



March 28, 2008
AVO 22650

Texas Water Development Board
P.O. Box 13231
Austin, Texas 78711-3231

Attention: Mr. Gilbert R. Ward, CPG, Hydrologist

RE: ***Wharton County, Texas
Flood Mitigation Plan***

Dear Mr. Ward:

On behalf of Wharton County and the cities of East Bernard, El Campo and Wharton and the Wharton County Flood Mitigation Planning Committee, Halff Associates, Inc. is submitting five (5) copies and one (1) CD of the Wharton County Flood Mitigation Plan that has been formally adopted by Wharton County Commissioners Court and the City Councils of East Bernard, El Campo and Wharton.

Building on the planning efforts funded by TWDB, Wharton County and participating communities have initiated several of the flood mitigation actions identified in the enclosed Flood Mitigation Plan:

- Wharton County, the City of El Campo and LCRA have installed additional Elevation Reference Marks (ERM's) in developing areas in Wharton County where no FEMA or NGS marks are located.
- With TWDB Flood Protection Planning Grant funding, Wharton County has initiated the county-wide Drainage Master Plan and the San Bernard River Watershed Study.
- The City of El Campo has initiated a Drainage Study to compliment the Wharton County Drainage Master Plan.
- Wharton County and Matagorda County have begun a coordinated effort to address drainage problems on watersheds shared by the two counties.
- The TCRFC has initiated planning efforts for the 5-year update of the TCRFC all-hazards Mitigation Plan that includes Wharton County. The Wharton County Flood Mitigation Actions identified in the attached Plan will be incorporated into the TCRFC all-hazards Mitigation Plan.
- The City of Wharton has submitted an application to enroll in FEMA's Community Rating System (CRS) Program.
- TCRFC and LCRA have conducted floodplain management training hosted by Wharton County.

Wharton County and the cities of East Bernard, El Campo and Wharton are very interested in receiving approval of the Flood Mitigation Plan from the Texas Water Development Board and FEMA so the County and participating communities will be eligible for FMA Program funding for future projects to minimize or reduce flood hazards within the County.

On behalf of the Wharton County Flood Mitigation Planning Committee we want to thank the Texas Water Development Board for assisting us with this important planning initiative.



If you should have any questions concerning this request, please contact John Ivey, PE, CFM, at Halff Associates, Inc. at (817) 847-1422 or Monica Martin, CFM, Director Wharton County Permit and Inspection Department, at (979) 532-8587.

Sincerely,
HALFF ASSOCIATES, INC.

A handwritten signature in black ink, appearing to read "John P. Ivey". The signature is fluid and cursive, with the first name "John" being particularly prominent.

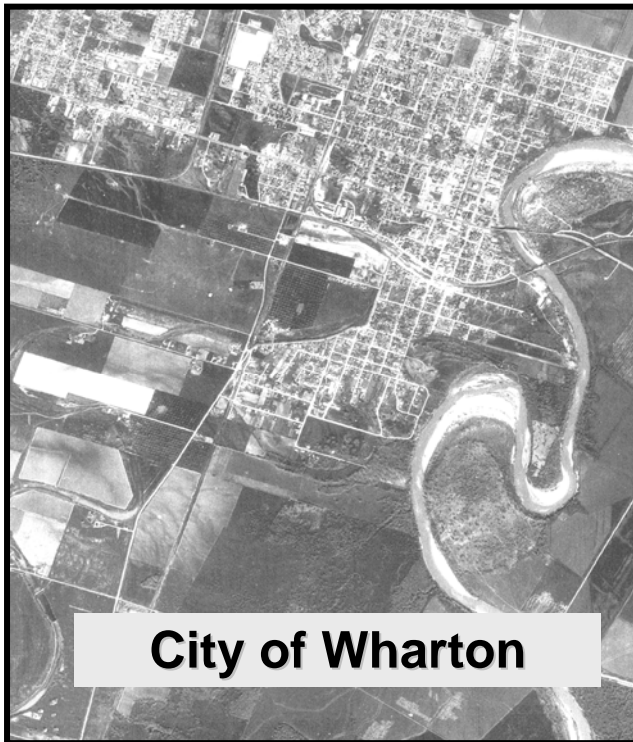
John P. Ivey, PE, CFM
Vice President
Enc.

Cc: Honorable John W. Murrile, Wharton County Judge
Mickey Reynolds, Commissioner, Wharton County Precinct 1
D. C. "Chris" King, Commissioner, Wharton County Precinct 2
Philip Miller, Commissioner, Wharton County Precinct 3
Jimmy Kainer, Commissioner, Wharton County Precinct 4
Honorable Buck Boettcher, Mayor, City of East Bernard
Honorable Phillip Spenrath, Mayor, City of El Campo
Honorable Bryce D. Kocian, Mayor, City of Wharton
Monica Martin, CFM, Director Wharton County Permit and Inspection Department
Wharton County Flood Mitigation Plan Committee

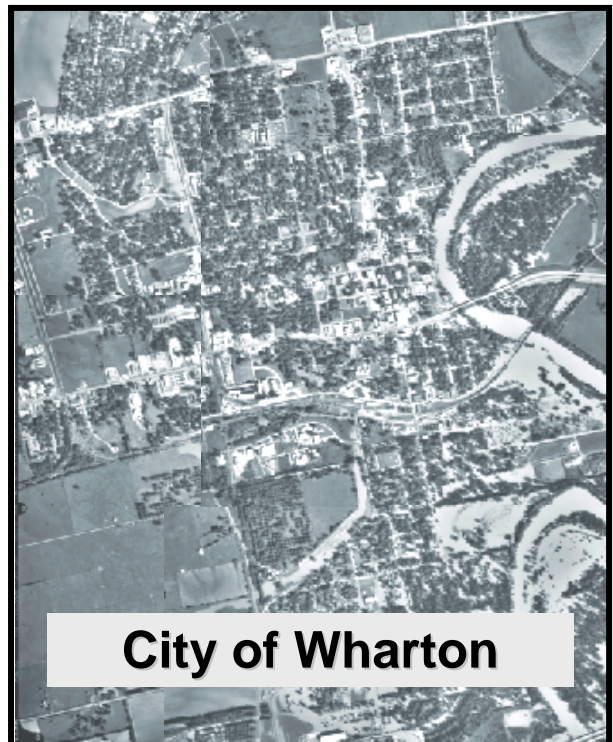
WHARTON COUNTY FLOOD MITIGATION PLAN

WHARTON COUNTY
CITY OF EAST BERNARD
CITY OF EL CAMPO
CITY OF WHARTON

PREPARED BY
WHARTON COUNTY FLOOD MITIGATION PLANNING COMMITTEE



1964



1998

HALFF ASSOCIATES, INC.
March 2008

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- Attachment C – Resolutions adopting the Plan; Questionnaire and News Articles
- Attachment D - Wharton County Flood Insurance Rate Maps

EXECUTIVE SUMMARY

Utilizing Flood Mitigation Assistance Program (FMA) funding from the Texas Water Development Board (TWDB), Wharton County committed to developing a Flood Mitigation Plan to address flooding concerns within the community. The County selected Halff Associates, Inc., as a planning consultant to assist in the preparation of the Flood Mitigation Plan.

Wharton County is vulnerable to several natural and technological hazards that have been addressed in the Texas Colorado River Floodplain Coalition All Hazards Mitigation Plan prepared with Hazard Mitigation Grant Program (HMGP) funding administered by the Governors Division of Emergency Management (TxDEM). The Wharton County All Hazards Plan was prepared to meet the requirements of the Disaster Mitigation Act of 2000 and to qualify Wharton County and all participating communities that include the cities of East Bernard, El Campo and Wharton, for future Hazard Mitigation Grant Program (HMGP) funding. In order to address the specific flood hazards faced, Wharton County has also developed a Flood Mitigation Plan to satisfy the requirements of both the Flood Mitigation Assistance Program as administered through the TWDB and the Community Rating System (CRS) program as administered through the Federal Emergency Management Agency (FEMA).

Mitigation is characterized as a long-term, ongoing process. This plan seeks to address all flood hazards within Wharton County. It provides general guidance related to various flood hazards within the county and an overview of numerous mitigation efforts undertaken by Wharton County, the TCRFC and the various communities in Wharton County. In addition, the plan identifies potential problematic conditions and outlines corrective actions that the County will undertake to remedy identified problems. Planning and implementation actions will be identified that are applicable to both pre-disaster and post disaster situations.

A Flood Mitigation Plan is more than just another planning document. It is a dynamic record of the county's recognition of its vulnerability to flood hazards, determination of the risks associated with flood effects, and commitment to reducing the long-term consequence of flooding. The Flood Mitigation Plan outlines the mitigation goals within the county, identifies risk reduction strategies for hazards that threaten the area, and discusses the ongoing risk reduction activities accomplished within the jurisdiction.

The Wharton County Flood Mitigation Plan was developed by following the ten (10) step planning process outlined in the FEMA CRS Coordinators Manual as Floodplain Management Planning Criteria; the process was further expanded to include FMA planning requirements. TWDB and FEMA approval of the Wharton County Flood Mitigation Plan qualifies Wharton County and participating communities within the county to receive federal funding through the FMA program for acquisition, relocation, and/or elevation of flood damaged properties.

Wharton County participates in the National Flood Insurance Program (NFIP) which allows flood insurance to be available throughout the unincorporated areas of the county. As a product of the Flood Mitigation Plan, Wharton County has evaluated FEMA's Community Rating System (CRS) Program. Classification as a CRS Community recognizes the Wharton County

and other participating community's Floodplain Management Program as exceeding the basic requirements for participation in the NFIP. Each community that enters FEMA's CRS Program will receive reduced flood insurance premiums within the community as follows:

CRS Class 9 - All flood insurance policies within the participating community receive a minimum of 5% reduction in annual premiums.

CRS Class 8 or lower - All flood insurance policies for properties located within the designated Special Flood Hazard Area (Zones A1-A30, AE, A, AO, AH, V1-30, VE, and V) will receive an additional 5% reduction in annual premiums for each rating classification better than CRS 9.

A Flood Mitigation Planning Committee was formed consisting of Wharton County employees, local citizens, and property owners. To assist in the planning effort Wharton County selected Halff Associates, Inc. to act as the planning consultant and coordinate with the Texas Water Development Board and "other agencies" during the preparation of the Plan. The Wharton County Flood Mitigation Planning Committee members are as follows:

Monica Martin	Wharton Co. and City of East Bernard
Andy Kirkland	Wharton Co.
Andrew Waligura	City of El Campo
John Steelman	City of El Campo
Andres Garza, Jr.	City of Wharton
Prudencio V. Arriaga, Sr.	City of Wharton
James Cooper	City of Wharton
Roy Sedwick	LCRA and TCRFC
Heidi Carlin	LCRA and TCRFC
Gilbert Ward	Texas Water Development Board
Martha Juch	Civil Tech Engineering, Inc.
John Ivey	Halff Associates, Inc.
Wes Birdwell	Halff Associates, Inc.

The Flood Mitigation Planning Committee met monthly from May to December 2006 to prepare the Wharton County Flood Mitigation Plan. Each committee member provided input and guidance in plan development. A Flood Mitigation Plan questionnaire was prepared and published in 3 local newspapers along with a public notice in an effort to increase public involvement regarding floodplain management planning. On November 14, 2007 a notice was placed in the Wharton Newspaper announcing a public meeting to discuss the Wharton County Flood Mitigation Plan. The public meeting was held November 26, 2007 at the Wharton County Courthouse, 309 East Milam, Wharton, Texas.

During the planning process, copies of the draft plan were submitted to outside organizations and "Other Agencies" for comment. The organizations contacted included the following: Bayou Preservation Association (BPA), Federal Emergency Management Agency (FEMA), Galveston Bay Foundation, Houston-Galveston Area Council (HGAC), Insurance Services Office (ISO),

Society of American Military Engineers (SAME), Lower Colorado River Authority, Texas Colorado River Floodplain Coalition, Texas Department of Transportation (TxDOT), Governor's Division of Emergency Management (TxDEM), Texas General Land Office (GLO), Texas Parks and Wildlife Department (TPWD), Texas Water Development Board (TWDB), U.S. Army Corps of Engineers (USACE – Fort Worth and Galveston District Offices), Austin County, Brazoria County, Colorado County, Fort Bend County, Jackson County, Matagorda County, City of East Bernard, City of El Campo, and City of Wharton. Of the agencies and communities contacted, comments on the plan were received from:

Texas Commission on Environmental Quality
Texas Parks and Wildlife Department
Houston Galveston Area Council
Governor's Division of Emergency Management
Bayou Preservation Association
Lower Colorado River Authority
Texas Colorado River Floodplain Coalition

Throughout the plan development process, the Committee reviewed the TCRFC "All Hazards" Mitigation Plan and identified numerous hazards that Wharton County may encounter. Although flooding remains the primary concern and focus of the plan, each hazard was briefly discussed within the planning document. To clarify the extent to which the community is subject to flood events, the plan identifies the following: number and types of buildings located within the floodplain, the number of flood insurance policies held within the community, and the number of flood losses and repetitive loss properties within Wharton County. The procedures for warning and evacuation during emergency events are also included in the plan. Critical facilities located within the community and their proximity to the floodplain in discussed. Finally, specific mitigation projects already completed within the county are recognized.

After assessing the hazards and reviewing potential alternatives, the Flood Mitigation Planning Committee established several flood mitigation goals for Wharton County. Current mitigation activities, CRS Program activities, and other Public Works, Parks Department and Emergency Management activities completed on an annual basis were identified. Documentation of each of the activities was included in the plan to receive appropriate CRS planning credits. Following identification of goals and activities, the Committee recommended mitigation actions to be undertaken or continued as part of the flood mitigation planning effort.

growth rate in the Houston Metropolitan Area is one of the fastest in the nation. Such rapid growth places enormous pressure on Wharton County and the IH-69 corridor.

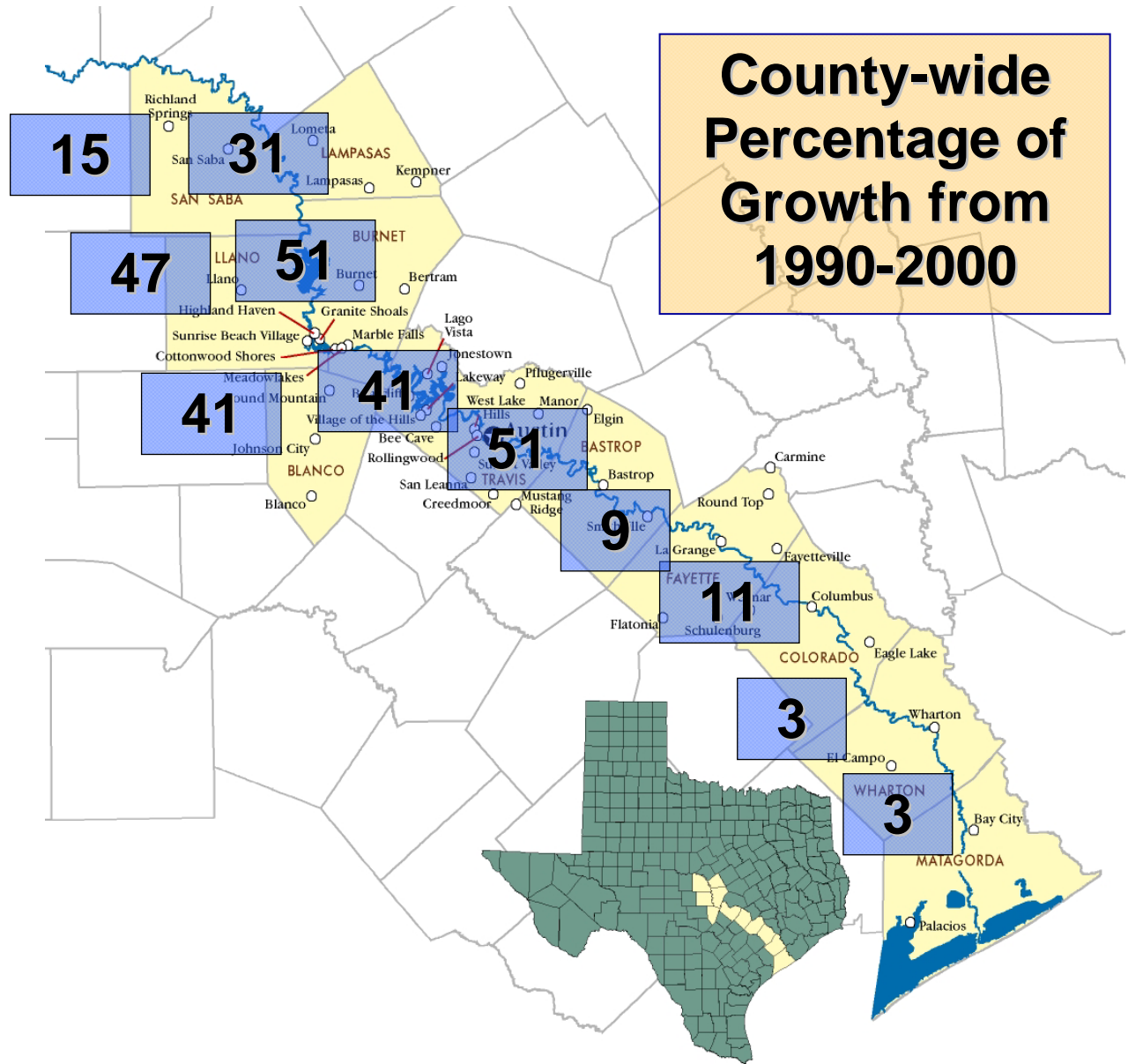


Figure 2 : Population Growth 1990 - 2000

Table 1: Population Trends Along IH-69 Corridor

	County	Population 1990	Population 2000	Increase	% Increase
	Harris County (total)	2,818,199	3,400,578	582,379	20.66%
	Fort Bend County (total)	225,421	354,452	129,031	57.24%
	Wharton County (total)	39,955	41,188	1,233	3.09%
	Jackson County (total)	13,039	14,391	1,352	10.37%
	Victoria County (total)	74,361	84,088	9,727	13.08%
	Total 5 Counties	3,170,975	3,894,697	723,722	22.82%

Note: County Population includes all incorporated communities.

Data Source: U.S. Census Bureau

Race/ethnicity breakdowns for Wharton County as compared to the State of Texas totals, as per the 2006-2007 Texas Almanac, are as follows:

<u>Ethnicity</u>	<u>Wharton County</u>	<u>Texas</u>
Anglo	53.29%	49.0%
Black	14.84%	11.0%
Hispanic	31.29%	36.0%
Other	0.58%	4.0%

Based on information available on the Texas Department of Economic Development website, www.txed.state.tx.us and the Texas Almanac 2006/2007 the unemployment rate for communities in Wharton County is as follows:

Wharton County 6.1% unemployment

Based on information provided by community representatives on the Wharton County Mitigation Planning Committee, research of state and federal agency websites there are no State or Federal designations related to minority or economically disadvantaged populations in Wharton County or any community within Wharton County. The Wharton County minority populations are slightly higher than the Texas state average. The City of Wharton and Wharton County College have executed Economic Development Administration (EDA) funded projects in Wharton County.

Wharton County elevations range from 50 feet to 150 feet. In addition to coastal storms the area is vulnerable to several natural and technological hazards. In order to address the hazards faced, Wharton County in cooperation with the Texas Colorado River Floodplain Coalition prepared the TCRFC “All Hazards” Mitigation Plan. Wharton County has also prepared an Emergency Management Plan composed of a basic plan and functional annexes to support the basic Plan. The assignments of responsibility for content and update to the functional annexes are as follows:

<u>Annex</u>	<u>Title</u>	<u>Responsibility</u>
A	Warning	Emergency Management Coordinator
B	Communications	Emergency Management Coordinator
C	Shelter	Emergency Management Coordinator
D	Radiological	Fire Marshall
E	Evacuation	Emergency Management Coordinator
F	Fire and Rescue	Fire Marshall
G	Law Enforcement	County Sheriff
H	Health and Medical	Health Director
I	Emergency Public Information	Emergency Management Coordinator
J	Damage Assessment	Emergency Management Coordinator
K	Public Works / Engineering	County Commissioners
L	Utilities	County Commissioners
M	Resource Management	Emergency Management Coordinator
N	EOC Direction and Control	Emergency Management Coordinator
O	Human Services	Emergency Management Coordinator
P	Hazard Mitigation	Emergency Management Coordinator
Q	Hazardous Materials	Fire Marshall
R	Search and Rescue	County Sheriff
S	Transportation	Emergency Management Coordinator
T	Donations Management	Emergency Management Coordinator
U	Legal	County Attorney
V	Terrorism	County Sheriff

The Wharton County Flood Mitigation Plan is a “stand alone” plan but draws from and references many of the annexes found in both the Wharton County *Emergency Management Plan and the TCRFC “All Hazards” Mitigation Plan..*

The most frequent disaster events that have impacted the Texas Gulf Coast Area are widespread hurricane and flooding events resulting from tropical storms. Within the last fifteen (15) years, Wharton County, has received numerous flood events including four (4) Presidential Disaster Declarations:

- 12/26/1991 – FEMA 930-DR
- 10/18/1994 – FEMA 1041-DR East Texas Flood
- 12/29/1996 – Lane City Flood
- 4/4/1997 – El Campo Flood
- 4/11/1997 – County-wide Flooding
- 10/13/1997 - County-wide Flooding
- 10/6/1998 – Wharton Flood
- 10/21/1998 – FEMA 1257 – DR (43 Texas counties)
- 11/12-14/1998 - County-wide Flooding
- 8/30-9/1/2001 - County-wide Flooding
- 7/13-7/15/2002 - County-wide Flooding
- 9/26/2002 – FEMA 1434 – DR Tropical Storm Fay

10/28/2002 – Wharton Flood
11/17/2003 – Wharton Flood
6/23-6/24/2004 - Wharton Flood
11/21-11/22/2004 - County-wide Flooding
7/8/2006 - County-wide Flooding

The National Climatic Data Center recorded 24 flood events in Wharton County from 10/18/1994 to 09/30/2006 with \$2.595M in property damages and \$50,000 in crop damage. (Source: www.ncdc.noaa.gov)



Figure 3: Wharton, Texas Flooding October 1998

In addition to flooding from coastal storms, natural hazards such as severe weather, extreme temperature variations, and winter weather pose risk to Wharton County. Wharton County is located near the largest petrochemical centers and ports in the World, therefore, hazardous conditions may develop from hazardous material accidents, transportation accidents, terrorism or civil disorder. Through proper identification of hazards faced and assessment of the capability of the city to respond to those hazards, Wharton County plans to improve the overall disaster

preparedness within the community. By developing and implementing a Flood Mitigation Plan, in conjunction with emergency management planning, Wharton County will achieve this goal.

PURPOSE

Mitigation is characterized as a long-term, on-going process. This plan seeks to address flood hazards within Wharton County, including the cities of East Bernard, El Campo and Wharton. The Plan provides general guidance related to flood hazards within Wharton County and an overview of mitigation efforts undertaken by all communities in the County. In addition, the plan identifies potential problematic conditions and outlines corrective actions that the county will undertake to remedy the identified problems. Planning and implementation actions will be identified that are applicable to both pre-incident and post-incident situations.

The adverse impact of flood hazards can be directly affected by mitigation actions accomplished prior to the occurrence of an emergency situation. Effective post-event mitigation actions can also reduce the risk of repeat disasters. Therefore, mitigation planning and implementation activities are an on going process and integral part of the comprehensive emergency management program.

Reference Documents for this plan include:

- Lower Colorado River Flood Damage Evaluation Project (2003)
- Lower Colorado River Basin Map Master Plan (2003)
- Wharton County Flood Insurance Study dated April 5, 2006
- TCRFC All Hazards Mitigation Plan (2004)
- City of El Campo Drainage Plan
- Wharton County Capital Improvement Plan
- Wharton County Community Assistance Visit (CAV) Report (2001)
- Wharton County Digital Flood Insurance Rate Maps (April 2006)
- Wharton County Emergency Management Plan
- Wharton County Flood Damage Prevention Ordinance
- San Bernard Watershed Plan (initiated in 2006)
- Wharton County Master Drainage Plan (initiated 2006)
- Wharton County Repetitive Loss Plan (initiated in 2006)
- Wharton County Map Needs Assessment
- FEMA/NFIP flood insurance policy and claims records
- Hazard Mitigation Grant Projects in the City of Wharton
- National Weather Service Tropical Storm Allison Flood Report (2001)
- National Weather Service Storm Evacuation Map for the Wharton Co. Area
- TxDem/Texas A&M University Evacuation Study
- Wharton County 1939 Contour (1') Maps (WPA)
- Fort Bend County (2') LIDAR Mapping
- NRCS (SCS) 1960 Drainage Study

COMMUNITY SPECIFIC INFORMATION

GEOLOGY

Wharton County is located in Southeast Texas in an area described in the Physiographic Map of Texas as the “Gulf Coastal Plain”. Elevation ranges from 50 feet above sea level to 150 feet above sea level in this region. The area is classified as Gulf prairie with alluvial, black and sandy loam soils.

DESCRIPTION OF WHARTON COUNTY

Wharton County is a large agribusiness center located midway between Houston and Victoria with an estimated population of 41,594 based on the 2006-2007 Texas Almanac. Wharton County is ranked as the top rice-producing county in Texas but lies adjacent to the fourth largest city in the US.

TRANSPORTATION

The new Interstate Highway 69 Corridor bisects Wharton County from southwest to northeast and connects NAFTA traffic from Mexico to Houston. This alignment follows US Highway 59 which is one of the fastest developing areas in Texas.

The Houston William P. Hobby Airport and the George Bush Intercontinental Airport are located within seventy (70) miles east of the center of Wharton County.

Brazosport, a community of eight cities and home of a large deepwater port, lies 58 miles southeast of the center of Wharton County. The Houston Ship Channel and the Port of Houston lies 75 miles east of Wharton County. The Gulf Intercoastal Waterway parallels the southern boundary of Wharton County with numerous direct access points to shipping traffic.

ECONOMIC PROFILE

Wharton County is the top rice producing county in Texas with 130,000 acres of irrigated farmland. Oil, agribusiness, and a variety of manufacturing facilities are located throughout the County. The rapid expansion of the Houston metro area has extended through Fort Bend County and has penetrated Wharton County. The 2006/2007 Texas Almanac shows population growth from 2000 to 2004 along the US 59/IH 69 Corridor extending from Harris County/Houston through Fort Bend County to Wharton County as:

<u>County/City</u>	<u>Population Growth</u> <u>2000 - 2004</u>
Harris County	7.17%
City of Houston	4.08%
Fort Bend County	24.87%
Stafford	18.83%
Missouri City	19.28%
Sugarland	16.98%

Richmond	12.29%
Rosenberg	17.25%

Development is centered on US 59 also know as the new IH 69 Corridor.

CLIMATE

The climate of the area is sub-tropical. Mild winters and warm summer's best characterize the climate. The average summer temperature ranges from a high of 94°F to a low of 74°F. The average winter temperature ranges from a high of 62°F to a low of 42°F. The area receives an average number of two hundred ninety (290) days per year of sunshine. Average rainfall per year is forty-five (45) inches. Rainfall is abundant and evenly distributed throughout the year. Hurricane season, spanning from June to November, usually produces the heaviest rainfall events.

HISTORY OF FLOODING WITHIN WHARTON COUNTY

As described in the Wharton County Flood Insurance Study (FIS) dated November 7, 2001, revised April 5, 2006, and separate flood insurance studies published for the cities of El Campo and Wharton, the area is subject to intense local thunderstorms of short duration, general storms extending over periods of several days, and torrential rainfall associated with hurricanes and other tropical disturbances. Flooding results from stream overflow from the Colorado and San Bernard Rivers, Baughman Branch, Caney Creek, Tres Palacios Creek, Stage Stand Creek and Blue Creek.

Devastating floods have occurred in Wharton County in 1913, 1922, 1935, 1938, 1940 and 2002. No flood protection projects have been constructed in Wharton County. However, a number of large multiple-purpose reservoirs have been constructed on the Colorado River above Austin that provide a measure of flood protection to this area.



Figure 4: Flooding in the City of Wharton, Texas October 1998

The following are major tropical storm and hurricane events that have produced severe flooding and structural damage along the Texas Gulf Coast:

- September 16-20, 1854 – Hurricane destroyed Matagorda
- June 1-5, 1871
- June 8-10, 1871
- September 8-18, 1875
- August 19-24, 1879
- June 21-25, 1880
- June 13-15, 1886
- June 18-16, 1888
- July 4-6, 1888
- July 3-8, 1891
- October 2-7, 1895
- September 10-13, 1897
- September 20-28, 1898
- September 7-10, 1900, “Galveston Great Storm”
- July 21, 1909
- August 16-17, 1915
- September 14, 1919
- August 12-15, 1932
- July 21-27, 1933
- August 26 – September 1, 1934
- October 11-17, 1938
- September 19-25, 1940
- September 11-16, 1941 - Hurricane

- September 16-25, 1941 - Hurricane
- August 30, 1942 - Hurricane
- July 25-29, 1943
- August 24-29, 1945 - Hurricane
- August 15-27, 1947
- September 27 – October 26, 1949
- July 27, 1957 – Hurricane Audrey
- July 24-25, 1959 – Hurricane Debra
- September 11, 1961 – Hurricane Carla
- September 16, 1963 – Hurricane Cindy
- August 6, 1964 – Tropical Storm Abby
- September 20, 1967 – Hurricane Beulah
- August 2-5, 1970 – Hurricane Celia
- September 12-17, 1970 – Tropical Storm Felice
- September 10, 1971 – Hurricane Fern
- September 1-7, 1973 – Tropical Storm Delia
- July 25, 1979 – Tropical Storm Claudette
- August 30, 1979 – Tropical Storm Elena
- August 3-10, 1980 – Hurricane Allen
- September 4-7, 1980 – Tropical Storm Danielle
- August 15-18, 1983 – Hurricane Alicia
- June 23, 1986 – Hurricane Bonnie
- August 9-17, 1987
- June 24-July 1, 1989 – Tropical Storm Allison
- July 30-August 3, 1989 – Hurricane Chantal
- October 12-16, 1989 – Hurricane Jerry
- March 5, 1992 – Houston Area Flood
- October 15-20, 1994 - Southeast Texas Flood
- July 28-August 2, 1995 – Tropical Storm Dean
- August 21, 1998 - Tropical Storm Charley
- September 1998 – Tropical Storm Frances
- June 5-10, 2001 – Tropical Storm Allison
- September 5-7, 2002 – Tropical Storm Fay
- August 2005 – Hurricane Rita

1.0 HOW THIS PLAN WAS PREPARED (CRS ACTIVITY 511.1)

Wharton County has initiated a series of floodplain planning activities to provide better services to the people that live and work in the area. Capitalizing on the technical data available from the US Army Corps of Engineers' Lower Colorado River Flood Damage Elimination Study and FEMA's 2005-2006 Wharton County Flood Insurance Study and corresponding remapping effort, Wharton County applied for Texas Water Development Board (TWDB) Flood Protection Planning Grant and Loan to initiate a county-wide Drainage Master Plan and the San Bernard Watershed Study. In May 2006, Wharton County and the cities of east Bernard, El Campo and Wharton initiated a coordinated planning effort to combine the TWDB Flood Mitigation Assistance Plan with the Master Drainage Plan and San Bernard Watershed Study.

For preparation of the Wharton County Flood Mitigation Plan, the Mitigation Planning Committee selected FEMA's ten (10) step planning procedures outlined in the Community Rating System (CRS) Program Coordinators Handbook. The ten step planning process for the Wharton County Flood Mitigation Plan is as follows:

1. Organize to prepare the Plan (CRS Activity 511.1)
2. Involve the Public (CRS Activity 511.2)
3. Coordinate with other agencies (CRS Activity 511.3)
4. Assess the Hazard (CRS Activity 511.4)
5. Assess the Problem (CRS Activity 511.5)
6. Set goals (CRS Activity 511.6)
7. Review possible activities (CRS Activity 511.7)
8. Draft the Flood Mitigation Plan (CRS Activity 511.8)
9. Adopt the plan and submit to TWDB (CRS Activity 511.9)
10. Establish procedures to implement, evaluate, and revise the Plan (CRS Activity 511.10)

1.1 ORGANIZE TO PREPARE THE PLAN

In February 2006, the Wharton County Commissioners Court executed the Flood Mitigation Assistance (FMA) planning grant contract with the Texas Water Development Board and a consultant agreement with Halff Associates to assist with the planning effort. From February to May 2006, Wharton County coordinated with TWDB and Fort Bend, Brazoria, Colorado and Austin counties for a proposed San Bernard Watershed Study to be conducted as a companion project with the Wharton County Flood Mitigation Plan. In May 2006 the Wharton County Flood Mitigation Planning Committee was formed.

On June 26, 2006 the Wharton County Flood Mitigation Planning Committee held its first organizational meeting. The committee is composed of representatives from various County departments dealing with permitting, inspection, and emergency operations and the four Wharton County Precinct Commissioners. Participating communities in the planning effort include the cities of East Bernard, El Campo and Wharton. The committee also includes members representing the public. The committee is assigned to oversee the activities of a consultant Halff

Associates, Inc. hired by Wharton County to assist in preparation of the Flood Mitigation Plan. Committee members include:

Monica Martin	Wharton Co. and City of East Bernard
Andy Kirkland	Wharton Co.
Andrew Waligura	City of El Campo
John Steelman	City of El Campo
Andres Garza, Jr.	City of Wharton
Prudencio V. Arriaga, Sr.	City of Wharton
James Cooper	City of Wharton
Roy Sedwick	LCRA and TCRFC
Gilbert Ward	Texas Water Development Board
Martha Juch	Civil Tech Engineering, Inc.
John Ivey	Halff Associates, Inc.
Wes Birdwell	Halff Associates, Inc.

The Wharton County Flood Mitigation Planning Committee Chairman and “Planner in Charge”:

Monica Martin, CFM, Director
 Wharton County Permit and Inspection Department
 1017 N. Alabama
 Wharton, Texas 77488
 Voice (979) 532-8587 and FAX (979) 532-8947

1.2 FLOOD MITIGATION PLAN SCHEDULE OF PLANNING ACTIVITIES COMPLETED AND PLANNED (CRS ACTIVITY 511.1, 511.2, AND 511.3)

The overall schedule of plan activities for the development, implementation, evaluation and adoption of the Wharton County Flood Mitigation Plan following the ten (10) planning steps as described in CRS Activity 511.1 through 511.10:

The proposed work schedule and planning steps to be accomplished under this project include the following:

DATE	PROJECT ACTION
Sep 2002	Tropical Storm Fay causes significant flooding throughout Wharton and Brazoria Counties
July 14, 2004	FEMA approved the TCRFC Mitigation Plan that included Wharton County and the cities of El Campo and Wharton
September 2005	Wharton County submitted an application to TWDB for funding to prepare a Flood Mitigation Assistance Plan
February 2006	The TWDB approved the Wharton Co. FMA Plan application.
February 2006	Halff Associates, Inc. selected as consultant to assist in preparation of the plan.

DATE	PROJECT ACTION
April 5, 2006	Wharton County DFIRM's effective date
May 23-24, 2006	TxDem Hurricane Conference, Beaumont, Texas
June 1, 2006	Brazoria County hosted "The Perfect Storm", hurricane preparedness mini-conference at the Lake Jackson Civic Center.
June 26, 2006	Initial meeting of the Flood Mitigation Planning Committee. Organize to prepare the Plan (511.1)
July 25, 2006	Flood Mitigation Planning Committee Meeting #2 A. Recommendations on methods to involve the Public (511.2) 1. Documents will be prepared for future Commissioners Court Meetings to involve the public in the planning process and to establish a method for the public to provide input into the planning process. 2. A Floodplain Management Plan Questionnaire was prepared for publication in local newspapers. B. Coordination with other agencies (511.3) Wharton County initiated efforts to take advantage of coordination meetings held with Texas Colorado River Floodplain Coalition, the Lower Colorado River Authority, Houston Galveston Area Council and others.
July 24, 2006	Wharton County Commissioners Court issued a work order to Halff Associates to initiate both the Wharton County Drainage Master Plan and San Bernard Watershed Study funded by TWDB
July 25, 2006	TCRFC Region I Meeting and CRS Workshop in Wharton, TX
Aug 29, 2006	Flood Mitigation Planning Committee Meeting #3 Assess the Hazard (511.4) Incorporate Wharton County CRS assessments and other hazard/project information that may be available.
Sep 26, 2006	Flood Mitigation Planning Committee Meeting #4 A. Assess the Problem (511.5) 1. Incorporate risk assessment information available from TWBD, TxDem, FEMA, Houston Galveston Area Council and others. 2. Assist the Wharton County Flood Mitigation Planning Committee to review and assess problems. B. Set goals (511.6) Set goals and establish a schedule for the Plan including TWBD Flood Mitigation Plan requirements and future improved CRS ratings
Oct 4 & 5, 2006	Public Notice and Questionnaires published in 3 local newspapers

DATE	PROJECT ACTION
Nov 8, 2006	Flood Mitigation Planning Committee Meeting #5 A. Review possible mitigation activities (511.7) 1. Summarize Wharton County Emergency Operations Center activities that meet the objectives of the CRS Activity 511 Floodplain Management Plan and TWDB Flood Mitigation Plan requirements. Explore similar Fort Bend and Brazoria County activities. 2. Review Wharton County and each participating community Flood Damage Prevention Ordinance and identify potential improvements. B. Review of the 1 st draft of the flood mitigation plan (511.8) and plan to submit to “Other Agencies” for comment. Ensure that the draft plan fulfills the CRS requirement to address a minimum of two (2) of the required six (6) categories: 1. Preventive activities 2. Property protection 3. Natural resource protection 4. Emergency services 5. Structural support 6. Public information
December 14, 2006	TCRFC and LCRA hosted the State NFIP-101 Basics of Floodplain Management Workshop in Wharton, Texas
Feb 2007	City of Wharton submitted a CRS Application
April 18, 2007	Monica Martin represented Wharton County at the HGAC Floodplain Management Council meeting in Houston, Texas.
April 19 2007	Committee Meeting #6 A. Review the latest draft of the Flood Mitigation Plan. B. Finalize Goals and Action Items C. Finalize preparation for the Public Meeting to present the plan. D. Make recommendations on procedures to adopt the plan (511.9) Prepare a schedule of activities leading to each City Council approval of the Plan
June 26, 2007	Draft plan submitted to “Other Agencies” for review.
July 2007	SB 1436 signed by Governor Perry
August 2007	TCEQ makes preparation to transfer NFIP functions to TWDB
September 1, 2007	TWDB designated as State NFIP Coordinator

DATE	PROJECT ACTION
October 2007	Draft Plan updated to include review comments from "other agencies"
October 24, 2007	Public Meeting Precinct 2 East Bernard American Legion Hall
October 25, 2007	Public Meeting Precinct 1 Boling Community Center
October 29, 2007	Public Meeting Precinct 3 Louise Fireman's Hall
October 30, 2007	Public Meeting Precinct 4 El Campo Community Center
Nov 14, 2007	Public Meeting Announcement published
Nov 26, 2007	Wharton County Public Meeting#1 to present the plan.
November 26, 2007	Wharton County Commissioners Court approved the Wharton County Flood Mitigation Plan
January 14, 2008	The City of El Campo conducted Public Meeting#2 and the City Council passed a resolution formally adopt the Plan
January 14, 2008	The City of East Bernard conducted Public Meeting#3 and the City Council passed a resolution formally adopt the Plan
January 28, 2008	The City Wharton of conducted Public Meeting#4 and the City Council passed a resolution formally adopt the Plan
March 10, 2008	After formal adoption by all participating communities the Wharton County Commissioners Court passed a resolution formally adopt the Plan

Proposed Actions

March 2008	Procedures implemented to evaluate and revise the plan (511.10)
March 2008	Submit the adopted plan to TWDB. If approved by TWDB the Plan will be forwarded to FEMA.
June 2008	Wharton County Flood Mitigation Planning Committee responds to review comments from TWDB and FEMA.
Oct 2008	ISO CRS Verification Visit (approximate date).
March 2009	Year One Plan Evaluation
Oct 2009	FEMA/ISO annual review of CRS Programs
March 2010	Year Two Plan Evaluation
Oct 2010	FEMA/ISO annual review of CRS Programs
March 2011	Year Three Plan Evaluation
Oct 2011	FEMA/ISO annual review of CRS Programs
March 2012	Year Four Plan Evaluation

DATE	PROJECT ACTION
Oct 2012	FEMA/ISO annual review of CRS Programs
March 2013	Year Five Plan Evaluation and Plan Update
Oct 2013	FEMA/ISO annual review of CRS Programs

1.3 INVOLVE THE PUBLIC

1.3.1 Public Notification

The following Public Announcement was published in 3 local newspapers on October 4 – 5, 2006 and included a Flood Mitigation Questionnaire as an attachment:

Wharton County Flood Mitigation Plan

Wharton County has initiated planning efforts to prepare a Flood Mitigation Plan to compliment the Texas Colorado River Floodplain Coalition (TCRFC) all-hazards Mitigation Plan that includes **Wharton County** and the cities of **East Bernard, El Campo** and **Wharton**. Currently Wharton County and all communities participate in the National Flood Insurance Program (NFIP). The purpose of the NFIP is to identify and mitigate the impact of floods and natural disasters including the regulation of development within special flood hazards areas, which in turn, allows citizens within each community to purchase flood insurance at an affordable rate.

