

CHAPTER 2 STUDY AREA DESCRIPTION

MAJOR STREAMS AND DRAINAGE PATHWAYS

There are several sources of flooding within and near the city of Wharton. Overflows from the Colorado River have impacted the West End neighborhood, downtown Wharton, and other low-lying areas. Localized flooding related to Baughman Slough and Caney Creek has also resulted in flooding problems in other neighborhoods of Wharton. Peach Creek, which flows north of the Wharton city limits, is another source of flooding for areas just outside of the city of Wharton. General locations of the streams within the study area can be seen in Figure 2-1.

COLORADO RIVER

The Colorado River drains over 42,000 square miles across the state of Texas of which 18,300 square miles are contained within the Lower Colorado River Basin. Rising from Dawson County, Texas, the river flows approximately 600 miles before emptying into Matagorda Bay and the Gulf of Mexico in Matagorda County, Texas. From the headwaters, the Colorado River flows through rolling prairie terrain before reaching the more rugged Hill Country area near San Saba County, Texas. Lake Travis, located on the Colorado River above Austin, regulates flows for storms centered on the upper reaches of the watershed. Leaving the Hill Country area, the Colorado River then passes through the Balcones Escarpment at Austin before flowing across the Coastal Plain to the Gulf of Mexico (The Handbook of Texas Online, 2002).

With respect to Wharton County, the Colorado River flows for over forty-seven miles through the center of the county from the Colorado/Wharton County line to the Wharton/Matagorda County line. Total drainage area of the Colorado River at the Wharton Gauge within the City of Wharton is approximately 42,000 square miles. The Lower Colorado River Basinwide study found that the 2 through 100-year frequency events on the Colorado River in Wharton are a result of storms centered below Lake Travis. The 500-year frequency event on the Colorado River in Wharton is a result of Lake Travis releases due to a storm centered above the reservoir.

The Colorado River has a mild bed slope of 0.0003 feet/feet through Wharton County. The river forms the southern boundary of the city of Wharton through much of the town. Downtown Wharton is built on the northern (left) bank of the Colorado River. The river is a major source of irrigation water within the county, and also a major source of flooding during heavy rainfall events. Six bridges cross the Colorado River in Wharton County (FM 960, U.S. Highway 59 (2), Railroad, and Business 59 (2)).

Within the city of Wharton, the Colorado River runs from west to east with the majority of the developed city on the north side of the river. The City has built two structures in recent years (See Figure 7, Appendix G, Page 8) to decrease water velocities and bank erosion along the river near the downtown area of Wharton. The breakwater structures are wooden walls that contain hollow horizontal empty spaces to allow water flow. Adjacent to the downtown area there is a park on the riverbank to allow pedestrian access to the river. Through the city of Wharton, the Colorado River varies in width from about 30 to 60 feet. The soil composition of the riverbanks in this area is generally silty to clayey loam. The less disturbed areas of the riverbanks are lined with trees such as oak, elm and hackberry. Adjacent to the Wharton Wastewater Treatment Plant, cement and rock riprap has been placed on the eastern bank of the river.

CANEY CREEK

Caney Creek was originally named Canebrake Creek due to the cane that grew along its sides until settlement of the area. The creek rises one mile south of Matthews in Colorado County, Texas from a maze of irrigation canals, dead-water sloughs, and old stream channels near the Colorado-Wharton county line. Caney Creek flows toward the southeast across the Coastal Plain approximately 155 miles to Gulf Intracoastal Waterway (GIWW) near Sargent, Matagorda County, Texas (The Handbook of Texas Online, 2002). The Colorado River and Caney Creek channels merge approximately a mile west of Glen Flora before separating again just to the south of Glen Flora (Appendix G, H&H Section, Figure 1). Caney Creek then flows through the city of Wharton on its path to the GIWW.

Caney Creek and the Colorado River most likely shared portions of the same channel many years ago. Today, Caney Creek and the Colorado River still share a common channel for approximately one mile and then split into two separate channels near FM 960 and the town of Glen Flora, Texas. The split is actually an overflow point, and the water surface in the Colorado River must exceed elevation 114.0 feet at this point for water to spill into the Caney Creek channel. From this point, Caney Creek meanders through the City of Wharton and downstream with a final outfall into Matagorda Bay near Sargent, Texas, in Matagorda County. Although Caney Creek outfalls into Matagorda Bay, through much of Wharton County and especially the city of Wharton, the channel is not well defined, tremendously disturbed, and essentially non-existent. As the city developed, the creek was modified and filled in many areas. Today, a defined creek channel is difficult to identify due to construction of homes, schools and parks over the historic location of the creek bed. In other locations, small earth embankments have created a series of private ponds and dams along Caney Creek. Caney Creek, throughout most areas of Wharton County does not exist in a riverine environment and resembles a series of storage areas. Within the city, the old Caney Creek channel has been filled and paved in most areas with development along and within the former channel. In some areas, natural flow direction has been reversed as a result of fill and grading.

SAN BERNARD RIVER

The headwaters of the San Bernard River begin just south of New Ulm in Austin County, Texas, then it flows toward the southeast approximately 120 miles before emptying into the Gulf of Mexico through the Gulf Intercoastal Waterway in Brazoria County. The river forms all or part of the county lines between Austin and Colorado, Austin and Wharton, and Wharton and Fort Bend Counties, and is fed by many smaller creeks, such as Peach Creek.

Figure 2-1 General Location Map

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PEACH CREEK

Peach Creek is a major tributary of the San Bernard River and flows north of the city limits of Wharton as seen in Figure 2-1). The headwaters of Peach Creek are between Bonus, Texas, and Egypt, Texas, west of FM 102 (approximately 13 miles northwest of the City of Wharton). Peach Creek outfalls into the San Bernard River approximately 11.8 miles downstream of the Business Highway 59 bridge crossing. Peach Creek flows from its headwaters in a generally west to east direction for approximately 28 miles before its outfall into the San Bernard River on the Fort Bend/Wharton County line. The channel area of Peach Creek is overgrown with dense vegetation and is relatively undisturbed throughout the vicinity of the city of Wharton. The creek is a characteristic bottomland hardwood system dominated by fairly young bald cypress trees. In addition to cypress many other types of vegetation can be found including alligator weed, palmetto, water lily, live oak, sagittaria, cedar elm, and cane. The bed slope of Peach Creek is mild averaging 0.0005 feet/feet. The Peach Creek channel is well-defined and over twenty feet deep in the area near the City of Wharton.

BAUGHMAN SLOUGH

Baughman Slough is located between Peach Creek and Caney Creek, as shown in Figure 2-1. Baughman Slough is a tributary of Peach Creek and flows just north of the city limits of Wharton. The headwaters of Baughman Slough are near Glen Flora, Texas, north of FM 102 (approximately six miles west of the City of Wharton). Baughman Slough outfalls into Peach Creek just downstream of the CR 129/Montgomery Road crossing northeast of the city of Wharton. Baughman Slough drains the northern sections of Wharton, including the Ahldag subdivision, which suffers from frequent localized flooding. Several man-made and natural channels divert stormwater runoff from the city of Wharton to Baughman Slough. The channel area of Baughman Slough does not have near the capacity as compared to Peach Creek. The Baughman Slough channel is well-defined, highly modified and devoid of most vegetation except grasses in the area near the city of Wharton. The channel of the slough winds through agricultural pasturelands north of Wharton and is generally about 10 feet wide and the banks of the slough vary between 2 to 5 feet. The slough is not fed by springs and is dependent on rainfall runoff for water flow. Therefore, the slough in the study area is dry throughout most of the year, except for a few small puddles between rainfall events.

ENVIRONMENTAL SETTING

ECOREGIONS OF TEXAS

The majority of Wharton County is located in the Gulf Prairies and Marshes ecoregion of Texas (Figure 2-2). The area of the county that is not located in the Gulf Prairies and Marshes ecoregion is located in the Post Oak Savannah ecoregion. The Post Oak Savannah portion of the county is outside of the study area. The Gulf Marshes, covering approximately 500,000 acres, are on a narrow strip of lowlands adjacent to the coast and the barrier islands (e.g., Padre Island), which extend from Mexico to Louisiana. The Gulf Prairies, about 9 million acres, include the nearly flat plain extending 30 to 80 miles inland from the Gulf Marshes. The Gulf Marshes are low, wet, marshy coastal areas that range from sea level to a few feet in elevation. The Gulf Prairies are nearly level with slow surface drainage and elevations from sea level to 250 feet (Hatch, 1990).

The original vegetation types of the Gulf Prairie were coastal prairie and post oak savannah. Characteristic oak species are live oak and post oak. Typical acacias are huisache and blackbrush. Bushy sea-ox-eye, a dwarf shrub, is also typical (Hatch, 1990). Principal climax grasses of the Gulf Prairie are Gulf cordgrass, big bluestem, little bluestem, Indiangrass, eastern gamagrass, gulf muhly, tanglehead, and many species of Panicum and Paspalum. Common increasers and invaders are yankeeweed, broomsedge bluestem, smutgrass, western ragweed, tumblegrass, threeawns, and many annual forbs and grasses. Characteristic forbs include asters, Indian paintbrush, poppy mallows, phloxes, bluebonnets, and evening primroses (Hatch, 1990). Approximately one-third of the inland prairies region is cultivated and is a major area of irrigated crop production, consisting primarily of rice cultivation, for the entire Lower Colorado Region. Bermudagrass and several bluestem species are common in tamed pasturelands.

