

July 15, 2021

Mr. Eddie Trevino, Jr.
Cameron County Judge
1100 E. Monroe St. Ste. 218
Brownsville, Tx 78520

RE: Preliminary Engineering Report
Cameron County Drainage District No. 6

Dear Judge Trevino,

Attached please find the Preliminary Engineering Report for the creation of the proposed Cameron County Drainage District No. 6 (CCDD #6). Based upon our analysis of the maintenance and improvements necessary within the boundaries of the proposed CCDD #6, we recommend that a tax rate of \$0.15 cents per \$100.00 valuation should be levied to properly maintain the existing ditch system and incrementally construct Capital Improvement Projects (CIP) within the proposed district boundary.

The initial assessment of CCDD #6 CIP Projects, as delineated in this report, cost a total of approximately \$62,000,000 with approximately \$8,500,000 in CIP Projects being funded directly by the proposed district initially. Based upon the assessed valuations reported by the Cameron County Appraisal District, the tax rate of less than \$0.085 cents per \$100.00 valuation would be necessary to retire \$8,500,000.00 worth of bonded indebtedness for these improvements with the remainder of the tax rate, \$0.065 cents per \$100, dedicated to operations and maintenance.

It is our engineering opinion that these improvements are necessary, the existing population would greatly benefit from these improvements, that the future growth of the area is dependent upon these improvements, and that if such improvements are not made, the frequency and severity of flooding within the area will likely increase as development continues. It is our recommendation that this matter be placed before the voters at the next possible election, and we hope that the public agrees with the necessity of these improvements.

We appreciate the opportunity to assist Cameron County in this very important endeavor and are available to answer any questions that may arise concerning this report.

Respectfully,



Christopher Rodriguez, P.E., C.F.M.
VP / Director of Engineering

**PRELIMINARY ENGINEER'S REPORT
FOR THE CREATION OF**

**CAMERON COUNTY
DRAINAGE DISTRICT NO. 6**

**COMMISSIONED BY
CAMERON COUNTY COMMISSIONER'S COURT**

EDDIE TREVIÑO, JR. COUNTY JUDGE

**SOFIA BENAVIDEZ
COMMISSIONER PRECINCT #1**

**JOEY LOPEZ
COMMISSIONER PRECINCT #2**

**DAVID A. GARZA
COMMISSIONER PRECINCT #3**

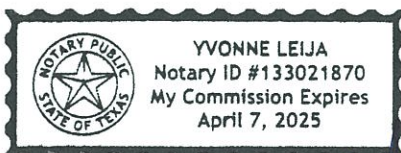
**GUS RUIZ
COMMISSIONER PRECINCT #4**

PREPARED BY:



**THIS DOCUMENT IS FOR PUBLIC
REVIEW AND COMMENT ONLY**

IN CONJUNCTION WITH:



U. LeiJa 7/14/2021

TABLE OF CONTENTS

- I. INTRODUCTION**
- II. DISTRICT WATERSHED BOUNDARY**
 - A. General
 - B. Land Use
 - C. Topography
 - D. Climate and Past Historic Rainfall Events
 - E. Drainage Areas
 - F. Boundary Description
- III. OPERATION AND MAINTENANCE**
 - A. General
 - B. Operating Methods
 - C. Annual Operations & Maintenance Cost Estimates
 - 1. Force Account
 - 2. Contract Services
 - 3. Intergovernmental Agreement
 - D. Recommended Operations Plan
 - E. Computation of Proposed Operation & Maintenance Tax Rate
 - F. Comparison of Tax Rates
- IV. PROPOSED IMPROVEMENT PLAN**
 - A. General
 - B. Main Drains and Lateral Drain Improvements
 - 1. Rabb Drain Basin - Main Canal Piping
 - 2. AN-47 Drain Basin - East Ditch Widening
 - 3. Main Drain Widening
 - 4. Parker Drain Widening (Tio Cano Lake Overflow)
 - 5. Parker Drain Basin - Ovalle Lateral Connectivity
 - 6. Parker Drain Basin - Southwest Ditch Widening
 - 7. AN-47 Drain Basin - Clark Road Ditch Improvements
 - C. Regional Detention Facilities (RDF)
 - 1. Main Drain RDF
 - 2. Parker Drain RDF
 - D. Pump Stations
 - 1. Floodway Pump Stations (Cantu, Main, Parker, Thompson, and Adams Garden Drains)
 - 2. Tio Cano Lake Pump Station
 - E. Right of Way
 - F. Cost Estimates
 - 1. General
 - 2. Right of Way and Land Acquisition
 - 3. Construction Costs

4. Planning, Engineering and Design
5. Contingency
6. Cost Estimates
 - Rabb Drain Basin - Main Canal Piping
 - AN-47 Drain Basin - East Ditch Widening
 - Main Drain Widening
 - Parker Drain Widening (Tio Cano Lake Overflow)
 - Parker Drain Basin - Ovalle Lateral Connectivity
 - Parker Drain Basin - Southwest Ditch Widening
 - AN-47 Drain Basin - Clark Road Ditch Improvements
 - Main Drain RDF
 - Parker Drain RDF
 - Floodway Pump Stations
 - Tio Cano Lake Pump Station

G. Design

1. General

H. Computation of Capital Improvement Tax Rate

I. Environmental Criteria

V. RECOMMENDATIONS

A. General

B. Proposed Improvement Schedule

VI. ATTACHMENTS

A. Capital Improvement Project Map

B. Plan Layouts

- 1) Rabb Drain Basin - Main Canal Piping & AN-47 Drain Basin - East Ditch Widening
- 2) Main Drain Widening
- 3) Parker Drain Widening (Tio Cano Lake Overflow)
- 4) Parker Drain Basin - Ovalle Lateral Connectivity & Southwest Ditch Widening
- 5) AN-47 Drain Basin - Clark Road Ditch Improvements
- 6) Main Drain RDF
- 7) Parker Drain RDF
- 8) Floodway Pump Stations
- 9) Tio Cano Lake Pump Station

C. Cameron County Drainage District No. 6 Boundary Map

D. Digital Elevation Map

E. Fema Floodzone Map

F. Drainage Watershed Map (Existing)

G. Drainage Watershed Map (Proposed)

H. Hydrologic Conditions Maps

I. Historical Rain Gauge Data

INTRODUCTION



INTRODUCTION

Recurring flood events within the unincorporated areas of Cameron County, the boundary of La Feria Irrigation District Number 3, as well as the former Adams Gardens Irrigation District, and the cities of LA Feria and Santa Rosa have led to the citizens of the area to petition the Cameron County Commissioner's Court to authorize this study on the feasibility and cost to create a new drainage district. Said District, which will be named Cameron County Drainage District No. 6, shall be created under Article III, Section 52 of the Texas Constitution and Chapter 56 of the Texas Water Code. The District will curtail the severe flooding of the watershed located in northwest Cameron County, by identifying, studying, funding, and constructing improvements to the existing drainage system and provide continued maintenance. Cameron County Drainage District No. 6 will encompass and serve 36,721 acres. Flooding within the area has increased in occurrence and severity due to a number of factors. The continuing urbanization of the area and the inability of the Irrigation District to fund improvements and maintenance for urban drainage have combined to exacerbate the drainage problem.

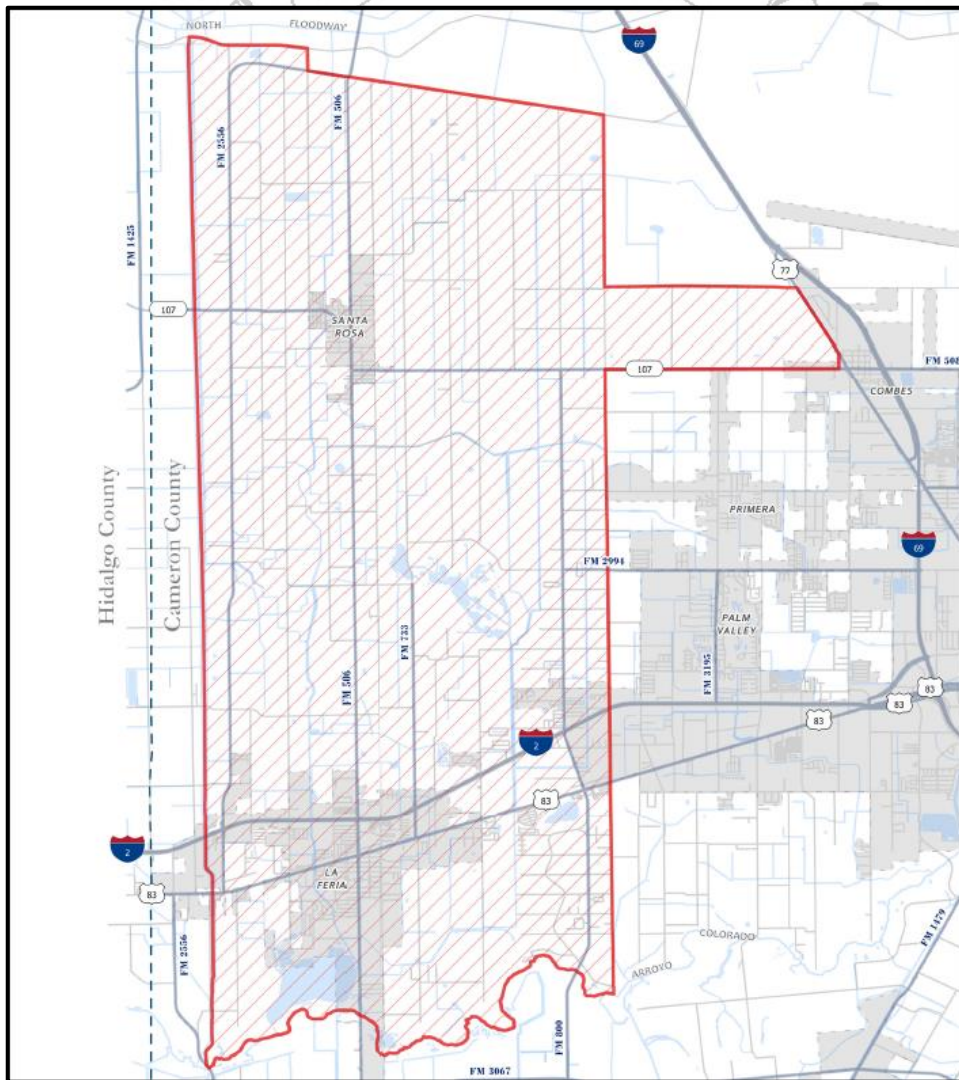


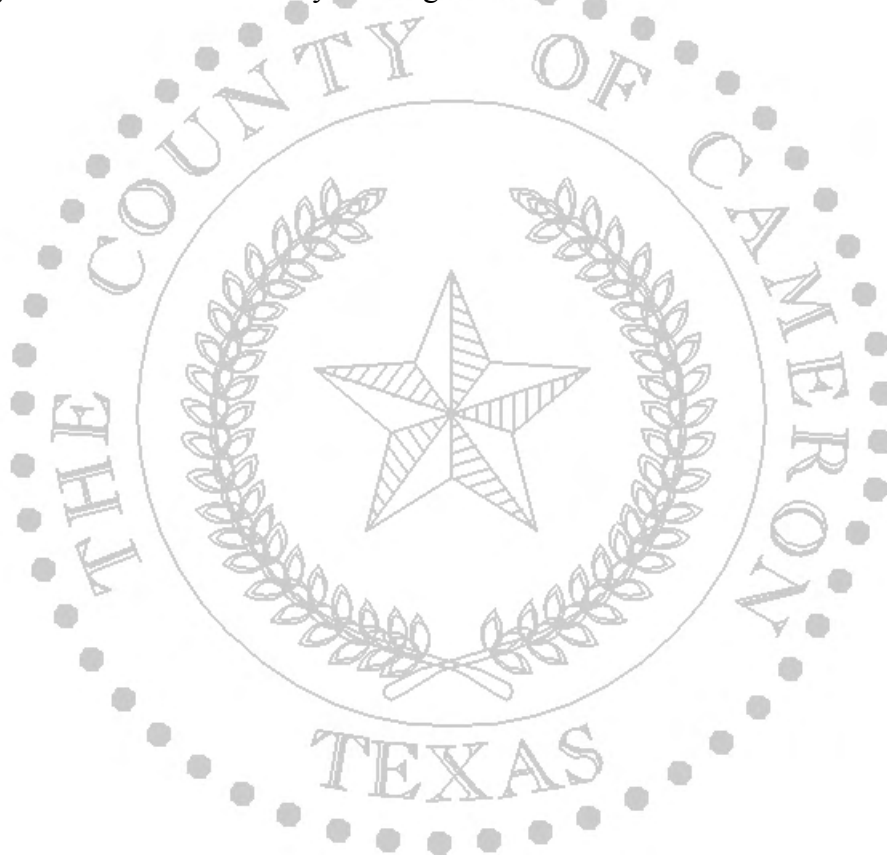
Figure 1. Cameron County Drainage District No.. 6 Boundary

It is important to note the increasing frequency of flood events within recent years. For 3 summers in a row, significant to locally devastating flooding inundated parts of the Rio Grande Valley and in particular Cameron County. Data from the National Oceanic and Atmospheric Administration shows average rainfall of 12 inches for each of the events listed.

| Date | Description | Rainfall | Damages and Extent of Flooding |
|-----------|---------------------|---|---|
| July 2020 | Hurricane Hanna | 8-15 inches from Port Mansfield to Harlingen, and along Interstate Highway 2. | 18 inches to up to 4 feet of flood waters in many areas between Santa Rosa/La Feria (Cameron). Crop damage overall was \$177 million in South Texas, the majority in the Rio Grande Valley. When including economic/production losses, the preliminary total was estimated at \$366 million. |
| June 2019 | Great June Flood II | Over a foot of rain fell in about six hours, including a peak total of more than 15 inches near Santa Rosa. | Hundreds of streets flooded, including 30 Texas-managed highways. 1,188 homes were considered "destroyed" or incurring "major" damage requiring significant repairs. An additional 182 homes sustained "minor" damage or were mildly affected. More than 100 persons were evacuated to higher ground when dozens of homes were threatened by 2 to 4 feet of water in each county. In northwestern Cameron County, total neighborhoods were inundated with 1 to 3 feet of water in northwest Harlingen, Santa Rosa (where some reports noted 4 feet of water depth), and Combes. |
| June 2018 | Great June Flood | In general, between; 8 to 17 inches in Cameron County. | At least 20,000 residences and businesses considered "affected" by the floods. Including more than 7,400 residences and businesses in Cameron and Willacy County with flood damage defined as minor to destructive by FEMA Standards. More than 600 persons in at least 10 shelters at the peak of the area-wide flooding. Several thousand vehicles with varying degrees of flood damage. Dozens to hundreds of roads, from neighborhood streets to major thoroughfares and frontage roads, closed during and after peak flooding. More than 2,000 rescues from vehicles and homes were conducted. Public infrastructure damage of at least \$50 million in Cameron and Willacy County alone. |

Additional Event logs effecting Cameron County and area within the boundaries of Drainage District No. 6 can be found in the Section II “District Watershed Boundaries”. Historical rainfall and even data clearly show the need to implement a Drainage District that will mobilize to initiate the needed improvements for this part of Cameron County which is in dire need of substantial drainage infrastructure.

The report herein is based upon preliminary hydrological and hydraulic analysis of the proposed drainage infrastructure projects as well as Key Stakeholder input from Cameron County, City of Santa Rosa, City of La Feria, and Irrigation District No 3. The report details the watershed boundary characteristics, capital improvement plan and the associate cost to develop and deliver the projects, operational and maintenance cost, and taxation recommendations to be able to leverage additional Federal & State funding for the construction and long term maintenance of the proposed projects for Cameron County Drainage District No. 6.



DISTRICT WATERSHED BOUNDARY



GENERAL

The proposed Cameron County Drainage District No. 6 watershed is located in the northwestern part of Cameron County, Texas. It will encompass a majority of the La Feria city limits, the entirety of the town of Santa Rosa, a small portion of the town of Combes, and some of the surrounding unincorporated areas within the La Feria Irrigation District No. 3 and the former Adams Gardens Irrigation District. As such, the district limits will include various irrigation canals of those districts, as well as the La Feria Reservoir and Tio Cano Lake. The land within the boundary has been predominately used for agriculture in the past, though the region has seen significant growth with suburban communities being developed throughout.

The proposed district can be generally defined as being bounded by the Arroyo Colorado to the south, the Willacy Irrigation Canal to the west, a combination of Ballenger Road and Orphanage Road to the north, both located near the North Floodway, and lastly by Tamm Lane to the east. There is also a portion towards the north end of the east boundary that juts out and extends to Business 77. The west boundary runs parallel and near the western limits of Cameron County. The proposed boundary will abut to Cameron County Drainage District No. 5, which is located to the southeast. The two districts will share limits along Tamm Lane and along Combes Santa Rosa Road. The boundary will enclose a total of 36,721 acres of land within Cameron County. A further detailed description of the proposed district boundary can be found under section "District Boundary". See the attached map in Attachment A showing the proposed boundary of the new drainage district.



LAND USE

Land use within the proposed district has undergone significant change and growth over the last thirty years, changing from small, agricultural communities with acres of undeveloped land to suburban communities. This is similar to most of the communities in the Lower Rio Grande Valley, as the area has transformed into a more urbanized use within one of the fastest growing metropolitan regions in the State of Texas. This urbanization is apparent along with the noted increases in population in the last few decades as shown on Tables 1 and 2, which shows at least an increase of 20 % in population in five out of the last six decades. From 125,170 habitants in 1950 to 406,220 habitants in 2010, the population of the county more than tripled.

TABLE 1 – Census Data of Cameron County

| Year | Population | % Population Growth |
|------|------------|---------------------|
| 1950 | 125,170 | - |
| 1960 | 151,098 | 20.71% |
| 1970 | 140,368 | -7.10% |
| 1980 | 209,727 | 49.41% |
| 1990 | 260,120 | 24.03% |
| 2000 | 335,227 | 28.87% |
| 2010 | 406,220 | 21.18% |

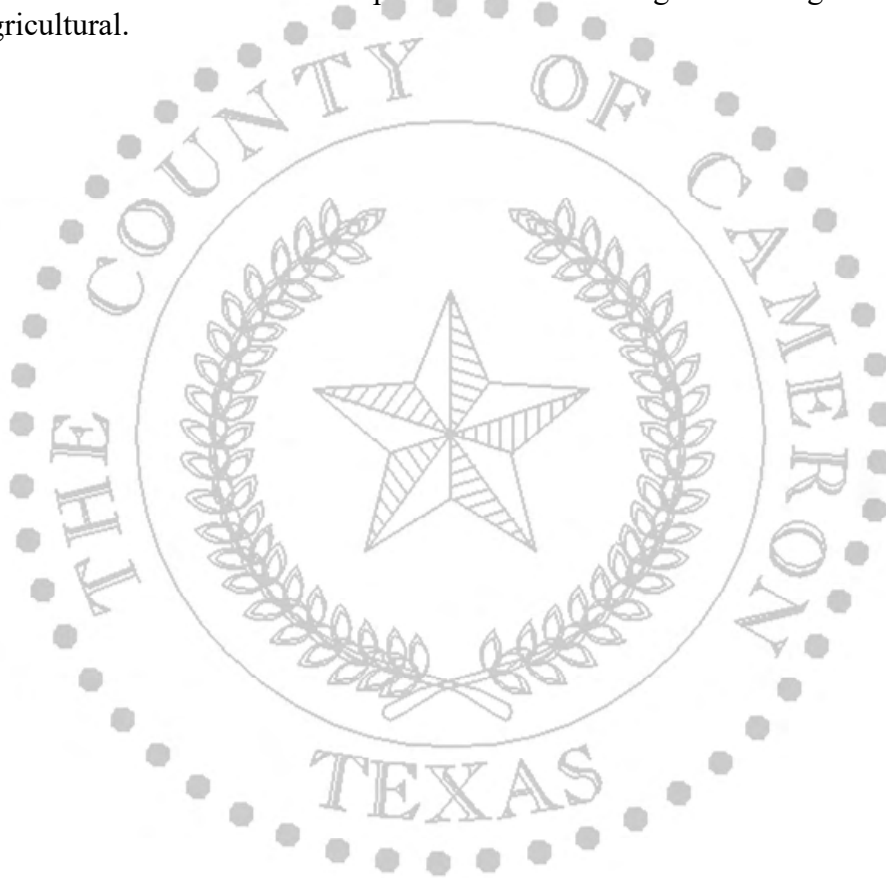
Source: United States Census Bureau (<https://www.census.gov>)

TABLE 2 – Census Data of LA Feria and Santa Rosa

| Year | La Feria, Texas | Santa Rosa, Texas | Total | % Population Growth |
|------|-----------------|-------------------|--------|---------------------|
| 1950 | 2,952 | 400 | 3,352 | - |
| 1960 | 1,644 | 1,572 | 3,216 | -4.06% |
| 1970 | 2,642 | 1,466 | 4,108 | 27.74% |
| 1980 | 3,495 | 1,889 | 5,384 | 31.06% |
| 1990 | 4,360 | 2,223 | 6,583 | 22.27% |
| 2000 | 6,115 | 2,833 | 8,948 | 35.93% |
| 2010 | 7,302 | 2,873 | 10,175 | 13.71% |

Source: United States Census Bureau (<https://www.census.gov>)

This growth translates into increased developmental pressures on the remaining undeveloped land within the area. As land use changes with development, increases in the impervious cover reduce the ability of the land to allow for infiltration of rainfall and thus larger amounts of runoff will either have to be accounted for or if not, it could lead to additional flooding. As older residential areas were often developed without much consideration to the regional hydrology characteristics and downstream impacts, before the adoption of the National Flood Insurance Program (NFIP), there are existing areas throughout the region which are already prone to flooding. Recent development has exacerbated the problem by causing an increase in the magnitude and in some cases the frequency of flood events. The projected growth and continued urbanization of the property within the district will only worsen the problem, unless improvements to the existing drainage systems are made. Currently, it is estimated that approximately 20 % of the land within the District 6 boundaries have been developed with the remaining 80 % being either undeveloped or used for agricultural.



TOPOGRAPHY

The natural topography of Drainage District 6 is that of which is typical of the Rio Grande River Delta Plain, the area is a smooth, virtually featureless plain, and nearly flat; with the area generally sloping to the northeast. Due to the exceptionally flat terrain within the region, excess storm water typically proceeds as runoff in the form of sheet flow, as such the runoff has difficulty concentrating and proceeds at lower velocities without sufficient force to cause erosion. Consequently, there are not many natural surface drainage channels within the County. The southern border of the proposed district is the Arroyo Colorado one of the few natural streams within the region. See Attachment B, which shows the existing grades within the new drainage district boundary.

In 1935, the Rio Grande floodway, a system of dams, levees, and channels, was completed to reduce the extent of flooding along the Rio Grande. This system, operated by the International Boundary and Water Commission (IBWC), partially diverts flood flows of the Rio Grande into the Main Floodway, where runoff is then spilt to the North Floodway and the Arroyo Colorado. This man-made drainage channel, the North Floodway, provides drainage relief to the upper two-thirds of the proposed district, while the Arroyo Colorado provides drainage relief to the lower third of the proposed district.

Drainage in Cameron County is served by a network of manmade ditches that carry excess runoff, some of which were constructed in the early 1900s. The absence of topographic relief and the limited capacity of the drainage ditches are the major factors that contribute to flooding in the County. Due to the relative flatness of the terrain and the high ground water table, drainage ditches must be rather shallow and wide in order to have adequate capacity. In Cameron County, slopes along a ditch flow line of less than 1 foot per mile are fairly common.

Overland runoff flows from the surrounding areas into these manmade drainage ditches, though there are numerous obstructions such as elevated canal levees, dikes, roadways, railroad embankments that tend to impede this flow. This in combination with the flat terrain and low infiltrating soils all combine to make shallow ponding of rainfall runoff the most common type of flooding. Ponding can be widespread and usually relatively shallow, in most cases less than a foot deep, though in some areas it can persist for weeks after a large storm has passed. See the attached map in Attachment C, which shows the FEMA Flood Zones within the new drainage district boundary.

CLIMATE AND PAST HISTORIC RAINFALL EVENTS

Cameron County has a subtropical and semiarid climate, with an average annual rainfall measured in inches, in the mid to high twenties. Being located along the Gulf Coast it is subject to intense rainfalls from thunderstorms, tropical depressions and hurricanes that develop in the Gulf of Mexico in late summer and early fall. As such, much of the yearly precipitation in Cameron County typically occurs in a few intensive rainfall events, as opposed to smaller more frequent storm events. Over the last 10 years, there has been 15 storm events where more than 5 inches of rain have been recorded. See Attachment H, which shows all the recorded rain gauge data within Cameron County gathered during severe rainfall events where the total precipitation exceeded 5 inches, dating back to 2007. Table 3 below lists some historic rainfall events that have affected Cameron County, with the magnitude of rainfall, the extent of flooding and subsequent damages.

TABLE 3 – Historic Rainfall Events

| Date | Description | Rainfall | Damages and Extent of Flooding |
|-----------|---------------------|---|---|
| July 2020 | Hurricane Hanna | 8-15 inches from Port Mansfield to Harlingen, and along Interstate Highway 2 out through Mission and Sullivan City. | 18 inches to up to 4 feet of flood waters in many areas between Santa Rosa/La Feria (Cameron) and east of Edinburg, as well as in the Mission/La Joya/Sullivan City area (Hidalgo). Crop damage overall was \$177 million in South Texas. When including economic/production losses, the preliminary total was estimated at \$366 million. |
| June 2019 | Great June Flood II | Over a foot of rain fell in about six hours, including a peak total of more than 15 inches near Santa Rosa. | Hundreds of streets flooded, including 30 Texas-managed highways. 1,188 homes were considered "destroyed" or incurring "major" damage requiring significant repairs. More than 100 persons were evacuated to higher ground when dozens of homes were threatened by 2 to 4 feet of water in each county. In northwestern Cameron County, total neighborhoods were inundated with 1 to 3 feet of water in northwest Harlingen, Santa Rosa (where some reports noted 4 feet of water depth), and Combes. |

TABLE 3 – Historic Rainfall Events (Continued)

| Date | Description | Rainfall | Damages and Extent of Flooding |
|-----------|------------------|---|--|
| June 2018 | Great June Flood | In general, between 12 and more than 18 inches fell in the McAllen/Mission area, up to 16 inches fell near Weslaco, with the potential of 18 inches between Weslaco and Mercedes; 8 to 17 inches in Harlingen ; 10 to 15 inches between Brownsville and Los Fresnos. | At least 20,000 residences and businesses considered "affected" by the floods. Including more than 7,400 residences and businesses in Cameron and Willacy County with flood damage defined as minor to destructive by FEMA Standards. More than 600 persons in at least 10 shelters at the peak of the area-wide flooding. Several thousand vehicles with varying degrees of flood damage. Dozens to hundreds of roads, from neighborhood streets to major thoroughfares and frontage roads, closed during and after peak flooding. More than 2,000 rescues from vehicles and homes were conducted. Public infrastructure damage of at least \$50 million in Cameron and Willacy County alone. |
| June 2010 | Hurricane Alex | Steady, locally torrential rains added up to roughly 6 to 9 inches for the entire episode across the Lower Rio Grande Valley, and 4 to 6 inches elsewhere. Some locations may have received nearly 10 inches of rain. | An estimated 9,000 customers without power across the Rio Grande Valley during the storm, 8,000 in Cameron County alone. Though property damage was minimal throughout the Lower Rio Grande Valley, nearly \$10 million in sorghum grain damage alone was reported in Hidalgo County. The heavy rains flooded many poor drainage locations across the Lower Valley, but nowhere near the impact Hurricane Dolly had in 2008. For Alex, modestly dry conditions through June allowed some of the rains to soak into the ground, reducing the impact of urban and flash flooding. |
| July 2008 | Hurricane Dolly | Torrential rains slammed deep South Texas out of a drought, bringing monthly rain totals in some cases to at least three times average and shattering all time July records in the Lower Rio Grande Valley. With 6 to 14 inches in Hidalgo, Willacy, and Cameron Counties, with locally more than 18 inches possible in northern Cameron and southern Willacy Counties. | Numerous roads and neighborhoods, particularly across northern Cameron County, remained flooded for several days. In some areas, where ground drainage was poor, the flooding persisted into August. These areas included neighborhoods across western Cameron County, including La Feria and Santa Rosa , as well as others from San Benito through Harlingen, Rio Hondo, and extending toward Arroyo City, and continuing in some neighborhoods near Bayview and Laguna Heights. Reported insured flood damage from FEMA's National Flood Insurance Program is \$171 thousand; however, it is estimated that the vast majority of flood damage occurred to uninsured properties, and including agricultural losses, will likely push total flood-related damages up to \$300 million. |

TABLE 3 – Historic Rainfall Events (Continued)

| Date | Description | Rainfall | Damages and Extent of Flooding |
|----------------|-------------------|--|--|
| May 2007 | | Strong thunderstorms brought between 8-12 inches of total accumulated rainfall in southwest Willacy County and northern Cameron County over a 24 hour period, based on spotter reports, surface observations, and radar estimates. | Texas Department of Transportation reported flash flooding of Farm to Market Road 506 and Farm to Market Road 107 in Santa Rosa with one and a half feet of water covering the roads. Texas DPS reported water covering U.S. Highway 77 in Combes. |
| September 2003 | | Portions of Hidalgo, Willacy and Cameron counties experienced heavy rains during a 5 day period. Cameron County received 6 to 12 inches of rain, with Bayview, reporting 12.74 inches, 12.05 inches falling at Port Isabel, 9.69 falling at Los Fresnos, and 7.87 inches at Brownsville. | The heavy rains caused extensive flooding of urban areas and long-lasting flooding of low-lying areas. Damage reports from Cameron county officials indicate, that approximately 467 homes were affected by flooding rains. Another 175 homes and businesses in Hidalgo and Willacy counties were also affected. |
| April 1991 | | Extensive rainfall over Harlingen, Palm Valley, Combes, Primera, La Feria and San Benito. Most of rain fell within 6 hours. | In excess of \$12.5 million in damages, including \$3-5 million in public facilities and thousands of homes and cars. |
| September 1988 | Hurricane Gilbert | Storms dumped a little over 6 inches of rain. | Minor damage reported in Texas, 327 deaths mostly in Mexico, total damage estimated at \$5.5 billion. |
| September 1984 | | Heavy rains, some exceeding 20 inches, drenched the lower Rio Grande Valley. | Worst flooding in Cameron County since Hurricane Beulah; approximately 50 percent of the eastern Cameron County flooded. |
| February 1982 | | Storms dumped 6 inches of rain in less than 3 hours at Harlingen. | \$250,000 damage in Cameron County. |
| September 1967 | Hurricane Beulah | 15-25 inches in South Texas, with isolated pockets around 30 inches | 58 deaths (15 in Texas), \$217 million USD in 1967, which equates to \$1.75 billion USD in the present. Water levels at Tio Cano Lake rose to 46 feet above mean sea level. |

DRAINAGE AREAS

The watershed of Cameron County Drainage District No. 6 can generally be summarized as three overall basins. The smallest basin (approximately 5,587 acres) drains to the south and outfalls at the Arroyo Colorado, and the largest basin (approximately 13,668 acres) drains to the north and outfalls at the North Floodway; whereas the middle portion of the district (approximately 8,323 acres) drains to a natural depression where no outfall is present, this area is known as Tio Cano Lake. It is important to note that scattered throughout the district there are other localized depressions where there are no apparent outfalls, though they are of a much smaller scale. The 3 basins were further delineated into 8 sub-watersheds for the numerous drains and lateral drains located throughout the district. The southernmost basin was delineated into 2 sub-watersheds, and the northernmost basin was delineated into 5 sub-watersheds. See Attachment E, which shows the existing watershed boundaries within the proposed drainage district.

The smallest (approximately 1,217 acres) and most southwestern sub-watershed is of a drainage channel network that services the area southwest of La Feria. The primary main drain that serves this area is the Rabb Drain. This drain outfalls to the Arroyo Colorado, runs along the west limits of the La Feria Reservoir and extends north towards Business 83.

The third largest sub-watershed (approximately 4,370 acres) is of the drainage channel which is the primary means of drainage for the City of La Feria, as it drains the entire city limits with exception to a small portion of the southwest corner of the city. This drainage main, which is named AN-47 Drain, starts on the west side of the city and runs north across Business 83 and US Expressway 83, then turns east and runs across FM 506, then turn south and again crosses Business 83 and US Expressway 83. The channel continues to run to the southeast through a series of ninety degree turns until its eventual outfall at the Arroyo Colorado.

The largest sub-watershed (approximately 8,323 acres) is that for the Tio Cano Lake basin, which is located between the cities of Santa Rosa and La Feria. The area is a natural depression in the topography of Cameron County, where there is no outfall and rainfall naturally seeks to fill the lakebed. The lake provides an approx. capacity of 17,500 acre-foot storage area for excess stormwater runoff during typical storm events, though during more severe storm events the area is prone to substantial flooding. There are several drainage channels particularly along the west end of the lake that extend in multiple directions that assist in collecting runoff and directing it to the lake.

The largest basin is for the northern and most eastern portions of the proposed drainage district. This basin is composed of five sub-watersheds of paralleling drainage channels that drain from south to north and outfall at the North Floodway. From west to east, these drainage mains are the Cantu Drain, Main Drain, Parker Drain, Thompson Drain, and Adams Garden Drain. The Cantu Drain will drain a basin of 664 acres of predominately agriculture land with a handful of residential structures in the very northwest section of the proposed drainage district. The Main Drain will drain a basin of 2,419 acres also of predominately agriculture land but includes several dozen residential properties as it includes the northwest portion of Santa Rosa. The Parker Drain will drain a basin of 1,898 acres, including a majority of Santa Rosa. The Thompson Drain will drain a basin of 2,946 acres of agriculture and residential properties to the east of Santa Rosa. Both of the drainage basins for Parker Drain and Thompson Drain extend to the High Canal. The Adams Gardens Drain will drain a basin of 5,741 acres in the east portion of the proposed drainage district extending south to Business Highway 83.

BOUNDARY DESCRIPTION

Detailed herein is the description of the proposed boundary of the Cameron County Drainage District No. 6. This proposed drainage district boundary encompasses the northern section of the western reach of the Arroyo Colorado within Cameron County, and was developed using the actual boundaries of the watersheds of the existing open channel drainage system which currently serves the area. The proposed boundary was further defined to follow lot and block lines, roadways, irrigation canals, and easily identifiable land features.

Within the proposed boundary there will arguably be some areas for which are located away from the existing drainage system, and seemingly have no pressing need for additional flood control measures. In general, these areas are well elevated compared to their surroundings and ultimately drain to one of the open channel drainage mains or laterals within the boundary. Having a developed and well-maintained drainage system that adequately collects and conveys stormwater runoff will only benefit these areas, particularly for when the land becomes further developed.

