Continued)**

<b>WR Number</b>	<b>Type of Use</b>	<b>Authorized Diversion</b>	<b>Fully Naturalized</b>	<b>Approximate Naturalized</b>
2231	Irrigation	42	0	0
2232	Irrigation	16	0	0
2230	Irrigation	76	0	0
2225	Irrigation	34	0	0
2223	Irrigation		19	0
5052 A	Irrigation	80	5	0
2222	Irrigation	110	0	0
2221	Irrigation	18	0	0
5007 A	Irrigation	38	0	0
2220	Irrigation	12	1	0
2219	Irrigation	13	0	0
2215	Irrigation	54	0	0
2216	Irrigation	54	0	0
2214	Irrigation	31	0	0
2212	Irrigation	2	0	0
4221 A	Irrigation	150	0	0
2211	Irrigation	85	0	0
2210	Irrigation	92	0	0
2209	Irrigation	3	0	0
2208 B	Irrigation	40	0	0
2207	Irrigation	23	0	0
2206	Irrigation	60	1	0
2205	Irrigation	150	4	0
2201	Irrigation	197	0	0
2218 A	Irrigation	100	0	0
2217 A	Irrigation	100	0	0

**Table H-2: Average Annual Diversions at NBCL36 – N Bosque nr Clifton**  
(values in acre-feet per year)

WR Number	Type of Use	Authorized Diversion	Fully Naturalized	Approximate Naturalized
2261	Irrigation	8	0	0
2262	Irrigation	30	0	0
2263	Irrigation	65	0	0
2264	Irrigation	45	0	0
2265	Irrigation	268	10	0
2266	Irrigation	18	0	0
2267	Irrigation	1	0	0
2267	Irrigation	1	0	0
2268	Irrigation	11	0	0
2269	Irrigation	4	0	0
2270	Irrigation	24	0	0
2271	Irrigation	15	0	0
2271	Irrigation	0	0	0
2272	Irrigation	42	0	0
2273	Irrigation	98	0	0
2274	Irrigation	81	9	0
2275	Irrigation	155	4	0
2276	Irrigation	90	56	0
2277	Irrigation	10	1	0
2278	Irrigation	114	0	0
2279	Irrigation	9	2	0
2280	Irrigation	69	14	0
2281B	Irrigation	7	6	0
2281B	Irrigation	100	0	0
2282	Irrigation	253	78	0
2283	Irrigation	8	0	0
2284	Irrigation	25	0	0
2285	Irrigation	35	0	0
2287	Irrigation	7	0	0
2288	Irrigation	3	0	0
2289	Recreation	0	0	0
2290	Irrigation	16	0	0
2290	Irrigation	29	0	0
2291	Municipal	607	37	0
4079A	Irrigation	230	4	0
5411	Irrigation	20	0	0
5551	Municipal	2004	366	366
5899	Municipal	1339	18	18

**Table H-3: Average Annual Diversions at LAKE50 – Lampasas at Kempner**  
 (values in acre-feet per year)

WR Number	Type of Use	Authorized Diversion	Fully Naturalized	Approximate Naturalized
2954	Other	170	0	0
2955	Irrigation	150	0	0
2957	Irrigation	65	14	0
2958	Irrigation	310	0	0
2959	Irrigation	23	0	0
2960	Irrigation	46	0	0
2961	Irrigation	354	0	0
2962	Irrigation	28	0	0
2963	Irrigation	41	0	0
2963	Irrigation	7	0	0
2964	Irrigation	1	0	0
2965	Irrigation	53	1	0
2966	Irrigation	31	0	0
2967	Irrigation	5	0	0
2968	Recreation	0	0	0
2969	Irrigation	8	0	0
2970	Irrigation	3	0	0
2970	Irrigation	51	0	0
2970	Irrigation	6	4	0
2971 A	Municipal	3760	24	24
2972	Recreation	0	13	0
2972	Irrigation	228	113	0
2973	Irrigation	6	0	0
2974	Irrigation	144	0	0
2975	Irrigation	46	7	0
2976	Industrial	48	1	0
2977	Irrigation	42	0	0
2978	Irrigation	54	0	0
2979	Irrigation	95	0	0
2980	Irrigation	1	0	0
2981	Irrigation	6	1	0
2981	Irrigation	45	0	0
2981	Irrigation	6	1	0
2982	Irrigation	6	4	0
2983	Irrigation	7	2	0
2984	Irrigation	18	5	0
2985	Irrigation	18	0	0
2986	Irrigation	47	0	0
2987	Irrigation	2	0	0