Much of the land within the proposed project area, especially along Caney Creek, has been disturbed by human activities that have altered both the topography and vegetation cover of the landscape. These include construction of roads and instream sewer lines, conversion of land for agriculture, and the building of commercial businesses and residential neighborhoods. According to the United States Department of Agriculture 1997 Census of Agriculture County Profiles, Wharton County had 679,275 acres of land in farms with 722 full time farms. The total market value of agricultural products sold in 1997 was \$133,550,000 with crops accounting for 80 percent and livestock accounting for 20 percent.

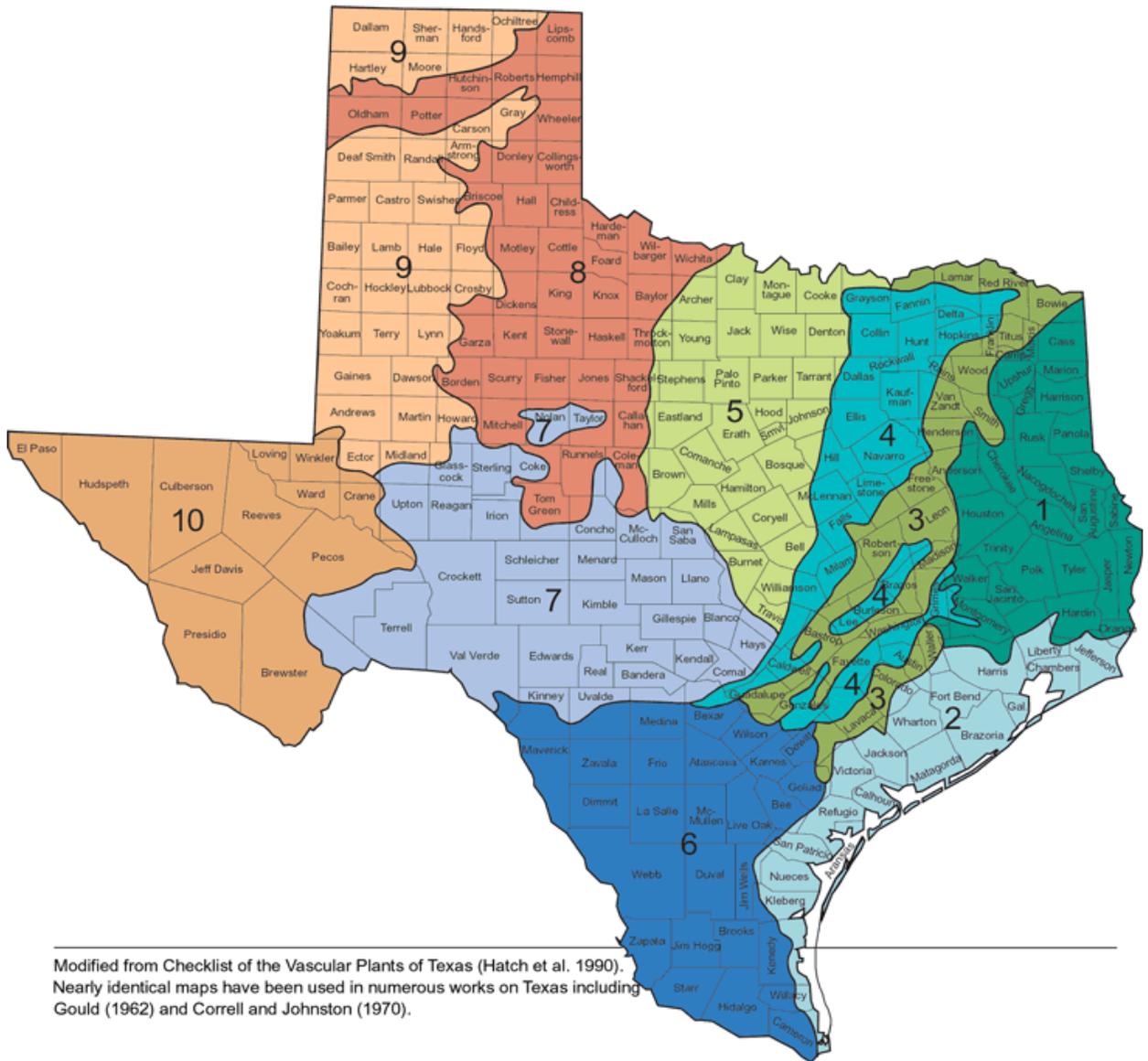
CLIMATE

The climate of Wharton County is generally characterized by hot, humid summers with temperatures averaging 92°F in the July and mild winters with temperatures averaging 41°F in January. The average rainfall for the area is 42.3 inches per year (Texas Almanac, 2002). Snowfall occurs only on rare occasions. One of those occasions was Christmas Eve, 2004, when approximately 4 inches of snow fell on the area.

Prevailing winds generally from the southeast. During the winter months, frontal boundaries may pass through the area on a regular basis. This may set a cycle of northerly winds, usually shifting back to the south after a day or two.

Thunderstorm activity can occur during all seasons, but is most prevalent in the spring and fall. Finally, due to its coastal proximity, the area is subject to influences from tropical storms. Daily rainfall amounts may easily exceed over 12 inches during these events.

Figure 2-2. Vegetational Areas of Texas (Hatch et al.)



Modified from Checklist of the Vascular Plants of Texas (Hatch et al. 1990).
Nearly identical maps have been used in numerous works on Texas including
Gould (1962) and Correll and Johnston (1970).

- 1 PINEYWOODS
- 2 GULF PRAIRIES AND MARSHES
- 3 POST OAK SAVANNAH
- 4 BLACKLAND PRAIRIES
- 5 CROSS TIMBERS AND PRAIRIES
- 6 SOUTH TEXAS PLAINS
- 7 EDWARDS PLATEAU
- 8 ROLLING PLAINS
- 9 HIGH PLAINS
- 10 TRANS-PECOS, MOUNTAINS AND BASINS

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PHYSIOGRAPHY

The study area is located in the Gulf Coastal Plains physiographic province of Texas. The Gulf Coastal Plains province is subdivided into 3 subprovinces named the Coastal Prairies, the Interior Coastal Plains, and the Blackland Prairies with Wharton County falling into the Coastal Prairies subprovince.

The Coastal Prairies begin at the Gulf of Mexico shoreline and contain young deltaic sands, silts, and clays eroding to nearly flat grasslands that form almost imperceptible slopes to the southeast. Trees are uncommon except locally along streams and in oak mottes, growing on coarser underlying sediments of ancient streams. Minor steeper slopes, from 1 foot to as much as 9 feet high, result from subsidence of deltaic sediments along faults (Wermund, 1996).

The elevation of Wharton County ranges from 50 to 150 feet. Most of the county is level to gently sloping from 2 to 5 feet of fall per mile causing runoff to move very slowly off the landscape. The Colorado and San Bernard Rivers are entrenched to depths of less than 50 feet (Soil Conservation Service, 1974).

GEOLOGY AND SOILS

The City of Wharton is located on the Coastal Plain of Texas, which is mainly a low-lying coastal plain with limited topographic relief that gradually rises from sea level in the east to as much as 900 feet in the north and in the west. The surface geology of the Coastal Plain is complex due to cyclic deposition of sediments and to repeated sea-level changes and natural basin subsidence that has produced discontinuous beds of sand, silt, clay, and gravel. The Coastal Plain is underlain by a massive thickness of sediments that form strata having the same dip (homocline). Several major rivers dissect the Coastal Plain and flow nearly perpendicular to the Gulf of Mexico; these rivers include the Sabine, Trinity, Colorado, Guadalupe, Brazos, San Antonio, and Rio Grande Rivers. During the Late Tertiary and early Quaternary Ages, the river systems brought in huge quantities of clay, silt, sand, and gravel from upstream sources. These sediments were spread over the Coastal Plain as the rivers shifted laterally over the nearly featureless coastal prairie. The city of Wharton is located on the east bank of the Colorado River. Caney Creek, which flows through Wharton immediately north of the main business district, occupies a former course of the Colorado River. The geology and the general soils of the project area are of the Holocene Age, as recent alluvium along the Colorado River, and of the Pleistocene Age, as older sediments underlying the alluvium and are of the Houston Group. The Houston Group is divided into two formations, the Lizzie, at the base, and the Beaumont, at the top. These formations both outcrop in Wharton County, with the Lizzie Formation outcropping only in the extreme northern portion of the county. The surface and near surface soils throughout the city of Wharton are alluvial in origin and generally consist of moderate to high plasticity clay (CL to CH) with sand at depth. The clay has low permeability, high water holding capacity, and poor drainage. The clay also has very high shrink-swell potential and exhibits high corrosivity for uncoated steel.