The proposed boundary is as follows:

BEGINNING at the point of intersection of the east line of the La Feria Grant and the centerline of the Arroyo Colorado, also being the approximate southwest corner of the Cameron County School Lands;

THENCE North along the east line of said La Feria Grant also being the west line of said Cameron County School Lands also generally being the centerline of Tamm Lane to its intersection with the centerline of State Highway I 07.

THENCE East along said centerline of State Highway I 07 to the southeast corner of the partition of the west 400 acres of Survey 22 as shown by map of record recorded in Volume 98, Page 162, Deed Records, Cameron County, Texas, also being the south projection of the west line of Pickens Subdivision as recorded in Volume 13, Page 68, Map Records, Cameron County, Texas.

THENCE North along the east line of said partition of the west 400 acres of Survey 22 as shown by map of record recorded in Volume 98, Page 162, Deed Records, Cameron County, Texas, also being the west line of said Pickens Subdivision to its intersection with the northeast Right-of-Way of U.S. Highway 77;

THENCE Northerly along said northeast Right-of-Way of U. S. Highway 77 its intersection with the Centerline of Woods Road;

THENCE West along said centerline of Woods Road its intersection with the centerline of Tamm Lane;

THENCE North along said centerline of Tamm Lane to its intersection with the centerline of Orphanage Road;

THENCE Northwesterly along said centerline of Orphanage Road to its intersection with the centerline of Louisiana Road

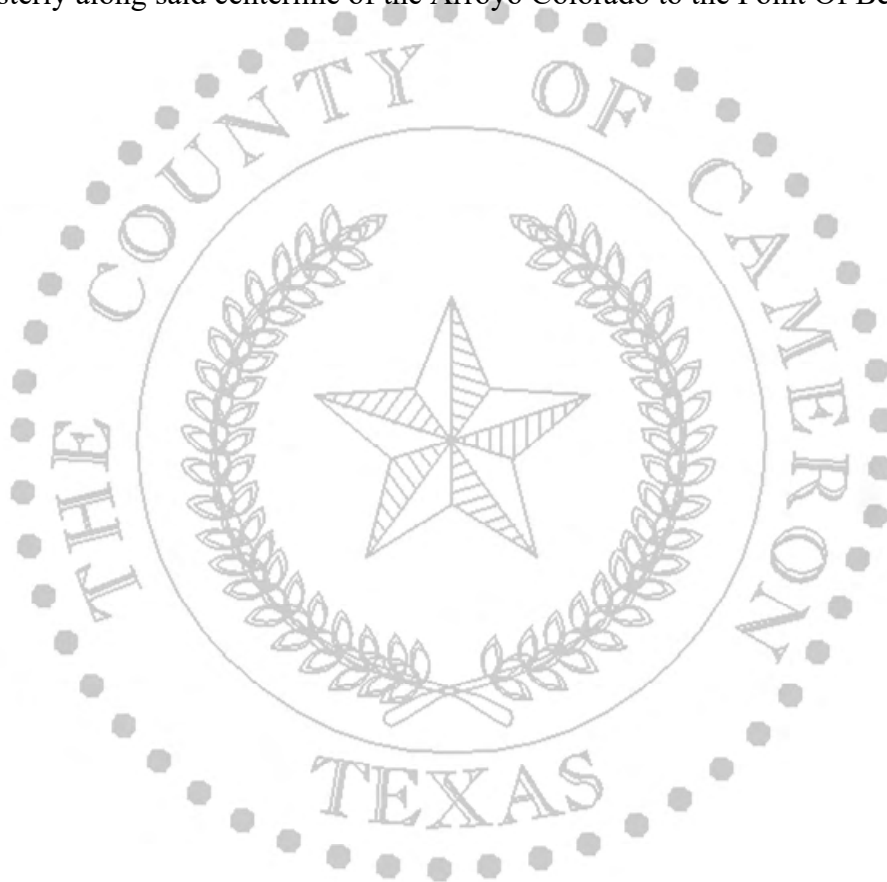
THENCE North along said centerline of Louisiana Road to its intersection with the centerline of Ballenger Road

THENCE West along said centerline of Ballenger Road to its intersection with the centerline of the Willacy County Main Canal

THENCE South along said centerline of the Willacy County Main Canal to its intersection with the centerline of FM 2556;

THENCE Southeasterly along said centerline of FM 2556 to its intersection with the centerline of said Arroyo Colorado

THENCE Easterly along said centerline of the Arroyo Colorado to the Point Of Beginning.



OPERATION AND MAINTENANCE



OPERATIONS AND MAINTENANCE

GENERAL

The proposed Cameron County Drainage District No. 6 is being created for two purposes. The primary purpose is to provide an entity to operate and maintain the existing ditch system in a manner consistent with urban needs. The second purpose is to cause improvements to be made to these ditches to provide additional capacity to remove storm water. The purpose of this section is to analyze the methods by which a drainage district may choose to operate and estimate the annual budget requirements for each scenario. Once the annual budget has been established, the annual tax rate necessary to fund this operation can be calculated.

OPERATING METHODS

A drainage district may choose to operate and maintain its ditch system in one of three general manners, or a combination of the three. The three methods of operating are a) force account, b) by contract, c) by intergovernmental agreement, or any combination of the above. If the district chooses to operate by force account, it must levy a tax which is sufficient to hire all the personnel necessary to adequately staff and operate equipment to be purchased for the maintenance of the ditch system. Under this plan the District Manager who would be hired by the Directors, would have full control of the day-to-day maintenance activities, and would direct maintenance as in necessary to best suit the district's needs. Based upon the attached Cost Estimate, this is the most expensive form of operation, but it does yield the most direct and responsive maintenance of the district.

This second type of operating scenario is for the district to contract for all services. As proposed herein, the District Directors would hire a manager, secretary/bookkeeper, and a ditch rider only. All repairs and maintenance to the district would be performed by contract services by independent contractors. The Cameron County Drainage District No. 1 and Cameron County Drainage District No. 4 both currently operate under this scenario. This method of operating can be very efficient monetarily, especially if the employee's salaries are totally eliminated. The problem associated with this type of maintenance is that many times there is a long delay or lead time in causing a repair or maintenance to be accomplished due to the fact that plans must be prepared, and bids taken for the work. There is, however, little, or no ongoing expense if salaries are reduced or eliminated.

The third type of operation is by intergovernmental agreement. Under this scenario the Drainage District Board of Directors would enter into annual agreements with existing governmental entities, and would, in essence, contract with these other governmental entities for the maintenance to be accomplished. This type of operating plan works well only where there is some existing governmental entity which has the equipment, personnel, and knowledge necessary to adequately maintain the existing ditch system. The work accomplished by these existing governmental entities can be supplemented by contract or by the purchase of district equipment, which would then necessitate district employees. As proposed herein, the district would enter into

intergovernmental agreements with the Harlingen Irrigation District for most of the ditch maintenance and also with the La Feria Irrigation District, and possibly the City of Harlingen for maintenance of certain ditches within the city limits. The drainage district would pay its pro rata share of the salaries of office personnel to include a manager, bookkeeper/secretary, and field personnel to include a ditch rider. The district would also share office facility expenses and maintenance work would then be contracted on a per hour bases for various types of equipment. The rates proposed herein are those which are currently in effect by FEMA for reimbursing political entities for the expense disaster cleanup. The number of hours utilized are that which is estimated to be necessary to mow all of the sixty (60) miles of district ditches twice a year, and clean main drains once every two (2) years.



**OPERATIONS AND MAINTENANCE
ANNUAL COST ESTIMATE FOR OPERATIONS
BY FORCE ACCOUNT**

Annual Personnel Costs:

| | |
|---|---------------------|
| Salary: | |
| Manager, Office Manager, Foreman, Excavator Operator, (3) Mower Operator, Mechanic: | \$287,200.00 |
| Social Security: | \$17,806.40 |
| Retirement: | \$28,720.00 |
| Health: | \$28,720.00 |
| | \$362,446.40 |

Annual Equipment & Maintenance Costs:

| | |
|---|---------------------|
| Excavator, (3) Tractor and Mower (2) Pickup Truck: | \$126,000.00 |
| Fuel Cost: | \$312,000.00 |
| Insurance: | \$8,400.00 |
| Maintenance: | \$81,000.00 |
| | \$527,400.00 |

Estimated Annual Office Costs:

| | |
|---|--------------------|
| Office Mortgage & Land Copiers & Plotters, Office Supplies Insurance: | \$78,000.00 |
| | \$78,000.00 |

Total Annual Cost: \$967,846.40

**OPERATIONS AND MAINTENANCE
ANNUAL COST ESTIMATE FOR OPERATIONS
BY CONTRACT SERVICES**

Annual Personnel Costs:

| | |
|-------------------------|--------------|
| Salary: | |
| Manager, Office Manager | \$131,200.00 |
| Social Security: | \$8,134.40 |
| Retirement: | \$13,120.00 |
| Health: | \$13,120.00 |

\$165,574.40

Annual Equipment & Maintenance Costs:

| | |
|-------------------------------------|--------------|
| Pickup Truck & 350,223 LF of Ditch: | \$9,000.00 |
| Fuel Cost: | \$6,000.00 |
| Insurance: | \$1,200.00 |
| Maintenance: | \$439,278.75 |

\$455,478.75

Estimated Annual Office Costs

| | |
|---|-------------|
| Office Rent, Copiers, & Plotters, Office Supplies, Insurance | \$60,000.00 |
|---|-------------|

\$60,000.00

Total Annual Cost: **\$681,053.15**

**OPERATIONS AND MAINTENANCE
ANNUAL COST ESTIMATE FOR OPERATIONS
BY INTERGOVERNMENTAL AGREEMENT**

Annual Personnel Costs:

| | |
|-------------------------|---------------------|
| Salary: | |
| Manager, Office Manager | \$100,000.00 |
| | \$100,000.00 |

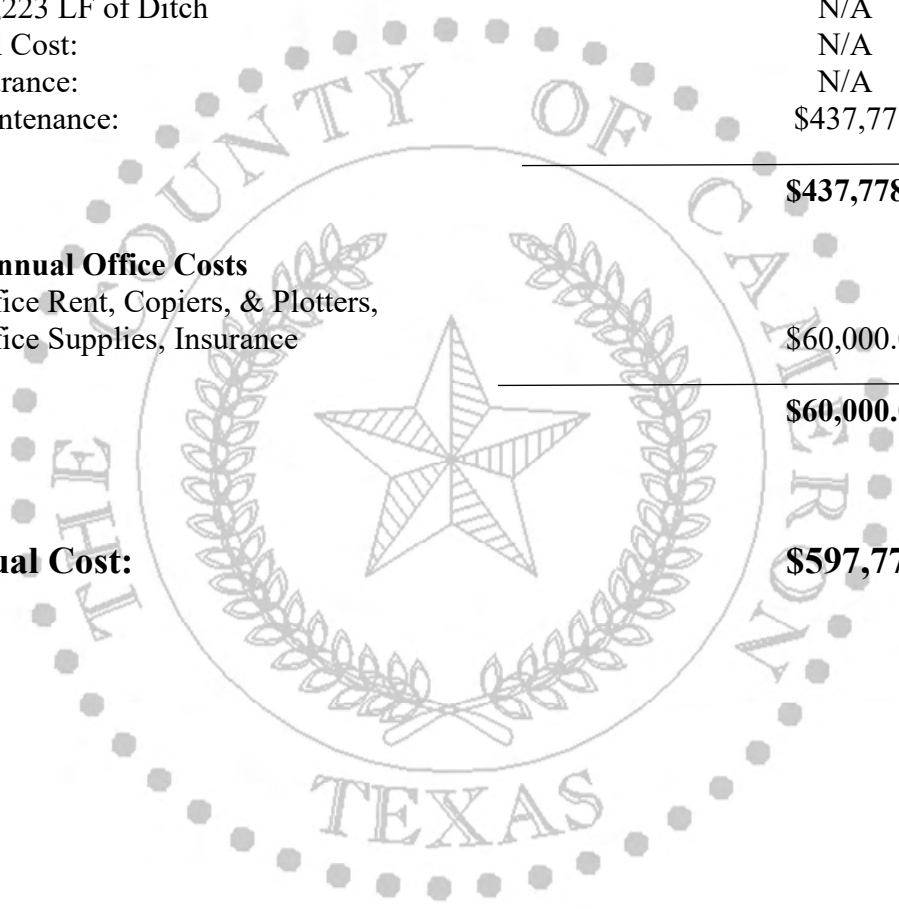
Annual Equipment & Maintenance Costs:

| | |
|---------------------|---------------------|
| 350,223 LF of Ditch | N/A |
| Fuel Cost: | N/A |
| Insurance: | N/A |
| Maintenance: | \$437,778.75 |
| | \$437,778.75 |

Estimated Annual Office Costs

| | |
|---|--------------------|
| Office Rent, Copiers, & Plotters, Office Supplies, Insurance | \$60,000.00 |
| | \$60,000.00 |

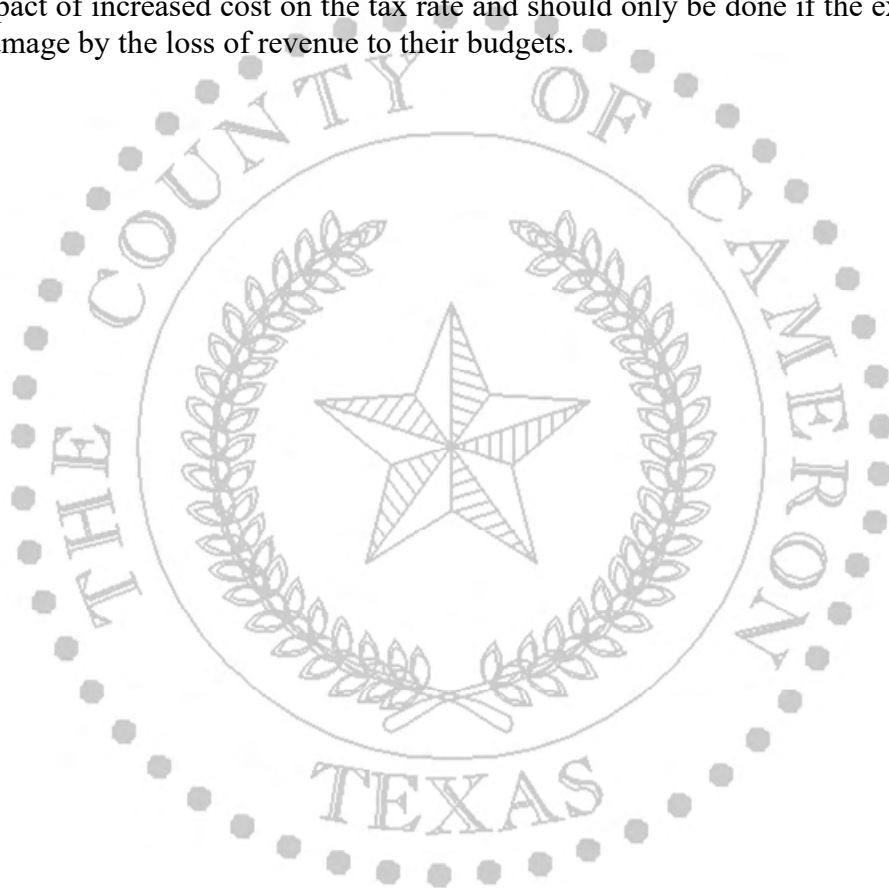
| | |
|---------------------------|---------------------|
| Total Annual Cost: | \$597,778.75 |
|---------------------------|---------------------|



RECOMMENDED OPERATIONS PLAN

Based upon the preceding descriptions of operation scenarios and the proposed annual cost estimate for each, it is recommended that the Drainage District begin its operations by entering into intergovernmental agreements with existing entities for the maintenance of the ditch system. The district should attempt to mow its entire ditch rights-of-way not less than twice annually, and attempt to clean all of the main drains on a bi-annual schedule. Any surplus of funds that may exist should be put into a capital improvement account to pay for capital improvements associated with increased capacity of the main drains.

Should the Board of Directors deem it necessary in the future, they can acquire equipment and personnel, and engage in maintenance themselves. This should be done over a period of time to lessen the impact of increased cost on the tax rate and should only be done if the existing entities will not be damaged by the loss of revenue to their budgets.



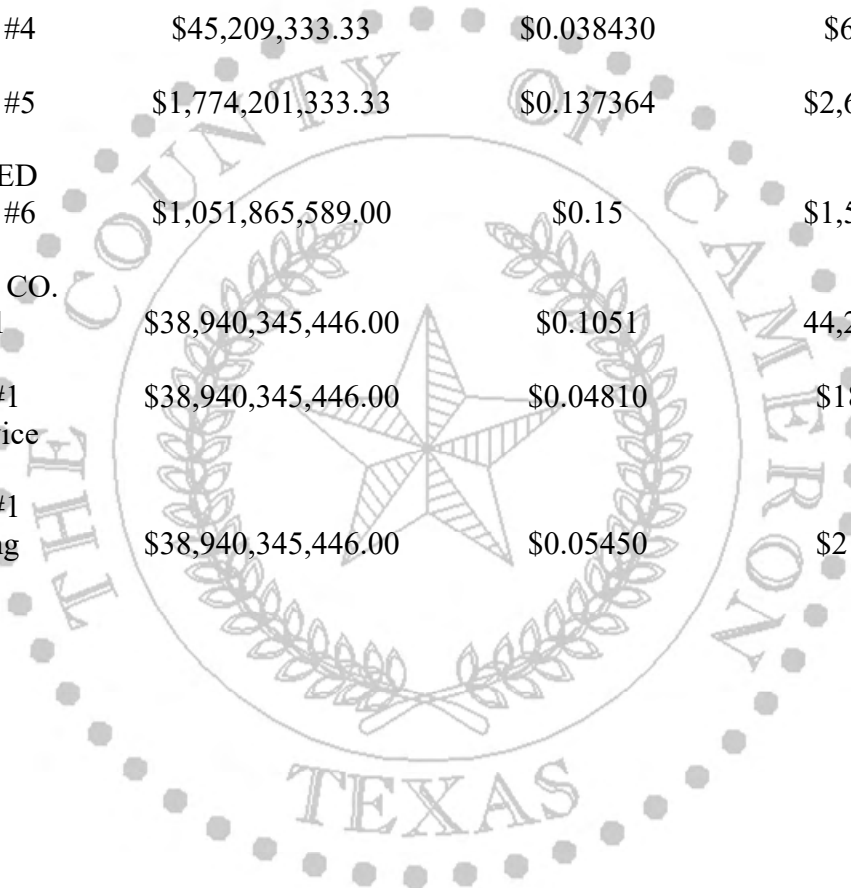
COMPUTATION OF PROPOSED TAX RATE FOR MAINTENANCE PURPOSES

The Cameron County Appraisal District has reported a net taxable value within the proposed Drainage District 6 boundary of \$1,051,865,589. Based upon this assessed valuation and an annual maintenance and operations cost of approximately \$597,778.75, a tax rate of \$0.15 per hundred dollars valuation would be required. It is recommended that the initial tax rate be established at a rate of \$0.15 per hundred dollars valuation which will generate a revenue of \$1,577,798.38 at 100% collection rate. A 95% collection rate and a \$0.15 per hundred-dollar valuation tax will generate a revenue of \$1,498,908.46.



**COMPARISON OF TAX RATES
2020/2021 TAX YEAR**

| DISTRICT | VALUATION | RATE | LEVY |
|-------------------------|---------------------|-------------|----------------|
| C.C.D.D. #1 | \$1,432,319,333.33 | \$0.033 | \$2,148,479.00 |
| C.C.D.D. #3 | \$2,118,098,000.00 | \$0.147218 | \$3,177,147.00 |
| C.C.D.D. #4 | \$45,209,333.33 | \$0.038430 | \$67,814.00 |
| C.C.D.D. #5 | \$1,774,201,333.33 | \$0.137364 | \$2,661,302.00 |
| PROPOSED C.C.D.D. #6 | \$1,051,865,589.00 | \$0.15 | \$1,577,798.38 |
| HIDALGO CO. D.D. #1 | \$38,940,345,446.00 | \$0.1051 | 44,287,025.35 |
| HCDD #1 Debt Service | \$38,940,345,446.00 | \$0.04810 | \$18,730,306 |
| HCDD #1 Operating | \$38,940,345,446.00 | \$0.05450 | \$21,222,488 |



PROPOSED IMPROVEMENT PLAN



GENERAL

The general nature of improvements within Drainage District No. 6 consists of deepening and widening the existing La Feria Irrigation District No 3 channels to be utilized to convey regional drainage runoff. There are 5 main drains identified for drainage improvements and upgraded capacity. These main drains will be coupled with downstream pump stations to allow for conveyance subsequently out falling into the International Boundary & Water Commission (IBWC) Floodway. Additionally 2 proposed inline regional detention facilities along the Main Drain and Parker Drain will provide additional storage and detention for high intensity storm events.

With these improvements, the lateral drains which tie into these mains will generally be adequate for current usage. Areas and laterals along these mains which have experienced severe and frequent flooding will be evaluated for upsizing and improvements as part of each respective project. The District's main construction focus will be for open channel systems. Storm sewers, culverts, pumps and regional detention facilities will supplement the open channel systems to effectively convey drainage and provide adequate storage for the respective storm design frequencies and events as outlined by the Districts Design Criteria.

RABB DRAIN BASIN - MAIN CANAL PIPING

This proposed project will involve creating a new proposed ditch, which will stretch approximately 6,190 feet, all within an existing ROW within the Rabb Drain Basin. The proposed ditch will run along the La Feria Main Irrigation Canal to the north of the La Feria Reservoir. The proposed ditch will outfall to an existing ditch that runs along the north side of the La Feria Reservoir. The proposed ditch will require cross culvert structures at Pancho Maples Drive and at Dodd Lane. The ditch will assist in draining a basin of 87 acres between the La Feria Main Irrigation Canal and the Orange Groove Canal, south of Business Highway 83. Making room for the proposed ditch improvements without acquiring additional ROW will require that a portion of the La Feria Main Irrigation Canal to be piped. The irrigation piping will extend from the LA Feria Reservoir to Business Highway 83, and in order to provide adequate capacity will require 2 - 72" diameter HDPE pipes. The project will also include the construction of a new pump station located near the northeast corner of La Feria Reservoir.

AN-47 DRAIN BASIN - EAST DITCH WIDENING

This proposed project will involve widening an existing undersized ditch within the AN-47 Drain Basin. The ditch widening will total approximately 7,800 feet and which limits will all be located within existing ROW. There will be a considerable amount of storm drain improvements to ensure the surrounding neighborhoods can drain to widened ditch. The existing ditch loops around with the upstream portion running north-south between Parker Road and Kansas City Road. The existing ditch outfalls to the AN-47 Drain at two locations, near the Evans Irrigation Canal and approximately 1,000 feet south of Business Highway 83. The proposed ditch will require cross culvert structures at Beddoes Road, Palm Avenue, and at Kansas City Road at two locations. The ditch will assist in draining the single-family residential properties in the southeast portion of La Feria.

MAIN DRAIN WIDENING

This proposed project will involve widening approximately 16,450 feet of the existing Main Drain, which at its current configuration is inadequate to convey the larger storm events that have plagued the region. The existing Main Drain outfalls to the North Floodway and helps drain the northern section of Santa Rosa, as well as the agriculture land to the north. There is existing ROW for the entire length of the project limits, though the ditch widening will require that an additional 100' wide of ROW be acquired to accommodate the larger proposed ditch. A total of 38 acres of ROW will be required for the project. The proposed ditch will be 120' wide with maintenance benches on both sides. No proposed improvements are proposed for the four lateral drains though the additional storage provided by the Main Drain shall improve drainage throughout. The proposed ditch will require cross culvert structures at Orphanage Road, a private drive, and Sesso Road.

PARKER DRAIN WIDENING (TIO CANO LAKE OVERFLOW)

This proposed project will involve widening approximately 34,000 feet of the existing Parker Drain, which at its current configuration is inadequate to convey the larger storm events that have plagued the region. The existing Parker Drain outfalls to the North Floodway and helps drain a majority of Santa Rosa, as well as the agriculture land to the east and northeast. There is existing ROW for the entire length of the project limits, though the ditch widening will require that an additional 100' wide of ROW be acquired to accommodate the larger proposed ditch. A total of 78 acres of ROW will be required for the project. The proposed ditch will be 120' wide with maintenance benches on both sides. The proposed ditch will require cross culvert structures at Orphanage Road, San Felipe Road, State Highway 107, Johnson Road, at a railroad crossing and at six private drives.

Parker Drain will be extended to connect to one of the drainage mains that flow to Tio Cano Lake, at the western end of the lake near Kansas City Road. The Tio Cano Lake, which is common defined as the basin at and below the 49 foot level of elevation, has experienced substantial flooding in the past. In 1967 during Hurricane Beulah and again in 2008 during Hurricane Dolly the lake reached an elevation of 46 feet. More recently in June of 2018 and 2019 where the rainfall rate was higher than the two previous hurricanes, the lake levels rose above those previous high marks and the flooding was more wide spread and severe. As there is no outfall to this natural depression, the only way to help alleviate flooding is through pumping which is down on the southeast side of the lake. By providing this connectivity, during larger storm events, Parker Drain will serve as an overflow drain in the event that the Tio Cano Lake basin becomes so inundated. As this connection is in the upper reaches of the lake it will provide this drainage relief while will utilizing the storage volume of the lake for attenuation and for watering needs of the surrounding agriculture.

PARKER DRAIN BASIN - OVALLE LATERAL CONNECTIVITY

This proposed project will involve constructing a new ditch and several drainage structures that will connect a combination of existing ditches, some of which drain to Tio Cano Lake and redirect them to outfall to Parker Drain. Currently there is an existing lateral ditch that runs along south side of Dr. Maria A Ovalle Avenue that drains to Parker Drain. A new ditch will be constructed

that will outfall to this existing ditch and will run due west to another existing ditch that drains to Tio Cano Lake. A cross culvert structure will need to be constructed at Parker Road, FM 506, and the La Feria Main Irrigation Canal. With the latter culvert allowing for the southwest portion of Santa Rosa to drain to Parker Drain, as opposed to Tio Cano Lake. The existing ditches will need to be widened to be able to convey the larger storm events that have flooded Santa Rosa in the past. The proposed ditch will be 70' wide with maintenance benches on both sides. There is existing ROW for a majority of the project limits, though the ditch widening will require that an additional 50' width of ROW be acquired to accommodate the larger proposed ditch. Where there is new ditch, a 100' wide ROW will need to be acquired. A total of 7.5 acres of ROW will be required for the project.

PARKER DRAIN BASIN - SOUTHWEST DITCH WIDENING

This proposed project will involve widening approximately 4,680 feet of the existing ditch located to the southwest of Santa Rosa. The existing ditch runs along 1st Street starting near Santa Cruz Avenue and eventually outfalls to the Tio Cano Lake. With the Ovalle Lateral Connectivity Project, this ditch will drain to the North Floodway through the Parker Drain. This ditch drains the residential properties to the southwest portion of Santa Rosa. There is existing ROW for the entire length of the project limits, though the ditch widening will require that an additional 50' width of ROW be acquired to accommodate the larger proposed ditch. A total of 5.5 acres of ROW will be required for the project. The proposed ditch will be 70' wide with maintenance benches on both sides. The proposed ditch will require a cross culvert structure at Jesus T Avila Avenue.

AN-47 DRAIN BASIN - CLARK ROAD DITCH IMPROVEMENTS

This proposed project will involve creating a new proposed ditch approximately 1,800 feet long within the AN-47 Drain Basin. The proposed ditch will run along the south side of the an irrigation canal to the north of Santa Rosa. The proposed ditch will outfall to an existing ditch, which is a lateral of the AN-47 Drain, that runs north-south between Parker Road and Kansas City Road. The proposed ditch will extend to an existing culvert that runs across the irrigation canal. The ditch will assist in draining a basin of 385 acres that is bounded by the La Feria Main Irrigation Canal to the west, an irrigation canal to the south, and Parker Road to the east. The proposed improvements will require a cross culvert to be constructed at Parker Road, that will consist of 2 - 10' x 10' box culverts. In addition, an 18 acre-feet detention pond will need to be constructed, utilizing the existing culvert as the outfall structure. The proposed ditch will require a 100 wide ROW that will need to be acquired, and a 3-acre tract will need to be acquired for the detention pond. A total of 7 acres of ROW will be required for the project.

MAIN DRAIN REGIONAL DETENTION FACILITY

This proposed project will help establish a Regional Detention Facility (RDF) at the outfall of the Main Drain. A substantial amount of excavation will take place just south of the IBWC Levee, west of FM 506, north of Orphanage Road, and east of Main Drain. This will exclude the residential properties to the immediate northwest of the intersection of FM 506 and Orphanage Road, which currently have structures on them. The area to be excavated is approximately 34 acres, most of which is agriculture land, with about 9 acres of wooded lands that will need to be cleared. The proposed detention facility will provide 123 acre-feet of storage, where it will outfall

to the proposed pump station. The Main Drain provides drainage relief for a basin of 2,149 acres. The proposed detention facility will require a 34-acre tract that will need to be acquired.

PARKER DRAIN REGIONAL DETENTION FACILITY

This proposed project will help establish a RDF at the outfall of the Parker Drain. The detention facility will require significant excavation between the IBWC Levee and Orpahanage Road, and will be located on both sides of the Parker Drain. The area to be excavated is approximately 122 acres, all of which is agriculture land. The proposed detention facility will provide 460 acre-feet of storage, where it will outfall to the proposed pump station. The Parker Drain provides drainage relief for a basin of 1,898 acres. The proposed detention facility will require a 122-acre tract that will need to be acquired.

FLOODWAY PUMP STATIONS

This proposed project will involve upgrading five outfalls into the North Floodway with the addition to the construction of new pump stations. These pump stations will be placed for the Cantu Drain, Main Drain, Parker Drain, Thompson Drain, and Adams Gardens Drain, listed from west to east. In accordance with IBWC restrictions the existing outfall structures can not be upsized from their current outfall configurations, thus the proposed structures will all match the existing configurations with 2 - 7' x 5' box culverts. With the addition of the pump station, the outfalls will be more capable to convey the floodwaters of larger storm events, while still meeting the imposed restrictions. Each outfall will include a large single box culvert that will gravity drain, and will serve as the primary drainage relief during most storm events. During smaller storm events this culvert will be used exclusively, where capacity isn't an issue and the situation doesn't necessitate the additional capacity of the pump station. This will help keep the operational costs of the pump station lower. In order to provide a level of control of floodwaters of the North Floodway a gate valve structure will be placed along Ballenger Road on top of the IBWC Levee. This structure will allow the IBWC the ability of close the gate valves during severe rain events to ensure that floodwaters of the Rio Grande and the North Floodway are managed to help reduce the risk of loss of life and property damage.

TIO CANO LAKE PUMP STATION

This project will include the addition of a Pump Station at the southeast corner of Tio Cano Lake. As there is no outfall to this natural depression, other than through natural means the only way to help alleviate flooding is through pumping. The proposed pump station will have 3 pumps, each capable to pumping up to 100 cfs, and will be configured to have the ability to pump to the Wilson Irrigation Canal, Adams Gardens Main Irrigation Canal, or to the Adams Gardens Drain during large storm events. The proposed Parker Drain Widening project discussed which will drain the upper reaches of the Tio Cano Lake during severe rain storms, should help alleviate the severity of flooding in the basin, as well as cut down the prolonged times of flooding after large rain events. As an added benefit this overflow gravity drain will cut down on the expense of having to pump. In addition to these projects we recommend that a feasibility study be conducted that will look at the possibility of creating a dedicated outfall for Tio Cano Lake. The study should include an alternative analysis with anticipated construction costs and a full hydrologic and hydraulic analysis.

RIGHT OF WAY

Right of way for the channel improvements is proposed to be acquired in fee simple as opposed to an easement. Past experience of other drainage and irrigation districts in the area have shown this to be the most prudent method of acquisition, as it eliminates the fee owners attempt to use their property. The amount of right of way and associated cost is shown for each respective project in the cost estimate section. The District will have the power of eminent domain, and will, undoubtedly, be required to use it in some instances. The transfer of rights, titles or interest between the proposed Drainage District and La Feria Irrigation District No.3 will be determined and agreed to upon the formation of the new Drainage District. This transfer will not include the easements or areas currently being used for Irrigation District purposes and is not intended to infringe in any way or encumber the Irrigation District in the performance of its duties.



COST ESTIMATES

GENERAL

The cost estimates contained herein are based on preliminary engineering design analysis and files which were used to compute estimated quantities and cost estimated based on current construction industry average bid prices and overall market values for real estate within Cameron County and the surrounding areas.

Four major categories were established for estimating purposes:

- A. Right of Way & Land Acquisition
- B. Construction
- C. Planning, Engineering and Design
- D. Permitting
- E. Contingency

RIGHT OF WAY & LAND ACQUISITION

All costs associated with the acquisition of rights-of-way were considered as a part of this category. Specifically, the cost of the land, surveying and preparation of acquisition descriptions, appraisal fees, and legal costs were included under this category. The computed average cost is estimated at \$20,000/acre including all soft cost associated with the land acquisition.

CONSTRUCTION COSTS

Construction costs were obtained from area contractors and other similar recent projects in the area. Construction cost for ditch excavation tends to vary widely in the area depending upon contractor's workloads. Unit prices were obtained from similar & recent projects in and around the Rio Grande Valley as well as governmental agencies such as the Texas Department of Transportations and the International Boundary & Water Commission.

PLANNING, ENGINEERING & DESIGN

This category will be used to estimate the cost of all planning studies, permits, surveying for design purposes, soils testing, design services, and costs associated with bidding of projects. A value of 10% of the estimated construction costs was used to estimate the cost of these services. This estimate percentage is a fair industry standard for estimating professional engineering service cost and is consistent with the American Society of Civil Engineers Fee Tables Publications.

CONTINGENCY

The contingency category is used to allow for unforeseen expenses related to the project. Typical items which would be included within the contingency category are items such as relocation or irrigation facilities, relocation of utilities, temporary facilities and to compensate for changes between this conceptual design and final design channel. A value of 10% of construction costs was used for estimating purposes.