Current Wharton County (county-wide) Flood Insurance Coverage

- Coverage (\$) \$330,560,700
- Policies in Force 2,144
- Claims Paid 458
- Claims Paid (\$) \$8,622,752.38
- Policy Premiums (\$) \$ 856,736 per year

NFIP Policies and Claims data is current as of September 30, 2007.

Wharton County and the cities of East Bernard, El Campo and Wharton are subject to flooding from coastal storms and overflows from the Colorado and San Bernard Rivers. Fortunately, Wharton County escaped the most severe wrath of Hurricane Rita but Wharton County wants to be prepared for future flood events.

In early 2006 the Wharton County Commissioners Court announced the initiation of planning efforts to prepare the Wharton County Flood Mitigation Plan and approved hiring Halff Associates, Inc. to assist with the planning effort.

Representatives for Wharton County and the cities of East Bernard, El Campo and Wharton met on June 26, 2006 to initiate the planning effort and to outline how the plan will be developed, how to encourage public participation in the planning process, and identify “other agencies” that need to be involved in the planning process. A Flood Mitigation Plan Questionnaire is attached to encourage public participation in the planning process.

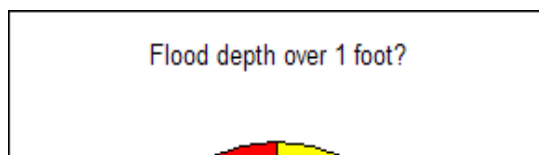
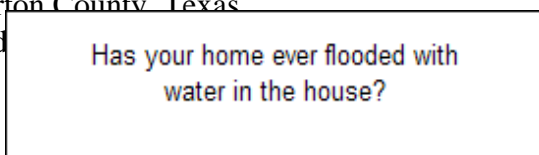
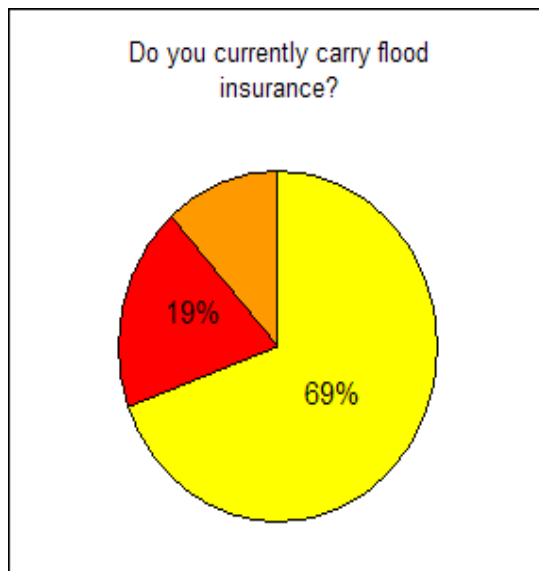
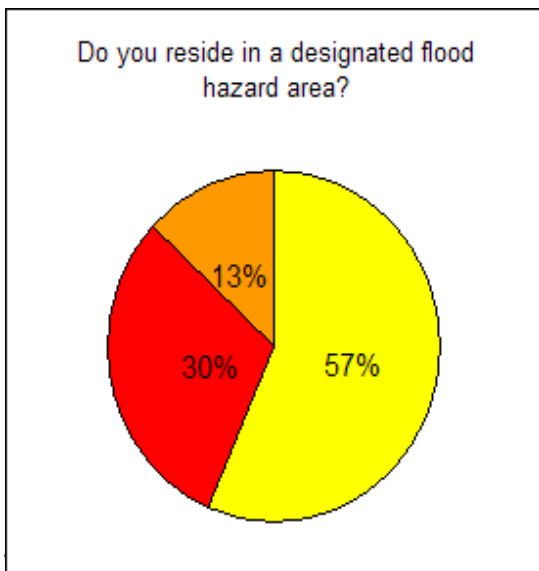
The Texas Water Development Board has awarded \$50,000 to Wharton County in federal funding through FEMA's Flood Mitigation Assistance (FMA) Program. Wharton County and the cities of East Bernard, El Campo and Wharton will be required to fulfill both the Texas Water Development Board and the Federal Emergency Management Agency (FEMA) planning requirements. The Flood Mitigation Plan, which is scheduled to be completed in January 2007, will be formally presented at a public meeting prior to formal adoption by the Wharton County Commissioners Court and the City Council of East Bernard, El Campo and Wharton.

Wharton County and participating communities will evaluate participation in FEMA's Community Rating System (CRS) Program. Participation in CRS can result in reductions in flood insurance policy premiums for properties located within the unincorporated areas of Wharton County. The CRS Program is available only to communities that participate in the National Flood Insurance Program (NFIP) and have adopted a floodplain management program that exceeds the NFIP guidelines. Only 45 communities in Texas participate in the CRS program and those communities receive annual flood insurance premium reductions based on the CRS classification. Adoption of an approved Flood Mitigation Plan is an approved activity for a CRS community and establishes eligibility for Wharton County to receive Flood Mitigation Assistance (FMA) Project funding.

The public is invited to participate in the planning process, which will be conducted under the supervision of Ms. Monica Martin, CFM, Wharton County Floodplain Manager and Director of Permits and Inspections Department, (979) 532-8587. Ms. Martin will receive Flood Mitigation Plan Questionnaires from the public to help guide the planning effort.

1.3.2 Flood Mitigation Plan Questionnaire

A Flood Mitigation Plan questionnaire was developed during Flood Mitigation Plan Committee Meeting #1 and finalized at Committee Meeting #2. The questionnaire requesting input was posted on the TCRFC website www.tcrfc.org and a summary of the 23 questionnaire responders is included below. The questionnaire, Public Notices and related newspaper articles are provided in Plan Attachments "B" and "C".



Yes

No

Unknown

Figure 5: Questionnaire Summaries

FLOOD MITIGATION PLAN QUESTIONNAIRE

WHARTON COUNTY FLOOD MITIGATION PLAN

Please take a few minutes to identify your hazard concerns using this Questionnaire and return it to the Wharton County Permits Department by October 15, 2006 if possible. The Wharton County Flood Mitigation Planning Committee will review the completed questionnaires and recommendations will be considered in development of the Flood Mitigation Plan. Current target completion date for the Wharton County Plan is January 2007.

1. Do you live in a designated flood hazard area? ___ Yes ___ No ___ Unknown

2. Do you currently carry flood insurance? ___ Yes ___ No ___ Unknown

3. Has your home ever flooded with water in the house? ___ Yes ___ No

4. Dates your home has flooded: _____

Flooding Source: _____ Depth of water in home: _____

5. Do you live in: Wharton County (unincorporated area) _____
City of East Bernard _____
City of El Campo _____
City of Wharton _____

6. What do you recommend to reduce flood hazards in your area?

7. Name and Address – Optional:

Attach additional sheets if necessary.

Your input is important. This questionnaire will provide valuable insight in developing the goals and objectives for the Wharton County Flood Mitigation Plan. Please return completed questionnaires to:

**Wharton County Permits and Inspection Departmentor
1017 North Alabama
Wharton, Texas 77488**

**Drop Box at:
City of El Campo
City of Wharton
Wharton County**

East Bernard City Hall

Figure 6: Questionnaire Posted on the TCRFC Website

1.3.3 Public Meetings

1.3.3.1 Wharton County Drainage Master Plan

The following is a Public Notice that was posted in September and October 2007 regarding public meetings related to the Wharton County Drainage Master Plan and Flood Mitigation Plan.

Wharton County is conducting drainage studies and preparing a flood protection plan for the San Bernard River and the unincorporated areas of West Bernard Creek, Middle Bernard Creek, Peach Creek, Jones Creek, East Mustang Creek, West Mustang Creek, Middle Mustang Creek, Tres Palacios Creek, Blue Creek, Waterhole Creek, and Jarvis Creek. A public meeting has been scheduled for each of the four precincts to present the study goals and schedule. Information will also be gathered from property owners and other residents regarding flooding problem areas throughout the county.

Meetings have been scheduled as follows:

Precinct 1: October 25, 2007, 7-9 PM, Boling Community Center

Precinct 2: October 24, 2007, 7-9 PM, East Bernard American Legion Hall

Precinct 3: October 29, 2007, 7-9 PM, Louise Fireman's Hall

Precinct 4: October 30, 2007, 7-9 PM, El Campo Community Center

1.3.3.2 Wharton County Flood Mitigation Plan

A Public Meeting was conducted in June 26, 2006 prior to the Wharton County Commissioners Court Meeting. This meeting was to formally "kick off" the flood mitigation planning effort with representatives from each community present.

Wharton County – County-Wide Public Meeting for the Flood Mitigation Plan:

On November 14, 2007 a notice was placed in the Wharton Journal-Spectator announcing the public meeting to discuss the Wharton County Flood Mitigation Plan. The Public Meeting was held on November 26, 2007 in the Wharton County Commissioners Courtroom. The Flood Mitigation Plan was approved by the Commissioners Court during the regular Court meeting on November 26, 2007. Copies of the public notice and Commissioner's Court Order adopting the Plan are included in Attachment C.

City of East Bernard:

On November 14, 2007 a notice was placed in the Wharton Journal-Spectator announcing the public meeting to discuss the Wharton County Flood Mitigation Plan. Public Meetings were held on November 26, 2007 in the Wharton County Commissioners Courtroom and on February 14, 2008 in the City of East Bernard City Council Chambers. The Flood Mitigation Plan was approved by the City Council during the regular Council meeting on February 14, 2008. Copies of the public notice and Resolution adopting the Plan are included in Attachment C.

City of El Campo:

On November 14, 2007 a notice was placed in the Wharton Journal-Spectator announcing the public meeting to discuss the Wharton County Flood Mitigation Plan. Public Meetings were held on November 26, 2007 in the Wharton County Commissioners Courtroom and January 14, 2008 in the City of El Campo City Council Chambers. The Flood Mitigation Plan was approved by the City Council during the regular Council meeting on January 14, 2008. Copies of the public notice and Resolution adopting the Plan are included in Attachment C.

City of Wharton:

On November 14, 2007 a notice was placed in the Wharton Journal-Spectator announcing the public meeting to discuss the Wharton County Flood Mitigation Plan. Public Meetings were held on November 26, 2007 in the Wharton County Commissioners Courtroom and January 28, 2008 in the City of Wharton City Council Chambers. The Flood Mitigation Plan was approved by the City Council during the regular Council meeting on January 28, 2008. Copies of the public notice and Resolution adopting the Plan are included in Attachment C.

1.4 COORDINATION WITH OTHER AGENCIES

Wharton County approached flood mitigation planning in two phases. Initially, the County developed a core Flood Mitigation Plan Committee comprised of individuals employed by the County and representatives from all participating communities and the general public. Additionally, the County enlisted the assistance of individuals selected to participate from a variety of “Other Agencies”. Representation consists of auxiliary agencies, surrounding jurisdictions, and various levels of governmental departments – local, state, and federal. “Other Agencies” were contacted by letter and invited to participate in the planning process. The “Draft” Flood Mitigation Plan was distributed to other agencies for review and comment prior to finalizing mitigation actions and formal adoption by the Wharton County Commissioners Court and participating communities.

1.4.1 MEETINGS WITH OTHER AGENCIES TO REVIEW COMMON PROBLEMS

Representatives from the Wharton County Flood Mitigation Planning Committee met with the following agencies to discuss the development of the Flood Mitigation Plan and to discuss the common hazards the affect the surrounding communities:

- Texas Water Development Board
- Texas Commission on Environmental Quality
- Lower Colorado River Authority
- Texas Colorado River Floodplain Coalition
- Texas Department of Transportation
- Natural Resource Conservation Service
- US Army Corps of Engineers – Galveston District
- Houston Galveston Area Council
- Lower Colorado River Authority

The public announcement below was distributed by the Texas Colorado River Floodplain Coalition (TCRFC) to coordinate floodplain activities within the Lower Colorado River Basin. The Region I Meeting, held on July 25, 2006, was coordinated with a Wharton County Flood Mitigation Planning Committee Meeting held at the same location:

TCRFC Regional Meeting & Community Rating System (CRS) Workshop



Region III - Tuesday, July 18, 2006, 8:30 am – 12:30 pm, Marble Falls, TX
Region II - Thursday, July 20, 2006, 1:00 – 5:00 pm, Bastrop, TX
Region I - Tuesday, July 25, 2006, 1:00 pm – 5:00 pm, Wharton, TX
Region IV - Thursday, July 27, 2006, 1:00 pm – 5:00 pm, Brady, TX

Come to hear TCRFC Updates from Regional Representatives:

- TCRFC Board Strategies
 - Provide input to Regional Representatives about your needs
 - TCRFC 5 Year Birthday
 - Regional Updates

Come for training:

Interested in lowering flood insurance rates for your citizens?

... and gaining a more effective floodplain management program??

If so, this is the workshop for you!

Your community may already be doing many activities that could earn points in the Community Rating System. Get credit for your efforts and earn discounts on flood insurance premiums for your citizens. Janine Ellington, CFM, Community Rating Specialist from the Insurance Services Office (ISO) will present an overview of the Community Rating System and help your community become a participant.

This FREE course is sponsored by the Texas Colorado River Floodplain Coalition in conjunction with the Lower Colorado River Authority and the Texas Floodplain Management Association. Three Continuing Education Credits (3 CECs) will be available for Certified Floodplain Managers (CFM).

1.5 ESTABLISHING PLANNING GOALS

On June 26, 2006, the Flood Mitigation Planning Committee met to discuss the flood mitigation planning goals. The committee finalized the public questionnaire and methods to distribute. The Flood Mitigation Planning Committee reviewed the planning goals from the TCRFC All Hazards Mitigation Plan prepared by the Texas Colorado River Floodplain Coalition (TCRFC) that included input from Wharton County and the cities within the county. The goals and objectives

of the TCRFC All Hazards Mitigation Plan were reviewed during the planning process to help identify specific flood mitigation goals to be addressed in the Flood Mitigation Plan.

On July 25, 2006, the Flood Mitigation Planning Committee met to review the Goals and objectives from the TCRFC, the Wharton County all-hazards Mitigation Plan and recent Flood Mitigation Plans prepared following TWDB guidelines. On August 29, 2006 the Committee finalize the goals and objectives for the Wharton County Flood Mitigation Plan. The Wharton County Flood Mitigation Plan Goals are described in Section 4.0 of this Plan.

1.6 DISTRIBUTION OF THE DRAFT FLOOD MITIGATION PLAN

On July 10, 2007, Halff Associates, Inc. (planning consultant) submitted the initial draft of the Flood Mitigation Plan to “Other Agencies” for review with comments and recommendations requested by August 15, 2007. These agencies were requested to review common problems, development policies, mitigation services, inconsistencies and conflicts in policies, plans, programs, and regulations. They were also requested to review to community’s needs, goals, and plans for the area.

Recommendations and comments were received from:

Lower Colorado River Authority

TCRFC

Texas Parks and Wildlife Department

Texas Commission on Environmental Quality

Governor’s Division of Emergency Management

Bayou Preservation Association

2.0 ASSESS THE HAZARD (CRS ACTIVITY 511.4)

Wharton County has experienced emergencies and disasters in the past and expects that emergencies and disaster will occur in the future. Due to location and geographic features, Wharton County is vulnerable to the damaging effects of certain hazards that include but are not limited to: hurricanes and tropical storms; extreme heat; flash flood; severe thunderstorm; tornado; winter weather; lightning; hazardous substance releases; power/utility outages; fire/explosion; building/structure collapse; mass casualty incidents; transportation accidents; terrorism/sabotage; hostage situation; and attack (conventional, nuclear, biological, chemical).

Natural disasters and emergencies affect the city more often than other types of emergencies and disasters. Of the natural disasters that have occurred, flooding is by far the most common event to affect the area. Damaging flood events have occurred within the city on average, at least once each year.

2.1 MAP OF KNOWN FLOOD PRONE AREAS.

The flood hazards for Wharton County were initially identified in 1974 by the Federal Insurance Administration and published as Flood Hazard Boundary Maps. In the early 1980's flood insurance studies were initiated by FEMA for Wharton County and the cities of El Campo and Wharton. The initial Flood Insurance Rate Maps (FIRM's) were published as individual community FIRM's and later combined into the Wharton County (county-wide) FIRM in April 2006. The Flood Insurance Studies (FIS) and related mapping published for Wharton County and participating communities are listed below:

Wharton County Unincorporated Areas:

August 2, 1974	Wharton County Flood Hazard Boundary Map
June 20, 1978	Wharton County Flood Hazard Boundary Map
June 12, 1979	Wharton County Flood Hazard Boundary Map
April 18, 1983	Wharton County Flood Insurance Study and FIRMs
November 7, 2001	Wharton County Flood Insurance Study and FIRMs
April 5, 2006	Wharton County Flood Insurance Study and FIRMs

City of East Bernard:

July 22, 2004	City of East Bernard entered the NFIP
April 5, 2006	Wharton County Flood Insurance Study and FIRMs

City of El Campo:

June 7, 1974	City of El Campo Flood Hazard Boundary Map
May 14, 1976	City of El Campo Flood Hazard Boundary Map
June 4, 1980	City of El Campo Flood Insurance Study and FIRMs
March 1, 1983	City of El Campo Flood Insurance Study and FIRMs
April 5, 2006	Wharton County Flood Insurance Study and FIRMs

City of Wharton:

December 31, 1976	City of Wharton Flood Hazard Boundary Map
July 19, 1977	City of Wharton Flood Hazard Boundary Map
July 3, 1979	City of Wharton Flood Hazard Boundary Map
September 16, 1982	City of Wharton Flood Insurance Study and FIRMs
April 5, 2006	Wharton Co (county-wide) Flood Insurance Study and FIRMs

Wharton County (county-wide) FIRM's (all areas):

April 5, 2006	Wharton County Flood Insurance Study and FIRMs
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The Forty-two (42) Wharton County FIRM Panels that show flood hazards within Wharton County and the cities of East Bernard, El campo and Wharton are as follows:

<u>Panel Number</u>	<u>Date</u>	<u>Map Scale</u>
48481C0025E	April 5, 2006	1 inch = 2000 feet
48481C0050E	April 5, 2006	1 inch = 2000 feet
48481C0075E	April 5, 2006	1 inch = 2000 feet
48481C0100E	April 5, 2006	1 inch = 2000 feet
48481C0125E	April 5, 2006	1 inch = 2000 feet
48481C0150E	April 5, 2006	1 inch = 2000 feet
48481C0175E	April 5, 2006	1 inch = 2000 feet
48481C0200E	April 5, 2006	1 inch = 2000 feet
48481C0225E	April 5, 2006	1 inch = 2000 feet
48481C0250E	April 5, 2006	1 inch = 2000 feet
48481C0275E	April 5, 2006	1 inch = 2000 feet
48481C0300E	April 5, 2006	1 inch = 2000 feet
48481C0325E	April 5, 2006	1 inch = 2000 feet
48481C0330E	April 5, 2006	1 inch = 1000 feet
48481C0335E	April 5, 2006	1 inch = 1000 feet
48481C0340E	April 5, 2006	1 inch = 1000 feet
48481C0345E	April 5, 2006	1 inch = 1000 feet
48481C0355E	April 5, 2006	1 inch = 1000 feet
48481C0360E	April 5, 2006	1 inch = 1000 feet
48481C0365E	April 5, 2006	1 inch = 1000 feet
48481C0370E	April 5, 2006	1 inch = 1000 feet
48481C0380E	April 5, 2006	1 inch = 1000 feet
48481C0385E	April 5, 2006	1 inch = 1000 feet
48481C0390E	April 5, 2006	1 inch = 1000 feet
48481C0395E	April 5, 2006	1 inch = 1000 feet
48481C0425E	April 5, 2006	1 inch = 2000 feet
48481C0450E	April 5, 2006	1 inch = 2000 feet
48481C0475E	April 5, 2006	1 inch = 2000 feet
48481C0500E	April 5, 2006	1 inch = 2000 feet
48481C0505E	April 5, 2006	1 inch = 1000 feet
48481C0510E	April 5, 2006	1 inch = 1000 feet

<u>Panel Number</u>	<u>Date</u>	<u>Map Scale</u>
48481C0515E	April 5, 2006	1 inch = 1000 feet
48481C0520E	April 5, 2006	1 inch = 1000 feet
48481C0550E	April 5, 2006	1 inch = 2000 feet
48481C0575E	April 5, 2006	1 inch = 2000 feet
48481C0600E	April 5, 2006	1 inch = 2000 feet
48481C0625E	April 5, 2006	1 inch = 2000 feet
48481C0650E	April 5, 2006	1 inch = 2000 feet
48481C0675E	April 5, 2006	1 inch = 2000 feet
48481C0700E	April 5, 2006	1 inch = 2000 feet
48481C0725E	April 5, 2006	1 inch = 2000 feet
48481C0750E	April 5, 2006	1 inch = 2000 feet

Map Needs Assessment

In 1994, the Mapping Needs Assessment Process was established by FEMA to identify and prioritize community map update needs in accordance with Section 575 of the *National Flood Insurance Reform Act* of 1994. Since May of 1997, more than 11,700 communities have been contacted for map update needs. Information regarding mapping needs is collected by FEMA in the Mapping Needs Update Support System (MNUSS).

The Federal Emergency Management Agency (FEMA), in 1997, designed a plan to modernize the Nations' map inventory. Over time, the objective is to eliminate the existing backlog of outdated maps and to convert all Flood Insurance Rate Maps (FIRMs) to a digital format. One of the key objectives of the modernization plan is to increase local involvement in, and ownership of, the flood mapping process. The Cooperating Technical Partner (CTP) concept was developed specifically to accomplish this goal. Under the CTP initiative, FEMA enters into agreements with technically capable community partners to produce agreed-upon products that supplement ongoing FEMA mapping efforts.

In 2000, the Lower Colorado River Authority (LCRA) executed a Cooperating Technical Partner (CTP) Agreement with FEMA. The first Activity Agreement generated under this partnership was to conduct a Map Needs Update Support System (MNUSS) Assessment for the eleven counties within the LCRA watershed including Wharton County and the cities of East Bernard, El Campo and Wharton. This CTP Activity established the basis for FEMA's Map Needs Update Support System (MNUSS) Database in Wharton County and led to the Wharton County Flood Insurance Study and remapping effort completed in April 2006.

The current Wharton County Flood Insurance Rate Map (FIRM) published by FEMA April 5, 2006, includes all incorporated and unincorporated areas within Wharton County.

2.2 STREAMS IN WHARTON COUNTY AND THE CITIES OF EAST BERNARD, EL CAMPO AND WHARTON

Based on Flood Insurance Study Reports and Flood Insurance Rate Maps published by FEMA the flooding sources and designated Special Flood hazard Areas (SFHA) in Wharton County and the cities of East Bernard, El Campo and Wharton are shown on Figure 7, Wharton County Streams with designated Special Flood hazard Areas and delineated in Table 3, Wharton County Streams.

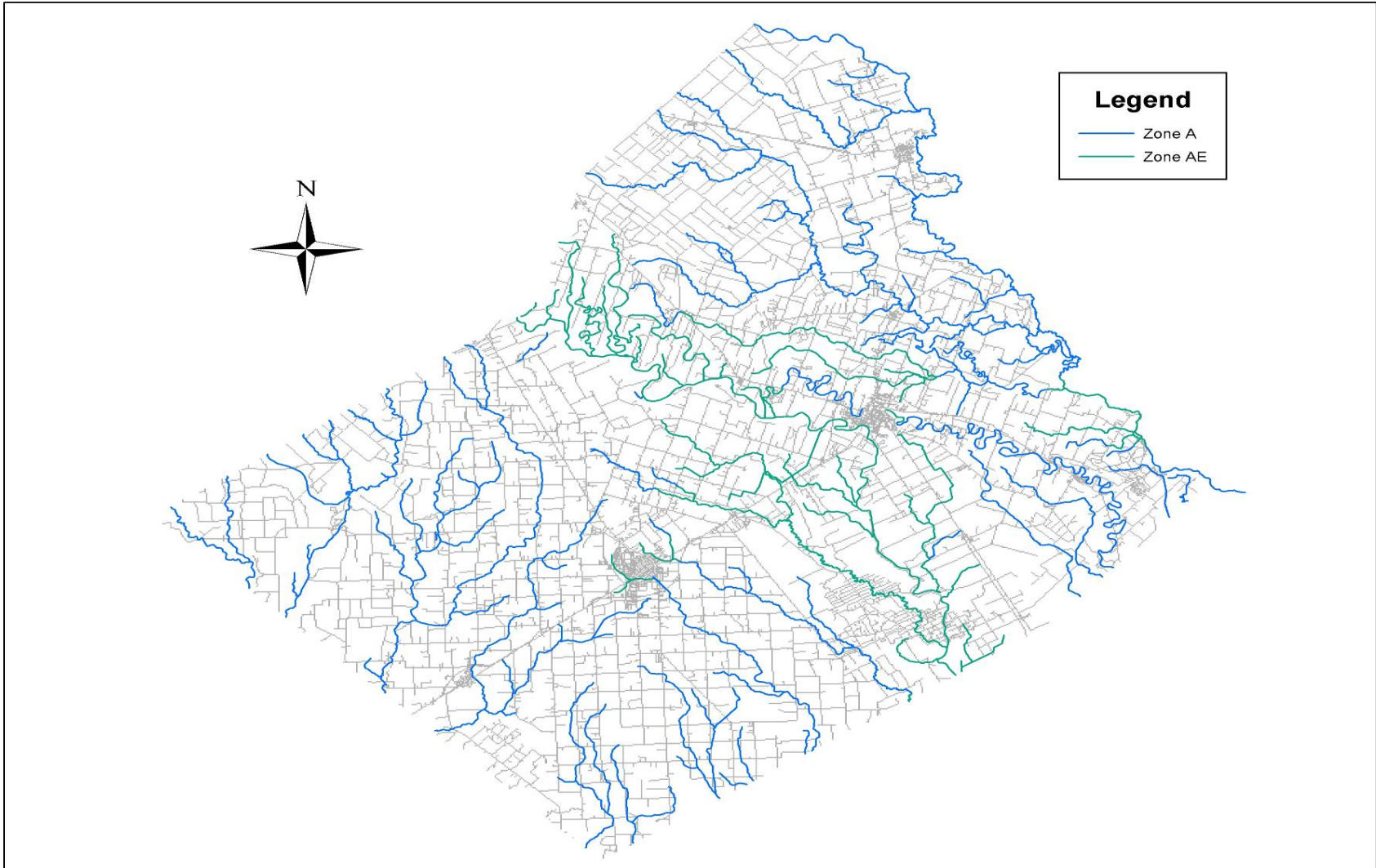


Figure 7: Wharton County Streams with Designated Special Flood Hazard Areas

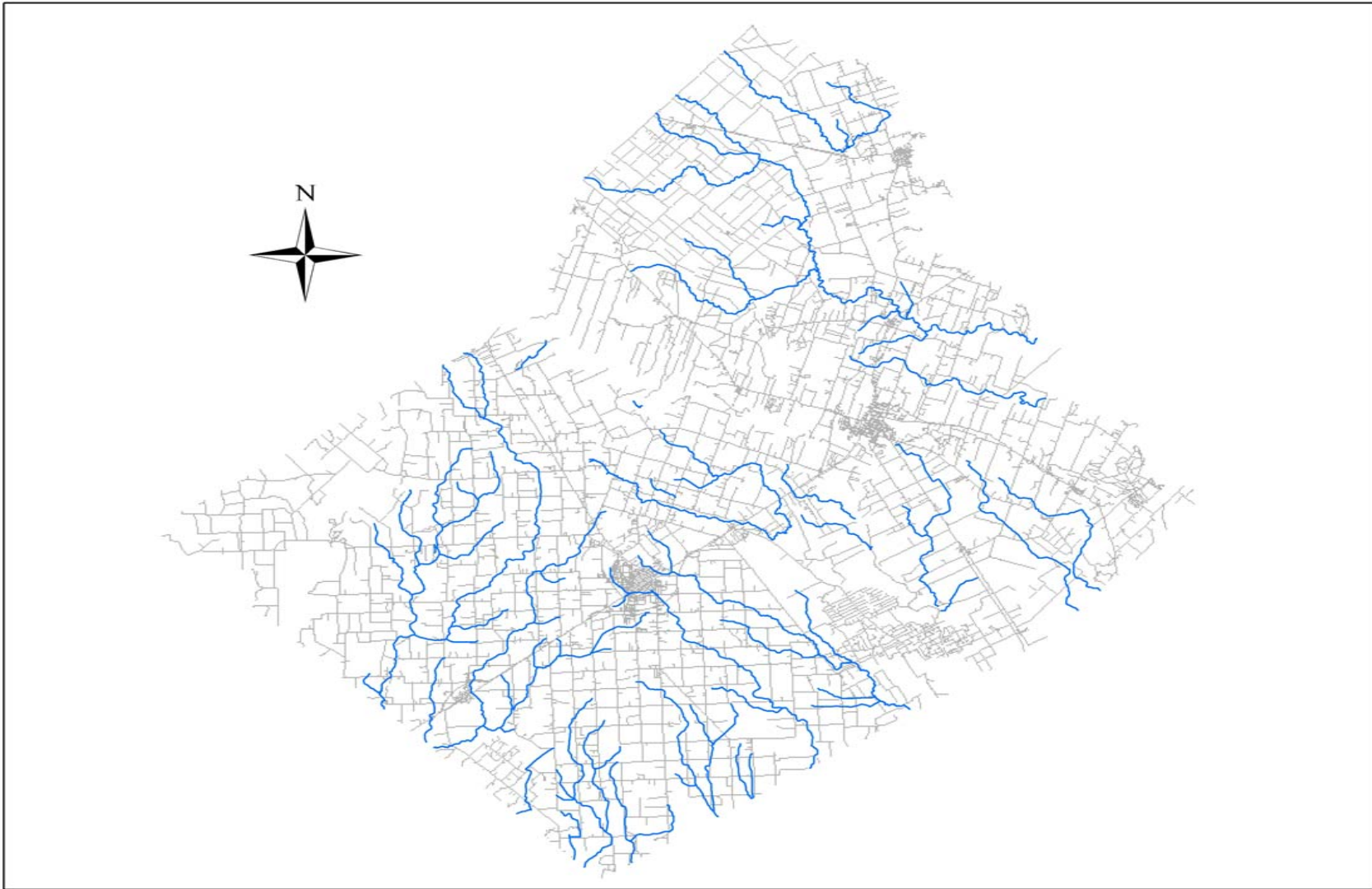


Figure 8: Wharton County Streams Studied by NRCS in 1964

Table 2: Wharton County Studied (Zone AE) Streams

<u>Stream</u>	<u>Studied Length</u>	<u>Data Source</u>
Colorado River	257,000'/48.83 miles	FIS
San Bernard River	35,700'/6.76 miles	FIS
Baughman Slough	53,660'/10.16 miles	FIS
Caney Creek (Upper/Lower)	70,200'/13.3 miles	FIS
Tres Palacios Creek	32,200'/6.1 miles	FIS
Tres Palacios Creek Trib	7,600'/1.4 miles	FIS
Stage Stand Creek	12,000'/2.27 miles	FIS
Blue Creek	14,400'/2.72 miles	FIS
Blue Creek Trib	7,300'/1.38 miles	FIS
Peach Creek	72,050'/13.65 miles	FIS
East Mustang Creek	24,700'/4.68 miles	FIS
East Fork Jones Creek	46,900'/8.88 miles	FIS
East Fork Jones Creek Trib	11,000'/2.08 miles	FIS
Bosque Slough	9,500'/1.8 miles	FIS
Total (14 streams)	654,210'/124.01 miles	

Note: The 14 streams listed have flood profiles in the April 5, 2006 Wharton County Flood Insurance Study published by FEMA.

Table 3: Wharton County Unstudied (Zone A) Streams

<u>Stream</u>	<u>Stream</u>	<u>Stream</u>
Blue Creek	Gumtree Branch Trib A	San Bernard River
Blue Creek Trib	Horseshoe Slough	San Bernard River Trib 1
Boone Branch	Jarvis Creek	San Bernard River Trib 2
Britt Branch	Jones Creek	San Bernard River Trib 3
Charo Slough	Jones Creek Trib 1	San Bernard River Trib 4
Chitland Creek	Juanita Creek	Sandy Branch
Clark's Branch	Juanita Creek Trib	Sandy Creek
Cypress Slough	Lone Tree Creek	Stage Stand Creek
Davis Branch	Lookout Creek	Stage Stand Creek Trib 1
Dewberry Branch	Lost Fork Goldenrod Creek	Tres Palacios Creek
Dry Branch	Lower Caney Creek	Tres Palacios Creek Trib 1
Eagle Branch	Middle Bernard Creek	Tres Palacios Creek Trib 2
East Caranacahua Creek	Middle Bernard Creek Trib	Tres Palacios Creek Trib 4
East Caranacahua Creek Trib 1	Middle Mustang Creek	Turkey Creek
East Caranacahua Creek Trib 2	Middle Turkey Creek	Turkey Slough
East Fork Blue Creek	Moccasin Creek	Waterhole Creek
East Fork Goldenrod Creek	Mud Creek	West Bernard Creek
East Mustang Creek	Peach Creek	West Mustang Creek
East Turkey Creek	Pinoak Creek	West Turkey Creek
Gardner Slough	Plainview Outfall Ditch	Willow Creek
Gobbler Creek	Porters Creek	Willow Creek Trib
Goldenrod Creek	Porters Creek Trib	
Gumtree Branch	Quinine Slough	

Note: The sixty-seven (67) streams listed are delineated as Zone A (approximate study) on the April 5, 2006 Wharton County Flood Insurance Rate Maps.

The Colorado River in Wharton County was studied by the US Army Corps of Engineers Fort Worth District as part of the Lower Colorado River Flood Damage Reduction Study. FEMA followed with the Wharton County Remapping Project that was finalized April 5, 2006 with publication of the Wharton County Flood Insurance Study and FIRM's. The Colorado River stream miles in Wharton County is as follows:

	Colorado River <u>Miles</u>	Current Detail <u>Miles</u>	Current Floodway <u>Miles</u>
Wharton County	48.6	21.2	10.9
East Bernard	n/a	n/a	n/a
El Campo	n/a	n/a	n/a
Wharton	3.6	3.6	3.6

The San Bernard River is the eastern boundary of Wharton County and the western boundary of Fort Bend County. Fort Bend County has established base flood elevations for the San Bernard River which will be incorporated into the Wharton County Drainage Master Plan and the San Bernard River Watershed Study. Only 6.7 miles of the San Bernard River in Wharton County is mapped as detail study (Zone AE) on the Wharton County FIRMs. The remainder of the San Bernard River and San Bernard River Tributaries 1, 2, 3, and 4, the Middle Bernard, Middle Bernard Tributary and the West Bernard Creek have not been studied and are currently mapped as Zone A (approximate floodplain) on the Wharton County FIRM. In July 2006, the Texas Water Development Board (TWDB) funded (grant and loan) the San Bernard Watershed Study that will identify the floodplain for the San Bernard River and major tributaries within Wharton County:

	San Bernard Drainage Area <u>SQ Mi</u>	San Bernard River <u>Miles</u>
Brazoria Co.	246.1	43.5
Wharton Co.	290.4	21.9
Ft Bend Co.	176	17.9
Austin Co.	148.2	30.9
Colorado Co.	<u>163</u>	<u>(1)</u>
Total	1023.7	114

(1) The San Bernard River forms the county boundary between Austin and Colorado counties.

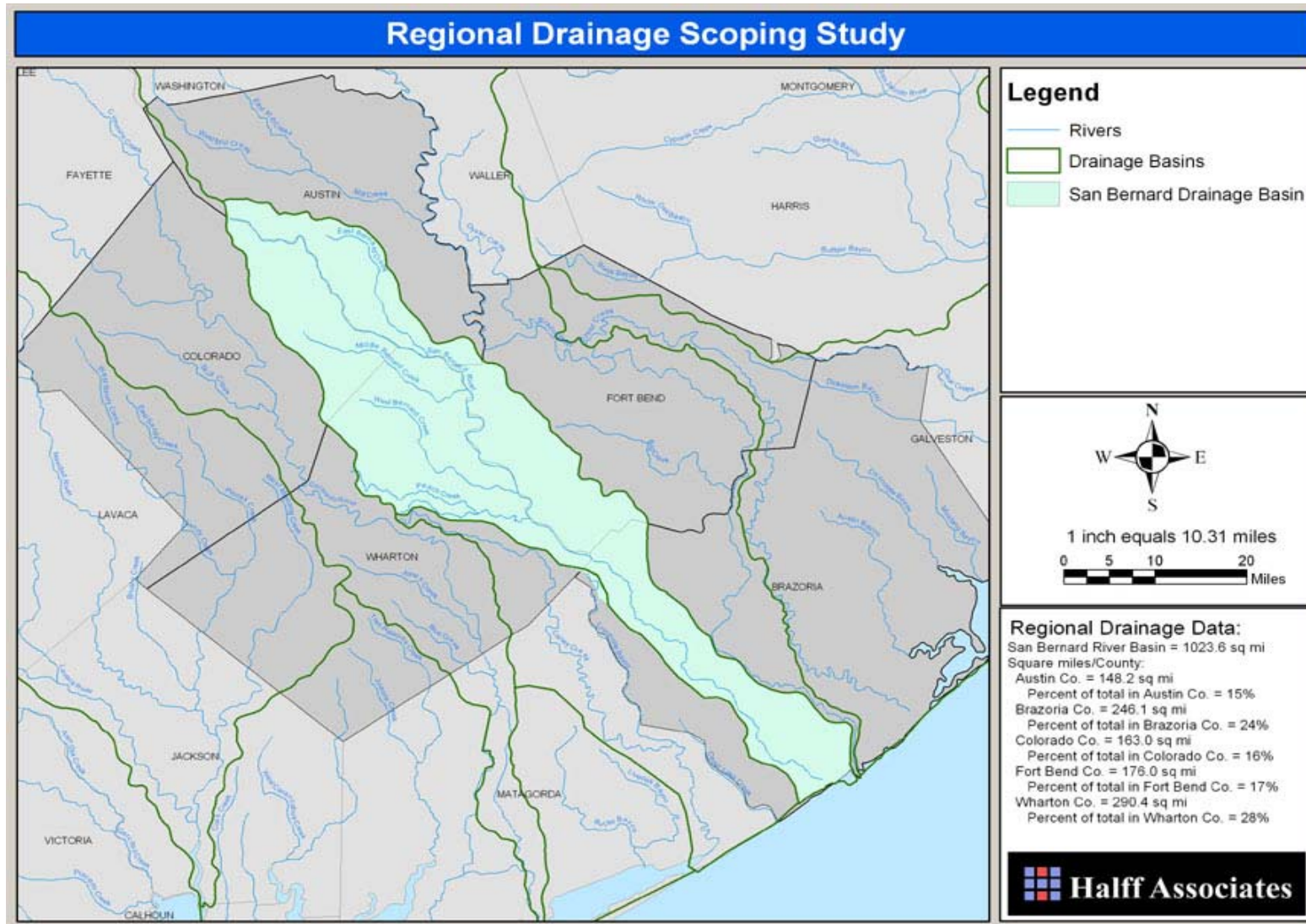


Figure 9: San Bernard River Watershed Study

San Bernard River Study

- Partners
 - Counties: Austin, Colorado, Wharton, Fort Bend, Brazoria
 - Cities: Sealy, Wallis, Kendleton, Sweeny, West Columbia, East Bernard
 - Federal: USACE – 50% project funding; FEMA – Remapping Project
 - State: TWDB – Flood Protection planning grants and loans
- Timeline
 - Determine level of participation of each community
 - Apply for TWDB Grant Fall '05
 - Study was initiated in 2006 after approval of the TWDB Grant
 - Scheduled completion is 2009 (Additional grants are possible)
- Each partner pays their share of
 - tributaries studied in their county
 - Percentage of main channel study based on shared stream miles
 - Topographic and base mapping
 - Surveying

2.3 LCRA HYDROMET SYSTEM

LCRA's Hydromet site is accessible on line at www.lcra.org and shown in Figure 10. The Hydromet (short for hydrological – meteorological data acquisition system) is a network of gauges that monitor river and weather conditions throughout the lower Colorado River watershed. The gauges provide around-the-clock information on weather conditions, lake levels, streamflows and rainfall.