The soils found in Wharton County are generally of the Miller-Norwood, Crowley, Lake Charles, Edna-Bernard, or Edna-Crowley association (Soil Conservation Service, 1974) (Figure 2-3). These soils are fully described in Appendix B. The soils are alluvial in origin, and were found to be relatively uniform throughout the City of Wharton. Very minor variances in soil composition can be noted. Subsurface borings were conducted in the study area, and most were characterized as having a high plasticity clay content. The material would be ideal for use in construction of levees, for example. Additional information regarding the subsurface investigations can be found in the Geotechnical section of Appendix G.

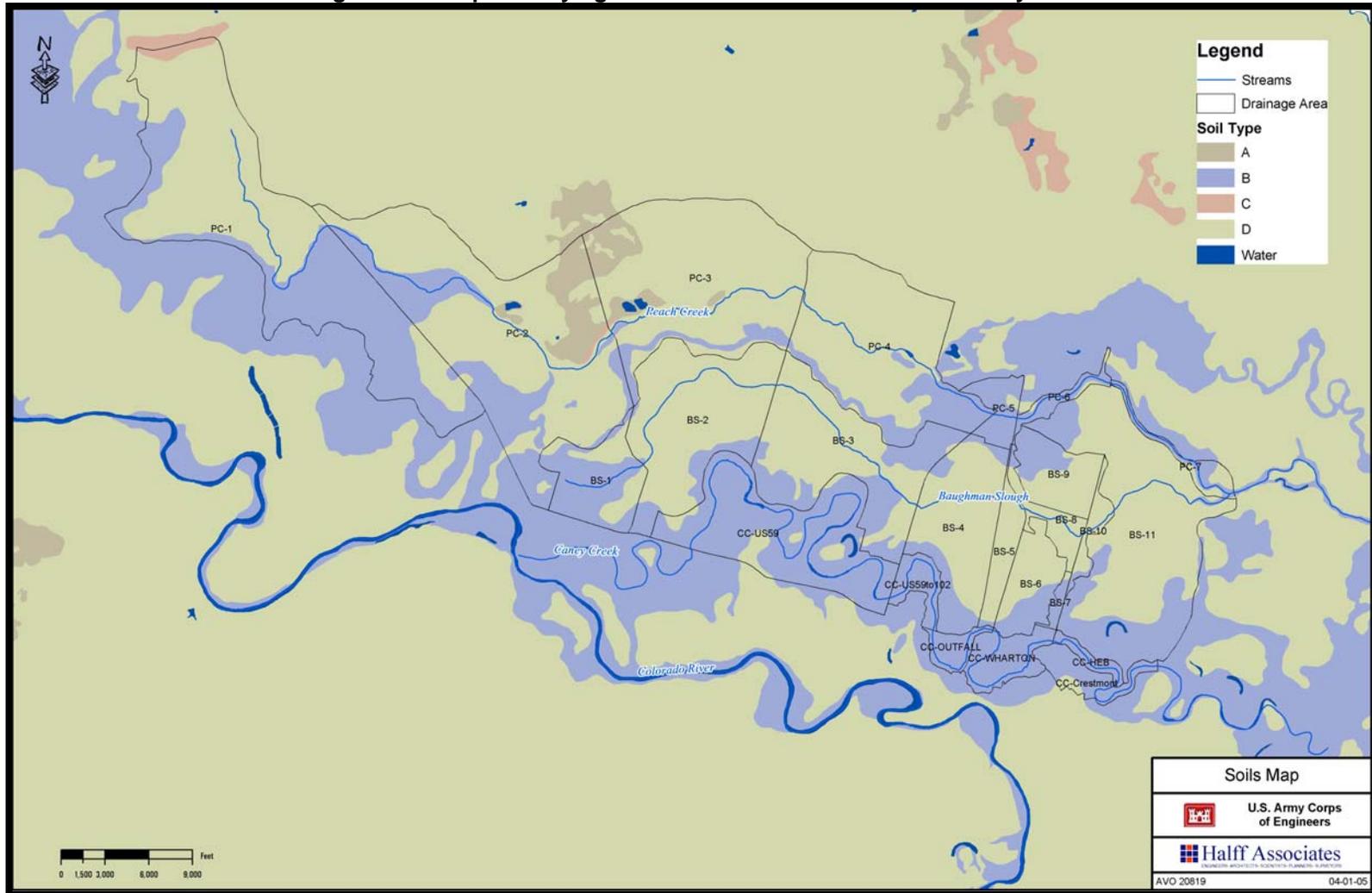
PRIME AND UNIQUE FARMLANDS.

The Farmland Protection Policy Act (FPPA) was included in the Agriculture and Food Act of 1981 and final regulations were published on June 17, 1994. The purpose of the FPPA is to minimize the unnecessary conversion of prime and unique farmland to nonagricultural uses by Federal programs. The Natural Resource Conservation Service (NRCS) administers the land evaluation and site assessment to determine if the potential impacts on farmland exceed the recommended allowable level. Prime farmland soils that are listed by the NRCS for Wharton County and occur within the project area are discussed above. The NRCS lists about 654,321 acres of prime farmlands occurring in Wharton County. An estimated 13,000 acres of prime farmland occur in the project area.

HYDROLOGY

For ease of presentation and clarification, all hydrologic and hydraulic information is presented in Chapter 3, with additional detail included in the Engineering Appendix.

Figure 2-3. Map Identifying the Soil Associations within the Study Area



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GENERAL WATER QUALITY

The TCEQ compiles a Clean Water Act Section 303(d) List for Threatened and Impaired Water Bodies every 2 years for submission to the Environmental Protection Agency (EPA). None of the listed segments within the Colorado River Basin or San Bernard River Basin, including Caney Creek, found on the 2004 Clean Water Act Section 303(d) List were located within the study area.

The criteria evaluated in determining if a water body is threatened or impaired are dissolved oxygen level, ammonia-nitrogen and nitrate-nitrogen, fecal coliform bacteria, ortho-phosphorus, pH, total suspended solids, total dissolved solids and conductivity, turbidity, and temperature.

AIR QUALITY

Wharton County is located in the EPA Air Quality Control Region (AQCR) 216. The EPA uses six "criteria pollutants" as indicators of air quality and has established for each of them a maximum concentration above which adverse effects on human health may occur. These threshold concentrations are referred to as the National Ambient Air Quality Standards (NAAQS). The areas of the country where air pollution levels persistently exceed the standards may be designated as 'Nonattainment' areas.

Areas of the country where the air pollutant concentration meets the national primary air quality standard are designated as being in "Attainment". An "unclassifiable" designation is ascribed to areas of the country that cannot be classified based on available information. A sub classification may be ascribed by the EPA to areas that are currently in non-attainment. This classification describes the level of a particular air pollutant as being Severe 17, Severe 15, Serious, Moderate, Marginal, Sub marginal, Section 185A, or Incomplete (no data). The information presented represents the most relevant and accurate description of existing conditions for air quality within the study area since it is not feasible to establish air pollutant monitoring stations at specific project site locations.