COST ESTIMATE SUMMARY & PROJECT ESTIMATES

CCDD NO. 6 TOTAL PROJECT COST SUMMARY Preliminary Cost Projection

| Project Number | ROW Acquisition | Permitting | Construction Cost | Engineering | Contingencies | Total Price Per Project |
|----------------|-----------------------|---------------------|------------------------|-----------------------|-----------------------|-------------------------|
| 1 | | \$88,341.25 | \$1,766,825.00 | \$212,019.00 | \$176,682.50 | \$2,243,867.75 |
| 2 | | \$88,341.25 | \$1,766,825.00 | \$212,019.00 | \$176,682.50 | \$2,243,867.75 |
| 3 | | \$88,341.25 | \$1,766,825.00 | \$212,019.00 | \$176,682.50 | \$2,243,867.75 |
| 4 | | \$88,341.25 | \$1,766,825.00 | \$212,019.00 | \$176,682.50 | \$2,243,867.75 |
| 5 | | \$88,341.25 | \$1,766,825.00 | \$212,019.00 | \$176,682.50 | \$2,243,867.75 |
| 6 | | | \$6,080,800.00 | \$608,080.00 | \$608,080.00 | \$7,296,960.00 |
| 7 | | | \$1,419,600.00 | \$141,960.00 | \$141,960.00 | \$1,703,520.00 |
| 8 | \$169,312.50 | | \$986,250.00 | \$98,625.00 | \$98,625.00 | \$1,352,812.50 |
| 9 | \$146,000.00 | | \$720,000.00 | \$72,000.00 | \$72,000.00 | \$1,010,000.00 |
| 10 | \$199,437.50 | | \$988,750.00 | \$98,875.00 | \$98,875.00 | \$1,385,937.50 |
| 11 | \$2,055,500.00 | \$99,100.00 | \$9,910,000.00 | \$991,000.00 | \$991,000.00 | \$14,046,600.00 |
| 12 | \$992,125.00 | | \$4,642,500.00 | \$464,250.00 | \$464,250.00 | \$6,563,125.00 |
| 13 | \$785,825.00 | | \$2,116,500.00 | \$211,650.00 | \$211,650.00 | \$3,325,625.00 |
| 14 | \$2,818,125.00 | | \$7,562,500.00 | \$756,250.00 | \$756,250.00 | \$11,893,125.00 |
| 15 | | | \$1,519,250.00 | \$901,925.00 | \$151,925.00 | \$2,573,100.00 |
| Total | \$7,166,325.00 | \$540,806.25 | \$44,780,275.00 | \$5,404,710.00 | \$4,478,027.50 | |

TOTAL COST \$62,370,143.75

CCDD NO. 6 PROJECTS # 1-5 FLOODWAY PUMP STATIONS (CANTU, MAIN, PARKER, THOMPSON & ADAMS GARDENS) Preliminary Construction Cost Projection (Per Site)

| Bid Item | Quantity | Units | Description | Unit Price | Total Price |
|------------------------------------|----------|-------|---|--------------|-----------------------|
| 1 | 7,500 | CY | SITE PREPARATION & GRADING TO INCLUDE CHANNEL EXCAVATION, SUMP EXCAVATION AND CHANNEL GRADING | \$25.00 | \$187,500.00 |
| 2 | 250 | CY | INSTALL PUMP STATION STRUCTURE | \$1,400.00 | \$350,000.00 |
| 3 | 1 | LS | INSTALL PUMP STATION BUILDING | \$30,000.00 | \$30,000.00 |
| 4 | 185 | LF | INSTALL 10'X10' BOX CULVERTS | \$1,000.00 | \$185,000.00 |
| 5 | 330 | LF | INSTALL 42" PIPING | \$115.00 | \$37,950.00 |
| 6 | 1 | EA | IBWC GATE STRUCTURE | \$50,000.00 | \$50,000.00 |
| 7 | 2 | EA | INSTALL 6" CONCRETE CANASTAS | \$10,000.00 | \$20,000.00 |
| 8 | 850 | SY | INSTALL ROCK RIP RAP | \$7.50 | \$6,375.00 |
| 9 | 3 | EA | INSTALL 100 CFS PUMPS, MOTORS & ELECTRIC | \$300,000.00 | \$900,000.00 |
| Estimated Construction Cost | | | | | \$1,766,825.00 |

| | | |
|-------------------------|--------|--------------|
| CONTINGENCIES | 10.00% | \$176,682.50 |
| ENGINEERING & SURVEYING | 10.00% | \$176,682.50 |
| PERMITTING (IBWC) | 5.00% | \$88,341.25 |
| GEOTECH TESTING | 2.00% | \$35,336.50 |

TOTAL PROJECT COST (PER SITE) \$2,243,867.75

Notes: Estimate is for planning purposes only. All Facilities subject to District, County, and IBWC approval. Projected Development Estimate includes only construction related costs. Land, legal, and advertising costs are not included.

**CCDD NO. 6
PROJECT # 6
MAIN CANAL PIPING
Preliminary Construction Cost Projection**

| Bid Item | Quantity | Units | Description | Unit Price | Total Price |
|------------------------------------|----------|-------|---|--------------|-----------------------|
| 1 | 6,190 | LF | EXCAVATION OF NEW DITCH TO INCLUDE HAULING OF EXCESS MATERIAL | \$250.00 | \$1,547,500.00 |
| 2 | 2 | EA | INSTALL PUMP STATION W/ 2-PUMPS & 2-MOTORS | \$250,000.00 | \$500,000.00 |
| 3 | 7 | EA | INSTALL STAND PIPE | \$25,000.00 | \$175,000.00 |
| 4 | 12,380 | LF | INSTALL 72" HDPE | \$285.00 | \$3,528,300.00 |
| 5 | 240 | LF | 10'X10' CONCRETE BOX CULVERTS | \$1,000.00 | \$240,000.00 |
| 6 | 2 | EA | ROAD REPAIRS | \$30,000.00 | \$60,000.00 |
| 7 | 6 | EA | CONCRETE CANASTAS | \$5,000.00 | \$30,000.00 |
| Estimated Construction Cost | | | | | \$6,080,800.00 |

CONTINGENCIES 10.00% \$608,080.00
ENGINEERING & SURVEYING 10.00% \$608,080.00

TOTAL PROJECT COST \$7,296,960.00

Notes: Estimate is for planning purposes only. All Facilities subject to District, County, and IBWC approval. Projected Development Estimate includes only construction related costs. Land, legal, and advertising costs are not included.

**CCDD NO. 6
PROJECT # 7
EAST DITCH WIDENING
Preliminary Construction Cost Projection**

| Bid Item | Quantity | Units | Description | Unit Price | Total Price |
|------------------------------------|----------|-------|--|-------------|-----------------------|
| 1 | 7,800 | LF | WIDENING OF EXISTING DITCH TO INCLUDE HAULING OF EXCESS MATERIAL | \$125.00 | \$975,000.00 |
| 2 | 240 | EA | INSTALL 6'X6' CONCRETE BOX CULVERTS | \$600.00 | \$144,000.00 |
| 3 | 2 | EA | INSTALL STAND PIPE | \$25,000.00 | \$50,000.00 |
| 4 | 4,700 | LF | INSTALL 24" PIPE | \$48.00 | \$225,600.00 |
| 5 | 5 | EA | CONCRETE CANASTAS | \$5,000.00 | \$25,000.00 |
| Estimated Construction Cost | | | | | \$1,419,600.00 |

CONTINGENCIES 10.00% \$141,960.00
ENGINEERING & SURVEYING 10.00% \$141,960.00

TOTAL PROJECT COST \$1,703,520.00

Notes: Estimate is for planning purposes only. All Facilities subject to District, County, and IBWC approval. Projected Development Estimate includes only construction related costs. Land, legal, and advertising costs are not included.

**CCDD NO. 6
PROJECT # 8
CLARK ROAD DITCH IMPROVEMENTS
Preliminary Construction Cost Projection**

| Bid Item | Quantity | Units | Description | Unit Price | Total Price |
|------------------------------------|----------|-------|--|-------------|---------------------|
| 1 | 27,250 | CY | SITE PREPARATION & GRADING TO INCLUDE DETENTION EXCAVATION, LEVELING & TRANSPORTATION FOR DETENTION POND | \$10.00 | \$272,500.00 |
| 2 | 1,835 | LF | SITE PREPARATION & GRADING TO INCLUDE DITCH EXCAVATION, LEVELING & TRANSPORTATION FOR DITCH | \$250.00 | \$458,750.00 |
| 3 | 3 | EA | INSTALL LARGE CONCRETE CANASTA | \$7,500.00 | \$22,500.00 |
| 4 | 4 | EA | INSTALL SMALL CONCRETE CANASTA | \$5,000.00 | \$20,000.00 |
| 5 | 120 | LF | 10x10 BOX CULVERT | \$1,000.00 | \$120,000.00 |
| 6 | 1 | LS | ROAD REPAIR | \$30,000.00 | \$30,000.00 |
| 7 | 250 | LF | INSTALL 18" RCP (CLASS III) | \$50.00 | \$12,500.00 |
| 8 | 1 | LS | TRAFFIC CONTROL | \$25,000.00 | \$25,000.00 |
| 9 | 1 | LS | SWP3 | \$25,000.00 | \$25,000.00 |
| Estimated Construction Cost | | | | | \$986,250.00 |

| | | |
|---------------------------|---------------|-----------------------|
| CONTINGENCIES | 10.00% | \$98,625.00 |
| ROW ACQUISITION (7 ACRES) | \$20,000/ AC. | \$120,000.00 |
| LEGAL | 5.00% | \$49,312.50 |
| ENGINEERING & SURVEYING | 10.00% | \$98,625.00 |
| TOTAL PROJECT COST | | \$1,352,812.50 |

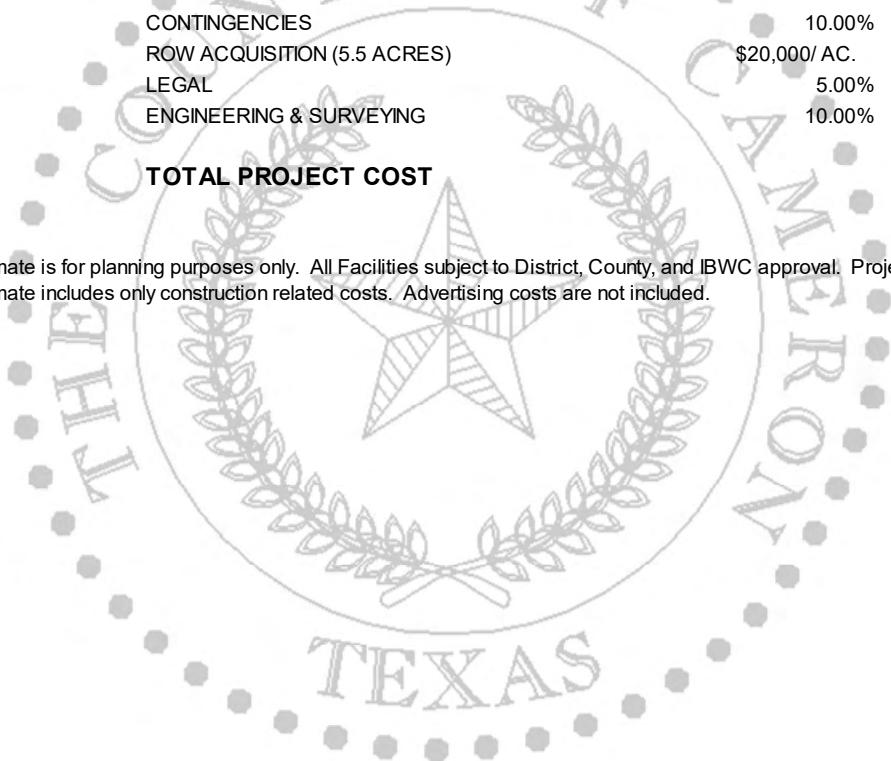
Notes: Estimate is for planning purposes only. All Facilities subject to District, County, and IBWC approval. Projected Development Estimate includes only construction related costs. Advertising costs are not included.

**CCDD NO. 6
PROJECT # 9
SOUTHWEST DITCH WIDENING
Preliminary Construction Cost Projection**

| Bid Item | Quantity | Units | Description | Unit Price | Total Price |
|------------------------------------|----------|-------|---|-------------|---------------------|
| 1 | 4,680 | LF | SITE PREPARATION & GRADING TO INCLUDE DITCH EXCAVATION, LEVELING & TRANSPORTATION FOR DITCH | \$125.00 | \$585,000.00 |
| 2 | 2 | EA | CONCRETE CANASTAS | \$5,000.00 | \$10,000.00 |
| 3 | 60 | LF | 10x10 BOX CULVERT | \$1,000.00 | \$60,000.00 |
| 4 | 1 | LS | ROAD REPAIR | \$30,000.00 | \$30,000.00 |
| 5 | 100 | LF | INSTALL 18" RCP (CLASS III) | \$50.00 | \$5,000.00 |
| 6 | 1 | LS | TRAFFIC CONTROL | \$15,000.00 | \$15,000.00 |
| 7 | 1 | LS | SWP3 | \$15,000.00 | \$15,000.00 |
| Estimated Construction Cost | | | | | \$720,000.00 |

| | | |
|-----------------------------|---------------|-----------------------|
| CONTINGENCIES | 10.00% | \$72,000.00 |
| ROW ACQUISITION (5.5 ACRES) | \$20,000/ AC. | \$110,000.00 |
| LEGAL | 5.00% | \$36,000.00 |
| ENGINEERING & SURVEYING | 10.00% | \$72,000.00 |
| TOTAL PROJECT COST | | \$1,010,000.00 |

Notes: Estimate is for planning purposes only. All Facilities subject to District, County, and IBWC approval. Projected Development Estimate includes only construction related costs. Advertising costs are not included.

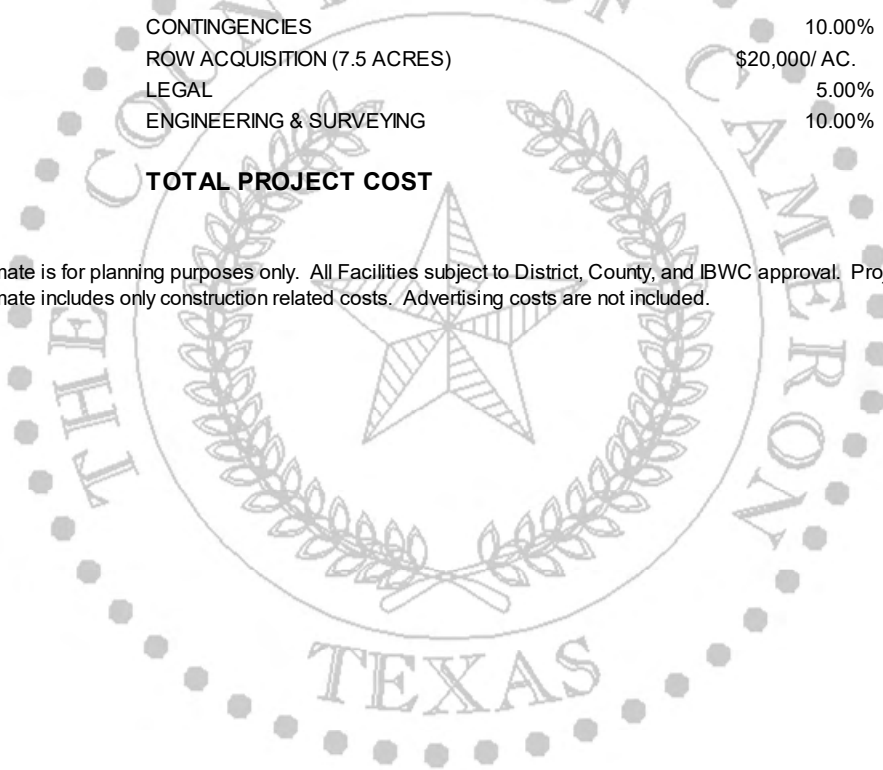


**CCDD NO. 6
PROJECT # 10
OVALLE LATERAL CONNECTIVITY
Preliminary Construction Cost Projection**

| Bid Item | Quantity | Units | Description | Unit Price | Total Price |
|------------------------------------|----------|-------|---|-------------|---------------------|
| 1 | 5,030 | LF | SITE PREPARATION & GRADING TO INCLUDE DITCH EXCAVATION, LEVELING & TRANSPORTATION FOR DITCH | \$125.00 | \$628,750.00 |
| 2 | 4 | EA | CONCRETE CANASTAS | \$5,000.00 | \$20,000.00 |
| 3 | 220 | LF | 10x10 BOX CULVERT | \$1,000.00 | \$220,000.00 |
| 4 | 2 | LS | ROAD REPAIR | \$30,000.00 | \$60,000.00 |
| 5 | 200 | LF | INSTALL 18" RCP (CLASS III) | \$50.00 | \$10,000.00 |
| 6 | 1 | LS | TRAFFIC CONTROL | \$25,000.00 | \$25,000.00 |
| 7 | 1 | LS | SWP3 | \$25,000.00 | \$25,000.00 |
| Estimated Construction Cost | | | | | \$988,750.00 |

| | | |
|-----------------------------|---------------|-----------------------|
| CONTINGENCIES | 10.00% | \$98,875.00 |
| ROW ACQUISITION (7.5 ACRES) | \$20,000/ AC. | \$150,000.00 |
| LEGAL | 5.00% | \$49,437.50 |
| ENGINEERING & SURVEYING | 10.00% | \$98,875.00 |
| TOTAL PROJECT COST | | \$1,385,937.50 |

Notes: Estimate is for planning purposes only. All Facilities subject to District, County, and IBWC approval. Projected Development Estimate includes only construction related costs. Advertising costs are not included.



**CCDD NO. 6
PROJECT # 11
PARKER DRAIN WIDENING (TIO CANO LAKE OVERFLOW)
Preliminary Construction Cost Projection**

| Bid Item | Quantity | Units | Description | Unit Price | Total Price |
|------------------------------------|----------|-------|---|--------------|-----------------------|
| 1 | 34,000 | LF | SITE PREPARATION & GRADING TO INCLUDE DITCH EXCAVATION, LEVELING & TRANSPORTATION FOR DITCH | \$250.00 | \$8,500,000.00 |
| 2 | 8 | EA | CONCRETE CANASTAS | \$5,000.00 | \$40,000.00 |
| 3 | 760 | LF | 10x10 BOX CULVERT | \$1,000.00 | \$760,000.00 |
| 4 | 4 | LS | ROAD REPAIR | \$30,000.00 | \$120,000.00 |
| 5 | 400 | LF | INSTALL 18" RCP (CLASS III) | \$50.00 | \$20,000.00 |
| 6 | 1 | LS | TRAFFIC CONTROL | \$235,000.00 | \$235,000.00 |
| 7 | 1 | LS | SWP3 | \$235,000.00 | \$235,000.00 |
| Estimated Construction Cost | | | | | \$9,910,000.00 |

| | | |
|----------------------------|---------------|------------------------|
| CONTINGENCIES | 10.00% | \$991,000.00 |
| ROW ACQUISITION (78 ACRES) | \$20,000/ AC. | \$1,560,000.00 |
| PERMITTING (UPRR) | 1.00% | \$99,100.00 |
| LEGAL | 5.00% | \$495,500.00 |
| ENGINEERING & SURVEYING | 10.00% | \$991,000.00 |
| TOTAL PROJECT COST | | \$14,046,600.00 |

Notes: Estimate is for planning purposes only. All Facilities subject to District, County, and IBWC approval. Projected Development Estimate includes only construction related costs. Advertising costs are not included.

**CCDD NO. 6
PROJECT # 12
MAIN DRAIN WIDENING
Preliminary Construction Cost Projection**

| Bid Item | Quantity | Units | Description | Unit Price | Total Price |
|------------------------------------|----------|-------|---|--------------|-----------------------|
| 1 | 16,450 | LF | SITE PREPARATION & GRADING TO INCLUDE DITCH EXCAVATION, LEVELING & TRANSPORTATION FOR DITCH | \$250.00 | \$4,112,500.00 |
| 2 | 4 | EA | CONCRETE CANASTAS | \$5,000.00 | \$20,000.00 |
| 3 | 220 | LF | 10x10 BOX CULVERT | \$1,000.00 | \$220,000.00 |
| 4 | 2 | LS | ROAD REPAIR | \$30,000.00 | \$60,000.00 |
| 5 | 200 | LF | INSTALL 18" RCP (CLASS III) | \$50.00 | \$10,000.00 |
| 6 | 1 | LS | TRAFFIC CONTROL | \$110,000.00 | \$110,000.00 |
| 7 | 1 | LS | SWP3 | \$110,000.00 | \$110,000.00 |
| Estimated Construction Cost | | | | | \$4,642,500.00 |

| | | |
|----------------------------|---------------|--------------|
| CONTINGENCIES | 10.00% | \$464,250.00 |
| ROW ACQUISITION (38 ACRES) | \$20,000/ AC. | \$760,000.00 |
| LEGAL | 5.00% | \$232,125.00 |
| ENGINEERING & SURVEYING | 10.00% | \$464,250.00 |

TOTAL PROJECT COST \$6,563,125.00

Notes: Estimate is for planning purposes only. All Facilities subject to District, County, and IBWC approval. Projected Development Estimate includes only construction related costs. Advertising costs are not included.

**CCDD NO. 6
PROJECT # 13
MAIN DRAIN RDF
Preliminary Construction Cost Projection**

| Bid Item | Quantity | Units | Description | Unit Price | Total Price |
|------------------------------------|----------|-------|--|-------------|-----------------------|
| 1 | 9 | AC | CLEARING AND GRUBBING OF WOODED AREA | \$6,000.00 | \$54,000.00 |
| 2 | 200,000 | CY | SITE PREPARATION & GRADING TO INCLUDE DETENTION EXCAVATION, LEVELING & TRANSPORTATION FOR DETENTION POND | \$10.00 | \$2,000,000.00 |
| 3 | 1 | EA | CONCRETE CANASTAS | \$5,000.00 | \$5,000.00 |
| 4 | 1,000 | SY | INSTALL ROCK RIP RAP | \$7.50 | \$7,500.00 |
| 5 | 1 | LS | SWP3 | \$50,000.00 | \$50,000.00 |
| Estimated Construction Cost | | | | | \$2,116,500.00 |

| | | |
|----------------------------|---------------|--------------|
| CONTINGENCIES | 10.00% | \$211,650.00 |
| ROW ACQUISITION (34 ACRES) | \$20,000/ AC. | \$680,000.00 |
| LEGAL | 5.00% | \$105,825.00 |
| ENGINEERING & SURVEYING | 10.00% | \$211,650.00 |

TOTAL PROJECT COST \$3,325,625.00

Notes: Estimate is for planning purposes only. All Facilities subject to District, County, and IBWC approval. Projected Development Estimate includes only construction related costs. Advertising costs are not included.

**CCDD NO. 6
PROJECT # 14
PARKER DRAIN RDF
Preliminary Construction Cost Projection**

| Bid Item | Quantity | Units | Description | Unit Price | Total Price |
|------------------------------------|----------|-------|--|--------------|-----------------------|
| 1 | 740,000 | CY | SITE PREPARATION & GRADING TO INCLUDE DETENTION EXCAVATION, LEVELING & TRANSPORTATION FOR DETENTION POND | \$10.00 | \$7,400,000.00 |
| 2 | 1 | EA | CONCRETE CANASTAS | \$5,000.00 | \$5,000.00 |
| 3 | 1,000 | SY | INSTALL ROCK RIP RAP | \$7.50 | \$7,500.00 |
| 4 | 1 | LS | SWP3 | \$150,000.00 | \$150,000.00 |
| Estimated Construction Cost | | | | | \$7,562,500.00 |

| | | |
|-----------------------------|---------------|----------------|
| CONTINGENCIES | 10.00% | \$756,250.00 |
| ROW ACQUISITION (122 ACRES) | \$20,000/ AC. | \$2,440,000.00 |
| LEGAL | 5.00% | \$378,125.00 |
| ENGINEERING & SURVEYING | 10.00% | \$756,250.00 |

TOTAL PROJECT COST \$11,893,125.00

Notes: Estimate is for planning purposes only. All Facilities subject to District, County, and IBWC approval. Projected Development Estimate includes only construction related costs. Advertising costs are not included.

**CCDD NO. 6
PROJECT # 15
TIO CANO LAKE PUMP STATION
Preliminary Construction Cost Projection**

| Bid Item | Quantity | Units | Description | Unit Price | Total Price |
|------------------------------------|----------|-------|---|--------------|-----------------------|
| 1 | 7,500 | CY | SITE PREPARATION & GRADING TO INCLUDE CHANNEL EXCAVATION, SUMP EXCAVATION AND CHANNEL GRADING | \$25.00 | \$187,500.00 |
| 2 | 250 | CY | INSTALL PUMP STATION STRUCTURE | \$1,400.00 | \$350,000.00 |
| 3 | 1 | LS | INSTALL PUMP STATION BUILDING | \$30,000.00 | \$30,000.00 |
| 4 | 450 | LF | INSTALL 42" PIPING | \$115.00 | \$51,750.00 |
| 5 | 3 | EA | INSTALL 100 CFS PUMPS, MOTORS & ELECTRIC | \$300,000.00 | \$900,000.00 |
| Estimated Construction Cost | | | | | \$1,519,250.00 |

| | | |
|---------------------------------|--------|--------------|
| CONTINGENCIES | 10.00% | \$151,925.00 |
| ENGINEERING & SURVEYING | 10.00% | \$151,925.00 |
| FEASABILITY STUDY (PROJECT 15A) | | \$750,000.00 |

TOTAL PROJECT COST \$2,573,100.00

Notes: Estimate is for planning purposes only. All Facilities subject to District, County, and IBWC approval. Projected Development Estimate includes only construction related costs. Land, legal, and advertising costs are not included.

DESIGN

GENERAL

The purpose of this section is to outline the methodology used in the preparation of this engineering report. Hydrologic and Hydraulic calculations were performed in accordance with Texas Department of Transportation, U.S. Army Corps of Engineers (USACE), Cameron County standards and other generally accepted practices. The study included the development of hydrologic models to estimate the peak discharges at various points of interest throughout the ditch networks. Additionally, detailed data such as field survey work, calculations, and materials estimate sheets are retained in the office of GDJ Engineering.

The design of the improvements shown herein is based on previously identified studies by the U.S. Army Corps of Engineers and the Lower Rio Grande Valley Development Council, and the City of La Feria Flood Protection Plan. The previous USACE report recommended a 50 year frequency level of protection and this has been maintained herein. The USACE design flows were modified, in accordance with the criteria established in their report, where drainage areas were amended to meet the current conditions.

The proposed channel improvement typical section for the rural areas is a 120 feet wide-trapezoidal channel with 3:1 side slopes and a maintenance bench on each side. The channel has a bottom width of 10 feet and a 10 feet depth, 3:1 side slopes for 15 feet, 25 feet maintenance bench, and 3:1 side slopes for 15 feet on each side. The proposed channel improvement typical section for the urban areas is a 70 feet-triangular channel with 2:1 side slopes and a maintenance bench on each side. The channel has a 10 feet depth, 2:1 side slopes for 10 feet, 15 feet maintenance bench, and 2:1 side slopes for 10 feet on each side.

PLAN LAYOUTS

See Attachments for Plan Layouts.

COMPUTATION OF CAPITAL IMPROVEMENT TAX RATE

GENERAL

The proposed tax rate necessary to be leveled for debt service retirement is dependent upon several factors. Some of these variables are 1) the interest rate at the time of sale, 2) the total assessed valuation at the time of sale, and 3) the amount of bonds sold. The assumption of these variables is based on current bond market conditions but become less precise as they are projected into the future and affected by credit rating and the bond market.

For the computation used herein, the following assumptions were used:

- A. Inflation will equal tax base growth so that as construction costs increase, it will equal tax base so that the rate would remain constant as cost increased. Historically, the tax base within Cameron County has exceeded inflation for the last five years.
- B. Bonds will be retired over 20 years.
- C. The interest rate is assumed at 3-4%.
- D. The net taxable value of the proposed district is \$1,051,865,5870.00 as reported by the Cameron County Appraisal District.

For \$9,500,000 in bonds, 100% collection, 3% interest, the tax rate is \$.095 per \$100 valuation.
Annual Cost for \$50,000 valuation = \$47.50
Or \$3.96/month

For \$9,500,000 in bonds, 95% collection, 3% interest, the tax rate is \$.010 per \$100 valuation.
Annual Cost for \$50,000 valuation = \$49.88
Or \$4.16/month

For \$9,500,000 in bonds, 100% collection, 4% interest, the tax rate is \$.104 per \$100 valuation.
Annual Cost for \$50,000 valuation = \$51.78
Or \$4.31/month

For \$9,500,000 in bonds, 95% collection, 4% interest, the tax rate is \$.1087 per \$100 valuation.
Annual Cost for \$50,000 valuation = \$54.36
Or \$4.53/month

For \$8,500,000 in bonds, 100% collection, 3% interest, the tax rate is \$.085 per \$100 valuation.
Annual Cost for \$50,000 valuation = \$42.50
Or \$3.54/month

For \$8,500,000 in bonds, 95% collection, 3% interest, the tax rate is \$.0893 per \$100 valuation.
Annual Cost for \$50,000 valuation = \$44.63
Or \$3.72/month

For \$8,500,000 in bonds, 100% collection, 4% interest, the tax rate is \$.093 per \$100 valuation.
Annual Cost for \$50,000 valuation = \$46.33
Or \$3.86/month

For \$8,500,000 in bonds, 95% collection, 4% interest, the tax rate is \$.0973 per \$100 valuation.
Annual Cost for \$50,000 valuation = \$48.64
Or \$4.05/month

ENVIRONMENTAL CRITERIA

Any plans considered should be formulated to avoid adverse environmental impacts to the maximum extent possible. Where adverse impacts cannot be avoided, measures should be developed to mitigate such effects. The necessity for developing specific mitigation measures could be reduced by emphasizing the protection, preservation, or enhancement of existing environmental values through project design. Significant resources should be preserved, improved, or restored to the maximum extent possible.

The U.S. Fish and Wildlife Service (USFWS) mitigation policy has established four resource categories which are used to determine that the level of recommended mitigation is consistent with the fish and wildlife resources involved. These range from Resource Category (RC) I which are the most desirable habitat types with a mitigation goal of no loss of the existing habitat value to RC IV which is the lowest category and denotes habitat types of medium to low value with a mitigation goal to minimize the loss of habitat value.

The USFWS has identified the major habitat types in each resource category. Brushings with greater than 60 percent canopy cover of diverse stands are grouped as RC I and should be avoided at all costs, while monotypic or less dense (less than 60 percent canopy cover) stands would be grouped as RC II and should be avoided, if possible. Mitigation for losses of RC II could be accomplished by revegetation with species such as anaqua, ebony, and granjeno in areas such as undisturbed brush stands which would increase the value of the existing habitat or along with right-of-way of the drains.

Grasslands, saline flats, and sacahuisti habitat types which are widely distributed throughout the county would be classified as RC II or III depending on habitat characteristics. Mitigation of these habitat types could be accomplished by revegetation with similar or more beneficial species typifying the community in question.

Wetlands, including potholes and resacas, would be classified as RC I. These areas cannot be adequately replaced; therefore, their destruction should be avoided. Losses of algal or mudflat communities are difficult to mitigate but could be accomplished by 1:1 marsh creation with smooth cordgrass of a 2:1 acreage compensation by scraping down suitable high ground.

Mitigation associated with impacts from sedimentation and pesticides would be more difficult to accomplish. However, project design, including weirs and settling basins to trap sediments, could eliminate most of the contaminant related impacts. Unavoidable losses could be mitigated by improvement in productivity of the system which could include additional marsh creation.

RECOMMENDATIONS



RECOMMENDATIONS

GENERAL

Based upon the material contained herein, the creation of a drainage district to serve the area north and south of La Feria is not only feasible, but highly recommended. The creation of an entity to levy a tax for maintenance as well as improvements, was a part of the 1984 Federal Emergency Management Association recommendations and was again repeated after the 1991 flood. A tax rate of \$.15 cents per \$100.00 valuation yielding a levee of approximately \$1,577,798.38 would adequately fund the district in order to maintain the 60 miles of ditches which currently exist within the boundaries of the proposed district. This revenue would allow a level of maintenance which the existing entities are unable to accomplish given their current budgets. It would be more expensive for each entity to separately attempt to maintain the existing ditch system at the required level and have one entity fund all the necessary operations.

Additionally, with one entity responsible for the maintenance of the existing system, the system may be maintained in an orderly and uniform manner rather than the seemingly random manner in which it is maintained currently.

A tax rate of \$.15 cents is within range of tax rates of the existing districts within Cameron County, and will adequately fund the necessary maintenance.

Capital improvements are totally beyond the reach of the current entities which provide for maintenance of the existing system. Neither the irrigation districts nor the cities can independently fund the necessary capital improvements which are necessary for the growth of the area. A tax rate of less than \$.085 cents per \$100 valuation will generate sufficient funds to retire from approximately \$8,000,000 to \$9,000,000 worth of bonds contingent on rates.

It is therefore recommended that Cameron County Commissioner's Court continue the procedure in the creation of a drainage district to be named Cameron County Drainage District Number 6, and that an election should be held for the people within the area to determine whether they are in favor or opposed to the creation of this district. It is recommended that only \$8,500,000 worth of bonds be authorized initially, and that these bonds be sold as the revenue needs dictate. If the capital improvements can be completed with \$8,500,000 and any money remains, a public hearing should be held to determine the application of the unused revenue from the bonds. If \$8,500,000 is not adequate to complete all improvements, then additional bonds should be authorized by the voters. It is not possible that \$8,500,000 may accomplish all of the required capital improvements detailed herein given the fact that the CIP list includes over \$62,000,000 in projects. The CCDD #6 will work towards multiple partnerships with entities to leverage CCDD #6 funds and engage in interlocal partnerships to maximize the amount of CIP projects to be constructed in the initial phase.

IMPLEMENTATION SCHEDULE

The anticipated implementation schedule is for CCDD No. 6 to be approved in November 2021 and the procedural steps to begin the operations and maintenance activities to begin as soon as an interim funding source is established and/or the first annual collection of ad valorem taxes are collected by the district. Concurrently the District Engineer and Board will coordinate the sale of bonds and concurrently develop the engineering plans for the identified priority CIP projects that are made final after the public involvement is complete. It is anticipated that the \$8,500,000 in bondable CIP project can go to construction within 12 months of the bond issuance and completed 12 to 18 months after.