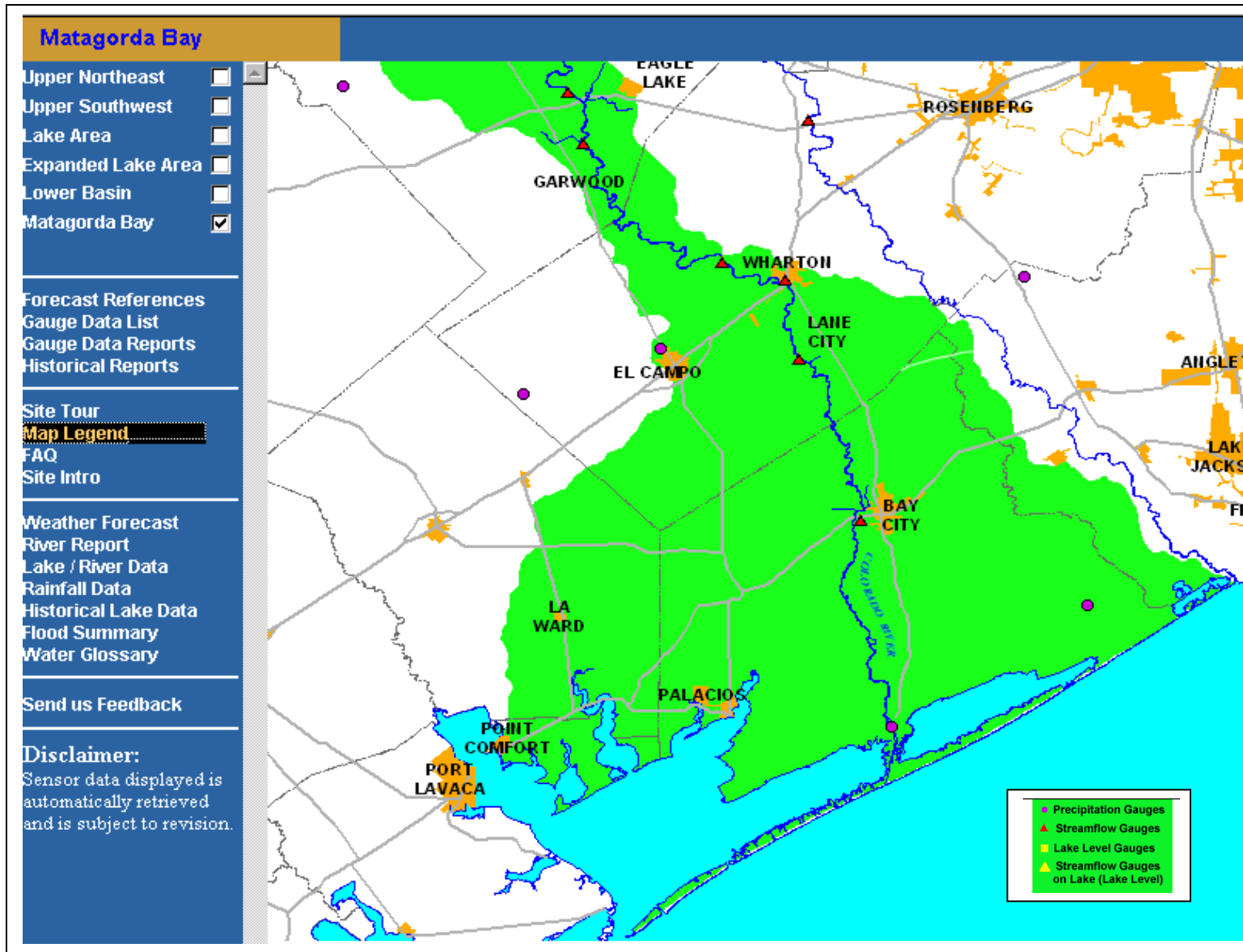


Figure 10: LCRA Hydromet System

The Hydromet plays a crucial role during potential flood situations by enabling LCRA's River Operations Center in Austin to track fast-changing conditions in the lakes, river and major tributaries. The National Weather Service's River Forecast Center in Fort Worth also uses the data to issue flood forecasts.

Disclaimer: LCRA provides the information contained on the Hydromet Web site as a courtesy and service to its customers. To meet as many needs as possible, it offers a wide range of information, including links to other organizations' sites. LCRA tries to provide accurate data according to the resources available. However, all "real-time" data available on LCRA's Web site server is provisional data. It has not been reviewed or edited and is subject to change. As such, LCRA does not warrant or guarantee that the information provided on this site, or any other site to which it is linked, is complete, accurate or current. LCRA shall not be liable under any legal theory, including contract, tort (including negligence and strict liability), warranty, indemnity and contribution theories, for any deficiency in the information accessible on or through this site, including without limitation inaccuracy, untimeliness, errors and omissions.

Three (3) LCRA Precipitation Gauges (only 2 located in Wharton County) record precipitation, air temperature and humidity:

- El Campo (located 2 miles NW of El Campo in Wharton County)
- El campo (located 15 miles WSW of El Campo in Wharton County)
- Eagle Lake (located 7 miles NE of Eagle Lake in Colorado County)

Four (4) LCRA Streamflow Gauges located in Wharton County record precipitation, stage and flow, air temperature and humidity:

- Colorado River at Lane City
- Colorado River at Wharton
- Colorado River at Glen Flora
- San Bernard River at East Bernard

Wharton County has 1,090 square miles of land area but has only six (6) gages (one gauge per 181 square miles) located within the County (4 streamflow and 2 precipitation gauges).

The Colorado River has 48.6 stream miles in Wharton County with 3 stage and flow gauges. The San Bernard River has 39.8 stream miles in Wharton County with only one (1) stage and flow gauges. There are no stream gauges installed on other streams within Wharton County. Additional stream and precipitation gauges are badly needed in Wharton County to establish technical data to regulate development, properly size drainage structures and to mitigate future flood losses.

The USGS has near real-time flow data for West Mustang and East Mustang Creeks posted on the web for the Lavaca River Basin at:

http://waterdata.usgs.gov/tx/nwis/current/?type=flow&group_key=basin_cd

2.4 KNOWN FLOOD HAZARDS

Wharton County is exposed to many hazards; all of which have the potential for disrupting the area, causing damage, and creating casualties. The Wharton County Emergency Management Plan and the Texas Colorado River Floodplain Coalition (TCRFC) Mitigation Plan identifies the major hazards that Wharton County is most likely to face. Possible flood related natural hazards include hurricanes and flooding from tropical storms, weather disturbances that are common to the Texas Gulf Coast, and major flood events on the Colorado and San Bernard Rivers. There is also the threat of other natural and technological hazards that are described in both the Wharton County Emergency Management Plan and the Texas Colorado River Floodplain Coalition (TCRFC) Mitigation Plan. Only flood related hazards will be addressed in this Plan. In the 2003-2005 timeframe, the TCRFC Hazard Mitigation Action Plan was prepared by the Texas Colorado River Floodplain Coalition in conjunction with the Lower Colorado River Authority (LCRA) to address known hazards throughout the 11 county planning area including Wharton County. Wharton County and the cities of El Campo and Wharton participated in the TCRFC planning effort and provided technical information to be included in the Regional All Hazards Plan. The City of East Bernard enrolled in the NFIP on July 22, 2004. Wharton County, through an interlocal agreement, administers the NFIP program in the City of East Bernard. The TCRFC (All Hazards) Mitigation Plan includes the risk assessment, vulnerability analysis and mitigation actions for the many hazards that impact Wharton County. These documents were reviewed by the Wharton County Flood Mitigation Planning Committee as part of the planning effort for the Wharton County Flood Mitigation Plan.

The Wharton County Flood Mitigation Plan outlines mitigation goals, identifies risk reduction strategies for flood hazards that threaten the area, and discusses the ongoing risk reduction activities undertaken within each participating community. The Flood Mitigation Plan further details what is to be done, how much it will cost, who will be responsible for flood mitigation actions, how each action will be funded and provides an implementation schedule. The flood mitigation actions described in the Wharton County Flood Mitigation Plan will supplement both the Hazard Mitigation Annex (Annex P) to the Wharton County Emergency Management Plan and the TCRFC (all hazards) Mitigation Plan. .

Wharton County recognizes that the County will continue to be exposed to and subject to the impact of hazards. Furthermore, it is possible for a major disaster to occur at any time and at any place. In many cases dissemination of warning to the public and implementation of increased readiness measures may be possible. Still, some emergency situations occur with little or no warning. The following paragraphs identify many of the flood related hazards that Wharton County may potentially encounter.

The following is a description of flood hazard from the North Central Texas Council of Governments (NCTCOG) Regional Risk Assessment and posted on line at www.nctcog.org:

Flooding is defined as the accumulation of water within a water body and the overflow of excess water onto adjacent floodplain lands. The floodplain is the land adjoining the channel of a river, stream, ocean, lake, or other watercourse or water body that is susceptible to flooding.

The statistical meaning of terms like “25-year storm” and “100-year flood” can be confusing. Simply stated, a floodplain can be located anywhere; it just depends on how large and how often a flood event occurs. Floodplains are those areas that are subject to inundation from flooding. Floods and the floodplains associated with them are often described in terms of the percent chance of a flood event happening in any given year. As a community management or planning term, “floodplain” most often refers to an area that is subject to inundation by a flood that has a one percent chance of occurring in any given year (commonly and incorrectly referred to as the 100-year floodplain).

What Is a 100-Year Flood?

Floods are random, variable events. Hydrologists characterize them as 50-year, 100-year, or 500-year floods. What exactly is a “100-year flood”? It is a flood that has a one-percent chance of being equaled or exceeded in any given year.

A young Missouri farmer has provided an ingenious explanation of the possibility of experiencing a 100-year flood. He described a bag full of 100 marbles with 99 clear marbles and one black marble. Every time you pull one of those marbles out and it's black, you've got a 100-year flood. After each draw, you put the marble back in the bag and shake it up. It's possible, although not likely, that you could pull the black one out two or even three times in a row.

A 100-year flood has a 26 percent chance of occurring over the life of a 30-year mortgage and a 63 percent chance of occurring over the next 100 years. No one, especially those living in high-risk floodplains, should be misled into believing that a 100-year flood occurs only once in a century. In addition, although the 100-year flood is usually the only type people hear about, flood events of all sizes can also occur.

As commonly applied, the concept of a 100-year floodplain can be misleading. Technically, only the outer edge of a 100-year floodplain has a risk of one percent of being flooded in any given year. The risk rises for sites closer to the river, and also at lower elevations, yet many people think of the entire area between the water body and the outer edge of the 100-year floodplain as subject to the same risk. This risk variability is not usually shown on floodplain maps. It should be kept in mind that mapping floodplain boundaries is at best an imperfect science.

According to the Federal Interagency Floodplain Management Task Force, flooding in the United States can be separated into several types:

Riverine Flooding

Includes overflow from a river channel, flash floods, alluvial fan floods, and ice jam floods. Overbank flooding of rivers and streams is the most common type of flood event. Flooding in large rivers usually results from large-scale weather systems generating prolonged rainfall over wide areas. These same weather systems can cause flooding in smaller basins that drain to major rivers.

Flash Floods

Are characterized by a rapid rise in water level, high velocity and large amounts of debris. Major factors in flash flooding are the intensity and duration of rainfall and the steepness of watershed and stream gradients. The amount of watershed vegetation, the natural and artificial flood storage areas and the configuration of the streambed and floodplain are also factors. Flash floods may also result from the failure of a dam or the sudden breakup of an ice jam. They are capable of tearing out trees, undermining buildings and bridges and scouring new channels.

Local Drainage or High Groundwater Levels

Can be caused by heavy local precipitation flooding areas other than delineated floodplains or along recognizable drainage channels. If local conditions cannot accommodate intense precipitation through a combination of infiltration and surface runoff, water may accumulate and cause flooding problems. Flooding of this nature generally occur in areas with flat gradients, and generally increase with urbanization which speeds the accumulation of floodwaters because of impervious areas.

Flooding occurs in all 50 States. FEMA indicates that the States with the most land area subject to flooding are Texas, Louisiana, Florida, and Arkansas. Since 1965, 30 Presidential Disaster Declarations have been declared in Texas. Of these 30 declarations, many have been declared in the Wharton County area.

In any given year, damaging floods are likely to occur on at least one major river or stream in Texas, affecting thousands of homes and businesses, and often, resulting in the loss of life. Floods in Texas killed more people between 1989 and 1998 than in any other state—145 out of a national total of 957 people killed in floods. On the average, Texas suffers \$254 million in losses (direct crop and property damage) each year from flooding.

Thunderstorms are a frequent occurrence within Wharton County. They may occur year round; however, the peak season is in the spring of each year. They occur most often between the hours of noon and 10:00 PM. Thunderstorms may be associated with lightning, hail, tornado, and flash flooding conditions. These storms are also capable of producing straight-line winds and microburst with extreme power. Thunderstorms kill more people in the United States than any other phenomenon.

The heavy rains associated with thunderstorms often cause flash flooding events within the community. Due to the flat terrain, flash flooding within the community renders streets impassable. Flash flooding events at times cause waters to rise to the point of impacting businesses and residences. In the aftermath of thunderstorm activity, it is not uncommon to find floodwaters in businesses and homes.

Lightning is a secondary effect of electrification within a thunderstorm cloud system. Lightning damage results from four effects of the lightning strike: electrocution of humans and animals; vaporization of materials along the path of the strike; fire caused by the high temperature produced by the strike; and a sudden power surge that can damage electrical and electronic equipment. Millions of dollars of direct and indirect damages result from lightning strikes on electric utility substations and distribution lines. While property damage is the major hazard associated with lightning, it should be noted that lightning strikes kill more people each year than either tornadoes or hurricanes.

Hurricanes and tropical storms combine size and intensity to become one of Earth's greatest and most awesome weather vehicles of death and destruction. In addition to hurricanes and tropical storms, damage may be caused by tornadoes that are created from the storms. The Texas coast is

not immune from damages from such storms. Hurricane season lasts over a six-month period from June 1 to November 30. Most hurricanes occur in August, September, and October.

Hurricanes are tropical cyclones in which winds reach constant speeds of 74 miles per hour or more and blow in a large spiral around a relatively calm center. Hurricanes are essentially giant whirlwinds in which air moves in a large tightening spiral around a center of extreme low pressure. Near the center, hurricane winds may gust to more than 200 miles per hour.

While hurricane winds are responsible for much of the damage, the storm surge and torrential rains accompanying hurricane landfall are responsible for most deaths. Historically, drowning has been the greatest cause of hurricane deaths. The storm surge raises wave heights and increases tides. Torrential rains because both flash flooding and sustained flooding in the area.

Tropical storms are weather events similar to hurricanes but sustained winds in these storms are between thirty-nine (39) and seventy-three (73) miles per hour. Tropical storms can affect an area by dropping large amounts of rain over a sustained period of time. Again, flash flooding and sustained flooding are the most deadly aspects of tropical storms.

Wharton County lies along the Texas Coast in an area with a thirty-seven percent (37%) chance of a hurricane, extreme hurricane or tropical storm occurring in any given year. A listing of Hurricanes and Tropical Storms that have impacted Wharton County and the Texas Gulf Coast may be found in the Introduction/History of Flooding Section of this Plan.

Wharton County participates in annual training exercises related to hurricane/tropical storm events. In May 2006, representatives from Wharton County participated in the Governor's Division of Emergency management (TxDEM) planning event for the State Hurricane Exercise for other Gulf Coast Communities.

2.5 HISTORICAL FLOOD EVENTS

As listed in the Governor's Division of Emergency Management (TxDEM) Hazards Analysis, historically floods are and continue to be one of the most frequent destructive and costly natural hazards. Floods are a natural and recurrent event. Floods take place every year and in all seasons. Flooding events are usually broken into three different categories: flash floods, riverine floods, and tidal floods. Given the present knowledge, the size, time and place of floods cannot be predicted more than a few hours in advance.

The following are major tropical storm and hurricane events have produced severe flooding and structural damage along the Texas Gulf Coast. Several of the storms identified resulted in damages within Wharton County:

- September 16-20, 1854
- June 1-5, 1871
- June 8-10, 1871
- September 8-18, 1875
- August 19-24, 1879
- June 21-25, 1880
- June 13-15, 1886
- June 18-16, 1888
- July 4-6, 1888
- July 3-8, 1891
- October 2-7, 1895
- September 10-13, 1897
- September 20-28, 1898
- September 7-10, 1900, “Galveston Great Storm”
- July 21, 1909
- August 16-17, 1915
- September 14, 1919
- August 12-15, 1932
- July 21-27, 1933
- August 26 – September 1, 1934
- October 11-17, 1938
- September 19-25, 1940
- September 11-16, 1941
- September 16-25, 1941
- August 30, 1942
- July 25-29, 1943
- August 24-29, 1945
- August 15-27, 1947
- September 27 – October 26, 1949
- July 27, 1957 – Hurricane Audrey
- July 24-25, 1959 – Hurricane Debra
- September 11, 1961 – Hurricane Carla
- September 16, 1963 – Hurricane Cindy
- August 6, 1964 – Tropical Storm Abby
- August 2-5, 1970 – Hurricane Celia
- September 12-17, 1970 – Tropical Storm Felice
- September 1-7, 1973 – Tropical Storm Delia
- July 25, 1979 – Tropical Storm Claudette
- August 30, 1979 – Tropical Storm Elena
- August 3-10, 1980 – Hurricane Allen
- September 4-7, 1980 – Tropical Storm Danielle
- August 15-18, 1983 – Hurricane Alicia
- June 23, 1986 – Hurricane Bonnie
- October 15-20, 1994 - Southeast Texas Flood
- August 21, 1998 - Tropical Storm Charley

- September 1998 – Tropical Storm Frances
- June 5-10, 2001 – Tropical Storm Allison
- September 5-7, 2002 – Tropical Storm Fay
- July 14-16, 2003 – Hurricane Claudette
- September 2003 – Tropical Storm Grace
- August 2005 – Hurricane Rita

Detailed information relating to hurricanes, tropical storms, and flash flooding events was gathered from the National Climactic Data Center, a division of NOAA and the National Weather Service.

2.6 ELEVATION REFERENCE MARKS

Wharton County is mapped as part of the Wharton County (county-wide) Flood Insurance Rate Maps that were revised April 5, 2006.

During the FEMA Wharton County remapping effort completed in 2006, the County recognized that the existing Elevation Reference Marks (ERM's) shown on the Wharton County and cities of El Campo and Wharton FIRMs were established in the late 1970's and early 1980's and were no longer usable for floodplain management. Many of the 1970's and 1980's ERM's had been destroyed and all were referenced to NGVD 1929. To add to this problem the 1970-80's benchmarks had not been releveled or adjusted to the North American Vertical Datum (NAVD) of 1988, which is the new national elevation standard that complies with the latest FEMA mapping and elevation specifications. The new Wharton County FIRM's identifies only elevation reference marks (ERM's) that are maintained in the National Geodetic Survey (NGS) website at www.ngs.noaa.gov. The reduced number of reliable elevation reference marks identified on the Wharton County FIRM's creates floodplain management problems for Wharton County and the cities of East Bernard, El Campo and Wharton. To comply with NFIP minimum requirements, communities must require that new and substantially improved construction, within designated Special Flood Hazard Areas, to be properly elevated so the lowest floor is at or above the base flood elevation and referenced to NAVD 1988. With a reduced number of NAVD 1988 Elevation Reference Marks available, each community must require developers or homeowners, that are requesting building permits, to provide elevation certificates or elevation data based on NAVD 1988 or acceptable conversion from NGVD 1929 to NAVD 1988 to support the permit application.

The Wharton County Flood Mitigation Planning Committee evaluated the ERM coverage throughout the County to identify areas where additional ERM's are needed for floodplain management purposes.

Currently there are one hundred eighty eight (188) ERM's identified within the cities of East Bernard, El Campo, and Wharton and within the unincorporated areas in Wharton County as shown on the Wharton County Flood Insurance Rate Map. Listed below are the location and description of each ERM along with the corresponding Wharton County Flood Insurance Rate Map panel as published by the Federal Emergency Management Agency (FEMA).

FIRM Panel #	FIRM Date	No.	NAVD Datum	ERM Numbers
48481C0025	4/5/2006	0	1988	San Bernard River – Zone A
48481C0050	4/5/2006	2	1988	AX0118 ; AX0420
48481C0075	4/5/2006	11	1988	AX0070 ;AX0071 ; AX0092 ; AX0095 ;AX0120 AXO-121 ; AXO-122 ; AX0279 ;AX0280 ;AX0281 ;AX0282
48481C0100	4/5/2006	5	1988	AX0089; AX0090;AX0110; AX0111; AXO-114
48481C0125	4/5/2006	0	1988	W. Mustang Creek – Zone A
48481C0150	4/5/2006	6	1988	AXO364, AXO365, AXO367, AXO467, AXO468, AXO469
48481C0175	4/5/2006	9	1988	AXO370, AXO371, AXO399, AXO400, AXO401, AXO402, AXO403, AXO404, AXO405 AXO289,AXO291, AXO293, AXO295, AXO296, AXO298, AXO299, AXO301, AXO303, AXO304, AXO406, AXO407, AXO408, AXO409, AXO414, AX2546
48481C0200	4/5/2006	16	1988	AXO406, AXO407, AXO408, AXO409, AXO414, AX2546
48481C0225	4/5/2006	0	1988	San Bernard River;W. Bernard Ck; Cypress Slough, Boone Branch,
48481C0250	4/5/2006	0	1988	Goldenrod Creek
48481C0275	4/5/2006	1	1988	AXO728
48481C0300	4/5/2006	0	1988	W Mustang Ck. And Trib, Chitland Ck; Porters Ck, Sandy Ck, Pinoak Ck & Trib, Middle Turkey Ck, E Turkey Ck.
48481C0325	4/5/2006	7	1988	AXO429, AXO431, AXO432, AXO434, AXO435, AXO436, AXO437
48481C0330	4/5/2006	4	1988	AXO372, AXO373, AXO470, AXO471
48481C0335	4/5/2006	4	1988	AXO375, AXO376, AXO377, AXO378
48481C0340	4/5/2006	0	1988	E Fork Jones Ck & Trib, Jones Ck., Colorado R.
48481C0345	4/5/2006	6	1988	AXO318, AXO321, AX2551, AX2552, AX2553, AX2554
48481C0355	4/5/2006	7	1988	AXO309, AXO380, AXO449, AXO450, AX2547, AX2548, AX2549
48481C0360	4/5/2006	0	1988	Caney Ck, Peach Ck, Baughman Slough, Peach Ck Tribs 2,3 & 4
48481C0365	4/5/2006	6	1988	AXO282, AXO283, AXO315, AXO385, AXO386, AX2550
48481C0370	4/5/2006	2	1988	AXO387, AXO388
48481C0380	4/5/2006	0	1988	San Bernard R., Peach Ck, Turkey Slough, Horseshoe Slough
484810385	4/5/2006	0	1988	San Bernard R.
48481C0390	4/5/2006	1	1988	AW4315
48481C0395	4/5/2006	1	1988	AW4209
48481C0425	4/5/2006	0	1988	San Bernard R
48481C0450	4/5/2006	0	1988	Goldenrod Ck.
48481C0475	4/5/2006	3	1988	AXO717, AXO722, AXO752
48481C0500	4/5/2006	11	1988	AXO493, AXO494, AXO495, AXO496, AXO500,

FIRM Panel #	FIRM Date	No.	NAVD Datum	ERM Numbers
48481C0505	4/5/2006	3	1988	AXO501, AXO502, AXO503, AXO505, AXO506, AX2565
48481C0510	4/5/2006	9	1988	AXO497, AXO498, AXO499
48481C0515	4/5/2006	6	1988	AXO334, AXO337, AXO438, AXO440, AXO442, AXO531, AX2556, AX2557, AX2558
48481C0520	4/5/2006	4	1988	AX2562
48481C0550	4/5/2006	11	1988	AXO340, AXO533, AX2559, AX2560
48481C0575	4/5/2006	8	1988	AXO324, AXO325, AXO327, AXO329, AXO330, AXO508, AXO509, AXO510, AXO511, AXO514, AX2555
48481C0600	4/5/2006	10	1988	AXO393, AXO395, AXO482, AXO483, AXO484, AXO485, AXO486, AXO488
48481C0625	4/5/2006	0	1988	AW4200, AW4201, AW4202, AW4203, AW4204, AW4205, AW4305, AW4307, AW4307, AW4444
48481C0650	4/5/2006	10	1988	Unnamed Ck.
48481C0675	4/5/2006	10	1988	AXO353, AXO358, AXO490, AXO565, AXO567, AXO568, AXO569, AX2567, AX2568, AX2569
48481C0700	4/5/2006	9	1988	AXO536, AXO559, AXO560, AXO561, AXO562, AXO564, AXO570, AXO571, AX0572, AX0573
48481C0725	4/5/2006	4	1988	AXO515, AXO541, AXO547, AXO549, AXO550, AXO551, AXO552, AXO553, AX0554
48481C0750	4/5/2006	1	1988	AXO517, AXO518, AXO520, AXO521
				ANO109
Total		188		

The Wharton County Flood Mitigation Committee evaluated the 188 ERM's described on the Wharton County FIRMs. The ERM density for Wharton County is only 0.17 ERM's per square mile. Based on information posted on the National Geodetic Survey website, www.ngs.noaa.gov, only 45 of the 188 NGS monuments have been releveled to NAVD 1988 as part of the FEMA Remapping Project.

The Committee recommends that a minimum of 2 permanent ERM's per mile for detailed streams be established within the cities of east Bernard, El Campo, and Wharton and within the unincorporated areas of the County to supplement the ERMs shown on the April 5, 2006 FIRM's.

The Lower Colorado River Authority (LCRA) has established a High Accuracy Reference Network (HARN) that includes elevation reference marks releveled to NAVD 1988 with twenty three (23) HARN marks established in Wharton County. Six of the LCRA HARN marks are also NGS monuments and all have either brass or aluminum disks. The LCRA HARN is accessible on line at www.lcra.org.

As a function of the Wharton County Drainage Master Plan and San Bernard River Watershed Study, Halff Associates compiled a Wharton County NAVD 1988 Bench Mark Network that includes:

- NGS Bench Marks based on NAVD 1988
- LCRA HARN Bench Marks (3 additional HARN Marks were established by LCRA in 2007)
- New bench marks being established by the City of El Campo as part of the Wharton County Drainage Master Plan
- New Bench Marks established during field surveying for the Wharton County Drainage Master Plan
- New Bench Marks established during field surveying for the TWDB San Bernard River Watershed Study
- Texas Department of Transportation NAVD 1988 and HARN Bench marks

3.0 ASSESS THE PROBLEM (CRS ACTIVITY 511.5)

Wharton County and the cities of East Bernard, El Campo and Wharton are subject to flood losses during coastal storms and flood events. Therefore Wharton County and the cities of East Bernard, El Campo and Wharton adopted flood damage prevention ordinances and enrolled in the National Flood Insurance Program (NFIP).

Wharton County enrolled in the NFIP Regular Program on February 27, 1987 based upon Texas Commission on Environmental Quality (TCEQ) records. The Pre-FIRM (Flood Insurance Rate Map) date for structures within the unincorporated areas in Wharton County is April 18, 1983, based upon the date of the initial Wharton County Flood Insurance Study (FIS) and FIRM. The current Wharton County Flood Insurance Rate Maps that include the cities of East Bernard, El Campo and Wharton are accessible to the public via the Internet at www.fema.gov

The Federal Emergency Management Agency (FEMA) has classified Wharton County and the cities of East Bernard, El Campo and Wharton as Category “B” Repetitive Loss Communities, with each having less than 10 repetitive loss properties. However, research of the NFIP Flood Insurance Paid Loss Database, provided by FEMA Region VI, lists 16 properties in Wharton County (unincorporated areas), 15 properties in the City of Wharton and 13 properties in the City of El Campo that have received two or more paid flood insurance claims. Therefore as a condition of participation in the Community Rating System (CRS) Program, FEMA requires a Category “C” community, having more than 10 repetitive loss properties, to adopt a floodplain management plan that addresses all hazards within the community and not limited to only repetitive loss areas. The Wharton County Flood Mitigation Plan qualifies as a floodplain management plan for the CRS Program. Should Wharton County and/or the cities of El Campo and Wharton choose to enroll in FEMA’s Community Rating System (CRS) Program, flood insurance policies for all properties located within the CRS Community would receive an initial 5% reduction (CRS Class 9) for annual flood insurance premiums and policies. Additional flood insurance policy premium reductions will be granted when the CRS Community improves its’ CRS rating.

3.1 DISCUSSION OF THE NUMBER AND TYPE OF BUILDING SUBJECT TO THE HAZARDS.

Based on FEMA Community Information System records Wharton County has 2,144 flood insurance policies in force with coverage totaling \$330M. Based upon FEMA Community Information System records, since 1978 a total of 458 flood claims have been paid for losses totaling \$8.6M. Based on an average flood damage claim of \$ 18,823, there is strong justification to purchase flood insurance for flood-prone properties located throughout Wharton County.

Table 4: NFIP Policies and Claims Information for Wharton County

Annual Premiums	Community	Policies (#)	Coverage (\$)	Claims (#)	Claims (\$)	Repetitive Loss
\$392,165	Wharton County (Unincorporated)	930	\$153,115,200	162	\$3,646,864	5
\$7,762	City of East Bernard	24	\$4,727,000	0	\$0	0
\$210,847	City of El Campo	546	\$77,330,700	161	\$2,853,872	5
\$287,264	City of Wharton	644	\$95,387,800	135	\$2,122,015	7
\$898,038	Wharton County Total	2,096	\$330,560,700	458	\$8,622,751	17

NFIP Data as of September 30, 2007

The National Flood Insurance Program - Texas Repetitive Loss List shows Wharton County and cities of El Campo and Wharton as Category “B” Repetitive Loss Communities and the City of East Bernard as a Category “A” Repetitive Loss Community. Repetitive Loss Properties are properties that have received two or more paid flood insurance claims that exceed \$1000.00 per claim. The NFIP classifies Repetitive Loss Communities based upon the total number of repetitive loss properties within the community:

- Class “A” no repetitive loss properties within the community
- Class “B” more that one but less than 10 repetitive loss properties within the community
- Class “C” 10 or more repetitive loss properties within the community

The Repetitive Loss properties and categories for Wharton County are as follows:

<u>Community</u>	<u>Total Category</u>	<u>Total Properties</u>	<u>Losses</u>	<u>Payments</u>
Wharton County (unincorporated)	“B”	5	10	\$169,665
City of East Bernard	“A”	0	0	0
City of El Campo	“B”	5	14	\$91,759
City of Wharton	“B”	7	14	\$110,671
Total		17	38	\$372,095
Average losses per property and average loss	2.23	\$9,791		

- Category is the NFIP Repetitive Loss Community Category
- Properties is the total number of repetitive loss properties within the community
- Total Losses is the total number of paid flood insurance policy claims paid for repetitive loss properties
- Total Payments is the total paid flood insurance policy claims paid for repetitive loss properties
- Average is the average number of claims per property and average claim payment

The current annual flood insurance premium for the 2,144 policies in force in Wharton County and the cities of East Bernard, El Campo and Wharton is \$878,038. Communities that adopt sound floodplain management programs, as demonstrated by the recent efforts by Wharton County and the cities of East Bernard, El Campo and Wharton, are eligible to enroll in FEMA's Community rating System (CRS) Program. A CRS Rating of 9 for Wharton County and all participating cities would result in a 5% annual flood insurance premium reduction for all NFIP policies and the annual flood insurance premium savings would be approximately \$43,900. If all 2,144 policies were for properties located in the designated Special Flood Hazard Area (SFHA) the annual premium savings would be \$ 87,800 for CRS Class 8 and \$131,700 for CRS Class 7. The Goals of the Wharton County Flood Mitigation Plan is for one or more of the participating communities to enroll in CRS with a goal to obtain CRS Class 7. A CRS 7 classification would result is a maximum of 15% annual premium savings for properties located in the SFHA and could be as much as \$658,000 over the 5-year CRS rating period. This assumes that the flood insurance policy base remains at current levels and premium rates do not increase. Both assumptions are unlikely because historically the NFIP policy base increases as the public become more aware of flood hazards and unlikely due to major flood losses that have occurred in recent years will most likely result in NFIP policy premium increases.

3.2 STRUCTURES THAT HAVE RECEIVED FLOOD INSURANCE CLAIMS.

Wharton County has experienced numerous flooding events with many occurring prior to the creation of the NFIP and not reported in FEMA's NFIP Flood Loss Records. Properties that flood repeated times have become a National concern and prompted Federal and State legislative actions such as the Nation Flood Insurance Program Reform Act and Texas Senate Bill 936. FEMA classifies a Repetitive Loss Property as a property (or structure) that has received two or more paid NFIP flood insurance claims that exceed \$1,000.00 each. Based on NFIP Repetitive Loss Summary for the State of Texas dated June 30, 2004, Wharton County and the cities of East Bernard, El Campo and Wharton have a total of 17 Repetitive Loss Properties that have suffered 38 flood losses totaling \$372,095 with an average loss payment of \$9,791. Due to mitigation actions by the City of Wharton with assistance from FEMA, the Governor's Division of Emergency Management (TxDEM), and individual homeowners, two (2) properties have been elevated so that the lowest floor of each elevated structure is above the base flood elevation. The cities of El Campo and Wharton utilized Hazard Mitigation Grant Funds (HMGP) and Texas Housing and Community Affairs (HCA) funding to finance the six (6) Elevation Projects that were completed in 2005. Based on FEMA's Repetitive Loss Summary Report there 17 Repetitive Loss Properties in Wharton County that have suffered 38 flood losses totaling \$372,095.95 with an average loss payment of \$9,791.99. Wharton County and the City of El Campo have 5 Repetitive Loss Properties each and the City of Wharton has 7. Recent acquisition, relocation, elevation and demo-rebuild activity by El Campo and Wharton has reduced the number of non-mitigated Repetitive Loss Properties. However the Wharton County Flood Mitigation Planning Committee expressed concern that the number of Repetitive Loss Properties will increase with the next flood event based on the large number 444 of flood insurance claims that have been paid in Wharton County. There are 2,144 individual flood

insurance policies in force that represents only a small percentage of properties that have a flood risk.

The Flood Insurance Reform Act (FIRA) of 2004 was signed into law June 30, 2004. The FIRA initiates a five-year pilot program to assist local communities with mitigating damage and loss to “severe repetitive loss properties”. Residential one to four unit severe repetitive loss properties are ones that: 1) have been the subject to four or more separate claims valued at more than \$5,000 each and collectively valued at more than \$20,000; or 2) properties with two or more claims the total value of which exceeds the value of the property. Multifamily properties with five or more units also are covered by the mitigation program and will be designated according to a definition of “severe repetitive loss” for multifamily property established by FEMA through regulations. FEMA has identified three (3) properties in Wharton County as Severe Repetitive Loss (SRL) Properties.

The SRL pilot program will provide funding to state and local governments to fund mitigation activities. The mitigation offers may include elevation, relocation, demolition, rebuilding, flood-proofing and purchasing property. The FIRA establishes a formula for distribution of federal mitigation funds to state and local governments, provided the state or local governments match 25% of the federal funding granted. The state and local government matching funds requirement can be reduced to 10% at the discretion of FEMA if the state has an approved mitigation plan and the Director of FEMA determines that the state has taken action to reduce the number of severe repetitive loss properties. The Governor’s Division of Emergency Management (TxDEM) prepared and submitted the Texas Mitigation Plan to FEMA to comply with the Disaster mitigation Act of 2000 requirements. The Texas Mitigation Plan was prepared as an “enhanced” plan and addresses specific issues such as severe repetitive loss properties. If the Texas Mitigation Plan prepared by TxDEM is approved by FEMA it should reduce the local governments match to 10% for mitigation of severe repetitive loss properties.

As a proposed mitigation action of the Wharton County Flood Mitigation Plan, a Repetitive Loss Plan must be developed by communities that may elect to enroll in FEMA’s Community Rating System (CRS) Program. The Repetitive Loss Plan must be reviewed and updated annually by each community that elects to enroll in the CRS Program. It is important to note that flooding has damaged additional properties throughout the County but exact records are not known because the properties and losses were not covered by flood insurance. Neither FEMA nor the TxDEM maintain records that indicate all flooded properties within Wharton County and participating communities.

3.3 PLAN AND PROCEDURES FOR WARNING AND EVACUATION

Websites provide valuable information related to warning and evacuation such as the National Weather Service, the Governor’s Division of Emergency Management and Lower Colorado River Authority:

National Weather Service (NWS)

www.srh.noaa.gov/hgx

NWS “Turn Around Don’t Drown”

www.srh.weather.gov

NWS Prec Analysis: http://www.srh.noaa.gov/rfcshare/precip_analysis_new.php
USGS Real Time Flow <http://waterdata.usgs.gov/tx/nwis/current/?type=flow>
Governors Division of Emergency Management (DEM) www.txdps.state.tx.us
Lower Colorado River Authority www.lcra.org
Texas A&M Hazard Reduction and Recovery Center (HRRC) <http://hrcc.tamu.edu>

The Emergency Management Plans for the cities of east Bernard, El Campo and Wharton and Wharton County outline the plans and procedures for warning and evacuation during incidents, emergencies and disasters. As outlined in the emergency management plan, detailed information is described below.

Warning

The primary objective of a warning system is to notify key officials of emergency situations and disseminate timely and accurate warnings to the population at risk. Wharton County acknowledges that the need to warn the public of impending danger may arise at any time. In order to reduce loss of life and property, adequate and timely warning must be provided. Appropriate action-oriented information must be supplied to citizens.

A warning period will be available for most emergency situations. However, the amount of lead-time will vary from hazard to hazard. Proper use of a warning period will save lives, reduce injuries and protect property. The most common warnings issued are those for severe weather. Other local hazards that may call for warnings are hazardous materials incidents from fixed facilities and/or transportation sources as well as radiological incidents and urban fires. Warnings will be issued when an event might endanger life or property.

The primary warning point for most warnings is the Texas Department of Public Safety Area Warning Center located in Houston, Texas. Upon notification of an emergency situation, the Department of Public Safety Area Warning Center will inform local warning points (LWP). The LWP for Wharton County and the City of East Bernard is the Wharton County Sheriff's Office; the City of El Campo is the El Campo Police Department; and the City of Wharton is the Wharton Police Department. Each of these warning points are manned 24 hours per day. Upon receipt of the information, each LWP verifies warning information where necessary and disseminates pertinent information to specific local officials and departments. Once warnings are received and where necessary, verified, the LWP will disseminate appropriate information through available communication channels. Warnings will continue until such time they are no longer required.

The Wharton County Sheriff has overall responsibility for warning however the Sheriff relies heavily on the Wharton County Emergency Manager and each City Manager and Emergency Management Coordinator (cities of El Campo and Wharton) to carry out this function. The Sheriff assists each Emergency Management Coordinator by coordinating the warning system operations with other local agencies. Wharton County and each community have adopted Emergency Response Plans that describe the procedures to disseminate emergency information

to the news media for the general public. Local radio and television stations broadcast Emergency Alert System (EAS) messages when requested by local government officials. To effectively utilize the EAS, local governments and broadcasters coordinate the procedures used to transmit warning messages and instructions from the government to the broadcasters. Additionally, the National Oceanic and Atmospheric Administration (NOAA) Weather Radio station will broadcast weather watches and warnings issued by the National Weather Service (NWS). Weather radios are activated when such messages are broadcast. LCRA has installed NOAA Radio Transmitters in Wharton County at New Taiton and nearby in the City of Bay City. NOAA weather radios have been installed in critical facilities in Wharton County.

Receipt Of Warning

The LWP Receives Warnings from the National Warning System (NAWAS), a 24-hour nationwide, dedicated, multiple line telephone warning system linking federal agencies and the states that is used to disseminate civil emergency warnings. The NAWAS is a voice communications system operated by FEMA. The warnings that are disseminated include: attack warnings, fallout warnings, or natural/technological warnings.

The Texas Warning System (TAWAS) is a state level extension of NAWAS. It consists of a dedicated telephone warning system linking the state warning point (in Austin) with other regional warning centers throughout the state. Once a national warning is received at TAWAS, it is transmitted via teletype messages on the Texas Law Enforcement Telecommunications System (TLETS) to the LWP. TAWAS also disseminates warning messages from the Governor or other key state officials to appropriate regions within the state.

The NWS disseminates weather forecasts, watches, and warnings via the NOAA Weather Wire Service. The NOAA service is a satellite communications system that broadcasts to specialized receiver terminals. The following are among a few of the weather messages that are provided: flood and flash flood watches and warnings, severe weather watches and warnings, tornado watches and warnings, and tropical weather watches and warnings.

Finally, Wharton County has developed a warning diagram for warning dissemination officials. Contained in Annex A of the Emergency Management Plan, the diagram outlines general warning dissemination procedures.

Dissemination Of Warning

The LWP has a variety of means to broadcast warnings to the public. Wharton County presently has no outdoor warning system and therefore must rely on the use of mobile sirens, public address systems, EAS and door-to-door notification. Within the limits of the authority delegated, the LWP will determine if a warning needs to be issued and mechanism of dissemination.

All commercial radio and television stations and cable television companies must participate in the Emergency Alert System (EAS) as a condition of licensing. These organizations must broadcast presidential warnings and may broadcast state and local warnings as well. The stations

are encouraged to broadcast all warning messages, however, ultimately the decision for broadcast lies with the broadcaster.

The public may be warned by route alerting using vehicles equipped with sirens and public address systems. The Emergency Management Plan has identified sheriff, police and fire vehicles to be used for this purpose. Response personnel going door-to-door may also deliver warnings. While each of the methods is effective in warning delivery, the methods are labor-intensive, time-consuming activities. These methods may be considered ineffective for warning large areas.

The NWS, USACE and the LCRA have established a network of rain and flood detection devices for the purposes of early warning within the Lower Colorado River Watershed. In the event of excessive rain, the NWS in conjunction with the LCRA will issue warnings where necessary.

Evacuation

A wide variety of emergency situations might require an evacuation of portions of the local area. Limited evacuations of a specific geographic area might be needed as a result of a hazardous materials transportation accident, major fire, natural gas leak, or localized flash flooding. Large-scale evacuation could be required in the event of a major hazardous materials spill, terrorist attack, extensive flooding, or hurricane.

While Texas has no mandatory evacuation law, the Wharton County Judge in cooperation with the various City Managers and Emergency Management Coordinators may recommend evacuation of a threatened area. Once a disaster declaration has been issued, actions may be taken to control re-entry into a stricken area. Additionally, the movement of people and occupancy of buildings within the disaster area may also be controlled.

Evacuation is one means of protecting the public from the effects of a hazard. In this instance, protection is achieved when persons are physically moved away from the hazard. Wharton County recognizes the benefits of evacuation and has therefore developed evacuation procedures for the entire County.

The decision to evacuate is decided upon by each community Emergency Management Coordinator and elected officials. The Emergency Management Coordinator will evaluate the need for evacuation, plan for evacuation, and coordinate support for the evacuation effort. During times that evacuations must be conducted because of incidents that occur without warning, evacuations may have to be planned quickly and carried out with available resources.