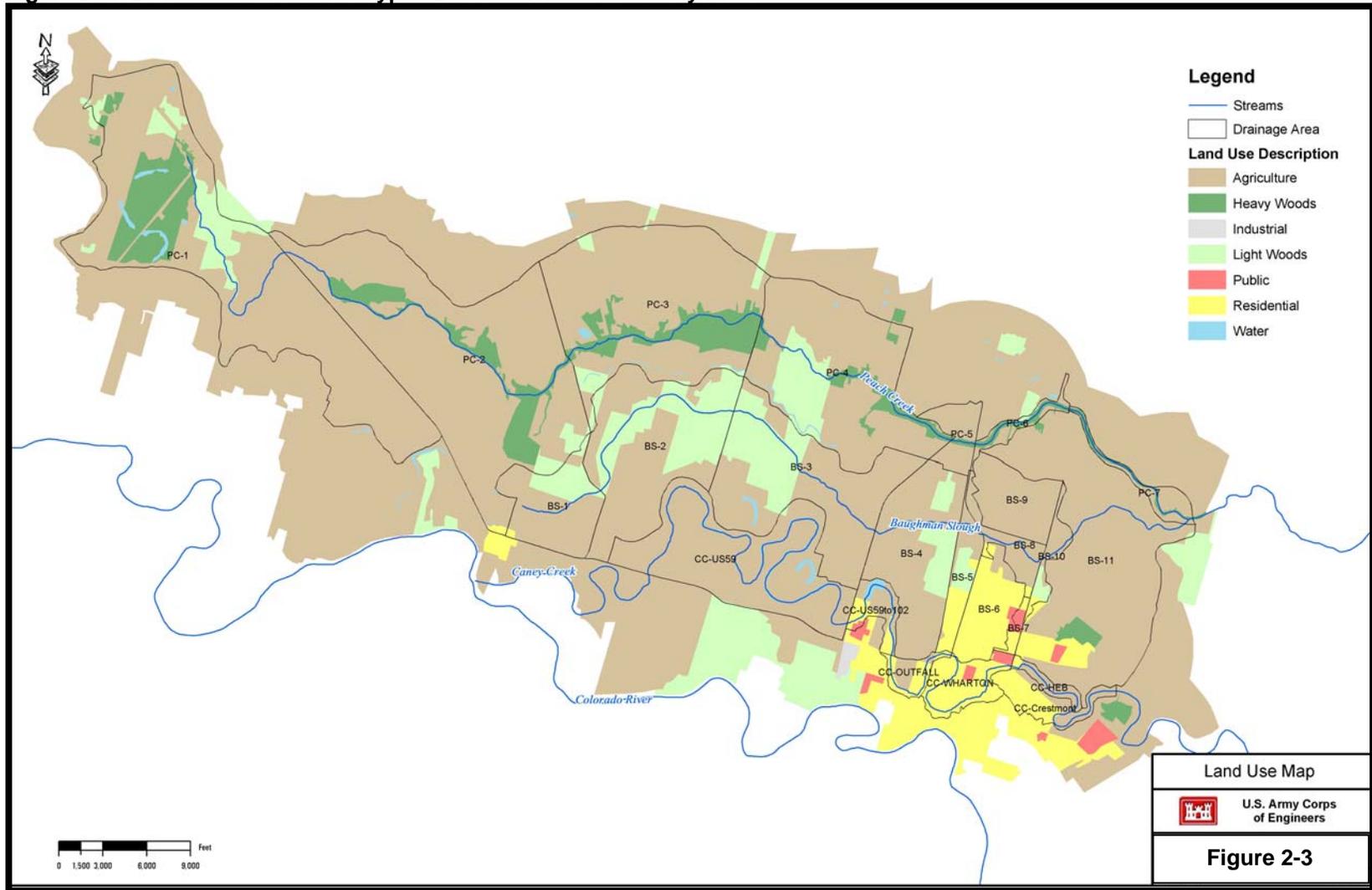
The study area is classified as being in Region 12 by the Texas Commission on Environmental Quality (TCEQ), the state agency responsible for meeting the NAAQS. Wharton County is in attainment for all criteria pollutants; however, it is adjacent to Brazoria and Fort Bend Counties, which are in non-attainment for ozone pollution. The Houston Air Plan has been approved by the Texas Commission on Environmental Quality and has been forwarded to the Environmental Protection Agency for its approval to bring these counties into attainment for ozone by 2007.

LAND USE

Land uses for the area were categorized as: agriculture, heavy woods (dense, under story), industrial, light woods (relatively thin, no under story), public, residential, and water. Figure 2-4 shows the land use map of the study area. Approximately 80% of the area land use is agricultural, 15% woods (heavy and light), and 5% residential. Common crops in the area are rice, corn, cotton, and grain sorghum.

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Figure 2-4. Land Uses and Cover Types Located Within the Study Area



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HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE

General

An environmental site assessment (ESA) for the Wharton Interim Feasibility Study was performed to investigate the project site and its general vicinity for the presence or suspected presence of Hazardous, Toxic, and Radioactive Waste (HTRW) materials during existing conditions. The ESA works to facilitate early identification and appropriate consideration of HTRW problems in reconnaissance, feasibility, pre-construction engineering and design, land acquisition, construction, and operations, maintenance, repair, replacement, and rehabilitation phases of the project.

In April 2003 an environmental records search was conducted, by Environmental Data Resources, Inc, on the City of Wharton and the city's general vicinity. One solid waste facility/landfill site and two leaking underground storage tank (LUST) sites were identified as a result of this search. In March 2005 an environmental site reconnaissance was conducted consisting of site walkovers of the footprint area. Field observations documented during this visit found no evidence of additional HTRW issues.

Based on the findings from the ESA (see Appendix G), three individual properties were identified as having a potential HTRW issue. These three properties are located in or near the Wharton recommended study design, with the closest property approximately 200 feet away from the project boundary. See Appendix G, figure G-1. The properties with suspected HTRW issues for the City of Wharton were one solid waste facility/landfill and two registered LUST sites. More details regarding the findings of the ESA can be found in Appendix G.

Initial Assessment Conclusions

The assessment records search and follow site visited confirmed the existence of three individual properties having a moderate to high probability of having a potential HTRW issue. Two of these are located in the 100 block of Burleson Street, and the other is a closed municipal landfill at the end of Sheppard Street. These areas were taken into account during the formulation process, but did not figure into the selection process. Impacts pertaining to the Recommended Plan are presented in Chapter 5.

AQUATIC RESOURCES

The aquatic resources in the study area are confined primarily to the Colorado River, which contains the only permanent water source, two ponds in the Nanya Plastics Sump area, and one man-made pond in the old streambed of Caney Creek. The study area contains approximately 56,000 feet of the Colorado River. The Colorado River is approximately 30-60 feet wide and several feet deep as it flows through the study area. The Colorado River, like most river systems in the eastern half of Texas, is characterized by slowly flowing water. Any river flow makes it difficult for phytoplankton, microscopic algal forms that usually constitute the primary production in an aquatic ecosystem, to maintain substantial populations. As a result, riverine systems are frequently dependent on outside sources of organic material that are washed into the river during local rains.

Approximately 96,000 feet of Caney Creek runs through the study area, however, as mentioned above, the only aquatics are mainly contained in the on-man-made pond. Caney

Creek does not function as a creek; it primarily consists of a grass ditch that is several 10-12 feet wide. Several of the remnants of the original streambed of Caney Creek serve as detention pools during rain events. Caney Creek and the section of Baughman Slough in the project area are dry throughout the year, except when there is sufficient rainfall to create runoff conditions in the watershed. The study area contains approximately 59,000 feet of Baughman Slough. Baughman Slough is generally about 10 feet wide through the study area and has limited aquatic resources due to going dry in the summer months. A large ditch in the Alabama Street Sump may contain a few small puddles of water during periods between rainfall events.

Wetlands

According to the Texas Environmental Almanac (2000), interior wetlands which include bottomland hardwood forests, riparian vegetation, inland freshwater marshes, and the playa lakes of west Texas account for 80 percent of the total wetland acreage in Texas and the vast majority are located on private property. In the last 200 years, Texas has lost over 60 percent of these inland wetlands due to agriculture conversion, timber production, reservoir construction and urban and industrial development.

The USFWS National Wetland Inventory data for the project area showed scattered wetlands along parts of the Colorado River, in Baughman Slough, in tributaries feeding Baughman Slough, in Caney Creek, in old oxbows of Caney Creek, and in some swales and ditches draining some of the pastures and woodland areas outside the city. Most of these wetlands are ephemeral and contain water only after moderate to heavy rainfall events. However, these wetlands still retain wildlife value, especially during wet years. These wetlands total about 118 acres. Most of the wetlands are of poor to average quality. A small wetland near the Nanya Plastics Factory is a high quality wetland and should be avoided if possible during project design.

Ecologically Unique River or Stream Segment Nomination

The Wild and Scenic Rivers Act, approved on October 2, 1968, establishes a National Wild and Scenic Rivers System and prescribes the methods and standards through which additional rivers may be identified and added to the system. The Act authorizes the Secretary of the Interior and the Secretary of Agriculture to study areas and submit proposals to the President and Congress for addition to the system. It describes procedures and limitations for control of lands in Federally administered components of the system and for dealing with disposition of lands and minerals under Federal ownership. Rivers are classified as wild, scenic, or recreational, and hunting and fishing are permitted in components of the system under applicable Federal and State laws. (Digest of Federal Resource Laws of Interest to the U.S. Fish and Wildlife Service). No Wild and Scenic Rivers are located within the project area.

The State of Texas has a similar law, the Texas Administrative Code, Title 31, Part 10, Chapter 357, Rule 357.8, Ecologically Unique River and Stream Segments. It outlines the process and criteria for designating a river or stream segment in the State as ecologically unique. The criteria used are biological function, hydrological function, riparian conservation areas, high water quality/exceptional aquatic life/high aesthetic value, and threatened or endangered species/unique communities. A regional water planning group can recommend a stream or river segment be designated as ecologically unique and include the recommendation in their regional plan. The Texas legislature can then officially designate a stream segment as having a unique ecological value after it has been nominated by a regional planning group. Designation by the legislature prevents a state agency or political subdivision from obtaining a fee title or an easement that would destroy the unique ecological value of the designated stream. The

designated segments also do not have to correspond to classified water quality segments (Ecologically Unique River and Stream Segments).

The Lower Colorado Regional Water Planning Group included a recommendation that the segment of the Colorado River (segment 1402) through Fayette, Colorado, Wharton, and Matagorda counties be designated as ecologically unique in their adopted plan. The recommendation was based on biological function: undeveloped riverine habitat in the segment, part of the Central Flyway of migratory birds passes over the segment, and the presence of a state-listed endangered species (the blue sucker) in portions of the segment. The Texas Legislature has not taken any action to designate the river segment as unique.

Groundwater – Gulf Coast Aquifer

The Gulf Coast aquifer forms an irregular belt along the Gulf of Mexico from Florida to Mexico. The Gulf Coast aquifer provides available groundwater to all or parts of 54 counties in Texas, including Wharton, as it stretches from the Rio Grande to the Louisiana-Texas border, and thus is an important part of the area's aquatic resources. The aquifer consists of complex interbedded clays, silts, sands, and gravels that are connected hydrologically forming a large, leaky artesian aquifer system (Lower Colorado Regional Water Planning Group (LCRWPG), 2000).