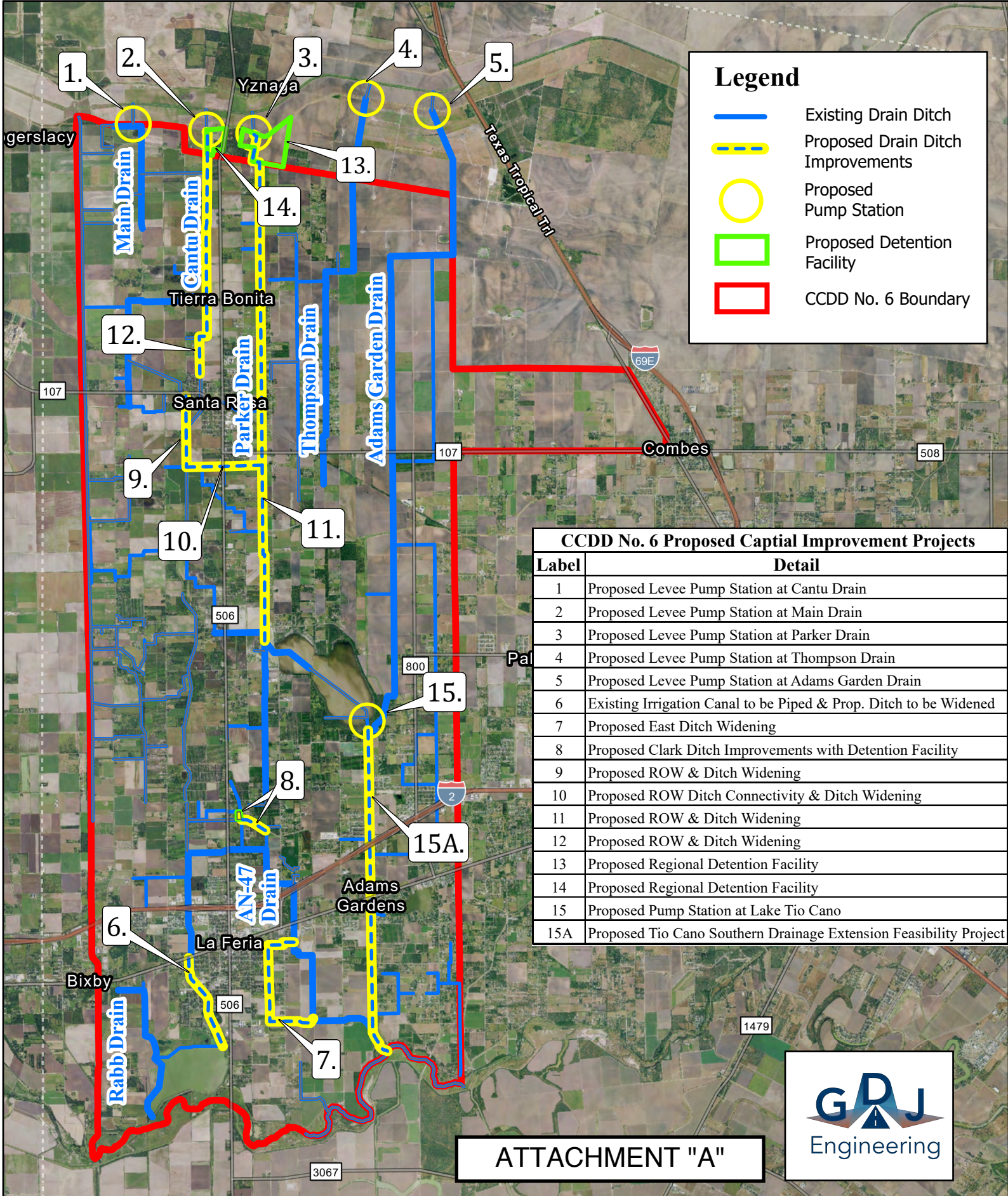




Cameron County Drainage District No. 6 Capital Improvement Projects



1 inch = 9,000 Ft



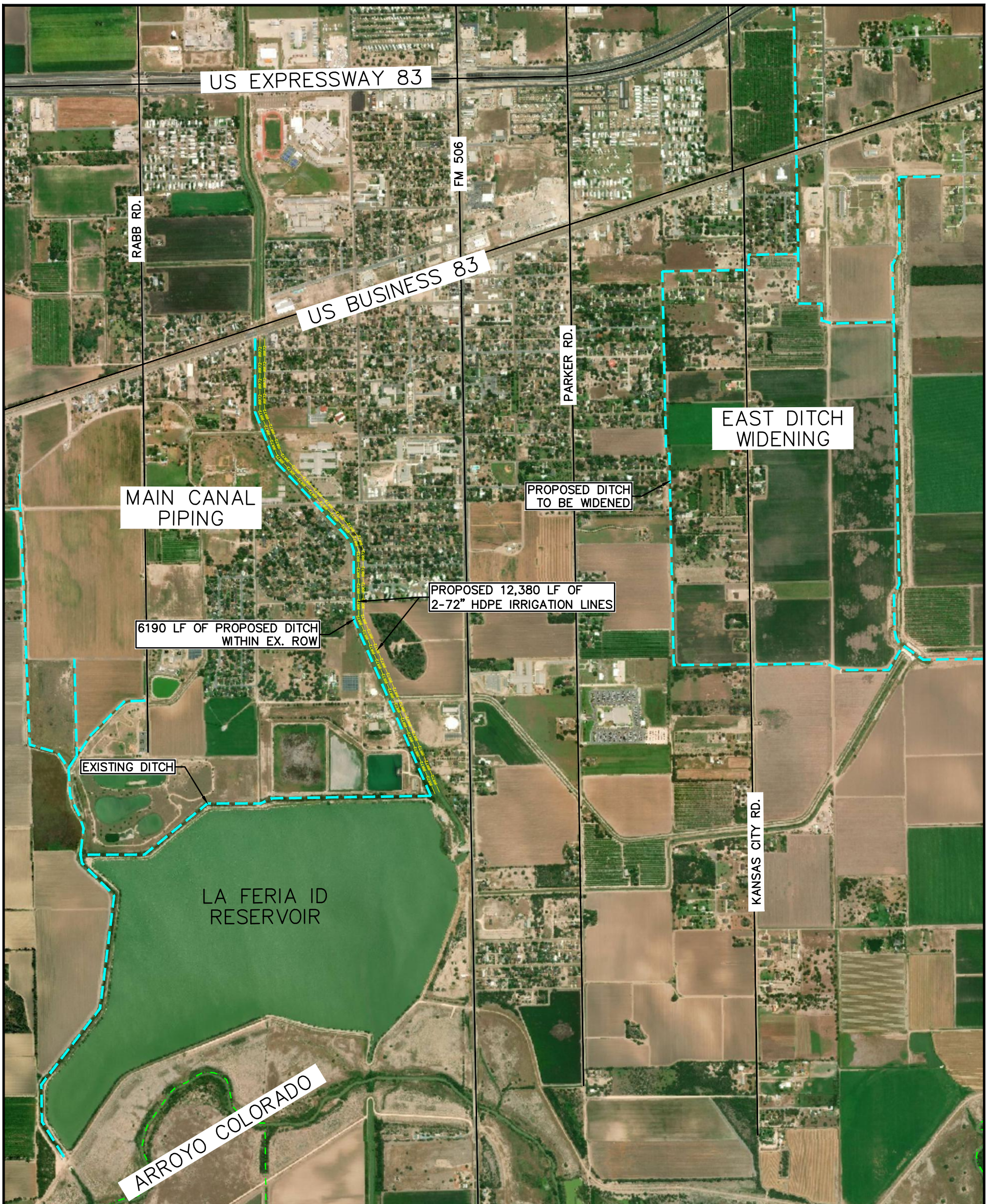
Legend

- Existing Drain Ditch
- Proposed Drain Ditch Improvements
- Proposed Pump Station
- Proposed Detention Facility
- CCDD No. 6 Boundary

| CCDD No. 6 Proposed Capital Improvement Projects | |
|--|---|
| Label | Detail |
| 1 | Proposed Levee Pump Station at Cantu Drain |
| 2 | Proposed Levee Pump Station at Main Drain |
| 3 | Proposed Levee Pump Station at Parker Drain |
| 4 | Proposed Levee Pump Station at Thompson Drain |
| 5 | Proposed Levee Pump Station at Adams Garden Drain |
| 6 | Existing Irrigation Canal to be Piped & Prop. Ditch to be Widened |
| 7 | Proposed East Ditch Widening |
| 8 | Proposed Clark Ditch Improvements with Detention Facility |
| 9 | Proposed ROW & Ditch Widening |
| 10 | Proposed ROW Ditch Connectivity & Ditch Widening |
| 11 | Proposed ROW & Ditch Widening |
| 12 | Proposed ROW & Ditch Widening |
| 13 | Proposed Regional Detention Facility |
| 14 | Proposed Regional Detention Facility |
| 15 | Proposed Pump Station at Lake Tio Cano |
| 15A | Proposed Tio Cano Southern Drainage Extension Feasibility Project |

ATTACHMENT "A"





SCALE 1" = 1250'

LEGEND

-  DISTRICT BOUNDARY
-  MAJOR LOCAL ROADS
-  CCDD NO. 6 DITCH

EXHIBIT ONLY
 NOT FOR CONSTRUCTION
 PREPARED UNDER THE
 SUPERVISION OF
 DUSTIN MOORE, PE - TX119107

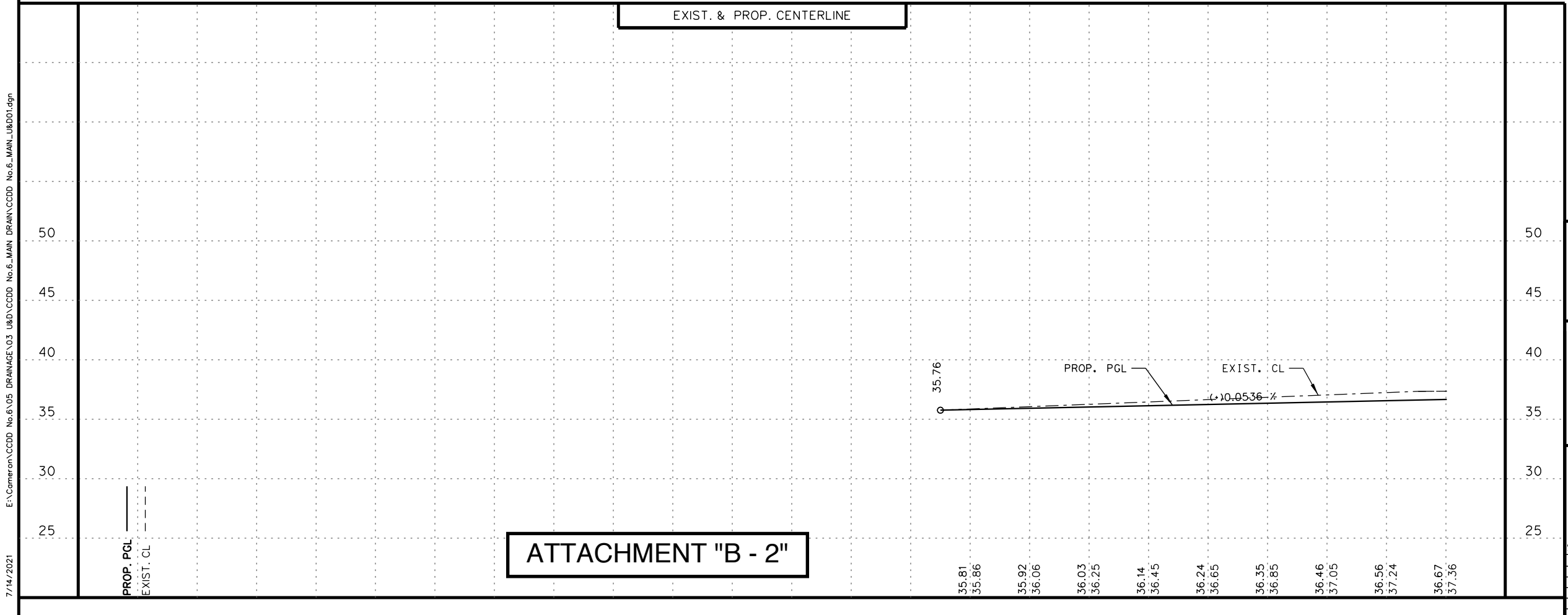
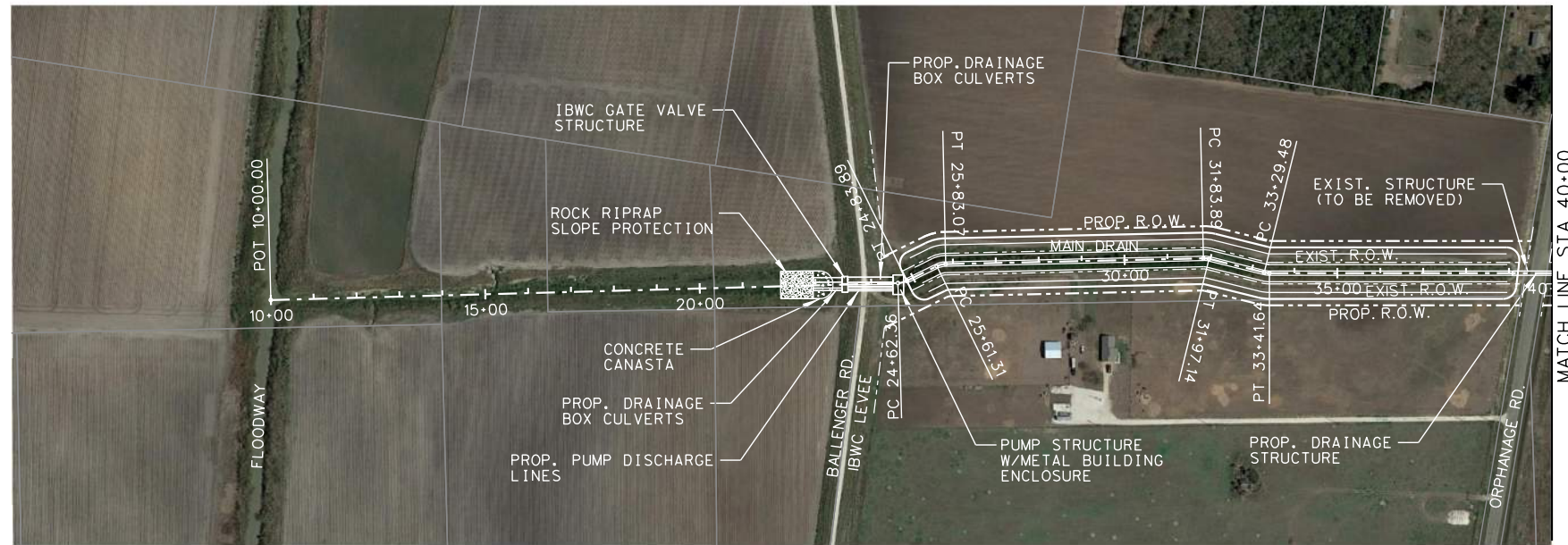
ATTACHMENT "B - 1"

CCDD NO. 6
 CAPITAL IMPROVEMENTS
 MAIN CANAL DITCH CONVERSION

Moore Land
 Surveying, LLC

14216 Palis Drive, La Feria, TX 78559
 (956)245-0988 TBPLS Firm No. 10194186
 (956)245-4651 TBPE Firm No. 19190





THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

Christopher R. Rodriguez
 CHRISTOPHER R. RODRIGUEZ
 P.E. 107692
 7/14/2021
 DATE



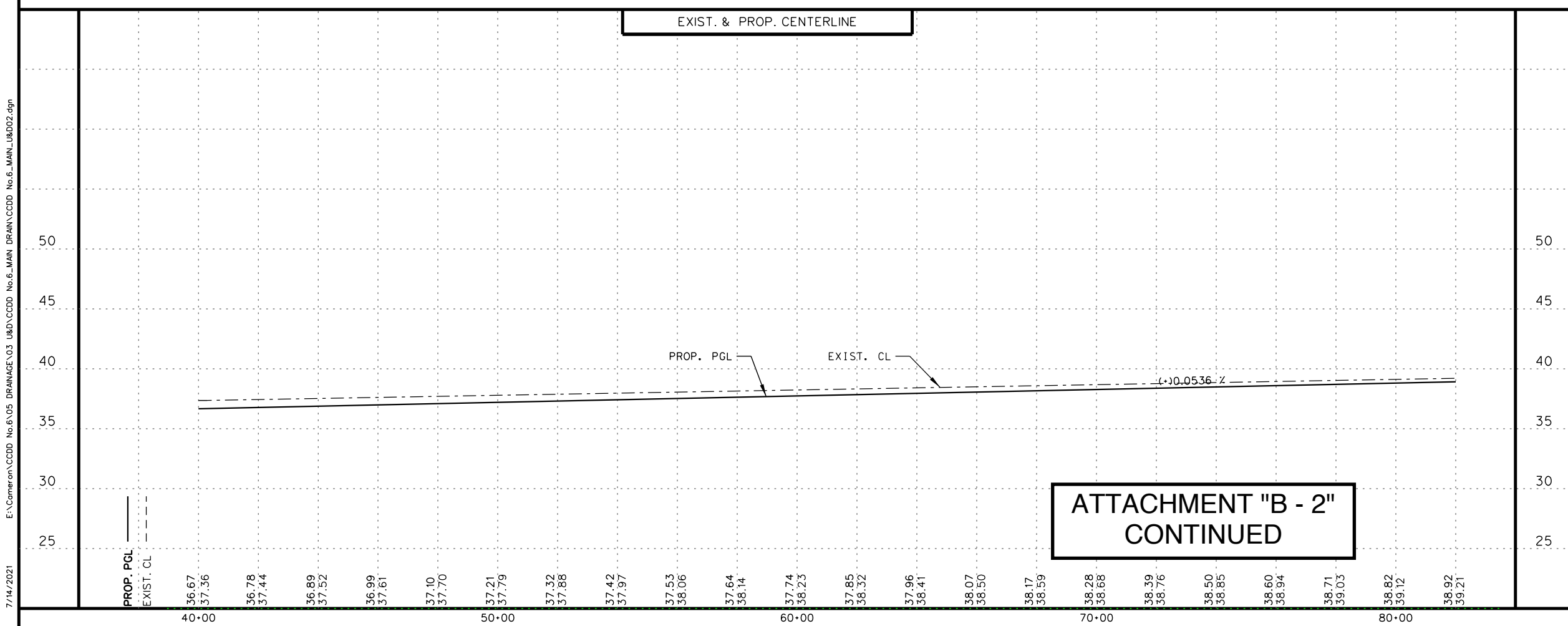
**DRAINAGE DIST. NO. 6
 MAIN DRAIN
 DRAINAGE
 LAYOUT**

SCALE: 1" = 400' SHEET 1 OF 5

| | | | | |
|--------|--------------------|---------|--------------|------------|
| DN: | FED. RD. DIV. NO.: | STATE: | PROJECT NO.: | SHEET NO.: |
| CK DN: | 6 | TEXAS | | |
| DW: | STATE DIST. NO. | COUNTY: | HIGHWAY: | |
| CK DW: | | CAMERON | | |
| TR: | | | | |
| CK TR: | | | | |

E:\Cameron\CDD No.6\05 DRAINAGE\03 U&D\CDD No.6_MAIN DRAIN\CDD No.6_MAIN_U&D01.dgn

7/14/2021



THIS DOCUMENT IS FOR
INTERIM REVIEW AND
NOT INTENDED FOR
CONSTRUCTION, BIDDING,
OR PERMIT PURPOSES.

Christopher R. Rodriguez
CHRISTOPHER R. RODRIGUEZ
P.E. 107692

7/14/2021
DATE

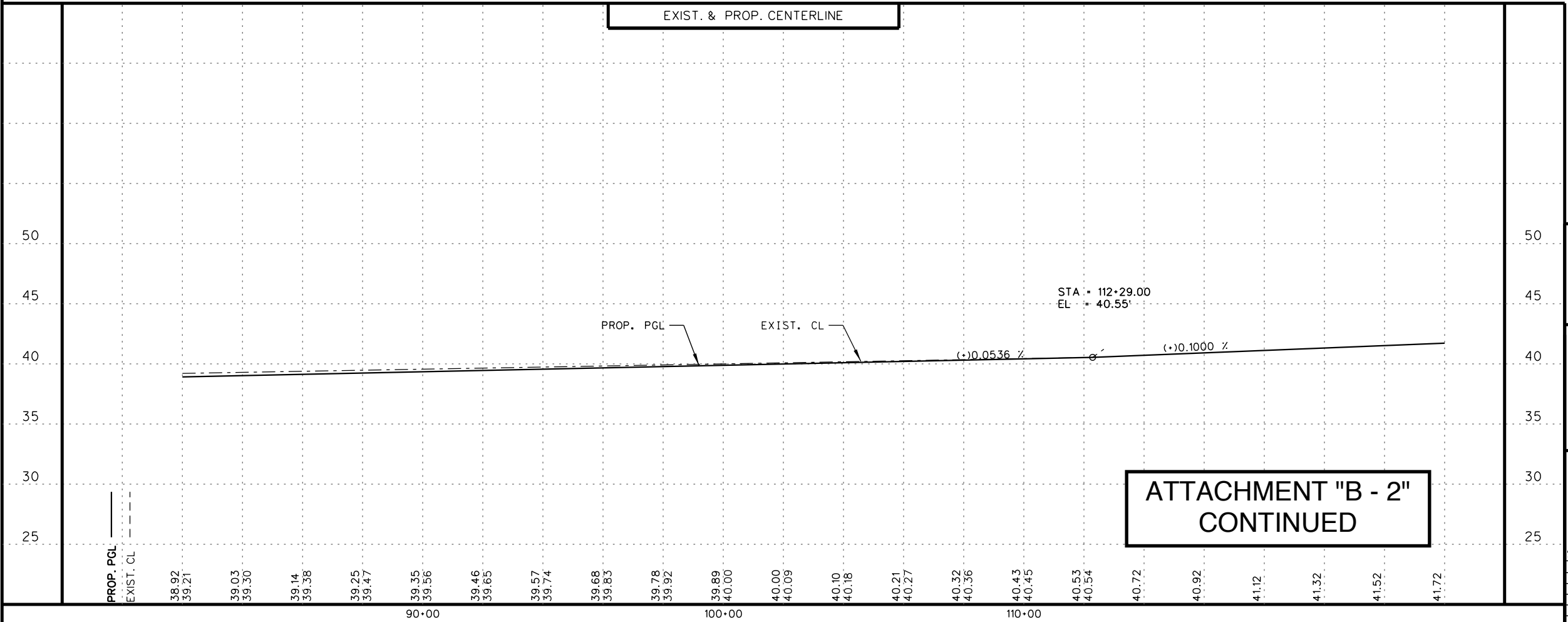
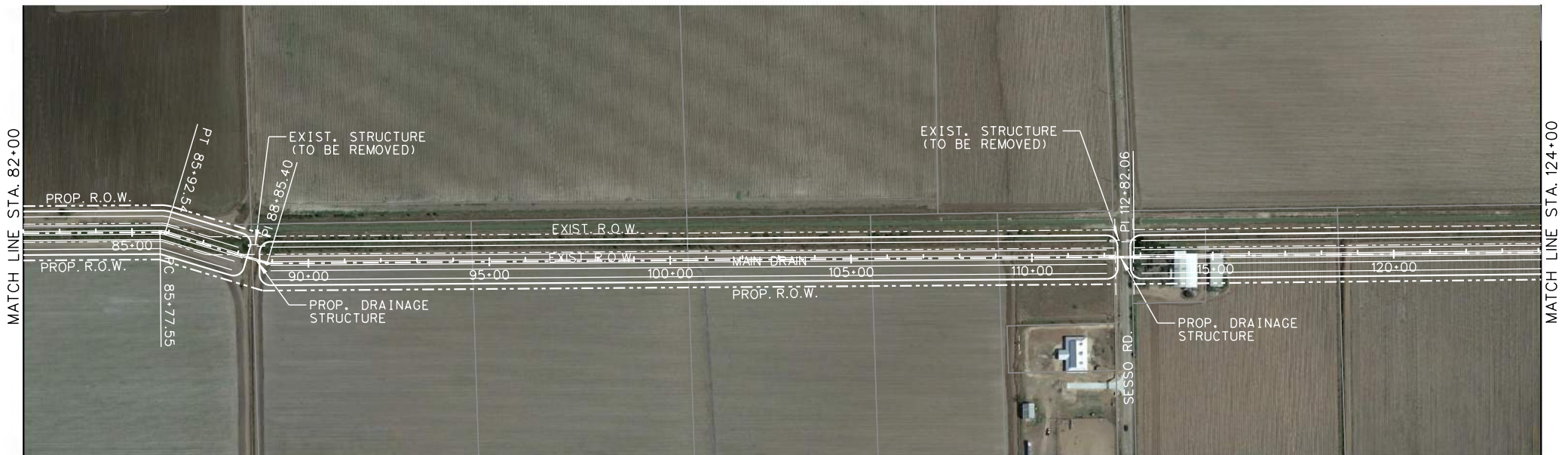


**DRAINAGE DIST. NO. 6
MAIN DRAIN
DRAINAGE
LAYOUT**

SCALE: 1" = 400' SHEET 2 OF 5

| | | | | |
|--------|--------------------|---------|--------------|------------|
| DN: | FED. RD. DIV. NO.: | STATE: | PROJECT NO.: | SHEET NO.: |
| CK DN: | 6 | TEXAS | | |
| DW: | STATE DIST. NO. | COUNTY: | HIGHWAY: | |
| CK DW: | | CAMERON | | |
| TR: | | | | |
| CK TR: | | | | |

E:\Cameron\CADD No.6\05 DRAINAGE\03 U&D\CADD No.6_MAIN_DRAIN\CADD No.6_MAIN_UBD02.dgn 7/14/2021



THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

Christopher R. Rodriguez
 CHRISTOPHER R. RODRIGUEZ
 P.E. 107692
 7/14/2021
 DATE

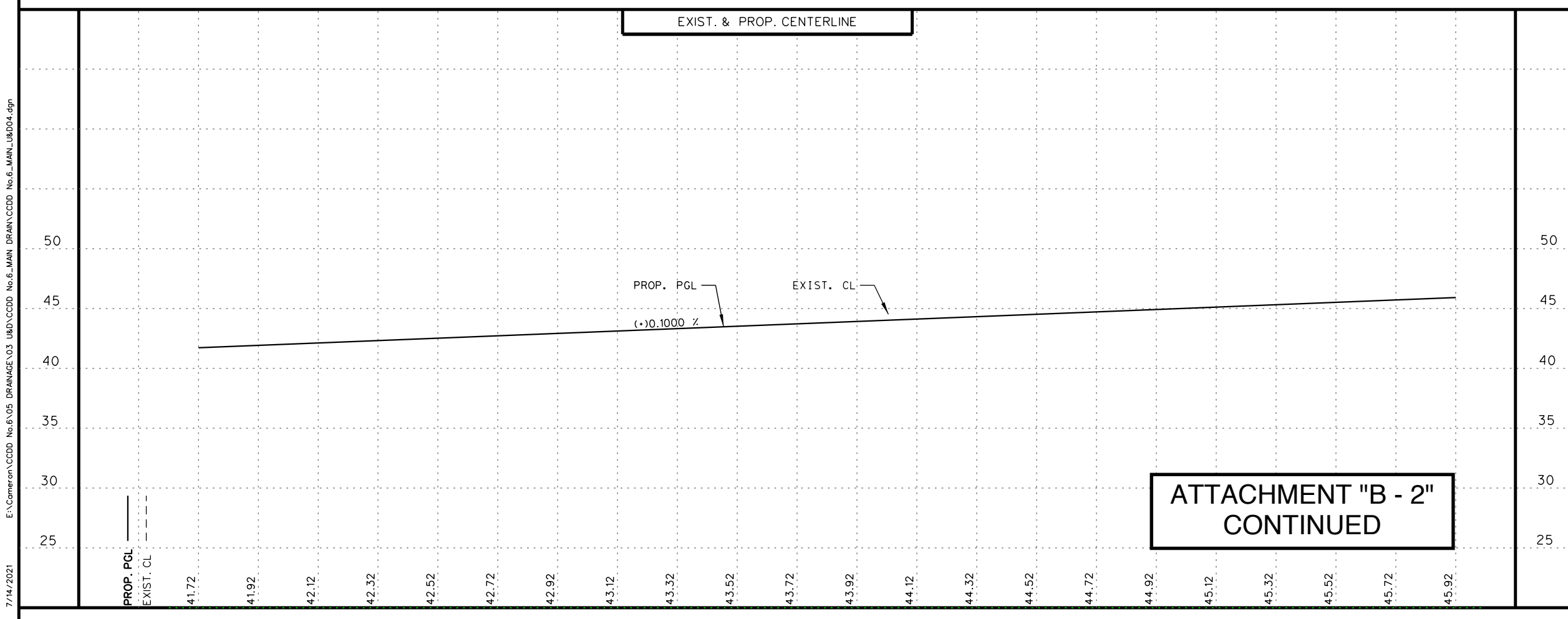


**DRAINAGE DIST. NO. 6
 MAIN DRAIN
 DRAINAGE
 LAYOUT**

SCALE: 1" = 400' SHEET 3 OF 5

| | | | | |
|--------|--------------------|---------|--------------|------------|
| DN: | FED. RD. DIV. NO.: | STATE: | PROJECT NO.: | SHEET NO.: |
| CK DN: | 6 | TEXAS | | |
| DW: | STATE DIST. NO.: | COUNTY: | HIGHWAY: | |
| CK DW: | | CAMERON | | |
| TR: | | | | |
| CK TR: | | | | |

E:\Cameron\CADD No.6\05 DRAINAGE\03 U&D\CADD No.6_MAIN_DRAIN\CADD No.6_MAIN_UBD03.dgn 7/14/2021



THIS DOCUMENT IS FOR
INTERIM REVIEW AND
NOT INTENDED FOR
CONSTRUCTION, BIDDING,
OR PERMIT PURPOSES.

Christopher R. Rodriguez
CHRISTOPHER R. RODRIGUEZ
P.E. 107692

7/14/2021
DATE



**DRAINAGE DIST. NO. 6
MAIN DRAIN
DRAINAGE
LAYOUT**

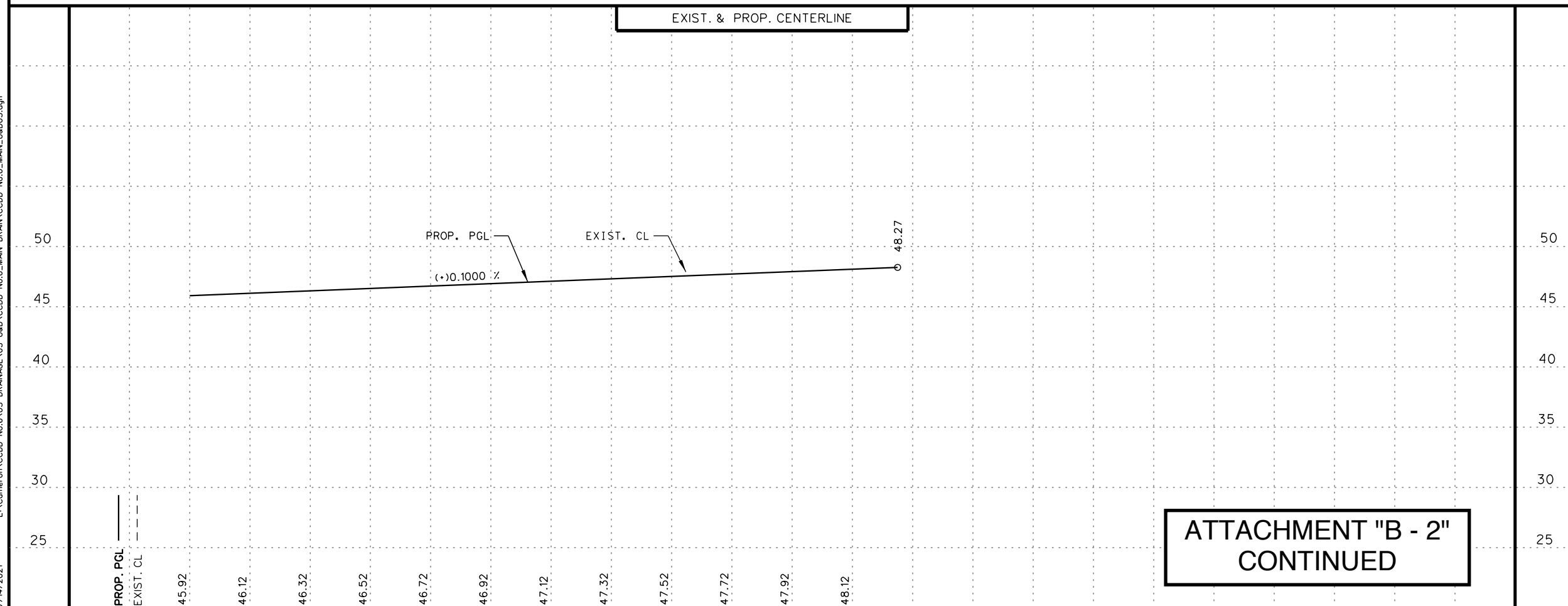
SCALE: 1" = 400' SHEET 4 OF 5

| | | | | |
|--------|-----------------|---------|-------------|-----------|
| DN: | FED. RD. NO. | STATE | PROJECT NO. | SHEET NO. |
| CK DN: | 6 | TEXAS | | |
| DW: | STATE DIST. NO. | COUNTY | HIGHWAY | |
| CK DW: | | CAMERON | | |
| TR: | | | | |
| CK TR: | | | | |

E:\Cameron\CCDD No.6\05 DRAINAGE\03 U&D\CCDD No.6_MAIN DRAIN\CCDD No.6_MAIN_UBD04.dgn 7/14/2021



E:\Cameron\CDD No.6\05 DRAINAGE\03 U&D\CDD No.6_MAIN_DRAIN\CDD No.6_MAIN_U&D05.dgn 7/14/2021



THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

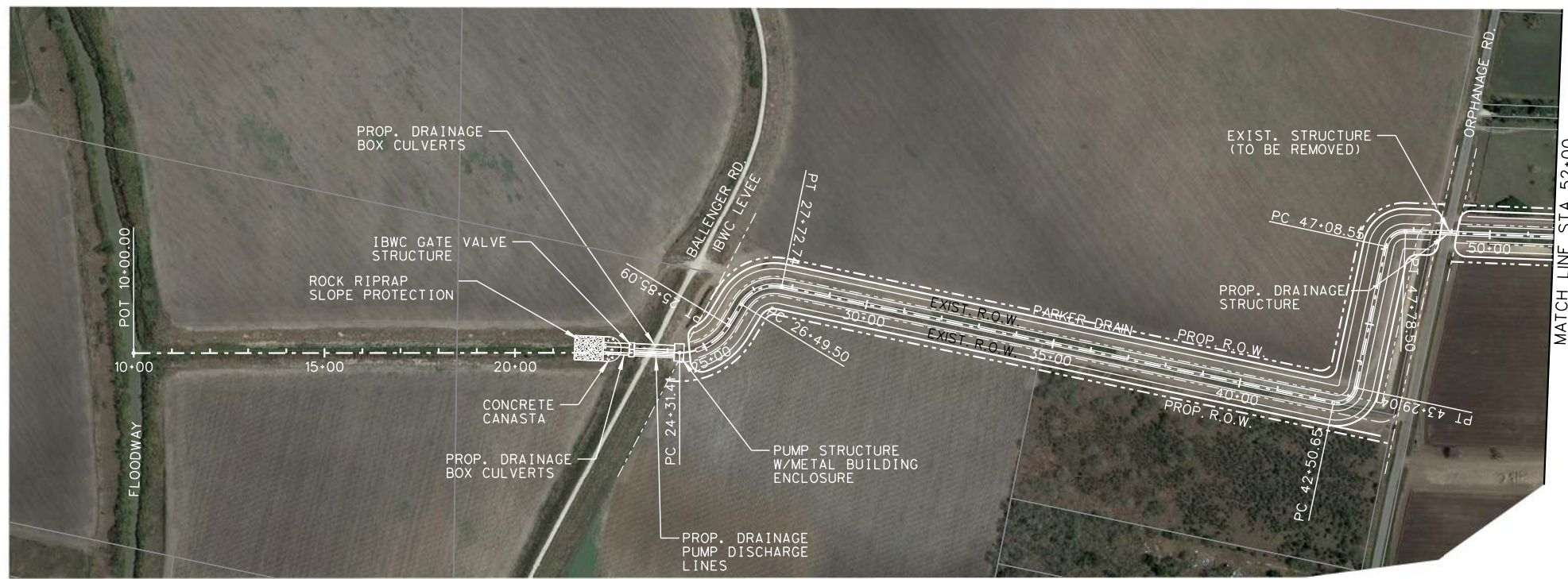
Christopher R. Rodriguez
 CHRISTOPHER R. RODRIGUEZ
 P.E. 107692
 7/14/2021
 DATE