The County Judge and/or the various Mayors, City Managers or Emergency Management Coordinators will normally advise the public to evacuate a hazard area. In situations where rapid evacuation is critical to the continued health and safety of the population, the on-scene senior official may advise the public in the immediate vicinity to evacuate. In the case of hazardous materials spills or fire, the senior fire official will make the evacuation recommendation. During floods, the evacuation notice will generally be initiated after evaluation and recommendation of

the Emergency Management Coordinator. For slowly developing emergency situations, advance warning should be given to affected residents as soon as it is clear evacuation may be required.

Persons to be evacuated should be given as much warning time as possible. For slow moving events, the evacuation notice should be given to affected residents if it appears that hazardous conditions may warrant such action. Citizens should be advised that the request to evacuate may occur with thirty minutes notice or less.

All warning modes will be utilized to direct the affected population to evacuate. Wherever possible, the warning will be given on a direct basis as well as through the media. The use of law enforcement and fire emergency vehicles moving through the affected area with sirens and public address systems is usually effective. However, if used, this procedure should be communicated to the public in advance to reduce confusion concerning vehicle usage. In addition, there should be door-to-door notifications.

Law enforcement personnel will sweep the evacuated area to ensure all persons have been advised of the evacuation and have responded accordingly. Persons who refuse to follow evacuation instructions will be left alone until all who are willing to leave have been provided for. If time permits, further efforts will be made to persuade those remaining to evacuate.

The public information officer will ensure that evacuation information is disseminated to the media on a timely basis. Instructions to the public identifying traffic routes to be followed, location of temporary reception centers as well as situation updates will be issued as information becomes available. When the incident that generated the need for evacuation is resolved, evacuees must be advised when it is safe to return to the area.

Wharton County and the many Texas counties and communities located along the Texas Gulf Coast take hurricane evacuation seriously. The Governor's Division of Emergency Management (TxDEM) in partnership with the Texas A&M Hazard Reduction and Recovery Center has prepared Storm Evacuation Maps for each segment along the Gulf of Mexico including inlets, bays and affected areas. The hurricane evacuation information is accessible by the public on the web at: www.hurricanes.tamu.edu.

The Texas Department of Public Safety published the Disaster Sub-District 2C-Pierce Emergency Evacuation Traffic Management Plans and Contra-Flow Traffic Plans dated March 31, 2006 for:

- Austin County
- Colorado County
- Fayette County
- Fort Bend County
- Matagorda County
- Washington County
- Wharton County

TxDDEM Evacuation Map for the Texas Gulf Coast Area includes Wharton County. The Evacuation Maps are published and distributed by public-private partnerships. The maps are made available to the public by businesses such as Radio and TV Stations, food stores, pharmacy's, and other local businesses located throughout the community.

In 2002, the Governor's Division of Emergency Management informed Texas communities that Evacuation Time Estimates (ETEs) for hurricane evacuations had been revised. For the Wharton County area, evacuation estimates for a Category 5 storm were raised to twenty (20) hours. The revised times incorporate risk area population data from the 2000 Census and the results of a 2001 behavior study of the residents of the Texas coast. The TxDDEM is confident that the new methodology for determining ETEs is a more accurate portrayal of what people will do and how long the evacuation process will take.

In the letter from TxDDEM the factors impacting evacuation times were identified as follows: increases in population, increases in the number of vehicles used for evacuation, evacuee preparation time, sympathetic evacuation, and traffic modeling. Most areas within the IH 69 Corridor from Houston to Corpus Christi area have experienced increases in population as a result of the 2000 Census figures. The increase in population subsequently increases the time necessary for evacuation. With an increased population, the number of vehicles used for evacuation has also increased. In a behavioral study conducted in 2001, respondents indicated that they had more vehicles per capita than in previous surveys, of which they intend to take with them when they evacuate. When evaluating evacuation time, the behavioral study found that evacuation preparation time exceeds previous estimates. Most individuals were assumed to evacuate within three hours of an evacuation notice being delivered. Realistically, the behavioral study indicated evacuees would evacuate within four to six hours of receipt of the evacuation notice.

Evacuation traffic is a major concern for Wharton County because the primary traffic route is east or west on US 59 (new IH 69). Travel to the east is immediately impacted by the Houston metroplex and travel to the west is parallel to the Gulf Coast and perhaps in harm's way. Travel to the north is limited to SH 71 and considered to be a secondary roadway. Northbound SH 71 evacuation is also limited by IH 10 which is only 37 miles NW of US 59.

During an evacuation event there is a major concern that portions of the Houston Metroplex (Sugarland, Missouri City, Richmond Rosenberg) may evacuate to the southeast along US 59 and pass through Wharton County. Heavy traffic from the Houston Metroplex would complicate options for evacuations from Wharton County.

It is understandable that the latest evacuation time estimates for areas in Wharton County are considerably longer due to population increases in the Texas Gulf Coast region.

Based upon responses to the Flood Mitigation Plan Questionnaire distributed by Wharton County, the majority of citizens would evacuate voluntarily if requested by law enforcement or a representative of a City or County.

3.4 CRITICAL FACILITIES

The Wharton County Flood Mitigation Planning Committee has identified facilities critical to the fulfillment of city and county services as well as facilities that are vulnerable to the impact of disaster. A map illustrating the location of critical and vulnerable facilities is located in Attachment “F” of this plan. The following locations are listed as vulnerable facilities with their approximate flood zone identified:

Facility	Address	Flood Zone
City Hall – East Bernard	704 Church Street	Zone X Unshaded
City Hall – El Campo	315 E. Jackson	Zone X Unshaded
City Hall – Wharton	120 E. Caney	AE/X Shaded
County Court House/Wharton	309 E. Milam	Zone AE
East Bernard Fire Department	808 Leveridge Street	Zone X Unshaded
El Campo Fire Station	220 Merchant Street	Zone X Unshaded
Wharton Fire Station	319 N. Fulton Street	Zone X Shaded
Louise Fire Station	707 3 rd Street	Zone X Unshaded
Danevang Fire Station	10753 S SH 71	Zone X Unshaded
Glen Flora Fire Station	131 S. Bridge Street	Zone AE
Hungerford Fire Station	8018 Houston Street	Zone X Unshaded
El Campo Memorial Hospital	303 Sandy Corner Road	Zone X Unshaded
Gulf Coast Medical Center, Wharton, Texas	10141 US 59 Road	Zone X Shaded

Fire Stations

Fire stations are critical facilities during all emergency events especially flooding.

The City of El Campo Fire Department has one (1) fire station located at 220 Merchant Street in El Campo and manned by volunteer fire fighters.

The City of Wharton Fire Department has one (1) fire station located at 319 N. Fulton Street in Wharton and manned by volunteer fire fighters.

The City of East Bernard Fire Department has one (1) fire station located at 880 Leveridge Street in East Bernard and manned by volunteer fire fighters.

Wharton County has five (5) fire stations located throughout the County all manned by Volunteer fire fighters:

- Boling – located at 6735 FM 442
- Hungerford – located at 8018 Houston Street
- Glen Flora – located at 131 South Bridge Street
- Louise – located at 707 3rd Street
- Danevang – located at 10753 South SH 71

The East Bernard, El Campo and Wharton Fire Departments assist the 5 Wharton County Fire Stations and provide fire protection services within the unincorporated areas in Wharton County.

The El Campo Fire Department also provides Emergency Medical first responder services. Fire Department representatives respond to medical calls but do not provide patient transport. The El Campo EMS provides patient transport to the appropriate medical facility.

Schools

School facilities often provide emergency shelter when needed. East Bernard, El Campo and Wharton each have school districts with one elementary, junior high and high schools in each city. The Boling and Louise School Districts are located in the unincorporated area in Wharton County

Wharton County Junior College is located in the City of Wharton.

Business/Industry

The business opportunities within Wharton County are enhanced by its location. US 59 is a major transportation corridor and will become IH 69 with connections from Mexico to Houston and then throughout the US. Major businesses and industries in Wharton County are located along the US 59 corridor.

3.5 WETLANDS, RIPARIAN AREAS, AND SENSITIVE AREAS

Wetlands, a natural resource, are a key mitigation tool in the fight against rising floodwaters. Wetlands diminish wave action, therefore controlling erosion. They also allow sediment to settle out of storm water, therefore improving water quality. When wetlands are used for construction, the above-mentioned benefits are lost; water flow is restricted causing greater flooding; and valuable property is lost causing an increase in flood insurance rates.

The Colorado and San Bernard River Corridors are rich with wetlands and wildlife habitat areas. Wharton County and the cities of East Bernard, El Campo and Wharton all participate in the National Flood Insurance Program and have adopted flood damage prevention ordinances that require Section 404 (Clean water Act) Wetland Permits and enforce the Endanger Species Act (ESA) Permits and requirements be obtained as part of the floodplain development process that impacts wetland and wildlife habitat areas.

Wharton County and participating communities have developed numerous parks, wildlife refuge areas, and outdoor recreational facilities. There are facilities consisting of walking trails, picnic tables, swimming pools, tennis courts, ball fields, boat ramps, and outdoor recreation areas. Both the city of El Campo and Wharton have invested extensively in its local parks system.

3.6 US ARMY CORPS OF ENGINEERS FLOOD PREVENTION PROJECT

The Lower Colorado River Authority was the local sponsor for the US Army Corps of Engineers Flood Damage Prevention Project to identify Federal Flood Protection measures that can mitigate the impacts of flooding along the Colorado River. The Corps of Engineers Study addressed flooding on:

- Onion and Williamson Creek Watersheds in and around Austin, Texas
- Flood Damage Reduction in the City of Wharton, Texas

Wharton County and the cities of East Bernard, El Campo and Wharton support the project that will reduce flood damages in Wharton County. The following announcement for a Public Meeting held in the City of Wharton, September 14, 2006 describes the proposed project:



DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF:

August 18, 2006

Planning, Environmental, and Regulatory Division

**JOINT PUBLIC NOTICE
NOTICE OF AVAILABILITY
U.S. ARMY CORPS OF ENGINEERS, FORT WORTH DISTRICT
Lower Colorado River Basin Phase I, Texas
Volume I – Project Summary
Volume II – Onion Creek Interim Feasibility Report
and Integrated Environmental Assessment
and
Volume III – Wharton Interim Feasibility Report
and Integrated Environmental Assessment**

**WATER QUALITY CERTIFICATION
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY**

Interested parties are hereby notified that the U.S. Army Corps of Engineers (Corps), Fort Worth District has prepared a draft Lower Colorado River Basin Phase I, Texas Project Report, which is proposing to implement a project addressing proposed activities to provide flood damage reduction, ecosystem improvement, and recreation in the Onion and Williamson Creek Watersheds in and around Austin, Texas (Volume II), and a project addressing proposed activities to address flood damage reduction in the city of Wharton, Texas (Volume III) within the Lower Colorado River Basin, Colorado River, Texas. The Corps is also requesting water quality certification from the Texas Commission on Environmental Quality (TCEQ) under Section 401 of the Clean Water Act (CWA) for both of these projects.

Authority. This Notice of Availability is being issued to interested parties in accordance with the National Environmental Policy Act (NEPA) of 1969, Public Law 91-190, as amended, and the implementing regulations in Engineering Regulation 200-2-2.

Purpose and Background. The Onion Creek and Wharton projects are a result of a Lower Colorado River Basinwide Study which recommended detailed studies in the two study areas in order to address water related resource problems and opportunities including flood damage reduction, ecosystem restoration and recreation in Onion and Williamson Creeks in Austin, Texas and within the city of Wharton, Texas. A *Final Programmatic Environmental Impact Statement, Flood Damage Reduction and Ecosystem Restoration, Lower Colorado River Basin, Colorado River, Texas August 2005* (PEIS) was conducted during the basin wide study effort. Both Volume II and III are interim feasibility reports and integrated environmental assessments (EA) tiered to the PEIS. The study area for the Onion Creek Project is the Onion Creek and Williamson Creek Watersheds, which were further refined to the Timber Creek, Onion Creek Forest/Yarrabee Bend, Bluff Springs Road/Perkins Valley, Onion Creek Subdivision, and Bear/Onion Confluence areas of interest. These areas of interest incur extensive flooding, have latent demand for recreation and are in need of ecosystem restoration measures to restore degraded natural resources. The study area for the Wharton Project is primarily the city limits of Wharton, Texas. However, some project features reduce flooding and are located in Wharton County. The city of Wharton incurs extensive flooding throughout virtually the entire city.

Proposed Actions and Alternatives. In addition to the No Action, structural, non-structural and combined project alternatives are presented in the Timber Creek, Onion Creek Forest/Yarrabee Bend, Bluff Springs Road/Perkins Valley, Onion Creek Subdivision, and Williamson Creek areas of interest and the Wharton study area. The action alternatives were developed in accordance with the Principles and Guidelines (P&G), which followed the principles, standards, and procedures outlined in the Water Resources Council's "Economic and Environmental Principles and Guidelines for Water Related Land Resources Implementation Studies". Under the No Action Alternative, which is equivalent to the description of the future without-project condition, no measures would be taken to address the objectives and goals developed for flood protection, ecosystem restoration, or recreation.

The Recommended Plan for the Onion Creek project did not include proposed alternatives to be implemented in the Bluff Springs Road/Perkins Valley, Onion Creek Subdivision and Bear/Onion Confluence areas of interest because of the lack of Federal interest due to inferior benefit-to-cost ratios for flood damage reduction projects. Under the Recommended Plan the Timber Creek and Onion Creek Forest/Yarrabee Bend study areas would consist of the acquisition and removal of 81 and 410 residential structures, respectively in the 4% (25-year) annual chance of exceedance (ACE) floodplain; permanent closure of several streets or parts thereof; restoration of 16 and 190 acres of land to riparian woodlands; and installation of recreation features such as picnic shelters, hiking trails, restrooms, and supporting infrastructure. The Recommended Plan for the Williamson Creek area of interest would consist of channel excavation on one side or the other of the creek to create a benched effect for approximately

8,500 linear feet of creek in four separate reaches; and restoration of 114 acres of land to riparian woodlands.

The Recommended Plan in Timber Creek and Onion Creek Forest/Yarrabee Bend would consist of buyouts and would not affect Waters of the United States or require mitigation. The Recommended Plan in the Williamson Creek Area of Interest would impact approximately 15 acres and 6.02 AAHU of riparian woodlands and impact 8,500 feet of Waters of the United States. Approximately 23 acres of mitigation is proposed, which would provide 7.22 AAHU of habitat improve 4,000 feet of Waters of the United States. The Recommended Plan would be fully mitigated by the proposed mitigation plan.

The Recommended Plan for the Wharton project consists of structural features in the form of earthen levees and accompanying sumps, floodwalls, a channel enlargement, storm drain type drainage structures and an open cut ditch. Most of the project features would be implemented into three different drainage areas: Colorado River, Baughman Slough and Caney Creek. The Recommended Plan associated with the Colorado River would include the construction of 20,310 feet of levees, 19,010 feet of floodwalls and seven sump areas. The seven sumps would occupy 120 acres. Recommended features in Baughman Slough would include 6,610 feet of levees, 380 feet of floodwalls, 4,780 feet of channel modification and two sump areas. The two sumps would occupy approximately 43 acres. Recommended features in Caney Creek would include placement of reinforced concrete pipes and approximately 10,700 feet of open cut ditch.

Implementation of the Recommended Plan in Wharton would result in impacts including approximately 65 acres of riparian/hardwood forests (148 average annual habitat units (AAHU) using 4 species), 129 acres of grassland (193 AAHU using 3 species) and 10 acres of wetlands (12 AAHU using 3 species). The recommended mitigation plan calls for all habitat mitigation to be placed on project sump lands. Approximately 145 acres could be used to create replacement forest, shrub and native prairie habitat. Approximately 40 acres could be used to create replacement wetland habitat. The recommended mitigation plan would generate approximately 256 AAHU of forest habitat and 66 AAHU of wetland habitat. This is well over the required mitigation ratio of 1:1 to fully compensate for project impacts. The mitigation may be revised in the detailed design phase and would be coordinated with resource agencies.(italics added)

Public Meeting. Public Meetings have been scheduled for both project areas. The meeting for the Williamson Creek area of interest is schedule for September 7th, 2006 at 7:00 p.m. at Woodlawn Baptist Church, 4600 Manchaca Road, Austin, Texas 78745. The meeting for the Onion Creek areas of interest is scheduled for September 13th, 2006 at 7:00 p.m. at Mendez Middle School, 5106 Village Square, Austin, Texas 78744. The meeting for the Wharton Project is scheduled for September 14th, 7:00 p.m. at the Wharton Civic Center, Wharton Texas, 77488.

Copies of the draft Lower Colorado River Basin Phase I, Texas Interim Feasibility Report and Integrated Environmental Assessment Volumes I, II, and III are available for review at the U.S. Army Corps of Engineers, P.O. Box 17300, 819 Taylor Street, Fort Worth, Texas 76102-0300. Copies have also been distributed to the Pleasant Hill Library at 211 East William Cannon Drive Austin, Texas 78745 and the Wharton County Library at 1920 North Fulton Wharton, Texas

77488. The documents are also available for review on the Fort Worth District Internet Home Page at <http://www.swf.usace.army.mil/> and the project website at <http://www.fdep.org>.

Water Quality Certification. This project would result in a direct impact of greater than three acres of waters of the state or 1,500 linear feet of streams (or a combination of the two is above the threshold), and as such would not fulfill Tier I criteria for the project. Therefore, Texas Commission on Environmental Quality (TCEQ) certification is required. Concurrent with the processing of this Department of the Army project, the TCEQ is reviewing this project under Section 401 of the Clean Water Act, and Title 30, Texas Administrative Code Section 279.1-13 to determine if the work would comply with State water quality standards. By virtue of an agreement between the USACE and the TCEQ, this public notice is also issued for the purpose of advising all known interested persons that there is pending before the TCEQ a decision on water quality certification under such act. **Any comments concerning this request for water quality certification may be submitted to TCEQ, 401 Coordinator, MSC-150, P.O. Box 13087, Austin, Texas 78711-3087.** The public comment period for the water quality certification request extends 30 days from the publication of this notice. A copy of the public notice with a description of the work is made available for review in the TCEQ's Austin office. The complete project information may be reviewed in the USACE's office. The TCEQ may conduct a public hearing to consider all comments concerning water quality if requested in writing. A request for a public hearing must contain the following information: the name, mailing address, application number, or other recognizable reference to the application; a brief description of the interest of the requestor, or of persons represented by the requestor; and a brief description of how the application, if granted, would adversely affect such interest.

The draft reports will be available for public review for 30 days from the date of this notice. Comments or other inquires should be addressed to: Mr. Elston Eckhardt, Project Manager, at U.S. Army Corps of Engineers, Attention: CESWF-PER-P, P.O. Box 17300, Fort Worth, Texas 76102-0300, telephone (817) 886-1861.

William Fickel, Jr.
Chief, Planning, Environmental, and
Regulatory Division

Newman/1762
PAXTON, CESWF-PER-EE
HARBERG, CESWF-PER-E
CRAIG, CESWF-PER-P
BROOKS, CESWF-PM-C
CHURCH, CESWF-PA
CROSSWHITE, CESWF-OC
FICKEL, CESWF-PER

The USACE Chief's Report dated December 31, 2006, officially approved Phase 1 of the proposed Project.

THE FOLLOWING LEGISLATION WAS INTRODUCED IN CONGRESS IN MARCH 2007”:

H.R.1495

Water Resources Development Act of 2007 (Introduced in House)

SEC. 1001. PROJECT AUTHORIZATIONS.

Except as otherwise provided in this section, the following projects for water resources development and conservation and other purposes are authorized to be carried out by the Secretary substantially in accordance with the plans, and subject to the conditions, described in the respective reports designated in this section:

(38) LOWER COLORADO RIVER BASIN PHASE I, TEXAS- The project for flood damage reduction and environmental restoration, Lower Colorado River Basin Phase I, Texas, Report of the Chief of Engineers dated December 31, 2006, at a total cost of \$110,730,000, with an estimated Federal cost of \$69,640,000 and an estimated non-Federal cost of \$41,090,000.

3.7 CAPITAL IMPROVEMENT PROJECTS

Drainage Master Plans

The Wharton County Drainage Master Plan was initiated in 2006 and will identify drainage improvement projects needed to help guide future development of the watersheds in Wharton County. The Master Drainage Plan will also identify drainage improvements needed for the cities of East Bernard, El Campo and Wharton and Wharton County.

The Wharton County Drainage Master Plan (and San Bernard River Watershed Study) will include:

- The San Bernard River, Middle and West Bernard Creeks and Peach Creek including Baughman's Slough
- East, West, and Middle Mustang Creeks
- Caney Creek downstream of the City of Wharton
- Jarvis Creek
- Waterhole Creek
- Gardner Slough
- Blue Creek downstream of the City of El Campo
- Tres Palacios Creek downstream of the City of El Campo
- Jones Creek

The Wharton County Drainage Master Plan will develop floodplain mapping and H&H data for the San Bernard main channel, and flood profiles for the remaining creeks and identify cost effective flood damage reduction alternatives to mitigate high priority flood problems. County-

wide LIDAR has been obtained, which will provide Wharton County and participating communities a DEM (Digital Elevation Model) providing BFE information for most of the county.

Recommended drainage improvements will be identified for each watershed and described in the Master Drainage Plan with the estimated total cost for recommended drainage improvements summarized.

The City of El Campo and City of Wharton Drainage Plans:

Claunch and Miller, Inc. initiated the Master Drainage Plan for the City of El Campo in 2006 that includes the upper portions of Blue and Tres Palacios Creeks. Jones and Carter, Inc. is preparing a drainage plan for the City of Wharton that complements the LCRA/USACE levee plan. The Wharton County Drainage Master Plan and the City of El Campo Plan is scheduled for completion in January 2009.

A USACE Section 211 Program MOA (Memorandum of Agreement) has been approved by the US Army Corps of Engineers Galveston District and finalized with Wharton County. The Section 211 Program can provide 50% reimbursement in approved drainage improvement study and project expenditures.

3.8 IMPACT OF FLOODING

There are forty-two (42) Wharton County Flood Insurance Rate Map (FIRM) Panels listed in Section 2.1.

The Wharton County Flood Insurance Study dated April 5, 2006, describes the hydrologic and hydraulic analysis conducted for the streams in Wharton County. FEMA established the 10-, 50-, 100-, and 500- year flood profiles, base flood elevations, floodways and floodplain boundaries for all streams studied by detail H&H methods. The remaining streams were studied by approximate H&H methods and mapped showing the approximate boundary of the 1% Chance or 100-year flood.

Wharton County and the cities of East Bernard, El Campo and Wharton have adopted Flood Damage Prevention Ordinances to regulate development within designated flood prone areas.

Wharton County and the cities of East Bernard, El Campo and Wharton are mitigating the impact of flooding within the County. The current flooding impact is greatly reduced from what it was prior to FEMA's efforts to remap Wharton County in 2004 through 2006. Cooperative projects and coordination with LCRA and the USACE for Federal Flood Control Projects, channel improvement projects, and improved drainage system maintenance, are active projects to reduce future flood losses.

Participation in the CRS program will recognize each community's efforts to minimize flood losses. Wharton County and participating communities continue to encourage the purchase of

flood insurance as a mitigation measure. Flood insurance policies are available to all residents in Wharton County. The City of Wharton has submitted an application to enroll in FEMA's CRS Program which will result in reduced premiums for flood insurance policy holders. Wharton County and the cities of East Bernard and El Campo are evaluating the CRS Program and considering enrollment.

4.0 GOALS (CRS ACTIVITY 511.6)

Wharton County and the cities of East Bernard, El Campo and Wharton are all active participants in the Texas Colorado River Floodplain Coalition (TCRFC). The Wharton County Flood Mitigation Planning Committee incorporated the TCRFC mission statement, goals and objectives into the Flood Mitigation Plan.

The Texas Colorado River Floodplain Coalition (TCRFC) established the following mission statement:

"Encourage comprehensive consistent management of the floodplain along the Colorado River and its tributaries; provide a forum for data exchange; and facilitate a structured approach to managing the complex issues related to floodplain management."

The TCRFC Goals are:

- Prevent and reduce flood damage
- Increase State and Federal funding to the region for solutions
- Increase public awareness on flood issues
- Encourage robust, coordinated local regulation
- Provide basinwide coordination among local programs

TCRFC Specific Floodplain Management Goals

- Cooperative arrangement for floodplain management.
- Mechanism for sharing ideas and programs.
- Assist local government with technology, emergency management, training.
- Have a single entity partner with which State and Federal agencies can correspond.
- Current Flood Insurance Rate Maps (FIRMS) - Countywide.
- Public Education

TCRFC Floodplain Management Technical Objectives

- Adopt uniform standards for development.
- Create and maintain accurate and current base mapping.
 - Benchmarks
 - Corporate boundaries
 - Roads
 - Streams
- Review and comment on LOMCs.
 - Facilitate access to approved LOMCs.
- Maintenance of current H&H models.
- Update Zone A to establish BFE & floodways.

TCRFC Emergency Management Objectives

- Facilitate local floodplain management and emergency management program coordination.
- Coordinate federal, state, and local resources and programs
- (Project Impact, HMGP, FMAP, Challenge 21, NPDES, and ICC).
- Help local communities meet state requirements for emergency response.
- Facilitate a "flood preparedness plan" annex.
- Promote emergency communication/notification - NOAA, LCRA radios, local media.

TCRFC Training Objectives

- Train new member communities prior to joining Coalition.
- Coordinate state and federal training programs.
- Technical training for floodplain and emergency management staff.
- Training for consistent hydrologic/hydraulic modeling.
- Training for stakeholders (Insurance, Lenders, Surveyors, and developers).
- Policy Training for local officials.
- Public Awareness.
- Maintain a resource pool of Mutual Aid Trainers/Emergency Response Personnel.

TCRFC Legislative/Legal/Funding Objectives

- Work with Council Of Governments.
- Develop and manage annual budget - Administrative.
- Identify and pursue additional funding for diversified sources.
- Review and educate lawmakers on related legislative issues as a coalition and via lobbyists associated with other agencies.
- Assist with solicitation of federal funds for capital projects.

Through implementation of the following activities, flood hazard mitigation will be realized to reduce the threat to citizen's health and safety, and to reduce property damage caused by floods. Flood mitigation planning will improve the lives of the citizens of Wharton County and the environment.

CRS Activities

1. Evaluate the benefits of enrolling in FEMA's CRS Program
2. Review FEMA's Repetitive Loss List annually and submit data to FEMA.
3. Improve CRS Classifications annually.

Drainage Projects

1. Support the Wharton County Master Drainage Plan projects and objectives by design and construction of regional stormwater detention facilities and channel improvement projects throughout Wharton County.

2. Secure funding for design and construction of drainage improvement projects identified in the Wharton County Master Drainage Plan.

Floodplain Management

1. Evaluate the remaining (non-mitigated) Repetitive Loss Properties within Wharton County and participating communities for future Flood Mitigation Assistance (FMA) and Hazard Mitigation Grant Program (HMGP) Projects focused on acquisition, relocation and or elevation projects.
2. Establish additional Elevation Reference Marks to create county-wide coverage based on NAVD 88.
4. Encourage local citizens and business owners to purchase flood insurance on both the structure and contents of properties located within Wharton County and the cities of East Bernard, El Campo and Wharton.
5. Revise building requirements if necessary to minimize flood damage to new construction.
6. Review the current flood damage prevention ordinances and evaluate the current requirement to elevate new construction above the Base Flood Elevation. The City of Wharton currently required new construction to be elevated a minimum of one foot above BFE.
7. Coordinate with FEMA and revise flood damage prevention ordinances to reference future revisions to the Wharton County DFIRMs.

Property Protection

1. Increase awareness for the need to purchase Flood Insurance for properties located in Wharton County and the cities of East Bernard, El Campo and Wharton. In the survey, conducted as part of the Flood Mitigation Plan preparation, there are 57% of people know that they live in a designated flood hazard zone. See Plan Section 1.3.2. The Texas Colorado River flood Coalition (TCRFC) TIMS can assist in helping inform the public by having an interactive map that people can easily use to help find their home or place of business to see if it is in a flood zone. TIMS has an option of entering an address to help the user find the specific site. TIMS can be found on the following link: <http://tims.lcra.org/Launch.aspx>
2. Wharton County and the cities of East Bernard, El Campo and Wharton are subject to flooding from extreme coastal storms resulting from intense rainfall and overflows from the Colorado River, San Bernard River and tributaries. Wharton County and the cities of East Bernard, El Campo and Wharton are enrolled in the National Flood Insurance Program and flood insurance is available for all structures located in Wharton County. Flood insurance is a citizen's first line of defense to offset flood losses. Wharton County and the cities of East Bernard, El Campo and Wharton have instituted measures to become more disaster resistant however the Flood Mitigation Planning Committee recommends that all property owners in Wharton County consider purchasing flood insurance regardless of what flood zone their property is located in. Wharton County and the cities of East Bernard, El Campo and Wharton should each continue to support public awareness efforts to inform citizens of the protection that can only be provided by purchasing flood insurance coverage for structures and their contents.

3. Conduct an annual evaluation of FEMA's Repetitive Loss List to prioritize and identify potential acquisition/relocation and elevation projects. Submit repetitive loss update information to FEMA.
4. Prepare Cost Estimates for future acquisition/relocation and elevation projects.
5. Educate the public on elevation of structures in addition to acquisition and relocation of flood prone structures. Utilize FMA and HMGP funding to elevate structures in lieu of acquisition.
6. Conduct an annual evaluation and update of the Wharton County section of the TCRFC "All Hazards Mitigation Plan" and cooperate with the Governor's Division of Emergency Management (TxDEM) to maintain and update the county-wide "all hazards" plan. (TxDEM and FEMA require that all hazard plans be reviewed annually and updated every five-years)
7. In response to the Flood Insurance Reform Act of 2004, cooperate with FEMA for the pilot program to mitigate "Severe Repetitive Loss Properties" located in Wharton County and the cities of East Bernard, El Campo and Wharton.

Wharton County Flood Mitigation Goals

After review of the TCRFC Regional Mitigation Plan Goals, a total of sixteen (16) Flood Damage Reduction Planning Goals were established by the Wharton County Flood Mitigation Planning Committee.

Flood Damage Reduction Goals (F)

Addresses: Flooding

Goal: Make Wharton County more flood resistant by:

F-1 Reduce flood losses and increase flood insurance coverage in Wharton County.

[Non structural measure to reduce the burden of future flood losses]

F-2 Design, construct and maintain drainage improvement projects that minimize the risk of loss of life and future flood damages.

[Structural measure to minimize future loss of life and flood damages.]

F-3 Acquisition or elevation of repetitive loss and floodprone properties.

[Structural measure to reduce the number of repetitive loss properties in Wharton County.]

F-4 Floodplain mapping for unmapped streams in Wharton County

[Non structural measure to minimize future flood damages.]

F-5 Adopt "higher standard" flood damage prevention ordinances and standards.

[Non structural measure to minimize future flood damages.]

F-6 Provide training for community floodplain managers, community emergency managers, CFM's and CEM's.

[Non structural measure to educate city staff to improve floodplain management and minimize future flood damages.]

F-7 Develop funding opportunities for drainage system improvements

[Structural and non structural measures to minimize future flood damages.]

F-8 Establish county-wide bench mark network

[Non structural measure to minimize future flood damages.]

F-9 Support future Colorado River and San Bernard River flood reduction projects

[Structural measure to minimize future flood damages.]

F-10 Participation in FEMA's Community Rating System (CRS) Program.

[Non structural measure to encourage sound floodplain management and minimize future flood damages.]

F-11 Create the Wharton County Disaster Response Team

[Measure to reduce losses from future disasters by accurately documenting public infrastructure and private property damages, establishing high water marks, properly permitting repairs to damaged structures, coordination with Federal and State Disaster Response forces, and designing and constructing facilities to minimize damages from future events.]

F-12 Wharton County Flood Warning System

[Non structural measure to save lives and minimize future flood damages.]

F-13 Installation of additional stream gauges in the Colorado and San Bernard watersheds

[Non structural measure to save lives and minimize future flood damages.]

F-14 Install Reverse 911 Emergency Warning System

[Non structural measure to save lives and minimize future flood damages.]

F-15 Storm Ready designation for Wharton County communities

[Non structural measure to save lives and minimize future flood damages.]

F-16 Backup power for Wharton County critical facilities
[Structural measure to save lives and minimize flood damages by increasing capabilities to respond to disasters.]

5.0 REVIEW OF POSSIBLE ACTIVITIES (CRS ACTIVITIES 511.7)

Many of the following alternatives were drawn from the Wharton County Drainage Master Plan and the TCRFC HAZMAP Plan:

- Structural” alternatives
 - Detention and retention ponds
 - Dredging and clearing
 - Levees and dams
 - Ditches and culverts
 - New Bridges
 - Construct new critical facilities above the 500-year flood level
- “Non-structural” alternatives
 - (FEMA) National Flood Insurance Program
 - » Identify flood areas and depths
 - » Buy-out of buildings most prone to flood
 - » Elevate new buildings (BFE +1, 2, 3 and Zone X)
 - » Provide insurance for existing public buildings
 - » Delineate Floodways (existing and future conditions)
 - » Establish Floodway Setbacks
 - » Install additional BM’s (NAVD 1988)
- County standards
 - Evaluate creation of a Wharton County Drainage District
 - Creek maintenance (Structural)
 - Development practices (Non-Structural)
 - » Practices
 - » Ordinances
 - » Policies

The TCRFC Recommendations are as follows:

- **Increase funding for State technical assistance by the TWDB to local floodplain and emergency management programs;**
- **Establish and fund a State floodplain mapping program, including required engineering studies;**
- **Increase TWDB funding programs for flood control studies and allow funding of related projects;**
- **Decrease the 50% matching funds requirement for small and rural communities; and**
- **Redirect a portion of the State tax on new flood insurance premiums.**

In the 2004-2005 timeframe, the TCRFC “All Hazards” Mitigation Plan was prepared by the Texas Colorado River Floodplain Coalition to address known hazards throughout the LCRA Basin including Wharton County. Wharton County and the cities of East Bernard, El Campo and Wharton participated in the TCRFC planning effort and provided technical information to be

included in the TCRFC Plan. The TCRFC All Hazards Mitigation Plan includes mitigation actions that were reviewed by the Wharton County Flood Mitigation Planning Committee during the planning for the Wharton County Flood Mitigation Plan. The Flood Mitigation Planning Committee evaluated the following activities to be included in the Flood Mitigation Plan:

5.1 PREVENTIVE ACTIVITIES (CRS ACTIVITY 511.7.A)

Open Space Preservation

Both the cities of El Campo and Wharton have developed parks and open space areas that preserve the natural and beneficial functions of the floodplain. These areas can be flooded with minimal risk of public infrastructure damage.

Floodplain Regulations

Wharton County and the cities of East Bernard, El Campo and Wharton have adopted floodplain management regulations that exceed the minimum requirements for participation in the National Flood Insurance Program.

Stormwater Management

Wharton County and the cities of East Bernard, El Campo and Wharton are responsible for the design, construction and maintenance of the storm drainage system within their jurisdictions. Local ordinances require that prior to development, an analysis must be submitted identifying by plan and profile the means and methods of draining the subdivision. Details showing all existing and proposed subdivision drainage structures, the means and methods of connecting the proposed drainage system into the existing system, and the impact the development will have on major outfall drainage structures are required. The Wharton Master Drainage Plan, to be completed in 2007, addresses funding options to finance design and construction of needed drainage improvements both regional and within participating communities.

Drainage System Management

The cities of East Bernard, El Campo and Wharton work in conjunction with the various Wharton County Precincts to design, construct, and maintain drainage systems within each community and the unincorporated areas in the County.

The Wharton County Master Drainage Plan will identify needed drainage improvements. These needed improvements will be incorporated into the Capital Improvement Program (CIP) projects to be designed and constructed by Wharton County and the cities of East Bernard, El Campo and Wharton. Wharton County Commissioners maintain the County's storm drainage system to reduce the risk of flooding within the County and adjacent cities to comply with the Non Pollution Discharge Elimination System (NPDES) requirements.

5.2 PROPERTY PROTECTION (CRS ACTIVITY 511.7.B)

Relocation / Acquisition

The cities of El Campo and Wharton have a long history of successful acquisition and relocation projects funded by the Hazard Mitigation Grant Program (HMGP) and the Office of Community Rural Affairs (ORCA).

The cities of El Campo and Wharton have reduced the number of Repetitive Loss Properties by successful acquisition and relocation and “demo-rebuild” projects. In response to future flood events, Wharton County and the cities of East Bernard, El Campo and Wharton are prepared to launch acquisition and relocation projects to mitigate properties that are substantially damaged and to take advantage of both Flood Mitigation Assistance (FMA) Program and HMGP grant funds. In the event of a future Presidential Declared Disaster, and if HMGP grant funds are made available, repetitive loss properties will be evaluated for potential relocation and/or acquisition projects.

Building Elevation

In lieu of relocation and/or acquisition, a structure may be elevated to minimize flood losses. Various grants and other alternative funding sources may be available for elevation projects. The City of Wharton has successfully completed two (2) building elevation projects utilizing HMGP funding. However, the City plans to concentrate on funding for “demo-rebuild” projects now that they are eligible for HMGP and FMA Program funding.

Wharton County and the cities of East Bernard, and El Campo are evaluating a higher standard Flood Damage Prevention Ordinance that requires new construction to be elevated 1, 2 or possibly 3 feet above the Base Flood Elevation (BFE) posed on the FIRM. This action will reduce the risk of flood damages to new construction in Wharton County. The City of Wharton currently requires new construction to be elevated a minimum of one foot above BFE.

The Wharton County Repetitive Loss List, maintained by Wharton County and the cities of East Bernard, El Campo and Wharton, is periodically reviewed and evaluated for potential elevation projects. This information is confidential (property owners names and addresses) in nature and used for planning purposes and not included in this Plan.

Floodproofing

Local ordinances allows for floodproofing of commercial, industrial or other nonresidential structures. Nonresidential structures must be floodproofed a minimum of twelve (12) inches above the base flood elevations as shown on the latest FEMA FIRM. In addition, a registered professional engineer or architect shall develop and/or review the structural design, specifications, and plans for the construction, and shall certify that the design and methods of construction are in accordance with accepted standards of practice. The floodplain administrator for each community maintains records of all certificates.

Insurance

The Flood Mitigation Committee recommends that the TCRFC continue insurance awareness and outreach programs to encourage citizens to purchase flood insurance policies. This will become a very important activity for communities that elect to enroll in the CRS Program. A CRS Rating of nine (9) provides a discount of five (5) percent to all flood insurance policies held within the CRS community.

5.3 NATURAL RESOURCE PROTECTION (CRS ACTIVITY 511.7.C)

Wetlands Protection

The NFIP Regulations 44 CFR 60.3.a.2 requires a participating community to review proposed development and require that all necessary permits have been received from those governmental agencies from which approval is required by Federal or State law, including section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334.

Wharton County and the cities of East Bernard, El Campo and Wharton all participate in the NFIP and have included the language above in their Flood Damage Prevention Ordinances.

The Lower Colorado River Authority is a strong supporter of natural resource protection in the Colorado River Basin. The following information was posted on www.lcra.org:

Promoting stewardship of natural resources in the Colorado River basin

LCRA's primary responsibility is to serve as a steward of the lower Colorado River. Two fundamental elements of that stewardship mission are: protecting the water and lands of the lower Colorado basin and informing the public about how the river affects their lives.

Whether it's [monitoring water quality](#) or helping students learn about [energy efficiency](#), environmental leadership and public education figure into all of LCRA's diverse roles and lines of business.

Environmental Leadership

LCRA works to protect air quality, water quality and natural resources in Central Texas and brings together a broad range of interests to address environmental issues.

Education

LCRA education efforts include natural science programs, leadership training for communities, energy efficiency programs for teachers and students and much more.

Our environmental commitment

Nothing at LCRA is more important than our responsibility to the environment and our commitment to being a respected environmental leader. As a conservation and reclamation district, LCRA is focused by its enabling legislation on the delivery of specific services to the people of Texas. Keeping the environment healthy, safe, usable and enjoyable while delivering those services goes to our very core.

In fact, without our commitment to managing the beautiful Colorado River, LCRA would have no inherent right to exist. It's just that simple. The river is our lifeblood. Ensuring its well-being is our mission.

Still, LCRA has a dual personality because of who we are and what we do. On one hand, as a steward of the Colorado River, we are a dedicated protector of our precious resources; on the other hand, as an electric-generating utility, and as a water and wastewater utility, we are subject to environmental rules.

This double role of protector and regulated entity is a reality that drives the work LCRA employees do every day.

Since becoming general manager, I repeatedly have shared my belief that LCRA deserves to be known as an environmental leader on both sides of our business. When it comes to the environment, we are driven to do the right thing. The public must know that our vision is clear, and our employees must know they are accountable.

Toward that end, LCRA's "environmental wheel" went into motion. An Environmental Leadership Policy Implementation Committee developed a plan for accomplishing our Board policy on environmental leadership. The plan recommends tools to educate and inform our employees and the public. As integral parts of LCRA's ongoing work, the specific elements of the plan will drive us to expanded levels of environmental leadership.

In fact, these Web pages and our [environmental report](#), focusing on our successes as well as current and future challenges, is a key part of that action plan. Sharing it publicly reinforces our commitment to environmental leadership.

Throughout its history, LCRA has been a responsible corporate citizen. We have cherished and protected what has been legislated to our safekeeping. We take pride in our record, while still acknowledging the challenges of ever-tightening rules and expectations.