The system is comprised of two major components in the Wharton County area, the Evangeline aquifer and the Chicot aquifer. The Burkeville confining layer defines the bottom of the Evangeline aquifer, which is contained within Fleming and Goliad sands. The upper level of the Gulf Coast aquifer system is the Chicot aquifer that consists of the Lissie, Willis, and Beaumont formations with alluvial deposits overlying the aquifer. Maximum total sand thickness ranges from about 700 feet near the coast to 1,300 feet in the northern extent (LCRWPG, 2000).

Essential Fish Habitat

Essential fish habitat (EFH) is evaluated under authority of the Magnuson-Stevens Fishery Conservation and Management Act of 1976 (MSFCMA), as amended (16 U.S.C. 1801-1882). The act established national standards that require fishery management plans to create conservation and management measures based on the best scientific information to prevent overfishing and assure optimum yield. The MSFCMA was amended in 1996 by the Sustainable Fisheries Act, which established procedures for identifying EFH and required interagency coordination to further the conservation of Federally-managed fisheries. Rules published by the NMFS (50 Code of Federal Regulations (CFR) Sections 600.805-600.930) specify that any Federal agency that authorizes, funds or undertakes, or proposes to authorize, fund, or undertake an activity that could adversely affect EFH is subject to the consultation provisions of the act and identifies consultation requirements.

EFH is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." These waters are generally found in estuaries and tidally influenced sections of rivers that flow into estuaries. Because this project is located well upstream of the Matagorda Bay system and is beyond tidal influence, there are no Federally-managed species that will be affected by this project. Therefore, there are no EFH considerations or consultation requirements needed for this project, and there will be no further discussion of this issue.

FISH AND WILDLIFE RESOURCES

The principal wildlife found in Wharton County are ducks, geese, quail, doves, raccoon, squirrel, nutria, and deer. Wharton County provides wintering grounds for rail, coot, crane, geese, ducks, and other migratory birds. Fish that inhabit the county include bass, channel

catfish, and bream. The county is divided into two wildlife sites. The first of which is generally accompanied by soils of the Miller-Norwood association. The areas that are not used for row crops can have cover from pecan, ash, elm, willow, oak, and hackberry trees that provide habitat for deer, squirrels, opossum, rabbit, raccoon, and many kinds of songbirds. The second type of wildlife site is usually accompanied by Edna-Bernard, Crowley, Lake Charles, and Edna-Crowley associations that provide habitat for deer, quail, doves, rabbit, opossum, raccoon, armadillos, and nutria (Soil Conservation Service, 1974).

Amphibians and reptiles are common in the project area and include a total of 25 species of amphibians and 96 species or subspecies of reptiles (Dixon 2000). These species include one siren, two salamanders, a newt, 21 species of frogs and toads, 10 species of turtles, the American alligator, 24 species or subspecies of lizards, and 62 species or subspecies of snakes (Dixon 2000). Widespread turtles within the basin include the common snapping turtle, yellow mud turtle, red-eared slider, ornate box turtle, and softshell turtle. Also, 12 lizard taxa and 37 snake taxa are expected to occur in the project area (Dixon 2000).

Fisheries located in the study area are abundant because of the diversity of species located within the Colorado River. The species are documented in the Programmatic Environmental Impact Statement conducted as part of the overall Basinwide Study. It documented that over 59 species of fish are located within the area. Species found on a daily basis include various minnow and sunfish species, largemouth bass, white bass, spotted bass, spotted and longnose gar, carp, channel and yellow catfish, drum, tilapia, and crappie.

A site visit was conducted on January 10, 2006, with United States Fish and Wildlife Service representatives. Species observed within the riparian forest adjacent to the Colorado River included the red tail hawk, red shoulder hawk, vermilion fly catcher, turkey vulture, savannah sparrows, and great egret. Another site visit with the USFWS on 15 June 2006 to three different sites containing grasslands, mixed forest and grasslands, hardwood forest, and wetlands produced a larger variety of birds to add to the list of observations. Birds sighted during this visit included: common grackle, mockingbird, cardinal, Carolina chickadee, yellow-billed cuckoo, mourning dove, swallow-tailed kite, white-eyed vireo, buteo hawk, little blue heron, turkey vulture, belted kingfisher, brown creeper, and eastern meadowlark.

Migratory Birds

The Colorado River bottomland forests in Wharton County are classified as part of the Austin's Woods or Columbia Bottomlands habitat. This once extensive hardwood forest occurs in the basins of the lower Colorado River, San Bernard River, Caney Creek, and Brazos River from within 6 miles of the Gulf coast to 50 miles inland. Besides their high biological productivity, these forests are critical to the survival of neotropical migratory birds which annually migrate in the spring from Central and South America and the Caribbean Islands across the Gulf of Mexico to their nesting areas in the United States and Canada. These birds depend on the Austin's Woods area for rest and replenishment during migration. Other birds using these habitats include migratory waterfowl, wading birds, colonial nesting birds, and migratory shorebirds. Investigations of the importance of these forests found that 237 species of birds totaling 239 million individuals migrate through the area each year. Therefore, the loss of this habitat could have significant consequences for these migratory birds (USFWS, 1997).

Threatened and Endangered Species

Correspondence with the United States Fish and Wildlife Service (USFWS) and the Texas Parks and Wildlife Department (TPWD) included requests for information, database searches, and a site visit to establish the potential presence of federally listed threatened and endangered species. Table 2-1 identifies the one federally listed threatened species that has been proposed

for delisting, the five state listed endangered species, and the ten state listed threatened species that have the potential to occur in Wharton County and the study area.

**Table 2-1
Potentially Occurring Federal and State Threatened and Endangered Species
for Wharton County**

Common Name	Scientific Name	Federal Status	State Status
Birds			
American Peregrine Falcon	Falco peregrinus anatum	*	E
Arctic Peregrine Falcon	Palco peregrinus tundrius	*	T
Attwater's Greater Prairie-chicken	Tympanuchus cupido attwateri	*	E
Bald Eagle	Haliaeetus leucocephalus	T/PDL	T
Eskimo Curlew	Numenius borealis	*	E
White-faced Ibis	Plegadis chihi	*	T
White-tailed Hawk	Buteo albicaudatus	*	T
Whooping Crane	Grus Americana	*	E
Wood Stork	Mycteria Americana	*	T
Interior Least Tern	Sterna antillarum athalassos	*	E
Mammals			
Black Bear	Ursus americanus	*	T
Louisiana Black Bear	Ursus americanus luteolus	*	T
Reptiles			
Texas Horned Lizard	Phrynosoma cornutum	*	T
Timber/Canebrake Rattlesnake	Crotalus horridus	*	T
Fishes			
Blue Sucker	Cycleptus elongates	*	T

T – Threatened, E – Endangered, PDL – Proposed for delisting, PT – Proposed Threatened

*Not listed by USFWS as a Federally listed threatened or endangered specie with the potential for occurring in Wharton County.

In addition to the State and Federal-listed threatened and endangered species in the list above, TPWD also lists several rare species potentially occurring in Wharton County, but these species have no regulatory listing status on the State list. Thus, they are not listed above and are not included in the species descriptions below. These rare species include one bird (Mountain plover, *Charadrius montanus*), one fish (American eel, *Anguilla rostrata*), one mammal (Plains spotted skunk, *Spilogale putorius interrupta*), and seven mollusks (Creeper (Squawfoot), *Strophitus undulates*; False spike mussel, *Quincuncina mitchelli*; Pistolgrip, *Tritogonia verrucosa*; Rock-pocketbook, *Arcidens confragosus*; Smooth pimpleback, *Quadrula houstonensis*; Texas fawnsfoot, *Truncilla macrodon*; and Texas pimpleback, *Quadrula petrina*).

Birds

The bald eagle has recovered sufficiently to be downlisted to threatened throughout its range and the USFWS has proposed to completely delist the species in the near future (64 FR 36453-36463; July 6, 1999). Two subspecies are currently recognized based on size and weight.

The northern subspecies nests from central Alaska and the Aleutian Islands through Canada into the northern U.S. The southern subspecies primarily nests in estuarine areas of the Atlantic and Gulf coasts, northern California to Baja California, Arizona, and New Mexico (Snow, 1981). Wintering ranges of the two populations overlap. The bald eagle inhabits coastal areas, rivers, and large bodies of water as fish and waterfowl comprise the bulk of their diet. Nests are seldom far from a river, lake, bay, or other water body. Nest trees are generally located in woodlands, woodland edges, or open areas, and are frequently the dominant or co-dominant tree in the area (Green, 1985). Concentrations of wintering northern eagles are often found around the shores of reservoirs in Texas, with most wintering concentrations occurring in the eastern part of the state. Wintering bald eagles in Texas have been observed as far south as Cameron County (Oberholser, 1974) and are considered to be a rare permanent resident in the Coastal Bend (Rappole and Blacklock, 1985). TPWD surveys have recorded nests as close as 5 miles upstream of Wharton on the Colorado River near Glen Flora.