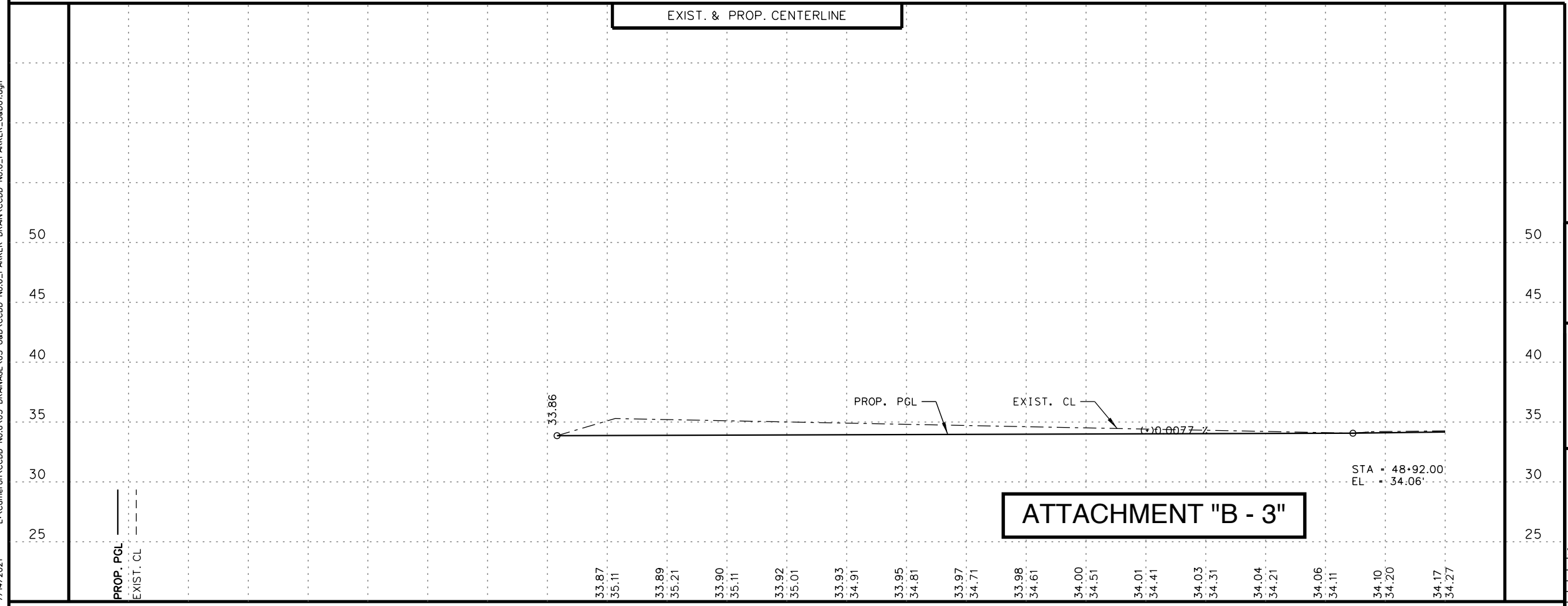
**DRAINAGE DIST. NO. 6
 MAIN DRAIN
 DRAINAGE
 LAYOUT**

SCALE: 1" = 400' SHEET 5 OF 5

| | | | | |
|--------|--------------------|---------|--------------|------------|
| DN: | FED. RD. DIV. NO.: | STATE: | PROJECT NO.: | SHEET NO.: |
| CK DN: | 6 | TEXAS | | |
| DW: | STATE DIST. NO.: | COUNTY: | HIGHWAY: | |
| CK DW: | | CAMERON | | |
| TR: | | | | |
| CK TR: | | | | |



7/14/2021 E:\Cameron\CCDD No.6\05 DRAINAGE\03 U&D\CCDD No.6_PARKER DRAIN\CCDD No.6_PARKER_U&D01.dgn



THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

Christopher R. Rodriguez
CHRISTOPHER R. RODRIGUEZ
P.E. 107692

7/14/2021
DATE



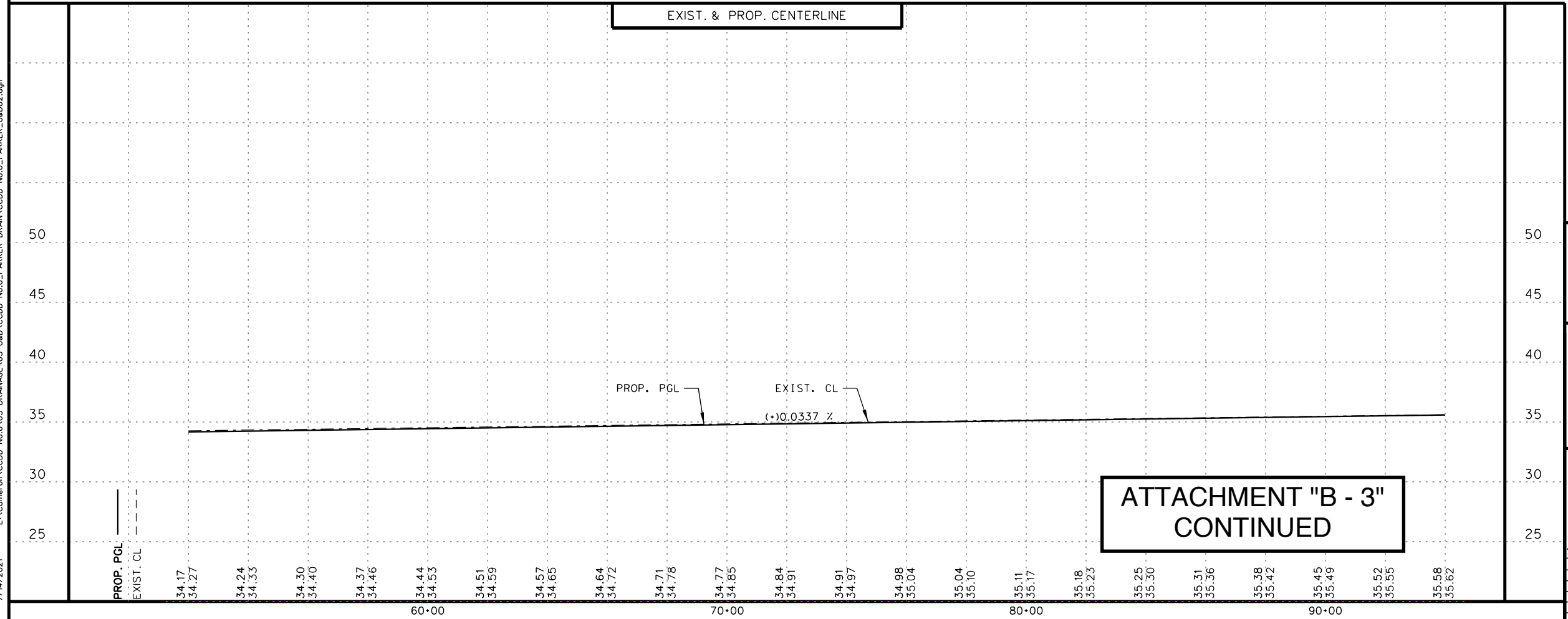
**DRAINAGE DIST. NO. 6
PARKER DRAIN
DRAINAGE LAYOUT**

SCALE: 1" = 400' SHEET 1 OF 9

| | | | | |
|--------|--------------------|---------|--------------|------------|
| DN: | FED. RD. DIV. NO.: | STATE: | PROJECT NO.: | SHEET NO.: |
| CK DN: | 6 | TEXAS | | |
| DW: | STATE DIST. NO.: | COUNTY: | HIGHWAY: | |
| CK DW: | | CAMERON | | |
| TR: | | | | |
| CK TR: | | | | |



E:\Comer\CCDD No.6\05 DRAINAGE\03 U&D\CCDD No.6_PARKER DRAIN\CCDD No.6_PARKER_U&DOZ.dgn 7/14/2021



**ATTACHMENT "B - 3"
CONTINUED**

THIS DOCUMENT IS FOR
INTERIM REVIEW AND
NOT INTENDED FOR
CONSTRUCTION, BIDDING,
OR PERMIT PURPOSES.

Christopher R. Rodriguez
CHRISTOPHER R. RODRIGUEZ
P.E. 107692

7/14/2021
DATE



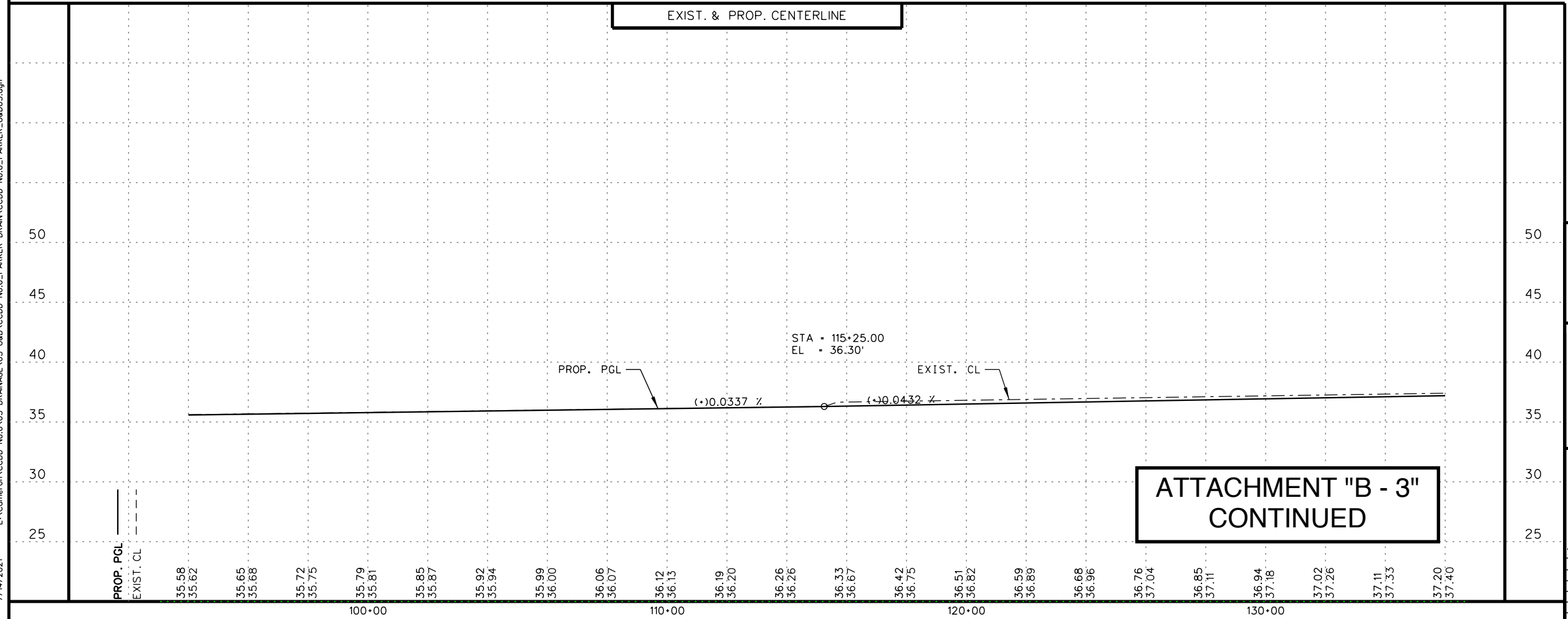
**DRAINAGE DIST. NO. 6
PARKER DRAIN
DRAINAGE
LAYOUT**

SCALE: 1" = 400' SHEET 2 OF 9

| | | | | |
|--------|--------------------|---------|--------------|------------|
| DN: | FED. RD. DIV. NO.: | STATE: | PROJECT NO.: | SHEET NO.: |
| CK DN: | 6 | TEXAS | | |
| DW: | STATE DIST. NO. | COUNTY: | HIGHWAY: | |
| CK DW: | | CAMERON | | |
| TR: | | | | |
| CK TR: | | | | |



E:\Comer\CCDD No.6\05 DRAINAGE\03 U&D\CCDD No.6_PARKER DRAIN\CCDD No.6_PARKER_U&D03.dgn 7/14/2021



THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

Christopher R. Rodriguez
 CHRISTOPHER R. RODRIGUEZ
 P.E. 107692
 7/14/2021
 DATE

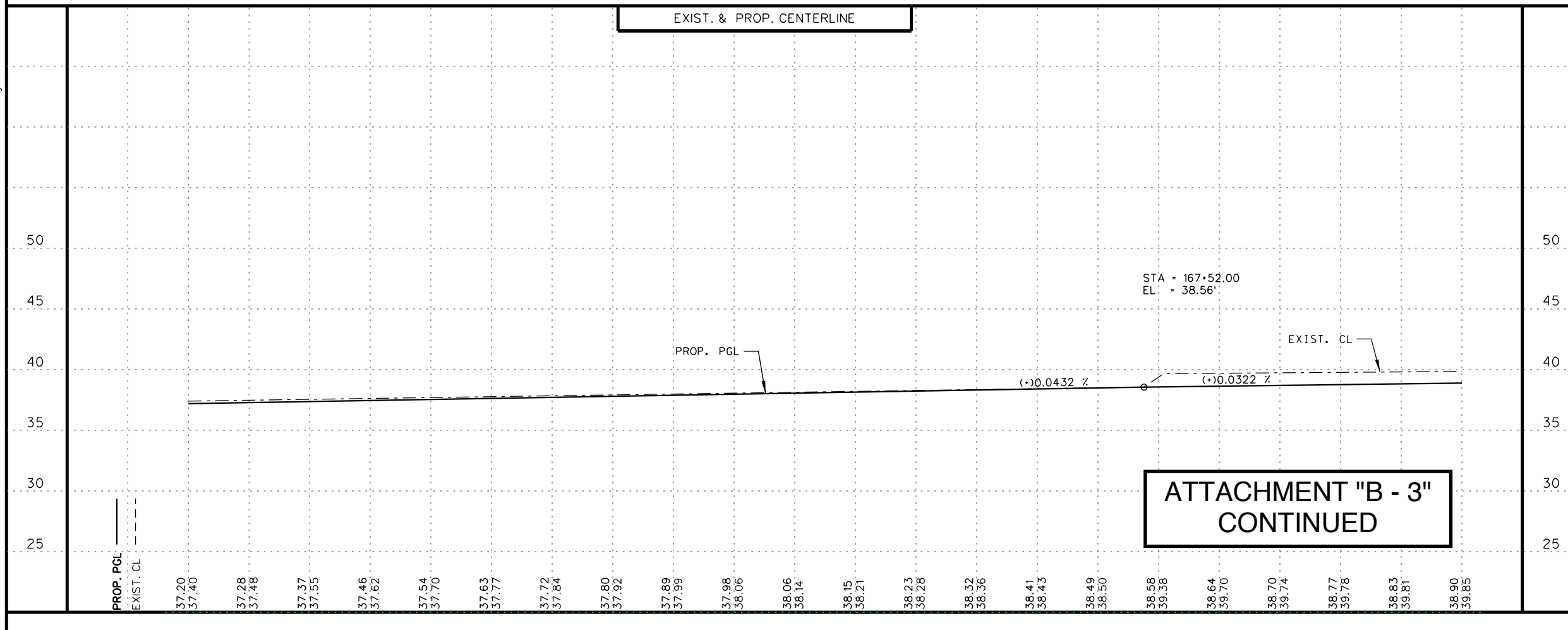


**DRAINAGE DIST. NO. 6
 PARKER DRAIN
 DRAINAGE LAYOUT**

SCALE: 1" = 400' SHEET 3 OF 9

| | | | | |
|--------|--------------------|---------|--------------|------------|
| DN: | FED. RD. DIV. NO.: | STATE: | PROJECT NO.: | SHEET NO.: |
| CK DN: | 6 | TEXAS | | |
| DW: | STATE DIST. NO. | COUNTY: | HIGHWAY: | |
| CK DW: | | CAMERON | | |
| TR: | | | | |
| CK TR: | | | | |

E:\Comer\CCDD No.6\05 DRAINAGE\03 U&D\CCDD No.6_PARKER DRAIN\CCDD No.6_PARKER_U&D.dgn 7/14/2021



THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

Christopher R. Rodriguez
CHRISTOPHER R. RODRIGUEZ
P.E. 107692

7/14/2021
DATE



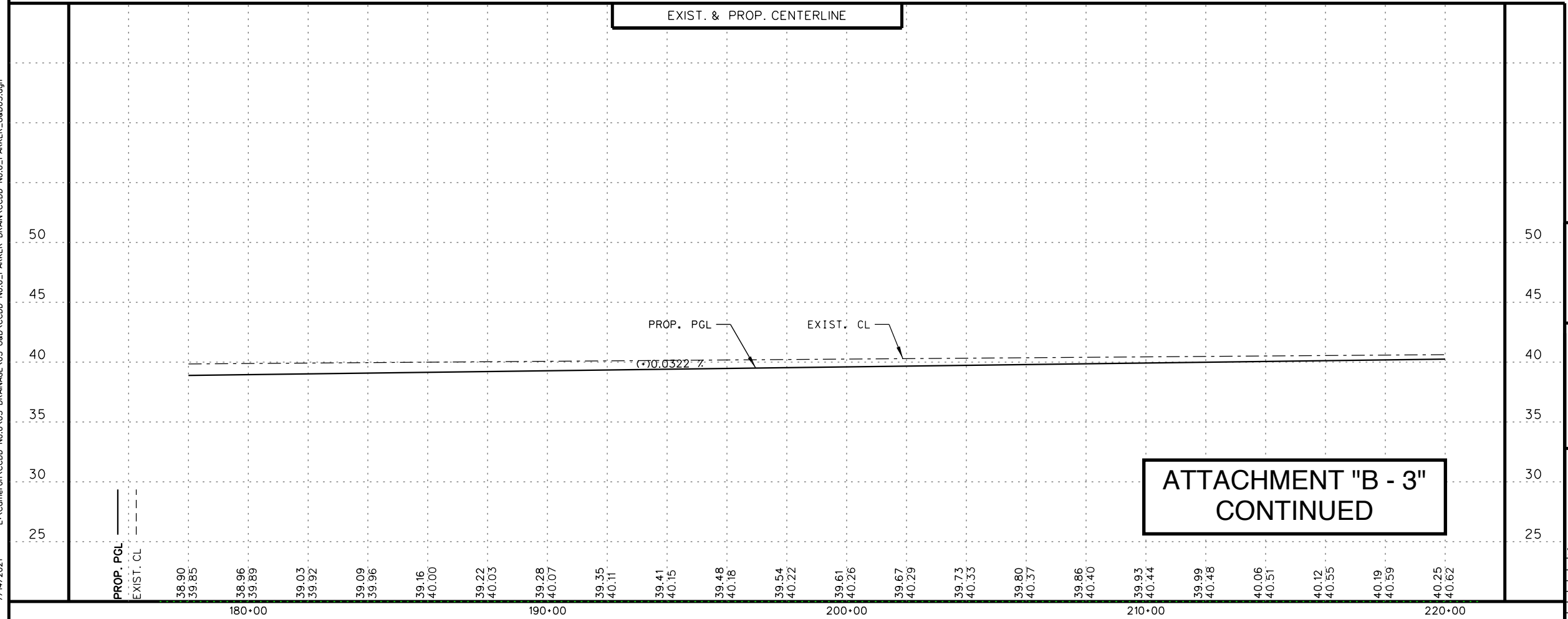
**DRAINAGE DIST. NO. 6
PARKER DRAIN
DRAINAGE LAYOUT**

SCALE: 1" = 400' SHEET 4 OF 9

| | | | | |
|--------|--------------------|---------|--------------|------------|
| DN: | FED. RD. DIV. NO.: | STATE: | PROJECT NO.: | SHEET NO.: |
| CK DN: | 6 | TEXAS | | |
| DW: | STATE DIST. NO. | COUNTY: | HIGHWAY: | |
| CK DW: | | CAMERON | | |
| TR: | | | | |
| CK TR: | | | | |



E:\Comercon\CDD No.6\05 DRAINAGE\03 U&D\CDD No.6_PARKER DRAIN\CDD No.6_PARKER_U&D05.dgn 7/14/2021



**ATTACHMENT "B - 3"
CONTINUED**

THIS DOCUMENT IS FOR
INTERIM REVIEW AND
NOT INTENDED FOR
CONSTRUCTION, BIDDING,
OR PERMIT PURPOSES.

Christopher R. Rodriguez
CHRISTOPHER R. RODRIGUEZ
P.E. 107692

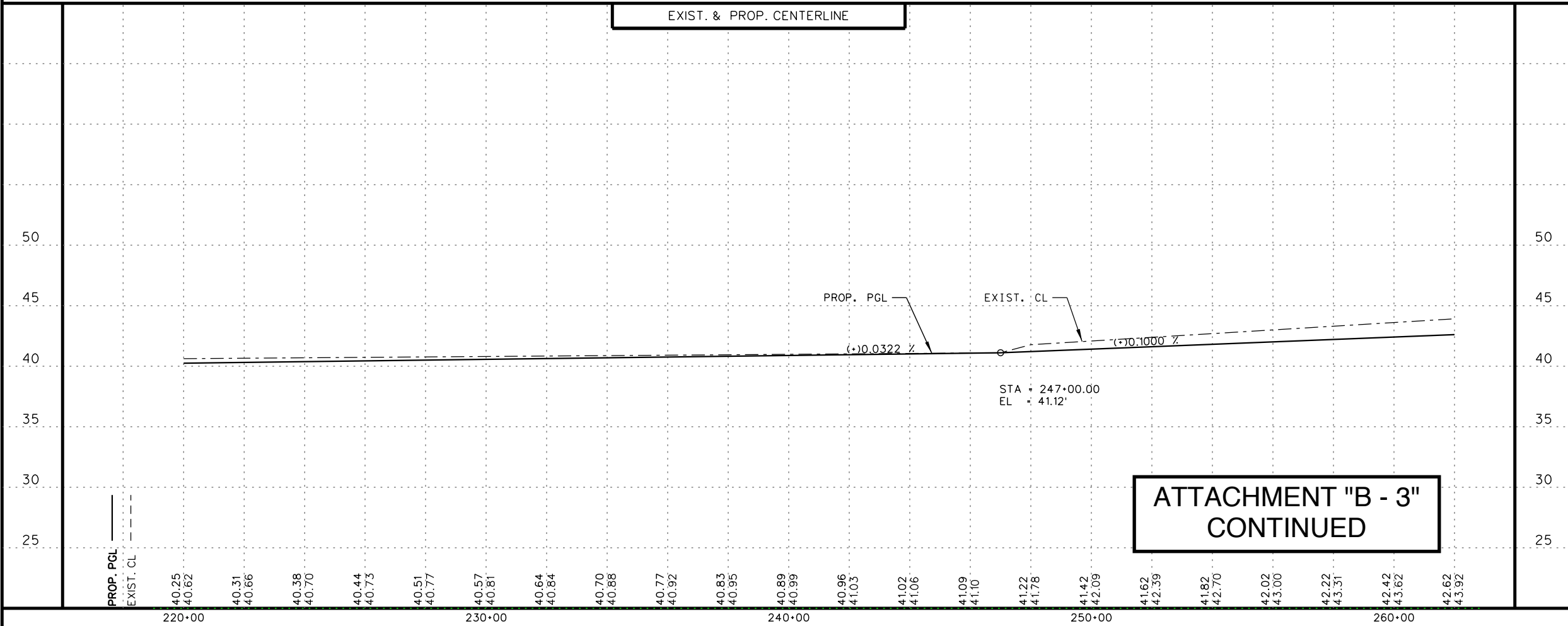
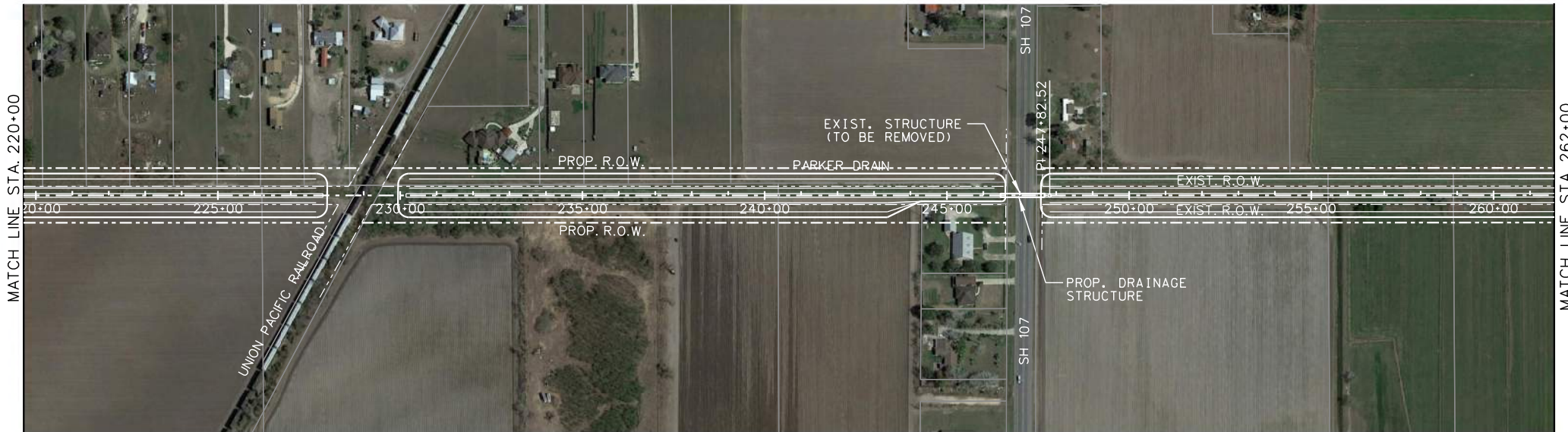
7/14/2021
DATE



**DRAINAGE DIST. NO. 6
PARKER DRAIN
DRAINAGE
LAYOUT**

SCALE: 1" = 400' SHEET 5 OF 9

| | | | | |
|--------|--------------------|---------|--------------|------------|
| DN: | FED. RD. DIV. NO.: | STATE: | PROJECT NO.: | SHEET NO.: |
| CK DN: | 6 | TEXAS | | |
| DW: | STATE DIST. NO. | COUNTY: | HIGHWAY: | |
| CK DW: | | CAMERON | | |
| TR: | | | | |
| CK TR: | | | | |



**ATTACHMENT "B - 3"
CONTINUED**

THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

Christopher R. Rodriguez
CHRISTOPHER R. RODRIGUEZ
P.E. 107692
7/14/2021
DATE



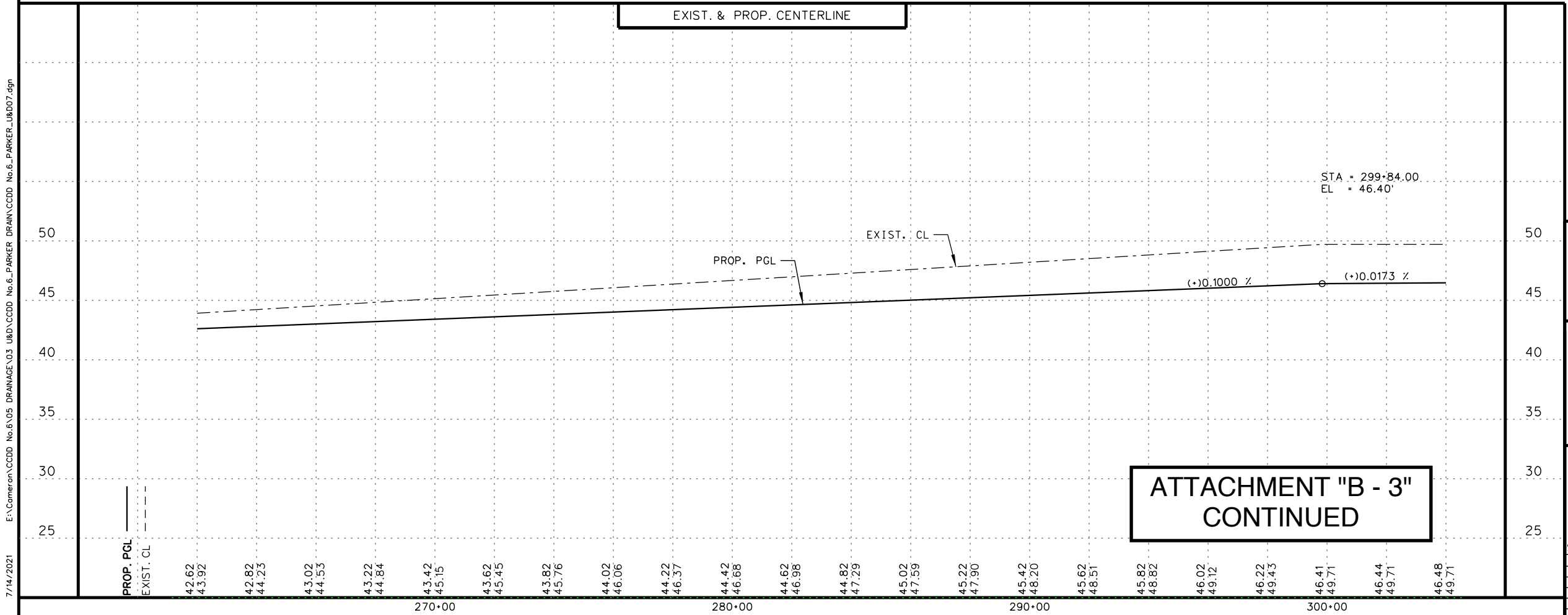
**DRAINAGE DIST. NO. 6
PARKER DRAIN
DRAINAGE LAYOUT**

SCALE: 1" = 400'

| | | | | |
|--------|--------------------|---------|--------------|------------|
| DN: | FED. RD. DIV. NO.: | STATE: | PROJECT NO.: | SHEET NO.: |
| CK DN: | 6 | TEXAS | | |
| DW: | STATE DIST. NO.: | COUNTY: | HIGHWAY: | |
| CK DW: | | CAMERON | | |
| TR: | | | | |
| CK TR: | | | | |

SHEET 6 OF 9

7/14/2021 E:\Comercon\CDD No.6\05 DRAINAGE\03 U&D\CDD No.6_PARKER DRAIN\CDD No.6_PARKER_U&D06.dgn



**ATTACHMENT "B - 3"
CONTINUED**

THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

Christopher R. Rodriguez
 CHRISTOPHER R. RODRIGUEZ
 P.E. 107692
 7/14/2021
 DATE

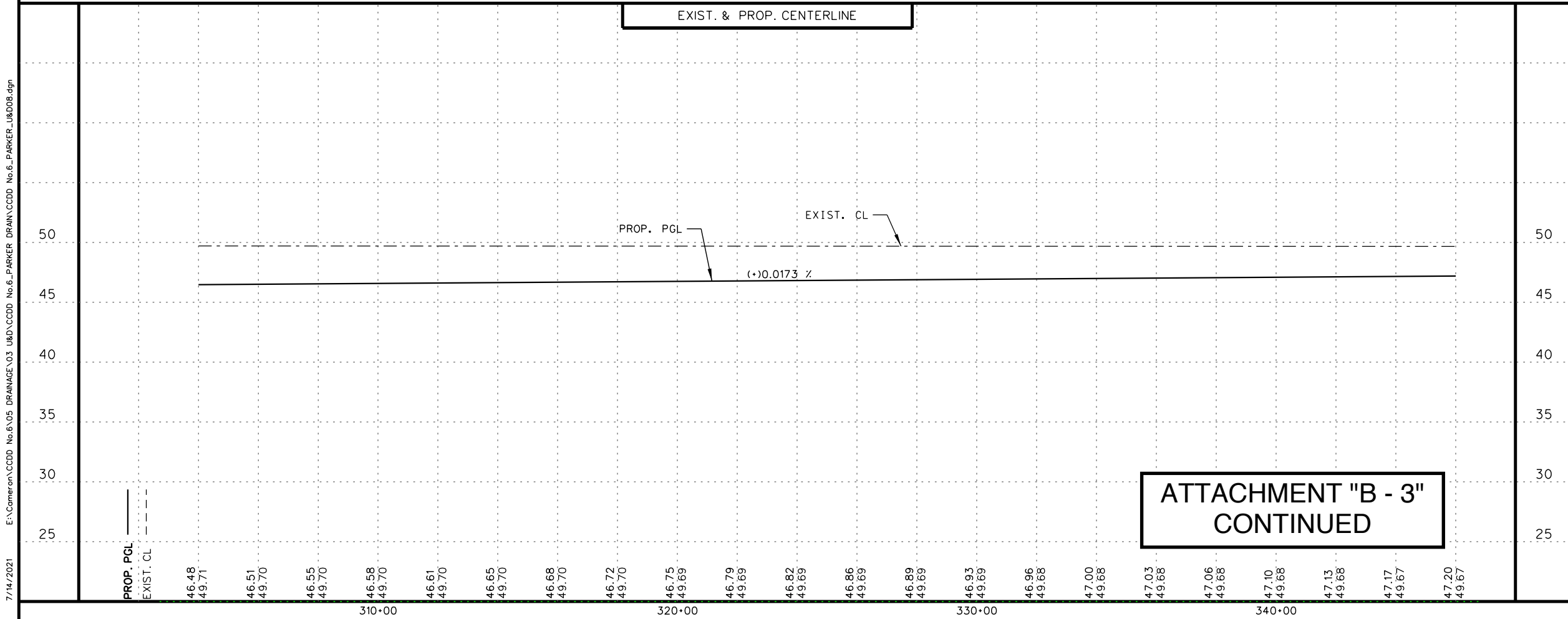


**DRAINAGE DIST. NO. 6
PARKER DRAIN
DRAINAGE LAYOUT**

SCALE: 1" = 400'

| | | | | |
|--------|--------------------|---------|--------------|------------|
| DN: | FED. RD. DIV. NO.: | STATE: | PROJECT NO.: | SHEET NO.: |
| CK DN: | 6 | TEXAS | | |
| DW: | STATE DIST. NO.: | COUNTY: | HIGHWAY: | |
| CK DW: | | CAMERON | | |
| TR: | | | | |
| CK TR: | | | | |

7/14/2021 E:\Comercon\CCDD No.6\05 DRAINAGE\03 U&D\CCDD No.6_PARKER DRAIN\CCDD No.6_PARKER_U&D07.dgn



THIS DOCUMENT IS FOR
INTERIM REVIEW AND
NOT INTENDED FOR
CONSTRUCTION, BIDDING,
OR PERMIT PURPOSES.