**Table H-4: Average Annual Diversions at NAGR64 – Navasota above Groesbeck**  
(values in acre-feet per year)

WR Number	Type of Use	Authorized Diversion	Fully Naturalized	Approximate Naturalized
5287	Municipal	2887	61	61
5287	Industrial	65	0	0
5288	Irrigation	5	0	0
5288	Recreation	0	0	0
5289	Municipal	2500	696	696

**Table H-5: Average Annual Return Flows at NBHI35 – N Bosque at Hico**  
(values in MGD)

Permit Number	Permitted Discharge	Fully Naturalized	Approximate Naturalized
10188.001	0.2	0.10	0.00
10290.001	3	1.34	1.34

**Table H-6: Average Annual Return Flows at NBCL36 – N Bosque nr Clifton**  
(values in MGD)

Permit Number	Permitted Discharge	Fully Naturalized	Approximate Naturalized
10043.001	0.65	0.31	0.00
10113.002	0.45	0.21	0.00

**Table H-7: Average Annual Return Flows at LAKE50 – Lampasas at Kempner**  
(values in MGD)

Permit Number	Permitted Discharge	Fully Naturalized	Approximate Naturalized
10205.002	1.5	0.46	0

**Table H-8: Average Annual Return Flows at NAGR64 – Navasota above Groesbeck**  
(values in MGD)

Permit Number	Permitted Discharge	Fully Naturalized	Approximate Naturalized
10717.001	0.45	0.16	0.00



## **Appendix J**

TCEQ Staff Comments on Naturalized Flow Report



The following comments from TCEQ staff were addressed in the July 2017 version of the Naturalized Flow Report. All comments were accepted and these corrections have been incorporated into that version of the Report.

### Comments on the Naturalized Flow Report:

1. Revise Table E-4 to Table E-3 in *Upstream Reservoir Evaporation* (Page 10).
2. Correct the control point ID BOWA41 to BOWA40 (Page 23).
3. Revise September 1991 for YCSO62 (Yegua Creek near Somerville) in the report to October 1991 as highlighted and filled in Nat-YCSO62.xlsb (Page 24).
4. Revise Table 3-1 as shown below:
  - a. Correct BRGR31 to BRGR30 in the fill relationships used for Control Points PPSA28, BRDE29, PAGR31, and NRBL32 (Page 25); and
  - b. Revise the missing data period as shown below (Pages 25 - 26). The missing data periods in the report are different from excel files for the Control Points:

Control Point	Data Missing Period		Page
	Report	Excel Files	
NBHI35	1/99 to 12/ <b>98</b>	1/99 to 12/ <b>15</b>	25
BOWA40	<b>6</b> /85 to 9/07	<b>10</b> /85 to 9/07	26
LEHM46	1/98 to <b>7</b> /07	1/98 to <b>9</b> /07	26
YCSO62	<b>9</b> /91 - 9/08	<b>10</b> /91 - 9/08	26

5. Change NAGR66 for USGS 08110325 to NAGR64 (Page 37).
6. Revise the description of comparison between fully and approximately naturalized flows in 6.2.3 Navasota River above Groesbeck (Page 43). The fully naturalized annual flows are greater than the approximate naturalized flows except for 2003 as listed in Table 6-6.