All North American peregrine falcons were delisted from the Federal list of threatened and endangered species in 1999 (64 FR 46541-46558, August 2, 1999). The Arctic peregrine falcon, which was listed as endangered due to similarity of appearance to the American peregrine falcon was delisted Federally, but remains on the TPWD threatened list. The primary differences between the subspecies are their ranges and migration patterns. The Arctic peregrine falcon nests only from northern Alaska to Greenland and winters along the entire Gulf Coast. It occurs statewide during migration (USFWS, 1995). The American peregrine falcon remains on the State endangered list and nests from central Alaska across north-central Canada to central Mexico. It also overwinters in Texas and both subspecies could potentially occur in the project area, especially during spring and fall migration.

Attwater's greater prairie-chicken is a medium-sized grouse (TPWD, 1995). This species was once a common resident on most of the Texas coastal plain, including parts of Wharton County. However, the abundance of this species is currently declining from Galveston County to Aransas and Refugio Counties (USFWS, 1995). Remaining populations of Attwater's greater prairie-chicken are found only in the Texas coastal prairie where native tallgrass prairie habitat still exists. No suitable habitat for Attwater's greater prairie-chicken is present in the project area.

The current status of the Eskimo curlew is considered uncertain and possibly extinct, but the species is Federally and State-listed as endangered. This species was very abundant in the nineteenth century, but was subject to extreme hunting pressure. The breeding habitat of the Eskimo curlew was treeless arctic and subarctic tundra (Gill, et al., 1998). Non-breeding birds use a variety of habitats, such as grasslands, pastures, plowed fields, and less frequently, marshes and mud flats (AOU, 1983). Spring migration would bring them through Texas and the midwestern U.S. (Gill, et al., 1998) from mid-March to late April (Oberholser, 1974). One record does exist from Galveston, Texas in 1962, and others since then have been reported. However, the validity of these records is uncertain. The Eskimo curlew is unlikely to occur in the project area due to its extreme rarity and the lack of recent records of occurrence.

The white-faced ibis is a coastal species that inhabits a variety of freshwater and estuarine environments. It is considered a rare to uncommon spring and fall migrant throughout Texas and a rare to uncommon post-breeding visitor north and west of its usual breeding range within Gulf coast counties (TOS, 1995). One sighting was recorded for this species in Wharton County in Oberholser (1974), but this species may migrate through the area and feed in the rice fields.

The white-tailed hawk is a large raptor that inhabits undeveloped coastal grasslands and inland mesquite-oak savannahs (Oberholser, 1974). White-tailed hawks are considered uncommon local summer residents of the coastal plain from Harris and Colorado Counties to south of the Rio Grande (TOS, 1995). This species may migrate through Wharton County and feed in any of the numerous pasturelands.

Each year the only remaining natural wild population of whooping cranes migrates 2,600 miles from its summer nesting grounds in Canada's Wood Buffalo National Park to its wintering grounds at Aransas National Wildlife Refuge in Aransas, Refugio, and Calhoun Counties. During migration, the whooping crane makes regular stops, during which they use a variety of habitats that are generally isolated from human activity. It can be found in the marshes of Matagorda and St. Joseph's Islands where it feeds mainly on blue crabs and clams. However, the birds will wander inland to oak mottes, swales, and ponds to feed on acorns, snails, crawfish, and insects (Campbell, 1995). The project area lies within the migration corridor, but it is unlikely the whooping crane will stop here due to human activity in and near the city.

Wood storks are semi-aquatic birds that prefer a variety of wet environments, including forested wetlands, irrigated fields and pastures, prairie ponds, and mudflats (Coulter, et al., 1999). Preferred habitats include coastal marshes, bays, prairies, and lakes (Sarkozi, 1996). They are not generally associated with upland areas with dense ground cover. The wood stork is a migratory species and is a common summer resident on the coastal plains from July to September (Sarkozi, 1996). The wood stork has been sighted in Wharton County and the project area contains habitats that may be used by this species. Therefore, this species could occur in the project area.

The interior least tern is a colonial nesting shorebird adapted to lacustrine and riverine sandbar and gravel beach habitats and has historically nested on sandbars of the Colorado River, Rio Grande, and Red River in Texas. Small, remnant breeding populations persist at isolated locations within its historic range. This species winters along the entire Texas coast, but the USFWS considers any least tern within 50 miles of the coast to be the coastal subspecies and, thus, not protected by the ESA (USFWS, 1995). Although listed as potentially occurring in Wharton County by TPWD, the USFWS does not list it on their county list for Federally-listed threatened and endangered species. Therefore, the occurrence of this species in the project area is highly unlikely.

Mammals

Black bears were historically widespread throughout Texas, but are now restricted to remnant populations in mountainous areas of the Trans-Pecos region (Davis and Schmidly, 1994). The Louisiana black bear, which is one of 16 recognized subspecies of black bear (Hall, 1981), was historically found in eastern Texas. It is distinguished from other black bears by its longer, more narrow, and flat skull and by its proportionately large molar teeth (Nowak, 1986). This subspecies is now restricted primarily to the Tensas and Atchafalaya River Basins in Louisiana, where its habitat consists primarily of bottomland hardwood timber. The Louisiana black bear is not known to occur in Texas, although potential habitat exists in the project area.

Reptiles

The Texas horned lizard has a broad and flattened body, short tail, and conspicuous elongated scales that form spines on the head, neck, and back. Texas horned lizards historically were widespread throughout Texas, but have experienced a rapid decline in number, possibly due to widespread use of insecticides, the introduction of imported red fire ants, and a decline in harvester ants, which are the lizard's primary food source. It has almost vanished from the eastern half of the state (Price, 1990). However, Bartlett and Bartlett (1999) state that the actual status of populations of this species is unknown. Since it has historically occurred in the region, the presence of the Texas horned lizard in the project area cannot be discounted.

Timber/canebrake rattlesnakes generally occur in lowland areas such as swamps, cane brakes, riverine thickets, pine and deciduous woodlands, and abandoned farmland, preferably with dense undergrowth. It primarily inhabits moist lowland forests and hilly woodlands near rivers, streams, and lakes in the eastern third of the state (Werler and Dixon, 2000). However, it

can also be found in open, upland pine and deciduous woods and the second-growth pastures of unused farmland. Because the preferred habitat for this species occurs in the project area, the potential for its occurrence cannot be ruled out.

Fish

The State-listed threatened blue sucker inhabits the larger portions of major rivers in Texas, usually within the deeper channels and flowing pools with a moderate current. Bottom type usually consists of exposed bedrock, perhaps in combination with hard clay, sand, and gravel. The adults winter in deep pools and move upstream in the spring to spawn on riffle beds. Construction of impoundments has led to a reduction of suitable silt-free gravel and rock bottoms by slowing the formerly constant strong flows and has led to blocked migratory routes resulting in depressed population levels. This species is known from further upstream in Colorado County in Stream Segment 1402 of the Colorado River (Celeste Brancel, TPWD, internet communication). This segment of the river flows through Fayette, Colorado, Wharton, and Matagorda Counties, including the project area. The TPWD Annotated County Lists of Rare Species for Wharton County last revised on December 11, 2002 does not list the blue sucker as occurring in Wharton County. However, the potential exists that this species could occur in the project area.

VEGETATION COVER TYPES

Within the study area, approximately 44% of the area is classified as grasslands, 32% as croplands, 13% urban, 7% other, and only 4% Riparian Woodlands.

Bottomland Vegetation/Riparian Woodlands

Bottomlands occur in the transition zone between aquatic and upland ecosystems. Bottomland hardwood systems are considered to be Texas' most diverse ecosystem. Prior to European settlement, Texas had approximately 16 million acres of bottomland hardwood riparian habitat. Today, the state has less than 5.9 million acres. There is expected to be a continual decrease of about 12% per decade due to future projections of pulpwood needs within the United States (Texas Environmental Almanac 2000). No logging operations are known to occur in Wharton County.

Bottomlands serve several important functions. They contribute to the state's biodiversity. According to the Texas Environmental Almanac (2000), 189 species of trees and shrubs, 42 woody vines, 75 grasses, and 802 herbaceous plants occur in Texas' bottomlands. They are also known to support 116 species of fish, 31 species of amphibians, 54 species of reptiles, 273 bird species and 45 species of mammals. At least 74 species of threatened and endangered animals depend directly on bottomland hardwood systems and over 50 percent of neotropical songbirds not listed as threatened and endangered species are associated with these systems. Besides providing critical wildlife and bird habitat, bottomland hardwood systems: 1) serve as catchments and water retention areas in times of flooding, 2) help control erosion, 3) contribute to the nutrient cycle, and 4) play a vital role in maintaining water quality by serving as a depository for sediments, wastes and pollutants from runoff. Despite these important functions, bottomland hardwoods ecosystems are one of the most endangered ecosystems in the United States (MacDonald et al. 1979). For all of these reasons, the bottomland vegetation system is of great environmental concern in the analysis of the proposed project impact areas.