Christopher R. Rodriguez
CHRISTOPHER R. RODRIGUEZ
P.E. 107692

7/14/2021
DATE

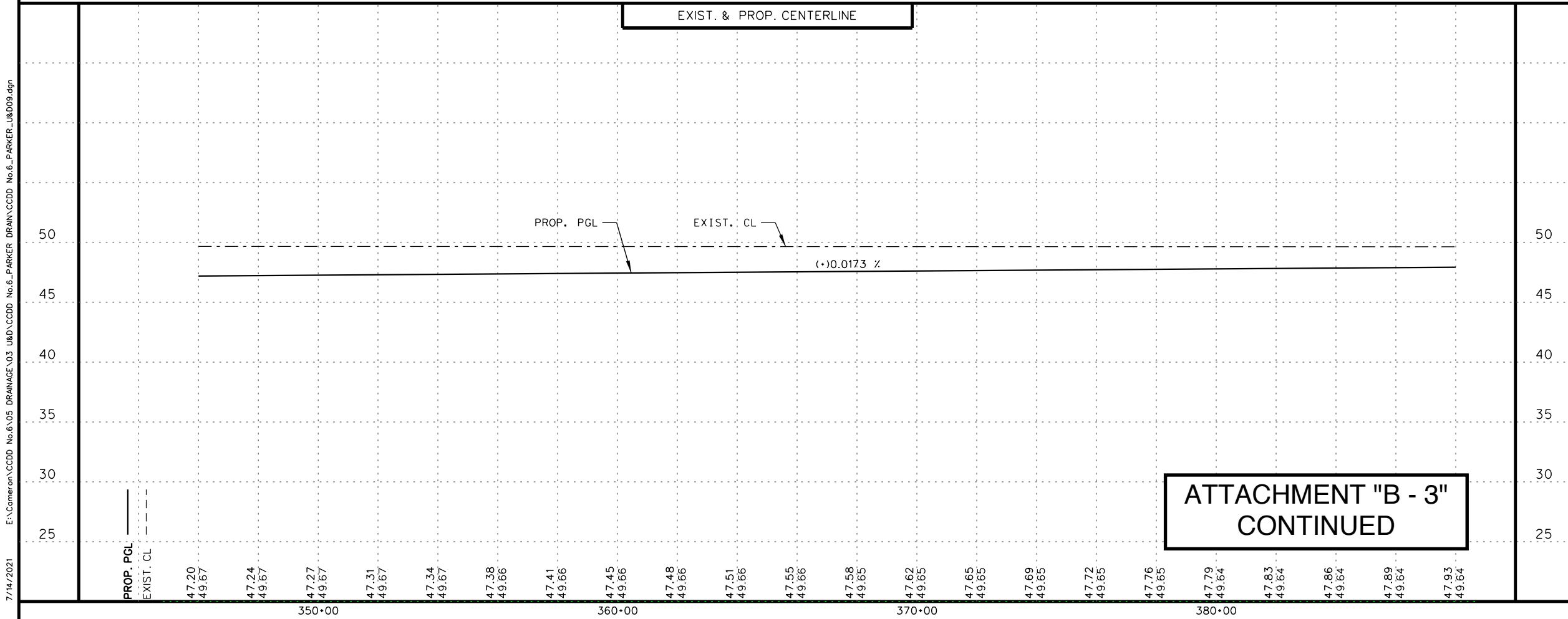


**DRAINAGE DIST. NO. 6
PARKER DRAIN
DRAINAGE
LAYOUT**

**ATTACHMENT "B - 3"
CONTINUED**

SCALE: 1" = 400'

| | | | | |
|--------|-------------------|---------|-------------|-----------|
| DN: | FED. RD. DIV. NO. | STATE | PROJECT NO. | SHEET NO. |
| CK DN: | 6 | TEXAS | | |
| DW: | STATE DIST. NO. | COUNTY | HIGHWAY | |
| CK DW: | | CAMERON | | |
| TR: | | | | |
| CK TR: | | | | |



THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

Christopher R. Rodriguez
 CHRISTOPHER R. RODRIGUEZ
 P.E. 107692

7/14/2021
 DATE



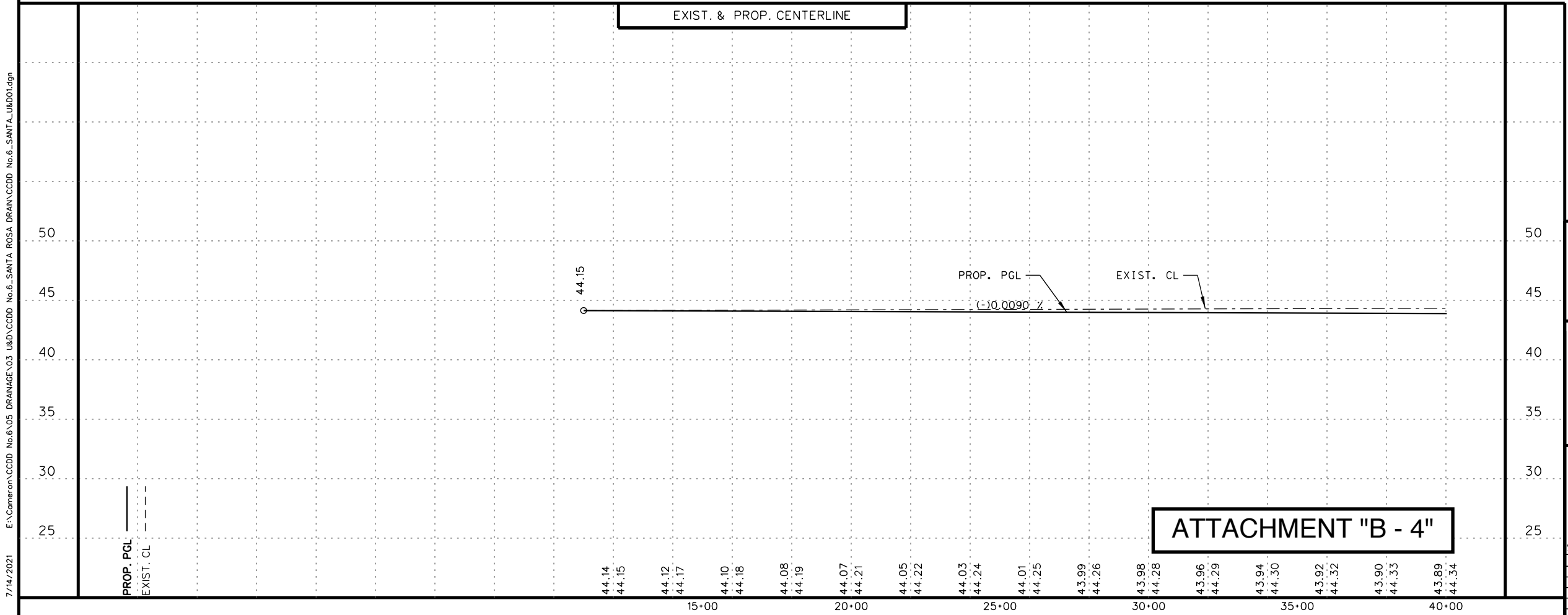
**DRAINAGE DIST. NO. 6
 PARKER DRAIN
 DRAINAGE
 LAYOUT**

**ATTACHMENT "B - 3"
 CONTINUED**

SCALE: 1" = 400'

SHEET 9 OF 9

| | | | | |
|--------|--------------------|---------|--------------|------------|
| DN: | FED. RD. DIV. NO.: | STATE: | PROJECT NO.: | SHEET NO.: |
| CK DN: | 6 | TEXAS | | |
| DW: | STATE DIST. NO. | COUNTY: | HIGHWAY: | |
| CK DW: | | CAMERON | | |
| TR: | | | | |
| CK TR: | | | | |



THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

Christopher R. Rodriguez
 CHRISTOPHER R. RODRIGUEZ
 P.E. 107692

7/14/2021
 DATE



**DRAINAGE DIST. NO. 6
 PARKER DRAIN
 OVALLE LATERAL CONNECTIVITY
 & SOUTHWEST DITCH WIDENING
 LAYOUT**

ATTACHMENT "B - 4"

SCALE: 1" = 400' SHEET 1 OF 3

| | | | | |
|--------|--------------------|---------|--------------|------------|
| DN: | FED. RD. DIV. NO.: | STATE: | PROJECT NO.: | SHEET NO.: |
| CK DN: | 6 | TEXAS | | |
| DW: | | | | |
| CK DW: | STATE DIST. NO. | COUNTY: | HIGHWAY: | |
| TR: | | CAMERON | | |
| CK TR: | | | | |

MATCH LINE STA. 72+00



MATCH LINE STA. 40+00

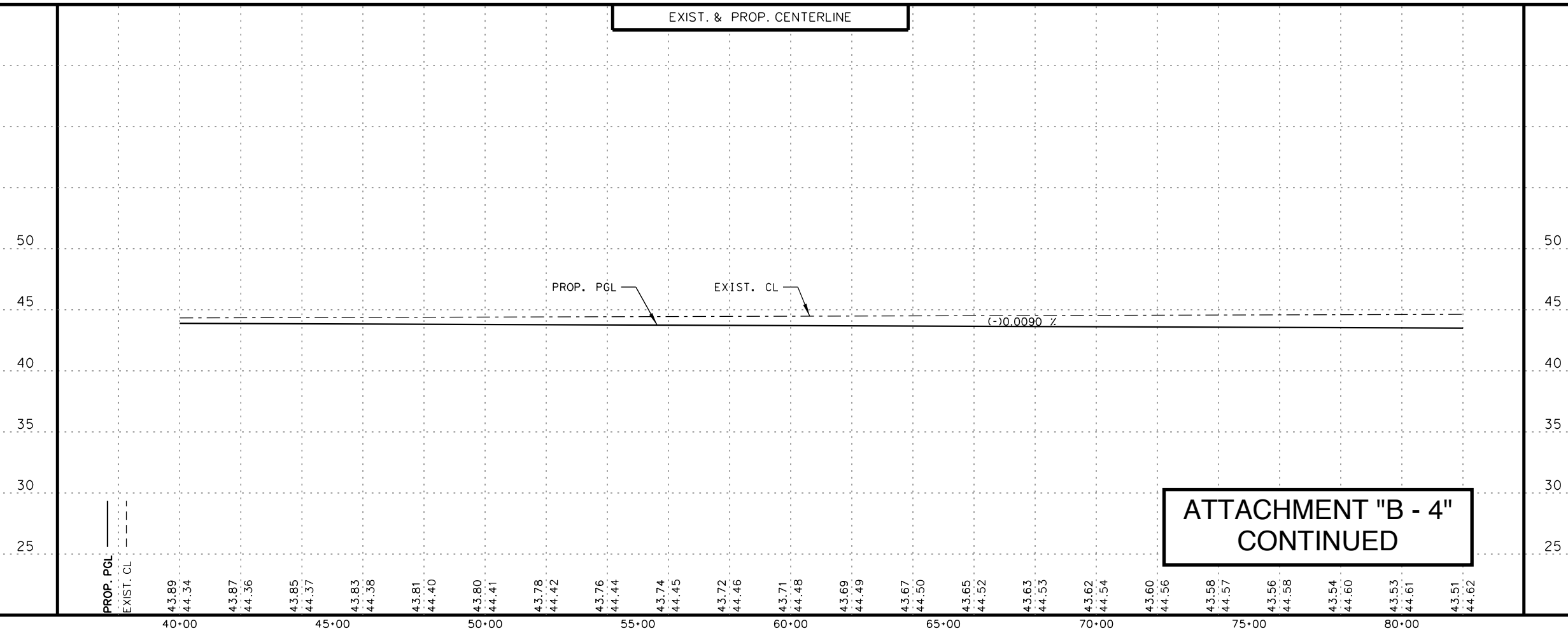


MATCH LINE STA. 72+00

MATCH LINE STA. 82+00



EXIST. & PROP. CENTERLINE



THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

Christopher R. Rodriguez
CHRISTOPHER R. RODRIGUEZ
P.E. 107692

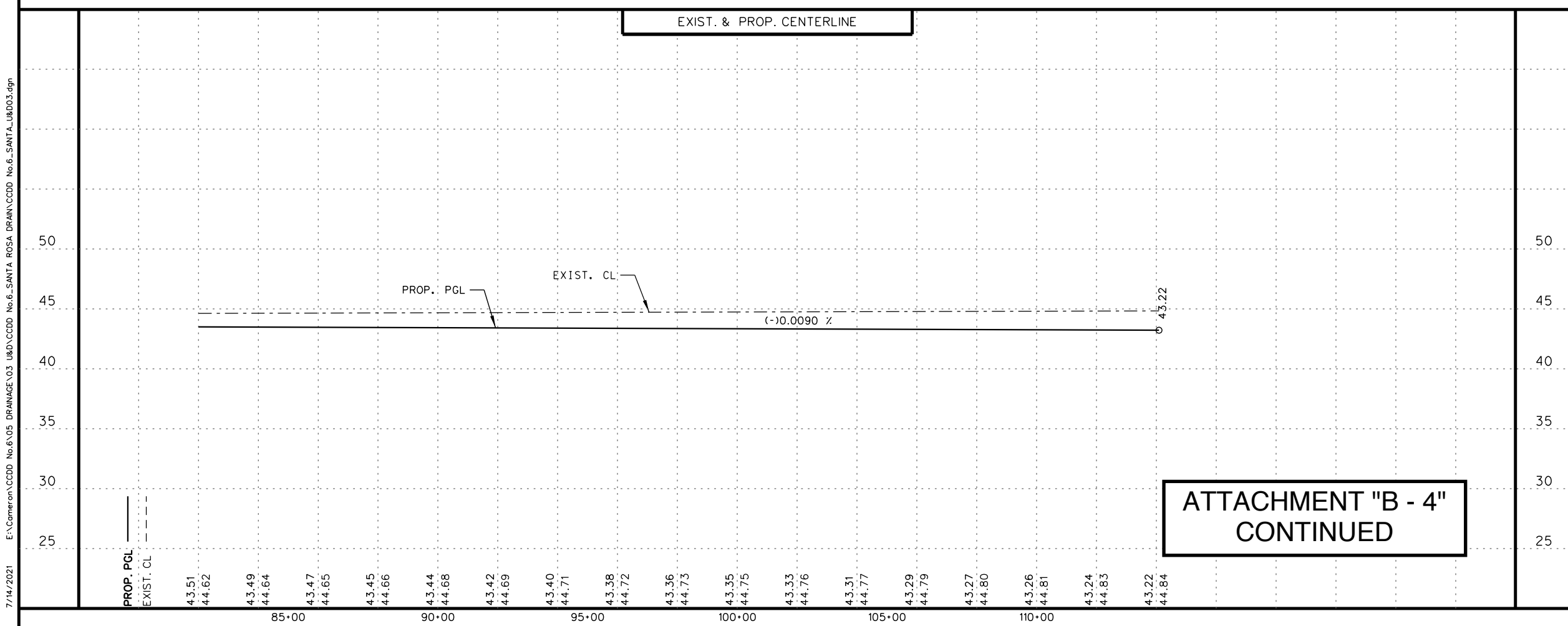
7/14/2021
DATE



**DRAINAGE DIST. NO. 6
PARKER DRAIN
OVALLE LATERAL CONNECTIVITY
& SOUTHWEST DITCH WIDENING
LAYOUT**

SCALE: 1" = 400' SHEET 2 OF 3

| | | | | |
|--------|--------------------|---------|--------------|------------|
| DN: | FED. RD. DIV. NO.: | STATE: | PROJECT NO.: | SHEET NO.: |
| CK DN: | 6 | TEXAS | | |
| DW: | | | | |
| CK DW: | STATE DIST. NO. | COUNTY: | HIGHWAY: | |
| TR: | | CAMERON | | |
| CK TR: | | | | |



**ATTACHMENT "B - 4"
CONTINUED**

THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

Christopher R. Rodriguez
CHRISTOPHER R. RODRIGUEZ
P.E. 107692

7/14/2021
DATE

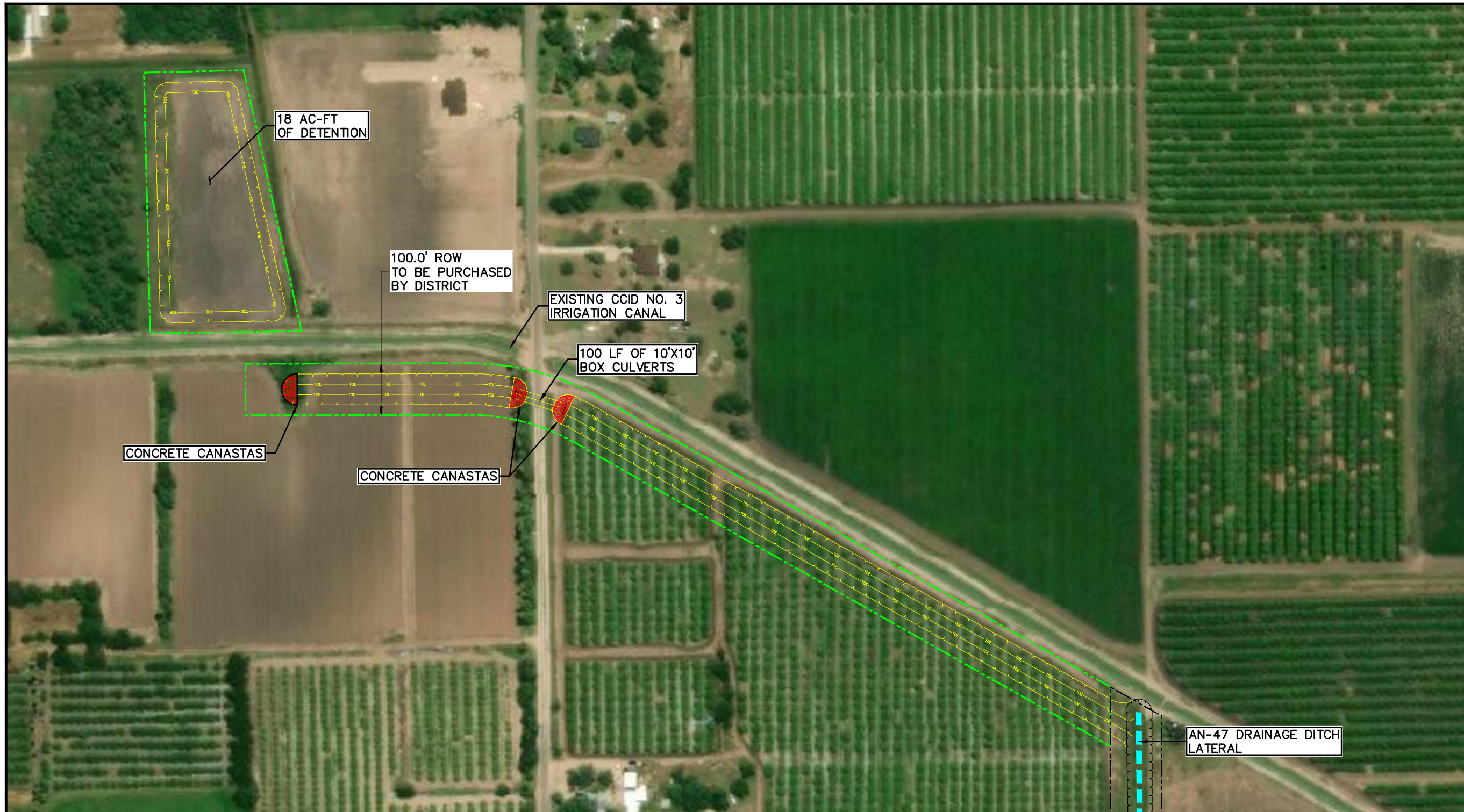


**DRAINAGE DIST. NO. 6
PARKER DRAIN
OVALLE LATERAL CONNECTIVITY
& SOUTHWEST DITCH WIDENING
LAYOUT**

SCALE: 1" = 400' SHEET 3 OF 3

| | | | | |
|--------|--------------------|---------|--------------|------------|
| DN: | FED. RD. DIV. NO.: | STATE: | PROJECT NO.: | SHEET NO.: |
| CK DN: | 6 | TEXAS | | |
| DW: | STATE DIST. NO.: | COUNTY: | HIGHWAY: | |
| CK DW: | | CAMERON | | |
| TR: | | | | |
| CK TR: | | | | |

7/14/2021 E:\Cameron\CCDD No.6\05 DRAINAGE\03 U&D\CCDD No.6_SANTA ROSA DRAIN\CCDD No.6_SANTA_U&D03.dgn



CONCRETE CANASTAS

CONCRETE CANASTAS

18 AC-FT OF DETENTION

100.0' ROW TO BE PURCHASED BY DISTRICT

EXISTING CCID NO. 3 IRRIGATION CANAL

100 LF OF 10'X10' BOX CULVERTS

AN-47 DRAINAGE DITCH LATERAL



SCALE: NTS

LEGEND




-  PROPOSED ROW
-  MAJOR LOCAL ROADS
-  CCDD NO. 6 DITCH

EXHIBIT ONLY
NOT FOR CONSTRUCTION
PREPARED UNDER THE
SUPERVISION OF
DUSTIN MOORE, PE - TX119107

ATTACHMENT "B - 5"

E:\Cameron\CCDD No.6\05 DRAINAGE\03 U&D\CCDD No.6_MAIN DRAIN\CCDD No.6_MAIN_DETENTION.dgn
7/14/2021



THIS DOCUMENT IS FOR INTERIM REVIEW AND NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

Christopher R. Rodriguez
CHRISTOPHER R. RODRIGUEZ
P.E. 107692

7/14/2021
DATE



**DRAINAGE DIST. NO. 6
PROPOSED REGIONAL
DETENTION FACILITY
MAIN DRAIN**

ATTACHMENT "B - 6"

SCALE: 1" = 400'

| | | | | |
|--------|--------------------|---------|--------------|------------|
| DN: | FED. RD. DIV. NO.: | STATE: | PROJECT NO.: | SHEET NO.: |
| CK DN: | 6 | TEXAS | | |
| DW: | STATE DIST. NO.: | COUNTY: | HIGHWAY: | |
| CK DW: | | CAMERON | | |
| TR: | | | | |
| CK TR: | | | | |

E:\Cameron\CDD No.6\05 DRAINAGE\03 U&D\CDD No.6_PARKER DETENTION.dgn
7/14/2021



PROPOSED REGIONAL
DETENTION FACILITY
(4' DEEP, 22 ACRES,
460 ACRE-FT OF DETENTION)



THIS DOCUMENT IS FOR
INTERIM REVIEW AND
NOT INTENDED FOR
CONSTRUCTION, BIDDING,
OR PERMIT PURPOSES.

CHRISTOPHER R. RODRIGUEZ
P.E. 107692

7/14/2021
DATE

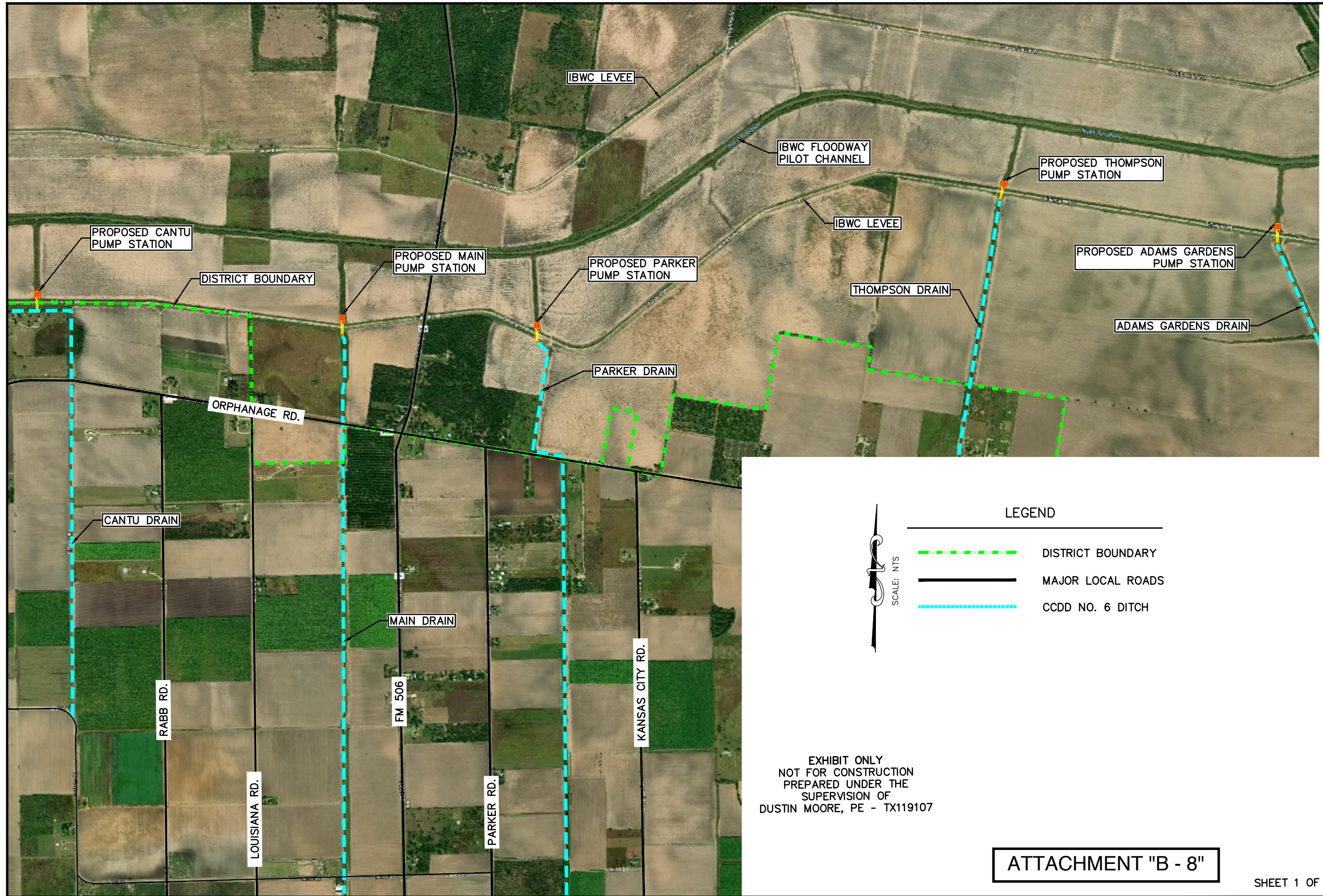


DRAINAGE DIST. NO. 6
PROPOSED REGIONAL
DETENTION FACILITY
PARKER DRAIN

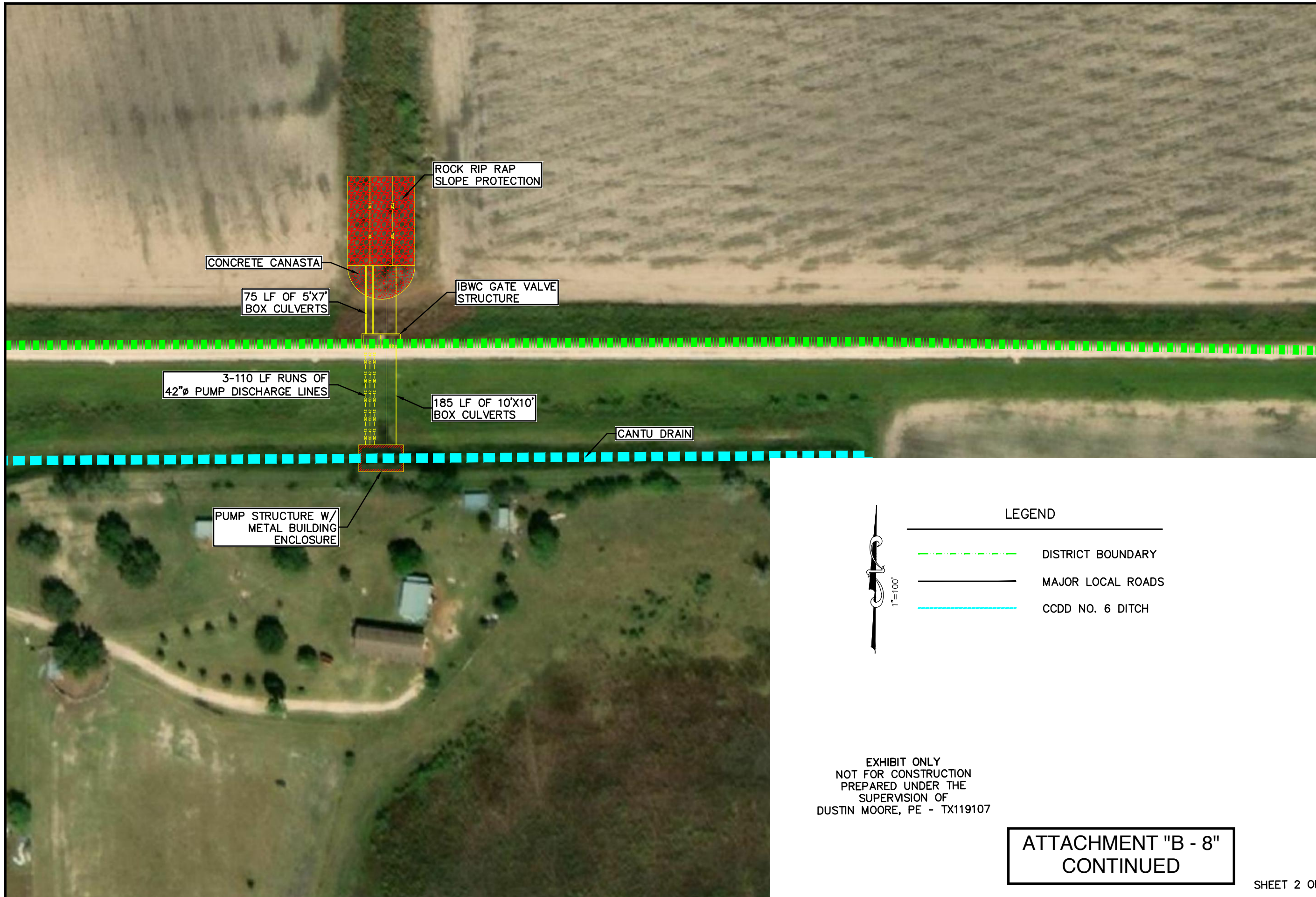
ATTACHMENT "B - 7"

SCALE: 1" = 400'

| | | | | |
|--------|--------------------|---------|--------------|------------|
| DN: | FED. RD. DIV. NO.: | STATE: | PROJECT NO.: | SHEET NO.: |
| CK DN: | 6 | TEXAS | | |
| DW: | | | | |
| CK DW: | STATE DIST. NO. | COUNTY: | HIGHWAY: | |
| TR: | | CAMERON | | |
| CK TR: | | | | |



ATTACHMENT "B - 8"



ROCK RIP RAP
SLOPE PROTECTION

CONCRETE CANASTA

75 LF OF 5'X7'
BOX CULVERTS

IBWC GATE VALVE
STRUCTURE

3-110 LF RUNS OF
42"Ø PUMP DISCHARGE LINES

185 LF OF 10'X10'
BOX CULVERTS

CANTU DRAIN

PUMP STRUCTURE W/
METAL BUILDING
ENCLOSURE



LEGEND

- DISTRICT BOUNDARY
- MAJOR LOCAL ROADS
- CCDD NO. 6 DITCH

EXHIBIT ONLY
NOT FOR CONSTRUCTION
PREPARED UNDER THE
SUPERVISION OF
DUSTIN MOORE, PE - TX119107

ATTACHMENT "B - 8"
CONTINUED



Moore Land
Surveying, LLC
14216 Palks Drive, La Feria, TX 78559
936.635-0988 TBP's Firm No. 10194186
936.635-4651 TBP's Firm No. 19190