But the proof of LCRA's environmental commitment ultimately is in its performance. We will be judged by our actions.

Sincerely,

Joseph J. Beal, P.E.
General Manager



LCRA General Manager
Joe Beal at the
Colorado River near
Bastrop.

Environmental Assessment and Mitigation of Flood Protection and Drainage Improvement Projects

In September 2006 Public Meetings were conducted to notify interested parties regarding the U.S. Army Corps of Engineers (Corps), Fort Worth District Lower Colorado River Basin Phase I, Texas Project Report, which is proposing to implement a project addressing **proposed activities to address flood damage reduction in the city of Wharton, Texas (Volume III) within the Lower Colorado River Basin, Colorado River, Texas.** The Corps is also requesting water quality certification from the Texas Commission on Environmental Quality (TCEQ) under Section 401 of the Clean Water Act (CWA) for both of these projects.

Implementation of the Corps Recommended Plan in Wharton would result in impacts including approximately 65 acres of riparian/hardwood forests (148 average annual habitat units (AAHU) using 4 species), 129 acres of grassland (193 AAHU using 3 species) and 10 acres of wetlands (12 AAHU using 3 species). The recommended mitigation plan calls for all habitat mitigation to be placed on project sump lands. Approximately 145 acres could be used to create replacement forest, shrub and native prairie habitat. Approximately 40 acres could be used to create replacement wetland habitat. The recommended mitigation plan would generate approximately 256 AAHU of forest habitat and 66 AAHU of wetland habitat. This is well over the required mitigation ratio of 1:1 to fully compensate for project impacts. The mitigation may be revised in the detailed design phase and would be coordinated with resource agencies

Erosion and Sediment Control

Wharton County and the cities of East Bernard, El Campo and Wharton address erosion that occurs on streams and drainage ways in the County. Due to the general flat stream gradients in Wharton County, riverine erosion is not considered to be a major problem.

The Wharton County Drainage Master Plan and San Bernard River Watershed Study will address erosion and sediment problems and recommend actions and projects to mitigate this hazard. Recommendations from the Drainage Master Plan will be incorporated into each community's Capital Improvement Program.

The Federal Flood Control Project proposed by the USACE and LCRA will include structural mitigation protection projects to alleviate erosion problems on the Colorado River and tributaries.

Best Management Practices

The cities of El Campo and Wharton Code of Ordinances outlines the best management practices for each city.

5.4 EMERGENCY SERVICES (CRS ACTIVITY 511.7.D)

Flood Warning

An example of a flood warning mitigation action is installation of automated flood warning devices on roadways at low water crossings. The following photos, Figures 11 and 12, describe the Watermark Safety Mark V Highway Automated 'flood gauge' warning system in Boerne, Texas on San Antonio Street. The computer system was not able to record (maxed out) with approximately 8 inches of water on September 5, 2006.



Figure 11: Flood Gauge - Boerne, Texas



Figure 12: Flood Gauge - Boerne, Texas

These photos were provided by Kenneth P. James, CEO, Watermark Safety, 2200 Danbury, San Antonio, TX 78217.

The Wharton County Emergency Management Plan describes warning procedures in depth in Annex A – Warning. The Wharton County Emergency Management Coordinator maintains the Emergency Management Plan. Similar documents have been produced by the cities of El Campo and Wharton.

Flood warning mitigation actions may be found in Section 6.0 of this Plan.

Flood Response

The TCRFC All-Hazards Mitigation Plan outlines specific response procedures for Wharton County and the cities of El Campo and Wharton in the event of disaster. Disaster response activities are also addressed in the individual community Emergency Management Plans and numerous functional annexes. TCRFC All-Hazards Mitigation Plan is available on line at www.tcrfc.org. The TCRFC Mitigation Plan will be updated annually.

Critical Facilities Protection

The Wharton County Flood Mitigation Planning Committee has identified the critical facilities located within the planning area. A listing of the critical facilities may be found in Section 3.4 of this plan.

Wharton County has established working relationships with engineering consultants that can provide assistance during disaster response operations and to initiate disaster recovery activities. Wharton County will explore contractual arrangements with emergency response providers to supply emergency equipment such as generators, pumps, portable or package wastewater treatment plant equipment and other vehicles, equipment, and services that may be required for emergency operations and disaster recovery.

5.5 STRUCTURAL PROJECTS (CRS ACTIVITY 511.7.E)

Flood Protection Projects

The U.S. Army Corps of Engineers, Fort Worth District has completed the Lower Colorado River Basin Phase I, Texas Flood Damage Reduction Project Feasibility Study.

On January 25, 2005, The City of Wharton submitted an application to the US Army Corps of Engineers, Galveston District to establish eligibility for the construction of improvements to Santa Fe Ditch to alleviate significant flood damages to the City. The estimated cost of this effort is \$2,900,000. On January 25, 2006, the USACE approved the City of Wharton's request for credit eligibility under Section 104 of the Water Resources Development Act (WRDA) of 1986. The City of Wharton has entered into an interlocal agreement with the LCRA to authorize the LCRA to be the "Local Sponsor" for the proposed Flood Damage Reduction Project. Funding for

the design phase, \$200,000, has been requested from Congress. Volume III – Wharton Interim Feasibility Report and Integrated Environmental Assessment includes the following recommended improvements:

The Recommended Plan for the Wharton project consists of structural features in the form of earthen levees and accompanying sumps, floodwalls, a channel enlargement, storm drain type drainage structures and an open cut ditch. Most of the project features would be implemented into three different drainage areas: Colorado River, Baughman Slough and Caney Creek. The Recommended Plan associated with the Colorado River would include the construction of 20,310 feet of levees, 19,010 feet of floodwalls and seven sump areas. The seven sumps would occupy 120 acres. Recommended features in Baughman Slough would include 6,610 feet of levees, 380 feet of floodwalls, 4,780 feet of channel modification and two sump areas. The two sumps would occupy approximately 43 acres. Recommended features in Caney Creek would include placement of reinforced concrete pipes and approximately 10,700 feet of open cut ditch.

Implementation of the Recommended Plan in Wharton would result in impacts including approximately 65 acres of riparian/hardwood forests (148 average annual habitat units (AAHU) using 4 species), 129 acres of grassland (193 AAHU using 3 species) and 10 acres of wetlands (12 AAHU using 3 species). The recommended mitigation plan calls for all habitat mitigation to be placed on project sump lands. Approximately 145 acres could be used to create replacement forest, shrub and native prairie habitat. Approximately 40 acres could be used to create replacement wetland habitat. The recommended mitigation plan would generate approximately 256 AAHU of forest habitat and 66 AAHU of wetland habitat. This is well over the required mitigation ratio of 1:1 to fully compensate for project impacts. The mitigation may be revised in the detailed design phase and would be coordinated with resource agencies.

Diversions/Channel Modifications/Storm Sewers

The Wharton County Drainage Master Plan and San Bernard River Watershed Study will include recommended drainage improvement projects for Wharton County and cities of East Bernard, El Campo and Wharton.

5.6 PUBLIC INFORMATION (CRS ACTIVITY 511.7.F)

Map Information

The local floodplain manager for Wharton County and cities of East Bernard, El Campo and Wharton allow for the public to view the most current FIRM map available. Citizens may contact the community permit department (the citizens of the City of Wharton may contact the Floodplain Manager) to schedule a time to view the maps with an employee or they may stop by the office to view the maps without employee assistance. Each community Building Department also provides the website address and phone number to obtain the FIRM map from the FEMA. Additionally, county and city officials supply the website address and FIRMETT instructions for the public to obtain and print FEMA's electronic FIRM.

Outreach Projects

The Texas Colorado River Floodplain Coalition (TCRFC) has established a website www.tcrfc.org and sponsor public outreach workshops to inform the public regarding flood hazards, the NFIP, environmental awareness and Turn Around Don't Drown (TADD) campaigns. In early 2007, the City of Wharton submitted a CRS application to enroll in the CRS Program and initiate public outreach activities to qualify for CRS credit.

Flood mitigation actions that address public outreach are listed in Plan Section 6.0. The TCRFC, in cooperation with HGAC, have key outreach roles identified in the proposed flood mitigation actions.

Real Estate Disclosure

Wharton County and cities of East Bernard, El Campo and Wharton have working relationships with the local real estate industry in regards to floodplain management. An eligible CRS activity is an outreach informational memo to be mailed to realtors, lenders, and insurance agents detailing that deal with the public regarding properties located in the SFHA. It is a violation of State law for the seller not to notify a potential buyer that a home has flooded or is in the floodplain. The seller may request a detailed description of NFIP flood insurance claims by sending proof of home ownership to:

FEMA Headquarters
Attention: Freedom of Information Act
500 "C" Street SW
Washington, DC 20472

The seller may request flood claims information from FEMA www.fema.gov for specific property information.

Library

The local floodplain administrator for Wharton County and cities of East Bernard, El Campo and Wharton each maintain a Flood Protection Reference Library. Reference materials and other literature related to floodplain management and participation in the NFIP are available for review. The Wharton County Flood Insurance Study, Flood Insurance Rate Maps and other LCRA, TCRFC and FEMA publications are available for reference. Some of the reference materials include topics such as: retrofitting floodprone properties, flood protection, elevation of floodprone structures, protective barriers and emergency measures to minimize flood damages. Citizens are encouraged to review the literature on a periodic basis.

Technical Assistance

As a community service, the Permits Department of Wharton County and cities of East Bernard, El Campo and Wharton (the citizens of the City of Wharton may contact the Floodplain Manager) provide technical assistance and references to technical resources to citizens,

homeowners, developers, engineers and surveyors regarding NFIP and community building permit requirements. Services provided include: Flood Insurance Rate Map Determinations; floodplain and floodway development requirements; floodproofing requirements; substantial damage and improvement requirements; wetland permit requirements; Endangered Species Act (ESA) requirements and contact information for publications, Federal and State agency assistance and information regarding the NFIP.

Environmental Education

The Lower Colorado River Authority website www.lcra.org contains information related to environmental education and coordination with environmental sources: EPA and other Federal, State and nonprofit agencies such as TCEQ, NRCS, TPWD, LCRA, TCRFC, HGAC, the Bayou Preservation Association, and Galveston Bay Foundation.

6.0 DRAFT ACTION PLAN (CRS ACTIVITY 511.8)

Wharton County Flood Mitigation Actions

The Wharton County Flood Mitigation Plan is maintained by the Wharton County Permit and Inspection Department in cooperation with floodplain managers and emergency managers from the cities of East Bernard, El Campo and Wharton. The Wharton County Floodplain Manager is responsible for retaining copies of the plan, coordinating review of the plan, and any future updates to the plan.

The Wharton County Flood Mitigation Planning Committee evaluated the proposed TCRFC regional mitigation actions to identify mitigation actions that may be implemented by Wharton County and the cities of East Bernard, El Campo, and Wharton. The actions identified below were determined to be the most appropriate actions given the current resources and hazard vulnerabilities for Wharton County and participating communities.

A total of sixteen (16) Flood Mitigation Actions to address flood hazards were identified along with Floodplain Management Planning Goals by the Wharton County Flood Mitigation Planning Committee. Individual Flood Mitigation Actions are identified for Wharton County and each participating community as follows:

<u>Wharton County</u>	<u>City of East Bernard</u>	<u>City of El Campo</u>	<u>City of Wharton</u>
F1	F1	F1	F1
F2			
F4	F4	F4	
F5	F5	F5	F5
F6			
F7			
F8	F8		
F9	F9	F9	
	F10		
F11	F11	F11	F11
F12	F12	F12	F12
F13	F13	F13	
F14			
F15	F15	F15	F15
F16	F16	F16	F16

Flood Damage Reduction (F)

Addresses: Flooding

Goal: Make Wharton County more flood resistant:

F.1 Reduce Flood Losses and Increase NFIP Flood Insurance Coverage throughout Wharton County

Based on NFIP flood insurance policy and claims data, there are only 2,144 flood insurance policies in force which is approximately 15% of the 14,000 structures in Wharton County and \$330in coverage in Wharton County and the cities of East Bernard, El Campo and Wharton. There have been 458 paid flood insurance claims for a total of \$8.6M (Average claim = \$18,826) in Wharton County since 1978. FEMA has identified 44 Repetitive Loss Properties in Wharton County (16 in unincorporated Wharton County, 15 (city has reduced to 12 by recent elevation projects) in the City of Wharton, 13 in the City of El Campo and 1 in the City of East Barnard). A Repetitive Loss Property is a property that has received two or more paid flood insurance claims that exceed \$1,000.00 within a ten year period. FEMA designates communities with 10 or more Repetitive Loss Properties as a Category “C” community. By utilizing FEMA funding administered by TxDEM and TWDB, Wharton County and participating communities can address problems in flood loss and repetitive loss areas by initiating acquisition and elevation projects for identified structures and by designing and constructing drainage improvements.

In the survey, conducted as part of the Flood Mitigation Plan preparation, only 57% of the responders know that they live in a designated flood hazard zone. See Plan Section 1.3.2. The Texas Colorado River flood Coalition (TCRFC) TIMS can assist in helping inform the public by having an interactive map that people can easily use to help find their home or place of business to see if it is in a flood zone. TIMS has an option of entering an address to help the user find the specific site. TIMS can be found on the following link: <http://tims.lcra.org/Launch.aspx>

This Mitigation Action Item recommends bi-annual Flood Insurance Workshops to be coordinated by the NFIP Region 6 Office utilizing “Flood Smart” publications. Wharton County and the cities of East Bernard, El Campo and Wharton are members of the Houston Galveston Area Council (HGAC) and the TCRFC, the likely sponsors of future workshops and outreach events. Community floodplain managers, insurance agents, developers, homeowners and the general public can be invited. The purpose of the workshop is to inform attendees that flood insurance is available for all structures located in communities that participate in the NFIP and that flood insurance policies protect against losses both for structures and contents.

Goal: Educate the public with the goal to increase the flood insurance policy base to minimize the financial impact of future floods.

Responsibility: Wharton County Floodplain Administrator (also represents the City of East Bernard)
City of El Campo Floodplain Administrator
City of Wharton Floodplain Administrator

TCRFC (continue to post website information)
HGAC
FEMA Region VI/CSC
Flood Smart
NFIP Regional Office
TWDB – State Floodplain Coordinator

Cost: \$425 = Average NFIP annual premium (estimate)
\$42,500 Annual premiums for 100 new policies
FEMA, NFIP/CSC/Flood Smart and TWDB provide workshops at no cost

Funding Sources: NFIP Policies (Flood Policy Fund)
Owners of residential and nonresidential structures
Renters and building occupants

Workshops: TCRFC
HGAC
FEMA/DHS
NFIP (National Flood Insurance Program Region VI)
TWDB (Texas Water Development Board)

Timing: Flood Insurance workshops to be held in the 2008 – 2012 time period.

Beneficiary: All citizens and property owners in Wharton County

F-2 Design, construct and maintain drainage improvement projects to minimize the risk of loss of life and future flood damages by utilizing funding from Federal, State, Capital Improvement Program (CIP), Development or Stormwater Utility Fee and other funding sources.

The National Weather Service reports that the national 30-year average for deaths related to flooding is 127 per year. Of that yearly average, nearly half are related to motorists attempting to cross roadways that are overtopped by floodwaters and Texas flood deaths in the first half of 2007 have exceeded the annual State average. The Wharton County Master Drainage Plan and San Bernard River Watershed Study, currently underway, will identify problem areas including roadway crossings that are overtopped by floodwaters. These problem areas present public danger and potential loss of human life. Detail information for each creek and watershed improvement will be described in the Wharton County Master Drainage Plan and San Bernard River Watershed Study.

This proposed action includes the implementation of the Wharton County Master Drainage Plan and San Bernard River Watershed Study recommendations to construct needed improvements to reduce the risk of loss of life and property damage. Annual revisions of the Wharton County Flood Mitigation Plan will identify future drainage improvement projects and estimated costs.

Responsibility: Wharton County
City of East Bernard
City of El Campo
City of Wharton

Cost: Will be described in the Wharton County Master Drainage Plan and San Bernard River Watershed Study

Funding Sources: FEMA/DEM - Hazard Mitigation Grant Program
FEMA/TWDB – Flood Mitigation Assistance funds
TWDB Flood Protection Planning Grants and Loans
NRCS – Stream Restoration Project funding
Storm Water Utility Fee and/or Bond Program (Under consideration)
Wharton County and participating communities Capital Improvements Program

Timing: Design and construction to be phased as funding becomes available.

Beneficiary: All citizens and property owners in Wharton County

F-3 Acquisition and Relocation, Elevation and “Demo-Rebuild” of Floodprone Structures

This proposed action assists local community efforts to identify potential structures and initiate acquisition and relocation, elevation and demo-rebuild projects to reduce the risk of future flood losses. A database has been created as part of the Wharton County Flood Mitigation Plan listing Repetitive Loss Properties, properties that have had flood insurance claims, and properties located in areas of high flood risk. This information is confidential in nature and used by the Flood Mitigation Planning Committee and participating communities for planning purposes only.

This proposed action identifies future HMGP, FMA, Federal Flood Protection Projects, TWDB Flood Protection Planning Grants, and county and community funded buyout and elevation projects. It is recommended that Wharton County, TCRFC and HGAC sponsor Buyout Conferences, similar to the Houston 1999 Buyout Conference sponsored by Bayou Preservation Association and HCFCFCD (200+ attendees) to inform and assist local communities and the general public on options and methods to reduce flood losses.

The City of El Campo and City of Wharton have completed successful mitigation projects of this type. The City of Wharton has completed two “elevation” projects that were funded by HMGP. The City of Wharton has completed 37 demo-rebuild projects and nine additional demo-rebuild projects are underway in 2007 funded by the Texas Department of Housing and Community Affairs (HCA) Home Investment Program. The City of El Campo has initiated nine (9) “demo-rebuild” projects funded by ORCA. FEMA’s Flood Mitigation Assistance (FMA) Program provides funding to communities for acquisition and relocation and elevation but does not

currently fund “demo-rebuild” projects. The cities of El Campo and Wharton have initiated “Demo-Rebuild” projects funded by HCA. Properties that are substandard, located in blighted areas with low income owners are eligible for this program. Selected properties may be floodprone, repetitive loss, or severe repetitive loss. These properties, when rebuilt, must be elevated above BFE.

To support this Mitigation Action, the Flood Mitigation Planning Committee recommends identifying, surveying lowest floors and documenting Wharton County Appraisal District values for Repetitive Loss and selected floodprone properties for future acquisition, relocation, elevation, demo-rebuild, and flood protection projects that may be eligible for funded with HMGP, FMA and ORCA funding. The Wharton County Repetitive Loss database, prepared as part of the Wharton County Flood Mitigation Plan includes repetitive loss properties identified by FEMA. This Mitigation Action recommends expanding the database to include:

- Properties located in the FEMA Floodway
- Properties with known flood hazards
- Appraisal District values (structure and land)
- Elevation Certificates and structure data (Lowest floor, type structure, etc)
- Property owner contact information (confidential)
- Base Flood Elevation data
- GIS mapping

FEMA requires submittal of a detailed cost:benefit analysis to justify expenditure of federal funds for these projects. This information needs to be readily available in the database.

The City of Wharton has submitted an application to enroll in FEMA’s CRS Program. The application addresses flood prone and repetitive loss properties within the city. This information will be incorporated into the Wharton County database to allow the County and communities to jointly address projects to reduce flood risks in entire watersheds rather than city by city.

FEMA Region VI provided NFIP flood loss records, for planning purposes only, identifying a total of 44 properties in Wharton County have receive 2 or more paid flood insurance claims that exceed \$1,000 for each claim. FEMA has designated 3 of the 44 as Severe Repetitive Loss Properties:

	<u>RL Properties</u>	<u>% of Total</u>	<u>Mitigation</u>
Wharton County -	15 Repetitive Loss Properties	34%	
City of East Bernard -	1 Property	2%	
City of El Campo -	13 Properties	30%	9 homes demo-rebuild
City of Wharton -	15 Properties	34%	
Wharton County Total	44 Properties		

The estimated cost to acquire approximately 44 Wharton County repetitive loss properties and to relocate the owners/tenants is \$ 5,500,000 for acquisition and relocation cost, and \$1,320,000

demolition cost, estimated to be \$30,000 for demolition cost for each structure.

The estimated cost to perform a “demo-rebuild” project is considered to be comparable to acquisition and relocation options. Specialized conditions may encourage the County or community to select one option over another or the decision may become b:c ratio influenced. However the ultimate decision lies with the community and the homeowner.

Responsibility: Wharton County Floodplain Administrator (also represents the City of East Bernard)
City of El Campo Floodplain Administrator
City of Wharton Floodplain Administrator
Individual property owners (voluntary):
FEMA/DHS
Governor’s Division of Emergency Management (TxDEM)
Texas Water Development Board (TWDB)

Cost: \$20,000 estimated cost to prepare the RL Database with GIS data
\$ 5,500,000 estimate acquisition and relocation cost (44 parcels)
[\$4.125M = 75% Federal Share]
[\$1.375M = 25% Local Share]
\$1,320,000 estimated demolition cost for 44 parcels (ICC Funds)

Cost breakdown per Community:

Wharton County -	\$1.87M Acquisition + \$0.45M Demolition (15 properties)
City of East Bernard -	\$125,000 Acquisition + \$30,000 Demolition (1 property)
City of El Campo -	\$1.625M Acquisition + \$0.39M Demolition (13 properties)
City of Wharton -	\$1.87M Acquisition + \$0.45M Demolition (15 properties)

Funding Sources: FEMA/DEM - Hazard Mitigation Grant Program (HMGP)
FEMA/TWDB – Flood Mitigation Assistance (FMA) Program
FEMA/DEM – Repetitive Flood Claims (RFC) Program
FEMA/DEM – Severe Repetitive Loss Program
Increased Cost of Construction (ICC) NFIP Policy Fund
Funding available from a future Presidential declared disaster
Office of Rural Community Affairs (ORCA) – (Texas)
Other Federal and State Agencies programs
Individual property owners
Wharton County
City of East Bernard
City of El Campo
City of Wharton

Timing: Repetitive Loss Buyout plan to be developed in 2008 and 2009 and carried out as funding becomes available or a disaster occurs.

Beneficiary: Property Owners in Wharton County

F-4 Floodplain Mapping for unmapped streams in Wharton County

The April 6, 2006 Wharton County Flood Insurance Study and FIRM's published by FEMA mapped floodplains, floodways and established base flood elevation (BFE's) on selected portions of 14 streams in Wharton County. The remaining 67 streams were mapped by approximate methods and designated as Approximate Zone A without identifying the 100-year, 500-year, and floodway boundaries and BFE's. Detail floodplain mapping is necessary for Wharton County and participating communities to establish and enforce sound floodplain management programs.

This flood mitigation action is to conduct detail hydrologic and hydraulic studies and map the 100-year, 500-year and floodway boundaries and establish BFE's for all streams in Wharton County. To accomplish this task, Wharton County and participating communities have initiated the Wharton County Master Drainage Plan and San Bernard River Watershed Study funded by the Texas Water Development Board. By coordinating this effort with the TCRFC, LCRA and FEMA, the Wharton County FIRM's can be updated to show detail floodplain information for all streams in Wharton County.

FEMA's 5-year Map Modernization Initiative, ending in FY 2008, will provide digital FIRM's for a major portion of the United States. FEMA has proposed a Phase II Map Mod Initiative to begin in FY 2009 to address mapping needs not addressed in Phase I. Wharton County and the cities of East Bernard, El Campo and Wharton, working with LCRA and TNRIS, can capitalize on available Federal and state funding to map streams in Wharton County and update the Wharton County FIRM. The LCRA is a FEMA Cooperative Technical Partner (CTP) and would be ideal to lead this mapping update effort.

- Phase 1A Wharton County Drainage Master Plan
- Phase 1B San Bernard River Watershed Study
- Phase 2 Revise Wharton County FIRM's to incorporate Wharton County Master Drainage Plan data
- Phase 3 Revise Austin, Brazoria, Colorado, Fort Bend and Wharton County FIRM's to incorporate San Bernard River study data

Responsibility: Wharton County
City of East Bernard
City of El Campo
City of Wharton
LCRA as a FEMA CTP
TNRIS as a FEMA CTP

Cost: Phase 1A \$ 2,300,000 (Estimated Cost)
Phase 1B \$2,767,130 (TWDB Flood Protection Project)
Phase 2 Cost to be determined in Phase 1A

Phase 3 Cost to be determined in Phase 1B

Funding Sources: Federal funding following a future Presidential declared disaster when funding is available for flood recovery mapping
Phase 1A - TWDB, USACE, Wharton County, cities of East Bernard, El Campo and Wharton
Phase 1B - TWDB, USACE, Wharton County and East Bernard
Phase 2 FEMA, LCRA/CTP, TWDB/CTP
Phase 3 FEMA Map Mod Phase 2 (2009-2013)

Timing: 2008-2013 Mapping will be phased as funding becomes available.

Beneficiary: All citizens and property owners in Wharton County

F-5 Adopt “Higher Standard” Flood Damage Prevention Ordinances and Standards.

The Wharton County Flood Mitigation Planning Committee reviewed the current ordinances for Wharton County and the cities of East Bernard, El Campo and Wharton and compared each to several “Higher Standard” Flood Damage Prevention Ordinances that have been adopted by other Texas communities and the 2005 model ordinance prepared by FEMA Region VI. The TCRFC is currently developing a “Higher Standard” Ordinance for consideration by TCRFC communities. A “Higher Standard” Flood Damage Prevention Ordinance can assist a community’s efforts to reduce future flood losses and provide additional Community Rating System (CRS) credits for communities desiring to participate in FEMA’s CRS Program. In April 2006 Wharton County and the cities of East Bernard, El Campo and Wharton adopted the new Wharton County Digital Flood Insurance Rate Maps (DFIRMs) by either a new flood damage prevention ordinance or by automatic adoption where the current ordinance adopts future FIRM’s published by FEMA. Should a community choose to adopt a “higher standard” flood damage prevention ordinance, that community will receive a higher CRS rating should they elect to enroll in the CRS Program. One “higher standard” considered by the Committee is to require future critical facilities to be constructed outside the 500-year (0.2% annual chance) flood boundary or to be elevated or floodproofed above the 500-year (0.2% annual chance) flood elevation. Wharton County and the cities of East Bernard, El Campo, and Wharton will continue to participate in TCRFC and HGAC Floodplain Management activities where NFIP requirements and “higher standards” are discussed with representatives from FEMA, TWDB and other TCRFC and HGAC communities. The TCRFC is currently developing a “higher standard” model ordinance that will contain options where a community can select key floodplain management requirements similar to the following listing developed by FEMA Region VI:

- 1’, 2’ or 3’ freeboard
- Base Flood Elevations (BFE’s) defined by fully developed watershed conditions
- Floodways defined by fully developed watershed conditions
- Floodways defined by zero rise
- On-site detention to compensate for the effects of proposed development
- Regional detention facilities funded by site development fees
- Minimum setbacks from floodways and stream banks
- Protection of critical facilities
 - Meet 500-year floodplain standards
- Protection of floodplain storage capacity
 - Prohibit fill in the 100-year floodplain
- Cumulative substantial improvement/substantial damage
 - Combination of multiple improvements/damage in reaching certain threshold
- Regulate development in the B or *shaded X Zone* and C or *unshaded X Zone*
 - City of Friendswood requires lowest floor to be elevated in Zone X
- Regulations for natural and beneficial functions
 - Restrictions on development in sensitive areas, i.e.: wetlands, riparian areas, shorelines, stream channels, banks, and habitats
- Low Density Zoning
 - Limit development i.e.: no more than one building constructed per acre of floodplain

Responsibility: Wharton County (Adopt Higher Standard Ordinance)
City of East Bernard (Adopt Higher Standard Ordinance)
City of El Campo (Adopt Higher Standard Ordinance)
City of Wharton (Enroll in FEMA’s CRS Program)
TCRFC (develop model Higher Standard ordinance)
HGAC and TCRFC (Floodplain Management Workshops)

Cost: \$500 to \$2,000 per residential structure (estimated cost)
\$1,000 to \$10,000 nonresidential structure (estimated cost)

Administrative Cost: Staff Time under current budgets

Funding Sources: Not Required

Timing: 2008 to 2012

Beneficiary: Citizens and property owners in Wharton County

F-6 Provide Training for Community Floodplain Managers, Community Emergency Managers, CEM’s and CFM’s.

Both TCRFC and HGAC currently host numerous floodplain and emergency manager training opportunities including: FEMA’s FPM Training Course, “Managing Floodplain Development through the NFIP”- E-273; NFIP Workshops and Flood Forums; and Community Rating System (CRS) Workshops; and Emergency Management and Home Land Security workshops, tabletop exercises and training opportunities. These TCRFC and HGAC programs assist local communities and provide continuing education credits (CEC’s) for local floodplain administrators, certified floodplain managers (CFM’s), certified emergency managers (CEM’s), professional engineers (PE’s), registered public land surveyors (RPLS) and the general public.

The proposed Mitigation Plan Action Item is to initiate a coordination effort to identify workshops and training activities that can benefit Wharton County and:

<u>Agencies</u>	<u>Associations</u>
FEMA Region VI	TFMA
NFIP Regional Office	EMAT
TWDB	ASFPM
TNRIS	IBC
LCRA	Texas Tech Wind Engineering
TxDEM	TCRFC
NRCS	
HGAC	
NWS/NOAA	

Note: Agency and association acronyms are listed in Plan Attachment “A”.

Proposed Workshops and Training Activities:

FEMA Flood Forums (similar to 2004-2006 events)
TCRFC Quarterly Meetings and Workshops
HAZMAP Plan adoption and Plan maintenance (TxDEM)
Managing Floodplain Development through the NFIP (FEMA)
Flood Mitigation Assistance Plans (TWDB)
Flood Protection Planning Grants (TWDB)
Floodplain Manager Workshops (TWDB)
NFIP Workshops for community officials, lenders, agents, developers
Substantial Damage Estimator (FEMA)
CRS Workshop (FEMA/ISO)
TFMA Conferences and Mutual Aid
HAZUS Workshop (FEMA)
Building Code Workshops (HGAC/IBC)
Tornado Safe Room Design and Construction Workshops (Texas Tech/FEMA)
Potential Funding Sources for Workshops and Training:
TWDB – Flood Protection Planning and FMA Program funding
TxDEM – Disaster Exercises and HMGP Program funding
Skyward/Storm Ready (NWS)
Hazardous Weather Partner Workshops (NWS)
HYDROMET System (LCRA)

Responsibility: Wharton County (Lead community to host training)
TCRFC
HGAC

Cost: Staff Time under current budgets

Funding Sources: Not Required

Timing: Annually 2008 to 2012

Beneficiary: Wharton County and all participating communities

F-7 Develop Funding Opportunities for Drainage System Improvements

The Wharton County Master Drainage Plan and San Bernard River Watershed Study will identify needed drainage improvements in Wharton County. The Flood Mitigation Planning Committee discussed funding possibilities such as:

- TWDB Flood Protection Planning Grants and Project Loans

- Flood Mitigation Assistance (FMA) Project grants to acquire flood prone properties and create open space within the SFHA
- Federal Flood Protection Projects (USACE)
- Corps of Engineers 1140-1-211 “Support for Others” reimbursement of planning, design and construction (USACE)
- Steam Restoration Projects (USACE and NRCS)
- FEMA funding programs: Hazard Mitigation Grant Program (HMGP), Severe Repetitive Loss (SRL) and Repetitive Flood Claims (RFC) – Acquisition and Relocation, Elevation and Demo-Rebuild of flood prone properties
- Development fees for new construction to offset cost of regional drainage improvements
- Establish a county-wide storm drainage utility or impact fee
- Establishing Watershed Development Fees to offset watershed projects such as regional detention and channel improvements
- Evaluate the creation of a county-wide drainage district
- Developer constructed improvements resulting in tax benefit pay backs

Identify and actively pursue funding mechanisms for future drainage improvements. Wharton County and participating communities working together can plan, coordinate and fund the design, construction, and maintenance of (county-wide) drainage improvements and flood control projects that benefit entire watersheds and drainage basins.

Responsibility: Wharton County
 City of East Bernard
 City of El Campo
 City of Wharton

Cost: To be determined by the Wharton Co. Drainage Master Plan

1. Identify funding sources
2. Submit applications for funding
3. Project planning
4. Design and construction – based on approved projects
5. Maintenance (annual expense)

Administrative Cost: Staff Time under current budgets

Funding Sources: TWDB
 USACE
 HMGP/PDM/SRL/RFC
 FMA
 NRCS
 Local Share - Funded by development fees, bonds and tax revenues

Timing: 2008 Drainage Master Plan completion

F-8 Establish County-Wide Bench Mark Network

The Wharton County FIRM's, dated April 2006, identify Elevation Reference Marks (ERM) or Bench Marks (BM) and Base Flood Elevations (BFEs) that are referenced to NAVD 1988 Elevation Datum. The Elevation Reference Marks and Base Flood Elevations (BFEs) on previously published FIRMs for Wharton County and the cities of El Campo and Wharton show Elevation Reference Marks and Base Flood Elevations referenced to NGVD 1929 which is no longer acceptable for National Flood Insurance Program purposes. Only 188 ERMs and BMs are shown on the new FIRM's (1,094 square miles or 1 BM per 5.8 square miles) presenting a major problem for local community administrators that must reference NAVD 1988 for new development permits. To assist local floodplain administrators, LCRA's High Accuracy Reference Network (HARN) System, accessible on line at www.harn.lcra.org, identifies 23 additional BMs that are referenced to NAVD 1988. The LCRA maintained HARN Network is mapped and described on the LCRA website. LCRA has also installed a GPS base station in Bay City to assist surveyors in the Lower Colorado River Basin that includes Matagorda and Wharton counties. In 2007, Wharton County funded installation of seven (7) brass survey monuments (NAVD 88) as part of the Wharton County Flood Mitigation Plan. Individual datasheets for these seven monuments are included in Appendix "B". The Wharton County Flood Mitigation Planning Committee recommends establishing a county-wide network of NAVD 1988 bench marks that can be shared by Wharton County and the cities of East Bernard, El Campo, and Wharton, along with USACE, TxDOT, LCRA, FEMA and others. This network must be readily available to surveyors, engineers, homeowners, insurance agents and general public for NFIP, floodplain management and general construction purposes. Participation by TxDOT, LCRA, NRCS, local surveyors and engineers is needed for this to be a successful mitigation action. Wharton County's subdivision ordinance requires developers to establish two (2) permanent survey monument per subdivision referenced to NAVD 1988 as part of all new subdivision developments.

- Phase 1 - LCRA established GPS base station in Bay City
- Phase 2 - Wharton County installed seven (7) additional NAVD 1988 Bench Marks as part of the Wharton County Drainage Master Plan and San Bernard River Watershed Study
- Phase 3 - LCRA established additional NAVD 1988 Bench Marks within Wharton County as part of the LCRA HARN Network
- Phase 4- Wharton County established an inventory of NAVD 1988 bench marks
- Phase 5- Identify areas where additional NAVD 1988 bench marks are needed.
- Phase 6- Install (establish) new NAVD 1988 bench marks (2nd Order)
- Phase 7- LCRA installs a GPS base station in Wharton County
- Phase 8- Annual review and update of the bench mark system including replacing missing or disturbed bench marks.

Responsibility: Wharton County (establish and manage bench mark system)
City of East Bernard (technical support)
City of El Campo (technical support)
City of Wharton (technical support)
LCRA – maintain HARN network and GPS base stations

Cost: Phase 1 – Project completed October 2006 by LCRA
Phase 2 – Project completed October 2007 by Wharton County
Phase 3 – Project completed in April 2007 by LCRA
Phase 4- \$5,000 (estimated cost to prepare BM Inventory)
Phase 5- \$5,000 (estimated study and mapping cost)
Phase 6- \$20,000 (estimated cost for 20 new Bench marks)
Phase 7- \$20,000 (estimated cost to install GPS base station)
Phase 8- \$10,000 (estimated annual maintenance cost)

Administrative Cost: Staff time under current budgets

Funding Sources: Federal funding following a future Presidential declared disaster
HMGP/PDM
FMA
TxDOT
TWDB/TNRIS
USACE
NRCS
LCRA/TCRFC
Local Share - Funded by bonds and tax revenues

Timing: Phase 1 – October 2006
Phases 2, 3 & 4 – October 2007
Phases 5, 6 & 7 – 2008 - 2009
Phase 8 - 2008 – 2012 annual maintenance needed

F-9 Support Future Colorado River and San Bernard River Flood Reduction Projects

LCRA and TCRFC, working closely with the USACE, continue to identify flood reduction projects on the Colorado and San Bernard Rivers that will reduce future flood losses in Wharton County, in the lower Colorado River Basin, and along the San Bernard River. The Wharton County Flood Mitigation Planning Committee has identified support of these actions and projects as a long range mitigation action by Wharton County and the cities of East Bernard, El Campo, and Wharton. By supporting these proposed projects, both politically and financially, Wharton County can help save lives and reduce property damages from future flood events.

Responsibility:	<u>Colorado River</u> Wharton County City of El Campo City of Wharton LCRA TCRFC USACE NRCS TWDB	<u>San Bernard River</u> Austin County Colorado County Fort Bend County Wharton County Brazoria County City of East Bernard LCRA TCRFC USACE NRCS TWDB
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Cost: Federal and local share to be determined by each project

Administrative Cost: Staff time under current budgets

Funding Sources: Federal funding following a future Presidential declared disaster
USACE
FEMA
HMGP
FMA
TWDB
NRCS (stream restoration)
Wharton County (local share if required)
City of East Bernard (local share if required)
City of El Campo (local share if required)
City of Wharton (local share if required)
San Bernard watershed cities and counties

Timing: 2008 to 2012 support projects as identified

F-10 Participation in FEMA’s Community Rating System (CRS) Program.

Currently no Wharton County communities participate in FEMA’s CRS Program. FEMA recognizes community efforts that exceed the minimum requirements of the National Flood Insurance Program (NFIP) by designating communities that have adopted “higher standards” as CRS Communities. All flood insurance policies within communities that participate in FEMA’s CRS program are rewarded with reduced flood insurance premiums. There are only 45 Texas counties and communities that are enrolled in the CRS Program. The City of Wharton submitted a CRS Application to FEMA in 2007 to enroll in the CRS Program.

The TCRFC has established a CRS Coordinators role to assist Coalition communities with CRS activities such as:

- Outreach (letters to owners of repetitive loss properties)
- TCRFC website as a CRS Program source
- Newspaper articles within the basin to support floodplain management activities
- Floodplain management workshops sponsored by TCRFC
- CRS Program technical resource for coalition communities

This Mitigation Plan Action Item is for the Wharton County and the cities of East Bernard, El Campo and Wharton to evaluate the benefits of FEMA's CRS program and if warranted prepare a CRS Program Application, document CRS activities, prepare annual reports, host CRS workshops and training activities, and develop programs that will result in future CRS credits. The Flood Mitigation Committee recognizes that the CRS Program may not be economically feasible for a community with a small number of flood insurance policies in force. Therefore, not all Wharton County communities are likely candidates to enroll in the CRS Program. Based on NFIP records, the annual premiums for Wharton County and participating communities are as follows:

Wharton County:	930 policies with \$392,165 annual premiums
City of East Bernard:	24 policies with \$7,762 annual premiums
City of El Campo:	546 policies with \$210,847 annual premiums
City of Wharton:	930 policies with \$392,165 annual premiums

Source: www.fema.gov policy statistics as of 09/30/07

The estimated flood insurance policy savings for a CRS Class 9 rating is estimated to be:

Wharton County:	\$19,600 annual savings (\$98,000 over 5-years)
City of East Bernard:	\$388 annual savings (\$1,940 over 5-years)
City of El Campo:	\$10,500 annual savings (\$52,500 over 5-years)
City of Wharton:	\$14,300 annual savings (\$71,500 over 5-years)

Source: www.fema.gov policy statistics as of 09/30/07
Note: CRS ratings are for a 5-year period and reviewed annually

Responsibility: Wharton County Floodplain Administrator (also represents the City of East Bernard)
City of El Campo Floodplain Administrator
City of Wharton Floodplain Administrator
TCRFC CRS Coordinator (Technical Support)

Cost: Staff time under current budgets

Funding Sources: Not required

Timing: 2007 – City of Wharton submits CRS Application
2007 – FEMA conducts a Community Assistance Visit (CAV)
2008 – ISO conducts community verification visit
2008 - City of Wharton enters the CRS Program
2009 - CRS program 1st evaluation (annual)

Beneficiary: NFIP policy holders in each CRS community

F-11 Create a Wharton County Disaster Response Team

As part of the TCRFC All-Hazards Mitigation Plan, Wharton County and the cities of East Bernard, El Campo and Wharton identified possible hurricane and tornado paths, floodprone properties, repetitive loss properties, HAZMAT corridors, and areas where emergency assistance may be needed. The Wharton County Flood Mitigation Planning Committee recommended establishing a Wharton County Disaster Response Team with identified procedures to assist local officials with important decisions regarding disaster response and recovery.

Step 1 – Select a consultant or consultants or develop in-house staff necessary to assist Wharton County and the cities of East Bernard, El Campo and Wharton during a disaster event. Wharton County and the cities of East Bernard, El Campo and Wharton can select a single engineering consultant or the County and each community can select their own engineering consultant to assist with disaster recovery. Should the disaster event become a Presidential declared disaster the expenses associated with this mitigation action may be eligible for reimbursement from FEMA.