Bottomland hardwood trees along the Lower Colorado River generally consist of bald cypress, pecan, oaks, elm, cottonwood, and hackberry. Most of these hardwoods are generally mature trees between 50-100 years old that provide food and shelter for wildlife. These large growth riparian woodlands are of average to quality woodlands for wildlife habitat.

A focus was placed in specific areas within the larger study area, specifically along the banks of the Colorado River, Baughman Slough, and areas adjacent to Caney Creek. The riparian/hardwood forest species growing in this area consist mostly of mature native pecan trees ranging in height from 30 feet to about 75 feet. These trees possibly invaded the area during past flood events which brought in the nuts that later sprouted and grew in the open fields near the river. Smaller trees scattered across the forested landscape include hackberry (8-20 feet in height), cedar elm (4-12 feet), wooly buckthorn (12-20 feet), cherry laurel (8 feet), and minor occurrences of the invasive Chinese tallow (up to 25 feet in height). Dominant species along the river bank (beyond the proposed project impact zone) include black willow and cottonwoods up to 60 feet in height. One pond of about 3 acres located adjacent to the Nanya Plastics plant appears to be an old oxbow of Caney Creek. It retains a fringe of mature bald cypress trees up to 40 or 50 feet in height. Understory vegetation growing at the base of the mature trees where frequent mowing is used as a management tool for improved pastures include smilax, mulberry, hawthorne, and viburnum, along with a mixture of grape vines, Virginia creeper, and blackberry and dewberry vines.

Peach Creek is relatively undisturbed throughout the vicinity of the city of Wharton. The creek is a characteristic bottomland hardwood system dominated by fairly young bald cypress trees. Other plants found in the Peach Creek vicinity include alligator weed, palmetto, water lily, live oak, sagittaria, cedar elm, and cane. This riparian habitat is of high quality and the resource agencies have suggested that these areas be avoided during project design.

Trees along the banks of Caney Creek and Baughman Slough are noticeably absent, except where homes are located near the streambeds. Most of these areas are pasturelands with some brush occasionally found in the streambeds. These streambeds appear to be mowed, at least on an infrequent basis, or grazed to control the growth of brush. The existing fragmented woodlands area of very poor quality.

There are over 1000 acres of riparian woodlands or bottomland vegetation within the study area. These are generally located along the Colorado River, Peach Creek, and Baughman Slough.

Bottomlands of Special Concern

The USFWS, TPWD, NRCS, Nature Conservancy, and other agencies and environmental organizations have a high priority in protecting the bottomland hardwood forests growing along the Colorado River, San Bernard River, Caney Creek, and Brazos River south of IH-10 to within 6 miles of the Gulf of Mexico. These woods are collectively known as Austin's Woods or the Columbia Bottomlands. In addition to their high biological productivity, they have an importance for neotropical migratory birds which depend on the woods for rest and energy replenishment during migration. The forests are also important resting, breeding, feeding, and escape habitats for a great number of other birds. A significant population of bald eagles is found in the area, due largely to the quality of the breeding habitat (USFWS, 1997).

The Austin's Woods are the only significant expanse of forest adjacent to the Gulf of Mexico in Texas. At the beginning of the 20th Century, the Austin's Woods occupied about 700,000 acres. However, human activities such as logging, agriculture, and development have slowly removed the forests until near the close of the century, it is estimated only 177,000 acres remain. The remaining 25% of the forest ecosystem is highly fragmented and continue to be threatened with commercial and residential development, logging, wetland drainage, and clearing for agriculture. Other threats include pipeline construction, road building, and power line construction. A new venture threatening bottomland forests is the hardwood pulp industry, which has recently clear cut, chipped, and exported hardwoods to Japan for paper production. In an effort to conserve this declining resource, the USFWS has proposed to acquire tracts of the

remaining forest from willing sellers and donors and manage them as units of the existing Brazoria National Wildlife Refuge Complex (USFWS, 1997).

Of the over 1000 acres of riparian bottomland hardwoods in the study area, approximately one-hundred could fall into this category. Most of these species are located on the West side of the Colorado River.

Grasslands

There are over 11,748 acres of grasslands within the study area. Wharton County grasslands are characterized by the Blackland Prairie ecoregion with tallgrass prairie to the Gulf Coastal Prairie ecoregion with tallgrasses and mid-grasses prairies. Many of the original prairie lands have been lost due to conversion of the land to farmland and cattle ranching. The high quality grasslands include the native vegetation including big bluestem, little bluestem, switchgrass, and sideoats. However, many of these have been converted to low habitat quality coastal Bermuda, King Ranch Bluestem, Johnson grass, and other range grasses that support cattle grazing or converted to rice fields.

CULTURAL RESOURCES

There have been few archeological investigations performed in the city of Wharton study area. Twelve recorded prehistoric archeological sites are in the vicinity of the study area. Seven sites are located north of Hwy 60, east of town along Caney Creek. One of these sites is the Crestmont Site (41WH39), an archaic burial site (Vernon 1987). Five sites are recorded along Peach Creek to the north of town; two sites (41WH4 and 41WH5) are located approximately 1.25 miles west of Hwy 59, and three sites (41WH40, 41WH74 and 41WH12) are found approximately 1.5 miles east of Hwy 59.

There is a potential for prehistoric archeological sites adjacent to both Baughman's Slough and the Colorado River, and many historic structures and districts within the project area that are listed on or potentially eligible for the National Register of Historic Places (NRHP).

In December 2005, The U.S. Army Corps of Engineers, Galveston District (USACE) Staff Archeologist conducted a cultural resources survey of the proposed levee alignment along the Colorado River. The purpose of the investigation was to identify and delineate any cultural resources located within the study area. The intensive pedestrian survey of 100 percent of the proposed levee alignment was supplemented by the systematic excavation of 5 shovel tests. All of the tests proved negative for cultural resources.

A cultural resources survey of Baughman's Slough was conducted by the USACE Staff Archeologist in June of 2006. No previously recorded archeological sites exist within this portion of the proposed levee alignment. Approximately 80 percent of the project area was investigated by a combination of pedestrian survey and shovel testing. A total of three shovel tests were excavated. All shovel tests proved negative for cultural resources. The proposed levee alignment is mostly pasture and rice fields and the channel shows signs of erosion. An inspection of the cut bank was negative for deeply buried cultural resources.

In June of 2006, The USACE contracted Prewitt and Associates, Inc. to perform a preliminary historic resources investigation the project area, which included intensive archival and historic map research combined with a windshield survey of historic resources.

Archival and historic map research identified numerous NRHP listed individual properties and historic districts in the study area; most notably, the Wharton County Courthouse Historic

Commercial District, the West Milan Street Mercantile Historic District and the Texas & New Orleans Railroad Bridge. The courthouse, constructed in 1889, is undergoing restoration with funding from the Texas Historic Courthouse Preservation Program.

Several NRHP eligible individual properties were identified in the study area including two long-established African American communities that retain many aspects of their early twentieth-century development.

Fieldwork consisted of a windshield survey to document listed or potentially eligible NRHP historic districts and individual properties with overall representative photographs. Approximately 90 resources were documented as representative of property types and listed or potentially eligible resources that may be in the study area. This included residential and commercial architecture, structures and historic landscapes.

RECREATION

LOCAL RECREATIONAL RESOURCES

Recreational facilities within the city include 10 small city parks, twelve tennis courts, and one private golf course and country club. The Colorado River Side Park contains picnic areas, children's playground equipment, volleyball court, restrooms, paved paths and limited access to the Colorado River for water-based recreational opportunities. According to Ms. Jones, the riverside park does not provide access for watercraft, which is desired by the community, and there are no trail-based activities within the city. The nearest public boat access ramp is the "David Hall Ramp" upstream, and is considered by Ms. Jones to be unsafe. Other than this ramp, the cities of Columbus and Bay City have the nearest boat ramps to the Wharton area.

According to the City Manager, Wharton utilizes the school facilities for most organized recreation. Hunting recreation is available within the county, particularly for ducks and geese. Lake Texana is 35 miles from the City. The Brazos Bend State Park is within easy access to the residents; however, according to local sources, the park is often closed, because visitor capacity limits are exceeded.

The Pierce Ranch, home of Karankawa Plains, is a working ranch that offers various recreational opportunities to the public for a fee, including bed and breakfast facilities, big game, upland and waterfowl hunting, horse back riding, nature tourism and wildlife viewing in spring and summer, fishing (from man-made ponds), and canoeing opportunities. The Wharton Chamber of Commerce partners with the ranch to conduct ranch tours, which is a popular attraction for wintering tourists.