CCDD NO. 6
CAPITAL IMPROVEMENTS
CANTU DRAIN - LEVEE CROSSING

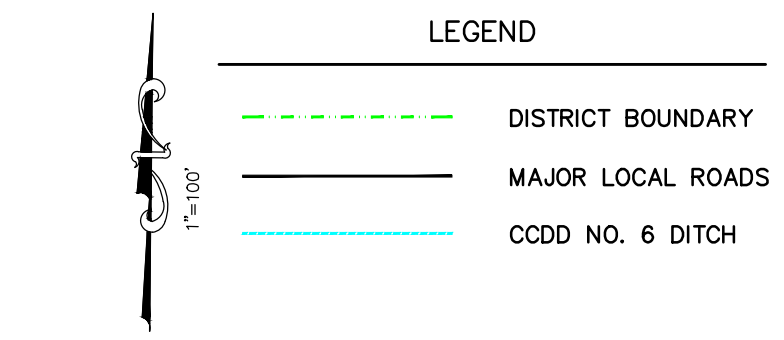
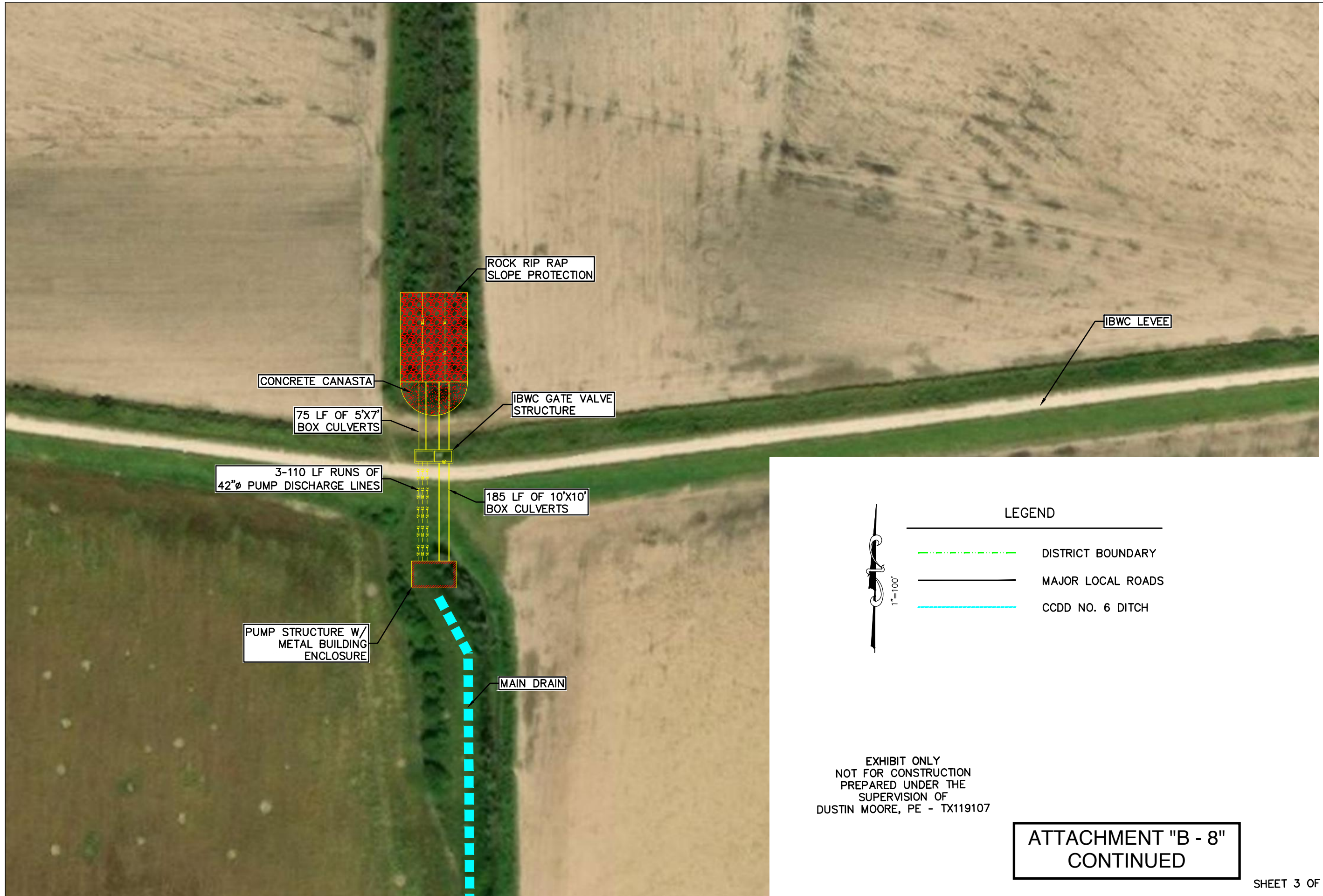
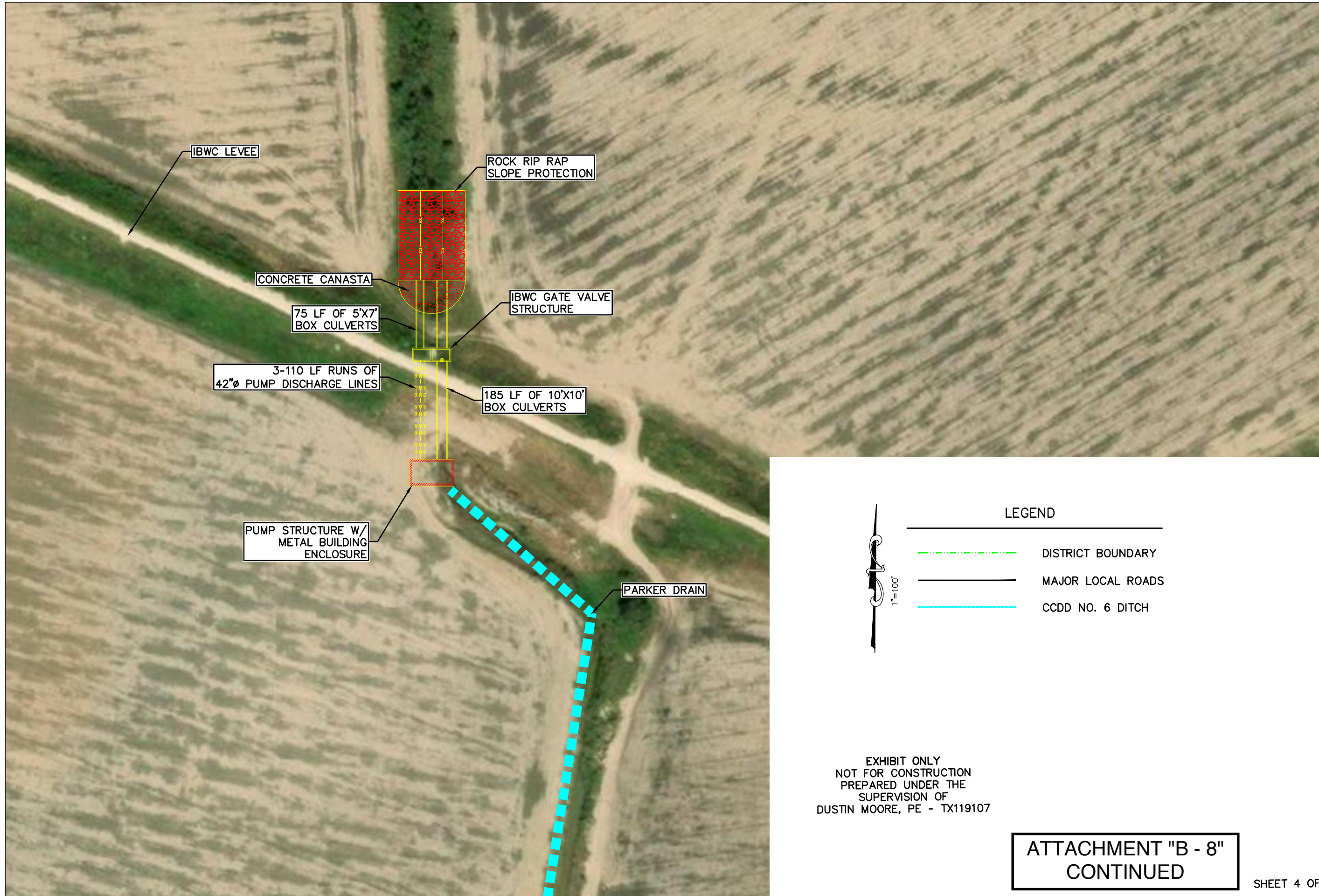


EXHIBIT ONLY
NOT FOR CONSTRUCTION
PREPARED UNDER THE
SUPERVISION OF
DUSTIN MOORE, PE - TX119107

ATTACHMENT "B - 8"
CONTINUED



IBWC LEVEE

ROCK RIP RAP
SLOPE PROTECTION

CONCRETE CANASTA

75 LF OF 5'X7'
BOX CULVERTS

IBWC GATE VALVE
STRUCTURE

3-110 LF RUNS OF
42"Ø PUMP DISCHARGE LINES

185 LF OF 10'X10'
BOX CULVERTS

PUMP STRUCTURE W/
METAL BUILDING
ENCLOSURE

PARKER DRAIN

LEGEND

-  DISTRICT BOUNDARY
-  MAJOR LOCAL ROADS
-  CCDD NO. 6 DITCH



EXHIBIT ONLY
NOT FOR CONSTRUCTION
PREPARED UNDER THE
SUPERVISION OF
DUSTIN MOORE, PE - TX119107

ATTACHMENT "B - 8"
CONTINUED

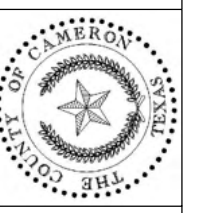


LEGEND

- DISTRICT BOUNDARY
- MAJOR LOCAL ROADS
- CCDD NO. 6 DITCH

EXHIBIT ONLY
 NOT FOR CONSTRUCTION
 PREPARED UNDER THE
 SUPERVISION OF
 DUSTIN MOORE, PE - TX119107

ATTACHMENT "B - 8"
CONTINUED



Moore Land
 Surveying, LLC
14216 Palks Drive, La Feria, TX 78559
 (361) 635-0988 TBPCL's Firm No. 10194186
 (361) 635-4651 TBPCL's Firm No. 19190

CCDD NO. 6
 CAPITAL IMPROVEMENTS
 THOMPSON DRAIN - LEVEE CROSSING

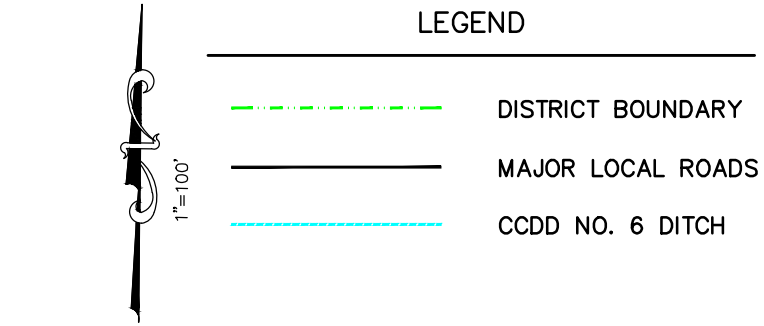
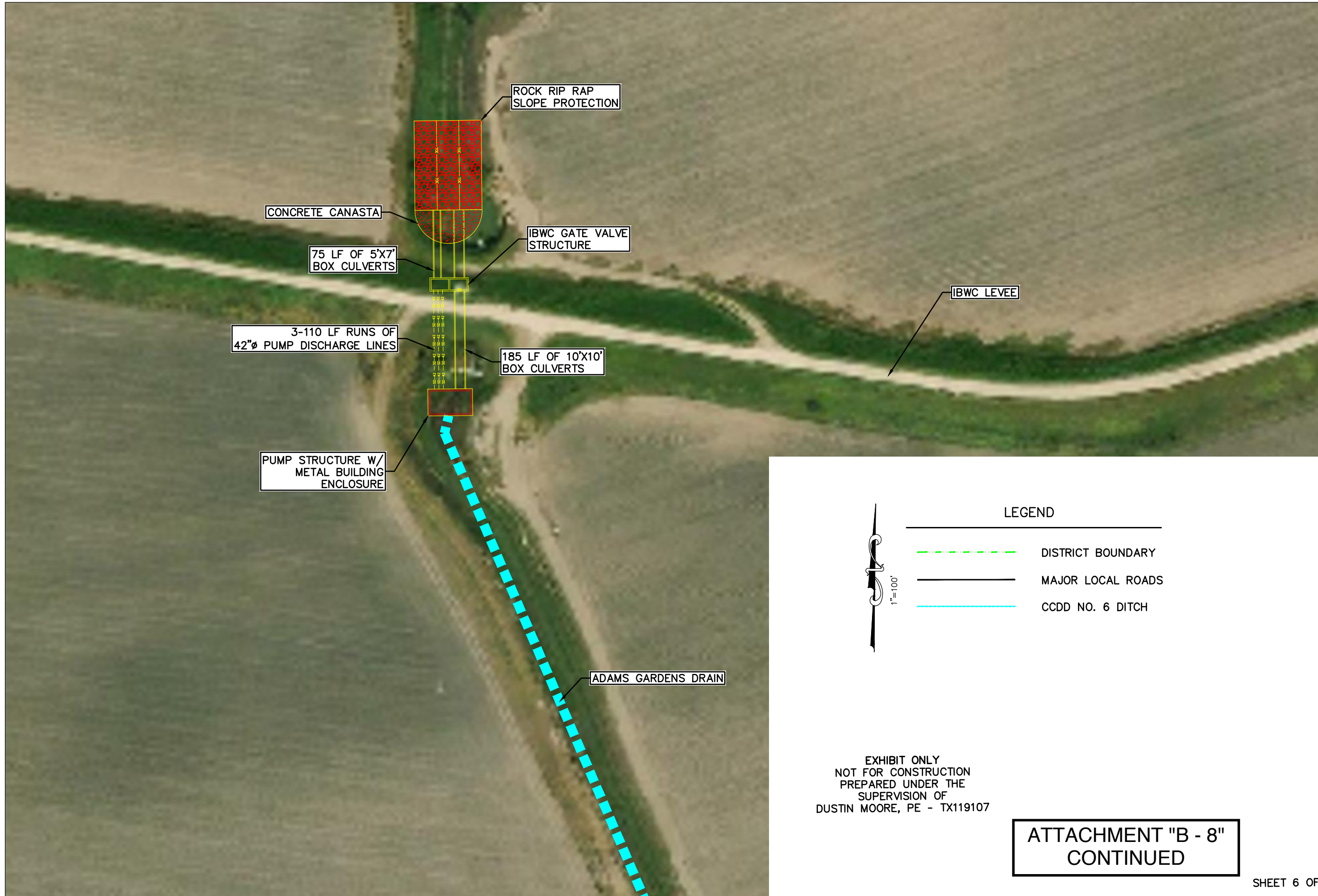


EXHIBIT ONLY
 NOT FOR CONSTRUCTION
 PREPARED UNDER THE
 SUPERVISION OF
 DUSTIN MOORE, PE - TX119107

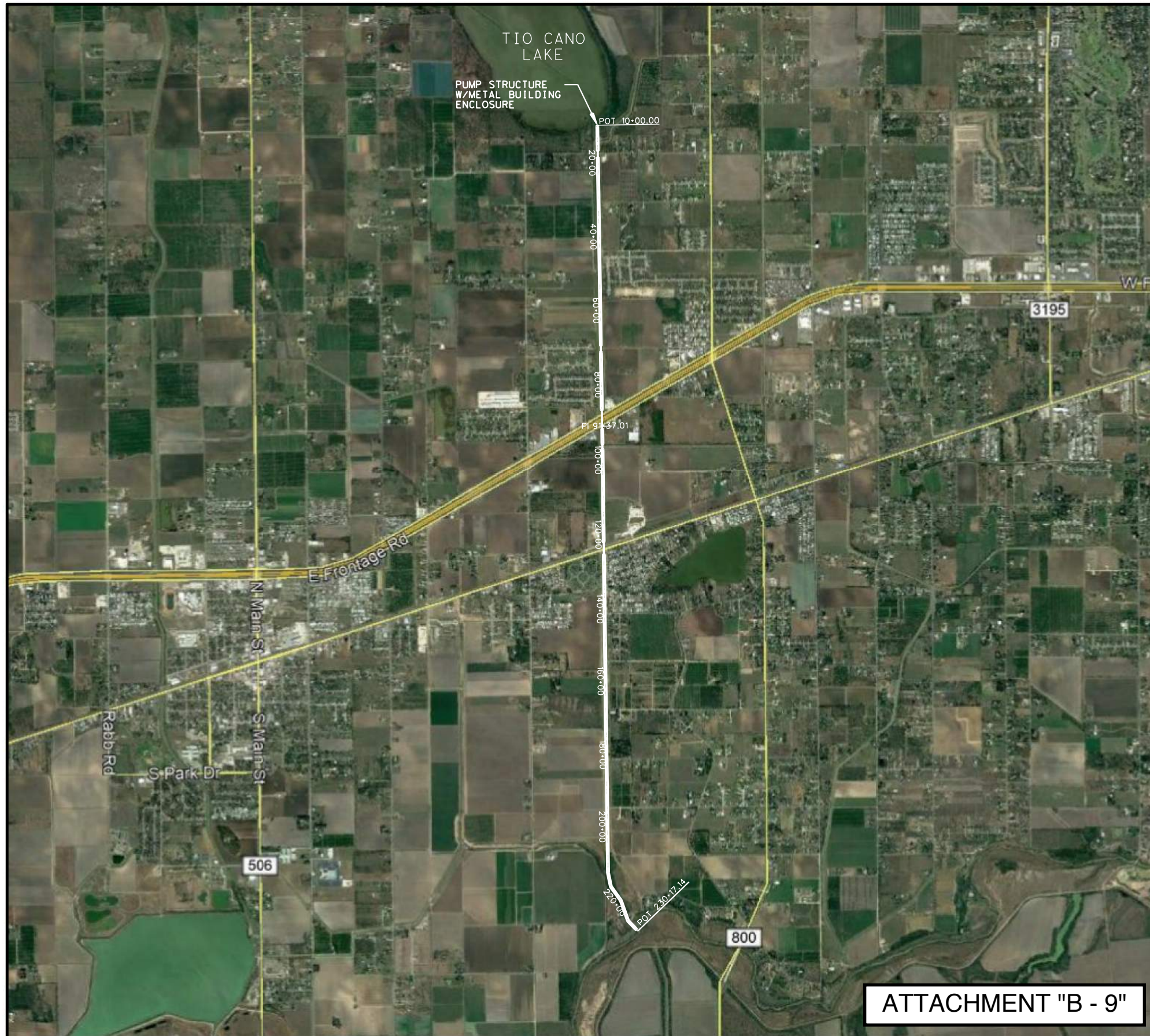
ATTACHMENT "B - 8"
 CONTINUED



Moore Land
 Surveying, LLC
 14216 Patis Drive, La Feria, TX 78559
 (361) 635-0988 TBP'S Firm No. 10194186
 (361) 635-4651 TBP'S Firm No. 19190

CCDD NO. 6
 CAPITAL IMPROVEMENTS
 ADAMS GARDENS - LEVEE CROSSING

7/14/2021 E:\Cameron\CCDD No.6\05 DRAINAGE\03 U&D\CCDD No.6_TIO CANO_DRAIN\CCDD No.6_TIO CANO EXHIBIT.dgn



ATTACHMENT "B - 9"



THIS DOCUMENT IS FOR
INTERIM REVIEW AND
NOT INTENDED FOR
CONSTRUCTION, BIDDING,
OR PERMIT PURPOSES.

Christopher R. Rodriguez
CHRISTOPHER R. RODRIGUEZ
P.E. 107692

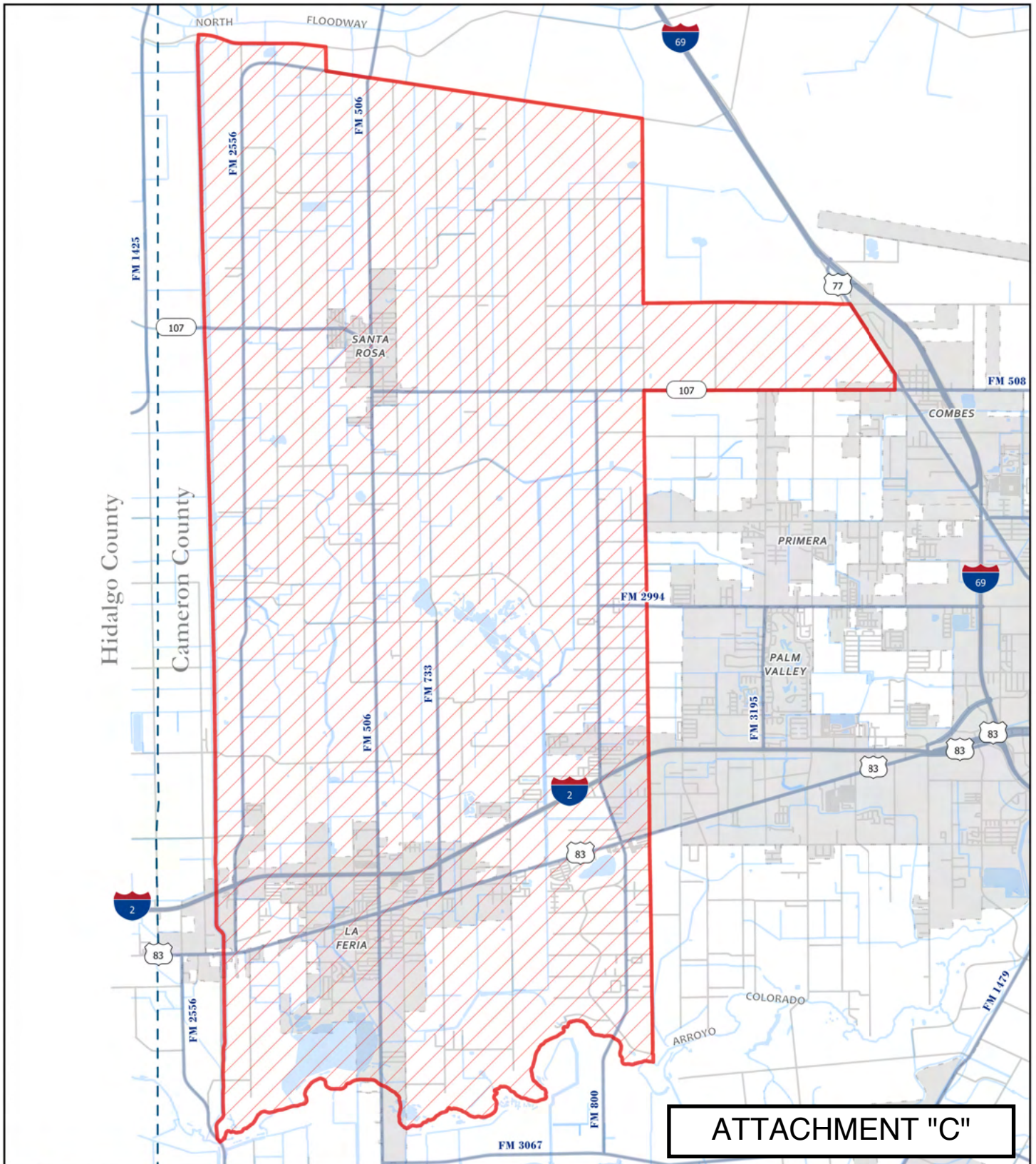
7/14/2021
DATE



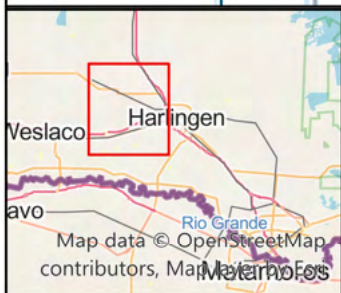
DRAINAGE DIST. NO. 6
TIO CANO SOUTHERN
DRAINAGE EXTENSION
FEASIBILITY PROJECT

SCALE: 1" = 3000'

| | | | | |
|--------|-------------------|---------|-------------|-----------|
| DN: | FED. RD. DIV. NO. | STATE | PROJECT NO. | SHEET NO. |
| CK DN: | 6 | TEXAS | | |
| DW: | STATE DIST. NO. | COUNTY | HIGHWAY | |
| CK DW: | | CAMERON | | |
| TR: | | | | |
| CK TR: | | | | |

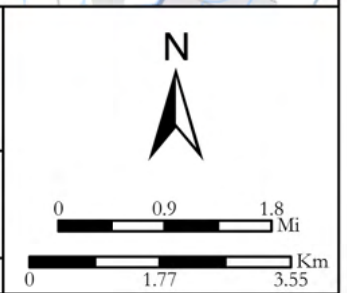


ATTACHMENT "C"



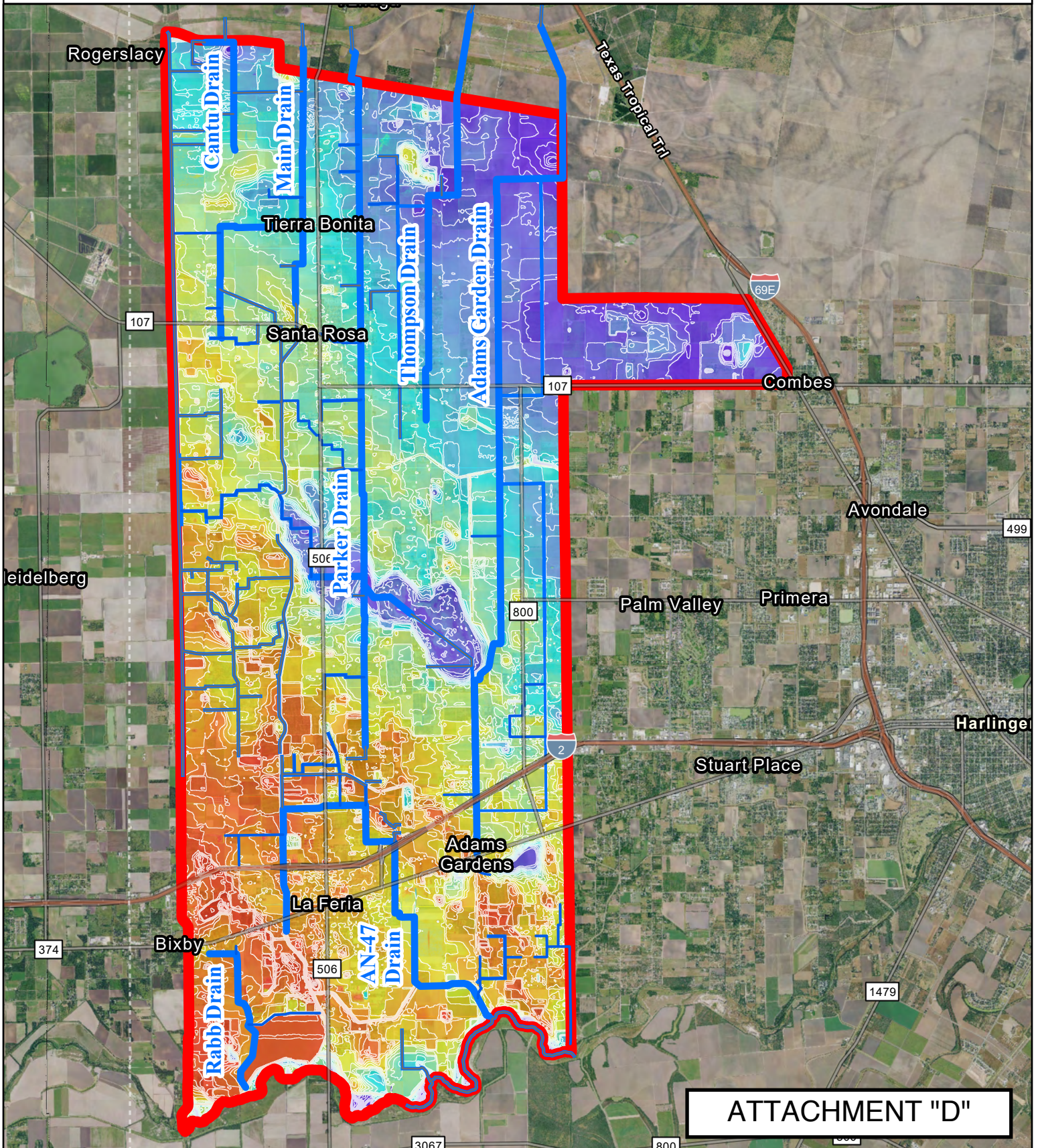
Cameron County Drainage District No. 6

| | |
|---|---------------------------------------|
| <p>Map Legend</p> <ul style="list-style-type: none"> 36,721 AC. Proposed Drainage District No.6 Boundary City Limits | <h2 style="font-size: 2em;">2021</h2> |
| <p>Coordinate System: GCS WGS 1984</p> | |



Digital Elevation Model

Cameron County Drainage District No.6



ATTACHMENT "D"



Legend

- ▭ CCDD No.6
- ▬ Existing Drain Ditches
- ▬ 1 Ft Contours

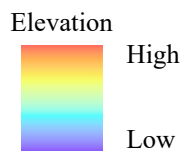


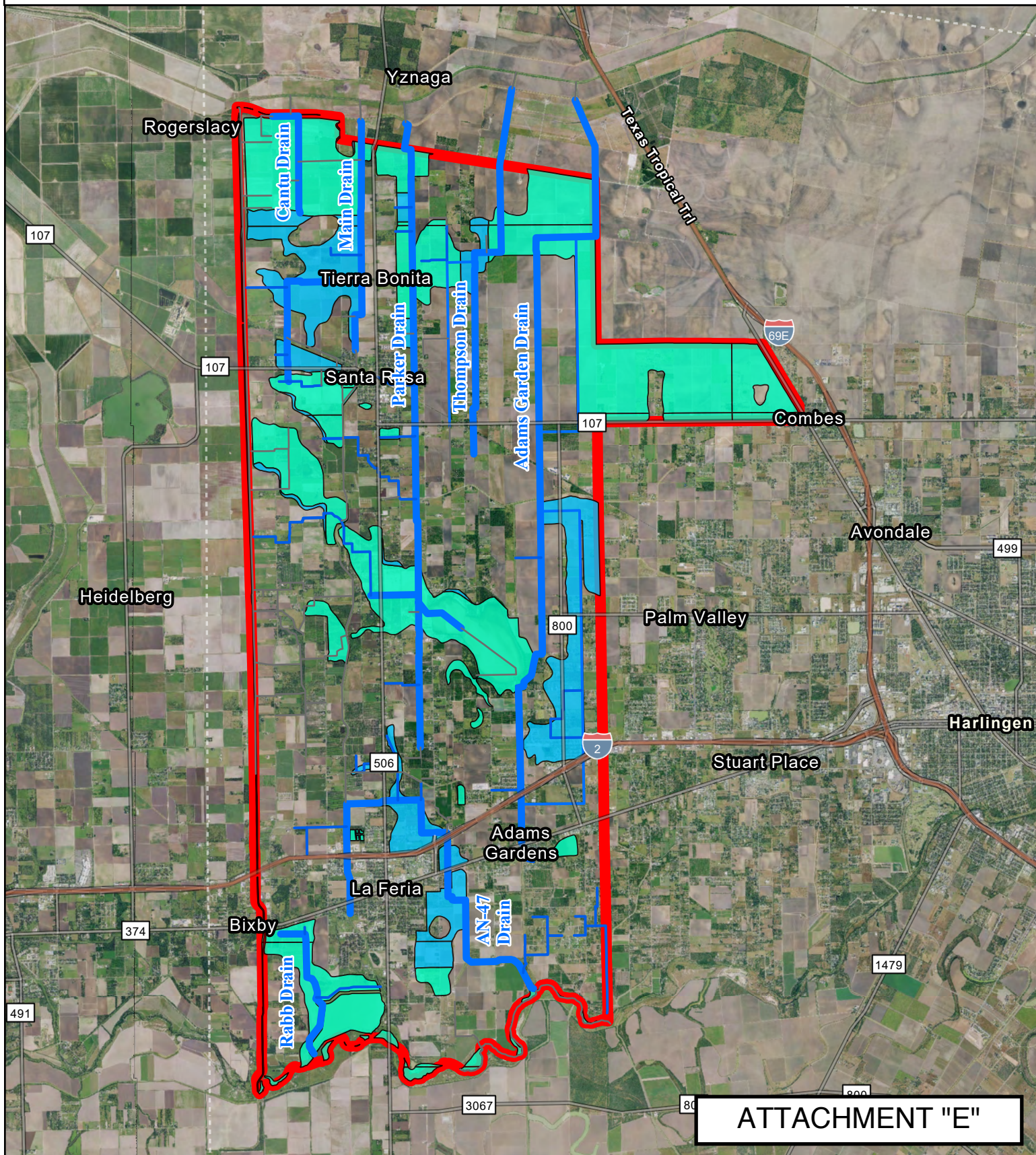
Figure #



1 inch = 9,000Ft





FEMA Flood Zone Map

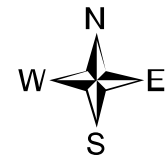
Cameron County Drainage District No.6



ATTACHMENT "E"

Legend

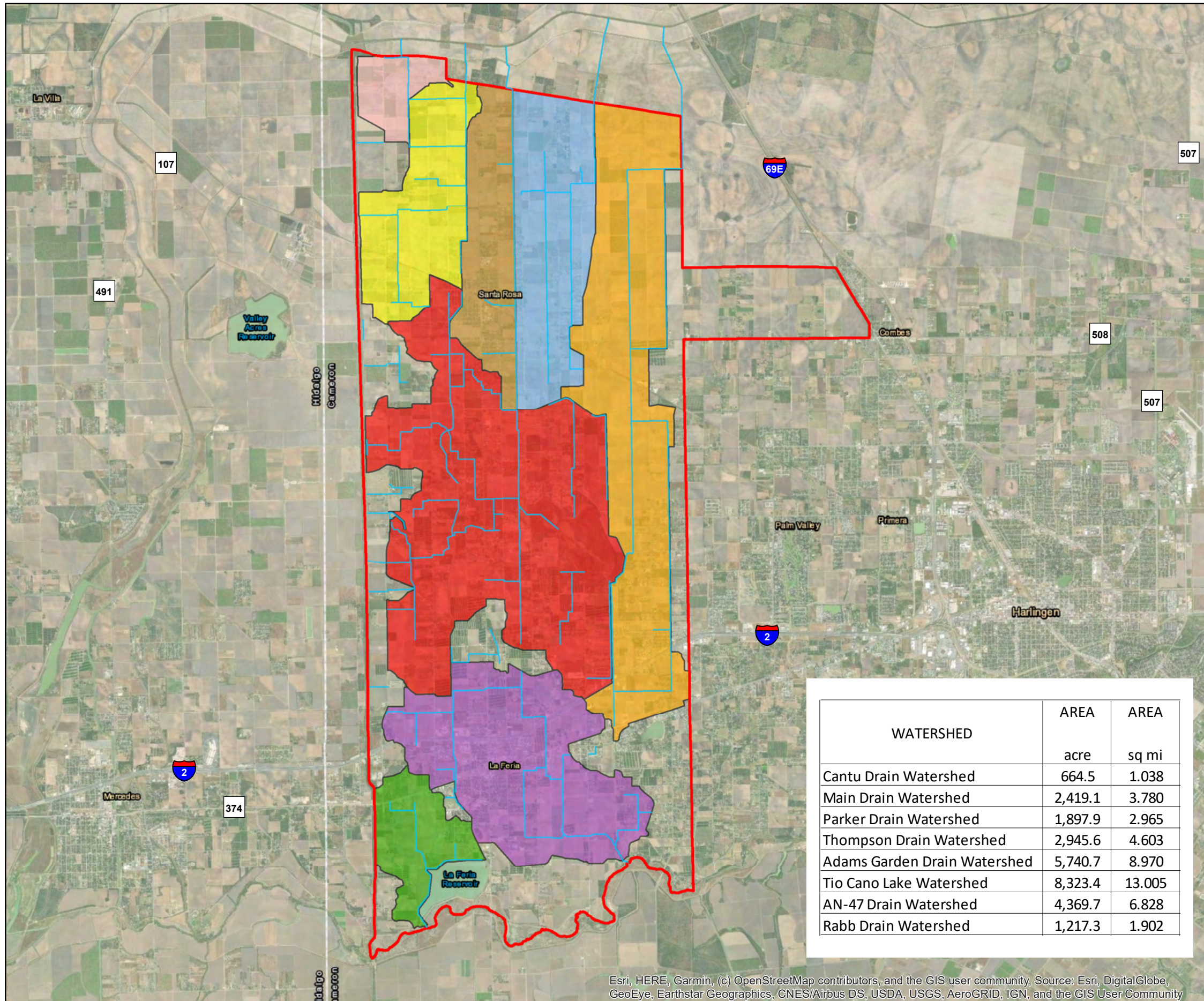
- | | | | |
|---|-------------------|---|----------------------|
|  | CCDD No.6 |  | 500 Yr Flood Zone |
|  | 100 Yr Flood Zone |  | Existing Drain Ditch |