Step 2 – Execute a consultant “on call” contract to include response tasks:

1. Deployment of consultant’s response team at Wharton County and/or participating community request
2. Coordination with each community elected officials, floodplain administrator, emergency management coordinator, engineering consultants, LCRA representative, and Federal and state agencies.
3. Define the engineering consultants scope of work based on set salary and expenses rates
4. Utilize Wharton County flood loss data and GIS mapping
5. Identify damaged properties, areas, subdivisions and specific structures
6. Identify substandard housing that may be eligible for Federal and state funding for possible “demo-rebuild” projects
7. Assist County and communities with requests to FEMA for flood recovery mapping
8. Identify and survey high water marks (HWM) and prepare flood inundation maps
9. Monitor Flood Warning Sites and gauges to forecast downstream flooding
10. Prepare maps of damage areas for hurricane, tornado, HAZMAT or other event
11. Compile daily reports with photographs and engineering data
12. Document flood depths and calculate estimated damages to all damaged structures
13. Utilize FEMA’s Residential Substantial Damage Estimator Program (RSDE)

14. Assist Wharton County and participating communities with damage inspections and Federal and State agency reports
15. Assist Wharton County and participating communities with coordination efforts with State and Federal agencies
16. Assist Wharton County and participating communities with applications for State and Federal funding
17. Assist Wharton County and participating communities with design, construction and management of flood recovery (Public Assistance) and Hazard Mitigation Grant Program (HMGP) projects
18. Assist Wharton County and participating communities with documentation and project closeout of state and Federally funded projects
19. Assist Wharton County and participating communities with FEMA map revisions to correct errors in FIRM's.

Step 3 – Annually review and update, if necessary, consultants “on call” contract

Responsibility: Wharton County (Disaster will be declared by county)
 City of East Bernard
 City of El Campo
 City of Wharton
 FEMA
 Governor’s Division of Emergency Management (TxDEM)
 LCRA (Technical Assistance)
 TCRFC

Cost: On call contracts will not be executed unless there is a hazard event
 Cost will be hourly and dependent on magnitude of the event
 Each engineering consultant will be required to submit a rate schedule of salary and expenses

Funding Sources: Governor’s Division of Emergency Management (TxDEM)
 Public Assistance Funding available from a future Presidential declared disaster
 FEMA – Flood Recovery Mapping funds
 TxDEM - Hazard Mitigation Grant Program
 TWDB – Flood Mitigation Assistance (FMA) Program
 TWDB – Flood Disaster Planning Grant and Loan Programs
 NRCS – Steam Restoration Program
 Wharton County and participating communities (if event is not declared a disaster)

Timing: Any disaster event during the 5 year plan life

Beneficiaries: Wharton County and participating communities
Property owners and citizens of Wharton County

F-12 Wharton County Flood Warning System

There are roadways and low lying areas in Wharton County that are subject to flooding. Flood warning systems installed on selected roadways and bridges may save lives during future flood events.

Federal funding is available to assist communities with flood warning programs. Both HMGP and NOAA's proposed Automated Local Flood Warning System (ALFWS) grant program provide funding for design and installation of these systems.

The Wharton County Drainage Master plan and San Bernard River Watershed Study will identify possible locations for installation of flood warning systems. The LCRA Hydromet System addresses flood warning in the Lower Colorado River Watershed and flood warning systems installed in Wharton County can be incorporated into the LCRA system.

Phase 1 of this Action Item is to identify low water crossings and existing bridges that will be inundated during flood events and install signage and automated warning devices or barricades to warn and restrict vehicular or pedestrian crossings during flood events. The TxDOT District Office in Victoria will be requested to assist in identifying and prioritizing crossings and bridges. Option 1 to Phase 1 is installation of an automated flood warning system monitored by the Wharton County Sheriffs Office and each participating community emergency manager. A similar flood warning system has been installed in Hays County with a cost of \$800,000. The Hays County experiences, good or bad, can help Wharton County to evaluate the need of an automated warning system. During and following major flood events, computer modeling may use data from one site to help forecast at several points downstream. Once the flood warning sites are selected, a record of depths and flood events should be recorded for future use in calibration of models in the area. Phase 1 should include systematic record keeping in a format that can be used and accessed by USACE, LCRA and others in addition to the office of the Emergency Managers in Wharton County. Documentation should be provided to LCRA and stored in the LCRA highwater marks system.

Responsibility: Wharton County Office of Emergency Management (OEM)
City of El Campo OEM
City of Wharton OEM
LCRA
TxDOT Victoria District Office

Cost: \$80,000 (estimate) to install signage at selected locations
\$150,000 (estimate) for 10 sites for automated warning devices
\$800,000 (estimate) for optional automated system to monitor and warn
\$ 20,000 (estimate) for maintenance for 10 sites

\$ 10,000 (estimate) flood response modeling (May be addressed in F-12)

Funding Sources: FEMA/TxDDEM – HMGP funding
FEMA/TxDDEM Disaster Response Funding
NOAA’s Automated Local Flood Warning System (ALFWS)

Timing: Applications submitted in March 2007
Study initiation in late 2007 and installation in 2008-2009

Beneficiary of Action: Wharton County rural areas

Phase 2 of this Action Item is maintenance of flood warning systems.

Responsibility: Wharton County Office of Emergency Management (OEM)
City of El Campo OEM
City of Wharton OEM

Cost: \$ 20,000 (estimate) per year for maintenance for 10 sites
\$15,000 (estimate) for installation of additional devices

Funding Sources: FEMA/TxDDEM – HMGP funding
FEMA/TxDDEM Disaster Response Funding
NOAA’s Automated Local Flood Warning System (ALFWS)

Timing: 2008 to 2012

Beneficiary: All citizens in Wharton County

Recommendations for bid documents for the proposed flood warning device specifications:

- Each unit shall consist of one high water warning sensor device and two flashing “Danger High Water” post-mounted signs adjacent to road at each side of river/creek.
- Sensor device shall be set off at 2” of water on road and signal to be sent to county at multiple sites.
- Sensor device shall be set off at 6” of water on road and begin flashing “Danger High Water” at post-mounted signs adjacent to road at each side of river/creek. Sensor device shall extend no more that 2’ above high water alarm elevation and shall be protected from floodwaters.
- Warning flashers shall be capable of operation at least 300’ from sensor device.
- Battery packs shall have 72-hr battery reserve and include solar collection system for continuous recharging.
- All components shall be protected against tampering and theft.
- Data relay shall be by radio, cellular, or satellite.
- Two year maintenance shall be included with bid.
- Bidder will be responsible for installation

- County will identify sites.

F-13 Installation of additional Stream Gauges in the Colorado and San Bernard Watersheds

This Action Item is to identify sites where stream and precipitation gauges are needed in Wharton County and coordinate installation requests with the USGS, LCRA and NWS. In addition to one gage on the san Bernard River maintained by LCRA, the USGS maintains two (2) “real time” USGS gauges located in Wharton County that can be viewed on line at <http://waterdata.usgs.gov/tx/nwis/current/?type=flow> .

Examples of the “real time” data accessible on line is shown in Figures 13 and 14.:

Figure 13 – USGS 08162000 Colorado River at Wharton, Texas

Figure 14 – USGS 08164504 East Mustang Creek at Louise, Texas

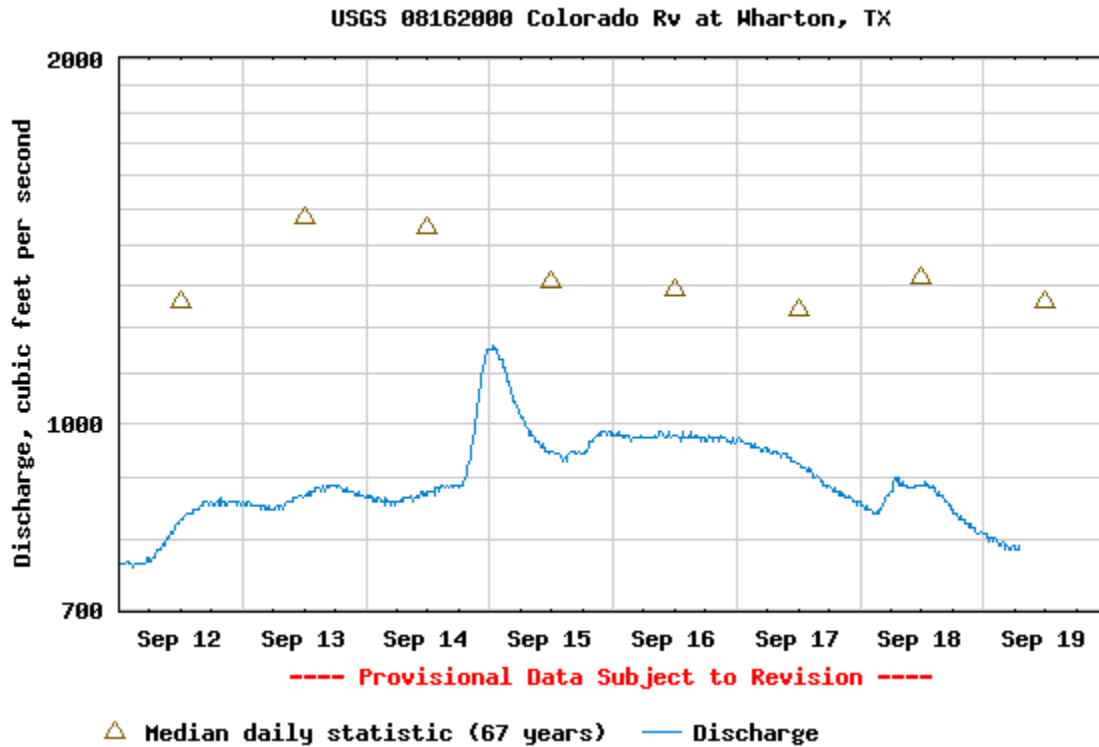
USGS

Wharton County

08162000	Colorado River at Wharton, TX	09/19 07:00	9.68	792	1,260
	Located at US 59				
	Drainage Area = 42,003 square miles				
	Period of Record – June 1916 with breaks				
08164504	East Mustang Creek near Louise, TX	09/19 06:15	3.53	0.09	2.10
	Located at FM 647				
	Drainage Area = 90.8 square miles				
	Period of Record – June 1996 to current				

Discharge, cubic feet per second

Most recent value: 792 09-19-2006 07:00



Create presentation-quality graph

Parameter 00060; DD

Daily discharge statistics, in cfs, for Sep 19 based on 67 years of record

Min (1954)	Current	20 %	Median	Mean	80 %	Max (1964)
482	792	796	1260	1720	2210	7100

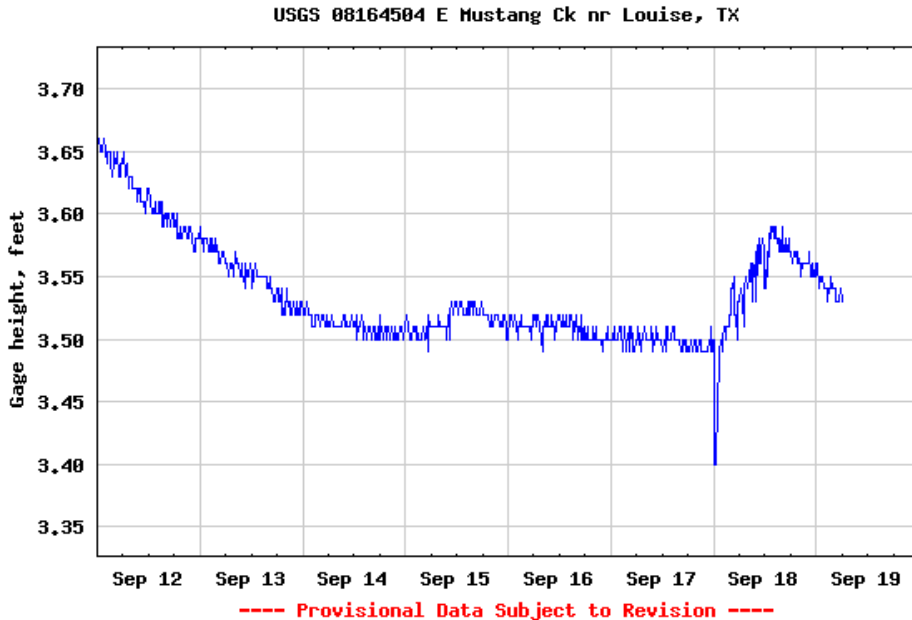
Daily discharge statistics, in cfs, for Sep 19 based on 67 years of record

Min (1954)	Current	20 %	Median	Mean	80 %	Max (1964)
482	792	796	1260	1720	2210	7100

Figure 13 : USGS 08162000 Colorado River at Wharton, Texas

Gauge height, feet

Most recent value: 3.53 09-19-2006 06:15

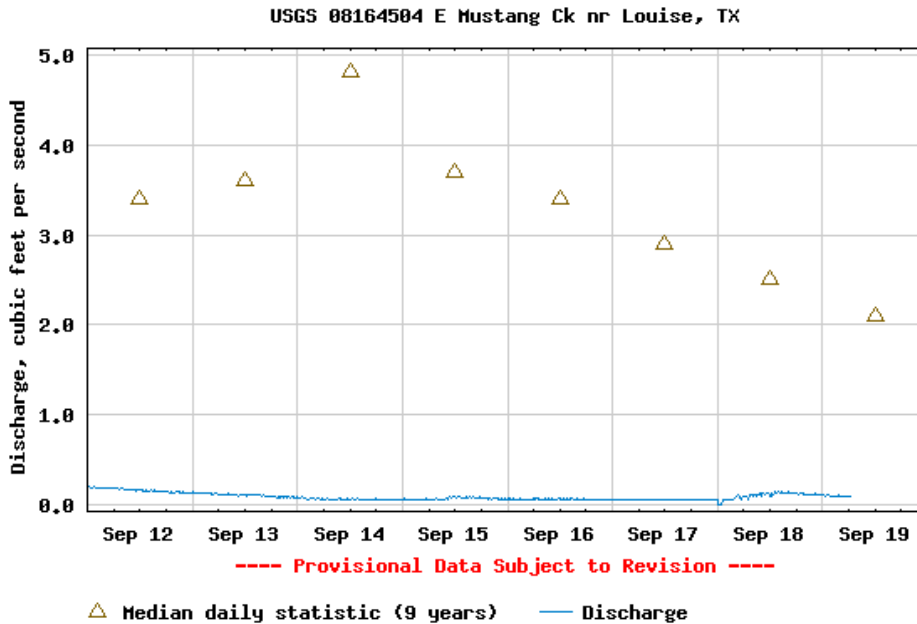


Parameter 00065; DD 01

[Create presentation-quality graph](#)

Discharge, cubic feet per second

Most recent value: 0.09 09-19-2006 06:15



Parameter 00060; DD 02

[Create presentation-quality graph](#)

Daily discharge statistics, in cfs, for Sep 19 based on 9 years of record

Min (2000)	20 %	Current	Median	Mean	80 %	Max (2002)
0.00	0.01	0.09	2.1	42	92	196

Figure 14: USGS 08164504 East Mustang Creek at Louise, Texas

The LCRA website, www.lcra.org provides access to the LCRA HYDROMET System

The LCRA website www.lcra.org contains rain and weather surveillance information which is updated in 5 minute intervals.

The LCRA is currently installing Crest Stage Gauges on the Colorado River to capture storm stage peaks.

Both the LCRA and the National Weather Service (NWS) monitors rain gauges in Wharton County. LCRA has established a network of volunteers in Wharton County that operate rain gauges and report data to LCRA that is incorporated into the LCRA HYDROMET System. LCRA is exploring the possibility of expanding the volunteer network in Wharton County.

The estimated installation cost for a stream gauge meeting USGS and GBRA criteria is \$20,000 with an estimated monthly maintenance cost of \$1,000.

Responsibility: Wharton County
City of El Campo
City of Wharton
Lower Colorado River Authority

Cost: Phase 1 - 4 gauges - \$80,000 estimated installation cost
Phase 2 - 4 gauges - \$ 80,000 estimated installation cost
Phase 3 - Expand LCRA volunteer raingauge network - \$1,000 (estimated)

Phase 1 Annual maintenance cost \$ 48,000 (estimated)
Phase 2 Annual maintenance cost \$ 48,000 (estimated)
Phase 3 Annual maintenance cost \$200 (estimated)

Funding Sources: HMGP – Governor’s Division of Emergency Management
Texas Water Development Board
Wharton County
City of El Campo
City of Wharton
LCRA

Timing: Phased 2008 to 2012

Beneficiary: Countywide

F-14 Install Reverse 911 Emergency Warning System

This action item builds on the current Wharton County 911 System. A mitigation evaluation is recommended to determine the feasibility of installing a Wharton County (countywide) Reverse 911 System. The evaluation should identify flood-prone or “at risk” structures that should be

notified and possibly evacuated when flooding is eminent. By identifying structures and phone numbers, a Reverse 911 database could be created. The Wharton County 911 System coordinates with the City of El Campo and City of Wharton Office of Emergency Management, the National Weather Service (NWS), LCRA and law enforcement agencies and could issue Emergency Warnings via the Reverse 911 System.

Responsibility: Wharton County (co-lead with cities of El Campo and Wharton)
City of El Campo (co lead with Wharton County)
City of Wharton (co lead with Wharton County)
HGAC (Technical Support)

Cost: \$10,000 estimated survey cost
\$60,000 estimated equipment cost
\$5,000 estimated cost for annual maintenance and training

Funding Sources: HGAC
TxDEM
LCRA/TCRFC
Wharton County
City of El Campo
City of Wharton

Timing: Phased over 5 years (2008-2012)

Beneficiary: Countywide

F-15 “Storm Ready” Designation for Wharton County Communities

There are no communities within Wharton County that have been designated as a “Storm Ready” community by the National Weather Service (NWS). The NWS Office in Houston is available to assist Wharton County communities to become “Storm Ready”. The mitigation plan goal is to classify every community within Wharton County as “Storm Ready”. There is the possibility that HGAC and/or LCRA/TCRFC may be able to assist with the coordination effort with the NWS.

Responsibility: Wharton County (co-lead with cities of El Campo and Wharton)
City of El Campo (co lead with Wharton County)
City of Wharton (co lead with Wharton County)
NWS
HGAC
LCRA
TCRFC

Cost: Staff time under current budgets

Funding Sources: Not required

Timing: Phased over 5 years (2008-2012)

Beneficiary: Countywide

F-16 Backup Power for Wharton County Critical Facilities

Install emergency generators or redundant power for the Wharton County critical facilities such as the County Court House, City Halls (3), Public Safety Buildings, fire stations, police facilities, communication towers and fuel dispensing facilities. A study should be conducted to evaluate options and estimated costs to assist Wharton County and participating communities in selecting, designing and constructing backup power systems that can fulfill the need.

AS A POSSIBLE ALTERNATIVE, WHARTON COUNTY AND PARTICIPATING COMMUNITIES CAN CONSIDERED PURCHASING A MOBILE POWER GENERATOR AS NOTED IN THE FOLLOWING *TEXAS GOVERNMENT INSIDER* ARTICLE REFERENCING ACTION BY THE CITY OF VICTORIA IN JULY 2006:

VICTORIA CONSIDERS \$100K MOBILE POWER GENERATOR

With a goal of keeping the city's water and sewer system operating during a sustained power loss, the city of Victoria is contemplating purchasing a mobile power generator at a cost of more than \$100,000. The generator could be used for everything from operating pumps that send water to the treatment plant to keeping sewer system lift stations up and running. The 600-kilowatt generator is mounted on a trailer so that it can be moved to the location where it is needed. Victoria city officials remember a few years ago when Hurricane Claudette left the city without power for an extended period of time.

Responsibility: Wharton County OEM
City of El Campo OEM
City of Wharton OEM
HGAC (Technical support)
LCRA (Technical support)
TCRFC (Technical support)

Cost: \$ 3,000 estimated study cost
\$30,000 estimated cost to install backup power per facility (Option 1)
\$20,000 estimated cost to install redundant power per facility (Option 2)
\$80,000 estimated cost to construct a secondary tower (Option 3)
\$100,000 estimated cost to purchase a 600 KW mobile power generator

Funding Sources: TxDEM
Department of Homeland Security (FEMA)
Wharton County
City of El Campo
City of Wharton

Timing: Study initiated in 2007
Phased construction from 2008 to 2011

Beneficiary: Countywide

7.0 ADOPT THE PLAN (CRS ACTIVITY 511.9)

In accordance with CRS requirements, the Wharton County Flood Mitigation Plan must be an official plan of each community and not an internal staff proposal. As such, the Wharton County Commissioners Court and the City Council of each participating community must formally adopt the plan and later amendments to the plan in order to be eligible to receive Flood Mitigation Assistance (FMA) Program funding and to receive CRS credits for planning efforts.

Formal Action to Adopt the Plan:

City of East Bernard City Council formally approved and adopted the Wharton County Flood Mitigation Plan on January 14, 2008. See Resolution #2008-001 in Appendix "C".

City of El Campo City Council formally approved and adopted the Wharton County Flood Mitigation Plan on January 14, 2008. See Resolution #2008-01 in Appendix "C".

City of Wharton City Council formally approved and adopted the Wharton County Flood Mitigation Plan on January 28, 2008. See Resolution #2008-01 in Appendix "C".

Wharton County Commissioners Court formally approved and adopted the Wharton County Flood Mitigation Plan on March 10, 2008. See Resolution #08-05 in Appendix "C".

8.0 IMPLEMENTATION, EVALUATION AND REVISION OF PLAN (CRS ACTIVITY 511.10)

8.1 PROCEDURES FOR IMPLEMENTING, EVALUATING AND REVISING THE PLAN

The Wharton County Flood Mitigation Planning Committee will monitor implementation of the Plan and conduct periodic and annual reviews to evaluate the effectiveness of the Plan as scheduled in CRS Section 511.2 and 511.3. Following formal Commissioners Court and each City Council adoption of the plan, the Wharton County Flood Mitigation Plan will be implemented as outlined in previous sections.

The Wharton County Permits and Inspection Department Director and participating community floodplain administrators will be responsible for ensuring the Flood Mitigation Plan is implemented in a timely manner. Other Flood Mitigation Planning Committee members will provide assistance and expertise for plan review when requested.

The Wharton County Flood Mitigation Planning Committee reviewed the following possible funding programs for Wharton County flood protection and drainage improvement projects:

- a. Hazard Mitigation Grant Program (HMGP)** – Wharton County and cities of El Campo and Wharton have an approved Hazard Mitigation Plan and therefore are

eligible for both Pre- or Post-Disaster mitigation grants from FEMA. Post Disaster Mitigation is state-wide competition for grant funding where Pre-Disaster Mitigation (PDM) is nation-wide competition for grant funding. Post Disaster Mitigation provides the better opportunity for funding because grant applications are reviewed, approved and administered by the Governor's Division of Emergency Management.

- b. Pre-Disaster Mitigation (PDM)** – As mentioned above, PDM is a national competition grant program. In addition to having a reduced chance for grant approval, the nation-wide review and approval process can be time consuming and many PDM grants go unused because the applicants have changed their plans before the end of the 6 to 12 month grant award process is completed.
- c. Flood Mitigation Assistance (FMA) Program** – The 2008 Wharton County Flood Mitigation Plan, when approved by FEMA, will establish eligibility for FMA Program funding. Wharton County will be required to perform the required 5-year FMA Plan update to continue eligibility to receive FMA Program funding through 2013. FEMA's FMA Program funding is administered by the Texas Water Development Board.
- d. Severe Repetitive Loss Program** - Authorized by the National Flood Insurance Program Reform Act of 2004 (eligibility is for properties with four or more losses totaling \$20,000 or two or more losses that exceed structure value). The Severe Repetitive Loss Program funding is funded by FEMA and administered by the Texas Water Development Board.
- e. Repetitive Flood Claims Program** – Authorized by the National Flood Insurance Program Reform Act of 2004 (eligibility is for flood-prone properties where the property is deed restricted for open space). The Repetitive Flood Claims (RFC) Program is funded by FEMA and administered by the Governor's Division of Emergency Management.
- f. Demo-Rebuild** – Demo-rebuild is a pilot program that was introduced by FEMA in Florida and Louisiana (2003-2008) and funded under the state administered Hazard Mitigation Grant Program. This program has not been authorized for Texas communities however it is anticipated that FEMA funding will become available through TxDEM and/or TWDB.
- g. FEMA Public Assistance (44CFR 206)** – FEMA Funding is available to Wharton County and incorporated communities following a Presidential Declared Disaster. Wharton County and the cities of East Bernard, El Campo and Wharton are eligible for Public Assistance funding to repair or replace public infrastructure and buildings damaged by the disaster event.
- h. Texas Water Development Board (TWDB) Flood Protection Planning Grant-** Wharton County received a grant from TWDB in 2006 to prepare the county-wide Drainage Master Plan. TWDB funding (50%) is available for applicant communities following an annual request for proposals.

i. FEMA Cooperating Technical Partner (CTP) & Map Maintenance Programs (2008-2013)

FEMA cost-shares with CTP's for mapping activities, such as the LCRA's CTP efforts to remap counties within the Lower Colorado River Watershed. FEMA plans to initiate Map Mod Phase 2 for FY 2009-FY2013. It may be possible for the LCRA to receive CTP funding to update the Wharton County Flood Insurance Rate Maps and incorporate the mapping products from the Wharton County Drainage Master Plan and the San Bernard River Watershed Study.

j. U.S. Army Corps of Engineers Small Project and Aquatic Ecosystem Restoration Programs

USACE Fort Worth and Galveston Districts accepts applications from communities to fund "small projects" and stream restoration projects. Recommended flood protection and drainage improvement projects identified by the Wharton County Drainage Master Plan and San Bernard River Watershed Study may be eligible for USACE funding.

k. NRCS Programs for urban erosion/sedimentation and stream restoration/stabilization projects.

The USDA/NRCS Office in Temple, Texas administers these programs. Recommended drainage improvement projects identified by the Wharton County Drainage Master Plan and San Bernard River Watershed Study may be eligible for NRCS funding as Stream Restoration Projects.

l. Regional Funding Sources - Wharton County is located within the HGAC Planning area. HGAC may become a funding source for regional drainage studies similar to successes experienced by the NCTCOG with receiving funding from the NRCS, USACE and FEMA. The HGAC may be a source of additional study funds, perhaps on cooperative basis.

m. Lower Colorado River Authority - Wharton County is located within the LCRA service area and a member of the TCRFC. LCRA and the TCRFC have both funded projects that benefited Wharton County. The LCRA is the Local Sponsor for the Lower Colorado River Flood Damage Reduction Project with the Corps of Engineers Fort Worth District.

n. Storm Water Utility Fee – Wharton County and the cities of El Campo and Wharton may wish to consider SWU to fund needed stormwater improvement projects. Several major cities have successfully implemented SWU programs.

o. Drainage Impact Fee – Wharton County and the cities of El Campo and Wharton may wish to consider Drainage Impact Fee to fund needed stormwater improvement projects. The HCFCD has successfully administered a drainage impact fee program that is watershed based to design and construct regional drainage and detention facilities.

- p. **Corps of Engineers/Galveston District** - USACE 1140-1-211 “Support for Others” allows reimbursement up to 50% for a communities cost for planning, engineering and design, construction management, and operations (training) for flood protection and water resources projects.

8.2 IMPLEMENTATION, EVALUATION AND REVISION OF THE PLAN (CRS ACTIVITY 511.10)

Upon completion of Annual Plan Reviews, the Committee will prepare a Plan Review Report to result in a revision to the Plan based on input from the public, other agencies, and City Staff. The Wharton County Flood Mitigation Plan will be resubmitted to the Commissioners Court and each City Council for approval only as required by TWDB to meet FMA Program requirements or by FEMA to meet CRS Requirements.

Following the recommendations of the Wharton County Flood Mitigation Planning Committee, the Wharton County Commissioners Court and each City Council formally adopted the Flood Mitigation Plan.

Wharton County
Flood Mitigation Planning Committee Planner-in-Charge

City of East Bernard
Wharton County Flood Mitigation Planning Committee

City of El Campo
Wharton County Flood Mitigation Planning Committee

City of Wharton
Wharton County Flood Mitigation Planning Committee

APPENDIX A

MHIP ACRONYMS

ACRONYM	DEFINITION
BFE	Base Flood Elevation
CTP	Cooperating Technical Partner
DFIRM	Digital Flood Insurance Rate Map
DHS	Department of Homeland Security
FEMA	Federal Emergency Management Agency
FIS	Flood Insurance Study
FIRM	Flood Insurance Rate Map
FY	Fiscal Year
GAO	Government Accountability Office
GIS	Geographic Information System
IDIQ	Indefinite Delivery Indefinite Quantity (Contract)
KPI	Key Performance Indicator
KPP	Key Performance Parameter
LFD	Letter of Final Determination
LOMA	Letter of Map Amendment
LOMC	Letter of Map Change
MHIP	Multi-Year Flood Hazard Identification Plan
MIP	Mapping Information Platform
MNA	Mapping Needs Assessment
MOU	Memorandum of Understanding
MNUSS	Mapping Needs Update Support System
MSC	Mapping Service Center
NDEP	National Digital Elevation Program
NDOP	National Digital Orthophoto Program
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NSDI	National Spatial Data Infrastructure
NSGIC	National States Geographic Information Council
OMB	Office of Management and Budget
SFHA	Special Flood Hazard Area
TIP	Transportation Improvement Plan
USGS	United States Geological Survey

MHIP TERMS

TERM	DEFINITION
1-Percent-Annual-Chance Flood	The flood that has a 1 percent chance of being equaled or exceeded in any given year. Synonymous with 100-Year Flood and Base Flood.
Appeal	The formal objection to proposed or proposed modified Base Flood Elevations (BFEs), submitted by a community official or an owner or lessee of real property within the community during the statutory 90-day appeal period. An appeal must be based on data that show the proposed or proposed modified BFEs are scientifically or technically incorrect.
Approximate Study	A flood hazard study that results in the delineation of floodplain boundaries for the 1-percent-annual-chance flood, but does not include the determination of BFEs or flood depths.
Base Flood	See 1-Percent-Annual-Chance Flood.
Base Flood Elevation (BFE)	The elevation of a flood having a 1-percent chance of being equaled or exceeded in any given year.
Base Map	The map of the community that depicts cultural features (for example, roads, railroad, bridges, dams, culverts, drainage features, and corporate limits).
Case	A specific unit of work.
Catalog	A listing of data holdings.
Coastal Flooding	Flooding that occurs along the Great Lakes, the Atlantic and Pacific Oceans, and the Gulf of Mexico.
Coastal High Hazard Area	An area of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high-velocity wave actions from storms or seismic sources.
Community	Any State or area or political subdivision thereof, or any Indian tribe or authorized tribal organization, or Alaska Native village or authorized native organization, that has the authority to adopt and enforce floodplain management regulations for the areas within its jurisdiction.
Community Identification Number (CID)	A six-digit code used by FEMA to identify each community that is potentially subject to flood hazards.
Community Information System (CIS)	An Oracle database system used by FEMA to track and report on all communities identified by FEMA as potentially flood prone, especially with regard to mapping actions, including Letters of Map Change, taken by FEMA to identify flood hazards in each community.
Community Rating System (CRS)	A FEMA initiative, established under the NFIP, to recognize and reward communities that have implemented floodplain management measures beyond the minimum required by NFIP regulations. Under the CRS, those communities that choose to participate voluntarily may reduce the flood insurance premium rates for property owners in the community by taking these additional actions.
Compliance Period	The period that begins with the issuance of a Letter of Final Determination and ends when a new or revised FIRM becomes effective. During the compliance period, a community must enact and adopt new or revised floodplain management ordinances required for participation in the NFIP.

Appendix E - Acronyms and Terms

TERM	DEFINITION
Cooperating Technical Partners (CTP) Program	An innovative FEMA program to create partnerships between FEMA and participating NFIP communities, regional agencies, and State agencies that have the interest and capability to become more active participants in the FEMA Flood Hazard Mapping Program.
Countywide Format	A format used by FEMA to show flooding information for the entire geographic area of a county, including the incorporated communities in the county, on one map and in one report.
Cycle Time	The calendar time from approval of a need to the updating of the appropriate multi-hazard layer.
Data Set or Data File	A named collection of logically related data records arranged in a prescribed manner. The physical set of data of one data type being referred to or being used in the context of a data processing operation.
Department of Homeland Security (DHS)	A Federal agency, of which FEMA is a part, that is charged with ensuring the safety of the United States and its population.
Detailed Study	A flood hazard study that, at a minimum, results in the delineation of floodplain boundaries for the 1-percent-annual-chance flood and the determination of BFEs or flood depths.
Digital Flood Insurance Rate Map (DFIRM)	A FIRM that has been prepared as a digital product, which may involve converting an existing manually produced FIRM to digital format, or creating a product from new digital data sources using a GIS environment. The DFIRM product allows for the creation of interactive, multi-hazard digital maps. Linkages are built into an associated database to allow users options to access the engineering backup material used to develop the DFIRM, such as hydrologic and hydraulic models, flood profiles, data tables, Digital Elevation Models, and structure-specific data, such as digital elevation certificates and digital photographs of bridges and culverts.
Digital Flood Insurance Rate Map (DFIRM) Spatial Database	A database designed to facilitate collecting, storing, processing, and accessing data developed by FEMA, enabling mapping partners to share the data necessary for the DFIRM production and conversion process. Where possible, all mapping and engineering data elements are linked to physical geographic features and georeferenced. The use of a GIS as a component of the DFIRM spatial database provides the ability to georeference and overlay the mapping and engineering data, allowing the database to support a wide variety of existing and forthcoming FEMA engineering and mapping products.
e-LOMA	Computer software application for processing map amendments and revisions.
Effective Date	The date on which the NFIP map for a community becomes effective and all sanctions of the NFIP apply.
Effective Map	The NFIP map issued by FEMA that is in effect as of the date shown in the title block of the map as "Effective Date," "Revised," or "Map Revised."
Federal Emergency Management Agency (FEMA)	The component of the Emergency Preparedness and Response Directorate within the U.S. Department of Homeland Security that oversees the administration of the NFIP.

TERM	DEFINITION
Federal Register	The document, published daily by the Federal Government, that presents regulation changes and legal notices issued by Federal agencies. FEMA publications in the Federal Register include Proposed, Interim, and Final Rules for BFE determinations; Compendium of Flood Map Changes published twice each year; and Final Rules concerning community eligibility for the sale of flood insurance.
Fiscal Year	The 12-month period that begins on October 1 and ends on September 30.
Flood	A general and temporary condition of partial or complete inundation of normally dry land areas from (1) the overflow of inland or tidal waters or (2) the unusual and rapid accumulation or runoff of surface waters from any source.
Flood Insurance Rate Map (FIRM)	The insurance and floodplain management map produced by FEMA that identifies, based on detailed or approximate analyses, the areas subject to flooding during a 1-percent-annual-chance flood event in a community. Flood insurance risk zones, which are used to compute actuarial flood insurance rates, also are shown. In areas studied by detailed analyses, the FIRM shows BFEs to reflect the elevations of the 1-percent-annual-chance flood. For many communities, when detailed analyses are performed, the FIRM also may show areas inundated by 0.2-percent-annual-chance flood and regulatory floodway areas.
Flood Insurance Risk Zones	The zones, also referred to as “risk premium rate zones” and “flood insurance rate zones,” shown on a FIRM or FHBM that are used to determine flood insurance premium rates for properties in the community covered by the FIRM or FHBM. The flood insurance risk zones include SFHA, (Zones A, A1-30, AE, A0, A99, AH, AR, AR/A, AR/A1-30, AR/AE, AR/A99, V, V1-30, VE, V0) and areas outside the SFHA (Zones B, X, D, M, N, P, E).
Flood Insurance Study (FIS)	The initial study of flood hazards performed for a community that does not have an effective FIRM or Flood Boundary and Floodway Map (FBFM). An FIS also may be referred to as a “Type 15 FIS” or a “Type 15 study.” FEMA study contractors have traditionally performed FISs. However, communities, regional agencies, and States that are participating in the CTP initiative also may perform these types of flood map projects.
Flood Insurance Study (FIS) Report	A document, prepared and issued by FEMA, that documents the results of the detailed flood hazard assessment performed for a community. The primary components of the FIS report are text, data tables, photographs, and flood profiles.
Flood Map Modernization	Multi-Hazard Flood Map Modernization program, FEMA’s plan to provide accurate flood hazard mapping data for areas of the Nation with the greatest flood risk.
Flood Map Project	Any activity undertaken by FEMA or a flood hazard mapping partner to create a new flood map or update an existing flood map, including detailed studies, approximate studies, and redelineations of floodplain boundaries based on updated topographic information.
Floodplain	A land area that is susceptible to being inundated by water from any source.
Floodplain Boundary Standard	The standard by which all flood maps are measured, requiring the map producer to match flood boundaries to the best-available topographic information and merging both in an updated, digital format.
Floodplain Management	The operation of a program of corrective and preventative measures for reducing flood damage, including, but not limited to, emergency preparedness plans, flood-control works, and floodplain management regulations.

Appendix E - Acronyms and Terms

TERM	DEFINITION
Floodplain Management Regulations	The zoning ordinances, subdivision regulations, building codes, health regulations, special-purpose ordinances, and other applications of enforcement used by a community to manage development in its floodplain areas.
Flood-prone Area	See floodplain.
Flood-prone Community	Any community that is subject to inundation by the 1-percent-annual-chance (base or 100-year) flood.
Flood Profile	A graph showing the relationship of water-surface elevation to location, with the latter generally expressed as distance above the mouth for a stream of water flowing in an open channel.
Floodway	See regulatory floodway.
Framework	A collection of technology from which items can be selected for a particular application. The elements in the collection are grouped because they are known to work well together to solve a particular problem set.
Geographic Information Systems (GIS)	A system of computer hardware, software, and procedures designed to support the capture, management, manipulation, analysis, modeling, and display of spatially referenced data for solving complex planning and management problems.
GEO-RAS	An ArcView GIS extension that provides the user with a set of procedures, tools, and utilities for the preparation of GIS data for importation into HEC-RAS and generation of GIS data from HEC-RAS output.
Geospatial One-stop	Initiative to reduce duplication among various GIS efforts throughout the U.S. Government.
Guidelines and Specifications for Flood Hazard Mapping Partners	FEMA's technical requirements, product specifications for Flood Hazard Maps and related NFIP products, and associated coordination and documentation activities. These Guidelines, organized into three volumes and 13 appendices, combine FEMA technical, programmatic, and administrative procedure publications, guidance documents, and memorandums regarding Flood Hazard Mapping.
H&H	Hydrology and Hydraulics (engineering analysis of water quantity and flow)
Hazard	An event or physical condition that has the potential to cause fatalities, injuries, property damage, infrastructure damage, agricultural loss, damage to the environment, interruption of business, and other types of loss or harm.
Hazard Mitigation Grant Program (HMGP)	The program, authorized under Section 404 of the Stafford Act, under which FEMA provides grants to state and local governments to implement long-term hazard mitigation measures after a presidential disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable implementation of mitigation measures during the immediate recovery from a presidentially declared disaster.
Hazards.fema.gov	The Web site for FEMA's Mapping Information Platform.
HTML	Hypertext Markup Language, a set of codes or "markups" that are inserted into plain text to create a Web page.
Hydraulic Analysis	An engineering analysis of a flooding source carried out to provide estimates of the elevations of floods of selected recurrence intervals.
Hydraulic Methodology	Analytical methodology used for assessing the movement and behavior of floodwaters and determining flood elevations and regulatory floodway data.
Hydraulics	The study of the dynamics of movement of a given amount of water in a watershed.

TERM	DEFINITION
Hydrologic Analysis	An engineering analysis of a flooding source carried out to establish peak flood discharges and their frequencies of occurrence.
Hydrology	The science encompassing the behavior of water as it occurs in the atmosphere, on the surface of the ground, and underground.
Indefinite-Delivery, Indefinite-Quantity (IDIQ)	A type of contract by which a service is provided an unspecified number of times, or a contractor who operates under such a contract.
Key Performance Indicator (KPI)	A statistical measurement of one of the Flood Map Modernization program's goals.
Key Performance Parameter (KPP)	The major measurement of program goal achievement; specifically, increasing safety for at least 92 percent of the Nation's population with the greatest flood risk.
Layer	An "overlay" of data, each of which normally deals with one thematic topic. Each overlay is registered to one another by the common coordinate system of the database. In a GIS, a layer or a theme represents a specific kind of data.
Legacy	An existing system that contains relevant and historical data.
Letter of Final Determination	A letter sent by FEMA upon conclusion of a study.
Levee	A man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide protection from temporary flooding.
Letter of Map Amendment (LOMA)	An official determination by FEMA that a property has been inadvertently included in an SFHA as shown on an effective FHBM or FIRM and is not subject to inundation by the 1-percent-annual-chance flood. Generally, the property is located on natural high ground at or above the BFE or on fill placed prior to the effective date of the first NFIP map designating the property as within an SFHA. Limitations of map scale and development of topographic data more accurately reflecting the existing ground elevations at the time the maps were prepared are the two most common bases for LOMA requests.
Letter of Map Change (LOMC)	A collective term used to describe official amendments and revisions to National Flood Insurance maps that are accomplished by a cost-effective administrative procedure and disseminated by letter.
Letter of Map Revision (LOMR)	A letter issued by FEMA to revise the FIRM, FBFM, and/or FIS report for a community to reflect a change in BFEs, floodplain and floodway boundary delineations, and coastal high hazard areas.
Letter of Map Revision Based on Fill (LOMR-F)	A Letter of Map Change issued by FEMA when FEMA determines that a legally defined parcel of land or structure has been elevated above the BFE based on the placement of earthen fill after the date of the first NFIP map.
Map Amendment	A change to an effective NFIP map that results in the exclusion from the SFHA of an individual structure or legally defined parcel of land that has been inadvertently included in the SFHA (that is, no alterations of topography have occurred since the date of the first NFIP map that showed the structure or parcel to be within the SFHA).
Map Revision	A change to an effective NFIP map that is accomplished by a LOMR or a physical map revision.