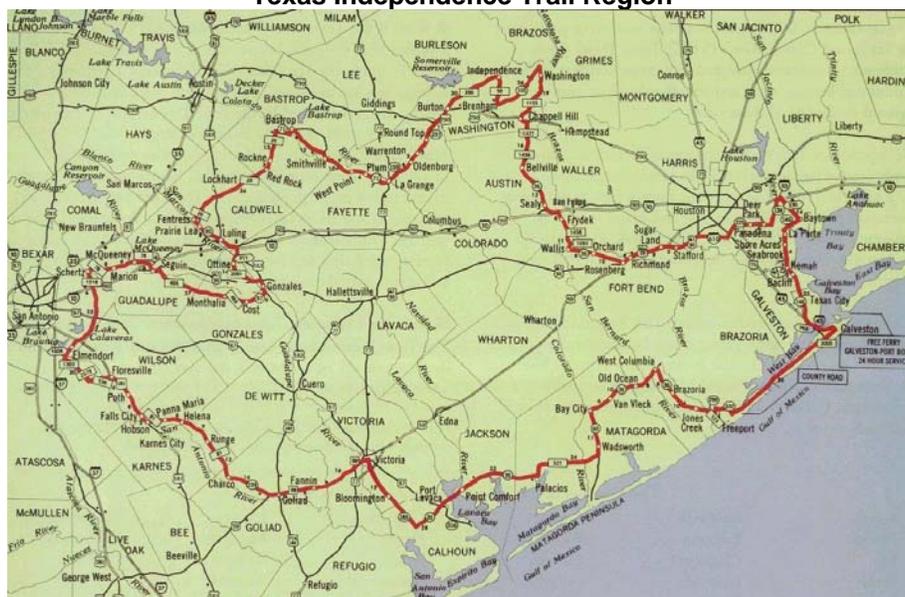
Farmland, particularly rice fields, in the area is often marketed to goose and duck hunters. There is an active chapter of Ducks Unlimited in Wharton that is working with landowners to manage farmlands for waterfowl species. There should be some concern with attracting migrating waterfowl due to the presence of the airport; however, no current problems were identified as existing.

Wharton receives significant drive-through tourism, particularly in the winter season, which is spurring the recent growth in the Bed-and-Breakfast and nature-based tourism markets. Other towns within the area are beginning to establish RV facilities and camping to market to these groups. With the close proximity to the Gulf Coast and the popularity of the Great Texas Coastal Birding Trails, significant tourism travels through the Wharton vicinity.

REGIONAL RECREATIONAL RESOURCES

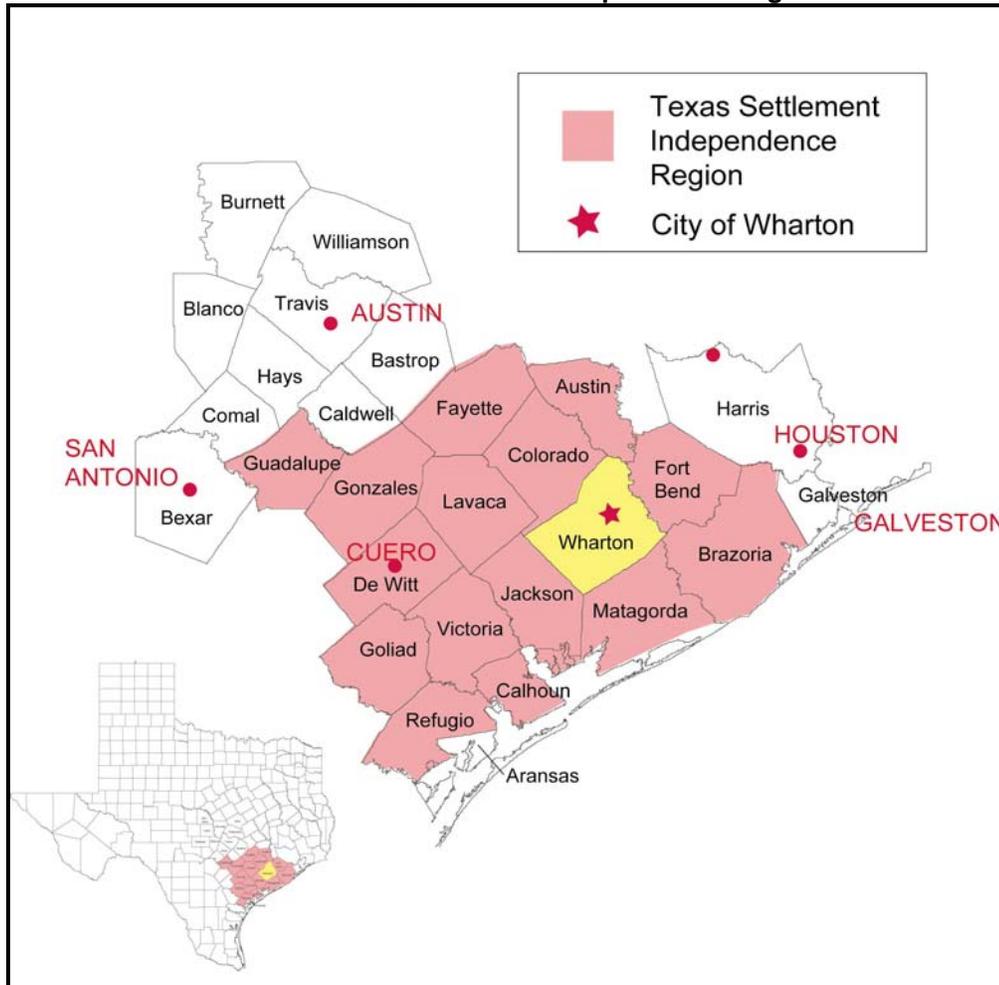
Wharton County is part of the Texas Settlement Independence Region and the Texas Independence Trail. The Texas Independence Trail is an auto-trail (Figure 2-5) and was designated by the Texas Department of Highways in 1968. The trail region includes 28 counties from Liberty (east of Houston) along the Gulf Coast to Refugio (south of Victoria) to San Antonio (Bexar County) in the west and to Washington County in the north. It was designed with the purpose of encouraging travelers to experience the spirit of the Texas Independence Story. More information regarding the auto-trail can be obtained at the Texas Independence Trail Region Website www.texasindependencetrail.org.

Figure 2-5
Texas Independence Trail Region



The Texas Settlement Independence Region (Figure 2-6) was organized in 1998 a conglomeration of 17 counties, including Aransas, Austin, Brazoria, Calhoun, Colorado, DeWitt, Fayette, Fort Bend, Goliad, Gonzales, Guadalupe, Jackson, Lavaca, Matagorda, Refugio, Victoria and Wharton. The mission statement of the Texas Settlement Independence Region is “to protect, enhance and interpret our region’s history, culture and natural attractions to promote our region as a heritage tourism destination”. The region has recently been adopted into the Texas Historical Commission’s new Texas Travel Trails program. Current efforts of the organization are to compile information for publications and to develop promotional literature and maps. The group has determined that the region’s unique identity is linked to the birth of the Republic and the State of Texas, and thus is focusing on “Texas’ First Settlements”. They have joined with six museums to “interpret the LaSalle Odyssey, using artifacts recovered from the Belle shipwreck in Matagorda Bay, and from the excavation of Fort St. Louis. It also envisions a re-creation of Fort St. Louis on Tonkawa Bluff in Riverside Park, Victoria, TX. In addition to these, the El Campo Chamber of Commerce supplies guided tours of more than 20 outdoor building murals, which reflect the city of El Campo’s heritage.

**Figure 2-6
Texas Settlement Independence Region**



Wharton is also included in the Great Texas Coastal Birding Trail System, and has the potential of supplying overnight and long-term accommodations for wintering tourists interested in visiting the various birding trails in the region.

OTHER SOCIAL RESOURCES

POPULATION AND STATISTICS

Wharton County had a population of 41,188 in 2000, an increase of 3% over 1990. The 2000 population ranked 68th out of 254 counties in the state of Texas. Per capita income was \$23,212 and ranked 64th in the state. In 2000, the county's population was approximately 53% Anglo, 31% Hispanic, and 15% African-American. Approximately 54.1% of Wharton County residents were between the ages of 20-64, 32.1% were under 20 years of age, and 14% were over 65. The population of the city of Wharton is approximately 10,000, with the city serving an area of approximately 19,000 residents. (2000 Census).

NOISE

Pursuant to the Noise Control Act of 1972 as amended by the Quiet Communities Act of 1978, the EPA has developed appropriate noise-level guidelines. The EPA generally recognizes an average day-night noise level (Ldn) of less than 50 decibels a-weighting (dBA) (USEPA, 1978) for rural areas and between 55 and 60 dBA for urban areas. Hearing loss could result if the average outdoor noise level is in excess of 70 dBA or more for 24 hours over a 40-year period (USEPA, 1974). Several factors affect response to noise levels, including background level, noise composition, and level fluctuation, time of year, time of day, history of exposure, community tolerance, and individual emotional factors. In general, people are more tolerant of a given noise if the background level is closer to the level of the new noise source. People are more tolerant of noises during daytime than at night when background noise normally diminishes, increase sound awareness. Residences are more tolerant of an activity if it is considered to benefit the economic or social well-being of the community or them individually. Noise levels have a much greater affect on outdoor than indoor activities. The project area is located within the City of Wharton. Sound levels in the project area are affected by vehicular traffic on local highways and roads, construction activities in the area, and commercial and residential activities.

TRAFFIC

Traffic within the proposed project areas generally consists of the typical types of traffic flows associated with a small town of less than 10,000 residents. U.S. 59 is the major thoroughfare in the County, and crosses the all streams within the study area. There are also numerous small county road and residential streets within the study area.