1 inch = 9,000Ft

Figure #

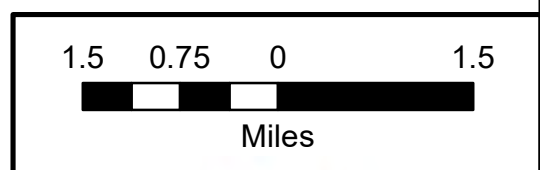




Legend

- CCD6
- Existing Drainage Ditches
- Cantu Drain Watershed
- Main Drain Watershed
- Parker Drain Watershed
- Thompson Drain Watershed
- Adams Garden Drain Watershed
- Tio Cano Lake Watershed
- AN-47 Drain Watershed
- Rabb Drain Watershed

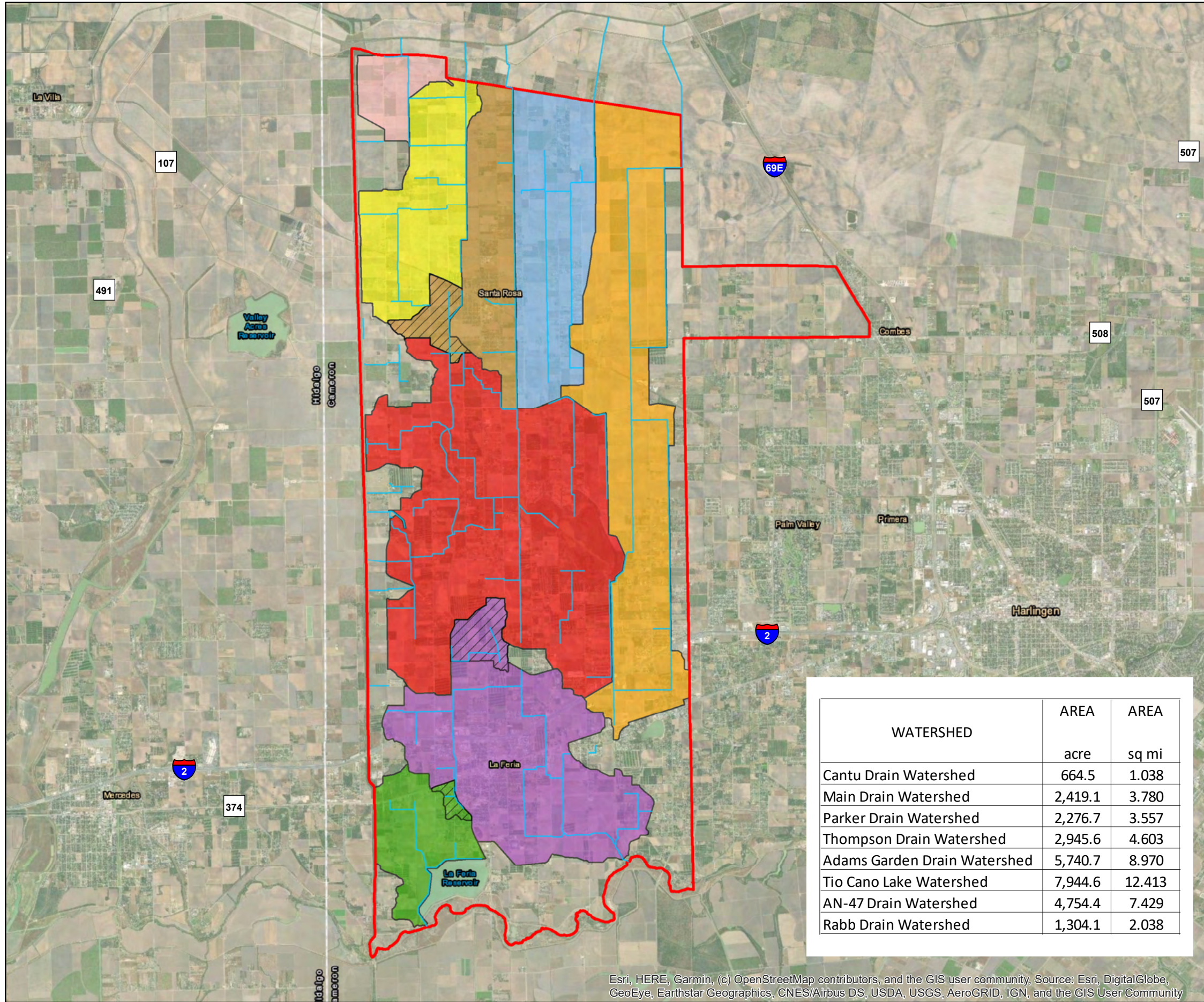
| WATERSHED | AREA | AREA |
|------------------------------|---------|--------|
| | acre | sq mi |
| Cantu Drain Watershed | 664.5 | 1.038 |
| Main Drain Watershed | 2,419.1 | 3.780 |
| Parker Drain Watershed | 1,897.9 | 2.965 |
| Thompson Drain Watershed | 2,945.6 | 4.603 |
| Adams Garden Drain Watershed | 5,740.7 | 8.970 |
| Tio Cano Lake Watershed | 8,323.4 | 13.005 |
| AN-47 Drain Watershed | 4,369.7 | 6.828 |
| Rabb Drain Watershed | 1,217.3 | 1.902 |



CH CAMACHO-HERNANDEZ & ASSOCIATES, LLC
 415 EMBASSY OAKS - SUITE 205 SAN ANTONIO, TX. 78216
 OFFICE: (210) 341-6200 FAX: (210) 341-6300
 FIRM NUMBER: F-8478

CAMERON COUNTY DRAINAGE DISTRICT No.6
DRAINAGE WATERSHED MAP
EXISTING
ATTACHMENT "F"

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Legend

- CCD6
- Existing Drainage Ditches
- Cantu Drain Watershed
- Main Drain Watershed
- Parker Drain Watershed
- Thompson Drain Watershed
- Adams Garden Drain Watershed
- Tio Cano Lake Watershed
- AN-47 Drain Watershed
- Rabb Drain Watershed
- Revised Drainage Areas

| WATERSHED | AREA | AREA |
|------------------------------|---------|--------|
| | acre | sq mi |
| Cantu Drain Watershed | 664.5 | 1.038 |
| Main Drain Watershed | 2,419.1 | 3.780 |
| Parker Drain Watershed | 2,276.7 | 3.557 |
| Thompson Drain Watershed | 2,945.6 | 4.603 |
| Adams Garden Drain Watershed | 5,740.7 | 8.970 |
| Tio Cano Lake Watershed | 7,944.6 | 12.413 |
| AN-47 Drain Watershed | 4,754.4 | 7.429 |
| Rabb Drain Watershed | 1,304.1 | 2.038 |



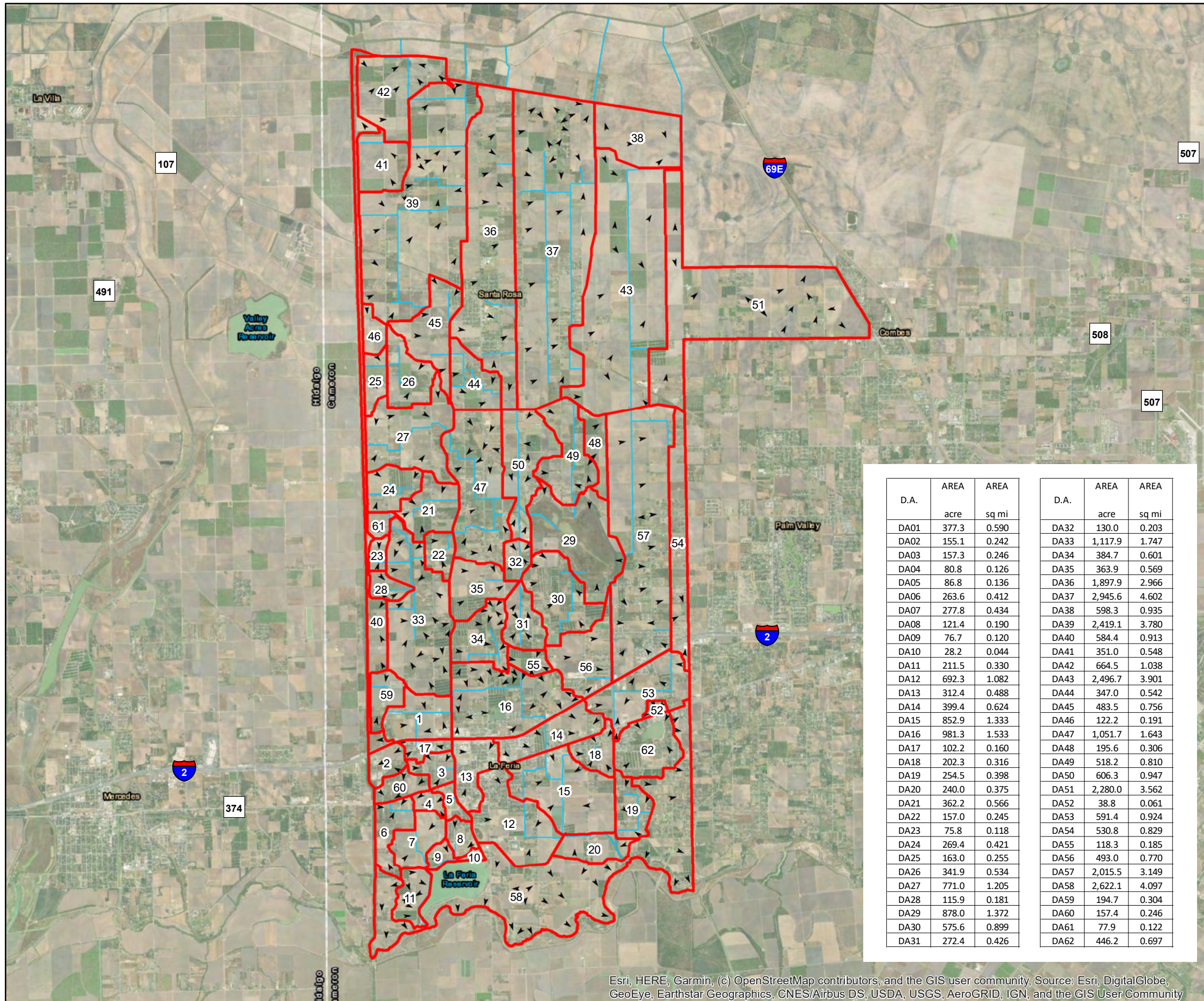
CH CAMACHO-HERNANDEZ & ASSOCIATES, LLC
 415 EMBASSY OAKS - SUITE 205 SAN ANTONIO, TX. 78216
 OFFICE: (210) 341-6200 FAX: (210) 341-6300
 FIRM NUMBER: F-8478

CAMERON COUNTY DRAINAGE DISTRICT No.6

DRAINAGE WATERSHED MAP PROPOSED

ATTACHMENT "G"

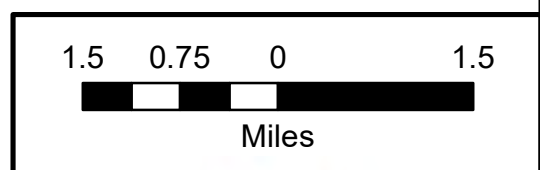
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Legend

- Drainage Areas
- Existing Drainage Ditches
- Flow Direction

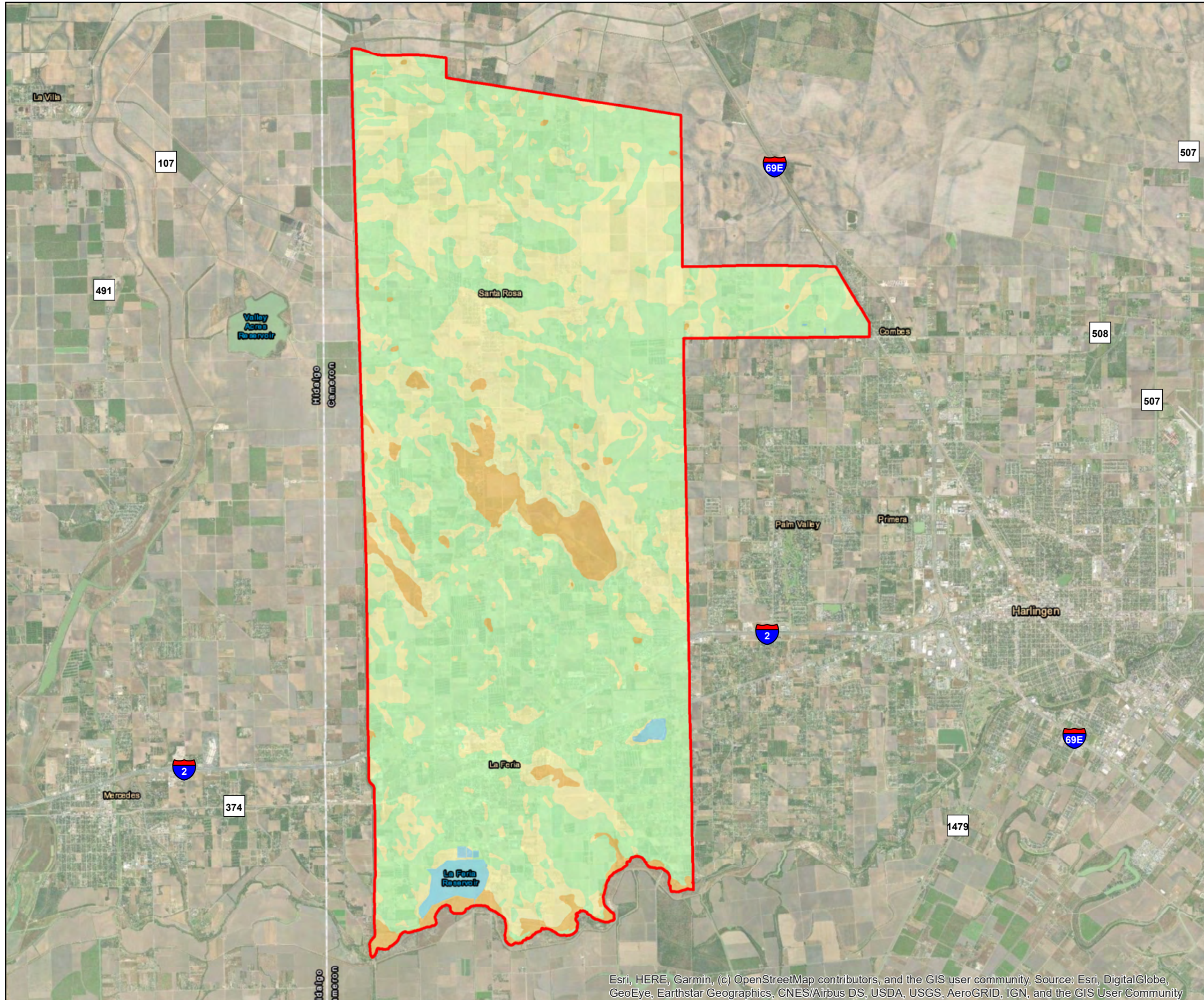
| D.A. | AREA acre | AREA sq mi | D.A. | AREA acre | AREA sq mi |
|------|--------------|---------------|------|--------------|---------------|
| DA01 | 377.3 | 0.590 | DA32 | 130.0 | 0.203 |
| DA02 | 155.1 | 0.242 | DA33 | 1,117.9 | 1.747 |
| DA03 | 157.3 | 0.246 | DA34 | 384.7 | 0.601 |
| DA04 | 80.8 | 0.126 | DA35 | 363.9 | 0.569 |
| DA05 | 86.8 | 0.136 | DA36 | 1,897.9 | 2.966 |
| DA06 | 263.6 | 0.412 | DA37 | 2,945.6 | 4.602 |
| DA07 | 277.8 | 0.434 | DA38 | 598.3 | 0.935 |
| DA08 | 121.4 | 0.190 | DA39 | 2,419.1 | 3.780 |
| DA09 | 76.7 | 0.120 | DA40 | 584.4 | 0.913 |
| DA10 | 28.2 | 0.044 | DA41 | 351.0 | 0.548 |
| DA11 | 211.5 | 0.330 | DA42 | 664.5 | 1.038 |
| DA12 | 692.3 | 1.082 | DA43 | 2,496.7 | 3.901 |
| DA13 | 312.4 | 0.488 | DA44 | 347.0 | 0.542 |
| DA14 | 399.4 | 0.624 | DA45 | 483.5 | 0.756 |
| DA15 | 852.9 | 1.333 | DA46 | 122.2 | 0.191 |
| DA16 | 981.3 | 1.533 | DA47 | 1,051.7 | 1.643 |
| DA17 | 102.2 | 0.160 | DA48 | 195.6 | 0.306 |
| DA18 | 202.3 | 0.316 | DA49 | 518.2 | 0.810 |
| DA19 | 254.5 | 0.398 | DA50 | 606.3 | 0.947 |
| DA20 | 240.0 | 0.375 | DA51 | 2,280.0 | 3.562 |
| DA21 | 362.2 | 0.566 | DA52 | 38.8 | 0.061 |
| DA22 | 157.0 | 0.245 | DA53 | 591.4 | 0.924 |
| DA23 | 75.8 | 0.118 | DA54 | 530.8 | 0.829 |
| DA24 | 269.4 | 0.421 | DA55 | 118.3 | 0.185 |
| DA25 | 163.0 | 0.255 | DA56 | 493.0 | 0.770 |
| DA26 | 341.9 | 0.534 | DA57 | 2,015.5 | 3.149 |
| DA27 | 771.0 | 1.205 | DA58 | 2,622.1 | 4.097 |
| DA28 | 115.9 | 0.181 | DA59 | 194.7 | 0.304 |
| DA29 | 878.0 | 1.372 | DA60 | 157.4 | 0.246 |
| DA30 | 575.6 | 0.899 | DA61 | 77.9 | 0.122 |
| DA31 | 272.4 | 0.426 | DA62 | 446.2 | 0.697 |



CH CAMACHO-HERNANDEZ & ASSOCIATES, LLC
 415 EMBASSY OAKS - SUITE 205 SAN ANTONIO, TX. 78216
 OFFICE: (210) 341-6200 FAX: (210) 341-6300
 FIRM NUMBER: F-8478

CAMERON COUNTY DRAINAGE DISTRICT No.6
DRAINAGE AREA MAP
ATTACHMENT "H"

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Legend

- CCDD6
- Hydrologic Soil Group "B"
- Hydrologic Soil Group "C"
- Hydrologic Soil Group "D"
- Surface Waters

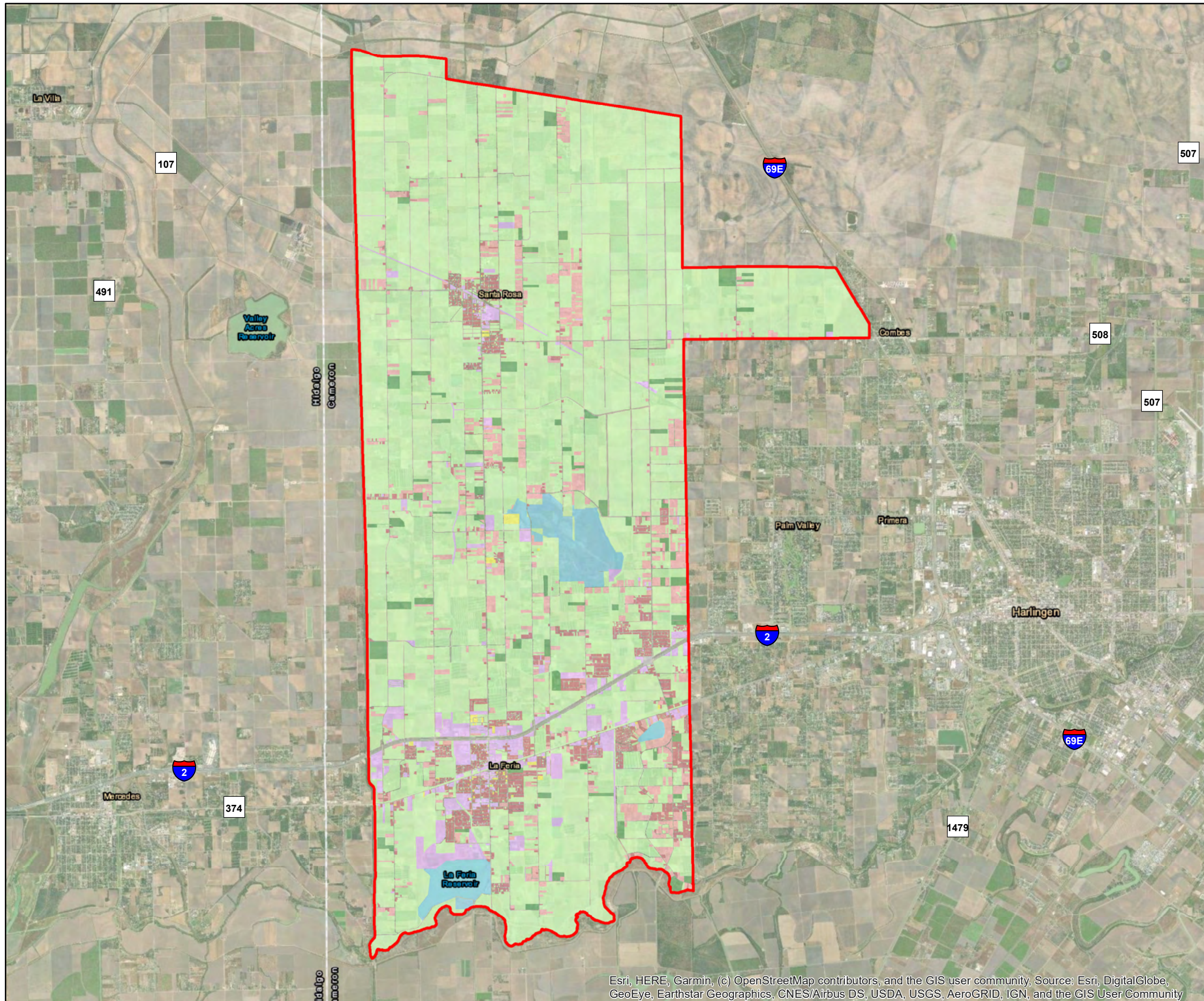


CH CAMACHO-HERNANDEZ & ASSOCIATES, LLC
 415 EMBASSY OAKS - SUITE 205 SAN ANTONIO, TX. 78216
 OFFICE: (210) 341-6200 FAX: (210) 341-6300
 FIRM NUMBER: F-8478

CAMERON COUNTY DRAINAGE DISTRICT No.6

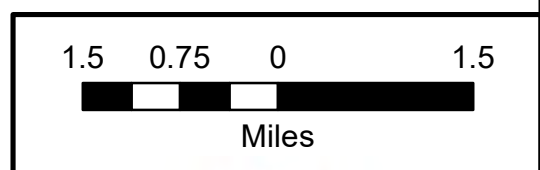
SOILS MAP
ATTACHMENT "H"
CONTINUED

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Legend

- CCD6
- Residential Rural > 5 acres
- Residential Large > 1 and < 5 acres
- Residential < 1 acre
- Residential 1/8 acres or less (townhouses)
- Green Areas
- Commercial, Industrial, Schools
- Transportation corridors and streets, etc.
- Water



CH CAMACHO-HERNANDEZ & ASSOCIATES, LLC
 415 EMBASSY OAKS - SUITE 205 SAN ANTONIO, TX. 78216
 OFFICE: (210) 341-6200 FAX: (210) 341-6300
 FIRM NUMBER: F-8478

CAMERON COUNTY DRAINAGE DISTRICT No.6

LAND USE MAP
ATTACHMENT "H"
CONTINUED

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Historical Rain Gauge Data

| Date | Time | Station Number | Station Name | Total Precipitation (inches) |
|------------|----------|----------------|---------------------|------------------------------|
| 7/27/2020 | 10:00 AM | TX-CMR-31 | Brownsville 7.0 NW | 5.28 |
| 7/26/2020 | 6:00 AM | TX-CMR-13 | Brownsville 2.2 W | 5.78 |
| 7/26/2020 | 7:00 AM | TX-CMR-1 | Rancho Viejo 0.7 E | 5.02 |
| 7/26/2020 | 7:00 AM | TX-CMR-21 | Los Fresnos 0.3 NE | 6.39 |
| 7/26/2020 | 7:00 AM | TX-CMR-58 | Laguna Vista 0.3 N | 6.04 |
| 7/26/2020 | 7:00 AM | TX-CMR-90 | Brownsville 1.5 WNW | 5.96 |
| 7/26/2020 | 7:00 AM | TX-CMR-93 | Harlingen 4.4 W | 7.66 |
| 7/26/2020 | 7:00 AM | TX-CMR-94 | Brownsville 12.6 E | 8.10 |
| 7/26/2020 | 7:00 AM | TX-CMR-96 | San Benito 6.3 ENE | 6.01 |
| 7/26/2020 | 7:00 AM | TX-CMR-100 | Harlingen 6.2 WSW | 7.65 |
| 7/26/2020 | 7:00 AM | TX-CMR-121 | Harlingen 4.2 W | 7.14 |
| 7/26/2020 | 8:00 AM | TX-CMR-120 | Harlingen 1.1 NE | 7.36 |
| 7/26/2020 | 9:30 AM | TX-CMR-28 | Brownsville 2.8 N | 5.05 |
| 7/26/2020 | 9:48 AM | TX-CMR-105 | Los Fresnos 2.1 NNE | 8.29 |
| 6/2/2020 | 4:00 PM | TX-CMR-31 | Brownsville 7.0 NW | 5.20 |
| 7/24/2019 | 8:00 AM | TX-CMR-16 | Brownsville 3.5 N | 5.64 |
| 6/25/2019 | 2:00 AM | TX-CMR-36 | Harlingen 4.7 WSW | 11.60 |
| 6/25/2019 | 7:00 AM | TX-CMR-93 | Harlingen 4.4 W | 11.12 |
| 6/25/2019 | 7:00 AM | TX-CMR-100 | Harlingen 6.2 WSW | 11.03 |
| 6/25/2019 | 7:00 AM | TX-CMR-119 | Harlingen 3.1 WSW | 11.40 |
| 6/25/2019 | 7:00 AM | TX-CMR-121 | Harlingen 4.2 W | 11.00 |
| 6/25/2019 | 7:00 AM | TX-CMR-123 | Harlingen 4.7 W | 10.96 |
| 6/25/2019 | 8:00 AM | TX-CMR-85 | Harlingen 0.4 N | 8.60 |
| 10/11/2018 | 6:00 PM | TX-CMR-85 | Harlingen 0.4 N | 5.85 |
| 6/21/2018 | 6:00 AM | TX-CMR-51 | Brownsville 0.1 SSE | 6.59 |
| 6/21/2018 | 7:00 AM | TX-CMR-97 | Rio Hondo 7.9 E | 5.49 |
| 6/21/2018 | 7:00 AM | TX-CMR-106 | Rio Hondo 10.0 NE | 5.21 |
| 6/21/2018 | 7:47 AM | TX-CMR-105 | Los Fresnos 2.1 NNE | 5.40 |
| 6/21/2018 | 8:00 AM | TX-CMR-6 | Brownsville 1.0 N | 5.26 |
| 6/20/2018 | 7:00 AM | TX-CMR-31 | Brownsville 7.0 NW | 7.81 |
| 6/20/2018 | 7:00 AM | TX-CMR-97 | Rio Hondo 7.9 E | 5.03 |
| 6/20/2018 | 7:00 AM | TX-CMR-100 | Harlingen 6.2 WSW | 6.99 |
| 6/20/2018 | 7:15 AM | TX-CMR-36 | Harlingen 4.7 WSW | 5.13 |
| 6/20/2018 | 7:15 AM | TX-CMR-96 | San Benito 6.3 ENE | 5.89 |
| 6/20/2018 | 8:00 AM | TX-CMR-61 | Brownsville 6.4 WNW | 6.40 |
| 6/20/2018 | 9:00 AM | TX-CMR-85 | Harlingen 0.4 N | 8.25 |
| 10/31/2015 | 7:00 AM | TX-CMR-23 | Brownsville 1.9 ESE | 6.55 |
| 10/30/2015 | 1:00 PM | TX-CMR-17 | Brownsville 4.1 E | 6.95 |
| 10/25/2015 | 7:00 AM | TX-CMR-58 | Laguna Vista 0.3 N | 5.06 |
| 9/1/2015 | 6:00 AM | TX-CMR-1 | Rancho Viejo 0.7 E | 6.02 |

ATTACHMENT "I"



| Date | Time | Station Number | Station Name | Total Precipitation (inches) |
|------------|----------|----------------|---------------------|------------------------------|
| 9/1/2015 | 7:00 AM | TX-CMR-90 | Brownsville 1.5 WNW | 6.54 |
| 9/1/2015 | 8:00 AM | TX-CMR-16 | Brownsville 3.5 N | 5.37 |
| 9/1/2015 | 8:00 AM | TX-CMR-24 | Cameron Park 3.9 W | 8.10 |
| 9/1/2015 | 8:00 AM | TX-CMR-50 | Brownsville 5.0 NW | 6.63 |
| 5/24/2015 | 8:00 AM | TX-CMR-61 | Brownsville 6.4 WNW | 6.29 |
| 11/23/2013 | 7:00 AM | TX-CMR-12 | Harlingen 2.6 ESE | 5.50 |
| 7/1/2012 | 6:00 AM | TX-CMR-13 | Brownsville 2.2 W | 6.15 |
| 7/1/2012 | 7:00 AM | TX-CMR-46 | Brownsville 0.9 SW | 5.80 |
| 7/1/2012 | 7:00 AM | TX-CMR-51 | Brownsville 0.1 SSE | 5.34 |
| 6/23/2011 | 7:00 AM | TX-CMR-36 | Harlingen 4.7 WSW | 5.26 |
| 9/19/2010 | 6:00 AM | TX-CMR-13 | Brownsville 2.2 W | 6.33 |
| 9/19/2010 | 7:00 AM | TX-CMR-15 | Brownsville 4.9 NW | 5.74 |
| 9/19/2010 | 7:00 AM | TX-CMR-46 | Brownsville 0.9 SW | 6.04 |
| 9/19/2010 | 7:40 AM | TX-CMR-21 | Los Fresnos 0.3 NE | 5.97 |
| 9/19/2010 | 8:00 AM | TX-CMR-1 | Rancho Viejo 0.7 E | 5.51 |
| 9/19/2010 | 8:00 AM | TX-CMR-11 | Brownsville 0.8 NNW | 5.35 |
| 9/19/2010 | 8:00 AM | TX-CMR-16 | Brownsville 3.5 N | 5.53 |
| 9/19/2010 | 8:00 AM | TX-CMR-50 | Brownsville 5.0 NW | 5.10 |
| 9/19/2010 | 12:00 PM | TX-CMR-6 | Brownsville 1.0 N | 6.00 |
| 9/7/2010 | 7:00 AM | TX-CMR-35 | Rio Hondo 9.4 NE | 7.73 |
| 7/1/2010 | 6:00 AM | TX-CMR-13 | Brownsville 2.2 W | 5.18 |
| 7/1/2010 | 7:00 AM | TX-CMR-1 | Rancho Viejo 0.7 E | 9.04 |
| 7/1/2010 | 7:00 AM | TX-CMR-15 | Brownsville 4.9 NW | 5.57 |
| 7/1/2010 | 7:00 AM | TX-CMR-17 | Brownsville 4.1 E | 6.31 |
| 7/1/2010 | 7:00 AM | TX-CMR-19 | San Benito 5.0 SSE | 6.50 |
| 7/1/2010 | 7:00 AM | TX-CMR-21 | Los Fresnos 0.3 NE | 6.17 |
| 7/1/2010 | 7:00 AM | TX-CMR-23 | Brownsville 1.9 ESE | 5.87 |
| 7/1/2010 | 7:00 AM | TX-CMR-36 | Harlingen 4.7 WSW | 5.82 |
| 7/1/2010 | 7:00 AM | TX-CMR-38 | Brownsville 4.1 NNE | 7.70 |
| 7/1/2010 | 7:00 AM | TX-CMR-42 | Brownsville 4.4 NE | 5.17 |
| 7/1/2010 | 7:00 AM | TX-CMR-46 | Brownsville 0.9 SW | 6.42 |
| 7/1/2010 | 7:00 AM | TX-CMR-50 | Brownsville 5.0 NW | 5.10 |
| 7/1/2010 | 7:00 AM | TX-CMR-51 | Brownsville 0.1 SSE | 5.62 |
| 7/1/2010 | 7:30 AM | TX-CMR-18 | Palm Valley 2.2 SSW | 5.33 |
| 7/1/2010 | 7:40 AM | TX-CMR-6 | Brownsville 1.0 N | 7.41 |
| 7/1/2010 | 8:00 AM | TX-CMR-16 | Brownsville 3.5 N | 5.51 |
| 7/1/2010 | 8:00 AM | TX-CMR-32 | Harlingen 4.3 WSW | 5.43 |
| 7/1/2010 | 10:30 AM | TX-CMR-35 | Rio Hondo 9.4 NE | 5.06 |
| 6/30/2010 | 7:00 PM | TX-CMR-44 | Brownsville 4.2 NE | 5.97 |
| 7/24/2008 | 6:30 AM | TX-CMR-17 | Brownsville 4.1 E | 6.29 |
| 7/24/2008 | 7:00 AM | TX-CMR-6 | Brownsville 1.0 N | 9.67 |
| 7/24/2008 | 7:00 AM | TX-CMR-19 | San Benito 5.0 SSE | 6.80 |
| 7/24/2008 | 7:00 AM | TX-CMR-21 | Los Fresnos 0.3 NE | 6.51 |

**ATTACHMENT "I"
CONTINUED**

| Date | Time | Station Number | Station Name | Total Precipitation (inches) |
|-----------|---------|----------------|---------------------|------------------------------|
| 7/24/2008 | 7:00 AM | TX-CMR-23 | Brownsville 1.9 ESE | 7.85 |
| 7/24/2008 | 7:00 AM | TX-CMR-27 | Brownsville 4.6 NNW | 8.62 |
| 7/24/2008 | 7:45 AM | TX-CMR-18 | Palm Valley 2.2 SSW | 5.25 |
| 7/24/2008 | 8:00 AM | TX-CMR-16 | Brownsville 3.5 N | 6.99 |
| 7/24/2008 | 7:00 PM | TX-CMR-1 | Rancho Viejo 0.7 E | 6.39 |
| 7/16/2007 | 9:30 AM | TX-CMR-19 | San Benito 5.0 SSE | 6.03 |
| 5/26/2007 | 7:00 AM | TX-CMR-12 | Harlingen 2.6 ESE | 5.50 |
| 3/31/2007 | 9:30 AM | TX-GV-2 | Brownsville 2.9 N | 5.14 |
| 3/13/2007 | 6:00 AM | TX-CMR-6 | Brownsville 1.0 N | 5.61 |
| 3/13/2007 | 7:00 AM | TX-CMR-1 | Rancho Viejo 0.7 E | 5.90 |
| 3/13/2007 | 7:00 AM | TX-CMR-3 | Bayview 1.6 SW | 5.34 |

**ATTACHMENT "I"
CONTINUED**