Appendix E - Acronyms and Terms

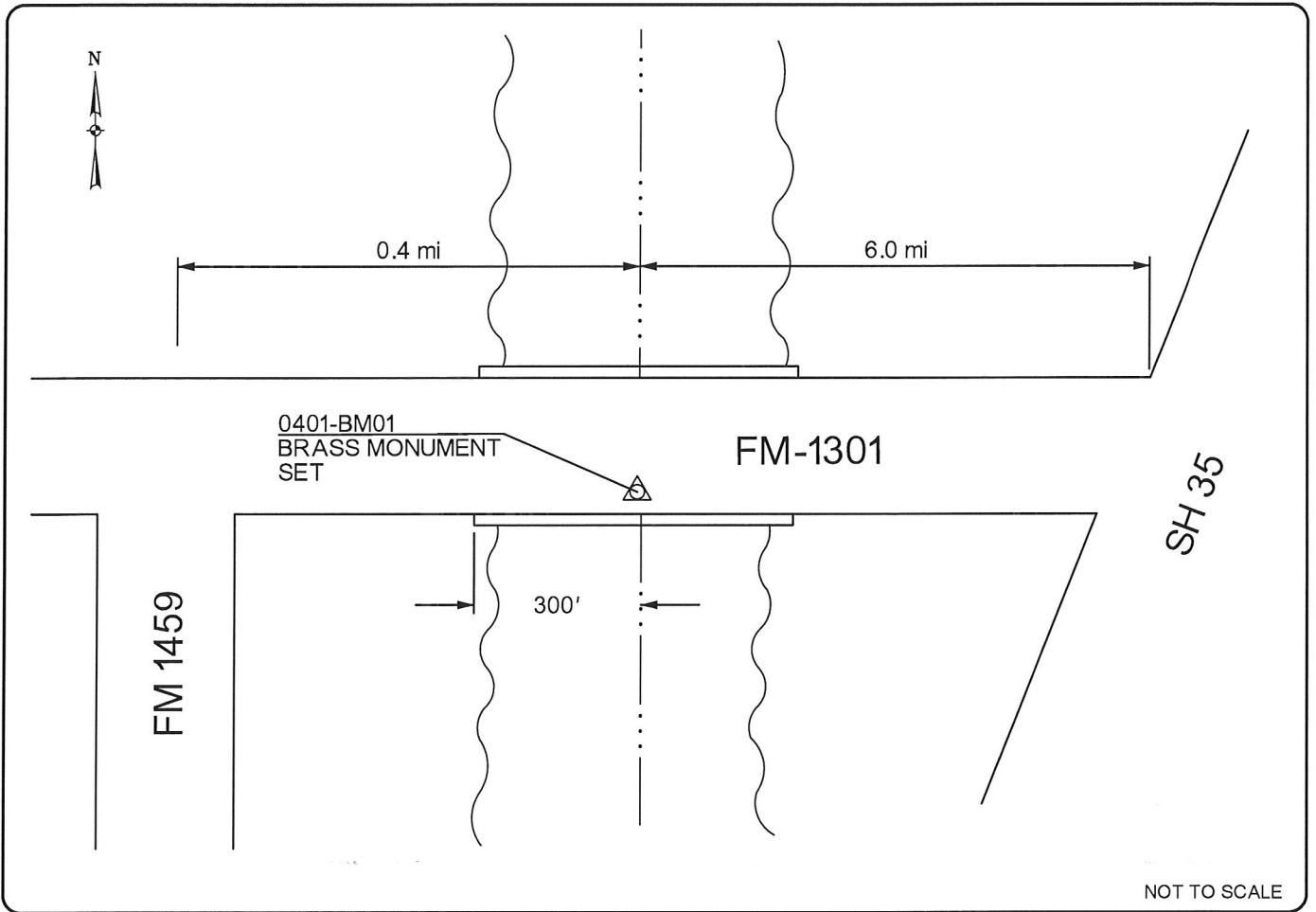
TERM	DEFINITION
Mapping Information Platform (MIP)	The name for the MOD team's information technology. This technology encompasses a program management workflow-based system, which has federation capabilities, community outreach capability, and a training system, all behind a common interface. This technology allows for personalization of content.
Mapping Needs Update Support System (MNUSS)	A computerized database system used by FEMA and its flood hazard mapping partners to compile information and manage needs assessment using the Mapping Needs Assessment Process.
Mapping Needs Assessment Process	The process by which FEMA identifies mapping needs nationwide by contacting states, regional agencies, and mapped participating communities for information; verifies the validity of the identified needs; and compiles information on those needs into a computerized database.
Metadata	Data about data. Metadata describes the data; for example, metadata about an image might describe the location where the image was taken, its resolution, etc.
MHIP@floodmaps.net	The e-mail address to which individuals, agencies, and organizations can send their comments about the MHIP.
Mitigation	A sustained action taken to reduce or eliminate long-term risk to people and property from flood hazards and their effects. Mitigation distinguishes actions that have a long-term impact from those more closely associated with preparedness for, immediate response to, and short-term recovery from specific events.
Multi-Year Flood Hazard Identification Plan (MHIP)	A document that defines how FEMA will produce updated, digital flood-hazard data for areas with the greatest flood risk with 5 years of funding.
National Flood Insurance Program (NFIP)	The Federal program under which flood-prone areas are identified and flood insurance is made available to the owners of the property in participating communities.
National Flood Layer	A virtual national geo-database containing flood information that appears to users as a seamless database, although the data itself may be held centrally in MIP or may be held locally at various CTPs. Data is accessed via MIP.
New, Updated, or Validated Engineering Analysis	Varying levels of engineering analysis established by FEMA for mapping studies.
Open Standards	Refers to standards that were developed in an environment allowing for public comment and pertains to methods and formats that can be met by a number of vendors or organizations. The word "proprietary" is an antonym to "open."
Participating Community	Any community that voluntarily elects to participate in the NFIP by adopting and enforcing floodplain management regulations that are consistent with the standards of the NFIP.
Physical Map Revision (PMR)	A revision made by FEMA to a FIRM, FBFM, or FIS report based on community-supplied data. FEMA issues PMRs when (1) changes resulting from the requested revision are extensive, affecting significant portions of a FIRM panel or multiple FIRM panels; (2) revision will add significant SFHAs to the effective FIRM; or (3) revision will result in an increase in the BFEs and/or regulatory floodway.
Protest	An objection to any information, other than BFEs, shown on an NFIP map that is submitted by community officials or interested citizens through the community officials during the 90-day appeal period.

TERM	DEFINITION
Regional Offices	The FEMA offices located in Boston, Massachusetts; New York, New York; Philadelphia, Pennsylvania; Atlanta, Georgia; Chicago, Illinois; Denton, Texas; Kansas City, Missouri; Denver, Colorado; Oakland, California; and Bothell, Washington.
Regulatory Floodway	A floodplain management tool that is the regulatory area defined as the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the base flood discharge can be conveyed without increasing the BFEs more than a specified amount. The regulatory floodway is not an insurance rating factor.
Risk Class	One of five categories of FIRMs, depending on flood risk.
Scoping	The process of determining the activities that a study must include in order to satisfy a funded need.
Special Flood Hazard Area (SFHA)	The area delineated on a NFIP map as being subject to inundation by the base flood. SFHAs are determined using statistical analyses of records of river flow, storm tides, and rainfall; information obtained through consultation with a community; floodplain topographic surveys; and hydrologic and hydraulic analyses.
Standards	Standards are methods, procedures, and formats defined to which processes and data must adhere to be acceptable. The standards used on this program are "open standards," meaning that they are not proprietary to any one company or group of companies. In general, our standards will have been developed via the Open GIS Consortium. In many cases, standards are not yet developed, particularly for intermediate engineering data, such as inputs to models. In this case, we will implement WISE standards as a starting point.
State	Any U.S. state, the District of Columbia, the territories and possessions of the United States, the Commonwealth of Puerto Rico, and the Trust Territory of the Pacific Islands.
Study Cycle	The flood study processing steps including needs assessment, project scoping, data development, processing, distribution, and maintenance.
Watershed	An area of land that drains into a single outlet and is separated from other drainage basins by a divide.
Web Services	A technology that allows a server to provide services over the Internet. Web services are self-contained, modular applications that can be described, published, located, and invoked over a network. Web services perform encapsulated business functions, ranging from simple request-reply to full business process interactions.
Work Map	Floodplain mapping submitted to FEMA by a mapping partner, reflecting the results of a flood study or other mapping activity. The work map depicts floodplain boundaries, regulatory floodway boundaries, BFEs, and cross-sections, and provides the basis for presentation of this information on a FIRM.

APPENDIX B

SAN BERNARD RIVER
COUNTY OF WHARTON, TEXAS

CONTROL POINT NO. 0401-BM01



COORDINATES: TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE
(4204) NAD83

ELEVATION: NORTH AMERICAN VERTICAL DATUM OF 1988

COMBINED SCALE FACTOR: 0.999869855

GRID X = 3,000,549.80 Y = 13,620,126.68

ELEVATION = 46.41'

DESCRIPTION: BRASS MONUMENT
STAMPED "0401 BM01" SET



Douglas W. Turner



HALFF

3701 KIRBY DRIVE, SUITE 860
HOUSTON, TEXAS 77098-3926
TEL (713) 523-7161
FAX (713) 523-4373

COUNTY OF WHARTON

AVO: NO. 22650

DATE: OCTOBER 23, 2007

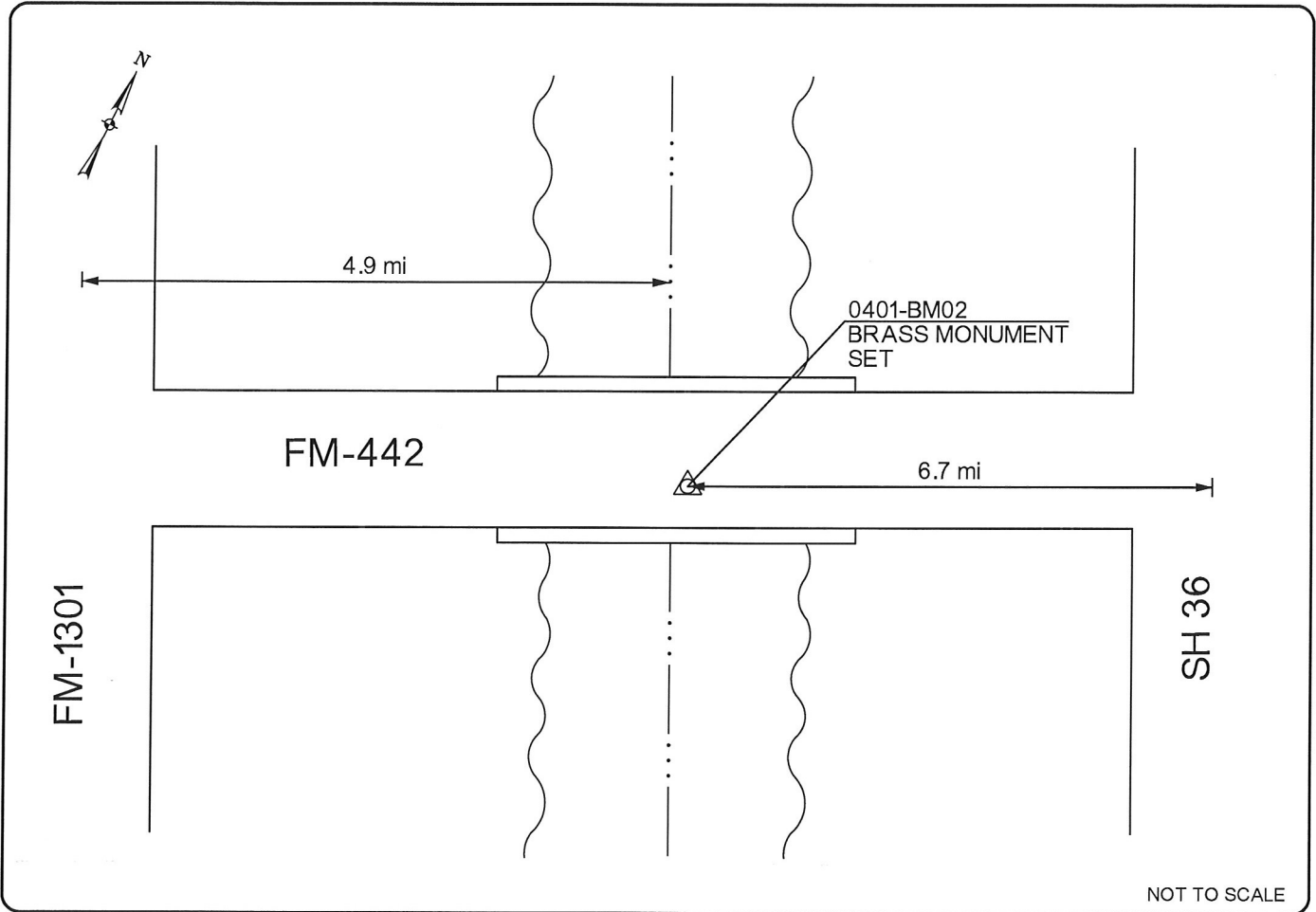
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SCALE: N.T.S.

CHECKED BY: DWT

SAN BERNARD RIVER
COUNTY OF WHARTON, TEXAS

CONTROL POINT NO. 0401-BM02



COORDINATES: TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE
(4204) NAD83

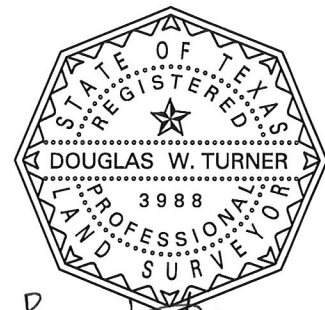
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COMBINED SCALE FACTOR: 0.999863858

GRID X = 2,958,269.36 Y = 13,674,696.85

ELEVATION = 77.69'

DESCRIPTION: BRASS MONUMENT
STAMPED "0401 BM02" SET



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AVO: NO. 22650

DATE: OCTOBER 23, 2007

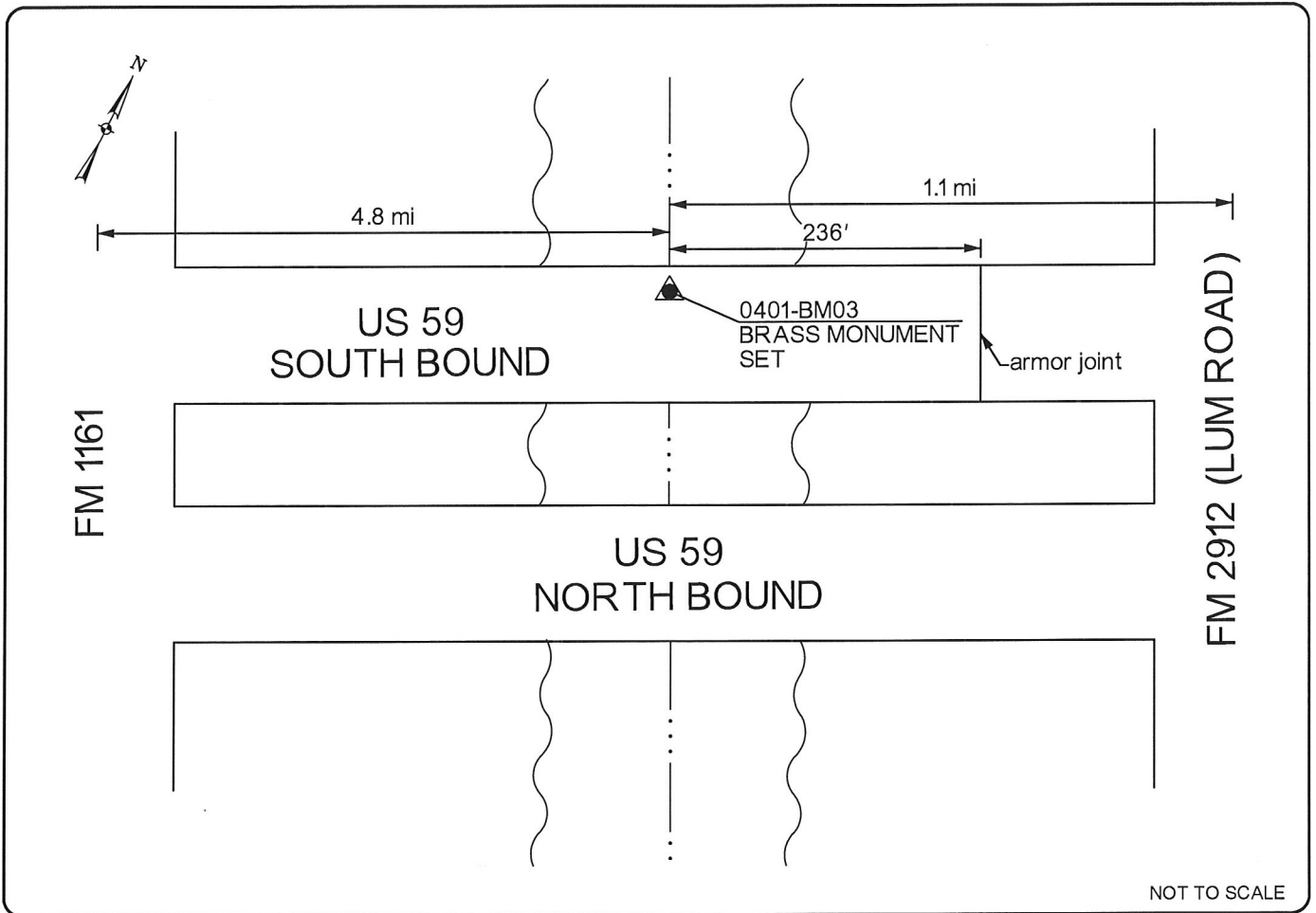
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SCALE: N.T.S.

CHECKED BY: DWT

SAN BERNARD RIVER
COUNTY OF WHARTON, TEXAS

CONTROL POINT NO. 0401-BM03



COORDINATES: TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE
(4204) NAD83

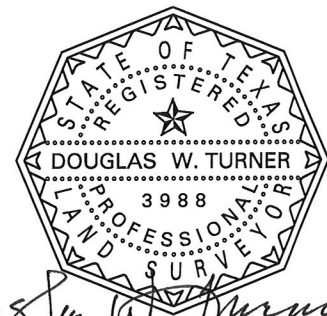
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COMBINED SCALE FACTOR: 0.999864676

GRID X = 2,918,142.03 Y = 13,718,904.42

ELEVATION = 93.11'

DESCRIPTION: BRASS MONUMENT
STAMPED "0401 BM03" SET



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DATE: OCTOBER 23, 2007

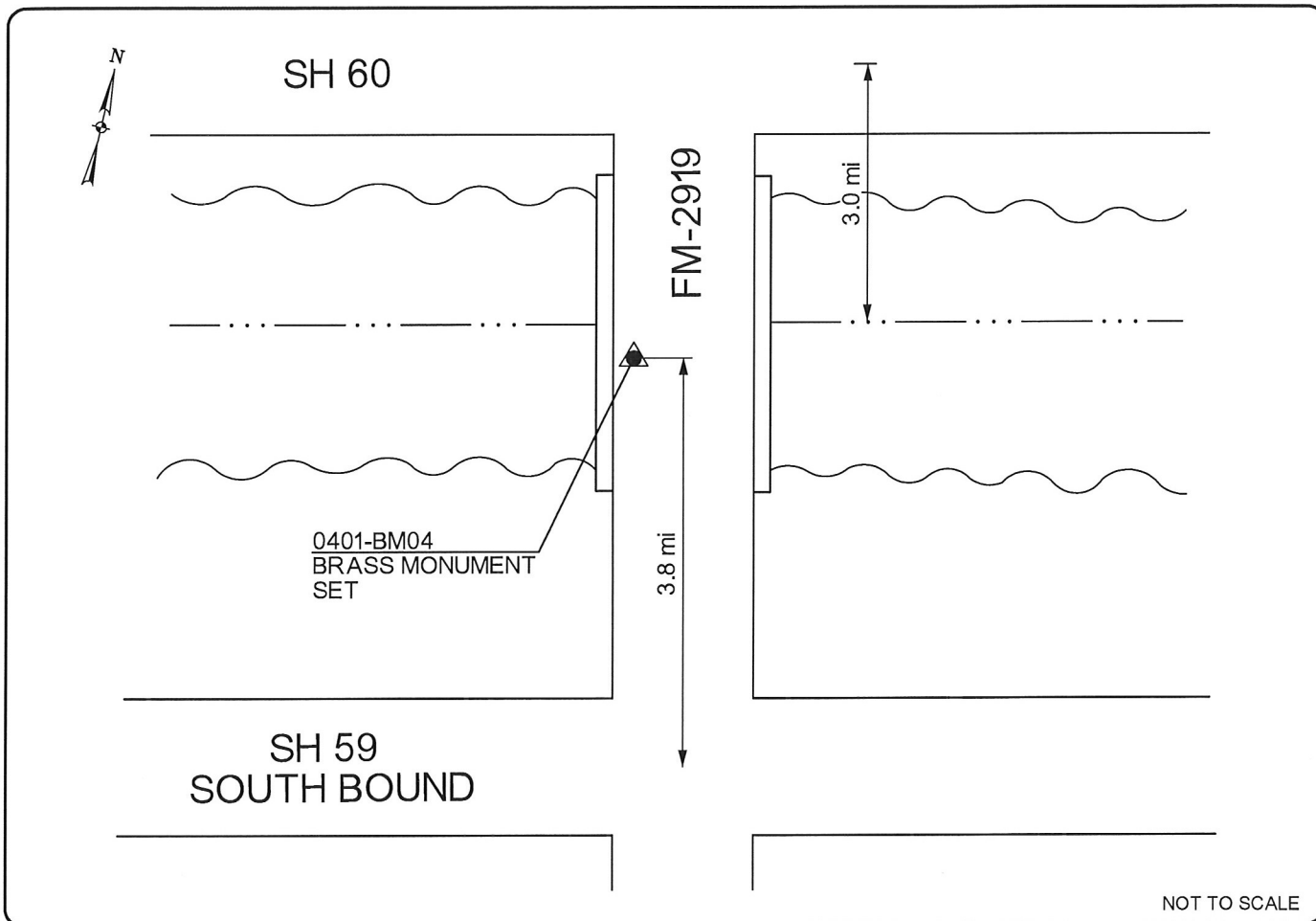
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SCALE: N.T.S.

CHECKED BY: DWT

SAN BERNARD RIVER
COUNTY OF WHARTON, TEXAS

CONTROL POINT NO. 0401-BM04



COORDINATES: TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE
(4204) NAD83

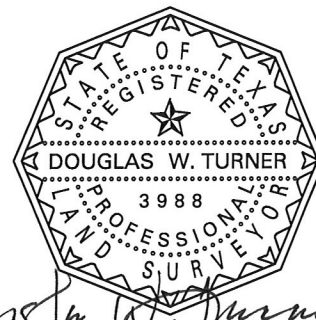
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COMBINED SCALE FACTOR: 0.999866705

GRID X = 2,913,529.65 Y = 13,739,475.97

ELEVATION = 98.15'

DESCRIPTION: BRASS MONUMENT
STAMPED "0401 BM04" SET



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COUNTY OF WHARTON

AVO: NO. 22650

DATE: OCTOBER 23, 2007

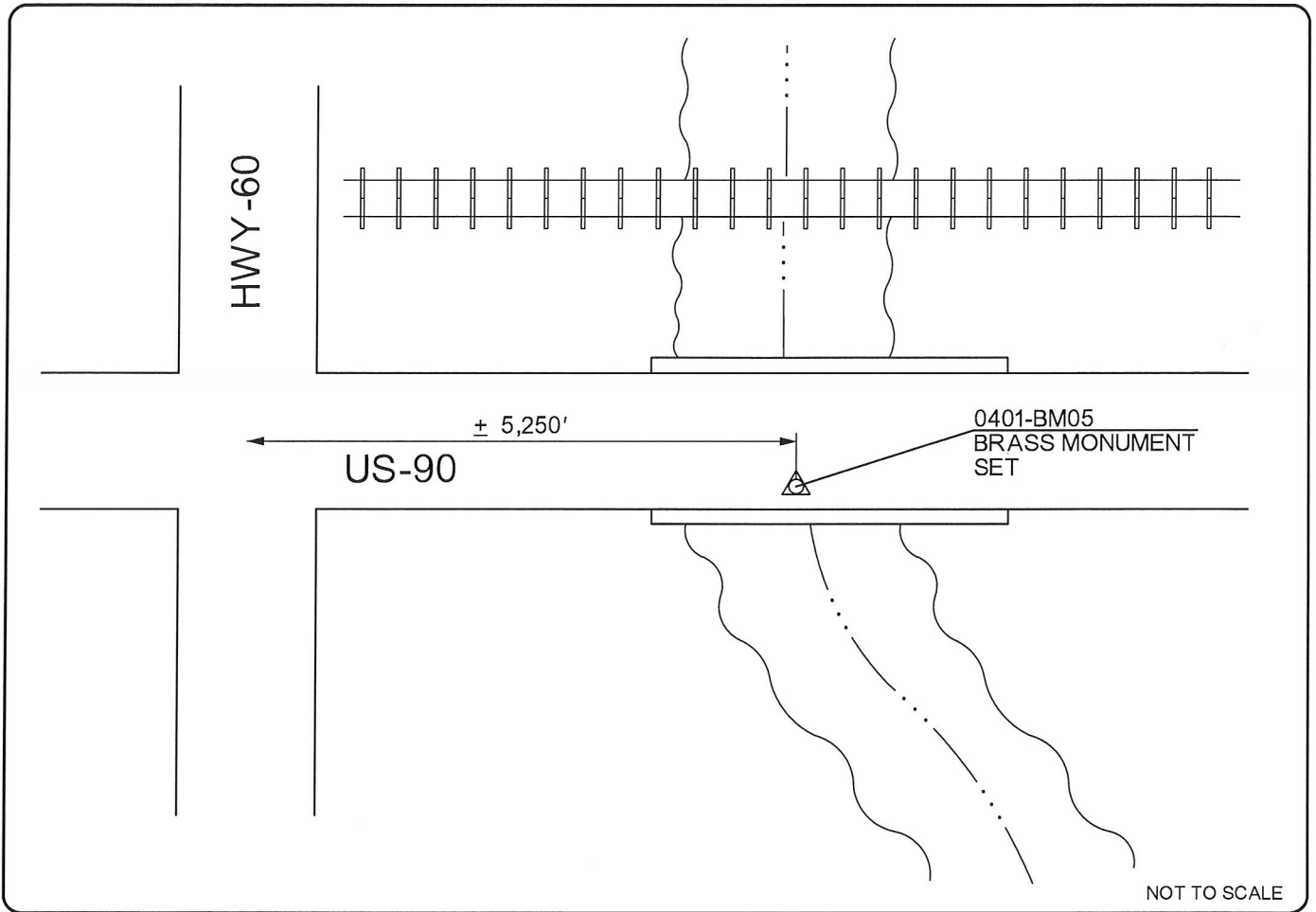
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CHECKED BY: DWT

SAN BERNARD RIVER
COUNTY OF WHARTON, TEXAS

CONTROL POINT NO. 0401-BM05



COORDINATES: TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE
(4204) NAD83

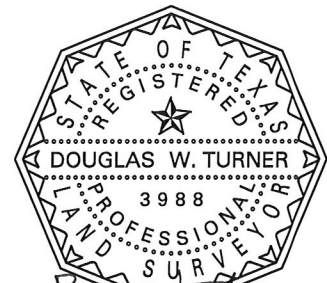
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COMBINED SCALE FACTOR: 0.999868102

GRID X = 2,904,806.58 Y = 13,753,060.94

ELEVATION = 112.00'

DESCRIPTION: BRASS MONUMENT
STAMPED "0401 BM05" SET



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COUNTY OF WHARTON

AVO: NO. 22650

DATE: OCTOBER 23, 2007

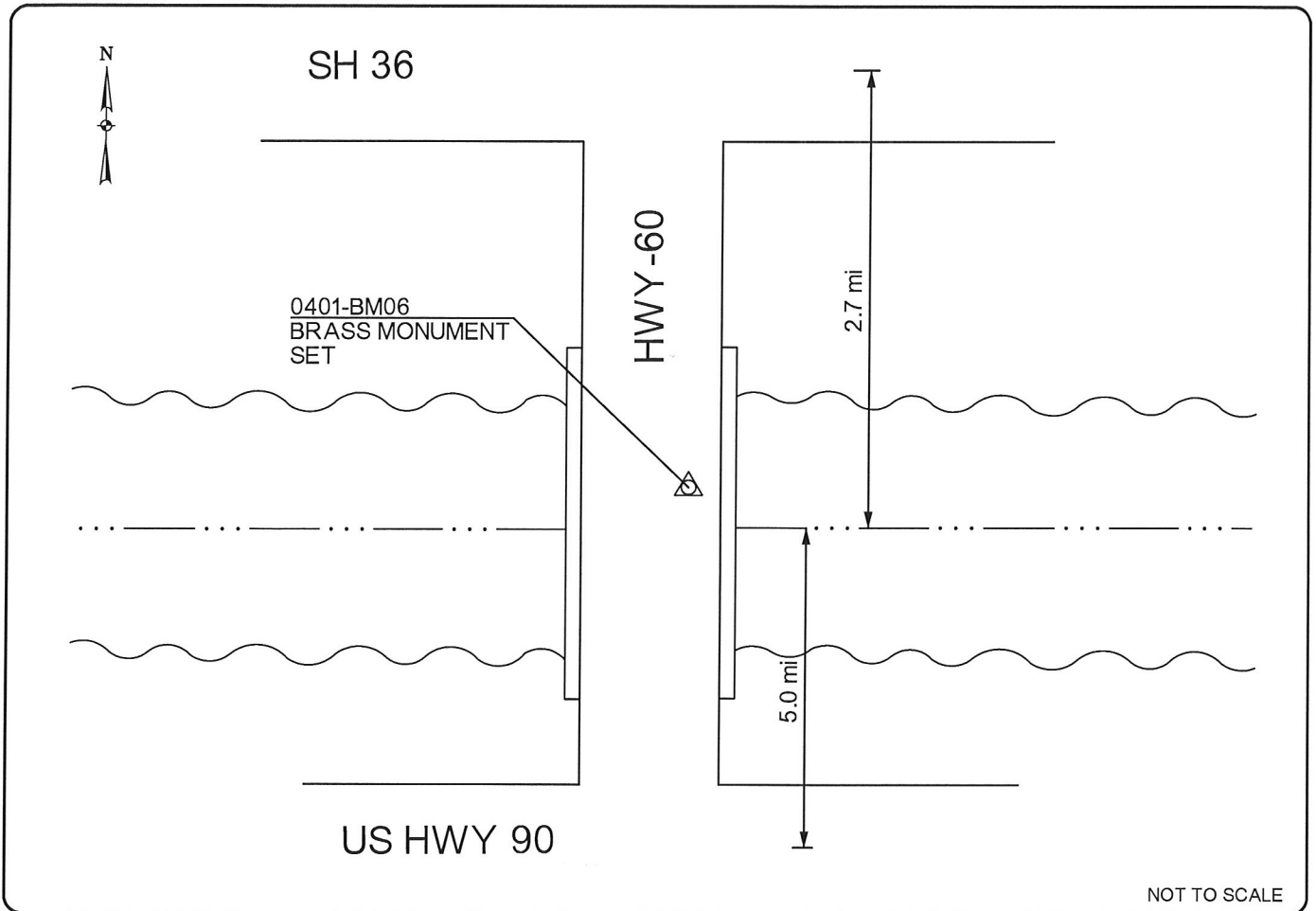
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CHECKED BY: DWT

SAN BERNARD RIVER
COUNTY OF WHARTON, TEXAS

CONTROL POINT NO. 0401-BM06



COORDINATES: TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE
(4204) NAD83

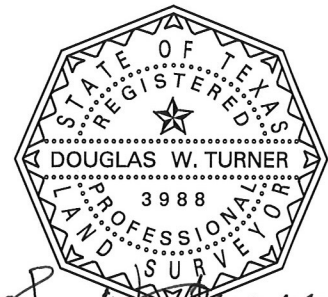
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COMBINED SCALE FACTOR: 0.999872000

GRID X = 2,893,211.66 Y = 13,777,900.49

ELEVATION = 132.38'

DESCRIPTION: BRASS MONUMENT
STAMPED "0401 BM06" SET



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COUNTY OF WHARTON

AVO: NO. 22650

DATE: OCTOBER 23, 2007

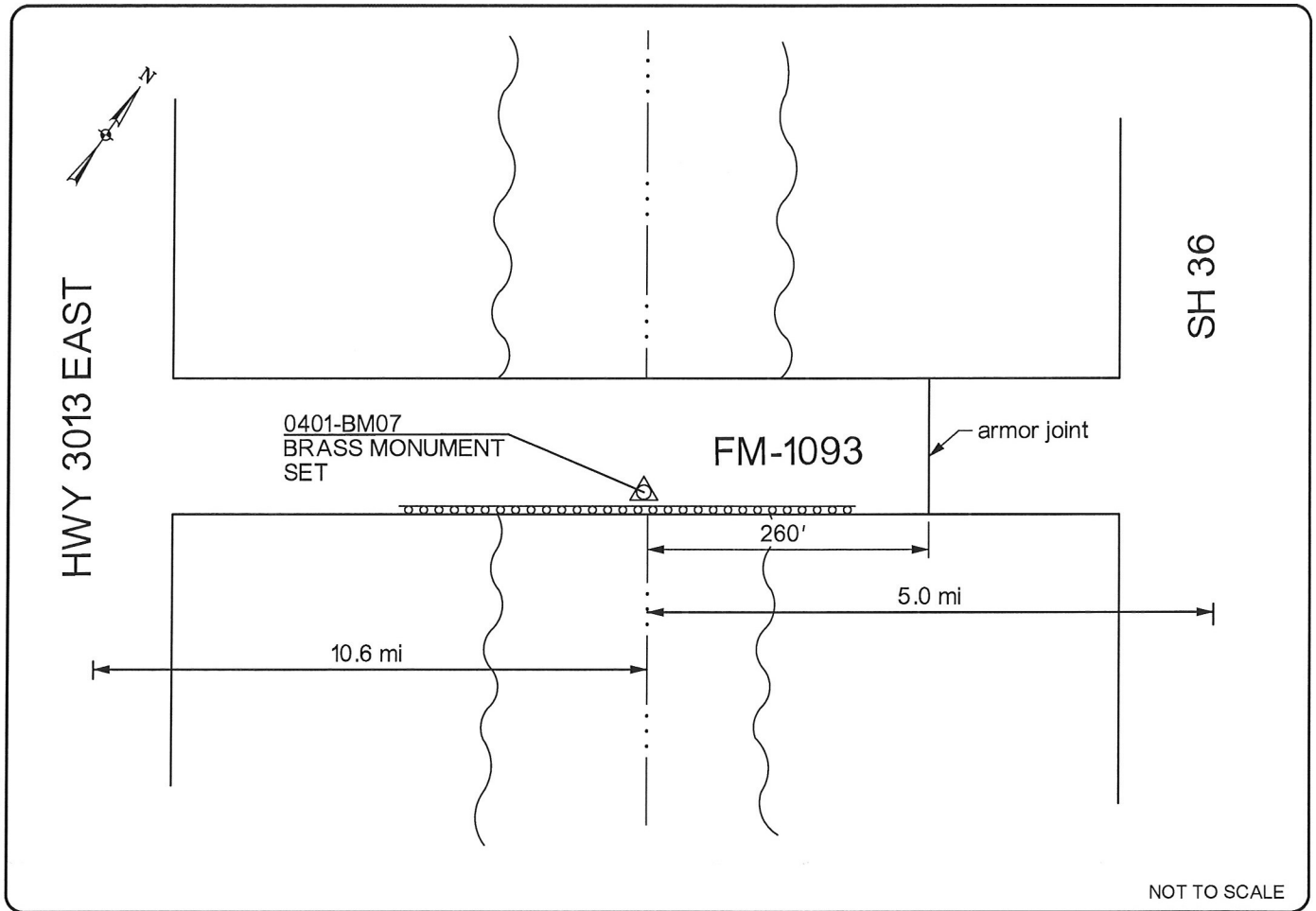
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SCALE: N.T.S.

CHECKED BY: DWT

SAN BERNARD RIVER
COUNTY OF WHARTON, TEXAS

CONTROL POINT NO. 0401-BM07



COORDINATES: TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE
(4204) NAD83

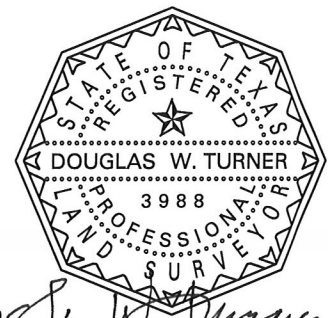
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COMBINED SCALE FACTOR: 0.999873283

GRID X = 2,875,271.86 Y = 13,784,944.24

ELEVATION = 141.71'

DESCRIPTION: BRASS MONUMENT
STAMPED "0401 BM07" SET



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COUNTY OF WHARTON

AVO: NO. 22650

DATE: OCTOBER 23, 2007

DRAWN BY: AG

SCALE: N.T.S.

CHECKED BY: DWT

APPENDIX C



City of Wharton

120 E. Caney Street • Wharton, Texas 77488
Phone (979) 532-2491 • Fax (979) 532-0181

January 29, 2008

Mr. John Ivey
Vice-President
HALFF ASSOCIATES, INC.
4000 Fossil Creek Blvd
Fort Worth, Texas 76137

*RE: City of Wharton Resolution No. 2008-09
Wharton County Flood Mitigation Plan*

Dear Mr. Ivey:

During the regular January 28, 2008 Wharton City Council meeting, the City Council approved the City of Wharton Resolution No. 2008-09 approving the Wharton County Flood Mitigation Plan. Attached is a copy of the resolution.

If you have any questions or need additional information, please contact me at City Hall (979) 532-2491.

Sincerely,

CITY OF WHARTON

By:

Andres Garza Jr.
City Manager

AGJ:jj

Attachment

cc: Prudencio V. Arriaga, Sr., Planning Director

**CITY OF WHARTON
RESOLUTION NO. 2008-09**

**A RESOLUTION OF THE WHARTON CITY COUNCIL APPROVING THE
WHARTON COUNTY FLOOD MITIGATION PLAN.**

WHEREAS, flood hazards in Wharton County historically have caused significant disasters with losses of life and property and natural resources damage; and

WHEREAS, the Flood Mitigation Assistance (FMA) Program administered by the Texas Water Development Board encourages communities to perform floodplain management plans to mitigate the impacts of floods, hurricanes and tropical storms and preparation of such plans is a requirement to be eligible for federal funding for mitigation purposes; and

WHEREAS, Wharton County coordinated the flood mitigation planning effort with the Texas Colorado River Floodplain Coalition and the Houston Galveston Area Council (HGAC) and created a framework for coordinated and focused flood hazard mitigation actions at both the local and regional levels; and

WHEREAS, Wharton County and the cities of East Bernard, El Campo and Wharton have been active participants in the regional mitigation planning process, as well as having conducted and documented its own community public involvement process; and

WHEREAS, Wharton County and the cities of East Bernard, El Campo and Wharton have incorporated comments and recommendations from the Texas Water Development Board and FEMA into the Wharton County Flood Mitigation Plan, and

WHEREAS, the Wharton County Flood Mitigation Plan is an extension of the TCRFC All Hazards Mitigation Plan, and the Wharton County Emergency Operations Plan; and

WHEREAS, the Wharton County Flood Mitigation Plan is a record of the potential risks and hazards and a commitment to reducing the long-term consequences of flood hazards. The Flood Mitigation Plan outlines mitigation goals, identifies risk reduction strategies for flood hazards that threaten the area, and discusses the ongoing risk reduction strategies to be undertaken within the City of Wharton.

NOW THEREFORE BE IT RESOLVED by the Wharton City Council that:

- Section 1:** The Wharton County Flood Mitigation Plan is approved in its entirety, incorporating both local and multi-jurisdictional elements.
- Section 2:** The City of Wharton will pursue available funding opportunities for implementation of the proposals designated therein, and will, upon receipt of such funding or other necessary resources, seek to implement the actions contained in the mitigation strategies.
- Section 3:** The City of Wharton will continue to participate in the TCRFC multi-jurisdictional mitigation planning process, including reporting of progress as required by FEMA, TWDB, and the Governor's Division of Emergency Management.
- Section 4:** This resolution shall become effective immediately after its passage.

Passed, Approved, and Adopted this 28th day of January 2008.

CITY OF WHARTON

By: *Bryce D. Kocian*
Bryce D. Kocian
Mayor

ATTEST:

By: *Lisa Stavena*
Lisa Stavena, City Secretary



RESOLUTION NO. 2008-001

A RESOLUTION APPROVING THE WHARTON COUNTY FLOOD MITIGATION PLAN IN ITS ENTIRETY; AND PROVIDING OTHER MATTERS RELATING TO THE SUBJECT.

* * * * *

WHEREAS, flood hazards in Wharton County historically have caused significant disasters with losses of life and property and natural resources damage; and

WHEREAS, the Flood Mitigation Assistance (FMA) Program administered by the Texas Water Development Board encourages communities to perform floodplain management plans to mitigate the impacts of flood, hurricanes and tropical storms and preparation of such plans is a requirement to be eligible for federal funding for mitigation purposes; and

WHEREAS, Wharton County coordinated the flood mitigation planning effort with the Texas Colorado River Floodplain Coalition and the Houston-Galveston Area Council (HGAC) and created a framework for coordinated and focused flood hazard mitigation actions at both the local and regional levels; and

WHEREAS, Wharton County and the cities of East Bernard, El Campo and Wharton have been active participants in the regional mitigation planning process, as well as having conducted and documented its own community public involvement process; and

WHEREAS, Wharton County and the cities of East Bernard, El Campo and Wharton have incorporated comments and recommendations from the Texas Water Development Board and FEMA into the Wharton County Flood Mitigation Plan; and

WHEREAS, the Wharton County Flood Mitigation Plan is an extension of the TCRFC All Hazards Mitigation Plan, and the Wharton County Emergency Operations Plan; and

WHEREAS, the Wharton County Flood Mitigation Plan is a record of the potential risks and hazards and a commitment to reducing the long-term consequences of flood hazards. The Flood Mitigation Plan also outlines mitigation goals, identifies risk reduction strategies for flood hazards that threaten the area, and discusses the ongoing risk reduction strategies to be undertaken within the City of East Bernard.

BE IT RESOLVED BY THE BOARD OF ALDERMEN OF THE CITY OF EAST BERNARD, TEXAS:

SECTION 1. The Wharton County Flood Mitigation Plan is approved in its entirety, incorporating both local and multi-jurisdictional elements.

SECTION 2. The City of East Bernard will pursue available funding opportunities for implementation of the proposals designated therein, and will, upon receipt of such funding or other necessary resources, seek to implement the actions contained in the mitigation strategies.

SECTION 3. The City of East Bernard will continue to participate in the TCRFC multi-jurisdictional mitigation planning process, including reporting of progress as required by FEMA, TWDB, and the Governor's Division of Emergency Management.

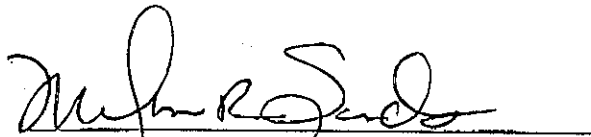
SECTION 4. This resolution is in effect immediately.

PASSED, APPROVED AND RESOLVED this 14th day of January, 2008.



BUCK BOETTCHER
Mayor

ATTEST:



MELVIN R. SANDS
City Secretary

CITY OF EL CAMPO TEXAS

RESOLUTION NO. R2008-01

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF EL CAMPO, TEXAS,
ADOPTING THE WHARTON COUNTY FLOOD MITIGATION PLAN AND
AUTHORIZING THE CITY OF EL CAMPO'S PARTICIPATION IN THE WHARTON
COUNTY FLOOD MITIGATION PLAN.**

WHEREAS, flood hazards in Wharton County historically have caused significant disasters with losses of life and property and natural resources damage; and

WHEREAS, the Flood Mitigation Assistance (FMA) Program administered by the Texas Water Development Board encourages communities to perform floodplain management plans to mitigate the impacts of floods, hurricanes and tropical storms and preparation of such plan is a requirement to be eligible for federal funding for mitigation purposes; and

WHEREAS, Wharton County coordinated the flood mitigation planning effort with the Texas Colorado River Floodplain Coalition (TCRFC) and the Houston Galveston Area Council (HGAC) and created a framework for coordination and focused on flood hazard mitigation actions at both the local and regional levels; and

WHEREAS, Wharton County and the Cities of East Bernard, El Campo and Wharton have been active participants in the regional mitigation planning process, as well as having conducted and documented their own community public involvement process; and

WHEREAS, the Wharton County Flood Mitigation Plan is an extension of the TCRFC All Hazards Mitigation Plan, and the Wharton County Emergency Operations Plan; and

WHEREAS, the Wharton County Flood Mitigation Plan is a record of the potential risks and hazards and a commitment to reducing the long-term consequences of flood hazards; and

WHEREAS, the Floodplain Plan outlines mitigation goals, identifies risk reduction strategies for flood hazards that threaten the area, and discusses the ongoing risk reduction strategies to be undertaken within the City of El Campo.

NOW THEREFORE BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF EL CAMPO, TEXAS, THAT:

Section 1: The Wharton County Flood Mitigation Plan is hereby approved in its entirety, incorporating both local multi-jurisdictional elements.

Section 2: The City of El Campo will pursue available funding opportunities for implementation of the proposals designated therein, and will, upon receipt of such funding or other necessary resources, seek to implement the actions contained in the mitigation strategies.

Section 3: The City of El Campo will continue to participate in the TCRFC multi-jurisdictional mitigation planning process, including reporting of progress as required by FEMA, TWDB, and the Governor's Division of Emergency Management.

Section 4: This resolution shall become effective immediately upon passage.

PASSED AND APPROVED THIS 14th DAY OF JANUARY, 2008

CITY OF EL CAMPO, TEXAS


PHILLIP SPENRATH, MAYOR

ATTEST:


CINDY CERNY, CITY SECRETARY

CITY OF EL CAMPO TEXAS

RESOLUTION NO. R2008-01

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF EL CAMPO, TEXAS,
ADOPTING THE WHARTON COUNTY FLOOD MITIGATION PLAN AND
AUTHORIZING THE CITY OF EL CAMPO'S PARTICIPATION IN THE WHARTON
COUNTY FLOOD MITIGATION PLAN.**

WHEREAS, flood hazards in Wharton County historically have caused significant disasters with losses of life and property and natural resources damage; and

WHEREAS, the Flood Mitigation Assistance (FMA) Program administered by the Texas Water Development Board encourages communities to perform floodplain management plans to mitigate the impacts of floods, hurricanes and tropical storms and preparation of such plan is a requirement to be eligible for federal funding for mitigation purposes; and

WHEREAS, Wharton County coordinated the flood mitigation planning effort with the Texas Colorado River Floodplain Coalition (TCRFC) and the Houston Galveston Area Council (HGAC) and created a framework for coordination and focused on flood hazard mitigation actions at both the local and regional levels; and

WHEREAS, Wharton County and the Cities of East Bernard, El Campo and Wharton have been active participants in the regional mitigation planning process, as well as having conducted and documented their own community public involvement process; and

WHEREAS, the Wharton County Flood Mitigation Plan is an extension of the TCRFC All Hazards Mitigation Plan, and the Wharton County Emergency Operations Plan; and

WHEREAS, the Wharton County Flood Mitigation Plan is a record of the potential risks and hazards and a commitment to reducing the long-term consequences of flood hazards; and

WHEREAS, the Floodplain Plan outlines mitigation goals, identifies risk reduction strategies for flood hazards that threaten the area, and discusses the ongoing risk reduction strategies to be undertaken within the City of El Campo.

**NOW THEREFORE BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF EL
CAMPO, TEXAS, THAT:**

Section 1: The Wharton County Flood Mitigation Plan is hereby approved in its entirety, incorporating both local multi-jurisdictional elements.

Section 2: The City of El Campo will pursue available funding opportunities for implementation of the proposals designated therein, and will, upon receipt of such funding or other necessary resources, seek to implement the actions contained in the mitigation strategies.

Section 3: The City of El Campo will continue to participate in the TCRFC multi-jurisdictional mitigation planning process, including reporting of progress as required by FEMA, TWDB, and the Governor's Division of Emergency Management.

Section 4: This resolution shall become effective immediately upon passage.

PASSED AND APPROVED THIS 14th DAY OF JANUARY, 2008

CITY OF EL CAMPO, TEXAS


PHILLIP SPENRATH, MAYOR

ATTEST:


CINDY CERNY, CITY SECRETARY

RESOLUTION #08-05 FOR WHARTON COUNTY COMMISSIONERS COURT
APPROVAL OF THE WHARTON COUNTY FLOOD MITIGATION PLAN

WHEREAS, flood hazards in Wharton County historically have caused significant disasters with losses of life and property and natural resources damages; and

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NOW, THEREFORE, BE IT RESOLVED BY THE COMMISSIONERS COURT OF WHARTON COUNTY, TEXAS, THAT:

Section 1. The Wharton County Flood Mitigation Plan is approved in its entirety, incorporating both local and multi-jurisdictional elements.

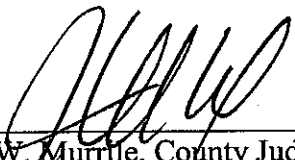
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Section 3. Wharton County will continue to participate in the TCRFC multi-jurisdictional mitigation planning process, including reporting of progress as required by FEMA, TWDB, and the Governor's Division of Emergency Management.

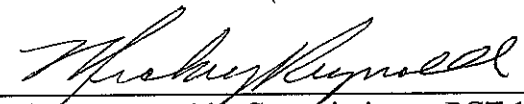
Section 4. This resolution is effect immediately.

The Flood Mitigation Plan was adopted and approved in Wharton County Commissioners Court on November 26, 2007.

PASSED AND APPROVED this 10th day of March, 2008.



John W. Murrell, County Judge



Mickey Reynolds, Commissioner, PCT 1



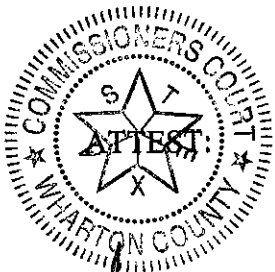
D.C. "Chris" King, Commissioner, PCT 2



Philip Miller, Commissioner, PCT 3



James Kainer, Commissioner, PCT 4





Sandra K. Sanders, County Clerk

Wharton County Flood Mitigation Plan

Wharton County has initiated planning efforts to prepare a Flood Mitigation Plan to compliment the Texas Colorado River Floodplain Coalition (TCRFC) all-hazards Mitigation Plan that includes Wharton County and the cities of East Bernard, El Campo and Wharton. Currently Wharton County and all communities participate in the National Flood Insurance Program (NFIP). The purpose of the NFIP is to identify and mitigate the impact of floods and natural disasters including the regulation of development within special flood hazards areas, which in turn, allows citizens within each community to purchase flood insurance at an affordable rate

Current Wharton County (county-wide)

Flood Insurance Coverage

• Coverage (\$)	\$190,400,000
• Policies in Force	1,550
• Claims Paid	444
• Claims Paid (\$)	\$4,969,863
• Policy Premiums(\$)	\$617,590 per year

Wharton County and the cities of East Bernard, El Campo and Wharton are subject to flooding from coastal storms and overflows from the Colorado and San Bernard Rivers. Fortunately, Wharton County escaped the most severe wrath of Hurricane Rita but Wharton County wants to be prepared for future flood events.

In early 2006 the Wharton County Commissioners Court announced the initiation of planning efforts to prepare the Wharton County Flood Mitigation Plan and approved hiring Half Associates, Inc. to assist with the planning effort.

Representatives for Wharton County and the cities of East Bernard, El Campo and Wharton met on June 26, 2006 to initiate the planning effort and to outline how the plan will be developed, how to encourage public participation in the planning process, and identify "other agencies" that need to be involved in the planning process. A Flood Mitigation Plan Questionnaire is attached to encourage

public participation in the planning process.

The Texas Water Development Board has awarded \$50,000 to Wharton County in federal funding through FEMA's Flood Mitigation Assistance (FMA) Program. Wharton County and the cities of East Bernard, El Campo and Wharton will be required to fulfill both the Texas Water Development Board and the Federal Emergency Management Agency (FEMA) planning requirements. The Flood Mitigation Plan, which is scheduled to be completed in January 2007, will be formally presented at a public meeting prior to formal adoption by the Wharton County Commissioners Court and the City Council of East Bernard, El Campo and Wharton.

Wharton County and participating communities will evaluate participation in FEMA's Community Rating System (CRS) Program. Participation in CRS can result in reductions in flood insurance policy premiums for properties located within the unincorporated areas of Wharton County. The CRS Program is available only to communities that participate in the National Flood Insurance Program (NFIP) and have adopted a floodplain management program that exceeds the NFIP guidelines. Only 45 communities in Texas participate in the CRS program and those communities receive annual flood insurance premium reductions based on the CRS classification. Adoption of an approved Flood Mitigation Plan is an approved activity for a CRS community and establishes eligibility for Wharton County to receive Flood Mitigation Assistance (FMA) Project funding.

The public is invited to participate in the planning process, which will be conducted under the supervision of Ms. Monica Martin, CFM, Wharton County Floodplain Manager and Director of the Wharton County Permit and Inspection Department, (979) 532-8587. Ms. Martin will receive Flood Mitigation Plan Questionnaires from the public to help guide the planning effort.

LAW & ORDER

Page 6-A

El Campo Leader-News • Wednesday, October 4, 2006

FLOOD MITIGATION PLAN QUESTIONNAIRE

WHARTON COUNTY FLOOD MITIGATION PLAN

Please take a few minutes to identify your hazard concerns using this Questionnaire and return it to the Wharton County Permit Department by October 15, 2006 if possible. The Wharton County Flood Mitigation Planning Committee will review the completed questionnaires and recommendations will be considered in development of the Flood Mitigation Plan. Current target completion date for the Wharton County Plan is January 2007.

YOUR INPUT IS IMPORTANT!!!

1.	Do you live in a designated flood hazard area? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
2.	Do you currently carry flood insurance? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
3.	Has your home ever flooded with water in the house? <input type="checkbox"/> Yes <input type="checkbox"/> No
4.	Dates your home has flooded: _____ _____ _____
	Flooding Source: _____ Depth of water in home: _____
5.	Do you live in: Wharton County (unincorporated area) _____ City of East Bernard _____ City of El Campo _____ City of Wharton _____
6.	What do you recommend to reduce flood hazards in your area?
7.	Name and Address -- Optional:
Attach additional sheets if necessary.	

Your input is important. This questionnaire will provide valuable insight in developing the goals and objectives for the Wharton County Flood Mitigation Plan. Please return completed questionnaires to:

Wharton County Permit and Inspection Department or
 1017 North Alabama
 Wharton, Texas 77488

Drop Box at:
 City of El Campo
 City of Wharton
 Wharton County
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Wharton Journal-Spectator, Wednesday, October 4, 2006 www.journal-spectator.com

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 City of El Campo _____
 City of Wharton _____

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7. Name and Address - Optional:

Attach additional sheets if necessary.

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WHARTON COUNTY FLOOD MITIGATION PLAN

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4. Dates your home has flooded: _____

Flooding Source: _____ Depth of water in home: _____

5. Do you live in: Wharton County (unincorporated area) _____
 City of East Bernard _____
 City of El Campo _____
 City of Wharton _____

6. What do you recommend to reduce flood hazards in your area?

7. Name and Address - Optional:

Attach additional sheets if necessary.

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 Wharton, Texas 77488

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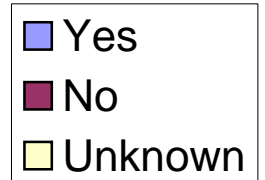
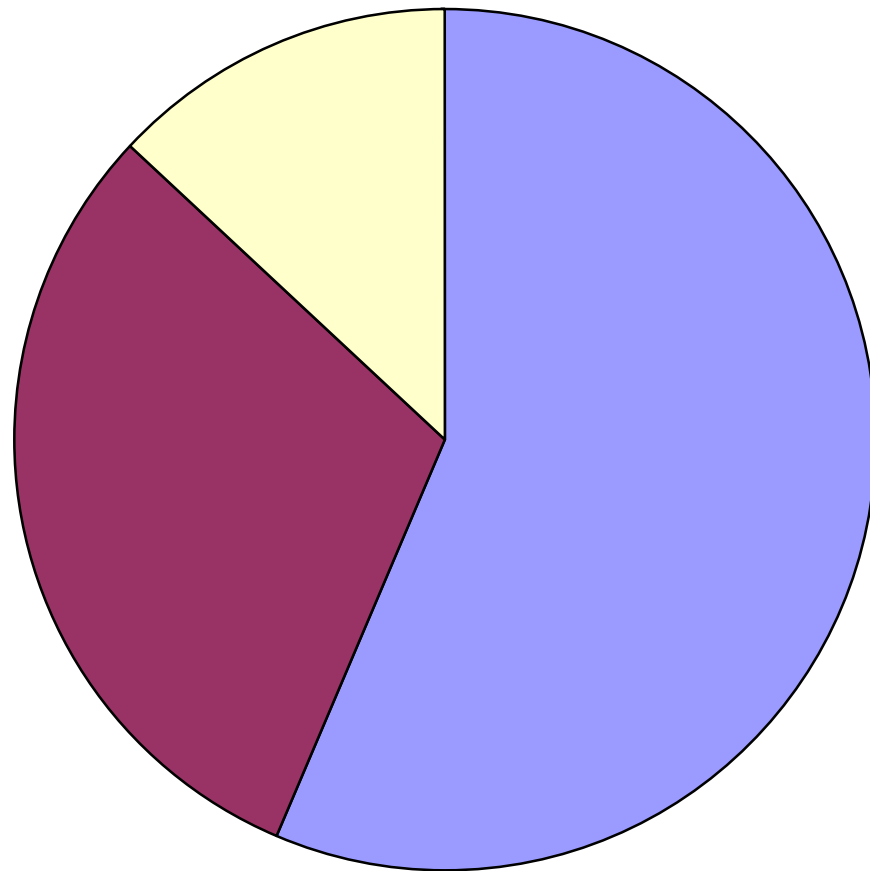
Wharton County Flood Mitigation Plan Questionnaires

30-Jan-07

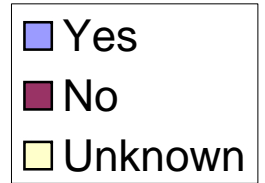
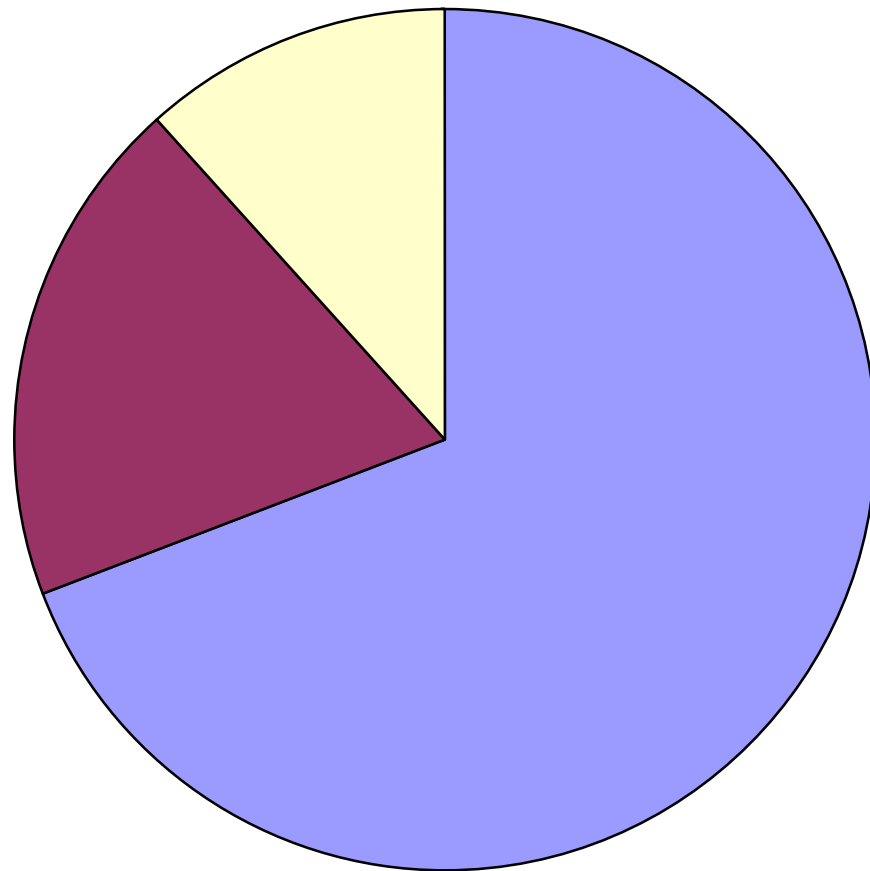
Half Associates, Inc.

	Question #1	Question #2	Question #3	Question #4	Flooding Source	depth in Home	Question #5	Question #6 Recommendations	Question #7
1	Yes	unknown	Yes	Oct-98	San B.	3 ft	Co.	Clean River	El Lobo Subdivision
2 2a	unknown	Yes	Yes	Oct-94 9/7/2002	river	1/2 "	Wharton	Clean ditches/drains	Frank Groves/406 University, Wharton 77488
3	Yes	Yes	No				Co.	Study San B.	Wayne/Jeanett Krenek/4207 Pecan Creek Dr., Wharton
4	Yes	Yes	Yes	Oct-98	San B.	4'3"	EB	Clean San B. River	
5 5a 5b	Yes	Yes	Yes	1994 1998 2004	Colorado R.	1' to 2'		Build levees/dam Reduce upstream releases	
6	No	Yes	No				Wharton	Clean ditches/drains	
7	No	yes	Yes	Nov-04		0.5'	EC	improve ditches flowing to Tres Palacios Ck	Ray/Liz Mach 1603 W. Roberts, El Campo 77437
8 8a	Yes	Yes	Yes	1989 2005		18" 8"	Wharton		
9 9a	Yes	Yes	Yes	1989 2005			Wharton		
10 10a	Yes	Unknown	Yes	1998 2004	Colorado R.	3.5'	Wharton	Close off drainage from Harrison St. Open Drainage on Pastors St	
11 11a 11b	Yes	No	Yes	1984 1998 2004	Colorado R.	1' to 2'	Wharton	Build levees/dam Reduce upstream releases	
12 12a	Yes	unknown	Yes	1998 2004	Colorado R.	4"	Wharton	Build levees/dam Reduce upstream releases	
13	No	Yes	No				EB	Improve drainage	
14	No	No	No				Wharton	Improve drainage	
15	No	No	No				Wharton		
16	Yes	Yes	No				Co.	Clean ditches/drains Improve outfall to Colorado River	Lori Vaquez/2860 CR 172, Wharton 77488
17	Yes	Yes	No		San B.		Co.		Jackie Jansky 788 CR 149, Boling 77420
18 18a	Yes	Yes	Yes	1994 1998		1 ft 2 ft	Co.		610 CR 149 data from Jackie Jansky 788 CR 149, Boling 77420
19	unknown	No	No				Co.	Clean ditches/drains	
20	No	No	No				Wharton	Improve drainage	
21	Yes	Yes	No				Wharton		Lisa Stavena, 1732 Briar Lane, Wharton, 77488
22	No	Yes	No				Co.	Clean ditches/drains	
23	unknown	Yes	No		Baughman Slough Peach Creek		Co.	Clean ditches/drains Freedom Rd drain is clogged Baughman Slough improvements needed (clearing & channelization) Improve drainage at Freedom Rd and Moers Ln Improve Freedom Rd ditch outfall to Peach Creek	Forrest/Julia Lewis, 510 Moers Ln Wharton 77488
Yes	13	18	11	8	8 over 1' depth				
No	7	5	12	4	4 less than 1' depth				
Unknown	3	3							
EB	City of East Bernard								
EC	El Campo								
Co.	Wharton County								
Wharton	City of Wharton								

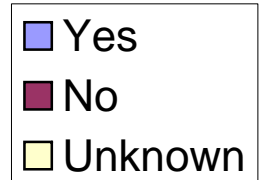
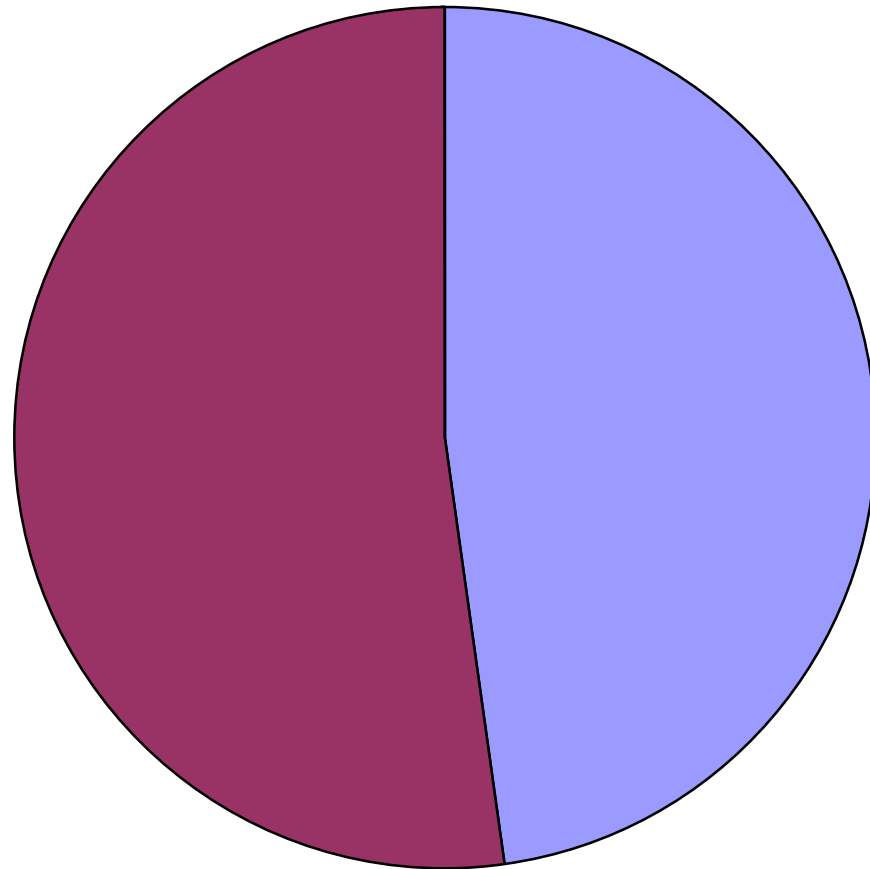
**Question #1:
Do You Live in a Designated Floodprone Area?**



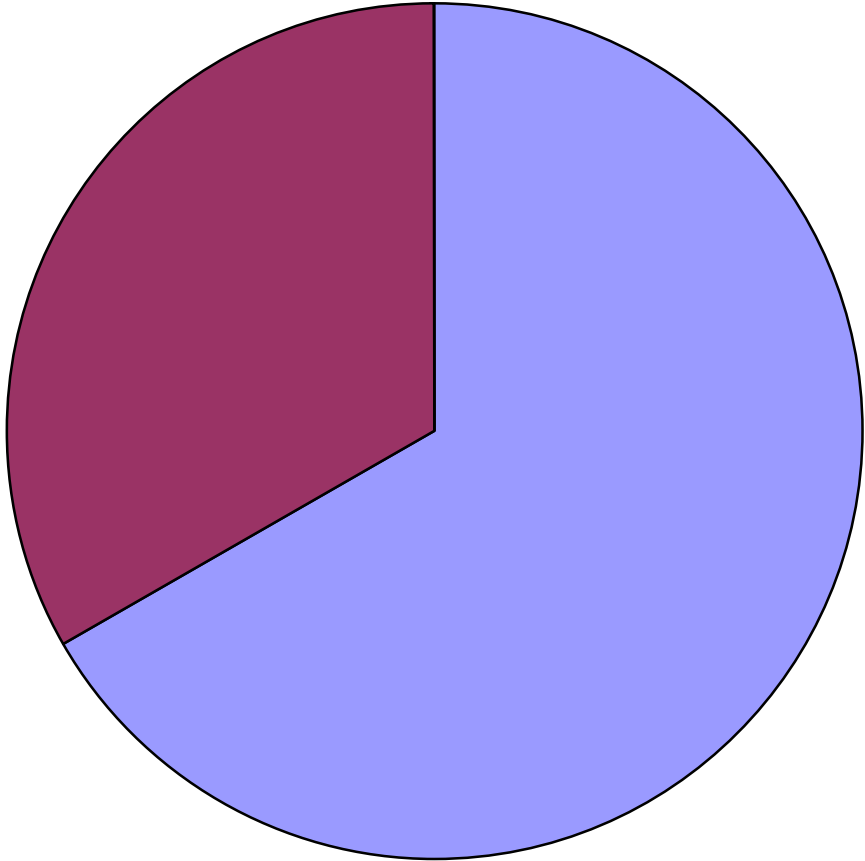
**Question #2:
Do You Carry Flood Insurance?**



**Question #3:
Has Your Home Ever Flooded?**



**Question #4:
Were the Flood Depths Over One-Foot?**



- Yes
- No
- Unknown

APPENDIX D

LISTING OF COMMUNITIES

COMMUNITY NAME	COMMUNITY NUMBER	LOCATED ON PANEL(S)	INITIAL IDENTIFICATION DATE	INITIAL NFIP MAP DATE	INITIAL FIRM DATE	FIR
EAST BERNARD, CITY OF	480650	0100	APRIL 5, 2006	APRIL 5, 2006	APRIL 5, 2006	
EL CAMPO, CITY OF	480653	0510, 0520	JUNE 7, 1974	JUNE 7, 1974	JUNE 4, 1980	
WHARTON, CITY OF	480654	0335, 0345, 0355, 0365, 0370, 0550	DECEMBER 31, 1976	DECEMBER 31, 1976	SEPTEMBER 16, 1982	
WHARTON COUNTY	480652	ALL PANELS	AUGUST 2, 1974	AUGUST 2, 1974	APRIL 18, 1983	

MAP DATES

This FIRM Index displays the map date for each FIRM panel at the time that this Index was printed. Because this Index may not be distributed to unaffected communities in subsequent revisions, users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website at <http://web1.msc.fema.gov>, or by calling the Map Service Center at 1-800-358-9616.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

NOTE TO USERS

Future revisions to this FIRM Index will be issued to communities that are on FIRM panels being revised. This Index therefore remains valid for panels dated April 5, 2006, or earlier. Please refer to the "MOST RECENT FIRM DATE" column in the LISTING OF COMMUNITIES table to determine the most recent FIRM date for each community.

FIRM

FLOOD INSURANCE RATE MAP

WHARTON COUNTY, TEXAS

AND INCORPORATED AREAS
(SEE LISTING OF COMMUNITIES TABLE)

MAP INDEX

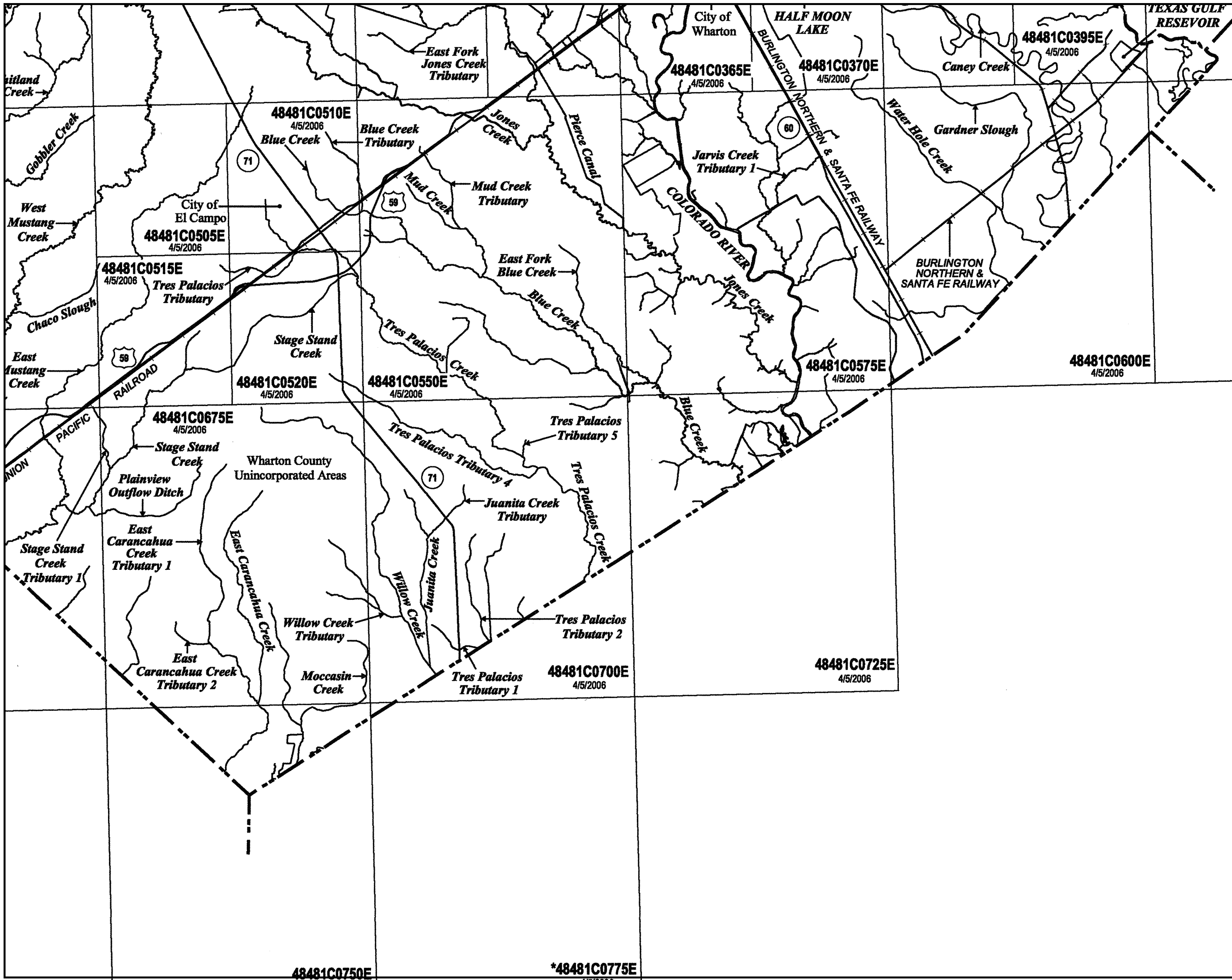
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MAP NUMBER
48481CIND0A
EFFECTIVE DATE
APRIL 5, 2006

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



FIRM
FLOOD INSURANCE RATE MAP
WHARTON COUNTY,
TEXAS
AND INCORPORATED AREAS
 (SEE LISTING OF COMMUNITIES TABLE)

MAP INDEX

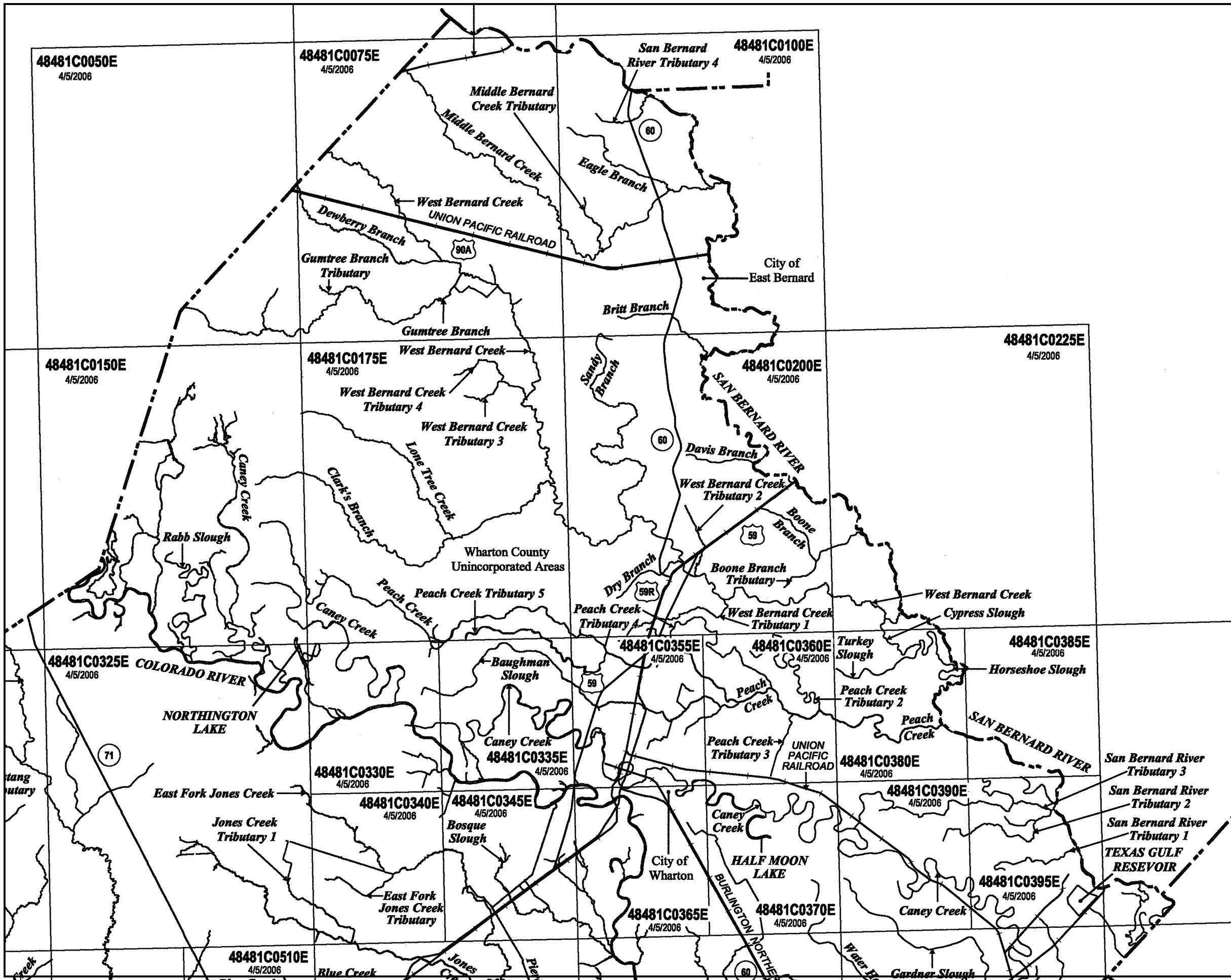
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WHARTON COUNTY,
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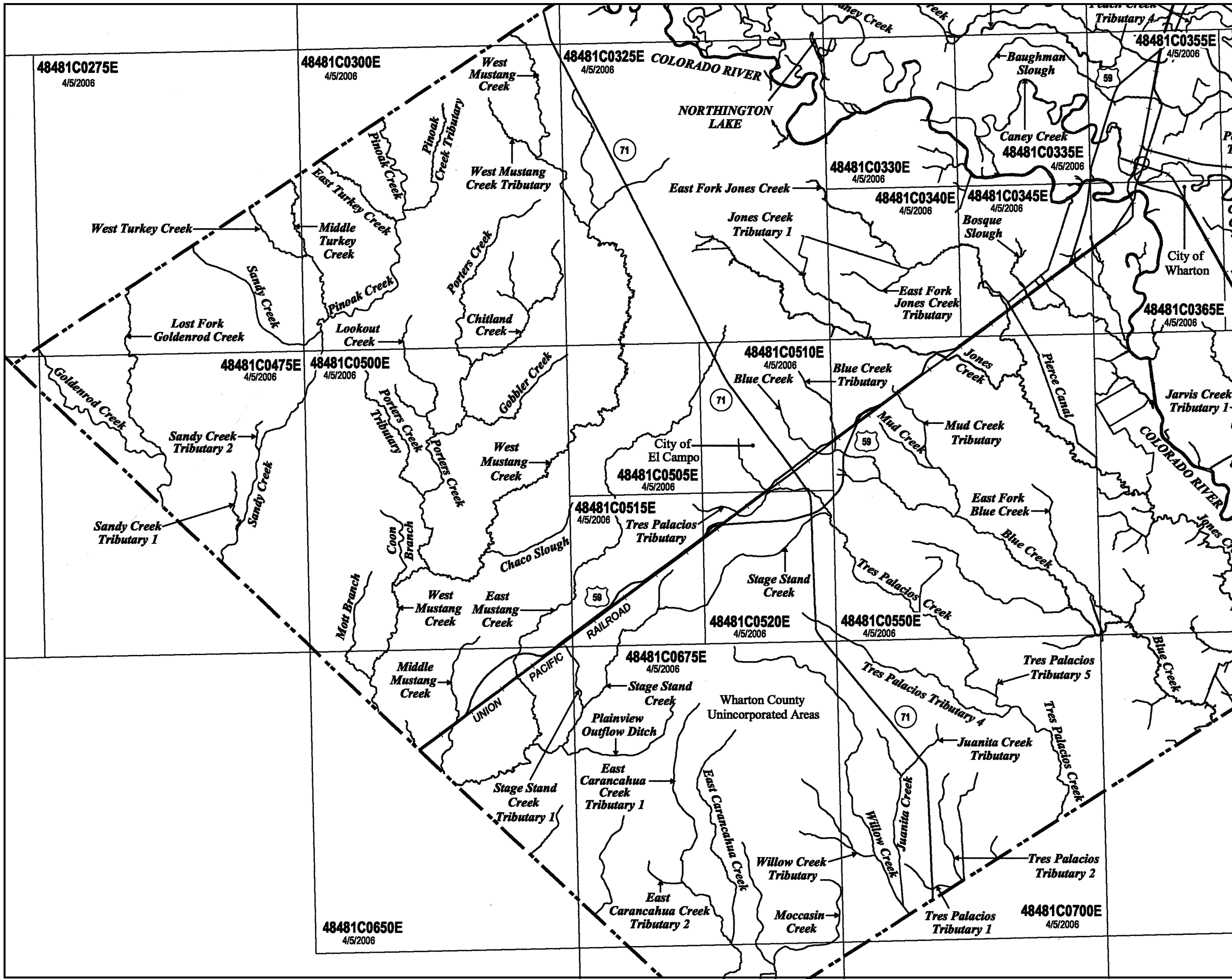
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